Food and Agriculture Organization of the United Nations

World Health Organization



Pesticide residues in food

REPORT 2024

Joint FAO/WHO Meeting on Pesticide Residues

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Pesticide Residues

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Abbreviations

AChE	acetylcholinesterase
AD	administered dose
ADI	acceptable daily intake
ADME	absorption, distribution, metabolism, excretion
AGF	aspirated grain fractions
ALP	alkaline phosphatase
ALT	alanine transaminase
AR	administered radioactivity
ARfD	acute reference dose
as	as received
AST	aspartate transaminase
AUC, $AUC_{0-\infty}$	area under the concentration–time curve
BBCH	Biologische Bundesanstalt, Bundessortenamt und Chemische Industrie
BMD	benchmark dose
bw	body weight
CAC	Codex Alimentarius Commission
CAR/PXR	constitutive androstane receptor/pregnane X receptor
CAS	Chemical Abstracts Service
CCPR	Codex Committee on Pesticide Residues
cGAP	critical GAP
ChE	cholinesterase
C_{max}	maximum concentration
DAA	days after application
DAFT	days after first treatment
DALA	days after last application
DAT	days after treatment
DM	dry matter
DNA	deoxyribonucleic acid
DT_{50}	time required for 50 percent dissipation of the initial concentration
dw	dry weight
EFSA	European Food Safety Authority
eq	equivalent(s)
ESI	electrospray ionization
FAO	Food and Agriculture Organization of the United Nations
$GABA_A$	γ-aminobutyric acid, type A
GAP	good agricultural practice
GC-ECD	gas chromatography–electron capture detector
GC-MS	gas chromatography–mass spectrometry
GC-NPD	nitrogen-phosphorus detectors
GD	gestation day
GECDE	global estimate of chronic dietary exposure
GEMS	Global Environment Monitoring System–Food Contamination Monitoring and Assessment Programme
GGTP	γ-glutamyl transpeptidase/transferase
GI	gastrointestinal
GLP	good laboratory practice
HBGV	health-based guidance values
Hb	haemoglobin
HCB	hexchlorobenzene
HPLC	high performance liquid chromatography
HPRT	hypoxanthine–guanine phosphoribosyl transferase
HR	highest residue level in the edible portion of a commodity

HR-P	highest residue level in a processed commodity
Ht	haematocrit
IEDI	International Estimated Daily Intake
IESTI	International Estimate of Short-term Intake
ILV	independent laboratory validation
ISO	International Organization for Standardization
IUPAC	International Union of Pure and Applied Chemistry
JECFA	Joint FAO/WHO Expert Committee on Food Additives
JMPR	Joint FAO/WHO Meeting on Pesticide Residues
LC_{50}	median lethal concentration
LC-MS/MS	liquid chromatography-tandem mass spectrometry
LD_{50}	median lethal dose
LLNA	local lymph node assay
LOAEL	lowest-observed-adverse-effect level
LOD	limit of detection
LOQ	limit of quantification
LP	large portion
mADI	microbiological ADI
mARfD	microbiological ARfD
MOA	mode of action
MRL	maximum residue limit
NIS	sodium/iodide symporter
NOAEC	no-observed-adverse-effect concentration
NOAEL	no-observed-adverse-effect level
NTE	neuropathy target esterase
OECD	Organisation for Economic Co-operation and Development
PBI	plant-back interval
PF	processing factor
PHI	pre-harvest interval
PND	postnatal day
Po	post-harvest
POD	point of departure
ppm	parts per million
PXR	pregnane X receptor
QuEChERS	quick, easy, cheap, effective, rugged and safe
QSAR	quantitative structure–activity relationship
RAC	raw agricultural commodity
RBC	red blood cell
RSD	relative standard deviation
RTI	re-treatment interval
SC	suspension concentrate
SCE	sister chromatid exchange
SD	standard deviation
SDHI	succinate dehydrogenase inhibitor
SPE	solid phase extraction
STMR	supervised trials median residue
STMR-P	supervised trials median residue in a processed commodity
$t_{½}$	half-life
T3	triiodothyronine
T4	thyroxine
THF	tetrahydrofuran
TLC	thin-layer chromatography
T_{max}	time to reach maximum concentration
TPO	thyroid peroxidase

TRR	total radioactive residues
TSH	thyroid stimulating hormone
TTC	threshold of toxicological concern
UDP-GT	uridine diphosphate glucuronosyltransferase
US	United States of America
USEPA	United States Environmental Protection Agency
v/v	volume for volume
WHO	World Health Organization
w/v	weight for volume
w/w	weight for weight

Use of JMPR reports and evaluations by registration authorities

Most of the summaries and evaluations contained in this report are based on unpublished proprietary data provided for use by JMPR in making its assessments. A registration authority should not grant a registration on the basis of an evaluation unless it has first received authorization for such use from the owner of the data provided for the JMPR review or has received the data on which the summaries are based, either from the owner of the data or from a second party that has obtained permission from the owner of the data for this purpose.

1. Introduction

A Joint Meeting of the Food and Agriculture Organization of the United Nations (FAO) Panel of Experts on Pesticide Residues in Food and the Environment and the World Health Organization (WHO) Core Assessment Group on Pesticide Residues (JMPR) was held at FAO, in Rome, Italy from 17 to 26 September 2024. FAO Panel Members met in preparatory sessions from 12 to 16 September. An extra virtual session was held on 9 October to complete the adoption of reports.

The meeting was opened by Guibiao Ye, FAO JMPR secretary. On behalf of FAO and WHO, he welcomed and thanked the participants for providing their expertise and for devoting significant time and efforts to the work of JMPR. He welcomed the new panel members, as well as the new FAO and WHO editors. He further invited Baogen Gu, senior agriculture offcier, Pest and Pesticide Management Team, on behalf of Yurdi Yasmi, Special Coordinator of the Plant Production and Protection Division (NSP), FAO, to address the meeting. Baogen Gu welcomed the participants to FAO and noted that pesticide use is expected to be continually increased to eradicate hunger and ensure the food security globally in context of climate change; he emphasized that sustainable pest and pesticide management and especially risk reduction is a key component for contributing to sustainable plant production and protection. He highlighted the importance of the JMPR work to food safety, sustainable production and international trade of food, and expressed high appreciation for the excellent work and great contributions. He officially opened the 2024 JMPR and wished all a very fruitful meeting.

Soren Madsen, WHO JMPR Secretariat, took the opportunity to thank FAO for organizing the JMPR 2024 in Rome at FAO headquarters and welcomed all participants to the meeting.

Prior to the meeting, the FAO and WHO JMPR Secretariats received declarations of conflicts of interest from their respective panels of experts. The WHO JMPR Secretary reported that all 28 WHO experts had completed the necessary declaration of interests and confidentiality forms, with some declaring interests. These interests had been carefully evaluated. None of the declared interests were found to constitute a conflict with the role of being an expert in JMPR. The FAO JMPR Secretariat received declarations from all 14 of its experts, and upon review, identified no conflicts of interest that would affect their full participation in JMPR 2024 agenda items. The FAO Secretariats reported the reviewing process and conclusions to the meeting. Additionally, the list of all JMPR 2024 participants and their professional profiles was published on the websites of FAO and WHO two weeks before the meeting. No objections to the selected experts were received from the public, thus both groups of experts from FAO and WHO were cleared for full participation without any identified conflicts of interest.

During the meeting, the FAO Panel of Experts were responsible for reviewing residue and analytical aspects of the pesticides under consideration, including data on their metabolism, fate in the environment and use patterns, and for estimating the maximum levels of residues that might occur as a result of use of the pesticides according to good agricultural practice (GAP). The meeting evaluated 37 pesticides, including seven new compounds and seven compounds that were re-evaluated within the periodic review programme of the CCPR, for toxicity and/or residues.

Maximum residue levels, supervised trials median residue (STMR) and, where appropriate, highest residue (HR) values were estimated for commodities of plant and animal origin. The maximum residue levels were recommended for use by CCPR, and STMR and HR were used as a basis for estimating dietary intake.

The WHO Core Assessment Group was responsible for reviewing toxicological and related data in order to establish acceptable daily intakes (ADIs) and acute reference doses (ARfDs), where necessary.

The meeting also estimated the dietary exposures (both long-term and acute) of the pesticides reviewed and, on this basis, performed a dietary risk assessment in relation to the relevant ADI, and where necessary, ARfD. Cases in which ADIs or ARfDs may be exceeded were clearly indicated in order to facilitate the decision-making process by CCPR.

The meeting considered a number of current issues related to the risk assessment of chemicals, the evaluation of pesticide residues and the procedures used to recommend maximum residue levels.

2. General considerations

2.1 Developments in dietary exposure methodology for pesticide residues in foods[1]

2.1.1 Background

The purpose of this general consideration is to address the further work identified at the 2023 JMPR and feedback from delegations at the 55th CCPR meeting (CCPR55) in 2024. For further background on these aspects and consideration of the dietary exposure methodologies at JMPR, see the JMPR 2023 report (FAO and WHO, 2024a) and the CCPR55 report (FAO and WHO, 2024b).

At the conclusion of the 2023 meeting, the JMPR agreed to: transition from the use of the international estimated daily intake (IEDI) to the GECDE-mean;[2] continue to investigate implementation and modification options for the GECDE-high for the assessment of dietary exposure to pesticide residues for chronic and less-than-lifetime assessments with the aim of a transition to adoption; and to further investigate the degree of conservatism in the GECDE (mean and high) and the IEDI (FAO and WHO, 2024a).

The outcomes of the 2023 JMPR were presented to CCPR55 in June 2024 (FAO and WHO, 2024b). The CCPR members "noted the general support for the exploration of the transition from the use of the IEDI to the use of GECDE-mean", but requested more information "about the uncertainty associated with the degree of conservatism and transparency of the GECDE methodology by comparison to the IEDI". Consideration of the timeline to transition was also requested. The need to encourage submission of consumption data from more countries to the Chronic individual food consumption database – Summary statistics (CIFOCOss) was also noted. A request was made for JMPR to provide an update of its work in this area to the 2025 CCPR meeting.

2.1.2 Further evaluation of data and the GECDE method

For the 2024 JMPR, further analysis was undertaken covering aspects discussed and recommended during the 2023 meeting and by CCPR55; they are outlined in the following subsections.

2.1.3 Comparison of dietary exposure estimates based on the GECDE with data from individuals

In order to evaluate the degree of conservatism in the GECDE, the JMPR undertook a comparison of dietary

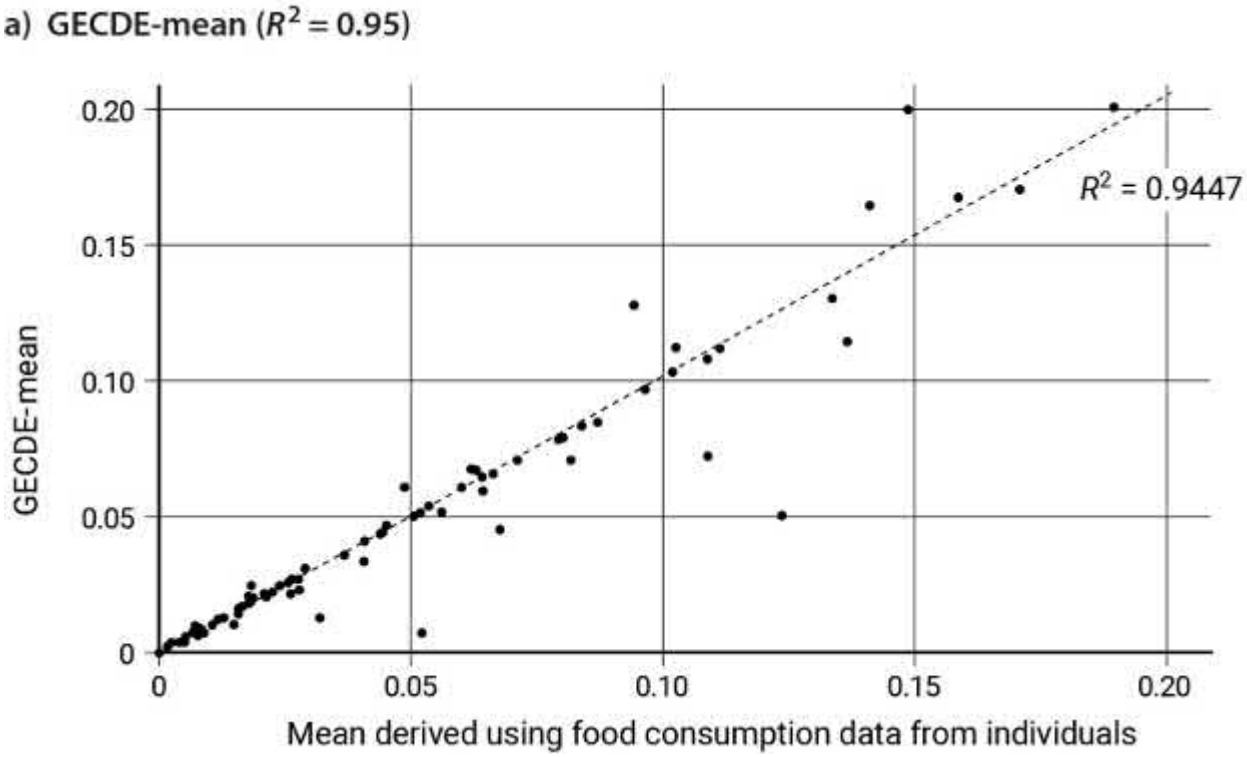
[1] There was a lack of consensus on this item and the residue experts registered a dissenting opinion, which was submitted to the JMPR Secretariat after the meeting. This is included as Annex 10.

[2] GECDE refers to the global estimate of chronic dietary exposure.

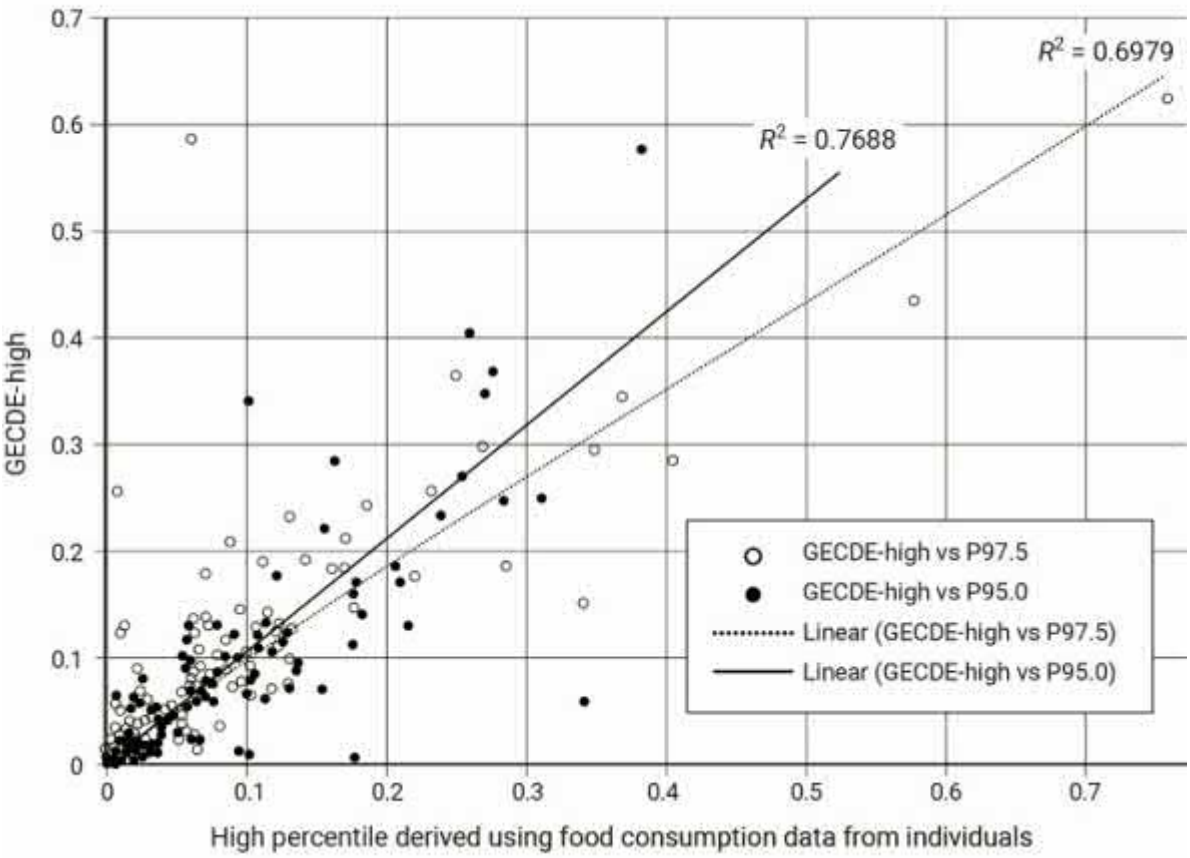
exposure estimates derived using food consumption data for individuals from nutrition surveys with the GECDE estimates. Three pesticides were selected for inclusion in the analysis: boscalid, iprodione and piperonyl butoxide. These were selected due to the greater variation in estimates of dietary exposure between the IEDI and the GECDE from among the pesticides considered at the 2023 meeting. There were 61 surveys included in this evaluation from the FAO/WHO Global Individual Food Consumption Data Tool (GIFT) database (FAO and WHO, 2024c). Estimates of dietary exposure used to compare with the GECDE estimates were derived for all respondents using food consumption data from individuals and STMR data from the 2023 JMPR.

This assessment showed good concordance (i.e. high coefficient correlation) between the GECDE and estimates of dietary exposure from the individual dietary records (Figure 2.1.1). This was true for both the mean (R^2 = 0.95) and high (R^2 = 0.77 with P95 and R^2 = 0.67 with P97.5) dietary exposures. The GECDE-high typically reflected a high percentile in the range of the P95 and P97.5 derived using the individual food consumption data. In summary, the GECDE, which is a tool for estimating dietary exposure when only summary food consumption statistics are available, produces estimates of dietary exposure closely aligned with those based on dietary survey data for individuals.

Figure 2.1.1 Comparison between estimated dietary exposures from the GECDE and food consumption data for individuals



b) GECDE-high (R^2 = 0.77 with P95, and R^2 = 0.67 with P97.5)



2.1.4 Number of survey days

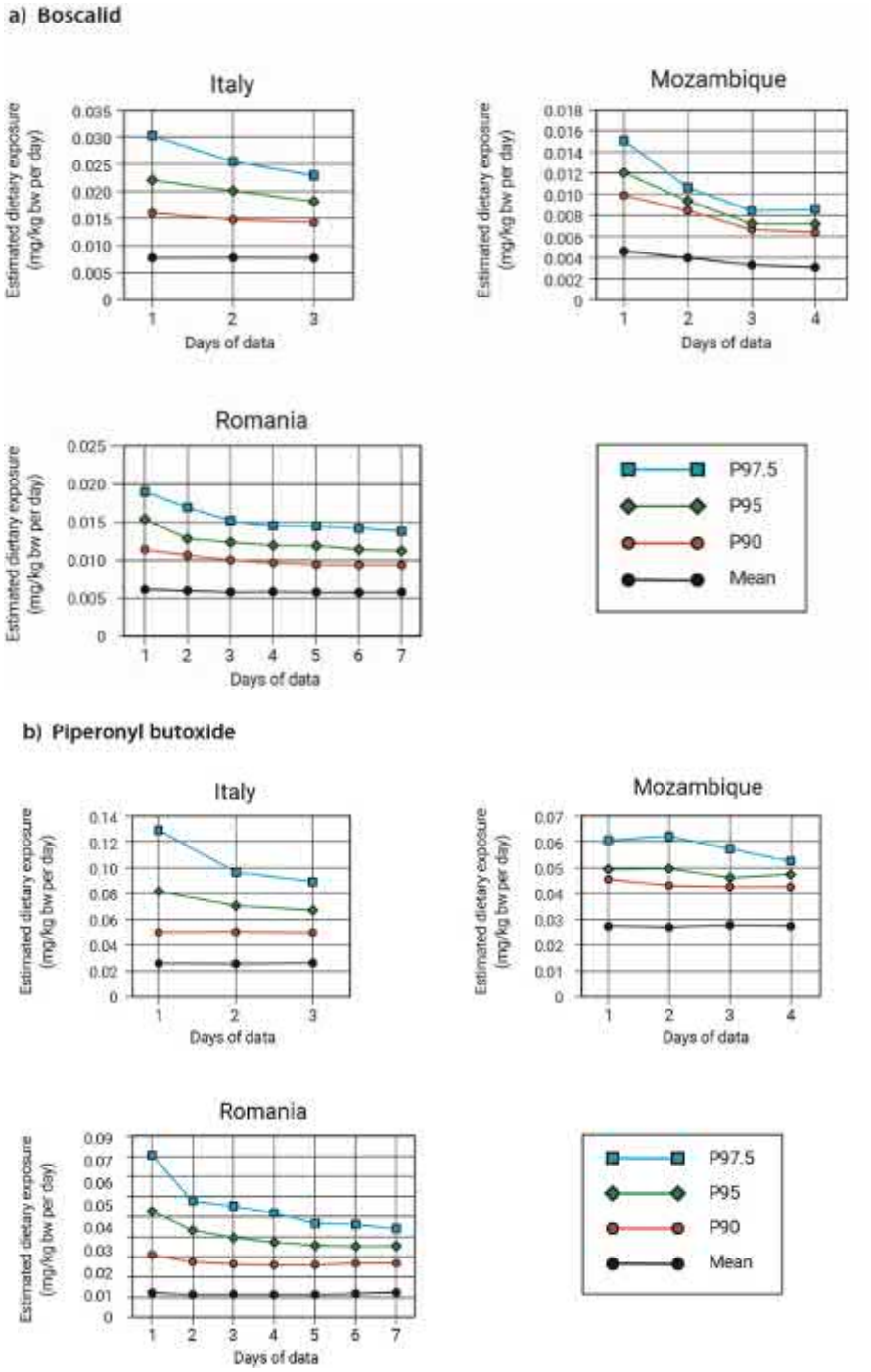
Sufficiency of two days of consumption data

During the 2023 JMPR, it was noted that the use in the GECDE-high of consumers-only high percentiles from two days of dietary survey data may overestimate food consumption amounts, and therefore dietary exposure and risk estimates. The degree of conservatism in the GECDE-high was evaluated at the current meeting. Dietary surveys where individual food consumption data were available for more than two days were selected for the evaluation. These included surveys from Romania with seven days of consumption data, Mozambique with four days of data, and Italy with three days of data. The same three pesticides as noted above were used in the analysis: boscalid, iprodione and piperonyl butoxide. Estimates of dietary exposure were derived for all respondents using food consumption data from individuals and STMR data from the 2023 meeting for day one only, the average of two days, the average of three days and so on for the countries with more days of data.

The results showed that the largest decrease in the estimated dietary exposure was between day one only and the average of two days, followed by a small decrease for results averaged over the subsequent number of days. This was more evident in the high percentiles of dietary exposure (P95 and P97.5), whereas the mean and P90 results were relatively consistent across results using any number of days.

Figure 2.1.2 shows the results for boscalid and piperonyl butoxide. While the results for iprodione followed the same general pattern, the small number of foods containing iprodione residues made estimates of dietary exposure more erratic.

Figure 2.1.2 Estimated dietary exposures to selected pesticides for all respondents for a single day and the average of multiple days for boscalid and piperonyl butoxide



Notes: Estimated dietary exposures in mg/kg bw per day. Italy, Mozambique and Romania.

The degree of discrepancy in dietary exposure estimates between the use of different numbers of dietary survey days was also quantified. For Italy, where there were three days of food consumption data available, there was a slight degree of overestimation in the two-day average results compared to three-day averages, primarily in the high percentile estimates of dietary exposure (P95 and P97.5), by up to around 10 percent across the pesticides assessed. For Mozambique, there was a slight degree of overestimation in the two-day average compared to the four-day average: up to 20 percent in the high percentiles for piperonyl butoxide, and up to 30 percent in the high percentiles for boscalid. For Romania, there was a slight degree of overestimation in the two-day average compared to the seven-day average: up to 20 percent in the high percentiles for boscalid, and up to 30 percent in the high percentiles for piperonyl butoxide. The degree of overestimation when using two days of food consumption data (which is most of the data in the CIFOCOss dataset used for the GECDE) is very modest, particularly when looking at the numerical estimate of dietary exposure on a unit/kg bw per day basis, and is not likely to change the risk assessment conclusion if more days of data were available. In addition, any modest overestimation is therefore more protective for consumers in the risk assessment.

In summary, there is no substantial benefit of having a larger number of survey days available for estimating less-than-lifetime or chronic dietary exposures. The use of two days of dietary survey data for dietary exposure assessments is consistent with international best practice (FAO and WHO, 2020). It is also what is most commonly collected in national dietary surveys where resources available to conduct such surveys are limited and respondent burden means longer surveys can diminish the willingness to report consumption fully, thereby reducing the quality of the data.

Frequency of consumption

The GECDE-high is based on population mean consumption levels for all except for one food commodity where a high value of consumption is used. This food commodity is the one for which the combination of the highest reliable percentile (HRP) food consumption (for consumers only) and the STMR produces the highest dietary exposure. Concerns have been raised that the selected food, which is a major driver of the GECDE-high, may on occasions be a food eaten by a relatively small proportion of the population. The frequency of consumption is in effect incorporated in the food consumption amounts derived for use in the GECDE calculations. In a national dietary survey, only a small number of consumers are likely to be captured for occasionally consumed foods. If a food is occasionally consumed, there will be a large number of respondents in a dataset with no consumption on either survey day, meaning their mean consumption is 0 g/day. If there are a small number of respondents who only consumed the food on a single day, their consumption averaged across the two days is half their single day consumption amount. There would be few respondents with consumption on both survey days. If all the two-day average consumption amounts were averaged to get a population mean, this would be skewed down by the large number of zeros in the distribution. For the consumers, only HRP consumption amount for an occasionally consumed food relevant to the GECDE-high calculation; the small number of consumers would influence the percentile chosen, which is less likely to be a higher percentile. Conversely, for commonly consumed foods, if eaten on both days, the mean of the two days will show a consumption amount that is relatively comparable to a single day amount.

By way of example, the foods contributing the most to the highest GECDE-high estimates of dietary exposure in 2023 were assessed to determine if infrequently consumed foods were driving the GECDE-high.

As a specific example for boscalid, the highest GECDE-high estimate was for children 0–35 months from Bulgaria, where the main contribution was coming from a vegetable subgroup in a mixed meal, where 21 percent of the cohort were consumers and the ratio of the HRP to mean consumption amount was within expected range (in this case less than two). For piperonyl butoxide the highest GECDE-high estimate was for children 3–5 years from Burkina Faso, where the main contribution was sorghum flour, where 90 percent of the cohort were consumers and the ratio of the HRP to mean consumption amount was within expected range (in this case less than 2.6). At a higher level, this analysis indicated that around 75 percent or more of these are foods are consumed by at least 10 percent of the cohort, with around 50 percent of the foods consumed by 20–55 percent of the cohort (boscalid) and 60 percent of the foods consumed by 20–100 percent of the cohort (piperonyl butoxide).

2.1.5 Further consideration of the IEDI

The current meeting also undertook further evaluation of the results from the IEDI. The dietary exposure estimates from the IEDI presented at the 2023 meeting were compared to the dietary exposure estimates derived using the food consumption data for individuals. The IEDI from the cluster in which each of the assessed countries is included was used for the comparison: Italy (Cluster G10), Mozambique (Cluster G03), and Romania (Cluster G15). This was the case for boscalid and iprodione, where IEDI calculations were done for the 2023 meeting. For piperonyl butoxide, the last IEDI undertaken was in 2002 where the Global Environment Monitoring System (GEMS)/Food Regional Diets (*n* = 5 diets) were used for IEDI calculations. The IEDI for Italy and Romania were therefore taken from the estimates based on the European diet, and the IEDI for Mozambique used was from the African diet estimate.

For Italy, there is variation in whether the mean estimates of dietary exposure based on food consumption data for individuals are higher or lower than the IEDI across the pesticides assessed, however children tended to have mean estimates of dietary exposure that were higher than the IEDI. The IEDI results are equal to or lower than the high percentile estimates for Italy derived using consumption data for individuals across all population groups assessed. For Mozambique, the mean estimates of dietary exposure based on food consumption data for individuals are typically higher than the IEDI across the pesticides for all population groups included. The IEDI results are typically equal to or higher than the high percentile estimates for Mozambique derived using consumption data for individuals across all population groups assessed, except for boscalid, where results based on individuals are higher than the IEDI. For Romania, all mean and 90th percentile estimates of dietary exposure based on data from individuals are lower than the IEDI for all pesticides and population groups assessed. However, the P95 and P97.5 estimates from individuals are equal to or higher than IEDI.

Overall, these findings show that the cluster (or regional) diets and IEDI estimates do not capture specific dietary patterns within individual countries, the variation of consumption amounts within a distribution (e.g. low and high consumers), or the variation in dietary exposure estimates for pesticides across countries or population subgroups. The range of more specific estimates of dietary exposure can be either higher or lower than the results from the IEDI.

2.1.6 Recommendations

The evaluation undertaken for the current 2024 meeting has shown good concordance between the GECDE and estimates of dietary exposure derived using food consumption data for individuals, for both the GECDE-mean and GECDE-high. It has also shown that the degree of overestimation in estimates of dietary exposure based on two days of food consumption data is relatively modest, compared to estimates based on longer survey durations. Considering the findings of the assessment undertaken, and that most available datasets contain two days of data per subject, the meeting recommends the adoption of the GECDE-high in addition to the GECDE-mean as part of the exposure assessment methodologies used by the JMPR. Inclusion of the GECDE-high will ensure the protection of consumers with a range of consumption patterns within different populations. The JMPR recommends the GECDE-mean estimates replace the IEDI estimates. Consideration of the toxicological profile of the chemical should be used to determine the population groups for which dietary exposures are reported for the GECDE.

The provision of the additional data to assist risk managers in making risk management decisions will also be provided on a routine basis for future meetings. This includes the percent of surveys for which estimates of dietary exposure exceeded the ADI based on the GECDE, and identification of major contributors to dietary exposure where an estimate of dietary exposure exceeds the ADI.

The meeting concluded that the GECDE methodology has been sufficiently well validated to establish its fitness for purpose for use by the JMPR in estimating chronic and less-than-lifetime dietary exposure to residues of pesticides. Also considering the validation work and the conclusions of the European Food Safety Authority and European Medicines Agency report (EFSA and EMA, 2022), the meeting recommends that the GECDE methodology should be adopted for future meetings of the JMPR.

2.1.7 Next steps for consideration

In order to enable others outside of the JMPR to run the calculations and estimate dietary exposure results for the GECDE, a number of datasets and code are required. These inputs include:

- STMR values for each compound (and/or metabolites) for each relevant commodity;
- recipe data file to disaggregate mixed foods to its ingredients, and relevant adjustment factors (i.e. dilution factors to adjust the STMR values between forms of foods such as raw and cooked rice);
- a tool or the code to enable derivation of STMRs in final foods and ingredients (bringing in the recipe file noted above);
- CIFOCOss food consumption datasets (already publicly available);
- code for calculating the GECDE outputs; and
- ADIs for each compound (and/or metabolites), which in themselves are not required for the GECDE calculation, but are used with the result of the GECDE for risk characterization purposes.

A tool for users to bring all these inputs together and run the estimates would ensure transparency, ease of use, and consistency in calculations across users of the method. However, such a tool requires resources for development, testing and validation. The timeline for the availability of any such tool will be dependent on resources available and the time to undertake the required work.

The timeline will be:

- **September 2024**: JMPR report including IEDI and GECDE-mean, and continuation of the trialling for GECDE-high, supported with additional information including percent of surveys resulting in dietary exposures that exceed the ADI and major contributors to dietary exposures.
- **May 2025**: Report to CCPR on the JMPR's findings regarding dietary exposure assessment methodologies used by the JMPR, covering the following:
    - presentation of GECDE method to member states;
    - findings from current methodology investigations;
    - state of efforts towards provision of open-source tool, including resource mobilization and advocacy for further support.

CCPR feedback on the information provided by the JMPR will be sought.

- **September 2025**: JMPR report including GECDE, mean and high. Application by the JMPR of the decision regarding exclusion or retention of IEDI.

2.2 Consideration on recommendation of group maximum residue limits for pulses

The 2023 JMPR received data for the use of acetamiprid on various pulses. When reviewing the data, significant differences in residue levels following good agricultural practice (GAP) treatment were identified between the genera of *Phaseolus* or *Vigna* and soya beans, and the meeting decided not to combine the data across these crops. Furthermore, field trials on the individual *Phaseolus* and *Vigna* crops were not sufficient to make a recommendation for their subgroups. Consequently, the 2023 meeting made a recommendation for soya bean only.

As a follow-up, the current meeting performed a preliminary data analysis for a limited number of active substances from field trials on various *Phaseolus* or *Vigna* genera and soya beans. However, a statistically significant difference in residue levels between these species was confirmed for the whole dataset, but not in samples close to harvest, which typically drive the residue. Hence, the 2024 JMPR re-evaluated the 2023 data for acetamiprid on pulses (see Section 5.1) based on the whole dataset submitted. The meeting also noted that for future applications, it would be desirable to obtain field trial data for both *Phaseolus* and *Vigna* genera.

2.3 Extrapolation of recommendations for tomato and pepper to eggplants (subgroup)

2.3.1 Background

The 2018 JMPR had agreed, as a general principal, to extrapolate residue estimates from peppers to eggplant, provided similar critical GAPs existed for both groups of commodities. The 2018 meeting further agreed that in cases where residue estimates for both peppers and tomatoes are available, the

extrapolation to eggplant should be made based on the higher residue estimate for peppers or tomatoes.

At CCPR54, a proposal was made by an observer organization (observer) to conduct an analysis of existing Codex MRLs (CXLs) for both tomato and pepper to prepare a discussion paper presenting proposals for establishing corresponding Codex MRLs in eggplant. The analysis was provided to the 2024 JMPR for consideration.

2.3.2 General comments by the current meeting

The JMPR appreciates the work done by the observer to identify candidate compounds for extrapolation of existing JMPR recommendations for residues in tomato and pepper to eggplant and to compile information regarding registered uses, previous JMPR recommendations, and proposed new recommendations for eggplant. In examining the submission by the observer, the meeting agreed that it provided an efficient approach to evaluate potential extrapolations from existing CXLs to additional commodities. The meeting encourages continued exploration of similar opportunities.

The meeting noted that even if such submissions provide an efficiency gain, their evaluation requires the time of JMPR experts (approximately one evaluation of additional MRLs) that would otherwise be allocated to other JMPR work. Therefore, the meeting recommended that all submissions be coordinated through the CCPR Working Group on Priorities.

With regard to conclusions for specific extrapolations made by the observer, the meeting noted several outcomes that would not be in agreement with current JMPR procedures. As a result, the meeting emphasized that recommendations under the mandate of the JMPR (e.g. toxicological health-based guidance values, maximum residue level recommendations, and dietary risk assessments) should be made to the CCPR only by the JMPR.

2.3.3 Process for identifying candidate compounds

Specific comments on the observer analysis

The observer outlined a stepwise approach for identifying candidate active ingredients for which extrapolation of previous JMPR recommendations for peppers and tomato to eggplant might be supported. The approach is summarized in a discussion paper from CCPR55 (CX/PR 24/55/12). The meeting agreed that the stepwise approach was generally appropriate and suitable, but should be modified to exclude active ingredients which involve application of the threshold of toxicological concern (TTC) approach. Furthermore, it was noted that assessments for chronic exposure in the stepwise approach should be based on all STMR recommendations made by the meeting.

2.3.4 Comments on some specific suggested extrapolations

The meeting noted the following aspects and modification to its assessment practice that may interfere with the observer-suggested direct extrapolation of MRLs from pepper/tomato to eggplant:

- Before implementation of the OECD MRL Calculator,[3] MRLs were estimated under consideration of the "NAFTA Calculator"[4] and/or expert judgement. It needs to be pointed out that direct transition of MRLs may result in deviating estimates which may overestimate or even underestimate MRLs derived according to current principles. In addition, rounding classes introduced with the OECD MRL Calculator have not been considered. For example, the proposed extrapolation of the recommended MRL of 0.2 mg/kg for cyfluthrin based on a use of peppers in the 2007 JMPR report would result in an MRL of 0.3 mg/kg following current practice.
- The meeting transitioned to base its acute dietary exposure assessment on the HR derived from a single highest value, if applicable. HR values derived previously do not reflect this practice and may potentially underestimate international estimate of short-term intake (IESTI) estimates.
- **Flubendiamide**: An insufficient number of trials would be identified based on the data presented in the 2010 JMPR report. Overall, eight trials for pepper and five trials for tomatoes were selected approximating the Australian GAP suggested as basis for extrapolation. The higher MRL estimate of 2 mg/kg was derived based on tomatoes, whereas pepper showed significantly lower residues resulting in an MRL estimate of 0.7 mg/kg. According to the current procedure, tomato data would be used for an extrapolation to eggplant due to higher residues in the fruits. However, eggplant is a major commodity, for which a minimum of six independent supervised field trials results is required. Similarly, three trials on tomatoes and pepper each for pyrethrins are insufficient for a major commodity.
- **Fludioxinil**: The label from the United States of America recommended for extrapolation is unsuitable to extrapolate to eggplant. The 2013 JMPR took note of the previously estimated MRL of 1 mg/kg for peppers based on an Italian and Austrian GAP and concluded that the existing recommendation "accommodates" for residues following treatment according to the US GAP. Residue data itself was significantly lower and would result in an MRL estimation of only 0.5 mg/kg only (based on OECD Calculator without detailed analysis of individual field trial study reports).
- **Flupyradifurone**: For this compound, uptake of residues from the group occurs and the meeting concluded that no group recommendation is appropriate for fruiting vegetables. Only specific data on crops (tomatoes and peppers) was considered for the recommendation. An extrapolation to eggplant without corresponding data on this specific crop may estimate residues and was intentionally not considered by the meeting.
- **Flutriafol**: Residues estimated by the 2015 JMPR were significantly higher in tomatoes (HR: 0.63 mg/kg) compared to peppers (HR: 0.31 mg/kg). The proposed extrapolation of the MRL of 1 mg/kg for peppers in combination with the suggested representative label is inappropriate, since this MRL is based on a previous recommendation from 2011, which was made for peppers (sweet), instead of pepper, and extended to now cover all members of the commodity. Data on pepper itself according to the label from the United States of America would result in an MRL estimate of 0.5 mg/kg only.
- **Methomyl**: Trial reporting in the 2004 report does not follow current assessment principles anymore; relevance of retreatment intervals (RTI) was emphasized in the recent years. In view of the IESTI of 100 percent for children, thorough investigation of the field trials data according to current scientific practice seems necessary.

- **Pyriproxyfen**: The cited label from France specifically states use on tomatoes and aubergines. No description of crop groups or definition of further members of the Codex subgroup eggplants was made. According to current JMPR practice, registered labels for all members of a group or subgroup are required for a respective recommendation. Therefore, the 2018 JMPR decided to limit the extrapolation to eggplants specifically.

2.4 Transition from commodity of meat to commodity of muscle and fat

The CCPR has finalized the revision of the Classification of Food and Feed (CXA 4-1989), which includes the revised Class B on primary food commodities of animal origin. The revised Class B incorporates new definitions for the terms "meat", "muscle", "fat" and "edible offal" to facilitate harmonization of MRLs between CCPR and the Codex Committee on Residues of Veterinary Drugs in Foods (CCRVDF). Table 2.4.1 outlines the changes made per the new commodity terms and definitions in the revised Classification (REP22/PR53, paragraphs 179–188, Appendix VIII; REP23/PR54 [Corrigendum], Appendix VIII).

Table 2.4.1 Outline of new animal commodity terms and definitions

CCN	Previous commodity definition	New commodity definition
MM 0095	Meat (from mammals other than marine mammals)	Group of muscle (from mammals other than marine mammals)
MF 0100	Mammalian fats (except milk fats)	Group of mammalian fats (except milk fats)
MO 0105	Edible offal (mammalian)	Group of edible offal (mammalian)
FM 0106	Milk fats (Old CCN: FM 0183)	Group of milk fats
ML 0106	Milks	Group of milks
PM 0110	Poultry meat	Group of avian muscle
PF 0111	Poultry fat	Group of avian fats
PO 0111	Poultry, edible offal of	Group of avian, edible offal of
PE 0112	Eggs	Group of eggs

The meeting also notes that all individual commodity definitions that contain the term "meat" (e.g. cattle, meat) should be updated to the term "muscle" (e.g. cattle, muscle) and all commodity definitions that contain the term "poultry" (e.g. poultry, liver) should be updated to the term "avian" (e.g. avian, liver). A full list of the updated commodity definitions can be found in Appendix 8 of the Report of the 54th Session of the CCPR (FAO and WHO, 2024d).

Furthermore, the meeting determined that if the residue is fat-soluble, it should be confirmed that the previous MRLs, STMRs and HRs for meat were based on muscle, not fat. If the MRLs were previously based on fat, the new MRLs, STMRs and HRs for muscle should be based on data for muscle and separate MRLs,

[3] OECD refers to the Organisation for Economic Co-operation and Development.
[4] NAFTA refers to the North American Free Trade Agreement.

STMRs and HRs should be established for fat.

The meeting agreed to update the commodity definitions described above for all compounds undergoing review at the current meeting. Furthermore, the meeting agreed to continue with this approach until the commodity terms have been updated for every compound.

2.5 Interpretation of use patterns for targeted applications

2.5.1 Background

The 2023 and 2024 meetings have received information on registered uses and supervised field trials for insecticide bait-spray products.

Bait sprays are generally not used in a typical broadcast spray scenario where the end-use product is applied uniformly to the growing crop. Rather, applications are made to a small area of the crop (for example, to 1 m^2 of a tree or in a band below the tree canopy).

2.5.2 JMPR considerations

The meeting makes residue recommendations on the basis of supervised residue trials whose use pattern matches, approximates, or can be adjusted to approximate the critical GAP. That expectation applies to spray-bait products as well; however, directed application of a product to a portion of the crop raises questions about the resulting distribution of residues across a treated area and the collection of representative samples from fields, orchards, etc. that receive treatments reflecting directed applications. The meeting further noted that the spot treatments inherent in precision agriculture will raise these same questions for other end-use products.

Sampling of commodities for pesticide residue levels should be fit for purpose for deriving maximum residue levels (reflecting potential for direct treatment of the commodity) as well as residue levels reflecting blending of harvested commodities at the field level. This level of blending can vary significantly from one crop to another (for example, almonds which are shaken from the tree and then collected from the orchard floor versus peaches which are hand-harvested and collected in baskets).

The JMPR recommends that regulatory authorities and others (e.g. OECD) that establish guidelines for conducting field trials consider these issues during guideline updates.

2.6 Update of the pesticide residues in food: guidance document for WHO JMPR monographers and reviewers

Proposed draft updates to the guidance document for WHO monographers and reviewers on procedures, scientific and style guidance were prepared, presented and discussed at the meeting. A revised draft of the document will be circulated for comments among members of the WHO Core Assessment Group after the meeting.

Following consideration of any comments received, a final draft will eventually replace the current WHO guidance on the WHO website after the 2025 JMPR.

2.7 Strategy and timing for JMPR re-evaluation of dithiocarbamates

Based on the information received regarding the volume of expected data submissions for the periodic re-evaluation of the five notified dithiocarbamates, including their metabolites, and taking into consideration the degree of commonalities between the individual compounds, the JMPR proposes that the re-evaluation be divided into three phases. Each phase needs to be completed before the subsequent phase is initiated. It is expected that a significant part of work done at Phase 1 will be useful to obtain efficiencies in subsequent evaluations under Phase 2 and Phase 3.

JMPR has estimated the evaluation workload of each phase to be equivalent to the following number of standard compound evaluations:

- **Phase 1**: mancozeb and metiram, and their common major metabolite ethylenethiourea (ETU). Workload for the toxicological re-evaluation is estimated to be equivalent to four to five standard evaluations.
- **Phase 2**: propineb, and its major metabolite propylenethiourea (PTU). Workload for the toxicological re-evaluation is estimated to be equivalent to two standard evaluations.
- **Phase 3**: ziram and thiram. Workload for the toxicological re-evaluation is estimated to be equivalent to two standard evaluations.

Depending on other priorities/workloads, it might be: i) that all the work associated with an individual phase cannot be completed at a single JMPR; and/or ii) that a subsequent phase will not be considered at the next JMPR. It is noted that Phase 1 is likely to require the full annual resources usually allocated under the periodic re-evaluation programme, while Phase 2 and Phase 3 will, in total, require a level of resources similar to Phase 1.

The residue analysis for dithiocarbamate compounds uses a total residue method (determined as carbon disulfide). It is therefore efficient to consider the residue aspects of all dithiocarbamate compounds together. It is proposed, subject to other priorities, to perform the FAO residue evaluations at the same time as Phase 3 of the WHO evaluation, or in the following years.

2.8 Linear and non-linear toxicokinetics guide progress update

A first draft of the JMPR guidance for the interpretation and use of toxicokinetic data to support the determination of health-based guidance values has been completed. Further refinement of the guidance is required before presenting it for discussion at the 2025 JMPR.

2.9 Data on pesticide metabolites that are also commodity chemicals

In its risk assessments of pesticide residues, the JMPR, in common with other assessment bodies, considers the dietary risk not only of the pesticide active ingredient but also its metabolites and degradation products. JMPR has developed a systematic approach (decision tree) for assessing the risk from such metabolites and degradation products (WHO, 2015). As with the parent pesticide, this requires that sponsors submit all available data on the toxicology of the metabolites and degradation products. Some of these are common to more than one pesticide, each with a different sponsor, and JMPR has discussed ways in which this could be addressed, most recently in 2023 (FAO and WHO, 2024a).

While compliance for those metabolites and degradation products that are pesticide-specific is generally good, for low molecular weight and less-specific products, this is often not the case. This is because such chemicals are often traded as commodity products in their own right (or are common breakdown products of a range of chemicals) (e.g. trifluoroacetic acid, from fluazinam and cyclobutrifluram; phthalic acid, from folpet and phosmet; 2,4,6-trichlorophenol, from pydiflumetofen – see the forthcoming 2024 JMPR report). Hence, information will have been generated to support such uses and/or occurrence, which will often not have been generated by the pesticide sponsor. They will not necessarily have access to these data. Nevertheless, this information will be useful and perhaps even essential to enable JMPR to complete its assessment.

Sponsors of pesticides on the agenda of JMPR should investigate the availability of and submit such information relevant to the dietary risk assessment, and if they are not the data owner, they are expected to obtain the original data for review by the JMPR.

2.10 Efficiency of JMPR resources

As highlighted at several past JMPRs (2015, 2018, 2019 and 2023), sponsors have been strongly encouraged to submit chemical dossiers that comply with the quality and scope specified in the CCPR Risk Analysis Principles. The current meeting received several dossiers for new and periodic review compounds which lacked critical residue and toxicology data to establish health-based guidance values, residue definitions for compliance and/or dietary risk assessments (e.g. chlorpyrifos [periodic review], acynonapyr [new compound]). In another case, the dossier for a new compound (cyclobutrifluram) included a very limited use pattern where this use did not give rise to detectable pesticide residues (whole banana).

Dossiers for additional uses for the same compound are then typically submitted in subsequent years and often include several critical studies which require the potential revisiting of the residue definitions. Submissions of such large dossiers for additional uses result in a strain on JMPR capacity, precluding the meeting from focusing on the review of new compounds and periodic review compounds.

Moving forward, JMPR will be prioritizing dossiers for review which include several registered uses, where measurable residues are expected. Priority will also be assigned to those dossiers that are complete and address all the required residue and toxicology data outlined in the JMPR call for data.

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3. Responses to specific concerns raised by the Codex Committee on Pesticide Residues (CCPR)

No specific concerns were raised by the 55th session of the CCPR.

4. Dietary exposure assessment for pesticide residues in food

4.1 Chemicals not assessed for dietary exposure

There were a number of chemicals on the agenda for the current meeting for which a dietary exposure assessment was not undertaken. This may have been for a number of reasons, including: the meeting could not estimate health-based guidance values for the chemical or any of its metabolites, it determined that a health-based guidance value was unnecessary, it could not establish residue definition for dietary exposure assessment for plant and animal commodities or evaluation for residues was not undertaken at the present meeting. Therefore, no dietary risk assessment was conducted in these situations. This was the case for acynonapyr, carfentrazone-ethyl, chlorpyrifos, ethoxyquin, florpyrauxifen-benzyl, fluazinam, fluoxapiprolin, lambda-cyhalothrin, maleic-hydrazide and permethrin. Phosphonic acid is included under fosetyl-Al.

4.2 Chronic dietary exposure

4.2.1 International estimate of daily intake

At the current meeting, an international estimated daily intake (IEDI) was calculated for each compound for which an acceptable daily intake (ADI) was established. The IEDI was calculated by multiplying the median concentrations of residues by the average daily per capita consumption of treated commodities. The concentrations were supervised trials median residues (STMRs) and/or supervised trials median residues in a processed commodity (STMR-Ps). The per capita food consumption amounts used were from the 17 Global Environment Monitoring System – Food Contamination Monitoring and Assessment Programme (GEMS/Food) cluster diets. A detailed description of the method used to derive the cluster diets is included in the Environmental Health Criteria 240 (EHC 240) monograph.[5]

These IEDIs were expressed as a percentage of the maximum ADI for a 55 kg or 60 kg person, depending on the region covered by each cluster diet (Table 4.2.1). The spreadsheet application is available at iedi–calculation–vs04–17clusters.xlsx (live.com).

The detailed calculations of the chronic (long-term) dietary exposure assessments via the IEDI are given in Annex 3.

[5] See: FAO and WHO. 2009. *Principles and methods for the risk assessment of chemicals in food. A joint publication of the Food and Agriculture Organization of the United Nations and the World Health Organization*. Geneva, World Health Organization. (*Environmental Health Criteria* 240; http://www.who.int/foodsafety/publications/chemical–food/en)

4.2.2 Chronic dietary exposure estimates using national dietary survey data

Food consumption data from national dietary surveys were used as the basis for estimating mean and high chronic dietary exposure to pesticide residues for different age/sex groups.

In a continuation of the trial exercise, the global estimate of chronic dietary exposure (GECDE) model, developed by JECFA (veterinary drugs) in 2011,[6] was used by JMPR for estimating mean and high dietary exposures to pesticide residues for subpopulation groups: adult females (as a proxy for women of childbearing age), infants and toddlers, and young children and adolescents, in addition to all male and female adults. The GECDE is a method for estimating dietary exposures when only summary food consumption statistics are available. The summary food consumption statistics are derived from individual food consumption data from representative national surveys. The GECDE-mean uses mean consumption amounts at the population level for each food commodity. The GECDE-high takes account of consumption of one commodity at a high level (for consumers of that commodity only) plus consumption of the remaining commodities at a population mean level. A high consumption amount for consumers based on the highest reliable percentile is used to ensure that the value is robust based on the number of consumers.

Food consumption data suitable for use in the GECDE model are available in the WHO Chronic Individual Food Consumption – summary statistics (CIFOCOss) database, which contains summary statistics of food consumption data derived from national surveys that have two or more daily records per survey participant. For use in chronic dietary exposure assessments, results for each individual are averaged over the number of days of the survey prior to deriving population statistics.

In the GECDE-mean and GECDE-high chronic dietary exposure estimates, the STMR residue levels are assigned to each relevant food with a maximum residue level recommendation for the pesticide. For multi-ingredient foods, a recipe tool developed by RIVM was used to disaggregate the food into its component ingredients to allow derivation of an ingredient weighted STMR. Within the recipe tool there are dilution factors applied to enable the STMR to be expressed in the same form as the consumption data. Processing factors are also taken into account. In recent years this tool has been further developed and refined with an updated version being used by JMPR in 2024.

Some dietary surveys were removed from the CIFOCOss dataset for a number of reasons to ensure reliability and robustness of the data. These included datasets without body weight data, and some older datasets where more than one was available for the same subpopulation (by country, age and sex). All subpopulations were included in the results presented for the subpopulation groups used for reporting, including infants and toddlers, children and adolescents, adult females and all male and female adults. No data are excluded based on number of consumers, ensuring consumption patterns across all

[6] See: FAO and WHO. 2012. *Joint FAO/WHO Expert meeting on Dietary Exposure Assessment Methodologies for Residues of Veterinary Drugs. Final Report including Report of Stakeholder meeting*. Geneva, World Health Organization. http://www.fao.org/fileadmin/user_upload/agns/pdf/jecfa/Dietary_Exposure_Assessment_Methodologies_for_Residues_of_Veterinary_Drugs.pdf

respondents reflect the consumption patterns within the survey. The code used to run the GECDE calculations, which reads input data from other files, is provided in Annex 6.

The estimates of GECDE-mean and GECDE-high are summarized in Table 4.2.1. In addition, the percentages of CIFOCOss surveys for which the GECDE-mean and GEDCE-high exceed the ADI are also summarized in Table 4.2.1. This information is provided to assist in characterising the risk by showing the extent of any potential exceedance for subpopulation groups across a range of countries. A small percent of exceedances of the ADI can be reflective of a very specific consumption pattern related to one subpopulation for example. Provided in Annex 7 is a summary of the commodities that contribute most frequently to dietary exposures for those subpopulations that exceeded the ADI. These detailed results are shown to provide more information around the characterization of the risk and can help inform risk management decisions.

4.2.3 Comparison of IEDI and GECDE

For most of pesticides, the results on the ranges of percent of maximum of ADI calculated with the IEDI and the GECDE-mean are consistent leading to the similar conclusion regarding the risk. For example, for the GECDE-mean, similar ranges with the ones obtained with the IEDI are found for acetamiprid, hexythiazox and tebufenozide for adults (“adults male and female” and “adults female”) and for Cyproconazole and fenpropidin for children (“children and adolescents and “infants and toddlers”). For the GECDE-high, similar ranges with the ones obtained with the IEDI are found for chlormequat for adults (“adults male and female” and “adults female”) and tetraniliprole for children (“children and adolescents and “infants and toddlers”).

When there was a large deviation between the two methods this tended to be due to a particular dietary pattern in a country or small number of countries. These individual patterns tend to be submerged in the averaging process resulting in the cluster diets used for the IEDI.

The inclusion of statistics on the percentage of subpopulations exceeding the ADI helps to inform the likely pattern of exceedances, with a low percentage indicating either marginal exceedance or exceedance due to a specific dietary pattern.

The relationship between the GECDE-mean and GECDE-high also tends to follow a well-behaved pattern with the upper limit of the GECDE-high usually a factor of 2–5 above the upper limit of the GECDE-mean. This ratio would be expected for a high percentile of about 90–95 (USFDA, 2006).

Table 4.2.1 Summary of chronic (long-term) dietary exposure assessments (IEDI) and chronic dietary exposure estimates using national dietary survey data (GECDE)

CCPR code	Pesticide	ADI (mg/kg bw)	Range of IEDI as % of maximum ADI	Range of dietary exposures across national dietary surveys (GECDE), as % of maximum ADI			% of subpopulations exceeding the ADI[b]	
				Subpopulation group	Mean	High[a]	Mean	High
246	Acetamiprid	0–0.07	0–3	Adults, male and female	0–2	0–20	0	0
				Adults, female	0–2	0–20	0	0
				Children and adolescents	0–5	0–30	0	0
				Infants and toddlers	0–10	0–30	0	0
228	Acibenzolar-S-methyl	0–0.08	0–1	Adults, male and female	0–1	0–8	0	0
				Adults, female	0–1	0–8	0	0
				Children and adolescents	0–1	0–10	0	0
				Infants and toddlers	0–3	0–10	0	0
229	Azoxystrobin	0–0.03	20–60	Adults, male and female	4–40	8–1090	0	10
				Adults, female	2–70	2–770	0	9
				Children and adolescents	6–80	10–560	0	20
				Infants and toddlers	7–90	7–180	6	50
173	Buprofezin	0–0.009	4–40	Adults, male and female	1–70	1–260	0	8
				Adults, female	1–70	1–250	0	4
				Children and adolescents	2–100	3–250	2	30
				Infants and toddlers	3–140	3–240	10	60
15	Chlormequat	0–0.05	1–20	Adults, male and female	0–9	0–20	0	0
				Adults, female	0–10	0–20	0	0
				Children and adolescents	0–20	0–50	0	0
				Infants and toddlers	2–20	3–40	0	0
339	Cyclobutrifluram[c]	0.2	0	Adults, male and female	0	0	0	0
				Adults, female	0	0	0	0
				Children and adolescents	0	0	0	0
				Infants and toddlers	0	0	0	0
239	Cyproconazole	0–0.02	0–1	Adults, male and female	0–1	0–3	0	0
				Adults, female	0–1	0–2	0	0
				Children and adolescents	0–2	0–3	0	0
				Infants and toddlers	0–3	1–7	0	0
184	Etofenprox	0–0.03	1–8	Adults, male and female	0–4	0–10	0	0
				Adults, female	0–4	0–10	0	0
				Children and adolescents	1–10	1–30	0	0
				Infants and toddlers	3–20	3–40	0	0
340	Fenpropidin	0–0.02	1–4	Adults, male and female	0–1	0–6	0	0
				Adults, female	0–2	0–5	0	0
				Children and adolescents	0–4	0–7	0	0
				Infants and toddlers	0–8	1–20	0	0

CCPR code	Pesticide	ADI (mg/kg bw)	Range of IEDI as % of maximum ADI	Range of dietary exposures across national dietary surveys (GECDE), as % of maximum ADI			% of subpopulations exceeding the ADI[b]	
				Subpopulation group	Mean	High[a]	Mean	High
193	Fenpyroximate	0–0.005	3–20	Adults, male and female	1–20	1–140	0	1
				Adults, female	0–20	0–140	0	1
				Children and adolescents	1–40	1–160	0	10
				Infants and toddlers	2–100	2–410	3	40
202	Fipronil	0–0.0002	20–100	Adults, male and female	9–60	20–180	0	5
				Adults, female	2–60	2–180	0	4
				Children and adolescents	10–170	30–230	20	60
				Infants and toddlers	30–200	50–490	80	90
242	Flubendiamide	0–0.02	4–20	Adults, male and female	1–70	1–290	0	3
				Adults, female	0–70	0–280	0	2
				Children and adolescents	2–40	2–280	0	2
				Infants and toddlers	4–50	4–220	0	10
285	Flupyradifurone	0–0.08	5–20	Adults, male and female	4–20	4–110	0	3
				Adults, female	4–20	4–120	0	2
				Children and adolescents	5–30	7–170	0	4
				Infants and toddlers	10–40	10–130	0	6
41	Folpet	0–0.1	1–8	Adults, male and female	0–6	0–40	0	0
				Adults, female	0–6	0–40	0	0
				Children and adolescents	0–10	0–40	0	0
				Infants and toddlers	1–30	1–110	0	3
302	Fosetyl–Al	0–1	0–30	Adults, male and female	0–10	0–40	0	0
				Adults, female	0–10	0–30	0	0
				Children and adolescents	2–30	5–70	0	0
				Infants and toddlers	2–60	2–170	0	30
176	Hexythiazox	0–0.03	0–4	Adults, male and female	0–9	0–40	0	0
				Adults, female	0–10	0–40	0	0
				Children and adolescents	0–10	0–40	0	0
				Infants and toddlers	0–20	0–50	0	0
147	Methoprene	0–0.05	10–60	Adults, male and female	2–50	2–260	0	5
				Adults, female	2–120	2–250	2	7
				Children and adolescents	7–110	10–260	2	10
				Infants and toddlers	10–90	10–240	0	10

CCPR code	Pesticide	ADI (mg/kg bw)	Range of IEDI as % of maximum ADI	Range of dietary exposures across national dietary surveys (GECDE), as % of maximum ADI			% of subpopulations exceeding the ADI[b]	
				Subpopulation group	Mean	High[a]	Mean	High
217	Novaluron	0–0.01	9–40	Adults, male and female	2–50	2–250	0	20
				Adults, female	1–60	1–280	0	10
				Children and adolescents	5–160	5–420	10	60
				Infants and toddlers	10–270	10–1030	70	90
103	Phosmet	0–0.006	0–1	Adults, male and female	0–20	0–110	0	3
				Adults, female	0–30	0–160	0	3
				Children and adolescents	1–60	1–180	0	10
				Infants and toddlers	1–50	1–200	0	50
–	Phthalic acid	0–0.1	1–10	–	–	–	–	–
142	Prochloraz	0–0.02	0–2	Adults, male and female	0–3	0–20	0	0
				Adults, female	0–2	0–20	0	0
				Children and adolescents	0–4	0–30	0	0
				Infants and toddlers	0–40	1–200	0	20
309	Pydiflumetofen	0–0.1	1–4	Adults, male and female	0–8	0–60	0	0
				Adults, female	0–10	0–50	0	0
				Children and adolescents	0–10	1–80	0	0
				Infants and toddlers	1–60	1–250	0	20
203	Spinosad	0–0.02	20–60	Adults, male and female	1–30	1–110	0	1
				Adults, female	1–50	1–110	0	1
				Children and adolescents	4–130	4–230	2	40
				Infants and toddlers	10–230	30–520	70	90
189	Tebuconazole	0–0.03	2–10	Adults, male and female	1–9	2–40	0	0
				Adults, female	0–10	0–40	0	0
				Children and adolescents	2–20	4–60	0	0
				Infants and toddlers	3–30	3–70	0	0
196	Tebufenozide	0–0.02	3–30	Adults, male and female	0–20	1–140	0	1
				Adults, female	0–30	1–140	0	1
				Children and adolescents	3–30	3–170	0	4
				Infants and toddlers	2–60	2–180	0	20
324	Tetraniliprole	0–2	0	Adults, male and female	0–0	0–2	0	0
				Adults, female	0–0	0–2	0	0
				Children and adolescents	0–0	0–3	0	0
				Infants and toddlers	0–1	0–4	0	0

Notes: ADI: acceptable daily intake; bw: body weight; CCPR: Codex Committee on Pesticide Residues; IEDI: international estimated daily intake; CIFOCOss: Chronic Individual Food Consumption summary statistics; GECDE: global estimate of chronic dietary exposure; IEDI: international estimated daily intake; NA: Not assessed.

[a] For each national survey in the CIFOCOss database, for the GECDE-high model for a specified age or age/sex group, a high

percentile dietary exposure was first calculated for each commodity with an assigned STMR: if there were more than 180 consumers of a commodity, a 97.5th percentile dietary exposure for consumers only was derived; if there were more than 60 but fewer than 181 consumers, a 95th percentile dietary exposure was derived; if there were more than 30 but fewer than 61 consumers, a 90th percentile dietary exposure was derived; and if there were more than 10 but fewer than 31 consumers, a median dietary exposure was derived. If there were fewer than 11 consumers, only the mean dietary exposure for the whole population was derived for that Codex commodity code.

[b] A subpopulation is a unique combination of country, age and/or gender and survey year. Within the specified subpopulation groups, the number of subpopulations are: Adults, male and female (81); Adults, female (88); Children and adolescents (50); Infants and toddlers (30).

[c] All dietary exposures are zero as a result of the STMR for the commodity assessed being zero.

4.3 Acute dietary exposure

At the current meeting, an international estimate of short-term intake (IESTI) was calculated for compounds for which an acute reference dose (ARfD) was established. For each relevant food commodity, the highest expected residue (highest residue in the edible portion of a commodity [HR] or highest residue in a processed commodity [HR-P]) and the highest large portion (LP) food consumption value for the general population (all ages) and children (6 years and under) were used for the calculation of the IESTI. The LP data are derived from single-day measures of food consumption, from national dietary surveys. For bulked and blended commodities, the STMR or STMR-P is used as the residue level in the IESTI calculation. A description of the IESTI method is included in EHC 240.

The IESTI results are expressed as a percentage of the ARfD and are summarized in Table 4.3.1. The spreadsheet application is available at iesti_calculation21_model.xlsx (live.com). The detailed calculations of acute dietary exposure are given in Annex 4.

Further discussion of the results of the acute dietary exposure assessment are provided in the report under each chemical.

Table 4.3.1 Summary of acute dietary exposure assessments (IESTI)

CCPR code	Pesticide	ARfD (mg/kg bw)	Range of percentages of ARfD across commodities[a]
246	Acetamiprid	0.1	0–1
228	Acibenzolar–S–methyl	0.5	0–1
173	Buprofezin	0.5	0–0
015	Chlormequat	0.05 mg/kg bw for chlormequat chloride and 0.0388 mg/kg bw for chlormequat cation	0–40
239	Cyproconazole	0.06	0–0
184	Etofenprox	1	0–9
340	Fenpropidin	0.03 (women of child-bearing age)	0–40
193	Fenpyroximate	0.005	10–100, except for subgroup of

CCPR code	Pesticide	ARfD (mg/kg bw)	Range of percentages of ARfD across commodities[a]
			eggplants (160), Phaseolus beans with pods (110) and Group of mammalian edible offal (140)
202	Fipronil	0.03	0–20
242	Flubendiamide	0.2	0–0
285	Flupyradifurone	0.2	0–6
103	Phosmet	0.3	0–90, except for blueberries (up to 650)
160	Propiconazole	0.3	0–20
309	Pydiflumetofen	0.3	0–80, except for leaf lettuce (120 for the general population and up to 370 for children)
189	Tebuconazole	0.3	0–0
196	Tebufenozide	0.9	0–20

Notes: ARfD: acute reference dose; bw: body weight; CCPR: Codex Committee on Pesticide Residues; IESTI: international estimate of short-term intake.

[a] Includes estimates for children and estimates for the general population.

4.3.1 Possible refinement when the IESTI exceeds the ARfD

Possible refinements can be achieved with the submission of alternative GAP that would lead to lower pesticide residues.

4.4 References

USFDA. 2006. *Guidance for Industry: Estimating Dietary Intake of Substances in Food*. https://www.fda.gov/regulatory–information/search–fda–guidance–documents/guidance–industry–estimating–dietary–intake–substances–food

5. Evaluation of data for acceptable daily intake, acute reference dose, maximum residue levels and supervised trials median residue and highest residues

5.1 Acetamiprid (246) (R)

5.1.1 Residue and analytical aspects

Acetamiprid is a neonicotinoid insecticide with contact and stomach action against a range of Hemiptera, Thysanoptera and Lepidoptera plant pests, acting as an agonist of the nicotinic acetylcholine receptor in the insect central nervous system. It was evaluated for the first time by the 2011 JMPR, when an ADI of 0–0.07 mg/kg bw and an ARfD of 0.1 mg/kg bw were established, followed by additional residue evaluations in 2012, 2015, 2017 and 2023.

The residue definition for plant commodities, for compliance with MRLs and estimation of dietary exposure, is acetamiprid. The residue definition for animal commodities, for compliance with MRLs and estimation of dietary exposure, is the sum of acetamiprid and desmethyl-acetamiprid, expressed as acetamiprid. The residue is not fat-soluble.

The 2023 JMPR received data for the use of acetamiprid on various pulses and identified significant differences in residue levels following GAP treatment between the genera of *Phaseolus* or *Vigna* and soya beans. The meeting decided not to combine the data across these crops and only made a recommendation for soya bean (see Section 2.3). The current meeting decided to re-evaluate the 2023 data for acetamiprid on pulses based on the whole dataset submitted. No evaluation was prepared for this compound.

Results of supervised residue trials on crops

Pulses (except soya beans)

The critical GAP for the use on winter and summer pulses in Australia allows two foliar applications of acetamiprid at 70 g ai/ha and a PHI of 28 days for mung beans and 42 days for other pulses.

For pulses other than mung beans and soya beans, field trials with beans and peas in Australia approximating the GAP (±25 percent) were evaluated against the PHI of 42 days. The ranked order of acetamiprid residues was (n = 6): <0.01(3) mg/kg, 0.040 mg/kg, 0.043 mg/kg, 0.11 mg/kg.

The meeting estimated a maximum residue level of 0.2 mg/kg and a STMR of 0.025 mg/kg for acetamiprid in the subgroup of dry beans (VD 2065) except soya bean and mung beans and in the subgroup of dry peas (VD 2066).

For mung beans, field trials with beans and peas in Australia approximating the GAP (±25 percent) were conducted and evaluated against the PHI of 28 days. The ranked order of acetamiprid residues was (n = 7): <0.01(2) mg/kg, 0.016 mg/kg, 0.032 mg/kg, 0.036 mg/kg, 0.050 mg/kg, 0.21 mg/kg.

The meeting estimated a maximum residue level of 0.4 mg/kg and a STMR of 0.032 mg/kg for acetamiprid in mung beans (dry).

Recommendations

On the basis of the data obtained from supervised trials, the meeting concluded that the residue levels listed in Table 5.1.1 and Annex 1 are suitable for establishing maximum residue limits and for dietary exposure assessments.

Definition of the residue for compliance with the MRL and for dietary risk assessment for plant commodities: acetamiprid.

Definition of the residue for compliance with the MRL and for dietary risk assessment for animal commodities: sum of acetamiprid and desmethyl-acetamiprid, expressed as acetamiprid.

The residue is not fat-soluble.

Table 5.1.1 Residue levels suitable for establishing maximum residue limits and for dietary exposure assessments

CCN	Commodity	Recommended maximum residue levels (mg/kg)		STMR or STMR-P mg/kg	HR or HR-P mg/kg
		New	Previous		
VD 0536	Mung beans (dry)	0.4	–	0.032	–
VD 2065	Subgroup of dry beans, except soya beans and mung beans	0.2	–	0.025	–
VD 2066	Subgroup of dry peas	0.2	–	0.025	–

Dietary risk assessment

Long-term dietary exposure

The ADI for acetamiprid is 0–0.07 mg/kg bw. The IEDIs for acetamiprid were estimated for the 17 GEMS/Food Consumption Cluster Diets using the STMR or STMR-P values estimated by the JMPR. The results are shown in Annex 3 of the 2024 JMPR report.

The IEDIs ranged from 0–3 percent of the maximum ADI. The meeting concluded that long-term dietary exposure to residues of acetamiprid from uses considered by the JMPR is unlikely to present a public health concern.

Acute dietary exposure

The ARfD for acetamiprid is 0.1 mg/kg bw. The IESTIs for acetamiprid were calculated for the food commodities and their processed commodities for which HRs/HR-Ps or STMRs/STMR-Ps were estimated by the present meeting and for which consumption data were available. The results are shown in Annex 4.

The IESTIs varied from 0–1 percent of the ARfD for children and 0 percent of the ARfD for the general population. The meeting concluded that acute dietary exposure to residues of acetamiprid from uses considered by the present meeting is unlikely to present a public health concern.

5.2 Acibenzolar-S-methyl (228) (R)

5.2.1 Residue and analytical aspects

Acibenzolar-S-methyl is a plant activator that stimulates the natural, inherent defence mechanisms of plants. It was first evaluated by JMPR in 2016 when an ADI of 0–0.08 mg/kg bw and an ARfD of 0.5 mg/kg bw were established and uses on a wide range of fruit and vegetable crops were evaluated. The residue definition for compliance with the MRL for plant and animal commodities and for estimation of dietary intake for animal commodities is sum of acibenzolar-S-methyl and 1,2,3-benzothiadiazole-7-carboxylic acid (acibenzolar acid) (free and conjugates), expressed as acibenzolar-S-methyl.

The residue definition for estimation of dietary intake for plant commodities is sum of acibenzolar-S-methyl and 1,2,3-benzothiadiazole-7-carboxylic acid (acibenzolar acid) (free and conjugated) and 1,2,3-benzothiadiazole-4-hydroxy-7-carboxylic acid (4-OH acibenzolar acid) (free and conjugated), expressed as acibenzolar-S-methyl. The residue is not fat-soluble.

Acibenzolar-S-methyl was scheduled at the 54th session of the CCPR for evaluation of new uses by the 2024 JMPR. The current meeting received information on GAP and supervised residue trials on apples, pears and celery.

Methods of analysis

The analytical methods used in the supervised residue trials on apples, pears and celery were evaluated by the 2016 meeting and shown to be suitable for measuring residues of acibenzolar-S-methyl and metabolites (free and conjugated) hydrolysable to acibenzolar acid (common moiety method).

The current meeting received validation data and concurrent recovery data supporting the use of method (GRM051.05A) on apples and pears and concurrent recovery data for Method AG-671 on celery.

The meeting concluded that the analytical methods used in the supervised trials were sufficiently validated and are suitable for measuring residues of acibenzolar-S-methyl and metabolites (free and conjugated) hydrolysable to acibenzolar acid, with each method having an LOQ of 0.01 mg/kg.

Stability of pesticide residues in stored analytical samples

The 2016 meeting concluded that acibenzolar-S-methyl residues, measured by the common moiety method, are stable in freezer storage (−18 °C) in dry commodities for 24 months, and high-water commodities and tobacco for 21 months.

The periods of demonstrated stability cover the frozen storage intervals used in the residue studies on crops.

Results of supervised residue trials on crops

Supervised trials conducted in the United States of America were available for the use of acibenzolar-S-methyl on pome fruit and celery. Product labels were available from the United States of America.

For dietary risk assessment, the 2016 meeting noted that the 4-OH acibenzolar acid metabolite (free and conjugated) was not measured in field trials and was only significant in leafy vegetables (lettuce) where it occurred at half the level of the sum of parent compound and acibenzolar acid (free and conjugated) and agreed to apply an adjustment factor of 1.5 to residues in leafy vegetables measured according to the residue definition for compliance to convert residues to the equivalent sum of acibenzolar-S-methyl, acibenzolar acid (free and conjugated) and 4-OH acibenzolar acid (free and conjugated).

Apples

The 2016 meeting recommended an MRL of 0.3 mg/kg for apple based on the GAP in Italy (100 g ai/ha, 5 day RTI and a 7-day PHI). This use on apple has recently been withdrawn. For pear, the 2016 meeting concluded that the four trials matching the GAP in Italy (100 g ai/ha, 14 day RTI and a 14-day PHI) were insufficient to estimate a maximum residue level.

The current meeting received additional GAP information for pome fruit (except persimmon, Japanese) in the United States of America and residue trials on apples and pears. The US critical GAP is 4 applications of 112 g ai/ha, on a 7-day retreatment interval, with a PHI of 60 days and a maximum seasonal rate of 448 g ai/ha.

Residues of acibenzolar-S-methyl in independent trials approximating the US GAP in apples were: <u>≤0.01</u> (10) mg/kg and 0.01 mg/kg (n = 11).

Residues of acibenzolar-S-methyl in independent trials approximating the US GAP in pears were (n = 5): <0.01 mg/kg, 0.011 mg/kg, 0.012 mg/kg, 0.015 mg/kg, 0.017 mg/kg.

The meeting agreed that the datasets for apples and pears were not similar and should not be combined, and noted that while either apple or pear can be used to extrapolate to the pome fruit crop grouping, the highest residue levels were in pears. However, five trials are insufficient to estimate a maximum residue level for pears. While there are enough trials to estimate a maximum residue level for apple, the meeting decided that due to the lower residue levels in apples compared to pears, extrapolation from the apple to the pome fruit crop grouping was not appropriate.

For dietary risk assessment, adjustment for residues of 4-OH acibenzolar acid (free and conjugated) is not required for apple.

The meeting estimated a maximum residue level of 0.02 mg/kg, an STMR of 0.01 mg/kg and an HR of 0.01 mg/kg for acibenzolar-S-methyl in apples and replaced the previous recommendation of maximum residue level of 0.3 mg/kg.

Stem and petioles

The US GAP for the Leafy Vegetables Crop Group 4, except spinach consists of up to 9 applications (up to 4 consecutive applications) at 35 g ai/ha (max. of 336 g ai/ha/year), on a 7-day retreatment interval, with a PHI of 7 days. This group includes celery, cardoon, celtuce, fennel bulb and rhubarb.

Four independent trials were provided on celery which used 4 applications of 35 g ai/ha with a PHI of 7 days. The meeting noted from the decline trial that earlier applications would make a negligible contribution to residues at harvest so these trials could be used to approximate GAP.

Residues of acibenzolar-S-methyl in independent trials approximating the critical GAP in celery were (n = 4): 0.042 mg/kg, 0.047 mg/kg, 0.050 mg/kg, 0.068 mg/kg.

As residues of 4-OH acibenzolar acid (free and conjugated) were not measured in the celery field trials, the current meeting agreed to apply the leafy vegetables adjustment factor of 1.5 to convert residues in celery measured using the compliance definition to that for dietary risk assessment.

Residues equivalent to the sum of acibenzolar-S-methyl, acibenzolar acid (free and conjugated) and 4-OH acibenzolar acid (free and conjugated) are (n = 4): 0.063 mg/kg, 0.071 mg/kg, 0.075 mg/kg, 0.10 mg/kg.

The meeting estimated a maximum residue level of 0.2 mg/kg, a STMR of 0.073 mg/kg, and a HR of 0.10 mg/kg for acibenzolar-S-methyl in celery.

The meeting noted that the US GAP did not include all crops in the subgroup of Stems and Petioles, so could not be extrapolated to the entire subgroup. However the US GAP does include cardoon, celtuce, fennel bulb and rhubarb, and the meeting agreed to extrapolate the celery recommendations to these commodities.

Fate of residues during processing

The 2016 meeting established a processing factor of 3.1 for dried pome fruit. Using the estimated maximum residue level of 0.02 mg/kg for apple and applying this processing factor, the current meeting estimated a maximum residue level of 0.06 mg/kg for acibenzolar-S-methyl in dried apple. Based on the recommended STMR and HR of 0.01 mg/kg, the current meeting estimated an STMR-P of 0.031 mg/kg and HR-P of 0.031mg/kg for acibenzolar-S-methyl in dried apple.

Residues in animal commodities

Farm animal dietary burden

The 2016 meeting estimated livestock dietary burdens arising from residues in cabbage wrapper leaves, kale, apple pomace and citrus pulp. The revised STMR for apple pomace does not change the previous estimation and the meeting confirmed the 2016 meeting recommendations for animal commodities.

Following the update of animal commodities Codex classifications (General consideration 2.4), the meeting recommended the maximum residue levels of 0.02* mg/kg for group of muscle (from mammalians other than marine mammals), group of mammalian fats (except milk fats), group of edible offal, mammalian, group of avian muscle, group of avian fats, group of avian, edible offal of and group of eggs and of 0.01* mg/kg for group of milks. The meeting also estimated a STMR of 0 mg/kg for all groups.

The meeting withdrew the previous recommendations on meat (from mammalians other than marine mammals), mammalian fats (except milk fats), edible offal (mammalian), poultry muscle, poultry fats, poultry, edible offal of, and eggs.

Recommendations

On the basis of the data obtained from supervised trials, the meeting concluded that the residue levels listed in Table 5.2.1 and Annex 1 are suitable for establishing maximum residue limits and for dietary exposure assessments.

Definition of the residue for compliance with the MRL for plant and animal commodities and for estimation of dietary intake for animal commodities*: Sum of acibenzolar-S-methyl and 1,2,3-benzothiadiazole-7-carboxylic acid (acibenzolar acid) (free and conjugates), expressed as acibenzolar-S-methyl.*

Definition of the residue for estimation of dietary intake for plant commodities: Sum of acibenzolar-S-methyl and 1,2,3-benzothiadiazole-7-carboxylic acid (acibenzolar acid), (free and conjugated) and 1,2,3-benzothiadiazole-4-hydroxy-7-carboxylic acid (4-OH acibenzolar acid) (free and conjugated), expressed as acibenzolar-S-methyl.

The residue is not fat-soluble.

Table 5.2.1 Residue levels suitable for establishing maximum residue limits and for dietary exposure assessment

CCN	Commodity	Recommended maximum residue levels (mg/kg)		STMR or STMR-P mg/kg	HR or HR-P mg/kg
		New	Previous		
FP 0226	Apple	0.02	0.3	0.01	0.01
DF 0226	Apple, dried	0.06	–	0.031	0.031
VS 0623	Cardoon	0.2	–	0.073	0.10
VS 0624	Celery	0.2	–	0.073	0.10
VS 0625	Celtuce	0.2	–	0.073	0.10
MO 0105	Edible offal (mammalian)	W	0.02*	–	–
PE 0112	Eggs	W	0.02*	–	–
VS 0380	Fennel, bulb	0.2	–	0.073	0.10
PO 0111	Group of avian, edible offal of	0.02*	–	0	0
PF 0111	Group of avian fats	0.02*	–	0	0
PM 0110	Group of avian muscle	0.02*	–	0	0
MO 0105	Group of edible offal (mammalian)	0.02*	–	0	0
PE 0112	Group of eggs	0.02*	–	0	0
MF 0100	Group of mammalian fats (except milk fats)	0.02*	–	0	0
ML 0106	Group of milks	0.01*	–	0	0
MM 0095	Group of muscle (from mammals other than marine mammals)	0.02*	–	0	0
MF 0100	Mammalian fats (except milk fats)	W	0.02*	–	–
MM 0095	Meat (from mammals other than marine mammals)	W	0.02*	–	–
ML 0106	Milks	W	0.01*	–	–
PO 0111	Poultry, edible offal of	W	0.02*	–	–
PF 0111	Poultry fats	W	0.02*	–	–
PM 0110	Poultry meat	W	0.02*	–	–
VS 0627	Rhubarb	0.2	–	0.073	0.10

Dietary risk assessment

Long-term dietary exposure

The ADI for acibenzolar-S-methyl is 0–0.08 mg/kg bw. The International Estimated Daily Intakes (IEDIs) for acibenzolar-S-methyl were estimated for the 17 GEMS/Food Consumption Cluster Diets using the STMR or STMR-P values estimated by the JMPR. The results are shown in Annex 3.

The IEDIs ranged from 0 to 1 percent of the maximum ADI. The meeting concluded that long-term dietary exposure to residues of acibenzolar-S-methyl from uses considered by the JMPR is unlikely to present a public health concern.

Acute dietary exposure

The ARfD for acibenzolar-S-methyl is 0.5 mg/kg bw. The International Estimate of Short-term Intakes (IESTIs) for acibenzolar-S-methyl were calculated for the food commodities and their processed commodities for which HRs/HR-Ps or STMRs/STMR-Ps were estimated by the current meeting and for which consumption data were available. The results are shown in Annex 4.

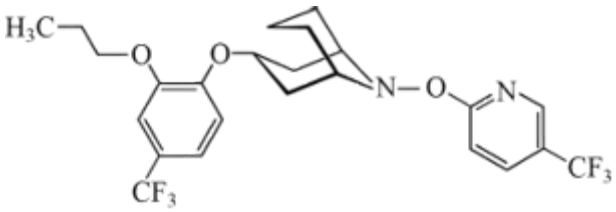
The IESTIs varied from 0 to 1 percent of the ARfD for children and 0 percent of the ARfD for the general population. The meeting concluded that acute dietary exposure to residues of acibenzolar-S-methyl from uses considered by the current meeting is unlikely to present a public health concern.

5.3 Acynonapyr (333)* (T, R)

5.3.1 Toxicology

Acynonapyr is the ISO-approved common name for 3-endo-[2-proxy-4-(trifluoromethyl) phenoxy]-9-[5-(trifluoromethyl)-2-pyridyloxy]-9-azabicyclo[3.3.1]nonane (IUPAC), Chemical Abstracts Service number 1332838-17-1. Acynonapyr is a miticide with a novel mode of action. It belongs to the class of calcium-activated potassium channel modulators. It is being developed for use on mandarins, apples and pears, and eggplants. Acynonapyr has not previously been evaluated by the FAO/WHO Joint Meeting on Pesticide Residues (JMPR) and was reviewed by the present meeting at the request of Codex Committee on Pesticide Residues (CCPR). All critical studies contained statements of compliance with good laboratory practice and complied with the relevant OECD technical guideline(s), unless otherwise specified. A literature search was conducted by the monographer. No relevant information was identified in the public domain from a search of the PubMed, Scopus and Web of Science databases. Overall, the available database was sufficient for assessment.

Figure 5.3.1 Chemical structure of acynonapyr



Biochemical aspects

Oral absorption following a single dose of [pyridine-2,6-^{14}C]acynonapyr in rats at 3 or 300 mg/kg bw was 68 percent and 29 percent respectively. At 3 mg/kg, T_{max} was approximately one hour in both sexes, while at 300 mg/kg, T_{max} in plasma was six hours in males and 13.5 hours in females, with plasma elimination half-lives at both doses and both sexes of 11.3–12.3 hours. The reduced oral absorption at 300 mg/kg bw and a 52-fold increase in AUC between 3 and 300 mg/kg bw indicates partial saturation of absorption. For [*phenyl-U*-^{14}C]acynonapyr, absorption at 3 or 300 mg/kg bw was 25 percent and 13 percent. Blood plasma T_{max} at 3 mg/kg was circa. two hours in both sexes and at 300 mg/kg bw it was 9.5 hours in males and 8.5 hours in females, with plasma elimination half-lives of 33.5–39.1 hours. AUC increased 28–42-fold, from 3 to 300 mg/kg bw, again indicating partial saturation of absorption.

Tissue distribution of both radiolabel-variants was widespread but tissue concentrations were generally low, except for higher concentrations in the gastrointestinal tract (including contents) and fat. At 168 hours, concentrations in fat were 5–100 times higher than in other tissues, most likely reflecting its lipophilicity. Less than 1 percent of the radioactivity remained in the carcass 168 hours after a single dose. Following 14 daily doses of [*phenyl-U*-^{14}C]acynonapyr at 3 mg/kg bw, concentrations in most tissues were 2–6-fold higher compared to a single dose, suggesting minimal potential for bioaccumulation.

Following a single dose of [pyridine-2,6-^{14}C] acynonapyr, metabolites AY, AY-glucuronide, AY-1, AY-1-glucuronide, and AY-1-sulphate were detected in excreta and tissues. In urine, AY accounted for 52–92 percent and 47–70 percent of the absorbed dose in males and females respectively. AY-1 and its conjugates (AY-glucuronide and AY-1-sulphate) accounted for 14–15 percent of the absorbed dose in females, with lesser amounts in males. Unchanged acynonapyr accounted for 34 percent of fecal radioactivity at low doses and 64 percent at high doses.

Following a single dose of [*phenyl-U*-^{14}C]acynonapyr, AP and its metabolites AP-4-glucuronide and AP-1-OH-glucuronide were significant. AP in the faeces accounted for 52–70 percent of total radiolabel but was not detected in urine. AP-4-glucuronide in urine accounted for 29–45 percent of the absorbed dose. AP-1-OH-glucuronide in urine accounting for <1 percent of the radiolabel. Both AP-4-glucuronide and AP-1-OH were also detected in bile, albeit at <2 percent of the radiolabel.

Following a low dose of *[azabicyclo-1,5*-^{14}C]acynonapyr, >75 percent of radioactivity was excreted in feces while excretion in the urine accounted for 13–18 percent within 48 hours and ≤3.3 percent was left in the carcass after 168 hours. Unchanged acynonapyr and AP were significant fecal metabolites, while AP-4-glucuronide was the major urinary metabolite.

The key initial metabolic step in the metabolism of acynonapyr is cleavage of the amine–oxide bond producing the metabolites AY (2,4,6-trifluoro-*N*-(pyridin-2-yl)benzamide) and AP (*N*-(2-((4-(3-(2-(2-((2-(2-methoxyethyl)-*3H*-benzimidazol-5-yl)methyl)-1,3-dioxolan-2-yl)ethyl)-*4H*-1,2,4-triazol-4-yl)phenoxy)methyl)-2-hydroxyethyl)-*N*-methylacetamide). Both AY and AP undergo extensive further metabolism.

The meeting noted the differences between the radiolabels with regards to absorption, resulting in differences in distribution, metabolism and excretion and this may be due to metabolism by the gut microbiome prior to absorption.

No in vitro comparative metabolism study with acynonapyr is available.

Toxicological data

The acute oral median lethal dose (LD_{50}) for acynonapyr was greater than 2000 mg/kg bw and the dermal LD_{50} was greater than 2000 mg/kg bw. The inhalation median lethal concentration (LC_{50}) for acynonapyr was greater than 4.79 mg/L air. Acynonapyr was not irritating to the skin and not irritating in rabbit eyes. Acynonapyr was not shown to be sensitizing in a Magnusson and Kligmann maximization test in guinea pigs.

In repeat dose oral toxicity studies with acynonapyr in mice, rats and dogs the main toxic effects were decreased body weight and body weight gain, anaemia (together with compensatory erythropoiesis in the spleen and bone marrow), hepato- and nephropathy and vacuolation primarily in lymph nodes and lungs. Dogs are more sensitive than rats, which are more sensitive than mice.

In a 28-day dietary toxicity study, mice were given acynonapyr at dietary concentrations of 0 ppm, 80 ppm, 800 ppm, or 8000 ppm (equal to 0 mg/kg bw, 11.7 mg/kg bw, 113.2 mg/kg bw, and 1172 mg/kg bw per day for males, and 0 mg/kg bw, 14.2 mg/kg bw, 139.0 mg/kg bw and 1384 mg/kg bw per day for females, respectively). The no-observed-adverse-effect level (NOAEL) was 800 ppm (113.2 mg/kg bw per day),

based upon anaemia together with increased spleen weight and increase splenic erythropoiesis at 8000 ppm (equal to 1172 mg/kg bw per day). Increased relative liver weight in combination with centrilobular hypertrophy were also considered adverse, given that changes in alanine transaminase (ALT), aspartate transaminase (AST) and lactate dehydrogenase (LDH) were seen with longer duration of administration.

In a 13-week dietary toxicity study, mice were given acynonapyr at dietary concentrations of 0 ppm, 60 ppm, 320 ppm, 1600 ppm, or 8000 ppm (equal to 0 mg/kg bw, 8.1 mg/kg bw, 39.9 mg/kg bw, 216 mg/kg bw and 1128 mg/kg bw per day for males and 0 mg/kg bw, 9.3 mg/kg bw, 48.4 mg/kg bw, 256 mg/kg bw and 1270 mg/kg bw per day for females). The NOAEL was 1600 ppm (equal to 216 mg/kg bw per day), based upon increased absolute and relative liver weight, centrilobular hypertrophy and ALT, AST and LDH activity, as well as anaemia and increased haemopoiesis and increased adrenal weight in combination with cortical hypertrophy at 8000 ppm (equal to 1128 mg/kg bw per day).

In a 28-day dietary toxicity study, rats were given acynonapyr concentrations of 0 ppm, 120 ppm, 600 ppm, and 3000 ppm (equal to 0 mg/kg bw, 9.4 mg/kg bw, 47.5 mg/kg bw, and 233.4 mg/kg bw per day for males and 0 mg/kg bw, 10.9 mg/kg bw, 53.3 mg/kg bw and 260.2 mg/kg bw per day for females). The NOAEL was 600 ppm (equal to 47.5 mg/kg bw per day), based on anaemia together with increased erythropoiesis in the spleen and vacuolar changes/foamy cells in various tissues suggestive of phospholipidosis observed at 3000 ppm (equal to 233.4 mg/kg bw per day).

In a 13-week dietary toxicity study, rats were given acynonapyr at dietary concentrations of 0 ppm, 60 ppm, 250 ppm, 1000 ppm, or 4000 ppm (equal to 0 mg/kg, 3.7 mg/kg, 15.2 mg/kg, 60.5 mg/kg, and 259.6 mg/kg per day for males and 0 mg/kg bw, 4.3 mg/kg bw, 18.4 mg/kg bw, 72.5 mg/kg bw, and 289.5 mg/kg bw per day for females). The NOAEL 250 ppm (equal to 15.2 mg/kg bw per day), based on transient brown urine (potentially occult blood related to anaemia), as well as reduced body weight gain and anaemia at 1000 ppm (equal to 60.5 mg/kg bw per day).

In a second 13-week dietary toxicity study, rats were given acynonapyr at dietary concentrations of 0 ppm, 60 ppm, 250 ppm, 1000 ppm, or 4000/2000 ppm (equal to 0 mg/kg bw, 3.9 mg/kg bw, 17.1 mg/kg bw, 68.9 mg/kg bw and 286/125 mg/kg bw per day for males and 0 mg/kg bw, 4.6 mg/kg bw, 21.2 mg/kg bw, 83.5 mg/kg bw and 304/149 mg/kg bw per day for females). The NOAEL was 250 ppm (equal to 21.2 mg/kg bw per day), based on reduced body weight gain at 1000 ppm (equal to 83.5 mg/kg bw per day).

In a 13-week toxicity study, dogs were administered acynonapyr in capsules at concentrations of 0 mg/kg bw, 10 mg/kg bw, 50 mg/kg bw or 200 mg/kg bw per day. The NOAEL was 10 mg/kg bw per day based on reduced body weight, body weight gain and anaemia together with sternal haemopoiesis and vacuolar changes with lymphocytosis in lymph nodes 50 mg/kg bw per day.

In a 52-week toxicity study, dogs were administered acynonapyr in capsules at concentrations of 0 mg/kg bw, 4 mg/kg bw, 20 mg/kg bw or 80 mg/kg bw per day. The NOAEL was 4 mg/kg bw per day based on reduced body weight, body weight gain, anaemia and histopathological changes in the (mandibular) lymph nodes at 20 mg/kg bw per day.

The overall NOAEL for the 13-week and 52-week dog studies was 10 mg/kg bw per day, with an overall lowest-observed-adverse-effect level (LOAEL) of 20 mg/kg bw per day.

In a carcinogenicity study, acynonapyr was administered in feed to mice at dose levels 0 ppm, 100 ppm, 500 ppm or 2500 ppm (equal to 0 mg/kg bw, 13.2 mg/kg bw, 69.7 mg/kg bw and 342 mg/kg bw per day for males and 0 mg/kg bw, 15.5 mg/kg bw, 79.3 mg/kg bw or 393 mg/kg bw per day for females) for 78 weeks. The chronic NOAEL was 500 ppm (equal to 69.7 mg/kg bw per day), based on increased absolute and relative spleen and liver weight, as well as equivocal increases in the incidences of liver necrosis and kidney nephropathy at 2500 ppm (equal to 342 mg/kg bw per day). The carcinogenicity NOAEL was 500 ppm (equal to 69.7 mg/kg bw per day), based on increased incidences of primary malignant lymphoma at 2500 ppm (equal to 342 mg/kg bw per day).

In a combined chronic toxicity/carcinogenicity study, acynonapyr was administered to rats in the diet at 0 ppm, 70 ppm, 250 ppm or 900 ppm (equal to 0 mg/kg bw, 3.8 mg/kg bw, 13.5 mg/kg bw and 51.5 mg/kg bw per day for males and 0 mg/kg bw, 5.2 mg/kg bw, 17.5 mg/kg bw and 68.2 mg/kg bw per day for females) for a duration of 50 weeks for satellite groups, or 104 weeks in the main study (then equal to 0 mg/kg bw, 3.5 mg/kg bw, 12.3 mg/kg bw and 45.1 mg/kg per day for males and 0 mg/kg bw, 4.6 mg/kg bw, 16.2 mg/kg bw and 60.9 mg/kg bw per day for females). The chronic NOAEL was 250 ppm (equal to 12.3 mg/kg bw per day) based on increased reticulocytes and increased angiomatous hyperplasia in mesenteric lymph nodes at 900 ppm (equal to 45.1 mg/kg bw per day). The carcinogenicity NOAEL was 250 ppm (equal to 12.3 mg/kg bw per day) based on increased incidences of thyroid follicular adenomas and mesenteric lymph node haemangioma at 900 ppm (equal to 45.1 mg/kg bw per day).

The meeting concluded that the compound is carcinogenic in male mice and male rats.

Acynonapyr was tested for genotoxicity in an adequate range of in vitro and in vivo assays. No evidence of genotoxicity was found.

The meeting concluded that acynonapyr is unlikely to be genotoxic.

Additional mechanistic studies were provided to further investigate the effects on the liver, including hepatocellular adenomas reported in the 78-week study in mice, which indicated they were consistent with mechanistic data indicating acynonapyr-induced, phenobarbital-like constitutive androstane receptor activation. Therefore, the effects of acynonapyr on the mouse liver are unlikely to be relevant for humans. Although lymphoma is a common tumour type in mice, the relevance of these tumours at the highest dose for humans is uncertain. An additional mechanistic study was provided to further investigate induction of UDP-GT as a possible mode of action responsible for the thyroid follicular hyperplasia and adenomas in the two-year rat study. This did not indicate UDP-GT activity was induced. Consequently, the relevance of these tumours for humans cannot be fully excluded. Increased incidences in mesenteric lymph node haemangioma were also reported in males and their relevance for humans is equally uncertain.

In view of the lack of genotoxicity and the clear threshold for lymphoma in male mice, as well as the thyroid follicular cell adenomas and mesenteric lymph node haemangioma in male rats, the meeting concluded that acynonapyr is unlikely to pose a carcinogenic risk to humans from the diet.

In a two-generation reproductive toxicity study, rats were fed acynonapyr (at concentrations of 0 ppm, 80 ppm, 400 ppm, 1000 ppm). The highest dose of 1000 ppm was reduced in females to 500 ppm during lactation to ensure a similar mean daily intake.

The parental NOAEL was 400 ppm (equal to 35.9 mg/kg bw per day) based on decreased body weight, body weight gain and food consumption, anaemia, as well as tubular basophilia and lymphocytic

infiltration in the kidney, and histiocytic alveolar infiltration in the lungs at 1000 ppm (equal to 61.7 mg/kg bw per day).

The reproductive NOAEL was 400 ppm (equal to 35.9 mg/kg bw per day) based on increased days in cohabitation prior to mating, reduced number of rats mated, fertility index and ratio of rats pregnant to rats in cohabitation in F1 males and females and reduced implantation sites in F1 females at 1000 ppm (equal to 71.5 mg/kg bw per day).

The offspring NOAEL was 80 ppm (equal to 20.2 mg/kg bw per day during lactation) based on reduced F1 pup weight, particularly between postnatal day (PND) 14 and 28 at 400 ppm (equal to 102.5 mg/kg bw per day). Pups were potentially exposed to acynonapyr in both milk and feed resulting in the significant drop in body weight gain between PND 14 and 28.

In a prenatal developmental toxicity study, rats were administered acynonapyr by gavage at concentrations of 0 mg/kg bw, 20 mg/kg bw, 150 mg/kg bw or 1000 mg/kg bw per day. The maternal NOAEL was 20 mg/kg bw per day based on decreased body weight gain and food consumption at 150 mg/kg bw per day. The embryo/fetal NOAEL was 150 mg/kg bw per day based on reduced fetal body weight at 1000 mg/kg bw per day.

In a prenatal developmental toxicity study, rabbits were administered acynonapyr by gavage at concentrations of 0 mg/kg bw, 15 mg/kg bw, 50 mg/kg bw or 150 mg/kg bw per day. The maternal NOAEL was 50 mg/kg bw per day, based upon increased mortality as well as reduced body weight gain, food consumption, increased abortions and incidences of spongy and/or red lung lobes at 150 mg/kg bw per day. The embryo/fetal NOAEL was 50 mg/kg bw per day, based upon reduced fetal body weight at 150 mg/kg bw per day.

The meeting concluded that acynonapyr is not teratogenic.

In an acute neurotoxicity study, rats received single doses of acynonapyr by gavage at 0 mg/kg bw, 50 mg/kg bw, 300 mg/kg bw or 2000 mg/kg bw. The highest tested dose of 2000 mg/kg bw was the NOAEL both for systemic effects and neurotoxicity.

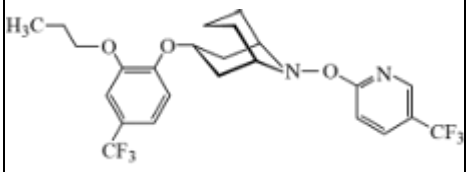
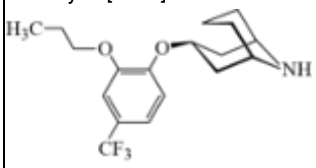
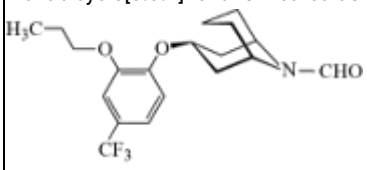
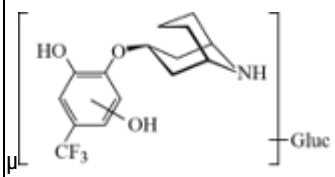
The meeting concluded that acynonapyr is not neurotoxic.

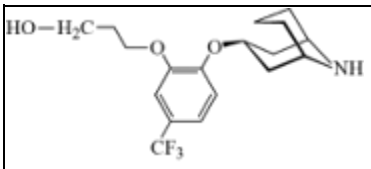
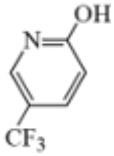
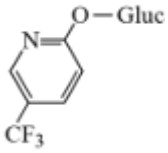
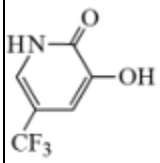
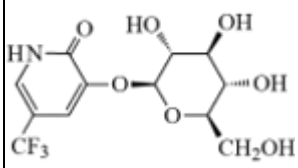
No immunotoxicology studies were submitted. However, based on the available data, the meeting concluded that acynonapyr is unlikely to be immunotoxic.

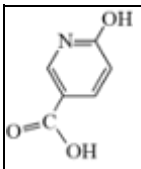
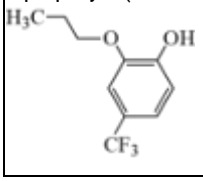
Toxicological data on metabolites and/or degradates

A toxicological evaluation of the following metabolites was performed. Table 5.3.1 shows an overall summary of the toxicological characterization of the metabolites requested for consideration in the residue definition.

Table 5.3.1 Summary overview of toxicological characterization of plant/livestock metabolites

Compound, codes and structure	Detection in rat ADME	Genotoxicity studies	General toxicity studies	Meeting conclusion
Acynonapyr (parent) 	N/A	Not genotoxic in vivo	Full dataset	ADI 0–0.1 mg/kg bw No ARfD
AP 3-*endo*-[2-propoxy-4-(trifluoromethyl)phenoxy]- 9-azabicyclo[3.3.1]nonane 	Yes, faeces only	Ames: Negative	Rat LD_{50}, oral: >300 but <2000 mg/kg bw	Cramer class III 1.5 µg/kg bw per day ARfD 0.03 mg/kg bw
AP-2 3-*endo*-[2-propoxy-4-(trifluoromethyl)phenoxy]-9-azabicyclo[3.3.1]nonane-9-carbaldehyde 	Yes, in fat only, not in urine or bile	Ames: Negative	Rat LD_{50}, oral: >300 but <2000 mg/kg bw Rat 28-d repeat dose, oral: NOAEL 38 mg/kg bw per day, based on a single death and on effects on body weight body weight gain, food consumption, organ weights and histopathological findings at 127 mg/kg bw per day	Parent ADI ARfD 0.1 mg/kg bw
AP-4-gluc/AP-1-OH-gluc 	Yes, >10% absorbed dose in urine	No data	No data	Parent ADI
AP-8 3-endo-[2-(3- hydroxypropoxy)-4-(trifluoromethyl)phenoxy]-9-azabicyclo[3.3.1]nonane	No	(Q)SAR: Ames negative Structural similarity to AP	No data	Cramer class III 1.5 µg/kg bw per day ARfD 0.03 mg/kg bw

				
AY 5-(trifluoromethyl)-2-pyridinol 	Yes, >10% absorbed dose in urine	Ames: positive In vivo micronucleus: Negative In vivo TGR: Negative	Rat LD_{50}, oral: >300 but <2000 mg/kg bw Rat 28-d repeat dose, oral: NOAEL 318 mg/kg bw per day, based on effects on body weight, blood and liver 1152 mg/kg bw per day Rat 90-d repeat dose, oral: NOAEL 160 mg/kg bw per day, based on effects on body weight and kidneys equal to 464 mg/kg bw per day	Parent ADI ARfD 0.1 mg/kg bw
AY-glucuronide 	Yes, >10% absorbed dose	No data. Conjugate of AY	No data. Conjugate of AY	Parent ADI ARfD 0.1 mg/kg bw
AY-1 	Yes, >10% absorbed dose in urine	Ames: positive In vivo micronucleus: Negative	Rat LD_{50}, oral: >2000 mg/kg bw	Parent ADI
AY-1-gluc 5-(trifluoromethyl)-2-pyridon-3-yl ß-*D*-glucopyranoside 	No, <2.5% absorbed dose in urine	Ames: Negative	Rat LD_{50}, oral: >2000 mg/kg bw	Parent ADI
AY-5 6-hydroxynicotinic acid	No	Ames: Negative	Rat LD_{50}, oral: >2000 mg/kg bw	Cramer class III 1.5 µg/kg bw per day

				
AH 2-propoxy-4-(trifluoromethyl)phenol 	No	Ames: Negative	Rat LD_{50}, oral: >2000 mg/kg bw	Cramer class III 1.5 µg/kg bw per day

AP

The acute oral LD_{50} of AP in female rats was greater than 300 mg/kg bw but less than 2000 mg/kg bw. At 300 mg/kg bw, mucous faeces, soiled wet fur around anus and lateral position were reported up to four hours after administration and body weight loss was reported on days one and two following administration.

AP-2

The acute oral LD_{50} of AP-2 in female rats was greater than 300 but less than 2000 mg/kg bw. At 300 mg/kg bw, mucous faeces, soiled wet fur around anus and lateral position were reported up to four hours after administration.

In a 28-day oral toxicity study, AP-2 was administered in feed to rats at dose levels of 0 ppm, 90 ppm, 450 ppm or 1500 ppm (equal to 0 mg/kg, 7.5 mg/kg, 37 mg/kg or 122 mg/kg bw per day for males and 0 mg/kg, 7.5 mg/kg, 37.8 mg/kg, or 127 mg/kg bw per day for females). The NOAEL was 450 ppm (equal to 37 mg/kg bw per day), based on a single death that cannot be excluded as treatment-related, on reduced body weight, body weight gain and food consumption, organ weight changes and histopathological findings at 1500 ppm (equal to 127 mg/kg bw per day).

AY

The acute oral LD_{50} of AY in female rats was greater than 300 but less than 2000 mg/kg bw. At 300 mg/kg bw, depression of spontaneous motor activity, staggering gait, incomplete eyelid opening, and prone position were reported up to four hours after administration. These had resolved by day two. Transient body weight loss was reported in one animal on day two.

In a four-week oral toxicity study, AY [5-(trifluoromethyl)-2-pyridinol] was administered in feed to rats at dose levels of 0 ppm, 1000 ppm, 4000 ppm or 16000 ppm (equal to 0 mg/kg bw, 79 mg/kg bw, 318 mg/kg bw and 1152 mg/kg bw per day for males and 0 mg/kg bw, 87 mg/kg bw, 320 mg/kg bw or 1216 mg/kg bw per day for females). The NOAEL was 1000 ppm (equal to 87 mg/kg bw per day), based upon decreased body weight and body weight gain in females at 4000 ppm (equal to 318 mg/kg bw per day). Effects on body weight were reported from day one onwards.

In a 90-day oral toxicity study, AY was administered in feed to rats at dose levels of 0 ppm, 1000 ppm, 2800 ppm or 8000 ppm (equal to 0 mg/kg bw, 55.5 mg/kg bw, 160 mg/kg bw and 464 mg/kg bw per day for males and 0 mg/kg bw, 62.8 mg/kg bw, 190 mg/kg bw, or 524 mg/kg bw per day for females). The NOAEL was 2800 ppm (equal to 160 mg/kg bw per day), based on reduced body weight and body weight gain and on histopathological findings in the kidney of equivocal health relevance at 8000 ppm (equal to 464 mg/kg bw per day).

Microbiological aspects

A search of literature available in the public domain did not identify information describing any direct or indirect experimental evidence, which addressed the possible impact of acynonapyr or its residues on the human intestinal microbiome.

No experimental data were submitted by the sponsor in this regard.

Human data

No information was provided on the health of workers involved in the manufacture or use of acynonapyr. No information on accidental or intentional poisoning in humans is available.

The meeting concluded that the existing database on acynonapyr was adequate to characterize the potential hazards to the general population, including fetuses, infants and children.

Toxicological evaluation

The meeting established an acceptable daily intake (ADI) of 0–0.1 mg/kg bw for acynonapyr based on the overall NOAEL of 10 mg/kg bw per day in the 13-week and 52-week studies in dogs, supported by the NOAEL of 12.3 mg/kg bw per day in the two-year study in rats and applying a safety factor of 100. This ADI also applies to metabolites AP-2, AP-4-gluc/AP-1-OH-gluc, AY, AY-gluc, AY-1 and AY-1-gluc.

The MoE between the lowest-observed-adverse-effect level (LOAEL) for primary malignant lymphoma in haemolymphoreticular tissue in mice and the upper bound of the ADI was 3420. The MoE between the LOAEL for thyroid follicular adenomas and mesenteric lymph node haemangioma in rats and the upper bound of the ADI was 450.

The meeting concluded that it was not necessary to establish an acute reference dose (ARfD) for acynonapyr in view of its low acute oral toxicity and the absence of developmental toxicity or any other toxicological effects likely to be elicited by a single dose. Although pronounced decreases in body weight gain were reported in the 28-day and 90-day rat studies on day one, recovery was clearly evident in both studies on days two and three. In addition, no adverse effects were reported in the acute oral toxicity and acute neurotoxicity studies at up to 2000 mg/kg bw.

The meeting established an acute reference dose (ARfD) of 0.03 mg/kg bw for AP based on an acute oral toxicity study showing significant but non-lethal toxic effects following a single exposure at 300 mg/kg bw and applying a safety factor of 10000. This also applies to AP-8 due to its high structural similarity to AP.

The meeting concluded that the upper bound of the parent ADI applies to AP-2, AY and AY-gluc for acute exposure assessments, also based on acute oral toxicity studies showing significant but non-lethal toxic

effects following a single exposure at 300 mg/kg bw. The upper bound of the parent ADI is considered sufficiently protective.

A toxicological monograph was prepared.

Table 5.3.2 Levels relevant to risk assessment of acynonapyr

Species	Study	Effect	NOAEL	LOAEL
Mouse	78-week study of toxicity and carcinogenicity[a]	Toxicity	500 ppm, equal to 69.7 mg/kg bw per day	2500 ppm, equal to 342 mg/kg bw per day
		Carcinogenicity	500 ppm, equal to 69.7 mg/kg bw per day	2500 ppm, equal to 342 mg/kg bw per day
Rat	Acute neurotoxicity study[b]	Neurotoxicity	>2000 mg/kg bw[c]	–
	Two-year studies of toxicity and carcinogenicity[a]	Toxicity	250 ppm, equal to 12.3 mg/kg bw per day	900 ppm, equal to 45.1 mg/kg bw per day
		Carcinogenicity	250 ppm, equal to 12.3 mg/kg bw per day	900 ppm, equal to 45.1 mg/kg bw per day
	Two-generation study of reproductive toxicity[a]	Reproductive toxicity	400 ppm, equal to 27.1 mg/kg bw per day	1000 ppm, equal to 71.5 mg/kg bw per day
		Parental toxicity	400 ppm, equal to 35.9 mg/kg bw per day	1000 ppm, equal to 61.7 mg/kg bw per day
		Offspring toxicity	80 ppm, equal to 20.2 mg/kg bw per day	400 ppm, equal to 102.5 mg/kg bw per day
	Developmental toxicity study[b]	Maternal toxicity	20 mg/kg bw per day	150 mg/kg bw per day
		Embryo/fetal toxicity	150 mg/kg bw per day	1000 mg/kg bw per day
Rabbit	Developmental toxicity study[b]	Maternal toxicity	50 mg/kg bw per day	150 mg/kg bw per day
		Embryo/fetal toxicity[d]	50 mg/kg bw per day	150 mg/kg bw per day
Dog	13-week and 1-year studies of toxicity[d, e]	Toxicity	10 mg/kg bw per day	20 mg/kg bw per day

AP

Rat	**Acute oral toxicity**	LD50 >300 but <2 000 mg/kg	

AP-2

Rat		**Acute oral toxicity**	LD50 >300 but <2000 mg/kg	
	Four-week study of toxicity[a]	Toxicity	450 ppm, equal to 38 mg/kg bw per day	1500 ppm, equal to 127 mg/kg bw per day

AY				
Rat			**Acute oral toxicity**	LD50 >300 but <2000 mg/kg
	Four-week study of toxicity[a]	Toxicity	450 ppm, equal to 38 mg/kg bw per day	1500 ppm, equal to 127 mg/kg bw per day
	90-day study of toxicity[a]	Toxicity	2800 ppm, equal to 160 mg/kg bw per day	8000 ppm, equal to 464 mg/kg bw per day

Notes:
[a] Dietary administration.
[b] Gavage administration.
[c] Highest dose tested.
[d] Two or more studies combined.
[e] Capsule administration.

Acceptable daily intake (ADI) applies to acynonapyr, AP-2, AP-4-gluc/AP-1-OH-gluc, AY, AY-gluc, AY-1 and AY-1-gluc:

0–0.1 mg/kg bw

Acute reference dose (ARfD) not necessary.

Information that would be useful for the continued evaluation of the compound

Results from epidemiological, occupational health per day and other such observational studies of human exposure. Information about the effects of acynonapyr on the human intestinal microbiome.

Table 2.3.3 Critical end-points for setting guidance values for exposure to acynonapyr

Absorption, distribution, excretion and metabolism in mammals	
Rate and extent of oral absorption	T_{max} 1–2 hours at 3 mg/kg and 9–14 hours at 300 mg/kg; 13–68%.
Distribution	Wide; highest concentrations in fat
Potential for accumulation	No evidence of toxicologically relevant accumulation
Rate and extent of excretion	Rapid and nearly complete via urine and faeces; 75% within 48 hours, 97% within 168 hours
Metabolism in animals	Initial cleavage of amine–oxide bond resulting in AP and AY. Further hydroxylation of phenyl or pyridine ring and/or glucuronidation or sulphatation
Toxicologically significant compounds in animals and plants	AP, AP-2, AP-4-gluc/AP-1-OH-gluc, AP-8, AY, AY-gluc, AY-1, AY-1-gluc, AY-5, AH
Acute toxicity	
Rat, LD_{50}, oral	>2000 mg/kg bw
Rat, LD_{50}, dermal	>2000 mg/kg bw
Rat, LC_{50}, inhalation	>4.79 mg/L
Rabbit, dermal irritation	Not irritating.
Rabbit, ocular irritation	Not irritating.
Guinea pig, dermal sensitization	Not sensitizing (Magnussen & Kligmann).
Short-term studies of toxicity	
Target/critical effect	Reduced body weight and body weight gain, anaemia with associated haemopoeisis, vacuolar changes in several tissues consistent with phospholipidosis
Lowest relevant oral NOAEL	10 mg/kg bw per day (dog)
Lowest relevant dermal NOAEL	>1000 mg/kg bw per day, highest dose tested (rat)
Long-term studies of toxicity and carcinogenicity	
Target/critical effect	Haemopoietic system

Lowest relevant NOAEL	12.3 mg/kg bw per day (rat)
Carcinogenicity	Carcinogenic in mice and rats[a] Lymphoma in mice, uncertain relevance for humans Thyroid follicular cell adenoma in rats, uncertain relevance for humans Haemangioma in rats, uncertain relevance for humans
Genotoxicity	Not genotoxic in vivo
Reproductive toxicity	
Target/critical effect	Parental: reduced body weight, body weight gain, food consumption, anaemia, histopathological changes in the lungs and kidney in females Reproduction: increased days in cohabitation prior to mating, reduced number of rats mated, fertility index and ratio of rats pregnant to rats in cohabitation and reduced implantation sites Offspring: reduced body weight
Lowest relevant parental NOAEL	35.9 mg/kg bw per day (rat)
Lowest relevant offspring NOAEL	20.2 mg/kg bw per day (rat)
Lowest relevant reproductive NOAEL	26.1 mg/kg bw per day (rat)
Developmental toxicity	
Target/critical effect	Increased mortality, reduced body weight, body weight gain, food consumption, increased abortions, reduced fetal weight
Lowest relevant maternal NOAEL	20 mg/kg bw per day (rat)
Lowest relevant embryo/fetal NOAEL	50 mg/kg bw per day (rabbit)
Neurotoxicity	
Acute neurotoxicity NOAEL	>2000 mg/kg bw, highest dose tested (rat)
Subchronic neurotoxicity NOAEL	No evidence from routine studies
Developmental neurotoxicity NOAEL	No data
Other toxicological studies	
Immunotoxicity	No evidence from routine studies
Studies on toxicologically relevant metabolites	
AP	Acute oral LD_{50}: >300 <2000 mg/kg bw (rat) Not genotoxic (Ames negative)
AP-2	Acute oral LD_{50}: >300 <2000 mg/kg bw (rat) 28-day NOAEL: 37 mg/kg bw per day (rat) Not genotoxic (Ames negative)
AP-4-glucuronide/AP-1-OH-glucuronide	No studies
AP-8	No studies
AY	Acute oral LD_{50}: >300 <2000 mg/kg bw (rat) 28-day NOAEL: 318 mg/kg bw per day (rat) 90-day NOAEL: 160 mg/kg bw per day (rat) Not genotoxic (Ames positive, in vivo micronucleus negative, in vivo transgenic rodent assay negative)
AY-glucuronide	No studies
AY-1	Acute oral LD_{50}: >2000 mg/kg bw (rat) Ames positive, in vivo micronucleus, negative
AY-1-glucuronide	Not genotoxic (Ames negative)
AY-5	Acute oral LD_{50}: >2000 mg/kg bw (rat) Not genotoxic (Ames negative)
AH	Acute oral LD_{50}: >5000 mg/kg bw (rat) Not genotoxic (Ames negative)
Microbiological data	No data
Human data	No clinical cases or poisoning incidents have been recorded

Notes:
[a] Unlikely to pose a carcinogenic risk to humans via exposure from the diet.

Table 5.3.4 Summary

	Value	Study	Safety factor
ADI	0–0.1 mg/kg bw[a]	Overall NOAEL from the 90-day and 52-week dog studies	100
ARfD	Unnecessary	–	–

Notes:
[a] Applies to acynonapyr, AP-2, AP-4-gluc/AP-1-OH-gluc, AY, AY-gluc, AY-1 and AY-1-gluc.

5.3.2 Residue and analytical aspects

Acynonapyr (ISO name), an acaricide (miticide), was scheduled at the 54th Session of the CCPR (2023) for evaluation as a new compound by the 2024 JMPR for toxicology and residues.

The meeting did not have enough time to conclude on the residue definitions and decided to postpone the evaluation to the 2025 JMPR to enable a well thought-out and widely supported evaluation.

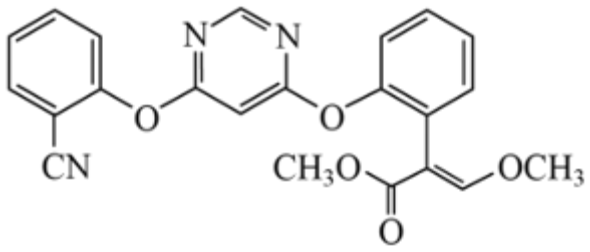
5.4 Azoxystrobin (T, R)

5.4.1 Toxicology

Azoxystrobin is the ISO-approved common name for methyl (E)-2-{2-[6-(2-cyanophenoxy)pyrimidin-4-yloxy]phenyl}-3-methoxyacrylate (IUPAC), Chemical Abstracts Service number 131860-33-8. Azoxystrobin is a β-methacrylate compound that is structurally related to the naturally occurring strobilurins, which are compounds derived from some fungal species. Azoxystrobin is a broad-spectrum, systemic fungicide that acts by inhibiting electron transport in pathogenic fungi. It protects against the fungal diseases caused by Ascomycota, Deuteromycota, Basidiomycota and Oomycota groups.

Azoxystrobin was evaluated previously by the FAO/WHO Joint Meeting on Pesticide Residues (JMPR) in 2008. The meeting established an acceptable daily intake (ADI) of 0–0.2 mg/kg bw based on a no-observed-adverse-effect level (NOAEL) of 300 ppm (equal to 18.2 mg/kg bw per day) in a two-year study of carcinogenicity in rats, identified on the basis of reduced body weight, food consumption and food efficiency, and bile duct lesions seen at 750 ppm (equal to 34 mg/kg bw per day) and using a safety factor of 100. No acute reference dose (ARfD) was considered necessary. It was reviewed by the present meeting due to a request from the Codex Committee on Pesticide Residues (CCPR) for additional maximum residue limits (MRLs) and, in accordance with meeting policy that any new information that may lower the toxicological end-points of the risk assessment must be submitted, newly supplied studies were evaluated by the present meeting. No additional information from a literature search was identified that complemented the toxicological information submitted for the current assessment. All pivotal studies with azoxystrobin were certified as complying with good laboratory practice.

Figure 5.4.1 Chemical structure of azoxystrobin



Biochemical aspects

In an in vitro comparative metabolism study, [*pyrimidinyl-5*-^{14}C], [*cyanophenyl-U*-^{14}C] and [*acrylphenyl-U*-^{14}C]azoxystrobin (10 µM) were incubated with liver microsomes from mice, rats, rabbits, dogs or male and female humans for 0, 10, 30 or 60 minutes. Azoxystrobin was extensively metabolized without significant qualitative differences between species.

Toxicological data

In a two-generation reproductive toxicity study in rats, azoxystrobin was administered at dietary concentrations of 0 ppm, 150 ppm, 500 ppm or 1500 ppm (equal to 0 mg/kg bw, 10.3 mg/kg bw, 29.3 mg/kg bw and 87.4 mg/kg bw per day) for males, and 0 ppm, 150/75 ppm, 500/250 ppm or 1500/750 ppm (equal to 0 mg/kg bw, 14.5 mg/kg bw, 44.9 mg/kg bw and 119 mg/kg bw per day) for females. Dietary concentrations were reduced during gestation and lactation to reach a target achieved intake roughly equal to the premating intake. In addition to the guideline parameters investigated, the bile ducts were examined histopathologically in all adult male animals and in the control and high-dose females.

No parental NOAEL could be identified, because epithelial erosion of the bile ducts in F0 and F1 males and fibrosis of the bile ducts in F1 males were observed at the lowest-observed-adverse-effect level (LOAEL) of 10.3 mg/kg bw per day, the lowest dose tested. The reproductive NOAEL was 87.4 mg/kg bw per day, the highest dose tested. The offspring NOAEL was 29.3 mg/kg bw per day, based on decreased postweaning body weights at 87.4 mg/kg bw per day.

Based on benchmark dose analysis of the bile duct changes, the critical end-point for systemic toxicity was bile duct erosion, with a lower confidence limit on the benchmark dose for a 10 percent response ($BMDL_{10}$) of 2.9 mg/kg bw per day in the F0 generation.

In 2008 JMPR evaluated an earlier two-generation reproductive toxicity study of azoxystrobin in rats. The NOAEL for parental systemic toxicity was 300 ppm (equal to 32.3 mg/kg bw per day) on the basis of reduced adjusted body weight, food consumption, food utilization, and an increase in liver weights and the frequency of histopathological findings in the liver (males only) at 1500 ppm (equal to 165.4 mg/kg bw per day). The NOAEL for reproductive toxicity was 1500 ppm (equal to 165.4 mg/kg bw per day), the highest dose tested. The NOAEL for offspring toxicity was 300 ppm (equal to 32.3 mg/kg bw per day) on the basis of a decrease in pup body weight, and a decrease in adjusted mean liver weight, observed in both generations at 1500 ppm (equal to 165.4 mg/kg bw per day).

The overall NOAEL for offspring toxicity was 32.3 mg/kg bw per day, based on delayed preputial separation secondary to decreased postweaning body weights at the LOAEL of 87.4 mg/kg bw per day.

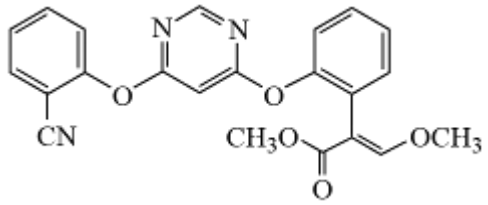
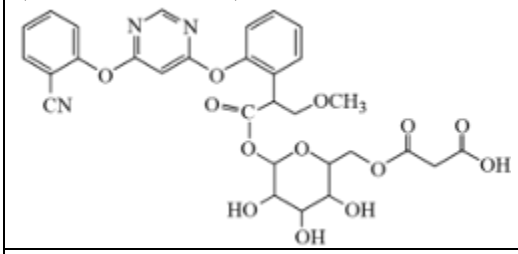
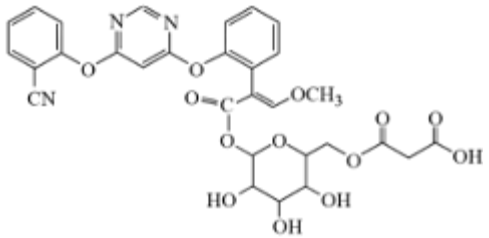
The overall NOAEL for reproductive toxicity was 165 mg/kg bw per day, the highest dose tested in both studies.

Studies focussing on androgen and steroidogenesis activity were provided and these yielded negative results.

Toxicological data on metabolites and/or degradates

A toxicological evaluation of the following metabolites was performed. Table 5.4.1 shows an overall summary of the toxicological characterization of the metabolites requested for consideration in the residue definition.

Table 5.4.1 Summary overview of toxicological characterization of plant/livestock metabolites

Compound, code and structure	Major rat metabolite (>10%AD)	Genotoxicity assessment (data, QSAR, read-across)	General toxicity	Reference value for dietary risk assessment
Azoxystrobin (ICIA5504) 	Parent	Not genotoxic (data)	Full dataset	ADI: 0–0.003 mg/kg bw ARfD: unnecessary
SYN552684 (conjugate of R405671) 	No	Not genotoxic as similar to parent	Not more toxic than parent due to similarity	Covered by parent
SYN552685 (conjugate of azoxystrobin acid) 	No	Not genotoxic as conjugate of metabolite covered by parent	Not more toxic than parent as conjugate of metabolite covered by parent	Covered by parent

Note: The meeting concluded that metabolites SYN552684 and SYN552685 are toxicologically relevant and covered by the parent.

Microbiological aspects

No experimental data were submitted by the sponsor to address the possible impact of azoxystrobin residues on the human intestinal microbiome.

Human data

No information was provided on the health of workers involved in the manufacture or use of azoxystrobin.

Toxicological evaluation

The current meeting established an ADI of 0–0.03 mg/kg bw per day, based on the $BMDL_{10}$ of 2.9 mg/kg bw per day in the two-generation reproductive toxicity study in the rat, and using a safety factor of 100. The meeting withdrew the ADI established by the 2008 meeting. The new data did not affect the conclusion of JMPR 2008 that it was unnecessary to establish an ARfD.

A toxicological monograph addendum was prepared.

Table 5.4.2 Levels relevant to risk assessment of azoxystrobin (addendum)

Species	Study	Effect	NOAEL	LOAEL
Rat	Two-generation study of reproductive toxicity[a, b]	Reproductive toxicity	165 mg/kg bw per day[c]	–
		Parental toxicity	2.9 mg/kg bw per day[d]	–
		Offspring toxicity	32.3 mg/kg bw per day	87.4 mg/kg bw per day

Notes:
[a] Dietary administration.
[b] Two or more studies combined.
[c] Highest dose tested.
[d] $BMDL_{10}$.

Acceptable daily intake (ADI) for azoxystrobin, applies also to SYN552684 and SYN552685 expressed as azoxystrobin:

0–0.03 mg/kg bw

An acute reference dose (ARfD) for azoxystrobin:

Unnecessary

Information that would be useful for the continued evaluation of the compound

Results from epidemiological, occupational health and other such observational studies of human exposure. Information about the effects of azoxystrobin on the human intestinal microbiome.

Table 5.4.3 Critical end-points for setting guidance values for exposure to azoxystrobin (addendum)

Reproductive toxicity	
Target/critical effect	Bile duct erosion in male adults
Relevant parental $BMDL_{10}$	2.9 mg/kg bw per day (rat)
Lowest relevant offspring NOAEL	32.3 mg/kg bw per day (rat)
Lowest relevant reproductive NOAEL	165 mg/kg bw per day (rat) highest dose tested
Studies on toxicologically relevant metabolites	No relevant data submitted
Microbiological data	No relevant data submitted
Human data	No data

Table 5.4.4 Summary

	Value	Study	Safety factor
ADI	0–0.03 mg/kg bw[a]	Two-generation reproductive toxicity study	100
ARfD	Unnecessary[a]		

Note:
[a] Applies to azoxystrobin, SYN552684 and SYN552685 expressed as azoxystrobin.

5.4.2 Residue and analytical aspects

Azoxystrobin was first evaluated for toxicology and residues by JMPR in 2008 and for residues only in 2011, 2012, 2013, 2017, 2019 extra and 2022. The current meeting reconsidered the ADI established in 2008 and established a revised ADI of 0–0.03 mg/kg bw. The meeting also confirmed that an ARfD was unnecessary.

The residue definition for compliance with the MRL and for dietary risk assessment for plant and animal commodities is azoxystrobin. The residue is fat-soluble.

Azoxystrobin was scheduled at the 54th session of the CCPR for the evaluation of additional MRLs in 2024. The current meeting received additional analytical methods, storage stability data, processing data, rotational crop, GAP information and residue trial data from uses on avocado, pineapple, melons, watermelons, sweet potatoes and hops.

Environmental fate

Confined rotational crop studies

In the 2008 JMPR meeting, three greenhouse confined rotation studies were submitted. The meeting concluded that it was difficult to assess the uptake of rotational crops (such as cereals), from soil under realistic conditions and noted that the greenhouse confined studies were conducted at an exaggerated application rate. The total radioactive residues (TRR) in the soil declined rapidly, and the azoxystrobin residues resulting from direct applications on the rotational crops were significantly higher than those found (even at the shortest plant back interval of 30 days) in the confined rotational studies resulting from the uptake from the treated soil (2008 JMPR). The current meeting received additional field rotational crops studies.

Field rotational crop studies

The meeting received nine field rotational crop studies. Residues of azoxystrobin and metabolite R230310 (as to assess photocatalytic degradation) were determined in all studies. In four studies the following dietary metabolites were also investigated: R219277, R234886 (and its O-glucoside and O malonyl glucoside conjugates SYN552246 and SYN552685, respectively), R405287, SYN552014 and R405671 (O-glucoside and O malonyl glucoside conjugates SYN552247 and SYN552684, respectively).

Three of the studies were conducted in the United States of America, where azoxystrobin was applied to wheat, cucumber and lettuce at rates of 2 × 448 g ai/ha (max. rate: 896 g ai/ha), 7–8 × 224 g ai/ha (max. rate: 1792 g ai/ha), and 6 × 373 g ai/ha (max. rate: 2238 g ai/ha), respectively. These rates cover the maximum seasonal rate of azoxystrobin to the relevant uses in this submission (melon and watermelon of 600 g ai/ha/season).

The magnitude of azoxystrobin and azoxystrobin Z isomer residues were investigated in succeeding crops (lettuce, mustard greens, turnip, radish, garden beet, wheat and millet) sown at two to three plant-back intervals (ranging from 29 to 60 days) following application of the active substance. Azoxystrobin residues

were below the LOQ (0.01 mg/kg) in all mature crop samples from all plant back intervals (PBIs) with exception of lettuce, millet forage and straw where maximum residues were 0.02 mg/kg, 0.21 mg/kg and 0.19 mg/kg, respectively. Residues of azoxystrobin Z isomer were <0.01 in all samples analysed.

Four rotational crop field studies were conducted in Europe where azoxystrobin was applied to bare soil at 1200 g/ha. The magnitude of azoxystrobin, azoxystrobin Z isomer, R234886, R405671, R219277, R405287 and SYN552014 residues were investigated in succeeding crops (lettuce, carrot, and barley) sown at three plant-back intervals (30, 120, 270–365 days) following application of the active substance. Azoxystrobin residues were <0.01 mg/kg in barley grain and mature lettuce, up to 0.04 mg/kg in barley straw and up to 0.02 mg/kg in carrot root, and immature lettuce across all PBIs. Residues of azoxystrobin Z isomer, R405671, R219277, R405287 and SYN552014 were <0.01 mg/kg in edible commodities after PBIs of 30, 120 and 365 days. Residues of R234886 were found up to 0.03 mg/kg in barley straw at the 120-day PBI only; residues in other commodities and PBIs were <0.01 mg/kg.

Two additional limited rotational crop field trials have been conducted in Europe to permit quantification of the O-glucoside and O-malonyl glucoside conjugates of R234886 and R405671 as intact conjugates (SYN552246, SYN552247, SYN552684 and SYN552685) in succeeding crops. In these trials, residues were assessed in immature and mature lettuce, carrot root and tops, and barley forage, grain and straw, following application of azoxystrobin to bare soil at a nominal rate of 1200 g ai/ha. Residues of R234886 and R405671 aligned with those determined in the previous limited rotational crop field studies in Europe. Residues of SYN552247 were <0.01 mg/kg in all commodities in all samples analysed. Residues of SYN552246 were found up to 0.03 mg/kg in barley forage only at the 30 PBI, residues of SYN552684 were found up to 0.05 mg/kg in immature lettuce only at the 30-day PBI and residues of SYN552685 were found up to 0.07 mg/kg in immature lettuce at the 30 day PBI declining down to 0.02 mg/kg at the 120 PBI.

Summary of environmental fate

The 2008 JMPR concluded that the geomean DT_{50} for azoxystrobin in soil is 13 days, therefore soil plateau concentration does not need to be considered in the maximum soil concentration calculations. Residues of azoxystrobin in rotational crops ranged from <0.01 to 0.02 mg/kg in edible commodities, which are considered negligible compared to the residue levels found in the related primary crops (median of 0.28 mg/kg in lettuce and median of 0.23 mg/kg in root and tuber vegetables) as estimated by the 2008 JMPR meeting. Residues were up to 0.21 mg/kg in feed commodities, particularly millet forage, which are considered negligible compared to the residue levels found in the related primary crops (median of 1.6 mg/kg in sorghum forage) as estimated by the 2013 JMPR meeting.

Residues of metabolites were <0.01 mg/kg in edible and feed commodities, except for R234886, SYN552246, SYN552684 and SYN552685 that ranged from 0.03 to 0.07 mg/kg, which are also considered to have negligible impact on the total exposure from succeeding crops.

The meeting concluded that residues from rotational crops are low and their inclusion in the residue definition for compliance with MRL and dietary exposure is unnecessary.

Methods of analysis

Multiresidue analytical method DFG-S19 was evaluated by the 2008 JMPR for the determination of azoxystrobin residues in products of plant (high water, high acid, high oil, high starch, tea and spices) and

animal origin (milk, muscle, liver) and was considered adequate for monitoring azoxystrobin residues in samples of plant and animal origin.

An additional enforcement analytical method for the determination of azoxystrobin and azoxystrobin Z isomer in potatoes was submitted. After extraction with acetonitrile, the residues were determined by LC-MS/MS with an LOQ of 0.01 mg/kg (Method AGR/MOA/AZO-3).

For data gathering, the meeting received descriptions and validation data for method RAM 305/03 (already validated in 2008 JMPR) for the determination azoxystrobin in pineapple (peel and pulp), pineapple juice, melon (fruit, peel and pulp), sweet potatoes, dried hops, and potatoes. Residues were determined by LC-MS/MS with an LOQ of 0.01 mg/kg.

Validation studies for new methods for the determination of residues of metabolites R234886 (free and conjugated), R405671 (free and conjugated), R219277, SYN552014, R405287, SYN552246, SYN552685, SYN552247, SYN552684 in lettuce, carrot, barley grain, barley straw. Extraction of residues was conducted with acetonitrile or acetonitrile/water and a hydrolysis step (35 percent w/v ammonium hydroxide; 100 °C for 20–24 hours) was added for the complete hydrolysis of conjugates (for R234886 and R405671 only). Residues were determined by LC-MS/MS with an LOQ of 0.01 mg/kg.

Stability of residues in stored analytical samples

The commodities under investigation belong to the groups of high water (melon, watermelon), high oil (avocado, hops), high acid (pineapple), high starch (sweet potatoes) commodities. The 2008 meeting concluded that residues of azoxystrobin were stable at ≤–18 °C for at least 24 months in high water, high oil, high acid and high starch commodities.

The meeting received additional data on the stability of azoxystrobin, its Z isomer and metabolites R234886, R405671, R219277, SYN552014, R405287, SYN552246, SYN552685, SYN552247 and SYN552684 in high water, high oil, high protein, high starch and high acid commodities. The meeting concluded that:

- Residues of azoxystrobin were stable for at least 24 months in high water (tomatoes), high oil (oilseed rape), high protein (broad beans), high starch (potatoes, wheat), high acid (grape) and dry (barley straw) commodities.
- Residues of azoxystrobin Z isomer were stable for at least 24 months in high water (lettuce), high oil (oilseed rape), high protein (broad beans), and high acid (orange) commodities for at least 18 months in high starch (wheat) commodities and or at least 5.35 months for at least 5.5 months in high starch (potatoes).
- Residues of R234886, R405671, R219277, SYN552014 and R405287 were stable for at least 21 months in high water (lettuce), high starch (wheat grain, carrots) and dry (wheat straw) commodities.
- Residues of SYN552246, SYN552685, SYN552247 and SYN552684 were stable for at least 15 months in high water (wheat straw, lettuce), high starch (wheat grain, carrots) and dry (wheat straw) commodities.

The meeting confirmed the previous findings and concluded that the storage stability data are adequate to support the storage durations in studies provided to the current meeting.

Results of supervised residue trials on crops

Avocado

Two GAPs were available for avocado from Australia. The first is a foliar spray, applied up to three times at 20 g ai/hL, 14-day retreatment interval and a 7-day PHI. The second is as a dip, drench/flood spray applied post-harvest, with one application at 60 g ai/hL.

A total of 10 trials were available with a combined treatment of both GAPs, involving three foliar applications at 15–20 g ai/hL, a 7-day PHI followed by a post-harvest treatment at 60 g ai/hL. The meeting determined that the combined treatment represented the critical GAP.

Residues of azoxystrobin in whole avocado (calculated from relative portions of flesh and peel). were (n = 10): 0.49 mg/kg, 0.58 mg/kg, 0.69 mg/kg, 0.73 mg/kg, 0.77 mg/kg, 0.80 mg/kg, 0.81 mg/kg, 0.87 mg/kg, 0.92 mg/kg and 0.93 mg/kg.

Residues of azoxystrobin in avocado pulp were (n = 10): (3) 0.040 mg/kg, (2) 0.050 mg/kg, (3) 0.060 mg/kg, 0.070 mg/kg and (2) 0.090 mg/kg.

The meeting estimated a maximum residue level of 1.5 mg/kg (calculated using the mean residue + 4 SD method appropriate for post-harvest uses) and an STMR of 0.06 mg/kg (based on pulp) for azoxystrobin in avocado.

Pineapple

The critical GAP for pineapple from Panama is post-harvest treatment one application at 30 g ai/hL (60 tonnes of fruits in 1800 L of water, wax containing formulation) and 0 days withholding period.

The meeting received 8 post-harvest trials conducted in Costa Rica and Mexico matching this GAP. In each trial, two replicates were available, fruits were treated with a solution that was prepared with 11 percent wax and without wax. The highest residue for each replicate trial was selected for the calculations.

Residues of azoxystrobin in whole pineapple fruits were (n = 8): 0.76 mg/kg, 0.81 mg/kg, 0.89 mg/kg, 0.9 mg/kg, 0.93 mg/kg, 0.95 mg/kg, 1.08 mg/kg and 1.45 mg/kg. Based on the available dataset, a median of 0.92 mg/kg was estimated.

Residues of azoxystrobin in pineapple pulp were (n = 8): (7) 0.01 mg/kg and 0.03 mg/kg.

The meeting estimated a maximum residue level of 2 mg/kg (calculated using the mean residue + 4 SD method appropriate for post-harvest uses) and an STMR of 0.01 mg/kg (based on pulp) for azoxystrobin in pineapple.

Melons and watermelons

Melons were previously evaluated in the 2008 JMPR with a GAP for azoxystrobin on cucurbits in the United States of America with a maximum of 6 foliar sprays of up to 0.28 kg ai/ha, with a 1-day PHI and the meeting estimated a maximum residue level for azoxystrobin in cucurbits of 1 mg/kg and an STMR value

of 0.17 mg/kg. Based on the pulp data for melon, the meeting estimated an STMR value of 0.02 mg/kg for cucurbits with inedible peel.

The current meeting received two GAPs from Brazil for melon and watermelons. One with five foliar applications at 120 (watermelon) or 128 (melon) g ai/kg, 7 days interval and 2 days PHI, and a one dip, drench/flood spray applied post-harvest at 120 g ai/hL (dipping for 2 minutes).

The meeting received 8 trials combining both Brazilian GAPs, with six foliar applications at 80 g ai/ha, a 7-day PHI followed by a post-harvest spray treatment, dip treatment or peduncle treatment at 120 g ai/hL in different parallel replicate trials. The highest residue for each replicate was selected for the calculations.

Residues of azoxystrobin in whole melon fruits were (n = 8): 0.39 mg/kg, 0.49 mg/kg, 0.61 mg/kg, 0.99 mg/kg, 1.15 mg/kg, 2.03 mg/kg, 2.42 mg/kg and 2.67 mg/kg.

Residues of azoxystrobin in melon pulp were (n = 8): (2) <0.01 mg/kg, (4) 0.01 mg/kg and (2) 0.030 mg/kg.

The meeting noted that trials from Brazil involving foliar application gave residues ranging from <0.01 to 0.04 mg/kg, which are much lower than the residues from the post-harvest treatment.

Based on the post-harvest trials, the meeting estimated a maximum residue level of 5 mg/kg (mean residue + 4 SD method appropriate for post-harvest uses) for azoxystrobin in melons.

As the use pattern covers watermelon, the meeting noted that melons are the representative commodity for the Subgroup of fruiting vegetables, Cucurbits – Cucumbers and Summer squashes and decided to extrapolate the estimated maximum residue level from melon to watermelon.

Based on the 2008 JMPR recommendation, the meeting proposed a maximum residue level of 1 mg/kg for the Group of fruiting vegetables, Cucurbits, excluding melons and watermelons.

The meeting withdrawn its previous recommendation for azoxystrobin for the Group of fruiting vegetables.

The previous STMR for cucurbits with inedible peel (0.02 mg/kg; based on pulp) resulting from the foliar application (2008 JMPR) is higher than the one derived from post-harvest GAP (0.01 mg/kg; based on pulp).

The meeting confirms its previous estimations of an STMR of 0.17 mg/kg for cucurbits with edible peel and an STMR of 0.02 mg/kg (based on pulp) for cucurbits with inedible peel.

Sweet potatoes

The GAP for sweet potatoes in the United States of America is a post-harvest treatment with one application at a maximum rate of 4 g ai for 907 kg tubers and 0 days withholding period.

The meeting received four trials in sweet potatoes conducted in the United States of America matching the GAP.

Residues of azoxystrobin in sweet potato roots were (n = 4): 0.26 mg/kg, 0.45 mg/kg, 0.51 mg/kg and 2.02 mg/kg.

The meeting was unable to estimate a maximum residue level on the sweet potatoes due to insufficient number of trials and the high variability of the values from the post-harvest trials.

Hops, dry

Hops were previously evaluated in the 2008 JMPR, with a GAP from Germany which involves applications at a rate of 0.19 kg ai/ha up to BBCH 37, at 0.25 kg ai/ha up to BBCH 55, and at 0.4 kg ai/ha above BBCH 55, with a total seasonal rate of 0.8 kg ai/ha and a PHI of 28 days. The meeting estimated a maximum residue level of 30 mg/kg.

The current meeting received a new GAP from Germany for hops that involves two applications at a maximum rate of 0.4 kg ai/ha at BBCH 31–89, 8-day retreatment interval and 28-day PHI.

The meeting received 7 independent supervised trials conducted in Germany, France and the United Kingdom of Great Britain and Northern Ireland matching the new GAP. Residues of azoxystrobin in hops, dry cones were (n = 7): 1.13 mg/kg, 5.25 mg/kg, 5.86 mg/kg, 7.03 mg/kg, 8.37 mg/kg, 17.3 mg/kg and 29.2 mg/kg.

A total of eight trials on hops were submitted to the 2008 JMPR. Four trials were carried out in the United Kingdom of Great Britain and Northern Ireland using six applications of 0.4 kg ai/ha and a PHI of 28 days or two applications at 0.20 kg ai/ha, followed by two applications at 0.30 kg ai/ha and two applications at 0.40 kg ai/ha, with a PHI of 27–28 days. Azoxystrobin residues were (n = 4) 0.83 mg/kg, 1.1 mg/kg, 1.3 mg/kg, and 2.2 mg/kg.

In four trials conducted in Germany using two applications at 0.23–0.25 kg ai/ha, followed by two applications at 0.30–0.36 kg ai/ha and two applications at 0.40–0.46 kg ai/ha, with a PHI of 26–28 days, giving azoxystrobin residues of (n = 4): 5.7 mg/kg, 11 (2) mg/kg, and 12 mg/kg.

Since the last applications are the ones that drive the residues, the meeting decided to consider all trials to estimate a maximum residue level and a STMR. The meeting noted that only the four German trials evaluated in the 2008 JMPR and the seven new trials are not statistically different according to the Mann-Whitney U-test and decided to combine these dataset.

Residues of azoxystrobin in hops, dry cones in ranked order, were (n = 11): 1.1 mg/kg, 5.2 mg/kg, 5.7 mg/kg, 5.9 mg/kg, 7.03 mg/kg, 8.4 mg/kg, (2) 11 mg/kg, 12 mg/kg, 17.3 mg/kg and 29.2 mg/kg.

The meeting estimated a maximum residue level of 40 mg/kg to replace its previous recommendation and an STMR of 8.4 mg/kg for azoxystrobin in hops, dried.

Fate of residues during processing

The meeting received data of azoxystrobin from processing studies in citrus fruits (4 studies), pineapples (2 studies) and hops (3 studies). Processing factors (PF), STMR-P and median (for dietary burden) estimates for citrus fruits, pineapple and dry hop processed commodities are summarized in Table 5.4.5.

Table 5.4.5 Processing factors (PF) and residue estimates for azoxystrobin

Raw commodity	STMR/ median	Processed commodity	PF	Median/best estimate PF	STMR-P/ median-P
Pineapple	0.92	Pineapple juice	<0.024; <0.031	<0.024	0.022
Hops, dry	8.4	Hops, Beer	0.002; 0.003; 0.003	0.003	0.025
Citrus fruits	4.9[a]	pulp	Orange: 0.36; 0.08, 0.08, 0.15, 0.1, 0.12, 0.12, 0.14, 0.21, 0.033; 0.048; 0.053	0.098	0.48
			Mandarin: 0.09; 0.05; 0.06; 0.08, 0.06, 0.04, 0.08, 0.07		
			Grapefruit: <0.043, <0.091		
		Orange juice (unpasteurized)	<0.008, <0.011, <0.003, <0.007, <0.08[b]	<0.003	0.015
		Orange wet pomace	<0.008, <0.003	<0.003	0.015
		Orange dry pomace	1.26, 0.69	0.98	4.78
		Orange canned juice (pasteurized)	<0.008, <0.003	<0.003	0.015
		Marmalade	<0.011, 0.02	0.016	0.076

Note:
[a] From the 2008 JMPR.

Residues in animal commodities

Farm animal feeding studies

Estimated maximum and mean dietary burdens of livestock and animal commodities maximum residue levels

Dietary burdens were calculated for beef cattle, dairy cattle, broilers and laying poultry based on feed items evaluated by the JMPR. The dietary burdens, estimated using the 2018 OECD Feed diets listed in Appendix XIV Electronic attachments to the 2016 Edition of the FAO Manual, are presented in Annex 6.

Of the commodities evaluated by the current meeting, only pineapple, need consideration with respect to livestock diets. Therefore, refined calculations were performed including pineapple pulp. Results of the estimated maximum and mean dietary burdens are summarized in Table 5.4.6.

Table 5.4.6 Estimated maximum and mean dietary burdens of farm animals (2022/2024)

	Livestock dietary burden, azoxystrobin, ppm of dry matter diet (2022/2024)							
	United States–Canada		Australia		European Union		Japan	
	Max.	Mean	Max.	Mean	Max.	Mean	Max.	Mean
Beef cattle	25.4/25.4	15.7/15.7	83.1/83.1[a]	50.9/50.9[c]	63.3/63.3	25.8/25.8	6.9/6.9	1.8/1.8
Dairy cattle	45.5/45.5	14/14	51.2/51.2[b]	22.2/22.2	81.2/81.2	31/31[d]	18.6/18.6	3.5/3.5
Poultry – broiler	1.7/1.7	1.7/1.7	1.7/1.7	1.7/1.7	5.7/5.7	5/5	1.4/1.4	1.4/1.4
Poultry – layer	1.7/1.7	1.7/1.7	1.7/1.7	1.7/1.7	25.4/25.4[e]	11.8/11.8[f]	1.4/1.4	1.4/1.4

Notes:
[a] Highest maximum beef or dairy cattle burden suitable for MRL estimates for mammalian tissues.
[b] Highest maximum dairy cattle burden suitable for MRL estimates for milk.
[c] Highest mean beef or dairy cattle burden suitable for STMR estimates for mammalian tissues.
[d] Highest mean dairy cattle burden suitable for STMR estimates for milk.
[e] Highest maximum poultry broiler or layer burden suitable for MRL estimates for poultry eggs and tissues.
[f] Highest mean poultry broiler or layer burden suitable for STMR estimates for poultry eggs and tissues.

The meeting noted that the new estimations made by the present meeting (median of 4.48 mg/kg for citrus pulp, dried and of 0.01 mg/kg for pineapple process residue, same as pulp) did not result in a significant change of the dietary burdens of farm animals conducted by the 2008 JMPR and decided not recalculate residues in animal commodities or revise its previous recommendations.

Following the update of the Codex Classification (General consideration 2.4), the meeting estimated a maximum residue level of 0.01 mg/kg and a STMR of 0.01 mg/kg for the Group of muscle (from mammals other than marine mammals), a maximum residue level of 0.05 mg/kg and a STMR of 0.015 mg/kg for the Group of mammalian fats (except milk fats), a maximum residue level of 0.07 mg/kg and a STMR of 0.02 mg/kg for the Group of edible offal (mammalian), maximum residue level of 0.01 mg/kg and a STMR of 0.01 mg/kg for the Group of milks, and a maximum residue level of 0.01* mg/kg and a STMR of 0 for the Group of avian muscle, Group of avian fats, Group of avian, edible offal of and Group of eggs.

The meeting withdraw its previous recommendations of maximum residue level of 0.05 mg/kg for meat (from mammals other than marine mammals), of 0.07 mg/kg for edible offal (mammalian), 0.01 mg/kg for milks, of 0.03 mg/kg for milk fats, and of 0.01* mg/kg for poultry meat, poultry fat, poultry edible offal and eggs.

Recommendations

On the basis of the data from supervised trials, the meeting concluded that the residue levels listed in Table 5.4.7 are suitable for recommending maximum residue limits and for dietary exposure.

The definition of the residue for compliance with the MRL and for dietary risk assessment for plant and animal commodities: azoxystrobin.

The residue is fat-soluble.

Table 5.4.7 Residue levels suitable for recommending maximum residue limits and exposure assessment

CCN	Commodity name	Recommended maximum residue level (mg/kg)		STMR or STMR-P mg/kg
		New	Previous	
FI 0326	Avocado	1.5	–	0.06 (pulp)
MO 0105	Edible offal (mammalian)	W	0.07	–
PE 0112	Eggs	W	0.01	–
PF 0111	Group of avian fats	0.01*	–	0
PM 0110	Group of avian muscle	0.01*	–	0
PO 0111	Group of avian, edible offal of	0.01*	–	0
FC 0001	Group of citrus Fruit	–	–	0.49 (pulp)
MO 0105	Group of edible offal (mammalian)	0.07	–	0.02

CCN	Commodity name	Recommended maximum residue level (mg/kg)		STMR or STMR-P mg/kg
		New	Previous	
PE 0112	Group of eggs	0.01*	–	0
VC 0045	Group of fruiting vegetables, Cucurbits	W	1	–
VC 0045	Group of fruiting vegetables, Cucurbits, expect melon and watermelon	1	–	0.17 (whole fruit) 0.02 (pulp)
MF 0100	Group of mammalian fats (except milk fats)	0.05	–	0.015
ML 0106	Group of milks, milk fats	0.01	–	0.01
MM 0095	Group of muscle (from mammals other than marine mammals)	0.01	–	0.01
MU 1100	Hops, dried	40	30	8.4
–	Hops, beer	–	–	0.025
MM 0095	Meat (from mammals other than marine mammals)	W	0.05	–
VC 0046	Melon	5	–	0.02 (pulp)
ML 0106	Milks	W	0.01	–
FM 0106	Milk fats	W	0.03	–
JF 0001	Orange juice	–	–	0.015
FI 0353	Pineapple	2	–	0.01 (pulp)
JF 0341	Pineapple juice	–	–	0.022
PF 0111	Poultry fat	W	0.01*	–
PO 0111	Poultry liver	W	0.01*	–
PM 0110	Poultry meat	W	–	–
VC 0432	Watermelon	5	–	0.02 (pulp)

Dietary risk assessment

Long-term dietary exposure

The ADI for azoxystrobin is 0–0.03 mg/kg bw. The International Estimated Daily Intakes (IEDIs) for azoxystrobin were estimated for the 17 GEMS/Food Consumption Cluster Diets using the STMR or STMR-P values estimated by the previous and present JMPR. The results are shown in Annex 3 of the 2024 JMPR Report. The IEDIs ranged from 20 to 60 percent of the maximum ADI.

The meeting concluded that the long-term intake of residues of azoxystrobin from uses considered by the JMPR is unlikely to present a public health concern.

Acute dietary exposure

An ARfD for azoxystrobin is unnecessary. The meeting therefore concluded that the acute dietary exposure to residues of azoxystrobin from the uses considered is unlikely to present a public health concern.

5.5 Buprofezin (173) (R)

5.5.1 Residue and analytical aspects

Buprofezin is the ISO-approved name for (Z)-2-tert-butylimino-3-isopropyl-5-phenyl-1,3,5-thiadiazinan-4-one (IUPAC), CAS number 69327-76-0. Buprofezin is an insecticide that acts by the inhibition of chitin synthesis.

Buprofezin was first evaluated by the JMPR in 1991. It was evaluated under the Periodic Review Programme in 2008, when an ADI of 0–0.009 mg/kg bw and an ARfD of 0.5 mg/kg bw were established. Buprofezin was re-evaluated in 2009, 2012, 2013, 2014, 2016 and 2019. The residue definition for compliance with the MRL and dietary risk assessment for plant and animal commodities is buprofezin. The residue is not fat-soluble.

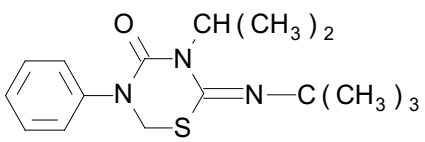
In 2019 a breakdown product of buprofezin, aniline, was assessed for toxicology and residues. Aniline can potentially be formed from residues of buprofezin in commodities which are subject to processing. The 2019 JMPR established an ADI for aniline of 0–0.02 mg/kg bw and an ARfD of 0.02 mg/kg bw.

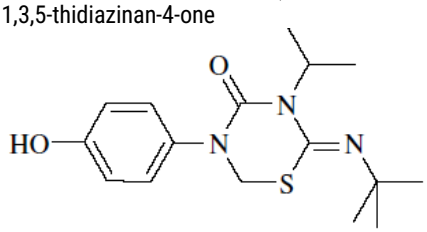
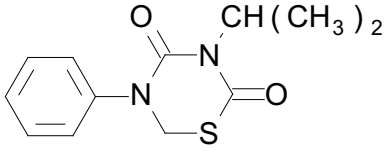
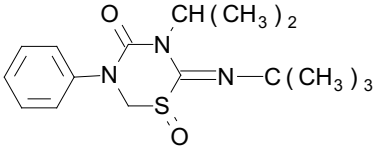
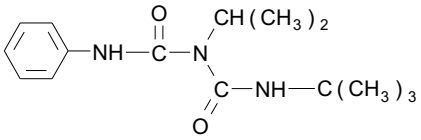
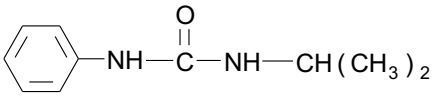
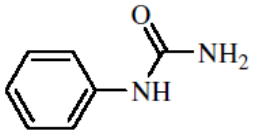
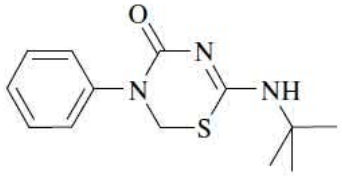
Information available to the 2019 meeting indicated that dietary exposure to aniline via buprofezin is minor compared to the estimated dietary exposure to buprofezin itself. Noting that the ADI for buprofezin is lower than that of aniline, the 2019 meeting concluded that the long-term dietary risk assessment for buprofezin adequately addresses long-term dietary risk to residues of aniline from the use of buprofezin. The estimated acute dietary risk to residues of aniline coming from buprofezin in processed commodities of orange, apple, grape and olive was zero percent of the aniline ARfD for both the general population and for children. Noting that aniline is not specific to buprofezin breakdown and exposure may come from many sources, the 2019 meeting recommended that FAO/WHO evaluate aniline as an environmental contaminant. Aniline will therefore not be assessed by the current meeting.

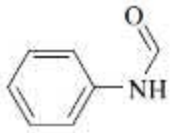
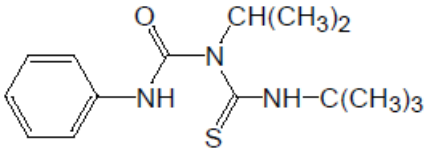
Buprofezin was scheduled at the 54th Session of the CCPR for the evaluation of additional uses by the 2024 JMPR. Metabolism, use pattern, analytical methods, storage stability, supervised residue trials and processing on rice were submitted to the present meeting by the government of the Republic of Korea. The meeting also evaluated the data on environmental fate in water/sediment systems that were submitted to the 2008 JMPR as they are relevant to paddy rice.

Table 5.5.1 shows the compounds that are referred to in this appraisal.

Table 5.5.1 Compounds referred to in this appraisal

Abbreviation	Name, structure	Found in
–	Buprofezin IUPAC: 2-tert-butylimino-3-isopropyl-5-phenyl-1,3,5-F thiadiazinan-4-one 	Rat, cattle, hen, tomato, lemon, lettuce, rice, cotton, processing, hydrolysis and photolysis in water, water-sediment
BF-2	4-hydroxybuprofezin	Rat, cattle, rice, photolysis in water

Abbreviation	Name, structure	Found in
	IUPAC: 2-tert-butylimino-5-(4-hydroxyphenyl)-3-isopropyl-1,3,5-thidiazinan-4-one 	
BF-9	Dione metabolite IUPAC: 3-isopropyl-5-phenyl-1,3,5-thiadiazinan-2,4-dione 	Rat, hen, lemon, lettuce, cotton, photolysis in water, water-sediment
BF-10	Buprofezin sulfoxide IUPAC: 2-tert-butylimino-3-isopropyl-5-phenyl-1,3,5-thiadiazinan-4-one 1-oxide 	Rat, photolysis in water, water-sediment
BF-11	IUPAC: 1-tert-butyl-3-isopropyl-5-phenylbiuret 	Rat, rice, processing, hydrolysis in water at pH5, photolysis in water; water-sediment
BF 12	Isopropylphenylurea IUPAC: 1-isopropyl-3-phenylurea 	Rat, cattle, hen, lemon, lettuce, cotton, processing, hydrolysis in water at pH 5, photolysis in water; water-sediment
BF-16	N-phenylurea IUPAC: phenylurea 	Photolysis in water
BF-19	Des-isopropyl buprofezin IUPAC: 6-tert-butylamino-2,3-dihydro-3-phenyl-4H-1,3,5-thiadiazin-4-one 	Photolysis in water
BF 21	IUPAC: formanilide	Photolysis in water

Abbreviation	Name, structure	Found in
		
BF-25	Thiobiuret- metabolite IUPAC: 1-tert-butyl-3-isopropyl-5-phenyl-2-thiobiuret 	Processing, hydrolysis in water at pH 5, photolysis in water

Plant metabolism

The 2008 meeting received metabolism studies for foliar and topical treatments on fruit (greenhouse-grown lemon) and fruiting vegetables (greenhouse-grown tomato) and foliar treatments on leafy vegetables (field-grown lettuce) and oilseeds (field-grown cotton). The current meeting received additional metabolism studies on rice.

The metabolic fate of [phenyl-(U)-14C]-buprofezin was studied in rice plants (variety Nihonbare) grown in pots in a glasshouse, representing upland-grown rice. Rice plants were treated with a single foliar application, equivalent to 832 g ai/ha, using a WP type formulation. Half of the rice plants were harvested at yellow ripening stage at DALT 21 (days after last treatment). The other half of the rice plants received a second foliar application (interval 23 days), equivalent to 832 g ai/ha and were harvested at maturity at DALT 7 days and air dried for 7 days in a glasshouse.

Rice plants were separated into forage/straw and spikes, which were rinsed twice with acetonitrile. Spikes were separated into grains and spike stems/chaff. Samples were extracted with methanol and methanol/water and analysed by 2D-TLC and HPLC. Radioactivity staying at the origin of the 2D-TLC and exceeding 0.05 mg/kg eq, was isolated and treated with beta-glucosidase and analysed by 2D-TLC.

Total radioactive residues (TRR) in husked rice and straw were 0.17 mg/kg eq and 4.72 mg/kg eq, respectively and 56.9 percent and 66.0 percent TRR, respectively, were extracted with solvents. The major residue in husked rice and straw was unchanged buprofezin, accounting for 38.6 percent TRR (0.06 mg/kg eq) and 37.7 percent TRR (1.80 mg/kg eq), respectively. The only identified metabolite in husked rice is BF-2 (4-hydroxybuprofezin) at 2.6 percent TRR (<0.005 mg/kg eq). In straw small amounts of BF-2, BF-2 glucosides, biuret (BF-11) and other minor compounds were found (each less than 5 percent TRR).

The unextracted solids in husked rice and straw comprised 43.1 percent TRR (0.07 mg/kg eq) and 34.0 percent TRR (1.60 mg/kg eq), respectively. Small amounts of radioactivity were liberated from the solids by Soxhlet extraction, acid extraction, cellulase treatment and acid hydrolysis. This suggests that a major part of the radioactivity was incorporated or tightly bound to macromolecules such as polysaccharides.

Total radioactive residues in rice grains and forage obtained at yellow ripening stage were 0.57 mg/kg eq and 2.15 mg/kg eq, respectively, and 69.6 percent and 70.7 percent TRR, respectively, were extracted with

solvents. The major radioactive residue in rice grains and forage was unchanged buprofezin, accounting for 45.8 percent TRR (0.26 mg/kg eq) and 28.6 percent TRR (0.62 mg/kg eq), respectively. Small amounts of BF-2, BF-2 glucosides, BF-11 and other minor compounds were also found (each less than 10 percent TRR). A qualitative difference of metabolite composition between the sampling stages was not observed.

Environmental fate in water/sediment systems

The current meeting evaluated residue degradation in water/sediment systems as these are relevant to decide on the suitability of the current residue definition for paddy rice.

The 2008 meeting received information on the hydrolysis and photolysis of ^{14}C-phenyl labelled buprofezin in sterile water. The 2008 meeting concluded that buprofezin was hydrolytically stable in sterile water at pH 7 and 9 but hydrolyses at pH 5 with a half-life of 51 days. The main hydrolysis products are BF-11, isopropylphenylurea (BF-12) and thiobiuret metabolite (BF-25). Buprofezin photolysis occurred with half-lives ranging from 33–140 days in sterile water after irradiation with light equivalent to 30 days of natural sunlight in summer. The major photolysis products were BF-11, BF-12, phenylurea (BF-16), formanilide (BF-21) and BF-25. Minor photodegradation products were des-isopropyl buprofezin (BF-19), buprofezin sulfoxide (BF-10) and BF-2.

The current meeting evaluated degradation of ^{14}C phenyl labelled buprofezin in two natural water/sediment systems. The meeting concluded that buprofezin was the major compound at all time-points up to 91 days. A half-life of 51.4 and 29.3 days was calculated for buprofezin in the silty clay and sandy sediment-water systems as a whole, respectively, using least squares linear regression analysis. The decline in the sandy system was biphasic and the half-life was calculated over the initial log linear phase of the concentration time/profile.

Several minor degradation products were detected, the most significant of those identified being BF-10 that accounted for up to 5.4 percent of the applied radioactivity in the silty clay system at 91 days and up to 12 percent in the sandy system at 56 days. The half-life of BF-10 was 139 days for the silty clay sediment-water system and 59 days for the sandy sediment-water system, respectively. Metabolites BF-9 (a dione metabolite), BF-11 and BF-12 appeared at levels up to 4.1 percent of the applied radioactivity at any interval.

Methods of analysis

The meeting received information on a LC-MS/MS method for buprofezin in rice commodities. Residues were extracted using acetonitrile and cleaned-up according to the QuEChERS method. The method was validated with an LOQ of 0.01 mg/kg in rice whole grain, husked rice, polished rice, rice hulls, cooked rice and rice cake.

The meeting concluded that the presented method was sufficiently validated and is suitable to quantify buprofezin in rice and processed rice commodities.

Stability of pesticide residues in stored analytical samples

The meeting received additional information on storage stability of buprofezin in various rice commodities demonstrating a storage stability of at least 113 days at –20 °C in rice grain, rice husked, rice polished, cooked rice and rice cake.

The meeting agreed that the demonstrated storage stability in rice grain, rice husked, and rice polished covered the residue sample storage intervals used in the field trials and processing studies considered by the current meeting.

Husked and polished rice were stored for 28–61 days at ambient conditions before being processed into cooked rice and rice cake. Husked and polished rice were stored for 237–606 days at 5 °C before being processed into instant cooked rice. As these storage conditions were not covered by the storage stability studies, and the husked and polished rice were not re-analysed just before cooking, the meeting decided not to derive processing factors for cooked rice commodities.

Definition of the residue

The residue definition for compliance with the MRL and dietary risk assessment for plant and animal commodities is buprofezin. This residue definition in plant commodities is based on metabolism studies in fruit (lemon), fruiting vegetables (tomato), leafy crops (lettuce) and oilseeds (cotton seed).

As paddy rice may take up metabolites from sediment/water systems, radio-labelled metabolism studies on paddy rice and radio-labelled degradation studies in water/sediment systems are needed to assess the appropriateness of the current residue definitions.

The metabolism study provided to the current JMPR is relevant to upland-grown rice. Radio-labelled studies in rice plants grown in pots in a greenhouse indicate that the major residue in husked rice is buprofezin, accounting for 38.6 percent TRR. Metabolism studies in paddy rice have not been submitted. However, radio-labelled degradation studies in water/sediment systems indicate that buprofezin is the major compound at all time-points of the study (up to 91 days). The meeting confirmed that the residue definition for enforcement should be buprofezin.

The metabolism study on upland-grown rice shows that the only metabolite identified in husked rice is BF-2 at 2.6 percent TRR (0.005 mg/kg eq) (i.e. 6.7 percent of the parent). Since this metabolite is found only at trace levels, it is not necessary to include it in the residue definition for dietary risk assessment.

The most significant of the minor degradation products found in water/sediment is buprofezin sulfoxide (BF-10) at up to 5.4 percent of the applied radioactivity in the silty clay system after 91 days and up to 12 percent in the sandy system after 56 days. Buprofezin sulfoxide was also found as minor degradation product in the photolysis studies in sterile water.

The presence or absence of buprofezin sulfoxide in paddy rice could however not be confirmed. The metabolite was not detected in the metabolism studies in lemon, tomato, lettuce and cotton and was not analysed for in the metabolism studies on upland-grown rice nor in the paddy rice field trials. Rotational crop studies were not available.

Buprofezin sulfoxide was found at low levels in the faeces of rats. However, the meeting could not find any information on the toxicity of this metabolite and could therefore not conclude on the residue definition for dietary risk assessment for paddy rice.

The meeting confirmed that the residue definition for compliance with the MRL for plant and animal commodities is buprofezin. The meeting could not conclude on the suitability of the current residue definition for dietary risk assessment for buprofezin in paddy rice.

Results of supervised residue trials on crops

Supervised trials were available for the use of buprofezin on rice and product labels were available from the Republic of Korea. STMRs or STMRPs could not be established as the meeting could not conclude whether the current residue definition for dietary risk assessment for plants is suitable for paddy rice and its processed commodities.

Rice

The GAP from the Republic of Korea is a foliar spray on rice with an application rate of 3x 0.012 kg ai/hL, a retreatment interval (RTI) of 10 days and a PHI of 7 days.

Ten Korean trials on paddy rice performed at 3x 0.012 kg ai/hL, RTI 10 days and PHI 7 day matched with the Korean cGAP. Rice was threshed immediately after harvest and rice whole grains were dried for 7 days in a greenhouse under ambient conditions until the moisture content was less than 15 percent, reflecting local agricultural practice.

Residues of buprofezin in rice whole grain were: 0.73 mg/kg, 1.5 mg/kg, 1.7 mg/kg, 2.0 mg/kg, 2.4 mg/kg, 3.0 mg/kg, 3.2 mg/kg, 3.6 mg/kg, 4.2 mg/kg, 4.4 mg/kg (n = 10).

The meeting estimated a maximum residue level of 8 mg/kg for buprofezin in rice.

Subsamples of rice whole grain were processed into husked rice and polished rice.

Residues of buprofezin in husked rice were: 0.06 mg/kg, 0.08 mg/kg, 0.08 mg/kg, 0.09 mg/kg, 0.11 mg/kg, 0.12 mg/kg, 0.14 mg/kg, 0.15 mg/kg, 0.16 mg/kg, 0.19 mg/kg (n = 10).

The meeting estimated a maximum residue level of 0.4 mg/kg for buprofezin in husked rice.

Residues of buprofezin in polished rice were: 0.01 mg/kg, 0.02 mg/kg, 0.02 mg/kg, 0.02 mg/kg, 0.02 mg/kg, 0.02 mg/kg, 0.02 mg/kg, 0.02 mg/kg, 0.03 mg/kg, 0.03 mg/kg (n = 10).

The meeting estimated a maximum residue level of 0.07 mg/kg for buprofezin in polished rice.

Fate of residues during processing

The meeting received information on the fate of buprofezin residues during processing of rice whole grain. Processing factors for rice commodities could not be established as the meeting could not conclude on the residue definition for dietary risk assessment for paddy rice.

Residues in animal commodities

Farm animal dietary burden

Since no recommendations could be made for rice commodities, the livestock dietary burden for livestock remained unchanged.

Residues in animal commodities

Following the update of the Codex Classification (General consideration 2.4) and based on the dietary burden derived by JMPR 2019, the meeting recommended a maximum residue level of 0.01* mg/kg and an STMR of 0.01 mg/kg for Group of milks and withdrew its previous recommendation of 0.01* mg/kg for milk.

The meeting estimated a maximum residue level of 0.05* mg/kg, STMR of 0.05 mg/kg and HR of 0.05 mg/kg for Group of muscle (from mammals other than marine mammals), Group of mammalian fats (except milk fats) and Group of edible offal (mammalian).

The meeting withdrew its previous recommendations of maximum residue levels of 0.01* mg/kg for mammalian meat, fat and edible offal as the analytical method suitable for enforcement was validated at an LOQ of 0.05 mg/kg.

The meeting recommended a maximum residue level of 0.05* mg/kg for Group of eggs, Group of avian, edible offal, Group of avian fats and Group of avian muscle with STMRs and HRs of 0 mg/kg.

The meeting withdrew its previous recommendations of 0.01* mg/kg for poultry meat, fat and edible offal as the analytical method suitable for enforcement was validated at an LOQ of 0.05 mg/kg.

Desirable

- Metabolism study in paddy rice (i.e. flooded conditions).
- Supervised field trials in paddy rice, where buprofezin sulfoxide is analysed using a validated method.

Recommendations

On the basis of the data obtained from supervised trials, the meeting concluded that the residue levels listed in Table 5.5.2 and Annex 1 are suitable for establishing maximum residue limits and for dietary exposure assessments.

Definition of the residue for compliance with the MRL and for dietary risk assessment for plant commodities: buprofezin.

The meeting could not conclude on the suitability of the current residue definition for dietary risk assessment for paddy rice, pending desired information on buprofezin sulfoxide.

Definition of the residue for compliance with the MRL and dietary risk assessment for animal commodities: buprofezin.

The residue is not fat-soluble.

Table 5.5.2 Residue levels suitable for establishing maximum residue limits and for dietary exposure assessments

CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P mg/kg	HR or HR-P mg/kg
		New	Previous		
MO 0105	Edible offal (mammalian)	W	0.01*	–	–
PE 0112	Eggs	W	0.01*	–	–
MO 0105	Group of edible offal (mammalian)	0.05*	–	Liver: 0.05 Kidney: 0.05	Liver: 0.05 Kidney: 0.05
PO 0111	Group of avian, edible offal	0.05*	–	0	0
PF 0111	Group of avian fats	0.05*	–	0	0
PM 0110	Group of avian muscle	0.05*	–	0	0
PE 0112	Group of eggs	0.05*	–	0	0
MF 0100	Group of mammalian fats (except milk fats)	0.05*	–	0.05	0.05
ML 0106	Group of milks	0.01*	–	0.01	–
MM 0095	Group of muscle (from mammals other than marine mammals)	0.05*	–	0.05	0.05
MF 0100	Mammalian fats (except milk fats)	W	0.01*	–	–
MM 0095	Meat (from mammals other than marine mammals)	W	0.01*	–	–
ML 0106	Milks	–	0.01*	–	–
PO 0111	Poultry, edible offal of	W	0.01*	–	–
PF 0111	Poultry fats	W	0.01*	–	–
PM 0110	Poultry meat	W	0.01*	–	–

Dietary risk assessment

Long-term dietary exposure

The ADI for buprofezin is 0–0.009 mg/kg bw. The International Estimated Daily Intakes (IEDIs) for buprofezin were estimated for the 17 GEMS/Food Consumption Cluster Diets using the STMR or STMR-P values estimated by the JMPR. The results are shown in Annex 3 of the 2024 JMPR Report.

The IEDIs ranged from 4–40 percent of the maximum ADI. The meeting concluded that long-term dietary exposure to residues of buprofezin from uses considered by the JMPR is unlikely to present a public health concern.

Acute dietary exposure

The ARfD for buprofezin is 0.5 mg/kg bw. The International Estimate of Short-term Intakes (IESTIs) for buprofezin were calculated for the food commodities and their processed commodities for which HRs/HR-Ps or STMRs/STMR-Ps were estimated by the present meeting and for which consumption data were available. The results are shown in Annex 4.

The IESTIs were 0 percent of the ARfD for children and for the general population. The meeting concluded that acute dietary exposure to residues of buprofezin from uses considered by the present meeting is unlikely to present a public health concern.

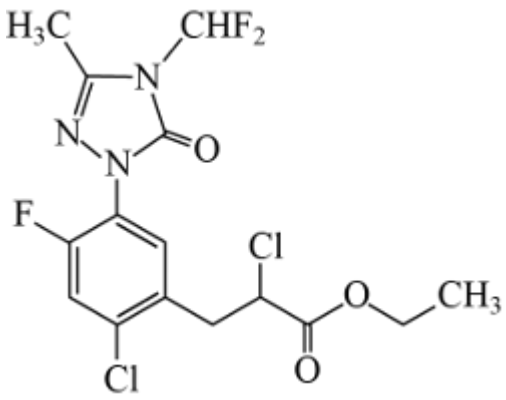
5.6 Carfentrazone-ethyl (338)* (T, R)

5.6.1 Toxicology

Carfentrazone-ethyl is the International Organization for Standardization-approved common name for ethyl-2-chloro-3-[2-chloro-4-fluoro-5-[4-(difluoromethyl)-4,5-dihydro-3-methyl-5-oxo-1*H*-1,2,4-triazol-1-yl]phenyl]propanoate (IUPAC), with the Chemical Abstracts Service number 128639-02-1. Carfentrazone-ethyl is an herbicide, and its mode of action in target plants is the inhibition of protoporphyrinogen oxidase (PPO), which is involved in chlorophyll biosynthesis.

Carfentrazone-ethyl has not previously been evaluated by the FAO/WHO Joint Meeting on Pesticide Residues and was reviewed by the present meeting at the request of Codex Committee on Pesticide Residues. All critical studies were performed according to national or international test guidelines and contained statements of compliance with good laboratory practice, unless otherwise specified. A literature search was performed by the sponsor but no relevant published papers were identified.

Figure 5.6.1 Chemical structure of carfentrazone-ethyl



Biochemical aspects

The oral absorption of ^{14}C-labelled carfentrazone-ethyl in rats was rapid with peak concentrations of radioactivity occurring in plasma between 0.8 and 2.5 hours in the dose range of 4–1100 mg/kg bw. Oral absorption at a low dose (5 mg/kg bw) and a high dose (1000 mg/kg bw) was 72–87 percent. Tissue distribution was extensive but indicated little potential for accumulation. The tissue residues were higher in female than male rats at the high dose, but there was little difference in the elimination half-life (5–6 hours) or area under the concentration–time curve (AUC) in plasma between males and females and the dose groups. Slightly higher residue values were seen in blood, liver and skin, than in other tissues, however mostly they remained below 1 ppm after seven days. Most of the administered dose (AD 88–97 percent) was eliminated in the excreta. Excretion was substantially complete by 48–72 hours after dosing. Urinary excretion (72–87 percent of AD) was the primary route of elimination followed by faeces (10–26 percent AD) with no significant excretion occurring by exhalation (<0.02 percent AD). Metabolism of the absorbed dose was extensive and primarily involved ester hydrolysis, resulting in the formation of carfentrazone chloropropionic acid. This hydrolysis product was

further metabolized via dechlorination, hydroxylation, and glucuronidation. Two urinary metabolites (3-hydroxymethyl-carfentrazone-chloropropionic acid (17–29 percent of AD) and carfentrazone-chloropropionic acid (39–63 percent of AD) were major.

In two in vitro comparative metabolism studies between rats and humans, no unique human metabolite was identified. The major metabolic pathway of carfentrazone-ethyl in vitro was the hydrolysis of the ester moiety. The metabolites of carfentrazone-ethyl identified in vitro were consistent with those identified in biological samples obtained from the in vivo study in rats. No chiral inversion (racemization) was observed for either of the enantiomers of carfentrazone-ethyl and their hydrolysis products (*R*-carfentrazone-chloropropionic acid and *S*-carfentrazone-chloropropionic acid), following 60- and 240-minute incubations with liver microsomes and hepatocytes, respectively.

Following 14 days of unlabelled carfentrazone-ethyl administration at 5 mg/kg bw followed by a single dose (5 mg/kg bw) of radiolabelled compound, the overall tissue distribution in male and female rats at one and seven days after dosing was similar to that found after single dose administration. Urine was the predominant route of elimination. The metabolite profiles in urine were consistent with those observed following a single dose.

Toxicological data

The acute oral median lethal dose (LD_{50}) of carfentrazone-ethyl in rats was greater than 5000 mg/kg bw and the dermal LD_{50} in rats was greater than 4000 mg/kg bw. The inhalation median lethal concentration (four-hour LC_{50}) of carfentrazone-ethyl aerosol in rats was greater than 5.09 mg/L. Carfentrazone-ethyl was not irritant to rabbit skin or eye. Carfentrazone-ethyl was not a skin sensitizer in a guinea pig Buehler test or in a local lymph node assay (LLNA) in mice.

In oral repeated dose studies, the main target organs of toxicity in all species were the haematological system (decreases in mean corpuscular haemoglobin [MCH], mean corpuscular volume [MCV], mean corpuscular haemoglobin concentration [MCHC], hematocrit [Ht] and haemoglobin [Hb]) and the liver (increased weight, porphyrin pigment deposits in hepatocytes and Kupffer cells, followed by single-cell necrosis, fibrosis, focal inflammation and haemosiderosis, bile duct hyperplasia, centrilobular hyperplasia and increased mitotic rate of hepatocytes) with associated clinical-chemistry changes (increases in alanine transaminase [ALT] and aspartate transaminase [AST] levels) and urinalysis changes (elevated porphyrins in urines) , as the consequence of impaired haeme biosynthesis due to PPO inhibition. Rats appeared the most sensitive species to the toxicity of carfentrazone-ethyl, with mice and dogs showing similar lower sensitivity.

In a 90-day dietary study in mice, carfentrazone-ethyl was administered at concentrations of 0 ppm, 1000 ppm, 4000 ppm, 8000 ppm, 14000 ppm or 20000 ppm (equivalent to 143 mg/kg bw, 571 mg/kg bw, 1143 mg/kg bw, 2000 mg/kg bw and 2857 mg/kg bw per day). The no-observed-adverse-effect level (NOAEL) was 1000 ppm (equivalent to 143 mg/kg bw per day) based on clinical signs of toxicity (urine discoloration most likely due to elevated porphyrins) in males and liver histopathology in females (including hepatocytomegaly and increased pigmentation, most likely due to porphyrin deposits) at the LOAEL of 4000 ppm (equivalent to 571 mg/kg bw per day).

In a 28-day dietary study in rats, carfentrazone-ethyl was administered at concentrations of 0 ppm, 1000 ppm, 4000 ppm, 8000 ppm, 14000 ppm or 20000 ppm (equal to 0 mg/kg bw, 74.6 mg/kg bw,

293.4 mg/kg bw, 583.7 mg/kg bw, 982.1 mg/kg bw and 1292 mg/kg bw per day in males and 0 mg/kg bw, 85.2 mg/kg bw, 329.6 mg/kg bw, 659.5 mg/kg bw, 1140 mg/kg bw and 1587 mg/kg bw per day in females). The NOAEL was 1000 ppm (equal to 74.6 mg/kg bw per day) based on the presence of porphyrins in urine and liver histopathology (pigment deposition, most likely porphyrins, single-cell necrosis and increased mitotic rate of hepatocytes) at the LOAEL of 4000 ppm (equal to 293 mg/kg bw per day).

In the subsequent 90-day dietary study in rats, carfentrazone-ethyl was administered at concentrations of 0 ppm, 1000 ppm, 4000 ppm, 8000 ppm, 14000 ppm or 20000 ppm (equal to 0 mg/kg bw, 58 mg/kg bw, 227 mg/kg bw, 470 mg/kg bw, 831 mg/kg bw and 1197 mg/kg bw per day in males and 0 mg/kg bw, 72 mg/kg bw, 284 mg/kg bw, 578 mg/kg bw, 1009 mg/kg bw and 142 mg/kg bw per day in females). The NOAEL was 1000 ppm (equal to 58 mg/kg bw per day) based on decreased food consumption, alterations in some haematological parameters (decreased MCV and MCH) and elevated levels of porphyrins in urine at the LOAEL of 4000 ppm (equal to 227 mg/kg bw per day).

In a 90-day study in dogs, carfentrazone-ethyl was administered in capsules at doses of 50 mg/kg bw, 150 mg/kg bw, 500 mg/kg bw or 1000 mg/kg bw per day. The NOAEL was 150 mg/kg bw per day based on decreased body weight gain, alterations in haematology parameters (decreased MCH and MCV levels), decreased bilirubin, increased porphyrin levels in urine and increased relative liver weight at the LOAEL of 500 mg/kg bw per day.

In the subsequent 52-week study in dogs, carfentrazone-ethyl was administered in capsules at doses of 50 mg/kg bw, 150 mg/kg bw, 500 mg/kg bw or 1000 mg/kg bw per day. The NOAEL was 150 mg/kg bw per day based on increased porphyrin levels in urine and increased relative liver weight at the LOAEL of 500 mg/kg bw per day. Haematological parameters (decreased MCH and MCV) were affected at the top dose, suggesting that the effects seen at the LOAEL were potentially adverse.

In a 78-week chronic toxicity and carcinogenicity study in mice, carfentrazone-ethyl was administered at dietary concentrations of 0 ppm, 70 ppm, 700 ppm or 7000 ppm (equal to 0 mg/kg bw, 10 mg/kg bw, 110 mg/kg bw and 1090 mg/kg bw per day for males, 0 mg/kg bw, 12 mg/kg bw, 119 mg/kg bw and 1296 mg/kg bw per day for females). The NOAEL for carcinogenicity was 7000 ppm (equal to 1090 mg/kg bw per day), the highest dose tested. The NOAEL for chronic toxicity was 70 ppm (equal to 10 mg/kg bw per day) based on increased mortality rates and histopathological findings in the liver (porphyrin deposits, single-cell necrosis, haemosiderosis and focal inflammation) and stomach (mucosal hyperplasia) at the LOAEL of 700 ppm (equal to 110 mg/kg bw per day).

In a chronic toxicity/carcinogenicity study in rats, carfentrazone-ethyl was administered in 700 ppm (equal to 110 mg/kg bw per day) the diet for one year (chronic toxicity group) or two years (carcinogenicity group), at dose levels of 0 ppm, 50 ppm, 200 ppm, 800 ppm or 4000 ppm (equal to 0 mg/kg bw, 2 mg/kg bw, 9 mg/kg bw, 37 mg/kg bw and 188 mg/kg bw per day for males, 0 mg/kg bw, 3 mg/kg bw, 12 mg/kg bw, 49 mg/kg bw and 242 mg/kg bw per day for females). The NOAEL for carcinogenicity was 4000 ppm (equal to 188 mg/kg bw per day), the highest dose tested. The NOAEL for chronic toxicity was 50 ppm (equal to 3 mg/kg bw per day) based on porphyrin deposits in the liver at the LOAEL of 200 ppm (equal to 12 mg/kg bw per day). Porphyrin deposits in the liver were also seen in males from 800 ppm.

The meeting concluded that carfentrazone-ethyl is not carcinogenic in mice or rats.

Carfentrazone-ethyl was tested for genotoxicity in an adequate range of in vitro and in vivo assays. No evidence of genotoxicity was found.

The meeting concluded that carfentrazone-ethyl is unlikely to be genotoxic.

In view of the lack carcinogenicity in mice and rats and the fact that the compound is unlikely to be genotoxic, the meeting concluded that carfentrazone-ethyl is unlikely to pose a carcinogenic risk to humans.

In a two-generation reproduction toxicity study, carfentrazone-ethyl was given in the diet to rats at concentrations of 0 ppm, 100 ppm, 500 ppm, 1500 ppm or 4000 ppm (equal to 0 mg/kg bw, 8.3 mg/kg bw, 40 mg/kg bw, 120 mg/kg bw and 323 mg/kg bw per day for males, 0 mg/kg bw, 9.2 mg/kg bw, 46 mg/kg bw, 137 mg/kg bw and 365 mg/kg bw per day for females). The NOAEL for parental toxicity was 1500 ppm (equal to 120 mg/kg bw per day), based on effects on body weight gain, haematology (decreased MCV, MCH, HCT, Hb), presence of porphyrins in urine, increased liver weight, bile duct hyperplasia and liver histopathology (pigmentation of hepatocytes and Kupffer cells, centrilobular hyperplasia, single-cell necrosis, increased mitotic rate of hepatocytes) at the LOAEL of 4000 ppm (equal to 323 mg/kg bw per day). The NOAEL for reproductive toxicity and offspring toxicity was 4000 ppm (equal to 323 mg/kg bw per day), the highest dose tested.

In a rat prenatal developmental toxicity study, carfentrazone-ethyl was administered by gavage from gestation day (GD) 6–19 at 0 mg/kg bw, 100 mg/kg bw, 600 mg/kg bw or 1250 mg/kg bw per day. The NOAEL for maternal toxicity was 100 mg/kg bw per day based on the presence of porphyrins in urine at the LOAEL of 600 mg/kg bw per day. The NOAEL for embryo/fetal toxicity was 100 mg/kg bw per day, based on the increased incidence of rib variants at the LOAEL of 600 mg/kg bw per day.

In a rabbit prenatal developmental toxicity study, carfentrazone-ethyl was administered by gavage from GD 7 to GD 28 at 0 mg/kg bw, 10 mg/kg bw, 40 mg/kg bw, 150 mg/kg bw or 300 mg/kg bw per day. The NOAEL for maternal toxicity was 40 mg/kg bw per day based on the presence of porphyrins in urine at the LOAEL of 150 mg/kg bw per day. The NOAEL for embryo/fetal toxicity was 300 mg/kg bw per day, the highest dose tested.

The meeting concluded that carfentrazone-ethyl is not teratogenic.

In an acute neurotoxicity study carfentrazone-ethyl was administered to rats by gavage as a single dose of 0 mg/kg bw, 500 mg/kg bw, 1000 mg/kg bw or 2000 mg/kg bw. The NOAEL for acute neurotoxicity was 2000 mg/kg bw, the highest dose tested. The LOAEL for acute systemic toxicity was 500 mg/kg bw, the lowest dose tested, based on the presence of porphyrins in urine.

In a 13-week neurotoxicity study, carfentrazone-ethyl was administered to rats in the diet at 0 ppm, 1000 ppm, 10000 ppm or 20000 ppm (equal to 0 mg/kg bw, 59 mg/kg bw, 603 mg/kg bw and 1178 mg/kg bw per day in males and 0 mg/kg bw, 70 mg/kg bw, 718 mg/kg bw or 1433 mg/kg bw per day in females). The NOAEL for subchronic neurotoxicity was 20000 ppm (equal to 1178 mg/kg bw per day), the highest dose tested. The NOAEL for systemic toxicity was 1000 ppm (equal to 59 mg/kg bw per day), based on urinary excretion of porphyrins, decreased body weight and food consumption at the LOAEL of 10000 ppm (equal to 603 mg/kg bw per day).

The meeting concluded that carfentrazone-ethyl is not neurotoxic.

In a 28-day dietary immunotoxicity study in rats, in which carfentrazone-ethyl was given at doses of 0 ppm, 1000 ppm, 4000 ppm or 8000 ppm (equivalent to 0 mg/kg bw, 92 mg/kg bw, 369 mg/kg bw or 741 mg/kg bw per day), the NOAEL for immunotoxicity was 8000 ppm (equivalent to 741 mg/kg bw per day), the highest dose tested. The NOAEL for systemic toxicity was 4000 ppm (equivalent to 369 mg/kg bw per day) based on increased relative liver weight at the LOAEL of 8000 ppm (equivalent to 741 mg/kg bw per day).

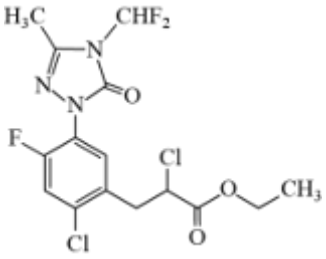
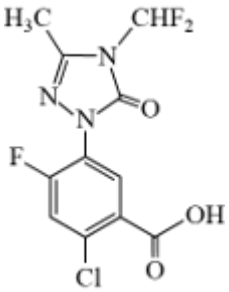
The meeting concluded that carfentrazone-ethyl is not immunotoxic.

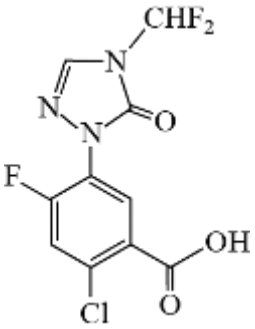
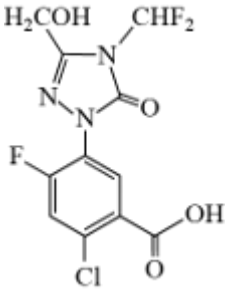
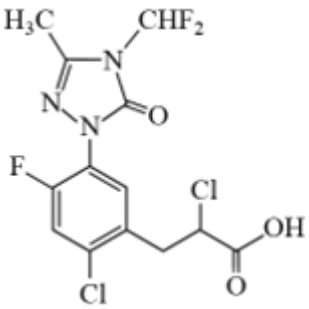
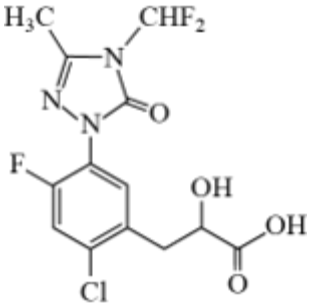
Toxicological data on metabolites and/or degradates

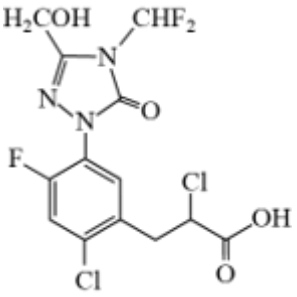
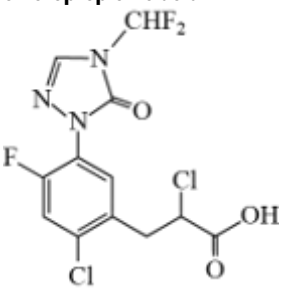
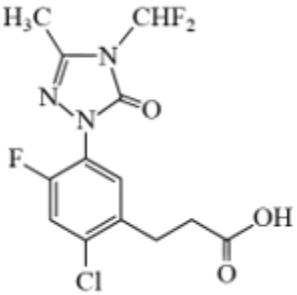
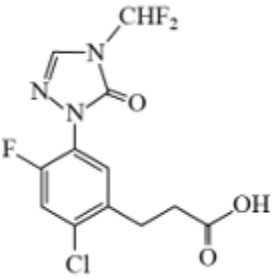
A toxicological characterization of numerous plant and/or livestock metabolites of carfentrazone-ethyl was performed. This was achieved through the conduct of specific studies, considerations about their occurrence in rat absorption, distribution, metabolism and excretion (ADME) studies, structural similarity to parent compound or major rat metabolites, in silico genotoxicity and general toxicity assessment and via grouping and read-across.

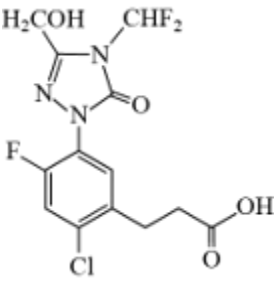
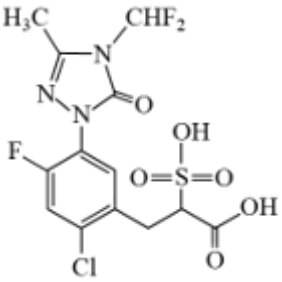
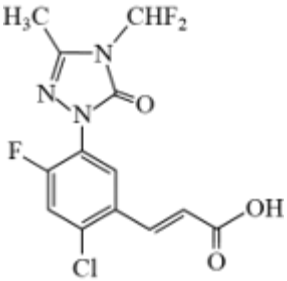
Table 5.6.1 below provides an overall summary overview of the toxicological characterization of the target plant and livestock metabolites of carfentrazone-ethyl.

Table 5.6.1 Summary overview of toxicological characterization of plant/livestock metabolites

Compound, code and structure	**Major rat metabolite?**	**Genotoxicity assessment** (data, QSAR, read-across)	**General toxicity** (data, QSAR, read-across)	**Reference value for dietary risk assessment**
Carfentrazone-ethyl F8426 	Parent	Not genotoxic (data)	Full dataset	ADI: 0–0.03 mg/kg bw ARfD: 2 mg/kg bw
F8426-benzoic acid 	No	Not genotoxic (negative in an adequate range of vitro studies)	Not more toxic than parent (based on data: Oral LD_{50}: >5000 mg/kg bw NOAEL of 97 mg/kg bw per day, highest dose tested in 28-day dietary study in rat, which is comparable to NOAEL of 74.6 mg/kg bw per day in 28-day dietary rat study with parent)	Parent HBGVs[a]
3-Desmethyl-F8426-benzoic acid	No	Not genotoxic (read-across from F8426-	Not more toxic than parent (read-across from	Parent HBGVs

Compound, code and structure	**Major rat metabolite?**	**Genotoxicity assessment** (data, QSAR, read-across)	**General toxicity** (data, QSAR, read-across)	**Reference value for dietary risk assessment**
		benzoic acid supported by comparative QSAR and structural similarity analysis)	F8426-benzoic acid supported by comparative QSAR and structural similarity analysis)	
3-Hydroxymethyl-benzoic acid F8426- 	No	Not genotoxic (negative Ames, negative in vitro MCGM,[b] positive in vitro cytogenetic test but negative in vivo micronucleus study)	Not more toxic than parent (read-across from F8426-benzoic acid supported by comparative QSAR and structural similarity analysis)	Parent HBGVs
F8426-chloropropionic acid 	Yes	Not genotoxic (negative Ames and major rat metabolite)	Covered by parent (major rat metabolite)	Parent HBGVs
F8426-deschloro-hydroxypropionic acid 	No	Not genotoxic (read-across from F8426-chloropropionic acid (major rat metabolite) supported by comparative QSAR and structural similarity analysis)	Covered by parent (read-across from F8426-chloropropionic acid (major rat metabolite) supported by comparative QSAR and structural similarity analysis)	Parent HBGVs
3-Hydroxymethyl-F8426-chloropropionic acid	Yes	Not genotoxic (major rat metabolite)	Covered by parent (major rat metabolite)	Parent HBGVs

Compound, code and structure	**Major rat metabolite?**	**Genotoxicity assessment** (data, QSAR, read-across)	**General toxicity** (data, QSAR, read-across)	**Reference value for dietary risk assessment**
				
3-Desmethyl-F8426-chloropropionic acid 	No	Not genotoxic (negative in adequate range of in vitro assays)	Covered by parent (read-across from F8426-chloro-propionic acid (major rat metabolite) supported by comparative QSAR and structural similarity analysis)	Parent HBGVs
F8426-propionic acid 	No	Not genotoxic (negative in adequate range of in vitro assays)	Covered by parent (read-across from carfentrazone-ethyl-chloropropionic acid (major rat metabolite), supported by comparative QSAR and structural similarity analysis)	Parent HBGVs
3-desmethyl-F8426-propionic acid 	No	Not genotoxic (read-across from F8426-propionic acid supported by comparative QSAR and structural similarity analysis)	Not more toxic than parent (read-across from F8426-propionic acid supported by comparative QSAR and structural similarity analysis)	Parent HBGVs
3-hydroxymethyl-F8426-propionic acid	No	Not genotoxic (negative Ames and read-across from 3- hydroxymethyl- F8426-chloropropionic acid, a major rat metabolite)	Not more toxic than parent (oral LD_{50} >2000 mg/kg bw; Read-across from 3-hydroxymethyl-F8426-	Parent HBGVs

Compound, code and structure	Major rat metabolite?	Genotoxicity assessment (data, QSAR, read-across)	General toxicity (data, QSAR, read-across)	Reference value for dietary risk assessment
			chloropropionic acid, a major rat metabolite)	
F8426-α-sulfo-propionic acid 	No	Not genotoxic (negative in adequate range of in vitro assays)	Not more toxic than parent (based on data: NOAEL: 98 mg/kg bw per day, highest dose tested in 28-day dietary study in rat, which is comparable to NOAEL of 74.6 mg/kg bw per day in 28-day dietary rat study with parent)	Parent HBGVs
F8426-cinnamic acid 	No	Not genotoxic (negative Ames, negative in vitro MCGM$, positive in vitro cytogenetic test but negative in vivo micronucleus study)	Not more toxic than parent (oral LD_{50} >5000 mg/kg bw and read-across from parent, supported by comparative QSAR and structural similarity analysis)	Parent HBGVs

Notes:

[a] HBGVs = health-based guidance values.

[b] MCGM = mammalian cell gene mutation.

Microbiological aspects

A search of the literature available in the public domain identified one publication but this study has no relevance as it involved application of carfentrazone-ethyl directly to soil to assess the abundance and biodiversity of soil-dwelling microorganisms.

No experimental data were submitted by the sponsor in this regard.

Human data

In health surveillance of personnel employed in the manufacture of carfentrazone-ethyl at two different sites since 2007 or 2011, no negative impacts have been observed. In addition, there are no data reported in the public domain, concerning incidents or clinical cases of poisoning with carfentrazone-ethyl.

The meeting concluded that the existing database on carfentrazone-ethyl was adequate to characterize the potential hazards to the general population, including fetuses, infants and children.

Toxicological evaluation

The meeting established an acceptable daily intake (ADI) of 0–0.03 mg/kg bw based on the NOAEL of 3 mg/kg bw per day from the rat two-year chronic/carcinogenicity study for porphyrin deposits in the liver. A safety factor of 100 was applied.

This ADI applies also to all the metabolites listed in the table above.

The meeting established an ARfD of 2 mg/kg bw based on the LOAEL of 500 mg/kg bw from the acute neurotoxicity study in rats for elevated levels of porphyrins in urine and the application of a safety factor of 300. An additional safety factor of three was applied for LOAEL to NOAEL extrapolation.

This acute reference dose (ARfD) applies also to all the metabolites listed in the table above.

A toxicological monograph was prepared.

Table 5.6.2 Levels relevant to risk assessment of carfentranzone-ethyl

Species	Study	Effect	NOAEL	LOAEL
Mouse	78-week study of toxicity and carcinogenicity[a]	Toxicity	70 ppm, equal to 10 mg/kg bw per day	700 ppm, equal to 110 mg/kg bw per day
		Carcinogenicity	7000 ppm, equal to 1090 mg/kg bw per day[c]	–
Rat	Acute neurotoxicity study[b]	Neurotoxicity	2000 mg/kg bw[c]	–
		Systemic toxicity	–	500 mg/kg bw[e]
	Two-year study of toxicity and carcinogenicity[a]	Toxicity	50 ppm, equal to 3 mg/kg bw per day	200 ppm, equal to 12 mg/kg bw per day
		Carcinogenicity	4000 ppm, equal to 188 mg/kg bw per day[c]	–
	Two-generation study of reproductive toxicity[a]	Reproductive toxicity	4000 ppm, equal to 323 mg/kg bw per day[c]	–
		Parental toxicity	1500 ppm, equal to 120 mg/kg bw per day	4000 ppm, equal to 323 mg/kg bw per day
		Offspring toxicity	4000 ppm, equal to 323 mg/kg bw per day[c]	–
	Developmental toxicity study[b]	Maternal toxicity Embryo/fetal toxicity	100 mg/kg bw per day 100 mg/kg bw per day	600 mg/kg bw per day 600 mg/kg bw per day
Rabbit	Developmental toxicity study[b]	Maternal toxicity Embryo/fetal toxicity	40 mg/kg bw per day 300 mg/kg bw per day[c]	150 mg/kg bw per day –

Species	Study	Effect	NOAEL	LOAEL
Dog	13-week and 1-year studies of toxicity[d, f]	Toxicity	150 mg/kg bw per day	500 mg/kg bw per day

Table 5.6.3 Studies on metabolites

F8426-benzoic acid				
Rat	Four-week study of toxicity[a]	Toxicity	1250 ppm, equal to 97 mg/kg bw per day[c]	–
F8426-α-sulfo-proprionic acid				
Rat	Four-week study of toxicity[a]	Toxicity	1250 ppm, equal to 98 mg/kg bw per day[c]	–

Notes:
[a] Dietary administration.
[b] Gavage administration.
[c] Highest dose tested.
[d] Two or more studies combined.
[e] Lowest dose tested.
[f] Capsule administration.

*Acceptable daily intake (ADI) for carfentrazone-ethyl:**

0–0.03 mg/kg bw

*Acute reference dose (ARfD) for carfentrazone-ethyl:**

2 mg/kg bw

*ADI and ARfD apply also to F8426-benzoic acid, 3-desmethyl-F8426-benzoic acid, 3-hydroxymethyl-F8426-benzoic acid, F8426-chloropropionic acid, F8426-deschloro-hydroxy-proprionic acid, 3-hydroxymethyl-F8426-chloropropionic acid, 3-desmethyl-F8426-chloropropionic acid, F8426-propionic acid, 3-desmethyl-F8426-propionic acid, 3-hydroxymethyl-F8426-propionic acid, F8426-α-sulfo-propionic acid and F8426-cinnamic acid, expressed as carfentranzone-ethyl.

Information that would be useful for the continued evaluation of the compound

Results from epidemiological, occupational health and other such observational studies of human exposure.

Table 5.6.4 Critical end-points for setting guidance values for exposure to carfentranzone-ethyl

Absorption, distribution, excretion and metabolism in mammals	
Rate and extent of oral absorption	Rapid (T_{max} = 0.8–2.5 hr) and extensive (>72%)
Dermal absorption	No data
Distribution	Wide; highest concentrations in blood, liver and skin
Potential for accumulation	No evidence of accumulation
Rate and extent of excretion	Rapid and nearly complete via urine; 72–87% within 48 hours
Metabolism in animals	Extensive, involving ester hydrolysis with subsequent dechlorination, hydroxylation and glucuronidation

Toxicologically significant compounds in animals and plants	Parent, F8426-benzoic acid, 3-desmethyl-F8426-benzoic acid, 3-hydroxymethyl-F8426-benzoic acid, F8426-chloropropionic acid, F8426-deschloro-hydroxy-proprionic acid, 3-hydroxymethyl-F8426-chloropropionic acid, 3-desmethyl-F8426-chloropropionic acid, F8426-propionic acid, 3-desmethyl-F8426-propionic acid, 3-hydroxymethyl-F8426-propionic acid, F8426-α-sulfo-propionic acid and F8426-cinnamic acid
Acute toxicity	
Rat, LD_{50}, oral	>5000 mg/kg bw
Rat, LD_{50}, dermal	>4000 mg/kg bw
Rat, LC_{50}, inhalation	>5.09 mg/L
Rabbit, dermal irritation	Not irritating
Rabbit, ocular irritation	Not irritating
Mouse, dermal sensitization	Not sensitizing (LLNA)
Guinea pig, dermal sensitization	Not sensitizing (Buehler)
Short-term studies of toxicity	
Target/critical effect	Haematological system, liver
Lowest relevant oral NOAEL	58 mg/kg bw per day (rat)
Long-term studies of toxicity and carcinogenicity	
Target/critical effect	Porphyrin deposits in the liver
Lowest relevant NOAEL	3 mg/kg bw per day (rat)
Carcinogenicity	Not carcinogenic in mice/rats
Genotoxicity	Unlikely to be genotoxic
Reproductive toxicity	
Target/critical effect	No reproductive effects
Lowest relevant parental NOAEL	120 mg/kg bw per day (rat)
Lowest relevant offspring NOAEL	323 mg/kg bw per day, highest dose tested (rat)
Lowest relevant reproductive NOAEL	323 mg/kg bw per day, highest dose tested (rat)
Developmental toxicity	
Target/critical effect	Maternal: porphyrins in urine; embryo/fetal: rib variants (rat)
Lowest relevant maternal NOAEL	40 mg/kg bw per day (rabbit)
Lowest relevant embryo/fetal NOAEL	100 mg/kg bw per day (rat)
Neurotoxicity	
Acute neurotoxicity NOAEL	2000 mg/kg bw, highest dose tested (rat)
Systemic toxicity NOAEL	<500 mg/kg bw, lowest dose tested (LOAEL)
Subchronic neurotoxicity NOAEL	1178 mg/kg bw per day, highest dose tested (rat)
Developmental neurotoxicity NOAEL	No data
Other toxicological studies	
Immunotoxicity	741 mg/kg bw per day, highest dose tested (rat)

Studies on toxicologically relevant metabolites

F8426-benzoic acid	Acute oral LD_{50}: >5000 mg/kg bw (rat) 28-day NOAEL: 97 mg/kg bw per day, highest dose tested (rat) Negative Ames, mouse lymphoma and chromosome aberration in vitro
3-hydroxymethyl-F8426-benzoic acid	Acute oral LD_{50}: >5000 mg/kg bw (rat) Negative Ames and HPRT,[a] positive chromosome aberration in vitro, negative micronucleus in vivo
F8426 chloropropionic acid	Acute oral LD_{50}: >5000 mg/kg bw (rat) Negative Ames

3-desmethyl-F8426 chloropropionic acid	Acute oral LD_{50}: >5000 mg/kg bw (rat) Negative Ames and micronucleus in vitro
F8426-propionic acid	Acute oral LD_{50}: >5000 mg/kg bw (rat) Negative Ames, HPRT and chromosome aberration in vitro
3-hydroxymethyl-F8426-propionic acid	Acute oral LD_{50}: >2000 mg/kg bw (rat) Negative Ames
F8426-α-sulfo-propionic acid	28-day NOAEL: 98 mg/kg bw per day, highest dose tested (rat) Negative Ames, HPRT and chromosome aberration in vitro
F8426-cinnamic acid	Acute oral LD_{50}: >5000 mg/kg bw per day (rat) Negative Ames and HPRT, positive chromosome aberration in vitro, negative micronucleus in vivo
Microbiological aspects	No relevant data
Human data	No clinical cases or poisoning incidents have been recorded

Note:
[a] Hypoxanthine–guanine phosphoribosyl transferase.

Table 5.6.5 Summary

	Value	Study	Safety factor
ADI	0–0.03 mg/kg bw[a]	Two-year study of toxicity and carcinogenicity (rat)	100
ARfD	2 mg/kg bw[a]	Acute neurotoxicity study (rat)	300

Note:
[a] Apply to carfentrazone-ethyl, F8426-benzoic acid, 3-desmethyl-F8426-benzoic acid, 3-hydroxymethyl-F8426-benzoic acid, F8426-chloropropionic acid, F8426-deschloro-hydroxy-proprionic acid, 3-hydroxymethyl-F8426-chloropropionic acid, 3-desmethyl-F8426-chloropropionic acid, F8426-propionic acid, 3-desmethyl-F8426-propionic acid, 3-hydroxymethyl-F8426-propionic acid, F8426-α-sulfo-propionic acid and F8426-cinnamic acid, expressed as carfentranzone-ethyl.

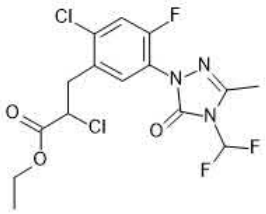
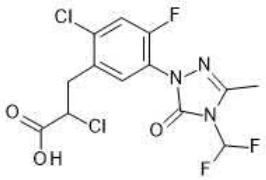
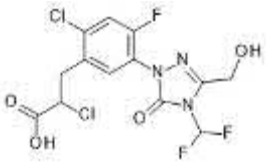
5.6.2 Residue and analytical aspects

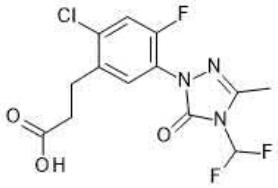
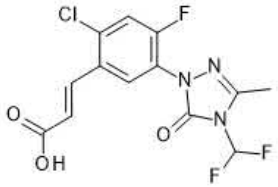
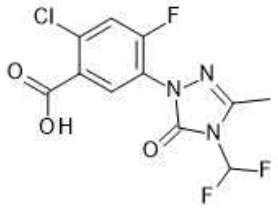
Carfentrazone-ethyl is an herbicide for control of grasses and broad leaf weeds. The mode of action is inhibition of protoporphyrinogen oxidase in the chlorophyll biosynthesis pathway. At the 54th session of CCPR, it was scheduled for the evaluation as a new compound in 2024. An ADI of 0–0.03 mg/kg bw and a ARfD of 2 mg/kg bw were established.

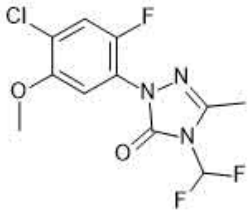
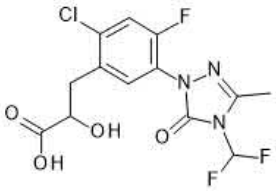
The meeting received information on the metabolism of carfentrazone-ethyl in animals (lactating goat, laying hens) and plants (soya bean, radish, potato, wheat, rice, maize), environmental fate, methods of residue analysis, freezer storage stability, GAP information, supervised residue trials, processing studies, and an animal feeding study (lactating cow).

Table 5.6.6 summarizes the information on the compounds discussed in this appraisal.

Table 5.6.6 Chemical name and structure and the matrices in which carfentrazone-ethyl and its metabolites are found

Chemical name	Abbreviation and molecular mass	Chemical structure	Found in
Carfentrazone-ethyl (F8426) (Carfentrazone-ethyl ester) IUPAC name: ethyl-2-chloro-3-[2-chloro-4-fluoro-5-[4-(difluoromethyl)-4,5-dihydro-3-methyl-5-oxo-1*H*-1,2,4-triazol-1-yl]phenyl]propanoate	412.19 g/mol		Soya bean (forage), Potato (mature stalk), Rice (forage), Maize (forage, silage, fodder), Rotational crops
F8426-chloropropionic acid (Carfentrazone)	F8426-Cl-PAc 384.14 g/mol		Plants, Goat (milk, muscle, liver, kidney), Hens (liver), soils, hydrolysis
3-hydroxymethyl-F8426-chloropropionic acid	3-OH-F8426-Cl-PAc 400.14 g/mol		Soya bean (forage, hay), Radish (leaf, roots), Potato (mature stalk), Wheat (forage, straw), Rice (mature roots)
3-desmethyl-F8426-chloropropionic acid	DesMe-F8426-Cl-PAc 370.11 g/mol		Wheat (forage, straw), Maize (forage, silage, fodder)
3-desmethyl-F8426-propionic acid	DesMe-F8426-PAc 335.67 g/mol		Rotational crops

Chemical name	Abbreviation and molecular mass	Chemical structure	Found in
3-desmethyl-F8426-benzoic acid	DesMe-F8426-BAc 307.61 g/mol		Rotational crops
F8426-propionic acid	F8426-PAc 349.70 g/mol		Goat (liver, kidney), Water-sediment, Rat
F8426-cinnamic acid	F8426-CAc 347.68 g/mol		Aerobic soil, Water-sediment
F8426-benzoic acid	F8426-BAc 321.64 g/mol		Radish (roots), Rotational crops, Aerobic soil, Water-sediment
3-hydroxymethyl-F8426-benzoic acid	3-OH-F8426-BAc 337.64 g/mol		Radish (leaf, roots), Rotational crops, Aerobic soil
F8426- α-sulfo-deschloropropionic acid (F8426- α-sulfo-propionic acid)	F8426-α-sulfo-deschloro-PAc 429.76 g/mol		Wheat (straw)

Chemical name	Abbreviation and molecular mass	Chemical structure	Found in
Methoxy-F8426-despropionate	Methoxy-F8426-despropionate 307.66 g/mol		Aerobic soil
F8426-dicarboxylic acid	F8426-dicarboxylic acid 351.63 g/mol		Aerobic soil
F8426-deschloro-hydroxypropionic acid	F8426-deschloro-hydroxypropionic acid 365.69 g/mol		High temperature hydrolysis (processing)

Based on the information on physical and chemical properties, carfentrazone-ethyl is not volatile and is lipid soluble with a log P_{ow} of 3.36. Carfentrazone-ethyl is hydrolytically stable in acidic condition, however, hydrolyses at moderate to very rapid rates in the environmental of neutral to alkaline pH, forming F8426-Cl-PAc. Under sterilization processing conditions, it is nearly completely hydrolysed. Aqueous photolysis is also major degradation pathway of carfentrazone-ethyl in the environment.

Metabolism

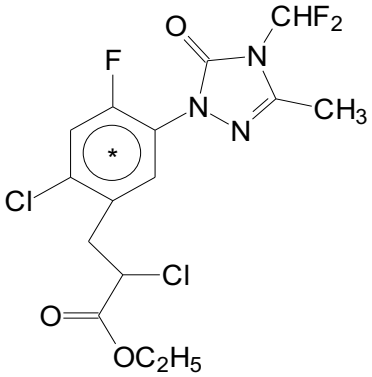
Metabolism studies of 14C-carfentrazone-ethyl were conducted with radiolabelled forms of either the phenyl ring (uniformly labelled) or 5-carbonyl carbon of the triazole moiety. Essentially, all metabolites retained the complete structure of the parent molecule and results of both labels were consistent. Figure 5.6.2 shows the position of the labels in the carfentrazone-ethyl structure.

Plant metabolism

^{14}C-Carfentrazone-ethyl was foliarly applied to pulses (soya bean), root and tuber crops (radish, potato), and cereals (wheat, rice, maize). In rice, metabolism following paddy water application was also studied. The studies were conducted with plants grown in a greenhouse condition except for a potato study. As aqueous photolysis testing was conducted under visible lights (300–800 nm), the study condition is not relevant (greenhouse or outdoor).

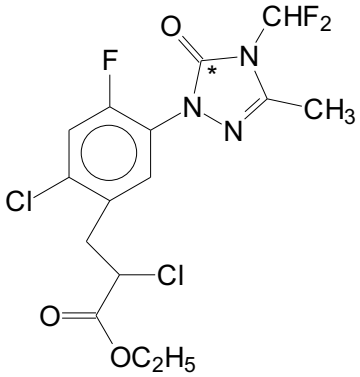
Figure 5.6.2 Carfentrazone-ethyl radiolabels used in studies of metabolism and environmental fate

[phenyl-ring UL-^{14}C]carfentrazone-ethyl



* label position

[carbonyl-^{14}C-]carfentrazone-ethyl



* label position

Soya bean

^{14}C-Carfentrazone-ethyl (carbonyl or phenyl label) was applied to soya beans at the 4-leaf stage grown in greenhouse with a single foliar spray at rates of 17 g ai/ha or 67 g ai/ha. Soybean forage, hay, and seed samples were collected at 21, 51, and 84 (maturity) days after treatment (DAT), respectively.

Total radioactive residues (TRR) in dry soya bean seeds (both labels) were below 0.01 mg eq/kg after the 67 g ai/ha treatment. In forage (both labels), TRR were 0.052–0.056 mg eq/kg and 0.23–0.39 mg eq/kg at lower and higher rate, respectively, and in dry hay (both labels), 0.045–0.067 mg eq/kg and 0.11–0.14 mg eq/kg, respectively. Soya bean seeds were not further investigated due to low radioactivity.

The extractability of radioactivity with methanol/water was good at 91–93 percent TRR in forage and dry hay (17 g ai/ha, both labels). The solvent extracts were further partitioned, yielding 31 percent TRR in dichloromethane fraction and 39–60 percent TRR in aqueous fraction. Acid hydrolyses of aqueous fraction with 1 and 4 mol/L HCl released 30–42 percent TRR and 4.7–9.7 percent TRR, respectively.

In soya bean forage (both labels), parent compound was found at 10–15 percent TRR (<0.01 mg/kg). Metabolite 3-OH-F8426-Cl-PAc accounted for 47–49 percent TRR (0.025–0.027 mg eq/kg, free 20–21 percent + conj. 27–29 percent). F8426-Cl-PAc accounted for 14–15 percent TRR (<0.01 mg eq/kg). DesMe-F8426-Cl-PAc, F8426-CAc, and F8426-BAc were found at each less than 5 percent TRR. Six unidentified metabolites were detected at 4.7–5.7 percent TRR (<0.01 mg eq/kg).

In soya bean dry hay (both labels), parent compound was found at 3.9–5.1 percent TRR (<0.01 mg/kg). Metabolite 3-OH-F8426-Cl-PAc accounted for 48–52 percent TRR (0.023–0.032 mg eq/kg, free 13–14 percent + conj. 35–37 percent). F8426-Cl-PAc accounted for 9.7–10 percent TRR (<0.01 mg eq/kg). DesMe-F8426-Cl-PAc, F8426-CAc, and F8426-BAc were found at each less than about 5 percent TRR. Six unidentified metabolites were detected at 4.5–10 percent TRR (<0.01 mg eq/kg).

Radish

14C-Carfentrazone-ethyl (carbonyl or phenyl label) was applied to radish grown in greenhouse at the stage 3–4 leaves with a single foliar spray at rates of 17 g ai/ha or 67 g ai/ha. Radishes (leaf, root) were harvested at 14 DAT.

TRR (both labels) in radish leaf were 0.16–0.19 mg eq/kg and 0.68–0.89 mg eq/kg at lower and higher rate, respectively. TRR (both labels) in radish root were 0.012–0.016 mg eq/kg and 0.050–0.066 mg eq/kg, respectively.

The extractability of radioactivity with methanol/water was good at 90–92 percent TRR in radish leaf and root (17 g ai/ha, both labels). The solvent extracts were further partitioned, yielding 45–59 percent TRR in ethyl ether fraction and 33–46 percent TRR in aqueous fraction. Acid hydrolysis (1 mol/L HCl) of aqueous fraction released 13–26 percent TRR.

In radish leaf (both labels), parent compound was found at 1.4–1.7 percent TRR (<0.01 mg/kg). Metabolite 3-OH-F8426-Cl-PAc accounted for 36–37 percent TRR (0.057–0.070 mg eq/kg, free 31–32 percent + conj. 4.9–5.6 percent). F8426-Cl-PAc accounted for 17–20 percent TRR (0.027–0.038 mg eq/kg, free 12–16 percent + conj. 4.2–5.5 percent). 3-OH-F8426-BAc accounted for 10–11 percent TRR (0.017–0.019 mg eq/kg, free 0.45–6.8 percent + conj. 4.1–9.9 percent TRR). F8426-BAc and F8426-CAc were detected at each less than about 5 percent TRR (<0.01 mg eq/kg). Five to seven unidentified metabolites were detected at 14–19 percent TRR (0.023–0.037 mg eq/kg), each at less than 10 percent TRR (≤0.016 mg eq/kg).

In radish root (both labels), parent compound was found at 0.43–1.2 percent TRR (<0.01 mg/kg). Metabolite 3-OH-F8426-Cl-PAc accounted for 20–39 percent TRR (<0.01 mg eq/kg, free 12–24 percent + conj. 8.6–15 percent). F8426-Cl-PAc accounted for 16–17 percent TRR (<0.01 me eq/kg, free 12–13 percent + conj. 3.6–4.2 percent). 3-OH-F8426-BAc accounted for 7.4–14 percent TRR (<0.01 mg eq/kg, free 3.7–3.8 percent + conj. 3.6–9.7 percent TRR). F8426-BAc was found at 4.4–22 percent TRR (<0.01 mg eq/kg, free 0.67–14 percent + conj. 3.7–7.4 percent). F8426-CAc was detected at 2.8 percent TRR in both labels. Eight to nine unidentified metabolites were detected at 15–20 percent TRR, each at less than 5 percent TRR, except for one metabolite (11–15 percent TRR, 0.002 mg eq/kg).

Potato

^{14}C-Carfentrazone-ethyl (carbonyl or phenyl label) was applied three times to the potato crops grown outdoor in wooden boxes filled with sandy loam soil. Potato crops were treated at 10 percent crop emergence (1st application) at a rate of 20 g ai/ha, and at full growth leaf stages (2nd, 3rd application) at a rate of 60 g ai/ha. Immature and mature potatoes were collected 94 days after the first application (prior to second application) and 12 days after third application, respectively.

TRR in potato tubers (mature and immature, both labels) were at less than 0.01 mg eq/kg. In immature and mature stalks (both labels), TRR were 0.007–0.025 mg eq/kg and 1.36–1.60 mg eq/kg, respectively. Potato tuber was not further investigated due to low radioactivity.

The extractability of radioactivity with methanol/water was good at 92–94 percent TRR in mature stalk (both labels). Conjugates were not present at a significant level in the solvent extracts before and after hydrolysis (1 mol/L HCl).

In mature stalk (both labels), parent compound accounted for 37–40 percent TRR (0.50–0.55 mg/kg). Metabolite F8426-Cl-PAc was found at 17–23 percent TRR (0.26–0.28 mg eq/kg). 3-OH-F8426-Cl-PAc was found at about 5 percent TRR (0.060–0.083 mg eq/kg). Five unidentified metabolites were detected at each less than 5 percent TRR, but above 0.01 mg eq/kg (0.034–0.066 mg eq/kg).

Wheat

^{14}C-Carfentrazone-ethyl (carbonyl or phenyl label) was applied to wheat plants grown in greenhouse with a single foliar spray. The application was performed at the middle and the end of the tillering stage (28 days after sowing) at rates of 35 g ai/ha and 140 g ai/ha. Forage and mature crop were collected 19 and 63 DAT, respectively.

TRR in wheat grain (both labels) were <0.01 mg eq/kg (0.002 mg eq/kg at 140 g ai/ha) and wheat grain was not further investigated.

In forage (both labels), TRR were 0.12–0.14 mg eq/kg and 0.52–0.72 mg eq/kg at lower and higher rate, respectively. In straw (both labels), TRR were 0.24–0.26 mg eq/kg and 1.11–1.25 mg eq/kg at lower and higher rate, respectively.

The majority of the radioactivity (84–88 percent TRR) was extracted with methanol/water in forage and straw (both labels, 35 g ai/ha). The solvent extracts were further partitioned, yielding 24–27 percent TRR in dichloromethane fraction and 58–63 percent TRR in aqueous methanol fraction. Acid hydrolysis (1 mol/L HCl) of aqueous methanol fraction released 48–58 percent TRR.

In forage (both labels), parent compound was found at 1.6–2.0 percent TRR (<0.01 mg/kg). Metabolite 3-OH-F8426-Cl-PAc accounted for 17 percent TRR (0.021–0.023 mg eq/kg, free 11 percent + conj. 5.9–6.1 percent). DesMe-F8426-Cl-PAc accounted for 14 percent TRR (0.017–0.019 mg eq/kg, free 2.0–2.3 percent + conj. 12 percent). F8426-α-conjugate-PAc was found at 9.0–9.6 percent TRR (0.011–0.013 mg eq/kg). F8426-Cl-PAc and F8426-CAc were found at each ca. 5 percent TRR (<0.01 mg eq/kg). Seven unidentified metabolites were detected at each less than 10 percent TRR (≤0.01 mg eq/kg).

In straw (both labels), parent compound was found at 1.4–1.7 percent TRR (<0.01 mg/kg). Metabolite 3-OH-F8426-Cl-PAc accounted for 12–13 percent TRR (0.026–0.031 mg eq/kg, free 8.7–10 percent + conj. 2.3–2.8 percent). DesMe-F8426-Cl-PAc accounted for 9.5–10 percent TRR (0.023–0.025 mg eq/kg, free 1.1–1.4 percent + conj. 8.4–8.6 percent). F8426-α-sulfo-deschloro-PAc (not found in forage) was found at 7.1–7.5 percent TRR (0.018 mg eq/kg, free 0.8–0.9 percent + conj. 6.3–6.6 percent). F8426-Cl-PAc, F8426-CAc, and F8426-α-conjugate-PAc were found at each less than 5 percent TRR (≤0.01 mg eq/kg). Seven unidentified metabolites were detected at each less than 10 percent TRR (≤0.02 mg eq/kg).

Rice, paddy (paddy water application)

A single paddy water application of 14C-carfentrazone-ethyl (carbonyl label) was made to rice grown in tub in greenhouse. At the 4 to 6 leaf stage (transplantation stage), the test solution was applied to the sandy loam soil at a rate of 90 g ai/ha. The rice plants remained flooded to 0.5–1 inch deep 24 hours after application. Rice forage was harvested 7 DAT. Panicles, roots and the remaining plant body were harvested after the flowering stage (181 DAT). At maturity (209 DAT), rice grain/brown rice/husk/straw/mature roots were harvested.

TRR in forage (7 DAT) was 4.16 mg eq/kg. In remaining plant body, panicles, and roots, TRR were 0.026 mg eq/kg, 0.005 mg eq/kg, and 0.17 mg eq/kg, respectively. In husk, straw, and mature roots, TRR were 0.039, 0.008, and 0.13 mg eq/kg, respectively. TRR in rice grain and brown rice were detected at less than 0.01 mg eq/kg and were not further investigated in rice grain.

The extractability of radioactivity with methanol/water was good at 95 percent TRR in forage. However, in roots (181 DAT, 209 DAT), the extractability was low at 41–45 percent TRR. Acid hydrolysis (1 mol/L HCl) released 20–26 percent TRR from the roots post-extraction solids, remaining 29–47 percent TRR in the terminal residues. For 209 DAT root, the radioactive residues (26 percent TRR) released by the hydrolysis were also analysed along with the solvent extract for characterisation of components.

In forage (7 DAT), no parent carfentrazone-ethyl was detected. Metabolite F8426-Cl-PAc was predominant, accounting for 81 percent TRR (3.25 mg eq/kg). F8426-CAc and one unknown fraction were found at each less than 10 percent TRR (0.22–0.23 mg eq/kg).

In roots (181 DAT and 209 DAT), parent compound was detected at 1.4–3.8 percent TRR (<0.01 mg/kg). Metabolites found in roots were identified by TLC against reference compounds F8426-Cl-PAc was found at 9.4–24 percent TRR (0.016–0.027 mg eq/kg). Other metabolites, F8426-CAc, 3-OH-F8426-Cl-PAc (immature root), and F8426-α-sulfo-deschloro-PAc were found at each less than 10 percent TRR (<0.01 mg eq/kg), except for 3-OH-F8426-Cl-PAc (14 percent TRR, 0.015 mg eq/kg) in mature root. Five to six uncharacterized fractions were present at 19–20 percent TRR (0.020–0.034 mg eq/kg), each less than 10 percent TRR (≤0.01 mg eq/kg).

Rice, upland (foliar application)

A single foliar application of ^{14}C- carfentrazone-ethyl (carbonyl label) was made to rice grown in tub (sandy loam soil) in greenhouse. At the 4 to 6 leaf stage (transplantation stage), the test solution was applied to the top of the rice plants at a rate of 90 g ai/ha. Rice plants were irrigated (no irrigation during the first 24 hours following application) but not flooded. Rice forage was harvested zero days (immediately after treatment) and 7 days after treatment. Panicles, roots and the remaining plant body were harvested after the flowering stage (181 DAT). At maturity (209 DAT), dried rice plants were harvested. Samples collected were forage (0 DAT, 7 DAT), the remaining plant body/panicles/roots (181 DAT), and rice grain/brown rice/husk/straw/mature roots (209 DAT).

TRR in forage was 12.1 mg eq/kg and 8.03 mg eq/kg at 0 DAT and at 7 DAT, respectively. In remaining plant body, panicles, and roots, TRR were 0.023 mg eq/kg, 0.004 mg eq/kg, and 0.13 mg eq/kg, respectively. In straw, husk, and mature roots, TRR were 0.024 mg eq/kg, 0.009 mg eq/kg, and 0.18 mg eq/kg, respectively. In rice grain and brown rice, TRR were detected at less than 0.01 mg eq/kg and further investigations on rice were not conducted.

The extractability of radioactivity with methanol/water was good at 91–99 percent TRR in forage (0 and 7–DAT). However, in roots (181 DAT, 209 DAT), extractability was low at 38–41 percent TRR. Acid hydrolysis (1 mol/L HCl) released 18–19 percent TRR from the roots post-extraction solids, remaining 42–43 percent TRR in the terminal residues. For 209 DAT root, the radioactive residues (19 percent TRR) released by the acid hydrolysis were also analysed for characterisation of components.

In forage, parent carfentrazone-ethyl was found at 53 percent TRR (6.1 mg eq/kg) and 30 percent TRR (2.21 mg eq/kg) at 0 and 7 DAT, respectively. Metabolite F8426-Cl-PAc accounted for 46 percent TRR (5.3 mg eq/kg) and 51 percent TRR (3. 8 mg eq/kg) at 0 DAT and 7 DAT, respectively. In 7 DAT forage, F8426-CAc and 3-OH-F8426-Cl-PAc were found at each less than 5 percent TRR (0.065–0.24 mg eq/kg). Two identified metabolites were detected at each less than 5 percent TRR (0.052–0.13 mg eq/kg) in 7 DAT forage.

For roots (181 DAT and 209 DAT), parent compound was detected at 4.0–6.0 percent TRR (<0.01 mg/kg). Metabolites found in roots were identified by TLC against reference compounds. F8426-Cl-PAc was found at 12–19 percent TRR (0.019–0.035 mg eq/kg). 3-OH-F8426-Cl-PAc was found at 7.0–11 percent TRR (0.011–0.019 mg eq/kg). Other metabolites, F8426-CAc, and F8426-α-sulfo-deschloro-PAc were found at each less than 10 percent TRR (≤0.012 mg eq/kg). Five to six uncharacterized fractions were detected at 12–13 percent TRR, each less than 10 percent TRR (≤0.01 mg eq/kg).

Maize

^{14}C-Carfentrazone-ethyl (carbonyl or phenyl label) was applied to maize grown in greenhouse. At four to six leaf stage, a single foliar application of ^{14}C-carfentrazone-ethyl dissolved in an acetone-water mixture was made at rates of 69.5 g ai/ha and 139 g ai/ha. Forage, silage, and fodder (stalks, husks and cobs combined)/grain were harvested 54, 75, 103 DAT at lower rate, respectively, and 42, 61, and 76 DAT at higher rate, respectively.

TRR in grain (both labels) were less than 0.01 mg eq/kg at higher rate and further investigations were not conducted. TRR in forage (both labels) were 0.029–0.054 mg eq/kg and 0.76–0.90 mg eq/kg at lower and higher rate, respectively. In silage (both labels), TRR were 0.027–0.056 mg eq/kg and 0.74–0.78 mg eq/kg at lower and higher rate, respectively. In fodder (both labels), TRR were 0.10–0.27 mg eq/kg and 0.99–1.09 mg/kg at lower and higher rate, respectively.

The extractability of radioactivity with methanol/water (both rates, both labels) was 85–94 percent TRR in forage, 79–93 percent TRR in silage, and 68—83 percent TRR in fodder, showing relatively lower extractability in silage and fodder. The solvent extracts (139 g ai/ha) were further partitioned, yielding 9.1–42 percent TRR in dichloromethane fraction and 42–62 percent TRR in aqueous fraction. The aqueous fraction was subjected to acid hydrolysis (1 mol/HCl).

In solvent extracts of forage, silage, and fodder treated at 69.5 g ai/ha, parent compound was found at 10–37 percent TRR (0.009–0.055 mg/kg) and F8426-Cl-PAc accounted for 8.2–13 percent TRR (0.003–0.024 mg eq/kg). Seven unidentified metabolites were found at each less than 24 percent TRR (≤0.046 mg eq/kg).

In forage, silage, and fodder treated at 139 g ai/ha (solvent extracts), parent compound was found at 3.2–34 percent TRR (0.035 –0.26 mg/kg) and F8426-Cl-PAc accounted for 3.2–9.8 percent TRR (0.035–0.077 mg eq/kg). Seven unidentified metabolites were found at each less than 30 percent TRR (≤0.32 mg eq/kg).

In forage treated at 139 g ai/ha (solvent extracts, partitioned and acid hydrolysed), parent compound was found at 12–33 percent TRR (0.11–0.25 mg/kg). F8426-Cl-PAc accounted for 7.1–11 percent TRR (0.064–0.084 mg eq/kg; free 5.2–10 percent + conj. 0.9–1.9 percent) and DesMe-F8426-Cl-PAc accounted for

16–19 percent TRR (free nd–0.4 percent + conj. 16–19 percent). F8426-α-sulfo-deschloro-PAc (characterized), 3-OH-F8426-Cl-PAc, and nine unidentified metabolites were detected at each less than 10 percent TRR (≤0.088 mg eq/kg).

In silage treated at 139 g ai/ha (solvent extracts, partitioned and acid hydrolysed), parent compound was found at 7.8–30 percent TRR (0.058–0.24 mg/kg). F8426-Cl-PAc accounted for 6.7–11 percent TRR (0.049–0.084 mg eq/kg; free 5.1–9.0 percent + conj. 1.6 percent) and DesMe-F8426-Cl-PAc accounted for 16–19 percent TRR (0.13–0.14 mg eq/kg, free nd–0.3 percent TRR + conj. 16–19 percent). F8426-α-sulfo-deschloro-PAc (characterized), 3-OH-F8426-Cl-PAc, and nine unidentified metabolites were detected at each less than 10 percent TRR (≤0.065 mg eq/kg).

In fodder treated at 139 g ai/ha (solvent extracts, partitioned and acid hydrolysed), parent compound was found at 4.0–20 percent TRR (0.044–0.20mg/kg). F8426-Cl-PAc accounted for 5.2–12 percent TRR (0.057–0.11 mg eq/kg; free 2.9–7.3 percent + conj. 2.3–4.3 percent) and DesMe-F8426-Cl-PAc accounted for 18–21 percent TRR (0.18–0.23 mg eq/kg, free 0.4–0.5 percent TRR + conj. 18–21 percent). F8426-α-sulfo-deschloro-PAc (characterized), 3-OH-F8426-Cl-PAc, and nine unidentified metabolites were detected at each less than 10 percent TRR (≤0.092 mg eq/kg).

Summary of plant metabolism

Metabolism pattern of ^{14}C-carfentrazone-ethyl was similar in the crops. Residue levels in edible parts of plants were very low (<0.01 mg eq/kg). Parent compound (40 percent TRR in potato stalk), F8426-Cl-PAc (81 percent TRR in rice forage), and 3-OH-F8426-Cl-PAc (49 percent TRR in soya bean forage) were present in high proportions in feed commodities. Carfentrazone-ethyl in plants is mainly metabolized via hydrolysis of the ester bond to form F8426-Cl-PAc, which is further oxidized on the methyl moiety of the triazolinone ring to give the corresponding 3-OH-F8426-Cl-PAc. The two minor routes involve further oxidation of 3-OH-F8426-Cl-PAc to generate a 3-dealkylated product, DesMe-F8426-Cl-PAc and dehydrohalogenation of F8426-Cl-PAc to give F8426-CAc and its subsequent oxidation at the alkenyl moiety to give F8426-BAc. In plants, conjugation forms of F8426-Cl-PAc, 3-OH-F8426-Cl-PAc, and DesMe-F8426-Cl-PAc are also present.

Environmental fate

Hydrolysis

At pH 4 (50 °C), a preliminary test showed that less than 10 percent of carfentrazone-ethyl was hydrolysed after 5 days. At pH 7, the DT_{50} values of carfentrazone-ethyl were 9.8 days, 3.4 days, and 11.2 days at 20 °C, 30 °C, and 50 °C, respectively. At pH 9, the DT_{50} values were 3.5 days, 1.5 days, and 0.3 days at 20 °C, 30 °C, and 50 °C, respectively. Hydrolysis product F8426-Cl-PAc was formed.

In conclusion, carfentrazone-ethyl is hydrolytically stable in acidic condition, however, hydrolyses at moderate to very rapid rates at conditions of neutral to alkaline pH.

Aqueous photolysis

Carfentrazone-ethyl in aqueous solution (pH 5) degraded under artificial sunlight with half-lives of 8.3–12.3 days (25 °C). F8426-Cl-PAc degraded with half-lives of 5.7–17.5 days (25 °C), not being dependent on pH. Aqueous photolysis of carfentrazone-ethyl and F8426-Cl-PAc are moderately fast.

Soil photolysis

Carfentrazone-ethyl was stable to photolysis under laboratory conditions. About 70 percent of carfentrazone-ethyl remained after 30 days and the only degradation product was F8426-Cl-PAc (27 percent after 30 days).

Aerobic soil degradation

Soils of four types with 50 percent or 75 percent moisture capacity were treated with ^{14}C-carfentrazone-ethyl (carbonyl or phenyl label) and incubated under aerobic conditions at 20□C in the dark. Degradation of carfentrazone-ethyl was very rapid, with a DT_{50} of <0.1–1.3 days. F8426-Cl-PAc, F8426-CAc, F8426-PAc, F8426-BAc, and 3-OH-F8426-BAc were found at greater than 10 percent of the applied radioactivity (AR) during the incubation.

In another study, three soils treated with ^{14}C-carfentrazone-ethyl (phenyl label) were incubated under aerobic conditions at 20 °C and potential force 2. F8426-Cl-PAc, F8426-CAc, and F8426-BAc were main metabolites common in aerobic soils. Methoxy-F8426-despropionate was one of the main metabolites found in neutral and alkaline soils, while 3-OH-F8426-BAc and F8426-dicarboxylic acid were the main metabolites found in acidic soil. Carfentrazone-ethyl dissipated very rapidly, with DT_{50} values of less than 1 day (geometric mean 0.013 days) for the three soils tested. Calculated DT_{50} values (geometric mean) of F8426-Cl-PAc, F8426-CAc, and F8426-BAc were 11.3, 9.5, and 43.7 days, respectively.

In conclusion, carfentrazone-ethyl is not persistent in aerobic soils. Metabolites F8426-Cl-PAc, F8426-CAc, and F8426-BAc are moderately persistent but no potential accumulations are expected.

Field dissipation studies

Carfentrazone-ethyl was immediately degraded in soil under field condition, applied to bare soil or winter wheat covered soil at 100 g/ha. F8426-Cl-PAc was the main degradation product detected in soil. DT50 values of F8426-Cl-PAc was 3–14 days (one exception 27 days) and DT90 values, 11–47 days (one exception 88 days). F8426-PAc, F8426-CAc, and F8426-BAc were detected. In carry over studies, after application to bare soil, winter wheat or barley (20 g ai/ha), no residue was detected in soil at harvest.

In conclusion, carfentrazone-ethyl is not persistent in soil.

Water-sediment system

Radioactivity of ^{14}C-carfentrazone-ethyl (carbonyl or phenyl) in the water phase were gradually transferred to the sediment phase. In three studies, radioactivity in water phase was at 56–73 percent or 73–86 percent of the applied radioactivity at 100 days and 70–80 percent AR at 30 days. In the water-sediment systems, ^{14}C-carfentrazone-ethyl rapidly converted to F8426-Cl-PAc, which degraded to F8426-PAc, F8426-CAc, and F8426-BAc.

The half-lives of carfentrazone-ethyl in water-sediment systems (different soil types) at 20 °C in the dark were 0.06, 0.09, 0.27, 0.32, 1.38, and 1.47 days. The half-lives of F8426-Cl-PAc in water-sediment systems (different soil types) at 20 °C in the dark were 44.2, 49, 81.4, and 108 days.

In summary, dissipation of carfentrazone-ethyl in water-sediment system was similar to other environmental systems. Metabolic pattern in paddy rice is expected to be similar to those of other environmental and agricultural systems.

Residues in succeeding or rotational crop

Confined rotational crop studies

A confined rotational crop study with ^{14}C-carfentrazone-ethyl was conducted in glasshouses. Soil was treated with ^{14}C-carfentrazone-ethyl (carbonyl or phenyl label) at a nominal rate of 35 g ai/ha. At 1, 3, 6 or 9 months after treatment, radish, lettuce, and wheat crops were planted into the treated soil. Crops were harvested at maturity, except wheat forage.

In all planting intervals and both labels, TRR in wheat grain were negligible (≤0.012 mg eq/kg). In lettuce leaf and radish roots, TRR were detected at up to 0.014 mg eq/kg and up to 0.022 mg eq/kg, respectively. In radish tops, TRR were detected at up to 0.067 mg eq/kg. In wheat forage and straw, TRR were detected at up to 0.035 mg eq/kg and up to 0.42 mg eq/kg, respectively. TRR levels seemed not to change over time.

The extractability of radioactivity with methanol/water was good at 84–98 percent TRR in both labels and all planting intervals (except wheat grain, 57–78 percent TRR). Wheat grain extracts were not further investigated due to low radioactivity.

The solvent extracts from the carbonyl labelled crops (radish tops 1, 3, 6 months; wheat forage and straw 1, 3, 6, 9 months) were fractionized by SPE, each fraction (methanol-1 and aqueous-1 fraction) hydrolysed in 1 mol/L HCl solution, and each hydrolysate fractionized by SPE (methanol-2 and aqueous-2 fraction from methanol-1 hydrolysate; methanol-3 and aqueous-3 fraction from aqueous-1 hydrolysate). The methanol-2 fractions and the aqueous-3 fractions (1, 3, 9 months in wheat straw) were further investigated for identification of radioactive components in the rotational crops.

The solvent extracts from the phenyl labelled crops (lettuce leaf 6 months, radish tops 1, 3, 6 months, radish roots 6 months, wheat forage and straw 1, 3, 6, 9 months) were fractionized by SPE and the resultant methanol-1 fractions (non-hydrolysis) were further investigated for identification of radioactive components in the rotational crops. Overall, there were little differences in residue pattern in both labels and acid hydrolysis/no-acid hydrolysis fractions.

In all planting intervals and both labels, parent compound was detected in all crops, but at less than 0.01 mg/kg, except for 0.048 mg/kg in wheat straw. In radish tops, the parent slightly increased at longer PBIs (4.0–6.3 percent TRR at 1 month and 8.4–9.7 percent TRR at 6 months). In wheat forage, parent accounted for 9.0–12 percent TRR at 6 months and in wheat straw to 6.0–12 percent TRR at 9 months (0.017–0.048 mg/kg).

3-OH-F8426-BAc was detected at 23 percent TRR in lettuce leaf and 74 percent TRR (0.016 mg eq/kg) in radish roots. 3-OH-F8426-Bac-was detected at up to 53 percent TRR (1 and 6 months, 0.036 mg eq/kg at 6 months) in radish tops, up to 38 percent TRR (1 month, 0.011 mg eq/kg at 6 and 9 months) in wheat forage, and up to 39 percent TRR (3 months, or 0.14 mg eq/kg at 9 months) in wheat straw.

F8426-BAc were detected at 6.7–11 percent TRR (<0.01 mg eq/kg) in lettuce and radish roots (6 months), up to 14 percent TRR (3 months, 0.0042 mg eq/kg at 6 months) in radish tops, up to 11 percent TRR (9 months, 0.0037 mg eq/kg) in wheat forage, and up to 8.6 percent TRR (1 month, 0.028 mg eq/kg) in wheat straw.

DesMe-F8426-BAc was not detected in lettuce leaf, radish roots and tops and detected up to 3.9 percent TRR (9 months) in wheat forage and up to 29 percent TRR (1 month, 0.094 mg eq/kg) in wheat straw.

DesMe-F8426-PAc was detected at 12 percent TRR in lettuce leaf and not detected in radish roots. It was detected at up to 8.4 percent TRR (1 month) in radish tops, up to 26 percent TRR (6 months) in wheat forage, and up to 15 percent TRR (3 months, 0.026 mg eq/kg at 9 months) in wheat straw.

DesMe-F8426-Cl-PAc was detected at 8.2 percent TRR in lettuce leaf and not detected in radish roots. It was detected at up to 5.1 percent TRR (3 months) in radish tops, up to 9.2 percent TRR (9 months) in wheat forage, and up to 7.9 percent TRR (3 months, 0.019 mg eq/kg at 9 months) in wheat straw.

In summary, 3-OH-F8426-BAc was a predominant metabolite in rotational crops. Its formation is most likely through an uptake of F8426-benzoic acid from the soil and oxidation of the 3-methyl group.

Field rotational crop study

In two sites (Germany and the Kingdom of the Netherlands), rotational crops were planted nominal 30 days for Lamb's lettuce, radish, and barley and nominal 60 days for lamb's lettuce and barley after treatment of the primary crop (potatoes). The applications were performed twice to potato tubers, at either 60 and 36 g ai/ha or two times at 60 g ai/ha. Harvested crops were stored frozen and the maximum storage period until analysis was 359 days.

Residues of carfentrazone-ethyl and F8426-Cl-PAc were <0.01 mg/kg in lamb's lettuce, radish tops and roots, and barley grain and straw.

At longer storage days, the samples stored frozen (–18 °C) were analysed for 3-OH-F8426-BAc, F-8426-BAc, and DesMe-F8426-Cl-PAc. The maximum storage intervals from sampling to extraction were 36 months (Germany and the Kingdom of the Netherlands) in radish, 36 months (Germany) and 24 months or 36 months (the Kingdom of the Netherlands) in lettuce, and 28 months (Germany and the Kingdom of the Netherlands) in barley. Residues for 3-OH-F8426-BAc, F-8426-BAc, and DesMe-F8426-Cl-PAc were all below the LOQ (<0.01 mg/kg; <0.02 mg/kg for 3-OH-F8426-BAc and F-8426-BAc in barley straw).

However, the storage periods of the samples analysed for F8426-BAc (lamb's lettuce, radish, barley) and DesMe-F8426-Cl-PAc (radish, barley) were not covered by the stability studies.

From the field rotational crop studies, no residues of carfentrazone-ethyl, F8426-Cl-PAc, and 3-OH-F8426-BAc are expected in rotational crops (<LOQ levels). For DesMe-F8426-Cl-PAc, no residue is expected in lamb's lettuce (<LOQ level).

Animal metabolism

Rats

The metabolism of carfentrazone-ethyl in rats was reviewed in the framework of the toxicological evaluation by the WHO Core Assessment Group of the 2024 JMPR.

Lactating goat

^{14}C-Carfentrazone-ethyl (carbonyl or phenyl label) was administered to lactating goats with gelatine capsules once a day for 7 consecutive days. Three goats (including control) were dosed at 88 ppm in feed, corresponding to approximately 3 mg/kg bw per day. Goats were sacrificed within 24 hours after the final dose and tissue samples collected. Milk samples were collected daily.

In both labels, the majority of the administered dose (AD) was excreted in urine (78–81 percent), faeces (4.5–6.8 percent), and milk (0.12–0.13 percent). Radioactivity in tissues (both labels) ranged from <0.01–0.02 percent of the AD.

TRR (both labels) were highest in kidney (0.50–0.53 mg eq/kg) followed by milk (0.26–0.34 mg eq/kg) and liver (0.18–0.26 mg eq/kg). In muscle and fat, TRR levels (both labels) were very low (≤0.011 mg eq/kg and <0.02 mg eq/kg, respectively). In milk, a plateau was reached after 3 days.

The majority of the radioactivity was extracted by different solvent systems (both labels), accounting for 94–100 percent TRR in milk, 80 percent TRR in muscle, 60 percent TRR in fat, 84–94 percent TRR in liver, and 93–97 percent TRR in kidney.

In milk (both labels), no parent was detected. F8426-Cl-PAc accounted for 83–94 percent TRR (0.25–0.28 mg eq/kg), F8426-PAc and F8426-CAc for less than 5 percent TRR each (0.015 mg eq/kg). One unidentified metabolite was detected at less than 5 percent TRR (0.018 mg eq/kg).

In loin muscle (phenyl label), parent was detected at 2.2 percent TRR (<0.01 mg/kg), F8426-Cl-PAc accounted for 16 percent TRR (<0.01 mg eq/kg), and F8426-PAc and F8426-CAc were detected at each less than 5 percent TRR.

In omental fat (phenyl label), parent was found at 35 percent TRR (0.006 mg/kg), F8426-Cl-PAc at less than 5 percent TRR and one unidentified metabolite at 11 percent TRR.

In liver (both labels), no parent was detected. F8426-Cl-PAc accounted for 27–58 percent TRR (0.047–0.15 mg eq/kg), F8426-PAc for 8.9–40 percent TRR (0.023–0.070 mg eq/kg), and F8426-CAc for less than 5 percent TRR (<0.01 mg eq/kg).

In kidney (both labels), no parent was detected. F8426-Cl-PAc accounted for 23–62 percent TRR (0.12–0.33 mg eq/kg), F8426-PAc for 17–57 percent TRR (0.091–0.28 mg eq/kg), and F8426-CAc for less than 10 percent TRR (0.035 mg eq/kg).

Laying hens

Six groups of five hens (three groups per label) were orally dosed with ^{14}C-carfentrazone-ethyl (carbonyl or phenyl label) for 7 consecutive days at a daily dose of 100 ppm feed, corresponding to approximately

0.8 mg/kg bw/day. At sacrifice, approximately 4–6 hours after the last administration, liver, fat, breast muscle, and thigh muscle were collected. Eggs were collected daily.

TRR in egg (yolks and whites), muscle, and fat were at less than 0.01 mg eq/kg (both labels). In liver (both labels), TRR was observed at levels of 0.045–0.055 mg eq/kg. No plateau was observed in egg yolks. In egg whites, a plateau reached after 3 days.

The extractability of radioactivity in liver with acetonitrile/water was good at 86–89 percent TRR (both labels). No parent was detected and F8426-Cl-PAc accounted for 68–70 percent TRR (0.031–0.038 mg eq/kg). 3-OH-F8426-Cl-PAc and F8426-PAc were detected at each less than 5 percent TRR (<0.01 mg eq/kg) and unidentified metabolites were detected at each less than 5 percent TRR.

Summary of animal metabolism

Carfentrazone-ethyl was present at a significant level only in goat fats. F8426-Cl-PAc was found in high proportions in goats (muscle, liver, kidney, milk) and laying hens (liver). F8426-PAc was one of the major components in goat liver and kidney.

Metabolic pathway of carfentrazone-ethyl in lactating goats and laying hens involves hydrolysis of the ester to form F8426-Cl-PAc. In goats, the resulting acid undergoes dechlorination and dehydrochlorination to give F8426-PAc and F8426-CAc, respectively. In hens, F8426-Cl-PAc converts to F8426-PAc and into 3-OH-F8426-Cl-PAc. The metabolic pathway of carfentrazone-ethyl in livestock animals was similar to that in rats.

Residue analysis

An analytical method using QuEChERS and LC-MS/MS was available for analysing carfentrazone-ethyl and F8426-Cl-PAc in various plant commodities. The method was validated in high water content commodity (radish, lettuce, potato), high starch and low water and fat content commodity (wheat grain, barley grain), high acid and high-water content commodity (orange, grape), high oil and intermediate water content commodity (olives), dry hops, and barley straw. LOQ values were 0.01 mg/kg for each of the analytes in all matrices, except for dry hops (0.05 mg/kg). The method was also validated for analysis of F8426-BAc, 3-OH-F8426-BAc, and DesMe-F8426-Cl-PAc in matrices of radish, lettuce, barley grain at LQO values of 0.01 mg/kg (barley straw, LOQ of 0.02 mg/kg).

Other analytical methods used in residue trials and storage stability tests were also available for analyses of F8426-Cl-PAc, 3-OH-F8426-Cl-PAc, and DesMe-F8426-Cl-PAc. The methods involved solvent extraction (mainly with acetone/water), partition with hexane (parent), acid hydrolysis of aqueous fraction, derivatization (methylation, acylation), and determination by GC, GC-MS, or LC-MS/MS. LOQ values were 0.01 or 0.05 mg/kg for each of the analytes in various plant matrices.

For animal commodities, QuEChERS and LC-MS/MS method was available for analyses of carfentrazone-ethyl and F8426-Cl-PAc in bovine (tissues, milk) and poultry (egg, liver) matrices. LOQ values were 0.01 mg/kg for each of the analytes in the animal matrices.

In an animal feeding study, carfentrazone-ethyl, F8426-Cl-PAc, and F8426-PAc were analysed using other analytical method, involving solvent extraction (with acetone or acetone/water), solid phase extraction, methylation, and determination by GC-ECD. The method was validated at LOQ 0.025 or 0.05 mg/kg for

each of the analytes in bovine matrices (milk, milk cream, tissues), except for LOQ 0.5 mg/kg for carfentrazone-ethyl in kidney.

Storage stability

Storage stability studies were conducted with carfentrazone-ethyl and its metabolites in various matrices, when stored frozen at below −18 °C or −20 °C, and the results are shown in Table 5.6.7.

Table 5.6.7 Storage stability of carfentrazone-ethyl and the metabolites at frozen condition

Compound	Commodity category	Storage period by commodity category, months, at least	Tested matrix (and stable period, months, at least)
Plant commodities			
Carfentrazone-ethyl	High water	24	Mint tops 18 months, wheat green plant 24 months
	High oil	18	Mint oil
	High protein	12	Dry bean
	High starch	24	Wheat grain and straw
F8426-Cl-PAc	High water	24	Mint tops 18 months, wheat green plant 24 months
	High oil	18	Mint oil
	High protein	12	Dry bean
	High starch	24	Wheat grain and straw
3-OH-F8426-Cl-PAc	High water	24	Mint tops 18 months, wheat green plant 24 months
	High oil	22	Mint oil 18 months, soya bean and field corn oil 22 months
	High starch	24	Sweet corn kernels and field corn starch 22 months, wheat grain and straw 24 months
DesMe-F8426-Cl-PAc	High water	24	Wheat green plant
	High oil	22	Soya bean and field corn oil
	High protein	12	Dry bean
	High starch	24	Sweet corn kernels and field corn starch 22 months, wheat grain and straw 24 months
3-OH-F8426-BAc	High water	48	Mint tops 18 months, corn forage 48 months
	High oil	18	Mint oil
	High starch	48	Corn grain, wheat hay and straw
F8426-BAc	High water	18	Mint tops
	High oil	18	Mint oil
Animal commodities			
Carfentrazone-ethyl	–	1	Cow milk
	–	Not stable at 1 month	Kidney; Parent alone degraded after one month of storage. The combined stability of parent plus F8426-Cl-pac was demonstrated for at least one month.
F8426-Cl-PAc	–	1	Cow milk and kidney
F8426-PAc	–	1	Cow milk and kidney

Definition of the residue

Plant commodities

The meeting received metabolism studies on soya bean, radish, potato, wheat, rice, and maize following foliar application of carfentrazone-ethyl (including paddy water application in rice). The metabolic pathway of carfentrazone-ethyl was similar among these plants.

The studies involved an early timing application with a single application at 3–4 leaf stage (soya beans, radish) or 4–6 leaf stage (rice, maize) or tillering stage (wheat) and three applications (potato) at

10 percent crop emergence and full growth leaf stages. Crops were harvested at immature state (soya bean forage/hay, potato, wheat forage, rice forage/plant, maize plant at milk and dent stage) and at maturity (radish, potato, wheat plant, rice plant, maize plant) with maximum intervals of 12–14 days for radish and potatoes and 63–209 days for wheat, soya bean, rice, and maize.

For radish roots, carfentrazone-ethyl residues were present at up to 1.2 percent TRR (0.016 mg eq/kg). Metabolites 3-OH-F8426-Cl-PAc, F8426-Cl-PAc, 3-OH-F8426-BAc, and F8426-BAc were found at high proportions (each maximum 14–39 percent TRR), as free and conjugated forms.

In the other edible commodities (soya bean seed, potato tuber, wheat grain, rice grain, maize grain), carfentrazone-ethyl residues were below 0.01 mg eq/kg. As the residue levels were very low, further identification for metabolic components were not conducted.

In the feed commodities, residues ranged from 0.01–8.0 mg eq/kg, with carfentrazone-ethyl accounting for up to 15–40 percent TRR in soya bean forage, rice forage, and maize forage/silage/fodder. Metabolite F8426-Cl-PAc and 3-OH-F8426-Cl-PAc residues ranged from 8.8 to 81 percent TRR in soya bean forage/hay, radish leaf, rice forage from paddy water application and maize forage/silage/fodder and from 13 to 52 percent TRR in soya bean forage/hay, radish leaf and wheat forage/straw, respectively. DesMe-F8426-Cl-PAc residues ranged from 10 to 21 percent TRR in wheat forage/straw and maize forage/silage/fodder. Metabolites were found as conjugated and/or non-conjugated form, depending on the crop type and intervals between application and harvest.

In a confined rotational crop study, a predominant metabolite 3-OH-F8426-Cl-BAc was found at up to 74 percent TRR, however, it was not detected in a field rotational crop study.

Under sterilization conditions, a predominant product F8426-deschloro-hydroxy-propionic acid was found at 77–83 percent AR and a major product F8426-Cl-PAc, at 13–15 percent AR.

A multiresidue analytical method using QuEChERS and LC-MS/MS was available and suitable for enforcement for parent and F8426-Cl-PAc (free form only) in plant commodities. In addition, single residue methods involving hydrolysis are available, which is suitable for enforcement of parent and free and conjugated metabolites.

The meeting noted that the submitted critical use pattern relies on the harvest aid treatment (desiccation) for pulses and cereal crops, applied closely with 0–7 days of PHI. The meeting concluded that available information on plant metabolism does not cover the critical use pattern adequately, since metabolization of the long intervals between treatment and harvest is expected to be significant, whereas harvest aid treatment may result in different composition ratios. In addition, residues in edible parts of the plants (except for radish roots) were not present in metabolism studies (early timing application), while present in residue trials (mature timing application). Consequently, identification of components suitable for estimation of maximum residue levels and for dietary exposure was not possible.

The meeting was unable to reach a conclusion on residue definition for plant commodities.

Animal commodities

Dietary burden for livestock could not be estimated since identification of residue components in feed commodities does not cover critical use pattern as harvest aid treatment. As residue definition for animal

commodities is based on quantification of expected components in animal matrices arising from intake of feed commodities, the meeting was unable to reach a conclusion on the residue definition for animal commodities.

Results of supervised residue trials on crops

The meeting received supervised residue trials on dry beans and peas, wheat, rice, and sorghum. As the meeting was unable to reach a conclusion on residue definition for plant commodities, maximum residue levels in plant commodities could not be estimated.

Fate of residues during processing

High temperature hydrolysis

Hydrolysis of 14C-carfentrazone-ethyl (carbonyl or phenyl label) under conditions of simulating processing was studied at 90 °C for 20 minutes (pH 4) for pasteurization, at 100 °C for 60 minutes (pH 5) for baking/brewing/boiling, and at 120 °C for 20 minutes (pH 6) for sterilization.

Carfentrazone-ethyl (both labels) was found at 98–106 percent, 87–87 percent, and 4.0–4.4 percent of the applied radioactivity under pasteurization, baking/brewing/boiling, and sterilization conditions, respectively.

In baking/brewing/boiling, several transformation products were detected at each less than 5 percent AR. In sterilization, F8426-deschloro-hydroxy-propionic acid was predominant, accounting for 77–83 percent AR. F8426-Cl-PAc was found at 13–15 percent AR. One to two products were detected at each less than 5 percent AR.

Carfentrazone-ethyl is stable under pasteurization; however, it is partially hydrolysed under baking/brewing/boiling. In sterilization, carfentrazone-ethyl was nearly completely hydrolysed, forming predominantly F8426-deschloro-hydroxy-propionic acid and at far less extent, F8426-Cl-PAc.

Residues in animal commodities

Farm animal feeding studies

Dairy cow

Holstein dairy cows were orally administered with carfentrazone-ethyl at dosing levels of 1 ppm, 3 ppm, and 10 ppm feed for 28 consecutive days. Animals were sacrificed within 24 hours of the last dosing. Residues of F8426, F8426-Cl-PAc, and F8426-PAc in tissues, milk, and milk cream were determined but no residues were found in any of the treated cow samples.

Animal commodity maximum residue levels

As the meeting was unable to reach a conclusion on residue definition for animal commodities, maximum residue levels in animal commodities could not be estimated.

Recommendations

As the meeting was unable to conclude on residue definition for plant and animal commodities, maximum residue levels in plant and animal commodities could not be estimated.

Dietary risk assessment

As the meeting was unable to conclude on residue definitions for plant and animal commodities, dietary intake assessments could not be conducted.

5.7 Chlorpyrifos (017)** (T, R)

5.7.1 Toxicology

Chlorpyrifos was previously evaluated by the FAO/WHO Joint Meeting on Pesticide Residues (JMPR) in 1972, 1977, 1982 and 1999. Chlorpyrifos was considered for re-evaluation at the present meeting under the periodic review program of the Codex Committee on Pesticide Residues (CCPR). Upon consideration of the toxicological dossier from the sponsor, the meeting concluded that the available toxicological database was insufficient as a basis to establish an acceptable daily intake and an acute reference dose. A toxicological re-evaluation of chlorpyrifos was not performed.

5.7.2 Residue and analytical aspects

Chlorpyrifos is a broad-spectrum organo-phosphorus insecticide that acts as a cholinesterase inhibitor used to control insects and mites in various crops. The compound has been evaluated for residues many times since 1972, the last time in 2006. It was schedule at the 54th Section of the CCPR for periodic evaluation of residues and toxicology by the 2024 JMPR.

The meeting concluded that it was not possible to perform a residue evaluation on the basis of the data submitted and determined that evaluation will not take place until a complete data package is received.

5.8 Chlormequat (015) (R)

5.8.1 Residue and analytical aspects

Chlormequat is the ISO-approved common name for 2-chloroethyltrimethylammonium chloride (IUPAC name) with CAS number of 999-81-5. Chlormequat, as an inhibitor of gibberellin synthesis, is used as a plant growth regulator which acts primarily by reducing cell elongation but also by lowering the rate of cell division.

Chlormequat was evaluated by JMPR in 1994 as a periodic review and in 1997, 1999, 2000, 2017 and 2022 for additional uses. The JMPR established an ADI of 0—0.05 mg/kg bw in 1997 and an ARfD of 0.05 mg/kg bw in 1999 for chlormequat chloride, both of which were confirmed by the 2017 JMPR. Its specifications were also established for technical concentrates and soluble concentrates by the Joint Meeting on Pesticides Specifications (JMPS) in 2005.

The 2017 JMPR concluded in the following residue definitions.

Definition of the residue for compliance with the MRL and dietary risk assessment for plant and animal commodities: chlormequat cation.

The residue is not fat-soluble.

At 54th CCPR in 2023, chlormequat was listed for consideration by the 2024 JMPR of a maximum residue level in barley based on alternative GAP. The current meeting received new information on use patterns on barley.

Results of supervised residue trials on crops

Barley

The 2000 JMPR estimated a maximum residue level of chlormequat cation in barley of 2 mg/kg and an STMR of 0.37 mg/kg. The estimations were confirmed by the 2017 JMPR based on the GAP in the United Kingdom of Great Britain and Northern Ireland (a foliar application at 1.65 kg ai/ha of chlormequat chloride at the timing of BBCH 25–30 (mid tillering to just prior to first node detectable) and supervised trial data from Europe.

At 2022 JMPR, new supervised trials conducted in Canada and the United States of America approximating the GAP in the United Kingdom of Great Britain and Northern Ireland were considered, and the JMPR estimated a maximum residue level of 7 mg/kg and an STMR of 1.5 mg/kg for barley. The International Estimate of Short-term Intake (IESTI) calculation for barley grain and its processed products resulted in a maximum of 110 percent of ARfD for children. As insufficient information on the validity of GAP considered at the 2017 JMPR was available, the 2022 JMPR retained the previous recommendation of maximum residue level of 2 mg/kg until information became available on valid GAPs for barley in countries which allowed lower application rates than the GAP used by the 2022 JMPR to enable the alternative GAP approach.

At the current JMPR, a new GAP for winter barley in Ireland was submitted, which is a foliar application at 1.5 kg ai/ha (chlormequat chloride) with the application timing of growth state (GS) 32 or earlier.

The meeting re-evaluated the residues data in winter and spring barley from supervised trials submitted to the 2017 JMPR (conducted in Europe between 2003 and 2011, analysed with Method BASF 530/0 with an LOQ of 0.039 mg/kg) and to the 2022 JMPR (conducted in North America in 2016, analysed with Method M01-001 with an LOQ of 0.0078 mg/kg). The residue data approximating the Ireland GAP are:

- Winter barley (n = 9): <0.04 mg/kg, 0.062 mg/kg, 0.12 mg/kg, 0.17 mg/kg, 0.38 mg/kg, 0.50 mg/kg, 0.59 mg/kg, 0.60 mg/kg and 0.93 mg/kg.
- Spring barley (n = 16): 0.12 mg/kg, 0.31 (2) mg/kg, 0.32 mg/kg, 0.36 mg/kg, 0.54 mg/kg, 0.65 mg/kg, 0.77 mg/kg, 1.0 mg/kg, 1.1 mg/kg, 1.5 (2) mg/kg, 1.6 mg/kg, 2.6 mg/kg, 3.3 mg/kg and 3.9 mg/kg.

Since distributions of residues in winter barley and spring barley when the application rates were the same (approximately 1.5 kg ai/ha) were not significantly different according to the Mann-Whitney U test ($p > 0.05$), the meeting decided to combine the datasets.

Residues of chlormequat cation in barley were (n = 25): <0.04 mg/kg, 0.062 mg/kg, 0.12 (2) mg/kg, 0.17 mg/kg, 0.31 (2) mg/kg, 0.32 mg/kg, 0.36 mg/kg, 0.38 mg/kg, 0.50 mg/kg, 0.54 mg/kg, 0.59 mg/kg, 0.60 mg/kg, 0.65 mg/kg, 0.77 mg/kg, 0.93 mg/kg, 1.0 mg/kg, 1.1 mg/kg, 1.5 (2) mg/kg, 1.6 mg/kg, 2.6 mg/kg, 3.3 mg/kg and 3.9 mg/kg.

The meeting estimated a maximum residue level for chlormequat cation in barley of 5 mg/kg and STMR of 0.59 mg/kg to replace its previous recommendation of 2 mg/kg.

Residues in processed commodities

The meeting estimated the STMR-P or median-P for chlormequat cation using the processing factors estimated by the 2017 and 2022 JMPR (Table 5.8.1).

Table 5.8.1 Processing factors and STMR-P for barley processed commodities

Processed commodity	Processing factor	STMR (mg/kg)	STMR-P or median-P (mg/kg)
Barley	–	0.59	–
Barley bran, processed	0.93	–	0.55
Barley, pearled	0.54	–	0.32
Barley, flour	0.18	–	0.11
Barley, malt	0.2	–	0.12
Barley, beer	0.2	–	0.12
Spent grain	0.02	–	0.012 (median)

Residues in animal commodities

The 2022 JMPR estimated livestock dietary burdens arising from residues in wheat forage, wheat hay, barley straw, wheat milled by-products, oat grain, rye grain, triticale hay, oat hay, brewer's spent grain dried and distiller's grain dried. The only commodities relevant to the current assessment (barley grain and brewer's spent grain, median of 0.012 mg/kg) do not increase the previous animal dietary burden. The meeting noted that the residues in barley, straw estimated by 2017 JMPR was based on the UK GAP with

a higher application rate of 1.65 kg ai/ha. Therefore, the meeting concluded that the livestock dietary burden does not increase with the current assessment and confirmed the 2022 JMPR recommendations for animal commodities.

Following the update of CODEX classification for animal commodities (see General consideration 2.4), the meeting estimated the maximum residue levels for chlormequat cation for Group of muscle (from mammalians other than marine mammals) of 0.2 mg/kg, Group of mammalian fats (except milk fat) of 0.1 mg/kg, Group of edible offal (mammalian) of 0.5 mg/kg, Group of milks of 0.2 mg/kg. The meeting also estimated a STMR of 0.04 mg/kg and HR of 0.085 mg/kg for Group of muscle (from mammalians other than marine mammals), a STMR of 0.04 mg/kg and HR of 0.043 mg/kg for Group of mammalian fats (except milk fat), a STMR of 0.036/0.20 mg/kg (liver/kidney), and HR of 0.011/0.40 mg/kg (liver/kidney) for Group of edible offal (mammalian), a STMR of 0.069 mg/kg for Group of milks.

The meeting estimated maximum residue levels of 0.04* mg/kg for Group of avian muscle and Group of avian fats and of 0.2 mg/kg for Group of avian, edible offal and Group of eggs. The meeting also estimated a STMR and HR of 0.04 mg/kg for Group of avian muscle and Group of avian fats, a STMR and HR of 0.043 and 0.085 mg/kg, respectively, for Group of avian, edible offal and of 0.049 and 0.094 mg/kg, respectively, for Group of eggs.

The meeting withdrew previous recommendations on the maximum residue levels for chlormequat cation for meat (from mammals other than marine mammals), mammalian fats (except milk fat), edible offal (mammalian), milks, poultry meat, poultry fats, poultry, edible offal of, and eggs.

Recommendations

On the basis of the data obtained from supervised trials, the meeting concluded that the residue levels listed in Table 5.8.2 and in Annex 1 are suitable for establishing maximum residue limits and for dietary exposure assessments.

Definition of the residue for compliance with the MRL and dietary risk assessment for plant and animal commodities: chlormequat cation.

The residue is not fat-soluble.

Table 5.8.2 Residue levels suitable for establishing maximum residue limits and for dietary exposure assessments

CCN	Commodity	Maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
		New	Previous		
GC 0640	Barley	5	2	0.59	–
CF 0640	Barley bran, processed	–	–	0.55	–
CM 0640	Barley, pearled	–	–	0.32	–
CF 3511	Barley, flour	–	–	0.11	–
GCT7013	Barley, malt	–	–	0.12	–
GCT7074	Barley, beer	–	–	0.12	–
MO0105	Edible offal (mammalian)	W	0.5	–	–
PE 0269	Eggs	W	0.2	–	–
PO 0111	Group of avian, edible offal of	0.2	–	0.043	0.085
PF 0111	Group of avian fats	0.04*	–	0.04	0.04
PM 0111	Group of avian muscle	0.04*	–	0.04	0.04

CCN	Commodity	Maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
		New	Previous		
MO0105	Group of edible offal (mammalian)	0.5	–	Liver: 0.036 Kidney: 0.20	Liver: 0.11 Kidney: 0.40
PE 0269	Group of eggs	0.2	–	0.049	0.094
MF 0100	Group of mammalian fats (except milk fat)	0.1	–	0.04	0.043
ML 0095	Group of milks	0.2	–	0.069	–
MM 0095	Group of muscle (from mammalians other than marine mammals)	0.2	–	0.04	0.085
MF 0100	Mammalian fats (except milk fat)	W	0.1	–	–
MM 0095	Meat (from mammalians other than marine mammals)	W	0.2	–	–
ML 0095	Milks	W	0.2	–	–
PO 0111	Poultry, edible offal of	W	0.2	–	–
PF 0111	Poultry fats	W	0.04*	–	–
PM 0111	Poultry meat	W	0.04*	–	–

Dietary risk assessment

Long-term exposure

The ADI for chlormequat chloride is 0–0.05 mg/kg bw. The International Estimated Daily Intakes (IEDIs) for 17 GEMS/Food cluster diets, based on the recommendations of the current JMPR, were in the range of 1to 20 percent of the maximum ADI of 0.05 mg/kg bw for chlormequat chloride (0.039 mg/kg bw for chlormequat cation). The results are shown in Annex 3 to the report.

The meeting concluded that the long-term dietary exposure from residues of chlormequat cation, from uses that have been considered by the JMPR, is unlikely to present a public health concern.

Acute dietary exposure

The International Estimated Short-term Intake (IESTI) for chlormequat cation was calculated. The results are shown in Annex 4.

The IESTIs for chlormequat cation from the intake of the residue evaluated by the meeting were 0–20 percent for general population and 1–40 percent for children of the ARfD (0.05 mg/kg bw for chlormequat chloride and 0.039 mg/kg bw for chlormequat cation). The meeting concluded that acute dietary exposure from the residues of chlormequat chloride, from uses that have been considered by the JMPR, is unlikely to present a public health concern.

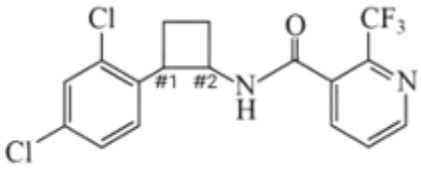
5.9 Cyclobutrifluram (339)* (T, R)

5.9.1 Toxicology

Cyclobutrifluram is the ISO-approved common name for rel-N-[(1R,2R]-(2,4-dichlorophenyl)cyclobutyl]-2-(trifluoromethyl)pyridine-3-carboxamide (IUPAC) with the Chemical Abstracts Service number 1644251-74-0. Cyclobutrifluram is a new contact nematicide, belonging to the chemical class of phenyl-cyclobutyl-pyridineamides, a subgroup of succinate dehydrogenase inhibitors (SDHI) (Complex II). Cyclobutrifluram has not been previously reviewed by the FAO/WHO Joint Meeting on Pesticide Residues (JMPR) and was reviewed by the present meeting at the request of the Codex Committee on Pesticide Residues (CCPR). All critical studies contained statements of compliance with good laboratory practice and were conducted in accordance with internationally recognized test guidelines, unless otherwise specified. No additional information from a literature search was identified that complemented the toxicological information submitted for the current assessment.

Cyclobutrifluram is a mixture of enantiomers, SYN547386 (1S, 2S) and SYN548974 (1R, 2R). Early studies were conducted with a ratio of SYN547386 to SYN548974 of 98.6:1.4 which was expressed as SYN547386. Later studies were conducted with the ratio of greater than 90 percent: less than 10 percent expressed as SYN549522. Neither qualitative nor quantitative toxicological differences were identified regardless of the enantiomer ratio.

Figure 5.9.1 Chemical structure of cyclobutrifluram



Configuration of enantiomers at #1 and #2:
SYN547386: 1S, 2R
SYN548974: 1R, 2R

Biochemical aspects

Following a single oral administration of 5 or 500 mg/kg bw [phenyl-U- and pyridinyl-2- ^{14}C] cyclobutrifluram in rats, the mean peak blood and plasma concentrations were reached between 0.5 to 24 hours post-dose. There were no consistent sex-related differences in the pharmacokinetics. Systemic exposure to total radioactivity increased in a subproportional manner between the 5 and 500 mg/kg dose levels in whole blood and plasma. After repeated daily oral administration, there was a reduction in systemic exposure with time, showing induction of metabolism. The majority of dose-related radioactivity was eliminated by 48 hours postdose (93 to 98 percent), with excretion complete at 168 h. Absorption of [^{14}C] cyclobutrifluram was 97 to 99 percent following a 5 mg/kg dose and 54 to 80 percent following a dose of 500 mg/kg bw, respectively. The majority of the absorbed dose was excreted in faeces via biliary elimination.

Following single and repeat oral dosing of radiolabelled cyclobutrifluram, the tissue distribution and depletion of radioactivity was broadly similar, irrespective of dose, sex or radiolabel position. Dose-related radioactivity was distributed extensively to all tissues with the highest concentrations generally observed

in the liver and kidney, being consistent with the urinary and biliary elimination of absorbed [^{14}C] cyclobutrifluram. Once absorption was complete, tissue concentrations of radioactivity steadily decreased and mirrored the depletion profile in blood. Total tissue and carcass residues at the last sampling point accounted for less than 5.5 percent of the administered dose. The major circulating metabolites were SYN549104 (hydroxylated SYN549522) and the two cleavage products SYN510275 and 2,4-dichlorophenylacetic acid. The major metabolites in excreta were SYN510275, SYN549104 and the hydroxy conjugates Metabolites B (cyclobutrifluram-hydroxy glucuronide) and C (cyclobutrifluram-sulfate).

Toxicological data

The acute oral median lethal dose (LD_{50}) for cyclobutrifluram in rats was greater than 2000 mg/kg bw and dermal LD_{50} was greater than 2000 mg/kg bw. The inhalation median lethal concentration (LC_{50}) was greater than 4.08 mg/L. Cyclobutrifluram was not irritating to the skin, but produced a slightly irritating effect on rabbit eyes. Cyclobutrifluram was shown not to be sensitizing in a local lymph node assay (LLNA) test in mice.

In repeat-dose oral toxicity studies with cyclobutrifluram in mice, rats and dogs, the main effects noted were decreased food consumption, body weight and body weight gain, and liver hypertrophy.

In a 28-day oral toxicity study in which mice were given cyclobutrifluram at dietary concentrations of 0 ppm, 350 ppm, 1750 ppm or 7000 ppm (equal to 0 mg/kg bw, 62 mg/kg bw, 338 mg/kg bw, 630 mg/kg bw and 1585 mg/kg bw per day for males and 0 mg/kg bw, 63 mg/kg bw, 334 mg/kg bw, 684 mg/kg bw and 1771 mg/kg bw per day for females, respectively), the no-observed-adverse-effect level (NOAEL) was 350 ppm (equal to 62 mg/kg bw per day based on the lower red blood cell mass and related change in the spleen in both sexes and elevated levels of alanine aminotransferase [ALT] and alkaline phosphatase [ALP] with increased liver weight in females observed at 1750 ppm equal to 338 mg/kg bw per day).

In a 90-day oral toxicity study, mice were given cyclobutrifluram at dietary concentrations of 0 ppm, 35 ppm, 120 ppm, 700 ppm or 1750 ppm (equal to 0 mg/kg bw, 4.7 mg/kg bw, 16.8 mg/kg bw, 93.8 mg/kg bw and 245 mg/kg bw per day for males and 0 mg/kg bw, 6.2 mg/kg bw, 21.5 mg/kg bw, 134.4 mg/kg bw and 309.2 mg/kg bw per day for females, respectively). The NOAEL was 120 ppm (equal to 16.8 mg/kg bw per day), based on decreased cholesterol and increased triglyceride consistent with the liver hypertrophy observed at 700 ppm (equal to 93.8 mg/kg bw per day). The meeting noted that since the NOAEL in the mouse chronic study is higher, this NOAEL is no longer relevant.

In a 28-day oral toxicity study in which rats were given cyclobutrifluram at dietary concentrations of 0 ppm, 400 ppm, 2000 ppm and 4000 ppm for males and 6000 ppm for females (equal to 0 mg/kg bw, 32 mg/kg bw, 161 mg/kg bw and 331 mg/kg bw per day for males and 0 mg/kg bw, 35 mg/kg bw, 167 mg/kg bw and 485 mg/kg bw per day for females, respectively). The NOAEL was 2000 ppm (equal to 161 mg/kg bw per day) based on inflammatory changes in the large intestine in males at 4000 ppm (equal to 331 mg/kg bw per day). In females treated with cylobutrifluram at 6000 ppm (equal to 485 mg/kg bw per day) lowered red blood mass, liver hypertrophy with hepatocellular vacuolation and the inflammatory changes in the large intestine were observed.

In a 90-day oral toxicity study rats were given cyclobutrifluram at dietary concentrations of 0 ppm, 40 ppm, 135 ppm, 700 ppm or 2500 ppm (equal to 0 mg/kg bw, 2.9 mg/kg bw, 9.6 mg/kg bw, 51.1 mg/kg bw and 187.0 mg/kg bw per day in males and 0 mg/kg bw, 3.2 mg/kg bw, 11.1 mg/kg bw, 58.7 mg/kg bw and 203.6 mg/kg bw per day for females, respectively). The NOAEL was 700 ppm (equal to 51.1 mg/kg bw per day), based on lowered body weight at 2500 ppm (187 mg/kg bw per day) in males.

In a 90-day oral toxicity study, dogs were given cyclobutrifluram by capsule at dose levels 0 mg/kg bw, 30 mg/kg bw, 100 mg/kg bw or 300 mg/kg bw per day. The NOAEL was 100 mg/kg bw per day based on marked liver hypertrophy with increases in triglycerides at 300 mg/kg bw per day.

In an 18-month carcinogenicity study in mice, cyclobutrifluram was given at dietary concentrations of 0 ppm, 35 ppm, 120 ppm or 400 ppm (equal to 0 mg/kg bw, 4.3 mg/kg bw, 14.0 mg/kg bw and 47.8 mg/kg bw per day for males and 0 mg/kg bw, 4.5 mg/kg bw, 16.2 mg/kg bw and 53.7 mg/kg bw per day for females, respectively). The NOAEL for carcinogenicity was 400 ppm (equal to 47.8 mg/kg bw per day), the highest dose tested.

The meeting considered that overall NOAEL for general toxicity in mice was 47.8 mg/kg bw per day based on the 90-day and 18-month studies in mice.

In a 24-month chronic toxicity and carcinogenicity study in rats, cyclobutrifluram was given at dietary concentrations of 0 ppm, 50 ppm, 150 ppm or 500 ppm (equal to 0 mg/kg bw, 2.2 mg/kg bw, 6.8 mg/kg bw and 23.0 mg/kg bw per day for males and 0 mg/kg bw, 3.0 mg/kg bw, 9.0 mg/kg bw or 30.1 mg/kg bw per day for females, respectively) The NOAEL for chronic toxicity and carcinogenicity was 500 ppm (equal to 23.0 mg/kg bw per day) the highest dose tested.

The meeting concluded that cyclobutrifluram is not carcinogenic in mice and rats.

Cyclobutrifluram was tested for genotoxicity in an adequate range of studies. No evidence of genotoxicity was found except a micronucleus test in vitro. The inconclusive result in this test was considered to be covered by other genotoxicity studies in vitro and in vivo.

The meeting concluded that cyclobutrifluram is unlikely to be genotoxic.

In view of the lack of genotoxicity and the absence of carcinogenicity in mice and rats, the meeting concluded that cyclobutrifluram is unlikely to pose a carcinogenic risk to humans.

In a two-generation reproductive toxicity study, rats were given cyclobutrifluram at dietary concentrations of 0 ppm, 50 ppm, 150 ppm or 700 ppm (equal to 0 mg/kg bw, 3.02 mg/kg bw, 8.96 mg/kg bw and 43.10 mg/kg bw per day for F0 males and 0 mg/kg bw, 3.75 mg/kg bw, 11.0 mg/kg bw and 52.82 mg/kg bw per day for F0 females during gestation, respectively). The dose concentration was halved in females during lactation in an attempt to maintain a stable dose level throughout the study. The NOAEL for parental, reproductive and offspring toxicity was 700 ppm (equal to 43.1 mg/kg bw per day) in F0 males, the highest dose tested.

In a rat developmental toxicity study, cyclobutrifluram was given to rats by oral gavage at dose levels of 0 mg/kg bw, 25 mg/kg bw, 100 mg/kg bw or 250 mg/kg bw per day from gestation days (GD) 6–19. The maternal and developmental NOAEL was 250 mg/kg bw per day, the highest dose tested.

In a rabbit developmental toxicity study, cyclobutrifluram was given by oral gavage at dose levels of 0 mg/kg bw, 25 mg/kg bw, 75 mg/kg bw or 125 mg/kg bw per day from GDs 6–27. The NOAEL for maternal toxicity was 75 mg/kg bw per day based on decreased overall body weight gains and feed consumptions at 125 mg/kg bw per day. The developmental NOAEL was 125 mg/kg bw per day, the highest dose tested.

The meeting concluded that cyclobutrifluram is not teratogenic.

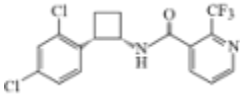
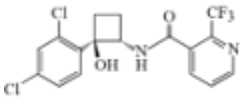
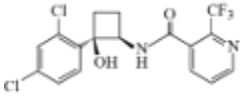
In an acute neurotoxicity study, cyclobutrifluram was given to rats by oral gavage at dose levels of 0 mg/kg bw, 200 mg/kg bw, 600 mg/kg bw or 2000 mg/kg bw. Cyclobutrifluram does not elicit acute neurotoxicity or systemic toxicity after a single exposure up to the limit dose. No neurotoxicity was seen in any of the routine toxicological studies. The meeting concluded that cyclobutrifluram is not neurotoxic.

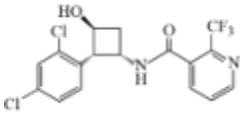
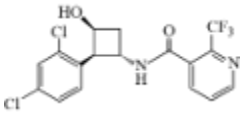
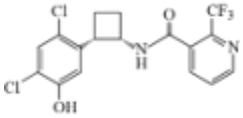
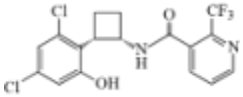
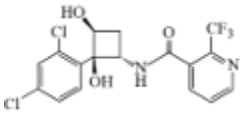
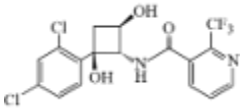
No specific data were submitted for immunotoxicity, but no evidence of immunotoxicity was reported in routine toxicological studies with cyclobutrifluram. The meeting concluded that cyclobutrifluram is unlikely to be immunotoxic.

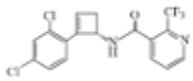
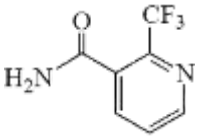
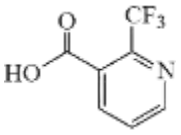
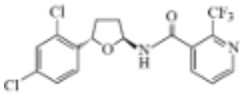
Toxicological data on metabolites and/or degradates

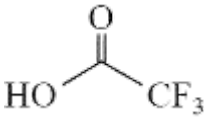
A toxicological evaluation was performed on plant and livestock metabolites and Table 5.9.1 shows an overall summary of the toxicological characterization of these metabolites requested for consideration in the residue definition.

Table 5.9.1 Summary of toxicological characterization of plant/livestock metabolites

Compound code (other names) and structure	Major rat metabolite (>10% AD)	Genotoxicity assessment	General toxicity	Toxicological reference values
Cyclobutrifluram (SYN549522) SYN547386 (1*S*,2*S* isomer)  SYN548941 (1*R*,2*R* isomer)	The parent compound	Not genotoxic (data)	Full dataset	ADI 0–0.2 mg/kg bw ARfD, Not necessary
SYN549104 Hydroxylated cyclobutrifluram 	Major rat metabolite Appro. 40 times higher than the parent AUC in rat dev. tox. study	Not genotoxic in QSAR analysis	Covered by the parent	Parent ADI
SYN552202 	No (Not detected in rats) An epimer of SYN549104, a major rat metabolite	Not genotoxic in QSAR analysis	Covered by parent Due to no critical molecular target the stereo-isomerization is unlikely to increase their toxicity	Parent ADI

Compound code (other names) and structure	Major rat metabolite (>10% AD)	Genotoxicity assessment	General toxicity	Toxicological reference values
SYN552301 	No (Not detected in rats) A stereoisomer of SYN549104, a major rat metabolite	Not genotoxic in QSAR analysis	Covered by parent Structural similarity to SYN549104	Parent ADI
SYN552442 	No (Not detected in rats) A stereoisomer of SYN549104, a major rat metabolite and SYN552301	No information but isomer of SYN552301, which was not genotoxic in QSAR analysis	Covered by parent Structural similarity to SYN549104	Parent ADI
SYN551829 	No (Not detected in rats)	Not genotoxic in QSAR analysis	No information[a]	TTC Cramer class III value for chronic: 1.5 µg/kg bw per day For acute, 5 µg/kg bw per day
SYN551636 	No (Not detected in rats) A stereoisomer of SYN551829	Not genotoxic in QSAR analysis	No information[a]	TTC Cramer class III value for chronic: 1.5 µg/kg bw per day For acute, 5 µg/kg bw per day
SYN552441 	No (Not detected in rats)	Not genotoxic in QSAR analysis	No information[a]	TTC Cramer class III value for chronic: 1.5 µg/kg bw per day For acute, 5 µg/kg bw per day
SYN552430 	No (Not detected in rats)	Not genotoxic in QSAR analysis	No information[a]	TTC Cramer class III value for chronic: 1.5 µg/kg bw per day For acute, 5 µg/kg bw per day

Compound code (other names) and structure	Major rat metabolite (>10% AD)	Genotoxicity assessment	General toxicity	Toxicological reference values
SYN552439 	No (Not detected in rats)	Not genotoxic in QSAR analysis	No information[a]	TTC Cramer class III value for chronic: 1.5 µg/kg bw per day For acute, 5 µg/kg bw per day
SYN510275 	Major rat metabolite (12.5 and 7.3% in male and female rat urine, respectively; >40% in rat plasma)	Not genotoxic in QSAR analysis; Bacterial reverse mutation: Negative; In vitro micronucleus assay: Inconclusive[b] SYN510275 is not genotoxic because of structural similarity to SYN10260, which is negative to adequate range of in vitro tests. .	LD_{50} >5000 mg/kg bw Covered by parent	Parent ADI
SYN510260 	No (Not detected in rats)	Negative in adequate range of in vitro tests	Covered by parent Structural similarity with SYN510275	Parent ADI
SYN552415 	No (Not detected in rats)	Not genotoxic in QSAR analysis	No information[a]	TTC Cramer class III value for chronic: 1.5 µg/kg bw per day For acute, 5 µg/kg bw per day

Compound code (other names) and structure	Major rat metabolite (>10% AD)	Genotoxicity assessment	General toxicity	Toxicological reference values
Trifluoroacetic acid (TFA), 	No (Not detected in rats)	Not genotoxic (Data)	Different toxicity profiles from the parent; Higher toxicity than the parent NOAEL in 90-day toxicity study of TFA Na in rats: 9.9 mg/kg bw In EGORT study of TFA Na in rats, NOAEL for general toxicity: 8.65 mg/kg bw per day. NOAEL for reproductive and offspring toxicity: 223 mg/kg bw per day NOAEL for maternal and embryo/fetal toxicity in developmental toxicity study of TFA Na in rats; 150 mg/kg bw, highest dose tested Overall NOAEL for maternal toxicity in developmental toxicity study in rabbits, 30 mg /kg bw; for embryo/fetal toxicity in rabbits, 60 mg/kg bw. TFA Na was not teratogenic in rats, but teratogenic in rabbits	Different HBGV from the parent ADI of 0–0.04 mg/kg bw[c, d] ARfD of 0.5 mg/kg bw for women of child-bearing age[d] ARfD for general population, Not necessary

Notes: AD: absorbed dose; appro.: approximately; dev. tox. study: developmental toxicity study in rats on Day 14; HDT: highest dose tested.

[a] No information related to general toxicity.

[b] The meeting noted a misuse of cytochalasin B in this study, which might induce an underestimation of micronuclei. Therefore, this study was regarded as inconclusive.

[c] A conversion factor of 0.84 was used to adjust for the difference in relative molecular weight between TFA (114.02) and its sodium salt (136.01).

[d] Safety factor of 200 was applied.

Trifluoroacetic acid (TFA)

The current meeting conducted a toxicological evaluation of trifluoroacetic acid, a plant metabolite of cyclobutrifluram and of a number of other pesticides.

Trifluoroacetic acid is a strong acid and corrosive. The meeting considered that using the neutral sodium salt (Na-TFA) in toxicity studies is appropriate to avoid local irritative effects. The conversion factor from trifluoroacetic acid to sodium trifluoroacetate is 0.84.

The oral LD_{50} of Na-TFA was 5000 mg/kg bw or higher. Repeated administration of Na-TFA caused hepatobiliary effects in rats and rabbits.

In a 90-day oral toxicity study in which Na-TFA was administered to rats at dietary concentrations of 0 ppm, 160 ppm, 1600 ppm or 16000 ppm (equal to 0 mg/kg bw, 9.9 mg/kg bw, 98 mg/kg bw, 1043 mg/kg bw per day for males, and 0 mg/kg bw, 12.2 mg/kg bw, 123 mg/kg bw, 1216 mg/kg bw per day for females, respectively), the NOAEL was 160 ppm (equal to 9.9 mg/kg bw per day) based on lowered glucose in plasma and increased ketone bodies in urine in both sexes and increases in ALP, ALT and aspartate aminotransferase (AST) in plasma in males at 1600 ppm (equal to 123 mg/kg bw per day).

TFA was tested for genotoxicity in vitro studies. No evidence of genotoxicity was found.

In an extended one generation reproductive toxicity (EOGRT) study, rats in the F0 generation received Na-TFA at dietary concentrations of 0 ppm, 120 ppm, 600 ppm or 3000 ppm from 10 weeks before mating through lactation. To compensate for the higher food intake during lactation, dietary concentrations in females were reduced to 0 ppm, 60 ppm, 300 ppm or 1500 ppm during lactation. The NOAEL for reproductive and offspring toxicity was 3000/1500 ppm (equal to 223 mg/kg bw per day), the highest dose tested. The NOAEL for parental toxicity was 120/60 ppm (equal to 8.65 mg/kg bw per day), based on decreased non-esterified fatty acids in plasma and increased ketone bodies in urine at 600/300 ppm (equal to 44.3 mg/kg bw per day).

In a developmental toxicity study in which rats were administered Na-TFA by oral gavage at 0 mg/kg bw, 37.5 mg/kg bw, 75 mg/kg bw or 150 mg/kg bw per day from gestation day 6 to 19, the NOAEL for maternal and embryo/fetal toxicity was 150 mg/kg bw per day, the highest dose tested.

In a development toxicity study in which rabbits were administered TFA Na by oral gavage at 0 mg/kg bw, 180 mg/kg bw, 375 mg/kg bw or 750 mg/kg bw per day from GD 6 to 28, maternal and developmental NOAELs could not be identified, The lowest-observed-adverse-effect levels (LOAELs) were 180 mg/kg bw per day, the lowest dose tested, based on histopathological changes in the hepatobiliary system in does and the occurrence of a rare fetal eye abnormality.

In a second development toxicity study in rabbits, animals were administered TFA Na by oral gavage at 0 mg/kg bw, 30 mg/kg bw, 60 mg/kg bw, 250 mg/kg bw or 750 mg/kg bw per day from GD 6 to 28. The NOAEL for maternal toxicity was 30 mg/kg bw per day based on histopathological changes in the hepatobiliary system in dams at 60 mg/kg bw per day. The NOAEL for developmental toxicity was 60 mg/kg bw per day based on the occurrence of rare fetal eye abnormalities at 250 mg/kg bw per day.

TFA was teratogenic in rabbits but not in rats.

Some information on mode of action (MoA) for the fetal eye abnormality was provided. The meeting considers that the MoA is inconclusive due to insufficient evidence.

The meeting concluded that the toxicological profile of trifluoroacetic acid was different from that of cyclobutrifluram, and is more toxic than the parent. Therefore, it is appropriate to establish a separate ADI and ARfD from those of cyclobutrifluram.

Microbiological aspects

There was no information available in the public domain and no experimental data were submitted that addressed the possible impact of cyclobutrifluram residues on the human intestinal microbiome.

Human data

No information was provided on the health of workers involved in the manufacture or use of cycloburifluram. No information on accidental or incidental poisoning in humans was available.

The meeting concluded that the existing database on cyclobutrifluram was adequate to characterize the potential hazards to the general population, including fetuses, infants and children.

Toxicological evaluation

The meeting established an ADI of 0–0.2 mg/kg bw for cyclobutrifluram based on the NOAEL of 23.0 mg/kg bw per day in the long-term study in rats, and applying a safety factor of 100. This ADI also applies to metabolites, SYN549104 (hydroxylated cyclobutrifluram), SYN552202, SYN552301, SYN552442, SYN510260 and SYN510275.

The meeting concluded that it was not necessary to establish an ARfD for cyclobutrifluram in view of its low acute oral toxicity or any other toxicological effects likely to be elicited by a single dose.

The meeting established an ADI of 0–0.04 mg/kg bw for TFA based on the NOAEL of 8.65 mg/kg bw per day for sodium trifluoroacetate (Na-TFA) in the EOGRT study supported by the NOAEL of 9.9 mg/kg bw per day in the 90-day oral toxicity study in rats and applying a safety factor of 200. The additional safety factor of two is applied due to the lack of long-term studies. A conversion factor of 0.84 was applied to adjust for the difference in relative molecular weight between Na-TFA and TFA.

The meeting established an ARfD for women of child-bearing age of 0.5 mg/kg bw for TFA based on the NOAEL of 60 mg/kg bw per day of Na-TFA in the developmental toxicity study in rabbits and applying a safety factor of 100. A conversion factor of 0.84 was applied as above to adjust Na-TFA to TFA. An ARfD for the general population is not necessary in view of its low acute oral toxicity or any other toxicological effects likely to be elicited by a single dose.

A toxicological monograph was prepared.

Table 5.9.2 Levels relevant to risk assessment of cyclobutrifluram

Species	Study	Effect	NOAEL	LOAEL
Mouse	90-day study of toxicity[a]	Toxicity	120 ppm, equal to 16.8 mg/kg bw per day	700 ppm, equal to 93.8 mg/kg bw per day
	78-week study of toxicity and carcinogenicity[a]	Toxicity	400 ppm, equal to 47.8 mg/kg bw per day[c]	–
		Carcinogenicity	400 ppm, equal to 47.8 mg/kg bw per day[c]	–
Rat	Acute neurotoxicity study[b]	Neurotoxicity	2000 mg/kg bw[c]	–

Species	Study	Effect	NOAEL	LOAEL
	90-day study of toxicity[a]	Toxicity	700 ppm, equal to 51.1 mg/kg bw per day	2500 ppm, equal to 187.0 mg/kg bw per day
	Two-year studies of toxicity and carcinogenicity[a]	Toxicity	500 ppm, equal to 23.0 mg/kg bw per day[c]	–
		Carcinogenicity	500 ppm, equal to 23.0 mg/kg bw per day[c]	–
	Two-generation study of reproductive toxicity[a]	Reproductive toxicity	700 ppm, equal to 43.1 mg/kg bw per day[c]	–
		Parental toxicity	700 ppm, equal to 43.1 mg/kg bw per day	–
		Offspring toxicity	700 ppm, equal to 43.1 mg/kg bw per day[c]	–
	Developmental toxicity study[b]	Maternal toxicity	250 mg/kg bw per day[c]	–
		Embryo/fetal toxicity	250 mg/kg bw per day[c]	–
Rabbit	Developmental toxicity study[b]	Maternal toxicity	75 mg/kg bw per day	125 mg/kg bw per day
		Embryo/fetal toxicity	125 mg/kg bw per day[c]	–
Dog	13-week study of toxicity[f]	Toxicity	100 mg/kg bw per day	300 mg/kg bw per day
Metabolites				
SYN510275 (2-trifluoromethyl-nicotindamide)				
Rat	Acute oral toxicity	Acute toxicity	LD_{50} ³5000 mg/kg bw	–
Trifluoroacetic acid (TFA Na)				
Rat	90-day study of toxicity[a]	Toxicity	160 ppm, equal to 9.9 mg/kg bw per day[g]	1600 ppm, equal to 98 mg/kg bw per day[g]
	Extended one generation reproductive toxicity[a]	Offspring toxicity	3000/1500 ppm equal to 223 mg/kg bw per day[c, g]	–
		Reproductive toxicity	3000/1500 ppm equal to 223 mg/kg bw per day[c, g]	–
		Parental toxicity	120/60 ppm equal to 8.65 m/kg bw per day[g]	600/300 ppm equal to 44.3 mg/kg bw per day[g]
	Developmental toxicity study[b]	Embryo and fetal toxicity	150 mg/kg bw per day[c, g]	–
		Maternal toxicity	150 mg/kg bw per day[c, g]	–
Rabbits	Developmental toxicity study[b, d]	Embryo/fetal toxicity	60 mg/kg bw per day[g]	180 mg/kg bw per day[g]
		Maternal toxicity	30 mg/kg bw per day[g]	60 mg/kg bw per day[g]

Notes:
[a] Dietary administration.
[b] Gavage administration.
[c] Highest dose tested.
[d] Two or more studies combined.
[e] Lowest dose tested.
[f] Capsule administration.
[g] This value is expressed as sodium trifluoroacetate (molecular weight 136.01); not converted to TFA at this point.

Table 5.9.3 Critical end-points for setting guidance values for exposure to cyclobutrifluram

Absorption, distribution, excretion and metabolism in mammals	
Rate and extent of oral absorption	Relatively rapidly and extensively absorbed (absorbed % 97 to 99%).
Distribution	Wide distribution. Highest concentrations in liver and kidney,
Potential for accumulation	No evidence of accumulation

Rate and extent of excretion	Rapidly and extensively excreted, mainly in the faeces, via biliary elimination. The majority of dose was eliminated by 48 hours post dose.
Metabolism in animals	Hydroxylation, glucuronide, sulfate and S-cysteine conjugation of hydroxylated metabolites. Cleavage of the amide bond. Hydrolysis of the amide bond and subsequent oxidative cleavage of cyclobutane moiety. Oxidative cleavage within the cyclobutane to give 2,4 di-chlorophenyl acetic acid.
Toxicologically significant compounds in animals and plants	Parent, SYN549104, SYN552202, SYN552301, SYN552442, SYN551829, SYN551636, SYN552441, SYN552430, SYN552439, SYN510275, SYN510260, SYN552415, trifluoroacetic acid
Acute toxicity	
Rat, LD_{50}, oral	>2000 mg/kg bw
Rat, LD_{50}, dermal	>2000 mg/kg bw
Rat, LC_{50}, inhalation	>4.08 mg/L
Rabbit, dermal irritation	Not irritating
Rabbit, ocular irritation	Mild irritating
Mouse, dermal sensitization	Not sensitizing (LLNA)
Short-term studies of toxicity	
Target/critical effect	Lower body weight
Lowest relevant oral NOAEL	51.1 mg/kg bw per day (rat)
Long-term studies of toxicity and carcinogenicity	
Target/critical effect	No adverse effect
Lowest relevant NOAEL	23.0 mg/kg bw per day (rat), highest dose tested
Carcinogenicity	Not carcinogenic
Genotoxicity	Unlikely to be genotoxic
Reproductive toxicity	
Target/critical effect	No adverse effect
Lowest relevant parental NOAEL	43.1 mg/kg bw per day (rat), highest dose tested
Lowest relevant offspring NOAEL	43.1 mg/kg bw per day (rat), highest dose tested
Lowest relevant reproductive NOAEL	43.1 mg/kg bw per day (rat), highest dose tested
Developmental toxicity	
Target/critical effect	Body weight/decreased body weight gain
Lowest relevant maternal NOAEL	75 mg/kg bw per day (rabbit)
Lowest relevant embryo/fetal NOAEL	125 mg/kg bw per day (rabbit), highest dose tested
Neurotoxicity	
Acute neurotoxicity NOAEL	2000 mg/kg bw, highest dose tested
Subchronic neurotoxicity NOAEL	No evidence from routine studies
Developmental neurotoxicity NOAEL	No data
Other toxicological studies	
Immunotoxicity	No evidence from routine studies
Studies on toxicologically relevant metabolites	
SYN510275	Acute oral LD_{50}: 5000 mg/kg bw (rat) Negative Ames, inconclusive micronucleus in vitro
SYN510260	Negative Ames, HPRT and micronucleus in vitro

Trifluoroacetic acid (Applied sodium trifluoroacetate)	90-day NOAEL: 9.9 mg/kg bw per day (rat) Negative Ames, mammalian cell gene mutation in vitro and chromosome aberration EOGRT NOAEL for reproduction and offspring, 223 mg/kg bw per day (rat) EOGRT NOAEL for parent, 8.65 mg/kg bw per day (rat) Developmental toxicity NOAEL for embryo/fetal; 60 mg/kg bw per day (rabbit) Developmental toxicity NOAEL for dam; 30 mg/kg bw per day (rabbit) Teratogenic (rabbit)
Microbiological data	No relevant data
Human data	No relevant data

Table 5.9.4 Summary

Cyclobutrifluram

	Value	Study	Safety factor
ADI	0–0.2 mg/kg bw[a]	Two-year study of toxicity and carcinogenicity (rat)	100
ARfD	Unnecessary		

Note:
[a] Applies to cyclobutrifluram, metabolites of SYN549104(Hydroxylated cyclobutrifluram), SYN552202, SYN552301, SYN552442, SYN510275, SYN510260, expressed as cyclobutrifluram.

Trifluoroacetic acid (TFA)

	Value	Study	Safety factor
ADI	0–0.04 mg/kg bw[a]	Extended one-generation reproductive toxicity study (rat) 90-day oral toxicity study (rat)	200[b]
ARfD	0.5 mg/kg bw[a, c]	Development toxicity study (rabbit)	100

Notes:
[a] A conversion factor of 0.84 was used to adjust for the difference in relative molecular weight between TFA (114.02) and its sodium salt (136.01).
[b] Additional safety factor to usual factor was 2 due to lack of long-term study, although there was no toxicity involved in tumorigenic potential such as hyperplasia or continues stimulation to tissue/organ in available toxicity studies of TFA Na.
[c] Applies to women of child-bearing age only. For general population, unnecessary.

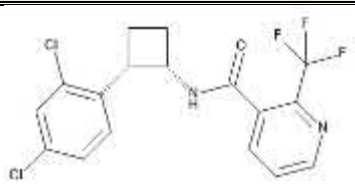
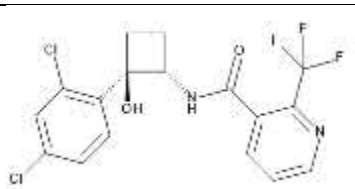
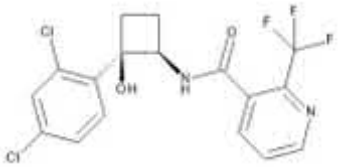
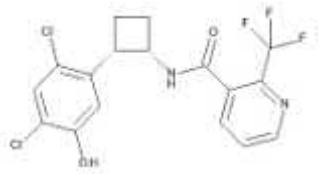
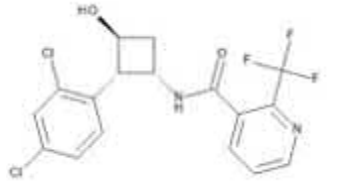
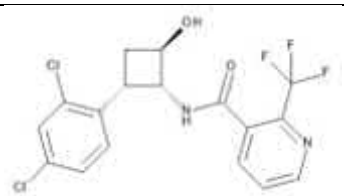
5.9.2 Residue and analytical aspects

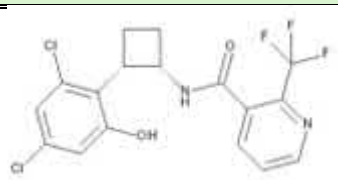
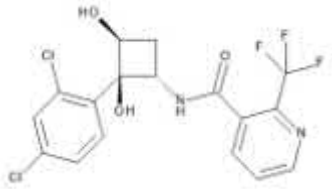
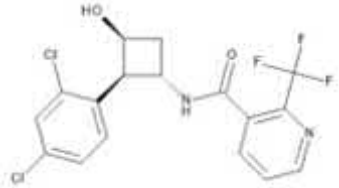
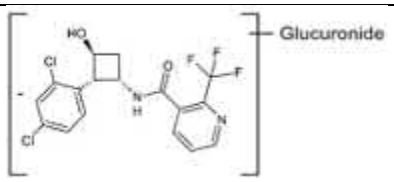
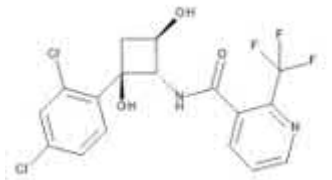
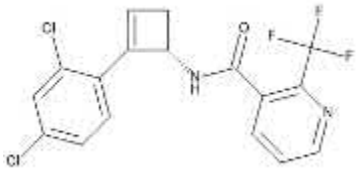
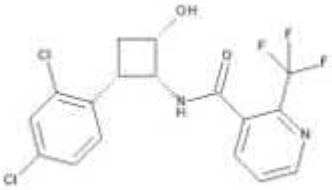
Cyclobutrifluram, N-[2-(2,4-dichlorophenyl)cyclobutyl]-2-(trifluoromethyl)pyridine-3-carboxamide, containing 80–100 percent of the (1S,2S)-enantiomer and 20–0 percent of the (1R,2R)-enantiomer, is a new contact nematicide/fungicide belonging to the chemical class of pyridine-3-carboxamides.

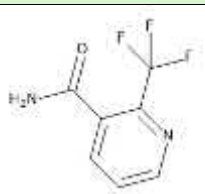
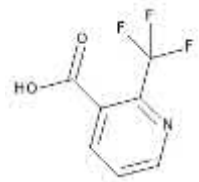
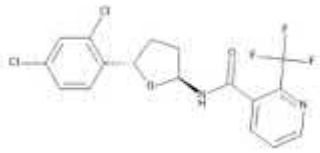
Cyclobutrifluram was scheduled at the 54th Session of the CCPR for Evaluation as a new compound for residues and toxicology by the 2024 JMPR. An ADI of 0–0.2 mg/kg bw was established and an ARfD was considered unnecessary.

The meeting received information from the sponsor on physical and chemical properties, metabolism studies on plants and animals, environmental fate data, analytical method and stability in stored analytical samples, use pattern information and supervised residue trials.

Table 5.9.5 Summary information on cyclobutrifluram and its metabolites mentioned in this appraisal

Compound code (other names)	Chemical name	Chemical structure	Found in
Cyclobutrifluram SYN549522 (parent)	*N*-[(1S,2S)-2-(2,4-dichlorophenyl)cyclobutyl]-2-(trifluoromethyl)pyridine-3-carboxamide		Soya bean, potato, wheat Goat, rat
SYN549104	*N*-[(1*S*,2*R*)-2-(2,4-dichlorophenyl)-2-hydroxy-cyclobutyl]-2-(trifluoromethyl)pyridine-3-carboxamide		Soya bean, potato, wheat Goat, hen, rat
SYN552202 [epimer of SYN549104]	*N*-((1*R*,2*R*)-2-(2,4-dichlorophenyl)-2-hydroxycyclobutyl)-2-(trifluoromethyl)pyridine-3-carboxamide		Wheat
SYN551829	*N*-((1*S*,2*S*)-2-(2,4-dichloro-5-hydroxyphenyl)cyclobutyl)-2-(trifluoromethyl)pyridine-3-carboxamide		Potato, wheat
SYN552301 (enantiomer of SYN552677)	*N*-((1*S*,2*S*,3*S*)-2-(2,4-dichlorophenyl)-3-hydroxycyclobutyl)-2-(trifluoromethyl)pyridine-3-carboxamide		Potato, wheat
SYN551715	*N*-((1*R*,2*S*,4*R*)-2-(2,4-dichlorophenyl)-4-hydroxycyclobutyl)-2-(trifluoromethyl)pyridine-3-carboxamide		Wheat

Compound code (other names)	Chemical name	Chemical structure	Found in
SYN551636	*N*-((1*S*,2*S*)-2-(2,4-dichloro-6-hydroxyphenyl)cyclobutyl)-2-(trifluoromethyl)pyridine-3-carboxamide		Potato
SYN552441 (enantiomer of SYN552678)	*N*-((1*S*,2*R*,3*S*)-2-(2,4-dichlorophenyl)-2,3-dihydroxycyclobutyl)-2-(trifluoromethyl)pyridine-3-carboxamide		Hen
SYN552442	*N*-((1*S*,2*R*,3*S*)-2-(2,4-dichlorophenyl)-3-hydroxycyclobutyl)-2-(trifluoromethyl)pyridine-3-carboxamide		Goat, hen
Metabolite G	N-((1S,2R,3S)-2-(2,4-dichlorophenyl)-3-hydroxycyclobutyl)-2-(trifluoromethyl)pyridine-3-carboxamide glucuronide conjugate		Goat
SYN552430	*N*-((1*S*,2*R*,4*R*)-2-(2,4-dichlorophenyl)-2,4-dihydroxycyclobutyl)-2-(trifluoromethyl)pyridine-3-carboxamide		Hen
SYN552439	(*S*)-*N*-(2-(2,4-dichlorophenyl)cyclobut-2-en-1-yl)-2-(trifluoromethyl)pyridine-3-carboxamide		Goat, hen
SYN551539	*N*-((1*R*,2*S*,4*S*)-2-(2,4-dichlorophenyl)-4-hydroxycyclobutyl)-2-(trifluoromethyl) pyridine-3-carboxamide		Potato

Compound code (other names)	Chemical name	Chemical structure	Found in
SYN510275	2-(trifluoromethyl)pyridine-3-carboxamide		Soya bean, potato, wheat Goat, hen, rat
SYN510260	2-(trifluoromethyl)pyridine-3-carboxylic acid		Potato, wheat
SYN552415	*N*-((2*S*,5*S*)-5-(2,4-dichlorophenyl)tetrahydrofuran-2-yl)-2-(trifluoromethyl)pyridine-3-carboxamide		Goat
TFA, CSCA000397	2,2,2-trifluoroacetic acid		Potato, wheat, soya bean

Physical chemical properties

Based on its physical chemical properties, cyclobutrifluram is slightly soluble in water and highly soluble in organic solvents. Based on its octanol/water partition coefficient (log Kow = 3.2), cyclobutrifluram residues may accumulate in fatty matrices. It has low potential for volatilization. Hydrolysis and photolysis are unlikely to be important routes of degradation at environmentally relevant pH levels.

Plant metabolism

Cyclobutrifluram metabolism data were submitted for soya bean, potato and wheat treated with [phenyl-U-^{14}C]-cyclobutrifluram (phenyl label) or [pyridinyl-2-^{14}C]-cyclobutrifluram (pyridinyl label) formulated as flowable or suspension concentrates.

Soya bean – Seed treatment

Soya bean (Glycine max, cv S12-C2) seed were treated (coated) at 72 g ai/100 kg of seeds. Seeds were planted in four separate containers maintained in a glasshouse and filled with sandy loam soil. Forage samples were collected at growth stage BBCH 49–51 (56 days after planting) and hay samples were collected at BBCH 73 (84 days after planting). At final harvest (BBCH 89; 120 days after planting) soya bean seed was separated by hand from pods. The empty pods were combined with the straw samples.

TRRs in forage collected following treatment with the phenyl label were higher (0.358 mg eq/kg) than those following treatment with pyridinyl label (0.131 mg eq/kg). Conversely, for hay, straw and seed, TRRs were higher with pyridinyl label (0.747 mg eq/kg, 0.175 mg eq/kg and 0.037 mg eq/kg, respectively,) than with phenyl label (0.526 mg eq/kg, 0.137 mg eq/kg and 0.010 mg eq/kg, respectively).

Solvent extraction of forage, hay and straw samples with 3x acetonitrile:water (8:2) (3x) followed by acetonitrile:water (1:1) (1x) released 90–98 percent TRR (0.123–0.725 mg eq/kg). Seed was extracted with 2x acetonitrile:water (8:2) and 2x acetonitrile:water (1:1), which released 71–94 percent TRR (0.007–0.035 mg eq/kg). Only the straw post-extraction solids (PES) from the phenyl-labelled experiment were subjected to mild base hydrolysis, however, TRRs in the hydrolysate and the rinse were too low to undergo further characterization/identification.

Cyclobutrifluram was the predominant residue in seed, accounting for 7–14 percent TRR (0.001–0.003 mg/kg), in forage (75–89 percent TRR; 0.098–0.32 mg/kg), hay (66–89 percent TRR; 0.47–0.50 mg/kg) and straw (34–79 percent TRR; 0.06–0.11 mg/kg).

SYN549104 was identified in the forage, hay and straw from both radiolabelled experiments, however, it accounted for ≤6 percent TRR (≤0.02 mg eq/kg). In seed, SYN549104 accounted for 8–12 percent TRR (≤0.003 mg eq/kg). No other metabolites were observed in the phenyl-labelled experiment. The pyridinyl-specific metabolite, SYN510275, represented a major metabolite in all matrices, accounting for 10 percent TRR (0.013 mg eq/kg) in forage, followed by 22 percent TRR (0.04 mg eq/kg) in straw, 27 percent TRR (0.2 mg eq/kg) in hay and 34 percent TRR (0.013 mg eq/kg) in seed.

The other pyridinyl-specific metabolite, trifluoroacetic acid (TFA), was observed as a major metabolite in straw (24 percent TRR; 0.04 mg eq/kg) but accounted for ≤8 percent TRR (≤0.01 mg eq/kg) in forage, hay and seed.

Analysis to determine the enantiomeric ratio of the test items in soya bean straw showed no significant change to the enantiomeric ratio of cyclobutrifluram which remained close to 9:1 (S,S:R,R) throughout the study.

Potato – In-furrow soil application

Radiolabelled cyclobutrifluram (phenyl and pyridinyl labels) was applied in-furrow to potatoes (Solanum tuberosum, cv Maris Piper) grown indoors in containers. The rates of the first application ranged from 246–247 g ai/ha. The second applications were performed 25 days after planting at 245–250 g ai/ha, for total seasonal rates of 492–496 g ai/ha. Potato tubers and foliage were sampled at two growth stages representing immature harvest (BBCH 45; 78 DALA) and mature harvest (BBCH49; 106 DALA).

The TRRs were highest in mature foliage, ranging from 0.98–1.4 mg eq/kg, followed by immature foliage, ranging from 0.47–0.56 mg eq/kg. Similar TRRs were observed for immature and mature tubers for each radiolabel, ranging from 0.03–0.04 mg eq/kg.

Radioactivity released following extraction, with acetonitrile:water (8:2) (2 or 3x, depending on commodity) and acetonitrile:water (1:1) (1x), ranged between 95 to 98 percent TRR (0.026–0.034 mg eq/kg) for immature and mature potato tubers and 98–99 percent TRR (0.47–1.35 mg eq/kg)

for immature and mature potato foliage. Unextracted residues in all tubers and foliage, representing 1.0–5.0 percent TRR (0.001–0.02 mg eq/kg), were not subjected to further analysis.

The metabolic profile in phenyl-labelled experiment was relatively the same between the mature and immature potato tubers, where cyclobutrifluram was the predominant residue, ranging from 61 to 77 percent TRR (0.018–0.024 mg/kg). The only major metabolite observed was SYN549104, ranging from 10 to 12 percent TRR (0.003–0.004 mg eq/kg). In pyridinyl-labelled experiment, SYN510275 was present at ≤8 percent TRR (≤0.003 mg eq/kg) while TFA accounted for 2 percent TRR (0.001 mg eq/kg). Unextracted residues for all tubers were 2–5 percent TRR (0.001 mg eq/kg) and were not further analysed.

The major residues observed in immature potato foliage were cyclobutrifluram, ranging from 57 to 63 percent TRR (0.30–0.32 mg/kg), SYN549104 (16–19 percent TRR; 0.09 mg eq/kg) and SYN510275 (pyridinyl label only) that accounted for 15 percent TRR (0.08 mg eq/kg). TFA was identified as a minor metabolite (0.7 percent TRR; 0.004 mg eq/kg).

The major residue observed in the concentrated extracts of mature potato foliage was the parent, ranging from 30 to 37 percent TRR (0.36–0.41 mg/kg). SYN549104 accounted for 15–18 percent TRR (0.17–0.20 mg eq/kg), and SYN510275 for 14 percent TRR (0.19 mg eq/kg).

The concentrated extracts from mature foliage extracts were partitioned with diethyl ether and the aqueous phase was hydrolysed with 0.5 mol/L HCl. Chromatography of the hydrolysed aqueous phase from the phenyl label indicated the presence of conjugated forms of SYN551636 (17 percent TRR; 0.17 mg eq/kg), SYN549104 (7 percent TRR; 0.06 mg eq/kg), SYN551829 (4 percent TRR; 0.04 mg eq/kg), SYN552301 (2 percent TRR; 0.02 mg eq/kg), accounting for all the components in the aqueous hydrolysate. The organic phase comprised of the parent (27 percent TRR; 0.27 mg/kg) and SYN549104 (24 percent TRR; 0.24 mg eq/kg), with the remaining radioactivity attributed to characterized radioactivity (3 percent TRR; 0.03 mg eq/kg).

The hydrolysed aqueous partition from the pyridinyl label contained SYN551636 (12 percent TRR; 0.16 mg eq/kg), with SYN549104, SYN510275, SYN510260, SYN551829, SYN552301 and SYN551539, accounting each for 1 to 9 percent TRR (0.02 to 0.12 mg eq/kg), collectively accounting for all the radioactivity in the aqueous phase. The organic partition phase comprised of cyclobutrifluram (18 percent TRR; 0.24 mg /kg), SYN549104 (17 percent TRR; 0.23 mg eq/kg) and SYN510275 (26 percent TRR; 0.357 mg eq/kg) with the remaining radioactivity attributed to unassigned radioactivity (4 percent TRR; 0.05 mg eq/kg).

Unextracted residues in all foliage, representing 1.0–2.4percent TRR (0.005–0.02 mg eq/kg), were not subjected to further analysis.

The enantiomeric ratio of cyclobutrifluram in radiochemical stocks and application solutions was ca 9:1(S,S:R,R) . Chiral analysis of cyclobutrifluram extracted from the treated mature potato tubers showed only (S,S)-cyclobutrifluram present.

Wheat – Seed treatment

Spring wheat (Triticum aestivum cv. Tybalt) seed were treated (coated) with cyclobutrifluram (phenyl and pyridinyl labels) at 60–63 g ai/100 kg of seeds prior to planting in four separate containers maintained in

a glasshouse and filled with sandy loam soil. Forage samples, collected at BBCH 24 (40 days after planting) and hay samples, collected at BBCH 45–47 (55 days after planting), were air dried for five days in the greenhouse. At BBCH 89 (106 days after planting), wheat was threshed by hand to separate grain from chaff, which was combined with the straw samples.

The TRRs were comparable between both radiolabels and were highest in mature straw (4.05–4.28 mg eq/kg), followed by hay (1.43–1.52 mg eq/kg), forage (0.75–0.76 mg eq/kg) and grain (0.02–0.06 mg eq/kg).

All samples were extracted three times with acetonitrile:water (8:2) with the exception of grain from the phenyl label, where four extractions were performed, the first two with acetonitrile:water (8:2) and the last two with acetonitrile:water (1:1). Solvent extraction released 95–98 percent TRR in forage and hay, while 89–90 percent TRR was extracted from straw and 66–91 percent TRR was extracted from grain. Unextracted TRRs in wheat forage, hay and grain accounted for 1–34 percent TRR (0.005–0.08 mg eq/kg) and were not further analysed. Unextracted TRRs in wheat straw, representing 10–11 percent TRR (0.44 mg eq/kg), were hydrolysed using 0.1 mol/L NaOH which released an additional 7 percent TRR (0.30 mg eq/kg).

In wheat grain, cyclobutrifluram was a major residue present at concentrations ranging from 4 to 27 percent TRR (0.002–0.007 mg/kg). SYN510260 and TFA were also major metabolites accounting for 34 percent TRR (0.02 mg/eq/kg) and 12 percent TRR (0.006 mg eq/kg), respectively. All other identified metabolites, SYN549104 and its epimer (SYN552202), SYN552301, SYN551715 and SYN510275 were minor, accounting for ≤7.5 percent TRR (≤0.004 mg eq/kg).

In wheat forage and hay, the only predominant residue was cyclobutrifluram, representing 65–77 percent TRR (0.49–1.18 mg/kg). All other identified metabolites, SYN549104, SYN552202 (epimer of SYN549104), SYN552301, SYN551715 including the pyridinyl-specific metabolite SYN510275, were minor, each accounting for ≤9.4 percent TRR (≤0.09 mg eq/kg).

In wheat straw, hydrolysis of the aqueous partition phase with HCl as well as the hydrolysis of the unextracted residues with NaOH released the parent compound and several metabolites including SYN549104 and SYN552202 (epimer of SYN549104), SYN551829, SYN551715, SYN552301, and the pyridinyl-specific metabolites, SYN510275, SYN510260 and TFA. Overall, cyclobutrifluram (free: 22–32 percent TRR; 0.89–1.4 mg/kg and conjugated: 1 percent TRR; 0.05 mg/kg) was the predominant residue, followed by the pyridinyl-specific metabolite SYN510275 (free: 9 percent TRR; 0.36 mg eq/kg and conjugated: 15 percent TRR; 0.61 mg eq/kg), SYN549104 (free: 14–18 percent TRR; 0.58–0.78 mg eq/kg) and SYN552202 (8–13 percent TRR; 0.31–0.56 mg eq/kg) and SYN552301 (free: 2 percent TRR; 0.06–0.07 mg eq/kg and conjugated: 5–9 percent TRR; 0.22–0.38 mg eq/kg). All other identified metabolites (SYN551829, SYN551715, SYN510260 and TFA), present in their free and conjugated forms, were minor (≤7 percent TRR; 0.31 mg eq/kg).

Chiral analysis of cyclobutrifluram extracted from the treated seed and isolated from the straw sample extracts showed no significant change to the enantiomeric ratio of cyclobutrifluram, which remained close to 9:1 throughout the study.

Summary of plant metabolism

In summary, the metabolism studies were conducted on three diverse crops including pulses/oilseeds (soya bean), root and tuber vegetables (potato) and cereals/grasses (spring wheat). Applications were made as a seed treatment (wheat and soya bean) or a combination of in-furrow and soil application (potato). These studies have adequately elucidated the nature of cyclobutrifluram in food and feed commodities. The metabolic pathways across all three crops and modes of application were similar, where acropetal uptake and translocation of cyclobutrifluram was observed. These studies can be extrapolated to the use on bananas, the only crop for which residue data were submitted to the present meeting, with a GAP that involves a soil drench application at the foot of the tree immediately before harvest. However, in the future, should the GAP involve foliar application, metabolism studies reflecting this method of application are recommended.

Cyclobutrifluram was identified in all tested food commodities including mature potato tubers (61–68 percent TRR, ≤0.02 mg/kg), soya bean seed (7–14 percent TRR, ≤0.003 mg/kg) and wheat grain (4–27 percent TRR, ≤0.007 mg/kg). Cyclobutrifluram was the predominant residue in the mature potato foliage (30–37 percent TRR, 0.36–0.41 mg/kg) and in all feed commodities, where concentrations were greatest in soya bean hay (66–89 percent TRR, 0.47–0.50 mg/kg) and wheat hay and straw (23–77 percent TRR, 0.94–1.44 mg/kg).

The number of metabolites produced varied between crops, however, the metabolites were formed through similar metabolic processes. The principal metabolic transformations of cyclobutrifluram in all commodities occurred via hydroxylation of the parent molecule to produce SYN549104 and via cleavage of the N-cyclopropyl bond to produce SYN510275. In the majority of commodities, extensive metabolism to TFA occurred. Less significant transformation pathways were via aromatic hydroxylation of the phenyl or cyclobutyl rings to produce SYN552301, SYN551539, SYN551715, SYN551829 and SYN551636. In wheat grain, additional hydrolysis of the amide moiety in cyclobutrifluram or SYN510275 to form SYN510260 was also observed. The majority of metabolites were detected in both free and conjugated forms.

Animal metabolism

The meeting received animal metabolism studies with cyclobutrifluram in rats, lactating goats and laying hens.

Rats

Metabolism of cyclobutrifluram in rats was evaluated by the WHO Core Assessment Group of the 2024 JMPR.

Lactating goats

The metabolism of cyclobutrifluram (phenyl or pyridinyl labels) was investigated in lactating goats (Toggenburg and Saanen, 51–64 kg bw) at daily oral doses equivalent to 30 ppm in the diet (ca 1.0 mg/kg bw) administered via gelatin capsule for 8 consecutive days. Urine and faeces were sampled once daily, while milk was collected twice daily, in the afternoon and in the morning and combined per 24-hour period.

On Days 4–8 of the study, 24 h milk samples were separated into cream and skim milk using centrifugation. Tissues, organs (liver, kidney, muscle and fat samples) and bile were collected after animal sacrifice, approximately 12 hours after administration of the last dose.

Most of the radioactivity was recovered in urine (27–39 percent of the administered dose, AD) and faeces (42–47percent AD). The radioactivity recovered in milk and tissues accounted for ≤2 percent AD. Plateau levels of radioactive residues in skim milk and cream could not be determined as there were an insufficient number of sampling intervals.

The calculated TRRs in the pooled milk samples (144h) for the phenyl- and pyridinyl-label experiments were 0.048 mg eq/kg and 0.357 mg eq/kg, respectively. For tissues, TRRs were highest in liver (3.98–8.51 mg eq/kg), followed by kidney (1.07–2.86 mg eq/kg), composite fat (0.20–0.53 mg eq/kg) and composite muscle (0.09–0.90 mg eq/kg). Levels of radioactivity were magnitudes higher in the samples from the pyridinyl label than the phenyl label.

Extraction with acetonitrile and hexane of milk from both labels released 92–99 percent TRR (0.03–0.27 mg eq/kg) with limited radioactivity remaining unextracted (1–8 percent TRR; 0.003 mg eq/kg). No parent was detected in milk samples and the major metabolites were SYN510275 (90 percent TRR; 0.25 mg eq/kg) in the pyridinyl experiment and SYN549104 (11 percent TRR; 0.004 mg eq/kg) and metabolite A (identified only as a phenyl-cleaved metabolite accounting for 13 percent TRR [0.005 mg eq/kg]) from the phenyl experiment. Characterized residues in the phenyl experiment, accounting for up to half of the radioactivity (57 percent TRR; 0.021 mg eq/kg), comprised of 12 discrete unassigned radio components, none of which accounted for greater than 8 percent TRR (0.003 mg eq/kg).

Extraction of liver with aqueous acetonitrile released about one third of the radioactivity (27–32 percent TRR; 1.18–2.81 mg eq/kg). Analysis of the concentrated solvent extract detected cyclobutrifluram (0.2–0.4 percent TRR; 0.016–0.019 mg/kg), SYN510275 (22 percent TRR; 1.94 mg eq/kg), SYN549104 (0.3–1.2 percent TRR; 0.029–0.053 mg eq/kg), and metabolites H, C, N, G, and E (0.6–3.4 percent TRR each, 0.050–0.146 mg eq/kg). When the concentrated extract was hydrolysed with glucuronidase, metabolites H, C, G and N were observed in their free form. Based on the levels of Metabolite C observed pre hydrolysis and the levels of SYN549104 present pre and post hydrolysis (1.2–4.6 percent TRR; 0.105–0.199 mg eq/kg), the Metabolite C appeared to be the glucuronide conjugate of SYN549104. From the levels of Metabolite G observed pre hydrolysis and SYN552442 present post hydrolysis (1.0–1.4 percent TRR; 0.06–0.08 mg eq/kg), Metabolite G appears to be a glucuronide conjugate of SYN552442.

The liver unextracted TRRs (68–73 percent TRR; 3.1–6.0 mg eq/kg) were subject to sodium dodecyl sulfate (SDS) extraction and base (mild), acid (mild and harsh) and proteolytic enzyme hydrolysis. SDS extracted 62–70 percent TRR (2.7–6.1 mg eq/kg) where 19–37 percent TRR (1.6 mg eq/kg) was associated with proteinaceous material. Base hydrolysis released 19 percent TRR (0.81 mg eq/kg). When analysed by 2D-TLC, the majority of the radioactivity remained on the origin.

Mild acid hydrolysis released up to 3 percent TRR (0.12 mg eq/kg) while harsher hydrolysis (1.0 mol/L HCl followed by 1 mol/L NaOH) released an additional 54 percent TRR (2.4 mg eq/kg). No further analysis of these hydrolysates was performed. Protease enzyme hydrolysis followed by acetonitrile:water (1:4) and water rinses released 43–50 percent TRR (1.8–3.9 mg eq/kg). Concentrated protease hydrolysate contained one major metabolite, SYN510275 (44 percent TRR; 3.86 mg eq/kg). Three metabolites were characterized, none of which exceeded 12 percent TRR (0.50 mg eq/kg). At least 18 other discrete

unassigned components (up to 3 percent TRR; 0.12 mg eq/kg) were also observed. The final unextracted PES following all hydrolysis steps accounted for 0.8–3 percent TRR (0.07–0.11 mg eq/kg).

The extraction procedures for kidney were relatively the same as those for liver, with a few modifications. Solvent extraction of kidney samples with mixtures of aqueous acetonitrile released 75–88 percent TRR (1.0–2.2 mg eq/kg). Analysis of the concentrated solvent extract did not reveal the presence of any parent compound. However, metabolite SYN510275 (28 percent TRR; 0.82 mg eq/kg) and several other characterized metabolites, Metabolites A, B, D, E and F, each accounted for ≤7.2 percent TRR (≤0.12 mg eq/kg).

Based on the levels of metabolite C and metabolite G observed pre hydrolysis and the levels of SYN549104 and SYN552442 present post hydrolysis, metabolite C and metabolite G appear to be the glucuronide conjugates of SYN549104 and SYN552442, respectively. The concentration of the pyridinyl-specific metabolite SYN510275 also increased slightly following hydrolysis (28 percent TRR; 0.815 mg eq/kg), evidence that it was also present as a glucuronide conjugate.

Unextracted radioactivity (12–25 percent TRR, 0.14–0.74 mg eq/kg) in kidney was investigated further by solubilisation with SDS, which released 11–26 percent TRR (0.13–0.76 mg eq/kg), demonstrating that the majority of the unextracted residue was likely proteinaceous material. Acid hydrolysis of the unextracted residues released 1–7 percent TRR (0.01–0.21 mg eq/kg), which was not further analysed. Protease enzyme hydrolysis followed by acetonitrile:water (1:4) and water rinses released almost all the bound radioactivity, with only ~2 percent TRR remaining unextracted. Analysis of the concentrated protease hydrolysate revealed the presence of the major metabolite SYN510275 (24 percent TRR; 0.7 mg eq/kg).

In the muscle sample from the phenyl experiment, 92 percent TRR (0.08 mg eq/kg) was solvent extracted and 8 percent TRR (0.007 mg eq/kg) remaining unextracted and not further analysed. For the pyridinyl experiment, 37 percent TRR was solvent extracted while 63 percent was unextracted. The concentrated solvent extract from the phenyl-label was hydrolysed with glucuronidase followed by base hydrolysis (1 mol/L). However, analysis of the hydrolysates showed no change in the metabolic profile compared to that of the concentrated solvent extract pre-hydrolysis. The parent compound accounted for 0.7 percent TRR (0.001 mg/kg), was present at significantly lower concentrations than the metabolites SYN549104 (free:12 percent TRR; 0.01 mg eq/kg and conjugated: 12 percent TRR; 0.01 mg eq/kg) and SYN552439 (14 percent TRR; 0.012 mg eq/kg). No hydrolysis of the concentrated solvent extract was performed for the pydidinyl-label experiment, as SYN510275 (34 percent TRR; 0.36 mg eq/kg) accounted for the majority of the radioactivity.

The unextracted residues from the pyridinyl experiment were subjected to procedures similar to those for liver and kidney. SDS extraction of the bound residues solubilized greater than 57 percent TRR (0.61 mg eq/kg) while acid hydrolysis released 19 percent TRR (0.21 mg eq/kg), neither of which was further analysed. Analysis of the protease enzyme hydrolysate demonstrated that SYN510275 accounted for all the radioactivity in this fraction (54 percent TRR; 0.58 mg eq/kg).

Solvent extraction of fat samples released 93–96 percent TRR, with 4–7 percent remaining unextracted. No further work-up of the solvent extracts or the bound residues in fat were required. Cyclobutrifluram accounted for 2–3 percent TRR (0.006 mg/kg) and the major metabolites observed were SYN552415 (5–15 percent TRR; 0.02–0.03 mg eq/kg), SYN552439 (22–48 percent TRR; 0.08–0.09 mg eq/kg) and SYN510275 (42 percent TRR; 0.14 mg eq/kg).

Laying hens

Phenyl or pyridinyl-labelled cyclobutrifluram were administered once daily via gelatin capsule to twelve laying hens (Shaver, 1.59–1.87 kg bw) at doses equivalent to 16 ppm in the diet (ca 1.0 mg/kg bw) for 14 consecutive days. Excreta was collected once daily, while eggs were collected twice daily and separated into yolk and white. Liver, omental fat, subcutaneous fat with skin attached, breast muscle, leg and thigh muscle were collected after animal sacrifice, approximately 12 hours after administration of the last dose.

Most of the radioactivity was recovered in the excreta (82–84 percent AD). The radioactivity recovered in eggs and tissues was low, accounting for ≤2 percent AD. Plateau levels of radioactive residues in egg whites and egg yolks were reached 5 days and 7–8 AD, respectively.

TRRs in the egg yolks were higher than the TRRs in egg whites for the phenyl- and pyridinyl-label experiments (0.586–0.765 mg eq/kg and 0.195–0.544 mg eq/kg, respectively). TRRs were highest in liver (1.02–1.23 mg eq/kg), followed by composite skin with fat (0.14–0.20 mg eq/kg) and composite muscle (0.06–0.26 mg eq/kg). Levels of radioactivity were consistently higher in the samples from the pyridinyl label than the phenyl label.

Extraction of egg whites using mixtures of aqueous acetonitrile released >97 percent TRR (>0.19 mg eq/kg) with <3 percent TRR (0.005 mg eq/kg) remaining in the unextracted fraction, which was not further investigated. No parent compound was identified in egg whites. All identified metabolites were major, where SYN510275 had the highest concentration (pyridinyl label only: 61 percent TRR; 0.31 mg eq/kg), followed by SYN549104 (11–34 percent TRR; 0.05–0.06 mg eq/kg), SYN552441 (5–14 percent TRR; 0.02–0.03 mg eq/kg), SYN552430 (5–13 percent TRR; 0.02 mg eq/kg) and SYN552442 (4–11 percent TRR; 0.02 mg eq/kg).

Solvent extraction of egg yolks with hexane and aqueous acetonitrile released much less radioactivity than egg whites (57–73 percent TRR; 0.32–0.52 mg eq/kg). In a similar manner as egg whites, no parent compound was detected in egg yolks. The two major metabolites identified were SYN549104 (8–11 percent TRR; 0.06 mg eq/kg) and SYN510275 (pyridinyl label only: 43 percent TRR; 0.31 mg eq/kg). All other identified metabolites were minor (SYN552430, SYN552441, SYN552442 and SYN552439) accounting each for 2–8 percent TRR (0.02–0.05 mg eq/kg). The unextracted residues of egg yolks (27–43 percent TRR; 0.19–0.24 mg eq/kg) were subject to SDS extraction and protease enzyme hydrolysis. SDS extraction released 30–48 percent TRR (0.22–0.27 mg eq/kg) where a fraction of the radioactivity was associated with the protein pellet (5–11 percent TRR; 0.04–0.06 mg eq/kg) and some was associated with the liquid supernatant (26–38 percent TRR; 0.18–0.22 mg eq/kg). Analysis of the supernatant indicated that the majority of the radioactivity was bound to the origin for the phenyl label. However, in the case of the pyridinyl label, the metabolite SYN510275 was identified, accounting for 8.5 percent TRR (0.060 mg eq/kg).

Protease hydrolysates revealed the presence of SYN510275 (1.7 percent TRR; 0.012 mg eq/kg) and up to 15 unassigned components, no single one exceeding 2.6 percent TRR (up to 0.015 mg eq/kg). The post protease hydrolysis PES was rinsed with acetonitrile: water (1:1) releasing up to 2.3 percent TRR (up to 0.013 mg eq/kg). The remaining PES was incubated in a solution of 0.1 mol/L hydrochloric acid where 5–10 percent TRR (0.03–0.06 mg eq/kg) was extracted. Analysis of the acid hydrolysate demonstrated the presence of unidentified compounds.

Sequential extraction of liver with aqueous acetonitrile released 34–40 percent TRR (0.35–0.50 mg eq/kg). The concentrated solvent extracts did not contain the parent compound and SYN510275 was the only major metabolite observed, accounting for 29 percent TRR (0.36 mg eq/kg). The minor metabolites SYN549104, SYN552430, SYN552441, SYN552442 and SYN552439 accounted for 0.4–3 percent TRR each (0.04–0.032 mg eq/kg). No change in the profile was observed after β-glucuronidase hydrolysis. Unextracted TRRs in liver (60–66 percent TRR; 0.68–0.74 mg eq/kg) were subjected to SDS extraction, and acid and proteolytic enzyme hydrolysis. In the pyridinyl-labelled experiment, SYN510275 was observed in the organic fraction (6.5 percent TRR; 0.080 mg eq/kg) following partitioning of the concentrated protease extract with diethyl ether, in the acid hydrolysate (3.4 percent TRR; 0.041 mg eq/kg) and in the liquid supernatant following direct SDS extraction of the unextracted residues (21 percent TRR; 0.260 mg eq/kg).

Following sequential extraction of muscle with mixtures of aqueous acetonitrile, the majority of the radioactivity was extracted (61–92 percent TRR; 0.04–0.25 mg eq/kg). No parent compound was detected but 3 major metabolites where identified: SYN552430 (18 percent TRR; 0.011 mg eq/kg), SYN552441 (16 percent TRR; 0.010 mg eq/kg) and SYN510275 (83 percent TRR; 0.23 mg eq/kg). SYN549104 and SYN552442 accounted for 4–5 percent TRR each (0.002–0.003 mg eq/kg). The unextracted TRRs from the pyridinyl label accounted for 8 percent TRR (0.02 mg eq/kg) and was not further analysed. Unextracted radioactivity from the phenyl label experiment, accounting for 39 percent TRR (0.023 mg eq/kg), was hydrolysed using protease enzyme but no further analysis was undertaken.

Solvent extraction of skin with fat with aqueous acetonitrile and hexane released 90–92 percent TRR (0.14–0.20 mg eq/kg). Analysis of the concentrated extracts did not detect the parent, but one major metabolite, SYN510275, accounting for 60 percent TRR (0.13 mg eq/kg) and 2 minor metabolites, SYN549104 and SYN552439, accounting for 6.8–7.2 percent TRR; 0.011 mg eq/kg. Following partitioning of the hexane fraction with aqueous acetonitrile, the aqueous and organic fractions were concentrated and analysed. Analysis of aqueous concentrate detected the presence of SYN552439, SYN549104 and SYN510275 (0.3–0.8 percent TRR; 0.001 mg eq/kg) No metabolites were identified following analysis of the organic fraction.

Summary of animal metabolism

The metabolism of cyclobutrifluram in livestock and rats was qualitatively similar, characterized by cleavage between the cyclobutyl and pyridinyl rings to produce the pyridinyl-specific metabolite SYN510275, monohydroxylation and dihydroxylation of the parent, predominantly on the cyclobutyl ring, glucuronide conjugation and to a lesser extent reduction of the cyclobutyl ring. SYN150275 was the major metabolite in all tissues from goat and hen. A number of mono- and dihydroxylated metabolites were detected, including SYN549104 and SYN552442 (hen only). Dihydroxylation of the cyclobutyl ring formed the major metabolites, SYN552430 and SYN552441, detected only in the hen matrices.

Reduction of parent in the cyclobutyl ring to form SYN552439 was observed in both the hen and goat. SYN552439 was a major metabolite in goat fat and minor in hen egg yolk, fat and muscle. One additional major metabolite was identified in the goat fat as the tetrahydrofuran metabolite SYN552415.

A number of other minor metabolites were characterized in the goat, but the exact structures were not fully elucidated, with the exception of metabolites C and G, which were observed in kidney and shown to hydrolyse to SYN549104 and SYN552442, respectively, following incubation with β-glucuronidase. In both

livestock animals, hydrolysis of the unextracted radioactivity in tissues comprised predominantly of the metabolite SYN510275.

Environmental fate in soil

The meeting received information on soil aerobic metabolism, field dissipation, hydrolysis and photolysis properties of cyclobutrifluram. The meeting did not receive studies on the nature of [^{14}C]-cyclobutrilfuram in confined rotational crops and the magnitude of cyclobutrifluram in field rotational crops, as the critical GAP is for bananas only, which is a permanent crop.

Aerobic soil metabolism (laboratory studies)

Cyclobutrifluram is persistent in soil, with DT_{50} ranging from 52 to >1000 days, with an estimated geometric mean of 323 days. The meeting noted that some of the predicted DT_{50} values were extrapolated well beyond the study duration (120 days) and should be treated with caution.

Cyclobutrifluram degraded primarily to SYN510275, SYN510260, SYN549104 and TFA, which reached 19 percent, 5 percent, 3 percent and 2 percent of the total applied radioactivity (TAR), respectively. A number of additional metabolites were detected, however, none exceeded 4 percent TAR at any sampling time. DT_{50} of SYN510275 and TFA where 53–246 days and >1000 days, respectively, demonstrating persistence in soil.

Hydrolysis

Cyclobutrifluram was shown to be stable in aqueous solutions at environmentally relevant pHs of 4, 7 and 9, and elevated temperatures of 50 °C, 60 °C, and 70 °C, for the tested duration of 30 days. Therefore the meeting concluded that hydrolysis is not likely an important route of degradation of cyclobutrifluram at environmentally relevant temperatures.

Soil photolysis

Limited degradation of cyclobutrifluram was observed in both irradiated and dark control dry soil systems. Conversely in irradiated moist soil test systems, degradation of cyclobutrifluram was moderately rapid resulting in the formation of SYN510275, CGA177291 and EXC8199. CGA177291 and EXC8199 reached mean maximum levels of 14 and 12 percent TAR at the end of the study duration (17-DAT), respectively, while SYN510275 reached a mean maximum of 48 percent TAR. The meeting concluded that photolysis is not a major route of degradation of cyclobutrifluram.

Field dissipation

The dissipation of cyclobutrifluram under field conditions has been investigated in three sites of the United States of America (bare and cropped soil), one site in Canada (bare soil), 3 sites in China (bare soil) and one site in India (bare soil). In summary, quantifiable residues of cyclobutrifluram were detected in soil cores at and below 70 cm starting at 29 days after application. Residues of the photodegradation products CGA177291 and EXC8199 were consistently <LOQ in all studies. Measurable residues of SYN549104 and SYN510275 were observed in the US studies, however, these were consistently below the levels reported for the parent compound, and predominantly found in the upper soil cores within the earlier sampling

intervals. The overall geometric mean (non-normalized) DT_{50} was estimated to be 49 days, indicating cyclobutrifluram is non-persistent.

Summary of environmental fate

Hydrolysis and photolysis are not major routes of degradation of cyclobutrifluram. The compound was shown to be persistent in soil in laboratory studies but non-persistent in the field studies, indicating a limited potential to accumulate in soil following application in consecutive years.

Methods of analysis

The meeting received descriptions and validation data for several analytical methods for residues of cyclobutrifluram and several metabolites, including TFA, in diverse plant matrices. In all methods, the compounds were analysed by LC-MS/MS.

In method GRM076.07A determine residues of cyclobutrifluram, SYN510275 and SYN510260. Samples were extracted with acetonitrile:water (80:20) followed by acetonitrile:1 percent formic acid in water (50:50). Depending on the crop and analyte being tested, the extracts were either centrifuged prior to analysis or sequentially hydrolysed with NaOH and HCl prior to centrifugation and analysis. The method was satisfactorily validated at LOQ of 0.01 mg/kg for 24 different plant matrices from all five commodity categories.

The meeting also received the description and validation data for a QuEChERS method for analysis of cyclobutrifluram, SYN510275 and SYN510260 in plant matrices. The method was satisfactorily validated at LOQ of 0.01 mg/kg for all tested plant matrices from all five commodity categories.

Both methods were successfully validated by independent laboratories, demonstrating good reproducibility.

For the analysis of metabolite SYN549104, Method GRM076.11A involved extraction of crop samples with acetonitrile:water (80:20) followed by acetonitrile:1 percent formic acid (50:50). Solvent extracts were acidified with 1 mol/L HCl, the hydrolysates neutralized with 2 mol/L NaOH and partitioned against ethyl acetate. The organic phases were evaporated and the residues redissolved in acetonitrile:0.01percent acetic acid prior to analysis. The LOQ is reported to be 0.01 mg/kg. During the hydrolysis step, residues of SYN549104 that were conjugated became SYN549104 free and SYN552202 (epimer of SYN549104). This method was also successfully independently validated, demonstrating good repeatability.

Method GRM076.08 determines the conjugated metabolites of SYN549104, SYN552677 (racemate of SYN552301), SYN552678 (racemate of SYN552441), SYN551636 and SYN551829 in various plant matrices. Samples are extracted with ACN:1 percent formic acid (80:20), extracts hydrolysed using 1 mol/L HCl, incubated at 100 °C for approximately 18 hours, cooled and then neutralized using 2 mol/L NaOH. Hydrolysates were then partitioned in ethyl acetate, the upper organic layer evaporated to dryness and reconstituted in methanol:water prior to analysis. The method was satisfactorily validated at LOQ of 0.01 mg/kg.

Method GRM092.02A quantify residues of TFA in bananas. The method involves extracting the samples once with 10mM ammonium acetate followed by a second extraction with ammonium

acetate:acetonitrile:85 percent formic acid. The final solution is centrifuged and the supernatant is analysed. The method was satisfactorily validated at LOQ of 0.01 mg/kg.

Methods GRM062.02A and GRM060.02B determine TFA residues in various crops, including spinach leaves, carrot roots, wheat whole plant, wheat grain, and wheat straw. Samples were extracted with water and magnesium carbonate, acidification with HCl and derivatization of the TFA to N-(2,4-dichlorophenyl)-2,2,2-trifluoroacetamide, partitioning with ethyl acetate and hexane followed by analysis of the organic phase. The methods were satisfactorily validated at LOQ of 0.01 or 0.05 mg/kg.

Stability of pesticide residues in stored analytical samples

Residues of cyclobutrifluram, SYN510275 and SYN510260 were determined to be stable at ≤−18 °C for up to 36 months in high oil content commodities (soya bean), high water content commodities (cucumber), high protein content commodities (dry bean) and high starch content commodities (wheat grain). In high acid content commodities (orange fruit), residues of cyclobutrifluram, SYN510275 and SYN510260 were shown to be stable in frozen storage for up to 18 months. Lastly, the freezer storage stability data demonstrated that residues of the metabolite SYN549104 (free + epimer) were stable in high water content commodities (cucumber), high protein content commodities (dry bean) and high starch content commodities (wheat grain) for 36 months, however, in high oil content commodities (soya bean), there was evidence of dissipation after 3 months.

Residues of the metabolites SYN552677, SYN552678, SYN551636, SYN551829 and SYN549104 (soya bean seed and orange fruit only; detected as the racemate SYN552438) were determined to be stable at ≤−20 °C for at least 18 months in high oil content commodities (soya bean), high water content commodities (lettuce), high protein content commodities (dry bean), high starch content commodities (wheat grain), high acid content commodities (orange fruit) and wheat straw.

Residues of TFA were determined to be stable at ≤−18 °C for at least 24 months in high water (spinach and wheat whole plant) and high starch (carrot roots and wheat grain) content commodities and for up to 36 months at ≤−18 °C in high acid (orange fruit), high protein (dry broad bean) and high oil (soya bean seed) content commodities.

Definition of the residue

Plant commodities

The nature of the cyclobutrifluram residues was investigated in soya beans (forage, hay, straw and seed, potatoes (foliage, tubers) and wheat (forage, hay, straw and grain) following in-furrow or seed treatment.

Cyclobutrifluram was the major analyte in food and feed commodities tested (7–89 percent TRR; 0.001–0.50 mg/kg). As suitable analytical methods are available to analyse the parent compound, the meeting considered that cyclobutrifluram was a suitable marker for compliance with MRL.

In deciding which compounds should be included in the residue definition for risk assessment, the meeting considered the likely occurrence and toxicological properties of SYN549104, SYN552202 (epimer of SYN549104), SYN510275, SYN510260 and TFA.

SYN549104 was observed as a major metabolite in the rat, and its toxicity was considered to be covered by the health-based guidance value (HBGV) of the parent compound. In the plant metabolism studies, its concentrations (7–12 percent TRR; 0.001–0.003 mg eq/kg) were equivalent to those of the parent (7–14 percent TRR; 0.001–0.003 mg/kg) in soybean seed. In all other food and feed commodities, SYN549104 was identified at up to 18 percent TRR (0.78 mg eq/kg). The meeting decided that SYN549104 should be included in the residue definition for dietary risk assessment and livestock dietary burden.

SYN510275 was observed as a major metabolite in the rat, and its toxicity was considered to be covered by the HBGV of the parent compound. Concentrations of free SYN510275 (34 percent TRR; 0.013 mg eq/kg) were approximately 5-fold greater than the levels of cyclobutrifluram (7 percent TRR; 0.003 mg/kg) in soybean seed. In all other food and feed commodities, except straw, free SYN510275 was present at ≤0.65-fold of the parent. In straw, this metabolite was present in the free and conjugated forms at levels equivalent to the parent. The meeting decided that SYN510275 (free and conjugated) should be included in the residue definition for dietary risk assessment and livestock dietary burden.

The toxicity of SYN510260 was considered to be covered by the HBGV of the parent compound. SYN510260 was only observed in wheat straw and grain. It was present at trace levels in straw and 3-fold greater than the combined residues of cyclobutrifluram, SYN549104 and SYN510275 in grain. The meeting decided that SYN510260 should be included in the residue definition for dietary risk assessment.

The meeting also considered the minor metabolites SYN552301, SYN551829 and SYN551715, identified in wheat commodities, but not observed in the animal metabolism studies. The meeting concluded that the toxicity of SYN552301 was covered by the parent HBGV. This metabolite was identified in wheat grain (2 percent; 0.001 mg eq/kg) and wheat feed commodities (0.2–11 percent TRR; 0.003–0.46 mg eq/kg) at levels considerably lower than the parent (23–77 percent TRR; 0.007–1.2 mg/kg). Therefore, the meeting determined that SYN552301 does not need to be considered in the residue definition for risk assessment or livestock dietary burden.

Metabolites SYN551829 and SYN551715 were only identified in straw (3–7 percent TRR; 0.12–0.31 mg eq/kg), at concentrations well below those of the parent (23–34 percent; 0.94–1.4 mg/kg). It was not observed in the rat and no toxicology information was provided to the current meeting. Therefore, the meeting concluded that the TTC Cramer class III approach for non-genotoxic compounds should be considered for the chronic exposure to each of these metabolites (1.5 µg/kg bw/day) and TTC III for acute exposure (5 µg/kg bw/day).

TFA was found at levels equivalent to or greater than the parent in soya bean, potato and wheat (except forage and hay) commodities. The meeting noted that this metabolite can arise from other sources and has toxicity different from cyclobutrifluram. The meeting concluded that this metabolite should be assessed separately, and was not further considered in the current evaluation.

In summary, the meeting concluded that the residue definition for dietary risk assessment for plant commodities should be the sum of residues of free and conjugated cyclobutrifluram, SYN549104, SYN510260 and SYN510275, expressed as cyclobutrifluram.

Livestock dietary burden

Wheat forage, hay and straw were the only commodities where SYN552202 (the epimer of SYN549104) was identified. Together with SYN549104 (free), the concentration of both (5–31 percent TRR; 0.003–1.3 mg eq/kg) was equivalent to that of the parent (4–34 percent TRR; 0.02–1.4 mg/kg). Therefore, the meeting agreed that cyclobutrifluram, SYN549104, SYN552202 and SYN510275 (free and conjugated) should be considered for inclusion in the dietary burden calculation.

The meeting was unable to conclude on the inclusion of the metabolites SYN551829 and SYN551715 in the livestock dietary burden calculation, as the critical GAP being reviewed by the current meeting is only for bananas. For future uses, it is desirable that additional information be provided on the potential transfer of the metabolites SYN551829 and SYN551715 from feed to animal matrices.

Animal commodities

The nature of the cyclobutrifluram residues was investigated in lactating goats and laying hens. The metabolism of cyclobutrifluram was qualitatively similar in both animals.

In lactating goats, cyclobutrifluram was not observed in milk and kidney, but was present in liver and muscle at very low concentrations (≤3.1percent TRR; ≤0.019 mg/kg). Cyclobutrifluram was not observed in any of the laying hen commodities (eggs or tissues). SYN510275 (free) was observed in all lactating goat and poultry matrices at 22–90 percent TRR (0.14–1.9 mg eq/kg). Therefore, the meeting considered that SYN510275 (free) was a suitable marker and decided that the residue definition for monitoring compliance for livestock commodities is the sum of cyclobutrifluram and SYN510275, expressed as cyclobutrifluram.

In deciding which compounds should be included in the residue definition for risk assessment, the meeting considered the likely occurrence and toxicological properties of SYN510275, SYN549104 (free and conjugated), SYN552442, SYN552441, SYN552430 and SYN552439. The toxicities of SYN510275, SYN549104 and SYN552442 are covered by the HBGV of the parent compound. SYN552441 SYN552430 and SYN552439 were not observed in the rat, and no toxicology information were provided.

SYN510275 accounted for the majority of the identified radioactivity in all animal commodities and should be included in the residue definition for dietary risk assessment. In turn, the meeting considered the relative exposure of each metabolite by comparing with the concentrations of SYN510275.

Concentrations of SYN549104 (free and conjugated) in kidney and egg whites were up to 0.6-fold those of SYN510275. In milk, egg yolks and all livestock tissues, concentrations of SYN549104 were ≤0.3-fold, relative to the concentrations of SYN510275. Therefore, the meeting decided that SYN49104 should be included in the residue definition for dietary risk assessment.

Concentrations of SYN552442 in goat liver and kidney (1–4 percent TRR; 0.05–0.08 mg eq/kg) and poultry eggs, liver and muscle (2–11 percent; 0.003–0.03 mg eq/kg) were much lower than those of SYN510275 (50–83 percent TRR; 0.23–0.62 mg/kg). Therefore, the meeting concluded that SYN552442 does not need to be considered in the residue definition for risk assessment.

SYN552441 and SYN552430 were only observed in eggs and poultry liver and muscle at concentrations much lower (≤0.2-fold) than those of SYN510275. SYN552439 was observed in goat liver and fat and in

poultry eggs (yolks only), liver and skin with fat. It was present in goat fat at 1.1-fold the concentration of SYN510275. For all other matrices, SYN552439 was observed at concentrations significantly lower (≤0.2-fold) than those of SYN510275. Therefore, the meeting concluded that the TTC Cramer class III approach for non-genotoxic compounds should be considered for the chronic exposure to each of SYN552441, SYN552430 and SYN552439 (1.5 µg/kg bw/day) and TTC III for acute exposure (5 µg/kg bw/day).

In summary, the meeting decided that the residue definition for dietary risk assessment for livestock matrices should be the sum of residues of free and conjugated cyclobutrifluram, SYN549104 and SYN510275, expressed as cyclobutrifluram.

Conclusions

Based on the above, the meeting recommended the following residue definitions for cyclobutrifluram.

Definition of the residue for compliance with the MRL for plant commodities: Cyclobutrifluram.

Definition of the residue for compliance with the MRL for animal commodities: Sum of residues of cyclobutrifluram and 2-(trifluoromethyl)pyridine-3-carboxamide (SYN510275), expressed as cyclobutrifluram.

Definition of the residue for dietary risk assessment for plant commodities: Sum of residues of cyclobutrifluram (free and conjugated), *N*-[(1*S*,2*R*)-2-(2,4-dichlorophenyl)-2-hydroxy-cyclobutyl]-2-(trifluoromethyl)pyridine-3-carboxamide (SYN549104) (free and conjugated), 2-(trifluoromethyl)pyridine-3-carboxylic acid (SYN510260) (free and conjugated) and 2-(trifluoromethyl)pyridine-3-carboxamide (SYN510275) (free and conjugated), expressed as cyclobutrifluram.

Definition of the residue for dietary risk assessment for animal commodities: Sum of residues of cyclobutrifluram, *N*-[(1*S*,2*R*)-2-(2,4-dichlorophenyl)-2-hydroxy-cyclobutyl]-2-(trifluoromethyl)pyridine-3-carboxamide (SYN549104) (free and conjugated) and 2-(trifluoromethyl)pyridine-3-carboxamide (SYN510275) (free and conjugated), expressed as cyclobutrifluram.

The residue is not fat-soluble.

Results of supervised residue trials

Bananas

The GAP for bananas from Guatemala is single drench application at 160 g ai/ha, 0–day PHI. The meeting received four side-by-side supervised residue trials conducted in Brazil according to this GAP and four conducted 2-fold GAP rate.

Although four trials are not sufficient to recommend a maximum residue level for banana, residues of cyclobutrifluram in whole banana from all trials (n = 8) were <0.01 mg/kg.

Therefore, the meeting estimated a maximum residue level of 0.01* mg/kg for banana.

For dietary risk assessment, residues of cyclobutrifluram, SYN549104, SYN510260, and SYN510275 were <0.01 mg/kg in all whole banana samples. Therefore, the meeting estimated an STMR and HR of 0 mg/kg.

Fate of residues in storage and processing

The meeting received information on the hydrolysis of cyclobutrifluram under simulated processing conditions.

High temperature hydrolysis

In studies on the hydrolytic stability of aqueous solutions of radiolabelled cyclobutrifluram, samples were incubated under three sets of conditions, representative of industrial and household processing procedures: 90 °C (pH 4, 20 minutes) to simulate pasteurization, 100 °C (pH 5, 60 minutes), to simulate boiling, baking and brewing, and 120 °C (pH 6, 20 minutes in the dark) to simulate sterilization. No degradation was observed, demonstrating that cyclobutrifluram is hydrolytically stable. In addition, no change in the isomer ratio was observed. Therefore, the nature of the residue is not affected by processing operations.

Residues in animal commodities

Animal feeding studies were not provided to the current meeting, nor is there a livestock dietary burden associated with bananas, therefore, no maximum residue levels were estimated for animal commodities.

Recommendations

On the basis of the data from supervised trials the meeting concluded that the residue level listed in Table 5.9.6 and Annex 1 is suitable for establishing a maximum residue limit and dietary exposure assessment.

Definition of the residue for compliance with the MRL for plant commodities: cyclobutrifluram.

Definition of the residue for compliance with the MRL for animal commodities: sum of residues of cyclobutrifluram and 2-(trifluoromethyl)pyridine-3-carboxamide (SYN510275), expressed as cyclobutrifluram.

Definition of the residue for dietary risk assessment for plant commodities: sum of residues of cyclobutrifluram (free and conjugated), N-[(1S,2R)-2-(2,4-dichlorophenyl)-2-hydroxy-cyclobutyl]-2-(trifluoromethyl)pyridine-3-carboxamide (SYN549104) (free and conjugated), 2-(trifluoromethyl)pyridine-3-carboxylic acid (SYN510260) (free and conjugated) and 2-(trifluoromethyl)pyridine-3-carboxamide (SYN510275) (free and conjugated), expressed as cyclobutrifluram.

Definition of the residue for dietary risk assessment for animal commodities: sum of residues of cyclobutrifluram, N-[(1S,2R)-2-(2,4-dichlorophenyl)-2-hydroxy-cyclobutyl]-2-(trifluoromethyl)pyridine-3-carboxamide (SYN549104) (free and conjugated) and 2-(trifluoromethyl)pyridine-3-carboxamide (SYN510275) (free and conjugated), expressed as cyclobutrifluram.

The residue is not fat-soluble.

Table 5.9.6 Recommendation for cyclobutrifluram

CCN	Commodity name	Maximum residue levels (mg/kg)	STMR (mg/kg)	HR (mg/kg)
FI 0327	Banana	0.01*	0	–

Dietary risk assessment

Long-term dietary exposure

The ADI for cyclobutrifluram is 0–0.2 mg/kg bw. The International Estimated Daily Intakes (IEDIs) for cyclobutrifluram were estimated for the 17 GEMS/Food Consumption Cluster Diets using the STMR value estimated for banana.

The IEDIs were 0 percent of the maximum ADI. The meeting concluded that long-term dietary exposure to residues of cyclobutrifluram from use considered by the JMPR (banana) is unlikely to present a public health concern.

Acute dietary exposure

An ARfD for cyclobutrifluram is unnecessary. The meeting concluded that the acute dietary exposure to residues of cyclobutrifluram is unlikely to present a public health concern.

Threshold of toxicological concern (TTC) consideration for metabolites

During the 2024 JMPR meeting, the WHO concluded that the metabolites SYN551829, SYN552441, SYN552430, SYN552439 could be assessed using the TTC Cramer class III for chronic exposure (1.5 µg/kg bw per day) and TTC III for acute exposure (5 µg/kg bw per day). Since no quantified residues of any of these metabolites were observed in banana, the only food commodities assessed at the current meeting, exposures were not assessed against the TTC approach.

5.10 Cyproconazole (239) (T, R)

5.10.1 Toxicology

Cyproconazole is the International Organization for Standardization (ISO)–approved common name for (2*RS*, 3*RS*, 2*SR*, 3*SR*)-2-(4-chlorophenyl)-3-cyclopropyl-1-(1*H*-1,2,4-triazol-1-yl)-butan-2-ol (IUPAC), for which the Chemical Abstracts Service number is 94361-06-5. The cyproconazole structure exists in four stereoisomeric forms as two diastereoisomeric pairs of enantiomers. Cyproconazole is a 1:1 mixture of the two diastereomeric pairs, each of which is a 1:1 mixture of the enantiomers (i.e. all four stereoisomers are present in similar amounts).

Cyproconazole is a broad-spectrum triazole fungicide. It acts by inhibiting sterol biosynthesis in fungi (demethylation inhibitor). Cyproconazole was previously evaluated by the FAO/WHO Joint Meeting on Pesticide Residues (JMPR) in 2010. That meeting established an acceptable daily intake (ADI) of 0–0.02 mg/kg bw on the basis of the overall no-observed-adverse-effect level (NOAEL) of 2.2 mg/kg bw per day from the two-year study of toxicity and carcinogenicity and the multigeneration reproduction study in rats based on reduced body weight gain and liver toxicity. A safety factor of 100 was applied. This ADI was supported by the NOAEL of 2.2 mg/kg bw per day observed in a 90-day toxicity study in mice on the basis of reduced body weight gain.

The 2010 meeting established an acute reference dose (ARfD) of 0.06 mg/kg bw on the basis of a maternal toxicity NOAEL of 6 mg/kg bw per day in studies of developmental toxicity in rats, based on body weight loss during the early treatment period (gestation days 6–11) and reduced feed consumption. The acute reference dose (ARfD) is protective of developmental toxicity seen at a slightly higher dose in rabbits. Cyproconazole was evaluated by the present meeting following a request from the Codex Committee on Pesticide Residues (CCPR) for additional maximum residue limits (MRLs)

The new toxicological studies with cyproconazole consisted of an acute neurotoxicity study in rats, immunotoxicity study in mice, and three mode of action studies for liver toxicity. The new studies did not affect the existing ADI and ARfD.

These studies with cyproconazole were performed according to OECD technical guidelines and complied with good laboratory practice.

Biochemical aspects

No new data were submitted.

Toxicological data

In an acute neurotoxicity study, cyproconazole was administered once by oral gavage to rats at dose levels of 0 mg/kg bw, 10 mg/kg bw, 50 mg/kg bw or 250 mg/kg bw. The NOAEL was 10 mg/kg bw based on transient effects, including increased locomotor activity at time of peak effect, observed at 50 mg/kg bw.

In a 28-day immunotoxicity study in mice, cyproconazole was administered daily at dietary concentrations of 10 ppm, 30 ppm, or 100 ppm (equal to a mean achieved dosage of 2.1 mg/kg bw, 7.0 mg/kg bw, and

23.0 mg/kg bw per day), respectively. The NOAEL for immunotoxicity was 100 ppm (23.0 mg/kg bw per day), the highest dose tested.

Toxicological data on metabolites and/or degradates

No new data were submitted.

Mode of action studies

Mode of action studies were performed to further investigate the mechanism of liver tumour formation observed in mice and was consistent with and supported the conclusions of the 2010 JMPR on the mode of action for cyproconazole-induced liver tumours in mice.

Microbiological aspects

No experimental data were submitted by the sponsor in this regard.

Human data

No new data were submitted.

Toxicological evaluation

The current meeting re-affirmed the ADI of 0–0.02 mg/kg bw for cyproconazole, established by the JMPR 2010 meeting.

The current meeting re-affirmed the ARfD of 0.06 mg/kg bw for cyproconazole, established by the JMPR 2010 meeting.

An addendum to the toxicological monograph was prepared.

5.10.2 Residue and analytical aspects

Cyproconazole was first evaluated by the JMPR in 2010 when an ADI of 0–0.02 mg/kg bw and an ARfD of 0.06 mg/kg bw per day were established, which were confirmed by the present meeting.

The definition of the residue for compliance with MRL in plant and animal commodities and for dietary intake in plant commodities is cyproconazole. The definition of the residue for dietary intake for animal commodities is free and conjugated cyproconazole. The residue is fat-soluble.

Cyproconazole was evaluated for new MRLs at the 2013 JMPR and was scheduled at the 54th Session of the CCPR for the evaluation of additional MRLs at the 2024 JMPR. The current meeting received additional information on analytical methods, storage stability, GAP, and magnitude of the residues to support the use on pulses.

Methods of analysis

Adequate analytical methods exist for the determination of cyproconazole residues for enforcement purposes. The 2010 meeting validated Method RAM 397/02 on dry pea seed, oilseed rape seed, lettuce, and apple. The 2024 meeting received additional validation data for Method RAM 397/02 on dry bean and pea seed, forage, and straw with 2 fortifications levels (0.01 and 0.05 mg/kg; n = 3). Recoveries and RSDs were acceptable (80—101 percent and ≤7 percent, respectively). The meeting concluded that method was validated on dry bean and pea seed, forage, and straw based on successful recoveries in a range of commodities reviewed by the 2010 JMPR. The LOQ is 0.01 mg/kg for cyproconazole in pulse seed, forage, and straw.

Stability of pesticides in stored analytical samples

The stability of cyproconazole residues in samples undergoing frozen storage conditions (≤–12 °C) was evaluated by the 2010 JMPR. Cyproconazole was stable in a range of commodities covering the high-water, high-acid, high-oil, high-starch, and dry commodity categories for at least 27 months. The current meeting received additional information on freezer storage stability of cyproconazole in pulse (lentil, faba bean, and chickpea) seed, forage, and straw. Samples were stored frozen (≤–18 °C) for 94 or 128 days. Residues of cyproconazole were stable for at least 94 days in faba bean forage and chickpea seed, forage, and straw, and at least 128 days in faba bean seed and straw and lentil seed, forage, and straw.

Samples from the supervised residue study were stored for a maximum duration of 293 days. The storage stability data are sufficient to support the submitted pulse forage (high-water content commodity) and straw (dry commodity) supervised residue trials. Samples from the supervised residue trials for pulse seeds exceeded the period of proven stability in high-protein content commodities. However, considering that there was no degradation in pulse seeds stored frozen for 94–128 days and that cyproconazole was stable across five commodity categories for at least 27 months, the meeting concluded that storage interval in the residue trials are adequate.

Results of supervised residue trials on crops

Dry beans (except soya beans) and peas

The meeting received information on supervised field trials on dry beans (faba beans) and dry peas (chickpeas). The meeting noted that no data were submitted for the triazole derivative metabolites including triazole-acetic acid (TAA), triazole-alanine (TA), 1,2,4-triazole (1,2,4-T), and triazole lactic acid (TLA).

Dry beans and peas were previously evaluated by the 2010 JMPR where a maximum residue level of 0.02(*) mg/kg and an STMR of 0.02 mg/kg were estimated based on the GAP from the United Kingdom of Great Britain and Northern Ireland for dried beans and peas of two applications up to 80 g ai/ha, a 14-day RTI, and a 42-day PHI. Soya beans were previously evaluated by the 2010 JMPR where a maximum residue level of 0.07 mg/kg and an STMR of 0.02 mg/kg were estimated based on the cGAP from the United States of America of two applications up to 400 g ai/ha, a 14-day RTI, and a 30-day PHI.

The current meeting received a GAP for pulses (except lentil) from Australia consisting of two foliar applications up to 64 g ai/ha, a 14-day RTI, and a 56-day PHI. The GAP for lentils from Australia consisting of two foliar applications up to 48 g ai/ha, 14-day RTI, and a 56-day PHI.

The trials on faba beans and chickpeas matched the Australian GAP for pulses (except lentil). For lentils, the trials were overdosed compared to the Australian GAP (ca. 1.3X).

Cyproconazole residues in faba beans and chickpeas in trials that approximated the Australian GAP in ranked order were (n = 7): <0.01 (6), 0.01 mg/kg.

Cyproconazole residues in lentils in trials conducted at ca. 1.3X the Australian GAP in ranked order were (n = 4): <0.01, 0.01, 0.02 (2). Cyproconazole residues in lentils proportioned to the Australian GAP in ranked order were: 0.008 mg/kg, <0.01 mg/kg, 0.014 mg/kg, and 0.015 mg/kg.

The meeting noted similar residues in faba beans, chickpeas, and lentils and combined the residue populations to estimate a maximum residue level and STMR.

Combined cyproconazole residues were (n = 11): 0.008 mg/kg, ≤0.01 (7) mg/kg, 0.01 mg/kg, 0.014 mg/kg, and 0.015 mg/kg.

The meeting recommended maximum residue levels of 0.02 mg/kg for the subgroup of dry beans (except soya beans) and the subgroup of dry peas. The meeting withdrew its previous recommendations of maximum residue levels of 0.02(*) mg/kg for beans (dry) and peas (dry).

Primary animal feed commodities

Products of legume feeds with high water (³ 20 percent) content (forage and silage)

The 2010 meeting recommended a highest residue of 3.32 mg/kg (dw) and a median residue of 1.38 mg/kg (dw) in pea vines. The 2010 meeting did not estimate median or highest residues in bean vines. The 2010 meeting estimated a highest residue of 1.46 mg/kg (dw) and median residue of 0.66 mg/kg (dw) in soya bean forage.

The 2010 meeting did not estimate a highest or median residue in the hay and fodder of pea and bean commodities, except soya bean. The 2010 meeting estimated a highest residue of 2.2 mg/kg (dw) and median residue of 0.78 mg/kg (dw) in soya bean hay.

Cyproconazole residues in faba bean forage trials that approximated the Australian GAP were (n = 1): 1.87 mg/kg (dw).

The meeting concluded that one trial was not sufficient to estimate a highest or median residue in bean forage.

Cyproconazole residues in chickpea forage in trials that approximated the Australian GAP in ranked order were (n = 3): <0.01 mg/kg (dw), 0.24 mg/kg (dw), and 1.01 mg/kg (dw).

Cyproconazole residues in lentil forage at ca. 1.3X Australian GAP in ranked order were (n = 2): 0.96 mg/kg (dw) and 1.38 mg/kg (dw). Residues in lentil forage proportioned to the Australian GAP in ranked order were: 0.83 mg/kg (dw) and 0.98 mg/kg (dw).

The meeting noted similar residues in chickpeas and the lentils and combined the residue populations for both pea commodities to estimate the highest residue and median residue. Combined cyproconazole residues in pea commodities were (n = 5): <0.01 mg/kg (dw), 0.24 mg/kg (dw), 0.83 mg/kg (dw), 0.98 mg/kg (dw), and 1.01 mg/kg (dw).

Due to higher residues, the meeting confirmed the previously established highest residue and median residue for pea vines.

Products of legume feeds with low water (<20 percent) content (hay), except soya bean and lentil

Cyproconazole residues in faba bean straw in trials that approximated the Australian GAP in ranked order were (n = 3): 0.03 mg/kg (dw), 0.09 (2) mg/kg (dw).

Cyproconazole residues in chickpea straw in trials that approximated the Australian GAP in ranked order were (n = 3): 0.09 mg/kg (dw), 0.13 mg/kg (dw), and 0.17 mg/kg (dw).

The meeting noted similar residues between faba bean and chickpea straw. Combined cyproconazole residues in faba beans and chickpea straw were (n = 6): 0.03 mg/kg, 0.09 (3) mg/kg, 0.13 mg/kg, and 0.17 mg/kg.

The current meeting estimated a maximum residue level of 0.3 mg/kg (dw), a highest residue of 0.17 mg/kg (dw), and a median residue of 0.09 mg/kg (dw) for the hay and fodder of pea and bean commodities, except soya beans and lentils.

The meeting noted that there is no Codex Classification for lentil straw, and that lentil straw is not used for animal dietary burdens.

Farm animal dietary burdens

The meeting added the residue levels for bean vines and bean and pea hay to the dietary burden calculations used by the 2010 JMPR. Dietary burden calculations are provided in Annex 6. The dietary burden estimates remain unchanged from the 2010 JMPR and the current meeting confirmed the previous recommendations of HR, STMR, and maximum residue levels in animal products.

Considering the new Codex Classification for animal commodities (General consideration 2.4), the meeting withdrew its previous recommendation of 0.02 mg/kg for meat (from mammals other than marine mammals) from the 2010 JMPR, since it was based on fat. The meeting made new recommendations for maximum residue levels of 0.01 mg/kg for the group of muscle (from mammals other than marine mammals) and 0.02 mg/kg for the group of mammalian fats (except milk fats). In addition, the meeting made new estimates of the STMR and HR for the group of muscle (from mammals other than marine mammals), each at 0.003 mg/kg, and for the group of mammalian fats (except milk fats) at 0.003 mg/kg and 0.02 mg/kg, respectively.

Similarly, the meeting withdrew its previous recommendation of 0.01(*) mg/kg for poultry meat from the 2010 JMPR. The meeting made new recommendations for maximum residue levels of 0.01(*) mg/kg for

the group of avian muscle and 0.01(*) mg/kg the group of avian fats. The meeting made new estimates of the STMRs and HRs for the group of avian muscle and group of avian fats of 0.01 mg/kg.

Considering the changed Codex Classification for animal commodities the meeting also withdrew its previous recommendations for edible offal (mammalian), milks, eggs, and poultry edible offal of, and made new recommendations for the group of edible offal (mammalian), group of milks, group of eggs, and group of avian edible offal without adjustment of the values.

Recommendations

On the basis of the data obtained from supervised residue trials, the meeting concluded that residue levels listed in Table 5.10.1 and Annex 1 are suitable for establishing maximum residue limits and for exposure assessments.

Definition of the residue for compliance with the MRL and for dietary risk assessment for plant commodities: Cyproconazole.

Definition of the residue for compliance with the MRL for animal commodities: Cyproconazole.

Definition of the residue for dietary risk assessment for animal commodities: Cyproconazole, free and conjugated.

The residue is fat-soluble.

Table 5.10.1 Residue levels suitable for establishing maximum residue limits and for dietary exposure assessments

Commodity		Recommended maximum residue level, mg/kg		STMR or median residue, mg/kg	HR or highest residue, mg/kg
CCN	Name	New	Previous		
VD 0071	Beans (dry)	W	0.02	–	–
VD 2065	Dry beans, subgroup of (except soya bean)	0.02	–	0.01	–
VD 2066	Dry peas, subgroup of	0.02	–	0.01	–
MO 0105	Edible offal (mammalian)	W	0.5	–	–
PE 0112	Eggs	W	0.01*	–	–
PO 0111	Group of avian, edible offal of	0.01*	–	0.01	0.01
PF 0111	Group of avian fats	0.01*	–	0.01	0.01
PM 0110	Group of avian muscle	0.01*	–	0.01	0.01
MO 0105	Group of edible offal (mammalian)	0.5	–	0.14	0.46
PE 0112	Group of eggs	0.01*	–	0.01	0.01
MF 0100	Group of mammalian fats (except milk fats)	0.02	–	0.003	0.02
ML 0106	Group of milks	0.01	–	0.009	–

Commodity		Recommended maximum residue level, mg/kg		STMR or median residue, mg/kg	HR or highest residue, mg/kg
CCN	Name	New	Previous		
MM 0095	Group of muscle (from mammals other than marine mammals)	0.01	–	0.003	0.003
MM 0095	Meat (from mammals other than marine mammals)	W	0.01	–	–
ML 0106	Milks	W	0.01	–	–
VD 0072	Peas (dry)	W	0.02	–	–
PO 0111	Poultry, edible offal of	W	0.01*	–	–
PM 0110	Poultry meat	W	0.01*	–	–
AL 3301	Products of legume feeds with low water (<20 percent) content (hay), except soya bean and lentil	0.3	–	0.090	0.17

Dietary risk assessment

Long-term dietary exposure

The ADI for cyproconazole is 0–0.02 mg/kg bw. The International Estimated Daily Intakes (IEDIs) for cyproconazole were estimated for the 17 GEMS/Food Consumption Cluster Diets using the STMR or STMR-P values estimated by the previous and present JMPR. The results are shown in Annex 3 of the 2024 JMPR Report. The IEDIs ranged from 0 to 1 percent of the maximum ADI.

The meeting concluded that the long-term intake of residues of cyproconazole from uses considered by the JMPR is unlikely to present a public health concern.

Short-term dietary exposure

The ARfD for cyproconazole is 0.06 mg/kg bw. The International Estimate of Short-term Intakes (IESTIs) for cyproconazole were calculated for the food commodities for which STMRs or HRs were estimated by the present meeting and for which consumption data were available. The results are shown in Annex 4 of the 2024 JMPR Report. The IESTIs were <1 percent of the ARfD for children and the general population.

The meeting concluded that the short-term intake of residues of cyproconazole from uses that have been considered by the present meeting is unlikely to present a public health concern.

5.11 Ethoxyquin (035)** (T, R)

5.11.1 Toxicology

Ethoxyquin was previously evaluated by the FAO/WHO Joint Meeting on Pesticide Residues (JMPR) in 1969, 1998 and 2005 (addendum). Ethoxyquin was considered for re-evaluation at the present meeting under the periodic review programme of the Codex Committee on Pesticide Residues (CCPR). Ethoxyquin was originally scheduled for re-evaluation during the 2021 meeting, however, during the 2021 meeting it was concluded that insufficient information was submitted and the dossier did not permit a substantive re-evaluation to be performed.

Ethoxyquin was again considered for re-evaluation at the present meeting. However, the sponsor did not submit an adequate submission initially and even after requests to provide additional information there were still deficiencies.

The meeting concluded that the dossier submitted for ethoxyquin was insufficient to permit a substantive re-evaluation to be performed. The meeting re-emphasized the importance of a timely and complete submission of all relevant data to enable JMPR to perform a state-of-knowledge risk assessment.

5.11.2 Residue and analytical aspects

Ethoxyquin is an antioxidant preservative. The IUPAC name for ethoxyquin is 1,2-dihydro-2,2,4-trimethylquinolin-6-yl ethyl ether. It was first evaluated by the JMPR in 1969, and the most recent periodic review was for toxicological and residue reviews in 1998 and 1999, respectively.

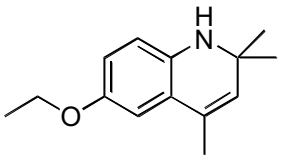
Ethoxyquin was originally proposed for a new periodic review by the 51st Session of CCPR (2019) but was rescheduled by the 54th CCPR for review in 2024.

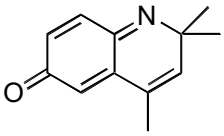
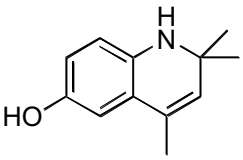
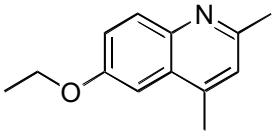
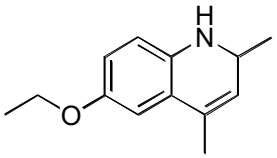
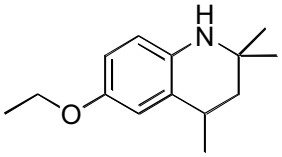
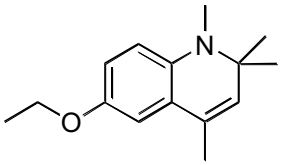
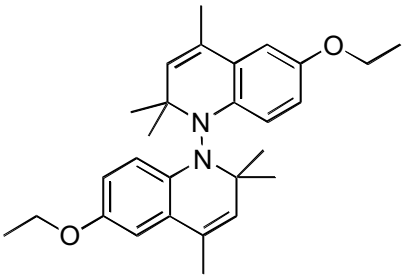
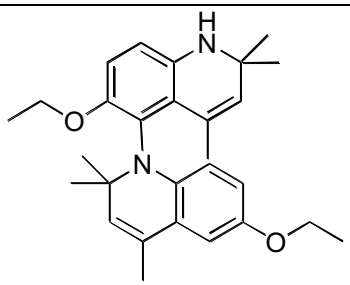
The meeting received information on identity, physical and chemical properties, plant metabolism, residue analytical methods for food, storage stability and use patterns. Residue trials are available for post-harvest treatment of pears.

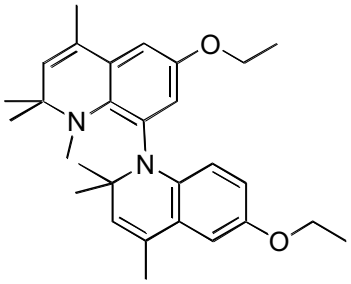
The meeting noted that ethoxyquin is an antioxidant used as post-harvest treatment as a deterrent of scald in pears but also has uses not considered by JMPR, such as animal and fish feed additive and as a food additive in chili powder, paprika, and ground chili.

Table 5.11.1 shows the structure of the compounds referred to in this appraisal.

Table 5.11.1 Relevant compounds referred to in the appraisal

Common name, abbreviation	Chemical structure
Ethoxyquin EQ	

Common name, abbreviation	Chemical structure
Ethoxyquin quinone imine EQI	
De-ethylated ethoxyquin DEQ	
Dehydrodemethyl-ethoxyquin DHMEQ	
Demethyl-ethoxyquin DMEQ	
Dihydro-ethoxyquin DHEQ	
Methyl-ethoxyquin MEQ	
TP-433 (N-N ethoxyquin dimer)	
ethoxyquin dimer EQDM 1,8'-EQDM	

Common name, abbreviation	Chemical structure
TP-447B (methyl C-N ethoxyquin dimer)	

Based on the information on physical and chemical properties, ethoxyquin is highly volatile and is lipid soluble with a log Pow of around 3. Ethoxyquin is hydrolytically non-persistent at environmental pH. Aqueous photolysis is likely to be a major degradation pathway of ethoxyquin.

Since the last evaluation by JMPR in 1999 of metabolism/degradation of ethoxyquin in pears on storage, additional work has been reported in the scientific literature using advanced mass spectra techniques to identify ethoxyquin transformation products. The reports on metabolism in pears and on aqueous hydrolysis have been re-interpreted in the current evaluation using the better understanding of mass spectra fragmentation. In assessing the degradation of ethoxyquin in pears on storage, it is useful to first review transformation products formed on the oxidation of ethoxyquin. A literature study of the oxidation of ethoxyquin by either H2O2 (non-radical scavenging activity) or the free radical 2,2-diphenyl-1-picrylhydrazyl (DPPH) (used to evaluate the capacity to scavenge free radicals) was located. Seven transformation products were common to both H2O2 and DPPH, whereas seventeen were only observed with H2O2 and three only with DPPH. Ethoxyquin dimer (1,8-EQDM) and ethoxyquin quinone imine (EQI) were the major transformation products obtained during the reaction with DPPH, with minor products dehydrodemethyl ethoxyquin (DHMEQ), de-ethylated ethoxyquin (DEQ), TP-232B, TP-218A,B,C (hydroxylated DHMEQ), When the reaction was performed with H2O2, TP-232B and TP-447 were the most prominent transformation products with 46 percent and 14 percent of the total peak area, respectively.

Metabolism

Plant

The meeting received plant metabolism studies with [ring-UL-^{14}C]ethoxyquin following post-harvest application to pears. D'Anjou pears were dipped for 30 seconds in a 20000 mg/L solution (about 7.5 times GAP) and air-dried for 2 hours. Samples (8 pears) were taken at the day of treatment and after storage at −0.2±2 °C for intervals up to 33 weeks. Pears were rinsed with methanol and two pears frozen with liquid nitrogen and ground. The remaining six pears were separated into peel and pulp, frozen with liquid nitrogen and separately ground.

Methanol rinses contained 84 percent of the total radioactive residue (TRR) at 0 days storage decreasing with cold storage interval to 13 percent at 33 weeks. Extractability of ^{14}C using methanol/water/chloroform (2.2:1:1) was 96 percent for 0-day samples reducing to about 64 percent after 33 weeks cold storage.

On the day of post-harvest treatment, ethoxyquin was the predominant residue accounting for 60 percent TRR. A range of unknown monomer and dimers accounted for most of the remaining radioactivity. After 33 weeks of cold storage, ethoxyquin dimers (1,8-EQDM, N-N dimer, methyl C-N dimer) accounted for the majority of the TRR at 33.8 percent for whole fruit. Parent ethoxyquin was not detected.

In a study on apples and pears following post-harvest treatment with unlabelled ethoxyquin (post-harvest storage interval not reported), ethoxyquin represented about 20 percent (0–51 percent) of the sum of ethoxyquin, EQI, DHMEQ and 1,8-EQDM. EQI accounted for 7.4 percent of the sum (0–50.4 percent), DHMEQ for 48 percent (14–92.2 percent) and 1,8-EQDM for 25.8 percent (5.5–82.8 percent).

Animal

No studies in poultry and ruminants were made available to the meeting. Metabolism on laboratory animals (rats) were evaluated by the WHO Core Assessment Group of the JMPR.

Literature studies have reported range of transformation products in salmon following exposure to exthoxyquin. The most predominant residue was 1,8-EQDM (57–97 percent). In studies of commercial fish, 47 transformation products were isolated with 1,8-EQDM the most abundant.

Environmental fate

Ethoxyquin is rapidly hydrolysed. Assuming pseudo-first-order kinetics, the half-life of ethoxyquin at 25 °C in the dark was calculated to be 3.7, 6.7, and 9.3 days at pH 5, 7, and 9, respectively. Major transformation products were methyl-ethoxyquin (MEQ), dimethyl-ethoxyquin (DMEQ), DEQ and EQI.

Ethoxyquin is rapidly degraded by photolysis, with an estimated DT_{50} for irradiation under sun-simulated conditions of ~38 seconds.

Ethoxyquin is rapidly degraded in soil maintained under aerobic conditions. The DT_{50} for degradation of the sum of ethoxyquin, EQI and DHMEQ in a clay loam soil (sand 37 percent, clay 31 percent, silt 32 percent, pH 7.55, organic carbon 1.05 percent, total nitrogen 0.13 percent) at 25 °C in the dark was 2.7 days.

In summary, hydrolysis and photolysis are likely significant routes of degradation of ethoxyquin, which is not persistent in soil.

Methods of analysis

Analytical methods are available to determine ethoxyquin in pears. Samples are cryogenically milled and subsamples extracted with acetonitrile in the presence of an antioxidant (e.g. ascorbic acid) with analysis by HPLC-fluorescence. LOQs were in the range of 0.1 to 0.5 mg/kg.

In an older US FDA “PAM method I” used in some residue trials, peel or pulp is extracted with iso-octane/10 percent sodium carbonate, filtered and partitioned with 0.5 N HCl, the pH of extract adjusted with 50 percent KOH, and the alkaline aqueous solution extracted with iso-octane. The combined iso-octane extracts are washed with water, diluted and analysed by photofluorimeter. The analysed solution is shaken with 0.04 percent potassium permanganate and the optical density of the quenched iso-octane

is measured. The second photofluorimeter reading is subtracted from the first. Calibration is with external standards containing known concentrations of ethoxyquin in isooctane. This method overestimates ethoxyquin residues and is not suitable for analysis of ethoxyquin in pears.

Methods have been reported for the determination of ethoxyquin in animal commodities, the determination of ethoxyquin, EQI and 1,8-EQDM in pig tissues and the determination of ethoxyquin, EQI, dihydro-ethoxyquin (DHEQ) and 1,8-EQDM in salmon commodities.

Stability of pesticide residues in stored analytical samples

There is considerable variability in the residues following frozen storage of pears. The data show significant increase in residues following storage for 42 days which should not be possible. With the data available it is not possible to make a conclusion regarding freezer storage stability of ethoxyquin in pears.

No data was made available to the meeting concerning the stability of ethoxyquin in animal commodities.

Definition of the residue

Plant commodities

The uses under consideration by the meeting are post-harvest uses. As such metabolism under typical agricultural field conditions is not particularly germane to determining residue definitions.

Ethoxyquin undergoes breakdown under hydrolytic and photolytic conditions to produce many transformation products. For the post-harvest uses being considered by the meeting, ethoxyquin is expected to undergo significant degradation on the surface of the fruits, which is supported by the residue decline data for pear.

In the metabolism study on pears, ethoxyquin was the predominant residue on the day of treatment (60 percent TRR), in addition to a range of unknown monomer and dimers. Following 33 weeks of cold storage, parent ethoxyquin was not detected in whole fruit, with most of the radioactivity (33.8 percent TRR) accounted for by ethoxyquin dimers (1,8-EQDM, N-N dimer, methyl C-N dimer).

Following post-harvest treatment of apples and pears with unlabelled ethoxyquin (post-harvest storage interval not reported), ethoxyquin accounted for about 20 percent of the sum of ethoxyquin, EQI, DHMEQ and 1,8-EQDM, EQI for a mean of 7.4 percent of the sum, DHMEQ for 48 percent and 1,8-EQDM for 25.8 percent (range 5.5–82.8 percent).

Although in the metabolism study, ethoxyquin was quickly degraded and not detected shortly after application, ethoxyquin was frequently detected in commercial samples collected at various (unspecified) cold storage intervals.

Analytical methods are available that are suitable for analysis of ethoxyquin.

The meeting was agreed the residue definition for compliance with the MRL for plant commodities should be ethoxyquin.

In deciding which compounds should be included in the residue definition for risk assessment, the meeting considered the likely occurrence of the compounds and the toxicological properties.

The meeting was unable to agree on a residue definition for estimation of dietary exposure as the metabolism study did not adequately identify the residues present on storage of post-harvest treated pears.

Animal commodities

No relevant livestock metabolism studies were made available to the meeting. Pears are not considered a significant livestock feed.

The meeting was unable to reach a conclusion on residue definitions for compliance or estimation of dietary exposure for animal commodities.

Results of supervised residue trials on crops

Pear

The GAPs for post-harvest use of ethoxyquin in pear in the United States of America are application as drench, spray or brush bed with a 2700 mg ai/L solution, or 100—1500 mg ai/L drench, or 1200–1700 mg ai/L line spray or impregnated paper wraps. Total application must not exceed 2700 mg ai/L. Alternatively application is by electrofog (thermofog) at 6.2 g ai/1000 kg fruit.

The meeting received studies of the post-harvest treatment of pears by spraying, a combination of spraying and wrapping in treated paper, and by thermofogging.

In 12 trials conducted at the maximum US GAP (2700 mg ai/L), involving spray application residues were, in ranked order (n = 12): 1.6 mg/kg, 1.7 (2) mg/kg, 1.8 (2) mg/kg, 1.9 mg/kg, 2.0 (2) mg/kg, 2.2 mg/kg, 2.3 (2) mg/kg, 2.4 mg/kg.

Four trials were conducted at the maximum US GAP using thermofog application, 16.2 g ai/1000 kg, giving residues of: <0.3 (4) mg/kg.

Three trials involved a spray at a concentration of 1700 mg/L followed by wrapping with impregnated paper approximating the maximum GAP. The residues in ranked order were (n = 3): 1.2 mg/kg, 1.5 mg/kg, 1.6 mg/kg.

Based on the 12 post-harvest spray trials of pears, the meeting estimated a maximum residue level of 3 mg/kg Po but withdraws the previous recommendation of 3 mg/kg Po as no residue definition for dietary intake assessment was concluded.

Fate of residues during processing

No studies relating to the fate of residues during processing were made available to the meeting.

Residues in animal commodities

No livestock transfer studies for ruminants or poultry were made available to the meeting.

Recommendations

Definition of the residue for compliance with the MRL for plant commodities: *ethoxyquin*.

The meeting concluded that no residue levels could be estimated as a conclusion on the definition of the residue for dietary risk assessment for plant commodities could not be reached.

Table 5.11.2 Recommendation for ethoxyquin

CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P mg/kg	HR or HR-P mg/kg
		New	Previous		
FP0230	Pear	W	3 Po	–	–

Dietary risk assessment

As no recommendation was made at the present meeting and no health-based reference values for ethoxyquin and metabolites were established, no dietary risk assessment was conducted.

5.12 Etofenprox (184) (R)

5.12.1 Residue and analytical aspects

Etofenprox is a pyrethroid insecticide with contact and stomach action against a broad range of pests, acting on ion channels of the insect nervous system. It was evaluated for the first time by the 1993 JMPR, where an ADI of 0–0.03 mg/kg bw was established. Etofenprox was evaluated under the Periodic Review Program in 2011, when the ADI was confirmed and additionally an ARfD of 1 mg/kg bw was established.

Definition of the residue for compliance with the MRL for plant and animal commodities and for estimation of dietary intake for plant and animal commodities is etofenprox. The residue is fat-soluble.

Etofenprox was scheduled at the 54th Session of the CCPR for the evaluation of additional uses by the 2024 JMPR. The meeting received information by the government of the Republic of Korea on the use pattern in rice, analytical methods, storage stability, supervised trials and processing.

Methods of analysis

The meeting received additional information on analytical methods for etofenprox in rice and its processed commodities.

Samples were analysed according to the QuEChERS method. In brief, homogenized samples were soaked in water containing sodium chloride, followed by shaking with acetonitrile. Separation of the aqueous and organic phase was accomplished by shaking with QuEChERS salts. An aliquot of the organic phase was analysed by LC-MS/MS with an LOQ of 0.01 mg/kg.

The meeting concluded that the method was sufficiently validated and is suitable to measure etofenprox in rice and its processed commodities.

Stability of pesticides in stored analytical samples

At the 2011 JMPR evaluation, etofenprox was shown to be stable for up to 24 months in high water content (apples, cabbage, peaches), high oil content (rape seed) and high acid content (grapes) matrices, as well as for up to 7 months in dry commodities (rice grain).

The 2024 meeting received additional information on storage stability of etofenprox in rice and its processed commodities. Quintuple samples were fortified with etofenprox at 0.1 mg/kg and stored at –20ºC for the same period as the samples from the field trials/processing. No degradation was observed during storage for at least 6 months (179 days).

Husked and polished rice were stored for 58–63 days at ambient conditions before being processed into cooked rice and rice cake. Husked and polished rice were stored for 604 days at 5 °C before being processed into instant cooked rice. As these storage conditions were not covered by the storage stability studies, and the husked and polished rice were not re-analysed just before cooking, the meeting decided not to derive processing factors for cooked rice commodities.

Results of supervised residue trials on crops

Rice

Rice was previously evaluated by the 2011 JMPR when a maximum residue level of 0.01* mg/kg was estimated based on a GAP from the United States of America (one broadcast application to paddy rice at 0.3 kg ai/ha, 1–7 days after flooding and with a PHI of 60 days).

The meeting received a more critical GAP for the use of etofenprox on rice in Republic of Korea, which allows three foliar applications of etofenprox at each 0.01 kg ai/hL, with a re-treatment interval of 10 days and a PHI of 14 days.

A total of 10 trials with paddy rice in the Republic of Korea were preformed following GAP (±25 percent).

Residues of etofenprox in rice whole grain were (n = 10): 1.3 mg/kg, 1.9 mg/kg, 2.3 mg/kg, 2.5 mg/kg, 2.9 mg/kg, 3.3 mg/kg, 3.7 (3) mg/kg, 4.0 mg/kg.

The meeting estimated a maximum residue level of 9 mg/kg, and a STMR of 3.1 mg/kg for etofenprox in rice whole grain, to replace its previous recommended maximum residue level of 0.01* mg/kg.

Residues of etofenprox in husked rice were (n = 10): 0.05 (2) mg/kg, 0.08 (2) mg/kg, 0.09 (3) mg/kg, 0.10 mg/kg, 0.12 mg/kg, 0.16 mg/kg.

The meeting estimated a maximum residue level of 0.3 mg/kg, and a STMR of 0.09 mg/kg for etofenprox in husked rice.

Residues of etofenprox in polished rice were (n = 10): <0.01 (2) mg/kg, 0.01 (6) mg/kg, 0.02 (2) mg/kg.

The meeting estimated a maximum residue level of 0.04 mg/kg and a STMR of 0.01 mg/kg for etofenprox in polished rice.

Fate of residues during processing

The meeting received new information on the fate of etofenprox residues during processing of rice whole grain. Processing factors could be established for milling rice whole grain into rice hulls, husked rice and polished rice (Table 5.12.1).

Table 5.12.1 Estimated processing factors (PF) for maximum residue and dietary exposure of processed commodities according to the residue definition etofenprox

Crop	Residue (mg/kg) in RAC		Processed commodity	Individual PF	Median or best estimate PF	Residue (mg/kg) in processed commodity	
	MRL	STMR				MRL-P	STMR-P
Rice	9	3.1	Husked rice	0.013, 0.022, 0.022, 0.025, 0.033, 0.036, 0.037, 0.041, 0.050, 0.060	0.035	–	see residue section
			Polished rice	0.003, 0.003, 0.003, <0.004, <0.004, 0.004, 0.005, 0.005, 0.007, 0.008	0.004	–	see residue section

Crop	Residue (mg/kg) in RAC		Processed commodity	Individual PF	Median or best estimate PF	Residue (mg/kg) in processed commodity	
	MRL	STMR				MRL-P	STMR-P
			Hulls	3.6, 5.1	4.4	–	13.6

Residues in animal commodities

Estimated maximum and mean dietary burdens of livestock

Dietary burdens were calculated for beef cattle, dairy cattle, broilers and laying poultry based on feed items evaluated by the JMPR in 2011 and the current meeting. The dietary burdens, estimated using the OECD diets listed in appendix IX of the 2016 edition of the FAO manual, are presented in Annex 5.

Previous evaluations included the following potential feed items: beans (dry), maize, rape seed (as a substitute for canola meal) and rice straw and fodder. Additionally, the current meeting considered rice grain (also as a substitute for rice bran) and rice hulls. The summary results are shown in Table 5.12.2.

Table 5.12.2 Estimated livestock dietary burden for the etofenprox, ppm of dry matter diet

	United States–Canada		European Union		Australia		Japan	
	Max.	Mean	Max.	Mean	Max.	Mean	Max.	Mean
Beef cattle	1.3	1.3	0.057	0.057	3.4[a]	3.4[c]	0.73	0.73
Dairy cattle	1.2	1.2	0.72	0.72	3.2[b]	3.2[d]	0.39	0.39
Poultry – broiler	1.1	1.1	0.40	0.40	2.5[e]	2.5[f]	0.21	0.21
Poultry – layer	1.1	1.1	0.22	0.22	2.5[g]	2.5[h]	0.73	0.73

Notes:
[a] Highest maximum beef or dairy cattle dietary burden suitable for MRL estimates for mammalian tissues.
[b] Highest maximum dairy cattle dietary burden suitable for MRL estimates for mammalian milk.
[c] Highest mean beef or dairy cattle dietary burden suitable for STMR estimates for mammalian tissues.
[d] Highest mean dairy cattle dietary burden suitable for STMR estimates for milk.
[e] Highest maximum poultry dietary burden suitable for MRL estimates for poultry tissues.
[f] Highest mean poultry dietary burden suitable for STMR estimates for poultry tissues.
[g] Highest maximum poultry dietary burden suitable for MRL estimates for poultry eggs.
[h] Highest mean poultry dietary burden suitable for STMR estimates for poultry eggs.

Animal commodities maximum residue levels

A maximum and mean dietary burden of 3.4 ppm and 3.2 ppm was estimated for beef and dairy cattle, respectively. The estimated dietary burdens are evaluated against a lactating cow feeding study from the 2011 JMPR conducted at treatment rates of 0.5 ppm, 1.5 ppm and 50 ppm (Table 5.12.3).

Table 5.12.3 Maximum residue level and STMR estimations of etofenprox in cattle commodities

	Feed level (ppm) for milk residues	Residues (mg/kg) in milk	Feed level (ppm) for tissue residues	Residues (mg/kg) in:			
				Liver	Kidney	Muscle	Fat
Maximum residue level, beef or dairy cattle							
Feeding study	1.5	0.05	1.5	<0.05	<0.05	<0.05	1.9
	50	1.4	50	0.63	1.2	0.35	14
Dietary burden	3.2	0.096	3.4	0.073	0.093	0.062	2.4

and highest residue							
STMR, beef or dairy cattle							
Feeding study	1.5	0.05	1.5	<0.05	<0.05	<0.05	1.2
	50	1.4	50	0.41	0.62	0.18	9.8
Dietary burden and mean residue	3.2	0.096	3.4	0.064	0.072	0.055	1.5

For the Group of milks, the meeting estimated maximum residue levels of 0.1 mg/kg and a STMR of 0.096 mg/kg and withdrew its previous recommendation of 0.02 mg/kg for milks.

For the Group of muscle (from mammals other than marine mammals), the meeting estimated a maximum residue level of 0.07 mg/kg, an HR of 0.062 mg/kg and an STMR of 0.055 mg/kg, and withdrew its previous recommendation for a maximum residue level of 0.5 mg/kg for meat (from mammals other than marine mammals) (fat).

For the Group of mammalian fats (except milk fats), the meeting estimated a maximum residue level of 3 mg/kg, an HR of 2.4 mg/kg and an STMR of 1.5 mg/kg.

For the Group of edible offal (mammalian), the meeting estimated a maximum residue level of 0.1 mg/kg, an HR of 0.093 mg/kg and an STMR of 0.072 mg/kg and withdrew its previous recommendation for a maximum residue level of 0.05* mg/kg for edible offal (mammalian).

For poultry, a maximum and mean dietary burden of 2.5 ppm was estimated. A poultry feeding study was not submitted. In the laying hen metabolism study evaluated by the 2011 JMPR and conducted at 0.9 ppm and 9.6 ppm etofenprox in dry feed, residues were not analysed for the low level, but were found in the high level at up to 0.72 mg/kg in egg yolk (egg white not analysed due to low residues), 0.051 mg/kg in liver, 0.013 mg/kg in muscle and 1.6 mg/kg in fat.

Since feeding level of 9.6 ppm was about 4-fold higher compared to the dietary burden of 2.5 ppm, the meeting estimated for the Group of eggs (based on a 35/65 percent ratio for egg yolk and egg white; Ahn *et al.*, 1997, Poultry Science 76:914–919) a maximum residue level of 0.1 mg/kg, an HR and STMR of 0.07 mg/kg and withdrew its previous recommendation for maximum residue level of 0.01* mg/kg for eggs.

For the Group of avian, edible offal of, the meeting estimated a maximum residue level of 0.02 mg/kg, an HR and STMR of 0.013 mg/kg and withdrew its previous recommendation for a maximum residue level of 0.01* mg/kg for poultry, edible offal of.

For the Group of avian muscle, the meeting estimated, a maximum residue level of 0.01* mg/kg, an HR and STMR of 0.003 mg/kg and withdrew its previous recommendation for a maximum residue level of 0.01* mg/kg for poultry meat.

For the Group of avian fats, the meeting estimated a maximum residue level of 0.5 mg/kg and an HR and STMR of 0.4 mg/kg.

Recommendations

On the basis of the data obtained from supervised trials, the meeting concluded that the residue levels listed in Table 5.12.4 and Annex 1 are suitable for establishing maximum residue limits and for dietary exposure assessment.

Definition of the residue for compliance with the MRL and for dietary risk assessment for plant and animal commodities: etofenprox.

The residue is fat-soluble.

Table 5.12.4 Residue levels suitable for establishing maximum residue limits and for dietary exposure assessment

CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P mg/kg	HR or HR-P mg/kg
		New	Previous		
MO 0105	Edible offal (mammalian)	W	0.05*	–	–
PE 0112	Eggs	W	0.01*	–	–
PO 0111	Group of avian, edible offal of	0.02	–	0.013	0.013
PF 0111	Group of avian fats	0.5	–	0.4	0.4
PM 0110	Group of avian muscle	0.01*	–	0.4 (fat) 0.003 (muscle)	0.4 (fat) 0.003 (muscle)
MO 0105	Group of edible offal (mammalian)	0.1	–	0.072	0.093
PE 0112	Group of eggs	0.1	–	0.07	0.07
MF 0100	Group of mammalian fats (except milk fats)	3	–	1.5	2.4
ML 0106	Group of milks	0.1	–	0.096	–
MM 0095	Group of muscle (from mammals other than marine mammals)	0.07	–	0.055	0.062
MM 0095	Meat (from mammals other than marine mammals)	W	0.5 (fat)	–	–
ML 0106	Milks	W	0.02	–	–
PO 0111	Poultry, edible offal of	W	0.01*	–	–
PM 0110	Poultry meat	W	0.01*	–	–
GC 0649	Rice	9	0.01*	3.1	–
AS 3570	Rice, hulls	–	–	13.6 (median)	–
CM 0649	Rice, husked	0.3	–	0.09	–
CM 1205	Rice, polished	0.04	–	0.01	–

Dietary risk assessment

Long-term dietary exposure

The ADI for etofenprox is 0–0.03 mg/kg bw. The IEDIs for etofenprox were estimated for the 17 GEMS/Food Consumption Cluster Diets using the STMR or STMR-P values estimated by the JMPR. The results are shown in Annex 3 of the 2024 JMPR report.

The IEDIs ranged from 1–8 percent of the maximum ADI. The meeting concluded that long-term dietary exposure to residues of etofenprox from uses considered by the JMPR is unlikely to present a public health concern.

Acute dietary exposure

The ARfD for etofenprox is 1 mg/kg bw. The IESTIs for etofenprox were calculated for the food commodities and their processed commodities for which HRs/HR-Ps or STMRs/STMR-Ps were estimated by the present meeting and for which consumption data were available. The results are shown in Annex 4.

The IESTIs varied from 0–9 percent of the ARfD for children and 0–5 percent of the ARfD for the general population. The meeting concluded that acute dietary exposure to residues of etofenprox from uses considered by the present meeting is unlikely to present a public health concern.

5.13 Fenpropidin (340)* (T, R)

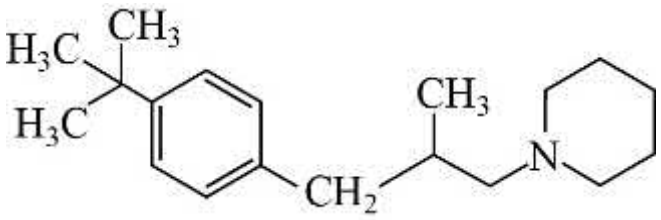
5.13.1 Toxicology

Fenpropidin is the ISO-approved common name for racemic [(R,S)-1-[3-(4-tert-butylphenyl)-2-methylpropyl]-piperidine] (IUPAC), with the Chemical Abstracts Service number 67306-00-7. Fenpropidin is a systemic fungicide in the piperidine group, with both curative and protective action, used to control powdery mildews, rusts and Rynchosporium secalis in cereal crops. Fenpropidin acts by inhibiting ergosterol biosynthesis.

Fenpropidin has not previously been evaluated by the FAO/WHO Joint Meeting on Pesticide Residue (JMPR) and was reviewed by the present meeting at the request of the Codex Committee on Pesticide Residues (CCPR).

All critical studies contained statements of compliance with good laboratory practice, unless otherwise indicated. Studies were conducted in accordance with relevant national or international test guidelines, unless otherwise specified. No additional information from a literature search was identified that complemented the toxicological information submitted for the current evaluation.

Figure 5.13.1 Chemical structure of fenpropidin



Biochemical aspects

Fenpropidin was rapidly (T_{max} for radioactivity 0.5–2 hours) and almost completely absorbed after a single oral dose, with more extensive absorption in males than in females, at both the low dose of 0.5 mg/kg bw, with 91.5 percent of the administered dose (AD) in males and 82 percent in females and to a greater degree at the high dose of 100 mg/kg bw, with 94 percent of the AD in males and 59 percent in females. Absorption of the low dose was slightly lower following 14 days of predosing with unlabelled fenpropidin, at 78.7 percent of the AD in males and 73.8 percent of the AD in females.

Higher levels of radioactivity were observed in highly perfused organs, including liver, kidney, lungs and spleen, with concentrations similar to the levels in blood, and a similar pattern of distribution at low and high doses. The calculated half-life for the radiolabel in most organs was between 9 and 13 hours, with the half-life in liver, carcass and fat being more than 15 hours. Tissue residue levels were very low at seven days after administration.

Excretion was rapid, primarily via the kidneys, with a similar pattern of excretion following either intravenous or oral dosing. In males, between 86 percent and 93 percent of administered radioactivity was excreted via the kidney, with 7–11 percent excreted in the faeces. In females, urinary excretion accounted for 80 percent of excretion, with 16 percent excreted in faeces. There was very limited excretion via expired air.

Fenpropidin was extensively metabolized in rats. In the urine, the metabolite fraction U6, identified as metabolite CGA 289267, made up 46–79 percent of the dose, with no other metabolites making up more than 2.5 percent of the AD. In the faeces, metabolite F5 was the major metabolite in females, present at up to 27 percent of AD. No other major metabolites were identified in the faeces, with metabolite F11 making up 11–30 percent of the faecal radioactivity in males, but only up to 1.7 percent of the AD. In the bile of females, 12 metabolite fractions were identified, with G5 being the most prominent (up to 6.2 percent of AD) followed by G3. Unchanged fenpropidin was not identified in any of the excreta. Based on an in vitro study, rat hepatocytes metabolized fenpropidin extensively, with more than 97 percent of fenpropidin metabolized after an incubation of four hours. In dogs, at least 40 percent of fenpropidin was metabolized, while with human hepatocytes only 10 percent of fenpropidin was metabolized and only two metabolites identified. Both of these metabolites were identified in rats and dogs, and no unique human metabolites were identified.

Toxicological data

The acute oral median lethal dose (LD_{50}) for fenpropidin was 1450 mg/kg bw and the dermal LD_{50} was lower than 4000 mg/kg bw. The acute inhalation median lethal concentration (LC_{50}) was 1.22 mg/L. Fenpropidin was irritating to the skin and eyes of the rabbit, and was a skin sensitizer.

In repeat-dose studies, signs relating to local irritation, including oesophageal irritation and keratosis of the nonglandular stomach, were seen. These were not considered to be related to systemic toxicity. Effects on body weight, haematology and clinical chemistry, neurological effects, as well as liver and kidney weight were seen.

In a 28-day dietary study in rats, fenpropidin was administered at 0 ppm, 50 ppm, 200 ppm, 1000 ppm or 2000 ppm (equal to 0 mg/kg bw, 5.40 mg/kg bw, 20.1 mg/kg bw, 105 mg/kg bw and 200 mg/kg bw per day for males, 0 mg/kg bw, 5.62 mg/kg bw, 19.9 mg/kg bw, 103 mg/kg bw, and 212 mg/kg bw per day for females). The no-observed-adverse-effect level (NOAEL) was 2000 ppm, equal to 200 mg/kg bw per day, as no effects related to systemic toxicity were seen at the highest dose tested.

In a 90-day dietary study in rats, fenpropidin was administered at 0 ppm, 20 ppm, 150 ppm or 1500 ppm (equal to 0 mg/kg bw, 1.14 mg/kg bw, 9.84 mg/kg bw and 89.9 mg/kg bw per day for males, 0 mg/kg bw, 1.24 mg/kg bw, 10.1 mg/kg bw and 97.3 mg/kg bw per day for females). The NOAEL was 150 ppm (equal to 9.84 mg/kg bw per day) based on decreased body weight and food consumption, increased erythrocytes and haemoglobin in males, and lower plasma globulin and higher albumin to globulin ratios, and, in one female, bilateral opaque eyes, bilateral paralysis of the hindlimbs and demyelination of nerve roots and spinal tract, all at 1500 ppm (equal to 89.9 mg/kg bw per day).

In a 26-week oral toxicity study in dogs, fenpropidin was administered by capsule at 0 mg/kg bw, 2 mg/kg bw, 5 mg/kg bw or 12 mg/kg bw per day. At 12 mg/kg bw per day, vomiting and occasional salivation were seen, with excitation within one hour of dosing in the first week of the study, and one

female had conjunctivitis and keratitis. At 5 mg/kg bw per day occasional vomiting was seen. Because of design limitations, it was not appropriate to identify a NOAEL in this study.

In a one-year oral toxicity study in dogs, fenpropidin was administered by capsule at 0 mg/kg bw, 2 mg/kg bw, 5 mg/kg bw or 20 mg/kg bw per day. The NOAEL was 5 mg/kg bw per day for both males and females based on the premature termination of one male (with paresis of hindlimbs and marked demyelination of the spinal cord), cataracts in all animals, slightly higher platelet counts, increased alkaline phosphatase levels, increased kidney and liver weights (males only), demyelination of spinal cord (males only), histopathology findings in liver (hypertrophy, pigmentation, inclusion bodies, inflammatory cell and lymphohistiocytic infiltration), kidney (pigmentation renal tubules), urinary bladder (hyperplasia) and hyperkeratosis and thickening of skin observed, all at 20 mg/kg bw per day.

In an 18-month carcinogenicity and toxicity study in mice, fenpropidin was administered in the diet at 0 ppm, 30 ppm, 100 ppm, 300 ppm or 1000 ppm (equivalent to 0 mg/kg bw, 4.12 mg/kg bw, 13.54 mg/kg bw, 41.90 mg/kg bw and 144 mg/kg bw per day for males, 0 mg/kg bw, 5.47 mg/kg bw, 17.7 mg/kg bw, 51.71 mg/kg bw and 166 mg/kg bw per day for females). The NOAEL for systemic toxicity was 1000 ppm (equal to 144 mg/kg bw per day), the highest dose tested. The hyperkeratosis of the oesophagus seen at 300 ppm (equal to 41.90 mg/kg bw per day) was considered a local effect, and therefore not relevant to dietary risk assessment. The NOAEL for carcinogenicity was 1000 ppm (equal to 144 mg/kg bw per day) the highest dose tested.

In a two-year carcinogenicity and toxicity study in rats, fenpropidin was administered at 0 ppm, 5 ppm, 25 ppm, 125 ppm or 625 ppm for the first seven weeks, from weeks 8–12 at 0 ppm, 2 ppm, 10 ppm, 0 ppm or 0 ppm, due to toxicity followed by 0 ppm, 2 ppm, 10 ppm, 50 ppm or 250 ppm from week 12. For the high dose groups, from weeks 8–12 there was therefore a recovery period (undosed). The revised mean doses was equal to 0 mg/kg bw, 0.07 mg/kg bw, 0.34 mg/kg bw, 1.65 mg/kg bw and 8.53 mg/kg bw per day for males, 0 mg/kg bw, 0.09 mg/kg bw, 0.45 mg/kg bw, 2.27 mg/kg bw and 11.83 mg/kg bw per day for females. The NOAEL for systemic toxicity was 50 ppm (equal to 2.27 mg/kg bw per day), based on decreased body weight gain at 250 ppm (equal to 8.53 mg/kg bw per day). The NOAEL for carcinogenicity was 250 ppm (equal to 8.53 mg/kg bw per day), the highest dose tested.

The meeting concluded that fenpropidin is not carcinogenic in mice or rats.

Fenpropidin was negative for genotoxicity in an adequate range of in vitro and in vivo assays.

The meeting concluded that fenpropidin is unlikely to be genotoxic.

In view of the lack of genotoxicity and the absence of carcinogenicity in mice and rats, the meeting concluded that fenpropidin is unlikely to pose a carcinogenic risk to humans.

In an oral two-generation reproductive toxicity study in rats, fenpropidin was administered in the diet at 0 ppm, 25 ppm, 100 ppm, 500 ppm or 1000 ppm, (equal to 0 mg/kg bw, 2 mg/kg bw, 8 mg/kg bw, 42 mg/kg bw and 80 mg/kg bw per day for males, 0 mg/kg bw, 2 mg/kg bw, 8 mg/kg bw, 45 mg/kg bw and 88 mg/kg bw per day for females during the pre-mating period). The NOAEL for parental toxicity was 100 ppm (equal to 8 mg/kg bw per day), based on decreased body weight and fatty changes in adrenals at 500 ppm (equal to 42 mg/kg bw per day). The NOAEL for offspring toxicity was 100 ppm (equal to 8 mg/kg bw per day), based on decreased body weight at 500 ppm (equal to 42 mg/kg bw per day). The

NOAEL for reproductive toxicity was 500 ppm (equal to 42 mg/kg bw per day), based on decreased numbers of pups delivered and implantation sites at 1000 ppm (equal to 91 mg/kg bw per day).

In a developmental toxicity study in rats, fenpropidin was administered by oral gavage at 0 mg/kg bw, 10 mg/kg bw, 60 mg/kg bw or 90 mg/kg bw per day during gestation days (GDs) 6–15. The NOAEL for maternal toxicity was 60 mg/kg bw per day, based on decreased body weight gain and food consumption at 90 mg/kg bw per day. The NOAEL for embryo/fetal toxicity was 90 mg/kg bw per day, the highest dose tested.

In a developmental toxicity study in rabbits, fenpropidin was administered by oral gavage at 0 mg/kg bw, 5 mg/kg bw, 10 mg/kg bw or 20 mg/kg bw per day on GDs 7–28. The NOAEL for maternal toxicity was 10 mg/kg bw per day, based on lower mean body weight gain, body weight loss and reduced food consumption, seen at 20 mg/kg bw day. The NOAEL for embryo/fetal toxicity was 10 mg/kg bw per day, based on an increase in the overall incidence of fetuses and litters with malaligned sternebrae (variation) and persistent truncus arteriosus (malformation) at 20 mg/kg bw per day.

The meeting concluded that fenpropidin is teratogenic in rabbits, but is not teratogenic in rats.

No specific acute or subchronic neurotoxicity study were submitted. However, clinical signs and histopathological observations suggesting neurotoxicity effects were seen in repeat-dose studies in male dogs at 20 mg/kg bw per day, giving a NOAEL of 5 mg/kg bw per day.

In a developmental neurotoxicity study in rats, fenpropidin was administered at 0 ppm, 40 ppm, 100 ppm or 400 ppm in the diet from gestation day six until lactation day (LD) 21, the doses being equal to 0 mg/kg bw, 3 mg/kg bw, 7 mg/kg bw and 27 mg/kg bw per day during gestation and 0 mg/kg bw, 7 mg/kg bw, 17 mg/kg bw and 67 mg/kg bw per day during lactation. The NOAEL for maternal toxicity was 40 ppm (equal to 7 mg/kg bw per day), based on lower mean body weight gain during lactation at 100 ppm (equal to 17 mg/kg bw per day). The NOAEL for offspring toxicity was 100 ppm (equal to 7 mg/kg bw per day, based on lower mean post-culling weight gain at 400 ppm (equal to 27 mg/kg bw per day). The NOAEL for developmental neurotoxicity was 400 ppm (equal to 27 mg/kg bw per day) the highest dose tested, based on the absence of any neurobehavioural or neuropathological effects.

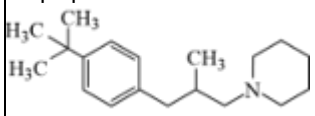
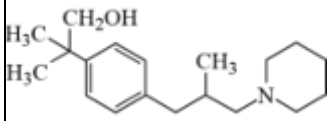
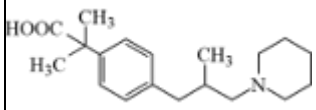
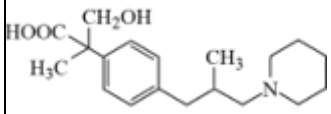
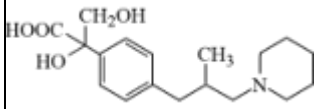
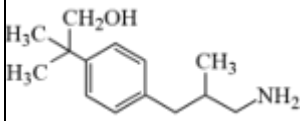
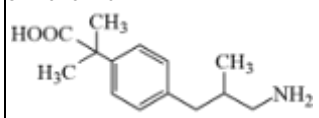
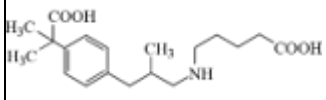
The meeting concluded that fenpropidin is neurotoxic in dogs.

In an immunotoxicity study fenpropidin was fed to female mice in their diet for 28 days at concentrations of 0 ppm, 125 ppm, 400 ppm or 1250 ppm (equal to 0 mg/kg bw, 27 mg/kg bw, 90 mg/kg bw and 258 mg/kg bw per day). Mice were immunized with sheep red blood cells on day 24. There were no effects on spleen cell numbers at any dose of fenpropidin, nor any suppression of the humoral immune response evaluated as either specific activity or as total spleen activity. The NOAEL for immunotoxicity was 1250 ppm (equal to 258 mg/kg bw per day), the highest dose tested.

The meeting concluded that fenpropidin is not immunotoxic.

Toxicological data on metabolites and/or degradates

Table 5.13.1 Summary overview of toxicological characterisation of plant/livestock metabolites

Compound, codes and structure	**Rat ADME** Toxicity covered by toxicological properties of parent compound (content in rat biofluids >10% of AD or 10% TRR)/structural similarities	**Genotoxicity assessment** (data, QSAR, read-across)	**General toxicity**	**HBGV**
Fenpropidin 	Parent	Not genotoxic (data)	Full dataset	ADI: 0–0.02 mg/kg bw ARfD: 0.03 mg/kg bw
CGA289268 	Obligatory intermediate in metabolic pathway to CGA289267	Negative QSAR	No data	Covered by parent
CGA289267 	Major rat metabolite	Not genotoxic (Negative in adequate range of studies)	No data	Covered by parent
SYN515213 	Structurally similar to parent. Major metabolite in incubation with rat hepatocytes	Negative QSAR	No data	Covered by parent
SYN515214 	Structurally similar to parent	Negative QSAR	No data	HBGVs of parent apply
SYN515215 	Not structurally similar to parent, due to opening of piperidine ring. Minor urinary metabolite in rat	Not genotoxic (Negative in adequate range of studies)	No alerts additional to those in parent for predicted toxicity	Cramer class III TTC (chronic and acute)
SYN515216 	Not structurally similar to parent, due to opening of piperidine ring. Minor urinary metabolite in rat	Negative QSAR	No alerts additional to those in parent for predicted toxicity	Cramer class III TTC (chronic and acute)
SYN522217 	Not structurally similar to parent, due to opening of piperidine ring. Minor urinary metabolite in rat	Not genotoxic (Negative in adequate range of studies)	No alerts additional to those for parent for predicted toxicity	Cramer class III TTC (Chronic and acute)

Microbiological aspects

There was no information available in the public domain and no experimental data were submitted that addressed the possible impact of fenpropidin residues on the human intestinal microbiome.

Human data

No information on accidental or intentional poisoning in humans is available.

The meeting concluded that the existing database on fenpropidin was adequate to characterize the potential hazards to the general population, including fetuses, infants and children.

Toxicological evaluation

The meeting established an acceptable daily intake (ADI) of 0–0.02 mg/kg bw, based on the NOAEL of 2.27 mg/kg bw per day in the two-year rat study and using a safety factor of 100. This ADI also applies to metabolites CGA289268, CGA289267, SYN515213 and SYN515214.

The meeting established an acute reference dose (ArfD) of 0.03 mg/kg bw for women of child-bearing age, from the NOAEL of 10 mg/kg bw per day in the rabbit development study, based on visceral malformations at 20 mg/kg bw per day. A safety factor of 300 was used. This gives a margin of 667-fold to the lowest dose causing malformations. This ARfD also applies to metabolites CGA289268, CGA289267, SYN515213 and SYN515214.

The meeting concluded that it was not necessary to establish an ARfD for fenpropidin for the remainder of the population in the absence of any other toxicological effects likely to be elicited by a single dose.

The meeting concluded that SYN515215, SYN515216 and SYN522217 were not similar to parent, however they were not genotoxic, and therefore should be covered by the TTC Cramer class III value of 1.5 µg/kg bw per day for chronic exposure in the diet, and the acute TTC Cramer class III value of 5 µg/kg bw per day for acute exposure in the diet.

A toxicological monograph was prepared.

Table 5.13.2 Levels relevant to risk assessment of fenpropidin

Species	Study	Effect	NOAEL	LOAEL
Mouse	18-month study of toxicity and carcinogenicity[a]	Toxicity	1000 ppm, equal to 144 mg/kg bw per day[c]	–
		Carcinogenicity	1000 ppm, equal to 144 mg/kg bw per day[c]	
Rat	Two-year study of toxicity and carcinogenicity[a]	Toxicity	50 ppm, equal to 2.27 mg/kg bw per day	250 ppm, equal to 8.53 mg/kg bw per day
		Carcinogenicity	250 ppm, equal to 8.53 mg/kg bw per day[c]	–
	Two-generation study of reproductive toxicity[a]	Reproductive toxicity	500 ppm, equal to 42 mg/kg bw per day	1000 ppm, equal to 80 mg/kg bw per day
		Parental toxicity	100 ppm, equal to 8 mg/kg bw per day	500 ppm, equal to 42 mg/kg bw per day
		Offspring toxicity	100 ppm, equal to 8 mg/kg bw per day	500 ppm equal to 42 mg/kg bw per day
	Developmental toxicity study[b]	Maternal toxicity	60 mg/kg bw per day	90 mg/kg bw per day
		Embryo/fetal toxicity	90 mg/kg bw per day[c]	
	Developmental neurotoxicity study[a]	Maternal toxicity	40 ppm, equal to 7 mg/kg bw per day	100 ppm, equal to 17 mg/kg bw per day
		Offspring toxicity	100 ppm, equal to 7 mg/kg bw per day	400 ppm, equal to 27 mg/kg bw per day
		Neurotoxicity	400 ppm, equal to 27 mg/kg bw per day[c]	
Rabbit	Developmental toxicity study[b]	Maternal toxicity	10 mg/kg bw per day	20 mg/kg bw per day
		Embryo/fetal toxicity	10 mg/kg bw per day	20 mg/kg bw per day
Dog	1-year study of toxicity[d]	Toxicity	5 mg/kg bw per day	20 mg/kg bw per day

Notes:
[a] Dietary administration.
[b] Gavage administration.
[c] Highest dose tested.
[d] Capsule administration.

Acceptable daily intake (ADI) for fenpropidin:*

0–0.02 mg/kg bw

*Acute reference dose (ARfD) for fenpropidin for women of child-bearing age:**

0.03 mg/kg bw

** Applies to fenpropidin, CGA289268, CGA289267, SYN515213 and SYN515214, expressed as fenpropidin.*

Information that would be useful for the continued evaluation of the compound

Results from epidemiological, occupational health and other such observational studies of human exposure.

Table 5.13.3 Critical end-points for setting guidance values for exposure to fenpropidin

Absorption, distribution, excretion and metabolism in mammals	
Rate and extent of oral absorption	Rapid (T_{max} for radioactivity 0.5 hours at low dose, 2 hours at high dose) and extensive (82% in females, 92% in males at low dose, 59% in females/94% in males at high dose)
Distribution	Wide, more extensive in highly perfused organs
Potential for accumulation	No evidence of accumulation
Rate and extent of excretion	Rapid and nearly complete via urine; up to 93% in males, up to 80% in females
Metabolism in animals	Extensively metabolized
Toxicologically significant compounds in animals and plants	Fenpropidin, CGA289268, CGA289267, SYN515213, SYN515214, SYN515215, SYN515216 and SYN522217
Acute toxicity	
Rat, LD_{50}, oral	1450 mg/kg bw
Rat, LD_{50}, dermal	>4000 mg/kg bw
Rat, LC_{50}, inhalation	1.22 mg/L
Rabbit, dermal irritation	Irritating
Rabbit, ocular irritation	Irritating
Guinea pig, dermal sensitization	Sensitizing (Magnussen & Kligmann)
Short-term studies of toxicity	
Target/critical effect	Body weight and food consumption, haematological effects, kidney and liver effects, demyelination of the spinal cord and irritation/inflammation of organs (rat/dog).
Lowest relevant oral NOAEL	5 mg/kg bw per day (dog)
Lowest relevant dermal NOAEL	2 mg/kg bw per day (rabbit)
Lowest relevant inhalation NOAEC	No data
Long-term studies of toxicity and carcinogenicity	
Target/critical effect	Reduced body weight (rat)
Lowest relevant NOAEL	2.27 mg/kg bw per day (rat)
Carcinogenicity	Not carcinogenic
Genotoxicity	Unlikely to be genotoxic
Reproductive toxicity	
Target/critical effect	Decreased body weight, decreased implantation sites, reduced number of pups born (rat)
Lowest relevant parental NOAEL	8 mg/kg bw per day (rat)
Lowest relevant offspring NOAEL	8 mg/kg bw per day (rat)
Lowest relevant reproductive NOAEL	42 mg/kg bw per day (rat)
Developmental toxicity	
Target/critical effect	Body weight loss, malaligned sternebrae (variation), persistent truncus arteriosus (malformation) (rabbit)
Lowest relevant maternal NOAEL	10 mg/kg bw per day (rabbit)
Lowest relevant embryo/fetal NOAEL	10 mg/kg bw per day (rabbit)
Neurotoxicity	
1 year dog	Demyelination in 3/4 male dogs, one with paresis. NOAEL 5 mg/kg bw per day
Developmental neurotoxicity NOAEL	27 mg/kg bw per day (highest dose tested) Systemic NOAEL 7 mg/kg bw per day (rat, maternal and offspring)
Other toxicological studies	
Immunotoxicity	258 mg/kg bw per day, highest dose tested (mouse)
Studies on toxicologically relevant metabolites	

CGA289267	Not genotoxic (Ames, mammalian gene mutation, micronucleus in vitro)
SYN515215	Not genotoxic (Ames, micronucleus in vitro)
SYN522217	Not genotoxic (Ames, micronucleus in vitro)
Microbiological data	No data
Human data	No clinical cases or poisoning incidents have been recorded

Table 5.13.4 Summary

	Value	Study	Safety factor
ADI	0–0.02 mg/kg bw[a]	Two-year study of toxicity and carcinogenicity (rat)	100
ARfD	0.03 mg/kg bw[b]	Developmental toxicity study (rabbit)	300

Notes:

[a] Applies to fenpropidin, CGA289268, CGA289267, SYN515213 and SYN515214, expressed as fenpropidin.

[b] Applies to fenpropidin, CGA289268, CGA289267, SYN515213 and SYN515214, expressed as fenpropidin in women of child-bearing age.

5.13.2 Residue and analytical aspects

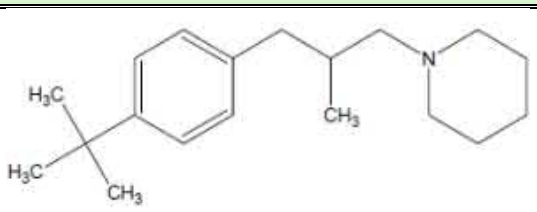
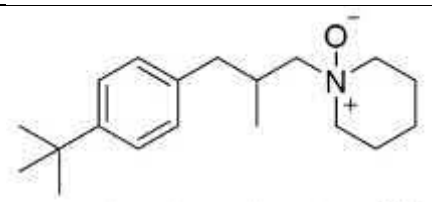
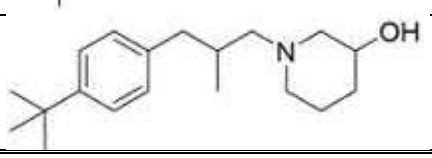
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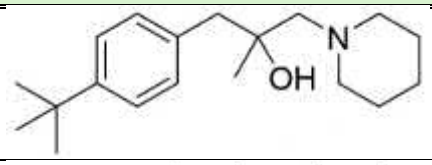
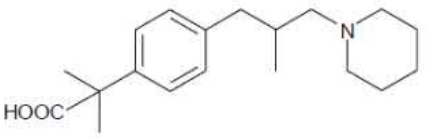
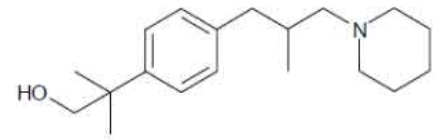
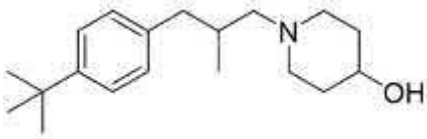
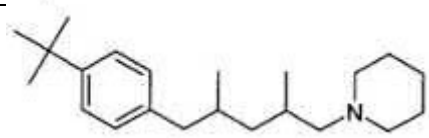
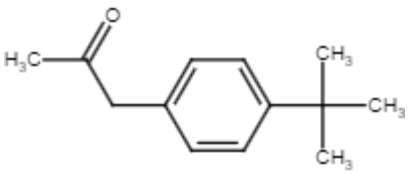
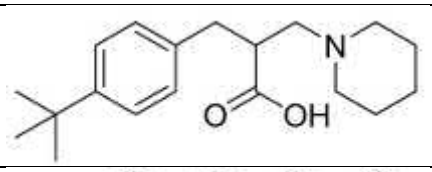
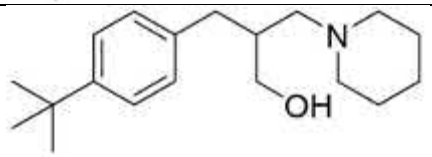
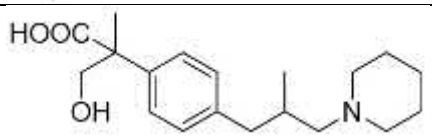
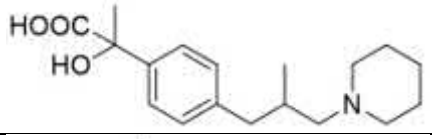
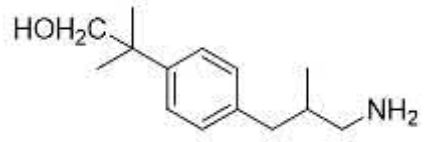
Fenpropidin was scheduled at the 54th Session of the CCPR for Evaluation by the 2024 JMPR as a new compound for Residues and Toxicology, when an ADI of 0–0.02 mg/kg bw and an ARfD of 0.03 mg/kg bw for women of child-bearing-age were established.

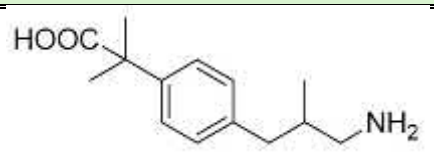
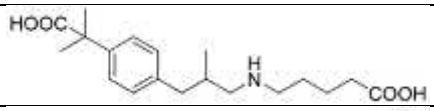
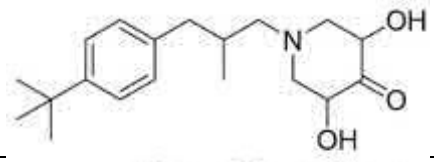
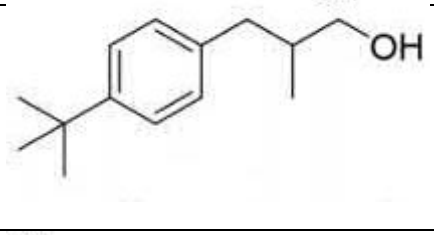
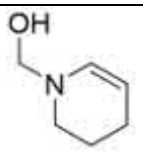
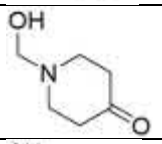
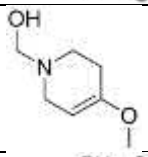
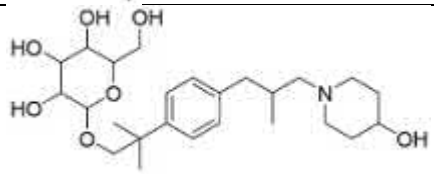
The meeting received information on identity, physical and chemical properties; plant and animal metabolism, environmental fate, methods of residue analysis, storage stability, GAP information, supervised residue trials, processing studies, as well as livestock feeding studies.

Table 5.13.5 shows the compounds discussed in this appraisal.

Table 5.13.5 Names and structures for the compounds discussed in this appraisal

Name	Chemical name	Structure
Fenpropidin	(R,S)-1-[3-(4-tert-butylphenyl)-2-methylpropyl]-piperidine	
CGA 289263	1-[3-(4-tert-butyl-phenyl)-2-methyl-propyl]-piperidine 1-oxide	
CGA 289265	1-[3-(4-tert-Butylphenyl)-2-methyl-propyl]-piperidin-3-ol	

Name	Chemical name	Structure
CGA 289266	1-(4-tert-Butylphenyl)-2-methyl-3-piperidin-1-yl-propan-2-ol	
CGA 289267 (+ hydroxy + acyl glycoside of dihydroxy)	2-methyl-2-[4-(2-methyl-3-piperidin-1- yl-propyl)-phenyl]propionic acid	
CGA 289268 (+ glycoside)	2-methyl-2-[4-(2-methyl-3- piperidin-1- yl-propyl)-phenyl]propan-1-ol	
CGA 289269	1-[3-4-tert-butyl-phenyl)-2-methyl-propyl]-piperidin-4-ol	
CGA 289270	1-[5(4-tert-Butylphenyl)-2,4-dimethyl-pentyl]-piperidine	
CGA 289273	3-(4-tert-butyl-phenyl)-propionaldehyde	
NOA 406116	3-(4-ter-butyl-phenyl)-2-piperidin-1-ylmethyl-propionic acid	
NOA 406117	3-(4-ter-butyl-phenyl)-2-piperidin-1-ylmethyl-propan-1-ol	
SYN 515213 (free + conjugated)	3-Hydroxy-2-methyl-2-[4-(2-methyl-3-piperidin-1-yl-propyl)-phenyl]-propionic acid	
SYN 515214	2-Hydroxy-2-[4-(2-methyl-3-piperidin-1-yl-propyl-phenyl]-propionic acid	
SYN 515215 (free + conjugated)	2-[4-(3-Amino-2-methyl-propyl)-phenyl]-2-methyl-propan-1-ol	

Name	Chemical name	Structure
SYN 515216	2-[4-(3-Amino-2-methyl-propyl)-phenyl]-2-methyl-propionic acid	
SYN 522217	5-{3-[4-(1-Carboxy-1-methyl-ethyl)-phenyl]-2-methyl-propylamino}-pentanoic acid	
SYN 522245	1-[3-(4-tert-Butylphenyl)-2-methyl-propyl]-3,5-dihydroxy-piperidin-4-one	
SYN 522247	2-[4-(2-hydroxypropyl)-phenyl]-2-methyl-propan-1-ol	
SYN 522248	3,4-Dihydro-2H-pyridin-1-yl)-methanol	
SYN 522249	1-Hydroxymethyl-2,3-dihydro-1H-pyridin-4-one	
SYN 522250	4-Methoxy-3,6-dihydro-2H-pyridin-1-yl)-methanol	
Metabolite I2B	2-Hydroxymethyl-6-(2-methyl-2-[4-(2-methyl-3-piperidin-1-yl)-2-methylpropyl]-phenyl)-2-methyl-propoxy)-tetrahydro-pyran-3,4,5-triol	

Physical-chemical properties

Fenpropidin has a log P_{OW} near 3 and may be fat-soluble. It is stable to hydrolysis across the pH range of 3 to 7 at 50 °C for at least 82 days and is not likely to be photolabile.

Metabolism

Plants

Metabolism studies were provided for grape, banana, sugar beet, and wheat. Studies were conducted with fenpropidin radiolabelled in the following locations: 3 carbon of the N-2-methylpropyl moiety, 2 carbon of the piperidine moiety, 2 and 6 carbon of the piperidine moiety, or uniformly in the benzyl moiety.

Grape

Three foliar applications of [N-2-methylpropyl-3-^{14}C]fenpropidin, each at 300 g ai/ha, were made to grape plants on approximately a 15-day interval beginning at BBCH 61. Grape leaves were harvested after each application as well as 53 and 81 days after the last application (DALA). Immature berries were harvested 53 DALA and mature fruit at 81 DALA. Mature fruit was crushed and divided into juice and pomace for analysis.

Residues in leaves increased marginally between the first application (26 mg eq/kg) and the second application (30 mg eq/kg) and then more markedly following the third application (73 mg eq/kg). At 53 and 81 DALA, residues in leaves were 27 mg eq/kg and 36 mg eq/kg, respectively. Residues in fruit were 0.74 mg eq/kg 53 DALA and 0.36 mg eq/kg 81 DALA. The majority of the radioactivity (1.6 mg eq/kg) was in the pomace, with only 0.098 mg eq/kg in the juice.

Extractability of residues from leaves, fruit, and pomace into methanol/water was good, ranging from 85 to 94 percent of the TRR. Leaves from the 81-DALA sampling and pomace were subjected to extraction under microwave conditions with n-propanol/water, which released an additional 7.7 percent TRR from the leaves and 5.1 percent TRR from the pomace.

In grape leaves, fenpropidin was the major residue regardless of the sampling time post-treatment. Fenpropidin ranged from 48 to 66 percent TRR with concentrations increasing with each application (13 mg/kg, 20 mg/kg and 48 mg/kg for 1st, 2nd, and 3rd applications, respectively). The concentration in leaves decreased to 15 mg/kg at 53 DALA and 18 mg/kg at 81 DALA. In addition to fenpropidin, residues consistently identified in leaves were CGA 289273, CGA 289263, CGA 289267, and NOA 406116, each accounting for ≤8.4 percent TRR. Unknown compounds in leaves constituted no more than 7.4 percent TRR for any individual component.

In immature and mature berries, fenpropidin was the major residue (65 percent TRR, 0.48 mg/kg immature; 63 percent TRR, 0.22 mg/kg mature). The next most abundant residue in both immature and mature berries was CGA 289263 (immature: 3.2 percent TRR, 1.3 mg/kg; mature: 3.5 percent TRR, 0.012 mg/kg). Unknown residues in berries were approximately 8 percent TRR, with no individual component accounting from more than 7.4 percent TRR. The residue profile was mirrored in juice and pomace, with fenpropidin constituting 48 percent TRR (0.047 mg/kg) in juice and 67 percent TRR (1.1 mg/kg) in pomace, and CGA 289263 making up 3 percent TRR (0.003 mg/kg) in juice and 3.6 percent TRR (0.057 mg/kg) in pomace. In juice, CGA 289268 accounted for 3.3 percent TRR (0.003 mg/kg). Unknown residues in juice and pomace were approximately 22 and 4 percent TRR, respectively, with no single component exceeding 7 percent TRR.

Banana

Three foliar applications of [*N*-2-methylpropyl-3-^{14}C]fenpropidin, each at 1800 g ai/ha, were made to banana plants grown under controlled conditions (14-h day length, 24–36 °C day, 18–20 °C night, 60–70 percent relative humidity). The first application was made just before blooming, the second 35 days after the first, and the third 55 days after the second. During applications, any flowers or growing fruit were protected with a plastic bag. One leaf and one unripe fruit was collected immediately prior to the second application, one leaf was collected immediately prior to the third application, and all remaining leaves and fruit were harvested 1 DALA. Fruits were separated into peel and pulp.

Residues in leaves were 160 mg eq/kg prior to the second application, 43 mg eq/kg prior to the third application, and 210 mg eq/kg 1 DALA. Prior to the second application, residues in peel were 3.6 mg eq/kg and in pulp were 1.5 mg eq/kg. At 1 DALA, residues in peel were 3.4 mg eq/kg and in pulp were 5.1 mg eq/kg. On a whole-fruit basis, residues 1 DALA were 3.6 mg eq/kg.

Extractability of residues into methanol/water was good: 86–89 percent TRR from leaves, 79–84 percent TRR from peel, and 88–92 percent from pulp. When combined with microwave-assisted extraction, the total amounts extracted were 93–96 percent from leaves, 88–93 percent from peel, and 94–96 percent from pulp.

Fenpropidin was the most abundant residue in all matrices at all sampling times, accounting for 27 percent TRR (43 mg/kg) in leaves at Day 35, 46 percent TRR (20 mg /kg) in leaves at Day 90, 66 percent TRR (2.4 mg /kg) in peel at Day 35, 44 percent TRR (1.5 mg/kg) in peel at Day 91 (1 DALA), 84 percent TRR (2.4 mg /kg) in pulp at Day 35, and 76percent TRR (1. 3 mg/kg) in pulp at Day 91 (1 DALA). Other identified residues were CGA 289263 and CGA 289268. On a relative basis, CGA 289263 was approximately 21 percent and 17 percent of the fenpropidin residue in 35- and 90-day banana leaves, respectively; 10 percent and 36 percent of the fenpropidin residue in 35- and 91-day banana peel, respectively; and 1.7 percent and 4.3 percent of the fenpropidin residue in 35- and 91-day banana pulp, respectively. CGA 289268 occurred at lower levels than CGA 289263, with a maximum of 17 percent of the fenpropidin residue in banana leaves and 4.8 percent of the fenpropidin residue in banana peel; CGA 289268 was not detected in banana pulp.

Sugar beet

Two foliar applications of [N-2-methylpropyl-3-14C]fenpropidin, each at 375 g ai/ha, were made to sugar beets grown under field conditions. The first application was made at BBCH 31 and the second application was made 30 days later. Plants were collected 1 hour after each application, 60 days after the second application, and at maturity (92 DALA). All plants were separated into tops and roots.

Residues in tops were 12 mg eq/kg one hour after the first application, 9.7 mg eq/kg one hour after the second application, 3.4 mg eq/kg 60 DALA, and 1.7 mg eq/kg 92 DALA. Residues in roots were 0.24 mg eq/kg one hour after the first application, 0.061 mg eq/kg one hour after the second application, 0.016 mg eq/kg 60 DALA, and 0.022 mg eq/kg 92 DALA.

Extractability of residues into methanol/water was generally good, ranging from 90 to 98 percent TRR in tops and from 79 to 90 percent TRR in roots, with the exception of the 92 DALA root samples, were

extraction was 58 percent TRR. Those root samples underwent additional extraction in boiling water for 24 hours, which release an addition 20 percent of the TRR.

Fenpropidin was the principal residue in sugar beet tops accounting for 86 percent TRR (10 mg/kg) one hour after the first application and dropping to 48 percent TRR (0.84 mg/kg) in mature tops 92 DALA. Other identified residues in tops occurred at much lower levels and were at relatively consistent percent TRR over time: CGA 289267 (ND to 0.7 percent TRR; 0.082 mg eq/kg), NOA 406116 (ND to 0.7 percent TRR; 0.082 mg eq/kg), CGA 289263 (1 to 2.8 percent TRR, 0.049 to 0.12 mg eq/kg), CGA 289268 (ND to 5.7 percent TRR, 0.224 mg eq/kg), CGA 289265 (ND to 0.2 percent TRR, 0.003 mg eq/kg), NOA 406117 (ND to 0.8 percent TRR, 0.02 mg eq/kg), and SYN 522247 (ND to 4.4 percent TRR, 0.077 mg eq/kg). Aside from the TLC origin, which accounted for up to 22 percent TRR (0.865 mg eq/kg), other unknowns each accounted for ≤2.5 percent TRR (0.098 mg eq/kg). Acid hydrolysis of the water phase of 90 DALA leaf extracts indicated the presence of conjugates of CGA 289268 (2.5 percent TRR, 0.044 mg eq/kg), NOA 406116 (1.4 percent TRR, 0.024 mg eq/kg), and CGA 289263 (0.8 percent TRR, 0.014 mg eq/kg)

Fenpropidin was the most abundant identified residue in sugar beet roots, accounting for 73 percent TRR (0.17 mg/kg) one hour after the first application, 66 percent TRR (0.04 mg/kg) one hour after the second application, 7.5 percent TRR (0.001 mg/kg) 60 DALA, and 2.3 percent TRR (0.001 mg/kg) 92 DALA. Other identified residues ranged from ND to ≤0.001 mg eq/kg, with CGA 289267 having the highest proportion relative to fenpropidin (63 percent of fenpropidin in roots 60 DALA). Unknowns at the TLC origin accounted for 1.5, 14, 59, and 51 percent TRR (up to 0.011 mg eq/kg) one hour after the first application, one hour after the second application, 60 DALA, and 92 DALA, respectively, indicating formation of polar compounds with time post treatment. Other unknowns were each ≤1.6 percent TRR (0.004 mg eq/kg).

In mature roots, fenpropidin was, again, the most abundant residue at 7.2 percent TRR. The only other identified residue occurring at more than 0.1 percent TRR was CGA 289268 (1.1 percent TRR). Acid hydrolysis (14 hours, 1 mol/L HCl) did not demonstrate presence of conjugated residues.

Wheat

Two foliar application of [2,6-^{14}C-piperidine] or [*N*-2-methylpropyl-3-^{14}C] labelled fenpropidin, each at 500 g ai/ha on a 20-day interval (BBCH 37 and BBCH 67) to spring wheat resulted in total residues, respectively, of 8.9 and 6.7 mg eq/kg in forage (1 DALA), 19 (70 DALA)and 15 (59 DALA) mg eq/kg in straw, 11 (71 DALA)and 10 (59 DALA) mg eq/kg in husks, and 0.20 (71 DALA) and 0.18 (59 DALA) mg eq/kg in grain.

Extraction of residues from forage, husks, and straw into methanol/water was good, ranging from 75 to 89 percent. Extraction of residues from grain was lower, at 40 percent (2,6-^{14}C-piperidine) or 68 percent (*N*-2-methylproplyl-3-^{14}C). Microwave extraction released an additional 1.9 to 11 percent TRR, for total extraction efficiencies of 83 to 91 percent in forage, husks and straw and 51 and 75 percent in grain.

Fenpropidin was the most abundant residue in all matrices for both the piperidine and methylpropyl label samples: forage (79 percent TRR, 7.0 mg/kg; 74 percent TRR, 5.0 mg/kg), husks (65 percent TRR, 7.1 mg/kg; 59 percent TRR, 5.7 mg/kg), straw (54 percent TRR, 10 mg/kg; 52 percent TRR, 7.6 mg/kg), and grain (38 percent TRR, 0.076 mg/kg; 56 percent TRR, 0.10 mg/kg). The next-most abundant residue from both labels was CGA 289263 at approximately 2 percent TRR (0.12–0.18 mg eq/kg) in forage, 7 percent TRR (0.7 mg eq/kg) in husks, 6.8 percent TRR (0.99–1.3 mg eq/kg) in straw, and 2.2 percent TRR

(0.004 mg eq/kg) in grain. Other identified residues in all matrices were at lower percentages and amounts: CGA 289268 (free + conjugated), CGA 289265, CGA 289266, CGA 289270, glucose conjugate of CGA 289268, metabolite I2B (2-Hydroxymethyl-6-(2-methyl-2-[4-(2-methyl-3-piperidin-1-yl)-2-methylpropyl]-phenyl)-2-methyl-propoxy)-tetrahydro-pyran-3,4,5-triol), SYN 522248, SYN 522249, SYN 522250, and SYN 522245. With the exception of SYN 522245, none of those residues were detected in grain.

In a second study, a single foliar application of [phenyl-U-^{14}C] and [piperidine-2-^{14}C] labelled fenpropidin at 1125 g ai/ha to spring wheat resulted in total residues of 3.4 and 6.8 mg eq/kg in forage (31 DALA, BBCH 69), 7.1 and 8.5 mg eq/kg in straw (75 DALA), and 0.026 and 0.22 mg eq/kg in grain (75 DALA).

Extraction of residues from forage into methanol followed by aqueous methanol was good (87 and 82 percent). Extraction efficiencies were lower for straw (59 and 56 percent) and grain (30 and 40 percent). Sequential extraction of post-extraction solids (PES) with 1 mol/L HCl, 6 mol/L HCl, 1 mol/L NaOH, and 6 mol/L NaOH released and additional 4.1–6.3 percent TRR from forage, 16–18 percent TRR from straw, and 49–64 percent TRR from grain. Further workup of these extracts was not done due to either low percentage of the TRR or low concentrations.

In this study, fenpropidin was a major residue in forage (20/26 percent TRR, 0.66/1.8 mg/kg; phenyl/piperidine labels) and a significant residue in straw (4.9/4.8 percent TRR, 0.35/0.40 mg/kg). The most abundant metabolite was CGA 289268 (free + glycoside conjugate) at 28/14 percent TRR (0.96/0.92 mg eq/kg) in forage and 13/8 percent TRR (0.9/0.68 mg eq/kg) in straw. Other identified residues were CGA 289263 (4.4/4.5 percent TRR, 0.14/0.30 mg eq/kg in forage; 7.6/6.9 percent TRR, 0.54/0.58 mg eq/kg in straw), hydroxy CGA 289267 (2.4/1.8 percent TRR, 0.081/0.12 mg eq/kg in forage; 2.0/1.9 percent TRR, 0.14/0.16 mg eq/kg in straw), and acyl glycoside conjugate of dihydroxy CGA 289267 (7.1/6.7 percent TRR, 0.24/0.46 mg eq/kg in forage; 3.1/3.4 percent TRR, 0.22/0.28 mg eq/kg in straw). Analyses of the grain extracts were either not carried out due to very low levels of radioactivity (phenyl label), or no residues were identified (piperidine label). Enzyme and acid hydrolyses of the piperidine label grain extracts did not demonstrate presence of conjugated residues.

Summary of plant metabolism

Metabolism across four diverse crops was similar, consisting of oxidation of the piperidine ring to form CGA 289263, CGA 289265, CGA 289269, and SYN 522245; oxidation of the tert-butyl chain to form CGA 289263 and CGA 289267; and oxidation of the 2-methylpropyl moiety to form CGA 289266, NOA 406116, and NOA 406117. CGA 289267 was further metabolized to hydroxy- and acyl glycoside of dihydroxy-CGA 289267. Fenpropidin was the most predominant residue observed across fruit, root, and cereal crops. Residues of CGA 289263 and CGA 289268 were observed in nearly all matrices examined. Other residues were less consistently observed and at levels less than those of fenpropidin, CGA 289263, and CGA 289268.

Animals

The meeting received animal metabolism studies with fenpropidin in rats, lactating goat and laying hen.

Rat

The metabolism of fenpropidin in rats was reviewed in the framework of the toxicological evaluation by the WHO Core Assessment Group in the 2024 JMPR.

Lactating goat

The metabolism of [*N*-2-methylpropyl-3-^{14}C]-fenpropidin was investigated in one lactating goat following repeated oral administration by gelatine capsule, once a day for four consecutive days at doses equivalent to 121 ppm in the diet and sacrificed 6 hours after the final dose. Milk was collected twice daily.

Residues in milk appear to reach a plateau after 2 days of dosing, however it is noted that the study dosing period is only 4 days. The TRR in milk were 0.24 mg eq/kg on the final day of dosing.

TRR levels in edible tissues were 6.827 mg eq/kg in liver, 3.902 mg eq/kg in kidney, 0.146 mg eq/kg in muscle, and 0.042 mg eq/kg in fat.

Extractability from liver, kidney, and muscle with acetonitrile, acetonitrile/water (7/3), and acetonitrile/water (3/7) was >91 percent TRR. Treatment of the liver PES with sodium dodecyl sulphate released an additional 3.9 percent TRR. Extractability from milk with hexane/diethyl ether (9/1) and water/acetone (1/2.7) was >84 percent TRR. Extractability from fat with hexane, hexane/diethyl ether (1/1), acetonitrile, acetonitrile/water (7/3) was >98 percent TRR.

Fenpropidin accounted for 1.1 percent TRR in liver (0.084 mg/kg) and 6.6 percent TRR in fat (<0.004 mg/kg) but was not detected in kidney, muscle, or milk. CGA 289267 (free and/or conjugated) was a major residue in muscle (37 percent TRR, 0.063 mg eq/kg), milk (24 percent TRR, 0.046 mg eq/kg), fat (16 percent TRR, <0.008 mg eq/kg), kidney (13 percent TRR, 0.551 mg eq/kg), and liver (8.4 percent TRR, 0.645 mg eq/kg). The metabolite SYN 515213 (free and conjugated) was the predominant residue in all tissues, accounting for 19–41 percent TRR (0.012–1.459 mg eq/kg) and was a major residue in milk (26 percent TRR, 0.05 mg eq/kg). CGA 289268 (free and/or conjugated) was the most abundant residue in milk (33 percent TRR) but was also present in tissues: liver (13 percent TRR, 1.017 mg eq/kg), kidney (6.4 percent TRR, 0.282 mg eq/kg), muscle (2.7 percent TRR, 0.004 mg eq/kg), and fat (7.8 percent TRR, 0.003 mg eq/kg). SYN 515215 (conjugated) was a major residue in liver (13 percent TRR) but also found in kidney (5.2 percent TRR) but not in any other tissues or milk. Other identified residues were SYN 515214 (all matrices) and SYN 515216 (all matrices except milk) at lower percentages and amounts.

Laying hen

The metabolism of [*N*-2-methylpropyl-3-^{14}C]fenpropidin and [2,6-^{14}C-piperidine]fenpropidin was investigated in laying hens following repeated oral administration by gelatine capsule, once a day for four consecutive days at doses equivalent to 10.28 ppm (methylpropyl label) and 11.58 (piperidine label) in the diet and sacrificed 6 hours after the final dose. Eggs were collected once daily.

TRR levels in edible tissues were 0.518/0.455 mg eq/kg in liver, 0.622/0.606 mg eq/kg in kidney, 0.073/0.071 mg eq/kg in lean meat, 0.047/0.044 mg eq/kg in skin with fat, and 0.030/0.036 mg eq/kg in peritoneal fat from the methylpropyl and piperidine labels, respectively. Residues in egg yolk and egg white did not reach a plateau by the end of the study in hens dosed with either label.

Extractability in eggs, lean meat, and liver with acetonitrile and methanol was ≥76 percent TRR. Extractability in fat/skin with hexane was 19–33 percent TRR and further extraction with acetonitrile and methanol released an additional 67–72 percent TRR with overall >91 percent TRR extracted.

In the methylpropyl label study, fenpropidin was observed in all matrices examined and was a major residue in whole fat with skin (12 percent TRR, 0.005 mg/kg) and accounted for 0.3–7.2 percent TRR (<0.001–0.037 mg/kg) in egg white, egg yolk, lean meat, and liver. CGA 289267 was the most predominant residue identified in all matrices examined, accounting for 83 percent TRR (0.033 mg eq/kg) in egg white, 60 percent TRR (<0.017 mg eq/kg) in egg yolk, 95 percent TRR (0.069 mg eq/kg) in lean meat, 47 percent TRR (0.019 mg eq/kg) in whole fat with skin, and 36 percent TRR (0.184 mg eq/kg) in liver. CGA 289268 was also identified in all matrices examined, accounting for 0.8–2.7 percent TRR (0.001–0.014 mg eq/kg). Other identified residues were SYN 515215 (egg white, egg yolk, and liver only), and SYN 515216/SYN 522217 (all tissues except egg yolk) at lower percentages and amounts.

In the piperidine label study, fenpropidin was observed in all matrices examined and was a major residue in whole fat with skin (16 percent TRR, 0.007 mg/kg) and accounted for 0.8–9.8 percent TRR (<0.001–0.045 mg/kg) in egg white, egg yolk, lean meat, and liver. CGA 289267 was the most predominant residue identified in all matrices examined, accounting for 87 percent TRR in egg white, 53 percent TRR (0.016 mg eq/kg) in egg yolk, 86 percent TRR (0.060 mg eq/kg) in lean meat, 53 percent TRR (0.022 mg eq/kg) in whole fat with skin, and 47 percent TRR (0.212 mg eq/kg) in liver. CGA 289268 was also identified in all matrices examined, accounting for 0.7–3.0 percent TRR (<0.001–0.013 mg eq/kg). Other identified residues were SYN 515215 (lean meat only), SYN 515216 (whole fat and liver only), and SYN 522217 (egg white, whole fat and liver only) at lower percentages and amounts.

Summary of animal metabolism

Metabolism in lactating goat and laying hen was similar but more extensive in the goat. The pathway consists of oxidation of one of the methyl groups of the tertiary-butyl moiety to form metabolite CGA 289268, which undergoes further oxidation to the corresponding carboxylic acid (CGA 289267). A second methyl group is oxidized resulting in a β-hydroxy acid (SYN 515213). Oxidative cleavage is also observed and produces an α-hydroxy acid (SYN 515214) with associated loss of one carbon atom from the original tertiary group. Oxidation and cleavage of the piperidine ring leads to the formation of SYN 515215, SYN 515216, and SYN 522217. Sulphate ester conjugation of SYN 515213, CGA 289268 and SYN 515215, and glucuronide conjugation of CGA 289268 are major secondary metabolic processes.

CGA 289267 (free and/or conjugated) was the predominant residue observed across all tissues, milk, and eggs. CGA 289268 (free and/or conjugated) was observed in all matrices examined and was a major residue in goat milk and liver. Residues of SYN 515213 (free and conjugated) were observed as a major residue in goat milk and tissues but were not identified in poultry matrices. The parent fenpropidin was identified in all poultry matrices examined and was a major residue in whole fat with skin, but was only identified in goat liver and fat at low levels/amounts. SYN 515215 (conjugated) was a major residue in goat liver and was observed (free or conjugated) in goat kidney, poultry meat, poultry liver, and eggs. Other residues (SYN 515214, SYN 515216, and SYN 522217) were observed but less consistently and at levels/amounts lower than those mentioned above.

Environmental fate

Hydrolysis/photolysis

Fenpropidin is expected to be stable to hydrolysis under environmental conditions. It is also expected to be stable to photolysis.

Soil dissipation

In the laboratory soil dissipation studies, DT_{50} estimates range from 9.5 to 233 days. The geometric mean DT_{50} from those studies is 77 days.

In the field dissipation studies, DT_{50} estimates range from 5.6 to 94 days. Best-fit models for those estimates are first-order multicompartment, dual first-order in parallel, or single first-order. DT_{90} estimates range from 24 to >10000 days. Geometric mean DT_{50} and DT_{90} values are 26 and 190 days, respectively.

A screen of open literature studies indicated dissipation rates similar to those in the provided studies.

Based on the observed dissipation rates, fenpropidin is considered to be non-persistent to moderately persistent in the environment.

Rotational crops

Uptake of radioactivity into rotational crops of lettuce, radish, and spring wheat (Study 1; two bare-soil applications each at 750 g ai/ha, 21-day retreatment interval; plant-back intervals (PBI) of approximately 30, 75/95/160 [crop dependent], and 365 days) and cabbage, spinach, carrot, and wheat (Study 2; single bare-soil application at 1067–1096 g ai/ha; PBI of 30 days) was shown in the confined rotational crop studies.

In Study 1, total residues ranged from 2.3–3.1 mg eq/kg in wheat straw at the 28-day plant-back interval (PBI) to 0.003–0.004 mg eq/kg in radish roots at the 365-day PBI. Total residues generally decreased with increasing PBI, with the exception of immature wheat tops, grain, and straw, which had peak residues at the 76-day PBI.

Extraction of residues into methanol was approximately 70–80 percent for lettuce, radish roots and tops, and wheat tops, 40–50 percent for wheat straw, and 8–20 percent for wheat grain. Extraction into propanol under microwave conditions extracted an additional 3 to 14 percent to give total extractions in the range of 61–87 percent for wheat fodder, 44–71 percent for wheat straw, and 12–23 percent for wheat grain. Hydrolysis (10 mol/L NaOH) of the PES, precipitation of starches, cellulose, and lignin; partitioning; and formation of osazone derivatives via addition of phenylhydrazine showed that the majority of the unextracted residues was associated with plant constituents.

Fenpropidin was the principal residue in all samples at all PBIs where residues were analysed. The parent compound ranged from 0.3 to 46 percent TRR (0.001–0.53 mg/kg) across all matrices and accounted for 40 to 89 percent of the identified residues. Residues of CGA 289263, CGA 289267, CGA 289268, CGA 289269, and NOA 406117 were observed at ≥10 percent of the fenpropidin level in at least one matrix and often occurred as a higher percentage of the TRR at the second PBI (noting that residues in samples

from the last PBI were often too low to merit residue identification). Residues of CGA 289263 and CGA 289268 occurred at levels exceeding 20 percent fenpropidin in at least one matrix.

In Study 2, TRRs were lowest in grain (0.012 mg eq/kg) and carrot root (0.022–0.024 mg eq/kg). In cabbage, spinach, carrot tops, and wheat fodder and straw, TRRs ranged from 0.037 to 0.442 mg eq/kg. Extraction efficiency into methanol and methanol/water was good (approximately 70 to 95 percent TRR) from all matrices except wheat grain (27 percent TRR). Treatment of the PES with 0.1 mol/L HCl and 0.1 mol/L NaOH each released an additional 0.2 to 2.4 percent TRR. Treatment of PES with enzyme mixtures (cellulase, pectinase, amylase, ß-glucosidase, and hesperidinase released an additional 38 percent TRR from grain and 2 to 7 percent TRR from other matrices. Further extraction of grain PES with 6 mol/L HCL released an additional 28 percent TRR (totalling 96 percent TRR extracted from grain).

Fenpropidin was the principal residue in all samples, accounting for 6.5 to 60 percent TRR (0.001 to 0.22 mg/kg) and 59–98 percent of the identified residues. Metabolites CGA 289263, CGA 289265, and CGA 289269 were generally <5 percent of the level of fenpropidin. Fenpropidin-O-glycoside was identified in this study at levels ≤10 percent TRR (<0.001–0.023 mg eq/kg; 3–62 percent of free fenpropidin).

Four field rotational crop studies were conducted using a single application of fenpropidin at approximately 2854 g ai/ha and PBIs of approximately 30 and 120 days with lettuce, carrot, and spring barley. These studies included analysis of fenpropidin, CGA 289263, CGA 289267, and CGA 289268. Residues of the metabolites were <0.01 mg/kg in all samples at all PBIs. Residues of fenpropidin were generally <0.01 mg/kg, with the following exceptions: immature lettuce (0.02–0.03 mg/kg, n = 3), mature lettuce (0.01–0.02 mg/kg, n = 3), carrot tops (0.01–0.04 mg/kg, n = 8), barley fodder (0.01 mg/kg, n = 3), and barley straw (0.01–0.05, n = 5). Samples with residues above the LOQ were from both the 30- and 120-day PBIs.

Summary of environmental fate

Based on the dissipation times observed in laboratory and field studies, and the results from the field rotational crop studies using an exaggerated (approximately 2x for the uses considered by the current meeting) application rate, the meeting agreed that residues of fenpropidin and its metabolites are unlikely to carry over into follow-on crops at levels requiring consideration for maximum residue level estimates or for dietary risk assessment purposes.

Methods of analysis

Plant matrices

Methods REM 164.01, 164.04, and 164.09 extract fenpropidin from plant matrices using methanol/water. These methods differ in their sample clean-up strategies and instrumentation for separation and detection. Recoveries for REM 164.01 (partitioning and column chromatography cleanup, GC-NPD analysis) were good (71–104 percent); however, replication was insufficient to determine a supported limit of quantification (LOQ). Method REM 164.04 (SPE and column chromatography clean-up, GC-NPD analysis) generally had sufficient replication at the lowest concentration tested (0.02 mg/kg, except wine at 0.005 mg/kg) to support validating an LOQ at those levels; however, residues in control samples were detected in sugar beet root and banana pulp samples, and poor chromatography resulted in unacceptably low recoveries (20–55 percent) in barley straw and sugar beet root at 0.02 mg/kg. Relative standard

deviations (RSD) for REM 164.04 ranged from 4 to 25 percent (barley straw only = 25 percent). Method REM 164.09 (SPE and column chromatography clean up, LC-MS/MS analysis) showed good recoveries (82–110 percent) and low RSD (≤8 percent) for all samples and concentrations tested. Method REM 164.09 underwent successful independent laboratory validation.

The meeting agreed that REM 164.09 was adequately validated, with an LOQ of 0.01 mg/kg. In addition, the meeting agreed to extrapolate the validation of REM 164.09 to REM 164.01, but with an LOQ of 0.02 mg/kg due to the difference in instrumentation. The meeting considers Method REM 164.04 suitable, with an LOQ of 0.02 mg/kg (0.005 mg/kg for wine).

Method MAAG12-3049-MD05 extracts fenpropidin from plant matrices using methylene chloride under alkaline conditions. The extract is neutralized, solvent evaporated, and residue dissolved into acetone. Separation and analysis is by HPLC-UV. The method had good mean recoveries (90, 99 percent; 0.05 and 0.5 mg/kg, respectively) and low RSD (4, 7 percent). The method is valid for the analysis of fenpropidin in sugar beet root to an LOQ of 0.05 mg/kg.

Animal matrices

Methods REM 164.02 (fenpropidin), 164.05 (CGA 289267), 164.06 (CGA 289268) and 164.10 (fenpropidin, CGA 289267, CGA 289268) are suitable for the analysis of animal commodities. All four methods extract residues into methanol/water (164.05 and 164.06 use water buffered to pH9), with the exception of 164.02, which extracts residues in fat using hexane, and 164.10, which extracts residues of fenpropidin into iso-hexane (metabolites are extracted using methanol/water). Recoveries for all methods were good, ranging from 73 to 110 percent, with RSDs ≤17 percent. The validated LOQ for all methods is 0.01 mg/kg for muscle, liver, kidney, fat, and milk (milk = 0.005 mg/kg for 164.02, 164.05, and 164.06). Method 164.10 underwent successful independent laboratory validation.

For all plant and animal methods, except MAAG12-3049-MD05, the extraction solvents are the same as or sufficiently similar to the solvents used in the metabolism studies, which showed good extraction efficiency for incurred residues. The meeting agreed that all methods are fit for purpose.

Stability of residues in stored analytical samples

Stability of fenpropidin residues under frozen conditions was examined in plant (grape, banana, lettuce, beans, sugar beet, oilseed rape, wheat, and barley) and animal (milk muscle, fat, liver, kidney, egg) commodities. The meeting concluded that residues of fenpropidin are stable under conditions of frozen storage as follows:

- high-acid commodities at least 729 days;
- high-water commodities at least 754 days;
- high-starch commodities at least 754 days;
- high-oil commodities at least 729 days;
- high-protein commodities at least 729 days;
- milk (fenpropidin, CGA 289267, CGA 289268) at least 979 days;
- muscle (fenpropidin, CGA 289267, CGA 289268) at least 981 days;
- fat at least 101 days (fenpropidin), 719 days (CGA 289267), 906 days (CGA 289268);
- liver up to 749 days(fenpropidin), at least 989 days (CGA 289267, CGA 289268); and

- egg (fenpropidin, CGA 289267, CGA 289268) at least 136 days.

The available storage stability data adequately address storage durations and condition for samples from all magnitude of the residue studies evaluated by the meeting.

Definition of the residue

Plants

The residue profile in fenpropidin metabolism studies was similar across grapes, banana, sugar beet, and wheat. In all four metabolism studies, fenpropidin was the predominant residue in all matrices examined. In food and feed commodities, fenpropidin accounted for up to 50 percent TRR (18 mg/kg) in grape leaves, 63 percent TRR (0.22 mg/kg) in grape berries, 76 percent TRR (3.9 mg/kg) in banana pulp, 48 percent TRR (0.845 mg/kg) in sugar beet tops, 2.3 percent TRR (0.001 mg/kg) in sugar beet roots, 56 percent TRR (0.1 mg/kg) in wheat grain, 79 percent TRR (7.0 mg/kg) in wheat forage, and 54 percent TRR (10 mg/kg) in wheat straw.

The meeting agreed that parent fenpropidin is an adequate marker residue for enforcement purposes in plants and noted that a suitable analytical method is available.

Other residues identified across the metabolism studies were CGA 289263, CGA 289265, CGA 289267, CGA 289268, CGA 289269, CGA 289273, NOA 406116, NOA 406117, SYN 522245. In addition, CGA 289266, CGA 289270, and SYN 522250 were observed in wheat matrices.

In considering which residues would be important for assessing dietary risk, the meeting noted that only the following residues exceeded 10 percent of the level of fenpropidin in food and feed commodities from the plant metabolism studies:

CGA 289263 occurred at approximately 43 percent of the level of fenpropidin in sugar beet root, up to approximately 22 percent of the level of fenpropidin in wheat forage, and up to 155 percent of the level of fenpropidin in wheat straw. It was detected at lower levels relative to fenpropidin in grape leaves (<3 percent), grape berries (<6 percent), banana pulp (<5 percent), and wheat grain (<6 percent). Although CGA 289263 (*N*-oxide of fenpropidin) was at a relatively high proportion compared to fenpropidin, it was found only at very low levels in sugar beet root (<0.001 mg eq/kg). The meeting agreed that due to its high potential for reactivity, it would be unlikely to be found in processed products from sugar beet roots or transfer intact to animal tissues. Therefore, the meeting decided that CGA 286263 should not be included in the residue definition for risk assessment.

CGA 289268 occurrence was similar to that of CGA 286263; however, it was found in high proportion as a glucose conjugate in wheat forage and straw, and at approximately 26 percent of the level of fenpropidin in sugar beet roots (at <0.001 mg eq/kg). Due to its low level in sugar beet roots, CGA 289268 is not expected to occur in sugar beet processed commodities or in other root crops. Total CGA 289268 (free + conjugated) was observed at up to nearly 150 percent of the fenpropidin residue in wheat forage and up to approximately 250 percent of fenpropidin in wheat straw. Based on that and its lack of occurrence in food commodities, the meeting agreed that CGA 289268 does not need to be included in the residue definition for risk assessment. However, the meeting noted that free and conjugated CGA 289268 is a precursor to CGA 289267 should be considered for inclusion in animal feed dietary burdens.

Hydroxy CGA 289267 and the related compound acyl glucoside of dihydroxy CGA 289267 were observed only in animal feed commodities (though the precursor CGA 289267 was observed in foods, but generally at very low levels). Due to their limited occurrence and that they will not be metabolized back to CGA 289267, the meeting agreed that they do not need to be included in the residue definition for risk assessment or be considered for animal dietary burden estimations.

Other residues were generally less than five percent of the level of fenpropidin and frequently less than 1 percent. The meeting agreed that they did not need to be included in the residue definition for risk assessment.

The meeting concluded that the residue definition for risk assessment for plant commodities is fenpropidin.

Animals

Fenpropidin was not detected in kidney, muscle, or milk in the lactating goat study and was a minor residue in other matrices from the goat and hen metabolism studies. The meeting agrees that fenpropidin, alone, would not be a good marker compound for compliance with MRLs for animal commodities.

In considering other potential marker compounds, the meeting noted that CGA 289267 was a significant residue in all tissues, milk and eggs, observed in all matrices in the lactating cattle and laying hen feeding studies (though sometimes only at the highest dose). In the metabolism studies and across both goats and hens, CGA 289267 was highest in muscle (38 to 83 percent TRR, ca. 0.062 mg eq/kg), milk (24 percent TRR, 0.046 mg eq/kg), and eggs (87 percent TRR, 0.042 mg eq/kg in egg white; 62 percent TRR, 0.018 mg eq/kg in egg yolk), and lower in fat (16 to 53 percent TRR, 0.008 to 0.022 mg eq/kg), liver (9.1 to 47 percent TRR, 0.21 to 0.70 mg eq/kg), and kidney (13 percent TRR, 0.551 mg eq/kg); the conjugated form was observed only in fat and liver, and at ≤8 percent of the free form.

The meeting agreed that CGA 289267 is a suitable marker for compliance with MRLs in animal commodities and that the residue definition for compliance should include the parent compound, fenpropidin. The meeting further agreed that monitoring the conjugated form of CGA 289267 for compliance is not necessary. Suitable analytical methods are available for the analysis of fenpropidin and CGA 289267 in animal matrices. Concentrations of CGA 289267 were generally higher in muscle than in fat in animal metabolism and feeding studies, and the meeting decided that the residue is not fat-soluble.

In considering which additional residues would be important for assessing dietary risk, the meeting noted that the HBGVs for fenpropidin are suitable for the assessment of CGA 289267, CGA 289268, SYN 515213, and SYN 515214.

CGA 289268 was identified as a conjugate in goat matrices and in the free form in poultry matrices. In goat, CGA 289268 was approximately 7 percent of the level of CGA 289267 in muscle (0.004 mg eq/kg) and fat (0.001 mg eq/kg), 51 percent of CGA 289267 in kidney, 140 percent of CGA 289267 in milk, and 160 percent of CGA 289267 in liver. In contrast to the results from the metabolism study, the cattle feeding study showed residues of CGA 289268 were <0.01 in all matrices except liver, where it occurred at levels less than 5 percent of CGA 289267.

In poultry, CGA 289268 occurred at a low percentage relative to CGA 289267 (<1 percent, except for egg yolk [<6 percent] and liver [<8 percent]). In all matrices except liver, CGA 289268 was ≤0.001 mg eq/kg; in liver CGA 286268 was 0.014 mg eq/kg).

The meeting agreed that CGA 289268 did not need to be included in the residue definition for risk assessment for animal commodities.

SYN 515213, as the sum of free and conjugated forms, was the predominant residue in goat liver (19 percent TRR, 1.4 mg eq/kg), kidney (29 percent TRR, 1.3 mg eq/kg), and muscle (41 percent TRR, 0.066 mg eq/kg) and was a significant residue in fat (28 percent TRR, 0.012 mg/kg) and milk (26 percent TRR, 0.01 mg eq/kg). Relative to CGA 289267, residues of SYN 515213 in goat matrices were 210 percent for liver, 230 percent for kidney, 110 percent for muscle, 170 percent for fat, and 110 percent for milk. Although SYN 515213 was not observed in the poultry metabolism study, it was noted as a potential residue in the poultry metabolism pathway.

The meeting agreed that SYN 515213 should be included in the residue definition for risk assessment for animal commodities.

SYN 515214 was observed in goat matrices at levels of 0.002 mg eq/kg in milk, 0.006 mg eq/kg in muscle, 0.001 mg eq/kg in fat, 0.14 mg eq/kg in liver, and 0.14 mg eq/kg in kidney. SYN 515214 was not observed in the poultry metabolism study.

SYN 515214 was found at levels much lower than CGA 289267 and SYN 515213 and acute exposure to SYN 515214 was zero percent of the ARfD of 0.03 mg/kg bw for women of child-bearing age. Therefore, the meeting agreed that SYN 515214 did not need to be included in the residue definition for risk assessment for animal commodities.

Additional residues for consideration for dietary risk assessment are SYN 515215 (free and/or conjugated), SYN 515216, and SYN 522217; for those residues, the meeting agreed that assessment could be done using the Threshold of Toxicological Concern (TTC) approach for acute and chronic (Cramer class III) exposures.

The meeting agreed that the residue definition for risk assessment for animal commodities is the sum of fenpropidin, CGA 289267, and SYN 515213 (free and conjugated), expressed as fenpropidin.

In conclusion:

- Definition of the residue for compliance with the MRL and for dietary risk assessment for plant commodities: *fenpropidin*.
- Definition of the residue for compliance with the MRL for animal commodities: sum of fenpropidin and CGA 289267 {2-methyl-2-[4-(2-methyl-3-piperidin-1-yl-propyl)-phenyl]propionic acid}, expressed as fenpropidin.
- Definition of the residue for dietary risk assessment for animal commodities: Sum of fenpropidin, CGA 289267 {2-methyl-2-[4-(2-methyl-3-piperidin-1-yl-propyl)-phenyl]propionic acid}, and SYN 515213 {3-hydroxy-2-methyl-2-[4-(2-methyl-3-piperidin-1-yl-propyl)-phenyl]-propionic acid} (free and conjugated), expressed as fenpropidin.
- The residue is not fat-soluble.

Results of supervised residue trials on crops

Based on the residue definitions and the metabolic pathway of fenpropidin in animals, the meeting considered residues of fenpropidin for estimating residues in plant commodities and the sum of fenpropidin and CGA 289268, expressed as fenpropidin, for deriving dietary burdens for animal commodities. CGA 289268 residues were not measured in supervised residue trials on crops, therefore, estimates for that compound were made based on ratios observed in the plant metabolism studies. Details are provided for each feed crop.

Grapes (wine)

The critical GAP for wine grapes is from Switzerland and consists of four foliar applications, on a 10-day interval of a 4000x dilution of the formulation. The label notes a "quantity of reference mixture" of 1600 L/ha or a volume of leaf hedge of 4500 m3/ha. On the basis of the L/ha rate, the application is equivalent to 300 g ai/ha. Applications are to be made between BBCH 71 and BBCH 81; a PHI is not specified.

Trials submitted to the meeting were conducted with retreatment intervals of 13–15 days (with 2 retreatment intervals of 9 days). Residue decline data were inconclusive with regard to the expected effect of retreatment interval on residues at harvest.

The meeting concluded that none of the trials approximated the critical GAP for grapes and did not estimate residues of fenpropidin on wine grapes.

Banana

The critical GAPs for banana are from Cameroon and the Philippines. Both consist of twelve foliar applications, each at 450 g ai/ha, on a 7-day interval. The PHI is 0 days.

All of the trials matching the critical GAP included analysis of bagged and unbagged bananas. The meeting selected the higher of the residue levels for estimating residues in banana. In trials matching the critical GAP, residues in whole banana were (n = 13): 0.04 mg/kg, 0.10 mg/kg, 0.21 mg/kg, 0.26 mg/kg, 0.27 mg/kg, 0.42 mg/kg, <u>0.47</u> mg/kg, 0.54 mg/kg, 0.60 mg/kg, 1.6 mg/kg, 1.8 mg/kg, 4.8 mg/kg, and 6.0 mg/kg.

The meeting estimated a maximum residue level of 9 mg/kg for fenpropidin in banana.

Four of the trials matching the critical GAP included analysis of banana pulp, with residues in pulp/whole banana of 0.06/0.105 mg/kg, 0.12/0.60 mg/kg, 0.045/0.21 mg/kg, and 0.075/0.42 mg/kg, resulting in pulp/whole fruit ratios, in ranked order, of 0.179, 0.200, 0.214, and 0.571. Applying the median ratio (0.207) to the median (0.47 mg/kg) and highest (6.0 mg/kg) residues in the whole fruit dataset results in an STMR of 0.097 mg/kg and an HR of 1.2 mg/kg for fenpropidin in banana pulp.

There are no feed items associated with banana; therefore, no residue estimates were made for dietary burden calculations.

Soya bean

Although field trials on fenpropidin in soya bean were provided to the meeting, a registered label was not available and the meeting did not estimate residues for fenpropidin in soya bean.

Sugar beet, fodder beet roots

The critical GAP for sugar beet and fodder beet is from Switzerland. The per-application rate is 375 g ai/ha and 2 applications may be made. There is a restriction of 725 g ai/ha/year; therefore, the critical application rate is one foliar application at 350 g ai/ha followed by a second foliar application at 375 g ai/ha. A retreatment interval is not specified and PHI is 28 days.

In trials approximating the critical GAP, residues of fenpropidin in sugar beet roots were (n = 16): <0.01 (13) mg/kg, 0.01 mg/kg, 0.02 mg/kg, and 0.02 mg/kg.

The meeting estimated a maximum residue level of 0.03 mg/kg for fenpropidin in sugar beet.

For purposes of estimating animal dietary burdens, the meeting noted that CGA 289268 levels were approximately 26 percent of those of fenpropidin in sugar beet roots in the metabolism study. Applying a factor of 1.26 to the estimated median for sugar beet roots (0.01 mg/kg) results in a median residue of 0.0126 mg/kg for fenpropidin in sugar beet roots.

Since the registration includes use on fodder beet, the meeting agreed to extrapolate the estimates from sugar beet to fodder beet, roots.

Wheat, triticale

The critical GAP for wheat and triticale is from Hungary and consists of 2 foliar applications, each at 563 g ai/ha, on a 14-day interval. Applications are to be made between BBCH 29 and BBCH 65, and the PHI is 35 days.

Noting the application window and the PHI listed for the critical GAP, the meeting selected trials approximating the application timing, with allowance to BBCH 69 for the second application, and with harvest occurring at least 35 DALA.

In trials approximating the critical GAP, residues of fenpropidin in wheat grain were (n = 13): <0.01 (8) mg/kg, 0.01 (4) mg/kg, and 0.04 mg/kg.

The meeting estimated a maximum residue level of 0.05 mg/kg and an STMR of 0.01 mg/kg for fenpropidin in wheat.

CGA 289268 was not observed in wheat grain in the metabolism study, and the meeting estimated a median of 0.01 mg/kg for estimating animal dietary burden.

Noting that the registration includes use on triticale, the meeting agreed to extrapolate the estimates from wheat to triticale.

Barley

The critical GAP for barley is from Hungary and consists of 2 foliar applications, each at 563 g ai/ha, on a 14-day interval. Applications are to be made between BBCH 29 and BBCH 65, and the PHI is 35 days.

Noting the application window and the PHI listed for the critical GAP, the meeting selected trials approximating the application timing, with allowance to BBCH69 for the second application, and with harvest occurring at least 35 DALA.

In trials approximating the critical GAP, residues of fenpropidin in barley grain were (n = 15): <0.01 mg/kg, 0.017 mg/kg, 0.02 mg/kg, 0.02 mg/kg, 0.03 mg/kg, 0.04 mg/kg, 0.04 mg/kg, 0.05 mg/kg, 0.06 mg/kg, 0.06 mg/kg, 0.07 mg/kg, 0.07 mg/kg, 0.07 mg/kg, 0.08 mg/kg, and 0.09 mg/kg.

The meeting estimated a maximum residue level of 0.15 mg/kg and an STMR of 0.055 mg/kg for fenpropidin in barley.

As CGA 289268 was not observed in wheat grain in the metabolism study, the meeting agreed to extrapolate these results to barley and estimated a median residue of 0.055 mg/kg for estimating animal dietary burdens.

Animal feeds

Sugar beet, fodder beet tops

The critical GAP for sugar beet and fodder beet is from Switzerland. The per-application rate is 375 g ai/ha and 2 applications may be made. There is a restriction of 725 g ai/ha/year; therefore, the critical application rate is one foliar application at 350 g ai/ha followed by a second foliar application at 375 g ai/ha. A retreatment interval is not specified. The PHI is 28 days.

In trials approximating the critical GAP, residues of fenpropidin in sugar beet tops were (n = 16): 0.42 mg/kg, 0.49 mg/kg, 0.50 mg/kg, 0.57 mg/kg, 0.57 mg/kg, 0.63 mg/kg, 0.88 mg/kg, 1.2 mg/kg, 1.3 mg/kg, 1.3 mg/kg, 1.3 mg/kg, 1.6 mg/kg, 1.6 mg/kg, 2.1 mg/kg, 2.3 mg/kg, and 4.1 mg/kg.

The OECD MRL calculator provided an estimate of 6 mg/kg for sugar beet tops. Based on a dry matter content of 23 percent, the meeting estimated a maximum residue level of 30 mg/kg (dry weight, dw) for fenpropidin in sugar beet, leaves or tops (dry).

For purposes of estimating animal dietary burdens, the meeting noted that CGA 289268 levels were approximately ten percent of those of fenpropidin in sugar beet leaves in the sugar beet metabolism study. Residues of fenpropidin + CGA 289268 (determined as fenpropidin × 1.1) were (n = 16): 0.46 mg/kg, 0.54 mg/kg, 0.55 mg/kg, 0.63 mg/kg, 0.63 mg/kg, 0.69 mg/kg, 0.97 mg/kg, 1.3 mg/kg, 1.4 mg/kg, 1.4 mg/kg, 1.4 mg/kg, 1.8 mg/kg, 1.8 mg/kg, 2.3 mg/kg, 2.5 mg/kg, and 4.5 mg/kg.

The meeting estimated a highest residue of 4.5 mg/kg (a.r.), and a median residue of 1.35 mg/kg (a.r.) for fenpropidin in sugar beet tops.

Noting that the registration includes use on fodder beet, the meeting agreed to extrapolate the estimates from sugar beet tops to fodder beet leaves or tops.

Wheat

The critical GAP for wheat and triticale is from Hungary and consists of 2 applications, each at 563 g ai/ha, on a 14-day interval. Applications are to be made between BBCH 29 and BBCH 65, and the PHI is 35 days.

Noting the application window and the PHI listed for the critical GAP, the meeting selected trials approximating the application timing, with allowance to BBCH 69 for the second application, and with harvest occurring at least 35 DALA.

In trials approximating the critical GAP, fenpropidin residues in wheat forage were (n = 4): 0.51 mg/kg, 0.60 mg/kg, 0.87 mg/kg, and 1.8 mg/kg. In the wheat metabolism study where CGA 289268 was observed, residues were approximately 22 percent of the residues of fenpropidin. The meeting estimated a median residue of fenpropidin + CGA 289268 (determined as fenpropidin × 1.22) of 0.897 mg/kg and a highest residue of 2.2 mg/kg.

In trials approximating the critical GAP, fenpropidin residues in wheat straw were (n = 5): 0.26 mg/kg, 0.40 mg/kg, 0.49 mg/kg, 0.77 mg/kg, and 1.2 mg/kg.

For purposes of estimating animal dietary burdens, the meeting noted that CGA 289268 levels in wheat straw were approximately 190 percent of those of fenpropidin. Residues of fenpropidin + CGA 289268 (determined as fenpropidin × 2.9) in wheat straw were (n = 5): 0.75 mg/kg, 1.2 mg/kg, 1.4 mg/kg, 2.2 mg/kg, and 3.5 mg/kg.

Furthermore, the meeting agreed to extrapolate the residue estimates for wheat animal feed commodities to triticale animal feed commodities.

Barley

The critical GAP for barley is from Hungary and consists of 2 applications, each at 563 g ai/ha, on a 14-day interval. Applications are to be made between BBCH 29 and BBCH 65, and the PHI is 35 days.

Noting the application window and the PHI listed for the critical GAP, the meeting selected trials approximating the application timing, with allowance to BBCH 69 for the second application, and with harvest occurring at least 35 DALA.

In trials approximating the critical GAP, fenpropidin in barley forage were (n = 2): 0.23 and 0.51 mg/kg. Data were insufficient to estimate residues in barley forage.

In trials approximating the critical GAP, fenpropidin residues in barley straw were (n = 14): 0.30 mg/kg, 0.45 mg/kg, 0.47 mg/kg, 0.51 mg/kg, 0.55 (2) mg/kg, 0.62 mg/kg, 0.67 mg/kg, 0.74 mg/kg, 0.74 mg/kg, 0.79 mg/kg, 0.82 mg/kg, 1.5 mg/kg, and 2.2 mg/kg.

For purposes of estimating animal dietary burdens, the meeting agreed to apply the factor of 2.9 from wheat straw to barley straw. Residues of fenpropidin + CGA 289268 (determined as fenpropidin × 2.9) in wheat straw were (n = 14): 0.87 mg/kg, 1.3 mg/kg, 1.4 mg/kg, 1.5 mg/kg, 1.6 (2) mg/kg, 1.8 mg/kg, 1.9 mg/kg, 2.1 (2) mg/kg, 2.3 mg/kg, 2.4 mg/kg, 4.4 mg/kg, and 6.4 mg/kg.

Given the similarity in the residue data for wheat straw and barley straw, and that cereal straw may be indistinguishable in commerce, the meeting agreed to combine the data for wheat and barley straw for

estimating residues. Residues of fenpropidin in wheat and barley straw were (n = 19): 0.26 mg/kg, 0.30 mg/kg, 0.40 mg/kg, 0.45 mg/kg, 0.47 mg/kg, 0.49 mg/kg, 0.51 mg/kg, 0.55 (2) mg/kg, 0.62 mg/kg, 0.67 mg/kg, 0.74 (2) mg/kg, 0.77 mg/kg, 0.79 mg/kg, 0.82 mg/kg, 1.2 mg/kg, 1.5 mg/kg, and 2.2 mg/kg.

The OECD MRL calculator provided an estimate of 3 mg/kg (a.r.). Based on a dry matter content of 89 percent, that translates to a maximum residue level of 4 mg/kg (d.w.) for fenpropidin in straw and hay from cereal grain (including pseudocereals) feed products with low water (<20 percent) content (hay, straw).

For estimating animal dietary burdens, residues of fenpropidin + CGA 289268 (determined as fenpropidin × 2.9) in wheat and barley straw were (n = 19): 0.75 mg/kg, 0.87 mg/kg, 1.2 mg/kg, 1.3 mg/kg, 1.4 (2) mg/kg, 1.5 mg/kg, 1.6 (2) mg/kg, 1.8 mg/kg, 1.9 mg/kg, 2.1 (2) mg/kg, 2.2 mg/kg, 2.3 mg/kg, 2.4 mg/kg, 3.5 mg/kg, 4.4 mg/kg, and 6.4 mg/kg.

The meeting estimated a highest residue of 6.4 mg/kg (a.r.) and a median residue of 1.6 mg/kg (a.r.) for cereal grain (including pseudocereals) feed products with low water (<20 percent) content (hay, straw)

Fate of residues during processing

Fenpropidin was shown to be stable to hydrolysis in the radiolabelled high-temperature hydrolysis study. The meeting concluded that no transformation of residues is expected under conditions typical of pasteurization (pH 4, 90 °C, 20 minutes); baking, brewing, and boiling (pH 5, 100 °C, 60 minutes); or sterilization (pH 6, 120 °C, 20 minutes).

Data depicting the effect on residue levels of processing of raw agricultural commodities were provided for grapes, sugar beets, wheat, and barley (Table 5.13.6).

Table 5.13.6 Processing factors and estimated residues

Crop[a]	Commodity	Processing factors		Residue estimates, mg/kg
		Individual	Best estimate	STMR-P/median[a]
Sugar beet Maximum: 0.03 mg/kg STMR: 0.01/0.0126 mg/kg	Dried pulp	3.2, 5.3, 7.5, 8.9	6.4	–/0.081
	Ensiled pulp	0.67, 0.80, 1.3, 1.4	1.05	–/0.013
	Molasses	<0.25, <0.29, <0.40, <0.67	0.25	0.0025/0.0032
	Raw sugar	<0.25, <0.29, <0.40, <0.67	0.25	0.0025
	Refined sugar	<0.25, <0.29, <0.40, <0.67	0.25	0.0025
Wheat Maximum: 0.05 mg/kg STMR: 0.01/0.01 mg/kg	Bran	4.0, 4.1, 4.5, 5.4	4.3	0.043
	Flour	0.16, 0.18, 0.21, 0.23	0.195	0.0020
	Whole-meal flour	1.0, 1.1, 1.1, 1.2	0.11	0.0011
	Whole-grain bread	0.93, 0.97, 1.0, 1.1	0.985	0.0098
	Milled by-products (from middlings)	2.7	2.7	–/0.027
Barley Maximum: 0.15 mg/kg STMR: 0.055/0.055 mg/kg	Malt	0.6, 1.2	0.9	0.050
	Beer	<0.2, <0.5	0.2	0.011

Note:

[a] Where two values are provided, the second value includes residues of CGA 289268 and is for estimation of animal dietary burdens.

Based on Table 5.13.6, the meeting estimated maximum residues levels for fenpropidin in sugar beet dried pulp of 0.2 mg/kg (maximum residue level in roots (0.3 mg/kg) × processing factor (6.4), rounded) and in

wheat bran of 0.3 mg/kg (maximum residue level in grain (0.05 mg/kg) × processing factor (4.3), rounded).

Residues in animal commodities

Farm animal dietary burden

The meeting estimated residues for feed items derived from sugar beet, wheat, triticale, and barley.

The dietary burdens, estimated using the OECD diets listed in Appendix IX of the 2016 edition of the FAO manual, are presented in Annex 5 of the 2024 JMPR Report and summarized in Table 5.13.7.

Table 5.13.7 Estimated maximum and mean dietary burdens of fenpropidin + CGA 289268 to farm animals

Animal	Dietary burden: fenpropidin + CGA 289268, ppm of dry matter diet							
	United States–Canada		European Union		Australia		Japan	
	Max.	Mean	Max.	Mean	Max.	Mean	Max.	Mean
Beef cattle	0.78	0.23	6.1	1.8	7.3	1.8	0.056	0.056
Dairy cattle	0.78	0.23	8.1[a, b]	2.3[c, d]	5.0	1.3	0.068	0.068
Poultry – broiler	0.055	0.050	0.050	0.050	0.023	0.023	0.0078	0.0078
Poultry – layer	0.055	0.055	1.8[e, f]	0.53[g, h]	0.02	0.02	0.0092	0.0092

[a] Highest maximum beef or dairy cattle dietary burden suitable for MRL estimates for mammalian tissues
[b] Highest maximum dairy cattle dietary burden suitable for MRL estimates for mammalian milk
[c] Highest mean beef or dairy cattle dietary burden suitable for STMR estimates for mammalian tissues.
[d] Highest mean dairy cattle dietary burden suitable for STMR estimates for milk.
[e] Highest maximum poultry dietary burden suitable for MRL estimates for poultry tissues.
[f] Highest maximum poultry dietary burden suitable for MRL estimates for poultry eggs.
[g] Highest mean poultry dietary burden suitable for STMR estimates for poultry tissues.
[h] Highest mean poultry dietary burden suitable for STMR estimates for poultry eggs.

Farm animal feeding studies

In the feeding studies submitted to the meeting, analysis was done for residues of fenpropidin, CGA 289267, and CGA 289268. The results for the cattle and poultry feeding studies are summarized in Table 5.13.8 and Table 5.13.9.

The meeting noted that in the cattle feeding study, the three animals within a dose group were slaughtered on consecutive days (day 0, day1, and day 2 post dosing). As there was therefore no true replication within a dose group, the meeting agreed to use the highest residue within each dose group for estimating residues in tissues.

Table 5.13.8 Summary of the cattle feeding study results

Residue	Dose level, ppm	Maximum residue level, mg/kg [fenpropidin equivalents]				
		Milk	Muscle	Fat	Liver	Kidney
Fenpropidin	3	<0.005	<0.01	<0.01	0.028	0.013
	14				0.043	0.018
	29				0.090	0.020
CGA 289267	3	<0.005 [<0.0056]	<0.01 [<0.011]	<0.01 [<0.011]	0.09 [0.10]	0.02 [0.022]
	14	0.018 [0.020]	0.01 [0.011]		0.45 [0.50]	0.09 [0.10]
	29	0.042 [0.047]	0.02 [0.022]		0.63 [0.70]	0.20 [0.22]

Residue	Dose level, ppm	Maximum residue level, mg/kg [fenpropidin equivalents]				
		Milk	Muscle	Fat	Liver	Kidney
CGA 289268	3	<0.005 [<0.0053]	<0.01 [<0.011]	<0.01 [<0.011]	<0.01 [<0.011]	<0.01 [<0.011]
	14				0.019 [0.020]	
	29				0.032 [0.034]	

Table 5.13.9 Summary of the poultry feeding study results

Residue	Dose level, ppm	Maximum/median residue level, mg/kg [fenpropidin equivalents]			
		Egg	Muscle	Skin + fat[a]	Liver
Fenpropidin	0.61	<0.01/<0.01	<0.01/<0.01	<0.01/<0.01	<0.01/<0.01
	1.9				0.01/<0.01
	6.5				0.05/0.04
CGA 289267	0.61	<0.01/<0.01 [<0.011/<0.011]	<0.01/<0.01 [<0.011/<0.011]	<0.01/<0.01 [<0.011/<0.011]	0.03/0.03 [0.033/0.033]
	1.9				0.06/0.06 [0.067/0.067]
	6.5	0.02/0.01	0.03/0.02	0.01/<0.01 [0.011/<0.011]	0.10/0.08 [0.11/0.089
CGA 289268	0.61	<0.01/<0.01 [<0.011/<0.011]	<0.01/<0.01 [<0.011/<0.011]	<0.01/<0.01 [<0.011/<0.011]	<0.01/<0.01 [<0.011/<0.011]
	1.9				
	6.5				

Note:
[a] Residues of all analytes at all does levels were <0.01 mg/kg in poultry fat.

Animal commodity maximum residue levels

The residue definition for compliance with MRLs for animal commodities is the sum of fenpropidin and CGA 289267, expressed as fenpropidin. Residues in animal feeds that would lead to CGA 289267 in animal commodities are fenpropidin and CGA 289268. For estimating residues in animal commodities for deriving maximum residue levels, the meeting considered the dietary burdens based on fenpropidin + CGA 289268 and the sum of fenpropidin and CGA 289267 observed in the feeding studies (Table 5.13.10).

Table 5.13.10 Estimated residues of fenpropidin + CGA 289267 in animal commodities

Fenpropidin feeding study	Feed level (ppm) for milk/egg residues	Residues (mg/kg) in milk/egg	Feed level (ppm) for tissue residues	Fenpropidin + CGA 289267 residues (mg fenpropidin equivalents/kg)			
				Muscle	Liver	Kidney	Fat
MRL beef or dairy cattle							
Feeding study	0	0	3	<0.021	0.128	0.035	<0.021
	3	<0.0106	14	0.021	0.543	0.118	<0.021
Dietary burden and high residue	2.3	<0.008	8.1	<0.021	0.32	0.073	<0.021
STMR beef or dairy cattle							
Feeding study	0	0	0	0	0	0	0
	3	<0.0106	3	<0.021	0.128	0.035	<0.021
Dietary burden and residue estimate	2.3	<0.008	2.3	<0.016	0.098	0.027	<0.016
MRL broiler or layer poultry							
Feeding study	0.61	<0.021	0.61	<0.021	0.043	N/A	<0.021
	1.9	<0.021	1.9	<0.021	0.077	N/A	<0.021
Dietary burden and high residue	1.8	<0.021	1.8	<0.021	0.074	N/A	<0.021
STMR broiler or layer poultry							
Feeding study	0	0	0	0	0	N/A	0
	0.61	<0.021	0.61	<0.021	0.043	N/A	<0.021

Fenpropidin feeding study	Feed level (ppm) for milk/egg residues	Residues (mg/kg) in milk/egg	Feed level (ppm) for tissue residues	Fenpropidin + CGA 289267 residues (mg fenpropidin equivalents/kg)			
				Muscle	Liver	Kidney	Fat
Dietary burden and residue estimate	0.53	<0.018	0.53	<0.018	0.037	N/A	<0.018

Considering the new Codex Classification for animal commodities (General consideration 2.4), the meeting estimated maximum residue levels of 0.02* mg/kg for group of milks, of 0.02 mg/kg for group of muscle (from mammals other than marine mammals) , group of mammalian fats (except milk fats), of group of eggs, group of avian muscle and group of avian fats, of 0.4 mg/kg for group of edible offal (mammalian), and of 0.08 mg/kg for group of avian, edible offal of.

To estimate STMR and HR, the meeting used the residue estimates in Table 5.13.10 for fenpropidin and CGA 289267 and worst-case adjustment factors based on the results of metabolism studies to derive estimates for SYN 515213 (free and conjugated).

For SYN 515213, the ratios of residues (free + conjugated, as fenpropidin) to the sum of fenpropidin + CGA 289267 (expressed as fenpropidin) in goat matrices were 2.0 for liver, 2.3 for kidney, 1.1 for muscle, 1.2 for fat, and 1.1 for milk. Given that SYN 515213 was not observed in the poultry metabolism study in any sample, the meeting agreed to count its contribution to the residues in poultry commodities as zero.

HRs and STMRs estimated for animal commodities are summarized in Table 5.13.11, using fenpropidin equivalents for all residues.

Table 5.13.11 Residue estimates for risk assessment of fenpropidin, CGA 289267 and SYN 515213 in animal commodities

Commodity	HR/STMR residue estimates, mg fenpropidin equivalents/kg		
	Fenpropidin + CGA 289267	SYN 515213 (factor)	Fenpropidin + CGA 289267 + SYN 515213
Milk	0.008	0.0088 (1.1)	0.017
Mammalian muscle	0.021/0.017	0.023/0.019 (1.1)	0.044/0.036
Mammalian fat	0.021/0.016	0.025/0.012 (1.2)	0.046/0.022
Mammalian liver	0.32/0.098	0.64/0.20 (2.0)	0.96/0.30
Mammalian kidney	0.073/0.027	0.17/0.062 (2.3)	0.24/0.089
Eggs	0.021/0.018	NA[a]	0.021/0.018
Poultry muscle	0.021/0.018	NA	0.021/0.018
Poultry fat	0.021/0.018	NA	0.021/0.018
Poultry liver	0.074/0.037	NA	0.074/0.037

Note:
[a] Residue was not observed in the commodity in metabolism studies; therefore, its contribution to the residue estimate was assumed to be zero.

The meeting used a similar approach to estimate residues of SYN 515215, SYN 515216, and SYN 522217 for TTC assessments.

SYN 515215 was not observed in goat or hen muscle, goat or hen fat, or milk, and it was assumed to be zero in those commodities. The ratio for SYN 515215 (free and conjugated, expressed as fenpropidin) to the sum of fenpropidin + CGA 289267 (expressed as fenpropidin) were 1.3 (goat liver), 0.41 (goat kidney),

0.014 (eggs), and 0.059 (hen liver). Based on molecular weights of 221.34 g/mol for SYN 515215 and 273.5 g/mol for fenpropidin, the factors in liver and kidney are 1.05 and 0.33, respectively.

For SYN 515216, the ratios of residue (as fenpropidin) to the sum of fenpropidin + CGA 289267 (expressed as fenpropidin) in goat edible offal were 1.3 for liver and 0.41 for kidney. Based on molecular weights of 221.34 g/mol for SYN 515215 and 273.5 g/mol for fenpropidin, the ratios in liver and kidney are 1.05 and 0.33, respectively. SYN 515216 was not observed in goat muscle, fat, or milk, and it was assumed to be zero.

Ratios of SYN 522217 (as fenpropidin) to the sum of fenpropidin + CGA 289267 (expressed as fenpropidin) in poultry commodities were 0.0098 for muscle, 0.037 for fat, and 0.089 for liver. After correcting for molecular weight (335.4 g SYN 522217/mol; 273.5 g fenpropidin/mol), the ratios are 0.012 for muscle, 0.045 for fat, and 0.11 for liver. The estimated residues are shown in Table 5.13.12.

Table 5.13.12 Residue estimates for risk assessment of SYN 515215, SYN 515216, and SYN 522217 in animal commodities

Commodity	HR/STMR residue estimates, mg/kg			
	Fenpropidin + CGA 289267 (fenpropidin equivalents)	SYN 515215 (factor[a])	SYN 515216 (factor[a])	SYN 522217 (factor[a])
Milk	0.008	–	NA	–
Mammalian muscle	0.021/0.017	–	0.0017/0.0014 (0.083)	–
Mammalian fat	0.021/0.016	–	0.00063/0.00048 (0.030)	–
Mammalian liver	0.32/0.098	0.34/0.103 (1.05)	0.22/0.070 (0.70)	–
Mammalian kidney	0.073/0.027	0.024/0.0089 (0.33)	0.049/0.018 (0.67)	–
Eggs	0.021/0.018	0.00018/0.00015 (0.0085)	0.00013/0.00011 (0.0062)	–
Poultry muscle	0.021/0.018	–	–	0.00025/0.00022 (0.012)
Poultry fat	0.021/0.018	–	0.00067/0.00058 (0.032)	0.00095/0.00081 (0.045)
Poultry liver	0.074/0.037	0.0035/0.0017 (0.047)	0.0055/0.0029 (0.079)	0.0081/0.0041 (0.11)

Notes:

[a] Residue was not observed in the commodity in metabolism studies; therefore, its contribution to the residue estimate was assumed to be zero.

[b] Includes molecular weight correction factors for SYN 515215 (0.81 = 221.3 g/mol SYN 515215 ÷ 273.5 g/mol fenpropidin), SYN 515216 (0.86 = 235.3 g/mol SYN 515216 ÷ 273.5 g/mol fenpropidin), and SYN 522217 (1.23 = 335.4 g/mol SYN 522217 ÷ 273.5 g/mol fenpropidin).

Recommendations

On the basis of data obtained from supervised trials, the meeting concluded that the residue levels listed in Table 5.13.13 and in Annex 1 are suitable for establishing maximum residue limits and for use in dietary risk assessments. Table 5.13.14 shows the residues used for animal dietary burden calculation.

Definition of the residue for compliance with the MRL and for dietary risk assessment for plant commodities: Fenpropidin.

Definition of the residue for compliance with the MRL for animal commodities: Sum of fenpropidin and CGA 289267 {2-methyl-2-[4-(2-methyl-3-piperidin-1-yl-propyl)-phenyl]propionic acid}, expressed as fenpropidin.

Definition of the residue for dietary risk assessment for animal commodities: Sum of fenpropidin, CGA 289267 {2-methyl-2-[4-(2-methyl-3-piperidin-1-yl-propyl)-phenyl]propionic acid}, and SYN 515213 {3-hydroxy-2-methyl-2-[4-(2-methyl-3-piperidin-1-yl-propyl)-phenyl]-propionic acid} (free and conjugated), expressed as fenpropidin.

The residue is not fat-soluble.

Table 5.13.13 Residue levels suitable for establishing maximum residue limits and for dietary intake assessments

CCN	Commodity	Recommended maximum residue level, mg/kg		STMR/STMR-P	HR/HR-P
		New	Previous		
FI 0327	Banana	9	–	0.097 (pulp)	1.2 (pulp)
GC 0640	Barley	0.15	–	0.05	–
–	Barley, malt	–	–	0.05	–
–	Barley, beer	_	–	0.011	–
AM 3573	Fodder beet, leaves or tops	30 (d.w.)	–	–	–
AM 1051	Fodder beet, roots	0.03	–	_	–
PO 0111	Group of avian, edible offal of	0.08	–	0.037	0.074
PM 0110	Group of avian muscle	0.02	–	0.018	0.021
PF 0111	Group of avian fats	0.02	–	0.018	0.021
MO 0105	Group of edible offal (mammalian)	0.4	–	0.3	0.96
PE 0112	Group of eggs	0.02	–	0.089	0.24
MF 0100	Group of mammalian fats (except milk fats)	0.02	–	0.022	0.046
ML 0106	Group of milks	0.02(*)	–	0.017	–
MM 0095	Group of muscle (from mammals other than marine mammals)	0.02	–	0.036	0.044
AS 3304	Subgroup of cereal grains (including pseudocereals) feed products with low water (<20%) content (hay and/or straw)	4 (d.w.)	–	–	–
VR 0596	Sugar beet	0.03	–	0.01 (0.0126 median)	–
DM 3523	Sugar beet, raw/refined sugar	–	–	0.0025	–
AV 0596	Sugar beet, leaves or tops (dry)	30 (d.w.)	–	–	–
AM 3599	Sugar beet, dried pulp	0.2	–	–	–
GC 0653	Triticale	0.05	–	0.01	–
GC 0654	Wheat	0.05	–	0.01	–
CF 0654	Wheat bran, processed	0.3	–	0.043	–
CF 1211	Wheat, flour	–	–	0.002	–
–	Wheat, whole-meal flour	–	–	0.0011	–
–	Wheat, whole-grain bread	–	–	0.0098	–

Note: d.w. = dry weight.

Table 5.13.14 Residues of fenpropidin for estimation of animal dietary burden

CCN	Commodity	Median residue (mg/kg)	Highest residue (mg/kg)
AM 3573	Fodder beet, leaves or tops	1.35 (a.r.)	4.5 (a.r.)

AM 1051	Fodder beet, roots	0.0126	0.02
AS 3304	Subgroup of cereal grains (including pseudocereals) feed products with low water (<20%) content (hay and/or straw)	1.6 (a.r.)	6.4 (a.r.)
VR 0596	Sugar beet	0.0126	0.02
AM 3599	Sugar beet, dried pulp	0.081	
AV 0596	Sugar beet, leaves or tops (dry)	1.35 (a.r.)	4.5 (a.r.)
DM 0596	Sugar beet, molasses	0.0032	–
CF 3514	Wheat, milled by-products	0.027	–

Note: a.r. = as received.

Dietary risk assessment

Long-term dietary exposure

The ADI for fenpropidin is 0–0.02 mg/kg bw. The International Estimated Daily Intakes (IEDIs) for fenpropidin were estimated for the 17 GEMS/Food Consumption Cluster Diets using the STMR or STMRP values estimated by the JMPR. The results are shown in Annex 3 of the 2024 JMPR Report.

The IEDIs ranged from 1 to 4 percent of the maximum ADI. The meeting concluded that long-term dietary exposure to residues of fenpropidin from uses considered by the JMPR is unlikely to present a public health concern.

Acute dietary exposure

The ARfD for women of child-bearing age for fenpropidin is 0.03 mg/kg bw. The International Estimate of Short-term Intakes (IESTIs) for fenpropidin were calculated for the food commodities and their processed commodities for which HRs/HR-Ps or STMRs/STMR-Ps were estimated by the present meeting and for which consumption data were available. The results are shown in Annex 4.

The IESTIs were 0 to 40 percent of the ARfD for women of child-bearing age. The meeting concluded that acute dietary exposure to residues of fenpropidin from uses considered by the present meeting is unlikely to present a public health concern.

Threshold of toxicological concern

The meeting estimated long-term and acute dietary exposure for the fenpropidin metabolites for which it was concluded that assessment could be done by TTC as Cramer class III compounds: SYN 515215, SYN 515216, and SYN 522217. The maximum long-term and acute dietary exposure estimates were as follows:

- SYN 515215: 0.026 µg/kg bw per day (long-term) and 3.2 µg/kg bw (acute);
- SYN 515216: 0.021 µg/kg bw per day (long-term) and 2.1 µg/kg bw (acute); and
- SYN 522217: 0.00097 µg/kg bw per day (long-term) and 0.053 µg/kg bw (acute).

The meeting noted that the exposure estimates are less than the TTC reference levels of 1.5 µg/kg bw per day (long-term) and 5 µg/kg bw per day (acute) and concluded that exposures to these residues are

unlikely to present a public health concern. This conclusion should be revisited if additional uses of fenpropidin are evaluated by future meetings.

Furthermore, the meeting recognized that the exposure estimates for SYN 515215 were greater than those for SYN 515216 or SYN 522217. Since all these residues were observed only in animal commodities and their relative exposures will remain unchanged regardless of changes to animal dietary burdens (SYN 515215 > SYN 515216 > SYN 522217), as long as SYN 515215 is below the TTC threshold value, separate assessments for SYN 515216 and SYN 522217 are not necessary.

5.14 Fenpyroximate (193) (R)

5.14.1 Residue and analytical aspects

Fenpyroximate is the ISO–approved common name for tert-butyl (E)-alpha-(1,3)-dimethyl-5-phenoxy-1H-pyrazol-4-ylmethyleneamino-oxy)-para-toluate (IUPAC), CAS numbers 134098-61-6 (E isomer) and 111812-58-9 (unspecified stereochemistry). Fenpyroximate is a phenoxypyrazole acaricide/insecticide that acts by inhibition of mitochondrial NADH-coenzyme Q reductase of the electron transport chain. It controls all motile stages of mites and other insects by inhibiting cellular respiration in the mitochondrion of cells which results in rapid cessation of all biological activities including feeding and reproduction.

Fenpyroximate was first evaluated by the JMPR in 1995 for toxicology and residues and was scheduled for periodic re-evaluation of toxicology and residues by the 2017 JMPR. The 2018 JMPR re-assessed the lactating goat metabolism studies, the residue definitions for animal commodities and the MRLs for animal commodities. The 2021 JMPR assessed additional toxicity and metabolite information and re-assessed the residue definitions for animal commodities. The 2021 JMPR withdrew the previous ADI and ARfD and established a new ADI of 0–0.005 mg/kg bw and a new ARfD of 0.005 mg/kg bw. The 2021 JMPR concluded that the ADI and ARfD can be applied to metabolites M-1, M-3, M-5, M-21, M-22, Fen-OH and R-UL-1.

The residue definition for compliance with MRLs for plant commodities is: fenpyroximate. For dietary risk assessment for plant commodities is the sum of fenpyroximate and tert-butyl (Z)-α-(1,3-dimethyl-5-phenoxypyrazol-4-ylmethylene-amino-oxy)-p-toluate (its Z-isomer M-1), expressed as fenpyroximate.

Residue definition for compliance with the MRL for animal commodities is the sum of fenpyroximate and (E)-4-[(1,3-dimethyl-5-phenoxypyrazol-4-yl) methyleneaminooxymethyl] benzoic acid (M-3), expressed as fenpyroximate. For dietary risk assessment is: sum of fenpyroximate, 2-hydroxymethyl-2-propyl (E)-4-[(1,3-dimethyl-5-phenoxypyrazol-4-yl)- methylenaminooxymethyl]benzoate (Fen-OH), 2-hydroxy-2-methylpropyl (E)-α-(1,3-dimethyl-5- phenoxypyrazol-4-ylmethyleneamino-oxy)-p-toluate (R-UL-1) and (E)-4-[(1,3-dimethyl-5- phenoxypyrazol-4-yl)methyleneaminooxymethyl]benzoic acid (M-3), expressed as fenpyroximate.

The residue is fat-soluble.

The 2021 JMPR identified an exceedance of the ARfD for several commodities: the subgroup of mandarins, the subgroup of oranges, apple, pear, the subgroup of cherries, apricot, peach, the subgroup of cane berries, the subgroup of bushberries, the subgroup of cucumbers and summer squashes, melons, watermelon, tomato, cherry tomato, the subgroup of eggplants, the subgroup of beans with pods and the subgroup of stems and petioles.

Fenpyroximate was scheduled at the Codex Alimentarius Commission for evaluation of alternative GAP uses by the 2024 JMPR. The meeting received alternative GAP use patterns on citrus fruit, apple, cucumber, summer squash, tomato, eggplant and beans with pods. No new residue trials were submitted.

Results of supervised residue trials on crops

No new study reports were submitted on citrus fruit, apple, cucumber, summer squash, tomato, eggplant and beans with pods and thus the information available from previous JMPR meetings was re-assessed against the newly submitted GAP information. Storage periods of the samples were covered by the storage stability studies assessed by the 2021 JMPR and analytical methods used in the trials were considered valid by the 2017 and 2021 JMPRs. Total residues were calculated as the sum of fenpyroximate and M-1 concentrations, expressed as fenpyroximate, and used to estimate STMR, HR and median residues. Residues below the LOQ were taken as the numeric value of the LOQ. When both fenpyroximate and M-1 were below the LOQ, the total residue was taken as the sum of LOQs of each analyte.

Group of citrus fruit

The 2021 JMPR recommended a maximum residue level of 1 mg/kg for the subgroup of lemons and limes and for the subgroup of mandarins, 0.7 mg/kg for the subgroup of oranges and 0.5 mg/kg for the subgroup of pummelo and grapefruits based on the US GAP for the citrus fruit group (two foliar applications at 230 g ai/ha with a retreatment interval of 14 days and a PHI of 3 days). This GAP gave rise to residues that exceeded the ARfD (140 percent for peeled mandarin consumption by Chinese children, 130 percent for peeled orange consumption by Australian children).

An alternative GAP from Spain was submitted for citrus fruit consisting of one foliar application at 102 g ai/ha with a PHI of 14 days, and was considered by the present meeting for mandarins and oranges only.

Eight trials in field-grown mandarins conducted in Greece, Italy and Spain with a single foliar application at 98–108 g ai/ha and a PHI of 14 days approximated this alternative GAP.

Residues of fenpyroximate in mandarin whole fruit in rank order (n = 8) were: <0.01 mg/kg, 0.01 (2) mg/kg, 0.03 mg/kg, 0.05 (2) mg/kg, 0.06 mg/kg and 0.09 mg/kg.

Residues of fenpyroximate in mandarin peel (n = 8) were: <0.01 mg/kg, 0.02 (2) mg/kg, 0.15 mg/kg, 0.19 mg/kg, 0.20 mg/kg, 0.22 mg/kg, 0.29 mg/kg.

Total residues in mandarin whole fruit in rank order (n = 8) were: <0.02 (3) mg/kg, 0.04 mg/kg, 0.06 (2) mg/kg, 0.07 mg/kg and 0.10 mg/kg.

Total residues in mandarin pulp in rank order (n = 8) were: <0.02 (7) mg/kg and 0.03 mg/kg.

Total residues in mandarin peel in rank order (n = 8) were: <0.02 mg/kg, 0.03 (2) mg/kg, 0.16 mg/kg, 0.21 mg/kg, 0.22 mg/kg, 0.23 mg/kg and 0.30 mg/kg. The meeting estimated a maximum residue level of 0.15 mg/kg for fenpyroximate for the subgroup of mandarins to replace the previous recommendation of 1 mg/kg.

The meeting estimated a maximum residue level of 0.6 mg/kg for fenpyroximate for Satsuma mandarin peel (fresh).

The meeting estimated a median residue of 0.05 mg/kg eq and highest residue of 0.10 mg/kg eq for the subgroup of mandarins whole fruit for the purpose of derivation of processing factors.

The meeting estimated an STMR of 0.02 mg/kg eq and an HR of 0.03 mg/kg for the subgroup of mandarin pulp.

The meeting estimated an STMR of 0.185 mg/kg eq and an HR of 0.30 mg/kg for Satsuma mandarin peel. Eight trials in field-grown oranges conducted in Greece, Italy and Spain with a single foliar application at 94–106 g ai/ha and a PHI of 14 days approximated the Spanish GAP.

Residues of fenpyroximate in orange whole fruit in rank order (n = 8) were: 0.02 mg/kg, 0.03 (2) mg/kg, 0.04 mg/kg, 0.05 (2) mg/kg, 0.06 (2) mg/kg.

Residues of fenpyroximate in orange peel in rank order (n = 8) were: 0.05 mg/kg, 0.09 mg/kg, 0.11 mg/kg, 0.12 mg/kg, 0.17 (2) mg/kg, 0.20 mg/kg, 0.21 mg/kg.

Total residues in orange whole fruit in rank order (n = 8) were: 0.03 mg/kg, 0.04 (2) mg/kg, 0.05 mg/kg, 0.06(2) mg/kg, 0.07 (2) mg/kg.

Total residues in orange pulp in rank order (n = 8) were: <0.02 (8) mg/kg.

Total residues in orange peel in rank order (n = 8) were: 0.06 mg/kg, 0.10 mg/kg, 0.12 mg/kg, 0.13 mg/kg, 0.18 (2) mg/kg, 0.21 mg/kg and 0.22 mg/kg.

The meeting estimated a maximum residue level of 0.15 mg/kg for fenpyroximate for the subgroup of oranges to replace the previous recommendation of 0.7 mg/kg.

The meeting estimated a maximum residue level of 0.5 mg/kg for fenpyroximate for orange peel (fresh). The meeting estimated a median residue of 0.055 mg/kg and highest residue of 0.07 mg/kg for the subgroup of oranges whole fruit for the purpose of derivation of processing factors.

The meeting estimated an STMR of 0.02 mg/kg eq and an HR of 0.02 mg/kg for the subgroup of oranges pulp.

The meeting estimated an STMR of 0.155 mg/kg and an HR of 0.22 mg/kg for orange peel.

Apple

The 2017 JMPR recommended a maximum residue level of 0.2 mg/kg for apples based on a GAP from Belgium (one foliar application at 76.5 g ai/ha with a PHI of 7 days). The 2021 JMPR noted that this GAP gave rise to residues that exceeded the ARfD (170 percent for apple consumption by children in China).

An alternative GAP from Slovakia was submitted to the present meeting for apple consisting of one foliar application at 64 g ai/ha with a PHI of 21 days. Seventeen trials in apple conducted in Belgium, France, Germany, Greece, Italy and Spain with a single foliar application at 77–126 g ai/ha and a PHI of 20–21 days could be matched to this alternative GAP using the proportionality principle. Unscaled residues of fenpyroximate in apple in rank order (n = 17) were: 0.03 (4) mg/kg, 0.04 (3) mg/kg, 0.05 (4) mg/kg, 0.07 mg/kg (2), 0.08 (2) mg/kg, 0.10 mg/kg and 0.12 mg/kg.

Scaled residues of fenpyroximate in apple (scaled using factors ranging from 0.51–0.83) in rank order (n = 17) were: 0.016 mg/kg, 0.017 (2) mg/kg, 0.023 (3) mg/kg, 0.025 mg/kg, 0.026 mg/kg, 0.028 mg/kg, 0.029 (2) mg/kg, 0.036 mg/kg, 0.039 mg/kg, 0.041 mg/kg, 0.057 (2) mg/kg and 0.066 mg/kg.

Scaled total residues of fenpyroximate and M-1 in apple in rank order (n = 17) were: 0.022 (2) mg/kg, 0.023 mg/kg, 0.029 mg/kg, 0.029 (2) mg/kg, 0.032 mg/kg, 0.033 (2) mg/kg, 0.035 (2) mg/kg, 0.041 mg/kg, 0.044 mg/kg, 0.046 mg/kg, 0.063 mg/kg, 0.071 mg/kg and 0.072 mg/kg. The meeting estimated a maximum residue level of 0.1 mg/kg for fenpyroximate to replace the previous recommendation of 0.2 mg/kg for apple. The meeting also estimated an STMR of 0.033 mg/kg and an HR of 0.072 mg/kg for apple.

Subgroup of cucumbers and summer squashes

The 2021 JMPR recommended a maximum residue level of 0.3 mg/kg for the subgroup of cucumbers and summer squashes based on the US GAP (of two foliar applications at 120 g ai/ha with a retreatment interval of 14 days and a PHI of 1 day). This GAP gave rise to residues that exceeded the ARfD (110 percent for consumption of bitter melon by the Chinese general population, 200 percent for consumption of chayote by Chinese children, 190 percent for consumption of cucumbers by Czech children, 110 percent for consumption of angled loofah by Thai children, 170 percent for consumption of smooth loofah by Chinese children, 110 percent for consumption of snake gourd by Thai children, 150 percent for consumption of summer squashes by US children).

An alternative GAP from Japan was submitted for cucumbers (greenhouse and field-grown) consisting of three foliar applications at 4.0 g ai/hL, a retreatment interval of 7 days and a PHI of 1 day. Four supervised trials in greenhouse-grown cucumber were conducted in Japan according to this GAP.

Residues of fenpyroximate in greenhouse-grown cucumber in rank order (n = 4) were: 0.076 mg/kg, 0.088 mg/kg, 0.11 mg/kg and 0.18 mg/kg. Total residues in rank order (n = 4) were: 0.081 mg/kg, 0.094 mg/kg, 0.12 mg/kg and 0.19 mg/kg.

As four trials are insufficient for a major crop, the meeting was unable to estimate a maximum residue level for cucumber based on the alternative GAP from Japan.

An alternative GAP from Germany was submitted for greenhouse- and field-grown cucumber, button squash, summer squash and pumpkin varieties with edible peel. The use on greenhouse-grown cucumber, button squash, summer squash and pumpkin varieties with edible peel represented the critical GAP from Germany consisting of a single foliar application at 46–92 g ai/ha, depending on the height of the plants, and a PHI of 3 days. The calculated spray concentration was 7.7 g ai/hL for each plant height, but this spray concentration was not mentioned on the label. Since trial information did not include the height of the plants and none of the trials approximating the maximum dose rate of 92 g ai/ha matched with the calculated spray concentration of 7.7 g ai/hL, none of the trials could be matched to the German critical GAP. An updated US GAP for field grown squash/cucumber subgroup is two foliar applications at 118 g ai/ha with a retreatment interval of 14 days and a PHI of 1 day, which is equal to the GAP presented to the 2021 meeting. The meeting noted that the highest residue of 0.17 mg/kg in field-grown summer squash from trials selected by the 2021 JMPR already exceeded the ARfD (110 percent for summer squash for US children) and did not consider this GAP any further.

Another alternative GAP was available from Spain for greenhouse-grown cucumbers and summer squashes consisting of a single foliar application at 102 g ai/ha and a PHI of 7 days. Ten supervised trials in greenhouse-grown cucumber conducted in France, Italy, Japan, Spain and the United Kingdom of Great

Britain and Northern Ireland with a single foliar application at 90–110 g ai//ha and a PHI of 7 days approximated this GAP. Trials on greenhouse-grown summer squash are not available.

Residues of fenpyroximate in greenhouse-grown cucumber in rank order (n = 10) were: 0.006 mg/kg, <0.01 (4) mg/kg, 0.01 (2) mg/kg, and 0.02 (3) mg/kg.

Total residues in rank order (n = 10) were: 0.012 mg/kg, <0.02 (4) mg/kg, 0.02 (2) mg/kg and 0.03 (3) mg/kg.

Based on the alternative GAP from Spain, the meeting estimated a maximum residue level of 0.04 mg/kg for fenpyroximate in cucumber and withdrew the previous recommendation of 0.3 mg/kg for the subgroup of cucumbers and summer squashes. The meeting also estimated a STMR of 0.02 mg/kg and an HR of 0.03 mg/kg in/on cucumber.

Subgroup of tomatoes and subgroup of eggplants

The 2017 JMPR recommended a maximum residue level of 0.3 mg/kg for cherry tomato and tomato based on the US GAP and agreed to extrapolate to the subgroup of eggplants. The 2018 JMPR reconsidered these maximum residue levels (as response to specific concerns) and agreed to extrapolate the recommendation to the subgroup of tomatoes.

The US GAP for the fruiting vegetables group 8–10 (including tomatoes and eggplants) at that time was two foliar applications at a rate of 117 g ai/ha with a 14-day retreatment interval and a PHI of 1 day. The 2021 JMPR meeting noted that this GAP gave rise to residues that exceeded the ARfD (130 percent for consumption of tomatoes by Chinese children, 160 percent for consumption of eggplants by Chinese children).

An alternative GAP from Spain was submitted for greenhouse- and field-grown tomatoes and eggplants and greenhouse-grown peppers, representing the critical GAP for Spain, consisting of a single foliar application at 102 g ai/ha and a PHI of 7 days. Eight supervised trials in greenhouse-grown tomatoes conducted in France, Italy, Spain and the United Kingdom of Great Britain and Northern Ireland with a single foliar application at 95–120 g ai/ha and a PHI of 7 days approximated this GAP.

Residues of fenpyroximate in greenhouse-grown tomatoes in rank order (n = 8) were: 0.03 (3) mg/kg, 0.04 mg/kg, 0.06 mg/kg, 0.07 mg/kg, 0.09 mg/kg, 0.11 mg/kg (in cherry tomato).

Total residues in rank order (n = 8) were: 0.04 (3) mg/kg, 0.05 mg/kg, 0.07 mg/kg, 0.08 mg/kg, 0.10 mg/kg, 0.12 mg/kg. The meeting estimated a maximum residue level of 0.2 mg/kg for fenpyroximate in tomato and cherry tomato to replace the previous recommendation of 0.3 mg/kg for the subgroup of tomatoes. The meeting also estimated an STMR of 0.06 mg/kg eq and an HR of 0.12 mg/kg for tomato and cherry tomato.

The meeting noted that the alternative Spanish GAP included eggplants and peppers. Since no supervised field trials on eggplants were submitted, the meeting explored the possibility to extrapolate residues in peppers to eggplants.

The 2017 JMPR made a recommendation of 0.2 mg/kg for the subgroup of peppers (except martynia, okra and roselle) based on the critical US GAP on pepper (included in US crop group 8–10) using two

applications at 117 g ai/ha with a PHI of 1 day. Since this GAP differs from the alternative Spanish GAP on greenhouse-grown eggplants and peppers, the meeting was unable to extrapolate the pepper recommendations to eggplant.

The meeting further noted that four supervised trials on greenhouse-grown peppers, conducted in Japan, could be matched to the alternative Spanish GAP for greenhouse grown tomatoes, eggplants and peppers using the proportionality approach. However since four trials are insufficient to derive a maximum residue level for a major crop like eggplant, the meeting did not consider these trials any further.

The meeting therefore confirms its previous recommendation of 0.3 mg/kg for the subgroup of eggplants with an STMR of 0.1 mg/kg and an HR of 0.17 mg/kg and notes that this GAP gives rise to exceedance of the ARfD (160 percent for consumption of eggplants by Chinese children).

Subgroup of beans with pods

The 2017 JMPR recommended a maximum residue level, STMR and HR of 0.5, 0.075 and 0.42 mg/kg, respectively, for the subgroup of beans with pods, based on the GAP from Spain (single foliar application at 102 g ai/ha and a PHI of 7 days). The 2021 JMPR meeting noted that this GAP gave rise to residues that exceeded the ARfD (110 percent for children in Canada).

An alternative US GAP was submitted for succulent beans consisting of two foliar applications at 118 g ai/ha, a retreatment interval of 14 days and a PHI of 1 day. This GAP was already evaluated by the 2017 JMPR, but the trials were not selected as the less critical GAP from Spain resulted in higher residues in greenhouse-grown beans with pods. The current meeting confirms its 2017 decision and did not consider this GAP any further.

Fate of residues during processing

Based on the processing studies submitted to the 2017 JMPR, the meeting estimated new STMR-Ps and HR-Ps based on the alternative GAPs for mandarin, orange, apple and tomato (Table 5.14.1). Processing factors for fenpyroximate used for maximum residue level estimation are shown in Table 5.14.2.

Table 5.14.1 Processing factors, STMR-Ps and HR-Ps for the sum of fenpyroximate and M-1, expressed as fenpyroximate, and used for dietary risk assessment and livestock dietary burden calculations for commodities considered at this meeting

Raw commodity [STMR] [HR]	Processed commodity	Individual processing factors	Mean or best estimate processing factor	STMR-P = STMR_RAC × PF (mg/kg)	HR-P = HR_RAC × PF (mg/kg)
Mandarins [STMR 0.05 mg/kg] Oranges [STMR 0.055 mg/kg]	Fresh, pasteurized or canned citrus juice	<0.037, <0.043, 0.062, 0.099, <0.12, <0.22, <0.24	0.099	0.05 × 0.099 = 0.0050 0.055 × 0.099 = 0.0054	–
	Canned citrus marmalade	0.037, 0.062	0.0495	0.05 × 0.0495 = 0.0025 0.055 × 0.0495 = 0.0027	–

Raw commodity [STMR] [HR]	Processed commodity	Individual processing factors	Mean or best estimate processing factor	STMR-P = STMR_RAC × PF (mg/kg)	HR-P = HR_RAC × PF (mg/kg)
	Citrus oil from dried citrus peel	138, 176	157	0.05 × 157 = 7.8 0.055 × 157 = 8.6	–
	Citrus dried pulp	3.6, 5.0, 8.2	5.0	0.05 × 5.0 = 0.25 0.055 × 5.0 = 0.28	–
Apple [STMR 0.033 mg/kg] [HR 0.072 mg/kg]	Apple wet pomace	2.2, 5.5	3.85	0.033 × 3.85 = 0.13	–
	Apple dry pomace	5.1, 12	8.55	0.03 × 8.55 = 2.3	–
	Apple pasteurized juice	0.14, 0.18	0.16	0.033 × 0.16 = 0.0053	–
	Apple pasteurized sauce	0.18, 0.18	0.18	0.033 × 0.18 = 0.0059	–
	Apple dried	3.8, 5.0	4.4	0.033 × 4.4 = 0.15	0.072 × 4.4= 0.32
Tomato [STMR 0.06 mg/kg] [HR 0.12 mg/kg]	Tomato juice	0.42, 0.85	0.635	0.06 × 0.635 = 0.038	–
	Tomato canned	0.25, 0.54	0.395	0.06 × 0.395 = 0.024	0.12 × 0.395 = 0.047
	Tomato puree	0.67, 0.76	0.715	0.06 × 0.715 = 0.043	–

Table 5.14.2 Processing factors for fenpyroximate (parent only) used for maximum residue level estimation

Raw commodity [MRL]	Processed commodity	Individual processing factors	Mean or best estimate processing factor	Maximum residue level estimate
Mandarins Oranges [MRL 0.15 mg/kg]	Citrus oil from dried citrus peel	137, 175	156	0.15 × 156 = 25 mg/kg
	Citrus dried pulp	3.5, 4.8, 7.4	4.8	0.15 × 4.8 × 100/90 = 0.8 mg/kg (dm)
Apple [MRL 0.1 mg/kg]	Apple dry pomace	5.1, 12	8.55	0.1 × 8.55 × 100/90 = 1.0 mg/kg (dm)
	Apple dried	3.8, 5.0	4.4	0.1 × 4.4 = 0.5 mg/kg as received

As residues in citrus oil, citrus dried pulp and dried apple were higher than residues in the RAC, the meeting decided to estimate maximum residue levels for these commodities. Because feed commodities need to be expressed as dry matter, the maximum residue level for citrus dried pulp and apple dry pomace on as received basis was multiplied by 100/90 assuming a dry matter content of 90 percent.

Using the estimated maximum residue level of 0.15 mg/kg for the subgroup of mandarins and the subgroup of oranges and applying the processing factor of 156 for citrus oil, and 4.8 (and multiplied by 100/90) for citrus dried pulp, the meeting estimated a maximum residue level of 25 mg/kg for fenpyroximate in the subgroup of mandarins oil and the subgroup of oranges oil and of 0.8 mg/kg (as dry matter) for fenpyroximate in the subgroup of mandarins dried pulp and the subgroup of oranges dried pulp, respectively, to replace the previous recommendations of 150 mg/kg for mandarin oil, 100 mg/kg for orange oil and 4 mg/kg (dm) for orange dried pulp.

Using the estimated maximum residue level of 0.1 mg/kg for apple and applying a processing factor of 4.4, the meeting estimated a maximum residue level of 0.5 mg/kg (as received) for apple, dried to replace the previous recommendation of 1 mg/kg.

Using the estimated maximum residue level of 0.1 mg/kg for apple and applying a processing factor of 8.55 (and multiplied by 100/90), the meeting estimated a maximum residue level of 1 mg/kg (dm) for apple, dry pomace.

Residues in animal commodities

The meeting noted that the alternative GAP uses did not result in a change of dietary burdens of livestock. Considering the new Codex Classification for animal commodities (General consideration 2.4) the meeting withdraws its previous recommendation of 0.2 mg/kg for Meat (from mammals other than marine mammals) from JMPR 2021, since it was based on fat and replaced it by a maximum residue level of 0.05 mg/kg for the group of muscle (from mammals other than marine mammals).

Considering the new Codex Classification for animal commodities the meeting also withdraws its previous recommendations for Edible offal (mammalian), Mammalian fats (except milk fats) and Milks and to replace them by Group of edible offal (mammalian), Group of mammalian fats (except milk fats), Group of milks without adjustment of the values.

Recommendations

On the basis of the data obtained from supervised trials, the meeting concluded that the residue levels listed in Table 5.14.3 and Annex 1 are suitable for establishing maximum residue limits and for exposure assessments Definition of the residue for compliance with the MRL for plant commodities: fenpyroximate.

Definition of the residue for dietary risk assessment for plant commodities and for livestock dietary burden calculations: sum of parent fenpyroximate and tert-butyl (Z)-α-(1,3-dimethyl-5-phenoxypyrazol-4-ylmethyleneamino-oxy)-p-toluate (its Z-isomer M-1), expressed as fenpyroximate.

Definition of the residue for compliance with the MRL for animal commodities: sum of fenpyroximate and (E)-4-[(1,3-dimethyl-5-phenoxypyrazol-4-yl)methyleneaminooxymethyl]benzoic acid (M-3), expressed as fenpyroximate.

Definition of the residue for dietary risk assessment for animal commodities): sum of fenpyroximate, 2-hydroxymethyl-2-propyl (E)-4-[(1,3-dimethyl-5-phenoxypyrazol-4-yl)- methylenaminooxymethyl]benzoate (Fen-OH), 2-hydroxy-2-methylpropyl (E)-α-(1,3-dimethyl-5-phenoxypyrazol-4-ylmethyleneamino-oxy)-p-

toluate (R-UL-1) and (E)-4-[(1,3-dimethyl-5-phenoxypyrazol-4-yl)methyleneaminooxymethyl]benzoic acid (M-3), expressed as fenpyroximate.

The residue is fat-soluble.

Table 5.14.3 Residue levels suitable for establishing maximum residue limits and for exposure assessments

CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P mg/kg eq	HR or HR-P mg/kg eq
		New	Previous		
FP 0226	Apple	0.1	0.2	0.033	0.072
DF 0226	Apple, dried	0.5	1	0.15	0.32
JF 0226	Apple, juice	–	–	0.0053	–
–	Apple wet pomace	–	–	0.13 (median)	–
AB 0226	Apple pomace, dried	1 (dm)	–	2.3	–
–	Apple pasteurized sauce	–	–	0.0059	–
VO 2700	Cherry tomato	0.2	–	0.06	0.12
VC 0424	Cucumber	0.04	–	0.02	0.03
MO 0105	Edible offal (mammalian)	W	0.8	–	–
MO 0105	Group of edible offal (mammalian)	0.8[a]	–	0.40	0.77
MF 0100	Group of mammalian fats (except milk fats)	0.2	–	0.063	0.13
ML 0106	Group of milks	0.01	–	0.005	–
MM 0095	Group of muscle (from mammals other than marine mammals)	0.05	–	0.015	0.041
MF 0100	Mammalian fats	W	0.2	–	–
MM 0095	Mammalian meat	W	0.2 (fat)	–	–
AB 0003	Mandarins, dried pulp	0.8 (dm)	–	0.25	–
OR 0003	Mandarins, oil edible	25	150	7.8	–
ML 0106	Milks	W	0.01	–	–
AB 0004	Oranges, dried pulp	0.8 (dm)	4 (dm)	0.28	–
JF 0004	Orange, juice	–	–	0.0054	–
OR 0004	Orange oil, edible	25	100	8.6	–
HS 3382	Orange, peel (fresh)	0.5	–	0.155	0.22
HS 3383	Satsuma mandarin, peel (fresh)	0.6	–	0.185	0.30
VC 2039	Subgroup of cucumbers and summer squashes	W	0.3	–	–
FC 0003	Subgroup of mandarins (including mandarin-like hybrids)	0.15	1	0.05 (RAC) 0.02 (pulp)	0.10 (RAC) 0.03 (pulp)
–	Subgroup of mandarins, juice	–	–	0.0050	–
–	Subgroup of mandarins, marmalade	–	–	0.0025	–
–	Subgroup of oranges, marmalade	–	–	0.0027	–
FC 0004	Subgroup of oranges, sweet, sour (including orange-like hybrids)	0.15	–	0.055 (RAC) 0.02 (pulp)	0.07 (RAC) 0.02 (pulp)
VO 2045	Subgroup of tomatoes	W	0.3	–	–
VO 0448	Tomato	0.2	–	0.06	0.12
–	Tomato canned	–	–	0.024	0.047
JF 0448	Tomato, juice	–	–	0.038	–
DM 0448	Tomato puree	–	–	0.043	–

Note:

[a] May present a public health concern.

Dietary risk assessment

Long-term dietary exposure

The ADI for fenpyroximate is 0–0.005 mg/kg bw. The International Estimated Daily Intakes (IEDIs) for fenpyroximate were estimated for the 17 GEMS/Food Consumption Cluster Diets using the STMR or STMR-P values estimated by the JMPR. The results are shown in Annex 3 of the 2024 JMPR Report.

The IEDIs ranged from three to twenty percent of the maximum ADI. The meeting concluded that long-term dietary exposure to residues of fenpyroximate from uses considered by the JMPR is unlikely to present a public health concern.

Acute dietary exposure

The ARfD for fenpyroximate is 0.005 mg/kg bw. The International Estimate of Short-term Intakes (IESTIs) for fenpyroximate were calculated for the food commodities and their processed commodities for which HRs/HR-Ps or STMRs/STMR-Ps were estimated by the present meeting and for which consumption data were available. The results are shown in Annex 4.

The maximum IESTIs for children and general population ranged from 10 to 90 percent and from 20 to 100 percent of the ARfD, respectively, except for group of edible offal, mammalian (140 percent ARfD for general population and 120 percent ARfD for children), for beans with pods for children (110 percent ARfD), and for egg plants for children (160 percent). The meeting concluded that acute dietary exposure to residues of fenpyroximate from uses where the ARfD is exceeded may present a public health concern.

The meeting notes, that no alternative GAPs were provided for pear, the subgroup of cherries, apricot, peach, the subgroup of cane berries, the subgroup of bushberries, melons, watermelon and the subgroup of stems and petioles and thus the use of fenpyroximate may still present a public health concern for these commodities. GAP information was provided to the current meeting for Subgroup of eggplants and for Phaseolus beans with pods, however, it did not change the previous conclusion that their consumption may present a public health concern (160 percent ARfD by Chinese children and 110 percent ARfD by Canadian children, respectively).

5.15 Fipronil (202) (R)

5.15.1 Residue and analytical aspects

Fipronil is a broad-spectrum insecticide that belongs to the phenylpyrazole chemical family used for the control of a wide range of crop, public hygiene, amenity, and veterinary pests. It was evaluated by JMPR in 1997 (T), 2000 (T), 2001 (R), 2016 (R) and 2021 (R, T). An ADI of 0–0.0002 mg/kg bw and an ARfD of 0.03 mg/kg bw was established by the 2021 JMPR, which concluded that the metabolites MB45897, MB46400, RPA105048, RPA105320 and RPA200761 could be assessed using the TTC approach (Cramer class III threshold of 1.5 µg/kg bw/day).

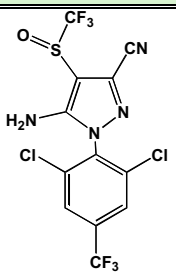
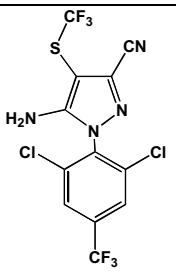
At the 54th Session of the CCPR (2023), fipronil was scheduled for evaluation of revised GAP in 2024.

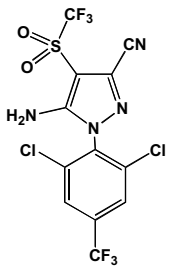
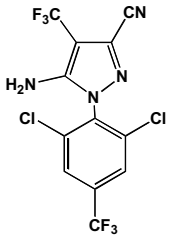
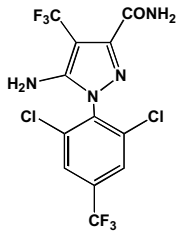
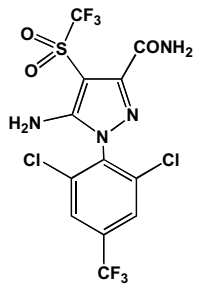
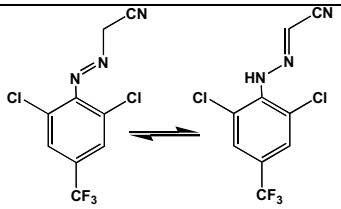
Definition of the residue for compliance with the MRL for plant and animal commodities: sum of fipronil and 5-amino-3-cyano-1-(2,6-dichloro-4-trifluoromethylphenyl)-4-trifluoromethylsulfonylpyrazole (MB46136), expressed in terms of fipronil.

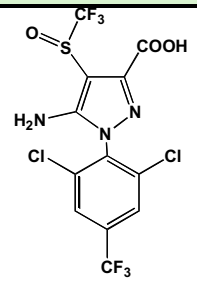
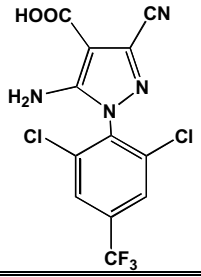
Definition of the residue for dietary risk assessment for plant and animal commodities: sum of fipronil and 5-amino-3-cyano-1-(2,6-dichloro-4-trifluoromethylphenyl)-4-trifluoromethylsulfonylpyrazole (MB46136), 5-amino-3-cyano-1-(2,6-dichloro-4-trifluoromethylphenyl)-4-trifluoromethylthiopyrazole (MB45950) and 5-amino-3-cyano-1-(2,6-dichloro-4-trifluoromethylphenyl)-4-trifluoromethylpyrazole (MB46513), expressed in terms of fipronil. The residue is fat-soluble.

Table 5.15.1 shows the chemical names and structures of fipronil and the main metabolites discussed in this appraisal.

Table 5.15.1 Compounds discussed in the appraisal

Code, names	Chemical name	Chemical Structure
Fipronil	5-amino-1-(2,6-dichloro-α,α,α-trifluoro-p-tolyl)-4-[(trifluoromethyl)sulfinyl]-1H-pyrazole-3-carbonitrile.	
MB45950 Fipronil-sulfide Fipronil-thioether	5-amino-3-cyano-1-(2,6-dichloro-4-trifluoromethylphenyl)-4-trifluoromethylthiopyrazole	

Code, names	Chemical name	Chemical Structure
MB46136 Fipronil-sulfone	5-amino-3-cyano-1-(2,6-dichloro-4-trifluoromethylphenyl)-4-trifluoromethylsulfonylpyrazole	
MB46513 Fipronil-desulfinyl	5-amino-3-cyano-1-(2,6-dichloro-4-trifluoromethylphenyl)-4-trifluoromethylpyrazole	
RPA105048 Fipronil-carboxamide	5-amino-3-carbamoyl-1-(2,6-dichloro-4-trifluoromethylphenyl)-4-trifluoromethylpyrazole	
RPA105320 Fipronil-sulfone-amide	5-amino-3-carbamoyl-1-(2,6-dichloro-4-trifluoromethylphenyl)-4-trifluoromethylsulfonylpyrazole	
RPA108058	–	

Code, names	Chemical name	Chemical Structure
RPA200761 Fipronil-acid Fipronil-carboxy	5-amino-1-(2,6-dichloro-4-trifluoromethylphenyl)-4-trifluoromethylsulfinylpyrazole-3-carboxylic acid	
MB46400	5-amino-3-cyano-1-(2,6-dichloro-4-trifluoromethylphenyl)pyrazole-4-carboxylic acid	

Results of supervised residue trials on crops

Supervised trials were available from the 2021 JMPR for the use of fipronil on broad range of crops with product labels made available from countries in Europe, North America, Central America, South America, Asia and Oceania.

Since 2019, foliar registrations have been withdrawn in many countries (e.g. Asia: rice, Australia: cotton), and only seed treatment and soil application (with incorporation) uses have been submitted to the meeting. Noting that foliar registrations are no longer supported by the sponsor, the meeting reconsidered the calculation of total residues.

The studies of plant metabolism and the supervised trials (submitted to the 2021 JMPR) showed that after soil incorporation and seed treatment uses, residues of fipronil and MB46136 represented most of the total residues. In metabolism studies, MB46513 was either not detected (sugar beet leaves and roots, maize leaves and grain, wheat grain, cotton seed, one sunflower study) or present at negligible levels compared to the sum of fipronil, MB46136 and MB45950 (one sunflower study).

In soil and seed treatment residue trials, MB46513 was not detected in banana (n = 15), tomato (n = 8), aubergine (n = 2), green beans (n = 12), beans dry (n = 12), sugar beet (n = 6, n = 15), barley grain (n = 3), wheat grain (n = 4, n = 10), rice grain (n = 6, n = 13), sorghum grain (n = 8), sugar cane (n = 9), sunflower seed (n = 2, n = 5). Residues of MB46513 were detected occasionally in cotton seed (1/10 at 44 percent of the total residue), maize grain (3/53, 20 percent, 29 percent, 37 percent), potato (2/92 8.2 percent, 25 percent), onion bulb (1/26, 0.8 percent), soya bean (2/12, 28 percent, 68 percent).

For animal feed items there were no detections in bean foliage (0/3), sugar beet foliage (0/21), wheat straw (0/4), sorghum foliage (0/2), with occasional detections in maize foliage (4/82 9.3 percent, 1.3 percent, 9.3 percent, 10.3 percent), rice straw (1/6 4.3 percent), cotton plants (1/1 16 percent) and potato haulm (1/5 33 percent).

In a field rotational crop study (bare ground application at 0.34 kg ai/ha), fipronil-desulfinyl (MB46513) was detected in radish tops, cowpea forage, lettuce, sorghum forage and sorghum straw (0.007–0.033 mg/kg) for the 31 DAA (days after application) samples, in wheat straw (0.020–0.023 mg/kg) for the 119 DAA samples, cowpea forage and wheat straw (0.005–0.026 mg/kg) for 239 DAA samples and sorghum straw (0.010–0.018 mg/kg) for the 367 DAA samples.

Noting occasional detections of MB46513 following use of fipronil as a seed treatment or following application to soil, the meeting concluded the weight of evidence supports finite residues may be present in trials where residues are reported as <LOQ. For this reason, when calculating total residues, less than LOQ levels should be considered equivalent to the LOQ.

Residue concentrations are expressed in terms of the individual compounds in the evaluation monograph and not as fipronil equivalents. To convert to fipronil equivalents, correction for differences in molecular mass need to be made. The factors are: 1.04 for MB45950 (437.1/421.1); 0.965 for MB46136 (437.1/453.1); and 1.1 for MB46513 (437.1/389.02).

When calculating the sum of fipronil and metabolites, values below the LOQ were assumed to be at the LOQ. Examples are in Table 5.15.2.

Table 5.15.2 Calculation of total residues, expressed as fipronil

As reported, mg/kg				Value for deriving total residue, mg/kg				Total residues, mg/kg
Fipronil	MB45950	MB46136	MB46513	Fipronil	MB45950	MB46136	MB46513	–
<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.004
<0.001	<0.001	0.02	<0.001	0.001	0.001	0.0193	0.001	0.0223
0.02	0.01	0.03	0.01	0.02	0.0104	0.02895	0.011	0.07035

The meeting reassessed the supervised residue trial data provided to the 2021 JMPR against the updated GAP information. Estimates are made for residues of:

- fipronil and fipronil-sulfone (MB46136) for estimation of maximum residue levels and livestock dietary burden for estimation of maximum residue levels for animal commodities;
- total residues: fipronil+MB46136+fipronil sulphide (MB45950) + fipronil desulfinyl (MB46513) for estimation of STMR and HR values;
- fipronil+MB46136+MB45950 for estimation of livestock dietary burdens for risk assessment; and
- MB46513 for estimation of livestock dietary burdens for risk assessment.

Bananas

The critical GAP for fipronil on banana is in Australia, with application to the butt of a stool at 0.15 g ai/stool or to soil /litter at 8 g ai/100 m^2 (= 0.8 kg ai/ha), maximum number of sprays not specified, and a PHI not required when used as directed. No trials matched cGAP, however, the meeting noted residues were <0.002 mg/kg for fipronil and each metabolite in all trials. The application rates to soil ranged from 0.25 to 1.6 kg ai/ha with PHIs of 0 to 295 days.

The meeting agreed that the use represents a nil residue situation and confirmed its previous recommendations of a maximum residue level of 0.004* mg/kg for the sum of fipronil and MB46136, and an STMR of 0 and HR of 0 mg/kg for total residues.

Onions

In the Plurinational State of Bolivia, GAP for fipronil on onion is seed treatment at 0.25 kg ai/ha and a PHI not required. In 15 trials approximating GAP (0.1875–0.3125 kg ai/100 kg seed) residues were (n = 15): <0.004 mg/kg, 0.0042 (2) mg/kg, 0.0043 mg/kg, 0.0046 mg/kg, <0.01 (7) mg/kg, 0.0106 mg/kg, 0.011 mg/kg, 0.018 mg/kg for fipronil and MB46136 (as fipronil).

The highest individual analytical result was 0.023 mg/kg (as fipronil).

Total residues were: <0.008 mg/kg, 0.0082 (2) mg/kg, 0.0083 mg/kg, 0.0086 mg/kg, 0.0146 mg/kg, <0.02 (7) mg/kg, 0.021 mg/kg, 0.028 mg/kg (as fipronil). The highest individual analytical result for total residues was 0.033 mg/kg (as fipronil).

The meeting confirmed its previous recommendations of a maximum residue level of 0.03 mg/kg, and estimated an STMR of 0.02 mg/kg and a HR of 0.033 mg/kg for fipronil in onion bulb, dry.

Subgroup of tomatoes

The cGAP for fipronil in tomato is from Armenia and Ukraine, which is one soil application at sowing planting at up to 0.2 kg ai/ha with a PHI of 30 days. The meeting considered the practical interval between sowing and harvest to be longer than 30 days (typically 4–5 months). In eight trials approximating cGAP (0.15–0.27 kg ai/ha) residues of fipronil and MB46136 at harvest 93–117 days after application were: <0.004 (8) mg/kg and <0.008 mg/kg (7) for total residues.

The meeting estimated a maximum residue level of 0.004* mg/kg, a STMR of 0.004 mg/kg and a HR of 0.008 mg/kg for fipronil in the subgroup of tomatoes to replace its previous recommendation of 0.01* mg/kg for tomatoes.

Legume vegetables – Beans with pods

The critical GAP for fipronil on beans is from Brazil, one seed application at 0.05 kg ai/100 kg seed. No trials matched GAP.

The meeting withdrew its previous recommendation of a maximum residue level of 0.01 mg/kg for fipronil in beans with pods, subgroup of.

Pulses

In Myanmar, the GAP is seed treatment for pulses at 0.125 kg ai/100 kg seed. No trials matched GAP of Myanmar.

In a range of countries, including Mexico, the GAP is seed treatment for beans, chickpeas, lentils and/or peas at 0.05 kg ai/100 kg seed.

In twelve trials on beans conducted at 0.039 to 0.057 kg ai/100 kg seed, residues of fipronil and MB46136 in dry beans were (n = 12): <0.001 (7) mg/kg, 0.0014 mg/kg, 0.0021 mg/kg, <0.004 (3) mg/kg.

Total residues were (n = 12): <u><0.002</u> (7) mg/kg, 0.0024 mg/kg, 0.0031 mg/kg, <0.008 (3) mg/kg.

The meeting estimated a maximum residue level of 0.008 mg/kg, a STMR of 0.002 mg/kg for fipronil in the subgroup of beans (dry) except soya beans to replace its previous recommendation (0.01 mg/kg).

The meeting agreed to extrapolate the estimations for the subgroup of dry beans (except soya beans) to the subgroup of dry peas.

The meeting also estimated median residues for use in estimation of livestock dietary burdens. The median residue for the sum of fipronil and MB46136 in beans (dry) was 0.001 mg/kg.

Residues of MB46513 were (n = 12): <0.0005 (9) mg/kg, <0.002 (2) mg/kg, with a median residue of 0.0005 mg/kg.

Residues of the sum of fipronil, MB46136 and MB45950 were (n = 12): <0.0015 (7) mg/kg, 0.0019 mg/kg, 0.0026 mg/kg, <0.006 (3) mg/kg, with an estimated median residue of 0.0015 mg/kg.

Soya beans (dry)

In Indonesia and Myanmar, GAP is seed treatment at 0.125 kg ai/100 g seed with PHI not required. No trials matched GAP.

In Paraguay, GAP is seed treatment at 0.055 kg ai/100 kg seed with PHI not required.

In trials approximating the Paraguayan GAP (0.04125–0.06875 kg ai/100 kg seed), residues of fipronil and MB46136 were (n = 9): <0.001 (5) mg/kg, 0.001 mg/kg, 0.0013 (2) mg/kg and 0.0014 mg/kg.

Total residues were (n = 9): <u><0.002</u> (5) mg/kg, 0.002 mg/kg, 0.0023 mg/kg, 0.0028 mg/kg and 0.0042 mg/kg.

The meeting estimated a maximum residue level of 0.002 mg/kg to replace the previous recommendation of 0.01 mg/kg and an STMR of 0.002 mg/kg for fipronil in soya bean (dry).

The meeting also estimated median residues in soya beans (dry) for use in estimation of livestock dietary burdens. The median residue for the sum of fipronil and MB46136 was 0.001 mg/kg.

Residues of MB46513 were (n = 9): <0.0005 (7) mg/kg, <0.00075 mg/kg, 0.0021 mg/kg, with an estimated median residue of 0.0005 mg/kg.

Residues of the sum of fipronil, MB46136 and MB45950 were (n = 9): <u><0.0015</u> (5) mg/kg, 0.0015 mg/kg, 0.0018 (2) mg/kg and 0.0019 mg/kg, with an estimated median residue of 0.0015 mg/kg.

Root and tuber vegetables

Potato

In Mexico, critical GAP for fipronil on potatoes is in-furrow application at planting at 0.45 kg ai/ha and a PHI not required. No trials matched this cGAP.

In Brazil, the GAP for fipronil on potatoes is in-furrow application at planting at 0.225 kg ai/ha followed by application at 0.225 kg ai/ha at hilling for a total of 0.45 kg ai/ha and a PHI not required.

In six trials matching the Brazilian GAP, residues of fipronil and MB46136 were (n = 6): <0.001 mg/kg, 0.0025 mg/kg, 0.0035 mg/kg, 0.0041 mg/kg, 0.0087 mg/kg and 0.0268 mg/kg.

Total residues were (n = 6): <0.002 mg/kg, 0.0038 mg/kg, 0.0049 mg/kg, 0.0050 mg/kg, 0.0115 mg/kg, 0.0287 mg/kg. Highest individual result was 0.0296 mg/kg.

The meeting confirmed its previous recommendations of a maximum residue level of 0.05 mg/kg for potato. The meeting estimated a STMR of 0.00495 mg/kg and a HR of 0.0296 mg/kg for fipronil in potatoes.

The meeting also estimated median and highest residues for potato culls for use in estimation of livestock dietary burdens. The median residue for the sum of fipronil and MB46136 in potato (culls) was 0.0038 mg/kg and a highest value of 0.0268 mg/kg.

Residues of MB46513 were (n = 6): <0.0005 (5) mg/kg, 0.00094 mg/kg, with a median of 0.0005 mg/kg and a highest residue of 0.0094 mg/kg.

Residues of the sum of fipronil, MB46136 and MB45950 were (n = 6): 0.0015 mg/kg, 0.0033 mg/kg, 0.0044 mg/kg, 0.0045 mg/kg, 0.0104 mg/kg, 0.0282 mg/kg, with estimated median residue of 0.00445 mg/kg and highest residue of 0.0282 mg/kg.

Sugar beet

In Armenia and the Ukraine, the GAP for fipronil on sugar beet is soil application at planting at 0.2 kg ai/ha with a PHI not required. In 13 trials matching the GAP, residues of fipronil and MB46136 at harvest were: <0.002 mg/kg, 0.002 (6) mg/kg, 0.0021 mg/kg and <0.004(5) mg/kg.

Total residues were (n = 13): <0.004 mg/kg, 0.004 (6) mg/kg, 0.0041 mg/kg, <0.008 (5) mg/kg.

The meeting estimated a maximum residue level of 0.004 mg/kg to replace its previous recommendation of 0.01 mg/kg, and an STMR of 0.004 mg/kg for fipronil in sugar beet root.

The meeting also estimated median and highest residue in sugar beet for use in estimation of livestock dietary burdens. Residues of the sum of fipronil, MB46136 and MB45950 were (n = 13): <0.003 mg/kg, 0.003 (6) mg/kg, 0.0031 mg/kg, <0.006 (5) mg/kg, with an estimated a median residue of 0.003 mg/kg and highest residue of 0.006 mg/kg. Residues of MB46513 were (n = 13): <0.001 (5) mg/kg, <0.002 (8) mg/kg, with an estimated median residue of 0.002 mg/kg and highest residue of 0.002 mg/kg.

Cereal grains

Wheat

The critical GAP for fipronil on wheat is from Brazil, with seed treatment at up to 0.0625 kg ai/100 kg seed and a PHI of not required.

In ten trials approximating cGAP (0.0469–0.0781 kg ai/100 kg seed) residues of fipronil and MB46136 in wheat grain were (n = 10): <0.001 (3) mg/kg, <0.004 (5) mg/kg, 0.005 mg/kg, 0.019 mg/kg with total residues (n = 10) of <0.002 (3) mg/kg, <u><0.008</u> (5) mg/kg, 0.009 mg/kg, 0.023 mg/kg.

The meeting estimated a maximum residue level of 0.03 mg/kg and a STMR of 0.008 mg/kg for fipronil in wheat grain and agreed to extrapolate the recommendations to rye and triticale to make a recommendation for the subgroup wheat, withdrawing its previous recommendation of 0.004* mg/kg.

The meeting also estimated median residues in wheat grain for use in estimation of livestock dietary burdens. The estimated median residue for the sum of fipronil and MB46136 was 0.004 mg/kg.

Residues of MB46513 in wheat grain were (n = 4): <0.0005 (3) mg/kg, <0.002 mg/kg, with a median residue of 0.0005 mg/kg.

Residues of the sum of fipronil, MB46136 and MB45950 in wheat grain were (n = 10): <0.0015 (3) mg/kg, <0.006 (5) mg/kg, 0.007 mg/kg, 0.021 mg/kg, with an estimated median residue of 0.006 mg/kg

Barley

The critical GAP for fipronil on barley is from Brazil, with a seed treatment at up to 0.0625 kg ai/100 kg seed and a PHI of not required.

In three trials matching the cGAP, residues of fipronil and MB4613 in grain were: <0.001 (3) mg/kg, with total residues of <0.002 (3) mg/kg.

In six trials conducted at exaggerated rates (five at 0.15 kg ai/100 kg seed and one at 0.1 kg ai/100 kg seed), residues were: <0.004 (6) mg/kg for the sum of fipronil and MB46136 and <0.006 (6) mg/kg for total residues.

The meeting noted that all residues are <LOQ in trials approximating GAP and that residues in trials conducted at exaggerated rates were also <LOQ and estimated a maximum residue level of 0.002* mg/kg and STMR of 0.002 mg/kg for barley. The meeting also agreed to extrapolate this estimation to subgroup barley and similar grains and withdraw its previous recommendation of 0.004* mg/kg.

The meeting also estimated median residues in barley grain for use in estimation of livestock dietary burdens. The median residue for the sum of fipronil and MB46136 in the subgroup barley and similar grains was 0.001 mg/kg.

Residues of MB46513 were not measured in barley grain.

Residues of the sum of fipronil, MB46136 and MB45950 in barley grain were (n = 3): <0.0015 (3) mg/kg, with an estimated a median residue of 0.0015 mg/kg.

Rice

The critical GAP for fipronil on rice is in Indonesia, a seed treatment at 0.125 kg ai/100 kg seed with a PHI of 14 days. The meeting considered the practical interval between sowing and harvest to be longer than 14 days, in practice harvest would around 110–140 days after planting. No trials matched cGAP for Indonesia.

In a number of countries, including Mexico, cGAP is seed treatment at 0.0625 kg ai/100 kg seed with a PHI not required. In ten trials approximating this GAP (0.0469–0.0781 kg ai/100 kg seed) residues of fipronil and MB46136 in rice grain (paddy rice) were (n = 10): <0.001 (8) mg/kg, 0.0012 mg/kg, 0.0014 mg/kg. Total residues were (n = 10): <0.002 (8) mg/kg, 0.0021 mg/kg, 0.0022 mg/kg.

The meeting estimated a maximum residue level of 0.002 mg/kg in rice grain and replaced its previous recommendation of 0.4 mg/kg. The meeting estimated a STMR of 0.002 mg/kg.

In 10 trials approximating GAP residues of fipronil and MB46136 in husked rice (brown rice) were: <0.001 mg/kg (10) while total residues were <0.002 (10) mg/kg.

The meeting estimated a maximum residue level of 0.001* mg/kg for fipronil in husked rice (brown rice), replacing its previous recommendation of 0.4 mg/kg. The meeting also estimated an STMR of 0.002 mg/kg.

Four trials reported residues in milled rice (= polished rice), giving residues of <0.001 (4) mg/kg for fipronil and MB46136 and <0.002 (4) mg/kg for total residues. Residues were <LOQ in both husked rice (n = 10) and polished rice (n = 4) and estimated a maximum residue level of 0.001* mg/kg for polished rice, replacing its previous recommendation of 0.15 mg/kg, and an STMR of 0.002 mg/kg.

Sorghum

The critical GAP for fipronil in sorghum is from Australia and Mexico, a seed treatment at 0.075 kg ai/100 kg seed with PHI not required.

Two trials matched cGAP with residues of fipronil and MB46136 of 0.004 (2) mg/kg and total residues of 0.006 (2) mg/kg. The number of trials is insufficient to estimate a maximum residue level.

Maize

In Mexico, GAP is in-furrow soil application at the time of planting at 0.24 kg ai/ha with a PHI of 90 days or seed treatment at 0.2 kg ai/100 kg seed with a PHI not required. Residues are higher following soil treatment compared to seed treatment and soil treatment is considered cGAP.

In trials approximating GAP residues of fipronil and MB46136 were (n = 38): 0.00196 mg/kg, <0.002 (27) mg/kg, 0.00206 mg/kg, <0.004 (6) mg/kg, 0.00538 mg/kg, 0.00607 mg/kg, 0.00648 mg/kg.

Total residues were (n = 38): ≤0.004 (27) mg/kg, 0.004 mg/kg, 0.0041 mg/kg, <0.008 (6) mg/kg, 0.0103 mg/kg, 0.0131 mg/kg, 0.0178 mg/kg.

The meeting estimated a maximum residue level of 0.01 mg/kg for fipronil in the subgroup maize, confirming its previous recommendation, and an STMR of 0.004 mg/kg.

The meeting also estimated median residues in maize grain for use in estimation of livestock dietary burdens. The median residue for the sum of fipronil and MB46136 in the subgroup maize was 0.002 mg/kg.

Residues of MB46513 in maize grain were (n = 37): <0.001 (30) mg/kg, <0.002 (4) mg/kg, 0.002 mg/kg, 0.0037 mg/kg, 0.0063 mg/kg, with an estimated median residue of 0.001 mg/kg.

Residues of the sum of fipronil, MB46136 and MB45950 in maize grain were (n = 38): 0.00296 mg/kg, <0.003 (27) mg/kg, 0.00306 mg/kg, <0.006 (6) mg/kg, 0.00858 mg/kg, 0.00887 mg/kg, 0.01058 mg/kg, with a median residue of 0.003 mg/kg.

Sugar cane

In Brazil, cGAP is soil treatments of 0.32 kg ai/ha at plow + 0.2 kg ai/ha at planting, total 0.52 kg ai/ha with a PHI not required. The meeting considered a single application at 0.52 kg ai/ha to be equivalent to soil treatments of 0.32 kg ai/ha at plow + 0.2 kg ai/ha at planting, total 0.52 kg ai/ha.

In five trials approximating cGAP (0.52 kg ai/ha) residues of fipronil and MB46136 were (n = 5): <0.001 mg/kg, 0.0018 mg/kg, 0.0022 mg/kg, 0.0032 mg/kg, 0.0038 mg/kg, with total residues <0.002 mg/kg, 0.0028 mg/kg, 0.0032 mg/kg, 0.0042 mg/kg, 0.0048 mg/kg.

In four trials conducted at 0.675 kg ai/ha residues were: 0.0014 mg/kg, 0.0020 (2) mg/kg, 0.0063 mg/kg with total residues 0.0024 mg/kg, 0.0030 (2) mg/kg, 0.0073 mg/kg.

The meeting decided to apply proportionality to scale trials conducted at 0.675 kg ai/ha (SF 0.77) and to combine the two datasets (n = 9): <0.001 mg/kg, 0.0014 mg/kg, 0.0018 mg/kg, 0.0020 (2) mg/kg, 0.0022 mg/kg, 0.0032 mg/kg, 0.0038 mg/kg, 0.0063 mg/kg.

Total residues are (n = 9): <0.002 mg/kg, 0.0024 mg/kg, 0.0028 mg/kg, 0.0030 (2) mg/kg, 0.0032 mg/kg, 0.0042 mg/kg, 0.0048 mg/kg, 0.0073 mg/kg.

The meeting estimated a maximum residue level of 0.01 mg/kg, confirming its previous recommendation, an STMR of 0.003 mg/kg and a HR of 0.0073 mg/kg for fipronil in sugar cane. The meeting also estimated median and highest residues in sugar cane for use in estimation of livestock dietary burdens. The median and highest residues for the sum of fipronil and MB46136 in sugar cane were 0.0020 mg/kg and 0.0063 mg/kg, respectively.

Scaled residues of MB46513 were (n = 9): 0.0004 (4) mg/kg, <0.0005 (5) mg/kg, with a median residue of 0.0005 mg/kg.

Scaled residues of the sum of fipronil, MB46136 and MB45950 were (n = 9): <0.0014 mg/kg, 0.0015 mg/kg, 0.0020 (2) mg/kg, 0.0022 mg/kg, 0.0026 mg/kg, 0.0036 mg/kg, 0.0042 mg/kg, 0.0053 mg/kg, with a median residue of 0.0022 mg/kg.

Oilseed

Cotton

The critical GAP for fipronil in cotton is from Brazil, a seed treatment at 0.125 kg ai/100 kg seed with PHI not required.

In trials approximating this cGAP (0.094–0.156 kg ai/100 kg seed) residues of fipronil and MB46136 at harvest were (n = 8): <0.001 (6) mg/kg, 0.001 mg/kg, 0.0023 mg/kg.

Total residues were (n = 8): <0.0012 (2) mg/kg, <0.0020 (4) mg/kg, 0.0028 mg/kg, 0.0033 mg/kg.

The meeting estimated a maximum residue level of 0.003 mg/kg, replacing its previous recommendation of 0.01 mg/kg, and an STMR of 0.002 mg/kg for fipronil in cotton seed.

The meeting also estimated median residues in cotton seed for use in estimation of livestock dietary burdens. The median residue for the sum of fipronil and MB46136 in cotton seed was 0.001 mg/kg.

Residues of MB46513 in cotton seed were (n = 8): <0.0001 (2) mg/kg, <0.0005 (5) mg/kg, 0.0013 mg/kg, with an estimated median residue of 0.0005 mg/kg.

Residues of the sum of fipronil, MB46136 and MB45950 in cotton seed were (n = 8): <0.0011 (2) mg/kg, <0.0015 (5) mg/kg, 0.0028 mg/kg, with an estimated median residue of 0.0015 mg/kg.

Sunflower

In the Ukraine, cGAP is seed treatment at planting at 0.375 kg ai/100 kg seed with a PHI not required.

In trials on sunflower matching cGAP residues of fipronil and MB46136 at harvest were (n = 6): <0.004 (3) mg/kg, 0.004 mg/kg, 0.0042 mg/kg, 0.0044 mg/kg.

Total residues were (n = 6): <0.008 (3) mg/kg, 0.0080 mg/kg, 0.0082 mg/kg, 0.0084 mg/kg.

The meeting estimated a maximum residue level of 0.01 mg/kg for fipronil in the subgroup sunflower seed to replace its previous recommendation of 0.004* mg/kg. The meeting also estimated a STMR of 0.008 mg/kg.

Basil

There is no longer GAP for foliar use of fipronil. The meeting agreed to withdraw its previous recommendation for basil of 0.8 mg/kg, which was based on foliar application.

Residues in animal feeds

Bean forage (green)

The critical GAP for fipronil in beans (dry) is from Brazil, seed application at 0.05 kg ai/100 kg seed. Residues in forage in one trial approximating cGAP (0.049 kg ai/100 kg seed) were 0.0348 mg/kg for fipronil and MB46136 and for total residues 0.0388 mg/kg.

The number of trials was insufficient to estimate residues.

Wheat straw and fodder dry (hay, straw, silage)

The critical GAP for fipronil on wheat is from Brazil, seed treatment at 0.0625 kg ai/100 kg seed and a PHI of not required. In five trials approximating cGAP (0.047–0.078 kg ai/100 kg seed) residues of fipronil and MB46136 in straw at harvest were: <0.02 (3) mg/kg, 0.0205 mg/kg, 0.0241 mg/kg (as received).

Using a typical dry matter content of 88 percent, the meeting estimated a maximum residue level of 0.05 mg/kg.

For livestock dietary burdens, the meeting estimated a median and highest residue of 0.02 mg/kg (as received) and highest residue of 0.0241 mg/kg (as received) for wheat straw and agreed to extrapolate the estimations to rye and triticale straw.

MB46513 was not measured in wheat straw.

Residues of the sum of fipronil, MB46136 and MB45950 in wheat straw were (n = 5): <0.03 (3) mg/kg, 0.0305 mg/kg, 0.0341 mg/kg, with an estimated median residue of 0.03 mg/kg and highest residue of 0.0341 mg/kg for wheat, rye and triticale straw.

Barley straw and fodder dry

The meeting received supervised residue trials on barley. In Brazil critical GAP for fipronil on barley is seed treatment at 0.0625 kg ai/100 kg seed and a PHI of not required. No trials matched cGAP.

Hays of cereals are expected to have similar residues and are indistinguishable in trade. The meeting agreed to extrapolate the recommendations for wheat straw and fodder dry to barley and oats straw and fodder dry. The meeting withdrew its previous recommendation of maximum residue level of 0.07 mg/kg for barley straw and fodder dry.

Rice straw and fodder dry

The critical GAP for fipronil on rice is in Indonesia, seed treatment at 0.125 kg ai/100 kg seed with a PHI of 14 days. The meeting considered the practical interval between sowing and harvest to be longer than 14 days, in practice harvest would around 110–140 days after planting. No trials matched GAP.

The meeting agreed to withdraw its previous recommendations for maximum residue level for rice straw and fodder, dry of 0.6 mg/kg.

Sorghum forage (green) and stover (Sorghum silage)

The critical GAP for fipronil in sorghum is from Australia and Mexico, seed treatment at 0.075 kg ai/100 kg seed with PHI not required. In two trials matching cGAP residues of fipronil and MB46136 in forage were <0.004 (2) mg/kg. Total residues in forage were <0.008(2) mg/kg.

The number of trials was insufficient to estimate residues.

Maize forage, fodder (stover) and silage

In Mexico, GAP for in-furrow soil treatment is application at the time of planting at 0.24 kg ai/ha with a PHI of 90 days.

In trials conducted approximating GAP, residues of fipronil and MB46316 in maize silage were (n = 13): <0.004 (11) mg/kg, <0.01 (2) mg/kg.

The meeting estimated a median residue of 0.004 mg/kg and highest residue of 0.01 mg/kg for fipronil+MB46136 in maize silage.

Residues of MB46513 in maize silage were (n = 12): <0.002 (10) mg/kg, <0.005 (2) mg/kg, with an estimated median residue of 0.002 mg/kg and highest residues of 0.005 mg/kg.

Residues of the sum of fipronil, MB46136 and MB45950 in maize silage were (n = 13): <0.006 (11) mg/kg, <0.015 (2) mg/kg, with an estimated median residue of 0.006 mg/kg and a highest residue of 0.015 mg/kg.

In trials conducted matching GAP, residues of fipronil and MB46136 in maize forage were <0.01 (7) mg/kg, with an estimated median and highest residue of 0.01 mg/kg (as received).

Residues of MB46513 in maize forage were (n = 7): <0.005 mg/kg, with an estimated median and highest residue of 0.005 mg/kg.

Residues of the sum of fipronil, MB46136 and MB45950 in maize forage were (n = 7): <0.015 (7) mg/kg, with an estimated median and highest residue of 0.015 mg/kg.

Noting residues in forage and silage were all <LOQ, and to avoid overestimation of livestock dietary burden, the meeting agreed to use the lowest of the forage and silage estimates in the calculation of livestock dietary burdens (fipronil+MB46316 median and highest 0.004 mg/kg, fipronil+MB46136+MB45950 median and highest 0.006 mg/kg, MB46513 median and highest 0.002 mg/kg, all on an as received basis).

Sugar beet tops (Sugar beet fodder)

In Armenia, and Ukraine, the GAP for fipronil on sugar beet is application to soil at the time of planting at 0.2 kg ai/ha with a PHI not required.

In fifteen trials matching the GAP, residues of fipronil and MB46316 in leaves and tops were: <0.002 (3) mg/kg, 0.002 mg/kg, 0.003 (6) mg/kg, <0.004 (3) mg/kg, 0.02, 0.02 mg/kg.

In six trials involving band application that matched GAP, residues were <0.001 mg/kg, 0.0014 mg/kg, 0.0017 mg/kg, 0.0024 mg/kg, 0.0025 mg/kg, 0.0033 mg/kg.

Combining the residue trials (n = 21): <0.001 mg/kg, 0.0014 mg/kg, 0.0017 mg/kg, <0.002 (3) mg/kg, 0.002 mg/kg, 0.0024 mg/kg, 0.0025 mg/kg, 0.003 (6) mg/kg, 0.0033 mg/kg, <0.004 (3) mg/kg, and 0.02 (2) mg/kg.

The meeting estimated a median residue of 0.003 mg/kg and highest residue of 0.02 mg/kg for fipronil+MB46136 in sugar beet tops.

Residues of MB46513 in sugar beet tops were (n = 21): <0.0005 (6) mg/kg, <0.001 (8) mg/kg, <0.002 (5) mg/kg, <0.01 (2) mg/kg, with an estimated median residue of 0.001 mg/kg.

Residues of the sum of fipronil, MB46136 and MB45950 in sugar beet tops were (n = 21): <0.0015 mg/kg, 0.0019 mg/kg, 0.0022 mg/kg, 0.0029 mg/kg, <0.003 mg/kg, 0.003 (2) mg/kg, 0.0038 mg/kg, 0.004 (6) mg/kg, <0.006 (3) mg/kg, 0.0063 mg/kg, 0.0093 mg/kg, <0.03 (2) mg/kg, with an estimated a median residue of 0.004 mg/kg and highest residue of 0.03 mg/kg.

Residues in rotational crops

Fipronil and metabolites are moderately persistent to persistent in the environment and may contribute to residues in follow/rotational crops through uptake from soil. As the maximal season rate considered (0.4 kg ai/ha for potato) has not changed from the previous evaluation, the meeting confirmed its previous recommendations for maximum residue level, STMR and HR relating to rotational crops (Leafy vegetables, group of; Root and Tuber vegetables, Group of [except potato and sugar beet]).

Fate of residues during processing

Processing studies were evaluated by the 2021 JMPR median and best estimate processing factors estimated. The processing study on rice utilized the unprocessed grain from a residue trial involving foliar application. The meeting considered this processing study not relevant for residues arising from application involving soil or seed treatments and agreed to withdraw its previous recommendation for rice bran (unprocessed) of 2 mg/kg. The new processing factors based on soil or seed application are shown in Table 5.15.3, Table 5.15.4 and Table 5.15.4.

Table 5.15.3 Processing factors and median and highest residue values for the sum of fipronil and fipronil-sulfone (MB46136) – used for estimation of maximum residue levels including livestock dietary burdens used for estimation of livestock commodity maximum residue

Commodity	Processed commodity	Raw commodity [median residue]	Median or best estimate processing factor	Median residue-P (mg/kg)	Highest residue-P (mg/kg)
Soya bean	Soya bean hulls	0.001	6.8	0.0068	–
Potato	Potato peel	0.0038	1.4	0.00532	–
Sugarcane	Sugarcane bagasse	0.0020	0.935	0.00187	–
	Molasses		0.0115	0.000023	–
Cottonseed	Cottonseed meal	0.001	0.17	0.00017	–
	Cottonseed hulls		0.18	0.00018	–

Table 5.15.4 Processing factors and STMR-P and HR-P residue values for total residues – used for STMR and HR estimation.

	Processed commodity	Raw commodity [STMR/HR]	Median or best estimate processing factor	STMR-P = $STMR_{RAC}$ × PF (mg/kg)	HR-P = HR_{RAC} × PF (mg/kg)
Soya bean	Soya bean crude oil	0.002	4.4	0.0088	–
Potato	Washed potato	0.00495/0.0296	0.495	0.00245	0.01465
	Peeled potato		0.32	0.00158	0.00947
	Cooked potato		0.245	0.00121	0.00725
	Microwave/unpeeled potato		0.675	0.00334	0.01998
	French fries		0.37	0.0018315	0.010952
	Flakes		0.45	0.00223	–
Sugarcane	Sugarcane juice	0.003	0.6	0.0018	–
	Sugarcane molasses		0.022	0.00007	–
	Cane sugar		0.022	0.00007	–
Cottonseed	Cottonseed crude oil	0.002	0.4	0.0008	–
	Cottonseed refined oil		0.3	0.0006	–

Using the estimated maximum residue level of 0.002 mg eq/kg for soya beans and applying the processing factors of 6.0 for hulls and 4.4 for crude oil, the meeting estimated maximum residue levels of 0.015 mg eq/kg for soya bean hulls and 0.01 mg eq/kg for soya bean crude oil.

Table 5.15.5 Processing factors and median-P residue values for fipronil-desulfinyl (MB46513) and for the sum of fipronil, fipronil-sulfone (MB46316) and fipronil-sulfide (MB45950) residues – used as inputs for livestock dietary burden calculations for use in estimate

	Processed commodity	Raw commodity Median (mg eq/kg)	Median or best estimate processing factor	median-P = median_RAC × PF (mg eq/kg)
	Fipronil-desulfinyl			
Soya bean	Soya bean hulls	0.0005	6.0	0.003
Potato	Potato peels	0.0005	3.2	0.0016
Sugarcane	Sugar cane bagasse	0.0004	0.42	0.000168
	Sugar cane molasses		0.4	0.00016
Cottonseed	Cotton seed meal	0.0005	0.001	0.0000005
	Cotton seed hulls		0.15	0.000075
	Sum of fipronil, fipronil-sulfone and fipronil-sulfide			
Soya bean	Soya bean hulls	0.0015	6.5	0.00975
Potato	Potato peels	0.00445	1.4	0.00623
Sugarcane	Sugar cane bagasse	0.0022	0.88	0.001936
	Sugar cane molasses		0.02	0.000044
Cottonseed	Cotton seed meal	0.0015	0.22	0.00033
	Cotton seed hulls		0.23	0.000345

Residues in animal commodities

Farm animal dietary burden

Dietary burdens were calculated for beef cattle, dairy cattle, broilers and laying poultry based on feed items evaluated by the by the current JMPR. The dietary burdens, estimated using the most recent version of the OECD livestock dietary burden calculator, are presented in Annex 5 and summarized in Table 5.15.6.

Separate feeding studies were carried out in cattle with fipronil and the photodegradation product fipronil-desulfinyl (MB46513) to determine residues. For laying hens, a feeding study was carried out with fipronil, and a metabolism study was available for MB46513. Detected residues of MB46513 were found in some feed commodities with highest residues in rice straw. The feeding studies with fipronil were used to estimate residues of fipronil, MB46136 and MB45950 in animal commodities. The feeding and metabolism study with MB46513 was used to estimate residues of MB46513 in animal commodities. The livestock dietary burden was therefore calculated separately for:

- estimation of maximum residue levels as the sum of fipronil and MB46136;
- estimation of STMRs and HRs as the sum of residues of fipronil, MB46136 and MB45950; and separately
- MB46513.

Residues in animal commodities were estimated for the sum of fipronil and MB46136 for use in estimating maximum residue levels.

Residues in animal commodities for dietary risk assessment were estimated for fipronil, MB46136 and MB45950 and separately for MB46513 and the results added to provide an estimate of fipronil, MB46136 and MB45950 and separately for MB46513 (Table 5.15.6, Table 5.15.7 and Table 5.15.8).

Table 5.15.6 Estimated maximum and mean dietary burdens of farm animals (fipronil+ MB46136) for use in estimating maximum residue levels (Annex 5)

	Animal dietary burden: fipronil+MB46136, ppm of dry matter diet							
	United States–Canada		European Union		Australia		Japan	
	Max.	Mean	Max.	Mean	Max.	Mean	Max	Mean
Beef cattle	0.059	0.024	0.077	0.029	0.047	0.026	0.003	0.003
Dairy cattle	0.029	0.017	0.082[a]	0.026	0.062	0.024	0.007	0.007
Broilers	0.005	0.005	0.018	0.006	0.005	0.005	0.002	0.002
Layers	0.005	0.005	0.023[b]	0.007	0.003	0.003	0.002	0.002

Notes:

[a] Highest maximum beef or dairy cattle dietary burden suitable for MRL estimates for mammalian tissues and milk.

[b] Highest maximum poultry dietary burden suitable for MRL estimates for poultry tissues and eggs.

Table 5.15.7 Estimated maximum and mean dietary burdens of farm animals (sum of fipronil+ MB46136+ MB45950) for use in estimating STMR and HR values (Annex 5)

	Animal dietary burden: fipronil+MB46136+MB45950, ppm of dry matter diet							
	United States–Canada		European Union		Australia		Japan	
	Max.	Mean	Max.	Mean	Max.	Mean	Max.	Mean
Beef cattle	0.066	0.030	0.093	0.038[c]	0.050	0.035	0.005	0.005

Dairy cattle	0.036	0.022	0.101[a]	0.034[b]	0.064	0.034	0.011	0.011
Broilers	0.007	0.007	0.020	0.008	0.004	0.004	0.002	0.002
Layers	0.007	0.007	0.029[d]	0.010[e]	0.003	0.003	0.003	0.003

Notes:
[a] Highest maximum beef or dairy cattle dietary burden suitable for HR estimates for mammalian tissues and milk.
[b] Highest mean dairy cattle dietary burden suitable for STMR estimates for milk.
[c] Highest mean beef or dairy cattle dietary burden suitable for STMR estimates for mammalian tissues.
[d] Highest maximum poultry dietary burden suitable for HR estimates for poultry tissues and eggs.
[e] Highest mean poultry dietary burden suitable for STMR estimates for poultry tissues and eggs.

Table 5.15.8 Estimated maximum and mean dietary burdens of farm animals (MB46513) for use in estimating STMR and HR values

	Animal dietary burden: fipronil-desulfinyl, ppm of dry matter diet							
	United States–Canada		European Union		Australia		Japan	
	Max.	Mean	Max.	Mean	Max.	Mean	Max.	Mean
Beef cattle	0.027	0.008	0.063	0.014	0.052	0.016	0.001	0.001
Dairy cattle	0.049	0.013	0.062	0.014	0.080[a]	0.016[b]	0.017	0.004
Broilers	0.001	0.001	0.006	0.001	0.001	0.001	0.001	0.001
Layers	0.001	0.001	0.021[c]	0.004[d]	0	0	0.001	0.001

Notes:
[a] Highest maximum beef or dairy cattle dietary burden suitable for HR estimates for mammalian tissues and milk.
[b] Highest mean beef or dairy cattle dietary burden suitable for STMR estimates for mammalian tissues and milk.
[c] Highest maximum poultry dietary burden suitable for HR estimates for poultry tissues and eggs.
[d] Highest mean poultry dietary burden suitable for STMR estimates for poultry tissues and eggs.

Animal commodity maximum residue levels

Cattle

The calculations used to estimate highest total residues for use in estimating maximum residue levels, STMR and HR values in cattle commodities are shown in Table 5.15.9, Table 5.15.10 and Table 5.15.11.

Table 5.15.9 Residues of fipronil and MB46136 in mammalian commodities

	Feed level (ppm) for milk residues	Fipronil+MB46136 residues (mg eq/kg) in milk	Feed level (ppm) for tissue residues	Fipronil+MB46136 residues (mg eq/kg)			
				Muscle	Liver	Kidney	Fat
Highest residue for maximum residue level estimation (beef or dairy cattle)							
Feeding study	0.04[a]	0.0052[a]	0.04[a]	0.0049[a]	0.0169[a]	0.0049[a]	0.0773[a]
	0.13[b]	0.0274[b]	0.13[b]	0.020[b]	0.0688[b]	0.0240[b]	0.2203[b]
Dietary burden and estimate of highest residue	0.082	0.0155	0.081	0.0118	0.0406	0.0136	0.1425

Notes:
[a] Feeding study from 2017.
[b] Feeding study from 1994.

Table 5.15.10 Residues of fipronil, MB46136 and MB45950 in mammalian commodities

	Feed level (ppm) for milk residues	Total residues (mg eq/kg) in milk	Feed level (ppm) for tissue residues	Fipronil+MB46136+MB45950 residues (mg eq/kg)			
				Muscle	Liver	Kidney	Fat
HR determination (beef or dairy cattle)							
Feeding study	0.04[a] 0.13[b]	0.0052[a] 0.0374[b]	0.04[a] 0.13[b]	0.0054[a] 0.03[b]	0.0174[a] 0.0788[b]	0.0054[a] 0.0340[b]	0.0878[a] 0.2403[b]
Dietary burden and estimate of highest residue	0.101	0.0270	0.101	0.0221	0.0590	0.0248	0.1912
STMR determination (beef or dairy cattle)							
Feeding study	0.04[a]	0.0052[a]	0.04[a]	0.0046[a]	0.0148[a]	0.0050[a]	0.0715[a]
Dietary burden and estimate of highest residue	0.034	0.0044	0.038	0.0043	0.0141	0.0047	0.0680

Notes:
[a] Feeding study from 2017.
[b] Feeding study from 1994.

Table 5.15.11 Residues of MB46513 in mammalian commodities

	Feed level (ppm) for milk residues	Total residues (mg eq/kg) in milk	Feed level (ppm) for tissue residues	MB46513 (mg eq/kg)			
				Muscle	Liver	Kidney	Fat
HR determination (beef or dairy cattle)							
Feeding study	0.076	0.008	0.076	0.005	0.098	0.013	0.12
	0.3	0.02658	0.3	0.019	0.28	0.044	0.41
Dietary burden and estimate of highest residue	0.080	0.0083	0.080	0.0052	0.1012	0.0136	0.1252
STMR determination (beef or dairy cattle)							
Feeding study	0.025	0.003083	0.025	0.00233	0.0357	0.005	0.0403
Dietary burden and estimate of highest residue	0.016	0.0020	0.016	0.0015	0.0228	0.0032	0.0258

Taking into account the new Codex Classification for animal commodities (General consideration 2.4), the meeting estimated maximum residue levels, STMR and HR levels of 0.015 mg/kg, 0.0043 mg/kg and 0.0221 mg/kg group of muscle (from mammals other than marine mammals), of 0.15 mg/kg, 0.0680 mg/kg and 0.1912 mg/kg for group of mammalian fats (except milk fats), of 0.05 mg/kg, 0.0141/0.0047 mg/kg (liver/kidney) and 0.0590/0.0248 (liver/kidney) for group of edible offal (mammalian). For group of milks, the meeting estimated a maximum residue level and STMR of 0.02 mg/kg and 0.0044 mg/kg.

Residues of the sum of fipronil and fipronil-sulfone were 14x higher in milk fat compared to whole milk. Residues of the sum of fipronil, fipronil-sulfone and fipronil-sulfide were 13x higher in milk fat compared to whole milk. Residues of fipronil-desulfinyl were 16x higher in milk fat compared to whole milk. Using this information, the meeting estimated a maximum residue level of 0.3 mg/kg for milk fat (0.0155 mg/kg

× 14 = 0.2422 mg/kg) and HR and STMR values of 0.4838 (0.0270 mg/kg × 13 + 0.0083 × 16) and 0.0892 (0.0044 mg/kg × 13 + 0.0020 × 16) mg/kg, respectively.

The meeting agreed to withdraw the previous recommendations for milks, muscle (from mammals other than marine mammals), mammalian fats (except milk fats) and edible offal (mammalian).

Avian

The calculations used to estimate highest total residues for use in estimating maximum residue levels, STMR and HR values in avian commodities are shown in Table 5.15.12, Table 5.15.13 and Table 5.15.14.

Table 5.15.12 Residues of fipronil and MB46136 in avian commodities

	Feed level (ppm) for egg residues	Fipronil+MB46136 residues (mg eq/kg) in egg	Feed level (ppm) for tissue residues	Fipronil+MB46136 residues (mg equiv/kg)			
				Muscle	Liver	Kidney	Fat
Highest residue for maximum residue level estimation (layers or broilers)							
Feeding study	0.01 0.031	0.02254 0.044729	0.01 0.031	 0.0235	0.019647 0.029294	–	0.023506 0.067882
Dietary burden and estimate of highest residue	0.022	0.0352	0.022	0.0167	0.0208	–	0.0489

Table 5.15.13 Residues of fipronil, MB46136 and MB45950 in avian commodities

	Feed level (ppm) for egg residues	Total residues (mg eq/kg) in egg	Feed level (ppm) for tissue residues	Total residues (mg equiv/kg)			
				Muscle	Liver	Kidney	Fat
HR determination (layers or broilers)							
Feeding study	0.01	0.032541	0.01	–	0.029647	–	0.033506
	0.031	0.054729	0.031	0.03	0.039294	–	0.077882
Dietary burden and estimate of highest residue	0.029	0.0526	0.029	0.0281	0.0368	–	0.0737
STMR determination (layers or broilers)							
Feeding study	0.01	0.030612	0.01	–	0.029647	–	0.032863
	0.031	0.047655	0.031	0.03	0.038972	–	0.072415
Dietary burden and estimate of highest residue	0.011	0.0314	0.011	0.0106	0.0301	–	0.0347

Table 5.15.14 Residues of MB46513 in avian commodities

	Feed level (ppm) for egg residues	Total residues (mg eq/kg) in egg	Feed level (ppm) for tissue residues	MB46513 (mg equiv/kg)			
				Muscle	Liver	Kidney	Fat
HR determination (layers or broilers)							
Feeding study	10[a]	1.886	10[a]	0.354	0.564	–	8.8018

Dietary burden and estimate of highest residue	0.021	0.0040	0.021	0.0007	0.0012	–	0.0185
STMR determination (layers or broilers)							
Feeding study	10[a]	1.886	10[a]	0.354	0.564	–	8.8018
Dietary burden and estimate of highest residue	0.004	0.0008	0.004	0.0001	0.0002	–	0.0035

Note:
[a] Laying hen metabolism study.

The meeting estimated maximum residue levels, STMR and HR levels, respectively, of 0.04 mg/kg, 0.0322 mg/kg and 0.0566 mg/kg for group of eggs, of 0.02 mg/kg, 0.0107 mg/kg and 0.0288 mg/kg for group of avian muscle, of 0.05 mg/kg, 0.0382 mg/kg and 0.0922 mg/kg for group of avian fats and of 0.02 mg/kg, STMR of 0.0303 mg/kg and HR of 0.0380 mg/kg for group of avian, edible offal of.

The meeting withdraws its previous recommendations for eggs, poultry meat, poultry fats and poultry edible offal.

Recommendations

On the basis of the data obtained from supervised trials, the meeting concluded that the residue levels listed in Table 5.15.15 and Annex 1 are suitable for establishing maximum residue limits and for estimation of dietary exposure. Table 5.15.16 shows the residues used for dietary burden calculations.

Definition of the residue for compliance with the MRL for plant and animal commodities: sum of fipronil and 5-amino-3-cyano-1-(2,6-dichloro-4-trifluoromethylphenyl)-4-trifluoromethylsulfonylpyrazole (MB46136) expressed in terms of fipronil.

Definition of the residue for dietary risk assessment for plant and animal commodities: sum of fipronil and 5-amino-3-cyano-1-(2,6-dichloro-4-trifluoromethylphenyl)-4-trifluoromethylsulfonylpyrazole (MB46136), 5-amino-3-cyano-1-(2,6-dichloro-4-trifluoromethylphenyl)-4-trifluoromethylthiopyrazole (MB45950) and 5-amino-3-cyano-1-(2,6-dichloro-4-trifluoromethylphenyl)-4-trifluoromethylpyrazole (MB46513) expressed in terms of fipronil.

The residue is fat-soluble.

Table 5.15.15 Residue levels suitable for establishing maximum residue limits and for dietary exposure assessments

CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P	HR or HR-P
		New	Previous	mg/kg	mg/kg
FI 0327	Banana	0.004*	0.004*	0	0
GC 2087	Barley, similar grains, and pseudocereals with husks, subgroup of	0.002*	0.004*	0.002	–
AS 0640	Barley straw and fodder dry	0.05 dw	0.07 dw	–	–
HH 0722	Basil	W	0.8	–	–
VP 2060	Beans with pods, subgroup of	W	0.01		–
SO 0691	Cotton seed	0.003	0.01	0.002	–

CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P	HR or HR-P
		New	Previous	mg/kg	mg/kg
OC 0691	Cotton seed oil, crude	–	–	0.0008	–
OR 0691	Cotton seed oil, refined	–	–	0.0006	–
VD 2065	Dry beans, subgroup of (except soya beans)	0.008	0.01	0.002	–
VD 2066	Dry Peas, subgroup of	0.008	–	0.002	–
MO 0105	Edible offal (mammalian)	W	0.1	–	–
PO 0111	Group of avian, edible offal of	0.02	–	0.0303	0.0380
PF 0111	Group of avian fats	0.05	–	0.0382	0.0922
PM 0110	Group of avian muscle	0.02	–	0.0107	0.0288
MO 0105	Group of edible offal (mammalian)	0.05	–	Liver: 0.0141 Kidney: 0.0047	Liver: 0.0590 Kidney: 0.0248
PE 0112	Group of eggs	0.04	0.04	0.0322	0.0566
MF 0100	Group of mammalian fats (except milk fats)	0.15	–	0.0680	0.1912
ML 0106	Group of milks	0.02	–	0.0044	–
FM 0106	Group of milk fat	0.3	–	0.0892	–
MM 0095	Group of muscle (from mammals other than marine mammals)	0.015	–	0.0043	0.0221
VL 0053	Leafy vegetables, Group of	0.01[a]	0.01	0	0.02919
GC 2091	Maize cereals, subgroup of	0.01	0.01	0.004	–
MF 0100	Mammalian fats (except milk fats)	W	0.4	–	–
MM 0095	Meat (from mammals other than marine mammals)	W	0.03	–	–
FM 0183	Milk fat	W	0.3	–	–
ML 0106	Milks	W	0.03	–	–
AS 0647	Oat straw and fodder dry	0.05 dw	0.07 dw	–	–
VA 0385	Onion, bulb	0.03	0.03	0.02	0.033
VR 0589	Potato	0.05	0.05	0.00495	0.0296
–	Potato washed	–	–	0.00245	0.01465
–	Potato peeled	–	–	0.00158	0.00947
–	Potato, cooked peeled	–	–	0.00121	0.00725
–	Potato, microwave unpeeled	–	–	0.00334	0.01998
–	Potato, French fries	–	–	0.00183	0.01095
–	Potato flakes	–	–	0.00223	–
PO 0111	Poultry, edible offal of	W	0.03	–	–
PF 0111	Poultry fats	W	0.07	–	–
PM 0110	Poultry meat	W	0.007	–	–
GC 0649	Rice	0.002	0.4	0.002	–
CM 0649	Rice, husked	0.001*	0.4	0.002	–
CM 1205	Rice, polished	0.001*	0.15	0.002	–
CM 1206	Rice bran, unprocessed	W	2	–	–
AS 0649	Rice straw and fodder, Dry	W	0.6 dw	–	–
VR 0075	Root and Tuber vegetables, Group of (except potato and sugar beet)	0.002[a]	0.002	0	0.00212
AS 0650	Rye straw and fodder dry	0.05 dw	0.05 dw	–	–
VD 0541	Soya beans (dry)	0.002	0.01	0.002	–
AL 3538	Soya bean hulls	0.015	0.06	–	–
OC 0541	Soya bean oil, crude	0.01	–	0.0088	–
DM 3524	Sugar (from sugarcane	–	–	0.00007	–
VR 0596	Sugar beet	0.004	0.01	0.004	–
GS 0659	Sugar cane	0.01	0.01	0.003	0.0073
–	Sugar cane juice	–	–	0.0018	–

CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P	HR or HR-P
		New	Previous	mg/kg	mg/kg
DM 0659	Sugar cane molasses	–	–	0.00007	–
SO 2091	Sunflower seeds, subgroup of	0.01	0.004*	0.008	–
VO 2045	Tomato, subgroup of	0.004*	0.01*	0.008	0.008
AS 0653	Triticale straw and fodder dry	0.05 dw	0.05 dw	–	–
GC 2086	Wheat, similar grains, and pseudocereals with husks, subgroup of	0.03	0.004*	0.008	–
AS 0654	Wheat straw and fodder dry	0.05 dw	0.05 dw	–	–

Notes: as: as received; dw: dry weight.

[a] Residues resulting from rotational cropping.

Table 5.15.16 Residue values used for estimation of livestock dietary burdens

CCN	Commodity	Fipronil+MB46136		Fipronil+MB46136+MB45950		MB46513	
		Median or median-P mg/kg	Highest or highest-P mg/kg	Median or median-P mg/kg	Highest or highest-P mg/kg	Median or median-P mg/kg	Highest or highest-P mg/kg
–	Barley, oats, rye, sorghum, triticale, wheat forage	0	0	0	0	0	0.01322
–	Barley/oat grain	0.001	–	0.0015	–	0.0005	–
SO 0691	Cottonseed	0.001	–	0.0015	–	0.0005	–
–	Cottonseed hulls	0.00018	–	0.000345	–	0.000075	–
–	Cottonseed meal	0.00017	–	0.00033	–	0.0000005	–
VD 2065	Dry beans (except soya bean)	0.001	–	0.0015	–	0.0005	–
VD 2066	Dry peas	0.001	–	0.0015	–	0.0005	–
–	Kale leaves	0	0.01135	0	0.01135	0	0.01784
–	Legume forages (except alfalfa, clover)	0	0	0	0	0.003635	0.0119
–	Maize grain	0.002	–	0.003	–	0.001	–
–	Maize forage	0.004 as	0.004 as	0.006 as	0.006 as	0.002 as	0.002 as
–	Maize silage	0.004 as	0.004 as	0.006 as	0.006 as	0.002 as	0.002 as
–	Potato culls	0.0038	0.0268	0.0045	0.0282	0.0005	0.0094
–	Potato processing waste[a]	0.00504	–	0.00623	–	0.0016	–
–	Carrot culls, cassava roots, swede roots, turnip roots	0	0.00212	0	0.00212	0	0
VD 0541	Soya beans (dry)	0.001	–	0.0015	–	0.0005	–
AL 3538	Soya bean hulls	0.0068	–	0.00975	–	0.003	–
–	Sugar beet tops	0.003 as	0.02 as	0.004 as	0.03 as	0.001 as	0.01 as
–	Sugarcane bagasse	0.00187	–	0.001936	–	0.000168	–
–	Sugarcane molasses	0.000023	–	0.000044	–	0.00016	–
–	Wheat/rye/triticale grain	0.004	–	0.006	–	0.0005	–
–	Wheat/rye/triticale straw	0.02 as	0.0241 as	0.03 as	0.0341 as	–	–

Note:

[a] Used potato peel values to reflect residues in processing waste.

Dietary risk assessment

Long-term dietary exposure

The ADI for fipronil is 0–0.0002 mg/kg bw. The International Estimated Daily Intakes (IEDIs) for fipronil were estimated for the 17 GEMS/Food Consumption Cluster Diets using the STMR or STMR-P values estimated by the JMPR. The results are shown in Annex 3 of the 2024 JMPR Report.

The IEDIs ranged from 20–100 percent of the maximum ADI. The meeting concluded that long-term dietary exposure to residues of fipronil from uses considered by the JMPR is unlikely to present a public health concern.

Acute dietary exposure

The ARfD for fipronil is 0.03 mg/kg bw. The International Estimate of Short-term Intakes (IESTIs) for fipronil were calculated for the food commodities and their processed commodities for which HRs/HR-Ps or STMRs/STMR-Ps were estimated by the present meeting and for which consumption data were available. The results are shown in Annex 4.

The IESTIs varied from 0–20 percent of the ARfD for children and 0–7 percent of the ARfD for the general population. The meeting concluded that acute dietary exposure to residues of fipronil from uses considered by the present meeting is unlikely to present a public health concern.

Threshold of toxicological concern (TTC) consideration for metabolites

The meeting agreed metabolites MB45897, MB46400, fipronil-carboxamide (RPA105048), fipronil sulfone-amide (RPA105320), RPA108058 and fipronil-acid (RPA200761) could be assessed using the TTC approach (Cramer class III threshold of 1.5 µg/kg bw per day) (Table 5.15.17).

Table 5.15.17 Intake estimated for metabolites assessed by the TCC approach

Metabolite	Intake (ug/person)	Intake (µg/kg bw)
MB45987	2.6	0.0433
MB46400	0.00038	6.63E-06
RPA105048	6.2	0.1033
RPA105320	7.3	0.1217
RPA108058	0.0073	0.00012
RPA200761	12	0.2

The current meeting estimated dietary exposures for metabolite MB45897 of 0.04334 µg/kg bw per day, MB46400 of 0.0000066 µg/kg bw per day, fipronil-carboxamide (RPA105048) of 0.1033 µg/kg bw per day, fipronil-sulfone-amide (RPA105320) of 0.1217 µg/kg bw per day, RPA108058 of 0.00012 µg/kg bw per day and fipronil-acid (RPA200761) of 0.2 µg/kg bw per day.

The meeting concluded that the estimated dietary exposure to residues of MB45897, MB46400, RPA105048, RPA105320, RPA108058 and RPA200761 from uses considered by the JMPR is below the

TTC for Cramer class III compounds and is unlikely to present a public health concern. Should further uses be considered in the future, these conclusions may need to be re-evaluated.

5.16 Florpyrauxifen-benzyl (341) (T, R)

5.16.1 Toxicology

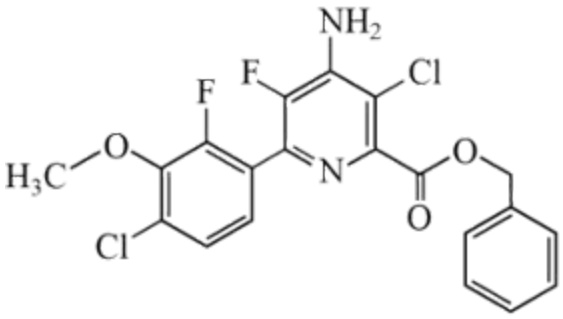
Florpyrauxifen-benzyl is the ISO-approved common name for benzyl-4-amino-3-chloro-6-(4-chloro-2-fluoro-3-methoxyphenyl)-5-fluoropyridine-2-carboxylate (IUPAC), with the Chemical Abstracts Service number 1390661-72-9.

Florpyrauxifen-benzyl is a post-emergence synthetic auxin herbicide for use in the control of a wide range of weeds in crops. Florpyrauxifen-benzyl acts systemically, mainly being absorbed by foliage but also by roots of plants. It is translocated through the phloem and xylem and accumulates in the meristematic tissue where it exerts its herbicide action. Florpyrauxifen-benzyl is a member of the chemical family: 6-arylpicolinates, which act as auxin mimics. Florpyrauxifen-benzyl demonstrates a high affinity for binding with the auxin-signalling F-box 5 (AFB5) receptor and a low affinity for binding with the transport inhibitor response 1 (TIR1) receptor in the cell nucleus, making it different from other auxin chemistries.

Florpyrauxifen-benzyl has not previously been evaluated by FAO/WHO Joint Meeting on Pesticide Residues (JMPR) and was reviewed by the present meeting at the request of the Codex Committee on Pesticide Residues (CCPR).

All critical studies contained statements of compliance with good laboratory practice and were conducted in accordance with current test guidelines, unless otherwise specified. No additional information from a literature search was identified that complemented the toxicological information submitted for the current assessment.

Figure 5.16.1 Chemical structure of florpyrauxifen-benzyl



Biochemical aspects

Absorption of ^{14}C-labelled florpyrauxifen-benzyl was rapid without apparent lag time, with an average time to maximum concentration (T_{max}) for radioactivity of two hours in rats. Absorption of florpyrauxifen-benzyl in rats was 36–42 percent at a single or multiple doses of 10 mg/kg bw per day, and 8–9 percent at a single dose of 300 mg/kg bw. After a single oral exposure at 10 mg/kg bw, the initial decline in plasma

radioactivity was rapid with a maximum concentration (C_{max}) in plasma declining to ½C_{max} by six hours post dosing.

Concentration of radioactivity was highest in the gastrointestinal tract, followed by urinary bladder, plasma, kidney and liver, consistent with the presence of the test material primarily in the portal of entry and primary excretion tissues. No potential for accumulation was observed, with less than 0.02 percent of the administered dose remaining in the tissues after seven days.

Excretion was primarily via faeces (51–101 percent) and urine (8–42 percent) in rats. The majority of the urinary elimination (51–92 percent) occurred within the first 12 hours post dosing, with the majority of the faecal elimination (88–97 percent) occurring within 24 hours. Plasma elimination of florpyrauxifen-benzyl radiolabel was biphasic with a rapid alpha phase ($t_{½α}$ = about 2 hours) and a slower β phase half-life ($t_{½β}$ = 27–51 hours) in both male and female rats. The fraction eliminated in the urine was higher in the lower dose groups, consistent with higher absorption at lower doses. This kinetic non-linearity is consistent with either reduced absorption or higher biliary elimination at the high dose, as possible reasons for reduced renal elimination at the high dose. In mice, urinary excretion accounted for 37–48 percent of the dose while faeces accounted for 39–46 percent. Elimination via urine and faeces in female rabbits was 67 percent and 25 percent, respectively. In dogs, 60–80 percent was eliminated in the faeces. Male and female dogs excreted 7–12 percent and 0.4–5 percent in the urine, respectively.

Florpyrauxifen-benzyl was metabolized primarily into a single metabolite, florpyrauxifen, and readily eliminated in urine and faeces from the rat, with almost no tissue residues. A total of 13 peaks were identified in rat urine and faeces. No parent florpyrauxifen-benzyl was identified in urine samples from the absorption, distribution, metabolism and excretion studies, while low levels were detected in urine in the toxicity studies. Flopyrauxifen was the most abundant metabolite identified in urine samples with remaining metabolites accounting for less than 5 percent. Parent florpyrauxifen-benzyl was the most abundant substance found in the faeces, accounting for about 35–92 percent.

The kinetic profile of florpyrauxifen-benzyl was consistent across, mice, rats, rabbits and dogs, with rapid systemic absorption and complete hydrolysis of the absorbed fraction to the major metabolite, florpyrauxifen, and other minor metabolites. An in vitro comparative metabolism study showed that florpyrauxifen-benzyl was highly metabolized in liver microsomes from rat, mouse, dog, rabbit, and human donors. No unique human metabolites were identified.

Toxicokinetics were analysed in all the short- and long-term studies of toxicity referenced below. In the short-term and subchronic toxicity studies in rats, daily systemic exposures (blood AUC_{24h}) for the major metabolite, florpyrauxifen, exhibited sublinear kinetics where increasing the dose resulted in minimal change in systemic exposure at the targeted dose levels of 500 mg/kg bw per day and above in the 28-day toxicity study and 300 mg/kg bw per day and above in the 90-day toxicity study in both males and females. Similarly, a reproductive/developmental screening study in rats demonstrated that blood levels of florpyrauxifen were sublinear at dose levels targeting 300 mg/kg bw per day and above. These data were used to support a kinetically informed dose selection for the combined chronic toxicity and carcinogenicity and two-generation reproduction studies in rats. A similar kinetic profile was also observed at high doses in the toxicity studies with mice, rabbits and dogs.

Toxicological data

The acute oral median lethal dose (LD_{50}) of florpyrauxifen-benzyl was greater than 5000 mg/kg bw and the dermal LD_{50} was greater than 5000 mg/kg bw. The inhalation median lethal concentration (LC_{50}) of florpyrauxifen-benzyl was greater than 5.23 mg/L. Florpyrauxifen-benzyl was not irritating to skin but caused transient irritation to eyes in rabbits. Florpyrauxifen-benzyl was skin sensitizing in the mouse local lymph node assay (LLNA) but was not skin sensitizing in the guinea pig Buehler test. It did not produce phototoxic effects in vitro.

In repeat-dose toxicity studies in mice, rats and dogs, no toxicologically significant findings were evident in any of the species at any dose tested up to the limit dose (around 1000 mg/kg bw per day) in the short-term toxicity studies in mice, rats and dogs, carcinogenicity study in mice, developmental toxicity studies in rats and rabbits, or the kinetically informed maximum dose (around 300 mg/kg bw per day) in the chronic toxicity and carcinogenicity study and two-generation reproductive toxicity study in rats.

In the long-term studies of toxicity and carcinogenicity in mice and rats, no treatment-related effects on systemic toxicity or tumour incidence were observed.

The meeting concluded that florpyrauxifen-benzyl is not carcinogenic in mice or rats.

Florpyrauxifen-benzyl was tested for genotoxicity in an adequate range of in vitro and in vivo assays. No evidence of genotoxicity was found.

The meeting concluded that florpyrauxifen-benzyl is unlikely to be genotoxic.

In view of the lack of genotoxicity and the absence of carcinogenicity in mice and rats, the meeting concluded that florpyrauxifen-benzyl is unlikely to pose a carcinogenic risk to humans.

No adverse effects were observed at any generation/life stage in a two-generation reproductive toxicity study in rats or developmental toxicity studies in rats and rabbits.

The meeting concluded that florpyrauxifen-benzyl is not teratogenic.

No specific data were submitted regarding neurotoxicity, but no evidence of neurotoxicity was reported in routine toxicological studies with florpyrauxifen-benzyl.

The meeting concluded that florpyrauxifen-benzyl is unlikely to be neurotoxic.

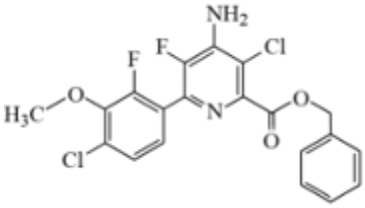
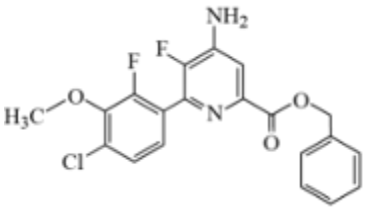
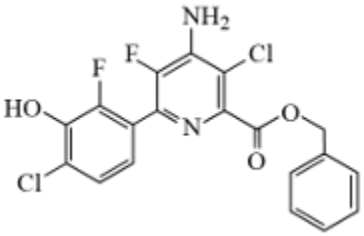
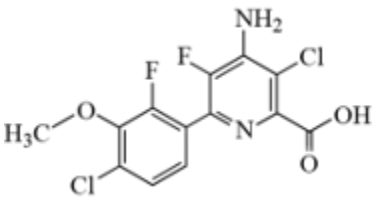
No specific data were submitted regarding immunotoxicity, but no evidence of immunotoxicity was reported in routine toxicological studies with florpyrauxifen-benzyl.

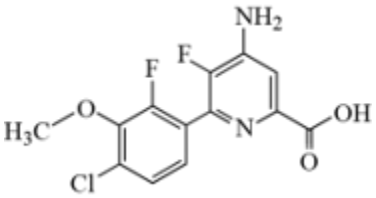
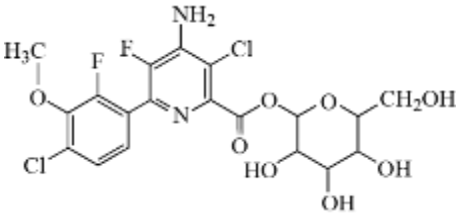
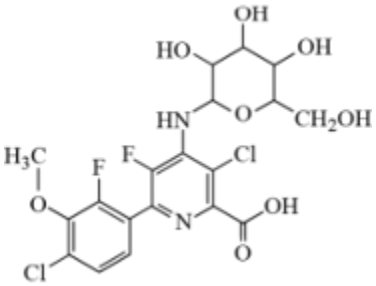
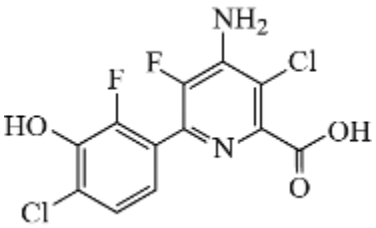
The meeting concluded that florpyrauxifen-benzyl is unlikely to be immunotoxic.

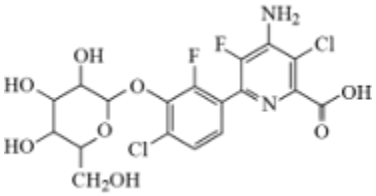
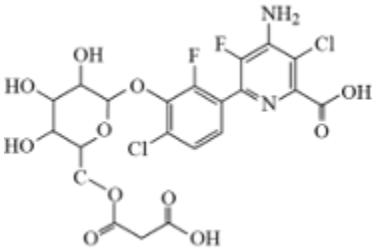
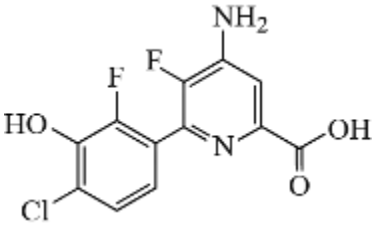
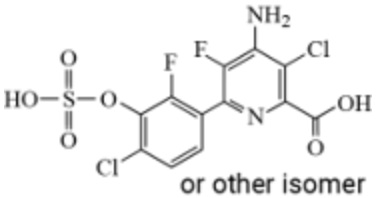
Toxicological data on metabolites and/or degradates

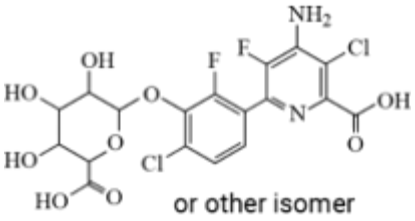
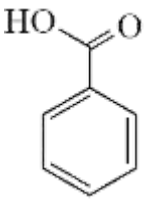
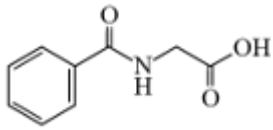
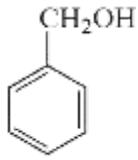
A toxicological evaluation of the following metabolites was performed. Table 5.16.1 shows an overall summary of the toxicological characterization of the metabolites requested for consideration in the residue definition.

Table 5.16.1 Summary overview of toxicological characterization of plant/livestock metabolites

Compound, code and structure	Major rat metabolite (>10% AD)	Genotoxicity assessment (data, QSAR, read-across)	General toxicity	Reference value for dietary risk assessment
Florpyrauxifen-benzyl X11959130 XR-848 benzyl ester, XR-848 BE 	Parent	Not genotoxic (data)	Full dataset	ADI: not necessary ARfD: not necessary
Benzyl 4-amino-6-(4-chloro-2-fluoro-3-methoxyphenyl)-5-fluoropyridine-2-carboxylate Des-chloro-848-BE X12131932 	No	Not genotoxic (QSAR)	Structural similarity to parent supported by comparative QSAR	Not of toxicological concern
Benzyl-4-amino-3-chloro-6-(4-chloro-2-fluoro-3-hydroxyphenyl)-5-fluoropyridine-2-carboxylate Benzyl hydroxy X12300837 	Present at 2–11% in rat faeces Not detected in rat urine	Not genotoxic (QSAR)	Structural similarity to parent supported by comparative QSAR	Not of toxicological concern
4-amino-3-chloro-6-(4-chloro-2-fluoro-3-methoxyphenyl)-5-fluoropyridine-2-carboxylic acid Florpyrauxifen XR-848 acid X11438848 	Yes	Not genotoxic as covered by parent	Covered by parent	Not of toxicological concern

Compound, code and structure	Major rat metabolite (>10% AD)	Genotoxicity assessment (data, QSAR, read-across)	General toxicity	Reference value for dietary risk assessment
4-amino-6-(4-chloro-2-fluoro-3-methoxyphenyl)-5-fluoropyridine-2-carboxylic acid X12393505 	No	Not genotoxic (QSAR)	Structural similarity to flopyrauxifen supported by comparative QSAR	Not of toxicological concern
Glucose conjugate of florpyrauxifen X12427971 	No	Not genotoxic (QSAR)	Conjugate of florpyrauxifen	Not of toxicological concern
***N*-Glucose conjugate of florpyrauxifen** 	No	Not genotoxic (QSAR)	Conjugate of florpyrauxifen	Not of toxicological concern
4-Amino-3-chloro-6-(4-chloro-2-fluoro-3-hydroxyphenyl)-5-fluoropyridine-2-carboxylic acid XR-848 hydroxy acid X11966341 	Minor metabolite (<10% in rat urine)	Not genotoxic (data)	Structural similarity to florpyrauxifen (minus methyl group)	Not of toxicological concern

Compound, code and structure	Major rat metabolite (>10% AD)	Genotoxicity assessment (data, QSAR, read-across)	General toxicity	Reference value for dietary risk assessment
4-Amino-3-chloro-6-(4-chloro-2-fluoro-3-((2*S*,3*R*,4*S*,5*S*,6*R*)-3,4,5-trihydroxy-6-(hydroxymethyl)-tetrahydro-2*H*-pyran-2-yoxyl)phenyl)-5-fluoropicolinic acid Glucose conjugate of X11966341 X12431091 	No	Not genotoxic (QSAR)	Conjugate of X11966341	Not of toxicological concern
4-Amino-6-(3-{[6-*O*-(carboxyacetyl)hexopyranosyl]*oxy*}-4-chloro-2-flurophenyl)-3-chloro-5-fluoropyridine-2-carboxylic acid Glucose-malonic acid conjugate of X11966341 X12431475 	No	Not genotoxic (QSAR)	Conjugate of X11966341	Not of toxicological concern
4-Amino-6-(4-chloro-2-fluoro-3-hydroxyphenyl)-5-fluoropyridine-2-carboxylic acid X12568215 	No	Not genotoxic (QSAR)	Structural similarity to X11966341 supported by comparative QSAR	Not of toxicological concern
4-Amino-3-chloro-6-(4-chloro-2-fluoro-3-sulfooxy-phenyl)-5-fluoro-pyridine-2-carboxylic acid Sulfate conjugate of X11966341 MW414  or other isomer	No	Not genotoxic (QSAR)	Conjugate of X11966341	Not of toxicological concern

Compound, code and structure	Major rat metabolite (>10% AD)	Genotoxicity assessment (data, QSAR, read-across)	General toxicity	Reference value for dietary risk assessment
4-Amino-6-[3-(6-carboxy-3,4,5-trihydroxy-tetrahydropyran-2-yl)oxy-4-chloro-2-fluoro-phenyl]-3-chloro-5-fluoro-pyridine-2-carboxylic acid Glucuronide conjugate of X11966341 MW 510  or other isomer	No	Not genotoxic (QSAR)	Conjugate of X11966341	Not of toxicological concern
Benzoic acid and benzoic acid conjugates (heat/acid labile) X194973 	No	Not genotoxic (QSAR)	Metabolized to hippuric acid, which is commonly found at mg/L levels in human urine	Not of toxicological concern
Hippuric acid *N*-Benzoylglycine or benzoylaminoacetic acid Conjugate of benzoic acid X194907 	No	Not genotoxic (QSAR)	Commonly found at mg/L levels in human urine	Not of toxicological concern
Benzyl alcohol X195023 	No	Not genotoxic (QSAR)	Metabolized to hippuric acid via benzoic acid in humans	Not of toxicological concern

Microbiological aspects

There was no information available in the public domain, and no experimental data were submitted, that addressed the possible impact of florpyrauxifen-benzyl residues on the human intestinal microbiome.

Human data

In reports on research and development personnel or manufacturing plant personnel, no adverse health effects were noted.

No information on accidental or intentional poisoning in humans is available.

The meeting concluded that the existing database on florpyrauxifen-benzyl was adequate to characterize the potential hazards to the general population, including fetuses, infants and children.

Toxicological evaluation

The meeting concluded that it was not necessary to establish an acceptable daily intake (ADI) for florpyrauxifen-benzyl. From the animal studies with florpyrauxifen-benzyl, no adverse effects were observed at the kinetically informed maximum dose of approximately 300 mg/kg bw per day in the two-year combined chronic toxicity and carcinogenicity study and two-generation reproductive toxicity study in rats, or at or near the limit dose of approximately 1000 mg/kg bw per day in the other toxicity studies evaluated. The meeting concluded that it was not necessary to establish an acute reference dose (ARfD) for florpyrauxifen-benzyl in view of its low acute toxicity and the absence of developmental toxicity or any other toxicological effects likely to be elicited by a single dose.

A toxicological monograph was prepared.

Table 5.16.2 Levels relevant to risk assessment of florpyrauxifen-benzyl

Species	Study	Effect	NOAEL	LOAEL
Mouse	Eighteen-month study of toxicity and carcinogenicity[a]	Toxicity	6072 ppm, equal to 803 mg/kg bw per day[b]	–
		Carcinogenicity	6072 ppm, equal to 803 mg/kg bw per day[b]	–
Rat	Two-year study of toxicity and carcinogenicity[a]	Toxicity	8584 ppm, equal to 303 mg/kg bw per day[b, c]	–
		Carcinogenicity	8584 ppm, equal to 303 mg/kg bw per day[b, c]	–
	Two-generation study of reproductive toxicity[a]	Reproductive toxicity	4289 ppm, equal to 309 mg/kg bw per day[b, c]	–
		Parental toxicity	4289 ppm, equal to 309 mg/kg bw per day[b, c]	–
		Offspring toxicity	4289 ppm, equal to 309 mg/kg bw per day[b, c]	–
	Developmental toxicity study[a]	Maternal toxicity	14000 ppm, equal to 975 mg/kg bw per day[b]	–
		Embryo/fetal toxicity	14000 ppm, equal to 975 mg/kg bw per day[b]	–
Rabbit	Developmental toxicity study[a]	Maternal toxicity	27000 ppm, equal to 1042 mg/kg bw per day[b]	–
		Embryo/fetal toxicity	27000 ppm, equal to 1042 mg/kg bw per day[b]	–
Dog	90-day study of toxicity[a]	Toxicity	30000 ppm, equal to 1008 mg/kg bw per day[b]	–

Notes:
[a] Dietary administration.
[b] Highest dose tested.
[c] Kinetically informed maximum dose.

Acceptable daily intake (ADI) applies to florpyrauxifen-benzyl:

Unnecessary

Acute reference dose (ARfD) applies to florpyrauxifen-benzyl:

Unnecessary

Information that would be useful for the continued evaluation of the compound

Results from epidemiological, occupational health and other such observational studies of human exposure.

Table 5.16.3 Critical end-points for setting guidance values for exposure to florpyrauxifen-benzyl

Absorption, distribution, excretion and metabolism in mammals	
Rate and extent of oral absorption	Rapid (T_{max} about 2 hours in rat); 36–42% at 10 mg/kg bw; 8–9% at 300 mg/kg bw
Distribution	Highest concentration in urinary bladder, plasma, kidney and liver
Potential for accumulation	No evidence of accumulation
Rate and extent of excretion	Primarily via faeces (51–101%) and urine (8–42%); majority within 24 hours Urinary excretion was higher in lower dose groups
Metabolism in animals	Extensive, primarily to florpyrauxifen
Toxicologically significant compounds in animals and plants	None
Acute toxicity	
Rat, LD_{50}, oral	>5000 mg/kg bw
Rat, LD_{50}, dermal	>5000 mg/kg bw
Rat, LC_{50}, inhalation	>5.23 mg/L
Rabbit, dermal irritation	Not irritating
Rabbit, ocular irritation	Transiently irritating
Mouse, dermal sensitization	Sensitizing (LLNA)
Guinea pig, dermal sensitization	Not sensitizing (Buehler)
Short-term studies of toxicity	
Target/critical effect	No adverse effects at the limit dose
Lowest relevant oral NOAEL	1003 mg/kg bw per day, highest dose tested (mouse)
Long-term studies of toxicity and carcinogenicity	
Target/critical effect	No adverse effects at limit dose/kinetically informed maximum dose
Lowest relevant NOAEL	303 mg/kg bw per day (rat); 803 mg/kg bw per day (mouse)
Carcinogenicity	Not carcinogenic
Genotoxicity	Unlikely to be genotoxic
Reproductive toxicity	
Target/critical effect	No adverse effects at kinetically informed maximum dose
Lowest relevant parental NOAEL	309 mg/kg bw per day (rat)
Lowest relevant offspring NOAEL	309 mg/kg bw per day (rat)
Lowest relevant reproductive NOAEL	309 mg/kg bw per day (rat)
Developmental toxicity	
Target/critical effect	No adverse effects at limit dose

Lowest relevant maternal NOAEL	975 mg/kg bw per day (rat)
Lowest relevant embryo/fetal NOAEL	975 mg/kg bw per day (rat)
Neurotoxicity	
Acute neurotoxicity NOAEL	No evidence from routine studies
Subchronic neurotoxicity NOAEL	No evidence from routine studies
Developmental neurotoxicity NOAEL	No evidence from routine studies
Other toxicological studies	
Immunotoxicity	No evidence from routine studies
Studies on toxicologically relevant metabolites	
X11966341	Not genotoxic (Ames, mammalian cell gene mutation in vitro, chromosomal aberration in vitro)
Microbiological data	No data available for the impact on the human gut microbiome
Human data	No clinical cases or poisoning incidents have been recorded

Table 5.16.4 Summary

	Value	Study	Safety factor
ADI	Unnecessary	–	–
ARfD	Unnecessary	–	–

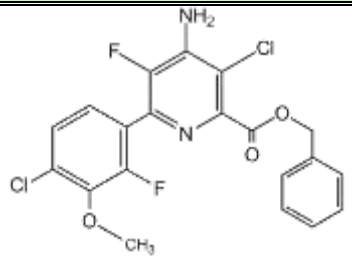
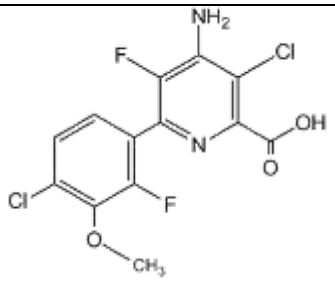
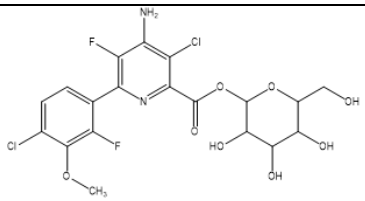
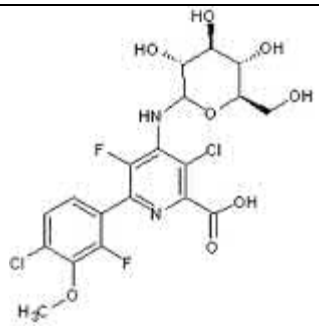
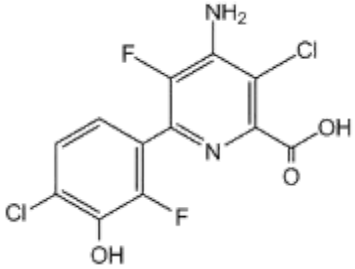
5.16.2 Residue and analytical aspects

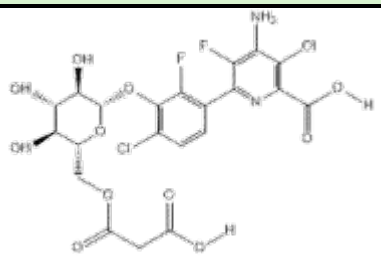
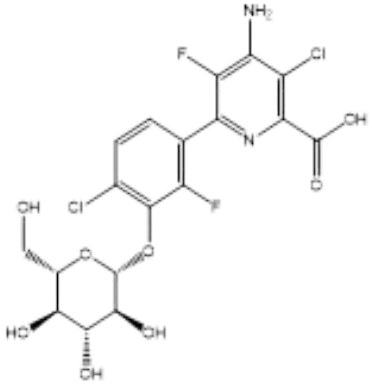
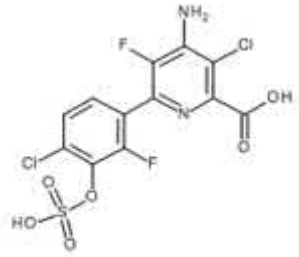
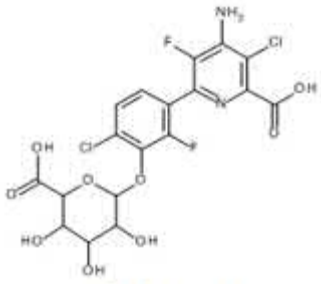
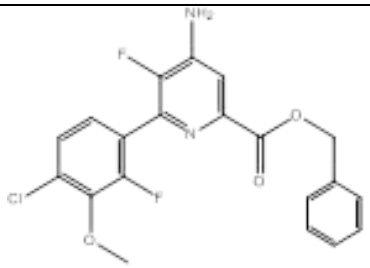
Florpyrauxifen-benzyl is an herbicide that has been developed for the control of grasses, broadleaf weeds, and sedges in rice, pasture grass, maize, soya bean, sugarcane and sugar beet The IUPAC name for florpyrauxifen-benzyl is Benzyl 4-amino-3-chloro-6-(4-chloro-2-fluoro-3-methoxyphenyl)-5-fluoropyridine-2-carboxylate. At the 54th Session of the CCPR, florpyrauxifen benzyl was scheduled for evaluation of toxicology and residue aspects as a new compound by the 2024 JMPR. The meeting decided that an ADI and ARfD for florpyrauxifen-benzyl was unnecessary.

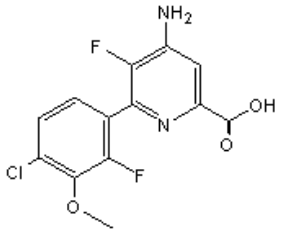
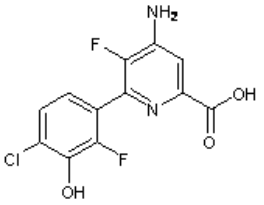
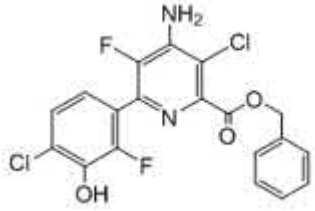
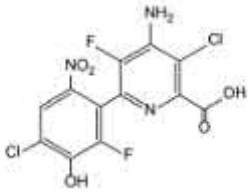
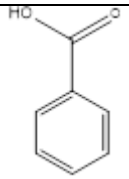
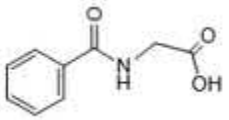
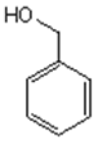
The meeting received information on identity, physicochemical properties, metabolism (plant and animals), environmental fate, methods of residue analysis, freezer storage stability, registered use patterns, supervised residue trials, fate of residues in processing, and livestock feeding studies.

The chemical structure of florpyrauxifen-benzyl and its metabolites/degradates relevant to the appraisal are shown in Table 5.16.5.

Table 5.16.5 Florpyrauxifen-benzyl and the list of identified metabolites/degradates referred to in this appraisal

Compound name(s)/code IUPAC name	Structure	Found in
Florpyrauxifen-benzyl (XR-848 benzyl ester; X11959130; XR-848 benzyl ester; XDE-848 BE; XR-848 BE) IUPAC: benzyl 4-amino-3-chloro-6-(4-chloro-2-fluoro-3-methoxyphenyl)-5-fluoropyridine-2-carboxylate)		Plant: rice (immature plant, mature straw, mature bran, mature grain); wheat (forage, hay, straw); oilseed rape (forage, remaining plant); rotational crop (wheat hay) Animal: goat (faeces); poultry (excreta)
X11438848 (XR-848-acid) IUPAC: 4-amino-3-chloro-6-(4-chloro-2-fluoro-3-methoxyphenyl)-5-fluoropyridine-2-carboxylic acid		Plant: rice (immature plant, mature straw, mature bran, mature grain); wheat (forage, hay, straw); oilseed rape (forage, remaining plant); rotational crop (wheat hay and straw) Animal: goat (faeces, urine, liver, kidney); poultry (excreta) Soil, aqueous photolysis, water-sediment
Glucose conjugate of X11438848 (X12427971)		Plant: rice (mature straw)
N-glucose Conjugate of X11438848		Plant: Oilseed rape (forage, remaining plant)
X11966341 (XR-848 Hydroxy acid) IUPAC: 4-Amino-3-chloro-6-(4-chloro-2-fluoro-3-hydroxyphenyl)-5-fluoropyridine-2-carboxylic acid		Plant: rice (immature plant, mature straw, mature bran, mature grain); wheat (hay, straw); oilseed rape (forage, remaining plant); rotational crop (wheat hay and straw) Animal: goat (faeces, urine, liver, kidney); poultry (excreta) Soil, water-sediment

Compound name(s)/code IUPAC name	Structure	Found in
Glucose-malonic acid conjugate of X11966341 (X12431475) IUPAC: 4-amino-6-(3-{[6-O-(carboxyacetyl)hexopyranosyl]oxy}-4-chloro-2-flurophenyl)-3-chloro-5-fluoropyridine-2-carboxylic acid		Plant: rice (mature straw); wheat (hay, straw); oilseed rape (forage, remaining plant); rotational crop (wheat hay and straw)
X12431091 (Glucose conjugate of XR-848 Hydroxy Acid) IUPAC: 4-amino-3-chloro-6-(4-chloro-2-fluoro-3-((2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)-tetrahydro-2H-pyran-2-yoxyl)phenyl)-5-fluoropicolinic acid		Plant: rice (mature straw, mature bran); wheat (forage, hay, straw); oilseed rape (forage, remaining plant); rotational crop (wheat hay and straw)
Sulphate conjugate of X11966341 (MW414) IUPAC: 4-amino-3-chloro-6-(4-chloro-2-fluoro-3-sulfooxy-phenyl)-5-fluoro-pyridine-2-carboxylic acid	 Or isomer	Animal: goat (urine, liver and kidney[a])
Glucuronide- conjugate of X11966341 (MW510) IUPAC: 4-amino-6-[3-(6-carboxy-3,4,5-trihydroxy-tetrahydropyran-2-yl)oxy-4-chloro-2-fluoro-phenyl]-3-chloro-5-fluoro-pyridine-2-carboxylic acid	 Or isomer	Animal: goat (urine, liver and kidney[a])
Des-Chloro-848-BE (X12131932) IUPAC: Benzyl 4-amino-6-(4-chloro-2-fluoro-3-methoxyphenyl)-5-fluoropyridine-2-carboxylate		Plant: rice (immature plant, mature straw, mature bran, mature grain); wheat (forage, hay, straw); oilseed rape (forage, remaining plant) Aqueous photolysis

Compound name(s)/code IUPAC name	Structure	Found in
X12393505 IUPAC: 4-amino-6-(4-chloro-2-fluoro-3-methoxyphenyl)-5-fluoropyridine-2-carboxylic acid		Plant: wheat (hay, straw); oilseed rape (forage, remaining plant) Aqueous photolysis
X12568215 IUPAC: 4-amino-6-(4-chloro-2-fluoro-3-hydroxyphenyl)-5-fluoropyridine-2-carboxylic acid		Plant: wheat (hay, straw); oilseed rape (forage, remaining plant)
Benzyl hydroxy (X12300837) IUPAC: benzyl-4-amino-3-chloro-6-(4-chloro-2-fluoro-3-hydroxyphenyl)-5-fluoropyridine-2-carboxylate		Plant: rice (immature plant, mature straw, mature bran) Animal: goat (faeces) Soil, water-sediment
X12483137 IUPAC: 4-amino-3-chloro-6-(4-chloro-2-fluoro-3-hydroxy-6-nitrophenyl)-5-fluoropyridine-2-carboxylic acid		Soil
Benzoic acid		Plant: rice (immature plant); wheat (hay) Animal: goat (urine) water-sediment
Benzoic acid conjugates (heat/acid labile)	–	Plant: rice (mature straw, mature bran)
Hippuric acid (N-benzoylglycine or benzoylaminoacetic acid) (X194907)		Animal: goat (urine, liver and kidney)
Benzyl alcohol (X195023)		Plant: wheat (hay); oilseed rape (forage, remaining plant) Soil, aqueous photolysis

Note:

[a] MW414/510 was identified in goat liver and kidney, after dosing with X11966341; not parent florpyrauxifen -benzyl.

Physical and chemical properties

Florpyrauxifen-benzyl is not regarded as volatile and it is hydrolytically stable at normal environmental conditions. It has a higher solubility in organic solvents compared to its solubility in water and the partition coefficient indicates its potential to sequester in fat (Log Pow ≥5.4). The data indicate that aqueous photolysis may play an important role in its degradation.

Plant metabolism

The meeting received studies on the metabolism of florpyrauxifen-benzyl in rice, wheat, oilseed rape and apple, using florpyrauxifen-benzyl labelled in the phenyl [PH] ring, pyridine [PY] ring and benzyl [BE] ring; the phenyl and benzyl labels were uniform throughout the ring, the pyridine label was at position 4 on the ring.

Apple

Apple trees grown outdoors were treated with florpyrauxifen benzyl labelled at the [PY-], [PH-] and [BE-] position. 2 applications were made at a nominal rate of 40 g ai/ha via spray application to bare soil at the base of the trees, at BBCH 74 and 82 (30 day RTI). Actual rates were within 101–105 percent of the nominal. Samples of foliage were taken 15 and 60 DALA. Fruit was harvested at 60 days after the last application (DALA). The total radioactive residues (TRR) did not exceed 0.001 mg eq/kg in any sample; and in the majority of cases the TRR was below the LOQ (0.001 mg eq/kg). No further analysis was conducted on any sample.

Oilseed rape

Oilseed rape grown outdoors was treated with florpyrauxifen benzyl labelled at the [PY-], [PH-] and [BE-] position. One application was made at a nominal rate of 20 g ai/ha via foliar spray application at 30 percent flowers open (BBCH 63). Actual rates were within 104–105 percent of the nominal rate. Samples of forage were taken 21 DALA; samples of immature seed and remaining plant were taken at 60 DALA; and samples of mature seed and remaining plant were taken at 90 DALA.

Homogenized samples were subjected to five sequential extractions with ACN/water (ranging from 90/10 to 10/90). Extractability with organic solvent in forage ranged from 78–92 percent TRR; extractability in remaining plant was lower at between 42–61 percent TRR. Post extraction solids (PES) from select forage and remaining plant samples were subject to acid extraction using 1 mol/L HCl and ACN to release further radioactivity. Additionally, select ACN/water extracts were subject to acid hydrolysis to release conjugates.

The TRR levels were broadly comparable for each label. Forage contained between 0.185–0.22 mg eq/kg; immature remaining plant contained between 0.078–0.10 mg eq/kg; mature remaining plant contained between 0.062–0.13 mg eq/kg. Seeds (immature and mature) contained less than 0.004 mg eq/kg TRR in all labels; therefore, no further identification or characterisation work was conducted on seeds.

In forage, parent florpyrauxifen-benzyl was found at between 1.8 and 2.9 percent TRR (0.003–0.007 mg/kg).

In BE-labelled forage, benzyl alcohol was identified as a major metabolite at 21 percent TRR (0.047 mg eq/kg). X12131932 was also identified as a minor metabolite at 0.6 percent TRR (0.001 mg eq/kg).

In PY- and PH- labelled forage, X11966341 (free and conjugated) was identified at between 41 and 43 percent TRR; free X11966341 comprised between 0 and 3.9 percent TRR. The major X11966341 conjugate identified was X12431091, as well as X12431475 in lesser amounts. X11438848 (free and conjugated) was identified at between 15 and 18 percent TRR; free X11438848 comprised between 1.8 and 2.8 percent TRR. The only X11438848 conjugate identified was the N-glucose conjugate. X12393505 and X12131932 were identified in smaller amounts, ranging from 0.9 to 1.9 percent TRR (0.001–0.004 mg eq/kg).

Following acid hydrolysis, X11966341 was identified as a major metabolite in both labels ranging from 40 to 47 percent TRR (0.074–0.088 mg eq/kg). X11438848 was also identified as a major metabolite at 16–17 percent TRR (0.029–0.032 mg eq/kg. The N-glucose conjugate of X11438848 was not detected following hydrolysis. X12568215 and X12393505 were also present following acid hydroyslis, at slightly higher levels than were observed before hydrolysis: 3.7–5.5 percent TRR (0.007–0.010 mg eq/kg). The TRR in the PES ranged from 17 to 23 percent TRR (0.039–0.042mg eq/kg).

In remaining plant, the metabolic profile of the 60 DALA and the 90 DALA samples are broadly comparable. Additional analyses were conducted on the 90 DALA sample; therefore, only this sample is described in more detail. Florpyrauxifen-benzyl was a minor component, between 0.1 and 1.0 percent TRR (<0.001–0.001 mg/kg).

In BE-labelled remaining plant, benzyl alcohol was identified at 9.3 percent TRR (0.006 mg eq/kg). X12131932 was also identified as a minor metabolite at 0.6 percent TRR (<0.001 mg eq/kg).

In PY- and PH- labelled remaining plant, X11966341 (free and conjugated) was identified at between 19 and 21 percent TRR; free X11966341 comprised between 5.2 and 6.3 percent TRR. The major X11966341 conjugate identified was X12431091, as well as X12431475 in lesser amounts. X11438848 (free and conjugated) was identified at between 7.7 and 12 percent TRR; free X11438848 comprised between 1.5 and 2.7 percent TRR. The only X11438848 conjugate identified was the N-glucose conjugate. X12393505 was identified in smaller amounts, ranging from 1.8 to 2.5 percent TRR (0.001–0.012 mg eq/kg).

Following acid hydrolysis (PY- label only, for 90 DALA sample), X11966341 was identified as a major metabolite at 24 percent TRR (0.032 mg eq/kg). X11438848 was also identified at 6.9 percent TRR (0.009 mg eq/kg). X12568215 and X12393505 were also present following acid hydrolysis: 1.8–2.1 percent TRR (0.003 mg eq/kg).

The TRR in the PES ranged from 11–30 percent TRR (0.04–0.13 mg eq/kg). Further analysis of the PES was conducted on the PH- and PY- label. Radioactivity was naturally incorporated into pectin, lignin, hemicellulose and cellulose; the TRR (sum per matrix) ranged from 27 to 42 percent TRR (0.034–0.041 mg eq/kg). Remaining bound residues, following analysis of naturally incorporated residues, accounted for 3.4–7.2 percent TRR (0.004–0.007 mg eq/kg).

Wheat

Wheat grown outdoors was treated with florpyrauxifen benzyl labelled at the [PY-], [PH-] and [BE-] position. One application was made at a nominal rate of 20 g ai/ha via foliar spray application at the flag leaf stage (BBCH 37). Actual rates were between 99–100 percent of the nominal rate. Samples of forage were taken 1 DALA; samples of hay were taken at 15 DALA; samples of immature grain and straw were taken at 60 DALA (details were not provided on whether 60 DALA straw was dry; however, detailed consideration has only been made for 84 DALA straw; therefore, the meeting decided this is not critical); and samples of mature grain and straw were taken at 84 DALA.

Homogenized samples were subjected to four sequential extractions with ACN/water (ranging from 90/10 to 10/90). Extractability with organic solvent in forage and hay ranged from 78 to 97 percent TRR; extractability in straw was lower at between 35 and 48 percent TRR. Hay samples and select 84 DALA straw samples were subject to further acid extraction or hydrolysis using 1 mol/L HCl and ACN; a further 2.1–2.5 percent TRR was released following acid extraction. Incorporation into natural components (lignin, pectin and hemicellulose) ranged from 3.4 to 30 percent TRR.

The TRR levels were broadly comparable for each label. Forage contained between 0.49 and 0.56 mg eq/kg; hay contained between 0.34 and 0.46 mg eq/kg (or 0.96–1.3 mg eq/kg on a dried, 15 percent moisture, basis); immature straw contained between 0.26 and 0.27 mg eq/kg; mature straw contained between 0.18 and 0.37 mg eq/kg. Wheat grain (immature and mature) contained less than 0.004 mg/kg TRR in all labels; therefore, no further identification or characterisation work was conducted on grain.

In forage, florpyrauxifen-benzyl was a major component at between 73 and 80 percent TRR (0.36–0.44 mg/kg). In BE-labelled forage, X12131932 was the only identified metabolite at 4.1 percent TRR (0.023 mg eq/kg). X12131932 was also observed in the PH- and PY- labelled samples 2.4–4.6 percent TRR (0.020–0.023 mg eq/kg). In the PH- and PY- labels, X11438848 and X12431091 were identified in lower amounts (maximum 1.1 percent TRR (0.006 mg eq/kg); and 2.4 percent TRR (0.012 mg eq/kg), respectively). The TRR in the PES ranged from 5.2 to 8.6 percent TRR (0.029–0.042 mg eq/kg).

For hay, TRR values were determined using samples that had not been dried to the typical moisture levels for hay. Parent florpyrauxifen-benzyl was observed in hay at between 4.2–10 percent TRR (0.014–0.038 mg/kg).

In BE-labelled hay, X12131932 was the only identified metabolite at 4.1 percent TRR (0.023 mg eq/kg). Following acid hydrolysis, X194973 (benzoic acid) was identified as a major metabolite at 39 percent TRR (0.13 mg eq/kg); benzyl alcohol was identified at 5.9 percent TRR (0.02 mq eq/kg).

In PH- and PY- labelled hay, X11966341 (free and conjugated) was identified at between 32–38 percent TRR; free X11966341 comprised between 3.2 and 5.2 percent TRR. The X11966341 conjugates identified were: X12431091 and X12431475. X11966341, X12393505, X11438848 and X12131932 were identified in smaller amounts, ranging from 1.1 to 5.2 percent TRR (0.008–0.019 mg eq/kg).

Following acid hydrolysis, X11966341 (free) was identified as a major metabolite in both labels ranging from 46 to 48 percent TRR (0.17–0.22 mg eq/kg); X12568215 was also identified at between 13 and 16 percent TRR (0.060–0.061 mg eq/kg). X11438848 and X12393505 were present following acid

hydrolysis, at slightly higher levels than were observed before hydrolysis: 2.7–6.1 percent TRR (0.012–0.023 mg eq/kg).

The TRR in the PES ranged from 11 to 30 percent TRR (0.04–0.13 mg eq/kg). Further analysis of the PES was conducted on the PH- and PY- label. Radioactivity was naturally incorporated into pectin, lignin, hemicellulose and cellulose; the TRR (sum of all matrices) ranged from 3.4 to 4.0 percent TRR (0.014–0.015 mg eq/kg). Remaining bound residues, following analysis of naturally incorporated residues, accounted for 9.3–10 percent TRR (0.038–0.043 mg eq/kg).

In straw, the metabolic profile of the 60 DALA and the 84 DALA samples are broadly comparable. Additional analysis were conducted on the 84 DALA sample; therefore, only this sample is described in more detail. Florpyrauxifen-benzyl was a minor component at between 2.7 and 4.9 percent TRR (0.009–0.012 mg/kg).

In BE-labelled straw, X12131932 was the only identified metabolite in the organic solvent extraction at 2.5 percent TRR (0.004 mg eq/kg).

In PY- and PH- labelled straw, X11966341 (free and conjugated) was identified at between 8.5 and 9.8 percent TRR; free X11966341 comprised between 8.2 and 9.8 percent TRR (0.026–0.037 mg eq/kg). The X11966341 conjugate identified was X12431091. X12393505, X11438848 and X12131932 were identified in smaller amounts, ranging from 1.7 to 4.0 percent TRR (0.005–0.013 mg eq/kg).

Following acid hydrolysis, X11966341 was identified as a major metabolite in both labels ranging from 14 to 16 percent TRR (0.04–0.051 mg eq/kg); X12568215 was also identified at between 4.9 and 5.5 percent TRR (0.015–0.020 mg eq/kg). X11438848 and X12393505 were also present following acid hydrolysis, at similar or slightly higher levels than were observed before hydrolysis: 2.7–6.1 percent TRR (0.012–0.023 mg eq/kg).

The TRR in the PES ranged from 42 to 68 percent TRR (0.12–0.21 mg eq/kg). Further analysis of the PES was conducted on the PH- and PY- label. Radioactivity was naturally incorporated into pectin, lignin, hemicellulose and cellulose; the TRR (sum of all matrices) ranged from 21 to 30 percent TRR (0.076–0.095 mg eq/kg). Remaining bound residues, following analysis of naturally incorporated residues, accounted for 9.1–12 percent TRR (0.028–0.045 mg eq/kg).

Paddy Rice

Paddy rice grown outdoors was treated with florpyrauxifen benzyl labelled at the [PY-], [PH-] and [BE-] position. Three application regimes were tested, actual rates were within 101–111 percent of the nominal rate:

- "water injected (W)": 2 applications at a nominal rate of 200 g ai/ha were made via a direct granular application to the flooded rice paddy at the 2-leaf unfolded stage (BBCH 12) and at panicle formation (BBCH 31) (16 days retreatment interval, RTI);
- "foliar flooded (F)": 2 applications at a nominal rate of 60 g ai/ha were performed as a foliar spray to flooded paddy rice at the 1–3 leaf unfolded stage (BBCH 11/13) and at late boot stage (BBCH 45) (15/25 days RTI); and

- "dry-seeded (D)": 2 applications at a nominal rate of 60 g ai/ha were performed as a foliar spray at the 3 leaves unfolded stage (BBCH 13) and at late boot stage (BBCH 45) (31 days RTI) – for scenario D, the field was flooded 3 days after the first application.

Samples of immature plant were taken at 13 DALA; samples of heads (grain and bran) and straw were taken 59–70 DALA. A grain thresher was used to remove the husk from the brown rice. The husks were combined with the straw sample and the brown rice sample was then used to produce white rice and bran. The white rice and bran were separated using a screen wire mesh and sandpaper.

Homogenized samples were subjected to six sequential extractions with ACN/water (ranging from 90/10 to 10/90). Extractability in organic solvent was generally lower for BE-labelled samples, ranging between 42 and 95 percent TRR in immature rice; 30–85 percent TRR in straw; 8–71 percent TRR in bran and 4–44 percent TRR in grain. A further 1.1–3.3 percent TRR was released from select samples using acid hydrolysis (1 mol/L HCl and ACN). Incorporation into natural components (lignin, pectin and hemicellulose; and for rice grain – starch) ranged from 1 to 57 percent TRR.

The TRR in immature rice was 0.046–0.054 mg eq/kg for scenario W, and between 0.15 and 0.80 mg eq/kg in scenarios F and D. The TRR in straw ranged from 0.07 to 0.11 mg eq/kg in scenario W; and 0.48–2.0 mg eq/kg for scenarios F and D. The TRR in bran ranged from 0.015 to 0.061 mg eq/kg in scenario W; and 0.078–0.39 mg eq/kg for scenarios F and D. The TRR in rice grain (white rice) ranged from 0.009 to 0.061 mg eq/kg.

In mature rice grain, only the PH- and PY- labels of scenario F contained extracted residues >0.01 mg eq/kg; no further identification work was conducted on the remaining samples.

Mature grain contained the same four components observed in immature rice plant and mature straw and bran, but at much lower levels: florpyrauxifen-benzyl (3.9–6 percent TRR; 0.001–0.002 mg/kg), X11966341 (2.1–3.2 percent TRR; 0.001 mg eq/kg), X11438848 (≤4.0 percent TRR; 0.001 mg eq/kg), and X12131932 (≤2.6 percent TRR; 0.001 mg eq/kg).

Starch isolation was performed on rice grain samples; natural incorporation into starch was observed in all scenarios and all labels: 20–57 percent TRR (0.003–0.0032 mg eq/kg). Total unextracted residues ranged from 48 to 68 percent TRR (0.006–0.056 mg eq/kg).

In immature rice plant, florpyrauxifen-benzyl was observed at between 9.2–35 percent TRR (0.005–0.28 mg/kg). Scenario W displayed a different metabolic profile to scenarios D and F.

In scenario W, X11438848 was a major metabolite at 25–49 percent TRR (0.011–0.025 mg eq/kg), X11966341 was identified in the PH-label only, at 4 percent TRR. Benzoic acid (or conjugates) and X12131932 (a photolysis product) were not identified in scenario W.

In scenarios D and F, X11438848 was identified at between 3.4 and 5.4 percent TRR; whilst X11966341 between 11 and 18 percent TRR (0.037–0.060 mg eq/kg). Benzoic acid (BE- label only) was identified at between 12 and 15 percent TRR. Natural incorporation into pectin, lignin and hemicellulose was limited in immature plants compared to mature crop fractions.

Natural incorporation ranged from 1.0 to 5.6 percent TRR (0.003–0.035 mg eq/kg). Total unextracted residues ranged from 3.7 and 63 percent TRR (0.025–0.045 mg eq/kg).

In mature straw and bran, metabolism was broadly similar in both matrices. Parent florpyrauxifen-benzyl was observed in mature rice straw at between 8.3 and 39 percent TRR (0.006–0.78 mg eq/kg); parent compound was observed in mature rice bran at between 13 and 19 percent TRR (0.014–0.056 mg eq/kg). Metabolism was less extensive in scenario W.

In scenario W, X11438848 was a major metabolite at between 39 and 48 percent TRR in straw and bran. X11966341 was identified in minor amounts in straw only: 2.4–3.3 percent TRR.

In scenarios D and F, X11438848 (free and conjugated) was identified at 1.9–8.5 percent TRR; free X11438848 at 1.9–6.0 percent TRR. The X11438848 conjugate was identified as X12427971. X11966341 (free and conjugated) was identified at 13–24 percent TRR; free X11966341 at 1.6–18 percent TRR and was identified in higher proportions compared to scenario W. The X11966341 conjugates were X12431091 (glucose conjugate); and X12431575 (glucose-malonic acid conjugate). The acid/heat labile conjugate of benzoic acid (BE-label only) was identified as a major metabolite in straw and bran: 13–18 percent TRR (0.011–0.27 mg eq/kg).

Natural incorporation into pectin, lignin and hemicellulose ranged from 6.1 to 42 percent TRR (0.029–0.17 mg eq/kg). Total unextracted residues ranged from 1.9 to 37 percent TRR (0.024–0.045 mg eq/kg) in straw and 18–99 percent TRR (0.011–0.075 mg eq/kg) in bran.

Summary of plant metabolism

Primary crop metabolism of florpyrauxifen-benzyl has been investigated following applications in crops from three representative groups, namely pulses and oilseeds (oilseed rape–foliar), fruit (apples–soil), cereals (wheat–foliar and paddy rice–various).

Additional experiments were conducted on rice, simulating three application methods: application directly into the water of the flooded bed to simulate rapid-release granular application, foliar spray to rice planted in a flooded bed and foliar spray to rice planted in dry beds.

In all plant metabolism studies (and for the matrices in which identification work was conducted), florpyrauxifen-benzyl was degraded into a range of metabolites; the most predominant route of metabolism proceeds via loss of the benzyl ester to form X11438848 and benzyl alcohol, or conjugates; further hydrolysis of benzyl alcohol can occur to form benzoic acid), or conjugates. X11438848 may then be conjugated or undergo demethylation; the demethylated compound (X11966341) is then incorporated into various conjugated forms (major conjugates include X12431091 and X12431475). A minor pathway consists of dechlorination of the pyridine ring of florpyrauixfen-benzyl which results in the dechlorinated acid (X1239505) though the loss of the benzyl ester, and subsequently, the demethylation to form the dechlorinated demethylated acid (X12568215); this minor pathway may also begin with photolysis of the parent compound, before proceeding as described.

Identification work was limited in crop fractions for human consumption (rice grain, wheat grain, oilseed rape and apple) due to low levels of TRR.

For animal feed commodities, parent compound is observed in widely varying amounts, with larger proportions typically observed at earlier PHIs. Metabolism is extensive with significant amounts of X11438848 and X11966341; including conjugates.

Animal metabolism

The meeting received animal metabolism studies on rats, lactating goats and laying hens where animals were dosed with florpyrauxifen-benzyl radiolabelled in the phenyl (PH), pyridine (PY) or the benzyl (BE) position (no BE-label for laying hens). The meeting also received a study on lactating goats dosed with X11966341 radiolabelled at the phenyl (PH]) or pyridine (PY) position.

Rats

The metabolism of florpyrauxifen-benzyl in rats was reviewed in the framework of the toxicological evaluation by the WHO Core Assessment Group of the current meeting.

Lactating goats

Lactating goats received oral doses of [14C]-florpyrauxifen-benzyl labelled at the [phenyl - PH]; [pyridine-PY] or the [benzyl-BE] position via capsule at a target rate of 10 ppm (actual rates were within 107–113 percent of the nominal, equivalent to ~0.3 mg kg/bw day); for seven consecutive days. Three animals were dosed, one for each label. Milk was collected twice a day. Tissue samples were collected 8.5 hours after the last dose.

The TRR in milk was below 0.01 mg eq/kg in all samples, the highest observed TRR was 0.0054 mg eq/kg in BE-labelled sample at the Day 1 AM timepoint. Residues in milk were notably higher in the BE-label compared to the other labels. The TRR in fat and muscle was below 0.01 mg eq/kg in all samples; the maximum observed TRR was 0.0017 mg eq/kg in perirenal fat for the PY-labelled sample. No identification or characterisation work was conducted on these matrices. The TRR in liver ranged from 0.0076 to 0.022 mg eq/kg; and in kidney it ranged from 0.014 to 0.022 mg eq/kg.

Homogenized liver and kidney samples (duplicate samples) were extracted three times using 80/20 methanol/water. Liver samples were initially extracted with hexane, with extractability of 66–80 percent TRR for liver, and 100–102 percent for kidney.

In liver, no parent compound was identified in any label. In the PH- and PY- labels X11966341 was identified at 21 percent TRR (0.002–0.003 mg eq/kg) and X11438848 at 6.0–6.9 percent TRR (0.001 mg eq/kg). In the BE-labelled sample, hippuric acid was the only identified metabolite at 14 percent TRR (0.003 mg eq/kg). A further 22.9–36.3 percent TRR (0.002–0.008 mg eq/kg) was characterized and 21–36 percent TRR (0.002–0.008 mg eq/kg) remained unextracted.

In kidney, no parent compound was identified in any label. X11966341 was identified at 24–25 percent TRR (0.003–0.005 mg eq/kg) and X11438848 at 28–45 percent TRR (0.004–0.010 mg eq/kg). In the BE-labelled sample, hippuric acid was the only identified metabolite at 14–100 percent TRR (0.022 mg eq/kg). A further 0.0–15 percent TRR (0.000–0.002 mg eq/kg) was characterized and 3.8–7.5 percent TRR (0.001–0.002 mg eq/kg) remained unextracted.

In another study, lactating goats received oral doses of [14C]-X11966341 labelled at the PH- or PY-position via capsule at a target rate of 10 ppm (actual rates were 159–168 percent of the nominal, equivalent to ~0.3 mg kg/bw day) for seven consecutive days. Two animals were dosed, one for each label. Milk was collected twice a day and tissue samples 6 hours after the last dose.

The TRR in milk was below 0.01 mg eq/kg in all samples, the highest observed TRR was 0.003 mg eq/kg in PH-labelled sample at the Day 4 AM timepoint. The TRR in fat and muscle was below 0.01 mg eq/kg in all samples; the maximum observed TRR was 0.006 mg eq/kg in perirenal/omental fat for the PY-labelled sample. No further analysis was undertaken on the milk, muscle and fat samples. The TRR in liver ranged from 0.04 to 0.052 mg eq/kg and in kidney it ranged from 0.074 to 0.11 mg eq/kg.

Homogenized liver and kidney samples were extracted two times using ACN/water (ranging from 100/0 to 30/70). Following organic solvent extraction, the remaining PES for liver samples were treated with protease enzymes, and further extracted with ACN/water (50/50). Kidney solvent extracts was tested for glucuronidase and sulphataseactivity. Between 101 and 107 and 66 and 69 percent TRR was extracted with organic solvent for kidney and liver, respectively; a further 22–33 percent TRR was extracted following protease enzyme treatment.

In liver, the majority of the radioactivity was extracted with neutral organic solvent. The administered compound, X11966341, was identified as the major compound in both labels: 57–78 percent TRR (0.023–0.041 mg eq/kg). The sulphate (MW414) and glucuronide (MW510) conjugates of X11966341, were identified following enzyme treatment at 1.2–16 percent TRR (0.001–0.006 mg eq/kg). A further 1.2–1.8 percent TRR (0.001 mg eq/kg) was characterized and between 4.2–10 percent TRR (0.002–0.004 mg eq/kg) remained unextracted.

In kidney, the majority of the radioactivity was extracted with neutral organic solvent. The administered compound X11966341 was identified as the major compound in both labels: 59–66 percent TRR (0.049–0.067 mg eq/kg). Only the glucuronide conjugate (MW510) of X11966341 was identified at between 33 and 45 percent TRR (0.004–0.025 mg eq/kg). A further 1.6–3.5 percent TRR (0.004 mg eq/kg) was characterized and 1.4–2.8 percent TRR (<0.002 mg eq/kg) remained unextracted.

Laying hens

Laying hens received oral doses of [14C]-florpyrauxifen-benzyl labelled at the [phenyl - PH] or the [pyridine-PY] position via capsule at a target rate of 10 ppm (~0.3 mg kg/bw day); for seven consecutive days. Twenty animals were dosed, ten for each label. Eggs were collected twice a day. Tissue samples were collected within 9 hours of the final dose.

TRR in eggs and tissues (liver, muscle (leg and breast), fat and skin with fat) were below 0.01 mg eq/kg in all samples and no further analysis in the samples was undertaken.

Summary of animal metabolism

In general, metabolism between goat and rat is similar; for hen no identification was conducted in tissue or egg due to low TRR; uptake was low in all tested species. Metabolism proceeds via loss of the benzyl ester to form X11438848, which is then demethylated to form X11966341, and may then be conjugated to form either a sulphate or gluconaride conjugate. Benzoic acid is also observed from the loss of the benzyl ester, this may also be conjugated to form hippuric acid.

For the study conducted with florpyrauxifen-benzyl, goat liver and kidney contained no parent florpyrauxifen-benzyl. X11438848 and X11966341 were identified as the major metabolites in the PH- and PY- labels at 27–69 percent TRR (combined). Hippuric acid was identified at 14–100 percent TRR in BE-

labelled samples. X11966341 was the predominant metabolite in liver, whilst X11438848 was the largest metabolite in kidney. When X11966341 was administered to the goat, it was the only identified compound, free and conjugated, at 80–103 percent TRR.

Environmental fate

The meeting received data on hydrolytic degradation and photolysis, aerobic degradation in soil, soil photolysis, photochemical degradation, degradation in water-sediment, confined rotational crop studies and rotational crop field trials.

Hydrolytic degradation

Florpyrauxifen-benzyl was found to be hydrolytically stable at pH 4 for 30 days at 10 °C. At pH 4 the DT_{50} values were 913 and 397 days at 25 and 35 °C, respectively. At pH 7 the DT_{50} were 952, 111 and 35 days at 10, 25 and 35 °C, respectively. At pH 9 and 10 and 35 °C, the DT_{50} ranged from 0.4 to 9 days. The metabolites X11438848 and benzyl alcohol were the only degradates that were identified. The meeting concluded that, with respect to hydrolysis, at environmentally relevant conditions florpyrauxifen-benzyl was persistent.

The metabolite X11438848 was found to be hydrolytically stable for 5 days at 50 °C at a pHs of 4, 7 and 9.

Aqueous photolysis

The aqueous photolysis of florpyrauxifen-benzyl was investigated in natural water samples and buffered water at pH 4. The samples were continuously exposed to simulated sunlight for 16–18 days equivalent to 30 days of summer sunlight at 40° north latitude.

In natural water samples, the major degradates in the irradiated samples were X12131932 and benzyl alcohol with maximum concentrations of 28 and 82 percent of the applied radioactivity (AR) on 0.17 days after treatment (DAT), and 6.9 DAT, respectively. The metabolite X11438848 was also identified in the water samples at a maximum concentration of 8.9 percent AR on 0.17 DAT. In the buffered water sample the major degradates detected in the irradiated samples were X12131932, X12393505, and benzyl alcohol with maximum concentrations of 31, 10, and 68 percent AR on 0.17, 0.99 and 7.0 DAT, respectively.

The DT_{50} values for florpyrauxifen-benzyl from photolysis at 40° north latitude in the summer sun were 0.16 days and 0.07 days for the natural water and buffered water samples respectively. The DT_{50} for the degradates X12131932, X11438848 and X12393505 ranged <1 day to ≤6 days for natural and buffered water samples.

The meeting concluded that florpyrauxifen-benzyl is degraded quickly, and that aqueous photolysis may play an important role in the degradation. It is noted that the results for buffered water and natural water are broadly comparable.

Route of degradation in soil

The aerobic degradation of florpyrauxifen-benzyl was investigated in 4 soils (3 sandy loam soils, and 1 loam soil) at a rate of 0.48 mg ai/kg. At the study termination, evolved CO_2, the only volatile metabolite formed, accounted for up to 64 percent AR.

Florpyrauxifen-benzyl concentrations decreased from 97 to 104 percent applied radioactivity (AR) at day 0 to 5–41 percent AR at the end of the study in all four aerobic soils. The primary degradates observed in the non-sterile soil samples were X11966341 (maximum 7.80 percent AR, 30 DAT), X12483137 (maximum 11.14 percent AR, 80 DAT), X11438848 (maximum 62.4 percent AR, 7 DAT) and X12300837 (maximum 2.50 percent AR, 0 DAT).

The DT_{50} calculated for the non-sterile soils ranged from 2.5 to 34 days, 28 to 54 days and 6.5 to 37 days for florpyrauxifen-benzyl, X11438848 and X11966341, respectively. The meeting considered that florpyrauxifen-benzyl, X11438848 and X11966341 were non-persistent to moderately persistent in soil under aerobic conditions.

Soil photolysis

A photo-degradation study was conducted with florpyrauxifen-benzyl at dose rates of 5.2–6.5 mg ai/kg soil. The samples were exposed to simulated sunlight continuously for 17 days, after which, florpyrauxifen-benzyl was found at 64–73 percent AR. No major degradates were observed. The metabolites identified were all minor, occurring at levels <10 percent AR (X12131932, X11438848 and X12393505). Three unidentified metabolites were found at low levels. The photolytic half-life for florpyrauxifen-benzyl was 26 days of artificial light, corresponding a DT_{50} value of 49 days of sunlight at 30 to 50°N. The meeting considered that florpyrauxifen-benzyl was stable in soil when exposed to light.

Degradation in water-sediment

Florpyrauxifen-benzyl was applied at a rate of 0.16 mg/kg to a flooded system (soil:water, 1: 1) with loam or sandy loam soil. The primary degradates observed in the flooded soil samples were X11966341 (maximum 64 percent AR, 72 DAT), X11438848 (maximum 33 percent AR, 20 DAT) and X12300837 (maximum 16 percent AR, 30 DAT). The DT_{50} values calculated for the flooded soil systems ranged from 8 to 10 days, 66 to 610 days, 7 to 10 days, and 17 to 61 days for florpyrauxifen-benzyl, X11966341, X11438848 and X12300837 respectively.

The meeting considered that florpyrauxifen-benzyl and X11438848 were non-persistent, and that X12300837 was non-persistent to moderately persistent in the flooded soil systems. X11966341 was very persistent in the sandy loam soil:water system but moderately persistent in the loam soil: water system.

In a second study, the aerobic degradation of florpyrauxifen-benzyl over 105 days was investigated in sediment-pond water systems at a dose rate of 0.48 mg ai/kg soil. The sediment components were categorized as being sandy loam and loam sand. The major degradates observed were X11966341 (78 percent AR, 59 DAT), X11438848 (maximum 45 percent AR, 21 DAT), X12300837 (23 percent AR, 7 DAT) and benzoic acid (21 percent AR, 10 DAT).

The metabolites identified in the flooded soil system were also identified in the sediment pond water system. The DT_{50} geomean values have been calculated based on the two sediment-water studies and are as follows: florpyrauxifen-benzyl – 6.6 days (n = 4); X11438848 – 6.7 days (n = 4); X12300837 – 17 days (n = 4); benzoic acid – 2.4 days (n = 2); and X11966341 – 125 days (n = 4). The meeting considered that the degradation of florpyrauxifen-benzyl, X11438848, X12300837, and benzoic acid was fast in water-sediment, but was slow for X11966341.

The aerobic degradation in sediment pond water systems is relevant to paddy rice. The metabolites identified in the total sediment-water system were also observed in the rice metabolism study.

Rotational crop summary

A confined rotational crop study was conducted at an application rate of 120 g ai/ha to the bare soil. Following crops of leafy lettuce/mustard greens, radish and wheat were planted 30, 90 and 270 DAT. No data are available for lettuce planted 30 and 90 DAT and for radishes planted 30 DAT owing to apparent phytotoxicity. It is noted on several of the provided labels that "sensitive crops" should not be planted up to 90 days following application; no details were provided for what constitutes a "sensitive crop".

TRR in the majority of tested crop matrices were <0.01 mg eq/kg; except for wheat hay and straw for the PH- and PY- label. Florpyrauxifen-benzyl is not expected in wheat hay or straw at >0.01 mg/kg. X11966341 (free and conjugated) was the major metabolite at a maximum of 0.015 mg eq/kg in wheat straw at a 90-day DAT. Free X11966341 comprised the majority of the radioactivity. No other metabolite was identified at >0.004 mg eq/kg.

A field rotational crop study was conducted at a rate of 60 or 79 g ai/ha to bare soil. All residues of florpyrauxifen-benzyl, X11438848 (free) and X11966341 (free) were <0.01 mg/kg.

Overall, the meeting agreed that residues are not expected in rotational crops at levels requiring consideration for maximum residue level estimates, or for dietary exposure assessment purposes.

Methods of analysis

The meeting received analytical method descriptions and validation data for florpyrauxifen-benzyl and its metabolites in plant and animal matrices.

Plant commodities

Residues were determined in crops using several different analytical methods. Following solvent extraction (typically with acetonitrile: water) and sample clean up, the methods employed LC-MS/MS to determine florpyrauxifen-benzyl and its metabolites. A number of the methods included an additional hydrolysis step (typically 80 °C for 60 minutes in the presence of 1 mol/L HCl). The meeting concluded that suitable methods, with an LOQ of 0.01 mg/kg are available to determine florpyrauxifen-benzyl and its metabolites in dry commodities, crop of a high-water content and crops of a high oil content.

Validation data were provided for three enforcement methods that employed LC-MS/MS. The meeting agreed that the multi residue QuEChERS method was suitable for the determination of florpyrauxifen-benzyl, X11438848, X12300837 and X11966341 in crops of a high-water content (lettuce), high oil content

(rapeseeds), high acid content (lemon) and dry crops (wheat/barley grain). The LOQ validated in the QuEChERS method was 0.01 mg/kg for each metabolite.

Radio validation data was provided for immature rice, rice straw and rice hulls for a method which used the extraction solvent ACN/water; extraction efficiency was demonstrated.

Animal commodities

The method employed in the feeding study involved extraction with acetonitrile: aqueous HCl and sample clean up with final determination by LC-MS/MS. The meeting agreed that method was suitable for the determination of florpyrauxifen-benzyl, X11438848 and X11966341 in milk, eggs and tissue samples at an LOQ of 0.01 mg/kg. Primary and ILV data were provided for the QuEChERS method demonstrating that this method was suitable for the determination of florpyrauxifen-benzyl and X11438848 at an LOQ of 0.01 mg/kg.

Stability of pesticide residues in stored analytical samples

The meeting received storage stability studies for florpyrauxifen-benzyl and its metabolites X11438848, X11966341, X12393505 and X12568215 in plant commodities and select processed plant commodities; and for florpyrauxifen-benzyl, X11438848 and X11966341 in products of animal origin.

Storage stability studies showed that florpyrauxifen-benzyl, X11438848, X11966341, X12393505 and X12568215 was stable for at least 50.5 months at –18 °C in crop commodities representative of the high water, high acid, high starch, high protein, high oil commodity groups, as well as processed commodities.

Storage stability studies demonstrated that florpyrauxifen-benzyl, X11438848 and X11966341 were stable for at least 2 months in milk, muscle, eggs, and liver; and at least 3 months in fat and kidney. Florpyrauxifen-benzyl was observed to hydrolyse to X11438848 in liver and kidney; however, the combined residue of florpyrauxifen-benzyl and X11438848 was deemed to be stable for at least 2 months in liver, and at least 3 months in kidney.

The meeting agreed that the demonstrated storage stability on various representative plant and animal commodities covered the residue sample storage intervals used in the field trials considered by the current meeting.

Definition of the residue

Plant commodities

In the plant metabolism studies, parent florpyrauxifen-benzyl was found at varying amounts (between 0.0–79.6 percent TRR); parent compound was found in lower proportions at later PHIs. X11438848 (free and conjugated) and X11966341 (free and conjugated) were identified at between 1.1 and 49 percent TRR. X12131932, X12300837, X12393505, X12568215, were identified in lower amounts (<5.5 percent TRR in primary crops). Benzoic acid and benzoic alcohol were found at >5 percent TRR in a number of matrices; but are not of toxicological concern and are not unique to florpyrauxifen-benzyl, and as such, are not considered suitable metabolites for compliance purposes.

In deciding which compounds should be included in the residue definition for enforcement, the meeting noted that, in the field studies which resulted in residues >LOQ; parent florpyrauxifen-benzyl was found in greater proportions than any metabolite for all crops (2.4–13.5x the levels of X11438848 or X11966341). Despite the low percent TRR of parent observed in some plant metabolism matrices (oilseed rape), parent florpyrauxifen-benzyl is shown to be the most predominant compound identified in the field trials.

For processed commodities, florpyrauxifen-benzyl is not stable under sterilization conditions, forming the breakdown product X11438848. However, approximately 41–49 percent of the residue remaining after sterilization was parent florpyrauxifen-benzyl; as such, parent compound is considered a sufficient marker compound in processed commodities. The meeting noted that suitable analytical methods exist to measure florpyrauxifen-benzyl in plant commodities.

Overall, florpyrauxifen-benzyl is considered to be a suitable marker compound in plant commodities.

In deciding which compounds should be included in the residue definition for dietary risk assessment, the meeting considered the likely occurrence of the compounds and the toxicological properties of the candidates florpyrauxifen-benzyl, X11966341 (free and conjugated), X11438848 (free and conjugated), X12131932, benzoic acid and benzyl alcohol.

Health Based Guidance Values (HBGVs) were not considered necessary for florpyrauxifen-benzyl. The following metabolites are not considered to be of toxicological concern: X11438848 and its conjugates (X12427971 and N-glucose conjugate of X11438848); X11966341 and its conjugates (X12431091, X12431475, MW414, MW510); X12393505; X12568215; X12300837; X12131932; hippuric acid, benzoic acid or benzyl alcohol.

The metabolites X12393505, X12568215 and X12300837 were not identified in any food commodity in metabolism studies or in field trials. X12131932 was identified at 2.6 percent TRR in rice grain (0.001 mg eq/kg) in the rice metabolism study.

In summary, the meeting agreed that a residue definition for dietary risk assessment for plants is not necessary.

Animal commodities

Metabolism of florpyrauxifen-benzyl in lactating goats and laying hens was qualitatively similar – although no residues >0.001 mg/kg were identified in laying hen tissue or eggs. Florpyrauxifen-benzyl was not found in any animal tissue sample in the animal metabolism studies. X11438848 was identified at between 6.0–6.9 percent TRR in goat liver; and at between 28–45 percent TRR in goat kidney. X11966341 was identified at 21 percent TRR in goat liver; and at between 24–25 percent TRR in goat kidney. Hippuric acid was also identified in goat liver and kidney. In the lactating goat study dosed with X11966341, X11966341 remained unchanged as the predominant residue at between 57–78 percent TRR, with conjugates of X11966341 comprising between 1.2–45 percent TRR.

In the farm animal feeding study on lactating goat, parent florpyrauxifen-benzyl was only identified in fat (<0.01–0.055 mg/kg) and cream (0.013–0.046 mg/kg) at the highest dose rate (111 mg/kg DM).

X11438848 was identified in kidney in the 13 and 111 mg eq/kg DM dose groups at a maximum of 0.40 mg/kg. X11438848 was found in liver and fat in the 111 mg eq/kg DM dose group (maximum of 0.068 mg eq/kg in liver and of 0.067 mg eq/kg in fat),

X11966341 was identified in liver and kidney in the 13 and 111 mg eq/kg DM dose groups (maximum of 0.29 mg eq/kg in liver and of 0.18 mg eq/kg in kidney). X11966341 was found in fat in the 111 mg eq/kg DM dose group (maximum 0.046 mg eq/kg).

It is noted that when stored frozen, florpyrauxifen-benzyl may be converted to X11438848 in liver and kidney. Stability of the combined residue of florpyrauxifen-benzyl and X11438848 was suitably demonstrated for the purposes of supporting the animal feeding study. Sufficient analytical methods are available for the determination of florpyrauxifen-benzyl, X11966341 and X11438848.

The meeting therefore decided to define the residue definition for compliance with MRLs for all animal commodities as the sum of florpyrauxifen-benzyl, X11966341 and X11438848, expressed as florpyrauxifen-benzyl.

Residues above LOQ were not detected in any milk or skimmed milk sample in the animal feeding study; however, in cream, residues of florpyrauxifen-benzyl ranged from 0.013–0.046 mg/kg; no residues of X11438848 or X11966341 were identified in cream. In tissues, no residues were detected in muscle, whereas average residues in fat reached 0.036 mg/kg, 0.032 mg eq/kg, and 0.026 mg eq/kg for florpyrauxifen-benzyl, X11438848 and X11966341, respectively. The concentration of the residue in fat and cream, as well as the parent compound Log Pow indicate that the residue is fat-soluble.

HBVGs were considered unnecessary for florpyrauxifen-benzyl. The following metabolites are not considered to be of toxicological concern: X11438848 and its conjugates (X12427971 and N-glucose conjugate of X11438848); X11966341 and its conjugates (X12431091, X12431475, MW414, MW510); hippuric acid, benzoic acid, and benzyl alcohol.

In summary, the meeting agreed that a residue definition for dietary risk assessment for animal commodities is not necessary.

Conclusions:

- Definition of the residue for compliance with the MRL for plant commodities: florpyrauxifen-benzyl.
- Definition of the residue for compliance with the MRL for animal commodities: sum of florpyrauxifen-benzyl, X11966341, and X11438848, expressed as florpyrauxifen-benzyl.
- Definition of the residue for dietary risk assessment for plant and animal commodities: not necessary.
- The residues are fat-soluble.

For the purpose of estimating the farm animal dietary burden, the meeting considered that the only relevant compounds/metabolites in feed are florpyrauxifen-benzyl, X11966341 and X11438848.

Results of supervised residue trials on crops

Supervised trials were available for the use of florpyrauxifen-benzyl on soya beans, sugar beet, maize, rice, sugarcane, and grass. Product labels were available from Brazil (soya beans, maize, rice, sugarcane); the

United States of America (Corn (field, sweetcorn and popcorn), sugarcane); and the European Union (rice (drained, rice paddy, wetter-dry and dry sown paddy rice), grass (new and established leys).

For the animal dietary burden calculation, the residues for estimating the median/highest residue were: the sum of florpyrauxifen-benzyl, X11438848 and X11966341 (expressed as parent). Residues reported as <LOQ were assumed to be at the LOQ for calculation purposes. Molecular mass conversions, to express metabolites as parent florpyrauxifen-benzyl are 1.26 for X11438848 and 1.31 for X11966341. In cases where residues of X11438848 and X11966341 are <LOQ the conversion factor will not apply; the sum of the residues in this case would be <0.03 mg/kg.

Soya bean (dry)

The GAP for soya bean in Brazil allows for one pre-emergence foliar spray application at 10 g ai/ha of florpyrauxifen-benzyl. The meeting received supervised residue trials on soybeans conducted in Brazil. Two trials approximated the GAP at an overdosed rate (2x). Residues of florpyrauxifen-benzyl were <0.01 (2) mg/kg; residues for the purpose of the dietary burden calculation were: <0.03 (2) mg/kg.

The meeting agreed that two trials are not sufficient to make estimations for florpyrauxifen-benzyl in soya beans.

Sugar beet

Data from trials on sugar beet conducted in Europe were provided to the meeting. As no GAP was provided to the meeting, it was not possible to estimate a maximum residue level, or a median/highest residue.

Rice

The critical GAP for rice is in Brazil, which allows 2 applications at 40 g ai/ha (RTI was not specified), with the final application at BBCH 61 (PHI 60 days). The meeting received supervised residue trials on paddy rice conducted in Argentina, Australia, Brazil, China, Europe and the United States of America.

In trials conducted in Australia, the DALA was too long (90–117 days). Some trials data from Argentina and Brazil was overdosed (1.5x) but gave residues <LOQ.

A total of 42 trials are available which approximate the critical GAP for whole rice grain and a total of 16 trials are available for husked rice grain. Residues of florpyrauxifen-benzyl in <u>whole rice grain</u> were: <<u>0.01</u> (34) mg/kg, 0.021 mg/kg, 0.047 mg/kg, 0.065 mg/kg, 0.076 mg/kg, 0.125 mg/kg, 0.187 mg/kg, 0.199 mg/kg, 0.288 mg/kg (n = 42). Residues for the purpose of the farm animal dietary burden calculation were: <0.03 (34) mg/kg, 0.041 mg/kg, 0.067 mg/kg, 0.085 mg/kg, 0.096 mg/kg, 0.17 mg/kg, 0.224 mg/kg, 0.243 mg/kg, 0.336 mg/kg (n = 42).

The meeting estimated a maximum residue level of 0.3 mg/kg for florpyrauxifen-benzyland a median residue of 0.03 mg/kg for florpyrauxifen-benzylin whole rice grain.

Residues of florpyrauxifen-benzyl in <u>husked rice grain</u> were <0.01 (16) mg/kg. Residues for the purpose of animal dietary burden calculation were: <0.03 (16) mg/kg.

The meeting estimated a maximum residue level of 0.01 mg/kg and a median residue of 0.03 mg/kg for florpyrauxifen-benzyl in husked rice grain.*

Maize

The GAP for maize in Brazil is one pre-emergence foliar spray application at 7.5 g ai/ha. The GAP in the United States of America is one foliar spray application at 29 g ai/ha, final application at BBCH 19 (PHI 60 days).

The meeting received supervised residue trials on maize conducted in Brazil and Europe, but none according to the US GAP.

In Europe, eighteen trials approximating the Brazilian GAP were conducted, giving residues of <0.01 (18) mg/kg. Residues for the purpose of animal dietary burden calculation were <0.03 (18) mg/kg (n = 18).

Two additional trials were available from Brazil, but were overdosed (2.8–3.4x), giving residues <0.01 mg/kg.

The meeting estimated a maximum residue level of 0.01* mg/kg and a median of 0 mg/kg for florpyrauxifen-benzyl in maize.

Sugar cane

Two GAPs for sugarcane are available from the United States of America; the first GAP is for two foliar spray application at 38.6 g ai/ha (RTI 14 days, PHI 60 days); the second GAP is for 2 foliar sprays (as a desiccant) at 5.5 g ai/ha (RTI 14 days, PHI 14 days). The meeting received four residue trials on sugar cane which were conducted in Brazil.

The meeting agreed that four trials are insufficient for a major crop and it was not possible to estimate a maximum residue level, or a median/highest residue.

Animal feed

Sugar beet tops

Data from trials on sugar beet conducted in Europe were provided to the meeting. As no GAP was provided to the meeting it was not possible to estimate a median or highest residue.

Rice, forage

The GAP for rice in Brazil allows 2 applications at 40 g ai/ha (RTI was not specified) with the final application at BBCH 61 (PHI 60 days). The label specifies application between BBCH 13–61; therefore, forage may be grazed for rice crops treated at earlier growth stages, and residue results from DALA 0 (or higher) were selected.

The meeting received supervised residue trials on rice conducted in Argentina, Australia, Brazil, China, Europe and the United States of America.

Five trials were conducted at 2x60 g ai/h were overdosed by a factor of 1.5x, but as sufficient trials are available without scaling, they were not considered further.

In five Australian trials approximating the Brazilian GAP, residues in rice forage for the purpose of the farm animal dietary burden calculation were: 4.66 mg/kg, 4.77 mg/kg, 6.50 mg/kg, 6.65 mg/kg, 7.11 mg/kg, 12.04, mg/kg (n = 5). The meeting estimated a median residue of 6.6 mg/kg and a highest residue of 12.04 mg/kg for florpyrauxifen-benzyl in rice, forage (as received).

Rice, hay and/or straw

The GAP for rice in Brazil allows 2 applications at 40 g ai/ha (RTI was not specified) with the final application at BBCH 61 (PHI 60 days). The meeting received supervised residue trials on rice conducted in Argentina, Australia, Brazil, China, Europe and the United States of America. In trials conducted in Australia DALA was too long (90–117 days). Trials from Argentina and Brazil were overdosed (1.5x) and, as sufficient trials approximating GAP were available, they were not considered further.

In 38 trials conducted in China, Europe and the United States of America approximating the Brazilian GAP, residues of florpyrauxifen-benzyl in rice straw were <0.01 (12) mg/kg, 0.011 mg/kg, 0.013 mg/kg, 0.02 (2) mg/kg, 0.026 mg/kg, 0.032 mg/kg, 0.038 mg/kg, 0.044 mg/kg, 0.046 mg/kg, 0.051 mg/kg, 0.078 mg/kg, 0.096 mg/kg, 0.107 mg/kg, 0.132 mg/kg, 0.143 mg/kg, 0.154 mg/kg, 0.158 mg/kg, 0.169 mg/kg, 0.222 mg/kg, 0.252 mg/kg, 0.416 mg/kg, 0.510 mg/kg, 0.669 mg/kg, 1.07 mg/kg, 1.57 mg/kg, 1.66 mg/kg.

Residues in rice straw for the purpose of the farm animal dietary burden calculation were (n = 38) <0.03 (10) mg/kg, 0.04 mg/kg, 0.052 (2) mg/kg, 0.056 mg/kg, 0.078 mg/kg, 0.081 mg/kg, 0.089 mg/kg, 0.102 mg/kg, 0.125 mg/kg, 0.152 mg/kg, 0.16 mg/kg, 0.170 mg/kg, 0.172 mg/kg, 0.176 mg/kg, 0.246 mg/kg, 0.251 mg/kg, 0.257 mg/kg, 0.260 mg/kg, 0.331 mg/kg, 0.378 mg/kg, 0.403 mg/kg, 0.50 mg/kg, 0.735 mg/kg, 0.758 mg/kg, 0.760 mg/kg, 1.21 mg/kg, 1.78 mg/kg, 1.85 mg/kg.

Assuming a default of 90 percent dry matter, the meeting estimated a maximum residue level of 2 mg/kg (dw) for florpyrauxifen-benzyl in Rice, hay and/or straw.

On an as received basis, the meeting estimated a median residue of 0.087 mg/kg and a highest residue of 1.85 mg/kg for florpyrauxifen-benzylin Rice, hay and/or straw.

Maize forage

The GAP for maize in Brazil is one pre-emergence foliar spray application at 7.5 g ai/ha. The GAP in the United States of America is one foliar spray application at 29 g ai/ha, final application at BBCH 19 (PHI 60 days).

The meeting received supervised residue trials on maize conducted in Brazil and Europe. None of the trials support the US GAP.

In Europe, 18 trials approximating the Brazilian GAP gave residues in maize forage for the purpose of the farm animal dietary burden calculation of <0.03 (18) mg/kg. The meeting estimated a median and a highest residue of 0.03 mg/kg for florpyrauxifen-benzyl in maize forage (as received).

Maize hay and/or straw

The GAP in Brazil is one pre-emergence foliar spray application at 7.5 g ai/ha. The GAP for maize in the United States of America is one foliar spray application at a rate of 29 g ai/ha, final application at BBCH 19 (PHI 60 days). The meeting received supervised residue trials on maize conducted in Brazil and Europe. None of the trials supported the US GAP.

In Europe, 18 trials approximating the Brazilian GAP gave residues of in maize stover of <0.01 (18). Residues for the purpose of animal dietary burden calculation were (n = 18): <0.03 (16) mg/kg, 0.034 mg/kg, 0.036 mg/kg.

The meeting estimated a maximum residue level of 0.01 mg/kg, a median residue of 0.03 mg/kg and a highest residue of 0.036 mg/kg for florpyrauxifen-benyzl in maize, hay and/or straw.*

Grass forage

The critical GAP for grass in Belgium allows one application at 9.4 g ai/ha with a PHI of 7 days. The meeting received supervised residue trials on grass conducted in Australia, Europe and the United States of America.

A total of 50 trials conducted in Europe and the United States of America approximating this GAP gave residues for the purpose of animal dietary burden calculation in grass forage of (n = 50): 0.061 mg/kg, 0.087 mg/kg, 0.115 mg/kg, 0.130 mg/kg, 0.144 mg/kg, 0.148 mg/kg, 0.165 mg/kg, 0.175 mg/kg, 0.178 mg/kg, 0.186 mg/kg, 0.217 mg/kg, 0.224 mg/kg, 0.231 mg/kg, 0.232 mg/kg, 0.235 mg/kg, 0.236 mg/kg, 0.238 mg/kg, 0.240 mg/kg, 0.261 mg/kg, 0.267 mg/kg, 0.289 mg/kg, 0.310 mg/kg, 0.331 mg/kg, 0.346 mg/kg, 0.348 mg/kg, 0.349 mg/kg, 0.370 mg/kg, 0.384 mg/kg, 0.386 mg/kg, 0.390 mg/kg, 0.399 mg/kg, 0.404 mg/kg, 0.436 mg/kg, 0.440 mg/kg, 0.455 mg/kg, 0.502 mg/kg, 0.506 mg/kg, 0.506 mg/kg, 0.558 mg/kg, 0.575 mg/kg, 0.589 mg/kg, 0.645 mg/kg, 0.648 mg/kg, 0.679 mg/kg, 0.731 mg/kg, 0.791 mg/kg, 0.794 mg/kg, 0.795 mg/kg, 0.829 mg/kg, 0.891 mg/kg.

On an as received basis, the meeting estimated a median residue of 0.348 mg/kg; and a highest residue of 0.891 mg/kg for florpyrauxifen-benzyl in forage of grasses.

Grass silage

The critical GAP for grass in Belgium allows one application at 9.4 g ai/ha and PHI of 7 days. The meeting received supervised residue trials on grass conducted in Australia, Europe and the United States of America.

A total of 22 trials conducted in Europe and the United States of America approximating the critical GAP gave residues in grass silage for the purpose of animal dietary burden calculation of (n = 22): 0.152 mg/kg, 0.249 mg/kg, 0.265 mg/kg, 0.271 mg/kg, 0.281 mg/kg, 0.286 mg/kg, 0.302 mg/kg, 0.313 mg/kg, 0.436 mg/kg, 0.438 mg/kg, 0.444 mg/kg, 0.487 mg/kg, 0.490 mg/kg, 0.524 mg/kg, 0.637 mg/kg, 0.660 mg/kg, 0.710 mg/kg, 0.716 mg/kg, 0.787 mg/kg, 0.808 mg/kg, 0.872 mg/kg, 1.05 mg/kg (n = 22).

On an as received basis, the meeting estimated a median residue of 0.465 mg/kg and a highest residue of 1.05 mg/kg for florpyrauxifen-benzyl in silage of grasses.

Grass hay

The critical GAP for grass in Belgium allows one application at 9.4 g ai/ha with a PHI of 7 days. The meeting received supervised residue trials on grass which were conducted in Australia, Europe and the United States of America.

A total of 40 trials conducted in Europe and the United States of America approximating the critical GAP gave residues of florpyrauxifen-benzyl of (n = 40): 0.098 mg/kg, 0.115 mg/kg, 0.126 mg/kg, 0.161 mg/kg, 0.183 mg/kg, 0.19 mg/kg, 0.228 mg/kg, 0.233 mg/kg, 0.248 mg/kg, 0.256 mg/kg, 0.269 mg/kg, 0.291 mg/kg, 0.306 mg/kg, 0.335 mg/kg, 0.413 mg/kg, 0.449 mg/kg, 0.458 mg/kg, 0.461 mg/kg, 0.488 mg/kg, 0.509 mg/kg, 0.545 mg/kg, 0.63 mg/kg, 0.65 mg/kg, 0.67 mg/kg, 0.693 mg/kg, 0.698 mg/kg, 0.708 mg/kg, 0.712 mg/kg, 0.861 mg/kg, 0.877 mg/kg, 0.893 mg/kg, 0.931 mg/kg, 1.1 mg/kg, 1.16 mg/kg, 1.26 mg/kg, 1.42 mg/kg, 1.47 mg/kg, 1.474 mg/kg, 2.01 mg/kg, 3.98 mg/kg.

Residues for the purpose of the farm animal dietary burden calculation were (n = 40): 0.190 mg/kg, 0.229 mg/kg, 0.260 mg/kg, 0.280 mg/kg, 0.296 mg/kg, 0.434 mg/kg, 0.452 mg/kg, 0.454 mg/kg, 0.466 mg/kg, 0.532 mg/kg, 0.556 mg/kg, 0.579 mg/kg, 0.598 mg/kg, 0.603 mg/kg, 0.619 mg/kg, 0.619 mg/kg, 0.652 mg/kg, 0.659 mg/kg, 0.728 mg/kg, <u>0.776</u> mg/kg, <u>0.815</u> mg/kg, 0.893 mg/kg, 0.951 mg/kg, 0.956 mg/kg, 0.973 mg/kg, 1.01 mg/kg, 1.03 mg/kg, 1.09 mg/kg, 1.09 mg/kg, 1.38 mg/kg, 1.42 mg/kg, 1.44 mg/kg, 1.46 mg/kg, 1.53 mg/kg, 1.69 mg/kg, 1.84 mg/kg, 1.88 mg/kg, 1.94 mg/kg, 2.33 mg/kg, 4.49 mg/kg.

Assuming a default of 88 percent dry matter, the meeting estimated a maximum residue level of 5 mg/kg florpyrauxifen-benzyl in Hay and/or straw of grasses.

On an as received basis, the meeting estimated a median residue of 0.796 mg/kg and a highest residue of 4.49 mg/kg for florpyrauxifen-benzyl in Hay and/or straw of grasses.

Fate of residues during processing

The meeting received information on the hydrolysis of [14C]-florpyrauxifen-benzyl (PH, PY and BE label), simulating typical processing conditions (90 °C, pH 4, 20 minutes to simulate pasteurization, 100 °C, pH 5, 60 minutes to simulate boiling, baking and brewing and 120 °C, pH 6, 20 minutes to simulate sterilization). The meeting also received information on the hydrolysis of [14C]-X11438848 (PH and PY label) under the same conditions.

No significant hydrolysis of florpyrauxifen-benzyl was observed under conditions simulating pasteurization, boiling, baking and brewing. Breakdown was observed under sterilization conditions in the PH- and PY- labels, forming X11438848. Florpyrauxifen-benzyl and X11438848 were found at approximately equivalent proportions following sterilization (45–49.1 percent TRR each). In the benzyl label, florpyrauxifen-benzyl accounted for 40.8 percent TRR, whilst benzyl alcohol made up 53.5 percent TRR. No significant hydrolysis of X11438848 was observed under any conditions.

The meeting concluded that florpyrauxifen-benzyl is stable under the conditions of pasteurization, boiling, baking and brewing, and forms X11438848 during sterilization. X11438848 is stable under the conditions of sterilization.

The fate of florpyrauxifen-benzyl residues has been examined simulating household and commercial processing of rice, sugar beet and sugar cane. No processing factors could be derived for rice or sugar beet as residues were <0.01 mg/kg in the RAC. As no estimations were made for sugarcane, processing factors for its processed products were not derived.

Residues in animal commodities

Farm animal feeding studies

The meeting received feeding studies with florpyrauxifen-benzyl on lactating cows conducted at treatment rates of 2.6 ppm, 13 ppm, 24 ppm and 111 ppm (DM basis). Residues of florpyrauxifen-benzyl were only detected in fat from the 111-ppm group at up to 0.055 mg/kg and in cream from the 111 ppm group at up to 0.046 mg/kg.

Residues of metabolite X11438848 were detected in kidney and liver in the 13 ppm, 24 ppm and 111 ppm groups, at up to 0.18 mg/kg and 0.29 mg/kg, respectively. In fat, residues were only found in the 111 ppm dose group (up to 0.067 mg/kg).

Residues of metabolite X11966341 were detected in kidney in the 13 ppm, 24 ppm and 111 ppm groups (at up to 0.40 mg/kg), and in liver and fat in the 111-ppm dose group (up to 0.068 mg/kg and 0.046 mg/kg, respectively).

Farm animal dietary burden

Dietary burdens were calculated for beef cattle, dairy cattle, broilers and laying poultry based on feed items evaluated by the JMPR in 2024. The input was based on the intake of florpyrauxifen-benzyl, X11438848 and X11966341 (expressed as florpyrauxifen-benzyl). The dietary burdens, estimated using the OECD diets listed in Appendix IX of the 2016 edition of the FAO manual, are presented in Annex 5 of the 2021 JMPR Report and summarized in Table 5.16.6.

Table 5.16.6 Estimated maximum and mean dietary burdens of farm animals

Animal dietary burden: sum of florpyrauxifen-benzyl, and free and conjugated forms of X11438848 and X11966341, expressed as florpyrauxifen-benzyl, ppm of dry matter diet								
	United States–Canada		European Union		Australia		Japan	
	Max.	Mean	Max.	Mean	Max.	Mean	Max.	Mean
Beef cattle	0.793	0.148	2.589	0.738	5.102	1.4	3.615	1.139
Dairy cattle	2.311	0.642	4.487	1.300	4.487	1.4	18.851[a, b]	9.598[c, d]
Poultry – broiler	0.026	0.03	0.024	0.024	0.017	0.017	0.024	0.024
Poultry – layer	0.026	0.026	0.03[e, f]	0.03[g, h]	0.017	0.017	0.027	0.027

Notes:

[a] Highest maximum beef or dairy cattle dietary burden suitable for MRL estimates for mammalian tissues.

[b] Highest maximum dairy cattle dietary burden suitable for MRL estimates for mammalian milk.

[c] Highest mean beef or dairy cattle dietary burden suitable for STMR estimates for mammalian tissues.

[d] Highest mean dairy cattle dietary burden suitable for STMR estimates for milk.

[e] Highest maximum poultry dietary burden suitable for MRL estimates for poultry tissues.

[f] Highest mean poultry dietary burden suitable for STMR estimates for poultry tissues.

[g] Highest maximum poultry dietary burden suitable for MRL estimates for poultry eggs.

[h] Highest mean poultry dietary burden suitable for STMR estimates for poultry eggs.

Animal commodity maximum residue levels

Cattle

For beef and dairy cattle, a maximum dietary burden of 3.615 ppm and 18.851 ppm were estimated, respectively. For beef and dairy cattle, a mean dietary burden of 1.4 ppm and 9.608 ppm were estimated, respectively. For maximum residue level estimation, the maximum dietary burden of 18.851 ppm was evaluated by interpolating between the 13 and 24 ppm dosing levels of the lactating cow feeding study (Table 5.16.7).

Table 5.16.7 Estimation of florpyrauxifen-benzyl, X11966341 and X11438848, expressed as florpyrauxifen-benzyl for cattle

	Feed level (ppm) for milk residues	Total residues (mg/kg) in milk	Feed level (ppm) for tissue residues	Total residues (mg/kg)			
				Muscle	Liver	Kidney	Fat
Highest residue determination (beef or dairy cattle)							
Feeding study	13	<0.03	13	<0.03	0.053	0.055	<0.03
	24	<0.03	24	<0.03	0.083	0.115	<0.03
Dietary burden and estimate of highest residue	18.851	<0.03	18.851	<0.03	0.068	0.087	<0.03

The meeting estimated a maximum residue level of 0.03* mg/kg for Group of milks, Group of muscle (from mammals other than marine mammals) and Group of mammalian fats (except milk fat), and of 0.09 mg/kg for Group of edible offal (mammalian).

Poultry

The meeting concluded that based on the poultry metabolism study (dosed at 10 ppm) residues above 0.01 mg/kg are not expected in products of poultry origin. The meeting estimated a maximum residue level of 0.03* mg/kg for Group of avian muscle, Group of avian fats, Group of avian, edible offal of and Group of eggs.

Recommendations

On the basis of the data obtained from supervised trials, the meeting concluded that the residue levels listed in Table 5.16.8 and Annex 1 are suitable for establishing maximum residue limits. Table 5.16.9 shows the residues used for animal dietary burden calculation.

Definition of the residue for compliance with the MRL for plant commodities: florpyrauxifen-benzyl.

Definition of the residue for compliance with the MRL for animal commodities: Sum of florpyrauxifen-benzyl, X11966341 and X11438848, expressed as florpyrauxifen-benzyl.

Definition of the residue for dietary risk assessment for plant and animal commodities: not necessary.

The residue is fat-soluble.

Table 5.16.8 Residue levels of florpyrauxifen-benzyl suitable for establishing maximum residue limits

CCN	Commodity	Recommended maximum residue level (mg/kg)	
		New	Previous
PE 0112	Eggs	0.03*	–
PO 0111	Group of avian, edible offal of	0.03*	–
PF 0111	Group of avian fats	0.03*	–
PM 0110	Group of avian muscle	0.03*	–
MO 0105	Group of edible offal (mammalian)	0.09	–
MF 0100	Group of mammalian fats (except milk fats)	0.03*	–
ML 0106	Group of milks	0.03*	–
MM 0095	Group of muscle (from mammals, other than marine mammals)	0.03*	–
AS 0162	Hay and/or straw of grasses	5 (dw)	–
GC 0645	Maize	0.01*	–
AS 3557	Maize, hay and/or straw	0.01* (dw)	–
GC 0649	Rice	0.3	–
CM 0649	Rice, husked	0.01*	–
AS 0649	Rice, hay and/or straw	2 (dw)	–

Note: dw: dry weight.

Table 5.16.9 Commodities used in estimating livestock dietary burdens

CCN	Commodity	Median residue (mg/kg)	Highest residue (mg/kg)[a]
AS 0163	Forage of grasses	0.348 (a.r.)	0.891 (a.r.)
AS 0162	Hay and/or straw of grasses	0.796 (a.r.)	4.49 (a.r.)
GC 2091	Maize	0	–
AS 0645	Maize forage	0.03 (a.r.)	0.03 (a.r.)
AS 3557	Maize, hay and/or straw	0.03 (a.r.)	0.036 (a.r.)
AS 3547	Rice forage (input as rice whole crop silage)	6.6 (a.r.)	12.04 (a.r.)
AS 0649	Rice, hay and/or straw	0.087 (a.r.)	1.85 (a.r.)
AS 0164	Silage of grasses	0.465	1.05 (a.r.)
GC 0649	Whole rice grain	0.03	–

Note: a.r. = as received.

Dietary risk assessment

Long-term dietary exposure

An ADI for florpyrauxifen-benzyl is unnecessary. The meeting therefore concluded that the long-term dietary exposure to residues of florpyrauxifen-benzyl from the uses considered is unlikely to present a public health concern.

Acute dietary exposure

An ARfD for florpyrauxifen-benzyl is unnecessary. The meeting therefore concluded that the acute dietary exposure to residues of florpyrauxifen-benzyl from the uses considered is unlikely to present a public health concern.

5.17 Fluazinam (306)* (T)

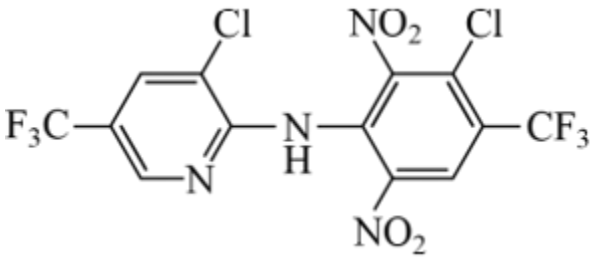
5.17.1 Toxicology

Fluazinam is the common name approved by the International Organization for Standardization for 3-chloro-*N*-(3-chloro-5-trifluoromethyl-2-pyridyl)-α,α,α-trifluoro-2,6-dinitro-*p*-toluidine (IUPAC), with the Chemical Abstracts Service number 79622-59-6.

Fluazinam is used as a fungicide. The fungicidal mode of action (MOA) is the uncoupling of mitochondrial oxidative phosphorylation.

Fluazinam was first reviewed in 2018 by the FAO/WHO Joint Meeting on Pesticide Residues (JMPR) at the request of Codex Committee on Pesticide Residues (CCPR). However, an assessment could not be concluded due to a lack of information on the toxicologically relevant impurity. In 2023 information was received on the impurity and metabolites, but the information was received too late to allow an evaluation to be completed. The chemical was further reviewed by the current meeting following the submission of information. All critical studies contained statements of compliance with good laboratory practice, unless otherwise specified. No additional information from a literature search was identified that complemented the toxicological information submitted for the current assessment.

Figure 5.17.1 Chemical structure of fluazinam



Biochemical aspects

Absorption of [*phenyl*-^{14}C]-labelled fluazinam was rapid with a time to maximum concentration (T_{max}) in the blood of six hours, independent of dose or sex. Blood concentrations at that time (C_{max}) were 32–39 ng equiv./g in the low doses (0.5 mg/kg bw) and 2900 ng equiv./g high doses (50 mg/kg bw), respectively, indicating a roughly proportional increase with dose. The half-life ($t_{½}$) of the radioactivity in plasma was approximately 30 hours at the high dose with the elimination rate remaining relatively constant throughout the study. The elimination rates were biphasic in the low-dose group, with $t_{½2}$ values of five hours in the α-phase and 40 hours in the β-phase. The area under the concentration–time curve (AUC) ratios of high- to low-dose animals were proportional to the dose ratio.

Faeces was the major route of excretion at over 85 percent AD in single low- and high- and repeat-dose (14 days unlabelled and one dose radiolabelled) studies with 78 percent administered dose (AD) excreted within 48 hours. Urinary excretion was below 5 percent AD and biliary excretion ranged from 25 to 44 percent AD with the lowest absorption in fasted animals. Excretion was complete after seven days,

with residual radioactivity in the carcass at less than 1 percent when the gastrointestinal tract was excluded, and was independent of dose and sex in all examined parameters in the single-dose studies. In single-dose studies, the highest concentrations were found in the liver and kidneys. In repeated-dose studies, the highest concentrations were found in the liver, fat and kidney, with proportionately higher concentrations in the fat in the males than in the females. Total absorption was between 30 and 50 percent of AD.

Fluazinam parent was the predominant compound identified at 25–28 percent AD in males, and at 36–45 percent in females depending on the label in the biliary excretion study. There were a number of lesser metabolites, including AMPA (2-(6-amino-3-chloro- α,α, -trifluoro-2-nitro-*p*-toluidino)-3-chloro-5-(trifluoromethyl)pyridine) and DAPA (3-chloro-2-(2,6-diamino-3-chloro- α,α,α-trifluoro-*p*-toluidino)-5-(trifluoromethyl)pyridine).The proposed metabolic pathway of fluazinam in rats involves reduction of one or both nitro groups (to form AMPA or DAPA), replacement of the phenyl ring chlorine by glutathione conjugation and then further metabolism and possibly conjugation.

In an in vitro comparative metabolism study, [*phenyl-U*-^{14}C] and [*pyridyl-2,6*-^{14}C]fluazinam (50 µM) was incubated with liver microsomes from mice, rats, rabbits, dogs or male and female humans. No human-specific major metabolites were detected.

Toxicological data

The acute oral median lethal dose (LD_{50}) of fluazinam was less than 4100 mg/kg bw in rats, mice and dogs. The acute dermal LD_{50} was greater than 2000 mg/kg bw in rats and the inhalation median lethal concentration (LC_{50}) was 0.463 mg/L. It was slightly irritating to the skin and irritating to the eyes. It was sensitizing to the skin of guinea pigs via the Buehler and maximization methods. Fluazinam was not phototoxic in mice.

In repeat-dose toxicity studies on mice, rats and dogs, the main effects attributed to the toxicity of fluazinam were on body weight, the liver in rodents and the liver, haematological system and eyes in dogs. In many of the studies in the database, histopathological re-examination of the brain tissue was performed due to the presence of white matter vacuolation in one of the long-term mouse studies. The finding did not occur in all of the repeat-dose toxicity studies and was linked to an impurity, B-1457 (5-chloro-N-(3-chloro-5-trifluoromethyl-2-pyridyl)-α,α,α-trifluoro-4,6-dinitro-o-toluidine), based on mechanistic studies on the impurity. Based on the studies available in the database, the no-observed-adverse-effect level (NOAEL) to the findings occurred at 0.02 mg/kg bw per day for B-1457.

In a 28-day oral toxicity study in mice, fluazinam was administered at dietary concentrations of 0 ppm, 10 ppm, 50 ppm, 250 ppm or 3000 ppm (equal to 0 mg/kg bw, 1.5 mg/kg bw, 7.6 mg/kg bw, 36 mg/kg bw and 438 mg/kg bw per day for males and 1.6 mg/kg bw, 8.2 mg/kg bw, 43 mg/kg bw and 472 mg/kg bw per day in females). The NOAEL was 50 ppm (equal to 7.6 mg/kg bw per day), based on reduced body weight gain at the lowest-observed-adverse-effect level (LOAEL) of 250 ppm (equal to 36 mg/kg bw per day).

In a 28-day oral toxicity study in rats, fluazinam was administered at dietary concentrations of 0 ppm, 10 ppm, 50 ppm, 250 ppm or 3000 ppm (equal to 1.05 mg/kg bw, 5.13 mg/kg bw, 26.4 mg/kg bw and 302 mg/kg bw per day for males and 1.05 mg/kg bw, 5.29 mg/kg bw, 25.9 mg/kg bw and 309 mg/kg bw per day for females, respectively). The NOAEL was 250 ppm (equal to 25.9 mg/kg bw per day), based on

increased liver weight and single cell necrosis with mononuclear cell infiltration in females at the LOAEL of 3000 ppm (equal to 309 mg/kg bw per day).

In a 90-day oral toxicity study in rats, fluazinam was administered at dietary concentrations of 0 ppm, 2 ppm, 10 ppm, 50 ppm or 500 ppm (equal to 0.15 mg/kg bw, 0.77 mg/kg bw, 3.85 mg/kg bw and 38.5 mg/kg bw per day for males and 0.17 mg/kg bw, 0.86 mg/kg bw, 4.3 mg/kg bw and 43.5 mg/kg bw per day for females). The NOAEL was 50 ppm (equal to 4.1 mg/kg bw per day), based on increased liver weight, periacinar hypertrophy and sinusoidal chronic inflammation in males at the LOAEL of 500 ppm (equal to 38.5 mg/kg bw per day).

In a 90-day oral toxicity study in dogs, fluazinam was administered in capsules at doses of 0 mg/kg bw, 1 mg/kg bw, 10 mg/kg bw or 100 mg/kg bw per day. The NOAEL was 10 mg/kg bw per day, based on grey mottling of the tapetal fundus and hyperreflection of the eyes, increased liver weight and bile duct hyperplasia in the liver at 100 mg/kg bw per day.

In a one-year oral toxicity study in dogs, fluazinam was administered in capsules at doses of 0 mg/kg bw, 1 mg/kg bw, 10 mg/kg bw or 50 mg/kg bw per day. The NOAEL was 10 mg/kg bw per day, based on changes to haemoglobin and red blood cell parameters and reduced glucose and albumin concentrations at the LOAEL of 50 mg/kg bw per day.

The overall NOAEL for the dog studies was 10 mg/kg bw per day, based on changes in the haematological and clinical chemistry parameters at the LOAEL of 50 mg/kg bw per day.

In a 104-week oral toxicity study in the mouse, fluazinam was administered at dietary concentrations of 0 ppm, 1 ppm, 10 ppm, 100 ppm or 1000 ppm (equal to 0.12 mg/kg bw, 1.12 mg/kg bw, 10.7 mg/kg bw, and 107 mg/kg bw per day for males and 0.11 mg/kg, 1.16 mg/kg, 11.7 mg/kg, and 117 mg/kg per day for females, respectively). The NOAEL for toxicity was 10 ppm (equal to 1.12 mg.kg bw per day), based on increased relative liver weights, granulomatous hepatitis and brown pigmented macrophages in the liver at the LOAEL of 100 ppm (equal to 10.7 mg/kg bw per day). The NOAEL for carcinogenicity was 100 ppm (equal to 10.7 mg/kg bw per day) based on increased hepatocellular adenomas and carcinomas in males at 1000 ppm (equal to 107 mg/kg bw per day).

In a 104-week oral toxicity study in rats, fluazinam was administered at dietary concentrations of 0 ppm, 1 ppm, 10 ppm, 100 ppm or 1000 ppm (equal to 0 mg/kg bw, 0.04 mg/kg bw, 0.38 mg/kg bw, 3.82 mg/kg bw, and 40 mg/kg bw per day for males and 0mg/kg bw, 0.05 mg/kg bw, 0.47 mg/kg bw, 4.87 mg/kg bw, and 53 mg/kg bw per day, respectively). The NOAEL was 10 ppm (equal to 0.38 mg/kg bw per day), based on increased liver weight, increased cholesterol and decreased albumin and non-neoplastic changes in the liver and atrophy of the pancreas and testes at the LOAEL of 100 ppm (equal to 3.82 mg/kg bw per day).

In a second 104-week oral toxicity study in rats, fluazinam was administered at dietary concentrations of 0 ppm, 25 ppm, 50 ppm or 100 ppm (equal to 0 mg/kg bw, 1.0 mg/kg bw, 1.9 mg/kg bw, and 3.9 mg/kg bw per day for males, 0 mg/kg bw, 1.2 mg/kg bw, 2.4 mg/kg bw, and 4.9 mg/kg bw per day for females, respectively). The NOAEL was 50 ppm (equal to 1.9 mg/kg bw per day), based on increased liver weights and testicular effects at the LOAEL of 100 ppm (equal to 3.9 mg/kg bw per day). There was no evidence of carcinogenicity.

The overall NOAEL was 50 ppm (equal to 1.9 mg/kg bw per day), based on liver, testicular and pancreatic changes at 100 ppm (equal to 3.82 mg/kg bw per day).

Studies were submitted to demonstrate a constitutive androstane receptor (CAR)-activated MOA resulting in the mouse liver tumours. However, while the ratio of CYB2B and CYP1A was inconsistent with the CAR-activated MOA, the long-term studies exhibited hypertrophy, basophilic changes and preneoplastic hyperplasia, consistent with a threshold-dependent MOA. Therefore, the data were insufficient to establish a CAR-mediated MOA and hence human relevance could not be dismissed.

The meeting concluded that fluazinam is carcinogenic in male mice, but not in rats or female mice.

Fluazinam was tested for genotoxicity in an adequate range of in vitro and in vivo assays. No evidence of genotoxicity was found.

The meeting concluded that fluazinam is unlikely to be genotoxic.

In view of the lack of genotoxicity, the absence of carcinogenicity in rats and female mice and evidence of a threshold MOA for the tumours in the male mouse, the meeting concluded that fluazinam is unlikely to pose a carcinogenic risk to humans from the diet.

In a two-generation reproductive toxicity study in rats, fluazinam was administered at dietary concentrations of 0 ppm, 20 ppm, 100 ppm or 500 ppm (equal to 0 mg/kg bw, 1.5 mg/kg bw, 7.2 mg/kg bw and 36.5 mg/kg bw per day in males, 0 mg/kg bw, 1.7 mg/kg bw, 8.4 mg/kg bw and 43 mg/kg bw per day in females). The parental NOAEL was 100 ppm (equal to 8.4 mg/kg bw per day) based on decreased body weight in females at 500 ppm (equal to 43 mg/kg bw per day). The reproductive NOAEL was 100 ppm (equal to 8.4 mg/kg bw per day based on reduced number of implantation sites and decreased mean litter size at 500 ppm (equal to 43 mg/kg bw per day). The offspring NOAEL was 100 ppm (equal to 8.4 mg/kg bw per day) based on reduced body weights in the F2 pups at 500 ppm (equal to 43 mg/kg bw per day).

In a developmental toxicity study in rats, fluazinam was administered at gavage doses of 0 mg/kg bw, 10 mg/kg bw, 50 mg/kg bw or 250 mg/kg bw per day from gestation day (GD) 6 to GD 15. The maternal NOAEL was 10 mg/kg bw per day, based on reduced body weight gain at the LOAEL of 50 mg/kg bw per day. The embryo/fetal NOAEL was 10 mg/kg bw per day, based on increased skeletal variation at the LOAEL of 50 mg/kg bw per day. There was evidence of cleft palate and diaphragmatic hernia malformations at 250 mg/kg bw per day.

In a second developmental toxicity study in rats, fluazinam was administered at gavage doses of 0 mg/kg bw, 10 mg/kg bw, 50 mg/kg bw or 300 mg/kg bw per day from GD 6 to 19. The maternal NOAEL was 10 mg/kg bw per day, based on decreased body weight gain and food consumption at the LOAEL of 50 mg/kg bw per day. The embryo/fetal NOAEL was 10 mg/kg bw per day, based on 27 presacral vertebrae and reduced ossification of the skull at the LOAEL of 50 mg/kg bw per day. There were no malformations.

In a developmental toxicity study in rabbits, fluazinam was administered at gavage doses of 0 mg/kg bw, 2 mg/kg bw, 4 mg/kg bw, 7 mg/kg bw and 12 mg/kg bw per day from GD 6 to 19. The maternal NOAEL was 4 mg/kg bw per day, based on decreased food consumption and apoptosis, necrosis, brown pigmentation and binucleation of the hepatocytes at the LOAEL of 7 mg/kg bw per day. The

embryo/fetal NOAEL was 7 mg/kg bw per day, based on increased post-implantation loss at the LOAEL of 12 mg/kg bw per day. There was no evidence of malformations.

The meeting concluded that fluazinam is teratogenic in rats, but not in rabbits.

In an acute neurotoxicity study in the rat, fluazinam was administered at gavage doses of 0 mg/kg bw, 50 mg/kg bw, 1000 mg/kg bw and 2000 mg/kg bw. The NOAEL for systemic toxicity was 50 mg/kg bw per day, based on reduced stool and reduced motor activity in females at the LOAEL of 1000 mg/kg bw per day. There was no evidence of specific neurotoxicity.

In a 90-day neurotoxicity study in rats, fluazinam was administered at dietary concentrations of 0 ppm, 300 ppm and 1000 ppm (equal to 0, 20.7 and 69 mg/kg bw per day for males, 0 mg/kg bw, 23.4 mg/kg bw and 81 mg/kg bw per day for females, respectively). The NOAEL for systemic toxicity was 1000 ppm (equal to 81 mg/kg bw per day), the highest dose tested. There was no evidence of specific neurotoxicity.

In a second 90-day neurotoxicity study in the rat, fluazinam was administered at dietary concentrations of 0 ppm, 1000 ppm, 2000 ppm or 3000 ppm (equal to 0 mg/kg bw, 74 mg/kg bw, 149 mg/kg bw and 233 mg/kg bw per day for males and 0 mg/kg bw, 89 mg/kg bw, 175 mg/kg bw and 280 mg/kg bw per day for females, respectively). The NOAEL was undetermined, based on decreased body weights in females at the LOAEL of 89 mg/kg bw per day. There was no evidence of specific neurotoxicity.

In a developmental neurotoxicity study in rats, fluazinam was administered at gavage doses of 0 mg/kg bw, 2 mg/kg bw, 10 mg/kg bw or 50 mg/kg bw per day from day six after mating to day 20 of lactation. Offspring were dosed from postnatal day 7–20/21. The maternal NOAEL was 2 mg/kg bw per day based on reduced body weight gain at the LOAEL of 10 mg/kg bw per day. The offspring NOAEL was 2 mg/kg bw per day, based on decreased body weight gains at the LOAEL of 10 mg/kg bw per day. The developmental neurotoxicity NOAEL was 50 mg/kg bw per day, the highest dose tested.

The meeting concluded that fluazinam is not neurotoxic.

In a 28-day immunotoxicity study in female mice, fluazinam was administered at dietary concentration of 0 ppm, 10 ppm, 50 ppm or 1000 ppm (equal to 2 mg/kg bw, 11 mg/kg bw and 231 mg/kg bw per day). The NOAEL for immunotoxicity was 50 ppm (equal to 11 mg/kg bw per day), based on decreased humoural response expressed as decreased total spleen activity and specific activity at the LOAEL of 1000 ppm (equal to 231 mg/kg bw per day).

The meeting concluded that fluazinam is immunotoxic.

Due to the presence of white matter vacuolation in the long-term mouse study, retained brain tissue samples from the repeat-dose studies were examined and the presence of white matter vacuolation of the myelin sheath was found in some, but not all of the studies. Therefore, it was hypothesized that the effect could have been due to an impurity. Only B-1457-treated animals exhibited neurological effects, edema of the brain and increased brain weight. At gavage doses of 3000 mg/kg bw or 5000 mg/kg bw for two or one days, respectively, male mice given fluazinam containing 0.12 percent B-1457 exhibited no signs of neurotoxicity and no changes to the white matter, whereas mice given fluazinam containing 0.20 percent exhibited decreased locomotor activity, prone position, paralysis of hind legs, tremor and staggering gait and mortality. Vacuolation of the white matter was noted in all animals given fluazinam containing 0.20 percent B-1457 only above the limit dose. In a comparative four-day oral study in mice,

rats and dogs and in a 14-day oral study on mice and rats, animals were administered pure B-1457. All animals exhibited white matter vacuolation without quantitative or qualitative differences. Based on the impurity levels in the material used in each of the studies, it was concluded that B-1457 caused the white matter vacuolation; concentrations of B-1457 below 0.20 percent did not cause the neurological lesions up to the limit dose of fluazinam.

Toxicological data on metabolites and/or degradates

No residue definition is under consideration at this time.

Microbiological aspects

A search of literature available in the public domain did not identify information describing any direct or indirect experimental evidence, which addressed the possible impact of fluazinam residues on the human intestinal microbiome. No data were submitted.

Human data

Reports of incidental contact with either fluazinam active or end-use products containing fluazinam by factory workers or agricultural applicators, respectively, indicate a common finding is contact dermatitis consistent with the sensitization studies in guinea pigs.

The meeting concluded that the existing database on fluazinam was adequate to characterize the potential hazards to the general population, including fetuses, infants and children.

Toxicological evaluation

The meeting established an acceptable daily intake (ADI) of 0–0.01 mg/kg bw, based on the NOAEL of 1.12 mg/kg bw per day in the 104-week study of toxicity and carcinogenicity in the mouse and using a safety factor of 100. This gives a margin of 10700 to the lowest dose causing tumours in male mice.

The meeting established an acute reference dose (ARfD) for women of child-bearing age of 0.07 mg/kg bw, on the basis of the NOAEL of 12 mg/kg bw per day for post-implantation loss in the developmental toxicity study in rabbits and using a safety factor of 100. The meeting concluded that it was not necessary to establish an ARfD for fluazinam for the remainder of the general population in view of its low acute oral toxicity and the absence of any other toxicological effects likely to be elicited by a single dose.

Both the ADI and the ARfD are applicable to fluazinam containing up to 0.2 percent B-1457.

The meeting concluded that an impurity limit of 0.2 percent B-1457 in fluazinam would be necessary to provide an additional 10-fold safety factor to effects in the brain due to dietary exposure.

A toxicological monograph was prepared.

Table 5.17.1 Levels relevant to risk assessment of fluazinam

Species	Study	Effect	NOAEL	LOAEL
Mouse	104-week study of toxicity and carcinogenicity[a]	Toxicity	10 ppm, equal to 1.12 mg/kg bw per day	100 ppm, equal to 10.7 mg/kg bw per day
		Carcinogenicity	100 ppm, equal to 10.7 mg/kg bw per day	1000 ppm, equal to 107 mg/kg bw per day
Rat	Acute neurotoxicity study[b]	Neurotoxicity	2000 mg/kg bw[c]	–
	Two-year studies of toxicity and carcinogenicity[a, d]	Toxicity	50 ppm, equal to 1.9 mg/kg bw per day	100 ppm, equal to 3.82 mg/kg bw per day
		Carcinogenicity	100 ppm, equal to 3.82 mg/kg bw per day[c]	–
	Two-generation study of reproductive toxicity[a]	Reproductive toxicity	100 ppm, equal to 8.4 mg/kg bw per day	500 ppm, equal to 43 mg/kg bw per day
		Parental toxicity	100 ppm, equal to 8.4 mg/kg bw per day	500 ppm, equal to 43 mg/kg bw per day
		Offspring toxicity	100 ppm, equal to 8.4 mg/kg bw per day	500 ppm, equal to 43 mg/kg bw per day
	Developmental toxicity study[b, d]	Maternal toxicity	10 mg/kg bw per day	50 mg/kg bw per day
		Embryo/fetal toxicity	10 mg/kg bw per day	50 mg/kg bw per day
	Developmental neurotoxicity study[b]	Maternal toxicity	2 mg/kg bw per day	10 mg/kg bw per day
		Offspring toxicity	2 mg/kg bw per day	10 mg/kg bw per day
		Developmental neurotoxicity	50 mg/kg bw per day[c]	–
Rabbit	Developmental toxicity study[b]	Maternal toxicity	4 mg/kg bw per day	7 mg/kg bw per day
		Embryo/fetal toxicity	7 mg/kg bw per day[e]	12 mg/kg bw per day
Dog	13-week and 1-year studies of toxicity[d, f]	Toxicity	10 mg/kg bw per day	50 mg/kg bw per day

Notes:
[a] Dietary administration.
[b] Gavage administration.
[c] Highest dose tested.
[d] Two or more studies combined.
[e] Single-dose effect.
[f] Capsule administration.

Acceptable daily intake (ADI) applies to fluazinam:

0–0.01 mg/kg bw

Acute reference dose (ARfD) for the general public is:

Unnecessary

Acute reference dose (ARfD) for women of child-bearing age applies to fluazinam:

0.07 mg/kg bw

Information that would be useful for the continued evaluation of the compound

Results from epidemiological, occupational health and other such observational studies of human exposure.

Table 5.17.2 Critical end-points for setting guidance values for exposure to fluazinam

Absorption, distribution, excretion and metabolism in mammals	
Rate and extent of oral absorption	Absorption is rapid but incomplete (40%).
Dermal absorption	Not applicable
Distribution	Wide, with the highest concentrations in the liver and kidney
Potential for accumulation	No evidence of accumulation
Rate and extent of excretion	Elimination is complete, primarily via the faeces within 48 hours. Biliary excretion between 25–44% AD. Urinary excretion <5%
Metabolism in animals	Moderate, primarily to AMPA and DAPA with further metabolism
Toxicologically significant compounds in animals and plants	Not applicable
Acute toxicity	
Rat, LD_{50}, oral	>4100 mg/kg bw
Rat, LD_{50}, dermal	>2000 mg/kg bw
Rat, LC_{50}, inhalation	0.463 mg/L
Rabbit, dermal irritation	Slightly irritating
Rabbit, ocular irritation	Irritating
Guinea pig, dermal sensitization	Sensitizing (Magnussen & Kligmann and Buehler)
Short-term studies of toxicity	
Target/critical effect	Body weight, liver and kidney changes in rodents.
Lowest relevant oral NOAEL	4.1 mg/kg bw per day (rat)
Long-term studies of toxicity and carcinogenicity	
Target/critical effect	Liver weight and histopathological changes
Lowest relevant NOAEL	1.12 mg/kg bw per day (mouse)
Carcinogenicity	Carcinogenic in male mice[a]
Genotoxicity	Unlikely to be genotoxic
Reproductive toxicity	
Target/critical effect	Decreased body weight in parental females and offspring males and females. Decreased number of implantation sites and mean litter size,
Lowest relevant parental NOAEL	8.4 mg/kg bw per day (rat)
Lowest relevant offspring NOAEL	8.4 mg/kg bw per day (rat)
Lowest relevant reproductive NOAEL	8.4 mg/kg bw per day (rat)
Developmental toxicity	
Target/critical effect	Decreased body weight gain in dams and increased skeletal variations in fetus in rats. Hepatoxicity and decreased food consumption in does and increased post-implantation loss in rabbits
Lowest relevant maternal NOAEL	4 mg/kg bw per day (rabbit)
Lowest relevant embryo/fetal NOAEL	7 mg/kg bw per day (rabbit)
Neurotoxicity	None
Acute neurotoxicity NOAEL	2000 mg/kg bw, highest dose tested (rat)
Subchronic neurotoxicity NOAEL	233 mg/kg bw per day (rat), highest dose tested
Developmental neurotoxicity NOAEL	50 mg/kg bw per day (rat), highest dose tested
Immunotoxicity	Decreased humoural response
Immunotoxicity	11 mg/kg bw per day (mouse)

Studies on toxicologically relevant metabolites	Not applicable
Microbiological data	No data
Human data	Effects consistent with sensitizing potential

Notes: AMPA: (2-(6-amino-3-chloro- α,α, -trifluoro-2-nitro-*p*-toluidino)-3-chloro-5-(trifluoromethyl)pyridine. DAPA: (3-chloro-2-(2,6-diamino-3-chloro- α,α,α-trifluoro-*p*-toluidino)-5-(trifluoromethyl)pyridine).
[a] Unlikely to pose a carcinogenic risk to humans via exposure from the diet.

Table 5.17.3 Summary

	Value	Study	Safety factor
ADI	0–0.01 mg/kg bw	Two-year study of toxicity and carcinogenicity (mouse), supported by rat and dog studies	100
ARfD	0.07 mg/kg bw[a]	Developmental toxicity study (rabbit)	

Notes:
[a] Applies to women of child-bearing age only.

5.18 Flubendiamide (242) (R)

5.18.1 Residue and analytical aspects

Flubendiamide is an insecticide belonging to the chemical class of benzenedicarboxamides or phthalic acid diamides. It was first evaluated by the JMPR in 2010, when an ADI of 0–0.02 mg/kg bw and an ARfD of 0.2 mg/kg bw were established.

Residue definition for compliance with the MRL in plant and animal commodities and for dietary risk assessment for plant commodities is flubendiamide. For dietary risk assessment for animal commodities, residue was defined as flubendiamide and flubendiamide-iodophthalimide. The residue is fat-soluble.

Flubendiamide was scheduled at the 54th Session of the CCPR for the evaluation of additional uses by the 2024 JMPR meeting. The present meeting received information on analytical methods, storage stability, use pattern, supervised residue trials, and processing on rice from the government of the Republic of Korea.

Methods of residue analysis

The meeting received new information on analytical method of flubendiamide using QuEChERS technique and LC-MS/MS. Determination of flubendiamide was validated at LOQ levels of 0.01 mg/kg in various rice commodities (rice grain, husked rice, polished rice, rice hulls, cooked rice, rice cake).

The meeting concluded that the presented method was sufficiently validated and is suitable to quantify flubendiamide in rice commodities.

Storage stability

The meeting received additional information on storage stability of flubendiamide in various rice commodities demonstrating stability of the residues for at least 11–149 days at –20 °C. The meeting agreed that the demonstrated storage stability in rice commodities of rice whole grain, husked rice, polished rice, and rice hulls covered the residue sample storage intervals.

However, husked or polished rice used to rice cooking and cake preparation were stored at ambient temperature (for 39–62 days) or at +5 °C (602–605 days) but not reanalysed before processing, so processing factors could not be estimated.

Results of supervised residue trials on crops

Rice

The GAP on rice from the Republic of Korea is a foliar spray with an application rate of 3x 0.002 kg ai/hL (2000x dilution of 4 percent SC formulation) and a PHI of 14 days. A retreatment interval is not specified.

Ten Korean trials on paddy rice approximating this GAP were performed. Rice was threshed immediately after harvest and whole grains were dried for 7 days in a greenhouse under ambient conditions until the moisture content was less than 15 percent, reflecting local agricultural practice.

Residues of flubendiamide in rice whole grain were: 0.18 mg/kg, 0.45 mg/kg, 0.66 mg/kg, 1.0 mg/kg, 1.1 mg/kg, 1.2 mg/kg, 1.3 mg/kg, 1.8 mg/kg, 2.0 mg/kg, and 2.5 mg/kg (n = 10).

Residues of flubendiamide in husked rice were 0.01 mg/kg, 0.01 mg/kg, 0.03 (5) mg/kg, 0.04 mg/kg, 0.05 mg/kg, and 0.05 mg/kg (n = 10).

Residues of flubendiamide in polished rice were <0.01 (10) mg/kg (n = 10).

The meeting estimated a maximum residue level of 4 mg/kg and a STMR of 1.15 mg/kg for flubendiamide in rice.

The meeting estimated a maximum residue level of 0.1 mg/kg and a STMR-P of 0.03 mg/kg for flubendiamide in husked rice.

The meeting estimated a maximum residue level of 0.01* mg/kg and a STMR-P of 0.01 mg/kg for flubendiamide in polished rice.

Fate of residues during processing

The meeting received new information on the fate of flubendiamide residues during processing in rice whole grain. Processing factors could be established for rice whole grain into rice hulls, husked rice and polished rice. Processing factors could not be established for cooked rice and rice cake. Storage stability studies did not cover the storage temperature and storage interval between husking/polishing and rice cooking and cake preparation.

Table 5.18.1 Estimation of processing factors for commodities considered at this meeting

Raw commodity [STMR]	Processed commodity	Individual processing factors	Mean or best estimate processing factor	STMR-P = STMR_RAC × Pf (mg/kg) or median residue
Rice whole grain STMR: 1.15 mg/kg	Hulls	5.0, 7.5	6.3	1.15 × 6.3 = 7.2 (for dietary burden)
	Husked rice	0.056, 0.067, 0.027, 0.030, 0.028, 0.012, 0.020, 0.025, 0.038, 0.015	0.032	See residue section
	Polished rice	<0.056, <0.022, <0.009, <0.01, <0.006, <0.004, <0.005, <0.008, <0.008, <0.015	<0.004	See residue section

Residues in animal commodities

Calculated dietary burden from the new uses on rice was 1.061 ppm for cattle and 0.653 ppm for poultry (using median of 7.2 mg/kg in hulls and of 1.15 mg/kg in grain).

For cattle, there was little impact on the previous dietary burden and the meeting confirmed its previous recommendations. Considering the new Codex Classification for animal commodities (General consideration 2.4), the meeting estimates maximum residue levels of 1, 2, 0.1, 5 and 0.2 mg/kg for group of edible offal (mammalian), group of mammalian fats (except milk fats), group of milks, group of milk fats and group of muscle (from mammals other than marine mammals), respectively.

The meeting estimated STMRs for group of edible offal (mammalian) of 0.31 mg/kg (liver) and 0.32 mg/kg (kidney) and HRs of 0.56 mg/kg (liver) and 0.57 mg/kg (kidney). The meeting also estimated STMR/HR of 0.62/1.2, 0.066, 1.6/4.0 and 0.06 /0.13 mg/kg for group of mammalian fats (except milk fats), group of milks, group of milk fats and group of muscle (from mammals other than marine mammals), respectively.

The meeting withdraws the previous recommendations of meat (from mammals other than marine mammals), edible offal (mammalian), milk fats, and milks.

For poultry, the previous meeting (2010) could not estimate maximum residue levels as the poultry dietary burden exceeds the highest dosing level in the poultry feeding study by more than 30 percent. The current meeting did not estimate a maximum residue level, STMR and HR values for poultry.

Recommendations

On the basis of the data obtained from supervised trials, the meeting concluded that the residue levels listed in Table 5.18.2 and Annex 1 are suitable for establishing maximum residue limits and for dietary intake assessments.

Definition of the residue for compliance with the MRL and dietary risk assessment for plant commodities: flubendiamide.

Definition of the residue for compliance with the MRL for animal commodities: flubendiamide.

Definition of the residue for dietary risk assessment for animal commodities: flubendiamide and flubendiamide-iodophthalimide.

The residue is fat-soluble.

Table 5.18.2 Residue levels suitable for establishing maximum residue limits and for dietary intake assessments

CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P mg/kg	HR or HR-P mg/kg
		New	Previous		
MO 0105	Edible offal (mammalian)	W	1	–	–
MO 0105	Group of edible offal (mammalian)	1	–	Liver: 0.31 Kidney: 0.32	Liver: 0.56 Kidney: 0.57
MF 0100	Group of mammalian fats (except milk fats)	2	–	0.62	1.2
FM 0106	Group of milk fats	5	–	1.6	4.0
ML 0106	Group of milks	0.1	–	0.066	–
MM 0095	Group of muscle (from mammals other than marine mammals)	0.2	–	0.06	0.13
MM 0095	Meat (from mammals other than marine mammals)	W	2 (fat)	–	–
FM 0106	Milk fats	W	5	–	–
ML 0106	Milks	W	0.1	–	–
GC 0649	Rice	4	–	1.15	–
CM 0649	Rice, husked	0.1	–	0.03	–
CM 1205	Rice, polished	0.01*	–	0.01	–

Dietary risk assessment

Long-term dietary exposure

The ADI for flubendiamide is 0–0.02 mg/kg bw. The International Estimated Daily Intakes (IEDIs) for flubendiamide were estimated for the 17 GEMS/Food Consumption Cluster Diets using the STMR or STMR-P values estimated by the JMPR. The results are shown in Annex 3 of the 2024 JMPR Report.

The IEDIs ranged from 4–20 percent of the maximum ADI. The meeting concluded that long-term dietary exposure to residues of flubendiamide from uses considered by the JMPR is unlikely to present a public health concern.

Acute dietary exposure

The ARfD for flubendiamide is 0.2 mg/kg bw. The International Estimate of Short-term Intakes (IESTIs) for flubendiamide were calculated for the food commodities and their processed commodities for which HRs/HR-Ps or STMRs/STMR-Ps were estimated by the present meeting and for which consumption data were available. The results are shown in Annex 4.

The IESTIs were 0 percent of the ARfD for children and the general population. The meeting concluded that acute dietary exposure to residues of flubendiamide from uses considered by the present meeting is unlikely to present a public health concern.

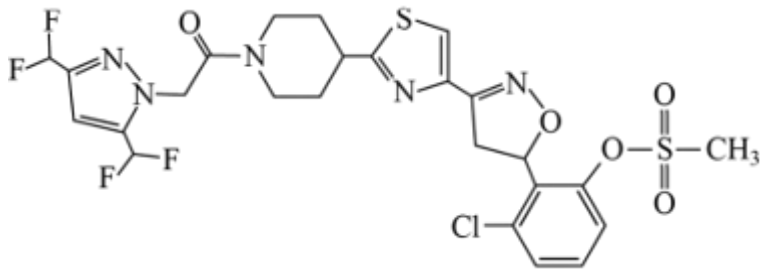
5.19 Fluoxapiprolin (342)* (T, R)

5.19.1 Toxicology

Fluoxapiprolin (company code BCS-CS55621) is the ISO-approved common name for *rac*-2-{3-[2-(1-{[3,5-*bis*(difluoromethyl)-1*H*-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5-yl}-3-chlorophenyl methanesulfonate (IUPAC), Chemical Abstracts Service number 1360819-11-9. The substance is a novel fungicidal active substance. As a piperidinyl thiazole isoxazoline fungicide, fluoxapiprolin inhibits the oxysterol binding protein process in oomycete fungi.

Fluoxapiprolin has not previously been evaluated by FAO/WHO Joint Meeting on Pesticide Residues (JMPR) and was reviewed by the present meeting at the request of the Codex Committee on Pesticide Residues (CCPR). All critical studies contained statements of compliance with good laboratory practice and were conducted in accordance with current test guidelines, unless otherwise specified. As to be expected for such a new compound, additional information from public scientific literature to complement the toxicological studies is scarce.

Figure 5.19.1 Chemical structure of fluoxapiprolin



Biochemical aspects

For the absorption, distribution, metabolism and excretion studies, the test substance was radiolabelled in three different positions to give [*acetyl-2*-^{14}C]fluoxapiprolin, [*phenyl-UL*-^{14}C]fluoxapiprolin and [*pyrazol-4*-^{14}C]fluoxapiprolin. The toxicokinetic behaviour was very dependent on the radiolabel position, thus no precise numbers can be given. In general, the absorption and excretion was rapid.

The absorption of fluoxapiprolin was low. Based on the recovered radioactivity detected in bile, urine and carcass without the gastrointestinal tract, the absorption rate of the pyrazole-labelled article was about 35 percent within the period 0–48 hours after administration of the low dose (10 mg/kg bw) and the estimated half-lives of absorption were about 2.4 hours in rats.

In the mean maximum plasma concentration of radioactivity was reached at 2–4 hours after dosing in low-dose tests (10 mg/kg bw, pyrazole label) and at one hour in all high-dose tests (200 mg/kg bw, pyrazole label). The dose-corrected area under the concentration–time curve ($AUC_{0-\infty}$) for plasma concentration was approximately ten times higher with the low dose than the high dose (pyrazole label), indicating a lower absorption of the test item at high dose compared to the low dose. Overall, peak plasma

levels and total exposure were slightly higher in female rats than in male rats, but still within the same order of magnitude.

The absorbed test item-related radioactivity was distributed throughout the animal immediately after dosing. Besides the carcass, the highest amounts of radioactivity at all doses were detected in liver regardless of sex or radiolabel position.

The compound-related radioactivity was rapidly and almost completely eliminated from the animals within 48–72 hours post administration and long-term retention of residues in any of the organs and tissues can therefore be excluded. Within 48 hours of dosing the major portion of the radioactivity (up to 100 percent) was excreted with faeces, of which up to 33 percent of the mean dose recovered with the pyrazole label was detected in bile samples, and a minor part (up to 6 percent) in urine. The estimated half-life of elimination for the pyrazole label was about 25 hours in rats. With the acetyl label only a negligible amount (less than 0.1 percent) of the administered dose was exhaled during this sampling period.

A number of metabolites, of which less than 19 were identified and characterized, was found in the excreta and bile of male and female rats, suggestive of an intensive metabolism of fluoxapiprolin in the rat. There was no major metabolite (less than 10 percent absorbed dose) detected in rats. Overall, the metabolism was comparable in males and females. The predominant metabolic reaction was hydroxylation of the phenyl and piperidine rings leading to mono- or -di-hydroxy-phenyl compounds. A further metabolic reaction was the hydrolysis of the piperidyl moiety.

In three comparative in vitro studies, the biotransformation of fluoxapiprolin by human, rat and dog liver microsomes was investigated. The metabolism appeared qualitatively similar but there were quantitative differences. No unique human metabolites were identified in human microsomal incubations.

In the 14-day biokinetic studies in rats and mice, sublinear kinetics were observed, where increasing the dose beyond 100–200 mg/kg bw per day resulted in minimal changes in systemic exposure after dietary administration of fluoxapiprolin. These data were used to support a kinetically informed dose selection with highest dose of 250–300 mg kg per day for a combined chronic toxicity and carcinogenicity study and two-generation reproduction study in rats.

Toxicological data

Fluoxapiprolin was of low acute toxicity rats, with an oral median lethal dose (LD_{50}) of 2000 mg/kg bw or above, a dermal LD_{50} of 2000 mg/kg bw or above, and an acute median lethal concentration (LC_{50}) of inhalation greater than 2.11 mg/L. In rabbits the compound was not irritating to skin, nor was it irritant to the eyes. Fluoxapiprolin displayed no skin sensitization potential and was not phototoxic in vitro.

In repeat-dose toxicity studies in mice, rats and dogs, no toxicologically significant findings were evident in any of the species at any dose tested up to the limit dose of around 1000 mg/kg bw per day in the short-term toxicity studies in mice, rats and dogs, nor in developmental toxicity studies in rats and rabbits, or the kinetically informed maximum dose (around 250–300 mg/kg bw per day) in the chronic toxicity and carcinogenicity study in rats and mice and in two-generation reproductive toxicity study in rats.

In the long-term studies of toxicity and carcinogenicity in mice and rats, no treatment-related effects on systemic toxicity or tumour incidence were observed.

The meeting concluded that fluoxapiprolin was not carcinogenic in rodents.

Fluoxapiprolin was tested for genotoxicity in an adequate range of in vitro and in vivo assays. No evidence of genotoxicity was found.

The meeting concluded that fluoxapiprolin is unlikely to be genotoxic.

In view of the lack of genotoxicity and in the absence of carcinogenicity in rodents, the meeting concluded that fluoxapiprolin is unlikely to pose a carcinogenic risk to humans.

No adverse effects were observed at any generation/life stage in a two-generation reproductive toxicity study in rats or developmental toxicity studies in rats and.

The meeting concluded that fluoxapiprolin is not teratogenic in rats and rabbits.

In an acute neurotoxicity study in rats, no adverse effects were found up to limit dose and no evidence of neurotoxicity was reported in any of the routine toxicological studies.

The meeting concluded that fluoxapiprolin is not neurotoxic.

No specific data were submitted regarding immunotoxicity, but no evidence of immunotoxicity was reported in routine toxicological studies with fluoxapiprolin.

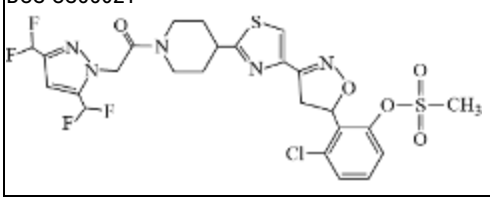
The meeting concluded that fluoxapiprolin is unlikely to be immunotoxic.

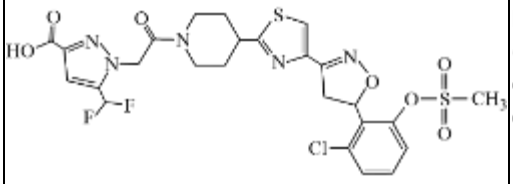
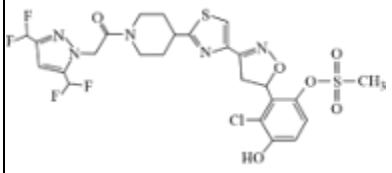
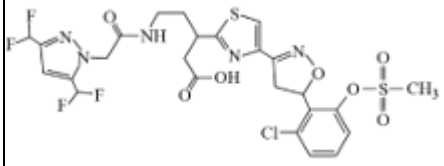
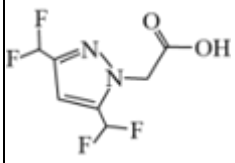
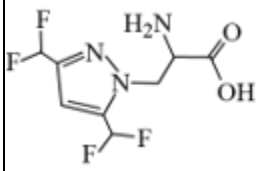
Fluoxapiprolin was negative in uterotrophic, Hershberger and in vitro H295R steroidogenesis assays.

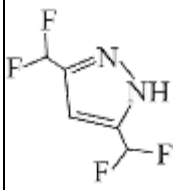
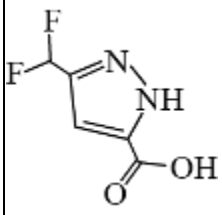
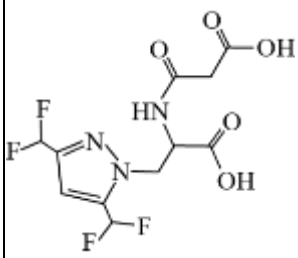
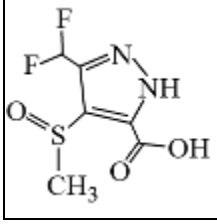
Toxicological data on metabolites and/or degradates

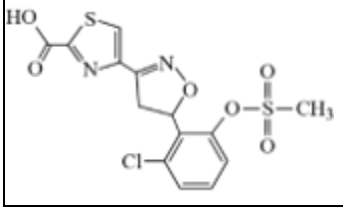
A toxicological evaluation of the following metabolites was performed. Table 5.19.1 shows an overall summary of the toxicological characterization of the metabolites requested for consideration in the residue definition.

Table 5.19.1 Toxicological data on and conclusions for metabolites

Compound, code and structure	**Major rat metabolite** (>10% AD)	**Genotoxicity assessment** (data, QSAR, read-across)	**General toxicity**	**Reference value for dietary risk assessment**
Fluoxapiprolin BCS-CS55621 	N/A	Not genotoxic	Full dataset	No ADI necessary No ARfD necessary

Fluoxapiprolin-3-carboxylic acid BCS-DA32270 	Minor rat metabolite Detected at 6.2% of absorbed dose in bile	No data	No data	Covered by parent due to structural similarity
Fluoxapiprolin-4-OH BCS-DA32272 	Minor rat metabolite Detected at 2.2–2.8% of absorbed dose in bile	No data	No data	Covered by parent due to structural similarity
Fluoxapiprolin-pentanoic acid BCS-DI53403 	Minor rat metabolite Detected at 8.9–9.5% of absorbed dose in bile as together with fluoxapiprolin-5-carboxylic acid	QSAR, read-across Not genotoxic based on structural similarity to parent compound	No data	TTC Cramer class III value: 1.5 µg/kg bw/day TTC Cramer class III value for acute toxicity: 5 µg/kg bw/day
Fluoxapiprolin-pyrazole acetic acid BCS-CC26101 	Minor rat metabolite Detected at <0.3–6.% of absorbed dose in urine Detected in significant fraction in plasma in the repeat dose studies	Not genotoxic (data: Ames, V79/HPRT-assay, micronucleus in vitro)	Acute oral toxicity LD_{50}: >2000 mg/kg bw 28-day oral toxicity studies NOAEL: 13000 ppm (equal to 1140 mg/kg bw per day), the highest dose tested Not more toxic than parent	Of no toxicological concern No ADI necessary No ARfD necessary
Fluoxapiprolin-pyrazole-alanine (tested as hydrochloride salt BCS-DL22168) BCS-DE61185 	No	Not genotoxic (data: Ames, micronucleus in vitro)	Acute oral toxicity LD_{50}: >2000 mg/kg bw 28-day oral toxicity studies NOAEL: 13000 ppm (equal to 1053 mg/kg bw per day) Highest dose tested	Of no toxicological concern No ADI necessary No ARfD necessary

Fluoxapiprolin-BDM-pyrazole BCS-BP32808 	No	Not genotoxic (data: Ames, V79/HPRT-assay, micronucleus in vitro, Big Blue® transgenic C57BL/6 mice and in the in vivo mouse micronucleus test)	Acute oral toxicity LD_{50}: 175 mg/kg bw 28-day oral toxicity studies NOAEL: 2 mg/kg bw per day, acute effects were observed	Chronic: TTC Cramer class III value: 1.5 µg/kg bw per day ARfD: 0.02 mg/kg bw
Fluoxapiprolin-pyrazole-carboxylic acid BCS-CZ38260 	No	Not genotoxic (data: Ames, V79/HPRT-assay, micronucleus in vitro) Minor rat metabolite Detected at <0.3–6.2% of absorbed dose in urine	No data	TTC Cramer class III value: 1.5 µg/kg bw per day ARfD: 0.02 mg/kg bw due to structural similarity to BCS-BP32808
Fluoxapiprolin-pyrazole-alanine-oxopropanoic acid BCS-DE72761 	No	Not genotoxic (data: Ames, micronucleus in vitro)	Acute oral toxicity LD_{50}: >2000 mg/kg bw 28-day oral toxicity studies NOAEL: 100 mg/kg bw per day, no acute effects observed	ADI: 0–0.5 mg/kg bw No ARfD necessary
Fluoxapiprolin-pyrazole-methyl-sulfinyl acid BCS-DE72760 	No	QSAR, read-across Not genotoxic based on structural similarity to BCS-CZ38260	No data	TTC Cramer class III value: 1.5 µg/kg bw per day TTC Cramer class III value for acute toxicity: 5 µg/kg bw/day

Fluoxapiprolin-thiazole acid (tested as sodium salt BCS-DH17585 due to its lack of stability) BCS-DG91934 	No	Not genotoxic (data: Ames, V79/HPRT-assay, micronucleus in vitro)	No data	TTC Cramer class III value: 1.5 µg/kg bw/day TTC Cramer class III value for acute toxicity: 5 µg/kg bw/day

Microbiological aspects

There was no information available in the public domain, and no experimental data were submitted that addressed the possible impact of fluoxapiprolin residues on the human intestinal microbiome.

Human data

No data available.

The meeting concluded that the existing database on fluoxapiprolin was adequate to characterize the potential hazards to the general population, including fetuses, infants and children.

Toxicological evaluation

The meeting concluded that it was not necessary to establish an acceptable daily intake (ADI) for fluoxapiprolin. From the animal studies with fluoxapiprolin, no adverse effects were observed at or near the limit dose of approximately 1000 mg/kg bw per day or the kinetically informed maximum dose of 250 mg/kg bw per day for the two-year combined chronic toxicity and carcinogenicity study and two-generation reproductive toxicity study in rats.

The meeting concluded that it was not necessary to establish an ARfD for fluoxapiprolin in view of its low acute toxicity and the absence of developmental toxicity or any other toxicological effects likely to be elicited by a single dose.

The meeting established a separate ADI of 0–0.5 mg/kg bw for the metabolite fluoxapiprolin-pyrazole-alanine-oxopropanoic acid (BCS-DE72761), based on the no-observed-adverse-effect level (NOAEL) of 100 mg/kg bw per day in the 28-day oral toxicity study in rats with the metabolite and applying a safety factor of 200. Although the dataset was limited, an additional factor of 2 was considered adequate, since the effects were minor and there was little progression with dose.

For chronic exposure, the meeting concluded that the TTC Cramer class III value of 1.5 µg/kg bw per day should be applied for the metabolites fluoxapiprolin-BDM-pyrazole (BCS-BP32808) and fluoxapiprolin-pyrazole-carboxylic acid BCS-CZ38260.

The meeting established an acute reference dose (ARfD) of 0.02 mg/kg bw for the metabolite fluoxapiprolin-BDM-pyrazole (BCS-BP32808) based on the NOAEL of 2 mg/kg bw per day for acute effects in the 28-day oral toxicity study in rats with the metabolite and applying a safety factor of 100. This ARfD

also applies to metabolite fluoxapiprolin-pyrazole-carboxylic acid BCS-CZ38260 due to its structural similarity.

A toxicological monograph was prepared.

Table 5.19.2 Levels relevant to risk assessment of fluoxapiprolin

Species	Study	Effect	NOAEL	LOAEL
Mouse	78-week study of toxicity and carcinogenicity[a]	Toxicity and carcinogenicity	2000–2400 ppm, equal to 278 mg/kg bw per day[d]	–
Rat	Acute neurotoxicity study[b]	Neurotoxicity	2000 mg/kg bw per day[c]	–
	Two-year studies of toxicity and carcinogenicity[a]	Toxicity and carcinogenicity	6300–9000 ppm, equal to 288 mg/kg bw per day[d]	–
	Two-generation study of reproductive toxicity[a]	Reproductive toxicity	3800/1900 ppm, equal to 262 mg/kg bw per day[d]	–
		Parental toxicity	3800/1900 ppm, equal to 262 mg/kg bw per day[d]	–
		Offspring toxicity	3800/1900 ppm, equal to 289 mg/kg bw per day[d]	–
	Developmental toxicity study[b]	Maternal toxicity	1000 mg/kg bw per day[c]	–
		Embryo/fetal toxicity	1000 mg/kg bw per day[c]	–
Rabbit	Developmental toxicity study[b]	Maternal toxicity	1000 mg/kg bw per day[c]	–
		Embryo/fetal toxicity	1000 mg/kg bw per day[c]	–
Dog	13-week toxicity study[a]	Toxicity	29000 ppm, equal to 892 mg/kg bw per day[c]	–
Metabolite studies				
Fluoxapiprolin-pyrazole acetic acid (BCS-CC26101)				
Rat	Four-week study of toxicity[a]	Toxicity	13000 ppm, equal to 945 mg/kg bw per day[c]	–
Fluoxapiprolin-pyrazole-alanine (BCS-DE61185, tested as HCl salt BCS-DL22168)				
Rat	Four-week study of toxicity[a]	Toxicity	13000 ppm, equal to 1052 mg/kg bw per day[c]	–
Fluoxapiprolin-BDM-pyrazole (BCS-BP32808)				
Rat	Four-week study of toxicity[b]	Toxicity	2 mg/kg bw per day	5 mg/kg bw per day
Fluoxapiprolin-pyrazole-alanine-oxopropanoic acid (BCS-DE72761)				
Rat	Four-week study of toxicity[b]	Toxicity	100 mg/kg bw per day	300 mg/kg bw per day

Notes:
[a] Dietary administration.
[b] Gavage administration.
[c] Highest dose tested.
[d] Kinetically-informed maximum dose.

Acceptable daily intake (ADI) applies to fluoxapiprolin, fluoxapiprolin-3-carboxylic acid (BCS-DA32270) and fluoxapiprolin-4-OH (BCS-DA32272):

Unnecessary

Acute reference dose (ARfD) applies to fluoxapiprolin, fluoxapiprolin-3-carboxylic acid (BCS-DA32270) and fluoxapiprolin-4-OH (BCS-DA32272):

Unnecessary

A separate acceptable daily intake (ADI) applies to the metabolite fluoxapiprolin-pyrazole-alanine-oxopropanoic acid (BCS-DE72761):

0–0.5 mg/kg bw

For chronic exposure the meeting concluded that the TTC Cramer class III value of 1.5 µg/kg bw per day applies for metabolites fluoxapiprolin-BDM-pyrazole (BCS-BP32808) and fluoxapiprolin-pyrazole-carboxylic acid BCS-CZ38260.

Acute reference dose (ARfD) applies for the metabolites fluoxapiprolin-BDM-pyrazole (BCS-BP32808) and fluoxapiprolin-pyrazole-carboxylic acid BCS-CZ38260:

0.02 mg/kg bw

Information that would be useful for the continued evaluation of the compound

Results from epidemiological, occupational health and other such observational studies of human exposure.

Table 5.19.3 Critical end-points for setting guidance values for exposure to [compound]

Absorption, distribution, excretion and metabolism in mammals	
Rate and extent of oral absorption	Low (roughly 35%) but rapid at the low dose; mean Cmax reached at 2–4 hours post dosing at low dose, at 1 hour at high dose
Dermal absorption	No data
Distribution	Widely distributed; highest amount in liver and carcass
Potential for accumulation	No evidence of accumulation
Rate and extent of excretion	Rapid, almost complete within 72 hours after administration
Metabolism in animals	Extensively metabolized
Toxicologically significant compounds in animals and plants	Fluoxapiprolin-BDM-pyrazole (BCS-BP32808), fluoxapiprolin-pyrazole-carboxylic acid (BCS-CZ38260) and fluoxapiprolin-pyrazole-alanine-oxopropanoic acid (BCS-DE72761)
Acute toxicity	
Rat, LD_{50}, oral	>2000 mg/kg bw
Rat, LD_{50}, dermal	>2000 mg/kg bw
Rat, LC_{50}, inhalation	>2.11 mg/L
Rabbit, dermal irritation	Not irritating
Rabbit, ocular irritation	Not irritating
Dermal sensitization	Not sensitizing (LLNA)
Short-term studies of toxicity	
Target/critical effect	No adverse effects at the limit dose
Lowest relevant oral NOAEL	Roughly 1000 mg/kg bw per day, highest dose tested (mouse/rat/rabbit/dog)
Lowest relevant dermal NOAEL	1000 mg/kg bw per day, highest dose tested.
Lowest relevant inhalation NOAEC	No data
Long-term studies of toxicity and carcinogenicity	
Target/critical effect	No adverse effects at kinetically informed maximum dose
Lowest relevant NOAEL	278 mg/kg bw per day (mouse)

Carcinogenicity	Not carcinogenic
Genotoxicity	Unlikely to be genotoxic
Reproductive toxicity	
Target/critical effect	No adverse effects at kinetically informed maximum dose
Lowest relevant parental NOAEL	262 mg/kg bw per day (rat), highest dose tested
Lowest relevant offspring NOAEL	289 mg/kg bw per day (rat), highest dose tested
Lowest relevant reproductive NOAEL	262 mg/kg bw per day (rat), highest dose tested
Developmental toxicity	
Target/critical effect	No adverse effects in rat and rabbit at limit dose No teratogenic effects
Lowest relevant maternal NOAEL	1000 mg/kg bw per day (rat/rabbit), highest dose tested
Lowest relevant embryo/fetal NOAEL	1000 mg/kg bw per day (rat/rabbit), highest dose tested
Neurotoxicity	No evidence of neurotoxicity
Acute neurotoxicity NOAEL	>2000 mg/kg bw, highest dose tested (rat)
Subchronic neurotoxicity NOAEL	No evidence from routine studies (rat)
Developmental neurotoxicity NOAEL	No evidence from the toxicological profile
Other toxicological studies	
Immunotoxicity	No evidence from routine studies
Studies on toxicologically relevant metabolites	
Fluoxapiprolin-pyrazole acetic acid (BCS-CC26101)	
Acute toxicity	Acute oral LD_{50}: >2000 mg/kg bw (rat)
Short-term studies of toxicity	28-day NOAEL: 13000 ppm equal to 945 mg/kg bw per day (rat), highest dose tested
Genotoxicity	Not genotoxic (Ames, V79/HPRT-assay, micronucleus in vitro)
Fluoxapiprolin-pyrazole-alanine (BCS-DE61185, tested as hydrochloride salt BCS-DL22168)	
Acute toxicity	Acute oral LD_{50}: >2000 mg/kg bw (rat)
Short-term studies of toxicity	28-day NOAEL: 13000 ppm equal to 1100 mg/kg bw per day (rat), highest dose tested
Genotoxicity	Not genotoxic (Ames, micronucleus in vitro)
Fluoxapiprolin-BDM-pyrazole (BCS-BP32808)	
Acute toxicity	Acute oral LD_{50}: 175 mg/kg bw (rat)
Short-term studies of toxicity	28-day NOAEL: 2 mg/kg bw per day (rat)
Genotoxicity	Not genotoxic (Ames, V79/HPRT-assay, micronucleus in vitro, in vivo micronucleus and transgenic rodent assays)
Fluoxapiprolin-pyrazole-carboxylic acid (BCS-CZ38260)	
Genotoxicity	Not genotoxic (Ames, V79/HPRT-assay, micronucleus in vitro)
Fluoxapiprolin-pyrazole-alanine-oxopropanoic acid (BCS-DE72761)	
Acute toxicity	Acute oral LD_{50}: >2000 mg/kg bw (rat), highest dose tested
Short-term studies of toxicity	28-day NOAEL: 100 mg/kg bw per day (rat)
Genotoxicity	Not genotoxic (Ames, micronucleus in vitro)
Fluoxapiprolin-thiazole acid; (BCS-DG91934, tested as sodium salt BCS-DH17585)	
Genotoxicity	Not genotoxic (Ames, V79/HPRT-assay, micronucleus in vitro)
Microbiological data	No data available for the impact on the human gut microbiome
Human data	Not available

Table 5.19.4 Summary for fluoxapiprolin

	Value	Study	Safety factor
ADI[a]	Unnecessary	–	–
ARfD[a]	Unnecessary		

Note:
[a] Applies to fluoxapiprolin, fluoxapiprolin-3-carboxylic acid (BCS-DA32270) and fluoxapiprolin-4-OH (BCS-DA32272) .

Table 5.19.5 Summary forfluoxapiprolin-BDM-pyrazole (BCS-BP32808) and fluoxapiprolin-pyrazole-carboxylic acid (BCS-CZ38260)

	Value	Study	Safety factor
ADI[a]	1.5 µg/kg bw per day	TTC Cramer class III value	–
ARfD[a]	0.02 mg/kg bw	28-day oral toxicity study with BCS-BP32808	100

Note:
[a] Applies to fluoxapiprolin-BDM-pyrazole (BCS-BP32808) and fluoxapiprolin-pyrazole-carboxylic acid (BCS-CZ38260).

Table 5.19.6 Summary for fluoxapiprolin-pyrazole-alanine-oxopropanoic acid (BCS-DE72761)

	Value	Study	Safety factor
ADI	0–0.5 mg/kg bw	28-day oral toxicity study with metabolite	200
ARfD	Unnecessary	–	–

5.19.2 Residue and analytical aspects

Fluoxapiprolin (ISO name) is a fungicide, as a racemic mixture. Fluoxapiprolin acts by oxysterol binding protein homologue inhibition) from the piperidinyl thiazole isoxazioline chemical class. It is active against a wide range of Oomycete fungi such as late blight (*Phytophthora infestans*) in potatoes and tomatoes, downy mildew in grapes (*Plasmopara viticola*) and in a broad range of horticultural crops.

Fluoxapiprolin was scheduled by the 54th Session of the CCPR (2023) for evaluation as a new compound by the 2024 JMPR for toxicology and residues. The meeting decided that ADI and ARfD for fluoxapiprolin are unnecessary. The meeting received information on identity, physicochemical properties, metabolism (plant and animals), methods of residue analysis, soil degradation, hydrolysis, confined rotational crop studies, freezer storage stability, registered use patterns, supervised residue trials (in grape, tomato, potato, and onion) and fate of residues in processing.

Figure 5.19.2 Fluoxapiprolin (BCS-CS55621)

(MM 650.1)

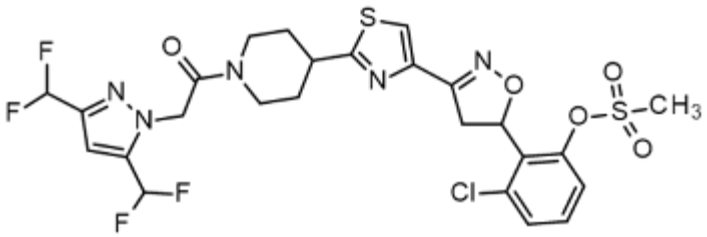
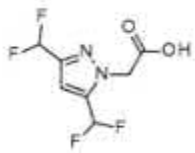
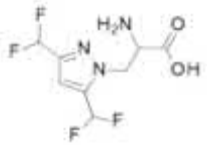
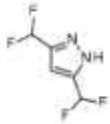
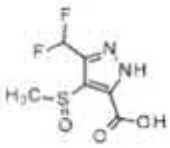
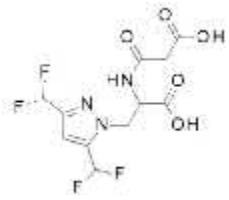
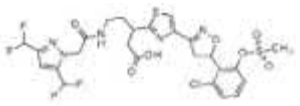
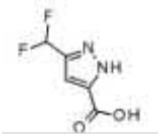
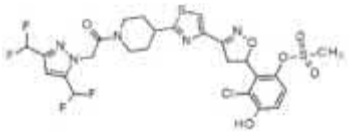
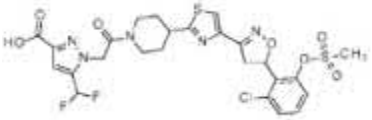


Table 5.19.7 Abbreviations used for relevant compounds referred to in the appraisal

Code	Structure and molecular mass (MM)	Found in
Fluoxapiprolin-pyrazole acetic acid BCS-CC26101	 MM: 226.1 g/mol	Potato and lettuce Rotated wheat, Swiss chard and turnip Goat liver and kidney Soil and water sediment systems Rat
Fluoxapiprolin-pyrazole-alanine BCS-DE61185	 MM: 255.2 g/mol	Potato and lettuce Rotated wheat, Swiss chard and turnip
BCS-BP32808	 MM: 168.1 g/mol	Fluoxapiprolin-BDM-pyrazole Poultry eggs, fat and liver Soil
Fluoxapiprolin-pyrazole-methyl-sulfinyl acid BCS-DE72760	 MM: 224.2 g/mol	Rotated wheat, Swiss chard and turnip
Fluoxapiprolin-pyrazolealanine-oxopropanoic acid BCS-DE72761	 MM: 341.2 g/mol	Rotated wheat, Swiss chard and turnip
Fluoxapiprolin-pentanoic acid BCS-DI53403	 MM: 682.1 g/mol	Goat milk, liver and kidney Rat

Code	Structure and molecular mass (MM)	Found in
Fluoxapiprolin-pyrazole-carboxylic acid BCS-CZ38260	 MM: 162.1 g/mol	Rotated wheat and turnip Goat kidney Soil Rat
Fluoxapiprolin-4-OH BCS-DA32272	 MM: 666.1 g/mol	Poultry eggs and liver Rat
Fluoxapiprolin-3-carboxylic acid BCS-DA32270	 MM: 644.1 g/mol	Goat liver Rat

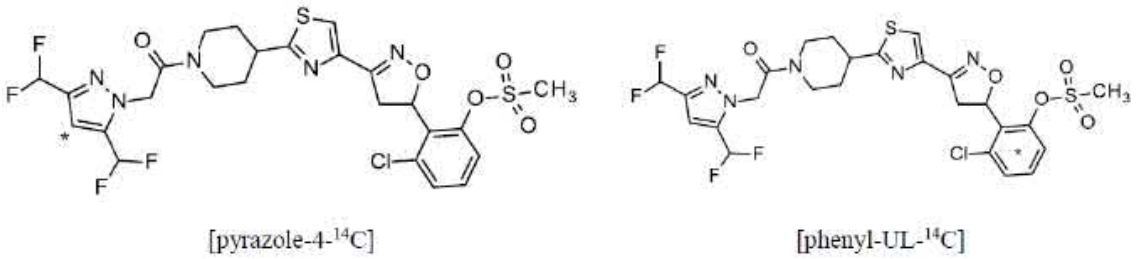
Physical and chemical properties

Fluoxapiprolin is a racemic mixture of *(R)*-fluoxapiprolin and (*S*)-fluoxapiprolin enantiomers with a low vapour pressure and water solubility (0.08 mg/L). It is soluble in medium polarity organic solvents (e.g. dichloromethane or acetone), but only slightly soluble in heptane. It is not susceptible to hydrolysis and photolysis. The octanol/water partition co-efficient (Log P_{OW} 3.4) is not pH dependent.

Plant metabolism

The meeting received plant metabolism studies following foliar application of [^{14}C]-fluoxapiprolin on potatoes, grapes and lettuce. As fluoxapiprolin contains separate ring systems, two different radiolabels were used in all plant and animal studies. These label positions are shown in Figure 5.19.3.

Figure 5.19.3 [^{14}C]-fluoxapiprolin labels used in the metabolism study



[pyrazole-4-^{14}C] [phenyl-UL-^{14}C]

Grape

In two studies in grapes, maintained in containers under natural temperature and light conditions, ^{14}C-fluoxapiprolin was applied to vines as 3 foliar treatments of 0.02 kg ai/ha each, at BBCH 16 (5–6 true leaves), BBCH 65 (50–60 percent petal fall) and BBCH 85 (berry softening). Berry and foliage samples were taken at maturity (BBCH 89, 14 days after the last treatment, DALT).

In unwashed fruit at maturity, 14 DALT, total radioactive residues (TRR) were about 0.14 mg eq/kg. In washed fruit, only 11–19 percent TRR were found (0.011–0.022 mg eq/kg). The majority of the radioactive residue in the berries at maturity was removed by surface washing with dichloromethane (79–87 percent TRR). In leaves 14 DALT, TRR were 6.7–11 mg eq/kg.

Following solvent extraction with 4:1 acetonitrile:water, extractability was good, with unextracted residues accounting for 2.3–2.6 percent TRR in unwashed fruit, 1.9–2.3 percent in washed fruit, and 3.5–3.9 percent TRR in leaves.

Fluoxapiprolin was the only component identified in unwashed fruit (89–90 percent TRR, 0.13 mg/kg), washed fruit (4.1–9.0 percent TRR, 0.004–0.011 mg/kg), leaves (81–91 percent TRR, 6.4–9.1 mg/kg), and surface wash (76–87 percent TRR, 0.092–0.094 mg/kg). Minor residues detected in fruits and leaves accounted for ≤9.4 percent TRR and were not investigated further.

Chiral HPLC analysis of the wash solution of fruit showed no change in the isomer ratio at the end of the study period.

Lettuce

In two studies on lettuce grown in the greenhouse, ^{14}C-fluoxapiprolin was applied as 3 foliar treatments of 0.02 kg ai/ha each, at BBCH 15 (5th true leaf unfolded), 27 days later at BBCH 42–43 (20–30 percent expected head size) and after a further 14 days at BBCH 44–45 (40–50 percent expected head size) directly onto the plants. Lettuce leaves were sampled in immature leaves at BBCH 42–43, 1 day prior to the second application. Mature lettuce heads were harvested at maturity (BBCH 49) with a PHI of 7 days.

The majority of the radioactive residue (92–99 percent TRR) was extracted with 4:1 acetonitrile:water. Immature lettuce leaves contained 0.04 mg eq/kg TRR 1 day prior to the second application, and mature heads 0.77–0.84 mg eq/kg 7 days after the third application. Unextracted residues ranged from 0.4–5.1 percent TRR.

Fluoxapiprolin was the major component identified in lettuce and accounted for 48–74 percent TRR (0.022–0.032 mg/kg) in immature leaves, and 93–95 percent TRR (0.75–0.79 mg/kg) in mature heads. Chiral HPLC analysis showed no change in the isomer ratio over the study period.

In the [phenyl-UL-^{14}C]-treated lettuce, one minor metabolite, fluoxapiprolin-phenyl-isoxazole acid was found at 18 percent TRR (0.008 mg eq/kg) in immature leaves, declining to 1.3 percent TRR (0.011 mg eq/kg) in mature heads.

In the [pyrazole-4-^{14}C] treated lettuce, two metabolites were identified. Fluoxapiprolin-pyrazole-alanine (BCS-DE61185) accounted for 20 percent TRR (0.009 mg eq/kg) in immature leaves. After 3 treatments the pyrazole-alanine metabolite accounted for 2.3 percent TRR (0.019 mg eq/kg) in mature heads.

Fluoxapiprolin-pyrazole acetic acid (BCS-CC26101) accounted for 17 percent TRR (0.008 mg eq/kg) in immature leaves. After 3 treatments, the pyrazole-acetic acid metabolite accounted for 2.3 percent TRR (0.019 mg eq/kg) in mature lettuce heads. At least four minor unidentified metabolites were also detected, the highest of which was 6.9 percent TRR (0.003 mg eq/kg) in immature leaves.

Potato

In two studies on potatoes grown in a protected environment, three applications of 0.02 kg ai/ha each ^{14}C-fluoxapiprolin were made at BBCH 13–15 (3rd leaf of main stem unfolded; >4cm), 26 days later at BBCH 61 (10 percent of flowers in the first inflorescence opened) and after a further 64 days at BBCH 93–95 (most of the leaves yellowish). Samples of potato tubers and tops (leaves and stem) were collected at maturity (BBCH 99) with a PHI of 7 days.

Radioactive residues in the tubers were proportionally low compared to the tops (0.001–0.026 mg/kg in tubers compared to 7.4–12 mg/kg in tops). For the [phenyl-UL-^{14}C]-labelled fluoxipiprolin, residues in tubers were very low (0.001 mg eq/kg) and were not investigated further. For the [pyrazole-4-^{14}C] labelled fluoxapiprolin, 93 percent TRR (0.024 mg eq/kg) was extracted from the tubers with 4:1 acetonitrile:water and in the tops, 97 percent TRR was extracted (7.2–11 mg eq/kg).

Fluoxapiprolin was not found in the tubers, but was the main residue found in the tops, accounting for 90–93 percent TRR (6.7–11 mg/kg).

Two metabolites, fluoxapiprolin-pyrazole-alanine (BCS-DE61185) and fluoxapiprolin-pyrazole acetic acid (BCS-CC26101), were identified and accounted for 52 percent TRR (0.014 mg eq/kg) and 41 percent TRR (0.011 mg eq/kg) in tubers, respectively. In tops, only fluoxapiprolin-pyrazole acetic acid was found, and this accounted for 0.4 percent TRR (0.033 mg eq/kg). No other minor metabolites were found in tubers, while eight other minor metabolites were characterized in tops, individually ranging from 0.3–1.5 percent TRR (0.022–0.11 mg eq/kg).

Summary of plant metabolism

When fluoxapiprolin was applied as a foliar treatment, parent compound was the major residue in grape berries and mature foliage (grape, lettuce, potato), making up 81–95 percent TRR, as well as immature lettuce leaves (48–74 percent TRR). No parent compound was found in potato tubers. Chiral chromatographic analysis indicates that the enantiomeric ratio did not change over the study periods. The majority of the radioactive residue in grape berries at maturity was removed by surface washing (79–87 percent TRR).

The significant metabolites in immature lettuce leaves and potato tubers were fluoxapiprolin-pyrazole-alanine (BCS-DE61185), formed by hydrolytic cleavage of fluoxapiprolin at the piperidine moiety and subsequent conjugation with alanine; and then decarboxylation of fluoxapiprolin-pyrazole-alanine to fluoxapiprolin-prazole acetic acid (BCS-CC26101). In tubers, these accounted for 52 percent TRR (0.014 mg eq/kg) and 41 percent TRR (0.011 mg eq/kg), respectively. In immature lettuce leaves, which were analysed 21 days after the first application, these metabolites proportionally accounted for more of the TRR than in mature heads which were analysed 7 DALA. Fluoxapiprolin-pyrazole-alanine (BCS-DE61185) accounted for 20 percent TRR (0.009 mg eq/kg) in immature leaves after 1 application, to 2.3 percent TRR (0.019 mg eq/kg) in mature heads after 3 applications. Fluoxapiprolin-pyrazole acetic acid accounted for 17 percent TRR (0.008 mg eq/kg) in immature leaves and 2.3 percent TRR (0.019 mg eq/kg) in mature lettuce heads.

One other metabolite, fluoxapiprolin-phenyl-isoxazole acid, was found at 18 percent TRR (0.008 mg eq/kg) in the [phenyl-UL-^{14}C]-treated immature lettuce leaves 21 days after the first application. The mature

heads, which were analysed 7 DALA, only contained 1.3 percent TRR (0.011 mg eq/kg), indicating that metabolism is occurring over time.

Environmental fate

The meeting received hydrolysis, soil and aqueous photolysis, aerobic soil metabolism and field dissipation studies for fluoxapiprolin.

Hydrolysis

Radiolabelled fluoxapiprolin incubated in the dark in sterile aqueous buffered solutions was stable at pH 4 and 7 for 30 days at 50 °C. At pH 9, fluoxapiprolin was stable at 25 °C (DT50 of 678 days) and 35 °C (DT50 of 202 days).

Hydrolysis is unlikely to be an important route of degradation at environmentally relevant pH levels and temperatures.

Aqueous photolysis

When environmental direct phototransformation half-lives of fluoxapiprolin in top surface water layers exposed to sunlight were modelled to predict half-lives in field conditions, they were estimated to be greater than 380 days.

Direct phototransformation in water is unlikely to contribute significantly to the dissipation of fluoxapiprolin from the environment.

Soil photolysis

The photolytic route and rate of degradation of radiolabelled fluoxapiprolin was determined in a sandy loam soil (pH 5.6, 1.3 percent organic carbon) under exposure to simulated sunlight in the laboratory for twelve days at 20 °C.

The amount of fluoxapiprolin in the soil extracts decreased to 86–87 percent of the applied radioactivity (AR) in irradiated samples and to 90–93 percent AR in dark samples over the course of the studies. One degradation product, fluoxapiprolin-4-OH-piperidine (BCS-CY96288), was observed with maximum occurrences of 6.6 percent AR at 12 days after treatment (DAT) in both the irradiated and dark samples. The ratio of enantiomers of racemic fluoxapiprolin did not deviate significantly during the study.

The experimental DT_{50} values of fluoxapiprolin calculated using single first order (SFO) kinetics were 45–56 days (irradiated) and 49–110 days (dark).

Photolysis is unlikely to be an important route of degradation for fluoxapiprolin in the soil.

Aerobic soil metabolism

Aerobic degradation of radiolabelled fluoxapiprolin (0.2 mg/kg) was investigated in six different soils (120–126 days in the dark at 20 °C) with 3 radiolabel positions (phenyl, pyrazole, thiazolyl). Volatile organics were not produced in significant amounts (≤1.2 percent) and about 10–30 percent AR was

evolved as $^{14}CO_2$. Chiral HPLC analysis in one study showed no change in the isomer ratio over the study period.

Fluoxapiprolin degrades in soil under laboratory aerobic conditions from 94–99 percent AR at Day 0, to 8.9–42 percent AR at Day 120–126, with DT_{50} values ranging from 13 to 81 days at 20 °C (geometric mean of 26.7 days). Mineralisation of fluoxapiprolin is significant (4.6–34 percent by days 125–126), and unextracted residues account for maximum values of 21–44 percent on days 90–126. Eight degradates were identified, with the predominant degradation products found at levels greater than 10 percent AR being fluoxapiprolin-pyrazole acetic acid (BCS-CS26101) from day 7, fluoxapiprolin-piperidine (BCS-DC21250) from day 14, and fluoxapiprolin-lactam (BCS-DA63612) from day 29. These three degradates were still present at levels of >10 percent AR at day 120–126.

The proposed degradation pathways include hydroxylation to form fluoxapiprolin-4-OH-piperidine (BCS-CY96288). Studies with the pyrazole label show that cleavage of the amide bond (from presumably both fluoxapiprolin and fluoxapiprolin-4-OH-piperidine) leads to fluoxapiprolin-pyrazole acetic acid (BCS-CC26101) with subsequent metabolism of the acetic acid moiety to form fluoxapiprolin-BDM-pyrazole (BCS-BP32808). Hydroxylation and oxidation of the difluoromethyl group results in fluoxpiproin-pyrazole carboxylic acid (BCS-CZ38260). The metabolites that form with the phenyl and thiazolyl label are, after amide cleavage, the piperidine moiety fluoxapiprolin-piperidine (BCS-DC21250, BCS-CU97237 as hydrochloride) and a further oxidated fluoxapiprolin-lactam (BCS-DA63612). Only in Californian soil further degradation of the piperidine ring leads to fluoxapiprolin-thiazole acid (BCS-DG91934, BCS-DH17585 as sodium salt).

Laboratory degradation studies were conducted on the degradates in four soils under aerobic conditions in the dark at 20 °C. Fluoxapiprolin-pyrazole acetic acid (BCS-CS26101) was rapidly degraded in soil under aerobic conditions in the dark, with a geometric mean of the DT_{50} of 3.85 days. Formation of carbon dioxide was up to 53.9 percent AR and non-extracted residues were up to 47.0 percent AR. No other metabolites were detected above 5 percent AR at any time.

Fluoxapiprolin-BDM-pyrazole (BCS-BP32808) had declined to a highest mean residue of 8.4 percent AR by day 120, with a DT_{50} geomean of 12.3 days. The metabolite fluoxapiprolin-pyrazole-carboxylic acid was formed, peaking at day 7–10 with up to 42.5 percent AR, but declining to <LOD in all four soils by day 120.

Fluoxapiprolin-pyrazole-carboxylic acid (BCS-CZ38260) had declined to a highest mean residue of 4.7 percent AR by day 57, with a DT_{50} geomean of 5.71 days. No other metabolites were identified.

Fluoxapiprolin-piperidine decreased to 30–72 percent AR over 120 days (DT_{50} geometric mean of 212 days), and fluoxapiprolin-lactam to 62–70 percent AR (DT_{50} geometric mean of 332 days). It is concluded that fluoxapiprolin-piperidine and fluoxapiprolin-lactam are moderately degraded in soil under aerobic conditions. For fluoxapiprolin thiazole acid, the geomean for the half-life was 153 days for enantiomer 1 and 154 days for enantiomer 2, indicating that no enantiospecific degradation takes place.

Terrestrial field dissipation studies were conducted on fluoxapiprolin, and the degradation tended to follow biphasic behaviour. The not normalized degradation rate of fluoxapiprolin amounted to a DT_{50} geomean of 45.7 days ranging from 20 to 99 days. A single worst case DT_{50} of 160 days was from a trial in Great Britain. Dissipation and degradation of a single application of fluoxapiprolin at 50 g ai/ha was accompanied by the formation of its degradation products fluoxapiprolin-piperidine (BCS-DC21250, BCS-

CU97237 as hydrochloride), fluoxapiprolin-4-OH-piperidine (BCS-CY96288), and fluoxapiprolin-lactam (BCS-DA63612) at levels of 2.3, 5.4, and 1.6 g/ha, respectively. Parent and degradates were found in the top 0–120 cm soil. Fluoxapiprolin-pyrazole acetic acid (BCS-CC26101) was detected in two trials conducted at up to 1.4 g/ha and fluoxapiprolin-pyrazole-carboxylic acid (BCS-CZ38260) was detected in one trial conducted at 0.4 g/ha. The transient character of these metabolites is indicated by the decline towards the end of the studies.

For fluoxapiprolin-4-OH-piperidine (BCS-CY96288), the degradation rate gave a DT_{50} geomean of 161.9 days ranging from 50.4 to 345.7 days (not normalized for moisture). With the exception of fluoxapiprolin-BDM-pyrazole (BCS-BP32808) where a DT_{50} of 12.9 days could be determined in one trial location, no reliable DT_{50} values were obtained from the terrestrial field dissipation studies for any other of the soil metabolites.

Summary of environmental fate

The meeting concluded that fluoxapiprolin was moderately persistent in soil, with an overall DT_{50} geomean of 36 days across the laboratory and field studies, and is unlikely to accumulate in soil following application in consecutive years. Fluoxapiprolin-4-OH-piperidine (BCS-CY96288), fluoxapiprolin-piperidine (BCS-DC21250), fluoxapiprolin-lactam (BCS-DA63612), and fluoxapiprolin-thiazole acid (BCS-DG91934) are persistent in soil and show potential to accumulate in soil following application in consecutive years. The metabolite fluoxapiprolin-pyrazole-acetic acid (BCS-CC26101) is not persistent and is unlikely to accumulate in soils.

Rotational crop metabolism

Confined rotational crop studies

The metabolism of fluoxapiprolin was investigated in rotational crops (turnips, chard and wheat) at three plant back intervals after application of fluoxapiprolin to soil (1x 60 g ai/ha) using [pyrazole-4-14C] and [phenyl-UL-14C]-labelled fluoxapiprolin. Root crops were represented by turnips, leafy crops by Swiss chard and cereals by wheat. Plant back intervals ranged from 30 to 271 days.

In samples from the [phenyl-UL-14C]-label, TRRs were low (<0.01 mg eq/kg) except in wheat hay, straw and grain with a plant back interval (PBI) of 30 days, and wheat hay and straw with a PBI of 154 days, with the highest residue of 0.022 mg eq/kg in wheat straw.

Higher TRRs were observed in the matrices from the [pyrazole-4-14C] labelled experiment. In food crops, highest TRRs were 0.34 mg eq/kg in wheat grain with a PBI of 30 days. In animal feed items, the highest TRRs of 0.186, 0.121 and 0.138 mg eq/kg were found in wheat straw, wheat hay and turnip leaves, respectively, with a PBI of 30 days.

No parent fluoxapiprolin was detected in any sample analysed.

Eight metabolites were present at >10 percent TRR. Fluoxapiprolin-pyrazole acetic acid (BCS-CC26101) was found up to 84.2 percent TRR (0.018 mg eq/kg) in immature Swiss chard and 20.6 percent TRR (0.025 mg eq/kg) in wheat hay. Fluoxapiprolin-pyrazole-methylsulfinyl acid (BCS-DE72760) was found at up to 46.3 percent (0.018 mg eq/kg) in wheat hay and 22.7 percent (0.042 mg eq/kg) in wheat straw.

Fluoxapiprolin-pyrazole-alanine-oxopropanoic acid (BCS-DE72761) was found at up to 58.8 percent (0.034 mg eq/kg) in turnip leaves. Fluoxapiprolin-pyrazole-alanine (BCS-DE61185) was found at up to 94 percent TRR (0.009 mg eq/kg) in turnip root, fluoxapiprolin-pyrazole-carboxylic acid (BCS-CZ38260) at up to 20 percent TRR (0.006 mg eq/kg) in wheat forage, fluoxapiprolin-pyrazole lactic acid at up to 14.4 percent (0.001 mg eq/kg) in Swiss chard, and fluoxapiprolin-phenylisoxazole acid at up to 79 percent TRR (0.007 mg eq/kg) in wheat straw.

Field rotational crop studies

In a series of rotational crop field trials involving a single application of 60 or 140 g ai/ha, residues of fluoxapiprolin and metabolites were measured in a number of representative root and tuber vegetables, leafy vegetables, stem vegetables, brassica vegetables, bulb vegetables, legumes/pulses, cereals, oilseeds and small berries at PBI ranging from 21 days to 369 days.

In soils treated with 140 g ai/ha, samples taken at planting showed fluoxapiprolin residues present, reaching 0.073 mg/kg 3–4 weeks after soil treatment, declining to a maximum of 0.036 mg/kg after approximately a year. Other metabolites expected in soil were rarely over the LOQ values. In crops that were planted into treated soil, fluoxapiprolin residues of either immature plants or at harvest were <0.01 mg/kg regardless of commodity or PBI. At 60 g ai/ha, only fluoxapiprolin-pyrazole-alanine (BCS-DE61185) was found in crops, and only in mature lettuce from the earliest PBI of 21–23 days (highest residue 0.020 mg eq/kg, median 0.012 mg eq/kg). No metabolites were found in carrots or barley.

After soil was treated at 140 g ai/ha, fluoxapiprolin-pyrazole-alanine (BCS-DE61185) was found to be the predominant residue in crops, detected in 18 of the 28 tested matrices, with highest levels in pea, green seeds found at all PBIs (median 0.058 mg eq/kg, highest residue 0.076 mg eq/kg at 158-day PBI). Notably it was not found in cereal matrices or dry pea seeds.

Fluoxapiprolin-pyrazole-alanine-oxopropanoic acid (BCS-DE72761) was found at highest levels in rape and pea seeds, pods and plants (up to 0.18 mg eq/kg in pea, dry seeds, at the 166-day PBI) and also in brassica vegetables (up to 0.034 mg eq/kg in broccoli at 309 day PBI). Fluoxapiprolin-pyrazole-acetic acid (BCS-CC26101) was found in brassica vegetables, potato, and rape seeds and dry pea seeds, with highest levels in immature cabbage at up to 0.039 mg eq/kg at 335-day PBI. Fluoxapiprolin-methyl-sulfinyl acid (BCS-DE72760) was only found in leek, and wheat forage and straw, with the highest residue of 0.031 mg eq/kg found in wheat straw at 154-day PBI. Fluoxapiprolin-BDM-pyrazole (BCS-BP32808) was only found in a single trial in wheat forage, with a residue of 0.011 mg eq/kg at 30-day PBI. Fluoxapiprolin-thiazole acid (BCS-DG91934) was only found in a single trial in immature lettuce, with a residue of 0.016 mg eq/kg.

The meeting concluded that while fluoxapiprolin is moderately persistent in soil, it is not taken up as parent fluoxapiprolin by rotational crops. Fluoxapiprolin-pyrazole-alanine (BCS-DE61185) and fluoxapiprolin-pyrazole-alanine-oxopropanoic acid (BCS-DE72761), fluoxapiprolin-pyrazole-acetic acid (BCS-CC26101), and fluoxapiprolin-methyl-sulfinyl acid (BCS-DE72760) may be found in rotational crops at low quantified levels when scaled to the field application rate of 60 g ai/ha.

Animal metabolism

The meeting received animal metabolism studies on rats, lactating goats and laying hens where animals were dosed with fluoxapiprolin radiolabelled in the phenyl ring or the pyrazole ring.

Rats

The metabolism of fluoxapiprolin in rats was reviewed in the framework of the toxicological evaluation by the WHO Core Assessment Group of the 2024 JMPR.

Goats

Lactating goats were administered daily doses in gelatine capsules over five days of [pyrazole-4-^{14}C]- or [phenyl-UL-^{14}C]-labelled fluoxapiprolin at rates equivalent to 24 ppm in dry feed in the morning after milking and were sacrificed approximately 6 hours after the last dose.

From 60–64 percent of the administered dose was recovered, of which 58–61 percent was excreted with faeces and 1.5–2.6 percent with urine.

Radioactivity plateaued in milk within 5 days at 0.012 mg eq/kg. TRRs were 0.90 to 0.93 mg eq/kg in the liver, 0.011–0.015 mg eq/kg in fat, 0.042–0.076 mg eq/kg in kidney and 0.004–0.008 mg eq/kg in muscle. Due to the low TRR, muscle was not further analysed.

Residues were efficiently extracted from milk, fat and kidney with 4:1 acetonitrile:water (86–97.4 percent TRR), with lower extraction rates of 47.6–49.3 TRR for liver. Sequential extractions with 4:1 acetonitrile:water and with 1:1 acetonitrile:water plus formic acid using microwave assistance were able to extract 100 percent TRR from liver and kidney.

Parent fluoxapiprolin was the major identified component in fat at 59 to 74 percent TRR (0.008 to 0.009 mg/kg) and kidney at 13 to 18 percent TRR (0.007 to 0.010 mg/kg). It was also observed in liver at 7.8 to 10 percent TRR (0.073 to 0.089 mg/kg) and milk at 5.7 to 12 percent TRR (0.001 mg/kg). Chiral analysis confirmed that the enantiomeric ratio of the parent (applied as a racemic mixture) remained unchanged over the study period.

In milk, the predominant compound was fluoxapiprolin-pentanoic acid (BCS-DI53403) which accounted for 63–85 percent of TRR (0.008 to 0.01 mg/kg). It was also found at 0.051 mg eq/kg in liver (but only 5.5–8.7 percent TRR).

The only other metabolite that was present at >10 percent TRR and >0.01 mg eq/kg was the fluoxapiprolin-pyrazole-carboxylic acid (BCS-CZ38260) in kidney (34 percent TRR and 0.026 mg eq/kg).

Laying hens

Laying hens were administered daily doses of [pyrazole-4-^{14}C]- or [phenyl-UL-^{14}C]-labelled fluoxapiprolin by gavage for 14 days at doses equivalent to 16.5–18 ppm in dry feed in the morning and were sacrificed approximately 6 hours after the last dose. Eggs were collected in the morning after each administration and about one hour before sacrifice.

More than 95 percent of the total administered dose was recovered from the excreta. Radioactivity plateaued in whole eggs by day 7. TRRs were 0.212–0.250 mg eq/kg in the liver, 0.036 –0.042 mg eq/kg in eggs, 0.018–0.027 mg eq/kg in fat and 0.010 mg eq/kg in muscle.

Solvent extractions (4:1 acetonitrile:water) released 79.3–90.6 percent TRR in eggs and tissues, except for liver where 55.0–57.8 percent TRR was released. Subsequent extraction with 1:1

acetonitrile:water/formic acid using microwave assistance released another 32–39 percent TRR in the liver, and an additional 9.1–10.3 percent TRR in eggs.

Parent fluoxapiprolin was the major identified component in eggs at 31 to 36 percent TRR (0.011 to 0.015 mg/kg), muscle at 16 percent TRR (0.002 mg/kg) and fat at 60 to 64 percent TRR (0.012 to 0.016 mg/kg). It was also observed in liver at 7.2 to 8.1 percent TRR (0.015 to 0.020 mg/kg).

Of the other identified metabolites, fluoxapiprolin-4-OH (BCS-DA32272) was present at >10 percent TRR and >0.01 mg eq/kg (16 to 17 percent TRR and 0.033 to 0.042 mg eq/kg in liver). Fluoxapiprolin-BDM-pyrazole (BCS-BP32808) was identified in fat at 21 percent TRR (0.006 mg eq/kg).

In muscle, fat and liver, only fluoxapiprolin *R*-enantiomer 2 was recovered (noting that structure is arbitrary, and absolute configuration is not determined). In eggs, both enantiomers were found, with a ratio of *R*-enantiomer 2 to *S*-enantiomer 1 of 1.1 to 1.7.

Summary of farm animal metabolism

Residues of fluoxapiprolin were present in most tissues, milk and eggs, with the highest levels found in liver from goat and hens (about 0.09 and 0.02 mg/kg, respectively).

The metabolic profiles differed between goats and hens. In goats, the most important metabolic reaction, observed for both labels, was the opening of the piperidine ring followed by oxidation to the 3-OH-propyl side chain. Further oxidation to fluoxapiprolin-pentanoic acid and subsequent hydroxylation to fluoxapiprolin-OH-pentanoic acid. Fluoxapiprolin-ketone was formed by cleavage of the 3-OH-propyl side chain followed by oxidation. Defluorination in the pyrazole moiety led to the minor metabolite fluoxapiprolin-3-carboxylic acid (BCS-DA32270). Another main metabolic reaction was opening of the piperidine ring in combination with cleavage and a subsequent oxidation to fluoxapiprolin-pyrazole-acetic acid. A follow-up reaction was the defluorination of fluoxapiprolin-pyrazole-acetic acid plus oxidation to fluoxapiprolin-pyrazole-carboxylic acid.

Metabolites found at greater than 10 percent TRR in goat tissues and/or milk were fluoxapiprolin-pentanoic acid (BCS-DI53403) in milk (63–85 percent of TRR, 0.008 to 0.01 mg eq/kg), which was also present in liver (5.5–8.7 percent TRR, 0.051–0.078 mg eq/kg), and the pyrazole-carboxylic metabolite in kidney (34 percent TRR and 0.026 mg eq/kg).

In laying hens, the principal metabolic reaction of fluoxapiprolin was the hydroxylation of the phenyl ring forming fluoxapiprolin-4-OH and fluoxapiprolin-di-OH-diene (isomer 1 & 2), respectively. Additionally, cleavage of fluoxapiprolin at the piperidine residue to fluoxapiprolin-pyrazole-acetic acid, and cleavage of fluoxapiprolin-pyrazole-acetic acid at the ethanoic acid group to fluoxapiprolin-BDM-pyrazole. The only significant metabolite in tissues was fluoxapiprolin-4-OH (BCS-DA32272), which was present at 16–17 percent TRR (0.033–0.042 mg eq/kg) in liver. Fluoxapiprolin-BDM-pyrazole (BCS-BP32808) was also identified at low levels in fat.

Methods of analysis

The meeting received information on analytical methods for fluoxapiprolin in plant and animal matrices.

For MRL compliance, two methods were suitable, both involving extraction with acetonitrile:water and analysis by LC-MS/MS. For plant matrices, Method 01624 is suitable for the analysis of fluoxapiprolin and metabolites BCS-CC26101, BCS-DE61185 and BCS-DE72761 in representative crops with a high acid content, high water content, high starch content, high protein content, high oil content and low water content. Method 01628 is suitable for the analysis of fluoxapiprolin in muscle, fat, liver kidney, milk and eggs. The LOQ for each analyte in all plant and animal matrices tested was 0.01 mg/kg.

Radiovalidation was attempted for the QuEChERS multiresidue method, with and without the salt step, in a number of commodities of plant origin. However, applicability was not demonstrated for all combinations and the method was not validated.

The meeting concluded that Method 01624 and Method 01628 were sufficiently validated and are suitable to measure fluoxapiprolin, BCS CC26101, BCS DE61185 and BCS-DE72761 in plant commodities, and fluoxapiprolin in animal commodities.

Stability of pesticide residues in stored analytical samples

The meeting received information on storage stability of fluoxapiprolin, BCS-CC26101, BCS-BP32808, BCS-DE61185, BCS-DE72760, BCS-DE72761, BCS-DC21250, BCS-DG91934, BCS-DA63612, BCS-DH17585 (sodium salt of BCS-DG91934) and BCS-CU97237 (hydrochloride of BCS-DC21250) in representative commodities with high water (tomato or lettuce), high starch (potato), high acid (grape or orange), high oil (sunflower or rape seed), and high protein (field pea dry seed), stored at freezer temperatures of –18 °C. These studies demonstrated a storage stability of at least 24 months in plant commodities.

No storage stability studies were provided for animal commodities.

The meeting agreed that the demonstrated storage stability on various representative plant commodities covered the residue sample storage intervals used in the field trials considered by the current meeting.

Definition of the residue

Plant commodities

In the plant metabolism studies after foliar application, parent fluoxapiprolin was the predominant residue in grape berries and mature foliage (grape, lettuce, potato), making up 80.6–94.7 percent TRR. It was also found in immature lettuce leaves (48.3–73.9 percent TRR). No parent compound was found in potato tubers.

The significant metabolites in potato tubers were fluoxapiprolin-pyrazole-alanine (BCS-DE61185) and fluoxapiprolin-pyrazole acetic acid (BCS-CC26101). In potato tubers at harvest, residues of parent and both metabolites were always <0.01 mg/kg in the tubers in the supervised field trials, and the meeting did not consider that these metabolites should be included in the definition for MRL compliance.

Fluoxapiprolin is found in most primary crop commodities and is considered to be a suitable marker compound. The meeting noted that suitable analytical methods exist to measure fluoxapiprolin in plant commodities. The meeting decided to define the residue for compliance with the MRL as fluoxapiprolin.

In deciding which compounds should be included in the residue definition for dietary intake assessment, the meeting considered the likely occurrence of the compound and toxicological properties of fluoxapiprolin, fluoxapiprolin-pyrazole-alanine (BCS-DE61185), fluoxapiprolin-pyrazole acetic acid (BCS-CC26101) and fluoxapiprolin-pyrazole-alanine-oxopropanoic acid (BCS-DE72761).

Although fluoxapiprolin occurs in most primary commodities an ADI is not considered necessary, and consequently is not relevant to dietary risk assessment.

Fluoxapiprolin-pyrazole-alanine (BCS-DE61185) and fluoxapiprolin-pyrazole acetic acid (BCS-CC26101) were present in the metabolism studies at 52 percent TRR (0.014 mg eq/kg) and 41 percent TRR (0.011 mg eq/kg), respectively, in potato tubers. They were also found in immature lettuce leaves at about 41 percent of parent (0.009 mg eq/kg) and 36 percent of parent (0.008 mg eq/kg), respectively. BCS-DE61185 was not detected in supervised field trials for grapes, onions, tomatoes or potatoes following foliar application. BCS-CC26101 was only detected in supervised field trials for tomatoes (up to 0.013 mg/kg), and for grapes treated later than GAP.

Both fluoxapiprolin-pyrazole-alanine (BCS-DE61185) and fluoxapiprolin-pyrazole acetic acid (BCS-CC26101) were identified in the rat metabolism studies. The toxicity of BCS-DE61185 is covered by the HBGVs for fluoxapiprolin and BCS-CC26101 is not of toxicological concern. Consequently these metabolites are not relevant to dietary risk assessment. The meeting agreed that BCS-DE61185 and BCS-CC26101 need not be included in the residue definition for dietary intake risk assessment for plant commodities.

Fluoxapiprolin-pyrazole-alanine-oxopropanoic acid (BCS-DE72761) was found in food commodities from the rotational crop field trials with median residue values of 0.061 mg eq/kg for pulses, and 0.027 mg eq/kg for oilseeds, after scaling to the seasonal application rate (Table 5.19.8). It was not found at quantified levels in other commodities representative of "super crop groups" after scaling, and was not detected in metabolism studies or in grapes, onions, tomatoes or potatoes in supervised field trials. This metabolite was not found in rat.

The 2024 meeting established an ADI for fluoxapiprolin-pyrazole-alanine-oxopropanoic acid (BCS-DE72761) of 0–0.5 mg/kg bw. As the residue contribution to the maximum long-term exposure is low (0.00026 mg/kg bw/day) and is due to the consumption of rotational crops only and unlikely to significantly increase with additional uses, the meeting agreed that the metabolite fluoxapiprolin-pyrazole-alanine-oxopropanoic acid (BCS-DE72761) should not be included in the residue definition for risk assessment.

Fluoxapiprolin and the metabolites fluoxapiprolin-pyrazole-alanine (BCS-DE61185), fluoxapiprolin-pyrazole acetic acid (BCS-CC26101) and fluoxapiprolin-pyrazole-alanine-oxopropanoic acid (BCS-DE72761) are stable under simulated pasteurization, baking, boiling and brewing, and sterilization conditions.

The meeting decided that no definition for residue for dietary risk assessment for plant commodities was necessary.

Animal commodities

In the goat and hen metabolism studies, about 0.6 percent of the applied dose remained in goat tissues and 0.09–0.12 percent in hens, with 0.1 and 0.7 percent of the dose being eliminated in eggs and milk, respectively.

Residues of fluoxapiprolin were present in most tissues and in milk and eggs, with the highest levels (about 0.09 and 0.02 mg/kg) found in liver from goat and hens, respectively, when fed the equivalent of 24 ppm (goats) or 16.5–18 ppm (hens) in the diet. The meeting noted that suitable enforcement methods exist to measure fluoxapiprolin residues in animal commodities.

Fluoxapiprolin is therefore a suitable marker compound. The meeting decided to define the residue for compliance with the MRL in animal commodities as *fluoxapiprolin*.

In deciding which compounds should be included in the residue definition for risk assessment, the meeting considered the likely occurrence of the compound and its toxicological properties for the candidates, metabolites fluoxapiprolin-pentanoic acid, fluoxapiprolin-pyrazole-carboxylic acid, and fluoxapiprolin-4-OH, found at greater than 10 percent of the parent and more than 0.01 mg eq/kg in animal tissues in the metabolism studies.

Fluoxapiprolin occurs in most animal tissues in the metabolism studies. However, an ADI is not considered necessary, and consequently is not relevant to dietary risk assessment.

Fluoxapiprolin-pentanoic acid (BCS-DI53404) was found in goat milk (500–1500 percent of parent, 0.008 to 0.01 mg eq/kg) and was also present in liver (71–87 percent of parent, 0.051–0.078 mg eq/kg). This metabolite was identified in the rat metabolism studies. The meeting concluded that fluoxapiprolin-pentanoic acid (BCS-DI53404) can be assessed against the TTC for a Cramer class III compound for chronic exposure assessment and the TTC Cramer class III value for acute toxicity.

Fluoxapiprolin-4-OH (BCS-DA32272) was found in hens, present at 210–215 percent of parent and 0.033–0.042 mg eq/kg in liver and 11–16 percent of parent in eggs (0.002–0.002 mg eq/kg). This metabolite was identified in the rat metabolism studies and the toxicity is covered by fluoxapiprolin. As an ADI is not considered necessary for fluoxapiprolin, this metabolite is not relevant to dietary risk assessment and the meeting agreed that there is no need to include it in the residue definition for dietary intake risk assessment for animal commodities.

Fluoxapiprolin-pyrazole-carboxylic acid (BCS-CZ38260) was found in goat kidney (260 percent of parent and 0.026 mg eq/kg). This metabolite was identified in the rat metabolism studies. Fluoxapiprolin-BDM-pyrazole (BCS-BP32808) was found in hens, at 79 percent of parent in liver (0.016 mg eq/kg), hen fat at 35 percent of parent (0.006 mg eq/kg) and hen eggs at 13 percent of parent (0.002 mg/eq/kg). It was not found in the goat or rat metabolism study.

The meeting concluded that the metabolites fluoxapiprolin-BDM-pyrazole (BCS-BP32808) and fluoxapiprolin-pyrazole-carboxylic acid (BCS-CZ38260) can be assessed against the TTC for a Cramer class III compound for chronic exposure assessment, but an acute dietary exposure assessment for the sum of the metabolites applies, with a ARfD of 0.02 mg/kg bw, established by the present meeting.

On considering the dose rates used in the metabolism studies (24 ppm for goat and around 17.5 ppm for hens), the meeting noted that 1x metabolism dose rates result in 0–1 percent of the ARfD, in goats and hens. Given that the uses assessed result in >1000-fold lower residues than the metabolism studies, the meeting concluded that none of the metabolites need not be included in the residue definition for dietary intake risk assessment for animal commodities.

The meeting decided that no definition for residue for dietary risk assessment for animal commodities was necessary.

The meeting noted that the octanol/water partition coefficient (Log P_{ow}) for fluoxapiprolin was 3.4, independent of pH, suggesting a potential for the residue to be fat-soluble. Information on relative concentrations in muscle and fat in the animal metabolism studies indicates that the relative distribution of fluoxapiprolin residues is proportionally higher in fat (59–74 percent TRR) than muscle (<16 percent TRR). The meeting therefore considers the residue to be fat-soluble.

The meeting recommended the following residue definitions for fluoxapiprolin.

Definition of the residue for compliance with the MRL for plant and animal commodities: *fluoxapiprolin.*

Definition of the residue for dietary risk assessment for plant and animal commodities: *not necessary.*

The residue is fat-soluble.

Residues in rotational crops

The meeting noted that in rotational crops, no quantified residues of fluoxapiprolin are expected.

The meeting estimated median residue values for fluoxapiprolin-pyrazole-alanine-oxopropanoic acid (BCS-DE72761) of 0.061 mg eq/kg for pulses, and 0.027 mg eq/kg for oilseeds to account for their presence in rotational food crops, for the purposes of dietary exposure assessment (Table 5.19.8).

Table 5.19.8 Median rotational crop residues of fluoxapiprolin-pyrazole-alanine-oxopropanoic acid (BCS-DE-72761) in plant commodities and animal feed crops grown in rotation, scaled to 60 g ai/ha

Commodity[a]	Fluoxapiprolin-pyrazole-alanine-oxopropanoic acid (BCS-DE72761) Median residue[c] (mg eq/kg)
Fruits and fruiting vegetables	
Strawberries	<0.004
Cucumber at harvest	<0.004
Bulb and stem vegetables	
Leek at harvest	<0.004
Leafy vegetables and Brassicas	
Broccoli at harvest	<0.004
Cabbage, head at harvest	<0.004
Lettuce at harvest	<0.004
Legume vegetables[b]	
Pea, green seeds	<0.004
Pea pods	<0.004
Oilseeds and pulses	
Pea, dry seeds	0.061
Rape seeds	0.027
Root and tuber vegetables	
Potato at harvest	<0.004
Carrot	<0.004
Cereals	
Barley grain	<0.01
Wheat grain	<0.004
Maize kernels	<0.004
Animal feeds[b]	
Rape green plant	<0.004
Rape pods	0.016
Pea green plant	<0.004
Barley forage	<0.01
Barley straw	<0.01
Wheat forage	<0.004
Wheat straw	<0.004
Maize forage	<0.004
Maize – rest of plant	<0.004

Notes:

[a] Based on "super" crop groups referred to in the OECD rotational crop guidance.

[b] These groups are not included in the OECD rotational crop guidance.

[c] Values are the highest median value seen at any plant back interval.

Results of supervised residue trials on crops

Supervised trials were available for the use of fluoxapiprolin on grapes, onions, tomatoes and potatoes, applied as foliar treatments. These trials were conducted in Australia, the European Union, North America, Brazil, and New Zealand. Product labels were available from Australia, Armenia, Belarus, Cambodia and New Zealand.

As residue definition for dietary risk assessment was not necessary, STMR and HR were not estimated. Median residues are estimated for animal dietary burden calculation.

Grapes

The GAP for grapes from Australia consists of 2 applications each at 1 g ai/hL with adjuvant, on a 10-day retreatment interval, with an implied PHI of "Do not use later than pre-bunch closure" (BBCH 75).

Eight trials from Australia were provided which approximate this GAP. Trials were conducted with/without adjuvant; however this did not have a consistent effect on the results so the highest residue value from each independent trial was chosen regardless of adjuvant use.

Residues of fluoxapiprolin in independent trials approximating the critical GAP were (n = 8): <0.01 (2) mg/kg, 0.01 mg/kg, 0.03 (2) mg/kg, 0.05 mg/kg, 0.06 (2) mg/kg.

The meeting estimated a maximum residue level in grapes of 0.15 mg/kg and a median residue of 0.03 mg/kg for fluoxapiprolin in grapes.

Onion, bulb

The GAP for onion, bulb from Cambodia is 3 applications at 20 g ai/ha in 500 L water/ha, with a 7-day retreatment interval and a PHI of 7 days. Nine trials were provided from New Zealand and four from the United States of America that matched this GAP.

Residues of fluoxapiprolin in independent trials approximating the critical GAP were (n = 13): <0.01 (11) mg/kg, 0.011 (2) mg/kg.

The MRL estimated using the OECD calculator was 0.015 mg/kg. However, the meeting noted two trials where a less critical use pattern (4 × 15 g ai/ha with a 14 day PHI) resulted in residues of 0.013 and 0.026 mg/kg. Accordingly, the meeting estimated a maximum residue level of 0.03 mg/kg for fluoxapiprolin in onion, bulb.

Tomato

The critical GAP for tomato is from Cambodia, and consists of 3 applications at 20 g ai/ha in 500 L water/ha, with a 7-day retreatment interval and a PHI of 7 days. For field-grown tomatoes, ten independent trials were provided from New Zealand (including 2 on cherry tomatoes) and 27 from the United States of America that matched the GAP for outdoor trials.

Residues of fluoxapiprolin were (n = 37): <0.01 (8) mg/kg, 0.010 mg/kg, 0.011 (3) mg/kg, 0.012 (3) mg/kg, 0.013 (2) mg/kg, 0.014 (2) mg/kg, 0.016 mg/kg, 0.017 (3) mg/kg, 0.018 (3) mg/kg, 0.019 mg/kg, 0.020 mg/kg, 0.021(2) mg/kg, 0.026 mg/kg, 0.027 (2) mg/kg, 0.028 mg/kg, 0.029 mg/kg, 0.039 mg/kg, 0.040 mg/kg.

An additional 19 (including 11 on cherry tomato) were grown under protection in a greenhouse, at a nominal application rate of 15 g ai/ha but otherwise matching the critical GAP. Results from these trials that had finite fluoxapiprolin residues were proportionally adjusted to support the GAP.

Residues of fluoxapiprolin in independent trials in the greenhouse, before scaling, were (n = 19): <0.01 (7), 0.011 (2), 0.013, 0.015, 0.019, 0.020, 0.021, 0.025, 0.027, 0.038, 0.046, 0.048.

After scaling residues were (n = 19): <0.01 (7) mg/kg, 0.015 (2) mg/kg, 0.017 mg/kg, 0.020 mg/kg, 0.025 mg/kg, 0.027 mg/kg, 0.028 mg/kg, 0.033 mg/kg, 0.036 mg/kg, 0.051 mg/kg, 0.061 mg/kg, 0.064 mg/kg.

The two populations are significantly different when compared using a Mann-Whitney U test and cannot be combined. The meeting noted that the highest residue levels were in greenhouse tomatoes and this population was used to represent tomatoes.

The meeting estimated a maximum residue level of 0.1 mg/kg for tomato and tomato, cherry, and a median residue of 0.017 mg/kg for fluoxapiprolin in tomato.

Potato

The critical GAP for potato is from Cambodia, and consists of 3 applications at 20 g ai/ha in 500 L water/ha, with a 7-day retreatment interval and a PHI of 7 days.

In nine trials from New Zealand, 26 from the United States of America and 8 from the European Union that matched the critical GAP, residues of fluoxapiprolin were all <0.01 mg/kg (n = 43).

Noting that in the potato processing studies involving exaggerated (5x) application, no fluoxapiprolin was found, the meeting estimated a maximum residue level of 0.01* mg/kg and a median residue of 0 mg/kg for fluoxapiprolin in potato.

Fate of residues during processing

Fluoxapiprolin and the metabolites BCS-DE61185, BCS-CC26101 and BCS-DE72761 are stable under simulated pasteurization, baking, boiling and brewing, and sterilization conditions, with material balances of 9–102 percent. Unchanged parent and metabolites accounted for 90–99 percent TRR in each of the studies, although a very small amount of metabolite BCS-DE61185 was degraded to BCS-CC26101 (0.5–1.6 percent TRR). The racemic distribution of enantiomers remained unchanged under all conditions with a ratio of approx. 50/50 in all tests.

The fate of fluoxapiprolin residues has been examined in a number of studies simulating commercial processing of grapes, potatoes and tomatoes. For potatoes, with no residues in the RACs or in any processed potato commodity, no PFs or conclusions on residue concentration or dilution can be made.

Residues of fluoxapiprolin increased in commodities such as raisins, dried tomatoes and in the grape and tomato pomaces, where processing involves a reduction in moisture content, with no residue concentration in the other processed commodities.

For the commodities considered at this meeting (grapes, onions, potatoes and tomatoes), estimated processing factors and STMR-P values for their processed food or feed commodities are summarized in Table 5.19.9.

Table 5.19.9 Estimation of processing factors (PF) for MRL estimation for food commodities considered at this meeting

Raw commodity [Fluoxapiprolin MRL][b]	Processed commodity	Fluoxapiprolin (for MRL estimation)		
		Individual processing factors[a]	Median best estimate PF	MRL-P (mg/kg)
Grape (0.15 mg/kg)	Grape, dried	3.1, 3.5	3.3	0.5
	Juice	<0.02, <0.03, <0.04, <0.05,	<0.02	
	Juice, raw	0.13, 0.16, 0.32, 0.41	0.24	
	Wine	<0.02, <0.03, <0.06, <0.06	<0.02	
	Must	<0.02, 0.11, 0.20, 0.23	0.16	
Tomato (0.1 mg/kg)	Dried fruit	1.5, 5.3, 6.5	5.3	0.6
	Canned fruit	<0.08, <0.09, <0.13	<0.08	
	Peeled fruit	<0.08, <0.09, <0.13	<0.08	
	Juice	0.08, 0.10, 0.21	0.10	
	Paste	0.30, 0.43, 1.0	0.43	
	Puree	0.13, 0.22, 0.49	0.22	

Note:
[a] Each value represents a separate study where residues were above the LOQ in the RAC. The factor is the ratio of fluoxapiprolin residues in the processed item divided by the residue of fluoxapiprolin in the RAC.

Using the estimated maximum residue level of 0.15 mg/kg for grape and applying the processing factor of 3.3, the meeting estimated a maximum residue level of 0.5 mg/kg for fluoxapiprolin in grape, dried.

For tomato, using the estimated maximum residue level of 0.1 mg/kg and applying the processing factor of 5.3 for dried fruit, the meeting estimated an MRL of 0.6 mg/kg for tomato, dried.

Table 5.19.10 shows the processing factors and median residues for feed commodities.

Table 5.19.10 Estimation of processing factors for animal feed commodities considered at this meeting

Raw commodity Median	Processed commodity	Fluoxapiprolin (for MRL estimation and livestock dietary burden)		
		Individual processing factors[a]	Median or best estimate processing factor	Median-P for livestock dietary burden (mg/kg)
Grape (0.03 mg/kg)	Pomace, wet	1.9, 2.2, 2.7, 3.0, 3.6, 4.0, 5.7, 7.6	3.3	0.099
Tomato (0.017 mg/kg)	Wet pomace	1.5, 3.5, 10	3.5	0.060

Note:
[a] Each value represents a separate study where residues were above the LOQ in the RAC. The factor is the ratio of fluoxapiprolin residues in the processed item divided by the residue of fluoxapiprolin in the RAC.

For grape wet pomace, the estimated median residue of fluoxapiprolin using the PF of 3.3 is 0.099 mg/kg.

For tomato wet pomace, the estimated median residue of fluoxapiprolin using the PF of 3.5 is 0.060 mg/kg.

Residues in animal commodities

Farm animal feeding studies

No lactating cow or poultry feeding studies were provided.

Farm animal dietary burden

Dietary burdens for fluoxapiprolin were calculated for beef cattle, dairy cattle, broilers and laying poultry. Livestock feed commodities considered by the meeting were grape pomace and tomato pomace. Residues in potato culls and potato waste are 0 mg/kg.

The dietary burdens, estimated using the OECD diets listed in Appendix IX of the 2016 edition of the FAO manual (OECD 2018 feed calculator, version October 2019), are presented in Annex 5 of the 2024 JMPR Report and summarized in Table 5.19.11.

Table 5.19.11 Estimated maximum and mean dietary burdens of farm animals for fluoxapiprolin

	Animal dietary burden: fluoxapiprolin sum, ppm of dry matter diet							
	United States–Canada		European Union		Australia		Japan	
	Max.	Mean	Max.	Mean	Max.	Mean	Max.	Mean
Beef cattle	0	0	0	0	0.013[a]	0.013[c]	0	0
Dairy cattle	0	0	0	0	0.013[b]	0.013[d]	0	0
Poultry – broiler	0	0	0	0	0	0	0	0
Poultry – layer	0	0	0	0	0	0	0	0

Notes:
[a] Highest maximum beef or dairy cattle dietary burden suitable for MRL estimates for mammalian tissues.
[b] Highest maximum dairy cattle dietary burden suitable for MRL estimates for mammalian milk.
[c] Highest mean beef or dairy cattle dietary burden suitable for STMR estimates for mammalian tissues.
[d] Highest mean dairy cattle dietary burden suitable for STMR estimates for milk.

Animal commodity maximum residue levels

No feeding study was provided. In the metabolism study, lactating goats were dosed with approximately 24 ppm fluoxapiprolin in feed for 5 days. The highest residues of fluoxapiprolin in tissues or milk were seen in liver at 0.089 mg/kg.

The 24-ppm dose rate of fluoxapiprolin used in the goat metabolism studies is about 1840x the highest estimated cattle dietary burden of 0.013 ppm, and the meeting estimated that fluoxapiprolin residues in tissues and milk from cattle exposed to the maximum dietary burden would not be more than 0.0001 mg/kg (in liver), and less than that in other tissues and milk.

The meeting estimated maximum residue levels of 0.01* mg/kg for fluoxapiprolin in Group of muscle (from mammals other than marine mammals), Group of edible offal (mammalian), Group of mammalian fats (except milk fats) and Group of milks.

The animal feed commodities did not contribute to the diet of poultry.

The meeting estimated maximum residue levels of 0.01* mg/kg for fluoxapiprolin in group of avian muscle, group of avian edible offal, group of avian fats and group of eggs.

Recommendations

On the basis of the data obtained from supervised trials, the meeting concluded that the residue levels listed in Table 5.19.12 and in Annex 1 are suitable for establishing maximum residue limits and for dietary exposure assessments. Table 5.19.13 shows the residues used for dietary burden calculation.

Definition of the residue for compliance with the MRL for plant and animal commodities: *fluoxapiprolin.*

Definition of the residue for dietary risk assessment for plant and animal commodities: *Not necessary.*

The residue is fat-soluble.

Table 5.19.12 Residue levels of fluoxapiprolin suitable for establishing maximum residue limits and for dietary exposure assessments

CCN	Commodity	Recommended maximum residue level (mg/kg)	
		New	Previous
VO 2700	Cherry tomato	0.1	–
FB 0269	Grapes	0.15	–
DF 0269	Grapes, dried	0.5	–
PO 0111	Group of avian edible offal	0.01*	–
PF 0111	Group of avian fats	0.01*	–
PM 0110	Group of avian muscle	0.01*	–
MO0105	Group of edible offal (mammalian)	0.01*	–
PE 0112	Group of eggs	0.01*	–
MF0100	Group of mammalian fats (except milk fats)	0.01*	–
ML0106	Group of milks	0.01*	–
MM0095	Group of muscle (from mammals other than marine mammals)	0.01*	–
VA 0385	Onion, bulb	0.03	–
VR 0589	Potato	0.01*	–
VO 0448	Tomato	0.1	–
–	Tomato, dried fruit	0.6	–

Table 5.19.13 Residues for animal dietary burden calculation

CCN	Commodity	Median residue (mg/kg)
VR 0589	Potato	0
AB	Grape pomace (wet)	0.099
AB	Tomato pomace (wet)	0.046

Dietary risk assessment

Long-term dietary exposure

An ADI for fluoxapiprolin is unnecessary. The meeting concluded that long-term dietary exposure to residues of fluoxapiprolin from uses considered by the JMPR is unlikely to present a public health concern.

Acute dietary exposure

An ARfD for fluoxapiprolin is unnecessary. The meeting therefore concluded that the acute dietary exposure to residues of fluoxapiprolin from the uses considered is unlikely to present a public health concern.

Threshold of toxicological concern (TTC) consideration for metabolites

Long-term dietary exposure

The metabolites fluoxapiprolin-pentanoic acid (BCS-DI53403), fluoxapiprolin-carboxylic acid (BCS-CZ3826) and fluoxapiprolin-BDM-pyrazole (BCS-BP32808) could be assessed using the TTC approach (Cramer class III threshold of 1.5 µg/kg bw per day) for chronic exposure.

The 2024 meeting estimated dietary exposures for:

- Fluoxapiprolin-pentaoic acid (BCS-DI53403) of 0 µg/kg bw per day;
- Fluoxapiprolin-carboxylic acid (BCS-CZ3826) of 0 µg/kg bw per day; and
- Fluoxapiprolin-BDM-pyrazole (BCS-BP32808) of 0 µg/kg bw per day.

The meeting concluded that the estimated dietary exposure to residues of fluoxapiprolin-pentanoic acid (BCS-DI53403), fluoxapiprolin-carboxylic acid (BCS-CZ3826) and fluoxapiprolin-BDM-pyrazole (BCS-BP32808) from uses considered by the JMPR is below the TTC for Cramer class III compounds and are unlikely to present a public health concern. Should further uses be considered in the future, these conclusions may need to be re-evaluated.

Acute dietary exposure

The metabolite fluoxapiprolin-pentanoic acid (BCS-DI53403) could be assessed using the TTC value of 5 µg/kg bw per day for acute exposure.

The meeting concluded that the estimated acute dietary exposure to residues of fluoxapiprolin-pentanoic acid (BCS-DI53403) is 0 µg/kg bw per day from uses considered by the JMPR, below the acute toxicity value, and is unlikely to present a public health concern. Should further uses be considered in the future, these conclusions may need to be re-evaluated.

5.20 Flupyradifurone (R)

5.20.1 Residue and analytical aspects

Flupyradifurone is an insecticide belonging to the chemical class of butenolides that acts as an

agonist of the nicotinic acetylcholine receptor. It was first evaluated by the 2015 JMPR for toxicology and an ADI of 0–0.08 mg/kg bw and an ARfD of 0.2 mg/kg bw were established. For residues, the 2016 JMPR recommended the following residue definition for flupyradifurone:

- For compliance with the MRL in plant commodities: flupyradifurone.
- For estimation of dietary intake for plant commodities: sum of flupyradifurone, difluoroacetic acid and 6-chloronicotinic acid, expressed as parent equivalents.
- For compliance with the MRL and for estimation of dietary intake for animal commodities: sum of flupyradifurone and difluoroacetic acid, expressed as parent equivalents.

The residue is not fat-soluble.

Flupyradifurone was scheduled at the 54th Session of the CCPR for the evaluation of additional uses by the 2024 JMPR meeting.

The meeting received new information on use patterns and supervised field trials for flupyradifurone in oilseed rape and olives, accompanied by supporting information on analytical methods, storage stability and processing.

Methods of residue analysis

The current meeting received additional recovery data on methods 01212 and 01304 using LC-MS/MS determination, which were already evaluated by the 2016 JMPR. Tested matrices for both methods were oilseed rape (forage, seeds and straw) and olives (fruits and oil). The methods were demonstrated to be fit-for-purpose with LOQs of 0.01 mg/kg for flupyradifurone, 0.02 mg/kg for difluoroacetic acid (DFA) and 0.005 to 0.01 mg/kg for 6-chloronicotinic acid (6-CNA).

Storage stability

The current meeting received additional data on the storage stability of flupyradifurone and DFA in oilseed rape seeds and straw at temperatures of –8.5 °C to +6 °C over ten days. Reason for the submission of the study was a malfunction of a freezer for 10 days, leading to higher temperatures of stored supervised field trial oilseed rape samples than the typical –18 °C.

In the study, no significant decline of flupyradifurone or DFA was observed under higher temperatures than usual within 10 days, suggesting no effect to residues concentrations measured at the end of the total storage period of up to 799 days.

The overall storage stability of flupyradifurone and DFA was last assessed by the 2017 meeting, which concluded that residues are stable for at least 52 months in high water, high acid, high oil, high protein, and high starch content matrices, when stored frozen at approximately –18 °C.

Results of supervised residue trials on crops

For dietary intake assessment, residues of flupyradifurone, DFA and 6-chloronicotinic acid expressed as parent equivalents (referred to as total residues of flupyradifurone), have been considered.

Where parent or DFA residues were not detected or were less than the LOQ (i.e. generally <0.01 mg/kg bw for parent or 0.02 mg/kg bw for DFA) the LOQ value was utilized for maximum residue estimation and dietary intake assessment. For 6-CNA, values less than the LOQ were not added for calculation of total residues of flupyradifurone (Table 5.20.1).

Table 5.20.1 How residues in the trials were added to give total residues of flupyradifurone (mg eq/kg)

Flupyradifurone	DFA	6-CAN	Total residues
<0.01	0.02	0.01	0.04
0.01	<0.02	0.01	0.04
<0.01	<0.02	<0.01	<0.03
0.01	0.02	<0.01	0.03
0.01	0.02	0.01	0.04

Olives, table and for oil production

The GAP for flupyradifurone in Italy involves one foliar spray of 0.015 kg ai/hL at the start of the pre-flowering phase with a PHI of 14 days. Supervised field trials conducted in Italy and Spain approximated the GAP.

Residues of flupyradifurone in olive fruits were (n = 8): 0.18 mg/kg bw, 0.25 mg/kg bw, 0.30 mg/kg bw, 0.40 mg/kg bw, 0.49 mg/kg bw, 0.57 mg/kg bw, 0.89 mg/kg bw, 3.2 mg/kg bw.

Residues of total flupyradifurone in olive fruits were (n = 8): 0.20 mg eq/kg, 0.28 mg eq/kg, 0.34 mg eq/kg, 0.43 mg eq/kg, 0.56 mg eq/kg, 0.63 mg eq/kg, 0.91 mg eq/kg, 3.3 mg eq/kg.

The meeting estimated a maximum residue level for flupyradifurone of 5 mg/kg bw, a STMR value of 0.495 mg eq/kg and a HR of 3.3 mg eq/kg for the total residue in table olives and olives for oil production.

Oilseed rape, seeds

The GAP for flupyradifurone in Greece involves two foliar sprayings of 0.056 kg ai/ha each (14-day interval) after the end of flowering (BBCH 69–79) with a PHI of 45 days. Supervised field trials conducted in Belgium, France, Germany, Italy, Portugal and Spain approximated the GAP.

Residues of flupyradifurone in rape seeds were (n = 15): 0.024 mg/kg bw, 0.058 mg/kg bw, 0.065 mg/kg bw, 0.066 (2) mg/kg bw, 0.088 mg/kg bw, 0.11 (2) mg/kg bw, 0.12 mg/kg bw, 0.13 (2) mg/kg bw, 0.15 (2) mg/kg bw, 0.16 mg/kg bw, 0.21 mg/kg bw.

Residues of total flupyradifurone in rape seeds were (n = 15): 0.087 mg eq/kg, 0.26 mg eq/kg, 0.29 mg eq/kg, 0.31 mg eq/kg, 0.33 mg eq/kg, 0.34 mg eq/kg, 0.35 mg eq/kg, 0.36 (2) mg eq/kg, 0.38 mg eq/kg, 0.40 mg eq/kg, 0.42 mg eq/kg, 0.43 mg eq/kg, 0.59 mg eq/kg, 0.86 mg eq/kg.

The meeting estimated a maximum residue level of 0.4 mg/kg and a STMR value of 0.36 mg eq/kg for flupyradifurone in rape seeds.

Oilseed rape, forage

GAP for flupyradifurone in Greece involves two foliar sprayings of 0.056 kg ai/ha each (14-day interval) after the end of flowering (BBCH 69–79) with a PHI of 45 days.

Supervised field trials conducted in Belgium, France, Germany, Italy, Portugal and Spain approximated the GAP. However, the meeting took note that the earliest growth-stage for treatment is after flowering. Utilisation of oilseed rape as forage after flowering is untypical, since it may become harmful to livestock. The meeting concluded that the GAP is not relevant for rape forage and decided that no median and highest residues for the purpose of calculating the dietary burden is necessary.

Oilseed rape, straw

The GAP for flupyradifurone is from Greece involving two foliar sprayings of 0.056 kg ai/ha each (14-day interval) after the end of flowering (BBCH 69–79) with a PHI of 45 days.

Supervised field trials conducted in Belgium, France, Germany, Italy, Portugal and Spain approximated the GAP. Rape straw is not a relevant feed commodity and there is no need to estimate maximum residue levels and median or highest residues for the purpose of calculating the dietary burden.

Residues in processed commodities

The meeting received information on the magnitude of residues following processing of olives and the processing factors and STMR-P for total flupyradifurone are shown in Table 5.20.2.

Table 5.20.2 Processing factor and STMR-P for olive processed commodities (total residues)

Raw commodity	Processed commodity	Individual processing factors	Mean or best estimate processing factor	STMR-P in mg eq/kg
Olive fruits (STMR: 0.495 mg eq/kg)	Oil, crude	0.16, 0.22	0.19	0.09415
	Oil, refined	<0.07, <0.15	<0.11	0.05435
	Oil, solvent extracted refined	<0.07, <0.15	<0.11	0.05435

Residues in animal commodities

Based on the uses evaluated by the current meeting, only processed rape seeds (rape seed meal) are a relevant feed item. However, no information on residues in processed rape commodities was submitted. In view of the previous maximum/mean dietary burdens estimated by the meeting of 71.8/23 ppm for cattle and 15.4/6.03 ppm for poultry, a significant increase in relation to the STMR for rape seeds (0.36 mg eq/kg) was not expected. The meeting confirms its previous recommendations for animal commodities.

For transition to the newly established Codex Classification for animal commodities (General consideration 2.4), the meeting estimated the following maximum residue levels, STMR and HR, respectively: 1.5 mg/kg, 0.30 and 1.27 mg/kg for the group of muscle (from mammals other than marine mammals), 1 mg/kg, 0.15 mg/kg and 0.86 mg/kg for the group of mammalian fats (except milk fats),

4 mg/kg, 0.81/0.87 mg/kg (liver/kidney), 2.75/3.4 mg/kg (liver/kidney) for the group of edible offal (mammalian), 0.7 mg/kg and 0.11 mg/kg for the group of milks, 0.7 mg/kg, 0.15 mg/kg and 0.42 mg/kg for the group of eggs, 0.8 mg/kg, 0.27 mg/kg and 0.64 mg/kg for the group of avian muscle, 0.3 mg/kg, 0.11 mg/kg and 0.24 mg/kg for the group of avian fat and 1 mg/kg, 0.39 mg/kg and 0.88 mg/kg for the group of avian, edible offal of.

The meeting withdraws its previous recommendations for group of muscle (from mammals other than marine mammals), mammalian fats (except milk fats), edible offal, mammalian, milk, eggs, poultry meat, poultry fats and poultry, edible offal of.

Recommendations

On the basis of the data from supervised trials, the meeting concluded that the residue levels listed in Table 5.20.3 and Annex 1 are suitable for establishing maximum residue limits and for dietary exposure assessment.

Definition of the residue for compliance with the MRL in plant commodities: flupyradifurone.

Definition for estimation of dietary intake for plant commodities: sum of flupyradifurone, difluoroacetic acid and 6-chloronicotinic acid, expressed as parent equivalents.

Definition for compliance with the MRL and for estimation of dietary intake for animal commodities: sum of flupyradifurone and difluoroacetic acid, expressed as parent equivalents.

The residue is not fat-soluble.

Table 5.20.3 Residue levels suitable for establishing maximum residue limits and for dietary intake assessments.

		Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
CCN	Commodity	New	Previous		
MO 0105	Edible offal, mammalian	W	4	–	–
PE 0112	Eggs	W	0.7	–	–
PF 0111	Group of avian fat	0.3	–	0.11	0.24
PM 0110	Group of avian muscle	0.8	–	0.27	0.64
PO 0111	Group of avian, edible offal of	1	–	0.39	0.88
MO 0105	Group of edible offal, mammalian	4	–	Liver: 0.81 Kidney: 0.87	Liver: 2.75 Kidney: 3.4
PE 0112	Group of eggs	0.7	–	0.15	0.42
MF 0100	Group of mammalian fats (except milk fats)	1	–	0.15	0.86
ML 0106	Group of milks	0.7	–	0.11	–
MM 0095	Group of muscle (from mammals other than marine mammals)	1.5	–	0.30	1.27
MF 0100	Mammalian fats (except milk fats)	W	1	0.15	0.86
MM 0095	Meat (from mammals other than	W	1.5	–	–

		Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
CCN	**Commodity**	**New**	**Previous**		
	marine mammals)				
ML 0106	Milks	W	0.7	–	–
SO 0305	Olives for oil production	5	–	0.495	–
–	Olive oil, crude	–	–	0.09415	–
–	Olive oil, refined	–	–	0.05435	–
–	Olive oil, solvent extracted refined	–	–	0.05435	–
PF 0111	Poultry fat	W	0.3	–	–
PM 0110	Poultry meat	W	0.8	–	–
PO 0111	Poultry, edible offal of	W	1	–	–
SO 0495	Rape seeds	0.4	–	0.36	–
FT 0305	Table olives	5	–	0.495	3.3

Dietary risk assessment

Long-term dietary exposure

The ADI for flupyradifurone is 0–0.08 mg/kg bw. The International Estimated Daily Intakes (IEDIs) for flupyradifurone were estimated for the 17 GEMS/Food Consumption Cluster Diets using the STMR or STMR-P values estimated by the JMPR. The results are shown in Annex 3 of the 2024 JMPR Report.

The IEDIs ranged from 5 to 20 percent of the maximum ADI. The meeting concluded that long-term dietary exposure to residues of flupyradifurone from uses considered by the JMPR is unlikely to present a public health concern.

Acute dietary exposure

The ARfD for flupyradifurone is 0.2 mg/kg bw. The International Estimate of Short-term Intakes (IESTIs) for flupyradifurone were calculated for the food commodities and their processed commodities for which HRs/HR-Ps or STMRs/STMR-Ps were estimated by the present meeting and for which consumption data were available. The results are shown in Annex 4.

The IESTIs were 0–6 percent of the ARfD for children and 0–3 percent for the general population. The meeting concluded that acute dietary exposure to residues of flupyradifurone from uses considered by the present meeting is unlikely to present a public health concern.

5.21 Folpet (041)** (T, R)

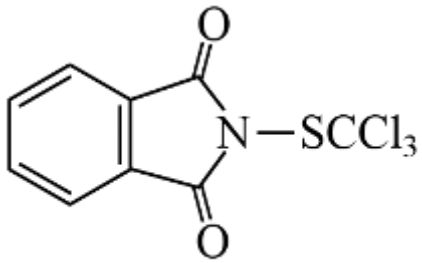
5.21.1 Toxicology

Folpet is the International Organization for Standardization-approved common name for 2-(trichloromethylsulfanyl)isoindole-1,3-dione, with the Chemical Abstracts Service number 133-07-3. Folpet is a phthalimide fungicide and its fungicidal mode of action (M**O**A) is chemical reactivity towards thiols in proteins involved in mitochondria respiration in fungal spores, resulting in the inhibition of mycelial growth.

Folpet was previously evaluated by the FAO/WHO Joint Meeting on Pesticide Residues (JMPR) in 1969, 1973, 1984, 1986, 1990, 1995 and 2004. In 1995 an acceptable daily intake (ADI) of 0–0.1 mg/kg bw was established on the basis of a no-observed-adverse-effect level (NOAEL) of 10 mg/kg bw per day in a two-year study of toxicity and carcinogenicity in rats, a one-year study of toxicity in dogs, and studies of reproductive toxicity in rats and rabbits, and using a safety factor of 100. In 2004 an acute reference dose (ARfD) of 0.2 mg/kg bw was established for women of childbearing age only, based on a NOAEL of 20 mg/kg bw per day for the increased incidence of hydrocephalus at 60 mg/kg bw per day in rabbits and a safety factor of 100. Folpet was reviewed by the present meeting under the periodic review programme of the Codex Committee on Pesticide Residues (CCPR).

All critical studies contained statements of compliance with good laboratory practice and were conducted in accordance with relevant national or international test guidelines, unless otherwise specified. No additional information from a literature search was identified that complemented the toxicological information submitted for the current assessment.

Figure 5.21.1 Chemical structure of folpet



Folpet

Biochemical aspects

Folpet is rapidly and extensively absorbed (more than 90 percent based on urinary excretion) following oral administration in rats at a dose of 10 mg/kg bw. Absorption was lower following administration of a single high dose of 500 mg/kg bw; 60 percent of administered dose (AD) recovered in urine. The time to maximum concentration (T_{max}) in blood was 30–45 minutes and the terminal half-lives were between 4.5 and 12.7 hours. The highest levels of radioactivity were found in the gastrointestinal (GI) tract and organs related to excretion. Excretion was mainly via urine (92 percent of AD) and to a lesser extent faeces (5–6 percent of AD) and expired air (2 percent of AD). After five days, radioactivity was essentially cleared

from the body. Repeat-dose administration showed a similar pattern of excretion and indicated no potential for accumulation.

Folpet was rapidly and extensively metabolized. Two hours after exposure no folpet was detected in the urine, faeces or tissues of rats. The most toxicologically significant pathway is the degradation to thiophosgene, which is highly reactive and is conjugated with glutathione (in particular in the duodenum and jejunum) and then excreted as thiazolidine and mineralized to carbon dioxide, hydrochloric acid and hydrogen sulfide. In the rat, the major metabolite found in urine was phthalamic acid (80 percent of AD); several minor rat metabolites were identified including phthalimide, phthalic acid, 3-OH-phthalimide and 5-OH-phthalimide. No unique human metabolites were identified from in vitro comparative metabolism studies using human and rat liver microsomes.

Toxicological data

The acute oral median lethal dose (LD_{50}) for folpet was greater than 2000 mg/kg bw and the dermal LD_{50} was greater than 2000 mg/kg bw. The inhalation median lethal concentration (LC_{50}) for folpet ranged in different studies between 0.34 mg/L air and greater than 4.35 mg/L air. Folpet was not irritating to the rabbit skin but had an irritating effect on rabbit eyes. Folpet was shown to be sensitizing, in the Magnusson & Kligman maximization test in guinea pigs. Folpet was not phototoxic.

In repeat-dose, oral toxicity studies in mice, rats and dogs per day, the main effects were lowered body weight and food consumption compared to controls (rat, dog), changes in clinical chemistry parameters (rat, dog) and histopathological findings in the GI tract (mouse, rat). The histopathological effects seen in the GI tract in mice and rats were considered to be a concentration-dependent, local effect, which was not considered relevant for the dietary risk assessment.

In a 90-day rat study folpet was administered at dietary concentrations of 0 ppm, 2000 ppm, 4000 ppm and 8000 ppm (equal to 0 mg/kg bw, 136 mg/kg bw, 270 mg/kg bw, 524 mg/kg bw per day for males, 0 mg/kg bw, 148 mg/kg bw, 292 mg/kg bw and 563 mg/kg bw per day for females). No NOAEL could be identified. The lowest-observed-adverse-effect level (LOAEL) was 2000 ppm (equal to less than 136 mg/kg bw per day), the lowest dose tested, based on histopathological changes in the GI tract (hyperkeratosis in the oesophagus, hyperkeratosis and acanthosis in the stomach) seen at all dose levels tested.

In a second 90-day rat study folpet was administered at dietary concentrations of 0 ppm, 300 ppm, 1000 ppm, 3000 ppm or 10000 ppm (equal to 0 mg/kg bw, 17 mg/kg bw, 56 mg/kg bw, 169 mg/kg bw and 614 mg/kg bw per day for males, 0 mg/kg bw, 21 mg/kg bw, 67 mg/kg bw, 205 mg/kg bw and 718 mg/kg bw per day for females). The NOAEL was 3000 ppm (equal to 169 mg/kg bw per day) based on histopathological findings in the nonglandular stomach (hyperkeratosis, acanthosis and submucosal oedema) and as a consequence decreased body weight and body weight gain and effects on clinical chemistry (decreased total protein and albumin and/or globulin) at 10000 ppm (equal to 614 mg/kg bw per day).

In a 90-day dog study folpet was administered via gelatin capsule at doses of 0 mg/kg bw, 790 mg/kg bw, 1800 mg/kg bw and 4000 mg/kg bw per day. No NOAEL could be identified, The LOAEL was 790 mg/kg bw per day, the lowest dose tested, based on effects on testes (weight, size, degeneration).

In a one-year dog study folpet was administered via gelatin capsule at doses of 0 mg/kg bw, 325 mg/kg bw, 650 mg/kg bw or 1300 mg/kg bw per day. No NOAEL could be identified. The LOAEL was 325 mg/kg bw per day, the lowest dose tested, based on decreased body weight gain in females.

In an additional one-year dog study folpet was administered via gelatin capsule at dose levels of 0 mg/kg bw, 10 mg/kg bw, 60 mg/kg bw or 120 mg/kg bw per day. The NOAEL was 10 mg/kg bw per day based on decreased body weight gain and food consumption and marginal effects on clinical chemistry findings (decreased cholesterol, total protein, albumin and globulin) at 60 mg/kg bw per day.

In a carcinogenicity study in mice, folpet was administered at dietary concentrations of 0 ppm, 1000 ppm, 5000 ppm or 12000 ppm (equal to 0 mg/kg bw, 93 mg/kg bw, 502 mg/kg bw and 1282 mg/kg bw per day for males, 0 mg/kg bw, 96 mg/kg bw, 515 mg/kg bw and 1284 mg/kg bw per day for females) for 112–113 weeks. As limited investigations were performed to study general toxicity, no NOAEL for chronic toxicity was derived. No NOAEL could be identified for carcinogenicity. The LOAEL was 1000 ppm (equal to less than 93 mg/kg bw per day), the lowest dose tested, based on tumours in the jejunum and duodenum.

In a two-year chronic toxicity and carcinogenicity study in mice, folpet was administered at dietary concentrations of 0 ppm, 1000 ppm, 5000 ppm or 10000 ppm for the first 21 weeks and thereafter at 0 ppm, 1000 ppm, 3500 ppm or 7000 ppm (equal to 0 mg/kg bw, 123 mg/kg bw, 564 mg/kg bw and 1264 mg/kg bw per day for males, 0 mg/kg bw, 141 mg/kg bw, 610 mg/kg bw and 1285 mg/kg bw per day for females). No NOAEL could be identified for chronic toxicity. The LOAEL was 1000 ppm (equal to less than 123 mg/kg bw per day), the lowest dose tested, based on histopathological findings in the GI tract (hyperkeratosis in oesophagus, nonglandular stomach, hyperplasia and proliferation of mucosal glands in the duodenum). The carcinogenicity NOAEL was 1000 ppm (equal to 123 mg/kg bw per day) based on increased incidence of duodenal carcinoma at 3500 ppm (equal to 564 mg/kg bw per day).

In an additional two-year carcinogenicity study in mice, folpet was administered at dietary concentrations of 0 ppm, 150 ppm, 450 ppm or 1350 ppm (equal to 0 mg/kg bw, 16 mg/kg bw, 47 mg/kg bw and 151 mg/kg bw per day for males, 0 mg/kg bw, 16 mg/kg bw, 51 mg/kg bw and 154 mg/kg bw per day for females). As limited investigations were performed to study general toxicity, no NOAEL for chronic toxicity was derived. The carcinogenicity NOAEL was 450 ppm (equal to 47 mg/kg bw per day) based on tumours in the nonglandular stomach and duodenum at 1350 ppm (equal to 151 mg/kg bw per day).

In a two-year chronic toxicity and carcinogenicity study in rats, folpet was administered at dietary concentrations of 0 ppm, 500 ppm, 1000 ppm or 2000 ppm (equal to 0 mg/kg bw, 28 mg/kg bw, 56 mg/kg bw and 108 mg/kg bw per day for males, 0 mg/kg bw, 37 mg/kg bw, 67 mg/kg bw and 133 mg/kg bw per day for females). The NOAEL for chronic toxicity was 500 ppm (equal to 28 mg/kg bw per day) based on histopathological findings in the nonglandular stomach at 1000 ppm (equal to 56 mg/kg bw per day). The carcinogenicity NOAEL was 2000 ppm (equal to 108 mg/kg bw per day), the highest dose tested.

In a second two-year chronic toxicity and carcinogenicity study in rats, folpet was administered at dietary concentrations of 0 ppm, 200 ppm, 800 ppm or 3200 ppm (equal to 0 mg/kg bw, 9.9 mg/kg bw, 40 mg/kg bw and 162 mg/kg bw per day for males, 0 mg/kg bw, 12.5 mg/kg bw, 50 mg/kg bw and 205 mg/kg bw per day for females). The chronic toxicity NOAEL was 800 ppm (equal to 40 mg/kg bw per day) based on histopathological findings in the nonglandular stomach (hyperkeratosis/acanthosis with

erosion/ulceration) at 3200 ppm (equal to 162 mg/kg bw per day). The carcinogenicity NOAEL was 3200 ppm (equal to 162 mg/kg bw per day), the highest dose tested.

In an additional two-year chronic toxicity study in rats, folpet was administered at dietary concentrations of 0 ppm, 250 ppm, 1500 ppm or 5000 ppm (equal to 0 mg/kg bw, 12 mg/kg bw, 83 mg/kg bw and 296 mg/kg bw per day for males, 0 mg/kg bw, 16 mg/kg bw, 104 mg/kg bw, 359 mg/kg bw per day for females). The chronic toxicity NOAEL was 250 ppm (equal to 12 mg/kg bw per day) based on histopathological findings in the nonglandular stomach (hyperkeratosis) at 1500 ppm (equal to 83 mg/kg bw per day). Within the limitations of this study no indication for carcinogenic potential was observed.

Several mechanistic studies were provided to further investigate the effects observed in the small intestines in mice. The data show that repeated exposure to folpet caused cytotoxicity in the villi (reduced in size, fusion, increased number of inflammatory cells), with increased cell proliferation (labelling with 5-bromo-2'-deoxyuridine [BrdU] and proliferating cell nuclear antigen) and hyperplasia. The available data support a MOA driven by local cytotoxicity, with subsequent regenerative proliferation which, if sustained, increases the probability of spontaneous mutation and formation of tumours in the small intestine of mice.

The meeting concluded that folpet is carcinogenic in mice, but not in rats.

Folpet was tested for genotoxicity in an adequate range of studies. Folpet was positive for mutagenicity and clastogenicity end-points in vitro, but not in vivo. The meeting concluded that folpet is unlikely to be genotoxic in vivo.

As folpet is unlikely to be genotoxic in vivo, and there is a clear threshold for GI tract tumours in mice, the meeting concluded that folpet is unlikely to pose a carcinogenic risk to humans from the diet.

In a two-generation reproductive toxicity study, rats were administrated folpet at dietary concentrations of 0 ppm, 200 ppm, 800 ppm or 3600 ppm (equal to mean folpet intakes of 0 mg/kg bw, 11 mg/kg bw, 45 mg/kg bw and 202 mg/kg bw per day for the F0 males; 0 mg/kg bw, 10 mg/kg bw, 40 mg/kg bw and 194 mg/kg bw per day for F1 males; 0 mg/kg bw, 15 mg/kg bw, 59 mg/kg bw and 226 mg/kg bw per day for F0 females; 0 mg/kg bw, 13 mg/kg bw, 51 mg/kg bw and 246 mg/kg bw per day for F1 females). The NOAEL for parental and offspring toxicity was 800 ppm, equal to 40 mg/kg bw per day based on the reduced body weight and food consumption in F1 parents of both sexes, and the reduced body weight of F2 litters during lactation, at 3600 ppm (equal to 194 mg/kg bw per day). The NOAEL for reproductive toxicity was 3600 ppm (equal to 194 mg/kg bw per day), the highest dose tested.

In a second two-generation reproductive toxicity study, rats were administrated folpet at dietary concentrations of 0 ppm, 250 ppm, 1500 ppm or 5000 ppm (equal to mean folpet intakes of 0 mg/kg bw, 18.9 mg/kg bw, 112.3 mg/kg bw and 370.1 mg/kg bw per day for the F0 males; 0 mg/kg bw, 22.5 mg/kg bw, 133.4 mg/kg bw or 453.6 mg/kg bw per day for the F1 males; 0 mg/kg bw, 25.2 mg/kg bw, 150.1 mg/kg bw or 520.2 mg/kg bw per day for F0 females; 0 mg/kg bw, 28.4 mg/kg bw, 168.3 mg/kg bw or 566.3 mg/kg bw per day for F1 females). The NOAEL for parental toxicity was 250 ppm (equal to 18.9 mg/kg bw per day) based on hyperkeratosis in the forestomach at 1500 ppm (equal to 112.3 mg/kg bw per day) in both F0 and F1 generations. The NOAEL for offspring toxicity was 1500 ppm (equal to 112.3 mg/kg bw per day) based on the decreases in body weight of F1 pups during lactation at

5000 ppm (equal to 370.1 mg/kg bw per day). The NOAEL for reproductive toxicity was 5000 ppm (equal to 370.1 mg/kg bw per day), the highest dose tested.

The overall parental NOAEL was 800 ppm (equal to 40 mg/kg bw per day) based on hyperkeratosis in the forestomach at 1500 ppm (equal to 112 mg/kg bw per day). The overall offspring NOAEL was 800 ppm (equal to 40 mg/kg bw per day) based on reduced body weight at 3600 ppm (equal to 194 mg/kg bw per day). The overall reproductive NOAEL was 5000 ppm (equal to 370 mg/kg bw per day), the highest dose tested.

In a developmental toxicity study, rats were administered folpet by gavage from gestation day (GD) 6 to GD 20 at doses of 0 mg/kg bw, 20 mg/kg bw, 100 mg/kg bw or 800 mg/kg bw per day. The NOAEL for maternal toxicity was 100 mg/kg bw per day based on clinical signs (dyspnea and loud breathing), reduced body weight gains and food consumption at 800 mg/kg bw. The NOAEL for embryo/fetal toxicity was 800 mg/kg bw per day, the highest dose tested.

In a developmental toxicity study, rats were administered folpet by gavage from GD 6 to GD 19 at doses of 0 mg/kg bw, 20 mg/kg bw, 100 mg/kg bw or 800 mg/kg bw per day. The NOAEL for maternal toxicity was 100 mg/kg bw per day based on lower body weight gains and food consumption at 800 mg/kg bw. The NOAEL for embryo/fetal toxicity was 800 mg/kg bw per day, the highest dose tested.

In a developmental toxicity study, rats were administered folpet by gavage from GD 6 to GD 19 at doses of 0 mg/kg bw, 10 mg/kg bw, 60 mg/kg bw or 360 mg/kg bw per day. The NOAEL for maternal toxicity was 60 mg/kg bw per day based on the lower body weight gain and food consumption at 360 mg/kg bw. The NOAEL for embryo/fetal toxicity was 360 mg/kg bw per day, the highest dose tested.

In a developmental toxicity study, rats were administered folpet by gavage from GD 6 to GD 15 at doses of 0 mg/kg bw, 150 mg/kg bw, 550 mg/kg bw or 2000 mg/kg bw per day. The NOAEL for maternal toxicity was 150 mg/kg bw per day based on lower body weight gain and food consumption and clinical signs (soft faeces and staining of the fur) at 550 mg/kg bw per day. The NOAEL for embryo/fetal toxicity was 150 mg/kg bw per day based on the increased incidence of delayed ossification and skeletal variations at 550 mg/kg bw.

The overall NOAEL for maternal toxicity in rat was 100 mg/kg bw per day, based on lower body weight gain and food consumption observed at 360 mg/kg bw per day. The overall NOAEL for embryo/fetal toxicity in the rat was 150 mg/kg bw per day based on increased incidence of delayed ossification and skeletal variations at 550 mg/kg bw per day.

In a developmental toxicity study, rabbits were administered folpet by gavage from GD 6 to GD 28 at doses of 0 mg/kg bw, 10 mg/kg bw, 30 mg/kg bw or 60 mg/kg bw per day. The NOAEL for maternal toxicity was 10 mg/kg bw based on a decrease in body weight gain and food consumption at 30 mg/kg bw per day. The NOAEL for embryo/fetal toxicity was 30 mg/kg bw per day based on lower fetal body weights, increased postimplantation loss and a slight delay in general development occurred subsequent to the maternal body weight loss observed at 60 mg/kg bw per day.

In a developmental toxicity study, rabbits were administered folpet by gavage from GD 6 to GD 28 at doses of 0 mg/kg bw, 10 mg/kg bw, 20 mg/kg bw or 60 mg/kg bw per day. The NOAEL for maternal toxicity was 10 mg/kg bw per day based on decreases in body weight gain and food consumption at 20 mg/kg bw per day. The NOAEL for embryo/fetal toxicity was 60 mg/kg bw per day, the highest dose tested. The

incidence of hydrocephaly and its coincidental major abnormalities (dilatation of lateral ventricle in the brain) in fetuses significantly increased at 60 mg/kg bw per day. As the litter incidence was not significantly increased and the incidence was not replicated in other studies, it was not considered to be a treatment-related change.

In a pulse-dose study, rabbits were administered folpet at a dose of 60 mg/kg bw per day by gavage during the periods GD 7–9, GD 10–12, GD 13–15, and GD 16–18 to further investigate the hydrocephaly observed in the above study. No increase in incidence of hydrocephaly was observed in any of the dose groups treated with folpet and hence the finding of hydrocephaly was not reproduced.

In a developmental toxicity study, rabbits were administered folpet by gavage from GD 7 to GD 19 at doses of 0 mg/kg bw, 10 mg/kg bw, 40 mg/kg bw or 160 mg/kg bw per day. The NOAEL for maternal toxicity was 40 mg/kg bw per day based on decreased maternal body weight and food consumption at 160 mg/kg bw per day. The NOAEL for embryo/fetal toxicity was 40 mg/kg bw per day based on increased postimplantation loss, small fetuses and increased incidences of minor skeletal variations at 160 mg/kg bw per day.

The overall NOAEL for maternal toxicity in the rabbit was 10 mg/kg bw per day based on decreased body weight gain and food consumption at 20 mg/kg bw per day. The overall NOAEL for embryo/fetal toxicity in the rabbit was 30 mg/kg bw per day based on based on lower fetal body weights, increased post-implantation loss and a slight delay in general development observed at 60 mg/kg bw per day.

Limited in vitro data indicated that folpet inhibits the growth of rabbit-specific gut microflora. The effects observed on body weight in the developmental toxicity studies in rabbits could be a consequence of altered gut microflora and/or a locally irritating effect of folpet.

The meeting concluded that folpet is not teratogenic.

In a 90-day neurotoxicity study in rats, folpet was administered at dietary concentrations of 0 ppm, 2500 ppm, 5000 ppm and 10000 ppm (equal to 0 mg/kg bw, 181 mg/kg bw, 363 mg/kg bw and 701 mg/kg bw per day for males, 0 mg/kg bw, 200 mg/kg bw, 397 mg/kg bw and 790 mg/kg bw per day for females). The NOAEL for general toxicity was 2500 ppm (equal to 181 mg/kg bw per day) based on decreased body weight and food consumption in males at 5000 ppm (equal to 363 mg/kg bw per day). The neurotoxicity NOAEL was 10000 ppm (equal to 701 mg/kg bw per day), the highest dose tested.

The meeting concluded that folpet is not neurotoxic.

No specific data were submitted regarding immunotoxicity. No evidence of immunotoxicity was reported in routine toxicological studies with folpet.

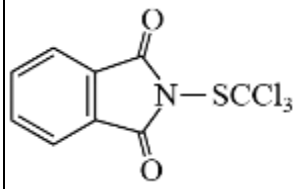
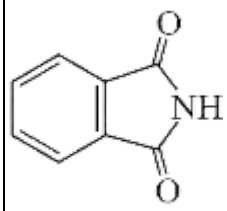
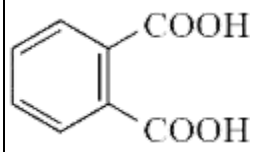
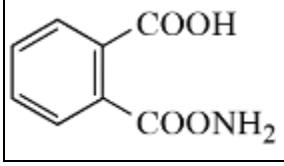
The meeting concluded that folpet is unlikely to be immunotoxic.

In vitro studies focusing on estrogen, androgen and steroidogenesis activity were provided and showed negative results.

Toxicological data on metabolites and/or degradates

A toxicological evaluation of the following metabolites was performed. Table 5.21.1 shows an overall summary of the toxicological characterization of the metabolites requested for consideration in the residue definition.

Table 5.21.1 Summary of toxicological characterization of plant/livestock metabolites of folpet

Compound, codes and structure	Detection in rat ADME	Genotoxicity studies	General toxicity studies	Meeting conclusion
Folpet 	Parent	Not genotoxic in vivo	Full dataset	ADI: 0–0.1 mg/kg bw No ARfD
Phthalimide 	Yes 2.1% in urine	Negative QSAR, Negative Ames and in vitro chromosome aberration	24-hour toxicity rat: NOAEL: 1372 mg/kg bw per day, the highest dose tested. Developmental toxicity in rabbit: maternal and developmental NOAEL: 30 mg/kg bw per day, the highest dose tested	Not of toxicological concern
Phthalic acid 	Yes 2.8% in urine	Negative QSAR, negative Ames and in vivo micronucleus	28 days in rat: NOAEL 113 mg/kg bw per day based on histopathological findings in kidneys observed at 402 mg/kg bw per day Four-week sperm motility study in rat: NOAEL of 100 mg/kg bw per day based on decreased testes weight and affected sperm parameters at 1000 mg/kg bw per day	Separate ADI of 0.1 mg/kg bw based on NOAEL of 113 mg/kg bw per day and a safety factor of 1000[a]
Phthalamic acid 	Yes 80% in urine	QSAR overall negative	No data	Parent ADI

Note:
[a] An additional safety factor of 10 was applied due to the limited database and different nature of effects compared to parent folpet.

Microbiological aspects

There is not sufficient directly relevant information available in the public domain, and no experimental data were submitted, that addressed the possible impact of folpet residues on the human intestinal microbiome. In vitro studies investigating potential inhibition of growth of the rabbit gut microflora

following exposure to folpet were provided, but these were not considered adequate for a human risk assessment.

Human data

In reports on manufacturing plant personnel, no adverse health effects were noted. No information on accidental or intentional poisoning in humans is available. Available epidemiological studies did not report any association between exposure to folpet and adverse health effects.

The meeting concluded that the existing database on folpet was adequate to characterize the potential hazards to the general population, including fetuses, infants and children.

Toxicological evaluation

The meeting re-affirmed the ADI of 0–0.1 mg/kg bw established by the 1995 meeting. This ADI is based on a NOAEL of 10 mg/kg bw per day in a one-year study of toxicity in dogs and a safety factor of 100. This provides a margin of 930 with respect to the lowest LOAEL for GI tract tumours found in mice. This ADI also applies to the metabolite phthalamic acid.

The meeting established a separate ADI for the metabolite phthalic acid of 0–0.1 mg/kg bw based on the NOAEL of 113 mg/kg bw per day from the 28-day study performed with phthalic acid in rats. A safety factor of 1000 was applied, which includes an additional safety factor of 10 due to the limited database and different nature of effects compared to parent folpet.

The meeting concluded that it was not necessary to establish an ARfD for folpet in view of its low acute oral toxicity and the absence of developmental toxicity and any other toxicological effects likely to be elicited by a single dose. The effects on the embryo/fetus observed in the rat and rabbit developmental toxicity studies were considered to be secondary to maternal toxicity. The current meeting withdrew the ARfD for folpet established by the 2004 meeting.

A toxicological monograph was prepared.

Table 5.21.2 Levels relevant to risk assessment of folpet

Species	Study	Effect	NOAEL	LOAEL
Mouse	Studies of toxicity and carcinogenicity[a, d]	Toxicity	–	1000 ppm, equal to 123 mg/kg bw per day[e, g]
		Carcinogenicity	450 ppm, equal to 47 mg/kg bw per day	1350 ppm, equal to 151 mg/kg bw per day[g]
Rat	13-week toxicity study[a]	Toxicity	3000 ppm, equal to 169 mg/kg bw per day	10000 ppm, equal to 614 mg/kg bw per day[g]
	13-week neurotoxicity study[a]	Neurotoxicity	10000 ppm, equal to 701 mg/kg bw per day[c]	–
		Toxicity	2500 ppm, equal to 181 mg/kg bw per day	5000 ppm, equal to 363 mg/kg bw per day
	Two-year studies of toxicity and carcinogenicity[a, d]	Toxicity	250 ppm, equal to 12 mg/kg bw per day	1500 ppm, equal to 83 mg/kg bw per day[g]
		Carcinogenicity	3200 ppm, equal to 162 mg/kg bw per day[c]	–

Species	Study	Effect	NOAEL	LOAEL
	Two-generation study of reproductive toxicity[a, d]	Reproductive toxicity	5000 ppm, equal to 370 mg/kg bw per day[c]	–
		Parental toxicity	800 ppm, equal to 40 mg/kg bw per day	1500 ppm, equal to 112 mg/kg bw per day
		Offspring toxicity	800 ppm, equal to 40 mg/kg bw per day	3600 ppm, equal to 194 mg/kg bw per day
	Developmental toxicity study[b]	Maternal toxicity[d] Embryo/fetal toxicity	100 mg/kg bw per day 150 mg/kg bw per day	360 mg/kg bw per day 550 mg/kg bw per day
Rabbit	Developmental toxicity study[b, d]	Maternal toxicity Embryo/fetal toxicity	10 mg/kg bw per day 30 mg/kg bw per day	20 mg/kg bw per day 60 mg/kg bw per day
Dog	1-year studies of toxicity[f]	Toxicity	10 mg/kg bw per day	60 mg/kg bw per day

Studies on metabolites

Phthalimide				
Rat	24-hour study of toxicity[a]	Toxicity	20000 ppm, equal to 1372 mg/kg bw/day[c]	–
	Developmental toxicity study[b]	Maternal toxicity Embryo/fetal toxicity	30 mg/kg bw per day[c] 30 mg/kg bw per day[c]	– –
Phthalic acid				
Rat	28-day study of toxicity[a]	Toxicity	1200 ppm, equal to 113 mg/kg bw per day	4000 ppm, equal to 402 mg/kg bw per day

Notes:
[a] Dietary administration.
[b] Gavage administration.
[c] Highest dose tested.
[d] Two or more studies combined.
[e] Lowest dose tested.
[f] Capsule administration.
[g] Critical effect related to a concentration-dependent local effect which is not considered relevant for the dietary risk assessment.

Acceptable daily intake (ADI) applies to folpet and phthalamic acid expressed as folpet:

0–0.1 mg/kg bw

Acute reference dose (ARfD):

Not necessary

Separate acceptable daily intake (ADI) for metabolite phthalic acid:

0–0.1 mg/kg bw

Information that would be useful for the continued evaluation of the compound

Results from epidemiological, occupational health and other such observational studies of human exposure.

Table 5.21.3 Critical end-points for setting guidance values for exposure to folpet

Absorption, distribution, excretion and metabolism in mammals	
Rate and extent of oral absorption	Rapidly (T_{max} of 30–45 minutes) and extensively absorbed in rats (>90%)
Dermal absorption	Very low dermal absorption in humans.
Distribution	Widely distributed.
Potential for accumulation	No evidence of accumulation
Rate and extent of excretion	Rapid excretion, mainly via urine and to a lesser extent via faeces and expired air.
Metabolism in animals	The trichloromethylthio side chain generates thiophosgene via hydrolysis and its rapid reaction with thiols. Thiophosgene is conjugated with glutathione and excreted. Removal of side chain by hydrolysis.
Toxicologically significant compounds in animals and plants	Folpet, phthalamic acid and phthalic acid
Acute toxicity	
Rat, LD_{50}, oral	>2000 mg/kg bw
Rat, LD_{50}, dermal	>2000 mg/kg bw
Rat, LC_{50}, inhalation	0.34–4.35 mg/L
Rabbit, dermal irritation	Not irritating
Rabbit, ocular irritation	Irritating
Mouse, dermal sensitization	Sensitizing (Magnusson & Kligman maximization test)
Short-term studies of toxicity	
Target/critical effect	Clinical chemistry and reduced body weight and food consumption, due to local irritating effects in the GI tract
Lowest relevant oral NOAEL	10 mg/kg bw per day (dog)
Long-term studies of toxicity and carcinogenicity	
Target/critical effect	GI tract histopathology due to local effect (mouse and rat)
Lowest relevant NOAEL	12 mg/kg bw per day (rat)
Carcinogenicity	Carcinogenic in mice[a]
Genotoxicity	Not genotoxic in vivo[a]
Reproductive toxicity	
Target/critical effect	Reduced body weight and food consumption
Lowest relevant parental NOAEL	40 mg/kg bw per day (rat)
Lowest relevant offspring NOAEL	40 mg/kg bw per day (rat)
Lowest relevant reproductive NOAEL	370 mg/kg bw per day, highest dose tested (rat)
Developmental toxicity	
Target/critical effect	Reduced body weight and food consumption
Lowest relevant maternal NOAEL	10 mg/kg bw per day (rabbit)
Lowest relevant embryo/fetal NOAEL	30 mg/kg bw per day (rabbit)
Neurotoxicity	
Acute neurotoxicity NOAEL	No data
Subchronic neurotoxicity NOAEL	701 mg/kg bw per day, highest dose tested (rat)
Developmental neurotoxicity NOAEL	No data
Other toxicological studies	
Immunotoxicity	No evidence from routine studies
Studies on metabolites	
Phthalimide	24-hour NOAEL: 1372 mg/kg bw, highest dose tested (rat) Not genotoxic (Ames, chromosome aberration in vitro) Developmental toxicity: maternal and embryo/fetal NOAEL of 30 mg/kg bw per day, highest dose tested (rabbit).

Phthalic acid	28-day NOAEL: 113 mg/kg bw per day based on kidney histopathology, at 402 mg/kg bw per day (rat). Not genotoxic (Ames, micronucleus in vivo).
Phthalamic acid	No studies
Microbiological data	Limited data on rabbit-specific microflora.
Human data	No reports of any adverse health effects.

[a] Unlikely to pose a carcinogenic risk to humans via exposure from the diet.

Table 5.21.4 Summary

	Value	Study	Safety factor
Folpet			
ADI	0–0.1 mg/kg bw[a]	One-year study of toxicity (dog)	100
ARfD	Unnecessary [a]		
Phthalic acid			
ADI	0–0.1 mg/kg bw[b]	28-day study of toxicity with phthalic acid (rat)	1000[b]
ARfD	Unnecessary		

Notes:
[a] Applies to folpet and phthalamic acid expressed as folpet.
[b] An additional safety factor of 10 was applied due to the limited database and the different nature of effects compared to parent folpet.

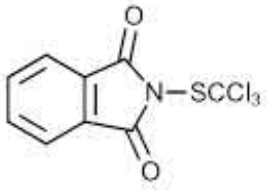
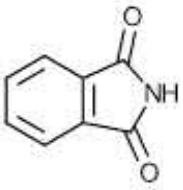
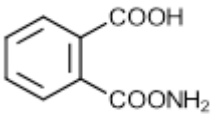
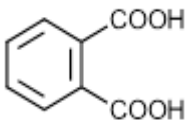
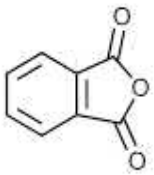
5.21.2 Residue and analytical aspects

Folpet (*N*-(trichloromethylthio)phthalimide) is a fungicide that was first evaluated by JMPR in 1969. It has been evaluated on several occasions and was last subject to Periodic Review for residues in 1998 (completed in 1999). Folpet was scheduled at the 54th Session of the CCPR for Periodic Review for Residues and Toxicology by the 2024 JMPR. An ADI of 0–0.1 was established for folpet and its metabolite phthalic acid. ARfD was considered unnecessary.

The meeting received information from the sponsor on the chemical identity, physical and chemical properties, animal and plant metabolism, environmental fate, methods of residue analysis, storage stability, intended use patterns, supervised residue trials, fate of residues upon processing, and farm animal feeding studies.

The chemical structures of folpet and its metabolites/degradates relevant for the appraisal are shown in Table 5.21.5.

Table 5.21.5 Summary information on compounds referred to in the appraisal

Compound name (IUPAC name)	Structure	Found in:
Folpet (N-(trichloromethylthio) phthalimide)		Grape berry and leaves Avocado fruit and leaves Cabbage foliage and root Potato tuber and leaves Wheat grain and straw Soil Goat and poultry excreta
Phthalimide (1,2-Benzenedicarboximide)		Grape berry and leaves Avocado fruit and leaves Cabbage foliage and root Potato tuber and leaves Wheat grain and straw Soil Goat milk, liver, kidney and faeces Poultry excreta
Phthalamic acid 2-Carbamoylbenzoic acid		Cabbage foliage and root Potato tuber and leaves Soil Goat milk, liver, kidney and urine Poultry excreta
Phthalic acid (1,2-Benzenedicarboxylic acid)		Grape berry and leaves Avocado fruit and leaves Cabbage foliage and root Potato tuber and leaves Wheat grain and straw Soil Goat milk and kidney Poultry excreta
Phthalic anhydride 2-Benzofuran-1,3-dione		Goat milk and kidney Poultry excreta

With respect to physical and chemical properties that may impact residues in crops, folpet is regarded as not volatile. It has a higher solubility in organic solvents compared to its solubility in water, and is susceptible to hydrolysis in water. The partition coefficient (log Pow = 3.1) for folpet indicates potential to accumulate in fat.

Plant metabolism

The meeting received studies describing the metabolism of folpet in grapes, avocados, cabbage, potatoes, and wheat. The studies were conducted with folpet radiolabelled at either the phenyl or carbonyl moiety.

Grape

[U-phenyl-^{14}C]-folpet was applied three times (foliar directed) to grapes grown outdoors at a nominal application rate of 1.5 kg ai/ha/application. Applications were made at growth stages of berry set, mid-berry, and late berry. The application intervals were 10–20 days. Mature grape berries were harvested at maturity 25 days after the last application (DALA). Grapevine leaves were also collected 25 DALA.

Total recovery radioactivity (TRR) was determined by combustion and Liquid Scintillation Counting (LSC), being 7.0 mg eq/kg for berry and 527 mg eq/kg for grapevine leaves. Surfaces were washed, extracted with water/acetonitrile/acetic acid, and partitioned with dichloromethane. For berry, the aqueous phase was then further processed by solid phase extraction (SPE). TRR in the summed wash, extracted fractions, and post extraction solids (PES) were 7.6 mg eq/kg for berry and 294 mg eq/kg for grapevine leaves. The different levels of radioactivity between combustion/LSC analysis and summed TRR analysis is attributed to variability between samples.

TRR recovered in the rinsate were 26 percent for berry and 88 percent for leaves. Extraction with water/acetonitrile/acetic acid released an additional 73 percent TRR for berry and 11 percent TRR for leaves. In berry, this radioactivity partitioned to the aqueous phase (54 percent TRR compared to 19 percent for the organo-soluble phase), whereas TRR was more evenly distributed in leaves (4.6 percent TRR in the aqueous phase and 6.5 percent TRR in the organo-soluble phase). Radioactivity remaining in the PES was 1.5 percent TRR for berry and 1.1 percent TRR for grapevine leaves, indicating effective extraction.

For berry (combined rinsate and extract), folpet accounted for 27 percent TRR, phthalimide accounted for 11 percent TRR, and phthalic acid accounted for 5.8 percent TRR. The water-soluble extract was subjected to acid (5 mol/L hydrochloric acid at room temperature for 1 hour) and base (5 mol/L sodium hydroxide at room temperature for 1 hour) hydrolyses. This hydrolysed, accounted for 41 percent TRR, was proposed as phthalic acid conjugates.

For leaves (combined rinsate and extract), folpet accounted for 91 percent TRR, phthalimide accounted for 3.0 percent TRR, and phthalic acid accounted for 2.4 percent TRR.

The identification rate was 43 percent TRR for berry (an additional 41 percent when including tentatively identified phthalic acid conjugates) and 96 percent TRR for leaves.

Avocado

[U-phenyl-^{14}C]-folpet was applied three times (foliar directed) to avocados grown outdoors at a nominal application rate of 3.4 kg ai/ha/application. Applications were made at growth stages of post-bloom, post fruit set, and 3–5 cm fruit. The application intervals were 21 days. Immature fruit and leaf samples were collected 21 DALA and mature fruit and leaf samples were collected 97 DALA. Leaves and immature fruit samples were analysed on a whole fruit basis. The rinsed mature fruit samples were peeled and pitted, and peel and pulp were extracted and analysed separately.

Surfaces were washed with water/phosphoric acid and the surface wash accounted for 6.5 percent TRR for immature fruit and 0.2 percent TRR for mature fruit, indicating absorption of TRR over time. The amount of radioactivity in the surface wash was 28–35 percent TRR for leaves. Samples were then extracted with ethyl acetate (releasing 81–90 percent TRR for fruit and 50–51 percent TRR for leaves) and partitioned

with acetonitrile and hexane. In this extract, residues in all matrices partitioned nearly completely into the acetonitrile fraction. Additional extractions were performed with acetonitrile/phosphoric acid, acetonitrile/water/acetic acid, and hydrochloric acid, individually releasing up to an additional 18 percent TRR. For immature avocado fruit, a parallel extraction was conducted with acetonitrile with 0.1 percent phosphoric acid which demonstrated comparable extraction for both solvents. Following the series of solvent extractions, ≤0.9 percent TRR remained in the PES, indicating successful extraction.

TRR in rinse solutions and plant extracts summed 11 mg eq/kg for immature fruit, 7.1 mg eq/kg for mature fruit, 136 mg eq/kg for immature leaves, and 74 mg eq/kg for mature leaves.

For avocado fruit (combined rinsate and extracts), folpet accounted for 4.9 percent TRR in immature fruit and 0.37 percent TRR in mature fruit. Phthalic acid was the major component of the TRR, accounting for 63–67 percent TRR. Phthalimide was also identified at 3.0 percent TRR in immature fruit and 6.9 percent TRR in mature fruit. A conjugate of phthalimide was tentatively identified in mature fruit at 2.2 percent TRR.

For avocado leaves (combined rinsate and extracts), folpet was the main component of the TRR, accounting for 54–57 percent TRR. Phthalic acid was observed in immature leaves at 11 percent TRR and in mature leaves at 4.4 percent TRR, and phthalimide at 6.9–8.5 percent TRR. The identification rate was 69–79 percent TRR for fruit and 65–77 percent for leaves. Following hydrolysis of mature avocado peel and pulp extracts, the majority of TRR was identified as phthalic acid.

Cabbage

[U-phenyl-^{14}C]-folpet was applied twice (foliar directed) to cabbage grown outdoors at a nominal application rate of 2.7 kg ai/ha/application at BBCH 45 and 47, with interval of 12 days. Immature cabbage foliage and root were collected 0 DALA and mature cabbage foliage and root were collected 14 DALA.

TRR were determined by LSC and combustion. TRR were 1.2 mg eq/kg for immature roots, 2.4 mg eq/kg for mature roots, 43 mg eq/kg for immature foliage, and 7.4 mg eq/kg for mature foliage.

Cabbage foliage was washed with water. Washed cabbage foliage and cabbage roots were subject to extraction with acetonitrile/water/phosphoric acid. Mature foliage and root extracts were partitioned into organo-soluble and aqueous phases. For 0 DALA cabbage foliage, 70 percent TRR were recovered in the surface wash and an additional 29 percent TRR were recovered in the acetonitrile/water/phosphoric extract. For 14 DALA cabbage foliage, 17 percent TRR were recovered in the surface wash and an additional 80 percent TRR were recovered in the acetonitrile/water/phosphoric extract. A comparison of the distribution of TRR in 0 and 14 DALA samples indicates absorption of TRR in cabbage foliage following application.

Extraction of cabbage root yielded 68 and 52 percent TRR for 0 DALA and 14 DALA samples, respectively. Residues partitioned in the aqueous phase in roots (41 percent TRR compared to 10 percent in the organo-soluble phase) and partitioned to the organo-soluble phase in leaves (48 percent TRR compared to 33 percent in the aqueous phase).

For foliage, 0.8–3.3 percent TRR remained in the PES, demonstrating successful extraction of TRR. However, for roots, 32–48 percent TRR remained in the PES following the initial extraction. Mature cabbage roots were subject to various additional acid, base, and enzymatic extractions. Less than

1.9 percent TRR were recovered in the protease, amylase, and dimethylsulphoxide extracts, indicating low to no radioactivity associated with protein, starch, and sugars. Following exhaustive extraction, 0.6 percent TRR remained in the mature cabbage root PES.

For cabbage foliage (combined rinsate and extract), folpet accounted for 90 and 54 percent TRR for 0 DALA and 14 DALA samples, respectively. Phthalamic acid accounted for 3.3 percent TRR at 0 DALA and increased to 16 percent TRR at 14 DALA and phthalic acid for 2.5 percent TRR at 0 DALA and increased to 11 percent TRR at 14 DALA. Across both sampling intervals, phthalimide accounted for 3.1–4.5 percent TRR.

For cabbage roots, folpet accounted for 12 and 33 percent TRR at 0 and 12 DALA samples, respectively. Across both sampling intervals, phthalamic acid accounted for 31–38 percent TRR and phthalimide and phthalic acid constituted ≤2 percent TRR.

The identification rate was 51–68 percent TRR for roots and 85–99 percent for foliage.

Potato

[U-phenyl-14C]-folpet was applied five times (foliar directed) to potatoes grown outdoors at a nominal application rate of 2 kg ai/ha/application. The application intervals were 10–20 days. Samples of potato tuber and foliage were collected 0 days after the first (DAT1), third (DAT3), and last applications (DALA) (0 DAT1, 0 DAT3, and 0 DALA), as well as 3 DALA and 7 DALA (0 DALA corresponds to normal commercial harvest). 0 DAT1 tuber samples were not analysed and therefore are not further discussed.

TRR in samples were determined by LSC and combustion and ranged from 0.56 to 1.1 mg eq/kg in potato tubers and 57–110 mg eq/kg in foliage. Foliage and tubers were first washed with acetonitrile/formic acid. The tuber surface washes were discarded and not included in the TRR, as it is postulated to originate from the soil. The rinse removed 85–98 percent TRR in potato foliage with no distinct trend over sampling intervals.

After surface washing, tuber and foliage samples were extracted with acetonitrile/water/phosphoric acid and partitioned with dichloromethane. In potato foliage, the extraction released 1.2 percent TRR (0 DAT1) to 15 percent TRR (3 DALA); the distribution was relatively equal between the organo-soluble and aqueous phases. In potato tubers, the extraction released 87 percent TRR (0 DAT3) to 93 percent TRR (0 DALA); the TRR partitioned nearly completely to the aqueous phase compared to the organo-soluble phase.

The TRR in the potato foliage PES ranged from 0.2–1.2 percent TRR, indicating successful extraction. However, the TRR for potato tuber PES ranged from 15 percent TRR (5 DALA) to 22 percent TRR (3 DALA) following the initial extraction. Potato tuber samples were subject to additional acid, base, and enzyme extractions. Notably, ≤2.9 percent TRR were recovered in the protease extract and no radioactivity was recovered in the amylase and dimethylsulphoxide extracts, indicating low to no radioactivity associated with protein, sugars, and starch. Following exhaustive extraction, ≤0.2 percent TRR remained in the potato tuber PES.

For potato tubers, folpet accounted for ≤0.10 percent TRR. Phthalic acid accounted for 43–55 percent TRR, phthalamic acid accounted for 25–32 percent TRR, and phthalimide accounted for 0.40–0.60 percent TRR. For potato foliage (combined rinse and extract), folpet accounted for 88–98 percent TRR. Phthalimide, phthalic acid, and phthalamic acid each accounted for ≤4.7 percent TRR.

The identification rate was 76–80 percent TRR for tubers and 94–99 percent TRR for foliage.

Wheat

[U-phenyl-^{14}C]-folpet was applied two times (foliar directed) to winter wheat grown outdoors at nominal application rates of 1.6 kg ai/ha/application at BBCH 49 and 69, with interval of 24 days. Samples of wheat straw, grain, and root were collected at 1 DAT1, 1 DALA, 27 DALA, and 36 DALA (normal commercial harvest).

TRR were determined by LSC and combustion. TRR in wheat grain, straw, and roots increased along collection intervals, ranging from 3.2–24 mg eq/kg in wheat grain, TRR for ranged from 4.5–15 mg eq/kg in wheat straw, and 0.030–0.74 mg eq/kg in wheat roots. Residues were extracted with ethyl acetate/water/phosphoric acid. Grain and straw samples collected 38 DALA were further extracted with acetonitrile and partitioned with dichloromethane and ethyl acetate. Between 11 percent TRR for 36 DALA and 49 percent TRR for 1 DAT1 were extracted from wheat roots, 64 percent TRR for 1 DALA and 88 percent TRR for 1 DAT1 from wheat straw, and 72 percent TRR for 27 DALA and 84 percent TRR for 1 DAT1 from wheat grain.

Between 28 percent TRR for 1 DAT1 and 115 percent TRR for 27 DALA remained in the wheat root PES, between 13 percent TRR for 1 DAT1 and 47 percent TRR for 27 DALA remained in the wheat straw PES, and between 7.9 percent TRR for 36 DALA and 40 percent TRR for 27 DALA remained in the wheat grain PES. TRR were not further analysed for wheat roots.

The PES from the 36 DALA straw samples were further extracted with 1 mol/L hydrochloric acid and then partitioned with dichloromethane, releasing an additional 9.8 percent TRR. Following this extraction, 9.6 percent TRR remained in the PES. In all cases, residues partitioned into the aqueous phase.

In wheat grain, folpet ranged from 39 percent TRR for 36 DALA to 63 percent TRR for 1 DALA. Phthalimide ranged from 9.5 percent TRR for 27 DALA to 25 percent TRR for 1 DAT1. Phthalic acid was observed at later harvest intervals and ranged from 5.6 percent TRR for 27 DALA to 27 percent TRR for 36 DALA.

In wheat straw (combined extracts), folpet ranged from 31 percent TRR for 36 DALA to 77 percent TRR for 1 DAT1. Phthalimide ranged from 5.7 percent TRR for 27 DALA to 10 percent TRR for 1 DALA. Phthalic acid was observed at later harvest intervals and ranged from 4.5 percent TRR for 27 DALA to 36 percent TRR for 36 DALA.

The identification rate was 64–82 percent TRR for wheat grain and 61–86 percent TRR for wheat straw.

Plant metabolism summary and conclusions

The metabolism of folpet in grapes, avocados, cabbage, potatoes, and wheat following 2–5 foliar directed applications was consistent. The parent compound was degraded to phthalimide and further hydrolysed to phthalamic acid and subsequently phthalic acid. Phthalimide and the acids can become conjugated.

In all commodities except avocado fruit and potato tuber, parent folpet accounted for 12–98 percent TRR. Parent folpet accounted for 0.4–4.9 percent TRR in avocado fruit and ≤0.1 percent TRR in potato tubers. Phthalimide, phthalic acid and phthalamic acid were observed in all commodities, accounting for at least 10 percent TRR.

Environmental Fate

The meeting received studies investigating the hydrolysis, aerobic metabolism/degradation in soil, aqueous photolysis, photodegradation in soil, and terrestrial field dissipation of folpet and its degradates. In radiolabelled studies, folpet and its degradates were labelled at either the phenyl or carbonyl moiety.

Hydrolysis

DT_{50}s for [^{14}C-carbonyl]-folpet were 2.6 hours in pH 5 buffer, 1.1 hours in pH 7 buffer, and 67 seconds in pH 9 buffer. Phthalimide and phthalic acid were major degradates.

[^{14}C-trichloromethyl]-folpet was recovered as 47 and 52 percent of the applied radioactivity (AR) in pH 5 and 7, respectively, after 1 hour of incubation. After 24 hours, folpet was recovered as 15 and 1.1 percent AR in pH 5 and pH 7 buffer, respectively, but it was not recovered in pH 9 buffer after 1 and 24 hours, indicating a very short half-life. Radioactivity was predominantly recovered as carbon dioxide.

DT_{50}s for non-radiolabelled folpet were 6.5 hours in pH 5 buffer, 0.70 hours in pH 7 buffer, and too fast to be measured in pH 9 buffer.

Non-radiolabelled phthalimide DT_{50}s were 125 days in pH 4 buffer, 56 hours in pH 7 buffer, and 2.0 hours in pH 9 buffer.

Aerobic degradation/metabolism

The route and rate of degradation of [U-phenyl-^{14}C]-folpet (n = 13) and [carbonyl-4-^{14}C]-folpet (n = 1) were studied in soils under aerobic conditions. Soils were incubated for 30–365 days. When evaluated for degradation under the FOCUS guidance (n = 13), folpet followed single first order (SFO) (n = 9), double first order in parallel (DFOP) (n = 3), and first order multicomponent (FOMC) (n = 1) degradation with DT_{50}s ranging from 0.20 to 21 days (geometric mean = 2.4 days).

Radioactivity was predominantly recovered as carbon dioxide. Major degradates were phthalimide (up to 65 percent AR on DAT 6), phthalamic acid (up to 17 percent AR on DAT 1), and phthalic acid (up to 17 percent AR on DAT 1).

The meeting selected the following DT_{50}s based on the evaluation with the FOCUS guidance and appropriate model statistics: 0.39 and 2.5 days for phthalimide, 0.63 days for phthalic acid, and 0.19 and 0.38 days for phthalic acid.

Aerobic degradation/metabolism

No aerobic soil metabolism data are available for folpet at the trichloromethyl position. However, the meeting received two studies investigating the active ingredient captan radiolabelled at the trichloromethyl position. Captan and folpet are structurally similar. After *ca.* 30 days, carbon dioxide accounted for 81–91 percent AR and no other degradate accounted for greater than 1.1 percent AR. Therefore, no major degradates unique to the trichloromethyl position are expected.

The route and rate of degradation of [U-phenyl-^{14}C]-phthalamic acid was studied in two soils under aerobic conditions. Soils were incubated for seven days. Phthalamic acid followed SFO degradation kinetics with

DT_{50}s of 0.8 and 1.6 days. Radioactivity was predominantly recovered as carbon dioxide, and phthalic acid was a major degradate (up to 33 percent AR on DAT 2). Phthalic acid also followed SFO kinetics with DT_{50}s of 0.4 and 1.8 days.

The route and rate of degradation of [U-phenyl-^{14}C]-phthalic acid was studied in three soils under aerobic conditions. Soils were incubated for seven days. Phthalic acid followed SFO degradation kinetics with DT_{50}s of 0.07, 0.10, and 0.26 days. Radioactivity was predominantly recovered as carbon dioxide. No major degradates were observed.

Photolysis

The meeting received information on the photodegradation of [carbonyl-^{14}C]-folpet in aqueous solution and [U-phenyl-^{14}C] folpet in microbially active soil. In both media, there was little difference in the DT_{50}s between the irradiated and control dark samples. The effects of photolysis appear to be minimal in relation to the rapid degradation of folpet in aquatic environments and microbially active soil.

Terrestrial field dissipation

The meeting received two terrestrial field dissipation studies. Folpet was applied three times to citrus groves in Florida, United States of America, at nominal application rates of 6.7 kg ai/ha/application.

Samples were analysed for folpet and phthalimide. Folpet was recovered up to a depth of 46 cm at intervals until 28 DALA and was below the LOQ thereafter. Phthalimide was recovered up to a depth of 30 cm at intervals until 1 DALA interval and was below the LOQ thereafter.

Due to the rapid degradation of folpet in both studies, linear regressions could not be applied to the data to calculate DT_{50}s. Visual inspection of the data indicate DT_{50}s less than five and seven days for the two studies.

Environmental fate summary and conclusions

Folpet is highly susceptible to hydrolytic degradation with DT_{50}s increasing at higher pH levels. The major hydrolytic degradates were phthalimide, phthalic acid, and carbon dioxide. The hydrolytic degradation of phthalimide is also quicker at higher pH levels.

Folpet degraded rapidly in microbially-active soils and the major degradates were carbon dioxide, phthalimide, phthalamic acid, and phthalic acid. Degradation by aqueous photolysis is negligible compared to hydrolysis. Similarly, soil photolysis is minimal compared to microbial degradation.

The aerobic soil metabolism geometric mean DT_{50} for folpet is 2.4 days and field dissipation data indicated DT_{50}s of 5–7 days. The geometric mean aerobic soil DT_{50}s for phthalimide, phthalamic acid, and phthalic acid were 1.0, 0.55, and 0.31 days, respectively.

Due to the rapid dissipation of folpet and its major degradates in soil, there is little potential for uptake of residues in rotational crops. No rotational crop studies were submitted to the meeting.

Animal metabolism

The meeting received studies describing the metabolism of folpet in laboratory rats, lactating goats, and laying hens. The studies were conducted with folpet radiolabelled at either the phenyl or trichloromethyl moiety.

Rats

The metabolism of folpet in rats was reviewed in the framework of the toxicological evaluation by the WHO Core Assessment Group of the 2024 JMPR.

Lactating goats

Lactating goats were orally dosed with [U-phenyl-14C]-folpet (n = 1) or [14C-trichloromethyl]-folpet (n = 2) in the diet at 14 ppm (dw) per day (phenyl study) and 20 and 24 ppm (dw) per day (trichloromethyl studies). Goats were dosed for 3 consecutive days for the trichloromethyl label study dosed at the equivalent of 20 ppm and 6 consecutive days for the other two studies.

Less than or equal to 0.4 percent of the administered dose (AD) was secreted with milk on each study day. TRR in milk ranged from 0.004–0.006 mg eq/kg for the phenyl label, 0.098–0.20 mg eq/kg for the trichloromethyl label dosed at the equivalent of 24 ppm, and 0.23–0.34 mg eq/kg for the trichloromethyl label dosed at the equivalent of 20 ppm. Residues were too low to calculate a plateau for the phenyl label study. For the trichloromethyl label studies, residues in milk reached a plateau level on days 2–4.

Approximately 23 hours after the final dose, animals were sacrificed and TRR were determined in liver, kidney, muscle (rump and fore-leg), and fat (peritoneal and subcutaneous). Less than or equal to 0.5 percent AD was recovered in each tissue. TRR values in the trichloromethyl label dosed at 20 ppm were 0.34 mg eq/kg for liver, 0.26 mg eq/kg for kidney, 0.03–0.04 mg eq/kg for muscle, and 0.01 mg eq/kg for fat. TRR levels in the trichloromethyl label dosed at 24 ppm were 0.25 mg eq/kg for liver, 0.16 mg eq/kg for kidney, 0.02–0.03 mg eq/kg for muscle, and <0.01 mg eq/kg for fat. TRR levels in the phenyl label study were 0.052 mg eq/kg for kidney, 0.022 mg eq/kg for liver, and <0.001–0.004 mg eq/kg for muscle and fat.

Milk and tissues from the trichloromethyl label study dosed at 20 ppm and muscle and fat from the phenyl label study were not further analysed.

In the trichloromethyl label studies, TRR were extracted sequentially with dichloromethane, acetonitrile, acetonitrile/water, water, acetone, and/or methanol. Liver and kidney samples were further extracted with aqueous sodium dodecyl sulphate (SDS). Solvent extraction yielded 90 percent TRR for liver, 84 percent TRR for fat, 74 percent TRR for kidney, 69 percent TRR for muscle, and 64 percent TRR for milk. Samples with sufficient radioactivity were pooled for analysis. Fat was not further analysed due to low radioactivity (0.008 mg eq/kg extracted).

Milk and kidney PES were treated with protease enzyme, releasing an additional 9.7 and 17 percent TRR. Kidney PES was also incubated under several acidic and basic conditions, each releasing an additional 1–23 percent TRR. No folpet was recovered in milk or tissues. TRR were incorporated into naturally occurring compounds, with amino acids the major components of the TRR for all matrices. Lactose was also a major

component in milk and glucose in liver. Identification rates were 53 percent TRR for milk, 36 percent TRR for muscle, 27 percent TRR for liver, and 19 percent TRR for kidney.

In the phenyl label study, TRR were extracted sequentially with dichloromethane, acetonitrile, acetonitrile/water, acetone, methanol, and/or hexane. Samples with sufficient radioactivity were pooled for analysis. Solvent extraction yielded 96 percent TRR for kidney and milk and 69 percent TRR for liver. No folpet was recovered in milk or tissues. In liver and kidney, phthalamic acid was the major residue accounting for 28 and 25 percent TRR, respectively. For kidney, a chromatographic peak attributed to the coeluting compounds phthalamic acid, phthalic anhydride, and phthalic acid was the major component, accounting for 44 percent TRR. Identification rates were 70 percent TRR for kidney, 30 percent TRR for liver, and 13 percent TRR for milk.

Laying hen

Laying hens were orally dosed with [U-phenyl-^{14}C]-folpet at 0.31 ppm or 10 ppm per day for 7 consecutive days. Eggs were collected twice daily and separated into whites and yolk. For both doses, ≤0.31 percent AD was recovered for each individual egg white and egg yolk sample. TRR levels in eggs were up to 0.004 mg eq/kg for low dose egg white, 0.005 mg eq/kg for low dose egg yolk, 0.064 mg eq/kg for high dose egg white, and 0.062 mg eq/kg for high dose egg yolk. For both dose levels, TRR reached a plateau level within 3 days for egg whites and within 7 days for egg yolk.

Hens were sacrificed approximately 16 hours after the final dose. At sacrifice, ≤0.16 percent AD was recovered in each tissue. For the low dose experiment, TRR were to up to 0.003 mg eq/kg for muscle, 0.002 mg eq/kg for liver, 0.001 mg eq/kg for skin without fat, and <0.001 mg eq/kg for fat. For the high dose experiment, TRR were up to 0.045 mg eq/kg for muscle, 0.028 mg eq/kg for liver, 0.018 mg eq/kg for skin without fat, and up to 0.011 mg eq/kg for fat.

The nature of the residue was not further investigated in eggs and tissues. However, excreta was investigated for composition of the TRR. Folpet was the main residue in the high dose excreta and was found in lower concentration in the low dose excreta. The main metabolites identified in the excreta of both dose groups were phthalic acid, phthalamic acid, phthalic anhydride, and phthalimide.

Animal metabolism summary and conclusions

Folpet was predominantly excreted in the faeces of goats dosed with trichloromethyl-labelled folpet and the urine of goats dosed with phenyl-labelled folpet. For goats dosed with trichloromethyl-labelled folpet, TRR were highest in milk or liver, followed by kidney. For goats dosed with phenyl-labelled folpet, TRR were highest in kidney, followed by liver, followed by milk. For all goats, TRR in muscle and fat were significantly lower than other commodities. For hens dosed with phenyl-labelled folpet, TRR were highest in egg white, followed by egg yolk, followed by muscle, followed by liver, followed by skin without fat, and lowest in fat.

Folpet was not detected in any goat commodities and the trichloromethyl moiety was incorporated into naturally occurring compounds including amino acids, lactose, and glucose. For milk and tissues, the phenyl moiety was metabolized to phthalimide, which was further metabolized to phthalamic acid and subsequently phthalic acid and phthalic anhydride.

Although radioactivity in eggs and poultry tissues were not analysed, the presence of folpet, phthalimide, phthalamic acid, phthalic acid, and phthalic anhydride in excreta suggests a comparable metabolic pathway to ruminants.

Methods of analysis

Plant commodities

Several methods are available to quantitate residues of folpet, phthalimide, phthalamic acid, and phthalic acid in crops. For all methods, residues were extracted with either acidified acetone, acidified acetonitrile, acidified ethyl acetate, acidified methanol, or methanol with ammonium carbonate. Most methods included a partition step with water and dichloromethane and extract clean-up on either SPE or GPC. Residues were analysed by either GC-ECD, GC-MS, GC-MSD, GC-NPD, GC-MS/MS, or LC-MS/MS. The LOQs range from 0.01–0.05 mg/kg for folpet, 0.01–0.2 mg/kg for phthalimide, and are 0.05 mg/kg for phthalamic acid and phthalic acid.

Radiovalidation data were provided for acidified acetone, acidified acetonitrile, and ammonium carbonate in water/methanol. The extraction solvents successfully extracted incurred residues from the metabolism studies in all cases except acidified acetone for phthalimide in wheat grain and straw. Therefore, method validation for these commodities were carried out with the same solvents as the metabolism studies. In wheat grain, the methods extracted above 120 percent of folpet compared to the extraction solvents used in the metabolism study. The meeting noted that the metabolism study extracted ≤84 percent TRR in wheat grain.

Validation data were submitted for all methods. In several cases, the method validation included 3 replications per commodity, analyte, and fortification level. In many cases, phthalic acid residues were quantified in control samples due to natural sources of phthalates. In these cases, residues in the fortified samples were corrected for background residues in the control samples. Mean recoveries and RSDs were generally acceptable. The meeting agreed that the methods were acceptable, except Method 1-R-91/23-12/91 (ITV - FO 05/89) for grapes, due to unacceptable method validation.

Animal commodities

Method S22-00128 quantitates residues of folpet, phthalimide, phthalamic acid, and phthalic acid in egg, cattle milk, liver, fat, and muscle. Folpet and phthalimide residues are extracted with acetone with formic acid and sodium chloride, ethyl acetate, and cyclohexane. The organic phase is filtered and cleaned-up by GPC. Phthalamic acid residues are extracted with a sodium hydrogen carbonate solution and phthalic acid with acetonitrile under acidic conditions with salts. The extract is cleaned-up with dispersive C18 sorbent and residues determined by LC-MS/MS. When phthalic acid residues were quantified in control samples due to natural sources of phthalates, residues in the fortified samples were corrected for background residues in the control samples. The method was satisfactorily validated at a LOQ of 0.01 mg/kg for folpet and 0.05 mg/kg for phthalimide, phthalamic acid, and phthalic acid.

Storage stability

Plant commodities

Folpet is stable for at least 1 month in cucumber, apple juice, and apple wet pomace, 2 months in tomato wet pomace, tomato juice, and canned tomato, 5 months in apple fruit, 12 months in onion bulb, tomato fruit, and olive fruit and oil, and 18 months in orange fruit, oilseed rape, and wheat grain and straw (≤–18 °C). In dry bean seed and lettuce stored at ≤–20 °C, folpet declined significantly by the 4-month and 12-month storage intervals, respectively. When these samples were reanalysed for the sum of folpet and phthalimide expressed as folpet, the percent remaining was acceptable.

Phthalimide, phthalamic acid, and phthalic acid were stable in lettuce, orange, oilseed rape, wheat grain, wheat straw, and dry bean seed (≤–20 °C) for at least 12 months. Additionally, phthalimide was stable for at least 12 months in tomato fruit, olive fruit, and olive oil and onion and at least 13 months in grape (≤–18 °C).

In conclusion, the meeting could not determine a trend in storage stability for folpet based on the OECD commodity classifications as it appears to be dependent on pH of the commodity. Folpet is stable under frozen storage conditions for at least 12 months in commodities with low pH levels. For lettuce and dry bean seed, both with higher pH levels than the other commodities investigated, folpet degrades to phthalimide within 4 months of frozen storage. The meeting noted that the sum of folpet and phthalimide expressed as folpet was stable for at least 18 months in lettuce and dry bean seed.

Phthalimide, phthalamic acid, and phthalic acid are stable in all OECD commodity categories for at least 12 months.

Supervised residue trials at GAP and processing data were generally supported by the storage stability data with the following exceptions:

- Five banana residue trials were stored up to 4 months longer than the period of proven stability for folpet in commodities with similar pH levels. The meeting considered these trials unacceptable for estimating residues of folpet in bananas.
- In one wheat and one barley processing study, the RAC and processed commodities were stored up to 4 months longer than the period of proven stability for phthalamic acid and phthalic acid in dry commodities. The meeting considered these studies unacceptable for estimating residues of phthalamic acid and phthalic acid in wheat and barley processed commodities.

Animal commodities

The meeting received a study evaluating the stability of folpet, phthalimide, phthalamic acid, and phthalic acid during freezer storage (≤–18 °C) for a period of 2 months in hen egg and cattle muscle, fat, and liver. Additionally, the same analytes were investigated in cattle milk stored during refrigerated conditions (1–5 °C) for a period of 10 days.

Folpet was only stable for the duration of the study in cattle fat. Folpet residues declined significantly after the 0-day interval in egg, cattle milk and liver after the 7 day interval in cattle muscle. These samples were reanalysed for phthalimide expressed as folpet and the percent remaining were acceptable

throughout the duration of the study in all cases except cattle milk, for which phthalimide, expressed as folpet, declined significantly by day 10.

Residues of phthalimide were stable in egg, cattle muscle, fat, and liver for the duration of the study. However, phthalimide declined in cattle milk by day 10. Residues of phthalamic acid and phthalic acid were stable in egg and cattle muscle, fat, liver, and milk for the duration of the study.

In conclusion, when stored under frozen conditions, folpet was only stable in cattle fat. In all other commodities, folpet was nearly completely degraded to phthalimide within several days. All metabolites were stable in all tested commodities for the duration of the study except phthalimide in cattle milk (degradation observed by day 10).

In the animal feeding studies, folpet residues were stored frozen for longer than the duration of proven stability in all matrices except cattle muscle and fats (<LOQ in both). Due to the rapid and complete degradation of folpet in all animal commodities except fats, folpet is expected to decline to non-quantifiable levels before analysis for maximum residue level enforcement and dietary exposure. Therefore, the exceedance of the period of proven storage stability does not impact the validity of the animal feeding studies.

Residue definition

Plant commodities

In plant metabolism studies, folpet was a major component of the residue in grape berries, grapevine leaves, cabbage foliage, wheat grain, and wheat straw TRR (27–91 percent), a minor component of the avocado fruit and potato foliage TRR (0.37–4.9 percent), and a trace component of the potato tuber TRR (ND–0.1 percent). Folpet residues were quantified in most magnitude of the residue trials (see later).

Folpet was not recovered in the high-temperature hydrolysis studies. However, in processing studies (see later), folpet was quantified and concentrated in apple wet pomace, grape raisin, grape must, drape dry pomace, barley bran, wheat bran, and aspirated grain fractions.

The meeting concluded that folpet is a suitable marker for compliance with MRL. Suitable analytical methods are available to determine residues of folpet in plant commodities.

In deciding which additional compounds should be included in the residue definition for risk assessment, the meeting considered the likely occurrence of the compounds and the toxicological properties of phthalamic acid, phthalic acid and phthalimide. In plant metabolism studies, phthalamic acid, phthalic acid and phthalimide residues exceeded 10 percent TRR in food and feed commodities.

Phthalamic acid was observed in the cabbage and potato metabolism studies, accounting for 3.3–16 percent TRR in cabbage foliage and 25–32 percent TRR in potato tuber. Furthermore, phthalamic acid was quantified in almost all residue trials in which it was analysed, often at levels greater than folpet. The meeting decided that phthalamic acid is covered by the toxicological reference value for folpet. The meeting decided that phthalamic acid should be included in the residue definition for risk assessment in plant commodities.

Phthalic acid was observed in all plant metabolism studies and was a major component of the avocado fruit (63–67 percent), cabbage foliage (2.5–11 percent), potato tuber (43–55 percent), wheat grain (ND–27 percent), and wheat straw (4.5–36 percent) TRR. As a conjugate, phthalic acid accounted for 41 percent TRR in grape berry. Phthalic acid was quantified in all residue trials in which it was analysed, often at levels greater than folpet. The meeting concluded that phthalic acid is not covered by the toxicological reference values for folpet and established a specific ADI of 0.1 mg/kg bw. The meeting decided that phthalic acid adds significantly to the dietary exposure and should be evaluated separately.

Phthalimide was observed in all plant metabolism studies and was a major component of the grape berry (11 percent), wheat grain (9.5–25 percent), and wheat straw (5.7–10 percent) TRR. In the magnitude of the residue data, phthalimide was quantified in most trials in which it was analysed, often at levels greater than parent folpet. The meeting decided that there was no toxicological concern for residues of phthalimide arising from uses of folpet and that no dietary risk assessment was necessary for phthalimide. The meeting concluded that phthalimide should not be included in the residue definition for risk assessment.

Animal commodities

Folpet was not detected in the lactating goat metabolism study, nor was it quantified in the dairy cattle and laying hen feeding studies. The meeting noted that no metabolite can be considered a unique marker compound, as they are common metabolites with phosmet and phthalate plasticizers.

The meeting agreed to select folpet as a default residue definition for compliance with MRLs in animal commodities. A suitable analytical method is available to determine residues of folpet in animal commodities.

In deciding which additional compounds should be included in the residue definition for risk assessment, the meeting considered the likely occurrence and the toxicological properties of phthalamic acid, phthalic acid and phthalimide.

A co-eluting peak attributed to phthalamic acid, phthalic acid, and phthalic anhydride accounted for 44 percent TRR in the lactating goat kidney. Additionally, phthalamic acid was the largest component in the lactating goat metabolism study (25–28 percent TRR).

In the feeding studies, phthalamic acid was observed in all commodities. As phthalamic acid is covered by the toxicological reference value for folpet, the meeting decided that phthalamic acid should be included in the residue definition for risk assessment for animals.

In the dairy cow feeding study, phthalic acid was observed in cattle fat, kidney and liver, and in hen liver. The meeting decided that phthalic acid adds significantly to the dietary exposure and should be evaluated separately (ADI of 0–0.1 mg/kg bw).

In the dairy cow feeding study, phthalimide was observed in all commodities analysed except cattle kidney. The meeting decided that there was no toxicological concern for residues of phthalimide arising from uses of folpet and that no dietary risk assessment was necessary for phthalimide. The meeting concluded that phthalimide should not be included in the residue definition for risk assessment.

Estimates of residues in animal feeds are required for folpet and phthalic acid dietary assessments. The metabolic pathway in animals follows the stepwise transformation of folpet to phthalimide to phthalamic acid and to phthalic acid. Therefore, for animal dietary burdens for folpet, the residues included are folpet, phthalimide, and phthalamic acid, expressed as folpet. For animal dietary burdens for phthalic acid, the residues are folpet, phthalimide, phthalamic acid, and phthalic acid, expressed as folpet.

As residues of folpet are not observed in animal commodities, the meeting concluded that the residue is not fat-soluble.

Based on the above, the meeting concluded on the following residue definitions.

Definition of the residue for compliance with the MRL for plant and animal commodities: *Folpet*.

Definition of the residue for folpet dietary risk assessment for plant and animal commodities: *Sum of folpet and phthalamic acid, expressed as folpet.*

Definition of the residue for phthalic acid dietary risk assessment for plant and animal commodities: *Phthalic acid.*

The residue is not fat-soluble.

Results of supervised trials on crops

The meeting received supervised field trial data and GAP information to support folpet uses on apples, table grapes, wine grapes, strawberries, bananas, onions, cucumbers, melons, tomatoes, lettuce, potatoes, wheat, and barley. The following residue summaries are given, where applicable:

- Folpet: for maximum residue level estimation in plant commodities.
- Folpet + phthalamic acid, expressed in folpet equivalents: for folpet STMR estimation.
- Folpet + phthalimide + phthalamic acid, expressed in folpet equivalents: for animal dietary burden calculations for folpet.
- Phthalic acid: for phthalic acid STMR estimation.
- Folpet + phthalimide + phthalamic acid + phthalic acid, expressed in folpet equivalents: for animal dietary burden calculations for phthalic acid.

Apple

The meeting received a GAP from Brazil on apple, which specifies up to 6 foliar applications at 105 g ai/hL and the maximum application volume of 400 L/ha, equivalent to 420 g ai/ha. The re-treatment interval is 7 days and PHI is 1 day.

The meeting received 14 independent supervised residue trials from Canada, Chile, Argentina, Italy, Germany, Greece, and Brazil on apple. As none of the trials matched the AGAP, the meeting withdrew its previous recommendation for a maximum residue level of 10 mg/kg for apple.

Table grapes

The meeting received a GAP from Italy on table grapes, which specifies up to 4 foliar applications at a maximum application rate of 1 kg ai/ha, with re-treatment interval of 7 days and PHI of 56 days.

The meeting received 16 independent supervised residue trials from Germany, France, Italy, Spain, Hungary, and Australia on table grapes. Eleven trials matched the GAP in all aspects except the application rate, which was 1.5–1.7 higher the GAP rate, with residues of folpet in ranked order of (n = 11): 0.09 mg/kg, 0.17 mg/kg, 0.22 mg/kg, 0.32 mg/kg, 0.46 mg/kg, 0.53 mg/kg, 0.63 mg/kg, 0.75 mg/kg, 1.0 mg/kg, 1.2 mg/kg, and 1.5 mg/kg.

Folpet residues proportioned to the GAP rate were: 0.050 mg/kg, 0.11 mg/kg, 0.15 mg/kg, 0.20 mg/kg, 0.27 mg/kg, 0.34 mg/kg, 0.38 mg/kg, 0.47 mg/kg, 0.61 mg/kg, 0.75 mg/kg, and 0.93 mg/kg.

The meeting estimated a maximum residue level of 1.5 mg/kg for table grape.

Four trials analysed phtalic and phthalamic acid in the samples, but in none of them the DALA (28 days) approximated the GAP PHI to allow the estimation of relative ratios of folpet to phthalamic acid and to phthalic acid. The meeting could not estimate STMRs for folpet or phthalic acid.

Wine grapes

The meeting received a GAP from Italy on wine grapes, which specifies up to ten foliar applications at 1.6 kg ai/ha/application. The re-treatment interval is 7 days and the PHI is 28 days.

The meeting received 42 independent supervised residue trials from France, Spain, Italy, Germany, Hungary, and Australia on wine grapes. In 12 trials, samples were analysed with a method with insufficient validation data and were not considered further.

In trials supported by a validated method that approximated the GAP, residues of folpet were (n = 30): 0.43 mg/kg, 0.73 mg/kg, 1.5 mg/kg, 1.7 (3) mg/kg, 1.8 mg/kg, 2.0 mg/kg, 2.6 mg/kg, 2.7 mg/kg, 2.8 mg/kg, 3.1 mg/kg, 3.5 (2) mg/kg, 3.7 mg/kg, 3.9 mg/kg, 4.0 (3) mg/kg, 4.1 mg/kg, 5.0 mg/kg, 5.4 mg/kg, 5.5 mg/kg, 6.2 (2) mg/kg, 6.3 (2) mg/kg, 6.5 mg/kg, 10.2 mg/kg, 10.8 mg/kg.

The meeting recommended a maximum residue level of 15 mg/kg for wine grape. The meeting withdrew its previous recommendation for a maximum residue level of 10 mg/kg for grapes.

For animal dietary burdens, the meeting estimated a median residue of 3.8 mg/kg for wine grapes.

Ratios of folpet to phthalamic acid and phthalic acid were calculated based on table grape and wine grape trials where the harvest interval approximated the wine grape GAP (n = 4).

The formula [(folpet + phthalamic acid$_{\text{as folpet}}$) ÷ folpet] was used to determine the ratio for concentration calculation of folpet + phthalamic acid$_{\text{as folpet}}$ to estimate STMR for folpet. The median ratio was 2.3.

The formula [(folpet + phthalamic acid$_{\text{as folpet}}$+ phthalic acid$_{\text{as folpet}}$) ÷ folpet] was used to determine the ratio for concentration calculation of folpet + phthalamic acid$_{\text{as folpet}}$+ phthalic acid$_{\text{as folpet}}$. The median ratio was 4.7.

The formula (phthalic acid/folpet) was used to determine the ratio for concentration calculation of phthalic acid. The median ratio was 1.3. Folpet median (3.8 mg/kg) × 1.3.

The meeting estimated an STMR of 4.9 mg/kg for phthalic acid. Folpet and phthalamic acid$_{\text{as folpet}}$ = Folpet median (3.8 mg/kg) × 2.3. The meeting estimated an STMR of 8.7 mg/kg for folpet.

Folpet + phthalamic acid$_{as\ folpet}$+ phthalic acid$_{as\ folpet}$: phthalimide$_{as\ folpet}$ was added to folpet after applying the ratio for phthalamic acid$_{as\ folpet}$: 1.3 mg/kg, 2.1 mg/kg, 3.8 mg/kg, 3.9 mg/kg, 4.4 mg/kg, 4.8 (2) mg/kg, 4.9 mg/kg, 6.1 mg/kg, 6.2 mg/kg, 6.8 mg/kg, 8.3 mg/kg, 8.4 mg/kg, 9.2 (2) mg/kg, 9.8 (2) mg/kg, 9.9 mg/kg, 10.5 mg/kg, 11.7 mg/kg, 12.3 mg/kg, 12.9 mg/kg, 13.0 mg/kg, 14.5 mg/kg, 14.8 mg/kg, 15.0 mg/kg, 15.2 (2) mg/kg, 24.0 mg/kg, and 25.3 mg/kg.

For animal dietary burdens (folpet), the meeting estimated a median residue of 9.5 mg/kg for wine grape.

Folpet, phthalimide$_{as\ folpet}$, phthalamic acid$_{as\ folpet}$, and phthalic acid$_{as\ folpet}$: The concentration of phthalimide$_{as\ folpet}$ was added to folpet after applying the ratio for phthalamic acid$_{as\ folpet}$ and phthalic acid$_{as\ folpet}$: 2.3 mg/kg, 3.8 mg/kg, 7.4 mg/kg, 7.9 mg/kg, 8.5 mg/kg, 8.7 mg/kg, 8.8 mg/kg, 9.7 mg/kg, 12.2 mg/kg, 12.4 mg/kg, 13.4 mg/kg, 16.3 mg/kg, 16.4 mg/kg, 16.6 mg/kg, 18.3 mg/kg, 18.4 mg/kg, 19.3 mg/kg, 19.4 mg/kg, 19.9 mg/kg, 21.0 mg/kg, 24.1 mg/kg, 25.6 mg/kg, 25.8 mg/kg, 29.4 mg/kg, 29.9 mg/kg, 28.9 mg/kg, 29.8 mg/kg, 30.4 mg/kg, 47.8 mg/kg, and 50.6 mg/kg. For animal dietary burdens (phthalic acid), the meeting estimated a median residue of 18.4 mg/kg for wine grape.

Strawberry

The meeting received a GAP from Mexico on strawberries that specifies foliar application at 1.6 kg ai/ha (number of applications not specified). The re-treatment interval is 7 days PHI is 2 days.

In the two independent supervised residue trials from Mexico approximating GAP, folpet residues in were (n = 2): 2.1 mg/kg and 2.6 mg/kg.

The meeting concluded that the number of trials in insufficient to estimate a maximum residue level for folpet in strawberry. The meeting withdrew its previous recommendation for a maximum residue level of 5 mg/kg for strawberry.

Banana

The meeting received a GAP from Ecuador on bananas, which specifies foliar applications of a SC formulation at 750 g ai/ha (number of applications not specified). The re-treatment interval is 4 days and PHI is 0 days.

The meeting received 12 independent supervised residue trials conducted on bagged and unbagged bananas from Costa Rica, Ecuador, Mexico, and Colombia on bananas. Five trials were excluded due to the unsupported durations of frozen storage. The unbagged residues were higher and therefore used for the estimations.

In trials approximating the GAP, residues of folpet in unbagged whole fruit were (n = 7): 0.22 mg/kg, 0.23 mg/kg, 0.37 mg/kg, 0.54 mg/kg, 0.58 mg/kg, 0.97 mg/kg, and 1.1 mg/kg.

The meeting estimated a maximum residue level of 2 mg/kg for folpet in banana.

Residues of folpet and phathalamic acid in banana pulp were below the LOQ (<0.01 and <0.05 mg/kg, respectively). In seven trials approximating the GAP, residues of the sum of folpet and phthalamic acidas folpet in banana pulp were <0.06 (7) mg/kg.

The meeting estimated an STMR of 0.06 mg/kg (pulp) for folpet in bananas.

In trials approximating the GAP, residues phthalic acid in banana pulp were (n = 7): <0.05 (3) mg/kg, 0.054 (2) mg/kg, 0.066 mg/kg, and 0.071 mg/kg.

The meeting estimated an STMR of 0.054 mg/kg (pulp) for phthalic in bananas.

Onion

The meeting received a GAP from Mexico on onions, which specifies foliar applications at 1.6 kg ai/ha (number of applications not specified). Re-treatment interval is 5 days and PHI is 7 days.

A total of 13 supervised residue trials were conducted in Mexico, Chile, Hungary, Greece, Portugal, Spain, and France on onions, but none of the trials matched the GAP.

The meeting withdrew its previous recommendation for a maximum residue level of 1 mg/kg for onion.

Cucumber

The meeting received a GAP from Mexico on cucumbers, which specifies foliar applications of a WG formulation at 2.24 kg ai/ha/application (number of applications not specified). Re-treatment interval is 5 days and PHI is 7 days.

The meeting received five independent supervised residue trials conducted in Mexico and Canada on cucumber, but none of the trials matched the GAP.

The meeting withdrew its previous recommendation for a maximum residue level of 1 mg/kg for cucumber.

Melon

The meeting received a GAP from Brazil on melons, which specifies up to 4 foliar applications of a WP formulation, at 140 g ai/hL, with a maximum volume of 1000 L/ha, a re-treatment interval of 7 days, and PHI of 1 day.

Three independent supervised residue trials from Brazil approximated GAP, giving folpet residues of: <0.1 (2) and 0.71 mg/kg.

As the number of trials was insufficient to estimate a maximum residue level for folpet in melon, the meeting withdrew its previous recommendation for a maximum residue level of 3 mg/kg for melons, except watermelon.

Tomato

The meeting received a GAP from Italy on greenhouse-grown tomatoes, which specified up to 3 foliar applications at 1.2 kg ai/ha/application, with re-treatment interval of 7 days and PHI of 10 days.

Nine independent supervised residue trials conducted in France, Germany, Spain, and Italy on greenhouse-grown tomatoes matched the GAP in all aspects except the application rate, which were conducted at 1.3–1.4 higher than the GAP. Residues of folpet were (n = 9): <0.02 mg/kg, 0.21 mg/kg, 0.36 mg/kg, 0.41 mg/kg, 0.52 mg/kg, 0.56 mg/kg, 1.1 mg/kg, 1.5 mg/kg, and 2.4 mg/kg.

Folpet residues proportioned to the GAP were: <0.02 mg/kg, 0.16 mg/kg, 0.28 mg/kg, 0.31 mg/kg, 0.38 mg/kg, 0.41 mg/kg, 0.82 mg/kg, 1.1 mg/kg, and 1.8 mg/kg.

The meeting estimated a maximum residue level of 3 mg/kg for folpet in tomato.

Phthalamic acid and phthalic acid were not analysed in the trials and could not estimate the relative ratios of folpet to phthalamic acid and phthalic acid. The meeting could not estimate STMRs for folpet or phthalic acid.

For animal dietary burden, the meeting estimated a median residue of 0.38 mg/kg for tomatoes.

The meeting withdrew its previous recommendation for a maximum residue level of 3 mg/kg for tomato.

Lettuce

The meeting received a GAP from Mexico on lettuce, which specifies foliar applications at 1.6 kg ai/ha/application (number of applications not specified). The re-treatment interval and PHI are each 7 days.

The meeting received 3 independent supervised residue trials conducted in Mexico on head lettuce approximating GAP that gave folpet residues of (n = 3): 3.1 mg/kg, 6.5 mg/kg, and 15.8 mg/kg.

The meeting received 1 independent supervised residue trial from Mexico on leaf lettuce that approximated GAP giving folpet residues of 20.7 mg/kg.

The meeting concluded that the number of trials in insufficient to estimate a maximum residue level for folpet in lettuce. The meeting withdrew its previous recommendation for a maximum residue level of 50 mg/kg for lettuce, head.

Potato

The meeting received GAP from Slovenia on potatoes, which specifies up to 3 foliar applications 1.6 kg ai/ha. Re-treatment interval is 7 days and PHI is 10 days.

The meeting received 15 independent supervised residue trials conducted in Italy, France, Spain, the United Kingdom of Great Britain and Northern Ireland, Hungary, Germany, Austria, and Bulgaria. In two trials that approximated GAP, residues of folpet in ranked order were <0.01 and <0.02 mg/kg.

The meeting concluded that the number of trials in insufficient to estimate a maximum residue level for folpet in potatoes. The meeting withdrew its previous recommendation for a maximum residue level of 0.1 mg/kg for potato.

Wheat grain

The meeting received a GAP from France on wheat, which specifies up to 2 foliar- applications at 750 g ai/ha/application, with a re-treatment interval of 14 days and PHI of 42 days.

The meeting received 41 independent supervised residue trials conducted in France, the United Kingdom of Great Britain and Northern Ireland, the Kingdom of the Netherlands, Belgium, Denmark, Hungary, Germany, Romania, Austria, Bulgaria, Spain, Greece, Poland, and Italy on wheat grain.

In trials that approximated the GAP, residues of folpet in ranked order were (n = 11): <0.01 (6) mg/kg, 0.010 mg/kg, 0.011 mg/kg, <0.02 mg/kg, and 0.02 (2) mg/kg.

The meeting recommended a maximum residue level of 0.04 mg/kg for folpet wheat grain.

For animal dietary burden, the meeting estimated a median residue of 0.010 mg/kg for folpet in wheat grain.

Ratios of folpet to phthalamic acid and phthalic acid were calculated based on wheat grain trials where the harvest interval approximated the GAP (n = 4).

The formula [(folpet + phthalamic acid$_{\text{as folpet}}$) ÷ folpet] was used to determine the ratio in order to determine the concentration of folpet + phthalamic acid$_{\text{as folpet}}$. The median ratio was 37.9. The formula [(folpet + phthalamic acid$_{\text{as folpet}}$+ phthalic acid$_{\text{as folpet}}$) ÷ folpet] was used to determine the ratio to determine the concentration of folpet + phthalamic acid$_{\text{as folpet}}$ + phthalic acid$_{\text{as folpet.}}$ The median ratio was 93.3. The formula (phthalic acid/folpet) was used to determine the ratio in order to determine the concentration of phthalic acid. The median ratio was 31.7.

Folpet and phthalamic acid$_{\text{as folpet}}$: Folpet median (0.010 mg/kg) × 37.9. The meeting estimated an STMR of 0.38 mg/kg for folpet in wheat grain.

Folpet + phthalimide$_{\text{as folpet}}$ + phthalamic acid$_{\text{as folpet}}$: The concentration of phthalimide$_{\text{as folpet}}$ was added to folpet after applying the ratio for phthalamic acid$_{\text{as folpet}}$: 0.43 (6) mg/kg, 0.44 mg/kg, 0.50 mg/kg, and 0.81 (3) mg/kg. For animal dietary burden (folpet), the meeting estimated a median residue of 0.43 mg/kg for wheat grain.

Folpet, phthalimide$_{\text{as folpet}}$, phthalamic acid$_{\text{as folpet}}$, and phthalic acid$_{\text{as folpet}}$: The concentration of phthalimide$_{\text{as folpet}}$ was added to folpet after applying the ratio for phthalamic acid$_{\text{as folpet}}$ and phthalic acid$_{\text{as folpet}}$: 0.98 (6) mg/kg, 0.99 mg/kg, 1.1 mg/kg, 1.9 (3) mg/kg.

Phthalic acid: folpet median (0.010 mg/kg) × 31.7. The meeting recommended an STMR of 0.32 mg/kg for phthalic acid in wheat grain.

For animal dietary burdens of phthalic acid, the meeting estimated a median residue of 0.98 mg/kg for wheat grain.

Barley grain

The meeting received a GAP from France on barley, which specifies up to 2 foliar- applications at 750 g ai/ha, a re-treatment interval of 14 days and PHI of 42 days.

The meeting received 42 independent residue trials from France, the United Kingdom of Great Britain and Northern Ireland, the Kingdom of the Netherlands, Belgium, Denmark, Italy, Spain, Romania, Austria, Hungary, Poland, Germany, Bulgaria, and Greece on barley. In nine trials that approximated the GAP, residues of folpet in ranked order were (n = 9): <0.01 mg/kg, 0.02 mg/kg, 0.048 mg/kg, 0.056 mg/kg, 0.077 mg/kg, 0.13 mg/kg, 0.14 mg/kg, 0.20 mg/kg, and 0.84 mg/kg.

The meeting recommended a maximum residue level of 1.5 mg/kg for folpet in barley grain.

For animal dietary burden, the meeting estimated a median residue of 0.077 mg/kg for barley grain.

Ratios of folpet to phthalamic acid and phthalic acid were calculated based on barley grain trials where the harvest interval approximated the GAP (n = 6).

The formula [(folpet + phthalamic acid$_{\text{as folpet}}$) ÷ folpet] was used to determine the ratio in order to determine the concentration of folpet + phthalamic acid$_{\text{as folpet}}$. The median ratio was 19.7. The formula (phthalic acid/folpet) was used to determine the ratio in order to determine the concentration of phthalic acid. The median ratio was 10.3. The formula [(folpet + phthalamic acid$_{\text{as folpet}}$ + phthalic acid$_{\text{as folpet}}$) ÷ folpet] was used to determine the ratio in order to determine the concentration of folpet + phthalamic acid$_{\text{as folpet}}$ + phthalic acid$_{\text{as folpet}}$. The median ratio was 44.4.

Folpet and phthalamic acid$_{\text{as folpet}}$: folpet median (0.077 mg/kg) × 19.7. The meeting estimated an STMR of 1.5 mg/kg for folpet in barley grain.

Folpet + phthalimide$_{\text{as folpet}}$ + phthalamic acid$_{\text{as folpet}}$: Residues of phthalimide were analysed in all GAP trials. The concentration of phthalimide$_{\text{as folpet}}$ was added to folpet after applying the ratio for phthalamic acid$_{\text{as folpet}}$: 0.44 mg/kg, 0.49 mg/kg, 1.1 mg/kg, 1.2 mg/kg, 1.8 mg/kg, 3.0 mg/kg, 4.0 mg/kg, 2.6 mg/kg, and 16.5 mg/kg. For animal dietary burdens (folpet dietary assessment), the meeting recommended a median residue of 1.8 mg/kg for folpet in barley grain.

Phthalic acid: Folpet median (0.077 mg/kg) × 10.3. The meeting estimated an STMR of 0.79 mg/kg for phthalic acid in barley grain.

Folpet, phthalimide$_{\text{as folpet}}$, phthalamic acid$_{\text{as folpet}}$, and phthalic acid$_{\text{as folpet}}$: The concentration of phthalimide$_{\text{as folpet}}$ was added to folpet after applying the ratio for phthalamic acid$_{\text{as folpet}}$ and phthalic acid$_{\text{as folpet}}$: 0.49 mg/kg, 0.89 mg/kg, 2.3 mg/kg, 2.6 mg/kg, 3.7 mg/kg, 5.8 mg/kg, 6.5 mg/kg, 8.9 mg/kg and 37.6 mg/kg. For animal dietary burdens (phthalic acid), the meeting estimated a median residue of 3.7 mg/kg for barley grain.

Residues in animal feeds

Barley and wheat straw

The GAP for barley and wheat hay is from France up to 2 foliar at 750 g ai/ha/application; re-treatment interval of 14 days and PHI of 42 days.

The GAP is for barley and wheat crops grown solely for grain production; therefore, only mature crop parts (grain and straw) are harvested and relevant as feed items. All residues were corrected for dry matter content of 89 percent for barley straw and 88 percent for wheat straw.

In independent trials approximating the GAP, residues of folpet in wheat straw were (n = 11): 0.95 mg/kg (dw), 1.1 mg/kg (dw), 1.7 mg/kg (dw), 1.9 mg/kg (dw), 3.2 mg/kg (dw), 3.9 mg/kg (dw), 4.9 mg/kg (dw), 5.1 mg/kg (dw), 6.1 mg/kg (dw), 7.8 mg/kg (dw), and 27.3 mg/kg (dw).

In independent trials approximating the GAP, residues of folpet in barley straw were (n = 9): 0.94 mg/kg (dw), 1.2 mg/kg (dw), 1.5 mg/kg (dw), 3.7 mg/kg (dw), 3.8 mg/kg (dw), 5.8 mg/kg (dw), 6.9 mg/kg (dw), 12.7 mg/kg (dw), 15.7 mg/kg (dw).

"Barley hay and straw" and "wheat hay and straw", as commodities moving in trade, may not always be readily distinguishable from each other. The meeting noted similar residues between wheat straw and barley straw and combined the datasets.

Residues of folpet in wheat and barley straw were (n = 20): 0.94 mg/kg (dw), 0.95 mg/kg (dw), 1.1 mg/kg (dw), 1.2 mg/kg (dw), 1.5 mg/kg (dw), 1.7 mg/kg (dw), 1.9 mg/kg (dw), 3.2 mg/kg (dw), 3.7 mg/kg (dw), 3.8 mg/kg (dw), 3.9 mg/kg (dw), 4.9 mg/kg (dw), 5.1 mg/kg (dw), 5.8 mg/kg (dw), 6.1 mg/kg (dw), 6.9 mg/kg (dw), 7.8 mg/kg (dw), 12.7 mg/kg (dw), 15.7 mg/kg (dw), and 27.3 mg/kg (dw).

The meeting estimated a maximum residue level of 40 mg/kg for folpet in/on wheat hay and/or straw (dw), and barley hay and/or straw (dw).

The meeting estimated a median residue of 3.9 mg/kg and a highest residue of 27.3 mg/kg for folpet in wheat and barley hay and straw.

Ratios of folpet to phthalamic acid and phthalic acid were calculated based on wheat and barley straw trials where the harvest interval approximated the GAP (n = 27).

The formula [(folpet + phthalamic acid$_{\text{as folpet}}$) ÷ folpet] was used to determine the ratio to determine the concentration of folpet + phthalamic acid$_{\text{as folpet}}$. The median ratio was 1.9. The formula [(folpet + phthalamic acid$_{\text{as folpet}}$ + phthalic acid$_{\text{as folpet}}$) ÷ folpet] was used to determine the ratio in order to determine the concentration of folpet + phthalamic acid$_{\text{as folpet}}$ + phthalic acid$_{\text{as folpet}}$. The median ratio was 2.1.

Folpet, phthalimide$_{\text{as folpet}}$, and phthalamic acid$_{\text{as folpet}}$: The concentration of phthalimide$_{\text{as folpet}}$ was added to folpet after applying the ratio for phthalamic acid$_{\text{as folpet}}$: 2.1 mg/kg, 2.3 mg/kg, 2.6 mg/kg, 2.7 mg/kg, 3.6 mg/kg, 7.2 (2) mg/kg, 3.9 mg/kg, 8.1 mg/kg, 9.9 mg/kg, 10.1 mg/kg, 11.5 mg/kg, 12.1 mg/kg, 13.3 mg/kg, 13.4 mg/kg, 17.3 mg/kg, 19.6 mg/kg, 26.9 mg/kg, 40.3 mg/kg, and 64.9 mg/kg.

For animal dietary burden of folpet, the meeting estimated a median residue of 10.1 mg/kg for wheat and barley hay and straw.

Folpet, phthalimide$_{\text{as folpet}}$, phthalamic acid$_{\text{as folpet}}$, and phthalic acid$_{\text{as folpet}}$: The concentration of phthalimide$_{\text{as folpet}}$ was added to folpet after applying the ratio for phthalamic acid$_{\text{as folpet}}$ and phthalic acid$_{\text{as folpet}}$: 2.9 mg/kg (dw), 3.1 mg/kg (dw), 3.6 (2) mg/kg (dw), 4.8 mg/kg (dw), 5.3 mg/kg (dw), 8.8 mg/kg (dw), 9.9 mg/kg (dw), 11.2 mg/kg (dw), 12.9 mg/kg (dw), 13.3 mg/kg (dw), 15.6 mg/kg (dw), 16.9 mg/kg (dw), 17.5 mg/kg (dw), 18.5 mg/kg (dw), 22.9 mg/kg (dw), 26.1 mg/kg (dw), 37.4 mg/kg (dw), 53.3 mg/kg (dw), and 87.4 mg/kg (dw).

For animal dietary burdens of phthalic acid, the meeting estimated a median residue of 13.1 mg/kg wheat and barley hay and straw.

Fate of residues during processing

Nature of the residue in processed commodities

The meeting received studies investigating the fate of radiolabelled folpet during conditions simulating pasteurization, baking/brewing/boiling, and sterilization.

Folpet was not detected in any of the test solutions under all three simulated processing conditions.

Following simulated pasteurization, phthalimide was recovered as major metabolite accounting for 92 percent TRR and phthalic acid was recovered at 8.2 percent TRR.

Following simulated baking/brewing/boiling, phthalimide and phthalic acid were recovered at 58 and 42 percent TRR, respectively.

Following simulated sterilization, phthalic acid was recovered as the major metabolite in both experiments, accounting for 82–98 percent TRR. In one study, an unidentified product was formed which was postulated to be phthalic anhydride (18 percent TRR).

Folpet was completely degraded forming phthalimide and phthalic acid. The formation of phthalic anhydride is likely formed by dehydration of phthalic acid with heat. Phthalic anhydride is not expected to be a significant product in any consumable commodity after processing, because the reaction will be readily reversible and phthalic acid will be re-formed via hydrolysis in aqueous solutions.

Residues in processed commodities

The meeting received data depicting the effect of processing on folpet and phthalimide in tomato, wheat grain, and barley grain and on folpet, phthalimide, phthalamic acid, and phthalic acid in table grape and wine grape.

Calculated processing factors indicate with a "<" (less-than) sign when the residue in the processed commodity is <LOQ of the analytical method. The calculation in these cases is based on the LOQ of the analytical method and the residue concentration of the RAC. The resulting processing factors and estimated residues are summarized in Table 5.21.6.

Table 5.21.6 Processing factors for maximum residue levels and folpet dietary risk assessment

Raw Commodity (STMR, MRL, or median)	Processed commodity	Processing factors		Residue estimates, mg/kg or mg/kg		
		Individual	Median or best estimate	Maximum residue level	STMR-P or median-P	HR-P or highest-P
Wine grape[a] (Median = 3.8)	Wet pomace	0.004, 0.006, 0.088, 0.019, 0.22, 0.46, 0.65, 0.79, 0.85, <0.94, 0.97	0.46	–	1.7	–
(MRL = 15)	Dry pomace	0.30, 0.55, <0.94, 1.6, 2.0, 2.7	1.3	19.5	–	–
Wine grape[b] (STMR = 8.7)	Juice	0.32, 0.37, 0.45, 0.53	0.41	–	3.5	–
	Wine	0.052, 0.067, 0.10, 0.11	0.084	–	0.73	–
Wine grape[a] (Median = 9.5)	Wet pomace	0.52, 0.58, 0.74, 1.0	0.66	–	6.3	–
Wheat grain[a] (MRL = 0.04)	Bran	1.3, 3.2, 3.2	3.2	0.13	–	–
(Median = 0.01)	Aspirated grain fraction	71.4, 340	206	–	2.1	–
	Gluten meal	<0.09, <0.35	0.09	–	0.0009	–
	Middlings	0.24, <0.35	0.30	–	0.0030	–
	Distiller's grain	<0.09, <0.35	0.09	–	0.0009	–
Barley grain[a] (MRL = 1.5)	Bran	0.63, 1.5, 1.7, 2.0	1.6	2.4	0.12	–
	Flour	0.57, 0.94, 2.0, 2.5	1.5	2.3	–	–

Raw Commodity (STMR, MRL, or median)	Processed commodity	Processing factors		Residue estimates, mg/kg or mg/kg		
		Individual	Median or best estimate	Maximum residue level	STMR-P or median-P	HR-P or highest-P
(Median = 0.077)	Brewer's grain	<0.0063, <0.031	0.0063	–	0.0005	–

Notes:
[a] Maximum residue level calculation based on maximum residue level for folpet. STMR-P and median-P calculation based on median residue of folpet.
[b] Processing factors based on the sum of folpet and phthalamic acidas folpet (mg eq/kg) in the RAC and processed commodity.
[c] Processing factors based on the sum of folpet, phthalimideas folpet, and phthalamic acidas folpet (mg/kg) in the RAC and processed commodity.

On the basis of the information presented in Table 5.21.6, the meeting estimated maximum residue levels of 0.15 mg/kg for wheat bran and 3 mg/kg for barley bran and flour and recommended a maximum residue level of 20 mg/kg for grape pomace (dry).

The meeting withdrew its previous recommendation for a maximum residue level of 40 mg/kg for grape, dried.

Table 5.21.7 shown the processing factors and the STMR-P or median-P for phthalic acid.

Table 5.21.7 Processing factors for phthalic acid dietary assessment

Raw commodity (STMR or median)	Processed commodity	Processing factors		Residue estimates, mg/kg
		Individual	Median or best estimate	STMR-P or median-P
Wine grape[a] (Median = 18.4)	Juice	0.41, 0.42, 0.42, 0.51	0.42	7.7
	Wine	0.26, 0.21, 0.36, 0.29	0.27	5.0
Wine grape[b] (Median = 18.4)	Wet pomace	0.75, 0.84, 0.90, 1.0	0.87	16.0 (median-P)

Notes:
[a] Processing factors are based on the sum of folpet, phthalimide$_{\text{as folpet}}$, phthalamic acid$_{\text{as folpet}}$, and phthalic acid$_{\text{as folpte}}$ (mg/kg) in the RAC and phthalic acid in the processed commodity.
[b] Processing factors are based on the sum of folpet, phthalimide$_{\text{as folpet}}$, phthalamic acid$_{\text{as folpet}}$, and phthalic acid$_{\text{as folpet}}$ (mg/kg) in the RAC and folpet, phthalimide$_{\text{as folpte}}$, phthalic acid$_{\text{as folpet}}$, and phthalamic acid$_{\text{as folpet}}$ (mg/kg) in the processed commodity.

Residues in animal commodities

Farm animal dietary burdens

Dietary burdens were calculated for beef cattle, dairy cattle, broilers, and laying poultry based on feed items evaluated by the JMPR by the current meeting. The dietary burdens estimated using the most recent version of the OECD livestock dietary burden calculator are presented in Annex 6 and summarized in Table 5.21.8.

The dietary burdens for maximum residue level calculation are based on folpet only. The dietary burdens for folpet are based on the sum of folpet, phthalimide$_{\text{as folpet}}$, and phthalamic acid$_{\text{as folpet}}$ (Table 5.21.9). The dietary burdens for phthalic acid are based on the sum of folpet, phthalimide$_{\text{as folpet}}$, phthalamic acid$_{\text{as folpet}}$, and phthalic acid$_{\text{as folpet}}$ (Table 5.21.10).

Table 5.21.8 Animal dietary burden for folpet for maximum residue level estimation

Livestock dietary burden folpet, ppm of dry matter diet				
	Japan	United States–Canada	European Union	Australia
	Max.	Max.	Max.	Max.
Beef cattle	0.075	4.8	9.3	31.0[a]
Dairy cattle	0.037	6.2	9.3	17.8[b]
Poultry – broiler	0.009	0.077	0.062	0.020
Poultry – layer	0.0076	0.066	3.2[c]	0.018

Notes:
[a] Highest maximum beef cattle dietary burden suitable for maximum residue level estimates for mammalian tissues.
[b] Highest maximum dairy cattle dietary burden suitable for maximum residue level estimates for milk.
[c] Highest maximum layer poultry dietary burden suitable for maximum residue estimates for poultry eggs and tissues.

Table 5.21.9 Animal dietary burden for the sum of folpet, phthalimide$_{\text{as folpet}}$, and phthalamic acid$_{\text{as folpet}}$ for folpet dietary assessment

Livestock dietary burden folpet, phthalimide$_{\text{as folpet}}$, and phthalamic acid$_{\text{as folpet, ppm}}$ of dry matter diet				
	Japan	United States–Canada	European Union	Australia
	Mean	Mean	Mean	Mean
Beef cattle	1.4	2.7	4.8	17.4[a]
Dairy cattle	0.82	3.2	4.2	14.6[b]
Poultry – broiler	0.20	1.5	1.4	0.57
Poultry – layer	–	1.5	3.0[c]	0.50

Notes:
[a] Highest mean beef cattle dietary burden suitable for STMR estimates for mammalian tissues.
[b] Highest mean dairy cattle dietary burden suitable for STMR estimates for mammalian milk.
[c] Highest mean broiler poultry dietary burden suitable for STMR estimates for poultry eggs and tissues.

Table 5.21.10 Animal dietary burden for the sum of folpet, phthalimide$_{\text{as folpet}}$, phthalamic acid$_{\text{as folpet}}$, and phthalic acid$_{\text{as folpet}}$ for phthalic acid dietary assessment

Livestock dietary burden folpet, phthalimide$_{\text{as folpet}}$, phthalamic acid$_{\text{as folpet}}$, and phthalic acid$_{\text{as folpet}}$, ppm of dry matter diet				
	Japan	United States–Canada	European Union	Australia
	Mean	Mean	Mean	Mean
Beef cattle	2.9	4.4	7.5	36.7[a]
Dairy cattle	1.7	4.9	6.2	33.3[b]
Poultry – broiler	0.42	3.2	2.9	1.2
Poultry – layer	–	3.2	5.3[c]	1.1

Notes:
[a] Highest mean beef cattle dietary burden suitable for STMR estimates for mammalian tissues.
[b] Highest mean dairy cattle dietary burden suitable for STMR estimates for mammalian milk.
[c] Highest mean broiler poultry dietary burden suitable for STMR estimates for poultry eggs and tissues.

Dairy cow feeding study

The meeting received a study investigating the magnitude of folpet, phthalimide, phthalamic acid, and phthalic acid in cattle milk, cream, skim milk, muscle, fat, liver, and kidney. Cows were orally dosed with folpet *via* gelatine capsules for 28 consecutive days. Folpet dose levels were 36 ppm, 102 ppm, 356 ppm and 362 ppm (depuration group), on a dry weight basis.

There were no quantified residues of folpet (<0.01 mg/kg) in any of the samples from all dose levels. In milk, phthalimide residues were observed at all dose levels and phthalamic acid residues were observed at the high dose level. All residues in cream and skimmed milk were below the LOQ (0.05 mg/kg), except phthalamic acid in skimmed milk.

In cattle muscle, phthalamic acid residues were observed for the high dose level.

In fat, phthalimide residues were observed for all dose levels, phthalic acid residues for the low and mid dose levels, and phthalamic acid residues for the mid and high dose levels.

In liver, phthalamic acid residues were observed for all dose levels.

In kidney, phthalamic acid residues were observed for all dose levels and phthalic acid residues were observed for the mid and high dose levels.

Laying hen feeding study

The meeting received a study investigating the magnitude of folpet, phthalimide, phthalamic acid, and phthalic acid in eggs, egg white, egg yolk, muscle, fat, and liver of laying hens. Hens were orally dosed with folpet *via* gelatine capsules for 28 consecutive days at 4.3 ppm, 13.0 ppm, 38.1 ppm, and 43.1 ppm (depuration group).

There were no quantified residues of folpet in any of the treated samples from all dose levels. In egg, phthalamic acid residues were observed for all dose groups, phthalimide residues were observed for the mid and high dose levels, and phthalic acid residues were observed for the high dose level.

In muscle, phthalimide and phthalamic acid residues were observed for the mid and high dose levels.

In skin with fat, phthalimide residues were observed for all dose levels and phthalamic acid residues were observed for the mid and high dose levels.

In liver, phthalimide and phthalamic acid residues were observed for all dose levels and phthalic acid residues were observed for the mid and high dose levels.

Animal commodity estimations of maximum residue levels and STMR

In both dairy cow and laying hen feeding studies, there were no quantified residues of folpet in any of the treated samples from all dose levels. The meeting estimated a maximum residue level of 0.01* mg/kg for the group of muscle (from mammals other than marine mammals), group of mammalian fats (except milk fats), group of edible offal (mammalian), group of milks, group of eggs, group of avian muscle, group of avian fats, and group of avian edible offal.

The folpet STMR estimates are based on the sum of folpet and phthalamic $acid_{as\ folpet}$ in animal tissues.

Table 5.21.11 Folpet and phthalamic acidas folpet STMR estimates for animal commodities

Folpet feeding study	Feed level (ppm) for milk/egg residues	Folpet and phthalamic acid$_{as\ folpet}$ residues (mg eq/kg) in milk/egg	Feed level (ppm) for tissue residues	Folpet and phthalamic acid$_{as\ folpet}$ residues (mg eq/kg)			
				Muscle	Liver	Kidney	Fat
STMR beef or dairy cattle							
Feeding study	0	0	0	0	0	0	0
	35.9	<0.06	35.9	<0.06	0.12	0.67	<0.06
Residues	14.6	0.024	17.4	0.029	0.058	0.33	0.029
STMR broiler or layer poultry							
Feeding study	0	0	0	0	0	–	0
	4.5	0.15	4.5	<0.06	0.24	–	<0.06
Residues	3.0	0.10	3.0	0.04	0.16	–	0.04

For folpet, the meeting recommended STMRs of 0.040 mg/kg for the group of avian muscle and the group of avian fats, 0.024 mg/kg in the group of milks, 0.029 mg/kg for the group of muscle (from mammals other than marine mammals) and the group of mammalian fats (except milk fats), 0.10 mg/kg for the group of eggs, 0.16 for the group of avian edible offal, and 0.33 mg/kg for the group of edible offal (mammalian).

The phthalic acid STMR estimates are based phthalic acid in animal tissues and are shown in Table 5.21.12.

Table 5.21.12 Phthalic acid STMR estimates for animal commodities

Folpet feeding study	Feed level (ppm) for milk/egg residues	Residues (mg/kg) in milk/egg	Feed level (ppm) for tissue residues	Phthalic acid residues (mg/kg)			
				Muscle	Liver	Kidney	Fat
STMR beef or dairy cattle							
Feeding study	0	0	35.9	<0.05	<0.05	<0.05	0.06
	35.9	<0.05	101.6	<0.05	<0.05	0.14	<0.4
Residues	33.3	0	36.7	0	0.05	0.051	0.064
STMR broiler or layer poultry							
Feeding study	4.5	<0.05	4.5	<0.05	<0.05	NA	<0.05
	13	<0.05	13	<0.05	0.078	NA	<0.05
Residue	5.3	0.05	5.3	0	0.053	NA	0

Due to no residues of phthalic acid at all feeding levels, the meeting estimated an STMR of 0 mg/kg in group of milks, the group of muscle (from mammals other than marine mammals), the group of avian muscle, and the group of avian fats.

The meeting estimated STMRs of 0.05 mg/kg in the group of eggs, 0.051 mg/kg for the group of edible offal (mammalian), 0.053 mg/kg for the group of avian edible offal, and 0.064 mg/kg for the group of mammalian fats (except milk fats).

Recommendations

On the basis of the data obtained from supervised residue trials, the meeting concluded that residue levels listed in Table 5.21.13 are suitable for establishing maximum residue limits and/or for exposure assessments. Table 5.21.14 shows the residue levels used for animal dietary burden calculations.

Definition of the residue for compliance with the MRL for plant and animal commodities: *folpet*.

Definition of the residue for folpet dietary risk assessment for plant and animal commodities: *sum of folpet and phthalamic acid, expressed as folpet.*

Definition of the residue for phthalic acid dietary risk assessment for plant and animal commodities: *phthalic acid.*

The residue is not fat-soluble.

Table 5.21.13 Recommendations for folpet, phathalamic acid and phthalic acid

CCN	Commodity	Recommended maximum residue level, mg/kg		STMR or STMR-P, mg/kg	HR or HR-P, mg/kg
		New	Previous		
FP 0226	Apple	W	10	–	–
FI 0327	Banana	2	–	0.060 0.054 (phthalic acid)	–
GC 0640	Barley	1.5	–	1.5 0.79 (phthalic acid)	–
AS 0640	Barley, hay and/or straw	40 (dw)	–	–	–
FB 0020	Blueberries	–	–	8.0 (phthalamic acid)[a] 7.4 (phthalic acid)[b]	–
FB 0265	Cranberries	–	–	1.8 (phthalamic acid)[a] 1.7 (phthalic acid)[b]	–
VC 0424	Cucumber	W	1	–	–
FB 0269	Grapes	W	10	–	–
DF 0269	Grape, dried (= Currants, Raisins and Sultanas)	W	40	–	–
JF 0269	Grape juice	–	–	3.5 7.7 (phthalic)	–
AB 0269	Grape pomace, dried	20 (dw)	–	–	–
PO 0111	Group of avian, edible offal of	0.01*	–	0.16 0.053 (phthalic acid)	–
PF 0111	Group of avian fats	0.01*	–	0.040 0 (phthalic acid)	–
PM 0110	Group of avian muscle	0.01*	–	0.040 0 (phthalic acid)	–
MO 0105	Group of edible offal (mammalian)	0.01*	–	0.33 0.051 (phthalic acid)	–
PE 0112	Group of eggs	0.01*	–	0.10 0.050 (phthalic acid)	–
MF 0100	Group of mammalian fats (except milk fats)	0.01*	–	0.029 0.064 (phthalic acid)	–
ML 0106	Group of milks	0.01*	–	0.024 0 (phthalic acid)	–
MM 0095	Group of muscle (from mammals other than marine mammals)	0.01*	–	0.029 0 (phthalic acid)	–
VL 0482	Lettuce, head	W	50	–	–
VC 0046	Melons, except watermelon	W	3	–	–

CCN	Commodity	Recommended maximum residue level, mg/kg		STMR or STMR-P, mg/kg	HR or HR-P, mg/kg
		New	Previous		
VA 0385	Onion, bulb	W	1	–	–
VR 0589	Potato	W	0.1	–	–
VR 0589	Potato	–	–	0.78 (phthalamic acid)[a] 0.23 (phthalic acid)[b]	–
FB 0275	Strawberry	W	5	–	–
VO 0448	Tomato	W	3	–	–
GC 0654	Wheat	0.04	–	0.38 0.32 (phthalic acid)	–
AS 0654	Wheat, hay and/or straw	40 (dw)	–	–	–
–	Wine	–	–	0.73 5.0 (phthalic acid)	–
FB 1236	Wine-grapes	15	–	8.7 4.9 (phthalic acid)	–

Notes:

[a] Expressed as folpet, arising from the GAPs for phosmet.

[b] Arising from the GAPs for phosmet.

Table 5.21.14 Residue levels for estimation of animal dietary burden calculations

		Median or Median-P (mg eq/kg)	Highest or Highest-P (mg eq/kg)
GC 0640	Barley (folpet)	0.077	
GC 0640	Barley (folpet, phthalimide, phthalamic acid, and phthalic acid)	3.7	–
CF 0640	Barley, bran, folpet (folpet)	0.12	–
GC 0640	Barley (folpet, phthalimide, and phthalamic acid)	1.8	
AS 0640	Barley hay and straw (folpet)	3.9 (dw)	27.3 (dw)
AS 0640	Barley hay and straw (folpet, phthalimide, and phthalamic acid)	9.9 (dw)	–
AS 0640	Barley hay and straw (folpet, phthalimide, phthalamic acid, and phthalic acid)	13.1 (dw)	–
SM 0720	Brewer's grain from wheat (folpet)	0.0009	–
SM 0718	Brewer's grain from barley	0.0005	–
AB 0269	Grape pomace (folpet)	1.7 (ar)	–
AB 0269	Grape pomace (folpet, phthalimide, and phthalamic acid)	6.3 (ar)	–
AB 0269	Grape pomace (folpet, phthalimide, phthalamic acid, and phthalic acid)	16.0 (ar)	–
FB 1236	Wine-grapes (folpet)	3.8	–
FB 1236	Wine-grapes (folpet, phthalimide, phthalamic acid, and phthalic acid)	18.4	–
FB 1236	Wine-grapes (folpet, phthalimide, and phthalamic acid)	9.5	–
GC 0654	Wheat (folpet)	0.010	–
GC 0654	Wheat (folpet, phthalimide, and phthalamic acid)	0.43	–
CF 3521	Wheat aspirated grain fractions (folpet)	2.1	–
CF 3522	Wheat gluten meal (folpet)	0.0009	–
AS 0654	Wheat hay and straw (folpet)	3.9 (dw)	27.3 (dw)
AS 0654	Wheat hay and straw (folpet, phthalimide, and phthalamic acid)	9.9 (dw)	–
GC 0654	Wheat (folpet, phthalimide, phthalamic acid, and phthalic acid)	0.98	–
AS 0654	Wheat hay and straw (folpet, phthalimide, phthalamic acid, and phthalic acid)	13.1 (dw)	–
CF 3514	Wheat, middlings (folpet)	0.003	–

Dietary risk assessment

Long-term dietary exposure for folpet

The ADI for folpet is 0–0.1 mg/kg bw. The International Estimated Daily Intakes (IEDIs) for folpet were estimated for the 17 GEMS/Food Consumption Cluster Diets using the STMR or STMR-P values estimated by the present JMPR. The results are shown in Annex 3 of the 2024 JMPR Report. The IEDIs ranged from 1–8 percent of the maximum ADI.

The meeting concluded that the long-term intake of residues of folpet from uses considered by the JMPR is unlikely to present a public health concern.

Long-term dietary exposure for phthalic acid

The ADI for phthalic acid is 0–0.1 mg/kg bw. The International Estimated Daily Intakes (IEDIs) for phthalic acid were estimated for the 17 GEMS/Food Consumption Cluster Diets using the STMR or STMR-P values estimated by the present JMPR. The results are shown in Annex 3 of the 2024 JMPR Report. The IEDIs ranged from 1–10 percent of the maximum ADI.

The meeting concluded that the long-term intake of residues of phthalic acid from uses considered by the JMPR is unlikely to present a public health concern.

Acute dietary exposure

The 2024 JMPR decided that an ARfD for folpet and phthalic acid was unnecessary. The meeting therefore concluded that the acute dietary exposure to residues of folpet and phtalic acid from the uses considered by the meeting is unlikely to present a public health concern.

5.22 Fosetyl aluminium (041) (R)

5.22.1 Residue and analytical aspects

Phosphonic acid, fosetyl and fosetyl aluminium (fosetyl-Al) are closely related systemic fungicides. Authorizations exist for phosphonic acid (formulated as potassium, sodium and ammonium salts) in a number of countries for use as trunk injections, pre-plant dips, foliar, soil and post-harvest treatments.

The 2017 meeting established an ADI of 0–1 mg/kg bw for fosetyl aluminium and phosphonic acid, which is the major metabolite of fosetyl-Al and fosetyl. The 2017 JMPR decided that an ARfD is unnecessary.

Fosetyl-Al and phosphonic acid were evaluated by the 2017 JMPR and 2019 JMPR (extra meeting). The 2017 JMPR established residue definitions:

- For compliance with MRLs and dietary risk assessment for plant commodities: *sum of fosetyl, phosphonic acid and their salts, expressed as phosphonic acid*.
- For compliance with MRLs and dietary risk assessment for animal commodities: *phosphonic acid*.

The residue is not fat-soluble.

Phosphonic acid and fosetyl-Al were scheduled at the 54th session of the CCPR for evaluation of additional uses by the 2024 JMPR. The meeting received additional GAP information and residue trial data on citrus fruits (potassium phosphonate) and rice (fosetyl-Al). This appraisal reflects the data submitted for fosetyl aluminium and phosphonic acid.

Storage stability

The stability of fosetyl-Al and phosphonic acid residues in frozen stored analytical samples was evaluated by the 2017 JMPR. A degradation of fosetyl-Al was observed in high water, high acid and high oil commodities, however, in the studies where both fosetyl-Al and phosphonic acid were measured, the total residues were stable over the storage intervals of 6–25 months for high starch/protein and high acid content commodities, which are relevant for the uses in citrus and rice. This period covers the maximum storage period of the samples in the residue trials which was up to 13.5 months in the citrus trials and up to 6.5 months in rice trials.

An additional storage stability study was submitted to verify the stability of residues in the citrus samples in the study IR-4 PR No. 10687 (post-harvest use in citrus). Samples, spiked with phosphonic acid were stored for 459 days (approximately 15 months). About 40 percent of phosphonic acid were recovered at the end of the storage period), and the procedural recovery was also 40 percent. The meeting could not conclude on the general integrity of residues in the citrus samples in this specific study and agreed that they could not be used to make residue recommendations.

Methods of analysis

The meeting received new information on an analytical method for the determination of phosphonic acid. The extraction of the method is based on the QuPPe-Method protocol and LC-MS/MS. Determination of phosphonic acid was validated with an LOQ of 1 mg/kg in oranges and mandarins. The meeting concluded

that the presented method was sufficiently validated and is suitable to quantify phosphonic acid residues in oranges and mandarins.

Results of supervised residue trials on crops

The meeting received data on supervised field trials following foliar application of Fosetyl-Al on rice and of potassium phosphonate in citrus fruits.

Citrus fruits – potassium phosphonates

Oranges

The 2017 JMPR meeting recommended a maximum residue level of 20 mg/kg for fosetyl-Al in Subgroup of oranges, sweet, sour based on a US GAP on citrus of 4 foliar sprays of up to 4.48 kg ai/ha, with a PHI of 0 days.

The GAP for potassium phosphonates from Spain and Portugal is two applications at BBCH 79–89, at a rate of 6 kg ai/ha (i.e. 4 kg phosphonic acid equivalents/ha) and a 14-day PHI, which is more critical than the US GAP.

A total of 8 trials with potassium phosphonates in oranges were available approximating the GAP rate and a 90-day interval and a 14-day PHI. The 1st application was conducted at flowering thus the meeting concluded that the contribution to the final residue is considered negligible and the trials are acceptable to estimate a maximum residue level and a STMR.

Total residues of phosphonic acid in whole fruits are (n = 8): 8.4 mg/kg, 9 mg/kg, 10 mg/kg, 15 mg/kg, 21 mg/kg, 22 (2) mg/kg and 26 mg/kg.

Total residues of phosphonic acid in pulp are (n = 3): 20 mg/kg, 23 mg/kg and 27 mg/kg.

Total residues of phosphonic acid in peel are (n = 3): 17 mg/kg, 21 mg/kg and 28 mg/kg.

Based on the dataset of 3 trials, a peeling factor of 1 (individual values: 1.04, 0.91 and 1.05) was derived, therefore residues in orange pulp for dietary risk assessment are similar with the ones in whole fruits.

Noting that orange is a representative crop for the subgroup of oranges, the meeting estimated a maximum residue level of 50 mg/kg and an STMR of 18 mg/kg for the Subgroup of oranges, sweet, sour (FC 0004) to replace its previous recommendation of 20 mg/kg.

Mandarins

Mandarins were previously evaluated in the 2017 JMPR with a US GAP for fosetyl-Al on citrus of up to 4 foliar sprays at 4.48 kg ai/ha, with a PHI of 12 hours and recommended a maximum residue level of 50 mg/kg for the subgroup of mandarins.

The current meeting received a GAP from Spain for potassium phosphonates of two foliar applications at BBCH 79–89, at a rate of 6 kg ai/ha (i.e. 4 kg phosphonic acid equivalents/ha) and a 24-day PHI.

A total of 8 trials in mandarins were available of which four trials approximated the cGAP rate, with a 90-day interval and a 21-day PHI. The 1st application was conducted at flowering, thus the meeting concluded that the contribution to the final residue is considered negligible.

Total residues of phosphonic acid in whole fruits are (n = 4): 10 mg/kg, 10 mg/kg, 21 mg/kg and 26 mg/kg.

The meeting agreed that four trials is not enough to estimate a new maximum residue level and confirms its previous recommendation of 50 mg/kg for the subgroup of mandarins.

Citrus fruits (post-harvest treatment) – potassium phosphonates

The post-harvest GAP for potassium phosphonates is from United States of America, including one application rate of 8988 mg a.i./L (i.e. 6000 mg/L phosphonic acid equivalents).

A total of 8 trials (2 in oranges, 2 in grapefruits, 2 in lemons and 2 in mandarins) were available matching the US GAP. In each trial, application was done in 3 different replicates by dipping, drenching or spraying the fruit with a solution of 6000 mg/L phosphorous acid equivalents.

Total residues of phosphonic acid in whole fruits are (n = 8): 7 mg/kg, 7.1 mg/kg, 8.8 mg/kg, 8.9 mg/kg, 12 (2) mg/kg, 14 mg/kg and 18 mg/kg. The meeting noted that residues were not stable for the storage period of the samples (see storage stability section) and the procedural recoveries were within the range of 40–92 percent, which in some cases is outside the acceptable range, therefore the meeting decided that the results are not suitable to estimate a maximum residue level and a STMR.

Rice – fosetyl-Al

The GAP for fosetyl-Al in rice in Thailand is one application at a rate of 450 g ai fosetyl-Al /ha, 45 days after sowing and a 30-day PHI.

Six supervised trials on rice conducted in Thailand matching this GAP were provided. Total residues in paddy rice grain were (n = 6): 6.98 mg/kg, 7.5 mg/kg, 12.3 mg/kg, 12.8 mg/kg, 20.1 mg/kg and 21.1 mg/kg.

The meeting estimated a maximum residue level of 40 mg/kg and an STMR of 12.55 mg/kg in whole rice grains.

Subsamples of rice whole grain were processed into polished rice. Total residues of polished rice grain were (n = 6): 3.6 mg/kg, 4.8 mg/kg, 6.4 mg/kg, 10.7 mg/kg, 15.9 mg/kg and 19.9 mg/kg.

The meeting estimated a maximum residue level of 40 mg/kg and an STMR-P of 8.55 mg/kg in polished rice grains.

Fate of residues during processing

Processing factors and residue estimates for citrus processed commodities are summarized in Table 5.22.1.

Table 5.22.1 Processing factors and residue estimates for phosphonic acid.

Raw commodity	STMR/MRL mg/kg	Processed commodity	Individual processing factors (PF)	Median/best estimate PF	STMR-P/ Median-P mg/kg	MRL-P mg/kg
Orange	18/50	Pasteurized juice	0.23, 0.29, 0.35,[a] 0.52, 0.57[a], 0.94,[a] 1.1,[a] 1.4[a]	0.55	9.8	–
		Dry pomace	0.45,[a] 0.77,[a] 2.03, 2.3, 3.4,[a] 3.9,[a] 4.6[a]	2.3	41.4	150
		Marmalade	0.31, 0.33; 0.46	0.33	5.9	–
		Sterilized canned fruit	0.18, 0.34, 0.58	0.34	6.1	–
		Essential oil	0.04; 0.04; 0.04	<0.04	0.68	–
Rice	40/12.55	Polished rice	0.51, 0.52, 0.64, 0.75, 0.83, 0.99	0.69	See section Results of supervised residue trials	See section Results of supervised residue trials

Notes:
[a] PF evaluated at 2017 JMPR.

Residues in animal commodities

Farm animal feeding studies

The magnitude of residue in animal commodities was investigated in the 2017 JMPR meeting. In the cattle study, animals form the 32-ppm dose group contained mean/maximum total residues were 0.29/0.3 mg/kg (kidney), 0.22/0.33 mg/kg (liver), 0.12/0.18 mg/kg (fat), 0.07/0.089 mg/kg (muscle) and a mean of 0.05 mg/kg in milk.

In the poultry study at the lowest dose group (14 ppm), phosphonic acid equivalent residues were not detected in kidney, liver, fat and muscle and were present in eggs at 0.039 mg/kg.

Estimated maximum and mean dietary burdens of livestock and animal commodities maximum residue levels

Dietary burdens were calculated for beef cattle, dairy cattle, broilers and laying poultry based on feed items evaluated by the JMPR. The dietary burdens, estimated using the 2018 OECD Feed diets listed in Appendix XIV Electronic attachments to the 2016 Edition of the FAO Manual, are presented in Annex 5.

In addition to the feed commodities considered in the 2019 JMPR, citrus dried pulp (41.4 mg/kg) and rice grain (12.6 mg/kg) need consideration with respect to livestock diets. Results of the estimated maximum and mean dietary burdens are summarized in Table 5.4.6.2.

Table 5.22.2 Estimated maximum and mean dietary burdens of farm animals (2019/2024)

	Livestock dietary burden, phosphonic acid, ppm of dry matter diet (2019/2024)							
	Japan		United States–Canada		European Union		Australia	
	Max.	Mean	Max.	Mean	Max.	Mean	Max.	Mean
Beef cattle	1.6/7	1.6/7	7.8/8	7.8/8	35/43.2[a]	35/43.2[c]	0/0	0/0
Dairy cattle	3.8/7	3.8/7	5.7/8.5	5.7/8.5	32/36.9[b]	32/36.9[d]	0/0	0/0
Poultry – broiler	0/2.9	0/2.9	0/0	0/0	0/7.2[e]	0/7.2[f]	0/0	0/0
Poultry – layer	0/2.9	0/2.9	0.1/0.1	0.1/0.1	0/7.2	0/7.2	0/0	0/0

Notes:
[a] Highest maximum beef or dairy cattle burden suitable for MRL estimates for mammalian tissues.
[b] Highest maximum dairy cattle burden suitable for MRL estimates for milk.
[c] Highest mean beef or dairy cattle burden suitable for STMR estimates for mammalian tissues.
[d] Highest mean dairy cattle burden suitable for STMR estimates for milk.
[e] Highest maximum poultry broiler or layer burden suitable for MRL estimates for poultry eggs and tissues.
[f] Highest mean poultry broiler or layer burden suitable for STMR estimates for poultry eggs and tissues.

Animal commodity maximum residue levels

Cattle

For maximum residue level estimation, the high total residues were calculated by extrapolating the maximum dietary burden (43.2 ppm) from the 32-ppm feeding level in the dairy cow feeding study and using the highest tissue concentrations of total residues in individual animals within the dose group.

The STMR values for the tissues were calculated by extrapolating the mean dietary burden (43.2 ppm) from the 32 ppm feeding level and using the mean tissue total residues from the dose group.

For milk, since both the mean and maximum dairy cow dietary burdens were 36.9 ppm, maximum residue levels and STMR estimations were obtained directly from the mean total residues in the milk from animals in the 36.9 ppm dose group (Table 5.22.3).

Table 5.22.3 Residue estimates for fosetyl aluminium in animal commodities

	Feed level (ppm) for milk residues	Total residues (mg eq/kg) in milk	Feed level (ppm) for tissue residues	Total residues (mg eq/kg)			
				Muscle	Liver	Kidney	Fat
MRL determination (beef or dairy cattle) – phosphonic acid							
Feeding study	32	0.05	32	0.086	0.33	0.3	0.18
–	100	0.06	100	0.06	0.28	0.6	0.22
Dietary burden/residue estimate	36.9	0.051	43.2	0.082	0.32	0.35	0.19
STMR determination (beef or dairy cattle) – phosphonic acid							
Feeding study	32	0.05	32	0.07	0.22	0.29	0.12
–	100	0.06	100	0.02	0.16	0.55	0.2
Dietary burden/residue estimate	36.9	0.051	43.2	0.062	0.21	0.33	0.13

Following the dietary burden calculation and the residues estimates in Table 5.22.3 and the new Codex Classifications for animal commodities (General consideration 2.4), the meeting estimates a maximum residue level of 0.15 mg/kg and a STMR of 0.062 mg/kg for Group of muscle (from mammals other than marine mammals), a maximum residue level of 0.3 mg/kg and a STMR of 0.13 mg/kg for Group of mammalian fats (except milk fats), a maximum residue level of 0.5 mg/kg for Group of edible offal (mammalian) and a STMR of 0.33 mg/kg for kidney and 0.21 mg/kg for liver and a maximum residue level of 0.1 mg/kg and a STMR of 0.051 mg/kg for Group of milks:

The meeting withdrew its previous recommendations for meat (from mammals other than marine mammals), mammalian fats (except milk fats), edible offal (mammalian) and milk.

Poultry

The meeting noted that the maximum and mean poultry dietary burden of 7.2 ppm was lower than the lowest dose level in the feeding studies (14 ppm) where no residues in tissues were detected and were present in eggs at 0.039 mg/kg.

Following the new Codex Classifications for animal commodities, the meeting estimated a maximum residue level of 0.05* mg/kg and a STMR of 0 for Group of avian muscle and Group of avian fats, Group of avian, edible offal and of 0.05 mg/kg and a STMR of 0.02 mg/kg for Group of eggs.

The meeting withdrew its previous recommendations for 0.05* mg/kg for poultry meat, poultry fat, poultry edible offal and eggs.

Recommendations

On the basis of the data from supervised trials. the meeting concluded that the residue levels listed in Table 5.22.4 and Annex 1 are suitable for establishing maximum residue limits and for dietary exposure assessment.

Definition of the residue (for compliance with the MRL and for estimation of dietary exposure) for plant commodities: sum of fosetyl, phosphonic acid and their salts, expressed as phosphonic acid.

Definition of the residue (for compliance with the MRL and for estimation of dietary exposure) for animal commodities: phosphonic acid.

The residue is not fat-soluble.

Table 5.22.4 Residue levels suitable for establishing maximum residue limits and for dietary exposure assessment

CCN	Commodity name	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)
		New	Previous	
OR 0001	Citrus oil, edible	–	–	0.68
MM 0105	Edible offal (mammalian)	W	0.5	–
PE 0112	Eggs	W	0.05*	–
PO 0111	Group of avian, edible offal of	0.05*	–	0
PF 0111	Group of avian fats	0.05*	–	0

CCN	Commodity name	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)
		New	Previous	
PM 0110	Group of avian muscle	0.05*	–	0
MO 0105	Group of edible offal (mammalian)	0.5	–	Liver: 0.21 Kidney: 0.33
PE 0112	Group of eggs	0.05	–	0.02
MF 0100	Group of mammalian fats (except milk fats)	0.3	–	0.13
ML 0106	Group of milks	0.1	–	0.051
MM 0095	Group of muscle (from mammals other than marine mammals)	0.15	–	0.062
MF 0100	Mammalian fats (except milk fats)	W	0.2	–
–	Marmalade	–		5.9
MM 0095	Meat (from mammals other than marine mammals)	W	0.15	–
MM 0106	Milks	W	0.1	–
AB 0004	Oranges, dried pulp	150	–	41.2
JF 0004	Orange, juice	–	–	9.8
PO 0111	Poultry edible offal	W	0.05*	–
PF 0111	Poultry fat	W	0.05*	–
PM 0110	Poultry meat	W	0.05*	
GC 0649	Rice	40	–	12.55
CM 1205	Rice, polished	40	–	8.55
–	Sterilized canned fruit	–	–	6.1
FC 0004	Subgroup of oranges, sweet, sour	50	20	18 (pulp)

Dietary risk assessment

Long-term dietary exposure

The ADI of 0–1 mg/kg bw for fosetyl aluminium also applied to phosphonic acid. The International Estimated Daily Intakes (IEDIs) for fosetyl aluminium/phosphonic acid were estimated for the 17 GEMS/Food Consumption Cluster Diets using the STMR or STMR-P values estimated by the previous and present JMPR. The results are shown in Annex 3 of the 2024 JMPR Report. The IEDIs ranged 0–30 percent of the maximum ADI.

The meeting concluded that the long-term intake of residues of fosetyl aluminium/phosphonic acid from uses considered by the JMPR is unlikely to present a public health concern.

Acute exposure

An ARfD for fosetyl aluminium and phosphonic acid is unnecessary. The meeting therefore concluded that the acute dietary exposure to residues of fosetyl aluminium and phosphonic acid from the uses considered is unlikely to present a public health concern.

5.23 Hexythiazox (176) (R)

5.23.1 Residue and analytical aspects

Hexythiazox is a non-systemic acaricide used for the control of phytophagous mites, acting as an ovicide, larvicide and nymphicide and applied at any stage of plant growth from budding to fruiting.

Hexythiazox was first evaluated by the JMPR in 1991 (T, R) and then evaluated again in 1994 (R), 1998 (R), 2008 (T), 2009 (R) and 2011 (R). An ADI of 0–0.03 mg/kg bw was established by the 2008 JMPR and it was concluded that an ARfD is unnecessary.

The 2009 JMPR recommended the following residue definition for hexythiazox:

- Definition of the residue for compliance with the MRL in plant commodities: *hexythiazox*.
- Definition for estimation of dietary intake for plant commodities: *sum of hexythiazox and all metabolites containing the trans-5-(4-chlorophenyl)-4-methyl-2-oxothiazolidine-moiety (PT-1-3), expressed as hexythiazox*.
- Definition for compliance with the MRL and for estimation of dietary intake for animal commodities: *sum of hexythiazox and all metabolites containing the trans-5-(4-chlorophenyl)-4-methyl-2-oxothiazolidine-moiety (PT-1-3), expressed as hexythiazox*.

The residue is fat-soluble.

Hexythiazox was scheduled at the 53rd Session of the CCPR for the evaluation of additional uses by the 2023 JMPR meeting and got postponed to the 2024 JMPR meeting.

The current meeting received new information on use patterns and supervised field trials for hexythiazox in raspberries and hops supported by additional analytical method data.

Methods of residue analysis

The current meeting received new information on method Meth-220, measuring hexythiazox following hydrolysis into PT-1-3. Samples are extracted with methanol:water (7:3), hydrolysed with 0.5 mol/L NaOH and cleaned via a C18 SPE column. Final determination is achieved by LC-MS/MS (m/z 228 → 168). The method was demonstrated being fit-for-purpose with a LOQ of 0.02 mg eq/kg in raspberry fruits, dried hops cones and processed products thereof (spent hops, yeast, flocs and beer).

Storage stability

The current meeting did not receive additional information on the storage stability of hexythiazox.

The 2009 meeting evaluated the storage stability of hexythiazox in various plant matrices and concluded that the residue is stable for at least 13 months, except for high acid commodities, for which the maximum period tested was three months. Field trial samples of raspberries were analysed within two months and are covered by this interval.

The 2011 JMPR evaluated additional storage stability data on hops matrices and beer and concluded that residues are stable for at least 25 months in hops (fresh and dry) and spent hops. In beer, significant decline was observed and a stability period of up to six months was concluded. Sampling periods in supervised field trials of 278 days (hops, dried cones) and 30 days in processing studies (spent hops, yeast, flocs and beer) are covered by these intervals.

Results of supervised residue trials

The meeting received information on use patterns and supervised residue trials for cane fruits and hops from the United States of America.

In trials on raspberries and hops, residues were analysed with a common moiety method measuring hexythiazox and all compounds containing the PT-1-3 structure, which addresses the residue definition for the estimation of the dietary exposure but not the residue definition for compliance with the MRL based on hexythiazox *per se*. However, the 2009 meeting concluded that "The residue following use of hexythiazox on crops is predominantly unchanged hexythiazox. After 30 days at least 70 percent of the total radioactivity was identified as parent substance mainly located on the plant surface.". PT-1-3 was not identified in plant samples but was considered as an analytical artefact following hydrolytic extraction conditions.

The current meeting concluded that application of the common moiety method in the supervised field trials can be used for the estimation of maximum residue levels based on hexythiazox only, considering that the results is an insignificant overestimation of parent residues.

Cane berries, subgroup of

The GAP for hexythiazox in cane berries in the United States of America involves one foliar spray of 0.28 kg ai/ha as an EW formulation and a PHI of 3 days.

Five supervised field trials conducted in the United States of America involved side-by-side application of two formulations at the same test site approximated the GAP (4 subplots in each trial).

Residues of hexythiazox in raspberry fruits following application of an EW formulation were (n = 5): 0.54 mg eq/kg, 0.89 mg eq/kg, 1.0 mg eq/kg, 1.2 mg eq/kg, 1.6 mg eq/kg.

Residues of hexythiazox in raspberry fruits following application of a WG formulation were (n = 5): 0.63 mg eq/kg, 1.0 mg eq/kg, 1.0 mg eq/kg, 1.1 mg eq/kg, 1.5 mg eq/kg.

Since both EW and WG are water-based formulations and result in residues distributions of no significant difference (Mann-Whitney-U-test), the highest single value from each trial from both formulations was selected for the estimation of maximum residue levels and the STMR.

Residues of hexythiazox in raspberry fruits following application of either an EW or WG formulation (highest trial residue) were (n = 5): 0.63 mg/kg, 1.0 mg/kg, <u>1.0</u> mg/kg, 1.2 mg/kg, 1.6 mg/kg.

The meeting noted that the GAP is for the cane berries. Since raspberries is a representative commodity for this subgroup, the meeting decided to extend its estimation to the subgroup of cane berries.

The meeting estimated a maximum residue level of 4 mg/kg and a STMR value of 1.0 mg eq/kg for hexythiazox in the subgroup of cane berries subgroup.

Hops

In 2011, the meeting estimated a maximum residue level of 3 mg/kg and a STMR of 0.79 mg eq/kg for hexythiazox in hops, dry, based on a GAP from Germany (a single application at 0.0045 kg ai/hL with a PHI of 28 days). The current meeting received a more critical US GAP involving one foliar spray of 0.21 kg ai/ha and a PHI of 30 days.

Supervised field trials conducted in the United States of America approximating the cGAP gave residues of hexythiazox in dried hops cones following application of an EC formulation were (n = 5): 0.82 mg eq/kg, 2.4 mg eq/kg, 6.0 mg eq/kg, 8.1 mg eq/kg, 9.1 mg eq/kg.

The meeting estimated a maximum residue level of 20 mg/kg to replace its previous recommendation and a STMR value of 6.0 mg/kg for hexythiazox in hops, dry.

Residues in processed commodities

The meeting received information on the magnitude of residues following processing of hops in addition to data evaluated by the 2011 JMPR. The processing factors and STMR-Ps are shown in Table 5.23.1.

Table 5.23.1 Processing factors and STMR-Ps for hexythiazox (determined as PT-1-3) in hops processed commodities

Raw commodity	Processed commodity	Individual processing factors	Mean or best estimate processing factor	STMR-P, mg/kg
Hops, dried cones (STMR: 6.0 mg/kg)	Spent hops	0.1, 0.1, 0.12,[a] 0.13,[a] 0.14,[a] 0.16[a]	0.125	0.75
	Beer	0.004, <0.03, <0.03,[a] <0.04,[a] <0.05,[a] <0.06[a]	<0.035	0.21

Notes:
[a] Values from the 2011 JMPR report.

Residues in animal commodities

No commodities evaluated by the current JMPR are utilized as animal feed. Consideration of residues in animal commodities is unnecessary.

Taking into account the 2009 JMPR report and the new Codex Classification for animal commodities (General consideration 2.4), the meeting estimated maximum residue levels of 0.05* mg/kg for the group of muscle (from mammals other than marine mammals) and group of avian muscle, and of 0.05 mg/kg for the group of mammalian fats (except milk fats), group of edible offal (mammalian), group of milks, group of milk fats, group of eggs, group of avian fat and group of avian, edible offal of.

The meeting also estimated a STMR of 0 mg/kg for group of muscle (from mammals other than marine mammals) and group of avian muscle, of 0.002 mg/kg for group of avian fat and group of eggs, and of

0.01 for group of edible offal (mammalian), group of avian, edible offal of, group of mammalian fats (except milk fats), group of milks and group of milk fats.

The meeting withdraws its previous recommendations of maximum residue levels for meat (mammalian except marine mammals) based on the fat, mammalian fats (except milk fats), milk fat, edible offal, mammalian, milk, eggs, poultry meat and poultry, edible offal of.

Recommendations

On the basis of the data from supervised trials. the meeting concluded that the residue levels listed in Table 5.23.2 and Annex 1 are suitable for establishing maximum residue limits and for dietary exposure assessment.

Definition of the residue for compliance with the MRL in plant commodities: hexythiazox.

Definition for estimation of dietary intake for plant commodities: sum of hexythiazox and all metabolites containing the trans-5-(4-chlorophenyl)-4-methyl-2-oxothiazolidine-moiety (PT-1-3), expressed as hexythiazox.

Definition for compliance with the MRL and for estimation of dietary intake for animal commodities: sum of hexythiazox and all metabolites containing the trans-5-(4-chlorophenyl)-4-methyl-2-oxothiazolidine-moiety (PT-1-3), expressed as hexythiazox.

The residue is fat-soluble.

Table 5.23.2 Residue levels suitable for establishing maximum residue limits and for dietary exposure assessments

		Recommended maximum residue limit (mg/kg)		STMR or STMR-P (mg/kg)
CCN	**Name**	**New**	**Previous**	
FB 2005	Cane berries, subgroup of	4	–	1.0
MO 0105	Edible offal, mammalian	W	0.05	–
PE 0112	Eggs	W	0.05	–
PO 0111	Group of avian, edible offal of	0.05	–	0.01
PF 0111	Group of avian fat	0.05	–	0.002
PM 0110	Group of avian muscle	0.05*	–	0
MO 0105	Group of edible offal, mammalian	0.05	–	0.01
PE 0112	Group of eggs	0.05	–	0.002
MF 0100	Group of mammalian fats (except milk fats)	0.05	–	0.01
FM 0106	Group of milk fats	0.05	–	0.01
ML 0106	Group of milks	0.05	–	0.01
MM 0095	Group of muscle (from mammals other than marine mammals)	0.05*	–	0
–	Hops, beer	–	–	0.21
DH 1100	Hops, dried	20	3	6.0

		Recommended maximum residue limit (mg/kg)		STMR or STMR-P (mg/kg)
CCN	**Name**	**New**	**Previous**	
–	Hops, spent	–	–	0.75
MF 0100	Mammalian fats (except milk fats)	W	0.05	–
MM 0095	Meat (from mammals other than marine mammals)	W	0.05	–
FM 0183	Milk fats	W	0.05	–
ML 0106	Milks	W	0.05	–
PO 0111	Poultry, edible offal of	W	0.05	–
PM 0110	Poultry meat	W	0.05* (F)	–

Dietary risk assessment

Long-term dietary exposure

The ADI for hexythiazox is 0–0.03 mg/kg bw. The International Estimated Daily Intakes (IEDIs) for hexythiazox were estimated for the 17 GEMS/Food Consumption Cluster Diets using the STMR or STMR-P values estimated by the JMPR. The results are shown in Annex 3 of the 2024 JMPR Report.

The IEDIs ranged from 0–4 percent of the maximum ADI. The meeting concluded that long-term dietary exposure to residues of hexythiazox from uses considered by the JMPR is unlikely to present a public health concern.

Acute dietary exposure

An ARfD for hexythiazox is unnecessary. The meeting therefore concluded that the acute dietary exposure to residues of hexythiazox from the uses considered is unlikely to present a public health concern.

5.24 Lambda-cyhalothrin (146) (T)

5.24.1 Toxicology

Lambda-cyhalothrin is the International Organization for Standardization approved common name for a 1:1 mixture of: (*S*)-α-cyano-3-phenoxybenzyl-(*Z*)-(1*R*,3*R*)-3-(2-chloro-3,3,3-trifluoroprop-1-enyl)-2,2-dimethylcyclopropane carboxylate, and (*R*)-α-cyano-3-phenoxybenzyl-(*Z*)-(1*S*,3*S*)-3-(2-chloro-3,3,3-trifluoroprop-1-enyl)-2,2-dimethylcyclopropane carboxylate (IUPAC).

It has the Chemical Abstracts Service (CAS) number 91465-08-6.

Lambda-cyhalothrin is a synthetic cyano-containing type II pyrethroid insecticide used to control a wide range of pests. The insecticidal mechanism of action of synthetic pyrethroids is primarily via an interaction with ion channels on axons of the peripheral and central nervous system. Lambda-cyhalothrin consists of two of the four enantiomers (i.e. the *cis* 1*R*α*S* and *cis* 1*S*α*S* enantiomeric pair) of cyhalothrin (CAS No. 68085-85-8).

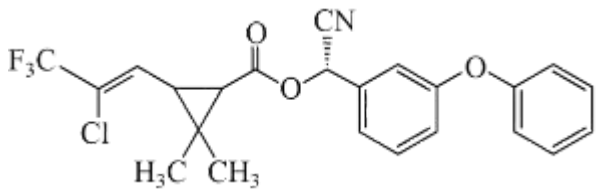
Cyhalothrin was evaluated by the Joint FAO/WHO Meeting on Pesticide Residues (JMPR) in 1984 and by the Joint FAO/WHO Expert Committee on Food Additives (JECFA) in 2000 and 2004. Lambda-cyhalothrin was previously evaluated by JMPR in 2007 and 2018. In 2007 the meeting established a group acceptable daily intake (ADI) of 0–0.02 mg/kg bw and an acute reference dose (ARfD) of 0.02 mg/kg bw for cyhalothrin and lambda-cyhalothrin, on the basis of a no-observed-adverse-effect level (NOAEL) of 0.5 mg/kg bw per day based on clinical signs of neurotoxicity, using a safety factor of 25. Because lambda-cyhalothrin is relatively rapidly absorbed and excreted and the neurotoxic effects, which are the most sensitive systemic effect of lambda-cyhalothrin/cyhalothrin, are rapidly reversible and dependent on the maximum concentration (C_{max}) achieved, the meeting considered it appropriate to adjust the safety factor for the reduced variability in C_{max} compared with the area under the concentration–time curve (AUC). In 2018, the meeting concluded that the new studies submitted did not have any impact on the ADI or the ARfD established in 2007.

Lambda-cyhalothrin was evaluated by the present meeting following a request from the Codex Committee on Pesticide Residues (CCPR) for additional maximum residue limits (MRLs).

The new studies on the toxicity of lambda-cyhalothrin consisted of an in vitro metabolism study, a seven-day dietary study, a 28-day dietary study, genotoxicity studies, a two-generation study, several studies on endocrine activity, an in vitro study for phototoxicity and studies on metabolites. The present meeting evaluated all newly provided studies. The results of these studies did not affect the previously established ADI or ARfD for lambda-cyhalothrin.

The newly submitted studies were performed in compliance with good laboratory practice (GLP) and were conducted in accordance with the relevant international test guidelines. Relevant peer-reviewed, published scientific papers were identified and evaluated.

Figure 5.24.1 Chemical structure of lambda-cyhalothrin



Biochemical aspects

An in vitro metabolism study was conducted using liver microsomes from humans, rats and dogs to compare the Phase I NADPH-dependent metabolism of lambda-cyhalothrin. The metabolism of lambda-cyhalothrin in liver microsomes was qualitatively similar with human, rat and dog preparations; with no unique human metabolites observed.

Toxicological data

In a 28-day study, rats were administrated lambda-cyhalothrin at dietary concentrations of 0 ppm, 50 ppm, 150 ppm or 300 ppm (equal to 0 mg/kg bw, 3.8 mg/kg bw, 12 mg/kg bw and 22 mg/kg bw per day for males, 0 mg/kg bw, 1.7 mg/kg bw, 12 mg/kg bw and 21 mg/kg bw per day for females). The NOAEL was 150 ppm (equal to 12 mg/kg bw per day) based on lower body-weight gain and mean daily food consumption at 300 ppm (equal to 21 mg/kg bw per day).

Additional genotoxicity studies in vitro and in vivo were negative. These studies show consistency with the previous evaluation.

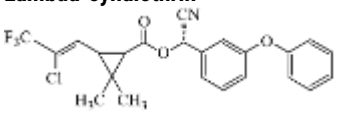
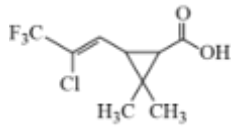
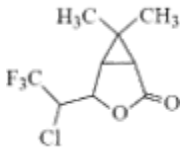
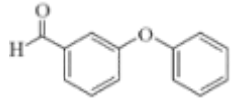
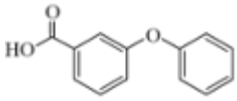
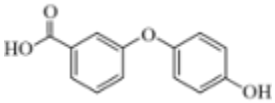
In a two-generation reproductive toxicity study, rats were administrated lambda-cyhalothrin at dietary concentrations of 0 ppm, 25/12.5 ppm, 60/30 ppm or 150/75 ppm (equal to 0 mg/kg bw, 1.9 mg/kg bw, 4.7 mg/kg bw or 12 mg/kg bw per day for the males; 0 mg/kg bw, 1.9 mg/kg bw, 4.5 mg/kg bw or 11 mg/kg bw per day for females, respectively). The NOAEL for parental and offspring toxicity was 60/30 ppm (equal to 4.5 mg/kg bw per day) based on lower body weight gain and food consumption at 150/75 ppm (equal to 11 mg/kg bw per day). The NOAEL for reproductive toxicity was 150/75 ppm (equal to 11 mg/kg bw per day) the highest dose tested. The meeting noted that the findings were consistent with those in the two-generation reproductive toxicity study on cyhalothrin reported in the 2007 evaluation, for which the parental and offspring NOAELs were 2.0 mg/kg bw per day based on body weight effects, and there was a NOAEL for reproductive toxicity of 6.7 mg/kg bw per day, the highest dose tested.

Studies on in vitro phototoxicity, in vitro and in vivo androgenicity, in vitro steroidogenesis activity and in vitro aromatase inhibition were provided and showed negative results.

Toxicological data on metabolites and/or degradates

A toxicological evaluation of the following metabolites was performed. Table 5.24.1 shows an overall summary of the toxicological characterization of the metabolites.

Table 5.24.1 Summary of toxicological characterization of plant/livestock metabolites

Compound, code and structure	Major rat metabolite (>10% AD)	Genotoxicity assessment	General toxicity	Toxicological reference value
Lambda-cyhalothrin 	Parent	Data Not genotoxic	Full dataset	ADI: 0–0.02 mg/kg bw ARfD: 0.02 mg/kg bw
R119890 	Yes >10% absorbed dose in bile	Ames: Negative (JMPR 2018)	Oral LD_{50}: >4900 mg/kg bw (JMPR 2018) 28-day in rat: NOAEL: 141 mg/kg bw per day	Not of toxicological concern
R947650 	No	Ames in vitro HPRT gene mutation and in vitro micronucleus: Negative	No information	TTC Cramer class III value: 1.5 µg/kg bw per day Acute TTC Cramer class III value: 5 µg/kg bw per day
R110649 3-Phenoxybenzaldehyde 	Yes This is an upstream metabolite of R41207.	No information	Oral LD_{50}: 1889 mg/kg bw (JMPR 2018) 28-day in rat: NOAEL: 99 mg/kg bw per day	Parent ADI and ARfD
R41207 3-Phenoxybenzoic acid 	Yes 7–10% of AD in bile and urine; combined level	In vitro HPRT gene mutation, and in vivo transgenic rodent mutation: Negative	Oral LD_{50}: >3000 mg/kg bw (JMPR 2018)	Parent ADI and ARfD
R175447 3-(4'-Hydroxyphenoxy) benzoic acid 	Yes >10% of AD in both bile and urine	In vitro HPRT gene mutation, in vitro mouse lymphoma gene mutation, in vitro micronucleus, in vivo micronucleus, in vivo transgenic rodent mutation: All negative	Oral LD_{50}: >2000 mg/kg bw 28-day in rat: NOAEL: 107 mg/kg bw per day	Parent ADI and ARfD

Notes: Metabolite R119890: (1*RS*,3*RS*)-3-[(1*Z*)-2-chloro-3,3,3-trifluoro-1-propen-1-yl]-2,2-dimethylcyclopropanecarboxylic acid; Metabolite R947650: 4-(1-chloro-2,2,2-trifluoroethyl)-6,6-dimethyl-3-oxa-bicyclo[3.1.0]hexan-2-one.

Microbiological aspects

No experimental data were submitted by the sponsor to address the possible impact of lambda-cyhalothrin residues on the human intestinal microbiome.

Human data

One epidemiological study reported an association between atrial septal defects and higher levels of cyhalothrin exposure. However, this study provides no support a causal association between cyhalothrin and birth defects owing to the potential for bias and lack of control for relevant confounders.

The meeting concluded that the existing database on lambda-cyhalothrin was adequate to characterize the potential hazards to the general population, including fetuses, infants and children.

Toxicological evaluation

The current meeting re-affirmed the ADI of 0–0.02 mg/kg bw* for lambda-cyhalothrin, established by at JMPR 2007.

The current meeting re-affirmed the ARfD of 0.02 mg/kg bw * for lambda-cyhalothrin, established at JMPR 2007.

An addendum to the toxicological monograph was prepared.

* Applies to lambda-cyhalothrin and its metabolites R110649, R41207 and R175447.

Table 5.24.2 Addendum to levels relevant to risk assessment of lambda-cyhalothrin

Species	Study	Effect	NOAEL	LOAEL
Rat	28-day study[a]	Toxicity	150 ppm, equal to 12 mg/kg bw per day	300 ppm, equal to 21 mg/kg bw per day
	Two-generation study of reproductive toxicity[a]	Reproductive toxicity	150/75 ppm, equal to 11 mg/kg bw per day[b]	–
		Parental toxicity	60/30 ppm, equal to 4.5 mg/kg bw per day	150/75 ppm, equal to 11 mg/kg bw per day
		Offspring toxicity	60/30 ppm, equal to 4.5 mg/kg bw per day	150/75 ppm, equal to 11 mg/kg bw per day

Notes:
[a] Dietary administration.
[b] Highest dose tested.

Table 5.24.3 Critical end-points for setting guidance values for exposure to lambda-cyhalothrin (addendum)

Short-term studies of toxicity	
Target/critical effect	Lower body-weight gain and food consumption
Lowest relevant oral NOAEL	12 mg/kg bw per day

Genotoxicity	Negative in vivo and in vitro
Reproductive toxicity	
Target/critical effect	Lower body-weight gain and food consumption
Lowest relevant parental NOAEL	4.5 mg/kg bw per day
Lowest relevant offspring NOAEL	4.5 mg/kg bw per day
Lowest relevant reproductive NOAEL	11 mg/kg bw per day, highest dose tested
Studies on toxicologically relevant metabolites	
R119890	28-day NOAEL: 141 mg/kg bw per day (rat)
R947650	Negative Ames, in vitro HPRT gene mutation and in vitro micronucleus
R110649	28-day NOAEL: 99 mg/kg bw per day (rat)
R41207	Negative in vitro HPRT gene mutation and in vivo transgenic rodent mutation
R175447	Acute oral LD_{50}: >2000 mg/kg bw (rat) 28-day: NOAEL 107 mg/kg bw per day (rat) Negative in vitro HPRT gene mutation, in vitro mouse lymphoma gene mutation, in vitro micronucleus, in vivo micronucleus and in vivo transgenic rodent mutation
Microbiological data	No relevant data submitted
Human data	No reports of any adverse health effects.

Table 5.24.4 Summary

	Value	Study	Safety factor
ADI[a]	0–0.02 mg/kg bw[b]	Rat, acute neurotoxicity, lambda-cyhalothrin; Dog, 1-year, lambda-cyhalothrin	25
ARfD[a]	0.02 mg/kg bw[b]	Rat, acute neurotoxicity, lambda-cyhalothrin; Dog, 1-year, lambda-cyhalothrin	25

Notes:

[a] A group ADI/ARfD for cyhalothrin and lambda-cyhalothrin.

[b] Applies to lambda-cyhalothrin and will apply to metabolites R110649, R41207 and R175447.

5.25 Maleic hydrazide (102) (T, R)

5.25.1 Toxicology

Maleic hydrazide was previously evaluated by the FAO/WHO Joint Meeting on Pesticide Residues (JMPR) in 1976, 1980, 1984 and 1996. Maleic hydrazide was considered for re-evaluation at the present meeting under the periodic review program of the Codex Committee on Pesticide Residues (CCPR). The sponsor did not submit an adequate database initially and even after requests to provide additional information there were still deficiencies.

The meeting re-emphasized the importance of a timely and complete submission of all relevant data to enable JMPR to perform a state-of-knowledge risk assessment.

The meeting concluded that the submitted toxicological database was insufficient to conduct a periodic re-evaluation of maleic hydrazide.

5.25.2 Residue and analytical aspects

Maleic-hydrazide is the common name for 6-hydroxy-2H-pyridazin-3-one or 1,2-dihydropyridazine-3,6-dione (IUPAC) as it can exist in two tautomeric forms. There is no ISO common name for this compound. The compound is used as a plant growth regulator.

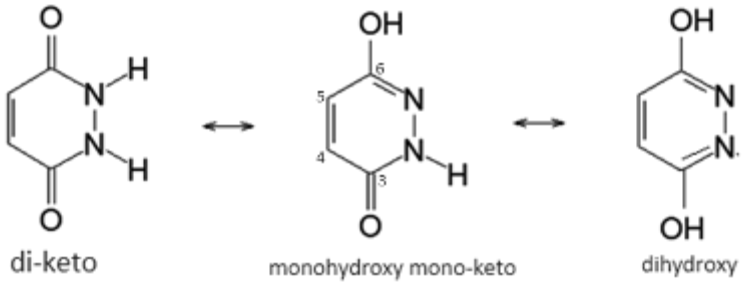
Maleic-hydrazide was first evaluated by JMPR in 1976. It was evaluated in 1996 (toxicology) and 1998 (residue) by JMPR in the periodic review programme.

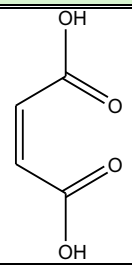
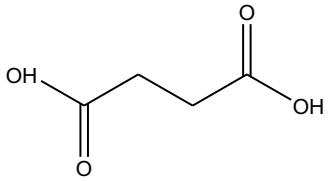
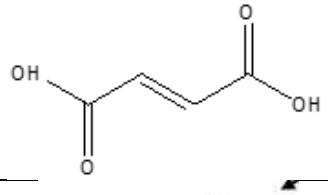
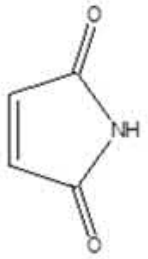
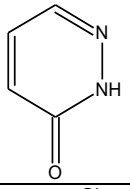
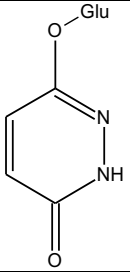
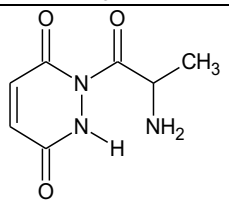
At the 54th session of CCPR (2023), maleic-hydrazide was scheduled for consideration by the 2024 JMPR in the periodic review programme. The meeting could not perform a toxicological evaluation of maleic-hydrazide due to insufficient database.

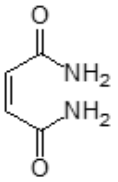
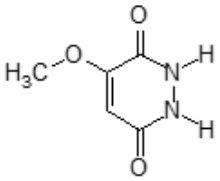
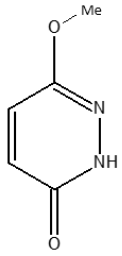
The meeting received data on plant and animal metabolism, environmental fate, methods of analysis, use patterns, residues resulting from supervised trials in garlic, onion, shallot, carrot and potato, fate of residues in storage and processing, and residues in animal products.

The compounds discussed in this appraisal are shown in Table 5.25.1.

Table 5.25.1 Names and structures for the compounds discussed in this appraisal

Name, chemical name, synonym	Structure
Maleic hydrazide	

Name, chemical name, synonym	Structure
Maleic acid (Z)-Butenedioic acid	
Succinic acid Butanedioic acid	
Fumaric acid (E)- Butenedioic acid	
Maleimide	
3-pyridazinone	
Maleic hydrazide glucoside MHG	
Maleic hydrazide alanine	

Name, chemical name, synonym	Structure
Maleic acid diamide	
Methoxymaleic hydrazide	
O-methylated maleic hydrazide	

With respect to the physical and chemical properties that may impact on residues in crops, maleic-hydrazide is not regarded as volatile, and it is highly water-soluble (log P_{ow} <–0.6).

Plant metabolism

In the metabolism study on onion, [3,6-^{14}C]-maleic-hydrazide was applied once to onion plants in outdoor condition as foliar spray at 2.33 kg ai/ha when approximately 50 percent of onion tops had fallen. Onions harvested at 0 and 14 days after treatment (DAT) and analysed by LSC showed the increase of radioactivity in onion bulbs (0 DAT: 0.015 mg eq/kg and 14 DAT: 0.11 mg eq/kg, dry weight basis). Onions (14 DAT) were homogenized and extracted with methanol:water (2:8), yielding 87 percent TRR, followed by 0.1 mol/L formic acid (6.8 percent TRR, 94 percent TRR in total extracted). In TLC analysis, the only band observed was maleic-hydrazide (not quantified).

Two metabolism studies on potato were available. In the first study, [3,6-^{14}C]-maleic-hydrazide was applied once to potato plants in outdoor condition as foliar spray at 5.62 or 3.37 kg ai/ha approximately three months from planting. Potatoes harvested 7 and 84 DAT were homogenized, extracted by methanol:water (2:8) (recovered 63–82 percent TRR), followed by 0.1 mol/L of formic acid (12–17 percent TRR, 76–99 percent TRR in total extracted) and analysed using HPLC or LC-MS. Compounds identified in the extracts were maleic-hydrazide (52–84 percent TRR), maleic-hydrazide glucoside (MHG, 6.4–13 percent TRR), fumaric acid (0.7–1.8 percent TRR), maleic acid (<0.1–1.5 percent TRR) and maleimide (<0.1–0.2 percent TRR).

In the second study, [3,6-^{14}C]-maleic-hydrazide was applied once to potato plants in outdoor condition as foliar spray at 3.28 kg ai/ha, harvested 0, 14 and 56 DAT and analysed by LSC. The radioactivity in tubers increased from 35 mg eq/kg (0 DAT) to 6.7 × 10^4 mg eq/kg (56 DAT, dry weight basis). Potato tubers (0 and 14 DAT) were extracted by methanol:water (2:8) (81–86 percent TRR) followed by 0.1 mol/L formic acid (4.2–7.4 percent TRR, 97–100 percent TRR in total). In TLC and HPLC analysis, the only maleic-hydrazide was observed (not quantified).

Animal metabolism

One metabolism study on cow, two studies on goat and three studies on hen were available to the meeting.

Ruminants

Cows (3 in each dose group) received 0.45 mg/kg, 1.35 mg/kg and 4.50 mg/kg bw/day (equivalent to 50 ppm, 150 ppm and 500 ppm of the feed diet, respectively) of [3,6-^{14}C]-maleic-hydrazide directly into the rumen of each cow twice daily for consecutive 27 days who were sacrificed 6 hours after the last dose. In milk (collected twice daily), radioactivity reached plateau on day 8 at 0.020 mg eq/kg (50 ppm), day 7 at 0.061 mg eq/kg (150 ppm) and day 3 at 0.20 mg eq/kg (500 ppm). Radioactivity in tissues analysed by combustion resulted in 0.34–3.9 mg eq/kg in kidneys, 0.08–0.8 mg eq/kg in liver, 0.04–0.10 mg eq/kg in fat and 0.02–0.09 mg eq/kg in muscle.

Milk and liver from the 500-ppm trial were further investigated. Milk was extracted with water:methanol (1:9) resulting in 50–53 percent TRR. From the extract, maleic-hydrazide (60–72 percent TRR) and 3-pyridazinone (10–17 percent TRR) were identified by HPLC. Liver homogenized with aqueous HCl (0.1 mol/L) and pepsin and incubated. Maleic-hydrazide (47 percent TRR) and 3-pyridazinone (7 percent TRR) were identified (extractability was 131 percent).

In the first study on goat, a lactating goat received 15 mg eq/kg bw/day of potassium salt of [3,6-^{14}C]-maleic-hydrazide (KMH) (equivalent to 590 ppm, expressed as maleic-hydrazide) twice a day for 3.5 consecutive days and sacrificed one day after the last dose. The radioactivity in milk (collected twice daily) increased to 0.88 mg eq/kg at day 3 am and then decreased. Tissue samples were homogenized and extracted with methanol:water (9:1). The extractability was 47 percent TRR in liver and 74–95 percent TRR in other tissues.

By the HPLC analysis after 5-month storage at –20 °C, maleic-hydrazide was found only in muscle (5.8 percent TRR). After hydrolysis with 4 mol/L of HCl (60 °C for 4 hours), maleic-hydrazide was released from kidney, liver, muscle and fat (83 percent, 39 percent, 61 percent and 83 percent TRR, respectively). Further treatment of pellet after extraction of liver with pepsin (37 °C for 96 hours) or 4 mol/L of HCl (60 °C for 5 hours), released additional maleic-hydrazide (20–23 percent TRR).

Milk was extracted by methanol (extractability of 83 percent), with maleic-hydrazide (free) and its conjugate accounting for 13 percent and 45 percent TRR. When the extract was treated with beta-glucuronidase, maleic-hydrazide and 3-pyridazinone were identified (68 and 22 percent TRR, respectively).

In the second study on goat, a lactating goat received 14.3 mg eq/kg bw/day of [3,6-^{14}C]-maleic-hydrazide (equivalent to 522 ppm) twice a day for 3.5 consecutive days and sacrificed 22–23 hours after the last dose. Milk was directly analysed by combustion and LSC. Liver, kidney, muscle and fat collected after

sacrifice were homogenized and analysed by combustion and LSC. Radioactivity in milk (collected twice daily) increased to day 3 (1.4 mg eq/kg), then decreased (1.1 mg eq/kg on day 4). Among tissues, radioactivity was the highest in kidney, followed by liver, muscle and fat (3.3 mg eq/kg, 1.6 mg eq/kg, 0.37 mg eq/kg and 0.052 mg eq/kg, respectively).

Tissues and milk were extracted with water-based solubilizer. The extractability was good (84–107 percent TRR). After the storage period of 18 months at −20 ºC, the extracts were then analysed by HPLC. In kidney, maleic-hydrazide was the highest concentration (88 percent TRR, 2.9 mg/kg), followed by 3-pyridazinone (10 percent TRR, 0.35 mg eq/kg), maleic acid diamide (4.4 percent TRR, 0.15 mg eq/kg) and alanine conjugate of maleic hydrazide (3.3 percent TRR, 0.11 mg eq/kg). In liver, muscle and fat, maleic-hydrazide, 3-pyridazinone, alanine conjugate of maleic hydrazide and maleic acid diamide were found (18–38 percent TRR, 0.020–0.30 mg eq/kg; 15–53 percent TRR, 0.013–0.24 mg eq/kg; ND–5.1 percent TRR, 0.004–0.11 mg eq/kg; and 4.9–9.5 percent TRR, 0.003–0.080 mg eq/kg, respectively). In milk, the majority was alanine conjugate of maleic hydrazide, followed by 3-pyridazinone, maleic hydrazide and maleic acid diamide (37 percent TRR, 0.41 mg eq/kg; 28 percent TRR, 0.32 mg eq/kg; 15 percent TRR, 0.17 mg eq/kg; and 2.8 percent TRR, 0.32 mg eq/kg, respectively).

Laying hens

In the first study, 6 hens received oral dose of [3,6-^{14}C]-KMH at 15 mg eq/kg bw/day (equivalent to 196 ppm expressed as maleic-hydrazide) for 3.5 consecutive days (twice daily) and sacrificed 24 hours after the last dose. Radioactivity in egg increased throughout the administration period (0.010 percent TRR, 0.33 mg eq/kg in egg white and 0.002 percent TRR, 0.18 mg eq/kg in egg yolk).

Tissues and eggs were extracted with methanol-water (8:2, v/v, extractability of 72–112 percent). After the storage period of 20 months at −20 ºC, the extracts were analysed by HPLC. Maleic-hydrazide was not a major component (up to 4 percent TRR) except in egg yolk (69 percent TRR, 0.18 mg/kg). O-methylated maleic-hydrazide was the major component in kidney, liver, muscle and egg white (28–60 percent TRR) and also found in egg yolk (7.3 percent TRR). Treatment of the extracts with HCl (2 mol/L) released additional maleic-hydrazide from tissue and egg extracts (7.0–27 percent TRR, <0.01–0.05 mg/kg in tissues, 31 percent TRR, 0.061 mg/kg in egg white and 71 percent TRR, 0.18 mg/kg in egg yolk), which suggested the existence of conjugated maleic-hydrazide.

In the second study, 19 hens received oral dose of [3,6-^{14}C]-KMH at 15.3 mg eq/kg bw/day (equivalent to 184 ppm expressed as maleic-hydrazide) for 7 consecutive days and sacrificed on the following day of the last dose. Tissues and eggs (day 6, white and yolk separately) were extracted with acetonitrile:methanol:water (1:1:1, extractability of 83–108 percent TRR). After the storage period of 3 months at −20 ºC, the extracts were analysed by HPLC. In liver, muscle, fat and egg white, the dominant radioactivity was 3-pyridazinone (79 percent TRR, 0.17 mg eq/kg; 84 percent TRR, 0.16 mg eq/kg; 74 percent TRR, 0.040 mg eq/kg; and 46 percent TRR, 0.16 mg eq/kg, respectively). Lower levels of maleic-hydrazide were found (7.1 percent TRR, 0.015 mg/kg; 1.7 percent TRR, 0.003 mg/kg; 4.7 percent TRR, 0.0026 mg/kg and 28 percent TRR, 0.097 mg/kg, respectively). In egg yolks, maleic-hydrazide and 3-pyridazinone were detected (54 percent TRR, 0.15 mg eq/kg; and 34 percent TRR, 0.092 mg eq/kg) in liver, muscle, fat and egg white, respectively.

In the third study on hens, four groups (10 hens per group, one group for control) received 1, 3 and 10 mg/kg bw/day (equivalent to 50 ppm, 150 ppm and 500 ppm, respectively) of [3,6-^{14}C]-maleic-hydrazide

orally twice daily for 28 consecutive days and sacrificed 6 hours after the last dose. In the 50-ppm group, radioactivity in egg reached plateau on day 9 (egg white: 0.014 mg eq/kg and egg yolk: 0.018 mg eq/kg), and radioactivity in tissues were highest in kidney (0.059 mg eq/kg), followed by muscle (0.014–0.022 mg eq/kg), liver (0.016 mg eq/kg) and fat (0.006–0.022 mg eq/kg). Eggs were extracted with methanol:water (8:2), yielding good extractability (84–102 percent). After the storage period of more than 48 months at –20 ºC, the extracts were analysed by HPLC. In eggs from the 500-ppm group, maleic-hydrazide and 3-pyridazinone were found at the similar levels (5.1–9.0 and 3.1–8.3 percent TRR, respectively).

Environmental fate

The meeting received information on degradation in aqueous solution, photochemical degradation in soil, degradation study in soil (both aerobic and anaerobic) and confined rotational crops.

Hydrolytic degradation in aqueous solution

Maleic-hydrazide was stable to hydrolysis at 50 °C in the dark between pH 4–9 for at least 5 days (>91 percent left).

Photochemical degradation in soil

After incubation with [14C]-maleic-hydrazide in dry soil, more than 70 percent of the applied radioactivity (AR) was left after 17 days regardless of irradiated or not. In wet soil, maleic-hydrazide was almost completely degraded after 408 hours of incubation regardless of irradiated or not (<1 percent AR left), resulting in CO2 (≥60 percent AR) and in unextracted soil (≥25 percent AR). DT50 values of maleic-hydrazide (converted to solar days) in light-exposed and dark control according to the single first order kinetics were 1.9 and 1.6 days in moist soil and 71 and >75 days in dry soil, respectively.

Aerobic degradation study in soil

When [3,6-^{14}C]-maleic-hydrazide or [4,5-^{14}C]-maleic-hydrazide was incubated in moist soil for 23 days, significant part of radioactivity was found as CO_2 (48–68 percent AR for [3,6-^{14}C]-maleic-hydrazide and 18–44 percent AR for [4,5-^{14}C]-maleic-hydrazide). [3,6-^{14}C]-Maleic-hydrazide disappeared in the soil after 59 days of incubation (≤1.3 percent AR). At the early stage (0–7 days), some amounts of maleic acid, succinic acid and maleimide were observed (≤11 percent AR, ≤1.4 percent AR and ≤2.5 percent AR, respectively). DT_{50} of maleic-hydrazide according to the single first order kinetics in moist soil was <0.1–3.7 days.

Confined rotational crops

[3,6-^{14}C]-maleic-hydrazide was applied to soil at 6.73 kg ai/ha and wheat was planted at plant back interval (PBI) of 30, 120, 274 and 364 days and harvested maturity. Total radioactivity was found in wheat grain planted PBI of 30 days (0.36 mg eq/kg), and lower in wheat grain planted PBI of 364 days (0.019 mg eq/kg).

Samples were extracted with chloroform (extractability of <15 percent) followed by water (extractability of 5–52 percent). The extracted compound was not identified, but was very polar, non-ionic and of low molecular weight. Maleic-hydrazide was not detected (LOD of 0.02 mg/kg).

Post-extract solids from wheat forage and straw (PBI of 30 and 120 days) were hydrolysed using enzyme (protease followed by cellulase) and chloric acid (1 mol/L). Enzyme and acid released 4.5–15 percent and 14–21 percent TRR, respectively. Radioactivity was found in cellulose (4.5–14 percent TRR) and lignin (5.6–15 percent TRR). When starch from wheat grain samples was analysed, 48–56 percent TRR of radioactivity were shown in glucose or starch.

Conclusion of environmental fate

Maleic-hydrazide was stable to hydrolysis, with DT_{50} values in wet aerobic soil of <0.1–3.7 days. In rotational crop study, maleic-hydrazide was not detected in wheat samples at 30-day PBI, and significant radioactivity was found in glucose, cellulose and lignin, suggesting breakdown of maleic-hydrazide and incorporation into natural plant constituents.

The meeting agreed that maleic-hydrazide was not persistent in soil and that residues of maleic-hydrazide are unlikely to carry over into follow-on crops at levels requiring consideration for maximum residue level estimate or for dietary risk assessment purposes.

Methods of analysis

The meeting received information on nine methods of analysis for maleic-hydrazide: three methods for free maleic-hydrazide, three for MHG and one for maleic-hydrazide (free and conjugated) in plant commodities, and one for maleic-hydrazide and one for maleic-hydrazide and 3-pyridazinone in animal products.

Plant commodities

Method 2002G extracted maleic-hydrazide with methanol containing formic acid and analysed with LC-MS/MS. The meeting confirmed that the method was validated for maleic-hydrazide (free) in onion, potato and carrot with an LOQ of 0.05 mg/kg.

Method AG/REP/66490/1 extracted maleic-hydrazide with methanol and analysed by HPLC with fluorescence detector. The meeting could not conclude that the method was suitable due to insufficient validation data.

MHTF-9003 extracted maleic-hydrazide with water and glycerol and analysed by UV absorption. The meeting could not conclude that the method was suitable due to due to insufficient validation data.

Methods D42608, 33340 and D33362 extracted MHG with methanol:water (1:9) containing ammonia and analysed with LC-MS/MS. The meeting confirmed that Methods D42608 and D33362 were validated for MHG in carrot with an LOQ of 0.1 mg/kg, and that Method 33340 was validated for MHG in garlics, shallots and potatoes with an LOQ of 0.1 mg/kg (0.039 mg eq/kg expressed as maleic-hydrazide).

Method AD/7725/CF extracted total maleic-hydrazide with aqueous NaOH (0.1 mol/L), followed by incubation with aqueous HCl (4 mol/L), and analysed by HPLC-UV. The meeting confirmed that the method is validated for maleic-hydrazide (free and conjugate) with and LOQ of 0.5 mg/kg.

Method AD/7725/CF with modification to omit hydrolysis process was used for the analysis of maleic-hydrazide (free) in some studies. The meeting considered that the method was not valid because the validation data were not available, and the effect of the co-existence of MHG in plant products was not clarified.

Animal commodities

Method 362628 extracted maleic-hydrazide with aqueous HCl (0.2 mol/L) followed by pepsin digestion, and analysed by HPLC-UV. The meeting confirmed that the method was validated for maleic-hydrazide in milk and egg with an LOQ of 0.5 mg/kg, but could not conclude that the method was suitable for muscle, liver, kidney and fat due to insufficient information on the performance.

Method 1427W-1 extracted maleic-hydrazide and 3-pyridazinone with acetonitrile-methanol-water or aqueous HCl (1.0 mol/L) and acetonitrile and analysed by LC-MS/MS. The meeting confirmed that the method is validated for maleic-hydrazide in milk and egg with an LOQ of 0.01 mg/kg and in muscle, fat, liver and kidney with an LOQ of 0.02 mg/kg. The meeting noted that there was no information on the applicability of this method to analyse alanine conjugate of maleic-hydrazide. The meeting also confirmed that the method is validated for 3-pyridazinone in milk and egg with an LOQ of 0.01 mg/kg and muscle and fat with an LOQ of 0.02 mg/kg. However, the meeting could not conclude that the method was suitable for 3-pyridazinone in liver and kidney because recoveries were too low (24–39 percent).

Stability of residues in stored analytical samples

In plant commodities, free maleic-hydrazide residues were stable for at least 13 months in carrot, onion and potato (high water content) when stored at –18 °C. MHG residues were stable for at least 13 months in carrot and onion but only up to 1 month in potato when stored at –18 °C.

In animal commodities, maleic-hydrazide residues were stable for at least 5 months in eggs and 3 months in other animal products when stored at –15 °C. The residues of 3-pyridazinone were stable for at least 3 months in milk, up to 1 month in egg, and less than 1 month in fat. The storage stability of 3-pyridazinone in muscle was not conclusive due to poor recovery (≤55 percent). No data were available on the stability of 3-pyridazinone in kidney and liver.

The available storage stability data adequately address storage durations and condition for samples from all residue studies evaluated by the meeting except for MHG in supervised residue trial on potato and 3-pyridazinone in animal feeding study (animal commodities other than milk).

Definition of the residue

Plant commodities

In the metabolism studies on onion and potato, maleic-hydrazide (free) was found in both crops (87 and 52–84 percent TRR, respectively). The meeting noted that suitable analytical methods exist to determine

maleic-hydrazide in plant commodities. The meeting considered that maleic-hydrazide (free) was a suitable marker for enforcement.

The meeting could not conclude on the definition of the residue for dietary exposure assessment for plant commodities since a toxicological evaluation for maleic hydrazide or its metabolites was not performed due to insufficiency of the database.

Animal commodities

Parent maleic-hydrazide was found in all commodities in metabolism studies on cow and goat in muscle, fat, liver, kidney and milk (25–35 percent, 26–38 percent, 12–47 percent, 29–88 percent, and 15–72 percent TRR, respectively) and laying hen in muscle, fat, liver, kidney, egg white and egg yolk (1.7–9.0 percent, 4.7 percent, 7.0 percent, 27 percent, 28–31 percent, and 54–71 percent TRR, respectively). The meeting noted that suitable analytical methods exist to determine maleic-hydrazide in animal commodities. The meeting considered that parent maleic-hydrazide was a suitable marker for enforcement.

The fact that maleic-hydrazide residues in muscle were at the almost same level as those in fat and that maleic-hydrazide was distributed almost evenly between cream and skim milk (0.388 mg/kg and 0.337 mg/kg, respectively) suggested that the residue is not fat-soluble.

The meeting could not conclude on the definition of the residue for dietary exposure assessment for animal commodities since a toxicological evaluation of maleic hydrazide or its metabolites was not performed due to insufficiency of the database.

Conclusion

The meeting established residue definition for maleic-hydrazide as follows:

- Definition of the residue for plant and animal commodities for compliance with the MRL: maleic-hydrazide (free).
- The residue is not fat-soluble.
- Definition of the residue for plant and animal commodities for dietary exposure assessment: not been concluded.

Results of supervised trials on crops

As not residue definition for dietary intake assessment was concluded, STMRs and HRs were not estimated.

Bulb vegetables

In some trials, bulb vegetables were lifted and field dried. As these are common commercial practices, the meeting decided to take into account the results from these trials.

According to decline studies, maleic-hydrazide concentrations in bulb vegetables increased after application. Since the highest residues were shown in various timing after application, the meeting

decided to use only data from decline study that includes the designated minimum pre-harvest interval (PHI) and shows peak residue to avoid underestimating residues.

Garlic

The critical GAP for maleic-hydrazide on garlic is in France, with a foliar application at 2.43 kg ai/ha with a 4-day PHI.

The meeting could not estimate the maximum residue level of maleic-hydrazide in garlic since no decline studies that showed peak residue approximating the cGAP was available. The meeting withdrew its previous recommendation.

Onion

The critical GAP for maleic-hydrazide on onion is in France, with is a foliar application at 2.43 kg ai/ha with a 4-day PHI.

In 17 trials, maleic-hydrazide (free and conjugate) in onion was analysed with a valid analytical method. However, maleic-hydrazide (free) was not analysed with a valid analytical method in any trial. Since metabolism study of onion indicated that MHG residue in onion was insignificant comparing to maleic-hydrazide, the meeting considered that maleic-hydrazide (free) residues occupied almost all of maleic-hydrazide (free and conjugate) residues. The meeting decided that the maximum residue level could be estimated using the residue data of maleic-hydrazide (free and conjugate).

In decline studies that showed peak residue approximating the cGAP, residues of maleic-hydrazide (free and conjugate) in onion were (n = 7): 0.6 mg eq/kg, 4.1 mg eq/kg, 4.2 mg eq/kg, 4.3 mg eq/kg, 5.5 mg eq/kg, 6.3 mg eq/kg and 7.0 mg eq/kg.

The meeting estimated maximum residue level for maleic-hydrazide (free) in onion of 15 mg/kg and confirms its previous recommendation.

Shallot

The critical GAP for maleic-hydrazide on shallot is in France is a foliar application at 2.43 kg ai/ha with a 4-day PHI.

In decline studies that showed peak residue approximating the cGAP, residues of maleic-hydrazide (free) in shallot were (n = 4): 5.3 mg/kg, 8.8 mg/kg, 9.3 mg/kg and 13 mg/kg.

The meeting could not estimate the maximum residue level of maleic-hydrazide in shallot due to insufficient number of trials. The meeting withdrew its previous recommendation.

Root and tuber vegetables

Carrot

The critical GAP for maleic-hydrazide on carrot are in Belgium, France and Kingdom of the Netherlands is a foliar application at 2.97 kg ai/ha with a 21-day PHI.

In the trials approximating the cGAP, residues of maleic-hydrazide (free) in carrot were (n = 15): 1.3 (2) mg/kg, 1.4 mg/kg, 1.6 mg/kg, 2.6 mg/kg, 2.7 mg/kg, 3.4 mg/kg, 3.8 mg/kg, 3.9 mg/kg, 4.2 mg/kg, 6.3 mg/kg, 8.2 mg/kg, 12 (2) mg/kg and 19 mg/kg.

The meeting estimated maximum residue level of maleic-hydrazide in carrot of 30 mg/kg.

Potato

The GAP for maleic-hydrazide on potato in the United States of America is a foliar application at 3.35 kg ai/ha 2–3 weeks after full bloom and no PHI was specified. Since the dates of full bloom were not recorded in the study reports, no trials could not be considered as approximating the GAP.

The GAP in Spain is a foliar application at 3.01 kg ai/ha with a PHI of 21 days.

In the trials approximating the GAP, residues of maleic-hydrazide (free) in potato from valid analytical methods were (n = 2): 6.4 mg/kg and 7.5 mg/kg.

The meeting could not estimate maximum residue level of maleic-hydrazide (free) in potato due to the insufficient number of trials. The meeting withdrew its previous recommendation.

Fates of residues during processing

High temperature hydrolysis study

Maleic-hydrazide in aqueous solutions was stable (≈100 percent TRR) during simulating pasteurization (pH 4, for 20 minutes at 90 °C), brewing, baking and boiling (pH 5, for 60 minutes at 100 °C) and sterilization (pH 6, for 20 minutes at 120 °C).

Residues in animal commodities

Farm animal feeding studies

A dairy cow feeding study was available to the meeting. Three groups of lactating cows (three cows per dose group) received maleic-hydrazide in a gelatine capsule at rates of 100 ppm, 300 ppm and 1000 ppm per a day for 28 consecutive days. The residue levels in milk from cows receiving 100 ppm went up to 0.46 mg/kg on day 14 for maleic-hydrazide and 0.28 mg/kg on day 21 for 3-pyridazinone, and then the residues decreased. The residues of maleic-hydrazide and 3-pyridazinone were evenly distributed in cream and skim milk (0.39 vs 0.34 mg/kg for maleic-hydrazide and 0.18 vs 0.18 mg/kg for 3-pyridazinone). Among tissues, the highest residue levels of maleic-hydrazide were observed in kidney, followed by liver, and the levels in muscle and fat were similar. The reported residue levels of 3-pyridazinone in tissues could not be used because samples were stored before analysis longer than the residues were proven to be stable, or information on storage stability was not available.

A feeding study on laying hen was available to the meeting. Three groups of laying hens (12 hens per dose group) received maleic-hydrazide in a gelatine capsule at rates of 50 ppm, 150 ppm and 500 ppm per day for 28 consecutive days. The residue levels of maleic-hydrazide in egg reached plateau around 1 week. The maleic-hydrazide residue was highest in fat, followed by muscle and liver. The reported residue levels

of 3-pyridazinone could not be used because samples were stored before analysis longer than the residues were proven to be stable, or information on storage stability was not available.

Farm animal dietary burden

Dietary burdens were calculated for beef cattle, dairy cattle, broilers and laying poultry based on feed items evaluated by the meeting. The dietary burdens, estimated using the OECD diets listed in Appendix IX of the 2016 edition of the FAO manual, are presented in Annex 5 and summarized in Table 5.25.2.

Table 5.25.2 Animal dietary burden for maleic-hydrazide (free)

	Animal dietary burden, ppm of dry matter diet							
	United States–Canada		European Union		Australia		Japan	
	Max.	Mean	Max.	Mean	Max.	Mean	Max.	Mean
Beef cattle	–	–	24	4.8	7.9	1.6	–	–
Dairy cattle	16	3.2	24[a]	4.8[b]	7.9	1.6	–	–
Poultry – broiler	–	–	16	3.2	–	–	–	–
Poultry – layer	–	–	16[c]	3.2[d]	–	–	–	–

Notes:
[a] Highest maximum beef or dairy cattle dietary burden suitable for MRL estimates for mammalian tissues and milk.
[b] Highest mean beef or dairy cattle dietary burden suitable for STMR estimates for mammalian tissues and milk.
[c] Highest maximum poultry dietary burden suitable for MRL estimates for poultry tissues and eggs.
[d] Highest mean poultry dietary burden suitable for STMR estimates for poultry tissues and eggs.

Animal commodity maximum residue levels

The estimation of the maximum residue levels in cattle and poultry commodities based on the feeding levels and dietary burden are shown in Table 5.25.3 and Table 5.25.4.

Table 5.25.3 Maximum residue levels of maleic-hydrazide in cattle commodities

	Feed level (ppm) for milk residues	Residues (mg/kg) in milk	Feed level (ppm) for tissue residues	Residues (mg/kg)			
				Muscle	Liver	Kidney	Fat
Feeding study	100	0.046	100	0.026	0.034	0.43	0.030
Dietary burden and estimate of highest residue	24	0.011	24	0.0062	0.0082	0.10	0.0072

Table 5.25.4 Maximum residue levels of maleic-hydrazide in poultry commodities

	Feed level (ppm) for eggs residues	Residues (mg/kg) in egg	Feed level (ppm) for tissue residues	Residues (mg/kg)		
				Muscle	Liver	Fat
Feeding study	50	0.042	50	0.021	<0.02	0.073
Dietary burden and estimate of highest residue	16	0.013	16	0.0067	<0.0064	0.023

The meeting estimated maximum residue levels for maleic-hydrazide (free) of 0.02 mg/kg for group of milk, 0.02* mg/kg for group of muscle (from mammals other than marine mammals) and group of mammalian fat (except milk fat), 0.15 mg/kg for group of edible offal, mammalian, 0.02 mg/kg for group of egg, 0.02* mg/kg for group of avian muscle and avian, edible offal of, and 0.03 mg/kg for avian fat.

Recommendations

On the basis of the data obtained from supervised trials, the meeting withdrew previous recommendations for maleic-hydrazine, listed in Table 5.25.5 and Annex 1. As definition of residues for dietary intake assessment was not concluded, no maximum residue levels could be recommended.

Definition of the residue for compliance with the MRL for plant and animal commodities: maleic-hydrazide (free).

Definition of the residue for plant and animal commodities for dietary exposure assessment: not concluded.

The residue is not fat-soluble.

Table 5.25.5 Recommendations for maleic-hydrazine

CCN	Commodity	Maximum residue level (mg/kg)	
		New	Previous
VA0381	Garlic	W	15
VA0385	Onion, bulb	W	15
VR0589	Potato	W	50
VA0388	Shallot	W	15

Dietary risk assessment

As the meeting could not perform a toxicological evaluation of maleic-hydrazide or its metabolites, a residue definition for dietary exposure assessment for plant and animal commodities was not concluded and no dietary risk assessment was conducted.

5.26 Methoprene (147) (R)

5.26.1 Residue and analytical aspects

Methoprene (ISO common name) is an insect growth regulator classified as a juvenile hormone mimic. It has insecticidal activity against a variety of insect species. Methoprene is used to control infestations in post-harvest stored cereal grain commodities and other stored commodities (including soya bean, sunflower and peanuts).

The IUPAC name for methoprene is isopropyl (*E,E*)-(*RS*)-11-methoxy-3,7,11-trimethyldodeca-2,4-dienoate. Methoprene was first evaluated by the JMPR in 1984, it received a periodic review in 2001 for toxicology and in 2005 for residues and was evaluated for additional uses in 2016, 2019 (extra meeting) and 2021 (extra meeting).

S-methoprene is the biologically active enantiomer in the racemic methoprene. An ADI of 0–0.09 mg/kg bw was established for racemic methoprene (R and S enantiomers in ratio 1:1), and a separate ADI of 0–0.05 mg/kg bw was established for S-methoprene (2001). An ARfD was considered unnecessary.

The residue definition for methoprene and for S-methoprene for plant and animal commodities, for both compliance with MRLs and dietary risk assessment is methoprene. The residue is fat-soluble.

Methoprene was scheduled at the 54th Session of the CCPR (2023) for evaluation of additional use patterns by the 2024 JMPR. The meeting received data on analytical methods, stability of residues, and residues trial data for post-harvest use and GAP information on tree nuts.

Analytical methods

The analytical method used for the analysis of tree nuts utilized methanol extraction with reverse-phase HPLC/UV. The method is not enantioselective. This method was validated for the determination of methoprene in sunflower seeds (2016 JMPR), unshelled peanuts (2019 extra JMPR meeting) and soya beans (2021 extra JMPR meeting). Additional validation data was provided to the meeting which demonstrated the suitability of the method for determining methoprene in tree nuts with a LOQ of 1.3 mg/kg.

Stability of pesticide residues in stored analytical samples

The meeting received additional information on storage stability of methoprene in shelled almonds and unshelled pistachios demonstrating a storage stability of at least 17 days.

The meeting agreed that the demonstrated storage stability on tree nuts covered the residue sample storage intervals used in the field trials considered by the current meeting.

Results of supervised residue trials

Tree nuts

A product labels was available from the United States of America, with the GAP for protection of stored food (any food) of a single application of S-methoprene at 2.4 g ai/tonne with no withholding period specified.

Six post-harvest supervised trials were conducted in the United States of America, comprising five trials on shelled almonds and one trial on unshelled pistachios, treated at the proposed GAP. Samples collected after treatment gave methoprene residues in rank order (n = 6): 2.0 (2) mg/kg, 2.1 (2) mg/kg and 2.2 (2) mg/kg.

S-methoprene is formulated as approximately 98.7 percent S-methoprene with the remainder being primarily R-methoprene. The analytical method used to determine the residues in the trials is not enantioselective and there is no data on interconversion of the isomers in plants. Due to the zero-day withholding period, no significant interconversion is expected. Even if interconversion from S- to R-methoprene could be anticipated, the assumption of negligible isomeric change represents the worst-case scenario in terms of human and animal exposure as S-methoprene has a lower ADI than the racemic mixture.

As in the trials, where S-methoprene was applied separately to different lots simulating commercial application practice, the results reflected a high recovery of applied methoprene.

(83 to 92 percent of the 2.4 g ai/tonne applied in all the trials), the meeting decided that the application rate determined the level of residue expected at the zero-day withholding period of the GAP and that residues of up to about 2.4 mg/kg can be anticipated.

The meeting estimated a maximum residue level of 3 (Po) mg/kg and an STMR of 2.1 mg/kg for methoprene in tree nuts.

Residues in animal commodities

Almond hulls can be fed to livestock; however, the available data do not cover almond hulls. Additionally, whole almonds (with hulls intact) are not expected to be stored or treated with methoprene; the meeting agreed that the previously estimated dietary burden is unchanged (JMPR 2021).

Following the new Codex Classifications for animal commodities (General consideration 2.4), the meeting withdrew its previous recommendation of 0.2 mg/kg for Meat (from mammals other than marine mammals) (fat basis), and estimated a maximum residue level of 0.02 mg/kg and a STMR of 0.007 for the Group of muscle (from mammals other than marine mammals). The meeting also estimated a maximum residue level of 0.2 mg/kg and a STMR of 0.092 mg/kg for Group of mammalian fats (except milk fats).

The meeting also withdrew its previous recommendations for edible offal (mammalian), and for milks and estimated a maximum residue level and STMR of 0.02 mg/kg and 0.014 mg/kg, respectively, for group of edible offal (mammalian), and a maximum residue level and STMR of 0.1 mg/kg and 0.044 mg/kg, respectively for group of milks.

Similarly, the meeting withdraws its previous recommendations for poultry meat, poultry, edible offal of and eggs and estimated a maximum residue level of 0.02 mg/kg and STMR of 0.007 mg/kg for group of avian muscle, group of avian fats and group of avian, edible offal of, and a maximum residue level and STMR of 0.02 mg/kg and 0.006 mg/kg, respectively, for group of eggs.

Recommendations

On the basis of the data obtained from supervised trials, the meeting concluded that the residue levels listed in Table 5.26.1 and Annex 1 are suitable for establishing maximum residue limits and dietary exposure assessments.

Definition of the residue for compliance with the MRL and dietary risk assessment for plant and animal commodities: *methoprene.*

The residue is fat-soluble.

Table 5.26.1 Residue levels suitable for establishing maximum residue limits and for exposure assessments

CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P mg/kg
		New	Previous	
MO 0105	Edible offal (mammalian)	W	0.02	–
PE 0112	Eggs	W	0.02	–
PO 0111	Group of avian, edible offal of	0.02	–	0.007
PF 0111	Group of avian fats	0.02	–	0.007
PM 0110	Group of avian muscle	0.02	–	0.007
MO 0105	Group of edible offal (mammalian)	0.02	–	0.014
PE 0112	Group of eggs	0.02	–	0.006
MF 0100	Group of mammalian fats (except milk fats)	0.2	–	0.092
ML 0106	Group of milks	0.1	–	0.044
MM 0095	Group of muscle (from mammals other than marine mammals)	0.02	–	0.007
MM 0095	Meat (from mammals other than marine mammals)	W	0.2 (fat)	–
ML 0106	Milks	W	0.1 (fat)	–
PO 0111	Poultry, edible offal of	W	0.02	–
PM 0110	Poultry meat	W	0.02	–
TN 0085	Tree nuts	3 (Po)	–	2.1

Note: Po = post-harvest use.

Dietary risk assessment

Long-term dietary exposure

The ADI for S-methoprene is 0–0.05 mg/kg bw. The International Estimated Daily Intakes (IEDIs) for methoprene were estimated for the 17 GEMS/Food Consumption Cluster Diets using the STMR values estimated by the JMPR. The results are shown in Annex 3 of the 2024 JMPR Report.

The IEDIs ranged from 10 to 60 percent of the maximum ADI. The meeting concluded that long-term dietary exposure to residues of methoprene from uses considered by the JMPR is unlikely to present a public health concern.

Acute dietary exposure

An ARfD for methoprene is unnecessary. The meeting therefore concluded that the acute dietary exposure to residues of methoprene from the uses considered is unlikely to present a public health concern.

5.27 Novaluron (217) (R)

5.27.1 Residue and analytical aspects

Novaluron ((±)-1-[3-chloro-4-(1,1,2-trifluoro-2-trifluoromethoxy ethoxy) phenyl]-3-(2,6-difluorobenzoyl)urea) (IUPAC) is an insecticide of the diflubenzoylurea class of insect-growth regulators. Novaluron is registered for use in a variety of crops globally. Novaluron was considered for the first time by the 2005 JMPR, and again in 2010. An ADI of 0–0.01 mg/kg bw was established by the 2005 JMPR for novaluron, while an ARfD was considered unnecessary.

The residue definition for compliance and for the estimation of dietary exposure in plant and livestock commodities is: novaluron. The residue is fat-soluble.

At the Fifty-fourth Session of the CCPR (2023), novaluron was scheduled for evaluation of new uses in 2024. The current meeting received additional analytical methods, storage stability data, GAP information and residue trial data from uses on rice and tree nuts.

Methods of analysis

Analytical methods were available for the analysis of novaluron in almonds and pecans and in rice and were acceptable. Samples were extracted with acetonitrile and quantified using LC-MS/MS with LOQs of 0.01 mg/kg.

Stability of pesticide residues in stored analytical samples

Information relating to the storage stability of novaluron residues in high water content (12 months), high oil content (5 months), high acid content (8 months) and high starch content (12 months) commodities was evaluated by the 2005 JMPR.

The intervals of demonstrated frozen storage stability encompass the range of storage periods for samples in the supervised residue trials.

In addition, frozen storage stability was demonstrated for novaluron in livestock commodities (muscle, fat, liver, kidney, eggs and milk) for at least 12 months.

Results of supervised residue trials on crops

The meeting received information on supervised trials for novaluron on rice, almonds and pecans.

Rice

The meeting considered whether the previously evaluated metabolism studies on crops (apples, cabbages, potatoes, cotton) adequately cover the use on paddy rice. The meeting noted water/sediment studies show rapid degradation to known cleavage products previously considered by the JMPR. As novaluron is detected as a residue in rice and can be used for compliance, there is no ARfD for novaluron and rice is a minor contributor to chronic exposure, the meeting considered there is no need for a metabolism study in paddy rice or a need to revisit the residue definition.

The critical GAP for novaluron on rice is in Thailand, which is three foliar applications of an SC formulation at 11.3 g ai/hL at a minimum interval of 7 days and a PHI of 30 days.

In trials matching cGAP residues of novaluron in rice grain (paddy rice) were (n = 6): 0.07 mg/kg, 0.10 mg/kg, 0.50 mg/kg, 0.70 mg/kg, 0.72 mg/kg, 2.5 mg/kg.

In trials matching cGAP residues of novaluron in polished rice (white rice) were (n = 6): <0.01 mg/kg, <0.01 mg/kg, <0.01 mg/kg, ≤0.01 mg/kg, 0.02 mg/kg, 0.08 mg/kg.

The meeting estimated a maximum residue level of 5 mg/kg and an STMR of 0.6 mg/kg for novaluron in rice grain (paddy rice).

The meeting estimated a maximum residue level of 0.15 mg/kg and an STMR-P of 0.01 mg/kg for novaluron in polished rice.

Tree nuts

The meeting received supervised residue trials on almonds and pecans. The critical GAP for novaluron on tree nuts in the United States of America is three foliar applications of an SC formulation at 200 g ai/ha at a minimum interval of 14 days and a PHI of 7 days (maximum seasonal application 600 g ai/ha).

In trials approximating GAP for almonds, residues of novaluron in nut meat were (n = 6): <0.01 mg/kg, 0.012 mg/kg, 0.013 mg/kg, 0.017 mg/kg, 0.022 mg/kg, 0.050 mg/kg.

In trials approximating GAP for pecans, residues of novaluron in nut meat were (n = 6): <0.01 mg/kg, <0.01 mg/kg, <0.01 mg/kg, <0.01 mg/kg, <0.01 mg/kg, 0.019 mg/kg.

The meeting noted that almonds and pecans are representative crops for the subgroup and concluded the dataset for almonds and pecans was sufficient for estimation of a maximum residue level for the group of tree nuts. The meeting agreed to use the dataset for almond to estimate a maximum residue level for tree nuts.

The meeting estimated a maximum residue level of 0.08 mg/kg and an STMR of 0.015 mg/kg for the group of tree nuts.

Residues in animal feeds

Almond hulls

The meeting received supervised residue trials on almonds. The critical GAP for novaluron on tree nuts in the United States of America is three foliar applications of an SC formulation at 200 g ai/ha at a minimum interval of 14 days and a PHI of 7 days (maximum seasonal application 600 g ai/ha).

In trials approximating GAP for almonds, residues of novaluron in hulls were (n = 6): 2.1 mg/kg, 2.5 mg/kg, 3.6 mg/kg, 5.3 mg/kg, 6.3 mg/kg, 7.9 mg/kg.

The meeting estimated a maximum residue level of 15 mg/kg, and median residues of 4.45 mg/kg for novaluron in almond hulls.

Residues in animal commodities

Farm animal dietary burden

The current meeting calculated dietary burdens based on residue estimates from previous meetings with updates to reflect feed commodities addressed by the current meeting. Potential primary crop feed items include feedstuffs from almond, apple, bean, cabbage, cotton, potato and rice crops. The dietary burdens were estimated using the most recent version of the OECD livestock dietary burden calculator and are presented in Annex 5 and summarized in Table 5.27.1.

Bean forage makes a considerable contribution to the diet of cattle in Australia and to a lesser extent in Europe. Preliminary dietary burden calculations with bean forage included in the diets of Australian and European cattle indicate that the residues in animal commodities lead to an exceedance of the ADI in at least one cluster diet. Therefore, a tiered approach was adopted, and bean forage (green) and cotton trash were not included in the livestock diet for Australia or the European Union because novaluron is not registered for use on beans in Australia or in European Union member states, and forages are not generally in international trade (JMPR Report 2009, General consideration 2.2).

Table 5.27.1 Summary of animal dietary burdens, as ppm of dry matter, for novaluron for maximum residue level setting

	Canada and United States		European Union		Australia		Japan	
Livestock	Max.	Mean	Max.	Mean	Max.	Mean	Max.	Mean
Beef cattle	1.642	0.562	3.00	2.52	3.14[a]	3.14[c]	0.002	0.002
Dairy cattle	1.82	1.82	1.8	1.35	2.79[b]	2.04[d]	0.001	0.001
Broiler chickens	0.148	0.148	0.014	0.014	0.369	0.369	–	–
Layer hens	0.148	0.148	0.174	0.054	0.369[e]	0.369[f]	–	–

Notes:

[a] Highest maximum dietary burden for beef or dairy cattle; suitable for estimating the maximum residue levels for mammalian meat, fat, and offal.

[b] Highest maximum dietary burden for dairy cattle; suitable for estimating the maximum residue levels for milk.

[c] Highest mean dietary burden for beef or dairy cattle suitable for estimating median residue levels for mammalian meat, fat, and offal.

[d] Highest mean dietary burden for dairy cattle suitable for estimating median residue levels for milk.

[e] Highest maximum dietary burden for broiler chickens or laying hens; suitable for estimating the maximum residue levels for poultry meat, fat, offal, and eggs.

[f] Highest mean dietary burden for laying hens suitable for estimating median residue levels for poultry meat, fat, offal, and eggs.

Animal commodity maximum residue levels

The estimation of the maximum residue levels in cattle and poultry commodities based on the feeding levels and dietary burden are shown in Table 5.27.2 and Table 5.27.3.

Table 5.27.2 Residues of novaluron in mammalian commodities

	Feed level (ppm) for milk residues	Novaluron residues (mg/kg) in milk[a]	Feed level (ppm) for tissue residues	Novaluron residues (mg/kg)			
				Muscle	Liver	Kidney	Fat
HR determination (beef or dairy cattle)							
Feeding study	2.6 8	0.13 (2.8) 0.38 (6.6)	2.6 8	0.09 0.34	0.14 0.41	0.14 0.35	2.25 6.8
Dietary burden and estimate of highest residue	2.79	0.1491 (2.934)	3.14	0.115	0.167	0.161	2.66
STMR determination (beef or dairy cattle)							
Feeding study	0.35 2.6	0.05 (0.94) 0.14 (2.8)	2.6 8	0.08 0.24	0.13 0.31	0.13 0.33	0.51 1.4
Dietary burden and estimate of highest residue	2.04	0.1176 (2.337)	3.14	0.096	0.148	0.15	0.599

Note:
[a] Figures in brackets are for cream.

Table 5.27.3 Residues of novaluron in avian commodities

	Feed level (ppm) for egg residues	Novaluron residues (mg/kg) in eggs	Feed level (ppm) for tissue residues	Novaluron residues (mg/kg)			
				Muscle	Liver	Kidney	Fat
HR determination							
Feeding study	0.36	0.256	0.36	0.031	0.096	–	0.988
Dietary burden and estimate of highest residue	0.369	0.262	0.369	0.0318	0.0984	–	1.0127
STMR determination							
Feeding study	0.36	0.18	0.36	0.029	0.092	–	0.897
Dietary burden and estimate of highest residue	0.369	0.1845	0.36	0.0297	0.0943	–	0.919

Taking into account the new Codex Classification for animal commodities (General consideration 2.4), the meeting estimated maximum residue levels of 0.2 mg/kg for group of milks, group of muscle (from mammals other than marine mammals) and group of edible offal (mammalian) and of 3 mg/kg for group of milk fats and group of mammalian fats (except milk fats)

The meeting also estimated STMRs for milk, milk fat, muscle, mammalian fats and edible offal of, of 0.1176 mg/kg, 2.337 mg/kg, 0.096 mg/kg, 0.599 mg/kg and 0.15 mg/kg, respectively.

The meeting estimated maximum residue levels of 0.1 mg/kg for group of avian, edible offal, of 0.3 mg/kg for group of eggs, of 1.5 mg/kg for group of avian fats and of 0.04 mg/kg for group of avian muscle. The meeting also estimated STMRs for group of eggs, avian muscle, avian edible offal, and avian fats of 0.1845 mg/kg, 0.0297 mg/kg, 0.0943 mg/kg and 0.919 mg/kg, respectively.

The meeting withdrew its previous recommendations for edible offal (mammalian), eggs, meat (from mammals other than marine mammals), milk fats, milks, poultry edible offal and poultry meat.

Recommendations

Based on the data obtained from supervised trials, the meeting concluded that the residue levels listed in Table 5.27.4 and Annex 1 are suitable for establishing maximum residue limits and for estimates of dietary exposure.

Definition of the residue for compliance with the MRL: *novaluron.*

Definition of the residue for dietary risk assessment for plant and animal commodities: *novaluron*.

The residue is fat-soluble.

Table 5.27.4 Residue levels suitable for establishing maximum residue limits and for dietary exposure assessments

CCN	Commodity	Recommended maximum residue levels (mg/kg)		STMR or STMR-P mg/kg	HR or HR-P mg/kg
		New	Previous		
AM 0660	Almond hulls	15	–	4.46 (median)	–
MO 0105	Edible offal (mammalian)	W	0.7	–	–
PE 0112	Eggs	W	0.1	–	–
PO 0111	Group of avian, edible offal of	0.1	–	0.0943	–
PF 0111	Group of avian fats	1.5	–	0.919	–
PM 0110	Group of avian muscle	0.04	–	0.0297	–
MO 0105	Group of edible offal (mammalian)	0.2	–	0.15	–
PE 0112	Group of eggs	0.3	–	0.1845	–
MF 0100	Group of mammalian fats (except milk fats)	3	–	0.599	–
FM 0106	Group of milk fats	3	–	2.337	–
ML 0106	Group of milks	0.2	_	0.1176	–
MM 0095	Group of muscle (from mammals other than marine mammals)	0.2	–	0.096	–
TN 0085	Group of tree nuts	0.08	_	0.015	–
MM 0095	Meat (from mammals other than marine mammals)	W	10 (fat)	–	–
FM 0183	Milk fats	W	7	–	–
ML 0106	Milks	W	0.4	–	–
PO0111	Poultry, edible offal of	W	0.1	–	–
PM0110	Poultry meat	W	0.5 (fat)	–	–
GC0649	Rice	5	–	0.6	–
CM1205	Rice, polished	0.15	–	0.015	–

Dietary risk assessment

Long-term dietary exposure

The ADI for novaluron is 0–0.01 mg/kg bw. The IEDIs for novaluron were estimated for the 17 GEMS/Food Consumption Cluster Diets using the STMR or STMR-P values estimated by the JMPR. The results are shown in Annex 3 of the 2024 JMPR Report.

The IEDIs ranged from 9–40 percent of the maximum ADI. The meeting concluded that long-term dietary exposure to residues of novaluron from uses considered by the JMPR is unlikely to present a public health concern.

Acute dietary exposure

An ARfD for novaluron is unnecessary. The meeting concluded that the acute dietary exposure to residues of novaluron, from uses considered by the present meeting, is unlikely to present a public health concern.

5.28 Permethrin (120)** (T)

5.28.1 Toxicology

Permethrin was previously evaluated by the FAO/WHO Joint Meeting on Pesticide Residues (JMPR) in 1979, 1981, 1982, 1987, 1999 and 2002. Permethrin was considered for re-evaluation at the present meeting under the period review programme of the Codex Committee on Pesticide Residues (CCPR). Permethrin was originally scheduled for re-evaluation during the 2023 meeting. However, during the 2023 meeting it was concluded that insufficient information from public literature, known to be extensive and relevant, was submitted and the dossier did not permit a substantive re-evaluation to be performed.

Permethrin was considered for re-evaluation at the present meeting, but the sponsor did not submit the dossier in time. Furthermore, the additional information provided from public literature focused only on carcinogenicity and epidemiology, whereas literature studies on other end-points relevant to the risk assessment (for example neurotoxicology) were not provided.

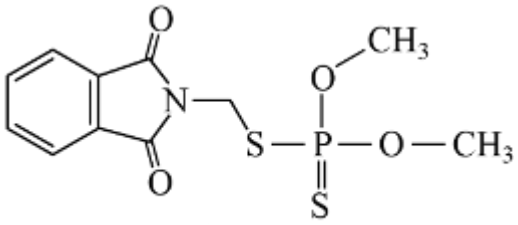
The meeting concluded that the dossier was insufficient to permit a substantive re-evaluation to be performed. The meeting re-emphasized the importance of timely and complete submissions of all relevant data to enable the JMPR to perform a state-of-knowledge risk assessment.

5.29 Phosmet (103)** (T, R)

5.29.1 Toxicology

Phosmet is the International Organization for Standardization approved name for *O*,*O*-dimethyl-*S*-phthalimidomethyl phosphorodithioate, for which the Chemical Abstracts Service number is 732-11-6. Phosmet, a propesticide which is metabolized to phosmet-oxon, the toxic agent, was previously evaluated by JMPR in 1978, 1979, 1994, 1998 and 2003. The current acceptable daily intake (ADI) is 0–0.01 mg/kg bw per day and the current acute reference dose (ARfD) is 0.2 mg/kg bw per day. It was reviewed by the present meeting as part of the periodic review programme of the Codex Committee on Pesticide Residues (CCPR). Several previously considered studies were performed before good laboratory practice (GLP) was established and had methodologically inadequate measurement of acetylcholinesterase (AChE) activity. However, studies critical to the current determination of the health-based guidance values (HBGVs) were of adequate quality, were adequately reported, were generally conducted in accordance with relevant test guidelines and used suitable methods of measuring AChE activity. A literature search was conducted by the monographer and published literature of sufficient quality and relevance was included as part of the evaluation. Overall the available database was sufficient for evaluation.

Figure 5.29.1 Chemical structure of phosmet



Biochemical aspects

In rats administered single doses of phosmet, by gavage, at up to 25 mg/kg bw, plasma radioactivity derived from phosmet was rapidly absorbed with a time to maximum concentration (T_{max}) of 0.5 hours. Following absorption, radioactivity derived from phosmet was widely distributed, with most tissues containing low levels of radioactivity. The highest levels of radioactivity occurred in whole blood. Within blood, the highest levels of radioactivity were associated with erythrocytes. Based on in vitro studies, conversion of phosmet to phosmet-oxon (bioactivation) was rapid. In humans both intestinal and liver microsomes can bioactivate phosmet. However, the magnitude of intestinal bioactivation is comparatively small. There were no human-specific or human disproportionate hepatocyte-derived metabolites in vitro. In vivo phosmet metabolism in rats following bioactivation proceeds via hydrolysis and oxidation. Two major urinary metabolites, *N*-(methylsulfinylmethyl)phthalamic acid and *N*-(methylsulfonylmethyl)phthalamic acid, are formed in rats. Excretion of phosmet-derived radioactivity by rats following gavage dosing was rapid with up to about 90 percent of the administered radioactivity being eliminated in the urine and faeces by 24 hours following dosing. Repeated oral dosing resulted in

no toxicologically important changes in the pattern of excretion. There was no evidence of accumulation of phosmet-derived radioactivity in any of the evaluated tissues except in packed red blood cells.

Toxicological data

The acute oral median lethal dose (LD_{50}) for phosmet was 113–230 mg/kg bw in rats, and the dermal LD_{50} was greater than 1000 mg/kg bw.in rats), and greater than 5000 mg/kg bw in rabbits. The inhalation median lethal concentration (LC_{50}) was greater than 0.15 mg/L. In rabbits phosmet was not irritating to the skin, but was irritating to the eyes. Phosmet was not sensitizing in a Buehler test in guinea pigs.

The critical effect of phosmet in repeat-dose toxicology studies was the inhibition of AChE activity.

In a two-year carcinogenicity study, mice were fed phosmet in the diet at concentrations of 0 ppm, 5 ppm, 25 ppm or 100 ppm (equal to 0 mg/kg bw, 1 mg/kg bw, 4 mg/kg bw and 14 mg/kg bw per day for males, 0 mg/kg bw, 1.2 mg/kg bw, 5 mg/kg bw and 18 mg/kg bw per day for females). A no-observed-adverse effect level (NOAEL) for toxicity could not be determined due to the unreliability of the method used to measure AChE activity. The NOAEL for carcinogenesis was 25 ppm (equal to 4 mg/kg bw per day) due to an increased incidence of hepatic adenomas in males, and mammary carcinomas in females, compared to concurrent and historical controls.

In a two-year combined chronic toxicity and carcinogenicity study rats were fed phosmet in the diet at 0 ppm, 20 ppm, 40 ppm or 200 ppm (equal to 0 mg/kg bw, 1.1 mg/kg bw, 1.8 mg/kg bw and 9.4 mg/kg bw per day for males, 0 mg/kg bw, 1.1 mg/kg bw, 2.1 mg/kg bw and 10.9 mg/kg bw per day for females). The NOAEL for toxicity was 40 ppm (equal to 1.8 mg/kg bw per day) due to a greater than 20 percent decrease in erythrocyte AChE activity, combined with an increased incidence and severity of hepatic fatty change at dietary concentrations of 200 ppm (equal to 9.4 mg/kg bw per day). The NOAEL for carcinogenesis was 200 ppm (equal to 9.4 mg/kg bw per day) the highest dose tested.

The meeting concluded that phosmet is carcinogenic in mice (liver in males, mammary gland in females), but not in rats.

Phosmet was tested for genotoxicity in adequate range of in vitro and in vivo assays. Phosmet was consistently genotoxic in bacteria but was not genotoxic in vivo in mammals.

The meeting concluded that phosmet is unlikely to be genotoxic in vivo.

Based on the lack of genotoxicity in vivo, the fact that neoplasia occurred only in one species (mice) at the highest dietary concentration tested, and that the meeting considered that phosmet has a dose-threshold mode of action for carcinogenesis in the mouse, the meeting concluded that phosmet is unlikely to pose a carcinogenic risk to humans from the diet.

In a two-generation reproductive toxicity study rats were exposed to phosmet in the diet at 0 ppm, 20 ppm, 80 ppm or 300 ppm (equal to 0 mg/kg bw, 0.8 mg/kg bw, 3 mg/kg bw and 11 mg/kg bw per day for males, 0 mg/kg bw, 1 mg/kg bw, 4 mg/kg bw and 14 mg/kg bw per day for females). The NOAEL for reproductive toxicity was 20 ppm (equal to the lowest achieved intake of 0.8 mg/kg bw per day) based on a significantly reduced fertility index in the F0 generation at 80 ppm (equal to the lowest achieved intake of 3 mg/kg bw per day). The NOAEL for parental toxicity was 20 ppm (equal to 0.8 mg/kg bw per day) based on greater than 20 percent inhibition of erythrocyte AChE activity at 80 ppm (equal to the lowest achieved intake of

3 mg/kg bw per day). The NOAEL for offspring toxicity was 80 ppm (equal to 3 mg/kg bw per day) due to a significantly reduced total number of pups born live, reduced postpartum survival, reduced survival during the lactation period and reduced mean pup weights by litter, at 300 ppm (equal to 11 mg/kg bw per day, but AChE activities were not measured in the offspring cohorts.

In a prenatal developmental toxicity study pregnant rats were gavaged with phosmet at 0, 5, 10 or 15 mg/kg bw per day over gestational days (GDs) 7–16. The NOAEL for maternal toxicity was 5 mg/kg bw per day based on a significant reduction of body weight gain at 10 mg/kg bw per day. The NOAEL for embryo/fetal toxicity was 15 mg/kg bw per day, the highest dose tested.

In a prenatal developmental toxicity study pregnant female rabbits were gavaged with phosmet at 0 mg/kg bw, 2 mg/kg bw, 5 mg/kg bw or 15 mg/kg bw per day from GD 7 to 19. The maternal NOAEL was 5 mg/kg bw per day due to reduction in mean body weight gain over study days 10–13, at the next highest dose of 15 mg/kg bw per day. The embryo/fetal NOAEL was 15 mg/kg bw per day, the highest dose tested.

The meeting concluded that phosmet is not teratogenic.

Phosmet did not induce delayed neuropathy.

In an acute neurotoxicity study, rats were gavaged with phosmet at 0 mg/kg bw, 3.0 mg/kg bw, 4.5 mg/kg bw or 22.5 mg/kg bw. The NOAEL was 4.5 mg/kg bw due to inhibition of erythrocyte and brain AChE and transient effects on motor activity, at 22.5 mg/kg bw.

In a repeat-exposure neurotoxicity study rats were fed phosmet incorporated into the diet at 0 ppm, 25 ppm, 50 ppm or 150 ppm (equal to 0 mg/kg bw, 1.5 mg/kg bw, 2.7 mg/kg bw and 9.4 mg/kg bw per day for males, 0 mg/kg bw, 1.6 mg/kg bw, 3.1 mg/kg bw and 11.0 mg/kg bw per day for females) for 13 weeks. The LOAEL was 25 ppm (equal to 1.6 mg/kg bw per day) the lowest dose tested, due to significant inhibition of brain AChE activity.

In acute comparative sensitivity study groups of male and female postpartum day (PPD) 11 pups, and male and female adult rats both gavaged with phosmet at 0 mg/kg bw, 2.5 mg/kg bw, 5.0 mg/kg bw or 10.0 mg/kg bw. The NOAEL for PPD 11 pups was 2.5 mg/kg bw and the NOAEL for the adult rats was 5.0 mg/kg bw based on inhibition of erythrocyte AChE activity.

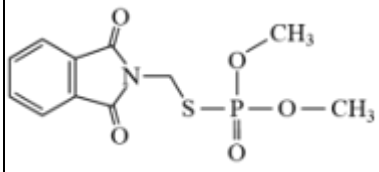
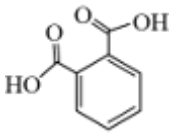
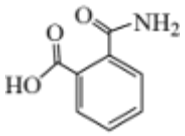
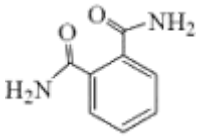
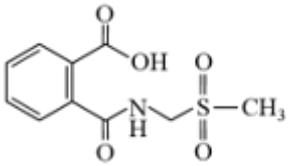
In a repeat-dose comparative sensitivity study groups of male and female PPD 11 pups and male and female adult rats were gavaged with phosmet at 0 mg/kg bw, 1.25 mg/kg bw, 2.5 mg/kg bw or 5.0 mg/kg bw per day for seven consecutive days. The LOAEL for PND 17 pups and adults was 1.25 mg/kg bw per day, the lowest dose tested, due to inhibition of erythrocyte AChE.

The meeting concluded that phosmet is neurotoxic.

No immunotoxicology studies were submitted. No indications of immunotoxicity were seen in the routine studies. Based on the available data, the meeting concluded that phosmet is unlikely to be immunotoxic.

Table 5.29.1 Toxicological data on metabolites and/or degradants

Compound, codes and structure	**Rat ADME** Toxicity covered by toxicological properties of parent compound	**Genotoxicity assessment** (data, QSAR read-across)	**General toxicity**	**HBGVs**

	(content in rat biofluids >10%absorbed dose or 10%TRR)?			
Phosmet-oxon 	Neurotoxically active chemical form	Not genotoxic in vivo	More toxic than phosmet	6x potency factor compared to phosmet for ADI 25x potency factor compared to phosmet for ARfD
Phthalic acid (and its anhydride) 	See folpet report item			
Phthalamic acid 	See folpet report item			
Phthalamide (and its *N*-glucosyl conjugate) 	Not of toxicological concern; See folpet report item.			
***N*-(methylsulfonylmethyl) phthalamic acid** 	Major metabolite of phosmet excreted in urine at up to 26% of the administered dose	Covered by parent	Covered by parent	Covered by parent

Phosmet-oxon

In acute comparative sensitivity study groups of male and female PPD 11 pups and male and female adult rats gavaged with phosmet-oxon at 0 mg/kg bw, 0.5 mg/kg bw, 2.0 mg/kg bw, 3.5 mg/kg bw or 5.0 mg/kg bw for adults and 0 mg/kg bw, 0.1 mg/kg bw, 0.4 mg/kg bw, 0.7 mg/kg bw, or 1.0 mg/kg bw for PPD 11 rats. The NOAEL for adults was 0.5 mg /kg bw due to significant reduction in erythrocyte AChE activity in both sexes and brain AChE activity in females at 2.0 mg/kg bw. The NOAEL for PND 11 pups was 0.1 mg/kg due to significant reduction in erythrocyte and brain AChE activity at 0.4 mg/kg bw (Barnett, 2020).

In a GLP repeat-exposure comparative AChE study of phosmet-oxon in rats, PND 11 pups and adults were repeatedly dosed by gavage with phosmet-oxon at 0 mg/kg bw, 0.1 mg/kg bw, 0.3 mg/kg bw, 0.6 mg/kg bw, or 1.2 mg /kg bw per day for adults and 0 mg/kg bw, 0.05 mg/kg bw, 0.1 mg/kg bw, 0.2 mg/kg bw or 0.4 mg/kg bw per day for PND 11 pups for seven days. The NOAEL for adults was

0.3 mg/kg bw per day based on inhibition of AChE activity at 0.6 mg/kg bw per day. The NOAEL for PND 17 pups was 0.1 mg/kg bw per day based on inhibition of AChE activity at 0.2 mg/kg bw per day (Barnett, 2021).

Phthalic acid (and its anhydride), phthalamic **acid and phthalamide (and its *N*-glucosyl conjugate)**.

See the folpet report item.

***N*-(methylsulfonylmethyl)phthalamic acid**

N-(Methylsulfonylmethyl)phthalamic acid is a major metabolite in rats that is excreted at up to 26 percent in the urine. Accordingly it is covered by the health-based guidance values for phosmet.

Microbiological aspects

There is not sufficient direct information available in the public domain, and no experimental data were submitted that addressed the possible impact of phosmet residues on the human intestinal microbiome.

Human data

Phosmet did not exhibit any significant increase in symptom frequency in exposed workers when compared to non-exposed workers. A case was reported of poisoning by phosmet, discharged with no neurological sequelae. A case-control study reported an association between prenatal pesticide exposure to phosmet and childhood leukemia. However, this study provides no support to the evidence of a causal association owing to the potential of bias and lack of control for relevant confounders.

The meeting concluded that the existing database on phosmet was adequate to characterize the potential hazards to the general population, including fetuses, infants and children.

A toxicological monograph was prepared.

Toxicological evaluation

The meeting established an ADI of 0–0.006 mg/kg bw for phosmet based on a LOAEL of 1.25 mg/kg bw per day for both adults and 17-day-old rats in the seven-day comparative age sensitivity study. This is supported by the NOAEL of 0.8 mg/kg bw per day for parental and reproductive toxicity in a two-generation study in rats and the LOAEL of 1.6 mg/kg bw per day in the 13-week neurotoxicity study in rats. A total safety factor of 200 was applied. An additional safety factor of two was applied for extrapolation from the LOAEL to the NOAEL. This gives a margin of 2300-fold to the lowest dose causing tumors. This health-based guidance value covers *N*-(methylsulfonylmethyl) phthalamic acid expressed as phosmet. The current meeting withdrew the ADI established by JMPR in 1994.

The meeting established a new ARfD of 0.03 mg/kg bw for phosmet based on a point of departure (POD) of 2.5 mg/kg bw (NOAEL) for acute neurotoxicity in 11-day-old rats in the comparative age sensitivity studies. A safety factor of 100 was applied. This health-based guidance value covers *N*-(methylsulfonylmethyl) phthalamic acid expressed as phosmet. A potency factor of 25 was applied for phosmet-oxon based on the NOAEL ratio (2.5/0.1) for phosmet and phosmet-oxon in the comparative age sensitivity study in rats. The meeting withdrew the current ARfD established in 2003.

The meeting established an ADI of 0–0.1 mg/kg bw for phthalic acid based on a NOAEL of 113 mg/kg bw per day in a 28-day rat study of phthalic acid. A safety factor of 1000 was applied. An additional safety factor of 10 was applied due to database limitations (see folpet evaluation in this report). This ADI also applies to phthalic anhydride.

The meeting established an ADI of 0–0.1 mg/kg bw for phthalamic acid based on a NOAEL of 10 mg/kg bw per day in a one-year dog study of folpet. A safety factor of 100 was applied. This ADI was established because phthalamic acid is a major metabolite of folpet (see folpet evaluation in this report).

A toxicological monograph was prepared.

Table 5.29.2 Levels relevant to risk assessment of phosmet

Species	Study	Effect	NOAEL	LOAEL
Mouse	2-year study of carcinogenicity[a]	Carcinogenicity	25 ppm, equal to 4 mg/kg bw per day	100 ppm, equal to 14 mg/kg bw per day
Rat	2-year study of toxicity and carcinogenicity[a]	Toxicity	40 ppm, equal to 1.8 mg/kg bw per day	200 ppm, equal to 9.4 mg/kg bw per day
		Carcinogenicity	200 ppm, equal to 9.4 mg/kg bw per day[c]	–
	2-generation study of reproductive toxicity[a]	Reproductive toxicity	20 ppm, equal to 0.8 mg/kg bw per day	80 ppm, equal to 3 mg/kg bw per day
		Parental toxicity	20 ppm, equal to 0.8 mg/kg bw per day	80 ppm, equal to 3 mg/kg bw per day
		Offspring toxicity	80 ppm, equal to 3 mg/kg bw per day	300 ppm, equal to 11 mg/kg bw per day
	Developmental toxicity study[d]	Maternal toxicity Embryo/fetal toxicity	5 mg/kg bw per day 15 mg/kg bw per day[c]	10 mg/kg bw per day
	Acute neurotoxicity study[d]	Neurotoxicity	4.5 mg/kg bw	22.5 mg/kg bw
	13-week neurotoxicity study[a]	Neurotoxicity		25 ppm, equal to 1.6 mg/kg bw per day[b]
	Acute comparative neurotoxicity study in 11-day-old and adult rats[d]	Neurotoxicity	11-day-old rats: 2.5 mg/kg bw Adults: 5.0 mg/kg bw	11-day-old rats: 5 mg/kg bw Adults: 10 mg/kg bw
	7-day repeat exposure comparative neurotoxicity study in 11–17-day-old and adult rats[d]	Neurotoxicity		17-day-old rats: 1.25 mg/kg bw per day[b] Adults: 1.25 mg/kg bw per day[b]
Rabbit	Developmental toxicity study[d]	Maternal toxicity Embryo/fetal toxicity	5 mg/kg bw per day 15 mg/kg bw per day[c]	15 mg/kg bw per day

Studies on metabolites

Phosmet-oxon				
Rat	Acute comparative neurotoxicity study in 11-day-old and adult rats[d]	Neurotoxicity	11-day-old rats: 0.1 mg/kg bw Adults: 0.5 mg/kg bw	11-day-old rats: 0.4 mg/kg bw Adults: 2.0 mg/kg bw

Species	Study	Effect	NOAEL	LOAEL
	7-day repeat exposure comparative neurotoxicity study in 11–17 day-old and adult rats[d]	Neurotoxicity	17-day-old rats: 0.1 mg/kg bw per day Adults: 0.3 mg/kg bw per day	17-day-old rats: 0.2 mg/kg bw per day Adults: 0.6 mg/kg bw per day
Phthalic acid		See folpet report item		
Phthalamic acid		See folpet report item		
Phthalamide (and its N-glucosyl conjugate)		See folpet report item		

Notes:
[a] Dietary administration.
[b] Lowest dose tested.
[c] Highest dose tested.
[d] Gavage administration.

Acceptable daily intake (ADI) for phosmet:

0–0.006 mg/kg bw

This ADI applies to the sum of phosmet plus N-(methylsulfonylmethyl) phthalamic acid expressed as phosmet, plus 6× phosmet-oxon.

Acute reference dose (ARfD) for phosmet:

0.03 mg/kg bw

This ARfD applies to phosmet plus N-(methylsulfonylmethyl) phthalamic acid expressed as phosmet plus 25× phosmet-oxon.

The meeting established an ADI of 0–0.1 mg/kg bw for phthalic acid based on a NOAEL of 113 mg/kg bw per day in a 28-day rat study. A safety factor of 1000 was applied. This ADI also applies to phthalic anhydride.

The meeting established an ADI of 0–0.1 mg/kg bw for phthalamic acid based on a NOAEL of 10 mg/kg bw per day in a one-year dog study of folpet. A safety factor of 100 was applied. This ADI was established because phthalamic acid is also a major metabolite of folpet.

Information that would be useful for the continued evaluation of the compound

Additional toxicological information on *N*-(methylsulfonylmethyl) phthalamic acid.
Results from epidemiological, occupational health and other such observational studies of human exposure.

Table 5.29.3 Critical endpoints for setting guidance values for exposure to phosmet

Absorption, distribution, excretion and metabolism in mammals	
Rate and extent of oral absorption	Rapid (T_{max} = 0.5h) and extensive (greater than 87%)]
Dermal absorption	No data
Distribution	Wide
Potential for accumulation	No evidence of accumulation
Rate and extent of excretion	Rapid, via urine, up to 84% within 96 hours
Metabolism in animals	Metabolism to the oxon followed by hydrolysis and oxidation with two major urinary metabolites *N*-(methylsulfinylmethyl)phthalamic acid and *N*-(methylsulfonylmethyl)phthalamic acid)
Toxicologically significant compounds in animals and plants	Phosmet, phosmet-oxon, phthalic acid (and its anhydride), phthalamic acid,
Acute toxicity	
Rat, LD_{50}, oral	113 mg/kg bw
Rat, LD_{50}, dermal	greater than 1000 mg/kg bw
Rat, LC_{50}, inhalation	0.15 mg/L
Rabbit, dermal irritation	Not irritating
Rabbit, ocular irritation	Irritating
Mouse, dermal sensitization	No data
Guinea pig, dermal sensitization	Not sensitizing (modified Buehler test)
Short-term studies of toxicity	
Target/critical effect	Inhibition AChE activity
Lowest relevant oral NOAEL	Not determined; LOAEL 1.25 mg/kg bw per day
Long-term studies of toxicity and carcinogenicity	
Target/critical effect	Inhibition of AChE activity
Lowest relevant LOAEL	1.8 mg/kg bw per day (rat)
Carcinogenicity	Carcinogenic in mice but not in rats[a]
Genotoxicity	Not genotoxic in vivo[a]
Reproductive toxicity	
Target/critical effect	Inhibition of AChE activity in F0, reduced fertility index in F0, reduced survival in offspring
Lowest relevant parental NOAEL	0.8 mg/kg bw per day (rat)
Lowest relevant offspring NOAEL	3 mg/kg bw per day (rat); AChE assays not performed
Lowest relevant reproductive NOAEL	0.8 mg/kg bw per day (rat)
Developmental toxicity	
Target/critical effect	Maternal: reduced body weight gain
Lowest relevant maternal NOAEL	2 mg/kg bw per day (rabbit)
Lowest relevant embryo/fetal NOAEL	15 mg/kg bw per day[b] (rabbit); AChE assays not performed
Neurotoxicity	
Acute neurotoxicity NOAEL	4.5 mg/kg bw (rat)
Subchronic neurotoxicity LOAEL	1.6 mg/kg bw per day (adult rat)
Developmental neurotoxicity NOAEL	No data

Acute comparative neurotoxicity in 11-day-old and adult rats	NOAEL 2.5 mg/kg bw in 11-day-old rats NOAEL 5.0 mg/kg bw in adult rats
7-day repeat exposure comparative neurotoxicity study in 17-day-old and adult rats	LOAEL 1.25 mg/kg bw per day in 17-day-old rats LOAEL 1.25 mg/kg bw per day in adult rats

Studies on toxicologically relevant metabolites

Phosmet-oxon	Not genotoxic in vivo Acute comparative neurotoxicity study in 11-day-old and adult rats: adult NOAEL 0.5 mg/kg bw, 11-day-old NOAEL 0.1 mg/kg bw 7-day repeat exposure comparative neurotoxicity study in 11–17-day-old and adult rats: adult NOAEL 0.3 mg/kg bw, 17-day-old NOAEL 0.05 mg/kg bw
Phthalic acid (and its anhydride)	See folpet report item
Phthalmic acid	See folpet report item
Phthalamide (and its N-glucosyl conjugate)	See folpet report item
Microbiological data	No relevant data
Human data	Some reports of human poisoning No relevant human epidemiological information

Notes:
[a] Unlikely to pose a carcinogenic risk to humans via exposure from the diet.
[b] Highest dose tested.

Table 5.29.4 Summary

	Value	Study	Safety factor
Phosmet			
ADI	0–0.006 mg/kg bw[a]	7-day study of toxicity in 11–17-day-old rats	100
ARfD	0.03 mg/kg bw[b]	Acute comparative neurotoxicity study in 11-day-old rats	100
Phthalic acid[c]			
ADI	0–0.1 mg/kg bw	28-day study if toxicity in rats	1000
Phthalamic acid			
ADI	0–0.1 mg/kg bw	1-year study of toxicity in dogs	100

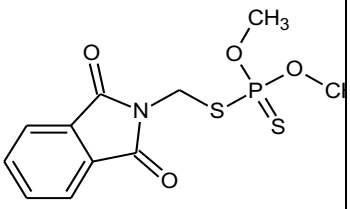
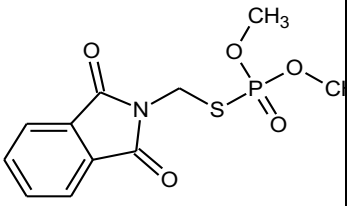
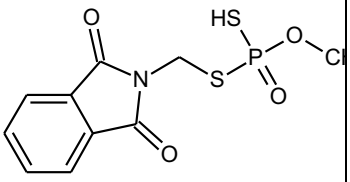
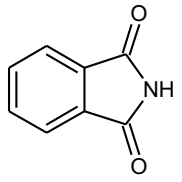
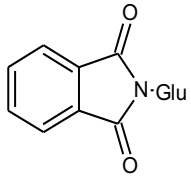
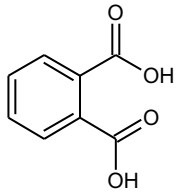
Notes:
[a] ADI applies to the sum of phosmet plus *N*-(methylsulfonylmethyl) phthalamic acid expressed as phosmet plus 6× phosmet-oxon.
[b] ARfD applies to phosmet plus *N*-(methylsulfonylmethyl) phthalamic acid expressed as phosmet plus 25× phosmet-oxon.
[c] Also applies to phthalic anhydride.

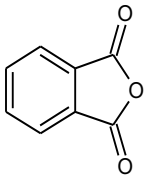
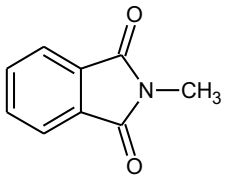
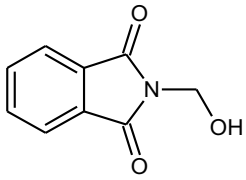
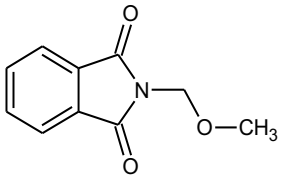
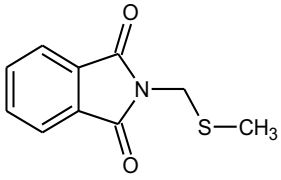
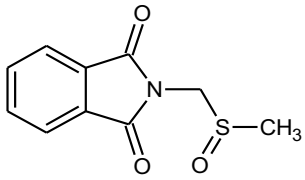
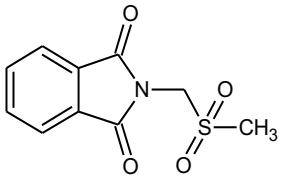
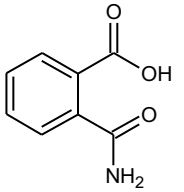
5.29.2 Residue and analytical aspects

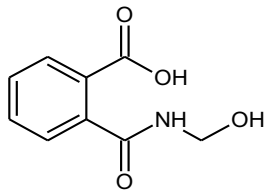
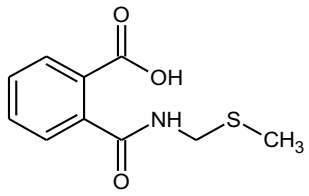
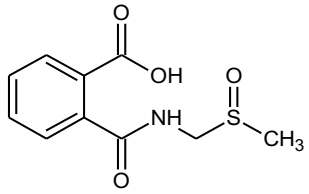
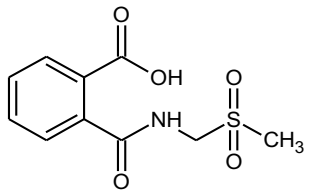
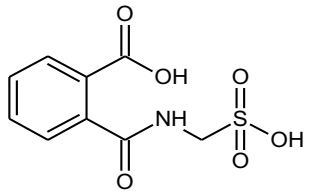
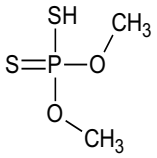
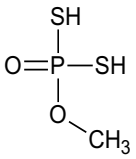
Phosmet is a broad-spectrum organo-phosphorus insecticide used to control a variety of insect and mite pests. It is non-systemic and acts by contact and ingestion as a cholinesterase inhibitor. It is registered in a number of countries, mainly for protecting fruits and vegetables. Phosmet was evaluated for residues several times by the JMPR from 1976 to 2014. At the 54th Session of the CCPR, phosmet was scheduled for the periodic evaluation of residues and toxicology by the 2024 JMPR within the periodic review program.

The meeting received information on identity, physicochemical properties, metabolism (plant and animals), methods of residue analysis, freezer storage stability, registered use patterns, supervised residue trials in citrus, pome fruit, stone fruit, grape, potato and tree nuts as well as and fate of residues in processing. Information on the compounds discussed in this appraisal is shown in Table 5.29.5.

Table 5.29.5 Overview of compounds referred to in the appraisal

Code names	Chemical names (IUPAC)	Structure	Found in
Phosmet	O,O-dimethyl S-(phthalimidomethyl) phosphorodithioate	 Molar mass: 317.3 g/mol	Plants (apple, cherry, maize forage, cob and fodder) Poultry (egg yolk)
Phosmet-oxon Imidoxon	2-(dimethoxyphosphoryl-sulfanylmethyl)isoindole-1,3-dione	 Molar mass: 301.3 g/mol	Plants (apple, maize fodder)
Desmethyl-phosmet	S-[(1,3-dioxo-1,3-dihydro-2H-isoindol-2-yl)methyl] O-methyl hydrogen phosphorodithioate		Hydrolysis product
Phthalimide	Isoindole-1,3-dione	 Molar mass: 147.1 g/mol	Plants (apple, cherry, maize forage and fodder) Poultry (egg yolk) Hydrolysis product
N-Glucosylphthalimide	–		Plants (cherry)
Phthalic acid	Phthalic acid	 Molar mass: 166.1 g/mol	Plants (apple, cherry, potato, maize forage, grain, cob and fodder) Ruminants (liver, kidney, muscle, milk) Hydrolysis product

Code names	Chemical names (IUPAC)	Structure	Found in
Phthalic anhydride	2-benzofuran-1,3-dione		Plants (cherry)
N-methyl phthalimide	2-methyl-1H-isoindole-1,3(2H)-dione		Hydrolysis product
N-hydroxymethyl phthalimide	2-(hydroxymethyl)-1H-isoindole-1,3(2H)-dione		Hydrolysis product
N-methoxymethyl phthalimide (PiMOM)	2-(methoxymethyl)-1H-isoindole-1,3(2H)-dione		Plants (maize fodder)
N-methylthiomethyl phthalimide (PiMSMe)	2-[(methylsulfanyl)methyl]-1H-isoindole-1,3(2H)-dione		Ruminants (liver)
N-methylsulfinylmethyl phthalimide (PiMSOMe)	2-[(methanesulfinyl)methyl]-1H-isoindole-1,3(2H)-dione		Ruminants (liver, kidney, muscle) Soil
N-methylsulfonylmethyl phthalimide ($PiMSO_2Me$)	2-[(methanesulfonyl)methyl]-1H-isoindole-1,3(2H)-dione		Plants (maize fodder) Ruminants (muscle, milk) Soil
Phthalamic acid	2-carbamoylbenzoic acid	 Molar mass: 165.15 g/mol	Plants (cherry, potato) Hydrolysis product

Code names	Chemical names (IUPAC)	Structure	Found in
N-hydroxymethyl phthalamic acid PaAMOH	2-[(hydroxymethyl) carbamoyl]benzoic acid		Plants (cherry, maize fodder) Ruminants (liver) Hydrolysis product
N-methylthiomethyl phthalamic acid (PaAMSMe)	2-{[(methylsulfanyl)methyl] carbamoyl}benzoic acid		Plants (maize fodder)
N-methylsulfinylmethyl phthalamic acid (PaAMSOMe)	2-{[(methanesulfinyl)methyl] carbamoyl}benzoic acid		Ruminants (liver, kidney, muscle, milk)
N-methylsulfonylmethyl phthalamic acid ($PaAMSO_2Me$)	2-{[(methanesulfonyl)methyl] carbamoyl}benzoic acid		Ruminants (liver, kidney, muscle, milk)
N-sulfomethyl phthalamic acid ($PaAMSO_3H$)	2-[(sulfomethyl)carbamoyl] benzoic acid		Plants (maize fodder)
O,O-dimethyl phosphorodithioic acid	O,O-dimethyl hydrogen phosphorodithioate		Hydrolysis product
O-methyl phosphorodithioic acid	O-methyl dihydrogen phosphorodithioate		Hydrolysis product

Physical and chemical properties

Phosmet exhibits poor solubility in water, but a good solubility in organic solvents. Its log POW of 2.8 (at 20 °C) indicates that phosmet does not readily partition into fat. Phosmet is more susceptible to hydrolysis with increasing pH, with half-lives ranging from 4 days at pH 4 to 7 minutes at pH 9. Aqueous photolysis did not result in longer DT50 values compared to hydrolysis, with a half-life of 24 h (pH 5 and 25 °C). The vapour pressure indicates that phosmet is not volatile.

Plant metabolism

The metabolic fate in plants was investigated following application of [carbonyl-^{14}C]-labelled phosmet to apples, cherries, potatoes, maize and cotton.

Apples received two foliar applications at rates of 0.84 and 0.85 kg ai/ha outdoors, the first at BBCH 75–76 and the second 20 days later at BBCH 78. Samples of apple fruit were harvested at 0, 14 and 28 days after the last applications (DALA). Total radioactive residues (TRR) were 0.44 mg eq/kg at 0 DALA, 0.18 mg eq/kg at 14 DALA and 0.24 mg eq/kg at 28 DALA.

Apple fruits were surface rinsed with acetone/water (1/1), followed by homogenization by blending with dry ice and extraction with acetone/water (1/1) (twice) and acetone (once).

Most of the radioactivity was found in the surface wash at 46–71 percent TRR. Considering also the solvent extract, the overall efficiency of the extraction was 93–98 percent TRR. Post extraction solids (PES) ranged from 1.8 to 7.1 percent TRR.

Parent phosmet was the major residue identified in apples accounting for 89 percent TRR (0.40 mg/kg) at 0 DALA down to 64 percent TRR (0.15 mg/kg) at 28 DALA. In addition, three minor metabolites were identified, namely phosmet-oxon, phthalimide and phthalic acid accounting for 1.5–1.9 percent TRR (0.0027–0.0076 mg eq/kg), 0.8–2.3 percent TRR (0.0036–0.0055 mg eq/kg) and 0.9 percent TRR (0.0038 mg eq/kg), respectively. The unextracted residue was not further characterized.

Cherries received one foliar application at 0.42 kg ai/hL indoors (rate in kg ai/ha not reported). Samples of cherry fruit were harvested at 0.17 (4h), 7 and 14 DAA. Measured TRRs ranged from 37 to 42 mg eq/kg when determined by combustion and between 23–35 mg eq/kg when calculated.

Cherries were surface rinsed with acetone and pitted subsequently. The flesh was homogenized with acetone/water (1/1). In some cases, extracts containing unknown components were enzymatically hydrolysed using β-glucosidase.

At 0.17 DALA, most of the radioactivity was found in the surface wash (56 percent TRR), which decreased over time to 7.3 percent TRR at 14 DAA, indicating rapid translocation of phosmet into the fruit. Overall extractability was good with 85–87 percent TRR found in the surface wash + extract. The PES ranged from 9–11 percent TRR.

Parent phosmet was identified in samples from 7 and 14 DAA only as a minor residue, accounting for 8.2–8.8 percent TRR (1.9–3.1 mg/kg). The highest levels were found for phthalic acid, accounting for 14–16 percent TRR (3.8–4.8 mg eq/kg) and phthalimide (including its N-glucosyl conjugate) accounting for 11–12 percent TRR (2.5–4.2 mg eq/kg). Other minor metabolites identified were phthalic anhydride at 4.1–4.7 percent TRR (1.1–1.4 mg eq/kg) and phthalamic acid & N-hydroxymethylphthalamic acid at 8.3–9.8 percent TRR (2.3–2.9 mg eq/kg). The unextracted residue was not further characterized.

Potatoes received 4 foliar applications at rates of 1.7–2.0 kg ai/ha outdoors. The first application was made on study day 0 (small immature plants), the second on day 40 (small tubers were formed), the third on day 62 (thin skinned potatoes were formed) and the final application on day 88 (mature potatoes). Potato foliage and tubers were harvested before the second and third applications, 7 days after the third

application and 7 days after the fourth application. TRR levels in potato tubers remained similar throughout the sampling period, ranging from 1.4 to 2.1 mg eq/kg.

Potato tubers were surface rinsed with water, followed by homogenization in the presence of dry ice. Portions of the homogenized tubers were extracted two or three times with acetone/water (4/1). Further sequential extractions were performed with acetone/0.1 mol/L aqueous HCl (5/1), refluxing with acetone/0.1 mol/L aqueous HCl (5/1), and methanol/water (2/1). The PES was additionally refluxed with 3 mol/L HCl.

Extracted radioactivity with neutral solvents ranged between 77 and 91 percent TRR, and subsequent harsher treatments extracted an additional 5.2–12 percent TRR. The PES accounted for 0.6–5.2 percent TRR.

Parent phosmet was not detected in any of the samples. The major identified residues were phthalic acid, accounting for 18–38 percent TRR (0.25–0.79 mg eq/kg) and phthalamic acid, accounting for 18–50 percent TRR (0.26–1.0 mg eq/kg). No time trend was observed regarding the composition of the metabolites in the samples. Additionally, one unknown component was detected at major proportions in potatoes from the third harvest at a retention time of 9.6 min. This component had a similar retention time as unknowns in the final tuber acetone/water (4/1) extract, which were converted to phthalic acid upon acid hydrolysis. The unextracted residue accounted for <1 percent TRR (0.008–0.013 mg eq/kg).

Maize plants received 2 foliar applications at rates of 1.0 and 1.1 kg ai/ha outdoors (later indoors due to weather). The first application was made at the onset of silk stage and the second application 14 days before harvest. Maize forage was sampled prior to the second application and maize grain, cob (without kernels) and fodder (husk, leaves and stalks) at maturity at 14 DALA. TRR levels were highest in maize fodder (274 mg eq/kg), followed by forage (29 mg eq/kg). The lowest levels were found in maize grain (3.6 mg eq/kg).

Samples were homogenized by blending with dry ice and extracted three times with acetone/water (4/1). The PES was further sequentially extracted with acetone/0.1 mol/L aqueous HCl (5/1), refluxing with acetone/0.1 mol/L aqueous HCl (5/1), methanol/water (2/1) and refluxing with 3 mol/L HCl.

Extracted radioactivity with neutral solvents ranged between 63–89 percent TRR and subsequent harsher treatments extracted an additional 6.6–33 percent TRR. The unextracted radioactivity accounted for 1.2–4.4 percent TRR.

Parent phosmet was not detected in maize grain but was found as a major residue in maize forage, cob and fodder, accounting for 27–53 percent TRR (1.3–145 mg/kg). As a major metabolite, phthalic acid (free and conjugated) was found in forage, grain, cob and fodder at 10–64 percent TRR (1.3–15 mg eq/kg). As minor metabolites, the following compounds were identified: phosmet-oxon in fodder, accounting for 1.2 percent TRR (3.4 mg eq/kg), phthalimide in forage and fodder at 3.9–7.8 percent TRR (2.3–11 mg eq/kg), PiMOM in forage (with unknow A) and fodder at 3.6–11 percent TRR (3.2–9.9 mg eq/kg). In addition, $PiMSO_2Me$ at 0.54 percent TRR (1.5 mg eq/kg), $PaAMSO_3H$ at 0.71 percent TRR (1.9 mg eq/kg), PaAMSMe at 0.56 percent TRR (1.5 mg eq/kg) and PaAMOH at 6.8 percent TRR (19 mg eq/kg) were identified in fodder only. The unknown component A was also found in grain at 13 percent TRR (0.49 mg eq/kg), but was not further characterized).

Cotton plants at the 3–5 leave stage were topically treated with 1000 µg [carbonyl-^{14}C]-labelled phosmet in 0.2 mL acetone per leaf. Plants were kept in an airtight glass container and exhaust air was trapped. In a second experiment indoors, cotton plants received one foliar application at a rate of 0.6 kg/hL.

Cotton leaves were surface washed three times with acetone, followed by homogenization and another acetone extraction. Phosmet was readily absorbed by treated leaves but not translocated in the plant.

Identified compounds were phthalic and/or phthalamic acid, benzoic acid and possibly one or more benzoic acid derivatives.

Summary plant metabolism

In all plant matrices, the predominant metabolism of phosmet is moderately fast hydrolysis of the amine bond to yield phthalimide, which is further hydrolysed and oxidized to yield phthalic acid and/or phthalamic acid. As a minor route of metabolism in apple and maize only, the phosphorus sulfide bond was oxidized to a phosphorus oxide bond to yield phosmet-oxon. Subsequently, these metabolites undergo further oxidation, hydrolysis and conjugation reactions. Studies with a radioactive label on the O,O-dimethyl phosphorodithionate moiety were not provided.

Animal metabolism

The meeting received studies on the metabolism of phosmet in laboratory animals, lactating goats and laying hens. The evaluation of the metabolism studies in laboratory animals was carried out by the WHO Core Assessment Group.

In lactating goats, [carbonyl-14C]-labelled phosmet was administered orally twice daily for 4 consecutive days to two lactating goats at 8.0–8.8 ppm (~0.3 mg/kg bw day). Milk was collected twice daily and excreta (urine and feces) once daily throughout the study period. Tissue samples were collected after sacrifice, which occurred 13–14 hours after the last dose.

The total mean recovery of the administered radioactivity (AR) was 87 percent. The majority of the radioactivity was found in urine at 60 percent AR, followed by feces at 18 percent AR. In edible tissues radioactivity was highest in kidney (0.24 mg eq/kg), followed by liver (0.20 mg eq/kg) and muscle (0.15 mg eq/kg), while it was at least one order in magnitude lower in fat (0.006 mg eq/kg) and milk (0.016 mg eq/kg).

In whole milk, the TRR was low and ranged over the course of the study between 0.008–0.017 mg eq/kg. Daily average residue levels reached a plateau after approximately 24 hours. In skim milk, the radioactivity was up to 0.015 mg eq/kg and in milk fat approximately 2–fold lower at up to 0.0085 mg eq/kg.

Samples of liver, muscle and kidney tissue were extracted three times with acetonitrile/water (7/3) and fat with acetonitrile alone. For milk, solids were removed by centrifugation, followed by extraction with acetonitrile. Extractability with solvents was higher for milk and kidney, at 75 percent TRR and 69 percent TRR, respectively, and lower for liver and muscle at 38 percent TRR. In fat, the extractability was lowest at 24 percent TRR (<0.01 mg eq/kg). Therefore, residues in fat were not further characterized.

The PES from the solvent extraction of liver, muscle and kidney was further extracted by refluxing with methanol, acid hydrolysis with 1 mol/L methanolic HCl and hydrazinolysis (also done for milk) for

solubilization and characterization of bound residues. These harsher treatments released an additional 52 percent TRR in liver, 39 percent TRR in kidney, 56 percent TRR in muscle and 13 percent in milk.

Parent phosmet was not detected in any matrices, but multiple compounds structurally related to phthalimide were. In tissues, as a major metabolite, PaAMSO2Me was detected at up to 14 percent TRR (0.022 mg eq/kg) in muscle. Additionally, the following metabolites were identified at minor proportions: PiMSMe at up to 5.0 percent TRR (0.009 mg eq/kg), (PiMSOMe) at up to 2.6 percent TRR (0.006 mg/eq/kg), PiMSO2Me at up to 2.0 percent TRR (0.003 mg eq/kg), PaAMSOMe at up to 2.8 percent TRR (0.007 mg eq/kg), PaAMOH at up to 2.6 percent TRR (0.006 mg eq/kg), phthalic acid at up to 6.4 percent TRR (0.015 mg eq/kg). Two additional metabolites could not be fully identified: AQ1 was detected at major proportions in kidney at up to 14.6 percent TRR (0.036 mg eq/kg) and was thought to be a substituted phthalamic acid derivative. In addition, during reanalysis of the extract after 4 months of storage, the metabolite appeared unstable, giving rise to phthalic acid.

In laying hens, [carbonyl-14C]-labelled phosmet was administered orally once daily for 7 consecutive days to 10 laying hens at 10.5 ppm (0.73 mg/kg bw day). Eggs were collected twice daily and separated into egg yolk and whites, while excreta samples were collected once a day. Tissue samples were collected after sacrifice, which occurred 15–18 hours after the last dose.

The majority of the radioactivity was found in excreta at 90 percent AR. In edible tissues radioactivity was highest in liver (0.24 mg eq/kg) and kidney (0.21 mg eq/kg) and about an order in magnitude lower in muscle and egg yolk (0.015–0.04 mg eq/kg). Radioactivity was lowest in fat and egg whites (0.005–0.007 mg eq/kg), which were not further analysed. Level of radioactivity into egg white and egg yolk reached steady state after 3 days and 6 days, respectively.

Liver and muscle samples were homogenized three times with acetonitrile/water (7/3) and egg yolk acetonitrile/water (1/1). Extractability with solvents was low for tissues, ranging between 33–40 percent TRR, and only slightly higher in egg yolks, at up to 51 percent TRR. The PES from each sample was further extracted by one or both of the following methods: refluxing with methanol and acidic methanol and/or refluxing with hydrazine, releasing an additional 30–41 percent TRR.

Identification of the radioactivity was very limited. Parent phosmet was not identified in any matrices, except in egg yolk at very low levels (0.001 mg eq/kg). Similarly, low levels of phthalimide and phthalic acid were identified, but none of the metabolites exceeded 0.005 mg eg/kg in egg yolk or edible tissues.

Summary livestock metabolism

Generally, the transfer of radioactivity into livestock was low. The highest TRRs were found in liver and kidney (ruminants and poultry) and muscle (ruminants only), while the TRRs in all other matrices were at least one order in magnitude lower. Overall, identification rate was low in ruminants and poultry. Parent phosmet was detected at a very low concentration in egg yolk only. The only major identified metabolite was PaAMSO_2Me in ruminant muscle. In ruminants, multiple minor metabolites were identified, while in poultry hardly any individual components were identified.

The main transformation of phosmet was similar in ruminants and poultry, occurring via hydrolytic displacement of the phosphorus-containing moiety to yield N-mercaptomethyl phthalimide, followed by methylation and oxidation of the thiol group. These compounds are further hydrolysed to the analogous

phthalamic acids and subsequently phthalic acid. Studies with a radioactive label on the O,O-dimethyl phosphorodithionate moiety were not provided.

Environmental fate

The meeting received studies on aerobic soil degradation, soil photolysis and hydrolysis.

In three hydrolysis studies, performed with unlabelled or [carbonyl-^{14}C]-labelled phosmet in aqueous buffer solutions at pH 4/5, 7 and 9, increasing rates of hydrolysis were observed with increasing pH-values. Estimated half-lives ranged between 2.1 and 26 days for pH 4/5, 2.3–24 hours at pH 7 and <10–52 minutes at pH 9. Identified hydrolysis products were PaAMOH (up to 94 percent AR), phthalamic acid (up to 72 percent AR), phthalic acid (up to 61 percent AR), phthalimide (up to 43 percent AR) and O,O-dimethyl phosphorodithioic acid (up to 79 percent). The meeting concluded that phosmet is not hydrolytically stable at environmental pH-values.

The half-life of [carbonyl-^{14}C]-labelled phosmet for soil photolysis could not be estimated due to insufficient photodegradation. The meeting concluded that photolysis does not represent a significant degradation pathway for phosmet.

In an aerobic soil degradation study performed with fresh soil under laboratory conditions, [carbonyl-^{14}C]-labelled phosmet was not persistent, with estimated half-lives in various soils ranging between 2 and 5 days. Identified metabolites were PiMSOMe and PiMSO$_2$Me, accounting for up to 3.8 and 3.2 percent AR, respectively. At the end of study, most of the radioactivity was either mineralized to CO_2, accounting for 52–77 percent AR, or remained as bound residues (17–38 percent AR). Therefore, the meeting concluded that phosmet does not have the potential to accumulate in soil.

Methods of residue analysis

The meeting received analytical methods for the determination of phosmet and metabolites phosmet-oxon and phthalimide in plant matrices and for phosmet and metabolite phosmet-oxon in animal matrices.

For matrices of plant origin, provided methods employed extraction with benzene, acetone or ethyl acetate, followed by different combinations of clean-up steps, dependent on the matrix type, if necessary. These clean-up steps involved for example dichloromethane partitioning, hexane/acetonitrile partitioning and/or silica SPE. Analytes were determined by GC-FID with an LOQ of 0.05 mg/kg or LC-MS/MS with an LOQ of 0.01 mg/kg.

A multiresidue method for enforcement was not made available to the meeting.

For matrices of animal origin, the methods employed extraction with ethyl acetate, followed by a hexane wash and silica SPE for fat samples, only. Analytes were determined by LC-MS/MS with an LOQ of 0.01 mg/kg.

The meeting concluded that suitable methods are available to measure residues of phosmet, phosmet-oxon and phthalimide in plant matrices (high water content, high oil content, high starch content, high protein content and high acid content); as well as phosmet and phosmet-oxon in animal matrices (tissues, milk and eggs).

Stability of residues in stored analytical samples

The meeting received information on the storage stability of phosmet and its metabolite phosmet-oxon in a variety of plant matrices stored under frozen conditions. In high water matrices, residues of phosmet were stable up to 28 months in peach, up to 30 months in pepper and at least 41 months in apple, in high acid matrices for at least 30 months in orange, in high starch matrices for at least 30 months in wheat grain and up to 30 months in potato, in high oil matrices for at least 12 months in rape seed at least 41 months in almond nutmeat and soya bean seed, in processed commodities for at least 28 months in apple sauce, at least 39 months in apple pomace and juice, up to 1 month in dried peach and up to 12 months in canned peaches. Additionally, residues of phosmet were stable up to 30 months in alfalfa hay, corn ears and at least 30 months in wheat straw.

All samples from field trials were analysed within the tested storage stability time (if information is stated).

Residues of metabolite phosmet-oxon were stable in high water matrices up to 28 months in peach and at least 39 months in apple, in high acid matrices for at least 12 months in citrus, in high starch matrices for at least 12 months in potato, in high oil matrices for at least 12 months in rape seed, in processed commodities at least 28 months in apple sauce, at least 39 months in apple pomace and juice, up to 1 month in dried peach and up to 28 months in canned peaches.

Most samples from field trials were analysed for phosmet-oxon within the tested storage stability time. However, some trials on citrus and tree nuts were outside the tested storage stability time at maximum 12.9 months and 41 months, respectively.

For animal matrices, the meeting received information on the storage stability of phosmet and its metabolite phosmet-oxon in muscle, liver, kidney, milk, fat and eggs stored at –20 °C. Residues of phosmet were stable up to 1 month in muscle, up to 6 months in kidney and at least 12 months in milk, liver, fat and eggs. Residues of phosmet-oxon were stable up to 1 month in muscle and eggs, up to 6 months in milk, and at least 12 months in fat. In liver and kidney, residues of phosmet-oxon were not stable (<1 day).

Definition of the residue

Plants

In food commodities from plant metabolism studies, the predominant residue in apple was parent phosmet, accounting for 37–68 percent TRR, while in cherry levels of phosmet were lower at 8–9 percent TRR. In field trials on fruit crops, phosmet was detected throughout at levels above LOQ. On the other hand, phosmet was not detected in metabolism studies performed with potatoes and in maize grain, which is coherent with field trials on potatoes where phosmet was not detected above LOQ. In feed matrices, residues of phosmet accounted for 24 percent TRR in maize forage, 27 percent in the cob and 53 percent TRR in maize fodder.

Phosmet-oxon was detected in metabolism studies with apple as a minor metabolite, accounting for up to 1.9 percent TRR. The metabolite was detected occasionally in samples from supervised trials above the LOQ (e.g. blueberries), but at least three times lower compared to parent.

Therefore, the meeting concluded that parent phosmet represents a sufficient marker compound for compliance with MRLs for fruit crops and straw/fodder only but not for other plant commodities. In root crops and cereal grains, only phthalimide-derived compounds were identified without specific markers suitable for compliance with MRLs. Therefore, the meeting decided to use parent phosmet per default as residue definition for compliance with the MRL for all commodities.

Analytical methods are available for monitoring phosmet in all plant matrix groups.

The meeting noted that all other metabolites were derived from phthalimide and cannot be considered specific marker compounds, as they are common metabolites with folpet and phthalate plasticizers.

On deciding which compounds should be included in the residue definition for risk assessment, the meeting considered the likely occurrence of the compounds and the toxicological properties of the metabolites phosmet-oxon, phthalimide and its derived compounds phthalic acid, phthalic anhydride, phthalamic acid, PiMOM, N- $PiMSO_2Me$, $PaAMSO_3H$, PaAMSMe and PaAMOH.

For phosmet-oxon, the meeting concluded that it is 6 times more potent for the long-term dietary risk and 25 times more potent for the acute dietary risk compared to parent. Therefore, the meeting decided that phosmet-oxon contributes significantly to the dietary exposure and should be included into the residue definition for risk assessment.

For phthalic acid, phthalic anhydride, phthalimide and phthalamic acid, the meeting noted that these compounds are common metabolites with the active substance folpet and were toxicologically evaluated in the context of the assessment of folpet by the current meeting.

Phthalic acid was detected as a major residue in phosmet metabolism studies with cherry, accounting for 14–16 percent, in potatoes accounting for 18–38 percent TRR and in maize grain at 61 percent TRR. In feed matrices, phthalic acid was found at major proportions in maize cob, accounting for 20 percent TRR. Data on the occurrence of phthalic acid in supervised trials was not available. The meeting concluded that phthalic acid is not covered by the toxicological reference values of the parent phosmet and established a specific ADI of 0–0.1 mg/kg bw. The meeting decided that phthalic acid adds significantly to the dietary exposure and should be evaluated separately.

Phthalic anhydride was only identified in a metabolism study with cherries as a minor metabolite (up to 4.7 percent TRR), at levels approximately 2 times lower than the parent and 3 times lower than phthalic acid. Data on the occurrence of phthalic anhydride in supervised trials was not available. The meeting decided that phthalic anhydride is covered by the toxicological reference value for phthalic acid. The meeting concluded further that phthalic anhydride contributes insignificantly to the dietary exposure of phthalic acid and does not need to be included into the residue definition for risk assessment.

Phthalimide was identified in metabolism studies with cherries (including its N-glucosyl conjugate) as a major metabolite (11–12 percent TRR) and in apples as a minor metabolite (2.3 percent TRR). Data on the occurrence of phthalimide in supervised trials was only available from two processing studies with orange (RAC at <0.01 mg/kg, processed edible commodities up to 0.02 mg/kg) and apple (RAC up to 0.02 mg/kg, processed edible commodities up to 0.09 mg/kg). The meeting decided that there was no toxicological concern for residues of phthalimide arising from uses of phosmet and no dietary risk assessment was necessary.

Phthalamic acid was only identified in a metabolism study with potato at major proportions, accounting to up 48 percent TRR in mature potatoes. Additionally, the compound was detected together with N-hydroxymethyl phthalamic acid in cherries at up to 9.8 percent TRR. Data on the occurrence of phthalamic acid in supervised trials was not available. The meeting concluded that phthalamic acid is not covered by the toxicological reference value of the parent phosmet. However, phthalamic acid is covered by the toxicological reference value for folpet and should be evaluated against the ADI of 0–0.1 mg/kg bw for folpet, since the compounds adds significantly to the dietary exposure.

Other phthalimide derived metabolites PiMOM, $PiMSO_2Me$, $PaAMSO_3H$, PaAMSMe and PaAMOH were only found in maize fodder, contributed less than 7 percent TRR individually, and 12 percent TRR as the sum. These metabolites were not further considered as significant contributors to the dietary exposure for plant commodities.

The meeting decided that phthalic acid and phthalamic acid contribute significantly to the dietary exposure and need to be considered for the dietary risk assessment, separately. However, since none of the field trial samples were analysed for these compounds, the meeting decided to derive conversion factors from the results of the metabolism studies, by comparing the residue levels of phosmet to phthalic acid and phthalamic acid. The highest resulting factors were used for extrapolation of quantified phosmet residues in fruit crops to the expected residue levels of phthalic acid and phthalamic acid.

Phthalic acid: 2.0 (from cherry, 14 DAA)

Phthalamic acid: 1.2 (from cherry, 14 DAA)

For potatoes a factor could not be calculated since phosmet was not detected in the respective metabolism study.

Animal commodities

In animal metabolism studies performed with lactating goats and laying hens, phosmet was not detected, except in egg yolk in minimal amounts (~3 percent TRR, 0.001 mg/kg). Phosmet-oxon was not detected in any samples.

The meeting noted that all other metabolites were derived from phthalimide and cannot be considered specific marker compounds and decided to set parent phosmet as the residue definition for compliance with MRLs by default. The meeting agreed that the residue in not fat-soluble.

On deciding which phthalimide derived compounds should be considered for dietary risk assessment, the meeting assessed the likely occurrence of the compounds and the toxicological properties of the metabolites $PaAMSO_2Me$, phthalic acid, PiMSMe, PiMSOMe, $PiMSO_2Me$, PaAMSOMe and PaAMOH.

As a major residue in lactating goats only metabolite $PaAMSO_2Me$ was identified at 14 percent TRR (0.022 mg eq/kg) in muscle and 30 percent TRR (0.005 mg eq/kg) in milk. The meeting concluded that metabolite $PaAMSO_2Me$ is of no greater toxicity than parent phosmet and is covered by the toxicological reference values of the parent. The meeting decided that $PaAMSO_2Me$ contributes significantly to the dietary exposure from animal matrices and should be included into the residue definition for risk assessment for phosmet.

Phthalic acid was present in all matrices (except fat) from a lactating goat metabolism study at up to 6 percent TRR (0.014 mg eq/kg). Detected levels in laying hens were <0.005 mg eq/kg in all matrices. The meeting decided that phthalic acid should be evaluated separately.

Other phthalimide derived metabolites PiMSMe, PiMSOMe, $PiMSO_2Me$, PaAMSOMe and PaAMOH were found in liver and/or kidney and/or muscle and/or milk from a lactating goat metabolism study, but contributed less than 4.3 percent TRR individually, and less than 8.3 percent TRR as the sum (liver). These metabolites were not considered to contribute significantly to the dietary exposure from animal commodities.

The meeting noted that the toxicological profile of phosmet and the phthalimide derived compounds is different and concluded to derive separate residue definitions for dietary risk assessment for plant and animal commodities to reflect this:

- For compliance with the MRL for plant and animal commodities: phosmet.
- For long-term dietary risk assessment for plant commodities: sum of phosmet plus 6-times 2-(dimethoxyphosphoryl-sulfanylmethyl)isoindole-1,3-dione (phosmet-oxon), expressed as phosmet.
- For acute-term dietary risk assessment for plant commodities: sum of phosmet plus 25-times 2-(dimethoxyphosphoryl-sulfanylmethyl)isoindole-1,3-dione (phosmet-oxon), expressed as phosmet.
- For dietary risk assessment for animal commodities: sum of phosmet and 2-{[(methanesulfonyl)methyl] carbamoyl}benzoic acid ($PaAMSO_2Me$), expressed as phosmet.

Additionally, the meeting concluded:

- Definition of the residue for phthalic acid long-term dietary risk assessment for plant and animal commodities: phthalic acid
- Definition of the residue for phthalamic acid long-term dietary risk assessment for plant and animal commodities: phthalamic acid, expressed as folpet.
- The residue is not fat-soluble.

Results of supervised residue trials on crops

Supervised trials were available for the use of phosmet on citrus (lemon, mandarin, orange, grapefruit), pome fruit (apple, pear), stone fruit (apricot, nectarine, peach), grapes, blueberry, cranberry, potato and tree nuts (almonds filberts, pecans, pistachio nut, walnut).

The residue for dietary risk assessment consists of phosmet and phosmet-oxon, expressed in parent equivalents. Since the molecular weight of phosmet (317.3 g/mol) and for phosmet-oxon (301.3 g/mol) were similar, a molecular conversion factor was not considered necessary. For phosmet-oxon, potency factors of 6 and 25 were applied to residues >LOQ for estimating long-term dietary exposure and acute dietary exposure, respectively. If residues were <LOQ the factors were applied only if residues >LOQ could be reasonably expected (e.g. if other trials from the same crop group or the metabolism study demonstrated residues >LOQ) (Table 5.29.6).

Table 5.29.6 Example calculation of total residue under consideration of toxicological potency factors

	Phosmet, mg/kg	Phosmet-oxon, mg/kg	Total residue, mg/kg
Long-term dietary exposure (potency factor 6)	10	0.175	10 + 0.175 × 6 = 11.1
Acute dietary exposure (potency factor 25)	10	0.175	10 + 0.175 × 25 = 14.4

Citrus fruits

The critical GAP for citrus is from Taiwan allows one foliar application of phosmet at 2.5 kg ai/ha with a PHI of 7 days. For lemons, no corresponding supervised field trials matched the cGAP.

For mandarin, field trials conducted in Spain were performed with one foliar application of phosmet at rates of 1.2–6.2 kg ai/ha with a PHI of 7–8 days. For estimating maximum residue levels of phosmet in mandarin, the ranked order of residues was (n = 5): 1.15 mg/kg, 1.5 mg/kg, 1.67 mg/kg, 1.77 mg/kg, 2.81 mg/kg. These trials would be potentially suitable following scaling; however the number of trials is insufficient and were therefore not further considered.

For orange, field trials conducted in Spain, were performed with one foliar application of phosmet at rates of 5.7–6.0 kg ai/ha with a PHI of 7–8 days. For estimating maximum residue levels of phosmet in mandarin, the ranked order of residues was (n = 2): 0.30 mg/kg, 0.69 mg/kg. These trials would be potentially suitable following scaling; however the number of trials is insufficient and were therefore not further considered.

For grapefruit, no corresponding supervised field trials matched the cGAP.

The meeting concluded that the number of trials is insufficient to estimate a maximum residue level for citrus fruits and agreed to withdraw the previous maximum residue level recommendation of 3 mg/kg for phosmet in the Group of Citrus Fruits.

Subgroup of lemons and limes and subgroup of mandarins

The critical GAP for lemons, tangerine and orange in Chile allows three foliar applications of phosmet at 0.09 kg ai/hL with a retreatment interval (RTI) of 15 days and a PHI of 7 days.

Based on the lack of data matching the GAP, the meeting concluded that no maximum residue level could be estimated for phosmet in the subgroup of lemons and limes and for the subgroup of mandarins.

Subgroup of oranges and subgroup of pummelo and grapefruits

The critical GAP for oranges and grapefruits in the United States of America allows two foliar applications of phosmet at 2.24 kg ai/ha, RTI not stated and a PHI of 7 days.

Based on the lack of data matching the GAP, the meeting concluded that no maximum residue level could be estimated for phosmet in the subgroup of oranges.

One field trial conducted with grapefruits in the United States of America, was performed with two foliar applications of phosmet at a rate of 6.7 kg ai/ha with a PHI of 7 days. For estimating maximum residue levels of phosmet in grapefruits, the ranked order of residues was (n = 1): 0.61 mg/kg. This trial would be

potentially suitable following scaling; however the number of trials is insufficient and was therefore not further considered.

The meeting concluded that the number of trials is insufficient to estimate maximum residue levels for phosmet in the Subgroup of pummelo and grapefruits.

Pome fruits

The critical GAP for apple and pears, in Chile allows three foliar applications of phosmet at 0.09 kg ai/hL with a RTI of 15 days and a PHI of 7 days.

In apples, one field trial conducted in Brazil, was performed with three foliar applications of phosmet at rates of 0.1 kg ai/hL with an RTI of 14 days and a PHI of 7 days, resulting in a residue of (n = 1): 0.2 mg/kg.

In pears, no corresponding supervised field trial data were submitted.

The meeting concluded that the number of trials is insufficient to estimate maximum residue levels for phosmet in pome fruit and agreed to withdraw the previous maximum residue level recommendation of 10 mg/kg for phosmet in the group of pome fruits.

Stone fruits

Apricot

The critical GAP for apricots in the United States of America allows three foliar applications of phosmet at 3.36 kg ai/ha, RTI not stated and a PHI of 14 days. No corresponding supervised field trial data were submitted for the US GAP. The meeting decided to withdraw its previous recommendation of a maximum residue level of 10 mg/kg in apricot.

Nectarine

The critical GAP for nectarines in Chile, allows three foliar applications of phosmet at 0.09 kg/hL, with a RTI of 15 days and a PHI of 7 days. No corresponding supervised field trial data were submitted for the Chilean GAP.

Alternatively, a GAP for nectarines in the United States of America allows three foliar applications at 3.36 kg ai/ha, RTI not stated and a PHI of 14 days. Field trials conducted in Chile were performed approximating the US GAP. For estimating maximum residue levels of phosmet in nectarines, the ranked order of residues was (n = 3): 2.4 (2) mg/kg, 3.7 mg/kg.

The meeting concluded that the number of trials is insufficient to estimate maximum residue levels and decided to withdraw its previous recommendation of 10 mg/kg in nectarine.

Peach

The critical GAP for peach in Chile allows three foliar applications of phosmet at 0.09 kg/hL, with a RTI of 15 days and a PHI of 7 days. No corresponding supervised field trial data were submitted for the Chilean GAP.

Alternatively, a GAP for peach in the United States of America allows four foliar applications of phosmet at 3.36 kg ai/ha, RTI not stated and a PHI of 14 days. One trial was conducted in the United States of America according to the GAP (±25 percent), giving residues of 4.9 mg/kg.

The meeting concluded that the number of trials is insufficient to estimate maximum residue levels and decided to withdraw its previous recommendation of 10 mg/kg in peach.

Berries and other small fruits

Blueberries

The critical GAP for blueberries in the United States of America allows five foliar applications of phosmet at 1.12 kg ai/ha, RTI not stated and a PHI of 3 days.

Field trials conducted with blueberries in the United States of America were performed according to the GAP (±25 percent). For estimating maximum residue levels of phosmet and dietary risk assessment of phthalic acid and phthalamic acid in blueberries, the ranked order of residues was (n = 6): 1.0 mg/kg, 2.4 mg/kg, 3.4 mg/kg, 4.0 (2) mg/kg, 10 mg/kg (single highest value: 12 mg/kg).

For long-term dietary exposure of phosmet, the ranked order of residues was (n = 6): 1.6 mg/kg, 3.0 mg/kg, 4.2 mg/kg, 4.8 mg/kg, 5.1 mg/kg, 11 mg/kg. For acute dietary exposure of phosmet, the ranked order of residues was (n = 6): 3.5 mg/kg, 5.0 mg/kg, 6.7 mg/kg, 7.2 mg/kg, 8.5 mg/kg, 14 mg/kg (single highest value: 17 mg/kg).

The meeting estimated a maximum residue level of 20 mg/kg to replace its previous recommendation of 10 mg/kg. The meeting also estimated a STMR of 4.5 mg/kg and HR of 17 mg/kg for phosmet in blueberries.

The meeting noted that acute dietary exposure assessment showed that residues in blueberries exceed the ARfD of 0.03 mg/kg bw, at 650 percent for Canadian children and 520 percent for the general population. No alternative GAP with matching trials was available.

For estimating dietary risk assessment of phthalic acid in blueberries, the meeting estimated a STMR of 7.4 mg/kg by multiplying 3.7 mg/kg with the conversion factor of 2.0 to extrapolate from phosmet to phthalic acid.

For estimating dietary risk assessment of phthalamic acid, expressed as folpet in blueberries, the meeting estimated a STMR of 8.0 mg/kg by multiplying 3.7 mg/kg with the conversion factor of 1.2 and a molecular conversion factor of 1.8 to extrapolate from phthalamic acid to folpet.

Grapes

The critical GAP for grapes in Chile allows three foliar applications of phosmet at 0.09 kg ai/hL, with a RTI of 15 days and a PHI of 7 days. No corresponding supervised field trials matched the Chilean GAP.

The meeting agreed to withdraw the previous maximum residue level recommendation of 10 mg/kg for phosmet in grapes.

Cranberries

The critical GAP for cranberries in the United States of America allows four foliar applications of phosmet at 3.14 kg ai/ha, RTI not stated and a PHI of 14 days.

Field trials conducted with cranberries in the United States of America were performed according to the GAP (±25 percent). For estimating maximum residue levels of phosmet and dietary risk assessment of phthalic acid and phthalamic acid in cranberries, the ranked order of residues was (n = 4): 0.13 mg/kg, 0.83 mg/kg, 0.85 mg/kg, 0.88 mg/kg (single highest value: 0.91 mg/kg).

For long-term dietary exposure of phosmet, the ranked order of residues was (n = 4): 0.43 mg/kg, 1.1 mg/kg, 1.2 (2) mg/kg

For acute dietary exposure of phosmet, the ranked order of residues was (n = 4): 1.4 mg/kg, 2.1 (3) mg/kg (single highest value: 2.2 mg/kg).

The meeting estimated a maximum residue level of 3 mg/kg, and confirmed its previous recommendation, a STMR of 1.15 mg/kg and HR of 2.2 mg/kg for phosmet in cranberries.

For estimating dietary risk assessment of phthalic acid in cranberries, the meeting estimated a STMR of 1.7 mg/kg, by multiplying 0.84 mg/kg with the conversion factor of 2.0 to extrapolate from phosmet to phthalic acid.

For estimating dietary risk assessment of phthalamic acid, expressed as folpet in cranberries, the meeting estimated a STMR of 1.8 mg/kg by multiplying 0.84 mg/kg with the conversion factor of 1.2 and a molecular conversion factor of 1.8 to extrapolate from phthalamic acid to folpet.

Root and tuber vegetables

Potato

The critical GAP for potato is in the United States of America allows five foliar applications of phosmet at 1.12 kg ai/ha, RTI not stated and a PHI of 7 days.

Field trials conducted with potato in the United States of America were performed according to the GAP (±25 percent), giving residues of phosmet of <0.05 (7) mg/kg.

The meeting estimated a maximum residue level of 0.05* mg/kg, confirmed its previous recommendation, and a STMR and HR of 0 mg/kg (2x application rate in metabolism, no parent) of phosmet in potato.

For estimating dietary risk assessment of phthalic acid and phthalamic acid residue, values from the potato metabolism study were considered, since no conversion factor could be derived due to unquantifiable residues of parent phosmet. The available plant metabolism study approximated the cGAP in terms of pre-harvest interval and number of treatments but was conducted at higher rates per application and was therefore considered as representing a conservative estimate for the residues. The meeting estimated a STMR of 0.23 mg/kg (calculated from 0.44 mg/kg phosmet) for phthalic acid and a STMR of 0.73 mg/kg (calculated from 0.84 mg/kg phosmet) for phthalamic acid, expressed as folpet.

Tree nuts

Almonds

The critical GAP for almond in the United States of America allows two foliar applications of phosmet at 3.36 kg ai/ha, RTI not stated and a PHI of 30 days. No corresponding supervised field trials matched the US GAP.

Hazelnuts

The critical GAP for hazelnuts (filberts) in the United States of America allows up to two foliar applications of phosmet at 6.7 kg ai/ha, RTI not stated and a PHI of 28 days. No corresponding supervised field trials matched the US GAP.

Pecans

The critical GAP for pecans in the United States of America allows four foliar applications of phosmet at 2.24 kg ai/ha, RTI not stated and a PHI of 14 days.

Field trials conducted with pecans in the United States of America were performed according to the GAP (±25 percent), giving residues of phosmet of <0.05 (2) mg/kg.

The meeting concluded that the number of trials is insufficient to estimate maximum residue levels for phosmet in pecans.

Pistachio nut

The critical GAP for pecans in the United States of America allows four foliar applications at 3.36 kg ai/ha, RTI not stated and a PHI of 14 days. No corresponding supervised field trials matched the US GAP.

Walnuts

The critical GAP for walnuts in the United States of America allows up to two foliar applications of phosmet for at 6.7kg ai/ha, RTI not stated and a PHI of 28 days. No corresponding supervised field trials matched the US GAP.

The meeting agreed to withdraw the previous maximum residue level recommendation of 0.2 mg/kg for phosmet in group of tree nuts.

Cottonseed

The meeting received no use pattern information and/or supervised field trials for cotton seed and agreed to withdraw the previous maximum residue level recommendation of 0.05 mg/kg for cottonseed.

Feeding stuff

Almond hulls

The critical GAP for almond in the United States of America allows two foliar applications of phosmet at 3.36 kg ai/ha, RTI not stated and a PHI of 30 days. No corresponding supervised field trials matched the US GAP.

Fate of residues during processing

The meeting received information on the hydrolysis of [carbonyl-14C]-labelled phosmet, simulating typical processing conditions (90 °C, pH 4, 20 minutes to simulate pasteurization, 100 °C, pH 5, 60 minutes to simulate boiling, baking and brewing and 120 °C, pH 6, 20 minutes to simulate sterilization).

Under the condition of pasteurization limited hydrolysis of phosmet occurred, with 84 percent AR remaining. Under the condition of boiling, baking and brewing significant hydrolysis occurred with 20–42 percent phosmet remaining. Under the condition to simulate sterilization, complete or nearly complete hydrolysis of phosmet was observed with only 0–2.1 percent remaining.

Major identified hydrolysis products across all tested conditions were desmethyl-phosmet (up to 15 percent AR) phthalimide (up to 30 percent AR), phthalamic acid (up to 20 percent AR), phthalic acid (up to 99 percent AR) and N-hydroxymethyl phthalamic acid (up to 51 percent AR).

The meeting concluded that phosmet is moderately stable under the conditions of pasteurization, but not under conditions of boiling, baking and brewing or under the conditions of sterilization.

The fate of phosmet residues has been examined simulating household and commercial processing of orange, apple, peach, grape and potato. The processing factors and STMR-P estimations are shown in Table 5.29.7.

Table 5.29.7 Estimated processing factors and STMR-P of processed commodities according to the residue definition phosmet

Crop	Residue (mg/kg) in RAC		Processed commodity	Individual PF	Median or best estimate PF	Residue (mg/kg) in processed commodity	
	MRL	STMR				MRL-P	STMR-P
Potato	0.05	0	Potato chips	<0.5	<0.5	–	0
			Wet peel	1.0	1.0	–	0
			Dry peel	3.3	3.3	–	0
			Granules	<0.5	<0.5	–	0

Residues in animal commodities

Farm animal feeding studies

Feeding studies on farm animals were not provided. Based on the recommendation by the current meeting no exposure to livestock is expected.

Recommendations

On the basis of the data obtained from supervised trials, the meeting concluded that the residue levels listed in Table 5.29.8 and Annex 1 are suitable for establishing maximum residue limits and for dietary exposure assessments.

Definition of the residue for compliance with the MRL for plant and animal commodities: *phosmet.*

Definition of the residue for phosmet long-term dietary risk assessment for plant commodities: *sum of phosmet plus 6-times 2-(dimethoxyphosphoryl-sulfanylmethyl)isoindole-1,3-dione (phosmet-oxon), expressed as phosmet.*

Definition of the residue for phosmet acute-term dietary risk assessment for plant commodities: *sum of phosmet plus 25-times 2-(dimethoxyphosphoryl-sulfanylmethyl)isoindole-1,3-dione (phosmet-oxon), expressed as phosmet.*

Definition of the residue for phosmet dietary risk assessment for animal commodities: *sum of phosmet and 2-{[(methanesulfonyl)methyl] carbamoyl}benzoic acid ($PaAMSO_2Me$), expressed as phosmet.*

Definition of the residue for phthalic acid long-term dietary risk assessment for plant and animal commodities: *phthalic acid.*

Definition of the residue for phthalamic acid long-term dietary risk assessment for plant and animal commodities: *phthalamic acid, expressed as folpet.*

The residue is not fat-soluble.

Table 5.29.8 Residue levels suitable for establishing maximum residue limits and for dietary exposure assessment

Commodity		Recommended maximum residue level, mg/kg		STMR or STMR-P, mg/kg	HR or highest residue, mg/kg
CCN	Name	New	Previous		
FS 0240	Apricots	W	10	–	–
SO 0691	Cottonseed	W	0.05	–	–
FB 0265	Cranberries	3	3	1.15 1.7 (phthalic acid) 1.8 (phthalamic acid as folpet)	2.2
FB 0020	Blueberries	20 $	10	4.5 7.4 (phthalic acid) 8.0 (phthalamic acid as folpet)	17
FB 0269	Grapes	W	10	–	–
FC 0001	Group of citrus fruit	W	3	–	–
FP 0009	Group of pome fruits	W	10	–	–
TN 0085	Group of tree nuts	W	0.2	–	–

Commodity		Recommended maximum residue level, mg/kg		STMR or STMR-P, mg/kg	HR or highest residue, mg/kg
CCN	Name	New	Previous		
MM 0095	Meat (from mammals other than marine mammals)	W	1 (fat)	–	–
ML 0106	Milks	W	0.02	–	–
FS 0245	Nectarine	W	10	–	–
FS 0247	Peach	W	10	–	–
VR 0589	Potato	0.05*	0.05*	0 0.23 (phthalic acid) 0.78 (phthalamic acid as folpet)	0

Note: $ may present an acute health concern.

Dietary risk assessment

Long-term dietary exposure

The ADI for phosmet is 0–0.006 mg/kg bw. The IEDIs for phosmet were estimated for the 17 GEMS/Food Consumption Cluster Diets using the STMR or STMR-P values estimated by the JMPR. The results are shown in Annex 3 of the 2024 JMPR report.

The IEDIs ranged from 0 to 1 percent of the maximum ADI. The meeting concluded that long-term dietary exposure to residues of phosmet from uses considered by the JMPR is unlikely to present a public health concern.

The ADI for phthalic acid is 0–0.1 mg/kg bw. The IEDIs for phthalic acid were estimated for the 17 GEMS/Food Consumption Cluster Diets using the STMR or STMR-P values estimated by the JMPR. The results are shown in Annex 3 of the 2024 JMPR report.

The IEDIs ranged from 0 to 1 percent of the maximum ADI. The meeting concluded that long-term dietary exposure to residues of phthalic acid from uses considered by the JMPR is unlikely to present a public health concern.

For long-term dietary exposure to residues of phthalamic acid, expressed as folpet from uses considered by the JMPR, see report on folpet.

Acute dietary exposure

The ARfD for phosmet is 0.03 mg/kg bw. The IESTIs were calculated for the food commodities and their processed commodities for which HRs/HR-Ps or STMRs/STMR-Ps were estimated by the present meeting and for which consumption data were available. The results are shown in Annex 4.

The IESTIs varied from 0 to 650 percent of the ARfD for children and 0 to 520 percent of the ARfD for the general population. The meeting concluded that acute dietary exposure to residues of phosmet from uses considered by the present meeting is unlikely to present a public health concern, except for blueberries,

where IESTIs exceeded 100 percent of the maximum ARfD (650 percent for Canadian children and 520 percent for the general population).

5.30 Phosphonic acid (301) (R)

5.30.1 Residue and analytical aspects

Phosphonic acid, fosetyl and fosetyl aluminium (fosetyl-Al) are closely related systemic fungicides. Authorisations exist for phosphonic acid (formulated as potassium, sodium and ammonium salts) in a number of countries for use as trunk injections, pre-plant dips, foliar, soil and post-harvest treatments.

Fosetyl-Al and phosphonic acid were first evaluated by the JMPR in 2017, when residue definitions and health-based guidance values were established. Phosphonic acid, as the major metabolite of fosetyl-Al and fosetyl, is toxicologically similar to fosetyl-Al and is covered by the ADI for fosetyl-Al of 0–1 mg/kg bw.

The 2017 JMPR established residue definitions for plant and animal commodities:

- For compliance with MRLs and dietary risk assessment for plant commodities: sum of fosetyl, phosphonic acid and their salts, expressed as phosphonic acid.
- For compliance with MRLs and dietary risk assessment for animal commodities: Phosphonic acid.
- The residue is not fat-soluble.

The meeting agreed to evaluate the fosetyl, fosetyl-Al and phosphonic acid together and to prepare a single appraisal and evaluation for fosetyl and its salts as well as phosphonic acid and its salts.

A review of the information and studies relating to phosphonic acid on citrus, the estimations of maximum residue levels, STMRs and dietary risk assessment are reported in the fosetyl aluminium (fosetyl-Al) appraisal.

5.31 Prochloraz (142)** (R)

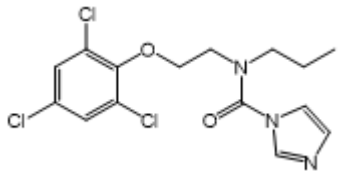
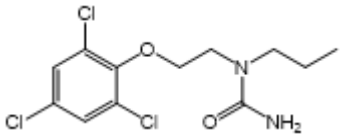
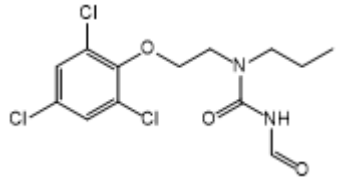
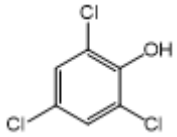
5.31.1 Residue and analytical aspects

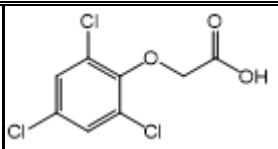
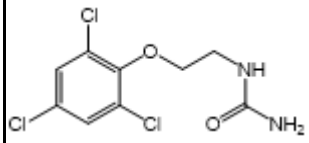
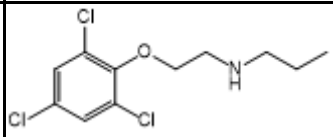
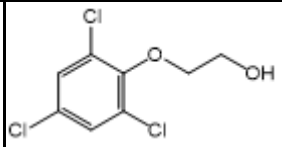
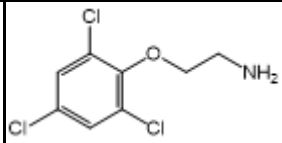
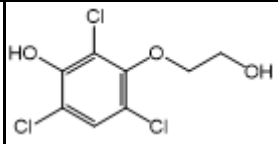
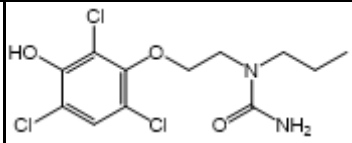
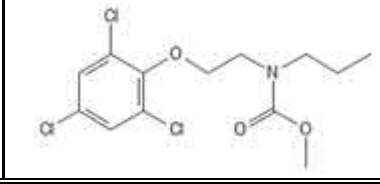
Prochloraz is a broad-spectrum imidazole fungicide, inhibiting ergosterol biosynthesis and active against a range of diseases caused by ascomycetes and fungi imperfecti. It can be used in fruit, vegetables, field crops, mushrooms, as a post-harvest treatment of fruit and as a seed treatment on cereals.

Prochloraz was first evaluated in 1983 for residues and toxicology, and subsequently for residues in 1985, 1987, 1988, 1989, 1990 and 1992 and for toxicology in 2001 under the CCPR Periodic Review Programme. The compound was evaluated for residues by the 2004 and 2009 JMPR. At the 51st session of the CCPR (2019), it was scheduled for periodic evaluation in 2021 and rescheduled to the 2023 JMPR. In 2023, the meeting established an ADI of 0–0.02 mg/kg bw and an ARfD of 0.2 mg/kg bw. In addition, it was agreed that metabolites BTS 44595, BTS 54906 and BTS 44770 are assessed against the threshold of toxicological concern as a Cramer class III compound. The assessment of residues was again postponed to the 2024 meeting.

The meeting received information on identity, physical and chemical properties, metabolism in plants and animals, environmental fate, analytical methodology, storage stability, supervised residues trials, processing studies and livestock feeding studies. Information on the compounds discussed in this appraisal is shown in Table 5.31.1.

Table 5.31.1 Abbreviations used for relevant compounds referred to in the appraisal

Name and/or code	Name	Structure
Prochloraz	N-propyl-N-[2-(2,4,6-trichlorophenoxy)ethyl]imidazole-1-carboxamide	
BTS 44595	N-propyl-N-[2-(2,4,6-trichlorophenoxy)ethyl]urea	
BTS 44596	N-formyl-N-propyl-N-[2-(2,4,6-trichlorophenoxy)ethyl]urea	
2,4,6-TCP BTS 45186	2,4,6-trichlorophenol	

BTS 9608	2,4,6-trichlorophenoxyacetic acid	
BTS 44770	N-2-(2,4,6-trichlorophenoxy)ethylurea	
BTS 40348 M201-07	N-propyl-N-[2-(2,4,6-trichlorophenoxy)ethyl]-amine	
BTS 3037	2-(2,4,6-trichlorophenoxy)ethanol	
M201-09	(2-(2,4,6-trichlorophenoxy)-ethylamine)	
BTS 54906	3-hydroxy-2,4,6-trichlorophenoxyethanol	
BTS 54908	N-2-(2,4,6-trichloro-3-hydroxyphenoxy)ethyl-N-propylurea	
M201-06	N-propyl-N-[2-(2,4,6-trichlorophenoxy)ethyl]	

Physical and chemical properties

Prochloraz is not volatile and not susceptible to hydrolysis under acidic or neutral condition. At pH 9, hydrolysis was more rapid. Prochloraz is moderately degraded by photolysis into BTS 44596 with half-life times of approximately 12 days in sterile water. Depending on the method used, the log P_{ow} for prochloraz ranged from 3.49 to 4.39.

Plant metabolism

The meeting received information on the metabolism of prochloraz in mushrooms, oilseed rape, barley, wheat. Typical label position were uniform ^{14}C-labelling of the phenyl or imidazole ring and ^{3}H-labelling of the phenyl ring.

In addition, investigation on the degradation of prochloraz in fruit crops following post-harvest treatment (mandarins, apples, pears) and foliar treatment (bananas) was reported in public literature. Analysis of residues these studies involved common moiety determination of all metabolites containing the BTS 45186 structure (2,4,6-TCP, referred to as total prochloraz).

Mandarins (post-harvest)

In public literature, the dissipation of total prochloraz residues (determined as 2,4,6-TCP) in mandarin oranges and the translocation from peel into pulp was investigated. Fruits were dipped into a solution of 0.5 or 1.0 g ai/L for one minute and stored for 7, 14 or 21 days either at room temperature (16–20 °C) or refrigerated conditions (4 °C).

At each time point, sampled fruits were manually separated into peel and pulp. Analysis for total prochloraz residues was conducted by initial extraction with acetone, clean-up and hydrolysis with pyridine hydrochloride. Total prochloraz residues were quantified by GC-ECD.

Under both storage conditions, total prochloraz residues declined quickly without a significant influence of the temperature. For whole fruits, half-life times were 8.2 days at room temperature and 10.8 days at 4 °C, with corresponding decline curves for peel and pulp.

Apples (post-harvest)

In public literature, the decline of total prochloraz (determined as 2,4,6-TCP) in apples (var. Red Fuji) following post-harvest treatment was described following dipping into a solution containing 1.0 or 2.0 g ai/L. Samples were stored for up to 84 days either at room temperature (20 °C) or under refrigerated conditions (2 °C). At specified time points, fruits were peeled (2mm peel by mechanical peeling). Analysis was conducted by initial extraction with acetone, clean-up and hydrolysis using pyridine hydrochloride to release the 2,4,6-TCP moiety. Final determination was achieved by GC-ECD.

Both for apple whole fruits (approx. 3.3–5.9 mg eq/kg) and apple peel (approx. 12.5–21 mg eq/kg), half-life times were similar irrespective of the storage temperature, ranging from 58 to 69 days and 63 to 87 days, respectively. In apple pulp, total prochloraz slowly built up until the end of the study after 84 days, reaching concentrations of approximately 0.3–0.45 mg eq/kg.

Pears (post-harvest)

In public literature, the decline of parent prochloraz in pears following post-harvest treatment was investigated following dipping for 5 minutes into a solution containing 0.225 or 0.45 g ai/L. Samples were stored for up to 21 days at room temperature (25 °C) and up to 180 days under refrigerated conditions (2 °C). At specified time points, fruits were peeled (2mm peel by mechanical peeling). Analysis of the parent was conducted by QuEChERS like extraction with final determination by UPLC-UV targeting parent prochloraz specifically.

In the peel, residue concentrations decreased steadily, with half-life times of 8.8–13.9 days at 25 °C and 173–231 days at 2 °C for both application rates. In the pulp, prochloraz concentrations increased up to 0.7–1.0 mg/kg after 14 days for the samples stored at room temperature (max. duration). Under 2 °C conditions, a plateau was reached between 60 and 90 days of storage, followed by decline until the end of the study (180 days).

Bananas (foliar spray)

In public literature, the decline of residues in bananas was described following foliar treatment in the field. In three Chinese regions, plants were sprayed three times once per week with approx. 0.027 kg ai/hL each. Samples were collected after 0, 1, 3, 5 and 7 days, plus one sample every week up to 35 days after the last application (DALA). Bananas were separated into peel and pulp, and extracted with acetonitrile, followed by a clean-up and hydrolysis of all compounds containing the 2,4,6-TCP moiety with pyridine hydrochloride. Final determination was achieved by HPLC-UV (290 nm).

The decline of residues was comparable in all matrices investigated. For whole bananas, half-life times of 8.3–10.8 days for total prochloraz were estimated. These half-life times were significantly faster for the peel (3.9–5.6 days) and lower for the pulp (10.4–12.8 days).

Mushrooms (bed spray treatment)

The metabolism of [^{14}C]-phenyl labelled-prochloraz in mushrooms has been studied following application to a mushroom bed. A single application was made post emergence to the first crop at 3 g ai/m^2 to mushrooms grown under standard commercial growing conditions. Mushrooms were harvested at 8, 16, 23, 30 and 37 DALA.

Total radioactive residues (TRR) in mushrooms following combustion analysis ranged from 0.13–0.82 mg eq/kg, without a trend for decline or accumulation over time. The majority of the radioactivity (77–102 percent TRR) was extracted with acetone. The extracts of samples collected at day 8 and 30 DALA were subject to TLC and HPLC analysis for identification. In addition, total prochloraz residues were analysed in all samples.

In both samples, parent prochloraz was the major part of the residue, representing 75–85 percent TRR (0.53–0.83 mg eq/kg). BTS 9608 was identified as a minor metabolite, representing 9.1–9.9 percent of the TRR (0.048–0.082 mg eq/kg). In addition, traces of unidentified conjugated residues containing the 2,4,6-TCP moiety were found (0.4–0.5 percent TRR, 0.003 mg eq/kg). Analysis of the radioactivity using the 2,4,6-TCP common moiety method recovered 63–132 percent TRR quantified by combustion (mean: 93 percent, RSD: 26 percent).

Oilseed rape (foliar treatment)

Oilseed rape at the 5–8 leaf growth stage (BBCH 15–18) was treated with [14C]-phenyl-prochloraz equivalent to a rate of 663 g ai/ha under greenhouse conditions. Immature harvests were taken after application and at 18–19 DALA. Seeds, seed pods, treated leaves, top growth (foliage above treated leaves) and bottom growth (foliage below treated leaves) were collected at 83–90 DALA.

Plant tissues were washed with acetone then sequentially extracted with acetone, acetonitrile and acetonitrile/water (80:20). Post-extraction solids (PES) from treated leaves were microwave extracted

sequentially with acetonitrile:water (80:20), acetonitrile:water (50:50) and 6 mol/L HCl. Extracted radioactivity was characterized by co-chromatography against reference standards (TLC and HPLC) and identified by mass spectrometry. In addition, total prochloraz residues were quantified in treated leaves extracts.

TRR levels were highest in foliage (0 and 19 DALA) and in treated leaves (83-90 DALA) with 4.7–35.1 mg eq/kg. Seed pods (0.38 mg eq/kg) and seeds (0.05 mg eq/kg) contained significantly lower total radioactive residues. In top and bottom growth (untreated new leaves), TRR levels were 0.37–0.47 mg eq/kg.

Acetone wash released the majority of the radioactivity from foliage (70–90 percent TRR) and mature treated leaves (38 percent TRR). From other matrices, <1 percent TRR was recovered in the wash. Subsequent extraction with acetone, acetonitrile and acetonitrile:water (80:20) recovered only a small proportion of the radioactivity with a total of 54 percent TRR for seeds, 38 percent TRR for pods and 21–26 percent TRR for new grown leaves. Consequently, unextracted residues ranged from 2.2–17 percent in foliage to 44 percent TRR in seeds, 60 percent TRR in pods and up to 77 percent TRR in new grown leaves. Analysis of the unextracted residues in treated leaves (17 percent TRR) by microwave extraction and acidic hydrolysis released additional unidentified polar metabolites containing the 2,4,6-TCP moiety (10.4 percent TRR), leaving 4.9 percent of the TRR as bound.

In freshly treated foliage, parent prochloraz was the predominant residue, representing 88 percent TRR. However, concentrations declined quickly to 2.8 percent TRR in foliage after 19 days. In seeds, prochloraz was the only major residue (11 percent TRR, 0.01 mg/kg), while it was a minor residue in all other matrices (up to 2.2 percent TRR). Major metabolites identified were BTS 44595 and BTS 44596 in foliage at 19 DALA and in treated leaves at 83 DALA (19–29 percent TRR each). In seeds, both compounds were present in minor amounts, representing 3.5–8.7 percent TRR (<0.01 mg eq/kg). Free 2,4,6-TCP was found as a minor metabolite (0.2–2.9 percent TRR) in most matrices.

Analysis of the radioactivity using the 2,4,6-TCP common moiety method recovered >99 percent TRR found in the acetone wash and extract of treated leaves.

Barley (foliar spray)

Prochloraz (phenyl-^{14}C label) was applied twice as a foliar spray to spring barley in the United Kingdom of Great Britain and Northern Ireland under outdoor conditions. The first application was made at BBCH 51–55 (inflorescence emergence) and the second seven days later at BBCH 55–59 (end of inflorescence) at rates of *ca*. 0.56 kg ai/ha each. Mature barley (BBCH 87) was harvested 41 DALA, allowed to dry for one day and separated into grain and chaff+straw.

Extraction of homogenized samples of grain and straw plus chaff was complex. Initial extraction was under Soxhlet conditions with acetone, reduction to dryness and partitioning between water and petroleum ether. Subsequently, acetone:water (1:1), water, 0.1 mol/L HCl, 0.1 mol/L NaOH, 0.1 mol/L sodium EDTA, 1 mol/L HCl and 1 mol/L NaOH were used to release residues. Selected extracts were worked-up and analysed by co-chromatography with reference standards by HPLC and TLC. In addition, total prochloraz residues (determined as 2,4,6-TCP) were quantified.

TRR represented 1.17 mg eq/kg in grain and 31.8 mg eq/kg in chaf/straw. Large proportions of the radioactivity were released by the initial acetone (23 percent TRR for grain and 71 percent TRR for chaff/straw) and acetone:water (1:1) extractions (47 percent TRR for grain and 9.8 percent TRR for chaff/straw). Each of the other extraction steps recovered a small proportion of radioactivity (<10 percent TRR), except for the final 1 mol/L NaOH extraction, which released 11 percent TRR from the grain. In total, nearly 100 percent TRR was recovered in the various extracts, leaving <1 percent TRR as unextracted.

In the quantitatively most relevant extracts (sum of acetone and acetone:water extract), BTS 44595 was the only major residue found in grain (25.9 percent TRR, 0.30 mg eq/kg) and chaff/straw (43.6 percent TRR, 13.9 mg eq/kg). Parent prochloraz was quantified at low proportions, representing 1.5 percent TRR in grain (0.018 mg eq/kg) and 5.3 percent in chaff/straw (1.7 mg eq/kg). Various metabolites (BTS 44596, BTS 44770, M201-07, BTS 3037, BTS 9608 and free 2,4,6-TCP were each identified in grain and chaff/straw in minor proportions of 1.6–5.8 percent TRR (0.019–0.068 mg eq/kg) and 0.6–7.6 percent TRR (0.19–2.4 mg eq/kg), respectively. In total, the sum of the analysed extract covered 70 percent TRR for grain and 80 percent TRR for chaff/straw, from which 44.6 percent TRR and 65.1 percent TRR have been identified. Analysis of the radioactivity using the 2,4,6-TCP common moiety method recovered 32–71 percent TRR from various extracts.

Wheat

In total, seven plant metabolism studies were submitted investigating the metabolic fate prochloraz in wheat following direct treatment to the plant (foliar spraying, direct spot application or seed/soil application).

Study 1 (foliar treatment)

Wheat was treated with ^{3}H-phenyl-labelled prochloraz at a rate equivalent to 1 kg ai/ha with a single foliar treatment at flag leaf sheath opening stage. Mature wheat samples (straw, chaff and grain) were collected 13 weeks later. Samples of straw and grain were submitted to Soxhlet extraction with methanol, followed by partitioning with ethyl acetate. PES were treated by 24h hydrolysis with 6 mol/L HCl at 60 °C. Radioactivity was analysed by combustion+LSC and for free and releasable 2,4,6-TCP residues (after derivatisation) by HPLC-SC, TLC and GC-MS.Total radioactive residues amounted 26.5, 13.2 and 0.26 mg eq/kg in mature straw, chaff and grain, respectively. Extraction recovered 43–55 percent TRR by the initial methanol extract. Acidic hydrolysis of the PES released an additional 22–34 percent TRR while 22–25 percent TRR remained unextracted.

Analysis of the extracts showed low presence of free 2,4,6-TCP both in grain (3.4 percent TRR, 0.009 mg eq/kg) and straw (5.2 percent TRR, 1.38 mg eq/kg). The major part of the radioactivity was recovered by the common moiety methods as 2,4,6-TCP following derivatisation, namely 53.9 percent TRR for grain (0.14 mg eq/kg) and 58.4 percent TRR for straw (15.5 mg eq/kg). The rest of the radioactivity remained unidentified.

Study 2 (foliar spot droplet treatment)

The metabolism of ^{3}H-phenyl-labelled prochloraz in wheat was investigated by foliar droplet application equivalent to 1 kg ai/ha under greenhouse conditions to plant at six leaf stage. After 1 and 19 days, green plants were harvested and analysed for residues.Total radioactive residues in the freshly treated plant at

1 DALA represented 98.0 percent of the nominal applied radioactivity (AR). In 19 DALA samples, recovered radioactivity was quantified at 7.98 mg eq/kg (representing 82.6 percent nominal AR).

A total of 67 percent TRR (6.44 mg eq/kg) was recovered by the initial extraction with acetone:water (90:10). Subsequent PES extraction with methanol recovered additional 13 percent TRR (1.3 mg eq/kg), and 2.7 percent TRR (0.26 mg eq/kg) remained unextracted. To release conjugates, hydrolysis treatment was applied using 6 mol/L HCl at 60 °C for 24h. Analysis of metabolites was conducted with radio-HPLC against reference compounds BTS 44596, BTS 44595, BTS 9608 and 2,4,6-TCP. In the wheat plants (19 DALA), only 1.1 percent AR were identified as parent prochloraz. Major residues were BTS 44595, primarily present in conjugated form (11 percent AR free, 19.5 percent AR conjugated, 30.5 percent AR total) and BTS 44596 (31.6 percent AR). Free and conjugated 2,4,6-TCP were identified in minor proportions of 1.4 percent and 6.8 percent AR each (total 8.2 percent AR). BTS 9608 was only detected in traces (0.21 percent AR). Several unknown minor metabolites could not be attributed to the reference compounds used for comparison (0.04–3.2 percent AR each, total 5.5 percent AR).

Study 3 (foliar treatment)

Wheat plants in the flag leave stage were treated with a single foliar treatment equivalent to 1 kg ai/ha either with ^{3}H-phenyl-labelled or ^{14}C-imidazole-labelled prochloraz. Samples of mature straw and grain were collected after 13 weeks and separated into grain, straw and chaff.

Total radioactive residues were measured by total oxidation. TRR levels found in the various matrices amounted 0.26 mg eq/kg in grain, 13 mg eq/kg in chaff and 27 mg eq/kg in straw following application of ^{3}H- prochloraz and 2.2 mg eq/kg in grain, 14 mg eq/kg in chaff and 24 mg eq/kg in straw following application of ^{14}C- prochloraz.

For the analysis of samples treated with ^{3}H-prochloraz, grain and straw were subsequently extracted by 1) methanol Soxhlet, 2) acid hydrolysis of the remaining pellet and 3) repeated methanol Soxhlet extraction. Extracts of grain and straw were partitioned at pH 2.5 (“acid fraction”) and for straw additional partitioned at pH 10 (“basic fraction”), all into ethyl acetate. Finally, “acid fractions” were treated with pyridine hydrochloride at 220 °C to release all conjugates and transform residues into the 2,4,6-TCP moiety.

In the grain 39.5 percent TRR was recovered as total 2,4,6-TCP, with an additional 8.4 percent TRR being present as free 2,4,6-TCP. In straw, proportions were comparable (38 percent TRR as total 2,4,6-TCP and 4.1 percent TRR in free form). The rest of the extracted radioactivity (76–80 percent extracted) remained unidentified. For grain following treatment with ^{14}C- prochloraz, starch was extracted using dimethylsulphoxide:water (9:1) and precipitated with methanol. The remaining residue was refluxed in 6 mol/L HCl, adjusted to pH 3.0 and partitioned with ethyl acetate. In total, 32.4 percent TRR were recovered in the starch. The remaining radioactivity in grain was recovered, with 12.5 percent in solids, 6.6 percent in the acid fraction and 48.8 percent in the aqueous fraction. Further analysis on the composition of the residue was not conducted.

Study 4 (soil or plant spot treatment)

[^{3}H]-prochloraz was applied under experimental conditions (no hectare rate equivalents reported) either to the soil in which wheat seeds were germinating or to the third leaf of growing wheat plants. The treatment was conducted as single seed/plant treatment with syringe. At appropriate intervals after

treatment (21 days for soil treatment and 24 days for foliar treatment), the plants were harvested, sectioned into root, stem, tillers and leaves and the radioactivity in each section assayed.

Following soil treatment, some radioactivity may have accumulated in the roots but translocation into the aerial portions of the plant was very limited (less than 0.1 percent of the material applied). Following foliar application there was little translocation between the leaves or movement from the leaves into the roots. The majority of the radioactivity was recovered from the directly treated leaves (>99 percent AR) while other plant parts contained not more than 0.3 percent of the AR each. No identification of the residue was conducted.

Study 5 (foliar treatment)

Wheat was sprayed at growth stage Zadoks 39 (flag leaf visible) with [^{14}C]-phenyl prochloraz at an application rate corresponding to 390 g ai/ha under greenhouse conditions. Whole plants (forage) were sampled 20 DALA and the remaining plants were harvested at normal maturity (98 DALA) and divided into straw, chaff and grain. Total residues in plant samples were determined by combustion. Samples were washed with acetone then sequentially extracted with acetone, acetonitrile and acetonitrile:water (50:50). Extracts containing polar metabolites were hydrolysed with pyridinium chloride and HCl. PES was Soxhlet extracted with acetonitrile:water (80:20) for 16 h, then hydrolysed with concentrated HCl for 16 h to liberate bound residues. Extracted radioactivity was characterized by co-chromatography against reference standards (TLC and HPLC) and identified by mass spectrometry. In addition, the quantitative conversion of residues in the solvent extracts to the common moiety (2,4,6-TCP) was investigated levels in the wheat forage collected at 20 DALA were 6.91 mg eq/kg. In grain, chaff and straw at 98 DALA, TRR levels were 0.023 mg eq/kg, 0.13 mg eq/kg and 20.9 mg eq/kg, respectively. In the forage, 93 percent TRR were recovered by washing with acetone. In grain, chaff and straw, the majority of the radioactivity was released by extraction with acetonitrile:water (50:50) with rates of 14, 52 and 37 percent TRR, respectively. Radioactivity in PES were highest in grain (84 percent TRR), followed by chaff (36 percent TRR) and straw (16 percent TRR). Identification of radioactivity was only conducted for foliage and straw, where prochloraz was a minor residue, found at 0.6 and <0.1 percent TRR, respectively. The only major residue identified was BTS 44596, present at 38 percent TRR in foliage (2.6 mg eq/kg) and 26 percent TRR in straw (5.4 mg eq/kg). In addition, BTS 44595 represented 8 percent TRR in both matrices (0.55 and 1.7 mg eq/kg for foliage and straw). Intensive extraction and acid hydrolysis of the PES released additional minor amounts of BTS 44595, BTS 44596 and 2,4,6-TCP, each at <1 percent TRR. In total, 46 percent TRR in foliage and 36 percent of the TRR in straw were identified. The majority of radioactivity remained characterized as polar.

Common moiety analysis of the acetone wash, acetone extract and acetonitrile extract of the straw sample recovered 73–84 percent TRR in the respective extracts.

Study 6 (foliar spray or spot treatment)

Four formulations of phenyl- or imidazole-[^{14}C]-prochloraz were applied to wheat either at a rate of 0.4 mg of prochloraz per plant by overall spraying or by spot treatment via syringe application to the major leaves. Treatments were performed at sixth leaf stage (BBCH 16). Plants were sampled one day after application (DALA 1) and at ear emergence (BBCH 59, DALA 46) and harvest (BBCH 89, DALA 102). The application rates equalled between 0.8 and 1.0 kg ai/ha.

TRR was quantified by combustion analysis. Extraction was performed by Soxhlet with acetone, evaporated to dryness, solved in water and partitioned with petroleum ether. Identification of metabolites was carried out using radio-HPLC and TLC. Unextracted radioactivity was further extracted by refluxing with 1 mol/L HCl or 1 mol/L NaOH followed by further extraction using petroleum ether and subsequently enzyme extractions (cellulose, pectinase, ß-glucosidase, hesperidinase, α-amylase and ß-amylase).TRR were highest in directly treated plant parts (shoots: 2.8–18 mg eq/kg, leaves: 20–81 mg eq/kg after foliar application and shoots: 21–26 mg eq/kg, leaves: 19–56 mg eq/kg after spot application), followed by straw (4.9–12 mg eq/kg, foliar application only). Lower radioactivity was found for both application techniques in grain (0.02–0.39 mg eq/kg) and roots (0.02–0.79 mg eq/kg). Extraction of the radioactivity following application of imidazole-[^{14}C]-prochloraz recovered 15–76 percent TRR from shoots and leaves at 1 DALA, which decreased to 5.6–19 percent TRR at 46 DALA. In straw and grain (101 DALA), less than 10 percent TRR were extracted. Parallel acidic or basic hydrolysis released the majority of radioactivity from the PES (27–74 percent TRR each), however no identification of the residue was conducted.

Identification in the acetone extract showed low levels of prochloraz in all matrices (not detected to 11.4 percent TRR in roots). The only metabolite identified was BTS 44596, present between 2 and 47 percent TRR in leaves, shoots and roots, but undetected in grain. For samples following phenyl-[^{14}C]-prochloraz treatment, acetone extraction recovered 65–100 percent of the TRR from plant tissues at DALA 1, but only 6.7–40 percent at later sampling timings or from grain. PES ranged from 22–88 percent of the TRR. As for the imidazole-label, acid or basic hydrolysis released the major part of radioactivity from the PES (without further identification).

In grain, no parent or related metabolites could be identified. In plant tissues, parent prochloraz was a minor component of the radioactivity (<6.2 percent TRR), except for samples collected at 101 DALA (root, straw: 11.7–16.8 percent TRR, 0.03 mg eq/kg each). The only major metabolite identified was BTS 44596, representing 6.6–49.4 percent of the TRR in shoots, straw or roots. In addition, minor amounts of BTS 9608, BTS 3037, M201-07, 2,4,6 TCP, BTS 44770, BTS 44595 and M201-09 were identified, none of them exceeding 4.6 percent TRR.

Study 7 (seed treatment)

[^{14}C]-phenyl labelled-prochloraz was applied to wheat seeds as a seed dressing equivalent to a rate of 0.4 g ai/kg seed. After treatment, each seed was individually sown in pots, germinated and grown under glass. Three to six plants were harvested 2, 6, 9 and 29 weeks after sowing.

Translocation of radioactivity into aerial plant parts was low. After two weeks, <1 percent of the AR was recovered from stems or leaves. At later intervals, concentrations in stems increased (up to 45 percent AR, 0.03 mg eq/kg). Mature straw contained 6.5 percent AR (0.23 mg eq/kg) while concentrations in grain remained low (0.04 percent AR, 0.004 mg eq/kg).

Summary of plant metabolism

The metabolic pathway of prochloraz was investigated in the crop groups pulses and oilseeds (oilseed rape), cereal grains (wheat, barley) as well as in mushrooms.

Within few days after application to plants, prochloraz is degraded primarily via hydroxylation of the imidazole-ring forming BTS 44596, followed by formation of BTS 44595. Subsequently, many minor

metabolites containing the 2,4,6-TCP moiety are formed, however identification of the structures and quantification of their amounts was rarely achieved. In addition, release of free 2,4,6-TCP was observed at low rates, however the moiety was quickly conjugated.

In mushrooms, parent prochloraz was found as predominant residue following bed treatment. Only BTS 9608 was found as a minor metabolite, suggesting significant cleavage on the imidazole-side of the molecule (not radiolabelled in metabolism studies).

Decline and translocation experiments described in public literature demonstrated penetration of the skin over time for oranges, apples and pears following post-harvest and for bananas following foliar treatment with increasing ratios of the residue being located in the pulp. However, the quantitatively relevant part remained on the peel for all commodities.

Animal metabolism

The metabolism of prochloraz in animal was investigated in rats, lactating goats, cows and in laying hens.

Rats

The metabolism of prochloraz in rats was reviewed in the framework of the toxicological evaluation by the WHO Core Assessment Group in the 2023 JMPR.

Lactating goats

Field grown wheat was treated with [14C]-labelled-prochloraz (position not reported) at a rate equivalent to 0.94 kg ai/ha. Mature straw (harvested after eleven weeks), which contained total radioactive residues equivalent to 19 mg/kg, was fed to the goat for a period of 4 consecutive days at 400, 270, 280 and 300 g/day.

After 24h following the last dose, the animal was sacrificed and radioactive residues in tissues quantified. Milk was collected twice daily over the whole dosing period.

TRR levels in milk remained steady over the four days with values between 0.001 and 0.06 mg eq/kg. Residues were quantified liver (0.05 mg eq/kg) and fat matrices (omental and kidney fat, 0.03–0.04 mg eq/kg), but residues in the other matrices were below the LOQ of 0.02 mg eq/kg.

No identification of the radioactivity in the straw fed or in animal matrices was conducted.

Lactating cows

One lactating cow received daily doses of [^{14}C]-phenyl-prochloraz in gelatine capsules twice daily (morning and evening) for 3 days at a rate of 1.5 mg/kg bw/day (equals approx. 366 ppm). Milk was collected twice daily immediately after dosing. The cow was sacrificed 16 hours after the last dose and tissues samples were collected. Total radioactive residues were subject to liquid scintillation counting (LSC) quantification. TRR levels in milk increased steadily, starting at 0.02 mg eq/kg to 0.18 mg eq/kg after 72h. In tissues, the highest TRRs were found in the liver (10 mg eq/kg) and kidney (1.7 mg eq/kg). Residues in muscle and renal fat were substantially lower at 0.07 mg eq/kg and 0.21 mg eq/kg, respectively. Radioactive residues were extracted from tissues and milk using methanol, ethyl acetate, hexane and

acetonitrile and the extracts were cleaned up by solvent partition and solid phase mini-column. Conjugated materials were enzymatically hydrolysed by incubation with “snail gut juice” (α-D and β-D-glucanase active) or subtilisin (a protease). Compounds were identified by TLC and HPLC. In milk, 90 percent TRR was extracted, with most of the residue consisting of BTS 54906 (58 percent TRR) and BTS 44596 (23 percent TRR). BTS 54908 was identified in minor amounts (8.7 percent TRR) and no parent prochloraz was detected.

In tissues, solvent extraction released 57–100 percent TRR, and enzymatic digestion released an additional 14–30 percent TRR, for a total of 78–100 percent recovery of the radioactivity. BTS 44595 and BTS 44596 were found as major metabolites in all tissues, at ranges of 13.4–23 percent TRR and 12.2–66 percent TRR, respectively. In addition, 2,4,6-TCP was found as the predominant metabolite exclusively in liver (18.8 percent of the TRR. Since the identification of residues was conducted in extracts following enzymatic digestion, it is unclear if this metabolite was conjugated before or not. BTS 9608 was also present in major proportions in liver and kidney with 10 percent and 13 percent of the TRR, respectively. Several minor metabolites were identified (BTS 44770, BTS 54906 and BTS 54908) at proportions of 4.5–8.3 percent of the TRR. No unchanged parent prochloraz was detected.

Total rates of identification were 70 percent or above for all matrices.

Laying hens

[^{14}C]-phenyl-prochloraz was administered in gelatine capsules by intubation to a group of 7 hens once daily for 14 days at a level of 1.5 mg/hen/day (equivalent to a dietary intake of approximately 10 ppm prochloraz). An additional two hens received 0.75 mg prochloraz/hen/day (approximately 5 ppm) over the same time period. Animal were sacrifices 24h after the final dose to collect tissues. Eggs were sampled over the whole dosing period.

Total levels of radioactivity were quantified by direct liquid scintillation counting (LSC) and combustion. After extraction with different solvents, the extracts were partitioned, fractionated and analysed by TLC and HPLC. Identification was conducted by MS/MS analysis. After initial extraction, residues in tissues and excreta were treated with protease and β-glucuronidase/sulfatase, respectively followed by further solvent extraction.

In eggs (yolk and white), TRR levels formed a plateau within one week at 0.27–0.29 mg eq/kg for the 5 ppm animals and at 0.6–0.62 mg eq/kg for the 10-ppm group. Egg yolk (1.5 mg eq/kg) contained higher residue concentrations than egg white (0.09 mg eq/kg). From 79 to 89 percent of the TRR was extracted with methanol, followed by acetone. Enzymatic digestion with methanol extraction released additional 12–14 percent TRR for a total of 93–100 percent TRR. BTS 44596 was the only major residue found in egg yolk, representing 55 percent TRR, being the predominant residue in egg white (15.9 percent TRR). In addition, BTS 44770 was found in major proportions of 13 percent TRR. Multiple minor metabolites (BTS 44595, BTS 54907, BTS 9608, BTS 3037and BTS 45186) were identified in egg yolk or white at levels of 2.5–9.0 percent of the TRR.

TRR levels in fat were 0.087 mg eq/kg, from which 80 percent were extracted with hexane. No enzymatic digestion step was conducted. Identified metabolites were BTS 44596 (17 percent TRR), BTS 9608 (14 percent TRR) and free 2,4,6-TCP (8.0 percent TRR). The rest of the radioactivity was present in multiple unidentified analytical fractions, representing up to 8.2 percent TRR each.

In muscle (breast and thigh), TRR levels of 0.050–0.074 mg eq/kg were found. Solvent extraction with methanol:water (1:1) and methanol released 45–48 percent TRR, and enzymatic digestion/methanol extraction 21–23 percent TRR. BTS 9608 was the predominant residue, with 36–39 percent TRR and BTS 44596 was the only other metabolite identified (11–15 percent TRR). The rest of the radioactivity was present in multiple unidentified analytical fractions, representing up to 3.5 percent TRR each.

TRR levels in liver were highest among the tissues, at 0.88 mg eq/kg. Solvent extraction with methanol:water (1:1) and methanol released 50 percent TRR, followed by enzymatic digestion/methanol extraction, accounting for 23 percent TRR. As in muscle, BTS 9608 was the predominant residue with 16.4 percent TRR, followed by BTS 44596 at 15.8 percent TRR. In addition, low levels of BTS 44770 (2.6 percent TRR) were found. The rest of the radioactivity was present in multiple unidentified analytical fractions, representing up to 8.8 percent TRR each.

Summary of animal metabolism

Metabolism of prochloraz in the hen and cow proceeds via cleavage of the imidazole ring, oxidation of the side chain and substitution of chlorine with a hydroxy group. Metabolites formed from phenyl ring hydroxylation (BTS 54906 and BTS 54908) were common in the cow but were not observed in the hen. No significant amounts of parent prochloraz were found in animal matrices, milk or eggs.

Environmental fate

The meeting received information on aerobic and anaerobic metabolism in soil, soil photolysis, hydrolytic and photolytic degradation in water systems and metabolism in rotational crops.

Hydrolytic degradation in water

In water systems at pH 5, 7 and 9 with temperature ranging from 20 °C to 50 °C, prochloraz was stable under all condition for pH 5 and 7. At pH 9, degradation of prochloraz was observed, accelerated by increasing temperature. At 20 °C, DT50 values of 79 days were calculated, decreasing to 1.4 days at 50 °C. The only degradation product identified was BTS 40348, at up to 78 percent AR.

Photodegradation in water

The photolytic behaviour of [14C]-phenoxy-labelled was tested in pH 5 aqueous solutions at 25 °C. The test substance was quickly degraded during irradiation with DT50 of 1.7 days. The only photo product was BTS 44596, with a maximum of 57 percent AR at the end of the study.

In a second experiment using unlabelled prochloraz in pH 7 aqueous solution at 20 °C, slower but steady degradation of the compound was observed. DT50 and DT90 values were estimated at 34 days and 112 days, respectively. No analysis of degradation products was conducted.

Aerobic degradation in soil

In multiple studies, degradation of [^{14}C]- or [^{3}H]-prochloraz (multiple label positions) was observed to be moderate to slow with a high degree of variability. The predominant metabolite was BTS 44596 (up to 30 percent AR). In addition, BTS 44595, BTS 40348, M201-06 and BTS 45186 were identified, but at low

proportions, mainly below 10 percent AR. Based on kinetic modelling provided, degradation of prochloraz followed a bi-exponential decline with estimated DT_{50} and DT_{90} values of 85–556 days (geometric mean: 196 days) and 569 to >1000 days, respectively. In addition, the aerobic degradation of the soil metabolites BTS 44595, BTS 44596, BTS 40348, BTS 54186 and free imidazole was investigated in multiple soils:

BTS 44595 was degraded slowly following 1st order kinetics, with estimated DT_{50} values of 168–293 days. No degradation products were identified.

BTS 44596 showed quick degradation, with DT_{50} values of 2.2–14 days in two studies. The only major metabolite formed was BTS 44595, yielding up to 85 percent AR at the end of the study.

BTS 40348 was investigated in two studies with variable results. In a total of five trials tested, DT_{50} values ranged from 5 days to 186 days. Analysis of potential degradates was not conducted.

Free 2,4,6-TCP was degraded very quickly, with a DT_{50} of less than 1 day. Analysis of potential degradates was not conducted.

Imidazole degradation in soil was quick too, with DT_{50} values of 1.8–2.5 days. Mineralisation was very high, with a total of 82–91 percent AR recovered as CO_2.

Soil photolysis

The soil photolysis of prochloraz was tested in two studies with [^{14}C]- or [^{3}H]-prochloraz (multiple label positions).

[^{14}C]phenoxy-prochloraz showed quick degradation in irradiated soil samples in contrast to control samples stored in the dark (25 °C). The major degradation product was BTS 44596, which gave a plateau concentration of 30 percent AR after two days until the end of the study period. Estimated half-life times for prochloraz were 4.7 days (assuming 16 hour/day sunlight).

For [^{14}C-phenyl]-prochloraz and [^{14}C-imidazole]-prochloraz, a similar decline was observed with BTS 44596 being the only major metabolite at 12 percent AR. In addition, minor amounts of BTS 40348 and 2,4,6-TCP were found. Estimated DT_{50} values were 6.5–12 days for prochloraz in irradiated samples.

Metabolism in rotational crops

In total, five confined metabolism studies were submitted to the meeting investigating the behaviour of prochloraz in rotational crops.

Study 1

[^{14}C]-phenyl labelled prochloraz was applied to bare soil equivalent to 395 g ai/ha. After 41 days, the soil was turned to a depth of about 15 cm and sugar beet seed sown. Samples of plants were collected 68 days after application (DAT) and at mature harvest (198 DAT). The plant material was extracted with acetone and the extracts assayed by LSC. Portions of the extracts were combusted to determine levels of non-extracted radioactive residues.

In seedlings, total radioactivity amounted 0.07 mg eq/kg, but declined to 0.005 mg eq/kg in mature plant parts. Acetone extracted 66 percent TRR in sugar beet seedlings (27 days), 37 percent TRR in mature root and 56 percent in foliage. No identification of the radioactivity was performed.

Study 2

Wheat was sprayed with either [^{14}C]-imidazole lor [^{3}H]-phenyl-prochloraz at a rate equivalent to 1 kg ai/ha (no exact timepoint reported). Following harvest, untreated wheat was sown as a rotational crop (unspecified interval) and grown to maturity in the following season. Wheat samples collected at harvest were separated into grain, chaff and straw and levels of radioactive residue determined by combustion and LSC.

At the time the preceding crop was harvested, [^{14}C] and [^{3}H] residues in the soil amounted 0.11 to 0.43 mg eq/kg. Residues in the wheat grain and straw were low, representing up to 0.01 mg eq/kg. No identification of the radioactivity was performed.

Study 3

Wheat was foliar treated at Zadoks growth stage 47 (ca. BBCH 39) with 0.94 kg [^{14}C]–phenyl-prochloraz per ha. Potato tubers were planted 9 months after the original treatment of the wheat following harvest of the wheat (removed from the field). Samples of tubers were harvested close to maturity after 6 months and analysed by LSC following combustion.

At planting, significant prochloraz-derived residues were still present in the soil (0.27 mg eq/kg soil in 0–10 cm depth, 0.20 mg eq/kg in 10–15 cm depth and 0.098 mg eq/kg in 15–20cm depth). At harvest, residues in potato tubers from the treated plot were low (0.0056 mg eq/kg), but higher than the mean background level of 0.003 mg/kg in the control samples. No identification of the total radioactivity was performed.

Study 4

Bare soil was treated at a rate of 1.1 kg [^{14}C-phenyl]-prochloraz/ha. Rotational crops were planted 30 days, 120 days and 365 days after treatment (plant back interval, PBI). Crops included a leafy vegetable (leaf lettuce), a root crop (radish) and a small grain (wheat).

Total radioactive residues were determined by combustion. Residues were extracted with acetonitrile, acetonitrile:water (80:20) and Soxhlet extracted with acetonitrile:water (80:20). Metabolites were identified by retention time comparison on reverse-phase HPLC and confirmed by LC-MS.TRR levels were highest in the 30 PBI plant samples, but remained at the similar lower level for the 120 and 365 PBI samples. Extraction rates were 61–71 percent TRR for leaf lettuce, 73–91 percent TRR for radish (top and roots), 79–89 percent TRR for wheat forage, 72–83 percent TRR for wheat straw and 16–37 percent TRR for wheat grain.

In leaf lettuce, TRR levels were 0.03 mg eq/kg at 30 PBI and declined to 0.016–0.020 mg eq/kg for 120 and 365 PBI. Similar tendencies were observed for radish top (0.155 mg eq/kg at PBI 30 → 0.052–0.057 mg eq/kg at PBI 120/365) and radish roots (0.051 mg eq/kg at PBI 30 → 0.018–0.024 mg eq/kg at PBI 120/365). In wheat matrices, samples from the 365 PBI gave higher residues than samples collected from 120 PBI plants. TRR levels in forage went from 0.28 mg eq/kg (PBI 30) down to 0.027 mg eq/kg (PBI

120) and increased again to 0.049 mg eq/kg at PBI 365. Again, the same tendency was observed for wheat grain (0.020 mg eq/kg at PBI 30 → 0.006 mg eq/kg at PBI 120 → 0.017 mg eq/kg at PBI 365) and wheat straw (1.1 mg eq/kg at PBI 30 → 0.21 mg eq/kg at PBI 120 → 0.43 mg eq/kg at PBI 365).

Identification of the radioactivity demonstrated that parent prochloraz was not present or only present in minor amounts. Major metabolites in all samples and for all PBIs were BTS 9608 (14–43 percent TRR), BTS 44595 (4.7–40 percent TRR) and BTS 45186 (5.1–23 percent TRR). In addition, conjugates of up to 20 percent TRR were found in radish top, wheat forage and wheat straw, which were released by common moiety analysis as 2,4,6 TCP. BTS 44596 was found as a minor metabolite in most samples (<LOQ–4.9 percent TRR). Overall, 59–81 percent TRR was identified.

Study 5

In this study, the potential uptake of residues from an agricultural soil by succeeding crops (barley, cabbage, radish and cos lettuce) sown or planted 30 ± 1 days after the application of [^{14}C-phenyl]-prochloraz at 1.08 kg ai/ha to bare soil under semi-field conditions in outdoor plots was investigated.

Crop samples were sequentially extracted with acetone, acetone:water, water, dilute acid, dilute base and acetone. The acetone and acetone:water extracts were combined and hexane partitioned or directly concentrated for analysis by HPLC and TLC. Soil samples were extracted with acetone:water and the extracts concentrated for analysis by HPLC and TLC.

TRR levels found in the different matrices were 0.024–0.027 mg eq/kg in cabbage (immature and mature), 0.066–0.081 and 0.042–0.046 mg eq/kg in radish leaves and tops and in roots, 0.014–0.021 mg eq/kg in lettuce (immature and mature) and 0.176, 0.58 and 0.03 mg eq/kg in barley forage, straw and grain, respectively.

The extraction procedure recovered generally >70 percent TRR, except for barley straw (61 percent TRR). Parent prochloraz was a minor component of the residue (<LOQ–8.0 percent TRR) in most matrices. Only early mature radish roots contained prochloraz in major proportions (13.8 percent TRR), but at a low concentration (0.006 mg/kg). Major metabolite in all samples was BTS 40348 (10.8–45 percent TRR). In addition, major proportions of BTS 9608 (<LOQ–34 percent TRR), BTS 44595 (1.8–19 percent TRR), M201-09 (<LOQ–13.4 percent TRR) and BTS 44770 (0.2–11 percent TRR) were identified in several matrices, however significant concentrations (≥0.01 mg eq/kg) were only measured for BTS 9608 in radish leaves (up to 0.016 mg eq/kg).

Summary environmental fate

In summary, prochloraz is persistent in soil under aerobic conditions, just like one of its main degradates BTS 44595. Taking note of the geometric mean DT_{50} value of 198 days, the meeting concluded that slight accumulation of residues in soil may occur with plateau concentrations of approximately 1.3 times of the annual application rate. Photolysis (both in soil and water systems) is a significant route of degradation in the environment. Prochloraz is stable to aqueous hydrolysis up to pH 7, but quickly degraded at pH 9. Main degradation products of all of these processes were the metabolites BTS 44595, BTS 44596, 2,4,6 TCP and BTS 40348.General uptake of radioactive residues from soil into rotational crops following treatment at 1.1 kg ai/ha was low (<0.1 mg eq/kg, except for cereal feed items with up to 1.1 mg eq/kg). The composition of residues did not contain significant amounts of parent prochloraz. Several major

metabolites containing the 2,4,6-TCP moiety (BTS 44595, BTS 45186, BTS 40348, BTS 9608) were identified, however individual concentrations under confined conditions amounted <0.01 mg eq/kg in most cases. Exceptions were BTS 44595 in radish roots (up to 0.018 mg eq/kg), BTS 45186 in radish tops (0.032 mg eq/kg) and BTS 9608 in lettuce (up to 0.011 mg eq/kg) and radish tops/roots (up to 0.044/0.013 mg eq/kg, respectively). In feed commodities, higher individual concentrations up to 0.2 mg eq/kg (BTS 9608) were observed. Information on residues from field rotational crop studies was not submitted.

The meeting concluded that the overall uptake of residues from soil at the highest reported GAP rate (1.2 kg ai/ha per year) is low for single compounds due to the intensive metabolization of prochloraz.

Methods of residue analysis

The current meeting received multiple methods for the determination of prochloraz residues either as total residue targeting the 2,4,6-TCP moiety or with specific methods for parent prochloraz, BTS 44595 and BTS 44596 in plant and animal commodities.

In a large range of comparable methods for plant matrices, prochloraz residues were analysed as the common moiety 2,4,6-TCP. Initial extraction normally involved acetone or acetone:water (80:20) extraction in Soxhlet, followed by clean-up primarily via steam-distillation. In all methods, residues are hydrolysed under high temperature (~220 °C) with pyridine hydrochloride to release and derivate the 2,4,6-TCP moiety. After final partitioning, quantification is conducted by GC-ECD or GC-MS(-/MS). The set of methods was validated for commodities of high acid, oil, water and starch content and for straw with a LOQ of 0.05 mg/kg. Single methods even reached lower LOQs for specific matrices, down to 0.02 mg/kg.

This method and the conversion into the 2,4,6-TCP moiety was broadly tested with fortification of prochloraz, BTS 44595 and BTS 44596, showing acceptable procedural recoveries of the residue. In addition, samples from several plant metabolism studies were analysed with this methodology, recovering 63–132 percent TRR from mushrooms, >99 percent TRR from oilseed rape leaves, 32–71 percent TRR for barley matrices (grain, chaff+straw) and 73–84 percent TRR for wheat straw.

The extraction rate of total radioactivity was tested in cereal grain and chaff+straw samples obtained from a metabolism study. Six different extraction methods were tested, involving similar solvents as used in total prochloraz methods but with less exhaustive conditions.

Three methods (acetone:water 80:20; acetone:water 70:30; pre-soaking in water followed by acetone extraction) showed recoveries of 73–74 percent TRR from chaff+straw. In grain, these methods released 59–61 percent of the TRR. Three other extraction methods (anhydrous sodium sulfate followed by acetone; acetone *per se*; sulphuric acid and steam distillation) could only release 41–48 percent TRR from straw and 12–40 percent TRR from the grain. A second set of methods relied on targeted analysis of prochloraz, BTS 44595, BTS 44596 and free 2,4,6-TCP in plant matrices. Method L0090/1 and the QuEChERS multimethod both use initial extraction with acetonitrile:water (70:30 or 1:1), with addition of $MgSO_4$, NaCl, and buffering citrate salts (pH 5–5.5) for the QuEChERS method. Clean-up was achieved either by partitioning against dichloromethane or by solid-phase extraction (SPE). Final determination was conducted by GC-MS/MS (L0090/1) or LC-MS/MS (QuEChERS) with validated LOQs of 0.01 mg/kg for each of the analytes in commodities of high acid, oil, protein, starch and water content as well as in coffee beans (L0090/1 only). For animal matrices, the same two basic principles for analyses are used.

Multiple methods analysing for the total prochloraz residues (determined as 2,4,6-TCP) were reported. Extraction of tissues and milk was conducted with either acetone, hexane or acetonitrile, depending on the fat content. Some methods used homogenates of the samples directly for hydrolysis. Either extracts or homogenates were again subject to total hydrolysis under high temperature (~220 °C) with pyridine hydrochloride to release and derivate the 2,4,6-TCP moiety. Steam distillation was used for clean-up, while one study demonstrated successful partitioning into petroleum ether instead. Final determination was achieved by GC, either in combinations with ECD or mass spectrometry, with lowest validated LOQs of 0.01 mg/kg for muscle, fat and milk and 0.025 mg/kg for liver, kidney and eggs. The performance of the common moiety hydrolysis using samples from metabolism studies was not tested.

In addition, the same specific methods as for plant matrices are applicable to animal matrices. The QuEChERS multimethod used an identical procedure to plants also for muscle, liver, eggs, milk and fat. Method L0090/1 relied on extraction with acetonitrile and iso-hexane (100:40), followed by determination via GC- or LC-MS/MS. A third method (L0216/01) was reported, using acetonitrile saturated with iso-hexane as solvent for extraction, followed by LC-MS/MS analysis. All three methods were successfully validated with LOQs of 0.01 mg/kg each for prochloraz, BTS 44595, BTS 44596 and free 2,4,6-TCP.

Storage stability

The meeting received information on the freezer storage stability in all plant matrix groups, cereal straw and in animal commodities. High acid content: The stability of prochloraz, BTS 44595 and BTS 44596 individually was tested in orange fruits. For prochloraz and BTS 44596, stability was demonstrated for at least 12 months and up to 6 months for BTS 44595. Stability of residues against the common 2,4,6-TCP moiety was not tested. High oil content: The stability of prochloraz, BTS 44595 and BTS 44596 individually was tested in rape seeds. For prochloraz and BTS 44595 stability was demonstrated for at least 36 months and up to 16 months for BTS 44596.

Stability of residues against the common 2,4,6-TCP moiety was also tested on rape seeds. In one study, stability was demonstrated for at least 6 months. In a second study, no starting concentrations were measured, but after 15 months 93 percent of the nominal concentration was recovered after storage. Overall, the meeting considered this to be a minor deviation and concluded that storage stability for total prochloraz residues was at least 15 months for rape seeds. High protein content: The stability of prochloraz, BTS 44595 and BTS 44596 individually was tested in dry bean seeds and demonstrated for at least 12 months for all analytes. Stability of residues against the common 2,4,6-TCP moiety was not tested. High starch content: The stability of prochloraz, BTS 44595 and BTS 44596 individually was tested in wheat grain and demonstrated for at least 6 months.

Stability of residues against the common 2,4,6-TCP moiety was also tested on barley and wheat grain. Incurred residues of barley and wheat grain were first analysed after 62 and 35 days, respectively, and afterwards stored for 23–33 months. Barley grain was stable for at least 23 months and wheat grain up to 24 months. In fortified samples, wheat grain was demonstrated to be stable for at least 18 months.

High water content: The stability of prochloraz, BTS 44595 and BTS 44596 individually was tested in lettuce, wheat plants and sugar beet roots. For all analytes, stability was demonstrated for at least 6 months.

Stability of residues against the common 2,4,6-TCP moiety was tested on tomatoes, maize leaves, sugar beet roots and tops. Incurred residues in maize leaves were stable for at least 24 months. Fortified residues in tomatoes, wheat plants and sugar beets were stable for least 12, 12 and 14 months, respectively.

Cereal straw: In barley and wheat straw, residues were stable for at least 12 months both for common 2,4,6-TCP moiety and for prochloraz, BTS 44595 and BTS 44596 individually.

In summary, the meeting concluded that total prochloraz residues (2,4,6-TCP based) are stable for at least 15 months in commodities of high oil content, for at least 24 months in commodities of high starch content and for at least 14 months in commodities of high-water content as well as for at least 12 months in cereal straw.

Prochloraz, BTS 44595 and BTS 44596 *per se* were stable for at least 12 months in high acid, 36 months in oil, 6 months in high protein or starch and 6 months in high water content, except for BTS 44595 in high acid commodities (up to 6 months) and BTS 44596 in high oil commodities (up to 16 months).

In animal commodities (muscle, fat, liver, eggs, milk), residues were stable for at least 12 months for common 2,4,6-TCP moiety and for at least 3 months for prochloraz, BTS 44595 and BTS 44596 individually.

A high number of supervised field trials and multiple feeding studies were submitted to the meeting. Storage intervals of samples are listed in connection to the respective studies.

Definition of the residue

Plants

The meeting received information on the metabolic fate of prochloraz in oilseeds (oilseed rape), cereal grain (barley, wheat) and in mushrooms. In addition, information is available from confined rotational crop metabolism and high temperature hydrolysis studies.

In plants (oilseed rape, barley and wheat), radioactivity following foliar treatment was primarily recovered from directly treated areas with a low potential for systemic basipetal translocation into other plant parts. Parent prochloraz, which represented the majority of the TRR immediately after treatment, was quickly degraded and remained undetected or was found at low proportions after two or more weeks.

TRR levels were low in rape seeds (0.05 mg eq/kg), up to 1.2 mg eq/kg in barley grain and up to 2.2 mg eq/kg in wheat grain. Rape seeds contained parent prochloraz at 11 percent TRR (0.01 mg/kg), with no identified metabolites at major proportions. BTS 44595 and BTS 44596 were present in minor amounts of 3.5–8.7 percent TRR (<0.01 mg eq/kg). In barley grain, parent prochloraz was detected at 1.5 percent TRR (0.018 mg/kg) and the only major metabolite was BTS 44595, representing 26 percent TRR (0.30 mg eq/kg). In wheat grain, no prochloraz or any metabolites could be identified.

In directly treated plant parts (forage, chaff and straw), quick hydroxylation of the imidazole-ring was observed, leading to the major metabolites BTS 44596 (up to 49 percent TRR) and its primary degradate BTS 44595 (up to 44 percent of the TRR). Several metabolites, all containing the 2,4,6-TCP moiety, were identified in minor amounts up to 5.8 percent TRR each.

When prochloraz was used as seed treatment agent on wheat grain, acropetal translocation of radioactivity into the plant resulted in TRR levels of up to 0.23 mg eq/kg (6.5 percent AR) in straw and 0.004 mg eq/kg (0.04 percent AR) in grain. No residues were identified in the study.

Mushroom grown in treated substrate showed significant uptake via the mycel with up 0.82 mg eq/kg in the fruits. Nearly the entire residue was recovered as parent prochloraz (75–85 percent TRR). BTS 9608 (up to 9.9 percent TRR) and conjugated 2,4,6-TCP (up to 0.5 percent TRR) were identified as minor metabolites.

In confined rotational crop studies following application prochloraz either to preceding crops or bare soil, low to moderate uptake of radioactivity from soil was observed, suggesting limited acropetal translocation of residues. Prochloraz levels were typically below 10 percent of the TRR, except for radish roots (13 percent, 0.006 mg/kg). The majority of the TRR consisted of several major metabolites all containing the 2,4,6-TCP moiety (BTS 44595, BTS 45186, BTS 9608), each at maximum of 19–45 percent TRR, depending on the matrix. Individual concentrations under confined conditions amounted <0.01 mg eq/kg in most cases, except for BTS 44595 in radish roots (up to 0.018 mg eq/kg), BTS 45186 in radish tops (0.032 mg eq/kg) and BTS 9608 in lettuce (up to 0.011 mg eq/kg) and radish tops/roots (up to 0.044/0.013 mg eq/kg, respectively).

In supervised field trials (sugar beets, oilseed rape and small cereal grains) analysed for prochloraz, BTS 44595 and BTS 44596 individually, ratios of residue levels between these three compounds differed. In sugar beet roots (no supporting metabolism study available), most of the residue was recovered as prochloraz while BTS 44595 and BTS 44596 remained undetected or were found in significantly lower levels. In contrast, in cereal and oilseed rape matrices (grain/seed, forage and straw), prochloraz was significantly degraded and both metabolites were present at equal concentrations at least one order of magnitude higher, which confirms findings from the corresponding metabolism studies.

The meeting decided that parent prochloraz alone is not a suitable marker for enforcement purposes in plant commodities. However, the sum of prochloraz, BTS 44595 and BTS 44596 would sufficiently address prochloraz residues in the crops investigated for enforcement purposes and allow routine implementation into multiresidue methods (e.g. QuEChERS). Occurrence and ratios of the two metabolites varied within crops, suggesting no clear preference of one or the other as solely marker compound.

The meeting noted that most of the supervised field trials were analysed according to the available common moiety method quantifying total 2,4,6-TCP, expressed as prochloraz. In view of the complexity of this single residue method and the circumstance that 2,4,6-TCP is a broadly used chemical formerly also marketed as the pesticide phenachlor, the meeting decided that the total residue definition is outdated and unspecific, making it unsuitable for the recommendation of maximum residue levels for prochloraz. For dietary risk assessment, the meeting considered the relevance of the metabolites BTS 44595, BTS 44596, BTS 9608 and BTS 45186.

BTS 44596 is covered by the HBGVs for prochloraz and represents a major part of the residue in plant parts investigated in plant metabolism studies (up to 49 percent TRR). In addition, it was found in quantifiable amounts in supervised field trials on oilseed rape and cereal grains at levels similar or higher than parent prochloraz. The meeting decided to include BTS 44596 into the residue definition for dietary risk assessment.

BTS 9608 is covered by the HBGVs for prochloraz. In primary treated crops, highest levels were found in mushroom (9.9 percent TRR; 11.6 percent relative to parent prochloraz) but it was present in minor proportions in all other crops investigated. BTS 9608 was proportionally a major residue in rotational crops, however absolute concentrations of residues in rotational crops are considered to be low. Overall, compared to the sum of parent and BTS 44596, the contribution of BTS 9608 was considered as minor and the meeting decided that the compound should not be included into the residue definition for dietary intake purposes.

BTS 45186 is covered by the HBGVs for prochloraz. It was found as a minor metabolite in directly treated crops and at major proportions (but low concentrations) in confined rotational crops (mainly conjugated). The contribution of BTS 45186 was considered as minor and the meeting decided that the compound should not be included into the residue definition for dietary intake purposes.

BTS 44595 was the predominant metabolite in many directly treated crops and the major residue found in supervised field trials on small cereal grains. It is not covered by the HBGVs for parent prochloraz and the meeting decided that is should be assessed under the TTC approach as a Cramer class III compound.

In summary, the meeting concluded that the residue definition for dietary risk assessment in plant commodities is the sum of prochloraz and BTS 44596, expressed as prochloraz.

Animal commodities

In cows, TRRs were highest in liver and kidney (10 mg eq/kg and 1.7 mg eq/kg), followed muscle, fat and milk (0.07–0.21 mg eq/kg). In all tissues, BTS 44595 (up to 23 percent TRR) and BTS 44596 (up to 66 percent TRR) were the predominant residues. Exclusively in liver, 2,4,6-TCP was found in major proportions of 19 percent TRR. However, since the analysis was conducted in an extract subject to enzymatic hydrolysis, it remains unclear if the compounds had been conjugated before. In milk, BTS 54906 was the predominant residue (58 percent TRR) in addition to BTS 44596 (23 percent TRR).

In laying hens, highest TRR levels were found in liver (0.88 mg eq/kg), followed by eggs, fat and muscle (0.05–0.29 mg eq/kg). In eggs, BTS 44596 was the predominant residue, representing 55 percent TRR in egg yolk and 16 percent TRR in egg white. In egg white, BTS 44770 was found in major proportions too (13 percent TRR), however it was a minor component in relation to the whole egg. In fat, major metabolites were BTS 44596 (17 percent TRR) and BTS 9608 (14 percent TRR). Most of the radioactivity was characterized in multiple analytical fractions representing up to 8 percent of the TRR each. Muscle tissue mainly contained BTS 9608 (36–39 percent TRR), followed by BTS 44596 (up to 15 percent TRR). No further metabolites were identified in muscle. In liver, again BTS 9608 (16 percent TRR) and BTS 44596 (16 percent TRR) were the only major metabolites identified. Several unidentified fractions represented up to 8.8 percent TRR each. In all animal matrices, no parent prochloraz was found. In livestock animal feeding studies on dairy cattle, total prochloraz (determined as 2,4,6-TCP) was quantifiable in all tissue samples obtained from dosed animals (no milk analysed). Targeted analysis for residues of BTS 44595, BTS 44596 and BTS 54906 in milk from different animals showed quantified residues only for BTS 44596 for the highest dose group of 2000 mg/animal and day (no tissues analysed). The meeting concluded that parent prochloraz alone is not suitable as a marker compound in animal commodities, since it was completely degraded. In all tissues, eggs and milk, residues of BTS 44595 and/or BTS 44596 were predominant or major residues and suitable marker compounds for enforcement purposes. Analytical methodology is available for specific analysis of prochloraz, BTS 44595 and BTS 44596 is

animal matrices. Following the same reasoning as for plants on the broad use of 2,4,6-TCP and the complexity of the common moiety analytical method, the meeting decided to define the residue for the enforcement of prochloraz in animal commodities as the sum of prochloraz, BTS 44595 an BTS 44596, expressed as prochloraz.

For dietary risk assessment, the meeting considered the relevance of the metabolites BTS 44595, BTS 44596, BTS 9608, BTS 44770 and BTS 54906 in animal commodities.

BTS 44596 is covered by the HBGVs for prochloraz and represents a major part of the residue in most animal tissue, eggs and milk. The meeting decided to include BTS 44596 into the residue definition for dietary risk assessment.

BTS 9608 is covered by the HBGVs for prochloraz. It was not found in ruminant matrices but was present in major amounts in poultry muscle (up to 39 percent TRR), fat (14 percent TRR) and liver (16 percent TRR), surpassing concentrations of BTS 44596. The meeting decided to include BTS 9608 into the residue definition for dietary risk assessment.

BTS 45186 is covered by the HBGVs for prochloraz. It was found exclusively in ruminant liver at major proportions of 19 percent TRR (potentially conjugated). In view of the sum of BTS 44596 and BTS 9608, the contribution of BTS 45186 was considered as minor. The meeting decided that the compound should not be included into the residue definition for dietary intake purposes.

BTS 44595 was a major metabolite in most ruminant tissues. It is not covered by the HBGVs for parent prochloraz and the meeting decided that is should be assessed under the TTC approach as a Cramer class III compound.

BTS 44770 was a major metabolite in egg yolk. It is not covered by the HBGVs for parent prochloraz and the meeting decided that is should be assessed under the TTC approach as a Cramer class III compound.

BTS 54906 was the predominant metabolite in milk in the metabolism study but remained undetected in the dairy cattle feeding study in all dose group. In tissues, it represents a minor part of the residue (max. 8.3 percent TRR). It is not covered by the HBGVs for parent prochloraz and the meeting decided that is should be assessed under the TTC approach as a Cramer class III compound.

In summary, the meeting concluded that the residue definition for dietary risk assessment in animal commodities is the sum of prochloraz, 44596 and BTS 9608 (free and conjugated), expressed as prochloraz. Based on the derived residue definition for enforcement purposes, residues in fat were approx. 3-times higher than in muscle of ruminants and 1.8-times in poultry. In eggs, the yolk contained approximately. 30-times higher residues than the egg white. The meeting decided that the residue in animal commodities is fat-soluble.

Definition of the residue for the setting of maximum residue levels for plant and animal commodities: sum of prochloraz, N-propyl-N-[2-(2,4,6-trichlorophenoxy)ethyl]urea (BTS 44595) and N-formyl-N-propyl-N-[2-(2,4,6-trichlorophenoxy)ethyl]urea (BTS 44596), expressed as prochloraz.

Definition of the residue for dietary risk assessment for plant commodities: sum of prochloraz and N-formyl-N-propyl-N-[2-(2,4,6-trichlorophenoxy)ethyl]urea (BTS 44596), expressed as prochloraz.

Definition of the residue for dietary risk assessment for animal commodities: sum of prochloraz, N-formyl-N-propyl-N-[2-(2,4,6-trichlorophenoxy)ethyl]urea (BTS 44596) and 2,4,6-trichlorophenoxyacetic acid (BTS 9608) (free and conjugated), expressed as prochloraz.

The residue is fat-soluble.

Results of supervised residue trials on crops

The meeting received information on use patterns and supervised residue trials for citrus fruits, cherries, tropical fruits, tomatoes, sugar beets, mushrooms, oilseed rape and cereal grains from several countries.

Residues of prochloraz for estimation of maximum residue level and dietary burden are the sum of prochloraz, BTS 44595 and BTS 44596, expressed as prochloraz.

Residues for dietary exposure assessment are the sum of prochloraz and BTS 44596, expressed as prochloraz.

Residues of BTS 44595 (expressed as prochloraz by applying a molecular mass factor of 0.86) are used for dietary exposure assessment using the TTC approach as a Cramer class III compound.

Where residues were reported below the LOQ, the following conventions (Table 5.31.2) were adopted for summing residues (using an LOQ of 0.01 mg/kg as an example).

Table 5.31.2 Calculation of total prochloraz residues

Prochloraz (mg/kg)	BTS 44595 (mg/kg) (not necessary for the estimation of STMR/HR)	BTS 44596 (mg/kg)	Sum of prochloraz, BTS 44595 and BTS 44596, expressed as prochloraz (mg/kg)
<0.01	<0.01	<0.01	<0.03
<0.01	0.02	<0.01	0.04
<0.01	<0.01	0.02	0.04
<0.01	0.02	0.02	0.05
0.02	0.02	0.02	0.06

Supervised field trials on citrus fruits, cherries, tropical fruits (bananas, mangoes, papaya and pineapples), tomatoes, linseeds, sunflowers seed (incl. sunflower seed oil, edible) and rice involved only analysis of total prochloraz residues determined as the 2,4,6-TCP moiety. The meeting concluded that no maximum residues levels according to the new residue definition can be estimated based on these trials and withdrew its previous recommendation of 10 mg/kg for citrus fruit, of 7 mg/kg for assorted tropical and subtropical fruits– inedible peel, of 0.05 mg/kg for linseeds, of 0.5 mg/kg for sunflower seeds and of 1 mg/kg for sunflower seed oil, edible.

In addition, the number of trials approximating the critical GAPs were insufficient to cover all members required for the estimation of a maximum residue levels in the group of cereal grains to estimate a maximum residue level and pepper, black, and the meeting withdrew the previous recommendations of 2 mg/kg for cereal grain. The meeting also withdrew the maximum residue level for pepper, black and 10 mg/kg, respectively

Avocado

The critical GAP for prochloraz on avocado is from South Africa and involves one post-harvest dip treatment of 0.081 kg ai/hL with no withholding period.

No supervised field trial on avocado approximating the cGAP were submitted. In public literature, a study described presence of prochloraz residues in eight avocado samples (whole fruit) treated according to the GAP from South Africa. Residues were 1.0 mg/kg, 1.2 mg/kg, 1.4 mg/kg, 1.4 mg/kg, 1.8 mg/kg, 2.2 mg/kg, 2.2 mg/kg and 2.9 mg/kg.

Although the report suggests that the post-harvest treatment was conducted at the same facility, variation in the selection of fruits for the individual composite samples in terms of size, quality and variety was described. The meeting concluded that sufficient variability was demonstrated to consider these trials as independent.

In addition, the analytical method measured parent prochloraz only. The meeting noted that the use represents a post-harvest treatment with direct sampling and most likely unchanged parent residue is expected as a surface residue. In addition, public literature information (see metabolism section) on the decline of prochloraz on fruits (citrus, pome fruits, bananas) suggests half-life times of at least seven days. The meeting decided that in these trials parent prochloraz addresses the majority of the quantified residue and can be used for the estimation of maximum residue levels, STMR and HR.

The meeting estimated a maximum residue level of 5 mg/kg (mean + 4×SD) in avocado and an STMR and HR of 1.6 mg/kg and 2.9 mg/kg, respectively. The meeting also estimated a STMR value of 0 mg/kg for BTS 44595.

Sugar beets

The critical GAP for prochloraz on sugar beets is from Russia and involves two foliar spray treatments (14-day interval) of 0.6 kg ai/ha each with a 21-day PHI. The meeting received three trials from Belgium, France and Germany approximating the cGAP, but involved lower individual rates of 0.4 kg ai/ha per treatment. The meeting decided to scale these trials with a factor of 1.5 (0.4 kg ai/ha → cGAP 0.6 kg ai/ha).

Unscaled prochloraz residues in sugar beet roots were (n = 3): <0.03 mg eq/kg, 0.031 mg eq/kg and 0.044 mg eq/kg. Scaled prochloraz residues were (n = 3): <0.045 mg eq/kg, 0.0465 mg eq/kg and 0.066 mg eq/kg.

Scaled prochloraz residues for the estimation of the dietary exposure were (n = 3): <0.03 mg eq/kg, 0.032 mg eq/kg and 0.042 mg eq/kg. Corresponding scaled residues for BTS 44595 were (n = 3): <0.013 mg/kg, <0.013 mg/kg, 0.0206 mg/kg.

The meeting concluded that an insufficient number of trials is available to estimate maximum residue levels in sugar beets.

Mushrooms

The GAP for prochloraz from South Africa on mushroom involves one bed drench at 1.5 g/m² treatment after casing followed by a second drench at 0.63 g/m² after the first flush with a PHI of fourteen days.

No supervised field trials approximated this GAP were submitted and the meeting withdrew its previous recommendation of 3 mg/kg for prochloraz in mushrooms.

Barley grain

The critical GAP for prochloraz on barley is from Russia and involves a single foliar spray treatment of 0.5 kg ai/ha with a PHI of 40 days.

The meeting received supervised trials from European countries approximating the GAP on barley. Prochloraz residues in barley grain were (n = 8): <0.03 mg eq/kg, 0.046 mg eq/kg, 0.053 mg eq/kg, 0.055 mg eq/kg, 0.077 mg eq/kg, 0.12 mg eq/kg, 0.20 mg eq/kg, 0.33 mg eq/kg.

Residues for the estimation of the dietary exposure were (n = 8): <0.02 mg eq/kg, <0.02 mg eq/kg, 0.021 mg eq/kg, 0.021 mg eq/kg, 0.028 mg eq/kg, 0.028 mg eq/kg, 0.059 mg eq/kg.

The meeting estimated a maximum residue level of 0.6 mg/kg, an STMR of 0.0245 mg/kg and a median residue of 0.066 mg/kg for barley grain.

Residues of BTS 44595 were (n = 8): <0.0086 mg/kg, 0.0215 mg/kg, 0.0232 mg/kg, 0.0283 mg/kg, 0.040 mg/kg, 0.067 mg/kg, 0.146 mg/kg, 0.232 mg/kg, with a STMR of 0.02575 mg/kg, with a STMR of 0.2575.

Oats grain

The critical GAP for prochloraz on small cereal grains (which includes oats) from Serbia involves two foliar spray treatments of 0.27 kg ai/ha each (before anthesis at BBCH 50 and up to end of flowering at BBCH 69) with a PHI of 35 days.

The meeting noted that barley grain is the representative commodity for the barley subgroup, which includes oats grain, and decided to extrapolate the available data from barley grain to oats grain. For the selection of supervised field trials, the last growth stage of treatment (end of flowering, near BBCH 69) was considered as more relevant than the PHI. Consequently, all supervised field trials with intervals of at least 35 days between last application and harvest were taken into account when treated at the specified growth stage of the Serbian GAP.

The meeting received supervised field trials from several European countries approximating the Serbian GAP, but involved higher individual rates of 0.43–0.49 kg ai/ha per treatment. The meeting decided to scale these trials with a factor of 0.6.

Unscaled total prochloraz residues in barley grain were (n = 27): 0.04 mg/kg, 0.05 mg/kg, 0.055 mg/kg, 0.06 mg/kg, 0.068 (2) mg/kg, 0.07 (4) mg/kg, 0.09 mg/kg, 0.10 mg/kg, 0.11 (3) mg/kg, 0.12 mg/kg, 0.15 mg/kg, 0.18 mg/kg, 0.22 mg/kg, 0.23 mg/kg, 0.25 mg/kg, 0.26 (2) mg/kg, 0.27 (2) mg/kg, 0.28 mg/kg and 0.69 mg/kg. Scaled total prochloraz residues were (n = 27): 0.024 mg/kg, 0.03 mg/kg, 0.033 mg/kg, 0.036 mg/kg, 0.0408 (2) mg/kg, 0.042 (4) mg/kg, 0.054 mg/kg, 0.06 mg/kg, 0.066 (3) mg/kg, 0.072 mg/kg, 0.09 mg/kg, 0.108 mg/kg, 0.132 mg/kg, 0.138 mg/kg, 0.15 mg/kg, 0.156 (2) mg/kg, 0.162 (2) mg/kg, 0.168 mg/kg, 0.414 mg/kg.

Scaled prochloraz residues for the estimation of the dietary exposure were (n = 27): <0.012 (6) mg eq/kg, 0.0126 mg eq/kg, 0.0144 mg eq/kg, 0.018 (2) mg eq/kg, 0.0186 mg eq/kg, 0.0192 mg eq/kg, 0.024

(2) mg eq/kg, 0.03 (2) mg eq/kg, 0.036 mg eq/kg, 0.036 mg eq/kg, 0.036 mg eq/kg, 0.036 mg eq/kg, 0.043 mg eq/kg, 0.078 mg eq/kg, 0.096 mg eq/kg, 0.096 mg eq/kg, 0.096 mg eq/kg, 0.10 mg eq/kg, 0.268 mg eq/kg.

The meeting estimated a maximum residue level of 0.5 mg/kg and an STMR of 0.024 mg/kg in oats grain, considering extrapolation from barley grain supervised field trial data.

Scaled residues for BTS 44595 were (n = 27): 0.01 mg/kg, 0.015 (3) mg/kg, 0.0175 mg/kg, 0.02 (3) mg/kg, 0.023 mg/kg, 0.025 mg/kg, 0.0275 mg/kg, 0.024 mg/kg, 0.03 mg/kg, 0.035 mg/kg, 0.039 mg/kg, 0.04 mg/kg, 0.041 mg/kg, 0.05 (2) mg/kg, 0.065 (2) mg/kg, 0.08 mg/kg, 0.1 mg/kg, 0.105 (2) mg/kg, 0.12 mg/kg and 0.125 mg/kg, with an estimated STMR of 0.035 mg/kg.

Rye grain, triticale grain

The critical GAP for prochloraz on small cereal grains (which includes rye) from Serbia involves two foliar spray treatments of 0.27 kg ai/ha each (before anthesis at BBCH 50 and up to end of flowering at BBCH 69) with a PHI of 35 days.

The meeting noted that wheat grain is the representative commodity for the wheat subgroup, which includes rye and triticale grain, and decided to extrapolate the available data from wheat grain to rye and triticale grain. For the selection of supervised field trials, the last growth stage of treatment (end of flowering, near BBCH 69) was considered as more relevant than the PHI. Consequently, all supervised field trials with intervals of at least 35 days between last application and harvest were taken into account when treated at the specified growth stage of the Serbian GAP.

The meeting received supervised field trials on wheat from several European countries approximating the GAP, but involved higher individual rates of 0.43–0.49 kg ai/ha per treatment. The meeting decided to scale these trials with a factor of 0.6.

Unscaled prochloraz residues in wheat grain were (n = 15): <0.03 (8) mg/kg, 0.03 (2) mg/kg, 0.04 mg/kg, 0.05 mg/kg, 0.06 mg/kg, 0.16 mg/kg and 0.20 mg/kg. Scaled prochloraz residues were (n = 15): <0.018 (8) mg/kg, 0.018 mg/kg, 0.024 mg/kg, 0.03 mg/kg, 0.036 mg/kg, 0.096 mg/kg and 0.12 mg/kg.

Scaled prochloraz residues for the estimation of the dietary exposure were (n = 15): <0.012 (10) mg eq/kg, 0.012 mg eq/kg, 0.018 (2) mg eq/kg, 0.024 mg eq/kg and 0.0414 mg eq/kg.

The meeting estimated a maximum residue level of 0.15 mg/kg, an STMR of 0.012 mg/kg and a median residue of 0.018 mg/kg for rye and triticale.

Scaled residues for BTS 44595 were (n = 15): <0.005 (8) mg/kg, 0.005 (3) mg/kg, 0.01 mg/kg, 0.02 mg/kg, 0.06 mg/kg and 0.065 mg/kg, with an estimated STMR of 0.005 mg/kg.

Wheat grain

The critical GAP for prochloraz on wheat from Ukraine involves two foliar spray treatments of 0.5 kg ai/ha each (no specified interval) with a PHI of thirty days.

Supervised field trial were conducted on wheat in European countries approximated the Ukrainian GAP. Total prochloraz residues in wheat grain were (n = 7): <0.03 mg/kg, <0.03 mg/kg, 0.05 mg/kg, 0.11 mg/kg, 0.16 mg/kg, 0.19 mg/kg, 0.20 mg/kg.

Residues for the estimation of the dietary exposure were (n = 7): <0.02 mg eq/kg, <0.02 mg eq/kg, 0.028 mg eq/kg, 0.03 mg eq/kg, 0.04 mg eq/kg, 0.042 mg eq/kg, 0.069 mg eq/kg.

The meeting estimated a maximum residue level of 0.4 mg/kg, an STMR of 0.035 mg/kg and a median residue of 0.11 mg/kg for prochloraz in wheat.

Residues of BTS 44595 were (n = 7): <0.0086 mg/kg, <0.0086 mg/kg, 0.0172 mg/kg, 0.067 mg/kg, 0.103 mg/kg, 0.11 mg/kg, 0.129 mg/kg, with an estimated STMR of 0.067 mg/kg.

Oilseed rape

The GAP for prochloraz on oilseed rape is from Serbia and involves two foliar spray treatments (before flowering BBCH 59 and up to end of flowering, BBCH 69) of 0.4 kg ai/ha each with a PHI of 35 days.

The meeting decided that the last growth stage of treatment (BBCH 69) is more relevant for the selection of field trials than the PHI and trials with longer periods than 35 days between last treatment and harvest were also considered at GAP.

The meeting received three trials from France and Germany approximating the GAP, with total prochloraz residues in rape seeds of (n = 3): 0.03 mg eq/kg, 0.04 mg eq/kg and 0.10 mg eq/kg.

Residues for the estimation of the dietary exposure were (n = 3): <0.02 mg eq/kg, <0.02 mg eq/kg, <0.02 mg eq/kg.

Residues of BTS 44595 were (n = 3): 0.086 mg/kg, 0.0172 mg/kg, 0.0688 mg/kg.

The meeting concluded that an insufficient number of trials is available to estimate maximum residue levels in rape seeds and withdraws its previous recommendation of 0.7 mg/kg.

Animal feeds and fodder

Sugar beet leaves and tops

The critical GAP for prochloraz on sugar beets is from Russia, involving two foliar spray treatments (14-day interval) of 0.6 kg ai/ha each with a 21-day PHI. The meeting received three trials from Belgium, France and Germany approximating the cGAP, but involved lower individual rates of 0.4 kg ai/ha per treatment. The meeting decided to scale these trials with a factor of 1.5 (0.4 kg ai/ha → cGAP 0.6 kg ai/ha).

Unscaled total prochloraz residues in sugar beet leaves and tops were (n = 3): 0.29 mg/kg, 0.48 mg/kg, 0.73 mg/kg. Scaled total prochloraz residues were (n = 3): 0.435 mg/kg, 0.72 mg/kg, 1.095 mg/kg. The meeting concluded that an insufficient number of trials is available to estimate median or highest residue levels in sugar beet leaves and tops.

Barley forage

The critical GAP for prochloraz on barley is from Russia and involves a single foliar spray treatment of 0.5 kg ai/ha with a PHI of 40 days, with no specific interval for utilisation as forage/grazing. Supervised field trial on barley from Denmark, France and Germany approximated the Russian GAP yield total prochloraz residues in barley forage of (n = 6): 4.4 mg eq/kg, 8.0 mg eq/kg, 8.1 mg eq/kg, 9.8 mg eq/kg, 9.9 mg eq/kg, 10 mg eq/kg. The meeting estimated a median and highest residue of 8.95 mg eq/kg and 10 mg eq/kg (as received) for prochloraz in barley forage, respectively.

Oats forage

The critical GAP for prochloraz on small cereal grains (which includes oats) from Serbia involves two foliar spray treatments of 0.27 kg ai/ha each (before anthesis at BBCH 50 and up to end of flowering at BBCH 69) with no specific interval for utilisation as forage/grazing. No supervised field trials on oats approximating the GAP from Serbia were submitted.

The meeting noted that additional supervised field trials on barley conducted at higher rates of 0.45–0.48 kg ai/ha are available and decided to extrapolate residue data from barley to oats forage after proportional adjustment to the Serbian GAP with a factor of 0.6.

In trials from Belgium, France, Germany, Spain and the United Kingdom of Great Britain and Northern Ireland, prochloraz residues in barley forage were (n = 10): 7.0 mg/kg, 8.8 mg/kg, 9.5 mg/kg, 9.9 mg/kg, 10 mg/kg, 12 mg/kg, 13.1 mg/kg, 13.5 mg/kg, 14 mg/kg, 15 mg/kg. Scaled total prochloraz residues were (n = 10): 4.2 mg/kg, 5.3 mg/kg, 5.7 mg/kg, 5.9 mg/kg, 6.0 mg/kg, 7.2 mg/kg, 7.9 mg/kg, 8.1 mg/kg, 8.4 mg/kg, 9.0 mg/kg. The meeting estimated a median and highest residue of 6.6 mg/kg and 9.0 mg/kg, respectively, for prochloraz in oats forage (as received).

Rye and triticale forage

The critical GAP for prochloraz on small cereal grains (which includes rye and triticale) from Serbia involves two foliar spray treatments of 0.27 kg ai/ha each (before anthesis at BBCH 50 and up to end of flowering at BBCH 69) with no specific interval for utilisation as forage/grazing. No supervised field trials on rye approximating the GAP from Serbia were submitted.

The meeting noted that supervised field trials on wheat conducted at higher rates of 0.45–0.48 kg ai/ha are available and decided to extrapolate residue data from wheat to rye and triticale forage after proportional adjustment to the Serbian GAP with a factor of 0.6.

In supervised trials from Belgium, France, Germany, Spain and the United Kingdom of Great Britain and Northern Ireland, prochloraz residues in wheat forage were (n = 8): 5.2 mg/kg, 5.5 mg/kg, 6.6 mg/kg, 8.8 mg/kg, 8.9 mg/kg, 9.5 mg/kg, 10 mg/kg, 11 mg/kg (as received). Scaled prochloraz residues were (n = 8): 3.1 mg/kg, 3.3 mg/kg, 3.96 mg/kg, 5.28 mg/kg, 5.34 mg/kg, 5.7 mg/kg, 6.0 mg/kg, 6.6 mg/kg (as received).

The meeting estimated a median and highest residue of 5.31 mg eq/kg and 6.6 mg/kg, respectively, for prochloraz in rye forage (as received) and triticale forage (as received).

Wheat forage

The critical GAP for prochloraz on wheat from Ukraine involves two foliar spray treatments of 0.5 kg ai/ha each (no specified interval) without a specified interval for grazing/feeding.

In supervised trials on wheat from European countries approximated the Ukrainian GAP, prochloraz residues in wheat forage were (n = 8): 5.2 mg/kg, 5.5 mg/kg, 6.6 mg/kg, 8.8 mg/kg, 8.9 mg/kg, 9.5 mg/kg, 10 mg/kg, 11 mg/kg (as received). The meeting estimated a median and highest residue of 8.85 mg eq/kg and 11 mg/kg (as received) for prochloraz in barley forage, respectively.

Oilseed rape forage

The critical GAP for prochloraz on oilseed rape is from Serbia and involves two foliar spray treatments (before flowering BBCH 59 and up to end of flowering, BBCH 69) of 0.4 kg ai/ha each with a PHI of 35 days.

The meeting received three trials from France and Germany approximating the cGAP, with trochloraz residues in rape forage of (n = 3): 9.0 mg/kg, 9.3 mg/kg, 9.6 mg/kg.

The meeting concluded that an insufficient number of trials is available to estimate median or highest residue levels in rape forage.

Straw and hay of cereal grains except pseudocereals

The critical GAP for prochloraz on barley is from Russia and involves a single foliar spray treatment of 0.5 kg ai/ha with a PHI of forty days.

Supervised field trials on barley from Denmark, France and Germany approximated the Russian GAP gave prochloraz residues in barley straw of (n = 8): 0.82 mg/kg, 2.1 mg/kg, 2.3 mg/kg, 3.4 mg/kg, 4.2 mg/kg, 9.0 mg/kg, 11 mg/kg, 19 mg/kg (as received).

The critical GAP for prochloraz on small cereal grains (which includes oats) from Serbia involves two foliar spray treatments of 0.27 kg ai/ha each (before anthesis at BBCH 50 and up to end of flowering at BBCH 69) with a PHI of 35 days.

The meeting decided that the last growth stage of treatment (end of flowering, BBCH 69) is more relevant for the selection of field trials than the PHI and trials with longer periods than 35 days between last treatment and harvest were also considered according to GAP. In addition, the meeting decided to extrapolate data from barley straw to oats straw.

The meeting received supervised field trials from several European countries approximating the GAP, but involved higher individual rates of 0.43–0.49 kg ai/ha. The meeting decided to scale these trials with a factor of 0.6.

Unscaled prochloraz residues in barley straw were (n = 29): 1.0 mg eq/kg, 1.1 mg eq/kg, 1.2 (3) mg eq/kg, 1.4 mg eq/kg, 1.5 mg eq/kg, 1.8 mg eq/kg, 1.9 mg eq/kg, 2.3 (2) mg eq/kg, 2.4 (2) mg eq/kg, 2.5 (2) mg eq/kg, 2.6 mg eq/kg, 4.3 mg eq/kg, 5.4 mg eq/kg, 5.6 mg eq/kg, 6.0 (2) mg eq/kg, 6.6 mg eq/kg, 8.0 mg eq/kg, 8.0 mg eq/kg, 11 mg eq/kg, 12 mg eq/kg, 13 mg eq/kg, 16 mg eq/kg and 26 mg eq/kg (as received). Scaled prochloraz residues were (n = 29): 0.6 mg/kg, 0.66 mg/kg, 0.72 (3) mg/kg, 0.84 mg/kg,

0.9 mg/kg, 1.08 mg/kg, 1.14 mg/kg, 1.38 (2) mg/kg, 1.44 (2) mg/kg, 1.5 (2) mg/kg, 1.56 mg/kg, 2.58 mg/kg, 3.24 mg/kg, 3.36 mg/kg, 3.6 (2) mg/kg, 3.96 mg/kg, 4.8 (2) mg/kg, 6.6 mg/kg, 7.2 mg/kg, 7.8 mg/kg, 9.6 mg/kg and 15.6 mg/kg (as received).

The critical GAP for prochloraz on small cereal grains (which includes rye and triticale) from Serbia involves two foliar spray treatments of 0.27 kg ai/ha each (before anthesis at BBCH 50 and up to end of flowering at BBCH 69) with a PHI of 35 days.

The meeting decided that the last growth stage of treatment (end of flowering, BBCH 69) is more relevant for the selection of field trials than the PHI and that trials with longer periods than 35 days between last treatment and harvest are considered according to GAP. In addition, the meeting decided to extrapolate data from wheat straw to rye and triticale straw.

The meeting received supervised field trials on wheat from several European countries approximating the GAP, but involved higher individual rates of 0.43–0.49 kg ai/ha per treatment. The meeting decided to scale these trials with a factor of 0.6.

Unscaled prochloraz residues in wheat straw were (n = 15): 0.59 mg eq/kg, 1.1 mg eq/kg, 1.1 mg eq/kg, 1.3 mg eq/kg, 1.5 mg eq/kg, 1.5 mg eq/kg, 2.6 mg eq/kg, 3.4 mg eq/kg, 3.6 mg eq/kg, 4.0 mg eq/kg, 4.1 mg eq/kg, 5.5 mg eq/kg, 7.7 mg eq/kg, 9.2 mg eq/kg, 12 mg eq/kg. Scaled prochloraz residues were (n = 15): 0.354 mg/kg, 0.66 mg/kg, 0.66 mg/kg, 0.78 mg/kg, 0.9 (2) mg/kg, 1.56 mg/kg, 2.04 mg/kg, 2.16 mg/kg, 2.4 mg/kg, 2.46 mg/kg, 3.3 mg/kg, 4.62 mg/kg, 5.52 mg/kg and 7.2 mg/kg.

The critical GAP for prochloraz on wheat from Ukraine involves two foliar spray treatments of 0.5 kg ai/ha each (no specified interval) with a PHI of 30 days.

In supervised field trial on wheat from European countries approximated the Ukrainian GAP, prochloraz residues in wheat straw were (n = 7): 3.6 mg/kg, 4.1 mg/kg, 5.5 mg/kg, 7.7 mg/kg, 11 mg/kg, 12 mg/kg, 13 mg/kg (as received).

The meeting concluded that different straws from small cereal grains (barley, oats, rye, triticale and wheat) are normally indistinguishable and decided to use the dataset resulting in the highest estimate for the estimation of a group maximum residue level for straw and hay of cereal grains except pseudocereals and for corresponding median a highest residues for the calculation of the livestock animals dietary burden.

The meeting estimated a maximum residue level of 40 mg/kg (dry-matter based) based on the dataset on barley straw following treatment according to the Russian GAP for straw and hay of cereal grains except pseudocereals to confirm its previous recommendation.

The meeting estimated a median residue of 7.7 mg eq/kg (as received, based on wheat straw) and a highest residue of 19 mg eq/kg (as received, based on barley straw) for straw and hay of cereal grains except pseudocereals.

Fate of residues during processing

The meeting received information on high temperature hydrolysis of prochloraz in aqueous buffer solutions at three pH values (pH 4, 5 and 6) and temperatures (90, 100 and 120 °C) to simulate representative processing conditions for 20, 60 and 20 minutes, respectively. Under all conditions, parent

prochloraz was stable representing 84–96 percent AR. Minor degradation into BTS 40348 (up to 6.0 percent AR) were found at pH 6 and 100 °C incubation.

The meeting concluded that parent prochloraz is stable during processing.

In addition, the fate of prochloraz residues (prochloraz, BTS 44595 and BTS 44596 individually) was examined in barley simulating commercial processing techniques. Table 5.31.3, Table 5.31.4 and Table 3.31.5 show the processing factors, and the estimated residues in processed commodities

Table 5.31.3 Processing factors for prochloraz for the purpose of estimating maximum residue levels

Raw commodity	Processed commodity	Sum of prochloraz, BTS 44595 and BTS 44596, expressed as prochloraz		
		Individual processing factors	Mean or best estimate processing factor	MRL in mg/kg
Barley (MRL: 0.6 mg/kg)	Pearly barley	0.24, 0.30	0.27	not necessary
	Pot barley	0.29, 0.30	0.30	not necessary
	Beer	0.03, 0.04	0.04	not necessary
	Malt	0.68, 0.69	0.68	not necessary

Table 5.31.4 Processing factors for prochloraz for the purpose of estimating the dietary exposure

Raw commodity	Processed commodity	Sum of prochloraz and BTS 44596, expressed as prochloraz (dietary exposure)		
		Individual processing factors	Mean or best estimate processing factor	STMR-P in mg/kg
Barley (STMR: 0.0245 mg/kg)	Pearly barley	0.15, 0.25	0.2	0.0049
	Pot barley	0.22, 0.27	0.24	0.00588
	Beer	<0.24, <0.49	<0.24 (best estimate)	0.00588
	Malt	0.63, 1.1	0.86	0.02107

Table 5.31.5 Processing factors for BTS 44959 for the estimation of the TCC approach

Raw commodity	Processed commodity	BTS 44595 (dietary exposure)		
		Individual processing factors	Mean or best estimate processing factor	STMR-P in mg/kg
Barley (STMR: 0. 02575 mg/kg)	Pearled barley	0.28, 0.36	0.32	0.00824
	Pot barley	0.32, 0.33	0.32	0.00824
	Beer	<0.03, <0.05	<0.05	0.001
	Malt	0.65, 0.71	0.68	0.01751

Residues in animal commodities

Farm animal feeding studies

The meeting received information of feeding studies on calves and dairy cattle. No feeding studies on poultry or pigs were submitted.

In calves, three animals were dosed daily at 0.263 mg/kg bw for a period of 28 days. In tissues, mean total prochloraz residues of the three animals were 2.1 mg/kg in liver, 0.55 mg/kg in kidney, 0.09 mg/kg in hind-leg muscle and 0.09 mg/kg in fat. Highest individual residues per animal were 2.4 mg/kg in liver, 0.68 mg/kg in kidney, 0.09 mg/kg in hind-leg muscle and 0.12 mg/kg in fat.

Dairy cattle were grouped into three treatment groups dosed at rates of 200 mg, 600 mg and 2000 mg prochloraz/animal per day (equivalent to 10 ppm, 30 ppm and 100 ppm, respectively, assuming average feed consumption of 20 kg/day) for 28 days. Within 24h after the final dosing, the animals were sacrificed, tissues sampled and analysed for total prochloraz residues. No milk was collected or analysed in the study.

In liver, mean/highest total prochloraz residues were 2.8/3.3 mg/kg, 6.4/9.0 mg/kg and 23/24 mg/kg for the 10 ppm, 30 ppm and 100 ppm dose groups, respectively.

In muscle, mean/highest total prochloraz residues were <0.05/<0.05 mg/kg, 0.11/0.14 mg/kg and 0.37/0.49 mg/kg for the 10 ppm, 30 ppm and 100 ppm dose groups, respectively.

In kidney, mean/highest total prochloraz residues were 0.46/0.59 mg/kg, 1.3/1.8 mg/kg and 3.2/3.4 mg/kg for the 10 ppm, 30 ppm and 100 ppm dose groups, respectively.

In fat, mean/highest total prochloraz residues were 0.16/0.24 mg/kg, 0.39/0.44 mg/kg and 1.2/1.4 mg/kg for the 10 ppm, 30 ppm and 100 ppm dose groups, respectively.

In a second study on dairy cattle following the same dosing regime, only milk was collected and analysed for free prochloraz and the metabolites BTS 44595, BTS 44596 and BTS 54906. In addition, milk was separated into skim milk and cream. No determination of total prochloraz residue (determined as 2,4,6-TCP) was conducted.

Free prochloraz, BTS 54906 and BTS 44595 remained unquantified in all samples (milk, cream or skim milk) from all dose groups. Only for BTS 44596 was found above the LOQ (0.005 mg/kg) from the 100-ppm group, with mean levels of up to 0.014 mg/kg for whole milk, 0.032 mg/kg in cream and 0.0056 mg/kg in skim milk.

Farm animal dietary burden

Dietary burdens were calculated for beef cattle, dairy cattle, broilers and laying poultry based on feed items evaluated by the present meeting.

The dietary burdens, estimated using the OECD diets listed in Appendix IX of the 2016 edition of the FAO manual, are presented in Annex 5 of the 2024 JMPR Report and summarized in Table 5.31.6.

Table 5.31.6 Estimated maximum and mean dietary burdens of farm animals

	Animal dietary burden: Sum of prochloraz, BTS 44595 and BTS 44596, expressed as prochloraz							
	United States–Canada		European Union		Australia		Japan	
	Max.	Mean	Max.	Mean	Max.	Mean	Max.	Mean
Beef cattle	2.2	0.9	12	10	44[a]	35[c]	0.08	0.08
Dairy cattle	12	9.3	12	10	38[b]	30[d]	1.5	1.1
Poultry – broiler	0.09	0.09	0.09	0.09	0.09	0.09	0.012	0.012
Poultry – layer	0.09	0.09	4.5[e]	3.6[f]	0.07	0.07	–	–

Notes:
[a] Highest maximum beef or dairy cattle dietary burden suitable for MRL estimates for mammalian tissues.
[b] Highest maximum dairy cattle dietary burden suitable for MRL estimates for milk.
[c] Highest mean beef or dairy cattle dietary burden suitable for STMR estimates for mammalian tissues.
[d] Highest mean dairy cattle dietary burden suitable for STMR estimates for milk.
[e] Highest maximum poultry dietary burden suitable for MRL estimates for poultry tissues and eggs.
[f] Highest mean poultry dietary burden suitable for STMR estimates for poultry tissues and eggs.

Animal commodity maximum residue levels

The meeting noted that no information from feeding studies addressing residues in ruminant tissues or poultry according to the residue definition were submitted. Available animal metabolism study on lactating cows or laying hens involving administration of approx. 366 ppm and 10 ppm, respectively, were considered instead. For milk, a feeding study was available involving targeted analysis.

The calculations used to estimate maximum residue levels, STMR and HR values for mammalian commodities are shown in Table 5.31.7 and Table 5.31.8.

Table 5.31.7 Residues in mammalian matrices based on the lactating cow metabolism study for tissues and a lactating cow feeding study for milk for the purpose of estimating maximum residue levels

	Feed level (ppm) for milk residues	Sum of prochloraz, BTS 44595 and BTS 44596, expressed as prochloraz (mg/kg) in milk	Feed level (ppm) for tissue residues	Sum of prochloraz, BTS 44595 and BTS 44596, expressed as prochloraz (mg/kg)			
				Muscle	Liver	Kidney	Fat
Highest residue for maximum residue level estimation (beef or dairy cattle)							
Feeding study Metabolism study	30[a] 100[a]	<0.015 0.024	366[b]	0.053	2.56	0.80	0.18
Dietary burden and estimate of highest residue	38	0.016	44	0.0064	0.31	0.096	0.022

Notes:
[a] Feeding study.
[b] Metabolism study.

Table 5.31.8 Residues in mammalian matrices based on the lactating cow metabolism study for tissues and a lactating cow feeding study for milk for the purpose of estimating the dietary exposure

	Feed level (ppm) for milk residues	Sum of prochloraz, BTS 44596 and BTS 9608, expressed as prochloraz (mg/kg) in milk	Feed level (ppm) for tissue residues	Sum of prochloraz, BTS 44596 and BTS 9608, expressed as prochloraz (mg/kg)			
				Muscle	Liver	Kidney	Fat
Highest residue for the estimation of the dietary exposure (beef or dairy cattle)							
Feeding study Metabolism study	30[a] 100[a]	<0.015 0.024	366[b]	0.043	2.25	0.753	0.156
Dietary burden and estimate of highest residue	38	0.016	44	0.005	0.27	0.091	0.019
Mean residue for the estimation of the dietary exposure (beef or dairy cattle)							
Feeding study Metabolism study	100[a]	0.019	366[b]	0.043	2.25	0.753	0.156
Dietary burden and estimate of mean residue	30	0.0057	35	0.0041	0.22	0.072	0.015

Notes:
[a] Feeding study.
[b] Metabolism study.

Considering the new Codex Classification for animal commodities (General consideration 2.4), the meeting estimated maximum residue levels of 0.01 mg/kg for the group of muscle (from mammals other than marine mammals), 0.02 mg/kg for the group of mammalian fats (except milk fats), 0.04 mg/kg for the group of edible offal (mammalian) and 0.02 mg/kg for the group of milks.

The meeting withdraws its previous recommendations of 0.5 mg/kg for meat (mammalian except marine mammals), of 10 mg/kg for edible offal, mammalian and of 0.05 mg/kg for milk. The meeting estimated and HRs of 0.005 mg/kg for group of muscle (from mammals other than marine mammals), of 0.019 mg/kg for group of mammalian fats (except milk fats) and of 0.27/0.091 mg/kg (liver/kidney) for group of edible offal (mammalian), and STMRs of 0.0041 mg/kg for group of muscle (from mammals other than marine mammals), 0.015 mg/kg for group of mammalian fats (except milk fats), and of 0.22/0.072 mg/kg (liver/kidney) for group of edible offal (mammalian 0.22 mg/kg mammalian liver, mammalian and of 0.0057 mg/kg for group of milks. For the purpose to estimate the dietary exposure in context to the TTC approach, the meeting estimated the following STMR/HR values for ruminant matrices (Table 5.31.9).

Table 5.31.9 Residues in mammalian matrices for the purpose of estimating the dietary exposure for BTS 44959, BTS 44770 and BTS 54906

	Feed level (ppm) for milk residues	Milk, residue in mg/kg	Feed level (ppm) for tissue residues	Residue in mg/kg			
				Muscle	Liver	Kidney	Fat
Highest residue for the estimation of the dietary exposure (beef or dairy cattle)							

	Feed level (ppm) for milk residues	Milk, residue in mg/kg	Feed level (ppm) for tissue residues	Residue in mg/kg			
				Muscle	Liver	Kidney	Fat
Feeding study Metabolism study	100[a]	BTS 44595: ND	366[b]	BTS 44595: 0.00945	BTS 44595: 1.34	BTS 44595: 0.27	BTS 44595: 0.04
	366[b]	BTS 44770: ND		BTS 44770: ND	BTS 44770: 0.49	BTS 44770: ND	BTS 44770: ND
		BTS 54906: 0.105		BTS 54906: ND	BTS 54906: 0.83	BTS 54906: 0.096	BTS 54906: ND
Dietary burden and estimate of highest residue (HR)	no HR necessary for milk	–	44	BTS 44595: 0.0011	BTS 44595: 0.161	BTS 44595: 0.032	BTS 44595: 0.0048
		–		BTS 44770: 0	BTS 44770: 0.059	BTS 44770: 0	BTS 44770: 0
		–		BTS 54906: 0	BTS 54906: 0.10	BTS 54906: 0.012	BTS 54906: 0
Dietary burden and estimate of mean residue (STMR)	30	BTS 44595: 0	35	BTS 44595: 0.0009	BTS 44595: 0.128	BTS 44595: 0.026	BTS 44595: 0.0038
		BTS 44770: 0		BTS 44770: 0	BTS 44770: 0.047	BTS 44770: 0	BTS 44770: 0
		BTS 54906: 0.0086		BTS 54906: 0	BTS 54906: 0.079	BTS 54906: 0.009	BTS 54906: 0

Notes: ND: not detected.
[a] Feeding study.
[b] Metabolism study.

The calculations used to estimate maximum residue levels, STMR and HR values for avian commodities are shown in Table 5.31.10 and Table 5.31.11.

Table 5.31.10 Residues in poultry matrices based on the laying hen metabolism study for the purpose of estimating maximum residue levels

	Feed level (ppm) for egg residues	Sum of prochloraz, BTS 44595 and BTS 44596, expressed as prochloraz (mg/kg) in eggs	Feed level (ppm) for tissue residues	Sum of prochloraz, BTS 44595 and BTS 44596, expressed as prochloraz (mg/kg)		
				Muscle (thigh)	Liver	Fat
Highest residue for maximum residue level estimation (broiler or layer)						
Metabolism study	10	0.36[a]	10	0.0083	0.16	0.015
Dietary burden and estimate of highest residue	4.5	0.16	4.5	0.0037	0.072	0.0068

Note:

[a] Calculated from egg white/egg yolk assuming 65 percent/35 percent mass ratio.

Table 5.31.11 Residues in poultry matrices based on the laying hen metabolism study for the purpose of estimating the dietary exposure

	Feed level (ppm) for egg residues	Sum of prochloraz, BTS 44596 and BTS 9608, expressed as prochloraz (mg/kg) in eggs	Feed level (ppm) for tissue residues	Sum of prochloraz, BTS 44596 and BTS 9608, expressed as prochloraz (mg/kg)		
				Muscle (thigh)	Liver	Fat
Highest residue for estimation of the dietary exposure (broiler or layer)						
Metabolism study	10	0.38[a]	10	0.037	0.28	0.027
Dietary burden and estimate of highest residue	4.5	0.18	4.5	0.017	0.13	0.013
Mean residue for estimation of the dietary exposure (broiler or layer)						
Metabolism study	10	0.38[a]	10	0.037	0.28	0.027
Dietary burden and estimate of mean residue	3.6	0.14	3.6	0.013	0.10	0.0097

Note:
[a] Calculated from egg white/egg yolk assuming 65 percent/35 percent mass ratio.

The meeting estimated maximum residue levels of 0.2 mg/kg in the group of eggs, 0.01* mg/kg for group of avian muscle, 0.01 mg/kg for group of avian fat and 0.08 mg/kg for group of avian, edible offal of

The meeting withdrew its previous recommendation of 0.1 mg/kg in eggs, 0.05 mg/kg in poultry meat and 0.2 mg/kg in poultry, edible offal of.

The meeting estimated HRs of 0.18 mg/kg for group of eggs, 0.017 mg/kg for group of avian muscle, 0.013 mg/kg for group of avian fat and 0.13 mg/kg for group of avian, edible offal of, and STMRs of 0.13 mg/kg for group of eggs, 0.014 mg/kg for group of avian muscle, 0.01 mg/kg for group of avian fat and 0.1 mg/kg for group of avian, edible offal of.

For the purpose to estimate the dietary exposure in context to the TTC approach, the meeting estimated the following STMR/HR values for the following groups of avian matrices (Table 5.31.12).

Table 5.31.12 Residues in avian matrices for the purpose of estimating the dietary exposure for BTS 44959, BTS 44770 and BTS 54906

	Feed level (ppm) for egg residues	Eggs, residue in mg/kg	Feed level (ppm) for tissue residues	Residue in mg/kg		
				Muscle	Edible offal of, based on liver	Fat
Highest residue for estimation of the dietary exposure (broiler or layer)						
Metabolism study	10	BTS 44595: 0.019[a]	10	BTS 44595: ND	BTS 44595: ND	BTS 44595: ND
		BTS 44770: 0.040[a]		BTS 44770: ND	BTS 44770: ND	BTS 44770: ND

	Feed level (ppm) for egg residues	Eggs, residue in mg/kg	Feed level (ppm) for tissue residues	Residue in mg/kg		
				Muscle	Edible offal of, based on liver	Fat
		BTS 54906: ND[a]		BTS 54906: ND	BTS 54906: 0.023	BTS 54906: ND
Dietary burden and estimate of highest residue (HR)	4.7	BTS 44595: 0.0089	4.7	BTS 44595: 0	BTS 44595: 0	BTS 44595: 0
		BTS 44770: 0.0188		BTS 44770: 0	BTS 44770: 0.011	BTS 44770: 0
		BTS 54906: 0		BTS 54906: 0	BTS 54906: 0	BTS 54906: 0
Dietary burden and estimate of mean residue (STMR)	3.7	BTS 44595: 0.007	3.7	BTS 44595: 0	BTS 44595: 0	BTS 44595: 0
		BTS 44770: 0.015		BTS 44770: 0	BTS 44770: 0.0085	BTS 44770: 0
		BTS 54906: 0		BTS 54906: 0	BTS 54906: 0	BTS 54906: 0

Notes: ND: not detected.

[a] Calculated from egg white/egg yolk assuming 65 percent/35 percent mass ratio.

Future work or information

Desirable information:

- field rotational crop study information;
- farm animal feeding studies on ruminants and poultry involving targeted analysis according to the residue definitions for animal commodities; and
- in case the use pattern is extended to commodities not covered by the crop groups tested in available metabolism studies, further information on plant metabolism on crops representative to the additional uses.

Recommendations

On the basis of the data obtained from supervised trials, the meeting concluded that the residue levels listed in Table 5.31.13 and Annex 1 are suitable for establishing maximum residue limits and dietary exposure assessments. Table 5.31.14 shows the residues used to calculate the dietary burden.

Definition of the residue for the setting of maximum residue levels for plant and animal commodities: sum of prochloraz, N-propyl-N-[2-(2,4,6-trichlorophenoxy)ethyl]urea (BTS 44595) and N-formyl-N-propyl-N-[2-(2,4,6-trichlorophenoxy)ethyl]urea (BTS 44596), expressed as prochloraz.

Definition of the residue for dietary risk assessment for plant commodities: sum of prochloraz and N-formyl-N-propyl-N-[2-(2,4,6-trichlorophenoxy)ethyl]urea (BTS 44596), expressed as prochloraz.

Definition of the residue for dietary risk assessment for animal commodities: sum of prochloraz, N-formyl-N-propyl-N-[2-(2,4,6-trichlorophenoxy)ethyl]urea (BTS 44596) and 2,4,6-trichlorophenoxyacetic acid (BTS 9608) (free and conjugated), all expressed as prochloraz.

The residue is fat-soluble.

Table 5.31.13 Residue levels suitable for establishing maximum residue limits and for dietary exposure assessment

		Recommended maximum residue level (mg/kg)		STMR or STMR-P, mg/kg	HR or HR-P, mg/kg
CCN	**Commodity**	**New**	**Previous**		
FI 0030	Assorted tropical and subtropical fruits – inedible peel	W	7	–	–
FI 0326	Avocado	5 (Po)	–	1.6	2.9
GC 0640	Barley	0.6	–	0.0245	–
–	Barley, beer	–	–	0.00588	–
–	Barley, malt	–	–	0.02107	–
–	Barley, pearled	–	–	0.0049	–
–	Barley, pot	–	–	0.00588	–
GC 0080	Cereal grains	W	2	–	–
FC 0001	Citrus fruits	W	10	–	–
MO 0105	Edible offal, mammalian	W	10	–	–
PE 0112	Eggs	W	0.1	–	–
PO 0111	Group of avian, edible offal of	0.08	–	0.1	0.13
PF 0111	Group of avian fat	0.01	–	0.01	0.013
PM 0110	Group of avian muscle	0.01*	–	0.014	0.017
MO 0105	Group of edible offal, mammalian	0.4	–	Liver: 0.22 Kidney: 0.072	Liver: 0.27 Kidney: 0.091
PE 0112	Group of eggs	0.2	–	0.13	0.18
MF 0100	Group of mammalian fats (except milk fats)	0.02	–	0.015	0.019
ML 0106	Group of milks	0.02	–	0.0057	–
MM 0095	Group of muscle (from mammals other than marine mammals)	0.01	–	0.0041	0.005
SO 0693	Linseed	W	0.05	–	–
MM 0095	Meat (from mammals other than marine mammals)	W	0.5	–	–
ML 0106	Milks	W	0.05	–	–
VO 0450	Mushroom	W	3	–	–
GC 0647	Oats	0.5	–	0.024	–
HS 0790	Pepper, black, white	W	10	–	–
PM 0110	Poultry meat	W	0.05	–	–
PO 0111	Poultry, edible offal of	W	0.2	–	–
SO 0495	Rape seed	W	0.7	–	–
GC 0650	Rye	0.15	–	0.012	–
AS 0081	Straw and hay of cereal	40 (dw)	40 (dw)	–	–

		Recommended maximum residue level (mg/kg)		STMR or STMR-P, mg/kg	HR or HR-P, mg/kg
CCN	Commodity	New	Previous		
	grains except pseudocereals				
OR 0702	Sunflower seed oil, edible	W	1	–	–
SO 0702	Sunflower seeds	W	0.5	–	–
GC 0653	Triticale	0.15	–	0.012	–
GC 0654	Wheat	0.4	–	0.035	–

Table 5.31.14 Residues (as received) used to calculate the animal dietary burden

CCN	Commodity	Median, mg/kg	Highest, mg/kg
–	Barley forage	8.95	10
GC 0640	Barley grain	0.066	–
–	Oats forage	6.6	9.0
GC 0647	Oat grain	0.066	–
–	Rye forage	5.31	6.6
GC 0650	Rye grain	0.018	–
AS 0081	Straw and hay of cereal grains except pseudocereals	7.7	19
–	Triticale forage	5.31	6.6
GC 0653	Triticale grain	0.018	–
–	Wheat forage	8.85	11
GC 0654	Wheat grain	0.011	–

Dietary risk assessment

Long-term dietary exposure

The ADI for prochloraz is 0–0.02 mg/kg bw. The International Estimated Daily Intakes (IEDIs) for prochloraz were estimated for the 17 GEMS/Food Consumption Cluster Diets using the STMR or STMR-P values estimated by the JMPR. The results are shown in Annex 3 of the 2024 JMPR Report.

The IEDIs ranged from 0 to 2 percent of the maximum ADI. The meeting concluded that long-term dietary exposure to residues of prochloraz from uses considered by the JMPR is unlikely to present a public health concern.

Acute dietary exposure

The ARfD for prochloraz is 0.2 mg/kg bw. The International Estimate of Short-term Intakes (IESTIs) for prochloraz were calculated for the food commodities and their processed commodities for which HRs/HR-Ps or STMRs/STMR-Ps were estimated by the present meeting and for which consumption data were available. The results are shown in Annex 4.

The IESTIs varied from 0 to 40 percent of the ARfD for children and from 0 to 20 percent of the ARfD for the general population. The meeting concluded that acute dietary exposure to residues of prochloraz from uses considered by the present meeting is unlikely to present a public health concern.

Threshold of toxicological concern (TTC) consideration for metabolites

The meeting agreed that metabolite BTS 44595 could be assessed using the TTC approach (Cramer class III threshold of 1.5 µg/kg bw per day). The current meeting estimated dietary exposures for BTS 44595 of 0.50 µg/kg bw per day.

The meeting concluded that the estimated dietary exposure to residues of BTS 44595 from the uses considered by the JMPR is below the TTC for Cramer class III compounds and is unlikely to present a public health concern. This conclusion will need to be revisited if additional uses are considered in the future for prochloraz.

The meeting agreed that metabolite BTS 44770 could be assessed using the TTC approach (Cramer class III threshold of 1.5 µg/kg bw per day). The current meeting estimated dietary exposures for BTS 44770 of 0.018 µg/kg bw per day.

The meeting concluded that the estimated dietary exposure to residues of BTS 44770 from the uses considered by the JMPR is below the TTC for Cramer class III compounds and is unlikely to present a public health concern. This conclusion will need to be revisited if additional uses are considered in the future for prochloraz.

The meeting agreed that metabolite BTS 54906 could be assessed using the TTC approach (Cramer class III threshold of 1.5 µg/kg bw per day). The current meeting estimated dietary exposures for BTS 54906 of 0.082 µg/kg bw per day.

The meeting concluded that the estimated dietary exposure to residues of BTS 54906 from the uses considered by the JMPR is below the TTC for Cramer class III compounds and is unlikely to present a public health concern. This conclusion will need to be revisited if additional uses are considered in the future for prochloraz.

5.32 Propiconazole (160) (R)

5.32.1 Residue and analytical aspects

Propiconazole, a broad spectrum fungicide used for control of various plant diseases, underwent periodic review programme for toxicology by JMPR in 2004, when an ADI of 0–0.07 mg/kg bw and an ARfD of 0.3 mg/kg bw were established.

Propiconazole was evaluated under the periodic review for residues by the JMPR in 2007, when the residue was defined for plant and animal commodities for compliance with the MRL as propiconazole. For dietary risk assessment for plant and animal commodities, the residue definition is propiconazole plus all metabolites convertible to 2,4-dichlorobenzoic acid (2,4-DCBA), expressed as propiconazole. The residue is fat-soluble. Since the periodic review, propiconazole has been reviewed for residues in 2013, 2014, 2015, 2017 and 2023.

Fate of residues during processing

Residues in processed commodities

The 2023 JMPR recommended a maximum residue level of 10 mg/kg for polished rice based on the processing factor for parboiled polished rice of 0.33, which was higher than the processing factor for polished rice (0.07).

At the 55th session of the CCPR, members commented that the recommended MRL for polished rice appeared to be overestimated based on the processing factor for parboiled polished rice, which was not covered by the definition for polished rice in the Classification of Food and Feed. The Committee also noted that the higher trade volume of polished rice compared to parboiled rice, and the difference in the nature of these commodities.

The 2024 meeting acknowledged the recommendation of CCPR and agreed that the lower processing factor for polished rice of 0.07 should be used to calculate the maximum residue level The meeting estimated a maximum residue level of 3 mg/kg to replace its previous recommendation of 10 mg/kg and estimated a STMR of 1.95 mg/kg for propiconazole in polished rice.

Residues in animal commodities

Following the new Codex Classification for animal commodities (General consideration 2.4) and based on the dietary burden derived by JMPR 2023, the meeting estimated maximum residue levels of 0.01* mg/kg for group of milks and group of muscle (from mammals other than marine mammals), of 0.05 mg/kg for group of mammalian fats (except milk fats) and of 0.2 mg/kg for group of edible offal.

The meeting estimated an STMR of 0.02 mg/kg for group of milks and HRs and STMRs of 0.12 mg eq/kg and 0.06 mg/kg for group of muscle, 0.23 mg/kg and 0.07 mg/kg for group of fats and 4.9 mg/kg and 1.3 mg eq/kg for group of edible offal (based on kidney).

The meeting also estimated maximum residue levels of 0.01* mg/kg for group of eggs, group of avian, edible offal, group of avian fats and group of avian muscle, and HRs and STMRs of 0.07 mg eq/kg and

0.06 mg eq/kg for group of eggs, 0.05 mg eq/kg for group of muscle and group of fat and 0.11 mg eq/kg and 0.10 mg eq/kg for group of edible offal.

The meeting withdrew its previous recommendations for meat (from mammals other than marine mammals), milks, mammalian fats (except milk fats), edible offal (mammalian) eggs, poultry fats, poultry meat and poultry edible offal.

Recommendations

On the basis of the data obtained from supervised trials, the meeting concluded that the residue levels listed in Table 5.32.1 and Annex 1 are suitable for establishing maximum residue limits and for dietary exposure assessments.

Definition of residues for compliance with the MRL for plant and animal commodities: propiconazole.

Definition of residues for dietary risk assessment for plant and animal commodities: propiconazole plus all metabolites convertible to 2,4-dichlorobenzoic acid (2,4-DCBA), expressed as propiconazole.

The residue is fat-soluble.

Table 5.32.1 Residue levels suitable for establishing maximum residue limits and for dietary exposure assessments

CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P mg/kg	HR or HR-P mg/kg
		New	Previous		
MO 0105	Edible offal (mammalian)	W	0.2	–	–
PE 0112	Eggs	W	0.01*	–	–
PO 0111	Group of avian, edible offal	0.01*	–	0.10	0.11
PF 0111	Group of avian fats	0.01*	–	0.05	0.05
PM 0110	Group of avian muscle	0.01*	–	0.05	0.05
MO 0105	Group of edible offal (mammalian)	0.2	–	1.3	4.4 (liver) 4.9 (kidney)
PE 0112	Group of eggs	0.01*	–	0.06	0.07
MF 0100	Group of mammalian fats (except milk fats)	0.05	–	0.07	0.23
ML 0106	Group of milks	0.01*	–	0.02	–
MM 0095	Group of muscle (from mammals other than marine mammals)	0.01*	–	0.06 (muscle) 0.07 (fat)	0.12 (muscle) 0.23 (fat)
MF 0100	Mammalian fats (except milk fats)	W	0.05	–	–
MM 0095	Meat (from mammals other than marine mammals)	W	0.01* (fat)	–	–
ML 0106	Milks	W	0.01*	–	–
PO 0111	Poultry, edible offal of	W	0.01*	–	–
PF 0111	Poultry fats	W	0.01*	–	–
PM 0110	Poultry meat	W	0.01* (fat)	–	–
CM 1205	Rice, polished	3	10	1.95	–

Dietary risk assessment

Long-term dietary exposure

The ADI for propiconazole is 0–0.07 mg/kg bw. The meeting concluded that the new STMR recommendation for polished rice will not impact the previously estimated International Estimated Daily Intakes (IEDIs) and concluded that long-term dietary exposure to residues of propiconazole from uses considered by the JMPR is unlikely to present a public health concern.

Acute dietary exposure

The ARfD for propiconazole is 0.3 mg/kg bw. The International Estimate of Short-term Intakes (IESTI) for propiconazole was calculated for the food commodities for which a STMR was estimated by the present meeting (polished rice) and for which consumption data were available. The result is shown in Annex 4.

The IESTI accounted for 20 percent of the ARfD for children and 10 percent of the ARfD for the general population. The meeting concluded that acute dietary exposure to residues of propiconazole from uses considered by the present meeting is unlikely to present a public health concern.

5.33 Pydiflumetofen (309) (T, R)

5.33.1 Toxicology

Pydiflumetofen is the International Organization for Standardization–approved common name for the 50:50 enantiomer ratio of (*S*)-3-difluoromethyl-1-methyl-1*H*-pyrazole-4-carboxylic acid methoxy-[1-methyl-2-(2,4,6-trichlorophenyl)-ethyl]-amide and (*R*)-3-difluoromethyl-1-methyl-1*H*-pyrazole-4-carboxylic acid methoxy-[1-methyl-2-(2,4,6-trichlorophenyl)-ethyl]-amide (IUPAC), with the Chemical Abstracts Service number 1228284-64-7.

Both pydiflumetofen enantiomers are biologically active. Pydiflumetofen is a member of the *N*-methoxy-(phenyl-ethyl)-pyrazole-carboxamide group of fungicides. Its mode of action is by respiration inhibition at complex II (succinate dehydrogenase) in the mitochondria of phytopathogenic fungi.

Pydiflumetofen was previously evaluated by FAO/WHO Joint Meeting on Pesticide Residues (JMPR) for toxicology in 2018. In the 2018 evaluation, an acceptable daily intake (ADI) of 0–0.1 mg/kg bw and an acute reference dose (ARfD) of 0.3 mg/kg bw were established.

Pydiflumetofen was evaluated by the present meeting following a request from the Codex Committee on Pesticide Residues (CCPR) for additional maximum residue limits (MRLs). Toxicological data on the parent compound and its metabolite 2,4,6-trichlorophenol (2,4,6-TCP) were have been produced since the last evaluation and these were assessed. The results of these studies did not affect the previously established ADI or ARfD for pydiflumetofen.

All critical studies contained statements of compliance with good laboratory practice and were conducted in accordance with relevant national or international test guidelines, unless otherwise specified. Published literature has been taken into consideration, but it is of generally limited value in the evaluation.

Toxicological data

Pydiflumetofen tested negative in an in vitro bacterial reverse mutation assay. The meeting re-affirmed that pydiflumetofen was unlikely to be genotoxic.

Toxicological data on metabolites and/or degradates

Metabolite 2,4,6-trichlorophenol (2,4,6-TCP)

The 2018 meeting concluded that the toxicity of 2,4,6-TCP and its conjugates would be covered by the parent compound.

The present meeting evaluated newly available studies including 14-day and 28-day toxicity studies, and in vitro and in vivo genotoxicity studies. Published literature was also provided for genotoxicity.

In a 14-day dose-range finding study in rats, 2,4,6-TCP was administered by gavage at dose levels of 0 mg/kg bw, 250 mg/kg bw, 500 mg/kg bw, 750 mg/kg bw or 1000 mg/kg bw per day. At 1000 mg/kg bw per day, one male animal was found dead on day two, and the remaining animals were euthanized due

clinical signs. 2,4,6-TCP was generally well tolerated up to 750 mg/kg bw per day with no deaths or clinical signs, and only slight reductions in body weight gains in males over the dosing period.

In a 28-day oral toxicity study in rats, 2,4,6-TCP was administered by gavage at dose levels of 0 mg/kg, 100 mg/kg, 250 mg/kg or 500 mg/kg per day. The no-observed-adverse-effect level (NOAEL) was 500 mg/kg bw per day, the highest dose tested. In a 28-day oral toxicity study of pydiflumetofen in rats, assessed by the 2018 JMPR, the NOAEL was 619 mg/kg bw per day (lowest-observed-adverse-effect level [LOAEL] 1174 mg/kg bw per day).

2,4,6-TCP was negative for genotoxicity in an in vitro Ames test, mammalian cell gene mutation test and an in vivo transgenic rodent assay, but inconclusive in the in vitro micronucleus assay. Studies from the open literature have also been taken into consideration. Based on the weight of evidence, including the fact that 2,4,6-TCP is a major rat metabolite of pydiflumetofen, which is not genotoxic in vivo, the meeting concluded that 2,4,6-TCP is unlikely to be genotoxic in vivo.

The present meeting confirmed the conclusion of the 2018 meeting, that metabolite 2,4,6-TCP and its sulfate conjugate would be covered by studies of the parent compound.

Toxicological evaluation

The 2018 meeting established an ADI of 0–0.1 mg/kg bw on the basis of the NOAEL of 9.9 mg/kg bw per day in pydiflumetofen a two-year study in rats for decreased body weight in males observed at 51.0 mg/kg bw per day. A safety factor of 100 was applied. The current meeting re-affirmed that the parent ADI applies also to metabolite 2,4,6-TCP and its sulfate conjugate.

The 2018 meeting established an ARfD of 0.3 mg/kg bw for pydiflumetofen a NOAEL of 30 mg/kg bw per day on the basis of a rat developmental toxicity study showing reduction in maternal body weight gain and food consumption during early treatment, observed at 100 mg/kg bw per day. A safety factor of 100 was applied. The current meeting re-affirmed that the parent ARfD applies also to metabolite 2,4,6-TCP and its sulfate conjugate.

A toxicological monograph addendum was prepared.

The acceptable daily intake (ADI) for pydiflumetofen, established by JMPR in 2018:

*0–0.1 mg/kg bw**

The acute reference dose (ARfD) for pydiflumetofen, established in 2018:

*0.3 mg/kg bw**

*Applies to pydiflumetofen and to metabolite 2,4,6-trichlorophenol and its sulfate conjugate.

Table 5.33.1 Critical end-points for setting guidance values for exposure to pydiflumetofen (addendum)

Genotoxicity	Unlikely to be genotoxic in vivo
Studies on toxicologically relevant metabolites	
2,4,6-TCP	
Short-term studies of toxicity	28-day NOAEL: 500 mg/kg bw per day (rat)
Genotoxicity	Negative (Ames, mammalian cell gene mutation, in vivo Transgenic rodent assay); inconclusive (in vitro Micronucleus)

Table 5.33.2 Summary

	Value	Study	Safety factor
ADI	0–0.1 mg/kg bw[a]	Two-year study of toxicity and carcinogenicity in rats	100
ARfD	0.3 mg/kg bw[a]	Developmental toxicity study in rats	100

Note:
[a] Applies to pydiflumetofen, 2,4,6-trichlorophenol and its sulfate conjugate, expressed as pydiflumetofen.

5.33.2 Residue and analytical aspects

Pydiflumetofen is a broad-spectrum fungicide belonging to the carboxamide group that acts through inhibition of succinate dehydrogenase in complex II of fungal mitochondrial respiration. Pydiflumetofen was first evaluated for toxicology and residues by the JMPR in 2018 when an ADI of 0–0.1 mg/kg bw and an ARfD of 0.3 mg/kg bw were established.

The residue definition for compliance with the MRL for plant and animal commodities, and dietary risk assessment for plant commodities is pydiflumetofen. The residue definition for dietary risk assessment for animal commodities other than mammalian liver and kidney is the sum of pydiflumetofen and 2,4,6-TCP (2,4,6-trichlorophenol) and its conjugates, expressed as pydiflumetofen and for dietary risk assessment for mammalian liver and kidney is the sum of pydiflumetofen; 2,4,6-trichlorophenol (2,4,6-TCP) and its conjugates; and SYN547897 and its conjugates, expressed as pydiflumetofen. The residue is fat-soluble.

Pydiflumetofen was evaluated for new uses by the JMPR in 2019 and 2021 (Extra meeting) and was scheduled at the 54th Session of the CCPR for evaluation of additional uses by the 2024 JMPR.

The meeting received information on environmental fate, residues in rotational crops, methods of residue analysis, storage stability, GAP information, supervised residue trials, and processing studies for the evaluation of new uses on cane berries, mango, pitaya, leafy green vegetables, cotton, and coffee.

Environmental fate in soil – field dissipation studies

The 2018 JMPR noted that pydiflumetofen residues are very persistent in soil (DT50 of up to 2380 days) and may be taken up by rotational crops. The 2019 meeting derived a soil plateau level of 591 g ai/ha based on a geometric mean DT50 value of 603 days. Coupled with a maximum application rate of

400 g ai/ha, the 2019 meeting estimated 991 g ai/ha as the plateau for evaluating potential residues in rotational crops.

New field dissipation studies submitted to the current meeting showed DT50 times ranging from 23 to 1310 days. When considered with the previously evaluated field dissipation studies, the new geometric mean DT50 is 521 days. Based on the same crop interception factor of 0.77 used by the 2019 meeting and the same maximum annual application rate of 400 g ai/ha (uses considered by the current meeting do not exceed this rate), the new plateau rate is 893 g ai/ha, which is reached in approximately 4 years following sequential annual application.

Given that the new estimated plateau rate is 90 percent of the plateau rate determined by the 2019 meeting, the meeting agreed that the anticipated residues in rotational crops used by the 2019 and 2021 meetings do not need to be revised based on inclusion of the new field dissipation results.

Residues in rotational crops

The current meeting received two field rotational crop studies in which pydiflumetofen was applied to bare soil at a nominal rate of 1500 g ai/ha (1.5x plateau rate of 991 g ai/ha) and has compiled the results with those summarized by the 2019 JMPR (Table 5.33.3 and Table 5.33.4)

Table 5.33.3 The residues scaled to plateau level of pydiflumetofen in soil (2019 JMPR) (residue values reported to the 2024 meeting have been added)

"Super" Crop Group[a]	Commodity	n	Residue scaled (mg/kg)		
			Mean	Median	Highest
Root and tuber vegetables	Carrot roots	8	0.03	0.02	0.05
	2024	4	0.015	0.013	0.026
	Radish roots	7	0.02	0.02	0.07
	Potato tuber (2024)	4	0.015	0.014	0.027
Cereals	Wheat grain	3	<0.03	<0.03	<0.03
	Barley grain	4	<0.02	<0.02	<0.02
	2024[c]	7	0.006	0.006	0.007
	Maize whole cobs	2	<0.02	<0.02	<0.02
	Maize grain (2024)	16	0.007	0.007	0.007
Leafy vegetables and Brassicas	Spinach (mature)	7	0.03	0.02	0.09
	Spinach (immature)	10	0.02	0.02	0.04
	Broccoli (2024)	4	0.019	0.007	0.058
	Leaf lettuce	1	<0.03	<0.03	<0.03
	2024	4	0.007	0.007	0.007
	Kale	4	<0.02	<0.02	<0.02
	2024	8	0.007	0.007	0.007
	Celery (2024)	4	0.045	0.007	0.162
Oilseeds and pulses	Soya bean seed	2	<0.02	<0.02	<0.02
	Bean dry seed	3	<0.02	<0.02	<0.02
	2024	4	0.007	0.007	0.007
	Beans fresh seed	4	<0.02	<0.02	<0.02
	2024	4	0.007	0.007	0.007
	Oilseed rape (2024)[c]	7	0.007	0.007	0.007
Fruits and fruiting vegetables	Tomato	4	<0.02	<0.02	<0.02
	Strawberry	3	<0.02	<0.02	<0.02

"Super" Crop Group[a]	Commodity	n	Residue scaled (mg/kg)		
			Mean	Median	Highest
	2024	4	0.007	0.007	0.007
	Cucumber (2024)	4	0.007	0.007	0.007
Leaves and tops of root vegetables[b]	Radish tops	7	0.02	0.02	0.05
	Carrot tops	8	0.02	0.02	0.02
	2024	4	0.010	0.007	0.021

Notes:
[a] Referred to in the OECD rotational crop guidance.
[b] This group is not included in OECD rotational crop guidance.
[c] Higher value from Spring and Winter varieties.

Table 5.33.4 Feed residues scaled to plateau level of pydiflumetofen in soil (2019 JMPR) (residue values reported to the 2024 meeting have been added)

Animal feeds	Commodity	n	Residue scaled (mg/kg)		
			Mean	Median	Highest
Legume animal feeds	Soya bean forage	3	0.02	0.02	0.02
	Bean forage	4	<0.02	<0.02	<0.02
	2024 (remaining plant)	4	0.013	0.013	0.019
Straw and fodder of cereal grains	Maize stover	4	0.02	0.02	0.03
	2024 (remaining plant)	16	0.017	0.007	0.12
	Barley straw	4	0.05	0.03	0.18
	2024	7	0.050	0.032	0.132
	Wheat hay	3	0.06	0.06	0.11
	Wheat straw	3	0.10	0.08	0.28
Forage of cereal grains	Barley forage	4	0.02	0.02	0.04
	2024 (whole plant)	7	0.009	0.006	0.021
	Wheat forage	3	0.03	0.03	0.03
Other forage	Rape forage (Spring) (2024)	1	0.104	0.104	0.104
	Rape forage (Winter) (2024)	7	0.010	0.007	0.020

Conclusion

In contrast to the studies considered by previous meetings, the new studies were done with an overdose when compared to the estimated plateau-based maximum application rate. This allows proportionality adjustments that, in some cases, predict residue levels below the pydiflumetofen LOQ (0.01 mg/kg). Overall, the new field rotational crop data corroborate the conclusions and recommendations made by previous meetings as relates to residues in rotational crops. The meeting agreed that new recommendations are not warranted as a result of the new information and confirmed its previous recommendations as pertains to residue estimates from carryover into follow-on crops.

Methods of analysis

The meeting received concurrent recovery data for two methods for plant matrices evaluated by previous meetings as well as validation and/or concurrent recovery data for two new methods. All four methods extract residues of pydiflumetofen into an acetonitrile-based solvent system. Clean-up techniques vary somewhat across methods, and all methods use LC-MS/MS for residue determination. All four methods

employ extraction solvents and techniques similar to those used in the metabolism studies (see 2018 JMPR).

Method GRM061.03A was previously evaluated by the JMPR and found to be suitable for high-water content and dry commodities. For those commodities, the method was validated to an LOQ of 0.01 mg/kg. New validation data for cottonseed, coffee, fruit (cane berries, pitaya), and leafy vegetable (lettuces, cabbage, spinach) commodities demonstrate good method performance. Across all matrices, fortification levels, and sample type (validation or concurrent recovery), recoveries were acceptable, ranging from 80 to 119 percent, with relative standard deviations (RSD) less than or equal to 20 percent and most being less than 10 percent.

Method YARL-0191A is similar to GRM061.03A. Across validation and concurrent recovery results, recoveries ranged from 85 to 97 percent at fortification levels of 0.01 mg/kg up to 5 mg/kg.

Method GM119 extracts pydiflumetofen into acidified (acetic acid) acetonitrile. Concurrent recoveries from fortified (0.01 or 0.1 mg/kg) samples of blueberry, strawberry, and raspberry ranged from 98 to 106 percent, with RSD less than 5 percent.

In the method used for the analysis of mango (untitled method), pydiflumetofen is extracted into acetonitrile in the presence of sodium chloride. Concurrent recoveries from fortified (0.1 to 1 mg/kg) samples of mango whole fruit and mango pulp ranged from 90 to 108 percent, with RSD less than 10 percent.

Based on the available information, all four methods are considered suitable for the analysis of pydiflumetofen in plant matrices, with an LOQ of 0.01 mg/kg.

Stability of residues in stored analytical samples

Previous meetings concluded that pydiflumetofen is stable for at least 23 months when stored at ≤–20 °C in commodities representative of the high water, high acid, high starch, high protein and high oil commodity groups.

Storage stability data were submitted to the current meeting for leafy vegetables and cane berries. Although the studies did not include results from Day 0 of storage, the results confirm the stability of pydiflumetofen during frozen storage for leafy vegetables and extend the demonstrated duration of stability to at least 782 days (ca. 26 months) for cane berries. The demonstrated durations of stability adequately cover the storage times for the samples in all field trials, with the exception of cane berries from trials conducted in the United States of America, where samples were stored for a maximum of 811 days. Given that no dissipation of pydiflumetofen was observed in cane berries stored for 782 days, the meeting agreed the residue data from cane berry trials in the United States of America are suitable for residue recommendations.

Results of supervised residue trials on crops

For maximum residue level estimation of pydiflumetofen residues in primary crop commodities, the addition of residues arising from direct treatment in combination with root uptake of pydiflumetofen from previous years, as determined at the 2019 meeting, must be taken into account. The meeting recognized

that such uptake is not relevant for permanent crops, including the cane berry, mango, pitaya, and coffee crops considered by the current meeting.

The meeting used the crop groups described in the Codex Classification of Foods and Animals Feeds and the "super crop group" strategy described in the OECD Guidance Document on Residues in Rotational Crops (OECD, 2018) to make recommendations related to residues due to carry over into follow-on crops. The meeting noted that the use of statistical methods for the estimation of maximum residue levels is not possible when considering potential carryover of residues in follow-on crops.

Cane berries

The critical GAP for cane berries from the United States of America consists of up to two applications, each at 150 g ai/ha, on a 7-day interval and PHI of 0 days.

In field trials from Australia, Hungary, Italy, Poland, Spain, and the United States of America approximating the critical GAP, residues of pydiflumetofen in raspberries in ranked order were (n = 14): 0.45 mg/kg, 0.50 mg/kg, 0.56 mg/kg, 0.74 mg/kg, 0.75 mg/kg, 0.79 mg/kg, 0.81 mg/kg, 0.82 mg/kg, 0.85 mg/kg, 0.88 mg/kg, 1.2 mg/kg, 1.4 mg/kg, 1.6 mg/kg, and 2.5 mg/kg.

In field trials from the United States of America approximating the critical GAP, residues of pydiflumetofen in blackberries in ranked order were (n = 6): 0.70 mg/kg, 0.77 mg/kg, 0.78 mg/kg, 0.89 mg/kg, 1.5 mg/kg, and 2.0 mg/kg.

The median residues from raspberries and blackberries are within a 5x difference and the residue populations are not significantly different (Mann-Whitney U Test); therefore, the meeting agreed to combine the data from raspberries and blackberries to estimate residues.

The residues from the combined datasets, in ranked order were (n = 20): 0.45 mg/kg, 0.50 mg/kg, 0.56 mg/kg, 0.70 mg/kg, 0.74 mg/kg, 0.75 mg/kg, 0.77 mg/kg, 0.78 mg/kg, 0.79 mg/kg, <u>0.81</u> mg/kg, <u>0.82</u> mg/kg, 0.85 mg/kg, 0.88 mg/kg, 0.89 mg/kg, 1.3 mg/kg, 1.4 mg/kg, 1.5 mg/kg, 1.5 mg/kg, 2.0 mg/kg, and 2.5 mg/kg.

Cane berries are a permanent crop and residues from rotational crops do not need to be considered. The meeting estimated a maximum residue level of 4 mg/kg, an HR of 2.6 mg/kg (highest single value), and an STMR of 0.815 mg/kg. Furthermore, the meeting recognized that the registration in the United States of America is for the cane berry subgroup and that the available data are representative for the subgroup; therefore, the meeting agreed to make the recommendation for the Subgroup of cane berries.

Mango

The critical GAP for mango from China consists of up to 2 applications of a 5 g ai/hL spray on a 10-day interval and PHI of 14 days.

In field trials from China matching the GAP, residues of pydiflumetofen in mango fruit in ranked order were (n = 6): <0.01 mg/kg, 0.016 mg/kg, 0.024 mg/kg, 0.032 mg/kg, 0.036 mg/kg, and 0.044 mg/kg. In mango flesh, residues were (n = 6): <<u>0.01</u> mg/kg.

Mango is a permanent crop and residues from rotational crops do not need to be considered. The meeting estimated a maximum residue level of 0.08 mg/kg, HR and STMR of 0.01 mg/kg for pydiflumetofen for pydiflumetofen in mango.

Pitaya

The critical GAP for pitaya from Viet Nam and consists of up to 2 applications of a 20 g ai/hL spray on a 7-day interval and PHI of 7 days.

In field trials from Viet Nam approximating the GAP, residues of pydiflumetofen in ranked order were (n = 4): 0.05 mg/kg, 0.13 mg/kg, 0.2 mg/kg, and 0.41 mg/kg. In pitaya flesh, residues were (n = 4): <0.01 (3) mg/kg and 0.03 mg/kg.

Pitaya is a permanent crop and residues from rotational crops do not need to be considered. The meeting estimated a maximum residue level of 0.9 mg/kg, an HR of 0.03 mg/kg and an STMR of 0.01 mg/kg for pydiflumetofen in pitaya.

Subgroup of leafy greens

The 2019 JMPR estimated a maximum residue level, HR, and STMR for the Subgroup of leafy greens of 40 mg/kg, 17 mg/kg, and 12.5 mg/kg, respectively, and noted that there was an exceedance of acute reference dose for spinach (140 percent for toddlers in the Kingdom of the Netherlands), lettuce (350 percent for children in China), and endive (230 percent for children in the Kingdom of the Netherlands). The estimations were made based on the critical GAP for leafy greens from the United States, which consists of up to two applications, each at 200 g ai/ha, on a 7-day interval and PHI of 0 days.

The current meeting agreed to consider alternative GAPs as well as the potential for residue estimates for individual crops within the Subgroup of leafy greens. Furthermore, and in keeping with the conclusions from previous meetings, the meeting concluded that residues from uptake of pydiflumetofen via the roots are insignificant in comparison to residue levels following direct treatment and that no adjustment to the residues needed to be made to account for such uptake for leafy green vegetables.

An alternative GAP for leafy vegetables is available from Australia and consists of up to 2 applications, each at 150 g ai/ha, on a 7-day interval and PHI of 3 days.

The highest residue for leaf lettuce from trials approximating the alternative GAP is 6.5 mg/kg. Based on that residue, the IESTI for children 1–6 years old in China consuming leaf lettuce is 130 percent of the ARfD, precluding making a recommendation for a group maximum residue level.

The meeting agreed to reconsider the critical US GAP for the individual crops for which field trials were available. Supervised residue trials approximating the critical US GAP were submitted for head lettuce, leaf lettuce, bok choi, pak choi, and spinach.

Head lettuce

In trials approximating the critical GAP, residues of pydiflumetofen in head lettuce were (n = 6): 2.3 mg/kg, 4.4 mg/kg, 4.9 mg/kg, 5.6 mg/kg, 6.2 mg/kg, and 10 mg/kg.

The meeting estimated a maximum residue level of 20 mg/kg, an HR of 10 mg/kg, and an STMR of 5.25 mg/kg for residues of pydiflumetofen in head lettuce.

Leaf lettuce

In trials approximating the critical GAP, residues of pydiflumetofen in leaf lettuce were (n = 10): 3.0 mg/kg, 3.3 mg/kg, 3.7 mg/kg, 4.9 mg/kg, 5.2 mg/kg, 5.4 mg/kg, 6.4 mg/kg, 6.6 mg/kg, 9.6 mg/kg, and 18 mg/kg.

The meeting estimated a maximum residue level of 30 mg/kg, an HR of 18 mg/kg, and an STMR of 5.3 mg/kg for pydiflumetofen in leaf lettuce.

The meeting noted that the HR for leaf lettuce resulted in exposure estimates that exceeded the ARfD (120 percent for the general population and 370 percent for children ages 1 to 6 in China; 120 percent for children ages 2 to 6 in the Kingdom of the Netherlands).

Bok choi/pak choi

In trials approximating the critical GAP, residues of pydiflumetofen in bok choi and pak choi were (n = 4): 1.4 mg/kg, 3.3 mg/kg, 4.8 mg/kg, 5.3 mg/kg.

There were an insufficient number of trials to estimate residues of pydiflumetofen in bok choi/pak choi.

Spinach

In a trial approximating the critical GAP, the residues of pydiflumetofen in spinach were (n = 2) 4.4 mg/kg and 18.0 mg/kg.

There were an insufficient number of trials to estimate residues of pydiflumetofen in spinach.

Cottonseed

The meeting previously recommended a maximum residue level of 0.1 mg/kg for pydiflumetofen in cottonseed based on potential residues in follow-on crops. Based on the data available to the current meeting, the median residue from the follow-on crop data relevant to cottonseed is 0.007 mg/kg.

The critical GAP for cotton is from the United States of America and consists of two applications, each at 125 g ai/ha, on a 10-day interval and PHI of 30 days.

In trials approximating the critical GAP, residues of pydiflumetofen in undelinted cotton seed were (n = 12): <0.01 (2) mg/kg, 0.013 mg/kg, 0.028 mg/kg, 0.038 mg/kg, 0.042 mg/kg, 0.070 mg/kg, 0.084 mg/kg, 0.086 mg/kg, 0.094 mg/kg, 0.12 mg/kg, and 0.29 mg/kg.

The meeting agreed that potential uptake from soil from previous applications of pydiflumetofen is significant in comparison to residues from foliar uses and added 0.1 mg/kg to the residues for maximum residue levels and 0.007 mg/kg for STMR derivation. On that basis, the meeting estimated a maximum residue level of 0.6 mg/kg and an STMR of 0.063 mg/kg for residues of pydiflumetofen in cotton, undelinted seed.

Coffee

The GAP for coffee from Brazil consists of up to two applications, each at 45 g ai/ha, on a 30-day interval and PHI of 28 days.

In trials approximating the critical GAP, residues of pydiflumetofen in green coffee beans were (n = 12): <0.01 (11) mg/kg and 0.02 mg/kg.

The meeting noted that four additional trials were available with retreatment intervals ranging from 144 to 161 days and which otherwise matched the critical GAP. Given the persistence of pydiflumetofen, the meeting agreed to include those trials for estimation of residues. The additional residues were (n = 4): <0.01 (3) mg/kg and 0.16 mg/kg.

In total, residues from trials approximating the critical GAP were (n = 16): <0.01 (14) mg/kg, 0.02 mg/kg, and 0.16 mg/kg.

Coffee is cultivated as permanent crops and, therefore, is not expected to be subject to a potential uptake of pydiflumetofen associated with rotational crops.

The meeting estimated a maximum residue level of 0.2 mg/kg and an STMR of 0.01 mg/kg for pydiflumetofen in coffee bean.

Residues in animal feeds

Cotton

In four of the trials discussed above for cotton seed, the cotton gin trash samples were analysed for residues of pydiflumetofen. Residues of pydiflumetofen in cotton gin trash from field trials approximating the critical GAP were (n = 4): 1.1 mg/kg, 1.6 mg/kg, 1.8 mg/kg, and 3.4 mg/kg.

The meeting concluded that residues from uptake of pydiflumetofen via the roots are insignificant in comparison to residue levels following direct treatment and that no adjustment to the residues needed to be made to account for such uptake for cotton gin trash.

The meeting estimated a maximum residue level of 7 mg/kg (dry weight based on a dry-matter content of 90 percent), a highest residue of 3.4 mg/kg (as received), and a median residue of 1.7 mg/kg (as received) for pydiflumetofen in cotton gin trash.

Fate of residues during processing

The 2021 meeting evaluated and summarized the processing factors for cotton commodities. The results are summarized in Table 5.33.5.

The meeting received studies showing the fate of pydiflumetofen residues during processing coffee into roasted beans and instant coffee. Processing factors and estimated STMR-Ps for cotton and coffee processed commodities are shown in Table 5.33.5.

Table 5.33.5 Summary of processing factors (PF) and STMR-Ps for pydiflumetofen for commodities considered by the current meeting

Crop	Commodity	Individual PF	PF best estimate	STMR-P, mg/kg
Cotton (2021 Extra JMPR) STMR: 0.063 mg/kg	Hulls	0.12, 0.13	0.125	0.0165
	Meal	<0.01	<0.01	0.0016
	Oil (refined)	0.002, 0.04	0.03	0.0.0019
Coffee STMR: 0.01 mg/kg	Roasted bean	<0.77, <0.91	<0.77	0.0077
	Instant coffee	<0.77, <0.91	<0.77	0.0077

Residues in animal commodities

The 2021 Extra JMPR estimated maximum and mean dietary burdens as follows: beef cattle = 45 ppm and 19 ppm, dairy cattle = 45 ppm and 13 ppm, and poultry (broiler and layer) = 8.7 ppm and 3.0 ppm.

Addition of the residue estimates for cotton animal feed items made by the current meeting the dietary burdens, estimated using the OECD diets listed in Appendix IX of the 2016 edition of the FAO manual (OECD 2018 feed calculator, version October 2019), are presented in Annex 5 of the 2024 JMPR Report and summarized in Table 5.33.6.

Table 5.33.6 Cattle and poultry dietary burden for pydiflumetofen

Animal	Pydiflumetofen dietary burden, ppm of dry matter diet							
	Canada/United States		European Union		Australia		Japan	
	Maximum	Mean	Maximum	Mean	Maximum	Mean	Maximum	Mean
Beef cattle	12	5.7	31	9.2	45[a]	20[b]	1.3	1.0
Dairy cattle	29	10	31	9.5	45[c]	15[d]	13	4.7
Poultry – broiler	0.56	0.56	0.76	0.59	0.51	0.51	0.42	0.42
Poultry – layer	0.56	0.56	8.7[e]	3.0[f]	0.51	0.51	0.46	0.46

Notes:

[a] Highest maximum cattle dietary burden suitable for maximum residue level estimates for mammalian tissues.

[b] Highest mean cattle dietary burden suitable for STMR estimates for mammalian tissues.

[c] Highest maximum dairy cattle dietary burden suitable for maximum residue level estimate for milk.

[d] Highest mean dairy cattle dietary burden suitable for STMR estimate for milk.

[e] Highest maximum poultry dietary burden suitable for maximum residue level estimates for poultry commodities.

[f] Highest mean poultry dietary burden suitable for STMR estimate for poultry commodities.

The meeting noted that the new dietary burdens are essentially unchanged from those used by the 2021 JMPR and confirmed its previous recommendations with respect to animal commodities, with the exception of mammalian meat and poultry meat.

Considering the new Codex Classification for animal commodities (General consideration 2.4), the meeting estimated maximum residue levels of 0.01* mg/kg for the group of muscle (from mammals other than marine mammals), group of milks, group of avian fats, group of avian muscle and group of avian edible offal; 0.1 mg/kg for group of edible offal (mammalian) and group of mammalian fats (except milk fats); and 0.02 mg/kg for group of eggs

In addition, the meeting estimated a STMR and HR of 0.02 mg/kg, each, for the group of muscle (from mammals other than marine mammals), group of avian fats, group of avian muscle and group of avian

edible offal; 0.02 mg/kg and 0.07 mg/kg, respectively, for group of mammalian fats (except milk fats); 0.02 mg/kg and 0.023, respectively, for group of eggs; 0.09 mg/kg (liver and kidney) and 0.44/0.30 mg/kg (liver/kidney), respectively, for group of group of edible offal (mammalian); and an STMR of 0.02 mg/kg for group of milks.

The meeting withdrew its previous recommendations for meat (from mammals other than marine mammals; in the fat), edible offal (mammalian), mammalian fats (except milk fats) and milks.

Recommendations

On the basis of data obtained from supervised trials, the meeting concluded that the residue levels listed in Table 5.33.7 and Annex 1 are suitable for establishing maximum residue limits and for use in dietary risk assessments for pydiflumetofen. Table 5.33.8 shows the residues used for dietary burden calculation.

Definition of the residue for compliance with the MRL for plant and animal commodities and dietary risk assessment for plant commodities: pydiflumetofen.

Definition of the residue for dietary risk assessment for animal commodities other than mammalian liver and kidney: Sum of pydiflumetofen and 2,4,6-TCP and its conjugates, expressed as pydiflumetofen.

Definition of the residue for dietary risk assessment for mammalian liver and kidney: Sum of pydiflumetofen; 2,4,6-TCP and its conjugates; and SYN547897 and its conjugates, expressed as pydiflumetofen.

The residue is fat-soluble.

Table 5.33.7 Residue levels suitable for establishing maximum residue limits and for dietary exposure assessment

CCN	Commodity	Recommended maximum residue level, mg/kg		STMR or STMR-P, mg/kg	HR or HR-P, mg/kg
		New	Previous		
FB 2005	Cane berries, subgroup of	4	–	0.815	2.6
SB 0716	Coffee bean	0.2	–	0.01	0.01
SM 0716	Coffee, roasted	–	–	0.0077	–
–	Coffee, instant	–	–	0.0077	–
SO 0691	Cottonseed	0.6	–	0.063	–
AM 3587	Cotton gin trash	7	–	–	–
MO 0105	Edible offal (mammalian)	W	0.1	–	–
PE 0112	Eggs	W	0.02	–	–
PO 0111	Group of avian, edible offal of	0.01*	–	0.02	0.02
PF 0111	Group of avian fats	0.01*	–	0.02	0.02
PM 0110	Group of avian muscle	0.01*	–	0.02	0.02
MO 0105	Group of edible offal (mammalian)	0.1	–	Liver: 0.09 Kidney: 0.09	Liver: 0.44 Kidney: 0.30
PE 0112	Group of eggs	0.02	–	0.02	0.023
MF 0100	Group of mammalian fats (except milk fats)	0.1	–	0.02	0.07
ML 0106	Group of milks	0.01*	–	0.02	–
MM 0095	Group of muscle (from mammals other than marine mammals)	0.01*	–	0.02	0.02
VL 0482	Lettuce, head	20	–	5.25	10
VL 0483	Lettuce, leaf	30	–	5.3	18
FI 0345	Mango	0.08	–	0.01	0.01

CCN	Commodity	Recommended maximum residue level, mg/kg		STMR or STMR-P, mg/kg	HR or HR-P, mg/kg
		New	Previous		
MM 0095	Meat (from mammals other than marine mammals)	W	0.01*	–	–
MF 0100	Mammalian fats (except milk fats)	W	0.1	–	–
ML 0106	Milks	W	0.01*	–	–
FI 2540	Pitaya	0.9	–	0.01	0.03
PO 0111	Poultry, edible offal of	W	0.01*	–	–
PF 0111	Poultry fats	W	0.01*	–	–
PM 0110	Poultry meat	W	0.01*	–	–

Table 5.33.8 Residues used for animal dietary burden estimated by the present meeting

CCN	Commodity	Median, mg/kg	Highest, mg/kg
AM 3588	Cotton hulls	0.0165	–
AM 3589	Cotton meal	0.0016	–
OR 0691	Cotton seed oil, edible	0.0019	–
AM 3587	Cotton gin trash	1.7 (ar)	3.4 (ar)

Note: ar = as received.

Dietary risk assessment

Long-term dietary exposure

The ADI for pydiflumetofen is 0–0.1 mg/kg bw. The International Estimated Daily Intakes (IEDIs) for pydiflumetofen were estimated for the 17 GEMS/Food Consumption Cluster Diets using the STMR or STMRP values estimated by the JMPR. The results are shown in Annex 3 of the 2024 JMPR Report.

The IEDIs ranged from 1 to 4 percent of the maximum ADI. The meeting concluded that long-term dietary exposure to residues of pydiflumetofen from uses considered by the JMPR is unlikely to present a public health concern.

Acute dietary exposure

The ARfD for pydiflumetofen is 0.3 mg/kg bw. The International Estimate of Short-term Intakes (IESTIs) for pydiflumetofen were calculated for the food commodities and their processed commodities for which HRs/HR-Ps or STMRs/STMR-Ps were estimated by the present meeting and for which consumption data were available. The results are shown in Annex 4.

The IESTIs were 0–120 percent of the ARfD for the general population and 0–370 percent for children. The meeting concluded that acute dietary exposure to residues of pydiflumetofen from uses considered by the current meeting is unlikely to present a public health concern, except for leaf lettuce for which IESTIs were 370 percent of the ARfD for children ages 1 to 6 years in China and 120 percent of the ARfD for children ages 2 to 6 years in the Kingdom of the Netherlands.

5.34 Spinosad (203) (R)

5.34.1 Residue and analytical aspects

Spinosad was first evaluated by the JMPR in 2001 for toxicology and residues, when an ADI of 0–0.02 mg/kg bw was established and an ARfD was determined to be unnecessary. Spinosad residues were also evaluated by the JMPR in 2004, 2008, and 2011.

Definition of the residue for compliance with the MRL in plant and animal commodities and for the estimation of the dietary exposure in plant and animal commodities is the sum of spinosyn A and spinosyn D. The compound was determined as fat-soluble for the purposes of residues in meat but not for milk.

Spinosad was scheduled at the 54th Session of the CCPR for evaluation of additional uses by the 2024 JMPR. The meeting received new information on analytical methods, use patterns and supervised field trials in mango and tea.

Methods of analysis

Mango

The 2024 meeting received additional concurrent recovery data based on the HPLC-UV method GRM 00.6.S1, which is a modification of methods previously reviewed by the 2001 JMPR (GRM 00.6 [2000], BRC 96.2 [1996] and BRC 99.1 [1999]). The limit of quantification (LOQ) was 0.003 mg/kg for spinosyn A and 0.005 mg/kg for spinosyn D. Therefore, the LOQ for spinosad was set as 0.01 mg/kg.

The current meeting also received information on LC-MS/MS method GRM 05.14, not previously reviewed by the JMPR. Briefly, residues of spinosyn A and spinosyn D are extracted from mango fruit samples by homogenisation with acetonitrile:water solution (80:20, v/v), an aliquot of the extract was spiked with a 0.1 µg/mL internal standard solution before analysis. Control samples were shown to contain residues below the limit of detection (LOD). The method demonstrated acceptable linearity in the concentration range of 0.1–0.5 ng/mL for both spinosyn A and spinosyn D.

Average recoveries of the mango fruit samples for residues of spinosyn A and spinosyn D in the concentration range 0.01–0.50 mg/kg were 86±3 and 85±7 percent, respectively. The LOQ for both spinosyn A and spinosyn D was 0.01 mg/kg, with a spinosad LOQ of 0.02 mg/kg.

The meeting concluded that the methods were sufficiently validated and are suitable to measure residues of spinosad in mango.

Tea

The meeting received information on LC-MS/MS methods JP2018C315 and JP2019C296. Briefly, residues of spinosyn A and spinosyn D were extracted from pulverized processed tea leaves (dried green tea, 5 g) by soaking in water for 2 hours, before extraction with acetonitrile. The extracts were cleaned up by solid-phase extraction (SPE) using a styrene divinylbenzene-N-containing methacrylate copolymer mini-column followed by a graphite carbon/ethylene-diamine-N-propyl silylated silica gel double layered mini-column, eluting spinosad with acetonitrile and acetonitrile:toluene (1:1), respectively. The method was adequately

validated, with LOQs of 0.01 mg/kg for each of spinosyn A and spinosyn D, giving a spinosad LOQ of 0.02 mg/kg.

The meeting also received information on HPLC-UV (250 nm) methods JP1995C001 and JP1995C002.-In method JP1995C001, samples of processed tea leaves were extracted with acetonitrile:water (4:1), then partitioned with ethyl acetate followed by SPE scheme consisting of a CH column and silica gel mini columns.

In method JP 1995C002, samples of processed tea leaves were soaked in boiling water and filtered through a cotton filter. Residues of spinosyn A and spinosyn D were extracted in a mixture of sodium tetraborate, sodium chloride, methanol, and ethyl acetate, then partitioned with acetonitrile:triethylamine (49:1) and acetone. Cleanup was by a SPE scheme consisting of a CH column followed by silica gel mini columns.

Validation of the methods was conducted with only two replicates, which was considered insufficient by the meeting and not adequate to analyse spinosad residues in tea leaves.

Stability of pesticides in stored analytical samples

In supervised field trials conducted on mangos, field trial samples were stored frozen (–20 °C) for up to 17 days prior to analysis. The JMPR in 2001 evaluated a large amount of storage stability data for spinosad on various commodities and found no indications for instability of spinosad during the frozen storage of high acid, high water, high oil, and high starch commodities for at least 141 days.

The 2024 meeting received additional information on storage stability of spinosad in tea. In the supervised field trial studies JP2018C315 and JP2019C296, three subsamples of pulverized processed tea leaves from each of the control plots were separately spiked with spinosyn A and spinosyn D at a fortification level of 0.5 mg/kg. The samples were stored deep frozen at ≤–20 °C for up to 125 days in study JP2018C315 and 35 days in study JP2019C296 to support the maximum frozen storage intervals of the field samples from each study (62 and 21 days, respectively). Samples were analysed in duplicate alongside a procedural recovery sample spiked with spinosyn A and spinosyn D at 0.1 mg/kg.

The storage stability data demonstrate that residues of spinosad (spinosyn A and spinosyn D) were shown to be stable in frozen storage for at least 125 days, which is sufficient to cover the maximum frozen storage interval in the magnitude of residue studies on tea.

Results of supervised residue trials on crops

Mango

The critical GAP for spinosad in mango in Brazil is a spray bait of six foliar applications at 0.384 g ai/ha with a retreatment interval (RTI) of 7 days and a PHI of 1 day. Directed foliar applications are made to one square meter of the tree.

Seven supervised field trials on mango fruit were conducted in Brazil in 2002 (n = 3) and 2017 (n = 4) at exaggerated rates but otherwise approximating the critical GAP. In the 2002 trials, plots were treated at two different dose rates equivalent to 0.48 and 0.96 g ai/ha, equivalent to 1.3—2.5 times the label rate.

All trials conducted in 2017 were treated at rates equivalent to 0.96 g ai/ha, equivalent to 2.5 times the label rate. Residues of spinosad in these trials were (n = 7): <0.01 (7) mg/kg

The meeting concluded that since no residues of spinosad were detected at the exaggerated rate (2.5X) in the field trials, all trials were considered to be compliant with the Brazil critical GAP and, therefore, were relied upon for the purposes of STMR and MRL setting.

The meeting estimated a maximum residue level of 0.01* mg/kg and an STMR of 0 mg/kg for spinosad in mango.

Tea

The GAP for spinosad in tea in Japan allows for two foliar applications of spinosad at 10 g ai/hL with a 7-day PHI. No RTI is specified.

Eight decline field trials approximating this GAP on tea were conducted in Japan during 1995 (n = 2), 2018 (n = 3) and 2019 (n = 3). Two trials were excluded on the basis that residues were analysed using unvalidated methods (JP1995C001 and JP1995C002).

Residues of spinosad in dried tea leaves were (n = 6): 0.10 mg/kg, 0.27 mg/kg, 0.32 mg/kg, 0.33 mg/kg, 1.78 mg/kg, and 5.89 mg/kg.

The meeting estimated a maximum residue level of 10 mg/kg and an STMR of 0.325 mg/kg for spinosad in tea, green, black (black, fermented and dried).

Residues in processed commodities

The meeting received data from processing studies on tea. In trials approximating the critical GAP, residues of spinosad in tea infusion were (n = 6): <0.0003 (3) mg/kg, 0.0005 mg/kg, 0.0007 mg/kg, 0.0025 mg/kg. A STMR-P was calculated using the STMR for the raw commodities (green tea) and applying the calculated mean processing factors for tea infusions (Table 5.34.1).

Table 5.34.1 Processing factor and STMR-P for spinosad in tea infusion

	Calculated processing factors	Best estimate	STMR-P, mg/kg
Green tea STMR = 0.325 mg/kg	–	–	–
Tea infusion	0.0004(2), 0.001(2), 0.002, 0.003	0.0013	0.0004

Residues in animal commodities

Since mango and tea are not a significant livestock feed commodity, the meeting agreed that the previous estimated residues for cattle and poultry commodities did not need to be recalculated. However, new estimations were made according to the new Codex classification for animal commodities (General consideration 2.4).

As spinosad is fat-soluble, previous recommendations for residues in muscle were made on the basis of residues in the fat. The current meeting used evaluations of residues in muscle made by previous meetings

to make estimations in muscle and fat, separately. Furthermore, estimations for cattle meat, liver, kidney and milk are made separately as they are related to direct treatment, which produces higher residue levels than occur from feed (2004 JMPR). In estimating the residues for cattle milk fats, the meeting used the residues in whole milk (maximum residue of 1 mg/kg and STMR of 0.65 mg/kg for cattle milk; maximum residue of 0.2 mg/kg and STMR of 0.022 mg/kg for other milks), the concentration factor for cream of 4.2 and the 50 percent fat content for cream (2004 JMPR).

The meeting withdrew its previous maximum residue level recommendations for meat (from mammals other than marine mammals) [except cattle], edible offal (mammalian) [except cattle], cattle, meat, poultry meat and eggs. The meeting confirmed its previous recommendations for cattle milk. (maximum residue level of 1 mg/kg and STMR of 0.65 mg/kg)

The meeting estimated a maximum residue level and a STMR of 0.07 mg/kg and 0.01 mg/kg for group of muscle (from mammals other than marine mammals) [except cattle muscle], of 2 mg/kg and 0.32 mg/kg for group of mammalian fats (except milk fats) [except cattle fat], of 0.5 mg/kg and 0.064/0.032 (liver/kidney) mg/kg for group of edible offal (mammalian) [except cattle edible offal], of 0.2 mg/kg and 0.022 mg/kg for group of milks [except cattle milk], and of 2 mg/kg and 0.1848 mg/kg for group of milk fats [except cattle milk fat].

The meeting estimated a maximum residue level and a STMR of 0.3 mg/kg and 0.078 mg/kg for cattle muscle, of 3 mg/kg and 0.565 mg/kg for cattle fat and of 9 mg/kg and 5.4 mg/kg (to replace previous recommendation) for cattle milk fat.

The meeting estimated a maximum residue level and a STMR of 0.01 mg/kg for the group of avian muscle, group of avian, edible offal, and group of eggs, and a maximum residue level of 0.2 mg/kg and a STMR of 0.05 mg/kg for group of avian fats.

The meeting withdrew its previous recommendations for meat (from mammals other than marine mammals) [except cattle], edible offal (mammalian) [except cattle], cattle, meat, poultry meat and eggs.

Recommendations

On the basis of the data from supervised trials, the meeting concluded that the residue concentrations listed in Table 5.34.2 and Annex 1 are suitable for establishing maximum residue limits and for dietary exposure assessment.

Definition of the residue (for compliance with the MRL and for estimation of dietary intake) for plant and animal commodities: sum of spinosyn A and spinosyn D.

The residue is considered fat-soluble for the purposes of residues in meat but not for milk.

Table 5.34.2 Residue levels suitable for establishing maximum residue limits and for dietary exposure assessments

CCN	Commodity	Recommended maximum residue levels (mg/kg)		STMR or STMR-P mg/kg
		New	Previous	
FI 0345	Mango	0.01*	_	0
MF 0812	Cattle fat	3	–	0.565

CCN	Commodity	Recommended maximum residue levels (mg/kg)		STMR or STMR-P mg/kg
		New	Previous	
MM 0812	Cattle meat	W	3	–
FM 0812	Cattle milk fat	9	5	5.4
MM 0812	Cattle muscle	0.3	–	0.078
MO 0105	Edible offal (mammalian) [except cattle]	W	0.5	_
PE 0112	Eggs	W	0.01	–
PO 0111	Group of avian, edible offal of	0.01	_	0.01
PF 0111	Group of avian fats	0.2	_	0.05
PM 0110	Group of avian muscle	0.01	–	0.01
MO 0105	Group of edible offal (mammalian) [except cattle edible offal]	0.5	–	Liver: 0.064 Kidney: 0.032
PE 0112	Group of eggs	0.01	_	0.01
MF 0100	Group of mammalian fats (except milk fats) [except cattle fats]	2	–	0.32
FM 0106	Group of milk fats [except cattle milk fat]	2	_	0.1848
ML 0106	Group of milks [except cattle milk]	0.2	–	0.022
MM 0095	Group of muscle (from mammals other than marine mammals) [except cattle]	0.07	–	0.01
MM 0095	Meat (from mammals other than marine mammals) [except cattle]	W	2	_
PM 0110	Poultry meat	W	0.2	–
DT 1114	Tea, green or black, fermented and dried, (including concentrates)	10	–	0.325
–	Tea infusion	–	_	0.0004

Dietary risk assessment

Long-term dietary exposure

The ADI for spinosad is 0–0.02 mg/kg bw. The IEDIs for spinosad were estimated for the 17 GEMS/Food Consumption Cluster Diets using the STMR or STMR-P values estimated by the JMPR. The results are shown in Annex 3 of the 2024 JMPR report.

The IEDIs ranged from 20 to 60 percent of the maximum ADI. The meeting concluded that long-term dietary exposure to residues of spinosad from uses considered by the JMPR is unlikely to present a public health concern.

Acute dietary exposure

An ARfD for spinosad is unnecessary. The meeting therefore concluded that short-term dietary intake of spinosad residues is unlikely to present a risk to consumers.

5.35 Tebuconazole (189) (R)

5.35.1 Residue and analytical aspects

Tebuconazole is a triazole broad spectrum fungicide, acting by disrupting membrane function and inhibiting sterol biosynthesis. It is a systemic fungicide (primarily translocated acropetally), with protectant and curative activity against wide range of diseases including rusts, smut, bunt, powdery mildew, leaf spots and blights. Tebuconazole was evaluated for toxicology and residues by the JMPR in 1994 and periodic reviews were conducted by the 2010 JMPR (toxicology) and the 2011 JMPR (residues).

An ADI of 0–0.03 mg/kg bw and an ARfD of 0.3 mg/kg bw were established by the 2010 JMPR. The definition of the residue for compliance with the MRL and dietary risk assessment for plant and animal commodities is tebuconazole. The residue is not fat-soluble.

The 36th Session of CCPR decided to schedule the JMPR to review the monitoring data available for the elaboration of MRLs on spices for pesticides already in the Codex system. The Committee also recommended that governments and the spice trade industry continue to collect monitoring data for pesticides on spices on a regular basis, following agreed criteria and other JMPR guidelines on the conduct of selective surveys, in order to keep the database updated for future review.

General principles for the evaluation of monitoring data for recommending maximum residue levels, medium and high residues for spices were developed by the JMPR in 2004.

In accordance with the decision of the 54th CCPR (2023), India submitted monitoring data for tebuconazole residues in cumin seed. Samples were collected from market and retail outlets.

The residues were extracted from the cumin seeds using acetonitrile and water. The extracts were purified with final identification and quantification by GC-MS/MS or LC-MS/MS. The recovery data were acceptable and the supported LOQ was 0.1 mg/kg.

Agricultural practices

Cumin seeds are grown throughout India and are susceptible to a number of pests and diseases. No information was provided on registered uses of tebuconazole on cumin seed.

Principles of evaluation of residues derived from monitoring programmes:

- It is assumed that the laboratories reported only valid results. Therefore, all residue data are taken into account without excluding any values as outliers.
- When residues were reported as <LOQ it does not necessarily mean that the sampled commodity was not treated with or exposed to the pesticide. While it is unlikely that all the samples will have been treated with the pesticides looked for within the monitoring data, it cannot be assumed that a residue reported as <LOQ is a "nil" residue situation.

- Distribution free statistics were used to estimate the maximum residue level, covering the 95th percentile of the residue population at the 95th confidence level. Thus, the estimated maximum residue level encompasses at least 95 percent of the residues with 95 percent probability (in 95 percent of cases). To satisfy this requirement, a minimum of 58–59 samples are required. In such cases the uncertainty derived from the limited number of data points are taken into account in recommending the maximum residue level.
- When there are >120 samples containing detected residues, the sample size is sufficiently large to calculate the upper 95 percent one tailed confidence limit of the 95th percentile of the population of residues, which can therefore be used to estimate the maximum residue level after rounding up to the next value of the scale of expressing residues according to the OECD MRL calculator.
- Monitoring results are not used for estimating maximum residue levels that reflect post-harvest uses.

Analytical results

A total of 1089 cumin samples were analysed for residues of tebuconazole, of which 186 samples contained quantified residues. The residues were: 0.11 (12), 0.12 (8), 0.13 (11), 0.14 (10), 0.15 (7), 0.16 (9), 0.17 (4), 0.18 (4), 0.19 (7), 0.20 (8), 0.21 (7), 0.22 (7), 0.23 (7), 0.24 (3), 0.25 (5), 0.26 (2), 0.27 (5), 0.28 (5), 0.29 (4), 0.30 (2), 0.31 (3), 0.32 (4), 0.33 (4), 0.34, 0.35 (3), 0.36 (3), 0.37 (3), 0.38 (2), 0.39, 0.40, 0.41 (2), 0.42, 0.43, 0.44, 0.46, 0.47 (2), 0.48, 0.49, 0.50 (2), 0.52 (2), 0.53 (2), 0.55, 0.56 (3), 0.59 (2), 0.61, 0.63, 0.66, 0.67 (3), 0.78, 0.81, 0.89, 0.90, 0.97, 1.00

The upper 95 percent one tailed confidence limit of the 95th percentile of the detected residues is 0.81 mg/kg.

The meeting estimated a maximum residue level of 0.9 mg/kg and a median residue of 0.22 mg/kg.

Recommendations

On the basis of the monitoring data submitted the meeting concluded that the residue levels listed in Table 5.35.1 and Annex 1 are appropriate for establishing maximum residue levels and for dietary risk assessments.

Definition of the residue for compliance with the MRL and for dietary intake estimation (plant and animal commodities): Tebuconazole.

The residue is not fat-soluble.

Table 5.35.1 Residue levels of tebuconazole suitable for establishing maximum residue limits and for dietary exposure assessments

CCN	Commodity name	Recommended maximum residue level, mg/kg		STMR or STMR-P, mg/kg
		New	Previous	
HS 0780	Cumin seed	0.9	–	0.22

Dietary risk assessment

Long-term dietary exposure

The ADI for tebuconazole is 0–0.03 mg/kg bw/day. The International Estimated Daily Intakes (IEDIs) for tebuconazole were estimated for the 17 GEMS/Food Consumption Cluster Diets using the STMR or STMR-P values estimated by the JMPR. The results are shown in Annex 3 of the 2024 JMPR Report.

The IEDIs ranged from 2 to 10 percent of the maximum ADI. The meeting concluded that long-term dietary exposure to residues of tebuconazole from uses considered by the JMPR is unlikely to present a public health concern.

Acute dietary exposure

The ARfD for tebuconazole is 0.3 mg/kg bw. The International Estimate of Short-term Intakes (IESTIs) for tebuconazole were calculated for cumin seed for which a STMR was estimated by the current meeting and for which consumption data were available. The results are shown in Annex 4.

The IESTIs was 0 percent the ARfD for children and the general population. The meeting concluded that acute dietary exposure to residues of tebuconazole from uses considered by the current meeting is unlikely to present a public health concern.

5.36 Tebufenozide (196) (R)

5.36.1 Residue and analytical aspects

Tebufenozide is an insecticide used to control lepidoptera pests in fruits, vegetables and other crops.

Tebufenozide was first evaluated by the JMPR in 1996 where an ADI of 0–0.02 mg/kg bw was established. An ARfD of 0.9 mg/kg bw was subsequently established by the 2003 JMPR. The residue definition for compliance with the MRL and dietary risk assessment for plant and animal commodities is tebufenozide. The residue is fat-soluble.

Tebufenozide was scheduled at the 54th session of the CCPR for the evaluation of additional uses by the 2024 JMPR. Analytical methods, freezer storage stability, use pattern, supervised trials and processing on rice were submitted to the present meeting by the government of the Republic of Korea.

Methods of analysis

The meeting received additional information on an LC-MS/MS method for the analysis of tebufenozide in rice commodities. Residues were extracted using acetonitrile and cleaned-up according to the QuEChERS method. The LOQ is 0.01 mg/kg in rice whole grain, husked rice, polished rice, rice hulls, cooked rice and rice cake.

The meeting concluded that this method was sufficiently validated and is suitable to quantify tebufenozide residues in all rice commodities.

Stability of pesticide residues in stored analytical samples

The meeting received additional information on storage stability of tebufenozide in rice grain, husked rice, polished rice and rice hulls, demonstrating a storage stability of at least 147 days at –20 °C, which covered the storage intervals from the crop field trials and processing studies considered by the current meeting, with exception of cooked rice.

Husked and polished rice were stored for 28–61 days at ambient conditions before being processed into cooked rice and rice cake. Husked and polished rice were stored for 237–606 days at 5 °C before being processed into instant cooked rice. The storage temperature of +5 °C is much higher than the temperature from the frozen storage stability studies (–20 °C) and the storage periods for instant-cooked husked/polished rice are much longer than the demonstrated storage stability duration (147 days). For these reasons the meeting did not derive any processing factors for cooked rice commodities.

Results of supervised residue trials on crops

Rice

Rice was previously evaluated by the 1996 JMPR where an MRL of 0.1 mg/kg was recommended for husked rice based on a GAP from Japan (2x 0.30 kg ai/ha and 14-day PHI).

The present meeting received a GAP from the Republic of Korea of foliar spray on rice with an application rate of 3x 0.008 kg ai/hL, a retreatment interval (RTI) of 10 days and a PHI of 7 days, which is more critical than the Japanese GAP.

Ten trials were conducted in the Republic of Korea approximating the critical GAP. Rice was threshed immediately after harvest and rice whole grains were dried for 7 days in a greenhouse under ambient conditions until the moisture content was less than 15 percent, reflecting local agricultural practices. Residues of tebufenozide in rice whole grain were: 1.6 mg/kg, 2.1 mg/kg, 3.0 mg/kg, 3.1 mg/kg, 4.6 mg/kg, 4.8 mg/kg, 5.1 mg/kg, 6.1 mg/kg, 8.0 mg/kg and 8.4 mg/kg (n = 10).

The meeting estimated a maximum residue level of 15 mg/kg and a STMR of 4.7 mg/kg for tebufenozide in rice whole grain.

Subsamples of rice whole grain were processed into husked rice and polished rice.

Residues of tebufenozide in husked rice were: 0.02 mg/kg, 0.06 mg/kg, 0.11 mg/kg, 0.15 mg/kg, 0.17 mg/kg, 0.18 mg/kg, 0.21 mg/kg, 0.25 mg/kg, 0.26 mg/kg and 0.34 mg/kg (n = 10).

The meeting estimated a maximum residue level of 0.6 mg/kg to replace its previous recommendation of 0.1 mg/kg, and a STMR-P of 0.175 mg/kg for tebufenozide in husked rice.

Residues of tebufenozide in polished rice were: <0.01 mg/kg, 0.01 mg/kg, 0.03 (2) mg/kg, 0.04 mg/kg, 0.05 mg/kg, 0.05 mg/kg, 0.06 mg/kg, 0.07 mg/kg and 0.2 mg/kg (n = 10).

The meeting estimated a maximum residue level of 0.3 mg/kg and a STMR-P of 0.045 mg/kg for tebufenozide in polished rice.

Fate of residues during processing

The meeting received new information on the fate of tebufenozide residues during processing in rice whole grain. Processing factors could be established for milling rice whole grain into rice hulls, husked rice and polished rice. The results are showing in Table 5.36.1.

Table 5.36.1 Estimation of processing factors for rice commodities considered at this meeting

Raw agricultural commodity (RAC)	Processed commodity	Processing factors		STMR-P
		Individual	Best estimate	
Whole grain STMR = 4.7 mg/kg	Husked rice	0.004, 0.029, 0.030, 0.032, 0.034, 0.041, 0.054, 0.057, 0.059, 0.069	0.037	See residue section above
	Polished rice	<0.005, 0.006, 0.006, 0.006, 0.008, 0.008, 0.009, 0.010, 0.013, 0.067	0.008	See residue section above
	Rice hulls	4.6, 6.3	5.4	25.38 (median)

Residues in animal commodities

Farm animal dietary burden

Dietary burdens for tebufenozide were re-calculated for beef cattle, dairy cattle, broilers and laying poultry based on citrus, apple, grape, tomato, cabbage, mustard, rice and almond feed items evaluated by the JMPR in 1996, 2001 and 2003, in addition to rice hulls and rice grain estimated by the present meeting. The median residue for rice grain was used to substitute for rice bran, the median and highest residues for cabbage heads with wrapper leaves were used to substitute for cabbage leaves, the median and highest residues for mustard greens were used to substitute for kale leaves and the STMR for tomato was used to substitute for tomato wet pomace.

The dietary burdens, estimated using the OECD diets listed in Appendix IX of the 2018 edition of the FAO manual, are presented in Annex 5 of the 2024 JMPR Report and summarized in Table 5.36.2.

Table 5.36.2 Estimated maximum and mean dietary burdens of farm animals

	Animal dietary burden: Tebufenozide, ppm of dry matter diet							
	United States–Canada		European Union		Australia		Japan	
	Max.	Mean	Max.	Mean	Max.	Mean	Max.	Mean
Beef cattle	1.21	1.21	10.38	4.22	12.40	10.63	4.73	3.11
Dairy cattle	3.00	3.00	9.88	3.87	27.33[a]	15.07[b]	2.18	1.44
Poultry – broiler	1.09	1.09	0.03	0.03	2.68[c]	2.68	0.008	0.008
Poultry – layer	1.09	1.09	1.55	0.13	2.68	2.68	0.02	0.02

Notes:
[a] Highest maximum dairy cattle dietary burden suitable for MRL estimates for milk and mammalian tissues.
[b] Highest mean dairy cattle dietary burden suitable for STMR estimates for milk and mammalian tissues.
[c] Highest maximum and mean poultry dietary burden suitable for MRL and STMR estimates for eggs and poultry tissues.

Residues in animal commodities

A lactating cattle feeding study, evaluated by the 2001 JMPR, was conducted at 6 ppm, 18 ppm and 60 ppm tebufenozide in dry feed. The highest individual concentrations of tebufenozide at the mid dose and high dose levels were <0.01 mg/kg and 0.028 mg/kg in milk, 0.11 mg/kg and 0.38 mg/kg in fat, 0.02 mg/kg and 0.06 mg/kg in muscle, <0.02 mg/kg and 0.04 mg/kg in kidney and 0.04 mg/kg and 0.10 mg/kg in liver. The average concentrations of tebufenozide at 18 ppm and 60 ppm were 00.064 mg/kg and 0.224 mg/kg in fat, <0.02 mg/kg and 0.03 mg/kg in muscle, <0.02 mg/kg and 0.03 mg/kg in kidney and 0.03 mg/kg and 0.08 mg/kg in liver, respectively (Table 5.36.3).

Table 5.36.3 Mean and high residues of tebufenozide in cattle commodities

	Feed level (ppm) for milk residues	Residues (mg/kg) in milk	Feed level (ppm) for tissue residues	Residues (mg/kg)			
				Muscle	Liver	Kidney	Fat
MRL beef or dairy cattle							
Feeding study	18.00 60.00	0.01 0.03	18.00 60.00	0.02 0.06	0.04 0.10	0.02 0.04	0.11 0.38
Dietary burden and high residue	27.33	0.014	27.33	0.029	0.053	0.024	0.17

	Feed level (ppm) for milk residues	Residues (mg/kg) in milk	Feed level (ppm) for tissue residues	Residues (mg/kg)			
				Muscle	Liver	Kidney	Fat
STMR beef or dairy cattle							
Feeding study	6.00 18.00	0.01 0.01	6.00 18.00	0.02 0.02	0.02 0.03	0.02 0.02	0.02 0.06
Dietary burden and residue estimate	15.07	0.01	15.07	0.02	0.028	0.02	0.054

Based on the maximum dietary burden of 27.33 ppm for dairy cattle and the new Codex classification for animal commodities (General consideration 2.4) the meeting estimated the a maximum residue levels of 0.02 mg/kg for group of milks, 0.03 mg/kg for group of muscle (from mammals other than marine mammals), 0.06 mg/kg for group edible offal and of 0.2 mg/kg for group of mammalian fats (except milk fats). The meeting also estimated HRs for muscle, edible offal and mammalian fats of 0.029, 0.053/0.24 (liver/kidney) and 0.17 mg/kg, respectively. Based on the mean dietary burden of 15.07 ppm for dairy cattle, the meeting estimated STMRs for milk, muscle, edible offal and mammalian fats of 0.01, 0.02, 0.028/0.02 (liver/kidney) and 0.054 mg/kg, respectively.

A poultry feeding study was not submitted. A poultry metabolism study evaluated by the 1996 JMPR showed that when laying hens were treated orally at a concentration equivalent to 30 ppm in the feed for 7 days, the concentrations of tebufenozide were 0.005 mg/kg in eggs, 0.18 mg/kg in fat and undetected in liver and muscle.

Based on the mean and maximum dietary burdens of 2.68 ppm for broilers and laying hens, which are 11-fold lower than the dosing level in the metabolism study, the meeting estimated a maximum residue levels of 0.02* mg/kg for group of eggs, group of avian muscle and group of avian edible offal and of 0.02 mg/kg for group of avian fats. The meeting also estimated STMRs and HRs of 0.02 mg/kg for the groups.

The meeting withdrew its previous recommendations for milks, edible offal (mammalian), meat (from mammals other than marine mammals), eggs and poultry meat.

Recommendations

On the basis of the data obtained from supervised trials, the meeting concluded that the residue levels listed in Table 5.36.4 and Annex 1 are suitable for establishing maximum residue limits and for dietary exposure assessments. Table 5.36.5 shows the commodities for animal dietary burden calculations estimated by the present meeting.

Definition of the residue for compliance with the MRL and dietary risk assessment for plant and animal commodities: *tebufenozide.*

The residue is fat-soluble.

Table 5.36.4 Residue levels suitable for establishing maximum residue limits and for dietary exposure assessments

CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P mg/kg	HR or HR-P mg/kg
		New	Previous		
MO 0105	Edible offal (mammalian)	W	0.02*	–	–
PE 0112	Eggs	W	0.02*	–	–
PO 0111	Group of avian edible offal	0.02*	–	0.02	0.02
PF 0111	Group of avian fat	0.02	–	0.02	0.02
PM 0111	Group of avian muscle	0.02*	–	0.02	0.02
MO 0105	Group of edible offal (mammalian)	0.06	–	Liver: 0.028 Kidney: 0.02	Liver: 0.053 Kidney: 0.024
PE 0112	Group of eggs	0.02*	–	0.02	0.02
MF 0100	Group of mammalian fats (except milk fats)	0.2	–	0.054	0.17
MM 0095	Meat (from mammals other than marine mammals)	W	0.05 (fat)	–	–
ML 0106	Group of milks	0.02	–	0.01	–
MM 0095	Group of muscle (from mammals other than marine mammals)	0.03	–	0.02	0.029
ML 0106	Milks	W	0.01*	–	–
PM 0111	Poultry meat	W	0.02*	–	–
GC 0649	Rice	15	–	4.7	–
CM 0649	Rice, husked	0.6	0.1	0.175	–
CM 1205	Rice, polished	0.3	–	0.045	–

Table 5.36.5 Residue levels suitable for dietary burden calculations

CCN	Commodity	Median mg/kg
GC 0649	Rice, whole grain (for rice bran)	4.7
AS 3570	Rice, hulls	25.38

Dietary risk assessment

Long-term dietary exposure

The ADI for tebufenozide is 0–0.02 mg/kg bw. The International Estimated Daily Intakes (IEDIs) for tebufenozide were estimated for the 17 GEMS/Food Consumption Cluster Diets using the STMR or STMR-P values estimated by the JMPR. The results are shown in Annex 3 of the 2024 JMPR Report.

The IEDIs ranged from 3 to 30 percent of the maximum ADI. The meeting concluded that long-term dietary exposure to residues of tebufenozide from uses considered by the JMPR is unlikely to present a public health concern.

Acute dietary exposure

The ARfD for tebufenozide is 0.9 mg/kg bw. The International Estimate of Short-term Intakes (IESTIs) for tebufenozide were calculated for the food commodities and their processed commodities for which

HRs/HR-Ps or STMRs/STMR-Ps were estimated by the present meeting and for which consumption data were available. The results are shown in Annex 4.

The IESTIs were 0–20 percent of the ARfD for the general population. The meeting concluded that acute dietary exposure to residues of tebufenozide from uses considered by the present meeting is unlikely to present a public health concern.

5.37 Tetraniliprole (324) (R)

5.37.1 Residue and analytical aspects

Tetraniliprole (ISO name) is a broad spectrum fast acting insecticide that belongs to the anthranilic diamide chemical class, which mode of action involves activating ryanodine receptors that play a critical role in muscle function. The IUPAC name for tetraniliprole is 1-(3-chloropyridin-2-yl)-*N*-[4-cyano-2-methyl-6-(methylcarbamoyl) phenyl]-3-{[5-(trifluoromethyl)-2*H*-tetrazol-2-yl]methyl}-1*H*-pyrazole-5-carboxamide.

Tetraniliprole was first evaluated for toxicology by JMPR in 2021 and for residues by JMPR in 2022. An ADI of 0–2 mg/kg bw was established and it was concluded that an ARfD for tetraniliprole was unnecessary. Both JMPR meetings also concluded that the TTC Cramer class III could be applied to a number of metabolites should be assessed under the TTC for genotoxic compounds. The definitions of the residue as established by JMPR 2022 were:

- For compliance with the MRL for plant commodities: tetraniliprole.
- For dietary risk assessment for plant commodities: sum of tetraniliprole and tetraniliprole-N-methyl-quinazolinone (BCS-CQ63359), expressed as tetraniliprole.
- For compliance with the MRL for animal commodities: tetraniliprole.
- For dietary risk assessment for animal commodities: sum of tetraniliprole and tetraniliprole-N-methyl-quinazolinone (BCS-CQ63359) and tetraniliprole-benzylalcohol (BCS-CZ91631), expressed as tetraniliprole.

The residue is not fat-soluble.

Tetratraniliprole was scheduled by the 54th CCPR for evaluation of additional uses by the 2024 JMPR. The meeting received new information on analytical methods, storage stability, use patterns and supervised residue trials on cereal grains.

Methods of analysis

The meeting received additional method validation data for analysis of tetraniliprole and tetraniliprole-N-methylquinazolinone in various rice, barley and wheat matrices using LC-MS/MS method 01414.

The results confirm the conclusions of the JMPR 2022 that the method is suitable for analysis of tetraniliprole and the metabolite tetraniliprole-N-methyl-quinazolinone (BCS-CQ63359) in these matrices. The validated limit of quantitation (LOQ) for each matrix and analyte is 0.01 mg/kg.

Stability of pesticide residues in stored analytical samples

The stability of tetraniliprole and its metabolite tetraniliprole-N-methyl-quinazolinone during frozen storage was already evaluated by JMPR in 2022. Residues of tetraniliprole and its metabolite were found to be stable during frozen storage for at least 24 months in commodities representative for high-water content (tomato), high-oil content (oilseed rape seeds), high-protein content (dry bean), high-starch content (wheat grain) and high-acid content (grape) commodities when stored at –18 °C or below.

The meeting concluded that the demonstrated storage stability on various representative plant commodities covered the residue sample storage intervals (5–15 months) used in the newly submitted field trials considered by the current meeting.

Results of supervised residue trials on crops

Supervised trials were available for the use of tetraniliprole on cereal grains (barley, wheat and rice).

GAP information was available from the United States of America (seed treatment cereal grains, excluding rice), India (foliar treatment of rice).

The method for calculating the total residue (sum of tetraniliprole + tetraniliprole-N-methyl-quinazolinone, expressed as tetraniliprole) in crops for various situations is illustrated in Table 5.37.1.

Table 5.37.1 Calculation of tetraniliprole total residues, mg/kg

Tetraniliprole	Tetraniliprole-N-methyl-quinazolinone (expressed in parent equivalents)	Tetraniliprole + tetraniliprole-N-methyl-quinazolinone
0.29	0.02	0.31
0.039	<0.01	0.039
<0.01	<0.01	<0.01

Cereal grains

The critical GAP in the United States of America for cereal grains is a seed treatment with 50 g ai/100 kg seed and field trials supporting this GAP were provided for wheat and barley. For rice, a more critical GAP from India is available for which new supporting data were submitted.

Wheat

In residue trials in winter wheat and spring wheat grain from the United States of America and Canada matching the GAP for seed treatment at 50 g ai/100 kg seed, tetraniliprole residues in wheat grains for both enforcement and dietary risk assessment were (n = 26): <0.01 (26) mg/kg.

The meeting estimated a maximum residue level of 0.01* mg/kg and an STMR of 0.01 mg/kg for tetranilliprole in the Subgroup of wheat, similar grains, and pseudocereals without husks.

Barley

In residue trials in barley grains from the United States of America and Canada matching the GAP for seed treatment at 50 g ai/100 kg seed, tetraniliprole residues for both enforcement and dietary risk assessment were (n = 10): <0.01 (10) mg/kg.

The meeting estimated a maximum residue level of 0.01* mg/kg and an STMR of 0.01 mg/kg for tetraniliprole in the Subgroup of barley, similar grains, and pseudocereals with husks.

Rice

The 2022 JMPR evaluated residue studies in rice and recommended maximum residue levels for tetraniliprole in rice grain and rice husked, based on the GAP from Japan that allows for a single seed treatment at 264 g ai/ha. The 2024 JMPR received additional residue data, matching a more critical GAP from India allowing 2 foliar applications at 60 g ai/ha with a RTI of 11 days and a PHI of 43 days, resulting in a more robuste dataset for estimation of maximum residue levels.

In residue trials from India, Thailand and Viet Nam machting the India GAP, tetraniliprole residues for enforcement, in rice grain were (n = 12): <0.01 (4) mg/kg, 0.01 mg/kg, 0.011 (2) mg/kg, 0.018 mg/kg, 0.041 mg/kg, 0.11 mg/kg, 0.14 mg/kg and 0.31 mg/kg.

Tetraniliprole residues for dietary risk assessment, in rice grain were (n = 12): <0.01 (4) mg/kg, 0.01 mg/kg, 0.011 (2) mg/kg, 0.018 mg/kg, 0.041 mg/kg, 0.11 mg/kg, 0.16 mg/kg and 0.32 mg/kg.

Tetraniliprole residues for both enforcement and dietary risk assessment in husked rice were (n = 12): <0.01 (10) mg/kg, 0.012 mg/kg and 0.016 mg/kg.

Based on the current dataset, the meeting estimated a maximum residue level of 0.5 mg/kg to replace its previous recommendation of 0.02 mg/kg, and an STMR of 0.011 mg/kg for tetraniliprole in the Subgroup of rice cereals.

The meeting also estimated a maximum residue level of 0.02 mg/kg to replace its previous recommendations of 0.01* mg/kg for in Rice, husked and Rice, polished, and an STMR of 0.01 mg/kg for tetraniliprole in both commodities.

Residues in animal feeds

Wheat forage

The critical GAP in the United States of America for wheat forage (spring wheat and winter wheat) is a seed treatment with 500 g ai/100 kg seed.

In residue trials in winter wheat and spring wheat from the United States of America and Canada matching this GAP, tetraniliprole residues in wheat forage for dietary burden calculations were (n = 18): <0.01 (18) mg/kg on an as received (ar) basis.

The meeting estimated a median and highest residue of 0.01 and 0.01 mg/kg (ar) for wheat forage. Noting that residue levels in barley forage are usually similar to residue levels in wheat forage, the meeting decided to extrapolate the median and highest residue of 0.01 and 0.01 mg/kg (ar), respectively, for tetraniliprole to barley, forage.

Wheat and barley hay and straw

The critical GAP in the United States of America for wheat (spring wheat and winter wheat) and barley is a seed treatment with 500 g ai/100 kg seed. Tetraniliprole residues in wheat and barley hay and straw in trials from the United States of America and Canada matching this GAP are listed below.

Residues in winter and spring wheat hay for MRL estimation were (n = 25): <0.01 (24) mg/kg, and 0.017 mg/kg on a dry weight (dw) basis.

Total tetraniliprole residues in winter and spring wheat hay for dietary burden calculation were (n = 25): <0.01 (24) mg/kg and 0.014 mg/kg on an as received (ar) basis.

Tetraniliprole residues in barley hay were (n = 9): <0.01 (8) mg/kg and 0.059 mg/kg on a dry weight (dw) basis.

Total tetraniliprole residue in barley hay for dietary burden calculation were (n = 9): <0.01 (8) mg/kg and 0.045 mg/kg on an as received (ar) basis.

Tetraniliprole residues in winter and spring wheat straw were (n = 26): <0.01 (24) mg/kg, 0.02 mg/kg and 0.027 mg/kg on a dry matter (dw) basis.

Total tetraniliprole residues in winter and spring wheat straw for dietary burden calculation were (n = 26): <0.01 (24) mg/kg, 0.016 mg/kg and 0.024 mg/kg on an as received (ar) basis.

Tetralilprole residues in barley straw were (n = 10): <0.01 (9) mg/kg and 0.026 mg/kg on a dry matter (dw) basis.

Total tetraniliprole residues in barley straw for dietary burden calculation were (n = 10): <0.01 (9) mg/kg and 0.019 mg/kg on an as received (ar) basis.

Noting that hay and straw from wheat and barley are indistinguishable in trade, the meeting decided to combine the most critical datasets. Tetraniliprole residues in wheat hay and barley hay as were (n = 34): <0.01 (32) mg/kg, 0.017 mg/kg and 0.059 mg/kg on a dry weight (dw) basis.

Combined total tetraniliprole residues in winter and spring wheat hay and barley hay for dietary burden calculation were (n = 34): <0.01 (32) mg/kg, 0.014 mg/kg, and 0.045 mg/kg on an as received (ar) basis.

Based on the combined datasets of residues in wheat and barley hay the meeting estimated a maximum residue level of 0.06 mg/kg (dw), a median residue of 0.01 mg/kg (ar) and a highest residue of 0.045 mg/kg (ar) for tetraniliprole in wheat hay and/or straw and barley hay and/or straw.

The meeting noted that residues may occur in wheat and barley planted in rotation. However, since seed treatment is considered as having a similar effect on seed as contaminated soil, no additional corrections on the maximum residue value and STMR were performed.

Rice whole crop silage (40 percent dry matter)

The 2022 JMPR evaluated residue studies in rice and recommended maximum residue levels for tetraniliprole in rice whole crop silage based on the critical GAP from India that allows for 2 foliar applications at 60 g ai/ha with a RTI of 11 days and a PHI of 43 days. However, data from trials were conducted at 2 × 40 g ai/ha and the proportionality approach using the data at PHI = 0 was applied. The 2024 JMPR received additional residue data matching the same critical GAP, resulting in a better-fitting dataset for estimation of maximum residue levels.

Total tetraniliprole residues for dietary burden calculations, in rice whole crop silage were (n = 12): 2.3 mg/kg, 2.5 (2) mg/kg, 2.6 mg/kg, 2.7 mg/kg, 3.2 mg/kg, 3.7 mg/kg, 3.8 mg/kg, 4 mg/kg, 4.2 (2) mg/kg and 5.3 mg/kg on a as received (ar) basis.

The meeting estimated a median of 3.45 mg/kg (ar) and a highest residue value of 5.3 mg/kg (ar) for tetraniliprole in the subgroup Rice whole crop silage, thereby replacing its previous recommendations for a median residue and highest residue of 2.7 mg/kg (ar) and 5.2 mg/kg (ar), respectively for Rice, silage.

Rice straw (90 percent dry matter)

The 2022 JMPR evaluated residue studies in rice and recommended maximum residue levels for tetraniliprole in rice straw based on the critical GAP from India that allows for 2 foliar applications at 60 g ai/ha with a RTI of 11 days and a PHI of 43 days. However, data from trials were conducted at 2 × 40 g ai/ha or 3 × 60 g ai/ha and the proportionality approach using the trials with the lower application rates had to be applied. The 2024 JMPR received additional residue data matching the same critical GAP from India but allowing 2 foliar applications at 60 g ai/ha, resulting in a more appropriate dataset for estimation of maximum residue levels.

Tetraniliprole residues from studies matching the Indian GAP and corrected for dry matter content in rice straw were (n = 12): 0.16 mg/kg, 1.2 mg/kg, 1.3 mg/kg, 1.6 mg/kg, 1.8 (2) mg/kg, 1.9 mg/kg, 2.8 mg/kg, 3 mg/kg, 3.9 (2) mg/kg and 5.4 mg/kg on a dry weight (dw) basis.

Total tetraniliprole residues for dietary burden calculations in rice straw were (n = 12): 0.15 mg/kg, 1.2 (2) mg/kg, 1.4 mg/kg, 1.6 mg/kg, 2.0 (2) mg/kg, 2.6 mg/kg, 2.8 mg/kg, 3.6 (2) mg/kg, and 5.4 mg/kg on an as received (ar) basis.

Based on the new dataset, the meeting estimated a maximum residue level of 9 mg/kg (dw), a median residue of 2.0 mg/kg (ar) and a highest residue of 5.4 mg/kg (ar) for tetraniliprole in Rice, hay and/or straw to replace the previous recommendations of maximum residue levels (20 mg/kg (dw), median residue (2.8 mg/kg (ar) and a highest residue (8.2 mg/kg [ar]). The previous recommendations were based on scaled data that did not precisely fit the critical GAP. Therefore, priority was given to the current dataset, even though maximum residue levels were lower.

The meeting noted that residues may occur in rice planted in rotation. However, residues from prior uses will not contribute significantly to the total residue and were not included in the calculation.

Farm animal dietary burden

The dietary burdens were calculated based on the intake of tetraniliprole for maximum residue estimation was recalculated because of the new uses in animal feed. An additional dietary burden calculation based on the intake of tetraniliprole + tetraniliprole-N-methyl-quinazolinone was recalculated for STMR estimation in animal matrices. Residues found in feed commodities in both supervised residue trials and field rotational crops studies and processing studies were used for dietary burden calculations. Dietary burdens were calculated for beef cattle, dairy cattle, broilers and laying poultry based on feed items evaluated by the JMPR in 2022 and JMPR 2024. The dietary burdens, estimated using the OECD diets listed in Appendix IX of the 2016 edition of the FAO manual, are presented in Annex 5 and summarized in Table 5.37.2 and Table 5.37.3.

Table 5.37.2 Estimated maximum and mean dietary burdens of farm animals for maximum residue limit estimation

	Animal dietary burden: tetraniliprole, ppm of dry matter diet							
	United States–Canada		European Union		Australia		Japan	
	Max.	Mean	Max.	Mean	Max.	Mean	Max.	Mean
Beef cattle	3.21	0.55	19.8	6.8	13.59	2.76	3.52	1.37
Dairy cattle	6.05	1.06	17.55	6.58	29.46[a, b]	12.69	12.71	4.76
Poultry, broiler	0.015	0.015	0.026	0.026	0.014	0.014	0.012	0.012
Poultry, layer	0.015	0.015	0.47[c, d]	0.076	0.014	0.014	0.013	0.013

Notes:
[a] Highest maximum beef or dairy cattle dietary burden suitable for MRL estimates for mammalian tissues.
[b] Highest maximum dairy cattle dietary burden suitable for MRL estimates for mammalian milk.
[c] Highest maximum poultry dietary burden suitable for MRL estimates for poultry tissues.
[d] Highest maximum poultry dietary burden suitable for MRL estimates for poultry eggs.

Table 5.37.3 Estimated maximum and mean dietary burdens of farm animals for STMR calculation

	Animal dietary burden: tetraniliprole + tetraniliprole-N-methyl-quinazolinone, ppm of dry matter diet							
	United States–Canada		European Union		Australia		Japan	
	Max.	Mean	Max.	Mean	Max.	Mean	Max.	Mean
Beef cattle	3.22	0.57	19.8	6.84	13.59	2.96	3.33	1.56
Dairy cattle	6.07	1.08	17.56	6.6	29.46	12.74[a, b]	12.71	4.76
Poultry, broiler	0.015	0.015	0.026	0.026	0.014	0.014	0.012	0.012
Poultry, layer	0.015	0.015	0.48	0.076[c, d]	0.014	0.014	0.013	0.013

Notes:
[a] Highest and mean beef or dairy cattle dietary burden suitable for STMR estimates for mammalian tissues.
[b] Highest mean dairy cattle dietary burden suitable for STMR estimates for mammalian milk.
[c] Highest mean poultry dietary burden suitable for STMR estimates for poultry tissues.
[d] Highest mean poultry burden suitable for STMR estimates for poultry eggs.

The meeting noted that the additional uses did not result in a significant change of the maximum and mean dietary burdens of farm animals conducted by the 2022 JMPR (29.46 ppm and 12.76 ppm for dairy cattle and 0.47 ppm and 0.076 ppm for poultry, respectively). As such, the meeting did not recalculate residues in animal commodities.

Considering the new Codex Classifications for animal commodities (General consideration 2.4), the meeting estimated a maximum residue level and a STMR of 0.07 mg/kg and 0.047 mg/kg for the group of muscle (from mammals other than marine mammals), of 1 mg/kg and 0.43 mg/kg for the group of edible offal (mammalian), of 0.15 mg/kg and 0.23 mg/kg for the group of mammalian fats (except milk fats), of 0.15 mg/kg and 0.12 mg/kg for group of milks, and of 0.01* mg/kg and 0 mg/kg for the group of eggs, group of avian, edible offal of, group of avian fats and group of avian muscle.

The meeting withdrew its previous recommendations for meat (from mammals other than marine mammals), edible offal (mammalian), mammalian fats (except milk fats), milks, eggs, poultry, edible offal, poultry, fats, and poultry, meat.

Recommendations

On the basis of the data obtained from supervised trials, the meeting concluded that the residue levels listed in Table 5.37.4 and Annex 1 are suitable for establishing maximum residue limits and dietary exposure assessment. Table 5.37.5 shows the residues used for animal dietary burden calculation.

Definition of the residue for compliance with the MRL for plant commodities: *tetraniliprole*.

Definition of the residue for dietary risk assessment for plant commodities: *tetraniliprole + tetraniliprole-N-methyl-quinazolinone, expressed as tetraniliprole.*

Definition of the residue for compliance with the MRL for animal commodities: *tetraniliprole*.

Definition of the residue for dietary risk assessment for animal commodities: *tetraniliprole + tetraniliprole-N-methyl-quinazolinone + tetraniliprole-benzylalcohol, expressed as tetraniliprole.*

The residue is not fat-soluble.

Table 5.37.4 Residue levels suitable for establishing maximum residue limits and for dietary exposure assessment

CCN	Commodity	Recommended Maximum residue limit (mg/kg)		STMR, STMR-P, median mg/kg
		New	Previous	
AS 0640	Barley hay (and/or straw)	0.06 (dw)	–	–
MO 0105	Edible offal (mammalian)	W	1.0	–
PE 0112	Eggs	W	0.01*	–
PO 0111	Group of avian, edible offal of	0.01*	–	0
PF 0111	Group of avian fats	0.01*	–	0
PM 0110	Group of avian muscle	0.01*	–	0
MO 0105	Group of edible offal (mammalian)	1.0	–	0.43
PE 0112	Group of eggs	0.01*	–	0
MF 0100	Group of mammalian fats (except milk fats)	0.15	–	0.26
ML 0106	Group of milks	0.15	–	0.12
MM 0095	Group of muscle (from mammals other than marine mammals)	0.07	–	0.047
MF 0100	Mammalian fats (except milk fats)	W	0.15	–
MM 0095	Meat (from mammals other than marine mammals)	W	0.1	–
ML 0106	Milks	W	0.15	–
PO 0111	Poultry, edible offal	W	0.01*	–
PF 0111	Poultry, fats	W	0.01*	–
PM 0110	Poultry, meat	W	0.01*	–
GC 2088	Rice cereals, subgroup of	0.5	0.02	0.011
GM 0649	Rice, husked	0.02	0.01*	0.01
CM 1205	Polished rice	0.02	0.01	0.01
AS 0649	Rice, hay and/or straw	9 (dw)	20 (dw)	
GC 2087	Subgroup of barley, similar grains, and pseudocereals with husks	0.01*	–	0.01
GC 2086	Subgroup of wheat, similar grains, and pseudocereals without husks	0.01*	–	0.01
AS 0654	Wheat, hay and/or straw	0.06 (dw)	–	–

Note: dw = dry weight.

Table 5.37.5 Residues used for animal dietary burden calculation

CCN	Commodity	Median, mg/kg	Highest, mg/kg
AS 0640	Barley hay (and/or straw)	0.01 (ar)	0.045 (ar)
AS 3540	Barley, forage	0.01 (ar)	0.01 (ar)
AS 3548	Rice, silage	3.45 (ar)	5.3 (ar)
AS 3552	Wheat forage	0.01 (ar)	0.01 (ar)
AS 0654	Wheat, hay and/or straw	0.01 (ar)	0.045 (ar)
AS 0649	Rice, hay and/or straw	2.0 (ar)	5.4 (ar)

Note: ar = as received.

Dietary risk assessment

Long-term dietary exposure

The ADI for tetraniliprole is 0–2 mg/kg bw. The International Estimated Daily Intakes (IEDIs) for tetraniliprole were estimated for the 17 GEMS/Food Consumption Cluster Diets using the STMR or STMR-P values estimated by the JMPR. The results are shown in Annex 3 of the 2024 JMPR Report.

The IEDIs are 0 percent of the maximum ADI. The meeting concluded that long-term dietary exposure to residues of tetraniliprole from uses considered by the JMPR is unlikely to present a public health concern.

Acute dietary exposure

The 2021 JMPR decided that an ARfD for tetraniliprole was unnecessary. The meeting therefore concluded that the acute dietary exposure to residues of tetraniliprole from the uses considered by the JMPR is unlikely to present a public health concern.

Threshold of toxicological concern (TTC) consideration for metabolites

At the JMPR 2021 meeting the WHO concluded that for the metabolites T-pyrazole-5-carboxylic acid, T-N-methyl-quinazolinone-benzylalcohol, T-pyrazole-5-amide, and T-N-methyl-quinazolinone-pyrazole-3-carboxyilic acid the TTC Cramer class III could be applied (no indication for genotoxicity). In addition, at the JMPR 2022 meeting the WHO concluded that the TTC Cramer class III could also be applied for the metabolites T-quinazolinone, T-pyridinyl-pyrazole-5-carboxylic acid, and T-pyrazole-5-N-methyl-amide. The meeting concluded that the exposures to these metabolites are below the TTC for Cramer class III compounds of 1.5 µg/kg bw/day and were unlikely to present a health concern from the uses evaluated by the 2022 meeting. The additional uses did not increase the dietary intake of these metabolites. Therefore, the current meeting concluded that these metabolites are unlikely to present a health concern from the combined uses evaluated by the 2022 and 2024 JMPR.

In addition, for a number of poultry specific metabolites no toxicity data was available to the 2021, 2022 or 2024 JMPR. The 2022 meeting decided these should be assessed using the TTC approach for genotoxic compounds (below the threshold of 0.0025 µg/kg bw/day). Also based on the current uses, exposure to the poultry metabolites T-despyridyl-N-methyl-quinazolinone, T-despyridyl, tetrazole-conjugates, T-despyridyl-N-methyl-quinazolinone-hydroxy/T-despyridyl-hydroxy, T-deschloro-desmethyl-amide, T-

despyridyl-quinazolinone, T-pyrazole-5-N-methyl-amide-hydroxy, and T-deschloro-desmethyl-amide is unaltered and below the TTC for genotoxic compounds.

Should further uses be considered in the future, these conclusions may need to be re-evaluated.

Annex 1. Acceptable daily intakes, acute reference doses, recommended maximum residue levels, supervised trials median residue values and other values recorded by the 2024 JMPR Meeting

Table A1.1 Acceptable daily intakes, acute reference doses, recommended maximum residue levels, supervised trials median residue values and other values recorded by the 2024 JMPR Meeting

Compound	CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
			New	Previous		
Acetamiprid (246) ADI: 0–0.07 mg/kg bw ARfD: 0.1 mg/kg bw (2011)	VD 0536	Mung beans (dry)	0.4	–	0.032	–
	VD 2065	Subgroup of dry beans, except soya beans and mung beans	0.2	–	0.025	–
	VD 2066	Subgroup of dry peas	0.2	–	0.025	–
Definition of the residue for compliance with the MRL and for dietary risk assessment for plant commodities: acetamiprid. Definition of the residue for compliance with the MRL and for dietary risk assessment for animal commodities: sum of acetamiprid and desmethyl-acetamiprid, expressed as acetamiprid. The residue is not fat-soluble.						
Acibenzolar-S-methyl (228) ADI: 0–0.08 mg/kg bw ARfD: 0.5 mg/kg bw (2016)	VS 0623	Cardoon	0.2	–	0.073	0.10
	VS 0624	Celery	0.2	–	0.073	0.10
	VS 0625	Celtuce	0.2	–	0.073	0.10
	VS 0380	Fennel, bulb	0.2	–	0.073	0.10
	FP 0226	Apple	0.02	0.3	0.01	0.01
	DF 0226	Apple, dried	0.06	–	0.031	0.031
	VS 0627	Rhubarb	0.2	–	0.073	0.10
	MM 0095	Group of muscle (from mammals other than marine mammals)	0.02*	–	0	0
	MF 0100	Group of mammalian fats (except milk fats)	0.02*	–	0	0
	MO 0105	Group of edible offal (mammalian)	0.02*	–	0	0
	ML 0106	Group of milks	0.01*	–	0	0
	MM 0095	Meat (from mammals other than marine mammals)	W	0.02*	–	–
	MF 0100	Mammalian fats (except milk fats)	W	0.02*	–	–
	MO 0105	Edible offal (mammalian)	W	0.02*	–	–

Compound	CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
			New	Previous		
	ML 0106	Milks	W	0.01*	–	–
	PF 0111	Poultry fats	W	0.02*	–	–
	PM 0110	Poultry meat	W	0.02*	–	–
	PO 0111	Poultry, edible offal of	W	0.02*	–	–
	PE 0112	Eggs	W	0.02*	–	–
	PO 0111	Group of avian, edible offal of	0.02*	–	0	0
	PF 0111	Group of avian fats	0.02*	–	0	0
	PM 0110	Group of avian muscle	0.02*	–	0	0
	PE 0112	Group of eggs	0.02*	–	0	0
Definition of the residue for compliance with the MRL for plant and animal commodities: sum of acibenzolar-S-methyl and 1,2,3-benzothiadiazole-7-carboxylic acid (acibenzolar acid) (free and conjugates), expressed as acibenzolar-S-methyl. Definition of the residue for estimation of dietary intake for plant commodities: sum of acibenzolar-S-methyl and 1,2,3-benzothiadiazole-7-carboxylic acid (acibenzolar acid), (free and conjugated) and 1,2,3-benzothiadiazole-4-hydroxy-7-carboxylic acid (4-OH acibenzolar acid) (free and conjugated), expressed as acibenzolar-S-methyl. Definition of the residue for estimation of dietary intake for animal commodities: sum of acibenzolar-S-methyl and 1,2,3-benzothiadiazole-7-carboxylic acid (acibenzolar acid) (free and conjugates), expressed as acibenzolar-S-methyl. The residue is not fat-soluble.						
Acynonapyr (333)*** ADI: 0–0.1 mg/kg bw ARfD: unnecessary (2024)	The meeting did not have enough time to conclude on the residue definitions and decided to postpone the evaluation to the 2025 JMPR.					
Definitions of residue: not concluded.						
Azoxystrobin (229) ADI: 0–0.03 mg/kg bw ARfD: unnecessary (2024)	FI 0326	Avocado	1.5	–	0.06 (pulp)	–
	MO 0105	Edible offal (mammalian)	W	0.07	–	–
	PE 0112	Eggs	W	0.01	–	–
	VC 0045	Fruiting vegetables, cucurbits	W	1	–	–
	VC 0045	Fruiting vegetables, cucurbits, except melons and watermelons	1	–	0.17 (whole fruit) 0.2 (pulp)	–
	PO 0111	Group of avian, edible offal of	0.01	–	0	–
	PF 0111	Group of avian fats	0.01	–	0	–
	PM 0110	Group of avian muscle	0.01	–	0	–
	FC 0001	Group of citrus fruit	–	–	0.49 (pulp)	–
	MO 0105	Group of edible offal (mammalian)	0.07	–	0.02	–
	PE 0112	Group of eggs	0.01	–	0	–
	MF 0100	Group of mammalian	0.05	–	0.01	–

Compound	CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
			New	Previous		
		fats (except milk fats)				
	MM 0095	Group of muscle (from mammals other than marine mammals)	0.01	–	0.01	–
	MU 1100	Hops, dried	40	30	8.4	–
	MM 0095	Meat (from mammals other than marine mammals)	W	0.05	–	–
	VC 0046	Melon	5	–	0.02 (pulp)	–
	FI 0353	Pineapple	2	–	0.01 (pulp)	–
	JF 0341	Pineapple juice	–	–	0.026	–
	PF 0111	Poultry fat	W	0.01	–	–
	PO 0111	Poultry liver	W	0.01	–	–
	PM 0110	Poultry meat	W	–	–	–
	VC 0432	Watermelon	5	–	0.02	–
Definition of residues for compliance with the MRL for plant and animal commodities: azoxystrobin. Definition of residues for dietary intake assessment for plant and animal commodities: azoxystrobin. The residue is fat-soluble.						
Buprofezin (173) ADI: 0–0.009 mg/kg bw ARfD: 0.5 mg/kg bw (2008)	MO 0105	Edible offal (mammalian)	W	0.01*	–	–
	PE 0112	Eggs	W	0.01*	–	–
	PO 0111	Group of avian, edible offal	0.05*	–	0.05 (liver) 0.05 (kidney)	0.05 (liver) 0.05 (kidney)
	PF 0111	Group of avian fats	0.05*	–	0.05	0.05
	PM 0110	Group of avian muscle	0.05*	–	0.05	0.05
	MO 0105	Group of edible offal (mammalian)	0.05*	–	0.05 (liver) 0.05 (kidney)	0.05 (liver) 0.05 (kidney)
	PE 0112	Group of eggs	0.05*	–	0.05	0.05
	MM 0095	Group of muscle (from mammals other than marine mammals)	0.05*	–	0.05	0.05
	MF 0100	Group of mammalian fats (except milk fats)	0.05*	–	0.05	0.05
	ML 0106	Group of milks	0.01*	–	0.01	–
	MM 0095	Meat (from mammals other than marine mammals)	W	0.01*	–	–
	MF 0100	Mammalian fats (except milk fats)	W	0.01*	–	–
	ML 0106	Milks	W	0.01*	–	–
	PM 0110	Poultry meat	W	0.01*	–	–

Compound	CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
			New	Previous		
	PF 0111	Poultry fats	W	0.01*	0.05	0.05
	PO 0111	Poultry, edible offal of	W	0.01*	–	–
Definition of the residue for compliance with the MRL for plant and animal commodities: buprofezin. Definition of the residue for dietary intake assessment for plant and animal commodities: buprofezin. The residue is not fat-soluble.						
Carfentrazone-ethyl (338)*** ADI: 0–0.03 mg/kg bw ARfD: 2 mg/kg bw (2024)	As the meeting could not conclude on residue definition for plant and animal commodities, maximum residue levels in plant and animal commodities could not be estimated.					
Definition of residues for compliance with MRL and dietary risk assessment for plant and animal commodities: not concluded.						
Chlorpyrifos (17)** Insufficient toxicological data to establish ADI or ARfD.	As the meeting could not conclude on residue definition for plant and animal commodities, maximum residue levels in plant and animal commodities could not be estimated.					
Definition of the residue for compliance with the MRL and dietary risk assessment for plant and animal commodities: not concluded.						
Chlormequat (015) ADI: 0–0.05 mg/kg bw ARfD: 0.05 mg/kg bw (2017)	GC 0640	Barley	5	2	0.59	–
	GCT 7074	Barley, beer	–	–	0.12	–
	CF 0640	Barley bran, processed	–	–	0.55	–
	CM 0640	Barley, pearled	–	–	0.32	–
	CF 3511	Barley, flour	–	–	0.11	–
	GCT 7013	Barley, malt	–	–	0.12	–
	MO 0105	Edible offal (mammalian)	W	0.5	–	–
	PE 0269	Eggs	W	0.2	–	–
	PO 0111	Group of avian, edible offal of	0.2	–	0.043	0.085
	PF 0111	Group of avian fats	0.04*	–	0.04	0.04
	PE 0269	Group of eggs	0.2	–	0.049	0.094
	PM 0111	Group of avian muscle	0.04*	–	0.04	0.04
	MO 0105	Group of edible offal (mammalian)	0.5	–	0.036 (liver) 0.20 (kidney)	0.11 (liver) 0.40 (kidney)
	MF 0100	Group of mammalian fats (except milk fat)	0.1	–	0.04	0.043
	ML 0095	Group of milks	0.2	–	0.069	–
	MM 0095	Group of muscle (from	0.2	–	0.04	0.085

Compound	CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
			New	Previous		
		mammalians other than marine mammals)				
	MF 0100	Mammalian fats (except milk fat)	W	0.1	–	–
	MM 0095	Meat (from mammalians other than marine mammals)	W	0.2	–	–
	ML 0095	Milks	W	0.2	–	–
	PO 0111	Poultry, edible offal of	W	0.2	–	–
	PF 0111	Poultry fats	W	0.04*	–	–
	PM 0111	Poultry meat	W	0.04*	–	–
Definition of the residue for compliance with the MRL for plant and animal commodities: chlormequat cation. Definition of the residue for dietary intake assessment for plant and animal commodities: chlormequat cation. The residue is not fat-soluble.						
Cyclobutrifluram (339)*** ADI: 0–0.2 mg/kg bw ARfD: unnecessary (2024)	FI 0327	Banana	0.01*	–	0	–
Definition of the residue for compliance with the MRL for plant commodities: cyclobutrifluram. Definition of the residue for compliance with the MRL for animal commodities: sum of residues of cyclobutrifluram and 2-(trifluoromethyl)pyridine-3-carboxamide (SYN510275), expressed as cyclobutrifluram. Definition of the residue for dietary risk assessment for plant commodities: sum of residues of cyclobutrifluram (free and conjugated), N-[(1S,2R)-2-(2,4-dichlorophenyl)-2-hydroxy-cyclobutyl]-2-(trifluoromethyl)pyridine-3-carboxamide (SYN549104) (free and conjugated), 2-(trifluoromethyl)pyridine-3-carboxylic acid (SYN510260) (free and conjugated) and 2-(trifluoromethyl)pyridine-3-carboxamide (SYN510275) (free and conjugated), expressed as cyclobutrifluram. Definition of the residue for dietary risk assessment for animal commodities: sum of residues of cyclobutrifluram, N-[(1S,2R)-2-(2,4-dichlorophenyl)-2-hydroxy-cyclobutyl]-2-(trifluoromethyl)pyridine-3-carboxamide (SYN549104) (free and conjugated) and 2-(trifluoromethyl)pyridine-3-carboxamide (SYN510275) (free and conjugated), expressed as cyclobutrifluram. The residue is not fat-soluble.						
Cyproconazole (239) ADI: 0–0.02 mg/kg bw ARfD: 0.06 mg/kg bw (2010)	VD 2065	Dry beans, subgroup of (except soya bean)	0.02	–	0.01	–
	VD 0071	Beans (dry)	W	0.02	–	–
	VD 2066	Dry peas, subgroup of	0.02	–	0.01	–
	VD 0072	Peas (dry)	W	0.02	–	–
	AL 3301	Products of legume feeds with low water (<20%) content (hay),	0.3	–	–	–

Compound	CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
			New	Previous		
		except soya bean and lentil				
	MM 0095	Meat (from mammals other than marine mammals)	W	0.01	–	–
	MM 0095	Group of muscle (from mammals other than marine mammals)	0.01	–	0.003	0.003
	MF 0100	Group of mammalian fats (except milk fats)	0.02	–	0.003	0.02
	ML 0106	Milks	W	0.01	–	–
	ML 0106	Group of milks	0.01	–	0.009	–
	MO 0105	Edible offal (mammalian)	W	0.5	–	–
	MO 0105	Group of edible offal (mammalian)	0.5	–	0.14	0.46
	PM 0110	Poultry meat	W	0.01*	–	–
	PM 0110	Group of avian muscle	0.01*	–	0.01	0.01
	PF 0111	Group of avian fats	0.01*	–	0.01	0.01
	PO 0111	Poultry, edible offal of	W	0.01*	–	–
	PO 0111	Group of avian, edible offal of	0.01*	–	0.01	0.01
	PE 0112	Eggs	W	0.01*	–	–
	PE 0112	Group of eggs	0.01*	–	0.01	0.01
Definition of the residue for compliance with the MRL for plant and animal commodities: cyproconazole. Definition of the residue for dietary intake for plant commodities: cyproconazole. Definition of the residue for dietary intake for animal commodities: free and conjugated cyproconazole. The residue is fat-soluble.						
Ethoxyquin (035)** Insufficient toxicological data were provided to establish ADI and ARfD.	FP 0230	Pear	W	3 (Po)	–	–
Definition of the residue for compliance with the MRL for plant commodities: ethoxyquin. Definition of the residue for dietary risk assessment for plant commodities: not concluded.						
Etofenprox (184) ADI: 0–0.03 mg/kg bw ARfD: 1 mg/kg bw (2011)	MO 0105	Edible offal (mammalian)	W	0.05*	–	–
	PE 0112	Eggs	W	0.01*	–	–
	PO 0111	Group of avian, edible offal of	0.02	–	0.013	0.013
	PF 0111	Group of avian fats	0.5	–	0.4	0.4
	PM 0110	Group of avian muscle	0.01*	–	0.003	0.003

Compound	CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
			New	Previous		
	MO 0105	Group of edible offal (mammalian)	0.1	–	0.072	0.093
	PE 0112	Group of eggs	0.1	–	0.07	0.07
	MF 0100	Group of mammalian fats (except milk fats)	3	–	1.5	2.4
	MM 0095	Group of muscle (from mammals other than marine mammals)	0.07	–	0.055	0.062
	ML 0106	Group of milks	0.1	–	0.096	–
	MM 0095	Meat (from mammals other than marine mammals)	W	0.5 (fat)	–	–
	ML 0106	Milks	W	0.02	–	–
	PO 0111	Poultry, edible offal of	W	0.01*	–	–
	PM 0110	Poultry meat	W	0.01*	–	–
	GC 0649	Rice	9	0.01*	3.1	–
	CM 0649	Rice, husked	0.3	–	0.09	–
	CM 1205	Rice, polished	0.04	–	0.01	–
Definition of the residue for compliance with the MRL for plant and animal commodities: etofenprox. Definition of the residue for estimation of dietary intake for plant and animal commodities: etofenprox. The residue is fat-soluble.						
Fenpropidin (340)*** ADI: 0–0.02 mg/kg bw ARfD: 0.03 mg/kg bw (women of child-bearing age) (2024)	FI 0327	Banana	9	–	0.097 (pulp)	1.2 (pulp)
	GC 0640	Barley	0.15	–	0.055	–
	–	Barley, malt	–	–	0.05	–
	–	Barley, beer	–	–	0.011	–
	PO 0111	Group of avian, edible offal of	0.08	–	0.039	0.074
	PF 0111	Group of avian fats	0.02	–	0.019	0.021
	PM 0110	Group of avian muscle	0.02	–	0.019	0.021
	MO 0105	Group of edible offal (mammalian)	0.4	–	0.3 (liver) 0.0056 (kidney)	0.96 (liver) 0.24 (kidney)
	PE 0112	Group of eggs	0.02	–	0.019	0.021
	MF 0100	Group of mammalian fats (except milk fats)	0.02	–	0.022	0.046
	ML 0106	Group of milks	0.02*	–	0.017	–
	MM 0095	Group of muscle (from mammals other than marine mammals)	0.02	–	0.036	0.044
	AM 1051	Fodder beet, roots	0.03	–	–	–
	AM 3573	Fodder beet, leaves or tops	30 (dw)	–	–	–
	AS 0081	Straw and hay of cereal grains	4 (dw)	–	–	–
	VR 0596	Sugar beet	0.03	–	–	–
	AM 3599	Sugar beet, dried pulp	0.2	–	–	–

Compound	CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
			New	Previous		
	AV 0596	Sugar beet, leaves or tops (dry)	30 (dw)	–	–	–
	DM 0596	Sugar beet, molasses	–	–	0.0025	–
	DM 3523	Sugar beet, raw/refined sugar	–	–	0.0025	–
	GC 0653	Triticale	0.05	–	0.01	–
	GC 0654	Wheat	0.05	–	0.01	–
	CF 0654	Wheat bran, processed	0.3	–	0.043	–
	CF 1211	Wheat, flour	–	–	0.002	–
	–	Wheat, whole-meal flour	–	–	0.0011	–
	–	Wheat, whole-grain bread	–	–	0.0098	–
Definition of the residue for compliance with the MRL and for dietary risk assessment for plant commodities: fenpropidin. Definition of the residue for compliance with the MRL for animal commodities: sum of fenpropidin and CGA 289267 {2-methyl-2-[4-(2-methyl-3-piperidin-1-yl-propyl)-phenyl]propionic acid}, expressed as fenpropidin. Definition of the residue for dietary risk assessment for animal commodities: sum of fenpropidin, CGA 289267 {2-methyl-2-[4-(2-methyl-3-piperidin-1-yl-propyl)-phenyl]propionic acid}, and SYN 515213 {3-hydroxy-2-methyl-2-[4-(2-methyl-3-piperidin-1-yl-propyl)-phenyl]-propionic acid} (free and conjugated), expressed as fenpropidin. The residue is not fat-soluble.						
Fenpyroximate (193) ADI: 0–0.005 mg/kg bw ARfD: 0.005 mg/kg bw (2021)	FP 0226	Apple	0.1	0.2	0.033	0.072
	AB 0226	Apple pomace, dried	1 (dw)	–	2.3	–
	JF 0226	Apple, juice	–	–	0.0053	–
	–	Apple, pasteurized sauce	–	–	0.0059	–
	DF 0226	Apple, dried	0.5	1	0.15	0.32
	VO 2700	Cherry tomato	0.2	–	0.06	0.12
	VC 0424	Cucumber	0.04	–	0.02	0.03
	MO 0105	Edible offal (mammalian)	W	0.8	–	–
	MO 0105	Group of edible offal (mammalian)	0.8[a]	–	0.40	0.77
	MF 0100	Group of mammalian fats (except milk fats)	0.2	–	0.063	0.13
	ML 0106	Group of milks	0.01	–	0.005	–
	MM 0095	Group of muscle (from mammals other than marine mammals)	0.05	–	0.015	0.041
	MF 0100	Mammalian fats	W	0.2	–	–
	MM 0095	Mammalian meats	W	0.2 (fat)	–	–
	AB 0003	Mandarins, dried pulp	0.8 (dw)	–	0.25	–
	OR 0003	Mandarins, oil, edible	25	150	7.8	–
	ML 0106	Milks	W	0.01	–	–
	VC 2039	Subgroup of cucumbers and	W	0.3	–	–

Compound	CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
			New	Previous		
		summer squashes				
	FC 0003	Subgroup of mandarins (including mandarin-like hybrids)	0.15	1	0.05 (RAC) 0.02 (pulp)	0.10 (RAC) 0.03 (pulp)
	–	Subgroup of mandarins, juice	–	–	0.0050	–
	–	Subgroup of mandarins, marmalade	–	–	0.0025	–
	FC 0004	Subgroup of oranges, sweet, sour (including orange-like hybrids)	0.15	0.7	0.055 (RAC) 0.02 (pulp)	0.07 (RAC) 0.02 (pulp)
	–	Subgroup of oranges, marmalade	–	–	0.0027	–
	VO 2045	Subgroup of tomatoes	W	0.3	–	–
	VO 0448	Tomato	0.2	–	0.06	0.12
	HS 3382	Orange, peel (fresh)	0.5	–	0.155	0.22
	JF 0004	Orange, juice	–	–	0.0054	–
	OR 0004	Orange oil, edible	25	100	8.6	–
	AB 0004	Oranges, dried pulp	0.8 (dw)	4 (dw)	0.28	–
	HS 3383	Satsuma mandarin, peel (fresh)	0.6	–	0.185	0.30
	JF 0448	Tomato, juice	–	–	0.038	–
		Tomato canned	–	–	0.024	0.047
	DM 0448	Tomato puree	–	–	0.043	–
Definition of the residue for compliance with MRLs for plant commodities: fenpyroximate. Definition of the residue for dietary risk assessment for plant commodities: sum of fenpyroximate and tert-butyl (Z)-α-(1,3-dimethyl-5-phenoxypyrazol-4-ylmethylene-amino-oxy)-p-toluate (its Z-isomer M-1), expressed as fenpyroximate. Definition of the residue for compliance with the MRL for animal commodities: sum of fenpyroximate and (E)-4-[(1,3-dimethyl-5-phenoxypyrazol-4-yl)methyleneaminooxymethyl]benzoic acid (M-3), expressed as fenpyroximate. Definition of the residue for dietary risk assessment for animal commodities: sum of fenpyroximate, 2-hydroxymethyl-2-propyl (E)-4-[(1,3-dimethyl-5-phenoxypyrazol-4-yl)- methylenaminooxymethyl]benzoate (Fen-OH), 2-hydroxy-2-methylpropyl (E)-α-(1,3-dimethyl-5-phenoxypyrazol-4-ylmethyleneamino-oxy)-p-toluate (R-UL-1) and (E)-4-[(1,3-dimethyl-5- phenoxypyrazol-4-yl)methyleneaminooxymethyl]benzoic acid (M-3), expressed as fenpyroximate. The residue is fat-soluble.						
Fipronil (202) ADI: 0–0.0002 mg/kg bw ARfD: 0.03 mg/kg bw (2021)	FI 0327	Banana	0.004*	0.004*	0	0
	GC 2087	Barley, similar grains, and pseudocereals with husks, subgroup of	0.002*	0.004*	0.002	–
	AS 0640	Barley straw and fodder, dry	0.05 (dw)	0.07 (dw)	–	–
	HH 0722	Basil	W	0.8	–	–
	SO 0691	Cotton seed	0.003	0.01	0.002	–
	OC 0691	Cotton seed oil, crude	–	–	0.0008	–

Compound	CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
			New	Previous		
	OR 0691	Cotton seed oil, refined	–	–	0.0006	–
	VD 2065	Dry beans, subgroup of (except soya beans)	0.008	0.01	0.001	–
	VD 2066	Dry peas, subgroup of	0.008	–	0.001	–
	MO 0105	Edible offal (mammalian)	W	0.1	–	–
	PO 0111	Group of avian, edible offal of	0.02	–	0.0303	0.0380
	PF 0111	Group of avian fats	0.05	–	0.0382	0.0922
	PM 0110	Group of avian muscle	0.02	–	0.0107	0.0288
	MO 0105	Group of edible offal (mammalian)	0.05	–	0.0141 (liver) 0.0047 (kidney)	0.0590 (liver) 0.0248 (kidney)
	PE 0112	Group of eggs	0.04	0.04	0.0322	0.0566
	MF 0100	Group of mammalian fats (except milk fats)	0.15	–	0.0680	0.1912
	ML 0106	Group of milks	0.02	–	0.0044	–
	FM 0106	Group of milk fat	0.3	–	0.0892	–
	MM 0095	Group of muscle (from mammals other than marine mammals)	0.015	–	0.0043	0.0221
	VL 0053	Leafy vegetables, group of	0.01	0.01	0	0.02919
	VP 0060	Legume vegetables, group of	W	0.01	–	–
	MF 0100	Mammalian fats (except milk fats)	W	0.4	–	–
	GC 2091	Maize cereals, subgroup of	0.01	0.01	0.004	–
	MM 0095	Meat (from mammals other than marine mammals)	W	0.03	–	–
	ML 0106	Milks	W	0.03	–	–
	FM 0183	Milk fat	W	0.3	–	–
	AS 0647	Oat straw and fodder, dry	0.05 (dw)	0.07 (dw)	–	–
	VA 0385	Onion, bulb	0.03	0.03	0.02	0.033
	VR 0589	Potato	0.05	0.05	0.00495	0.0296
	–	Potato washed	–	–	0.00245	0.01465
	–	Potato peeled	–	–	0.00158	0.00947
	–	Potato, cooked peeled	–	–	0.00121	0.00725
	–	Potato, microwave unpeeled	–	–	0.00334	0.01998
	–	Potato, French fries	–	–	0.00183	0.01095
	–	Potato flakes	–	–	0.00223	–
	PO 0111	Poultry, edible offal	W	0.03	–	–

Compound	CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
			New	Previous		
		of				
	PF 0111	Poultry fats	W	0.07	–	–
	PM 0110	Poultry meat	W	0.007	–	–
	GC 0649	Rice	0.002	0.4	0.002	–
	CM 0649	Rice, husked	0.001*	0.4	0.002	–
	CM 1205	Rice, polished	0.001*	0.15	0.002	–
	CM 1206	Rice bran, unprocessed	W	2	–	–
	AS 0649	Rice straw and fodder, dry	W	0.6 (dw)	–	–
	VR 0075	Root and tuber vegetables, group of (except potato and sugar beet)	0.002	0.002	0	0.00212
	AS 0650	Rye straw and fodder dry	0.05 (dw)	0.05 (dw)	–	–
	VD 0541	Soya bean (dry)	0.002	0.01	0.002	–
	AB 0541	Soya bean hulls	0.015	0.06	–	–
	VR 0596	Sugar beet	0.004	0.01	0.004	–
	GS 0659	Sugar cane	0.01	0.01	0.003	0.0073
	OC 0541	Soya bean oil, crude	0.01	0.05	0.0088	–
	–	Sugar cane juice	–	–	0.0018	–
	DM 0659	Sugar cane molasses	–	–	0.00007	–
	DM 3524	Sugar (from sugarcane)	–	–	0.00007	–
	SO 2091	Sunflower seeds, subgroup of	0.01	0.004*	0.008	–
	VO 2045	Tomato, subgroup of	0.004*	0.01*	0.008	0.008
	AS 0653	Triticale straw and fodder, dry	0.05 (dw)	0.05 (dw)	–	–
	GC 2086	Wheat, similar grains, and pseudocereals with husks, subgroup of	0.03	0.004*	0.008	–
	AS 0654	Wheat straw and fodder, dry	0.05 (dw)	0.05 (dw)	–	–
Definition of the residue for compliance with the MRL for plant and animal commodities: sum of fipronil and 5-amino-3-cyano-1-(2,6-dichloro-4-trifluoromethylphenyl)-4-trifluoromethylsulfonylpyrazole (MB46136) expressed in terms of fipronil. Definition of the residue for dietary risk assessment for plant and animal commodities: sum of fipronil and 5-amino-3-cyano-1-(2,6-dichloro-4-trifluoromethylphenyl)-4-trifluoromethylsulfonylpyrazole (MB46136), 5-amino-3-cyano-1-(2,6-dichloro-4-trifluoromethylphenyl)-4-trifluoromethylthiopyrazole (MB45950) and 5-amino-3-cyano-1-(2,6-dichloro-4-trifluoromethylphenyl)-4-trifluoromethylpyrazole (MB46513) expressed in terms of fipronil. The residue is fat-soluble.						
Florpyrauxifen-benzyl (341)	PE 0112	Eggs	0.03*	–	–	–
	PO 0111	Group of avian, edible offal of	0.03*	–	–	–

Compound	CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
			New	Previous		
ADI: unnecessary ARfD: unnecessary (2024)	PM 0110	Group of avian muscle	0.03*	–	–	–
	PF 0111	Group of avian fats	0.03*	–	–	–
	MO 0105	Group of edible offal (mammalian)	0.09	–	–	–
	MM 0095	Group of muscle (from mammals, other than marine mammals)	0.03*	–	–	–
	MF 0100	Group of mammalian fats (except milk fats)	0.03*	–	–	–
	ML 0106	Group of milks	0.03*	–	–	–
	AS 0162	Hay and/or straw of grasses	5 (dw)	–	–	–
	GC 0645	Maize	0.01*	–	–	–
	AS 3557	Maize, hay and/or straw	0.01* (dw)	–	–	–
	GC 0649	Rice	0.3	–	–	–
	AS 0649	Rice, hay and/or straw	2 (dw)	–	–	–
	CM 0649	Rice, husked	0.01*	–	–	–
Definition of the residue for compliance with the MRL for plant commodities: florpyrauxifen-benzyl. Definition of the residue for compliance with the MRL for animal commodities: sum of florpyrauxifen-benzyl, X11966341 and X11438848, expressed as florpyrauxifen-benzyl. Definition of the residue for dietary risk assessment for plant and animal commodities: not necessary. The residue is fat-soluble.						
Fluazinam (306)*** ADI: 0–0.01 mg/kg bw ARfD: 0.07 mg/kg bw (women of child-bearing age) (2024)	Not considered for residues by the present meeting.					
Flubendiamide (242) ADI: 0–0.02 mg/kg bw ARfD: 0.2 mg/kg bw (2010)	MO 0105	Edible offal (mammalian)	W	1	–	–
	MO 0105	Group of edible offal (mammalian)	1	–	0.31 (liver) 0.32 (kidney)	0.56 (liver) 0.57 (kidney)
	MF 0100	Group of mammalian fats (except milk fats)	2	–	0.62	1.2
	ML 0106	Group of milks	0.1	–	0.066	–
	FM 0106	Group of milk fats	5	–	1.6	4.0
	MM 0095	Group of muscle (from mammals other than marine mammals)	0.2	–	0.06	0.13

Compound	CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
			New	Previous		
	MM 0095	Meat (from mammals other than marine mammals)	W	2 (fat)	–	–
	ML 0106	Milks	W	0.1	–	–
	FM 0106	Milk fats	W	5	–	–
	GC 0649	Rice	4	–	1.15	–
	CM 0649	Rice, husked	0.1	–	0.03	–
	CM 1205	Rice, polished	0.01*	–	0.01	–
Definition of the residue for compliance with the MRL and dietary risk assessment for plant commodities: flubendiamide. Definition of the residue for compliance with the MRL for animal commodities: flubendiamide. Definition of the residue for dietary risk assessment for animal commodities: flubendiamide and flubendiamide-iodophthalimide. The residue is fat-soluble.						
Fluoxapiprolin (342)*** ADI: unnecessary ARfD: unnecessary **Fluoxapiprolin-pyrazole-alanine-oxopropanoic acid (BCS-DE72761)** ADI: 0–0.5 mg/kg bw ARfD: unnecessary **Fluoxapiprolin-BDM-pyrazole (BCS-BP32808)** ADI: 0–1.5 µg/kg bw ARfD: 0.02 mg/kg bw **Fluoxapiprolin-pyrazole-carboxylic acid (BCS-CZ38260)** ADI: 0–1.5 µg/kg bw ARfD: 0.02 mg/kg bw (2024)	VO 2700	Cherry tomato	0.1	–	–	–
	FB 0269	Grapes	0.15	–	–	–
	DF 0269	Grapes, dried	0.5	–	–	–
	PO 0111	Group of avian edible offal	0.01*	–	–	–
	PF 0111	Group of avian fats	0.01*	–	–	–
	PM 0110	Group of avian muscle	0.01*	–	–	–
	MO 0105	Group of edible offal (mammalian)	0.01*	–	–	–
	PE 0112	Group of eggs	0.01*	–	–	–
	MF 0100	Group of mammalian fats (except milk fats)	0.01*	–	–	–
	MM 0095	Group of muscle (from mammals other than marine mammals)	0.01*	–	–	–
	ML 0106	Group of milks	0.01*	–	–	–
	VA 0385	Onion, bulb	0.03	–	–	–
	VR 0589	Potato	0.01*	–	–	–
	VO 0448	Tomato	0.07	–	–	–
	–	Tomato, dried fruit	0.32	–	–	–
Definition of the residue for compliance with the MRL for plant and animal commodities: fluoxapiprolin. Definition of the residue for dietary risk assessment for plant and animal commodities: not necessary. The residue is fat-soluble.						
Flupyradifurone (285)	MO 0105	Edible offal, mammalian	W	4	–	–
	PE 0112	Eggs	W	0.7	–	–

Compound	CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
			New	Previous		
ADI: 0–0.08 mg/kg bw ARfD: 0.2 mg/kg bw (2015)	PO 0111	Group of avian, edible offal of	1	–	0.39	0.88
	PF 0111	Group of avian fats	0.3	–	0.11	0.24
	PM 0110	Group of avian muscle	0.8	–	0.27	0.64
	MO 0105	Group of edible offal, mammalian	4	–	0.81 (liver) 0.87 (kidney)	2.75 (liver) 3.4 (kidney)
	PE 0112	Group of eggs	0.7	–	0.15	0.42
	MF 0100	Group of mammalian fats (except milk fats)	1	–	0.15	0.86
	ML 0106	Group of milks	0.7	–	0.11	0.48
	MM 0095	Group of muscle (from mammals other than marine mammals)	1.5	–	0.30	1.27
	MF 0100	Mammalian fats (except milk fats)	W	1	–	–
	MM 0095	Meat (from mammals other than marine mammals)	W	1.5	–	–
	ML 0106	Milks	W	0.7	–	–
	SO 0305	Olives for oil production	5	–	0.495	–
	PF 0111	Poultry fat	W	0.3	–	–
	PM 0110	Poultry meat	W	0.8	–	–
	PO 0111	Poultry, edible offal of	W	1	–	–
	SO 0495	Rape seeds	0.4	–	0.36	–
	FT 0305	Table olives	5	–	0.495	3.3
	–	Olive oil, crude	–	–	0.09415	–
	–	Olive oil, refined	–	–	0.05435	–
	–	Olive oil, solvent extracted refined	–	–	0.05435	–
Definition of the residue for compliance with the MRL in plant commodities: flupyradifurone. Definition for estimation of dietary intake for plant commodities: sum of flupyradifurone, difluoroacetic acid and 6-chloronicotinic acid, expressed as parent equivalents. Definition for compliance with the MRL and for estimation of dietary intake for animal commodities: sum of flupyradifurone and difluoroacetic acid, expressed as parent equivalents. The residue is not fat-soluble.						
Folpet (041)**	FP 0226	Apple	W	10	–	–
ADI: 0–0.1 mg/kg bw (also applies to phthalamic acid expressed as folpet) ARfD: unnecessary	FI 0327	Banana	2	–	0.060 0.054 (phthalic acid)	–
	VC 0424	Cucumber	W	1	–	–
	GC 0640	Barley	1.5	–	1.5	–

Compound	CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
			New	Previous		
					0.79 (phthalic acid)	
Phthalic acid ADI: 0–0.1 mg/kg bw ARfD: unnecessary (2024)	AS 0640	Barley, hay and/or straw	40 (dw)	–	–	–
	FB 0265	Cranberries	–	–	7.4 (phthalic acid) 1.8 (phthalamic acid from phosmet use)	–
	FB 0020	Blueberries	–	–	1.7 (phthalic acid) 8.0 (phthalamic acid from phosmet use)	–
	FB 0269	Grapes	W	10	–	–
	DF 0269	Grape, dried (i.e. currants, raisins and sultanas)	W	40	–	–
	AB 0269	Grape pomace, dried	20 (dw)	–	–	–
	JF 0269	Grape juice	–	–	3.5 7.7 (phthalic acid)	–
	PM 0110	Group of avian muscle	0.01*	–	0.040 0 (phthalic acid)	–
	PF 0111	Group of avian fats	0.01*	–	0.040 0 (phthalic acid)	–
	PO 0111	Group of avian, edible offal of	0.01*	–	0.16 0.053 (phthalic acid)	–
	MO 0105	Group of edible offal (mammalian)	0.01*	–	0.058 (liver) 0.33 (kidney) 0.051 (phthalic acid)	–
	PE 0112	Group of eggs	0.01*	–	0.10	–

Compound	CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
			New	Previous		
					0.050 (phthalic acid)	
	MF 0100	Group of mammalian fats (except milk fats)	0.01*	–	0.029 0.064 (phthalic acid)	–
	MM 0095	Group of muscle (from mammals other than marine mammals)	0.01*	–	0.029 0 (phthalic acid)	–
	ML 0106	Group of milks	0.01*	–	0.024 0 (phthalic acid)	–
	VC 0046	Melons, except watermelon	W	3	–	–
	VL 0482	Lettuce, head	W	50	–	–
	VA 0385	Onion, bulb	W	1	–	–
	VR 0589	Potato	W	0.1	–	–
	VR 0589	Potato	–	–	0.23 (phthalic acid) 0.78 (phthalamic acid from phosmet use)	–
	FB 0275	Strawberry	W	5	–	–
	VO 0448	Tomato	W	3	–	–
	GC 0654	Wheat	0.04	–	0.38 0.32 (phthalic acid)	–
	AS 0654	Wheat, hay and/or straw	40 (dw)	–	–	–
	FB 1236	Wine grapes	15	–	8.7 4.9 (phthalic acid)	–
	–	Wine	–	–	0.73 5.0 (phthalic acid)	–
Definition of the residue for compliance with the MRL for plant and animal commodities: folpet. Definition of the residue for folpet dietary risk assessment for plant and animal commodities: sum of folpet and phthalamic acid, expressed as folpet. Definition of the residue for phthalic acid dietary risk assessment for plant and animal commodities: phthalic acid.						

Compound	CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
			New	Previous		
The residue is not fat-soluble.						
Fosetyl aluminium (302) ADI: 0–1 mg/kg bw ARfD: unnecessary (2017)	OR 0001	Citrus oil, edible	–	–	0.68	–
	MM 0105	Edible offal (mammalian)	W	0.5	–	–
	PE 0112	Eggs	W	0.05*	–	–
	PO 0111	Group of avian, edible offal of	0.05*	–	0	–
	PF 0111	Group of avian fats	0.05*	–	0	–
	PM 0110	Group of avian muscle	0.05*	–	0	–
	MO 0105	Group of edible offal (mammalian)	0.5	–	0.21 (liver) 0.33 (kidney)	–
	PE 0112	Group of eggs	0.05	–	0.02	–
	MF 0100	Group of mammalian fats (except milk fats)	0.3	–	0.13	–
	ML 0106	Group of milks	0.1	–	0.051	–
	MM 0095	Group of muscle (from mammals other than marine mammals)	0.15	–	0.062	–
	MF 0100	Mammalian fats (except milk fats)	W	0.2	–	–
	–	Marmalade	–	–	5.9	–
	MM 0095	Meat (from mammals other than marine mammals)	W	0.15	–	–
	MM 0106	Milks	W	0.1	–	–
	AB 0004	Oranges, dried pulp	150	–	41.2	–
	JF 0004	Orange, juice	–	–	9.8	–
	PO 0111	Poultry edible offal	W	0.05*	–	–
	PF 0111	Poultry fat	W	0.05*	–	–
	PM 0110	Poultry meat	W	0.05*	–	–
	GC 0649	Rice	40	–	12.55	–
	CM 1205	Rice, polished	40	–	8.55	–
	–	Sterilized canned fruit	–	–	6.1	–
	FC 0004	Subgroup of oranges, sweet, sour	50	20	18 (pulp)	–
Definition of residue for compliance with MRLs and dietary risk assessment for plant commodities: sum of fosetyl, phosphonic acid and their salts, expressed as phosphonic acid. Definition of residue for compliance with MRLs and dietary risk assessment for animal commodities: phosphonic acid. The residue is not fat-soluble.						
Hexythiazox (176)	FB 2005	Caneberries, subgroup of	4	–	1.0	–

Compound	CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
			New	Previous		
ADI: 0–0.03 mg/kg bw ARfD: unnecessary (2008)	MO 0105	Edible offal, mammalian	W	0.05	–	–
	PE 0112	Eggs	W	0.05	–	–
	PO 0111	Group of avian, edible offal of	0.05	–	0.01	–
	PF 0111	Group of avian fat	0.05	–	0.002	–
	PM 0110	Group of avian muscle	0.05*	–	0	–
	MO 0105	Group of edible offal, mammalian	0.05	–	0.01	–
	PE 0112	Group of eggs	0.05	–	0.002	–
	MF 0100	Group of mammalian fats (except milk fats)	0.05	–	0.01	–
	FM 0106	Group of milk fats	0.05	–	0.01	–
	ML 0106	Group of milks	0.05	–	0.01	–
	MM 0095	Group of muscle (from mammals other than marine mammals)	0.05*	–	0	–
	–	Hops, beer	–	–	0.21	–
	DH 1100	Hops, dried	20	3	6.0	–
	–	Hops, spent	–	–	0.75	–
	MF 0100	Mammalian fats (except milk fats)	W	0.05	–	–
	MM 0095	Meat (from mammals other than marine mammals)	W	0.05	–	–
	FM 0183	Milk fats	W	0.05	–	–
	ML 0106	Milks	W	0.05	–	–
	PM 0110	Poultry meat	W	0.05* (F)	–	–
	PO 0111	Poultry, edible offal of	W	0.05	–	–
Definition of the residue for compliance with the MRL in commodities: hexythiazox. Definition for estimation of dietary intake for plant commodities: sum of hexythiazox and all metabolites containing the trans-5-(4-chlorophenyl)-4-methyl-2-oxothiazolidine-moiety (PT-1-3), expressed as hexythiazox. Definition for compliance with the MRL and for estimation of dietary intake for animal commodities: sum of hexythiazox and all metabolites containing the trans-5-(4-chlorophenyl)-4-methyl-2-oxothiazolidine-moiety (PT-1-3), expressed as hexythiazox. The residue is fat-soluble.						
Lambda-cyhalothrin (146) ADI: 0–0.02 mg/kg bw ARfD: 0.02 mg/kg bw (2007)	Residue evaluation was not performed by the present meeting.					
Definition of the residue for compliance with the MRL for plant and animal commodities: cyhalothrin, sum of isomers. Definition of the residue for estimation of the dietary exposure for plant and animal commodities: cyhalothrin, sum of isomers.						

Compound	CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
			New	Previous		
The residue is fat-soluble.						
Maleic hydrazide (102) Insufficient toxicologic data were provided to establish ADI and ARfD.	VA 0381	Garlic	W	15	–	–
	VA 0385	Onion, bulb	W	15	–	–
	VR 0589	Potato	W	50	–	–
	VA 0388	Shallot	W	15	–	–
Definition of the residue for compliance with the MRL for plant and animal commodities: maleic hydrazide (free). Definition of the residue for dietary intake assessment for plant and animal commodities: not concluded. The residue is not fat-soluble.						
Methoprene (147) ADI: 0–0.09 mg/kg bw ARfD: unnecessary **S-methoprene** ADI: 0–0.05 mg/kg bw ARfD: unnecessary (2001)	MO 0105	Edible offal (mammalian)	W	0.02	–	–
	PE 0112	Eggs	W	0.02	–	–
	PO 0111	Group of avian, edible offal of	0.02	–	0.007	–
	PF 0111	Group of avian fats	0.02	–	0.007	–
	PM 0110	Group of avian muscle	0.02	–	0.007	–
	MO 0105	Group of edible offal (mammalian)	0.02	–	0.014	–
	PE 0112	Group of eggs	0.02	–	0.006	–
	MF 0100	Group of mammalian fats (except milk fats)	0.2	–	0.092	–
	ML 0106	Group of milks	0.1	–	0.044	–
	MM 0095	Group of muscle (from mammals other than marine mammals)	0.02	–	0.007	–
	MM 0095	Meat (from mammals other than marine mammals)	W	0.2 (fat)	–	–
	ML 0106	Milks	W	0.1 (fat)	–	–
	PO 0111	Poultry, edible offal of	W	0.02	–	–
	PM 0110	Poultry meat	W	0.02	–	–
	TN 0085	Tree nuts	3 (Po)	–	2.1	–
Definition of residue for compliance with MRL for methoprene and S-methoprene for plant and animal: methoprene. Definition of residue for dietary intake assessment for methoprene and S-methoprene for plant and animal: methoprene. The residue is fat-soluble.						
Novaluron (217) ADI: 0–0.01 mg/kg bw ARfD: unnecessary. (2005)	AM 0660	Almond hulls	15	–	4.46	–
	PE 0112	Eggs	W	0.1	–	–
	MO 0105	Edible offal (mammalian)	W	0.7	–	–
	PO 0111	Group of avian, edible	0.1	–	0.0943	–

Compound	CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
			New	Previous		
		offal of				
	PF 0111	Group of avian fats	1.5	–	0.919	–
	PM 0110	Group of avian muscle	0.04	–	0.0297	–
	MO 0105	Group of edible offal (mammalian)	0.2	–	0.15	–
	PE 0112	Group of eggs	0.3	–	0.1845	–
	MF 0100	Group of mammalian fats (except milk fats)	3	–	0.599	–
	ML 0106	Group of milks	0.2	–	0.1176	–
	MF 0106	Group of milk fats	3	–	2.337	–
	TN 0085	Group of tree nuts	0.08	–	0.015	–
	MM 0095	Meat (from mammals other than marine mammals) [in the fat]	W	10 (fat)	–	–
	ML 0106	Milks	W	0.4	–	–
	FM 0183	Milk fats	W	7	–	–
	MM 0095	Muscle (from mammals other than marine mammals)	0.2	–	0.096	–
	PO 0111	Poultry, edible offal of	W	0.1	–	–
	PM 0110	Poultry meat	W	0.5 (fat)	–	–
	PM 0110	Poultry muscle	0.04	–	0.0297	–
	GC 0649	Rice	5	–	0.6	–
	CM 1205	Rice, polished	0.15	–	0.015	–
Definition of residues for compliance with MRL in plant and animal commodities: novaluron. Definition of residues for compliance with MRL and for the estimation of dietary exposure in plant and animal commodities: novaluron. The residue is fat-soluble.						
Permethrin (120)** Insufficient data were provided to establish ADI and ARfD.	Not considered for residues by the present meeting.					
Phosphonic acid (301) ADI: 0–1 mg/kg bw ARfD: unnecessary (2017)	See **fosetyl aluminium**.					
Definition of residue for compliance with MRLs and dietary risk assessment for plant commodities: sum of fosetyl, phosphonic acid and their salts, expressed as phosphonic acid. Definition of residue for compliance with MRLs and dietary risk assessment for animal commodities: phosphonic acid. The residue is not fat-soluble.						
	FS 0240	Apricots	W	10	–	–

Compound	CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
			New	Previous		
Phosmet (103)**	SO 0691	Cottonseed	W	0.05	–	–
	FB 0265	Cranberries	3	3	1.15 1.7 (phthalic acid) 0.94 (phthalamic acid as folpet)	2.2
ADI: 0–0.006 mg/kg bw ARfD: 0.03 mg/kg bw						
Phthalamic acid						
ADI: 0–0.1 mg/kg bw						
	FB 0020	Blueberries	20[a]	10	4.5 7.4 (phthalic acid) 4.1 (phthalamic acid as folpet)	17
Phthalic acid (and its anhydride)						
ADI: 0–0.1 mg/kg bw ARfD: unnecessary (2024)						
	FB 0269	Grapes	W	10	–	–
	FC 0001	Group of citrus fruit	W	3	–	–
	FP 0009	Group of pome fruits	W	10	–	–
	TN 0085	Group of tree nuts	W	0.2	–	–
	MM 0095	Meat (from mammals other than marine mammals)	W	1 (fat)	–	–
	ML 0106	Milks	W	0.02	–	–
	FS 0245	Nectarine	W	10	–	–
	FS 0247	Peach	W	10	–	–
	VR 0589	Potato	0.05*	0.05*	0 0.44 (phthalic acid) 0.78 (phthalamic acid as folpet)	0

Definition of the residue for compliance with the MRL for plant and animal commodities: phosmet.

Definition of the residue for phosmet long-term dietary risk assessment for plant commodities: sum of phosmet plus 6-times 2-(dimethoxyphosphoryl-sulfanylmethyl)isoindole-1,3-dione (phosmet-oxon), expressed as phosmet.

Definition of the residue for phosmet acute dietary risk assessment for plant commodities: sum of phosmet plus 25-times 2-(dimethoxyphosphoryl-sulfanylmethyl)isoindole-1,3-dione (phosmet-oxon), expressed as phosmet.

For dietary risk assessment for animal commodities: sum of phosmet and 2-{[(methanesulfonyl)methyl] carbamoyl}benzoic acid ($PaAMSO_2Me$), expressed as phosmet.

Definition of the residue for phthalic acid dietary risk assessment for plant and animal commodities: phthalic acid.

Definition of the residue for phthalamic acid dietary risk assessment for plant and animal commodities: phthalamic acid, expressed as folpet.

The residue is not fat-soluble.

Compound	CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
			New	Previous		
Prochloraz (142)**	FI 0030	Assorted tropical and subtropical fruits – inedible peel	W	7	–	–
ADI: 0–0.02 mg/kg bw	FI 0326	Avocado	5 (Po)	–	1.6	2.9
ARfD: 0.2 mg/kg bw	GC 0640	Barley	0.6	–	0.0245	–
(2023)	–	Barley malt	–	–	0.02107	–
	–	Barley, pearly	–	–	0.0049	–
	–	Barley, pot	–	–	0.00588	–
	–	Barley beer	–	–	0.00588	–
	GC 0080	Cereal grains	W	2	–	–
	FC 0001	Citrus fruits	W	10	–	–
	MO 0105	Edible offal, mammalian	W	10	–	–
	PE 0112	Eggs	W	0.1	–	–
	PO 0111	Group of avian, edible offal of	0.08	–	0.1	0.13
	PF 0111	Group of avian fat	0.01	–	0.01	0.013
	PM 0110	Group of avian muscle	0.01*	–	0.014	0.017
	MO 0105	Group of edible offal, mammalian	0.4	–	0.22 (liver) 0.072 (kidney)	0.27 (liver) 0.091 (kidney)
	PE 0112	Group of eggs	0.2	–	0.13	0.18
	MF 0100	Group of mammalian fats (except milk fats)	0.02	–	0.015	0.019
	ML 0106	Group of milks	0.02	–	0.0057	–
	MM 0095	Group of muscle (from mammals other than marine mammals)	0.01	–	0.0041	0.005
	SO 0693	Linseed	W	0.05	–	–
	MM 0095	Meat (from mammals other than marine mammals)	W	0.5	–	–
	ML 0106	Milks	W	0.05	–	–
	VO 0450	Mushroom	W	3	–	–
	GC 0647	Oats	0.5	–	0.024	–
	HS 0790	Pepper, black, white	W	10	–	–
	PM 0110	Poultry meat	W	0.05	–	–
	PO 0111	Poultry, edible offal of	W	0.2	–	–
	SO 0495	Rape seed	W	0.7	–	–
	GC 0650	Rye	0.15	–	0.012	–
	AS 3560	Rye, hay and/or straw	15 (dw)	–	–	–
	AS 0081	Straw and hay of cereal grains except pseudocereals	40 (dw)	40 (dw)	–	–
	OR 0702	Sunflower seed oil, edible	W	1	–	–
	SO 0702	Sunflower seeds	W	0.5	–	–

Compound	CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
			New	Previous		
	GC 0653	Triticale	0.15	–	–	–
	GC 0654	Wheat	0.4	–	0.035	–
Definition of the residue for compliance of MRL for plant and animal commodities: sum of prochloraz, N-propyl-N-[2-(2,4,6-trichlorophenoxy)ethyl]urea (BTS 44595) and N-formyl-N-propyl-N-[2-(2,4,6-trichlorophenoxy)ethyl]urea (BTS 44596), expressed as prochloraz. Definition of the residue for dietary intake assessment for plant commodities: sum of prochloraz and N-formyl-N-propyl-N-[2-(2,4,6-trichlorophenoxy)ethyl]urea (BTS 44596), expressed as prochloraz. Definition of the residue for dietary intake assessment for animal commodities: sum of prochloraz, N-formyl-N-propyl-N-[2-(2,4,6-trichlorophenoxy)ethyl]urea (BTS 44596) and 2,4,6-trichlorophenoxyacetic acid (BTS 9608) (free and conjugated), all expressed as prochloraz. The residue is fat-soluble.						
Propiconazole (160) ADI: 0–0.07 mg/kg bw ARfD: 0.3 mg/kg bw (2004)	MO 0105	Edible offal (mammalian)	W	0.2	–	–
	PE 0112	Eggs	W	0.01*	–	–
	PO 0111	Group of avian, edible offal	0.01*	–	–	–
	PF 0111	Group of avian fats	0.01*	–	–	–
	PM 0110	Group of avian muscle	0.01*	–	–	–
	MO 0105	Group of edible offal (mammalian)	0.2	–	–	–
	PE 0112	Group of eggs	0.01*	–	–	–
	MF 0100	Group of mammalian fats (except milk fats)	0.05	–	–	–
	ML 0106	Group of milks	0.01*	–	–	–
	MM 0095	Group of muscle (from mammals other than marine mammals)	0.01*	–	–	–
	MF 0100	Mammalian fats (except milk fats)	W	0.05	–	–
	MM 0095	Meat (from mammals other than marine mammals)	W	0.01* (fat)	–	–
	ML 0106	Milks	W	0.01*	–	–
	PM 0110	Poultry meat	W	0.01* (fat)	–	–
	PF 0111	Poultry fats	W	0.01*	–	–
	PO 0111	Poultry, edible offal of	W	0.01*	–	–
	CM 1205	Rice, polished	3	10	1.95	–
Definition of the residue for compliance with the MRL for plant and animal commodities: propiconazole. Definition of the residue for dietary risk assessment for plant and animal commodities: propiconazole plus all metabolites convertible to 2,4-dichlorobenzoic acid (2,4-DCBA), expressed as propiconazole. The residue is fat-soluble.						

Compound	CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
			New	Previous		
Pydiflumetofen (309) ADI: 0–0.1 mg/kg bw ARfD: 0.3 mg/kg bw (2018)	VL 0482	Lettuce, head	20	–	5.25	10
	VL 0483	Lettuce, leaf	30	–	5.3	18
	SB 0716	Coffee bean	0.2	–	0.01	0.01
	–	Coffee, instant	–	–	0.0077	–
	SO 0691	Cottonseed	0.6	–	0.063	–
	AM 3587	Cotton gin trash	7	–	1.7	3.4
	OR 0691	Cotton seed oil, edible	–	–	0.0019	–
	MO 0105	Edible offal (mammalian)	W	0.1	–	–
	PE 0112	Eggs	W	0.02	–	–
	PF 0111	Group of avian fats	0.01*	–	0.02	0.02
	PM 0110	Group of avian muscle	0.01*	–	0.02	0.02
	PO 0111	Group of avian, edible offal of	0.01*	–	0.02	0.02
	MO 0105	Group of edible offal (mammalian)	0.1	–	0.09 (liver) 0.09 (kidney)	0.44 (liver) 0.30 (kidney)
	PE 0112	Group of eggs	0.02	–	0.02	0.023
	MF 0100	Group of mammalian fats (except milk fats)	0.1	–	0.02	0.07
	ML 0106	Group of milks	0.01*	–	0.02	–
	MM 0095	Group of muscle (from mammals other than marine mammals)	0.01*	–	0.02	0.02
	MF 0100	Mammalian fats (except milk fats)	W	0.1	–	–
	FI 0345	Mango	0.08	–	0.01	0.01
	MM 0095	Meat (from mammals other than marine mammals)	W	0.01*	–	–
	ML 0106	Milks	W	0.01*	–	–
	PM 0110	Poultry meat	W	0.01*	–	–
	PF 0111	Poultry fats	W	0.01*	–	–
	PO 0111	Poultry, edible offal of	W	0.01*	–	–
	FI 2540	Pitaya	0.9	–	0.01	0.03
	SM 0716	Roasted coffee	–	–	0.0077	–
	FB 2005	Subgroup of cane berries	4	–	0.815	2.6
Definition of the residue for compliance with the MRL for plant and animal commodities: pydiflumetofen. Definition of the residue for dietary risk assessment for plant commodities: pydiflumetofen. Definition of the residue for dietary risk assessment for animal commodities other than mammalian liver and kidney: sum of pydiflumetofen and 2,4,6-TCP (2,4,6-trichlorophenol) and its conjugates, expressed as pydiflumetofen. Definition of the residue for dietary risk assessment for mammalian liver and kidney: sum of pydiflumetofen, 2,4,6-trichlorophenol						

Compound	CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
			New	Previous		
(2,4,6-TCP) and its conjugates, and SYN547897 and its conjugates, expressed as pydiflumetofen. The residue is fat-soluble.						
Spinosad (203) ADI: 0–0.02 mg/kg bw ARfD: unnecessary (2001)	MF 0812	Cattle fat	3	–	0.565	–
	MM 0812	Cattle meat	W	3	–	–
	MM 0812	Cattle muscle	0.3	–	0.078	–
	MO 0105	Edible offal (mammalian) [except cattle]	W	0.5	–	–
	PE 0112	Eggs	W	0.01	–	–
	PO 0111	Group of avian, edible offal of	–	–	0.01	–
	PF 0111	Group of avian fats	0.2	–	0.05	–
	PM 0110	Group of avian muscle	0.01	–	0.01	–
	MO 0105	Group of edible offal (mammalian) [except cattle]	0.5	–	0.064 (liver) 0.032 (kidney)	–
	PE 0112	Group of eggs	0.01	–	0.01	–
	MF 0100	Group of mammalian fats (except milk fats) [except cattle]	2	–	0.32	–
	MM 0095	Group of muscle (from mammals other than marine mammals) [except cattle]	0.07	–	0.01	–
	MF 0100	Mammalian fat	W	–	0.32	–
	FI 0345	Mango	0.01*	–	0	–
	MM 0095	Meat (from mammals other than marine mammals) [except cattle]	W	2	0.01 (muscle) 0.32 (fat)	–
	PM 0110	Poultry meat	W	0.2	–	–
	DT 1114	Tea, green or black, fermented and dried, (including concentrates)	10	–	0.325	–
	–	Tea infusion	–	–	0.0004	–
Definition of the residue for compliance with the MRL in plant and animal commodities: sum of spinosyn A and spinosyn D. Definition of the residue for dietary intake assessment in plant and animal commodities: sum of spinosyn A and spinosyn D. The residue is fat-soluble for residues in meat but not fat-soluble in milk.						
Tebuconazole (189) ADI: 0–0.03 mg/kg bw	HS 0780	Cumin seed	0.9	–	0.22	–

Compound	CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
			New	Previous		
ARfD: 0.3 mg/kg bw (2010)						
Definition of the residue for compliance with the MRL in plant and animal commodities: tebuconazole. Definition of the residue for dietary intake assessment in plant and animal commodities: tebuconazole. The residue is not fat-soluble.						
Tebufenozide (196) ADI: 0–0.02 mg/kg bw (1996) ARfD: 0.9 mg/kg bw (2003)	ML 0812	Cattle milk	W	0.05	–	–
	MO 0105	Edible offal (mammalian)	W	0.02*	–	–
	PO 0111	Group of avian edible offal	0.02*	–	0.02	0.02
	PF 0111	Group of avian fat	0.02*	–	0.02	0.02
	PM 0111	Group of avian muscle	0.02*	–	0.02	0.02
	MO 0105	Group of edible offal (mammalian)	0.06	–	0.028 (liver) 0.02 (kidney)	0.053 (liver) 0.024 (kidney)
	PE 0112	Group of eggs	0.02*	–	0.02	0.02
	MF 0100	Group of mammalian fats (except milk fats)	0.2	–	0.054	0.17
	ML 0106	Group of milks	0.02	–	0.014	–
	MM 0095	Group of muscle (from mammals other than marine mammals)	0.03	–	0.02	0.029
	MM 0095	Meat (from mammals other than marine mammals)	W	0.05 (fat)	–	–
	ML 0106	Milks	W	0.01*	–	–
	PM 0111	Poultry meat	W	0.02*	–	–
	GC 0649	Rice	15	–	4.7	–
	CM 0649	Rice, husked	0.6	0.1	0.175	–
	CM 1205	Rice, polished	0.3	–	0.045	–
Definition of the residue for compliance with the MRL in plant and animal commodities: tebufenozide. Definition of the residue for dietary intake assessment in plant and animal commodities: tebufenozide. The residue is fat-soluble.						
Tetraniliprole (324) ADI: 0–0.2 mg/kg bw ARfD: unnecessary	AS 0640	Barley hay (and/or straw)	0.08 (dw)	–	–	–
	MO 0105	Edible offal (mammalian)	W	1.0	–	–
	PE 0112	Eggs	W	0.01*	–	–

Compound	CCN	Commodity	Recommended maximum residue level (mg/kg)		STMR or STMR-P (mg/kg)	HR or HR-P (mg/kg)
			New	Previous		
(2021)	PO 0111	Group of avian, edible offal of	0.01*	–	0	–
	PF 0111	Group of avian fats	0.01*	–	0	–
	PM 0110	Group of avian muscle	0.01*	–	0	–
	MO 0105	Group of edible offal (mammalian)	1.0	–	0.43	–
	PE 0112	Group of eggs	0.01*	–	0	–
	MF 0100	Group of mammalian fats (except milk fats)	0.15	–	0.26	–
	ML 0106	Group of milks	0.15	–	0.12	–
	MM 0095	Group of muscle (from mammals other than marine mammals)	0.07	–	0.047	–
	MF 0100	Mammalian fats (except milk fats)	W	0.15	–	–
	MM 0095	Meat (from mammals other than marine mammals)	W	0.1	–	–
	ML 0106	Milks	W	0.15	–	–
	PO 0111	Poultry, edible offal	W	0.01*	–	–
	PF 0111	Poultry, fats	W	0.01*	–	–
	PM 0110	Poultry, meat	W	0.01*	–	–
	GC 2088	Rice cereals, subgroup of	0.5	0.02	0.011	–
	GM 0649	Rice, husked	0.03	0.01*	0.01	–
	AS 0649	Rice, hay and/or straw	9 (dw)	20 (dw)	–	–
	GC 2087	Subgroup of barley, similar grains, and pseudocereals with husks	0.01*	–	0.01	–
	GC 2086	Subgroup of wheat, similar grains, and pseudocereals without husks	0.01*	–	0.01	–
	AS 0654	Wheat, hay and/or straw	0.08 (dw)	–	–	–

Definition of the residue for compliance with the MRL for plant and animal commodities: tetraniliprole.

Definition of the residue for dietary risk assessment for plant commodities: tetraniliprole *plus* tetraniliprole-N-methyl-quinazolinone, expressed as tetraniliprole.

Definition of the residue for dietary risk assessment for animal commodities: tetraniliprole + tetraniliprole-N-methyl-quinazolinone *plus* tetraniliprole-benzylalcohol, expressed as tetraniliprole.

The residue is not fat-soluble.

Notes:

* At or about the limit of quantification.
** Compound evaluated under the periodic review programme.
*** New compound.
[a] The acute exposure from the consumption of the commodity may present a public health concern.

Annex 2. Index of reports and evaluations of pesticides by the JMPR

Numbers in parentheses after the names of pesticides are Codex classification numbers. The abbreviations used are:

- T: evaluation of toxicology
- R: evaluation of residue and analytical aspects
- E: evaluation of effects on the environment

Abamectin (177)	1992 (T, R), 1994 (T, R), 1995 (T), 1997 (T, R), 2000 (R), 2015 (R), 2017 (T), 2018 (R)
Acephate (095)	1976 (T, R), 1979 (R), 1981 (R), 1982 (T), 1984 (T, R), 1987 (T), 1988 (T), 1990 (T, R), 1991 (corr. to 1990 R evaluation), 1994 (R), 1996 (R), 2002 (T), 2003 (R), 2004 (corr. to 2003 report), 2005 (T), 2006 (R), 2011 (R)
Acetamiprid (246)	2011 (T, R), 2012 (R), 2015 (R), 2017 (R), 2021 (R), 2023 (R), 2024 (R)
Acetochlor (280)	2015 (T, R), 2019 (T, R)
Acibenzolar-S-methyl (288)	2016 (T, R), 2024 (R)
Acrylonitrile	1965 (T, R)
Acynonapyr (333)	2024 (T, R)
Afidopyropen (312)	2019 (T, R), 2021 (R), 2022 (R)
Aldicarb (117)	1979 (T, R), 1982 (T, R), 1985 (R), 1988 (R), 1990 (R), 1991 (corr. to 1990 evaluation), 1992 (T), 1993 (R), 1994 (R), 1996 (R), 2001 (R), 2002 (R), 2006 (R)
Aldrin (001)	1965 (T), 1966 (T, R), 1967 (R), 1974 (R), 1975 (R), 1977 (T), 1990 (R), 1992 (R)
Allethrin	1965 (T, R)
Ametoctradin (253)	2012 (T, R)
Aminocarb (134)	1978 (T, R), 1979 (T, R)
Aminocyclopyrachlor (272)	2014 (T, R)

Aminomethylphosphonic acid (AMPA, 198)	1997 (T, R)
Aminopyralid (220)	2006 (T, R), 2007 (T, R)
Amitraz (122)	1980 (T, R), 1983 (R), 1984 (T, R), 1985 (R), 1986 (R), 1989 (R), 1990 (T, R), 1991 (R & corr. to 1990 R evaluation), 1998 (T)
Amitrole (079)	1974 (T, R), 1977 (T), 1993 (T, R), 1997 (T), 1998 (R)
Anilazine (163)	1989 (T, R), 1992 (R)
Atrazine	2007 (T)
Azinphos-ethyl (068)	1973 (T, R), 1983 (R)
Azinphos-methyl (002)	1965 (T), 1968 (T, R), 1972 (R), 1973 (T), 1974 (R), 1991 (T, R), 1992 (corr. to 1991 report), 1993 (R), 1995 (R), 2007 (T)
Azocyclotin (129)	1979 (R), 1981 (T), 1982 (R), 1983 (R), 1985 (R), 1989 (T, R), 1991 (R), 1994 (T), 2005 (T, R)
Azoxystrobin (229)	2008 (T, R), 2011 (R), 2012 (R), 2013 (R), 2017 (R), 2019 (R), 2022 (R), 2024 (T, R)
Benalaxyl (155)	1986 (R), 1987 (T), 1988 (R), 1992 (R), 1993 (R), 2005 (T), 2009 (R)
Bendiocarb (137)	1982 (T, R), 1984 (T, R), 1989 (R), 1990 (R)
Benomyl (069)	1973 (T, R), 1975 (T, R), 1978 (T, R), 1983 (T, R), 1988 (R), 1990 (R), 1994 (R), 1995 (T, E), 1998 (R)
Bentazone (172)	1991 (T, R), 1992 (corr. to 1991 report, Annex I), 1994 (R), 1995 (R), 1998 (T, R), 1999 (corr. to 1998 report), 2004 (T), 2012 (T), 2013 (R), 2016 (T), 2018 (R)
Benzovindiflupyr (261)	2013 (T), 2014 (R), 2016 (R), 2019 (R), 2022 (T, R)
Benzpyrimoxan (325)	2022 (T, R)
BHC (technical-grade)	1965 (T), 1968 (T, R), 1973 (T, R) (see also Lindane)
Bicyclopyrone (295)	2017 (T, R)
Bifenazate (219)	2006 (T, R), 2008 (R), 2010 (R)
Bifenthrin (178)	1992 (T, R), 1995 (R), 1996 (R), 1997 (R), 2009 (T), 2010 (R), 2015 (R), 2019 (R), 2022 (R)

Binapacryl (003)	1969 (T, R), 1974 (R), 1982 (T), 1984 (R), 1985 (T, R)
Bioresmethrin (093)	1975 (R), 1976 (T, R), 1991 (T, R)
Biphenyl	See Diphenyl
Bitertanol (144)	1983 (T), 1984 (R), 1986 (R), 1987 (T), 1988 (R), 1989 (R), 1991 (R), 1998 (T), 1999 (R), 2002 (R)
Bixafen (262)	2013 (T, R), 2016 (R), 2021 (R)
Boscalid (221)	2006 (T, R), 2008 (R), 2010 (R), 2019 (T, R), 2023 (R)
Broflanilide (326)	2022 (T, R)
Bromide ion (047)	1968 (R), 1969 (T, R), 1971 (R), 1979 (R), 1981 (R), 1983 (R), 1988 (T, R), 1989 (R), 1992 (R)
Bromomethane (052)	1965 (T, R), 1966 (T, R), 1967 (R), 1968 (T, R), 1971 (R), 1979 (R), 1985 (R), 1992 (R)
Bromophos (004)	1972 (T, R), 1975 (R), 1977 (T, R), 1982 (R), 1984 (R), 1985 (R)
Bromophos-ethyl (005)	1972 (T, R), 1975 (T, R), 1977 (R)
Bromopropylate (070)	1973 (T, R), 1993 (T, R)
Butocarboxim (139)	1983 (R), 1984 (T), 1985 (T), 1986 (R)
Buprofezin (173)	1991 (T, R), 1995 (R), 1996 (corr. to 1995 report), 1999 (R), 2008 (T, R), 2009 (R), 2012 (R), 2014 (R), 2016 (R), 2019 (T, R), 2024 (R)
sec-Butylamine (089)	1975 (T, R), 1977 (R), 1978 (T, R), 1979 (R), 1980 (R), 1981 (T), 1984 (T, R: withdrawal of temporary ADI, but no evaluation)
Cadusafos (174)	1991 (T, R), 1992 (R), 1992 (R), 2009 (R), 2010 (R)
Campheclor (071)	1968 (T, R), 1973 (T, R)
Captafol (006)	1969 (T, R), 1973 (T, R), 1974 (R), 1976 (R), 1977 (T, R), 1982 (T), 1985 (T, R), 1986 (corr. to 1985 report), 1990 (R), 1999 (ARfD)
Captan (007)	1965 (T), 1969 (T, R), 1973 (T), 1974 (R), 1977 (T, R), 1978 (T, R), 1980 (R), 1982 (T), 1984 (T, R), 1986 (R), 1987 (R and corr. to 1986 R evaluation), 1990 (T, R), 1991 (corr. to 1990 R evaluation), 1994 (R), 1995 (T), 1997 (R),

	2000 (R), 2004 (T), 2007 (T), 2017 (R)
Carbaryl (008)	1965 (T), 1966 (T, R), 1967 (T, R), 1968 (R), 1969 (T, R), 1970 (R), 1973 (T, R), 1975 (R), 1976 (R), 1977 (R), 1979 (R), 1984 (R), 1996 (T), 2001 (T), 2002 (R), 2007 (R)
Carbendazim (072)	1973 (T, R), 1976 (R), 1977 (T), 1978 (R), 1983 (T, R), 1985 (T, R), 1987 (R), 1988 (R), 1990 (R), 1994 (R), 1995 (T, E), 1998 (T, R), 2003 (R), 2005 (T), 2012 (R), 2023 (T, R)
Carbofuran (096)	1976 (T, R), 1979 (T, R), 1980 (T), 1982 (T), 1991 (R), 1993 (R), 1996 (T), 1997 (R), 1999 (corr. to 1997 report), 2002 (T, R), 2003 (R) (See also carbosulfan), 2004 (R), 2008 (T), 2009 (R), 2023 (T, R)
Carbon disulfide (009)	1965 (T, R), 1967 (R), 1968 (R), 1971 (R), 1985 (R)
Carbon tetrachloride (010)	1965 (T, R), 1967 (R), 1968 (T, R), 1971 (R), 1979 (R), 1985 (R)
Carbophenothion (011)	1972 (T, R), 1976 (T, R), 1977 (T, R), 1979 (T, R), 1980 (T, R), 1983 (R)
Carbosulfan (145)	1984 (T, R), 1986 (T), 1991 (R), 1992 (corr. to 1991 report), 1993 (R), 1997 (R), 1999 (R), 2002 (R), 2003 (T, R), 2004 (R, corr. to 2003 report), 2023 (T, R)
Cartap (097)	1976 (T, R), 1978 (T, R), 1995 (T, R)
Carfentrazone-ethyl (338)	2024 (T, R)
Chinomethionat (080)	1968 (T, R) (as oxythioquinox), 1974 (T, R), 1977 (T, R), 1981 (T, R), 1983 (R), 1984 (T, R), 1987 (T)
Chlorantraniliprole (230)	2008 (T, R), 2010 (R), 2013 (R), 2014 (R), 2016 (R), 2019 (R), 2022 (R)
Chlorbenside	1965 (T)
Chlordane (012)	1965 (T), 1967 (T, R), 1969 (R), 1970 (T, R), 1972 (R), 1974 (R), 1977 (T, R), 1982 (T), 1984 (T, R), 1986 (T)
Chlordimeform (013)	1971 (T, R), 1975 (T, R), 1977 (T), 1978 (T, R), 1979 (T), 1980 (T), 1985 (T), 1986 (R), 1987 (T)
Chlorfenapyr (254)	2013 (T), 2018 (T, R)
Chlorfenson	1965 (T)

Chlorfenvinphos (014)	1971 (T, R), 1984 (R), 1994 (T), 1996 (R)
Chlormequat (015)	1970 (T, R), 1972 (T, R), 1976 (R), 1985 (R), 1994 (T, R), 1997 (T), 1999 (ARfD), 2000 (R), 2017 (T, R), 2022 (R), 2024 (R)
Chlorobenzilate (016)	1965 (T), 1968 (T, R), 1972 (R), 1975 (R), 1977 (R), 1980 (T)
Chloropicrin	1965 (T, R)
Chloropropylate	1968 (T, R), 1972 (R)
Chlorothalonil (081)	1974 (T, R), 1977 (T, R), 1978 (R), 1979 (T, R), 1981 (T, R), 1983 (T, R), 1984 (corr. to 1983 report and T evaluation), 1985 (T, R), 1987 (T), 1988 (R), 1990 (T, R), 1991 (corr. to 1990 evaluation), 1992 (T), 1993 (R), 1997 (R), 2009 (T), 2010 (R), 2012 (R), 2015 (R), 2019 (T, R)
Chlorpropham (201)	1965 (T), 2000 (T), 2001 (R), 2005 (T), 2008 (R)
Chlorpyrifos (017)	1972 (T, R), 1974 (R), 1975 (R), 1977 (T, R), 1981 (R), 1982 (T, R), 1983 (R), 1989 (R), 1995 (R), 1999 (T), 2000 (R), 2004 (R), 2006 (R), 2021 (R), 2024 (T, R)
Chlorpyrifos-methyl (090)	1975 (T, R), 1976 (R, Annex I only), 1979 (R), 1990 (R), 1991 (T, R), 1992 (T and corr. to 1991 report), 1993 (R), 1994 (R), 2001 (T), 2009 (R)
Chlorthion	1965 (T)
Clethodim (187)	1994 (T, R), 1997 (R), 1999 (R), 2002 (R), 2019 (T, R)
Clofentezine (156)	1986 (T, R), 1987 (R), 1989 (R), 1990 (R), 1992 (R), 2005 (T), 2007 (R), 2021 (R)
Clothianidin (238)	2010 (T, R), 2011 (R), 2014 (R), 2021 (R), 2023 (R)
Coumaphos (018)	1968 (T, R), 1972 (R), 1975 (R), 1978 (R), 1980 (T, R), 1983 (R), 1987 (T), 1990 (T, R)
Crufomate (019)	1968 (T, R), 1972 (R)
Cyanophenfos (091)	1975 (T, R), 1978 (T: ADI extended, but no evaluation), 1980 (T), 1982 (R), 1983 (T)
Cyantraniliprole (263)	2013 (T, R), 2015 (R), 2018 (R), 2023 (R)
Cyazofamid (281)	2015 (T, R), 2018 (R)

Cyclaniliprole (296)	2017 (T, R), 2019 (R)
Cyclobutrifluram (339)	2024 (T, R)
Cycloxydim (179)	1992 (T, R), 1993 (R), 2009 (T), 2012 (R)
Cyflumetofen (273)	2014 (T, R), 2023 (R)
Cyfluthrin (157)	1986 (R), 1987 (T and corr. to 1986 report), 1989 (R), 1990 (R), 1992 (R), 2006 (T), 2007 (R)
Cyhalothrin (including lambda-cyhalothrin) (146)	1984 (T, R), 1986 (R), 1988 (R), 2007 (T), 2008 (R), 2015 (R), 2018 (T), 2019 (R), 2024 (T)
Cyhexatin (067)	1970 (T, R), 1973 (T, R), 1974 (R), 1975 (R), 1977 (T), 1978 (T, R), 1980 (T), 1981 (T), 1982 (R), 1983 (R), 1985 (R), 1988 (T), 1989 (T), 1991 (T, R), 1992 (R), 1994 (T), 2005 (T, R)
Cypermethrin (118)	1979 (T, R), 1981 (T, R), 1982 (R), 1983 (R), 1984 (R), 1985 (R), 1986 (R), 1987 (corr. to 1986 evaluation), 1988 (R), 1990 (R), 2006 (T), 2008 (R), 2009 (R), 2011 (R), 2019 (R), 2021 (R)
Cyproconazole (239)	2010 (T, R), 2013 (R), 2024 (T, R)
Cyprodinil (207)	2003 (T, R), 2004 (corr. to 2003 report), 2013 (R), 2015 (R), 2017 (R), 2018 (R), 2019 (T, R), 2021 (R)
Cyromazine (169)	1990 (T, R), 1991 (corr. to 1990 R evaluation), 1992 (R), 2006 (T), 2007 (R), 2012 (R)
2,4-D (020)	1970 (T, R), 1971 (T, R), 1974 (T, R), 1975 (T, R), 1980 (R), 1985 (R), 1986 (R), 1987 (corr. to 1986 report, Annex I), 1996 (T), 1997 (E), 1998 (R), 2001 (R), 2017 (R)
Daminozide (104)	1977 (T, R), 1983 (T), 1989 (T, R), 1991 (T)
DDT (021)	1965 (T), 1966 (T, R), 1967 (T, R), 1968 (T, R), 1969 (T, R), 1978 (R), 1979 (T), 1980 (T), 1983 (T), 1984 (T), 1993 (R), 1994 (R), 1996 (R)
Deltamethrin (135)	1980 (T, R), 1981 (T, R), 1982 (T, R), 1984 (R), 1985 (R), 1986 (R), 1987 (R), 1988 (R), 1990 (R), 1992 (R), 2000 (T), 2002 (R), 2016 (R), 2023 (R)
Demeton (092)	1965 (T), 1967 (R), 1975 (R), 1982 (T)
Demeton-S-methyl (073)	1973 (T, R), 1979 (R), 1982 (T), 1984 (T, R), 1989 (T, R),

	1992 (R), 1998 (R)
Demeton-S-methylsulfon (164)	1973 (T, R), 1982 (T), 1984 (T, R), 1989 (T, R), 1992 (R)
Dialifos (098)	1976 (T, R), 1982 (T), 1985 (R)
Diazinon (022)	1965 (T), 1966 (T), 1967 (R), 1968 (T, R), 1970 (T, R), 1975 (R), 1979 (R), 1993 (T, R), 1994 (R), 1996 (R), 1999 (R), 2001 (T), 2006 (T, R), 2016 (T), 2022 (R)
1,2-Dibromoethane (023)	1965 (T, R), 1966 (T, R), 1967 (R), 1968 (R), 1971 (R), 1979 (R), 1985 (R)
Dicamba (240)	2010 (T, R), 2011 (R), 2012 (R), 2013 (R), 2019 (T, R)
Dichlobenil (274)	2014 (T, R)
Dicloran (083)	2003 (R)
Dichlorfluanid (082)	1969 (T, R), 1974 (T, R), 1977 (T, R), 1979 (T, R), 1981 (R), 1982 (R), 1983 (T, R), 1985 (R)
1,2-Dichloroethane (024)	1965 (T, R), 1967 (R), 1971 (R), 1979 (R), 1985 (R)
Dichlorvos (025)	1965 (T, R), 1966 (T, R), 1967 (T, R), 1969 (R), 1970 (T, R), 1974 (R), 1977 (T), 1993 (T, R), 2011 (T), 2012 (R)
Dicloran (083)	1974 (T, R), 1977 (T, R), 1998 (T, R)
Dicofol (026)	1968 (T, R), 1970 (R), 1974 (R), 1992 (T, R), 1994 (R), 2011 (T), 2012 (R)
Dieldrin (001)	1965 (T), 1966 (T, R), 1967 (T, R), 1968 (R), 1969 (R), 1970 (T, R), 1974 (R), 1975 (R), 1977 (T), 1990 (R), 1992 (R)
Difenoconazole (224)	2007 (T, R), 2010 (R), 2013 (R), 2015 (R), 2017 (R), 2021 (R), 2022 (R), 2023 (R)
Diflubenzuron (130)	1981 (T, R), 1983 (R), 1984 (T, R), 1985 (T, R), 1988 (R), 2001 (T), 2002 (R), 2011 (R), 2023 (R)
Dimethenamid-P (214)	2005 (T, R)
Dimethipin (151)	1985 (T, R), 1987 (T, R), 1988 (T, R), 1999 (T), 2001 (R), 2004 (T)
Dimethoate (027)	1965 (T), 1966 (T), 1967 (T, R), 1970 (R), 1973 (R in evaluation of formothion), 1977 (R), 1978 (R), 1983 (R) 1984 (T, R), 1986 (R), 1987 (T, R), 1988 (R), 1990 (R),

	1991 (corr. to 1990 evaluation), 1994 (R), 1996 (T), 1998 (R), 2003 (T, R), 2004 (corr. to 2003 report), 2006 (R), 2008 (R), 2019 (T, R), 2022 (T, R)
Dimethomorph (225)	2007 (T, R), 2014 (R), 2016 (R)
Dimethrin	1965 (T)
1,4- Dimethylnaphthalene (331)	2023 (R)
Dinocap (087)	1969 (T, R), 1974 (T, R), 1989 (T, R), 1992 (R), 1998 (R), 1999 (R), 2000 (T), 2001 (R)
Dinotefuran (255)	2012 (T, R), 2023 (R)
Dioxathion (028)	1968 (T, R), 1972 (R)
Diphenyl (029)	1966 (T, R), 1967 (T)
Diphenylamine (030)	1969 (T, R), 1976 (T, R), 1979 (R), 1982 (T), 1984 (T, R), 1998 (T), 2001 (R), 2003 (R), 2008 (R)
Diquat (031)	1970 (T, R), 1972 (T, R), 1976 (R), 1977 (T, R), 1978 (R), 1994 (R), 2013 (T, R), 2018 (R)
Disulfoton (074)	1973 (T, R), 1975 (T, R), 1979 (R), 1981 (R), 1984 (R), 1991 (T, R), 1992 (corr. to 1991 report, Annex I), 1994 (R), 1996 (T), 1998 (R), 2006 (R)
Dithianon (180)	1992 (T, R), 1995 (R), 1996 (corr. to 1995 report), 2010 (T), 2013 (T, R)
Dithiocarbamates (105)	1965 (T), 1967 (T, R), 1970 (T, R), 1983 (R propineb, thiram), 1984 (R propineb), 1985 (R), 1987 (T thiram), 1988 (R thiram), 1990 (R), 1991 (corr. to 1990 evaluation), 1992 (T thiram), 1993 (T, R), 1995 (R), 1996 (T, R ferbam, ziram; R thiram), 2004 (R), 2012 (R), 2014 (R)
4,6-Dinitro-ortho-cresol (DNOC)	1965 (T)
Dodine (084)	1974 (T, R), 1976 (T, R), 1977 (R), 2000 (T), 2003 (R), 2004 (corr. to 2003 report)
Edifenphos (099)	1976 (T, R), 1979 (T, R), 1981 (T, R)
Emamectin benzoate (247)	2011 (T, R), 2014 (R), 2022 (R), 2023 (R)
Endosulfan (032)	1965 (T), 1967 (T, R), 1968 (T, R), 1971 (R), 1974 (R), 1975 (R), 1982 (T), 1985 (T, R), 1989 (T, R), 1993 (R),

	1998 (T), 2006 (R), 2010 (R)
Endrin (033)	1965 (T), 1970 (T, R), 1974 (R), 1975 (R), 1990 (R), 1992 (R)
Esfenvalerate (204)	2002 (T, R)
Ethephon (106)	1977 (T, R), 1978 (T, R), 1983 (R), 1985 (R), 1993 (T), 1994 (R), 1995 (T), 1997 (T), 2002 (T), 2015 (T, R)
Ethiofencarb (107)	1977 (T, R), 1978 (R), 1981 (R), 1982 (T, R), 1983 (R)
Ethion (034)	1968 (T, R), 1969 (R), 1970 (R), 1972 (T, R), 1975 (R), 1982 (T), 1983 (R), 1985 (T), 1986 (T), 1989 (T), 1990 (T), 1994 (R), 2021 (T, R)
Ethiprole (304)	2018 (T, R), 2021 (R)
Ethoprophos (149)	1983 (T), 1984 (R), 1987 (T), 1999 (T), 2004 (R)
Ethoxyquin (035)	1969 (T, R), 1998 (T), 1999 (R), 2005 (T), 2008 (R), 2024 (T, R)
Ethylene dibromide	See 1,2-Dibromoethane
Ethylene dichloride	See 1,2-Dichloroethane
Ethylene oxide	1965 (T, R), 1968 (T, R), 1971 (R)
Ethylenethiourea (ETU) (108)	1974 (R), 1977 (T, R), 1986 (T, R), 1987 (R), 1988 (T, R), 1990 (R), 1993 (T, R)
Etofenprox (184)	1993 (T, R), 2011 (T, R), 2024 (R)
Etoxazole (241)	2010 (T, R), 2011 (R)
Etrimfos (123)	1980 (T, R), 1982 (T, R), 1986 (T, R), 1987 (R), 1988 (R), 1989 (R), 1990 (R)
Famoxadone (208)	2003 (T, R), 2022 (R)
Fenamidone (264)	2013 (T), 2014 (T, R)
Fenamiphos (085)	1974 (T, R), 1977 (R), 1978 (R), 1980 (R), 1985 (T), 1987 (T), 1997 (T), 1999 (R), 2002 (T), 2006 (R)
Fenarimol (192)	1995 (T, R, E), 1996 (R and corr. to 1995 report)
Fenazaquin (297)	2017 (T, R), 2019 (R), 2022 (R)
Fenbuconazole (197)	1997 (T, R), 2009 (R), 2012 (T), 2013 (R), 2021 (R)

Fenbutatin oxide (109)	1977 (T, R), 1979 (R), 1992 (T), 1993 (R)
Fenchlorfos (036)	1968 (T, R), 1972 (R), 1983 (R)
Fenhexamid (215)	2005 (T, R), 2021 (R)
Fenitrothion (037)	1969 (T, R), 1974 (T, R), 1976 (R), 1977 (T, R), 1979 (R), 1982 (T), 1983 (R), 1984 (T, R), 1986 (T, R), 1987 (R and corr. to 1986 R evaluation), 1988 (T), 1989 (R), 2000 (T), 2003 (R), 2004 (R, corr. to 2003 report), 2007 (T, R)
Fenpicoxamid (305)	2018 (T, R), 2021 (T, R)
Fenpropathrin (185)	1993 (T, R), 2006 (R), 2012 (T), 2014 (R)
Fenpropidin (340)	2024 (T, R)
Fenpropimorph (188)	1994 (T), 1995 (R), 1999 (R), 2001 (T), 2004 (T), 2016 (T), 2017 (T, R)
Fenpyrazamine (298)	2017 (R, T)
Fenpyroximate (193)	1995 (T, R), 1996 (corr. to 1995 report), 1999 (R), 2004 (T), 2007 (T), 2010 (R), 2013 (R), 2017 (T, R), 2018 (R), 2021 (T, R), 2024 (R)
Fensulfothion (038)	1972 (T, R), 1982 (T), 1983 (R)
Fenthion (039)	1971 (T, R), 1975 (T, R), 1977 (R), 1978 (T, R), 1979 (T), 1980 (T), 1983 (R), 1989 (R), 1995 (T, R, E), 1996 (corr. to 1995 report), 1997 (T), 2000 (R)
Fentin compounds (040)	1965 (T), 1970 (T, R), 1972 (R), 1986 (R), 1991 (T, R), 1993 (R), 1994 (R)
Fenvalerate (119)	1979 (T, R), 1981 (T, R), 1982 (T), 1984 (T, R), 1985 (R), 1986 (T, R), 1987 (R and corr. to 1986 report), 1988 (R), 1990 (R), 1991 (corr. to 1990 R evaluation), 2012 (T, R)
Ferbam	See Dithiocarbamates, 1965 (T), 1967 (T, R), 1996 (T, R)
Fipronil (202)	1997 (T), 2000 (T), 2001 (R), 2016 (R), 2021 (T, R), 2024 (R)
Fipronil-desulfinyl	1997 (T), 2021 (T, R)
Flonicamid (282)	2015 (T, R), 2016 (R), 2017 (R), 2019 (R)
Florpyrauxifen-benzyl (341)	2024 (T, R)

Florylpicoxamid (332)	2023 (T, R)
Fluazaindolizine (327)	2022 (T, R)
Fluazifop-P-butyl	2016 (T, R), 2019 (R)
Fluazinam (306)	2018 (T, R), 2023 (T, R), 2024 (T)
Flubendiamide (242)	2010 (T, R), 2024 (R)
Flucythrinate (152)	1985 (T, R), 1987 (R), 1988 (R), 1989 (R), 1990 (R), 1993 (R)
Fludioxonil (211)	2004 (T, R), 2006 (R), 2010 (R), 2012 (R), 2013 (R), 2018 (R), 2022 (T, R)
Fluensulfone (265)	2013 (T), 2014 (T, R), 2016 (T, R), 2017 (R), 2019 (R), 2021 (R)
Flufenoxuron (275)	2014 (T, R)
Fluindapyr (328)	2022 (T, R)
Flumethrin (195)	1996 (T, R)
Fluopicolide (235)	2009 (T, R), 2014 (R)
Fluopyram (243)	2010 (T, R), 2012 (R), 2014 (R), 2015 (R), 2017 (R), 2021 (R), 2023 (R), 2024 (R, corr. to 2023 report)
Fluoxapiprolin (342)	2024 (T, R)
Flupyradifurone (285)	2015 (T), 2016 (R), 2017 (R), 2019 (R), 2022 (R), 2024 (R)
Flusilazole (165)	1989 (T, R), 1990 (R), 1991 (R), 1993 (R), 1995 (T), 2007 (T, R)
Flutianil (319)	2021 (T, R)
Flutolanil (205)	2002 (T, R), 2013 (R)
Flutriafol (248)	2011 (T, R), 2015 (R), 2022 (R)
Fluxapyroxad (256)	2012 (T, R), 2015 (R), 2018 (T, R)
Folpet (041)	1969 (T, R), 1973 (T), 1974 (R), 1982 (T), 1984 (T, R), 1986 (T), 1987 (R), 1990 (T, R), 1991 (corr. to 1990 R evaluation), 1993 (T, R), 1994 (R), 1995 (T), 1997 (R), 1998 (R), 1999 (R), 2002 (T), 2004 (T), 2007 (T), 2024 (T, R)

Formothion (042)	1969 (T, R), 1972 (R), 1973 (T, R), 1978 (R), 1998 (R)
Fosetyl aluminium (302)	2017 (T, R), 2019 (R), 2024 (R)
Glufosinate-ammonium (175)	1991 (T, R), 1992 (corr. to 1991 report, Annex I), 1994 (R), 1998 (R), 1999 (T, R), 2012 (T, R), 2014 (R)
Glyphosate (158)	1986 (T, R), 1987 (R and corr. to 1986 report), 1988 (R), 1994 (R), 1997 (T, R), 2004 (T), 2005 (R), 2011 (T, R), 2013 (R), 2016 (T), 2019 (R)
Guazatine (114)	1978 (T, R), 1980 (R), 1997 (T, R)
Haloxyfop (194)	1995 (T, R), 1996 (R and corr. to 1995 report), 2001 (R), 2006 (T), 2009 (R)
Heptachlor (043)	1965 (T), 1966 (T, R), 1967 (R), 1968 (R), 1969 (R), 1970 (T, R), 1974 (R), 1975 (R), 1977 (R), 1987 (R), 1991 (T, R), 1992 (corr. to 1991 report, Annex I), 1993 (R), 1994 (R)
Hexachlorobenzene (044)	1969 (T, R), 1973 (T, R), 1974 (T, R), 1978 (T), 1985 (R)
Hexaconazole (170)	1990 (T, R), 1991 (R and corr. to 1990 R evaluation), 1993 (R)
Hexythiazox (176)	1991 (T, R), 1994 (R), 1998 (R), 2008 (T), 2009 (R), 2024 (R)
Hydrogen cyanide (045)	1965 (T, R)
Hydrogen phosphide (046)	1965 (T, R), 1966 (T, R), 1967 (R), 1969 (R), 1971 (R)
Imazalil (110)	1977 (T, R), 1980 (T, R), 1984 (T, R), 1985 (T, R), 1986 (T), 1988 (R), 1989 (R), 1991 (T), 1994 (R), 2000 (T), 2001 (T), 2005 (T), 2018 (T, R), 2021 (R)
Imazamox (276)	2014 (T, R), 2017 (R)
Imazapic (266)	2013 (T, R), 2015 (R)
Imazapyr (267)	2013 (T, R), 2015 (R), 2017 (R), 2023 (R)
Imazethapyr (289)	2016 (T, R)
Imidacloprid (206)	2001 (T), 2002 (R), 2006 (R), 2008 (R), 2012 (R), 2015 (R), 2017 (R)
Indoxacarb (216)	2005 (T, R), 2007 (R), 2009 (R), 2012 (R), 2013 (R), 2022 (R)

Inpyrfluxam(329)	2022 (T, R)
Isocycloseram (334)	2023 (T, R), 2024 (R, corr. to 2023 report)
Isoflucypram (330)	2022 (T, R), 2023 (T, R)
Iprodione (111)	1977 (T, R), 1980 (R), 1992 (T), 1994 (R), 1995 (T), 2001 (R), 2023 (T, R)
Isofenphos (131)	1981 (T, R), 1982 (T, R), 1984 (R), 1985 (R), 1986 (T, R), 1988 (R), 1992 (R)
Isofetamid (290)	2016 (T, R), 2018 (R)
Isoprothiolane (299)	2017 (T, R), 2021 (R), 2021 (T)
Isopyrazam (249)	2011 (T, R), 2017 (R)
Isotianil (335)	2023 (T, R)
Isoxaflutole (268)	2013 (T, R), 2021 (R)
Kresoxim-methyl (199)	1998 (T, R), 2001 (R), 2018 (T, R), 2019 (R)
Lead arsenate	1965 (T), 1968 (T, R)
Leptophos (088)	1974 (T, R), 1975 (T, R), 1978 (T, R)
Lindane (048)	1965 (T), 1966 (T, R), 1967 (R), 1968 (R), 1969 (R), 1970 (T, R, published as Annex VI to 1971 evaluations), 1973 (T, R), 1974 (R), 1975 (R), 1977 (T, R), 1978 (R), 1979 (R), 1989 (T, R), 1997 (T), 2002 (T), 2003 (R), 2004 (corr. to 2003 report), 2015 (R)
Lufenuron (286)	2015 (T, R), 2018 (R)
Malathion (049)	1965 (T), 1966 (T, R), 1967 (corr. to 1966 R evaluation), 1968 (R), 1969 (R), 1970 (R), 1973 (R), 1975 (R), 1977 (R), 1984 (R), 1997 (T), 1999 (R), 2000 (R), 2003 (T), 2004 (R), 2005 (R), 2008 (R), 2013 (R), 2016 (T)
Maleic hydrazide (102)	1976 (T, R), 1977 (T, R), 1980 (T), 1984 (T, R), 1996 (T), 1998 (R), 2024 (T, R)
Mancozeb (050)	1967 (T, R), 1970 (T, R), 1974 (R), 1977 (R), 1980 (T, R), 1993 (T, R), 2022 (T, R)
Mandestrobin (307)	2018 (T, R), 2019 (R)
Mandipropamid (231)	2008 (T, R), 2013 (R), 2018 (R), 2021 (R), 2022 (T, R)

Maneb	See Dithiocarbamates, 1965 (T), 1967 (T, R), 1987 (T), 1993 (T, R)
MCPA (257)	2012 (T, R)
Mecarbam (124)	1980 (T, R), 1983 (T, R), 1985 (T, R), 1986 (T, R), 1987 (R)
Mefentrifluconazole (320)	2021 (T), 2022 (R)
Mepiquat-chloride (336)	2023 (T, R)
Meptyldinocap (244)	2010 (T, R)
Mesotrione (277)	2014 (T, R), 2019 (T, R)
Metaflumizone (236)	2009 (T, R), 2019 (T, R)
Metalaxyl (138)	1982 (T, R), 1984 (R), 1985 (R), 1986 (R), 1987 (R), 1989 (R), 1990 (R), 1992 (R), 1995 (R), 2021 (T, R), 2022 (R)
Metalaxyl –M (212)	2002 (T), 2004 (R), 2021 (R)
Metconazole (313)	2019 (T, R), 2021(R)
Methacrifos (125)	1980 (T, R), 1982 (T), 1986 (T), 1988 (T), 1990 (T, R), 1992 (R)
Methamidophos (100)	1976 (T, R), 1979 (R), 1981 (R), 1982 (T, R), 1984 (R), 1985 (T), 1989 (R), 1990 (T, R), 1994 (R), 1996 (R), 1997 (R), 2002 (T), 2003 (R), 2004 (R, corr. to 2003 report)
Methidathion (051)	1972 (T, R), 1975 (T, R), 1979 (R), 1992 (T, R), 1994 (R), 1997 (T), 2022 (T, R)
Methiocarb (132)	1981 (T, R), 1983 (T, R), 1984 (T), 1985 (T), 1986 (R), 1987 (T, R), 1988 (R), 1998 (T), 1999 (R), 2005 (R)
Methomyl (094)	1975 (R), 1976 (R), 1977 (R), 1978 (R), 1986 (T, R), 1987 (R), 1988 (R), 1989 (T, R), 1990 (R), 1991 (R), 2001 (T, R), 2004 (R), 2008 (R)
Methoprene (147)	1984 (T, R), 1986 (R), 1987 (T and corr. to 1986 report), 1988 (R), 1989 (R), 2001 (T), 2005 (R), 2016 (R), 2019 (R), 2021 (R), 2024 (R)
Methoxychlor	1965 (T), 1977 (T)
Methoxyfenozide (209)	2003 (T, R), 2004 (corr. to 2003 report), 2006 (R), 2009 (R), 2012 (R), 2021 (R)

Methyl bromide (052)	See Bromomethane
Metrafenone (278)	2014 (T, R), 2016 (R)
Metiram (186)	1993 (T), 1995 (R)
Mevinphos (053)	1965 (T), 1972 (T, R), 1996 (T), 1997 (E, R), 2000 (R)
MGK (264)	1967 (T, R)
Monocrotophos (054)	1972 (T, R), 1975 (T, R), 1991 (T, R), 1993 (T), 1994 (R)
Myclobutanil (181)	1992 (T, R), 1997 (R), 1998 (R), (2001 (R)), 2014 (T, R)
Nabam	See Dithiocarbamates, 1965 (T), 1976 (T, R)
Natamycin (300)	2017 (T, R)
Nitrofen (140)	1983 (T, R)
Norflurazon (308)	2018 (T, R)
Novaluron (217)	2005 (T, R), 2010 (R), 2024 (R)
Omethoate (055)	1971 (T, R), 1975 (T, R), 1978 (T, R), 1979 (T), 1981 (T, R), 1984 (R), 1985 (T), 1986 (R), 1987 (R), 1988 (R), 1990 (R), 1998 (R)
Organomercury compounds	1965 (T), 1966 (T, R), 1967 (T, R)
Oxamyl (126)	1980 (T, R), 1983 (R), 1984 (T), 1985 (T, R), 1986 (R), 2002 (T, R), 2017 (T, R)
Oxathiapiprolin (291)	2016 (T, R), 2018 (R), 2023 (R)
Oxydemeton-methyl (166)	1965 (T, as demeton-S-methyl sulfoxide), 1967 (T), 1968 (R), 1973 (T, R), 1982 (T), 1984 (T, R), 1989 (T, R), 1992 (R), 1998 (R), 1999 (corr. to 1992 report), 2002 (T), 2004 (R)
Oxythioquinox	See Chinomethionat
Paclobutrazol (161)	1988 (T, R), 1989 (R)
Paraquat (057)	1970 (T, R), 1972 (T, R), 1976 (T, R), 1978 (R), 1981 (R), 1982 (T), 1985 (T), 1986 (T), 2003 (T), 2004 (R), 2009 (R)
Parathion (058)	1965 (T), 1967 (T, R), 1969 (R), 1970 (R), 1984 (R), 1991 (R), 1995 (T, R), 1997 (R), 2000 (R)
Parathion-methyl (059)	1965 (T), 1968 (T, R), 1972 (R), 1975 (T, R), 1978 (T, R),

	1979 (T), 1980 (T), 1982 (T), 1984 (T, R), 1991 (R), 1992 (R), 1994 (R), 1995 (T), 2000 (R), 2003 (R)
Penconazole (182)	1992 (T, R), 1995 (R), 2015 (T), 2016 (R)
Pendimethalin (292)	2016 (T, R), 2019 (R), 2021 (R)
Penthiopyrad (253)	2011 (T), 2012 (R), 2013 (R), 2019 (R)
Permethrin (120)	1979 (T, R), 1980 (R), 1981 (T, R), 1982 (R), 1983 (R), 1984 (R), 1985 (R), 1986 (T, R), 1987 (T), 1988 (R), 1989 (R), 1991 (R), 1992 (corr. to 1991 report), 1999 (T), 2023 (T, R), 2024 (T)
2-Phenylphenol (056)	1969 (T, R), 1975 (R), 1983 (T), 1985 (T, R), 1989 (T), 1990 (T, R), 1999 (T, R), 2002 (R)
Phenothrin (127)	1979 (R), 1980 (T, R), 1982 (T), 1984 (T), 1987 (R), 1988 (T, R)
Phenthoate (128)	1980 (T, R), 1981 (R), 1984 (T)
Phorate (112)	1977 (T, R), 1982 (T), 1983 (T), 1984 (R), 1985 (T), 1990 (R), 1991 (R), 1992 (R), 1993 (T), 1994 (T), 1996 (T), 2004 (T), 2005 (R), 2012 (R), 2014 (R)
Phosalone (060)	1972 (T, R), 1975 (R), 1976 (R), 1993 (T), 1994 (R), 1997 (T), 1999 (R), 2001 (T)
Phosmet (103)	1976 (R), 1977 (corr. to 1976 R evaluation), 1978 (T, R), 1979 (T, R), 1981 (R), 1984 (R), 1985 (R), 1986 (R), 1987 (R and corr. to 1986 R evaluation), 1988 (R), 1994 (T), 1997 (R), 1998 (T), 2002 (R), 2003 (R), 2007 (R), 2024 (T, R)
Phosphine	See Hydrogen phosphide
Phosphamidon (061)	1965 (T), 1966 (T), 1968 (T, R), 1969 (R), 1972 (R), 1974 (R), 1982 (T), 1985 (T), 1986 (T)
Phosphonic acid (301)	2017 (T, R), 2024 (R)
Phoxim (141)	1982 (T), 1983 (R), 1984 (T, R), 1986 (R), 1987 (R), 1988 (R)
Picoxystrobin (258)	2012 (T, R), 2013 (R), 2016 (R), 2017 (R), 2019 (R)
Pinoxaden (293)	2016 (T, R)
Piperonyl butoxide (062)	1965 (T, R), 1966 (T, R), 1967 (R), 1969 (R), 1972 (T, R),

	1992 (T, R), 1995 (T), 2001 (R), 2002 (R), 2023 (R)
Pirimicarb (101)	1976 (T, R), 1978 (T, R), 1979 (R), 1981 (T, R), 1982 (T), 1985 (R), 2004 (T), 2006 (R)
Pirimiphos-methyl (086)	1974 (T, R), 1976 (T, R), 1977 (R), 1979 (R), 1983 (R), 1985 (R), 1992 (T), 1994 (R), 2003 (R), 2004 (R, corr. to 2003 report), 2006 (T)
Prochloraz (142)	1983 (T, R), 1985 (R), 1987 (R), 1988 (R), 1989 (R), 1990 (R), 1991 (corr. to 1990 report, Annex I, and R evaluation), 1992 (R), 2001 (T), 2004 (R), 2009 (R), 2024 (R)
Procymidone (136)	1981 (R), 1982 (T), 1989 (T, R), 1990 (R), 1991 (corr. to 1990 Annex I), 1993 (R), 1998 (R), 2007 (T)
Profenofos (171)	1990 (T, R), 1992 (R), 1994 (R), 1995 (R), 2007 (T), 2008 (R), 2011 (R), 2018 (R)
Propamocarb (148)	1984 (T, R), 1986 (T, R), 1987 (R), 2005 (T), 2006 (R), 2014 (R), 2018 (R)
Propargite (113)	1977 (T, R), 1978 (R), 1979 (R), 1980 (T, R), 1982 (T, R), 1999 (T), 2002 (R), 2006 (R)
Propham (183)	1965 (T), 1992 (T, R)
Propiconazole (160)	1987 (T, R), 1991 (R), 1994 (R), 2004 (T), 2006 (R), 2007 (R), 2013 (R), 2014 (R), 2015 (R), 2017 (R), 2018 (R), 2023 (R), 2024 (R)
Propineb	1977 (T, R), 1980 (T), 1983 (T), 1984 (R), 1985 (T, R), 1993 (T, R), 2004 (R)
Propoxur (075)	1973 (T, R), 1977 (R), 1981 (R), 1983 (R), 1989 (T), 1991 (R), 1996 (R)
Propylene oxide (250)	2011 (T, R), 2017 (T, R)
Propylenethiourea (PTU, 150)	1993 (T, R), 1994 (R), 1999 (T)
Prothioconazole (232)	2008 (T, R), 2009 (R), 2014 (R), 2017 (R), 2021 (R)
Pydiflumetofen (309)	2018 (T, R), 2019 (R), 2021 (R), 2024 (T, R)
Pyflubumide (314)	2019 (T, R)
Pymetrozine (279)	2014 (T, R)
Pyraclostrobin (210)	2003 (T), 2004 (R), 2006 (R), 2011 (R), 2012 (R), 2014 (R),

	2018 (T, R)
Pyrasulfotole (321)	2021 (T, R)
Pyraziflumid (322)	2021 (T, R)
Pyrazophos (153)	1985 (T, R), 1987 (R), 1992 (T, R), 1993 (R)
Pyrethrins (063)	1965 (T), 1966 (T, R), 1967 (R), 1968 (R), 1969 (R), 1970 (T), 1972 (T, R), 1974 (R), 1999 (T), 2000 (R), 2003 (T, R), 2005 (R), 2023 (–)
Pyridate (315)	2019 (T), 2022 (R)
Pyrifluquinazon (316)	2019 (T, R)
Pyrimethanil (226)	2007 (T, R), 2013 (R)
Pyriofenone (310)	2018 (T, R), 2019 (R)
Pyriproxyfen (200)	1999 (R, T), 2000 (R), 2001 (T), 2018 (R), 2019 (R)
Quinclorac (287)	2015 (T, R), 2017 (R), 2022 (R)
Quinoxyfen (223)	2006 (T, R), 2021 (R)
Quintozene (064)	1969 (T, R), 1973 (T, R), 1974 (R), 1975 (T, R), 1976 (Annex I, corr. to 1975 R evaluation), 1977 (T, R), 1995 (T, R), 1998 (R), 2022 (T, R)
Saflufenacil (251)	2011 (T, R), 2016 (R), 2017 (R)
Sedaxane (259)	2012 (T, R), 2014 (R)
Spices	2004 (R), 2005 (R), 2007 (R), 2010 (R), 2015 (R), 2019 (R)
Spinetoram (233)	2008 (T, R), 2012 (R), 2017 (R), 2021 (R)
Spinosad (203)	2001 (T, R), 2004 (R), 2008 (R), 2011 (R), 2024 (R)
Spirodiclofen (237)	2009 (T, R)
Spiromesifen (294)	2016 (T, R), 2021 (R), 2022 (R)
Spiropidion (323)	2021 (T, R)
Spirotetramat (234)	2008 (T, R), 2011 (R), 2012 (R), 2013 (R), 2015 (R), 2019 (R)
Sulfoxaflor (252)	2011 (T, R), 2013 (R), 2014 (R), 2016 (R), 2018 (R), 2021 (R)

Sulfuryl fluoride (218)	2005 (T, R)
2,4,5-T (121)	1970 (T, R), 1979 (T, R), 1981 (T)
Tebuconazole (189)	1994 (T, R), 1996 (corr. to Annex II of 1995 report), 1997 (R), 2008 (R), 2010 (T), 2011 (R), 2015 (R), 2017 (R), 2019 (R), 2021 (R), 2024 (R)
Tebufenozide (196)	1996 (T, R), 1997 (R), 1999 (R), 2001 (T, R), 2003 (T), 2024 (R)
Tecnazine (115)	1974 (T, R), 1978 (T, R), 1981 (R), 1983 (T), 1987 (R), 1989 (R), 1994 (T, R)
Teflubenzuron (190)	1994 (T), 1996 (R), 2016 (T, R)
Temephos	2006 (T)
Terbufos (167)	1989 (T, R), 1990 (T, R), 2003 (T), 2005 (R)
Tetraniliprole (324)	2021 (T), 2022 (T, R), 2023 (R), 2024 (R)
Thiabendazole (065)	1970 (T, R), 1971 (R), 1972 (R), 1975 (R), 1977 (T, R), 1979 (R), 1981 (R), 1997 (R), 2000 (R), 2006 (T, R), 2019 (T, R)
Thiacloprid (223)	2006 (T, R)
Thiamethoxam (245)	2010 (T, R), 2011 (R), 2012 (R), 2014 (R), 2021 (R), 2023 (R)
Thiodicarb (154)	1985 (T, R), 1986 (T), 1987 (R), 1988 (R), 2000 (T), 2001 (R)
Thiometon (076)	1969 (T, R), 1973 (T, R), 1976 (R), 1979 (T, R), 1988 (R)
Thiophanate-methyl (077)	1973 (T, R), 1975 (T, R), 1977 (T), 1978 (R), 1988 (R), 2002 (R), 1990 (R), 1994 (R), 1995 (T, E), 1998 (T, R), 2006 (T), 2017 (T), 2023 (T, R)
Thiram (105)	See Dithiocarbamates, 1965 (T), 1967 (T, R), 1970 (T, R), 1974 (T), 1977 (T), 1983 (R), 1984 (R), 1985 (T, R), 1987 (T), 1988 (R), 1989 (R), 1992 (T), 1996 (R)
Tioxazafen (211)	2018 (T, R)
Tolclofos-methyl (191)	1994 (T, R), 1996 (corr. to Annex II of 1995 report), 2019 (T, R)

Tolfenpyrad (269)	2013 (T), 2016 (R)
Tolylfluanid (162)	1988 (T, R), 1990 (R), 1991 (corr. to 1990 report), 2002 (T, R), 2003 (R)
Toxaphene	See Camphechlor
Triadimefon (133)	1979 (R), 1981 (T, R), 1983 (T, R), 1984 (R), 1985 (T, R), 1986 (R), 1987 (R and corr. to 1986 R evaluation), 1988 (R), 1989 (R), 1992 (R), 1995 (R), 2004 (T), 2007 (R)
Triadimenol (168)	1989 (T, R), 1992 (R), 1995 (R), 2004 (T), 2007 (R), 2014 (R)
Triazolylalanine	1989 (T, R)
Triazophos (143)	1982 (T), 1983 (R), 1984 (corr. to 1983 report, Annex I), 1986 (T, R), 1990 (R), 1991 (T and corr. to 1990 R evaluation), 1992 (R), 1993 (T, R), 2002 (T), 2007 (R), 2010 (R), 2013 (R)
Trichlorfon (066)	1971 (T, R), 1975 (T, R), 1978 (T, R), 1987 (R)
Trichloronat	1971 (T, R)
Trichloroethylene	1968 (R)
Tricyclazole (337)	2023 (T, R)
Tricyclohexyltin hydroxide	See Cyhexatin
Trifloxystrobin (213)	2004 (T, R), 2012 (R), 2015 (R), 2017 (R), 2021 (R)
Triflumezopyrim (303)	2017 (T, R)
Triflumuron (317)	2022 (T, R)
Triflumizole (270)	2013 (T, R)
Triforine (116)	1977 (T), 1978 (T, R), 1997 (T), 2004 (R), 2014 (T, R)
Trinexapac-ethyl (271)	2013 (T, R), 2021(T, R)
Triphenyltin compounds	See Fentin compounds
Vamidothion (078)	1973 (T, R), 1982 (T), 1985 (T, R), 1987 (R), 1988 (T), 1990 (R), 1992 (R)
Vinclozolin (159)	1986 (T, R), 1987 (R and corr. to 1986 report and R evaluation), 1988 (T, R), 1989 (R), 1990 (R), 1992 (R), 1995 (T)

Zeta-cypermethrin (118)	2023 (R)
Zineb (105)	See Dithiocarbamates, 1965 (T), 1967 (T, R), 1993 (T)
Ziram (105)	See Dithiocarbamates, 1965 (T), 1967 (T, R), 1996 (T, R)
Zoxamide (227)	2007 (T, R), 2009 (R)

Annex 3. International Estimated Daily Intakes (IEDIs) of pesticide residues

Table A3.1 International Estimated Daily Intakes (IEDIs) of pesticide residues

ACETAMIPRID (246) International Estimated Daily Intake (IEDI) ADI = 0–0.07 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as ug/person/day									
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FC 0001	Group of citrus fruit, raw (incl. kumquat commodities)	RAC	0.25	32.25	8.06	11.67	2.92	16.70	4.18	76.01	19.00	33.90	8.48	92.97	23.24
JF 0001	Group of citrus fruit, juice	PP	0.03	1.30	0.04	2.37	0.07	0.22	0.01	13.88	0.42	0.75	0.02	2.63	0.08
FP 0009	Group of pome fruits, raw (incl. apple cider, excl. apple juice)	RAC	0.225	19.35	4.35	34.06	7.66	17.87	4.02	25.74	5.79	7.69	1.73	56.85	12.79
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.2	0.32	0.06	3.07	0.61	0.07	0.01	5.00	1.00	0.29	0.06	5.57	1.11
FS 0013	Subgroup of cherries, raw	RAC	0.45	0.92	0.41	9.15	4.12	0.01	0.00	0.61	0.27	0.06	0.03	6.64	2.99
FS 0014	Subgroup of plums, raw	RAC	0.04	2.40	0.10	8.60	0.34	0.06	0.00	2.52	0.10	0.58	0.02	4.16	0.17
DF 0014	Plums, dried (prunes)	PP	0.12	0.09	0.01	0.06	0.01	0.01	0.00	0.18	0.02	0.04	0.00	0.06	0.01
–	Peaches and nectarines, raw	RAC	0.2	2.87	0.57	2.21	0.44	0.15	0.03	5.94	1.19	1.47	0.29	15.66	3.13
FB 2005	Subgroup of caneberries, raw	RAC	0.64	0.42	0.27	1.05	0.67	0.01	0.01	0.02	0.01	0.02	0.01	1.24	0.79
FB 2006	Subgroup of bush berries, raw (including processed)	RAC	0.64	0.53	0.34	1.31	0.84	0.40	0.26	1.66	1.06	0.01	0.01	0.99	0.63
FB 2007	Subgroup of large shrub/tree berries, raw (including processed)	RAC	0.64	0.62	0.40	0.33	0.21	0.34	0.22	1.42	0.91	0.01	0.01	1.51	0.97
FB 0269	Grapes, raw (incl. must, incl. wine, excl. dried, excl.	RAC	0.085	13.94	1.18	26.46	2.25	2.79	0.24	18.58	1.58	8.54	0.73	59.95	5.10

ACETAMIPRID (246) International Estimated Daily Intake (IEDI) ADI = 0–0.07 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
	juice)														
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.08	0.51	0.04	0.51	0.04	0.01	0.00	1.27	0.10	0.12	0.01	2.07	0.17
JF 0269	Grape juice (from wine grapes)	PP	0.13	0.14	0.02	0.29	0.04	0.05	0.01	0.30	0.04	0.24	0.03	0.05	0.01
FB 0265	Cranberry, raw	RAC	0.64	0.02	0.01	0.01	0.01	NC	–	0.03	0.02	0.01	0.01	0.01	0.01
FB 0275	Strawberry, raw	RAC	0.1	0.70	0.07	2.01	0.20	0.04	0.00	1.36	0.14	0.37	0.04	2.53	0.25
VA 0381	Garlic, raw	RAC	0.01	2.29	0.02	5.78	0.06	0.11	0.00	3.69	0.04	1.65	0.02	3.91	0.04
–	Onions, dry, raw	RAC	0.01	29.36	0.29	37.50	0.38	3.56	0.04	34.78	0.35	18.81	0.19	43.38	0.43
–	Onions, green, raw	RAC	0.38	2.45	0.93	1.49	0.57	1.02	0.39	2.60	0.99	0.60	0.23	2.03	0.77
VB 0042	Subgroup of flowerhead brassica, raw	RAC	0.02	2.54	0.05	0.49	0.01	0.01	0.00	3.57	0.07	7.79	0.16	3.12	0.06
VB 0041	Cabbages, head, raw	RAC	0.02	2.73	0.05	27.92	0.56	0.55	0.01	4.47	0.09	4.27	0.09	10.25	0.21
VC 0424	Cucumber, raw	RAC	0.057	8.01	0.46	30.66	1.75	1.45	0.08	19.84	1.13	0.27	0.02	34.92	1.99
VC 0425	Gherkin, raw	RAC	0.05	1.73	0.09	6.64	0.33	0.31	0.02	4.29	0.21	0.29	0.01	7.56	0.38
VC 0431	Squash, summer (courgette, marrow, zucchetti, zucchini), raw	RAC	0.05	0.78	0.04	2.06	0.10	0.30	0.02	1.61	0.08	2.25	0.11	2.36	0.12
VC 2040	Subgroup of melons, pumpkins and winter squashes	RAC	0.05	42.62	2.13	46.85	2.34	4.21	0.21	67.02	3.35	12.84	0.64	110.47	5.52
VO 0448	Tomato, raw (incl. juice, incl. canned, excl. paste)	RAC	0.04	42.41	1.70	76.50	3.06	10.69	0.43	85.07	3.40	24.98	1.00	203.44	8.14

ACETAMIPRID (246) International Estimated Daily Intake (IEDI) ADI = 0–0.07 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.09	2.34	0.21	1.33	0.12	1.57	0.14	4.24	0.38	0.34	0.03	2.83	0.25
VO 0051	Subgroup of peppers, raw (incl. dried sweet peppers, excl. dried chili peppers), incl. okra	RAC	0.04	10.45	0.42	13.74	0.55	13.81	0.55	14.53	0.58	15.25	0.61	27.93	1.12
VO 2046	Subgroup of eggplants	RAC	0.04	5.58	0.22	4.31	0.17	0.89	0.04	9.31	0.37	13.64	0.55	20.12	0.80
VL 0460	Amaranth leaves, raw (i.e. bledo)	RAC	0.64	1.09	0.70	1.94	1.24	1.20	0.77	2.91	1.86	NC	–	1.41	0.90
VL 0464	Chard, raw (i.e. beet leaves; silver beet)	RAC	0.64	0.40	0.26	0.70	0.45	0.44	0.28	1.06	0.68	4.66	2.98	0.51	0.33
VL 0465	Chervil, raw	RAC	0.64	0.19	0.12	0.34	0.22	0.21	0.13	0.52	0.33	NC	–	0.25	0.16
VL 2752	Chrysanthemum, edible leaved	RAC	0.64	0.02	0.01	0.04	0.03	0.02	0.01	0.06	0.04	NC	–	0.03	0.02
VL 0470	Corn salad (lambs lettuce)	RAC	0.64	0.64	0.41	1.13	0.72	0.70	0.45	1.70	1.09	NC	–	0.82	0.52
VL 0474	Dandelion, raw (i.e. laiteron, pissenlit)	RAC	0.64	0.13	0.08	0.23	0.15	0.14	0.09	0.34	0.22	1.44	0.92	0.16	0.10
VL 0476	Endive, raw (i.e. scarole)	RAC	0.64	0.03	0.02	0.02	0.01	0.01	0.01	0.40	0.26	0.05	0.03	0.39	0.25
VL 0483	Lettuce, leaf, raw	RAC	0.64	0.53	0.34	0.36	0.23	0.16	0.10	6.21	3.97	1.90	1.22	6.05	3.87
VL 2765	Perilla leaves (sesame leaves)	RAC	0.64	0.15	0.10	0.27	0.17	0.17	0.11	0.40	0.26	NC	–	0.19	0.12
VL 0492	Purslane, raw	RAC	0.64	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	NC	–	0.01	0.01
VL 0502	Spinach, raw	RAC	0.51	0.74	0.38	0.22	0.11	0.02	0.01	0.91	0.46	0.04	0.02	2.92	1.49
VL 0503	Spinach, Indian, raw (i.e. vine spinach)	RAC	0.64	0.01	0.01	0.02	0.01	0.02	0.01	0.04	0.03	0.16	0.10	0.02	0.01
VL 0485	Mustard greens, raw (i.e. Indian mustard, amsoi,	RAC	2	0.03	0.06	0.31	0.62	0.01	0.02	0.05	0.10	0.47	0.94	0.11	0.22

ACETAMIPRID (246) International Estimated Daily Intake (IEDI) ADI = 0–0.07 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
	mustard cabbage)														
VP 0061	Beans with pods (Phaseolus spp): (immature pods + succulent seeds)	RAC	0.01	0.68	0.01	NC	–	NC	–	0.39	0.00	0.22	0.00	0.49	0.00
VP 2062	Subgroup of succulent beans without pods (all commodities within this group)	RAC	0.03	5.07	0.15	1.02	0.03	0.49	0.01	1.78	0.05	1.19	0.04	8.57	0.26
VP 0064	Peas without pods (Pisum spp) (succulent seeds)	RAC	0.03	1.97	0.06	0.51	0.02	0.02	0.00	0.79	0.02	3.68	0.11	3.80	0.11
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.025	2.39	0.06	1.61	0.04	10.47	0.26	1.84	0.05	12.90	0.32	7.44	0.19
VD 0523	Broad bean, dry, raw (incl. horse-bean, field bean) (Vicia faba)	RAC	0.025	1.27	0.03	0.01	0.00	0.12	0.00	2.49	0.06	0.23	0.01	5.54	0.14
VD 0527	Cowpea, dry, raw (Vigna sinensis, Dolichos sinensis)	RAC	0.025	0.05	0.00	NC	–	1.74	0.04	0.01	0.00	0.01	0.00	0.07	0.00
VD 0541	Soya bean, dry, raw (incl. paste, incl. curd, incl. oil, incl. sauce)	RAC	0.01	72.79	0.73	59.05	0.59	20.55	0.21	74.20	0.74	61.12	0.61	73.24	0.73
–	Beans (dry) NES: including inter alia lablab or hyacinth bean (Dolichos spp.); jack or sword bean (Canavalia spp.); winged bean (Psophocarpus tetragonolobus); guar bean (Cyamopsis tetragonoloba); velvet bean (Stizolobium spp.); yam bean (Pachyrrhizus erosus)	RAC	0.025	1.70	0.04	0.01	0.00	3.00	0.08	1.80	0.05	1.64	0.04	1.33	0.03
VD 2066	Subgroup of dry peas, raw	RAC	0.025	9.09	0.23	3.35	0.08	1.06	0.03	9.48	0.24	15.11	0.38	10.58	0.26
VS 0624	Celery	RAC	0.3	2.14	0.64	3.79	1.14	2.35	0.71	5.69	1.71	0.02	0.01	2.75	0.83
VS 0621	Asparagus, raw	RAC	0.26	0.01	0.00	0.01	0.00	0.01	0.00	0.03	0.01	0.07	0.02	0.21	0.05

ACETAMIPRID (246) International Estimated Daily Intake (IEDI) ADI = 0–0.07 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
GC 0447	Sweet corn on the cob, raw (incl. frozen kernels, incl. canned kernels)	RAC	0.01	0.14	0.00	0.94	0.01	5.70	0.06	2.61	0.03	1.94	0.02	0.22	0.00
TN 0660	Almonds, nutmeat	RAC	0.01	1.38	0.01	0.08	0.00	0.01	0.00	1.00	0.01	0.06	0.00	0.81	0.01
TN 0662	Brazil nuts, nutmeat	RAC	0.01	0.01	0.00	0.01	0.00	0.03	0.00	0.02	0.00	0.02	0.00	0.01	0.00
TN 0295	Cashew nuts, nutmeat	RAC	0.01	0.01	0.00	0.02	0.00	0.24	0.00	0.47	0.00	0.32	0.00	0.05	0.00
TN 0664	Chestnut, raw	RAC	0.01	0.03	0.00	0.02	0.00	0.01	0.00	0.31	0.00	0.09	0.00	0.67	0.01
TN 0665	Coconut, nutmeat (incl. copra, incl. desiccated, incl. oil)	RAC	0.01	1.73	0.02	1.20	0.01	6.63	0.07	10.18	0.10	13.07	0.13	2.98	0.03
TN 0666	Hazelnuts, nutmeat	RAC	0.01	0.03	0.00	0.13	0.00	0.01	0.00	0.11	0.00	0.01	0.00	1.11	0.01
TN 0669	Macadamia nuts, nutmeat (i.e. Queensland nuts)	RAC	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.04	0.00	NC	–	0.03	0.00
TN 0672	Pecan, nutmeat	RAC	0.01	0.05	0.00	0.05	0.00	0.02	0.00	0.14	0.00	0.09	0.00	0.13	0.00
TN 0673	Pine nut, nutmeat (i.e. pignolia nuts)	RAC	0.01	0.18	0.00	0.18	0.00	0.08	0.00	0.49	0.00	0.25	0.00	0.43	0.00
TN 0675	Pistachio nut, nutmeat	RAC	0.33	0.41	0.14	0.07	0.02	0.01	0.00	0.85	0.28	0.02	0.01	1.08	0.36
TN 0678	Walnut, nutmeat	RAC	0.01	0.23	0.00	1.49	0.01	0.01	0.00	0.33	0.00	0.07	0.00	2.06	0.02
OR 0691	Cotton seed oil, edible	PP	0.004	3.22	0.01	1.54	0.01	1.01	0.00	0.74	0.00	1.12	0.00	2.93	0.01
HS 0093	Group of spices (including processed)	RAC	0.57	1.75	1.00	1.10	0.63	1.33	0.76	5.98	3.41	2.95	1.68	1.55	0.88
HS 0444	Peppers, chili, dried	PP	0.4	0.42	0.17	0.53	0.21	0.84	0.34	0.50	0.20	0.95	0.38	0.37	0.15
MM 0095	Meat from mammals other than marine mammals,	RAC	0.022	24.96	0.55	57.95	1.27	16.70	0.37	38.38	0.84	26.46	0.58	29.00	0.64

ACETAMIPRID (246) International Estimated Daily Intake (IEDI) ADI = 0–0.07 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as ug/person/day								
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
	raw (incl. prepared meat) – 80% as muscle														
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.017	6.24	0.11	14.49	0.25	4.18	0.07	9.60	0.16	6.62	0.11	7.25	0.12
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.017	3.29	0.06	6.14	0.10	0.82	0.01	1.57	0.03	2.23	0.04	1.07	0.02
MO 0105	Edible offal (mammalian), raw	RAC	0.11	4.79	0.53	9.68	1.06	2.97	0.33	5.49	0.60	3.84	0.42	5.03	0.55
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.019	289.65	5.50	485.88	9.23	26.92	0.51	239.03	4.54	199.91	3.80	180.53	3.43
PM 0110	Poultry meat, raw (incl. prepared)	RAC	0	14.63	0.00	29.76	0.00	8.04	0.00	129.68	0.00	25.04	0.00	35.66	0.00
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.01	0.12	0.00	0.12	0.00	0.11	0.00	5.37	0.05	0.24	0.00	0.10	0.00
PE 0112	Eggs, raw (incl. dried)	RAC	0	7.84	0.00	23.08	0.00	2.88	0.00	14.89	0.00	9.81	0.00	14.83	0.00
	Total intake (ug/person) =				35.1		49.1		16.8		65.2		30.0		88.1
	Body weight per region (kg bw) =				60		60		60		60		60		60
	ADI (ug/person) =				4200		4200		4200		4200		4200		4200
	%ADI =				0.8%		1.2%		0.4%		1.6%		0.7%		2.1%
	Rounded %ADI =				1%		1%		0%		2%		1%		2%

ACETAMIPRID (246) International Estimated Daily Intake (IEDI) ADI = 0–0.07 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FC 0001	Group of citrus fruit, raw (incl. kumquat commodities)	RAC	0.25	38.66	9.67	54.93	13.73	26.36	6.59	51.46	12.87	51.06	12.77	466.36	116.59
JF 0001	Group of citrus fruit, juice	PP	0.03	36.84	1.11	3.75	0.11	0.30	0.01	21.62	0.65	21.82	0.65	46.67	1.40
FP 0009	Group of pome fruits, raw (incl. apple cider, excl. apple juice)	RAC	0.225	51.09	11.50	65.40	14.72	42.71	9.61	45.29	10.19	62.51	14.06	7.74	1.74
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.2	14.88	2.98	11.98	2.40	0.15	0.03	9.98	2.00	30.32	6.06	3.47	0.69
FS 0013	Subgroup of cherries, raw	RAC	0.45	1.40	0.63	4.21	1.89	0.04	0.02	2.93	1.32	1.50	0.68	NC	–
FS 0014	Subgroup of plums, raw	RAC	0.04	3.75	0.15	3.33	0.13	5.94	0.24	2.64	0.11	2.50	0.10	0.06	0.00
DF 0014	Plums, dried (prunes)	PP	0.12	0.61	0.07	0.35	0.04	0.05	0.01	0.35	0.04	0.49	0.06	0.13	0.02
–	Peaches and nectarines, raw	RAC	0.2	8.76	1.75	12.98	2.60	8.23	1.65	10.09	2.02	3.64	0.73	0.04	0.01
FB 2005	Subgroup of caneberries, raw	RAC	0.64	0.56	0.36	1.43	0.92	0.14	0.09	1.23	0.79	1.14	0.73	0.01	0.01
FB 2006	Subgroup of bush berries, raw (including processed)	RAC	0.64	1.31	0.84	5.50	3.52	0.01	0.01	2.57	1.64	0.82	0.52	2.15	1.38
FB 2007	Subgroup of large shrub/tree berries, raw (including processed)	RAC	0.64	8.26	5.29	0.14	0.09	0.07	0.04	0.13	0.08	0.19	0.12	1.87	1.20
FB 0269	Grapes, raw (incl. must, incl. wine, excl. dried, excl. juice)	RAC	0.085	128.64	10.93	97.04	8.25	7.74	0.66	43.94	3.73	88.68	7.54	8.80	0.75
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.08	3.09	0.25	1.51	0.12	0.03	0.00	1.38	0.11	4.26	0.34	0.42	0.03
JF 0269	Grape juice (from wine grapes)	PP	0.13	0.56	0.07	1.96	0.25	0.02	0.00	2.24	0.29	2.27	0.30	0.34	0.04

ACETAMIPRID (246) International Estimated Daily Intake (IEDI) ADI = 0–0.07 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FB 0265	Cranberry, raw	RAC	0.64	0.06	0.04	0.01	0.01	0.01	0.01	1.22	0.78	0.11	0.07	NC	–
FB 0275	Strawberry, raw	RAC	0.1	4.49	0.45	5.66	0.57	0.02	0.00	6.63	0.66	5.75	0.58	0.05	0.01
VA 0381	Garlic, raw	RAC	0.01	0.98	0.01	1.49	0.01	12.88	0.13	3.74	0.04	2.05	0.02	1.14	0.01
–	Onions, dry, raw	RAC	0.01	19.69	0.20	29.83	0.30	24.64	0.25	31.35	0.31	9.72	0.10	12.59	0.13
–	Onions, green, raw	RAC	0.38	1.55	0.59	0.74	0.28	1.05	0.40	3.74	1.42	0.94	0.36	6.45	2.45
VB 0042	Subgroup of flowerhead brassica, raw	RAC	0.02	9.50	0.19	6.77	0.14	NC	–	3.21	0.06	9.36	0.19	0.75	0.02
VB 0041	Cabbages, head, raw	RAC	0.02	8.97	0.18	27.12	0.54	1.44	0.03	24.96	0.50	4.55	0.09	11.23	0.22
VC 0424	Cucumber, raw	RAC	0.057	6.72	0.38	11.03	0.63	32.10	1.83	15.10	0.86	4.05	0.23	9.57	0.55
VC 0425	Gherkin, raw	RAC	0.05	0.41	0.02	5.89	0.29	NC	–	0.06	0.00	0.37	0.02	2.07	0.10
VC 0431	Squash, summer (courgette, marrow, zucchetti, zucchini), raw	RAC	0.05	NC	–	NC	–	5.48	0.27	NC	–	NC	–	1.03	0.05
VC 2040	Subgroup of melons, pumpkins and winter squashes	RAC	0.05	20.68	1.03	25.00	1.25	85.72	4.29	34.31	1.72	11.54	0.58	23.32	1.17
VO 0448	Tomato, raw (incl. juice, incl. canned, excl. paste)	RAC	0.04	44.88	1.80	55.49	2.22	35.44	1.42	75.65	3.03	27.00	1.08	9.61	0.38
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.09	4.96	0.45	3.20	0.29	0.15	0.01	1.61	0.14	6.88	0.62	0.52	0.05
VO 0051	Subgroup of peppers, raw (incl. dried sweet peppers, excl. dried chili peppers), incl. okra	RAC	0.04	6.39	0.26	15.53	0.62	19.13	0.77	10.53	0.42	8.29	0.33	5.25	0.21
VO 2046	Subgroup of eggplants	RAC	0.04	1.01	0.04	1.69	0.07	21.37	0.85	3.00	0.12	1.40	0.06	NC	–

ACETAMIPRID (246) International Estimated Daily Intake (IEDI) ADI = 0–0.07 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
VL 0460	Amaranth leaves, raw (i.e. bledo)	RAC	0.64	NC	–	NC	–	47.45	30.37	NC	–	NC	–	2.07	1.32
VL 0464	Chard, raw (i.e. beet leaves; Silver beet)	RAC	0.64	NC	–	NC	–	NC	–	NC	–	NC	–	0.75	0.48
VL 0465	Chervil, raw	RAC	0.64	NC	–	NC	–	8.39	5.37	NC	–	NC	–	0.37	0.24
VL 2752	Chrysanthemum, edible leaved	RAC	0.64	NC	–	NC	–	NC	–	0.32	0.20	NC	–	0.04	0.03
VL 0470	Corn salad (lambs lettuce)	RAC	0.64	1.41	0.90	4.28	2.74	NC	–	0.03	0.02	5.11	3.27	1.20	0.77
VL 0474	Dandelion, raw (i.e. laiteron, pissenlit)	RAC	0.64	0.05	0.03	0.01	0.01	NC	–	NC	–	0.01	0.01	0.24	0.15
VL 0476	Endive, raw (i.e. scarole)	RAC	0.64	0.21	0.13	0.93	0.60	NC	–	0.30	0.19	2.14	1.37	0.14	0.09
VL 0483	Lettuce, leaf, raw	RAC	0.64	14.50	9.28	11.76	7.53	13.14	8.41	19.50	12.48	4.81	3.08	2.23	1.43
VL 2765	Perilla leaves (Sesame leaves)	RAC	0.64	NC	–	NC	–	NC	–	2.23	1.43	NC	–	0.29	0.19
VL 0492	Purslane, raw	RAC	0.64	0.01	0.01	NC	–	NC	–	NC	–	NC	–	0.01	0.01
VL 0502	Spinach, raw	RAC	0.51	2.20	1.12	1.76	0.90	13.38	6.82	2.94	1.50	5.53	2.82	0.02	0.01
VL 0503	Spinach, Indian, raw (i.e. vine spinach)	RAC	0.64	NC	–	NC	–	NC	–	NC	–	NC	–	0.03	0.02
VL 0485	Mustard greens, raw (i.e. Indian mustard, amsoi, mustard cabbage)	RAC	2	NC	–	NC	–	NC	–	NC	–	NC	–	0.13	0.26
VP 0061	Beans with pods (Phaseolus spp): (immature pods + succulent seeds)	RAC	0.01	5.07	0.05	0.83	0.01	0.17	0.00	3.70	0.04	NC	–	NC	–
VP 2062	Subgroup of succulent beans without pods (all commodities within this group)	RAC	0.03	2.42	0.07	6.09	0.18	4.33	0.13	2.09	0.06	18.99	0.57	0.17	0.01

ACETAMIPRID (246) International Estimated Daily Intake (IEDI) ADI = 0–0.07 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
VP 0064	Peas without pods (Pisum spp) (succulent seeds)	RAC	0.03	10.72	0.32	1.99	0.06	2.72	0.08	4.26	0.13	4.23	0.13	NC	–
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.025	1.51	0.04	1.50	0.04	1.90	0.05	5.11	0.13	1.36	0.03	23.43	0.59
VD 0523	Broad bean, dry, raw (incl. horse-bean, field bean) (Vicia faba)	RAC	0.025	0.02	0.00	0.01	0.00	1.16	0.03	0.40	0.01	NC	–	0.06	0.00
VD 0527	Cowpea, dry, raw (Vigna sinensis, Dolichos sinensis)	RAC	0.025	NC	–	NC	–	0.16	0.00	0.01	0.00	NC	–	NC	–
VD 0541	Soya bean, dry, raw (incl. paste, incl. curd, incl. oil, incl. sauce)	RAC	0.01	106.33	1.06	117.78	1.18	42.12	0.42	195.70	1.96	222.52	2.23	80.47	0.80
–	Beans (dry) NES: including inter alia lablab or hyacinth bean (Dolichos spp.); jack or sword bean (Canavalia spp.); winged bean (Psophocarpus tetragonolobus); guar bean (Cyamopsis tetragonoloba); velvet bean (Stizolobium spp.); yam bean (Pachyrrhizus erosus)	RAC	0.025	0.01	0.00	NC	–	0.57	0.01	0.11	0.00	0.16	0.00	0.94	0.02
VD 2066	Subgroup of dry peas, raw	RAC	0.025	5.01	0.13	3.76	0.09	1.82	0.05	3.44	0.09	3.49	0.09	5.15	0.13
VS 0624	Celery	RAC	0.3	7.68	2.30	2.85	0.86	NC	–	3.34	1.00	16.83	5.05	4.04	1.21
VS 0621	Asparagus, raw	RAC	0.26	0.84	0.22	2.08	0.54	7.11	1.85	1.01	0.26	1.69	0.44	0.04	0.01
GC 0447	Sweet corn on the cob, raw (incl. frozen kernels, incl. canned kernels)	RAC	0.01	11.43	0.11	3.71	0.04	0.74	0.01	13.63	0.14	3.07	0.03	1.50	0.02
TN 0660	Almonds, nutmeat	RAC	0.01	0.81	0.01	2.21	0.02	0.03	0.00	1.02	0.01	1.47	0.01	NC	–
TN 0662	Brazil nuts, nutmeat	RAC	0.01	0.12	0.00	0.05	0.00	0.01	0.00	0.05	0.00	0.13	0.00	NC	–

ACETAMIPRID (246) International Estimated Daily Intake (IEDI) ADI = 0–0.07 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day								Intake as ug/person/day			
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
TN 0295	Cashew nuts, nutmeat	RAC	0.01	0.59	0.01	0.23	0.00	0.18	0.00	0.52	0.01	1.75	0.02	2.78	0.03
TN 0664	Chestnut, raw	RAC	0.01	0.34	0.00	0.21	0.00	1.14	0.01	0.52	0.01	0.09	0.00	NC	–
TN 0665	Coconut, nutmeat (incl. copra, incl. desiccated, incl. oil)	RAC	0.01	4.13	0.04	2.73	0.03	13.15	0.13	5.85	0.06	6.92	0.07	22.24	0.22
TN 0666	Hazelnuts, nutmeat	RAC	0.01	0.45	0.00	1.12	0.01	0.02	0.00	0.34	0.00	1.63	0.02	NC	–
TN 0669	Macadamia nuts, nutmeat (i.e. Queensland nuts)	RAC	0.01	NC	–	0.40	0.00	NC	–	NC	–	NC	–	0.07	0.00
TN 0672	Pecan, nutmeat	RAC	0.01	0.38	0.00	NC	–	NC	–	0.27	0.00	NC	–	0.26	0.00
TN 0673	Pine nut, nutmeat (i.e. pignolia nuts)	RAC	0.01	0.99	0.01	0.66	0.01	0.22	0.00	0.27	0.00	1.89	0.02	0.89	0.01
TN 0675	Pistachio nut, nutmeat	RAC	0.33	0.35	0.12	0.48	0.16	0.07	0.02	0.39	0.13	0.23	0.08	0.02	0.01
TN 0678	Walnut, nutmeat	RAC	0.01	0.34	0.00	0.84	0.01	0.28	0.00	0.39	0.00	0.45	0.00	NC	–
OR 0691	Cotton seed oil, edible	PP	0.004	1.68	0.01	0.66	0.00	1.13	0.00	1.18	0.00	0.89	0.00	0.37	0.00
HS 0093	Group of Spices (including processed)	RAC	0.57	1.07	0.61	1.20	0.68	1.44	0.82	1.74	0.99	6.31	3.60	2.61	1.49
HS 0444	Peppers, chili, dried	PP	0.4	0.11	0.04	0.21	0.08	0.36	0.14	0.21	0.08	0.25	0.10	0.15	0.06
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.022	112.02	2.46	120.71	2.66	63.46	1.40	88.99	1.96	96.24	2.12	41.02	0.90
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.017	28.01	0.48	30.18	0.51	15.86	0.27	22.25	0.38	24.06	0.41	10.25	0.17
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered	RAC	0.017	6.44	0.11	15.51	0.26	3.79	0.06	8.29	0.14	18.44	0.31	8.00	0.14

ACETAMIPRID (246) International Estimated Daily Intake (IEDI) ADI = 0–0.07 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
	fats)														
MO 0105	Edible offal (mammalian), raw	RAC	0.11	15.17	1.67	5.19	0.57	6.30	0.69	6.78	0.75	3.32	0.37	3.17	0.35
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.019	388.92	7.39	335.88	6.38	49.15	0.93	331.25	6.29	468.56	8.90	245.45	4.66
PM 0110	Poultry meat, raw (incl. prepared)	RAC	0	73.76	0.00	53.86	0.00	23.98	0.00	87.12	0.00	53.38	0.00	84.45	0.00
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.01	0.33	0.00	0.72	0.01	0.27	0.00	0.35	0.00	0.80	0.01	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0	25.84	0.00	29.53	0.00	28.05	0.00	33.19	0.00	36.44	0.00	8.89	0.00
	Total intake (ug/person) =				80.0		82.1		87.3		76.4		84.1		145.0
	Body weight per region (kg bw) =				60		60		55		60		60		60
	ADI (ug/person) =				4200		4200		3850		4200		4200		4200
	%ADI =				1.9%		2.0%		2.3%		1.8%		2.0%		3.5%
	Rounded %ADI =				2%		2%		2%		2%		2%		3%

ACETAMIPRID (246) International Estimated Daily Intake (IEDI) ADI = 0–0.07 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FC 0001	Group of citrus fruit, raw (incl. kumquat commodities)	RAC	0.25	20.93	5.23	2.35	0.59	30.71	7.68	0.15	0.04	4.45	1.11

ACETAMIPRID (246) International Estimated Daily Intake (IEDI) ADI = 0–0.07 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
JF 0001	Group of citrus fruit, juice	PP	0.03	0.11	0.00	0.29	0.01	13.55	0.41	0.14	0.00	0.33	0.01
FP 0009	Group of pome fruits, raw (incl. apple cider, excl. apple juice)	RAC	0.225	68.85	15.49	10.93	2.46	70.82	15.93	189.78	42.70	19.56	4.40
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.2	0.03	0.01	0.10	0.02	7.19	1.44	0.03	0.01	NC	–
FS 0013	Subgroup of cherries, raw	RAC	0.45	0.01	0.00	0.01	0.00	5.96	2.68	0.01	0.00	NC	–
FS 0014	Subgroup of plums, raw	RAC	0.04	0.07	0.00	0.01	0.00	15.56	0.62	0.01	0.00	NC	–
DF 0014	Plums, dried (prunes)	PP	0.12	0.01	0.00	0.01	0.00	0.37	0.04	0.01	0.00	NC	–
–	Peaches and nectarines, raw	RAC	0.2	0.02	0.00	0.01	0.00	7.47	1.49	0.01	0.00	NC	–
FB 2005	Subgroup of caneberries, raw	RAC	0.64	0.01	0.01	7.30	4.67	2.29	1.47	0.01	0.01	NC	–
FB 2006	Subgroup of bush berries, raw (including processed)	RAC	0.64	0.82	0.52	4.05	2.59	5.94	3.80	0.43	0.28	2.66	1.70
FB 2007	Subgroup of Large shrub/tree berries, raw (including processed)	RAC	0.64	0.71	0.45	7.32	4.68	NC	–	0.38	0.24	2.32	1.48
FB 0269	Grapes, raw (incl. must, incl. wine, excl. dried, excl. juice)	RAC	0.085	0.57	0.05	0.69	0.06	98.34	8.36	0.73	0.06	44.12	3.75
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.08	0.01	0.00	0.13	0.01	1.06	0.08	0.01	0.00	0.03	0.00
JF 0269	Grape juice (from wine grapes)	PP	0.13	0.01	0.00	0.01	0.00	0.41	0.05	0.01	0.00	NC	–
FB 0265	Cranberry, raw	RAC	0.64	NC	–	NC	–	0.03	0.02	NC	–	NC	–

ACETAMIPRID (246) International Estimated Daily Intake (IEDI) ADI = 0–0.07 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FB 0275	Strawberry, raw	RAC	0.1	0.01	0.00	0.01	0.00	3.35	0.34	0.01	0.00	0.01	0.00
VA 0381	Garlic, raw	RAC	0.01	0.82	0.01	2.06	0.02	3.79	0.04	0.03	0.00	0.29	0.00
–	Onions, dry, raw	RAC	0.01	9.01	0.09	20.24	0.20	30.90	0.31	9.61	0.10	2.11	0.02
–	Onions, green, raw	RAC	0.38	1.43	0.54	0.05	0.02	0.20	0.08	NC	–	6.30	2.39
VB 0042	Subgroup of flowerhead brassica, raw	RAC	0.02	0.02	0.00	0.02	0.00	4.86	0.10	0.01	0.00	NC	–
VB 0041	Cabbages, head, raw	RAC	0.02	3.82	0.08	2.99	0.06	49.16	0.98	0.01	0.00	NC	–
VC 0424	Cucumber, raw	RAC	0.057	0.68	0.04	1.81	0.10	10.40	0.59	0.01	0.00	0.04	0.00
VC 0425	Gherkin, raw	RAC	0.05	0.15	0.01	0.39	0.02	3.15	0.16	0.01	0.00	0.01	0.00
VC 0431	Squash, summer (courgette, marrow, zucchetti, zucchini), raw	RAC	0.05	0.09	0.00	1.01	0.05	NC	–	1.91	0.10	NC	–
VC 2040	Subgroup of melons, pumpkins and winter squashes	RAC	0.05	5.04	0.25	6.54	0.33	38.26	1.91	11.70	0.59	NC	–
VO 0448	Tomato, raw (incl. juice, incl. canned, excl. paste)	RAC	0.04	13.17	0.53	4.92	0.20	62.69	2.51	1.04	0.04	0.11	0.00
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.09	0.58	0.05	0.22	0.02	2.21	0.20	0.24	0.02	3.10	0.28
VO 0051	Subgroup of peppers, raw (incl. dried sweet peppers, excl. dried chili peppers), incl. okra	RAC	0.04	15.20	0.61	14.23	0.57	25.14	1.01	0.91	0.04	NC	–
VO 2046	Subgroup of eggplants	RAC	0.04	1.31	0.05	8.26	0.33	3.95	0.16	0.01	0.00	NC	–
VL 0460	Amaranth leaves, raw (i.e. bledo)	RAC	0.64	1.87	1.20	1.35	0.86	NC	–	1.27	0.81	2.53	1.62

ACETAMIPRID (246) International Estimated Daily Intake (IEDI) ADI = 0–0.07 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VL 0464	Chard, raw (i.e. beet leaves; silver beet)	RAC	0.64	0.68	0.44	0.49	0.31	NC	–	0.46	0.29	0.92	0.59
VL 0465	Chervil, raw	RAC	0.64	0.33	0.21	0.24	0.15	NC	–	0.22	0.14	0.45	0.29
VL 2752	Chrysanthemum, edible leaved	RAC	0.64	0.04	0.03	0.03	0.02	NC	–	0.03	0.02	0.05	0.03
VL 0470	Corn salad (lambs lettuce)	RAC	0.64	1.09	0.70	0.79	0.51	NC	–	0.74	0.47	1.47	0.94
VL 0474	Dandelion, raw (i.e. laiteron, pissenlit)	RAC	0.64	0.22	0.14	0.16	0.10	NC	–	0.15	0.10	0.29	0.19
VL 0476	Endive, raw (i.e. scarole)	RAC	0.64	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	NC	–
VL 0483	Lettuce, leaf, raw	RAC	0.64	0.29	0.19	0.03	0.02	6.71	4.29	0.01	0.01	NC	–
VL 2765	Perilla leaves (sesame leaves)	RAC	0.64	0.26	0.17	0.19	0.12	NC	–	0.18	0.12	0.35	0.22
VL 0492	Purslane, raw	RAC	0.64	0.01	0.01	0.01	0.01	NC	–	0.01	0.01	0.01	0.01
VL 0502	Spinach, raw	RAC	0.51	0.17	0.09	0.01	0.01	0.81	0.41	0.01	0.01	NC	–
VL 0503	Spinach, Indian, raw (i.e. vine spinach)	RAC	0.64	0.02	0.01	0.02	0.01	NC	–	0.02	0.01	0.03	0.02
VL 0485	Mustard greens, raw (i.e. Indian mustard, amsoi, mustard cabbage)	RAC	2	0.04	0.08	0.03	0.06	NC	–	0.01	0.02	NC	–
VP 0061	Beans with pods (Phaseolus spp): (immature pods + succulent seeds)	RAC	0.01	NC	–	NC	–	NC	–	NC	–	NC	–
VP 2062	Subgroup of succulent beans without pods (all commodities within this group)	RAC	0.03	0.37	0.01	3.14	0.09	4.88	0.15	0.01	0.00	NC	–
VP 0064	Peas without pods (Pisum spp) (succulent seeds)	RAC	0.03	0.21	0.01	0.02	0.00	5.51	0.17	0.02	0.00	NC	–

ACETAMIPRID (246) International Estimated Daily Intake (IEDI) ADI = 0–0.07 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.025	7.11	0.18	2.33	0.06	3.76	0.09	44.70	1.12	3.27	0.08
VD 0523	Broad bean, dry, raw (incl. horse-bean, field bean) (Vicia faba)	RAC	0.025	3.70	0.09	0.03	0.00	0.17	0.00	0.01	0.00	NC	–
VD 0527	Cowpea, dry, raw (Vigna sinensis, Dolichos sinensis)	RAC	0.025	12.77	0.32	0.99	0.02	0.01	0.00	4.33	0.11	NC	–
VD 0541	Soya bean, dry, raw (incl. paste, incl. curd, incl. oil, incl. sauce)	RAC	0.01	15.80	0.16	14.29	0.14	104.36	1.04	17.11	0.17	35.20	0.35
–	Beans (dry) NES: including inter alia lablab or hyacinth bean (Dolichos spp.); jack or sword bean (Canavalia spp.); winged bean (Psophocarpus tetragonolobus); guar bean (Cyamopsis tetragonoloba); velvet bean (Stizolobium spp.); yam bean (Pachyrrhizus erosus)	RAC	0.025	2.54	0.06	1.77	0.04	0.03	0.00	0.03	0.00	3.99	0.10
VD 2066	Subgroup of dry peas, raw	RAC	0.025	4.43	0.11	11.36	0.28	4.22	0.11	9.36	0.23	1.21	0.03
VS 0624	Celery	RAC	0.3	3.66	1.10	2.65	0.80	4.84	1.45	2.47	0.74	4.94	1.48
VS 0621	Asparagus, raw	RAC	0.26	0.01	0.00	0.01	0.00	0.17	0.04	0.01	0.00	NC	–
GC 0447	Sweet corn on the cob, raw (incl. frozen kernels, incl. canned kernels)	RAC	0.01	3.63	0.04	20.50	0.21	8.78	0.09	0.02	0.00	0.17	0.00
TN 0660	Almonds, nutmeat	RAC	0.01	0.01	0.00	0.01	0.00	0.61	0.01	0.01	0.00	NC	–
TN 0662	Brazil nuts, nutmeat	RAC	0.01	0.01	0.00	0.01	0.00	0.02	0.00	0.01	0.00	NC	–
TN 0295	Cashew nuts, nutmeat	RAC	0.01	0.91	0.01	0.14	0.00	0.11	0.00	0.01	0.00	NC	–

ACETAMIPRID (246) International Estimated Daily Intake (IEDI) ADI = 0–0.07 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
TN 0664	Chestnut, raw	RAC	0.01	0.01	0.00	0.01	0.00	0.75	0.01	0.01	0.00	NC	–
TN 0665	Coconut, nutmeat (incl. copra, incl. desiccated, incl. oil)	RAC	0.01	2.77	0.03	134.37	1.34	2.81	0.03	0.70	0.01	317.67	3.18
TN 0666	Hazelnuts, nutmeat	RAC	0.01	0.01	0.00	0.01	0.00	0.21	0.00	0.01	0.00	NC	–
TN 0669	Macadamia nuts, nutmeat (i.e. Queensland nuts)	RAC	0.01	0.04	0.00	0.05	0.00	NC	–	0.01	0.00	0.01	0.00
TN 0672	Pecan, nutmeat	RAC	0.01	0.15	0.00	0.22	0.00	0.31	0.00	0.01	0.00	0.01	0.00
TN 0673	Pine nut, nutmeat (i.e. pignolia nuts)	RAC	0.01	0.51	0.01	0.74	0.01	0.36	0.00	0.01	0.00	0.05	0.00
TN 0675	Pistachio nut, nutmeat	RAC	0.33	0.01	0.00	0.01	0.00	0.15	0.05	0.01	0.00	NC	–
TN 0678	Walnut, nutmeat	RAC	0.01	0.01	0.00	0.01	0.00	0.81	0.01	0.01	0.00	NC	–
OR 0691	Cotton seed oil, edible	PP	0.004	1.28	0.01	0.05	0.00	0.45	0.00	0.42	0.00	0.15	0.00
HS 0093	Group of spices (including processed)	RAC	0.57	1.85	1.05	5.61	3.20	1.99	1.13	0.54	0.31	1.46	0.83
HS 0444	Peppers, chili, dried	PP	0.4	0.58	0.23	1.27	0.51	1.21	0.48	0.12	0.05	NC	–
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.022	23.34	0.51	40.71	0.90	97.15	2.14	18.06	0.40	57.71	1.27
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.017	5.84	0.10	10.18	0.17	24.29	0.41	4.52	0.08	14.43	0.25
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.017	1.05	0.02	1.14	0.02	18.69	0.32	0.94	0.02	3.12	0.05
MO 0105	Edible offal (mammalian), raw	RAC	0.11	4.64	0.51	1.97	0.22	10.01	1.10	3.27	0.36	3.98	0.44

ACETAMIPRID (246) International Estimated Daily Intake (IEDI) ADI = 0–0.07 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.019	108.75	2.07	70.31	1.34	436.11	8.29	61.55	1.17	79.09	1.50
PM 0110	Poultry meat, raw (incl. prepared)	RAC	0	3.92	0.00	12.03	0.00	57.07	0.00	5.03	0.00	55.56	0.00
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.01	0.10	0.00	0.70	0.01	0.97	0.01	0.10	0.00	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0	3.84	0.00	4.41	0.00	27.25	0.00	1.13	0.00	7.39	0.00
	Total intake (ug/person) =				33.9		28.6		74.3		51.0		28.6
	Body weight per region (kg bw) =				60		60		60		60		60
	ADI (ug/person) =				4200		4200		4200		4200		4200
	%ADI =				0.8%		0.7%		1.8%		1.2%		0.7%
	Rounded %ADI =				1%		1%		2%		1%		1%

ACIBENZOLAR-S-METHYL (288) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as ug/person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FC 0001	Group of citrus fruit, raw (incl. citrus fruit juice, incl. kumquat commodities)	RAC	0.01	34.91	0.35	16.51	0.17	17.23	0.17	104.48	1.04	35.57	0.36	98.49	0.98
FP 0226	Apple, raw (incl. juice, incl. cider)	RAC	0.01	13.94	0.14	30.81	0.31	15.14	0.15	23.10	0.23	6.86	0.07	55.48	0.55

ACIBENZOLAR-S-METHYL (288) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FS 2001	Subgroup of peaches, raw (incl. dried apricots)	RAC	0.05	8.01	0.40	5.87	0.29	0.18	0.01	8.19	0.41	1.64	0.08	22.46	1.12
FB 2009	Subgroup of low growing berries, raw	RAC	0.045	0.71	0.03	2.02	0.09	0.04	0.00	1.39	0.06	0.37	0.02	2.53	0.11
FI 0327	Banana, raw (incl. plantains) (incl. dried)	RAC	0.02	5.23	0.10	6.94	0.14	99.45	1.99	32.47	0.65	48.30	0.97	24.70	0.49
FI 0341	Kiwifruit, raw	RAC	0.01	0.03	0.00	0.36	0.00	0.01	0.00	1.17	0.01	0.06	0.00	0.69	0.01
VA 2031	Subgroup of bulb onions	RAC	0.05	31.65	1.58	43.28	2.16	3.68	0.18	38.48	1.92	20.46	1.02	47.29	2.36
VB 0040	Group of brassica vegetables (excl. brassica leafy vegetables), raw	RAC	0.315	6.43	2.03	40.26	12.68	0.80	0.25	9.94	3.13	12.07	3.80	17.73	5.58
VC 0045	Group of fruiting vegetables, cucurbits, raw	RAC	0.175	53.14	9.30	86.21	15.09	6.28	1.10	92.76	16.23	15.64	2.74	155.30	27.18
VO 0448	Tomato, raw	RAC	0.09	41.73	3.76	75.65	6.81	10.66	0.96	82.87	7.46	24.75	2.23	200.93	18.08
–	Tomato, canned (& peeled)	PP	0.059	0.20	0.01	0.31	0.02	0.02	0.00	1.11	0.07	0.11	0.01	1.50	0.09
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.169	2.34	0.40	1.33	0.22	1.57	0.27	4.24	0.72	0.34	0.06	2.83	0.48
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.07	0.29	0.02	0.29	0.02	0.01	0.00	0.38	0.03	0.05	0.00	0.14	0.01
VL 0483	Lettuce, leaf, raw	RAC	0.18	0.53	0.10	0.36	0.06	0.16	0.03	6.21	1.12	1.90	0.34	6.05	1.09
VL 0502	Spinach, raw	RAC	0.285	0.74	0.21	0.22	0.06	0.02	0.01	0.91	0.26	0.04	0.01	2.92	0.83
VL 0054	Subgroup of leaves of brassicaceae, raw	RAC	0.585	2.63	1.54	9.27	5.42	1.86	1.09	5.82	3.40	19.53	11.43	4.90	2.87
VS 0623	Cardoon	RAC	0.073	0.24	0.02	0.43	0.03	0.27	0.02	0.64	0.05	NC	–	0.31	0.02

ACIBENZOLAR-S-METHYL (288) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VS 0624	Celery	RAC	0.073	2.14	0.16	3.79	0.28	2.35	0.17	5.69	0.42	0.02	0.00	2.75	0.20
VS 0627	Rhubarb	RAC	0.073	0.73	0.05	1.30	0.09	0.80	0.06	1.95	0.14	NC	–	0.94	0.07
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat)	RAC	0	31.20	0.00	72.44	0.00	20.88	0.00	47.98	0.00	33.08	0.00	36.25	0.00
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0	3.29	0.00	6.14	0.00	0.82	0.00	1.57	0.00	2.23	0.00	1.07	0.00
MO 0105	Edible offal (mammalian), raw	RAC	0	4.79	0.00	9.68	0.00	2.97	0.00	5.49	0.00	3.84	0.00	5.03	0.00
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0	289.65	0.00	485.88	0.00	26.92	0.00	239.03	0.00	199.91	0.00	180.53	0.00
PM 0110	Poultry meat, raw (incl. prepared)	RAC	0	14.63	0.00	29.76	0.00	8.04	0.00	129.68	0.00	25.04	0.00	35.66	0.00
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.10	0.00	0.10	0.00
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0	0.12	0.00	0.12	0.00	0.11	0.00	5.37	0.00	0.24	0.00	0.10	0.00
PE 0112	Eggs, raw (incl. dried)	RAC	0	7.84	0.00	23.08	0.00	2.88	0.00	14.89	0.00	9.81	0.00	14.83	0.00
	Total intake (ug/person) =				20.2		44.0		6.5		37.4		23.1		62.1
	Body weight per region (kg bw) =				60		60		60		60		60		60
	ADI (ug/person) =				4800		4800		4800		4800		4800		4800
	%ADI =				0.4%		0.9%		0.1%		0.8%		0.5%		1.3%
	Rounded %ADI =				0%		1%		0%		1%		0%		1%

ACIBENZOLAR-S-METHYL (288) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FC 0001	Group of citrus fruit, raw (incl. citrus fruit juice, incl. kumquat commodities)	RAC	0.01	114.42	1.14	62.91	0.63	26.97	0.27	96.72	0.97	96.22	0.96	563.19	5.63
FP 0226	Apple, raw (incl. juice, incl. cider)	RAC	0.01	61.44	0.61	72.81	0.73	26.84	0.27	45.18	0.45	93.28	0.93	7.78	0.08
FS 2001	Subgroup of peaches, raw (incl. dried apricots)	RAC	0.05	13.03	0.65	16.29	0.81	8.29	0.41	12.95	0.65	5.35	0.27	0.04	0.00
FB 2009	Subgroup of low growing berries, raw	RAC	0.045	4.55	0.20	5.66	0.25	0.02	0.00	7.85	0.35	5.86	0.26	0.05	0.00
FI 0327	Banana, raw (incl. plantains) (incl. dried)	RAC	0.02	25.76	0.52	23.65	0.47	23.83	0.48	24.37	0.49	19.43	0.39	101.55	2.03
FI 0341	Kiwifruit, raw	RAC	0.01	2.46	0.02	3.62	0.04	0.04	0.00	1.48	0.01	7.43	0.07	0.03	0.00
VA 2031	Subgroup of bulb onions	RAC	0.05	20.67	1.03	31.32	1.57	37.52	1.88	35.08	1.75	11.77	0.59	13.74	0.69
VB 0040	Group of brassica vegetables (excl. brassica leafy vegetables), raw	RAC	0.315	20.71	6.52	39.81	12.54	25.06	7.89	37.93	11.95	18.12	5.71	16.74	5.27
VC 0045	Group of fruiting vegetables, cucurbits, raw	RAC	0.175	27.81	4.87	41.93	7.34	123.30	21.58	49.47	8.66	15.95	2.79	35.99	6.30
VO 0448	Tomato, raw	RAC	0.09	32.13	2.89	51.27	4.61	34.92	3.14	73.37	6.60	15.15	1.36	8.88	0.80
–	Tomato, canned (& peeled)	PP	0.059	7.57	0.45	2.66	0.16	0.30	0.02	0.97	0.06	7.31	0.43	0.41	0.02
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.169	4.96	0.84	3.20	0.54	0.15	0.03	1.61	0.27	6.88	1.16	0.52	0.09
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.07	0.80	0.06	0.07	0.00	0.05	0.00	0.61	0.04	0.40	0.03	0.08	0.01
VL 0483	Lettuce, leaf, raw	RAC	0.18	14.50	2.61	11.76	2.12	13.14	2.37	19.50	3.51	4.81	0.87	2.23	0.40
VL 0502	Spinach, raw	RAC	0.285	2.20	0.63	1.76	0.50	13.38	3.81	2.94	0.84	5.53	1.58	0.02	0.01

ACIBENZOLAR-S-METHYL (288) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as ug/person/day								
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
VL 0054	Subgroup of leaves of brassicaceae, raw	RAC	0.585	0.10	0.06	NC	–	26.78	15.67	5.00	2.93	0.58	0.34	5.68	3.32
VS 0623	Cardoon	RAC	0.073	0.02	0.00	3.49	0.25	NC	–	0.02	0.00	NC	–	0.46	0.03
VS 0624	Celery	RAC	0.073	7.68	0.56	2.85	0.21	NC	–	3.34	0.24	16.83	1.23	4.04	0.29
VS 0627	Rhubarb	RAC	0.073	1.61	0.12	2.23	0.16	NC	–	0.52	0.04	7.63	0.56	1.39	0.10
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat)	RAC	0	140.03	0.00	150.89	0.00	79.32	0.00	111.24	0.00	120.30	0.00	51.27	0.00
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0	6.44	0.00	15.51	0.00	3.79	0.00	8.29	0.00	18.44	0.00	8.00	0.00
MO 0105	Edible offal (mammalian), raw	RAC	0	15.17	0.00	5.19	0.00	6.30	0.00	6.78	0.00	3.32	0.00	3.17	0.00
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0	388.92	0.00	335.88	0.00	49.15	0.00	331.25	0.00	468.56	0.00	245.45	0.00
PM 0110	Poultry meat, raw (incl. prepared)	RAC	0	73.76	0.00	53.86	0.00	23.98	0.00	87.12	0.00	53.38	0.00	84.45	0.00
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.71	0.00	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0	0.33	0.00	0.72	0.00	0.27	0.00	0.35	0.00	0.80	0.00	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0	25.84	0.00	29.53	0.00	28.05	0.00	33.19	0.00	36.44	0.00	8.89	0.00
	Total intake (ug/person) =				23.8		32.9		57.8		39.8		19.5		25.1
	Body weight per region (kg bw) =				60		60		55		60		60		60
	ADI (ug/person) =				4800		4800		4400		4800		4800		4800

ACIBENZOLAR-S-METHYL (288) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
	%ADI =				0.5%		0.7%		1.3%		0.8%		0.4%		0.5%
	Rounded %ADI =				0%		1%		1%		1%		0%		1%

ACIBENZOLAR-S-METHYL (288) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FC 0001	Group of citrus fruit, raw (incl. citrus fruit juice, incl. kumquat commodities)	RAC	0.01	21.16	0.21	2.94	0.03	58.52	0.59	0.44	0.00	5.13	0.05
FP 0226	Apple, raw (incl. juice, incl. cider)	RAC	0.01	66.71	0.67	2.19	0.02	65.63	0.66	188.34	1.88	1.38	0.01
FS 2001	Subgroup of peaches, raw (incl. dried apricots)	RAC	0.05	0.02	0.00	0.01	0.00	10.76	0.54	0.01	0.00	NC	–
FB 2009	Subgroup of low growing berries, raw	RAC	0.045	0.01	0.00	0.01	0.00	3.37	0.15	0.01	0.00	0.01	0.00
FI 0327	Banana, raw (incl. plantains) (incl. dried)	RAC	0.02	44.80	0.90	118.17	2.36	25.25	0.51	454.49	9.09	310.23	6.20
FI 0341	Kiwifruit, raw	RAC	0.01	0.01	0.00	0.01	0.00	2.00	0.02	0.01	0.00	NC	–
VA 2031	Subgroup of bulb onions	RAC	0.05	9.83	0.49	22.30	1.12	34.69	1.73	9.65	0.48	2.39	0.12
VB 0040	Group of brassica vegetables (excl. brassica leafy vegetables), raw	RAC	0.315	5.46	1.72	4.28	1.35	58.72	18.50	0.02	0.01	NC	–
VC 0045	Group of fruiting vegetables, cucurbits, raw	RAC	0.175	5.96	1.04	9.74	1.70	51.82	9.07	13.61	2.38	0.05	0.01

ACIBENZOLAR-S-METHYL (288) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VO 0448	Tomato, raw	RAC	0.09	12.99	1.17	4.79	0.43	58.40	5.26	0.92	0.08	0.09	0.01
–	Tomato, canned (& peeled)	PP	0.059	0.07	0.00	0.08	0.00	2.42	0.14	0.07	0.00	NC	–
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.169	0.58	0.10	0.22	0.04	2.21	0.37	0.24	0.04	3.10	0.52
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.07	0.05	0.00	0.01	0.00	0.42	0.03	0.01	0.00	0.02	0.00
VL 0483	Lettuce, leaf, raw	RAC	0.18	0.29	0.05	0.03	0.01	6.71	1.21	0.01	0.00	NC	–
VL 0502	Spinach, raw	RAC	0.285	0.17	0.05	0.01	0.00	0.81	0.23	0.01	0.00	NC	–
VL 0054	Subgroup of leaves of brassicaceae, raw	RAC	0.585	3.58	2.09	2.64	1.54	NC	–	1.83	1.07	3.65	2.14
VS 0623	Cardoon	RAC	0.073	0.41	0.03	0.30	0.02	NC	–	0.28	0.02	0.56	0.04
VS 0624	Celery	RAC	0.073	3.66	0.27	2.65	0.19	4.84	0.35	2.47	0.18	4.94	0.36
VS 0627	Rhubarb	RAC	0.073	1.26	0.09	0.91	0.07	0.96	0.07	0.85	0.06	1.70	0.12
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat)	RAC	0	29.18	0.00	50.89	0.00	121.44	0.00	22.58	0.00	72.14	0.00
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0	1.05	0.00	1.14	0.00	18.69	0.00	0.94	0.00	3.12	0.00
MO 0105	Edible offal (mammalian), raw	RAC	0	4.64	0.00	1.97	0.00	10.01	0.00	3.27	0.00	3.98	0.00
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0	108.75	0.00	70.31	0.00	436.11	0.00	61.55	0.00	79.09	0.00
PM 0110	Poultry meat, raw (incl. prepared)	RAC	0	3.92	0.00	12.03	0.00	57.07	0.00	5.03	0.00	55.56	0.00

ACIBENZOLAR-S-METHYL (288) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0	NC	–	NC	–	0.32	0.00	NC	–	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0	0.10	0.00	0.70	0.00	0.97	0.00	0.10	0.00	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0	3.84	0.00	4.41	0.00	27.25	0.00	1.13	0.00	7.39	0.00
	Total intake (ug/person) =				8.9		8.9		39.4		15.3		9.6
	Body weight per region (kg bw) =				60		60		60		60		60
	ADI (ug/person) =				4800		4800		4800		4800		4800
	%ADI =				0.2%		0.2%		0.8%		0.3%		0.2%
	Rounded %ADI =				0%		0%		1%		0%		0%

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as ug/person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FC 0001	Group of citrus fruit, raw (incl. kumquat commodities)	RAC	0.4802	32.25	15.49	11.67	5.60	16.70	8.02	76.01	36.50	33.90	16.28	92.97	44.64
JF 0001	Group of citrus fruit, juice	PP	0.015	1.30	0.02	2.37	0.04	0.22	0.00	13.88	0.21	0.75	0.01	2.63	0.04
FC 0303	Kumquats, raw (incl. juice)	RAC	4.9	2.36	11.56	0.27	1.32	3.19	15.63	14.44	70.76	1.66	8.13	1.71	8.38

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FS 0013	Subgroup of cherries, raw	RAC	0.74	0.92	0.68	9.15	6.77	0.01	0.01	0.61	0.45	0.06	0.04	6.64	4.91
FS 0014	Subgroup of plums, raw	RAC	0.74	2.40	1.78	8.60	6.36	0.06	0.04	2.52	1.86	0.58	0.43	4.16	3.08
DF 0014	Plums, dried (prunes)	PP	0.14	0.09	0.01	0.06	0.01	0.01	0.00	0.18	0.03	0.04	0.01	0.06	0.01
FS 2001	Subgroup of peaches, raw (incl. dried apricots)	RAC	0.74	8.01	5.93	5.87	4.34	0.18	0.13	8.19	6.06	1.64	1.21	22.46	16.62
FB 2005	Subgroup of caneberries, raw	RAC	1	0.42	0.42	1.05	1.05	0.01	0.01	0.02	0.02	0.02	0.02	1.24	1.24
FB 2006	Subgroup of bush berries, raw (including processed)	RAC	1	0.53	0.53	1.31	1.31	0.40	0.40	1.66	1.66	0.01	0.01	0.99	0.99
FB 2007	Subgroup of large shrub/tree berries, raw (including processed)	RAC	1	0.62	0.62	0.33	0.33	0.34	0.34	1.42	1.42	0.01	0.01	1.51	1.51
FB 0269	Grapes, raw (i.e. table grapes)	RAC	0.53	12.68	6.72	9.12	4.83	0.03	0.02	16.88	8.95	3.70	1.96	54.42	28.84
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.24	0.51	0.12	0.51	0.12	0.01	0.00	1.27	0.30	0.12	0.03	2.07	0.50
JF 0269	Grape juice (from wine grapes)	PP	0.19	0.14	0.03	0.29	0.06	0.05	0.01	0.30	0.06	0.24	0.05	0.05	0.01
–	Grape must (from wine grapes)	PP	0.28	0.33	0.09	0.13	0.04	0.01	0.00	0.02	0.01	0.01	0.00	0.02	0.01
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.36	0.67	0.24	12.53	4.51	2.01	0.72	1.21	0.44	3.53	1.27	4.01	1.44
FB 0265	Cranberry, raw	RAC	0.23	0.02	0.00	0.01	0.00	NC	–	0.03	0.01	0.01	0.00	0.01	0.00
FB 0275	Strawberry, raw	RAC	1.3	0.70	0.91	2.01	2.61	0.04	0.05	1.36	1.77	0.37	0.48	2.53	3.29
FT 0289	Carambola, raw	RAC	0.023	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	NC	–	0.01	0.00

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FT 0336	Guava, raw	RAC	0.055	0.47	0.03	0.01	0.00	0.48	0.03	0.49	0.03	4.42	0.24	0.06	0.00
FI 0326	Avocado, raw	RAC	0.06	0.13	0.01	0.03	0.00	2.05	0.12	2.54	0.15	2.34	0.14	0.12	0.01
FI 0327	Banana, raw (incl. plantains) (incl. dried)	RAC	0.03	5.23	0.16	6.94	0.21	99.45	2.98	32.47	0.97	48.30	1.45	24.70	0.74
FI 0345	Mango, raw (incl. canned mango, incl. mango juice)	RAC	0.035	10.48	0.37	0.01	0.00	7.24	0.25	6.87	0.24	19.98	0.70	6.25	0.22
FI 0350	Papaya, raw	RAC	0.1	0.35	0.04	0.01	0.00	3.05	0.31	0.80	0.08	7.28	0.73	1.00	0.10
FI 0353	Pineapple, raw (incl. canned pineapple, incl. dried pineapple, excl. pineapple juice)	RAC	0.01	0.54	0.01	0.58	0.01	7.69	0.08	6.02	0.06	8.26	0.08	0.82	0.01
JF 0341	Pineapple juice (single strength, incl. concentrated)	PP	0.022	0.04	0.00	0.57	0.01	0.12	0.00	1.96	0.04	0.29	0.01	0.28	0.01
FI 2540	Pitaya, raw (i.e. dragon fruit or pitahaya)	RAC	0.041	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	NC	–	0.01	0.00
VA 0035	Group of bulb vegetables, raw	RAC	2.2	34.29	75.44	46.37	102.01	4.73	10.41	41.36	90.99	21.08	46.38	52.54	115.59
VB 0040	Group of brassica vegetables (excl. brassica leafy vegetables), raw	RAC	1.2	6.43	7.72	40.26	48.31	0.80	0.96	9.94	11.93	12.07	14.48	17.73	21.28
VC 2039	Subgroup of cucumbers and squashes, raw	RAC	0.17	10.52	1.79	39.36	6.69	2.07	0.35	25.74	4.38	2.80	0.48	44.83	7.62
VC 2040	Subgroup of melons, pumpkins and winter squashes	RAC	0.02	42.62	0.85	46.85	0.94	4.21	0.08	67.02	1.34	12.84	0.26	110.47	2.21
VO 0448	Tomato, raw	RAC	0.35	41.73	14.61	75.65	26.48	10.66	3.73	82.87	29.00	24.75	8.66	200.93	70.33
–	Tomato, canned (& peeled)	PP	0.05	0.20	0.01	0.31	0.02	0.02	0.00	1.11	0.06	0.11	0.01	1.50	0.08
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	1.1	2.34	2.57	1.33	1.46	1.57	1.73	4.24	4.66	0.34	0.37	2.83	3.11

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.16	0.29	0.05	0.29	0.05	0.01	0.00	0.38	0.06	0.05	0.01	0.14	0.02
VO 0051	Subgroup of peppers, raw (incl. dried sweet peppers, excl. dried chili peppers), incl. okra	RAC	0.35	10.45	3.66	13.74	4.81	13.81	4.83	14.53	5.09	15.25	5.34	27.93	9.78
VO 2046	Subgroup of eggplants	RAC	0.35	5.58	1.95	4.31	1.51	0.89	0.31	9.31	3.26	13.64	4.77	20.12	7.04
VL 0483	Lettuce, leaf, raw	RAC	0.28	0.53	0.15	0.36	0.10	0.16	0.04	6.21	1.74	1.90	0.53	6.05	1.69
VL 2832	Witloof chicory (sprouts)	RAC	0.05	0.03	0.00	0.02	0.00	0.01	0.00	0.36	0.02	0.06	0.00	0.35	0.02
VP 0060	Group of legume vegetables, raw	RAC	1	7.73	7.73	1.53	1.53	0.51	0.51	2.95	2.95	5.08	5.08	12.86	12.86
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.01	2.39	0.02	1.61	0.02	10.47	0.10	1.84	0.02	12.90	0.13	7.44	0.07
VD 0523	Broad bean, dry, raw (incl. horse-bean, field bean) (Vicia faba)	RAC	0.01	1.27	0.01	0.01	0.00	0.12	0.00	2.49	0.02	0.23	0.00	5.54	0.06
VD 0527	Cowpea, dry, raw (Vigna sinensis, Dolichos sinensis)	RAC	0.01	0.05	0.00	NC	–	1.74	0.02	0.01	0.00	0.01	0.00	0.07	0.00
VD 0541	Soya bean, dry, raw (incl. flour, incl. paste, incl. curd, incl. sauce, excl. oil)	RAC	0.06	0.63	0.04	1.09	0.07	0.40	0.02	1.40	0.08	1.68	0.10	0.48	0.03
OR 0541	Soya oil, refined	PP	0.05	12.99	0.65	10.43	0.52	3.63	0.18	13.10	0.66	10.70	0.54	13.10	0.66
–	Beans (dry) NES: including inter alia lablab or hyacinth bean (Dolichos spp.); jack or sword bean (Canavalia spp.); winged bean (Psophocarpus tetragonolobus); guar bean (Cyamopsis tetragonoloba); velvet bean (Stizolobium spp.); yam bean (Pachyrrhizus erosus)	RAC	0.01	1.70	0.02	0.01	0.00	3.00	0.03	1.80	0.02	1.64	0.02	1.33	0.01

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VD 2066	Subgroup of dry peas, raw	RAC	0.01	9.09	0.09	3.35	0.03	1.06	0.01	9.48	0.09	15.11	0.15	10.58	0.11
VD 2067	Subgroup of dry underground pulses, raw	RAC	0.01	NC	–	NC	–	0.20	0.00	NC	–	NC	–	NC	–
VR 0574	Beetroot, raw	RAC	0.23	3.42	0.79	6.06	1.39	3.75	0.86	9.11	2.10	NC	–	4.39	1.01
VR 0575	Burdock, greater or edible, raw	RAC	0.23	0.03	0.01	0.06	0.01	0.04	0.01	0.09	0.02	NC	–	0.04	0.01
VR 0577	Carrots, raw	RAC	0.23	9.51	2.19	30.78	7.08	0.37	0.09	8.75	2.01	2.80	0.64	6.10	1.40
VR 0578	Celeriac, raw	RAC	0.23	1.70	0.39	3.01	0.69	1.87	0.43	4.53	1.04	NC	–	2.19	0.50
VR 0469	Chicory, roots, raw	RAC	0.23	0.01	0.00	0.20	0.05	0.01	0.00	0.01	0.00	0.02	0.00	0.01	0.00
VR 0583	Horseradish, raw	RAC	0.23	0.51	0.12	0.91	0.21	0.56	0.13	1.37	0.32	NC	–	0.66	0.15
VR 0587	Parsley turnip-rooted, raw	RAC	0.23	0.32	0.07	0.57	0.13	0.35	0.08	0.85	0.20	NC	–	0.41	0.09
VR 0588	Parsnip, raw	RAC	0.23	0.59	0.14	1.05	0.24	0.65	0.15	1.58	0.36	NC	–	0.76	0.17
VR 0494	Radish roots, raw	RAC	0.23	2.31	0.53	4.09	0.94	2.53	0.58	6.15	1.41	5.88	1.35	2.97	0.68
VR 0591	Japanese radish, raw (i.e. Chinese radish, daikon)	RAC	0.23	1.90	0.44	3.36	0.77	2.08	0.48	5.06	1.16	NC	–	2.44	0.56
VR 0498	Salsify, raw (i.e. oysterplant)	RAC	0.23	0.21	0.05	0.37	0.09	0.23	0.05	0.55	0.13	NC	–	0.27	0.06
VR 0596	Sugar beet, raw	RAC	1.35	NC	–	NC	–	NC	–	NC	–	0.01	0.01	NC	–
–	Sugar beet, sugar	PP	0.023	0.02	0.00	NC	–	0.01	0.00	0.09	0.00	0.07	0.00	12.63	0.29
VR 0573	Arrowroot, raw	RAC	0.23	1.53	0.35	0.01	0.00	0.93	0.21	1.33	0.31	0.47	0.11	0.02	0.00

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day				Intake as ug/person/day							
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VR 0463	Cassava raw (incl. starch, incl. tapioca, incl. flour) (i.e. manioc)	RAC	0.23	0.08	0.02	0.01	0.00	482.56	110.99	0.99	0.23	25.75	5.92	3.29	0.76
VR 0463	Cassava raw (incl. starch, incl. flour, excl. tapioca) (i.e. manioc)	RAC	0.23	0.02	0.00	0.01	0.00	478.42	110.04	0.70	0.16	25.39	5.84	3.28	0.75
VR 0463	Cassava raw (incl. starch, incl. tapioca, excl. flour) (i.e. manioc)	RAC	0.23	0.08	0.02	0.01	0.00	306.72	70.55	0.97	0.22	11.51	2.65	3.29	0.76
VR 0463	Cassava raw (incl. tapioca, incl. flour, excl. starch) (i.e. manioc)	RAC	0.23	0.06	0.01	NC	–	482.53	110.98	0.99	0.23	25.37	5.84	3.29	0.76
VR 0463	Cassava raw (incl. starch, excl. tapioca, excl. flour) (i.e. manioc)	RAC	0.23	0.02	0.00	0.01	0.00	302.58	69.59	0.68	0.16	11.15	2.56	3.28	0.75
VR 0463	Cassava raw (incl. tapioca, excl. flour, excl. starch) (i.e. manioc)	RAC	0.23	0.06	0.01	NC	–	306.70	70.54	0.97	0.22	11.13	2.56	3.29	0.76
VR 0463	Cassava raw (incl. flour, excl. tapioca, excl. starch) (i.e. manioc)	RAC	0.23	0.01	0.00	NC	–	478.39	110.03	0.70	0.16	25.02	5.75	3.28	0.75
VR 0463	Cassava, raw (i.e. manioc)	RAC	0.23	NC	–	NC	–	302.56	69.59	0.68	0.16	10.77	2.48	3.28	0.75
–	Cassava, flour	PP	0.23	0.01	0.00	NC	–	49.23	11.32	0.01	0.00	3.99	0.92	NC	–
–	Cassava, starch	PP	0.23	0.01	0.00	0.01	0.00	0.01	0.00	NC	–	0.11	0.03	NC	–
–	Cassava, tapioca	PP	0.23	0.02	0.00	NC	–	1.16	0.27	0.08	0.02	0.10	0.02	0.01	0.00
VR 0585	Jerusalem artichoke, raw (i.e. topinambur)	RAC	0.23	1.57	0.36	0.01	0.00	0.96	0.22	1.36	0.31	0.48	0.11	0.02	0.00

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VR 0589	Potato, raw (incl. flour, incl. frozen, incl. starch, incl. tapioca)	RAC	2.3	59.74	137.40	316.14	727.12	9.78	22.49	60.26	138.60	54.12	124.48	119.82	275.59
VR 0508	Sweet potato, raw (incl. dried)	RAC	0.48	0.18	0.09	0.18	0.09	42.16	20.24	1.61	0.77	3.06	1.47	6.67	3.20
VR 0504	Tannia, raw (i.e. tanier, yautia)	RAC	0.23	NC	–	NC	–	NC	–	0.01	0.00	0.26	0.06	1.27	0.29
VR 0505	Taro, raw (i.e. dasheen, eddoe)	RAC	0.23	0.01	0.00	NC	–	25.12	5.78	0.04	0.01	0.01	0.00	0.97	0.22
VR 0600	Yams, raw (incl. dried)	RAC	0.23	0.02	0.00	NC	–	90.40	20.79	6.45	1.48	0.74	0.17	0.65	0.15
VR 3001	Chinese water chestnut, raw	RAC	0.23	NC	–	NC	–	NC	–	NC	–	NC	–	NC	–
VS 0624	Celery	RAC	0.43	2.14	0.92	3.79	1.63	2.35	1.01	5.69	2.45	0.02	0.01	2.75	1.18
VS 0621	Asparagus, raw	RAC	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.03	0.00	0.07	0.00	0.21	0.00
VS 0620	Artichoke globe, raw	RAC	1.8	0.69	1.24	0.01	0.02	0.01	0.02	0.32	0.58	0.26	0.47	1.21	2.18
GC 0650	Rye, raw (incl. flour)	RAC	0.01	0.13	0.00	19.38	0.19	0.10	0.00	0.12	0.00	0.03	0.00	2.15	0.02
GC 0653	Triticale, raw (incl. flour)	RAC	0.01	NC	–	NC	–	NC	–	0.01	0.00	0.39	0.00	NC	–
GC 0654	Wheat, raw (incl. meslin)	RAC	0.01	0.01	0.00	1.12	0.01	NC	–	0.01	0.00	0.56	0.01	NC	–
CP 1212	Wheat, wholemeal bread	PP	0.001	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.03	0.00	0.01	0.00
CP 1211	Wheat, white bread	PP	0.001	0.25	0.00	0.63	0.00	0.12	0.00	0.43	0.00	1.39	0.00	0.22	0.00
CF 1211	Wheat, white flour (incl. white flour products: starch, gluten, macaroni, pastry)	PP	0.003	301.24	0.90	268.64	0.81	30.21	0.09	222.51	0.67	134.73	0.40	343.12	1.03

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
GC 0640	Barley, raw (incl. malt extract, incl. pot & pearled, incl. flour & grits, excl. beer, excl. malt)	RAC	0.05	18.86	0.94	11.93	0.60	0.18	0.01	0.23	0.01	2.25	0.11	0.72	0.04
–	Barley beer	PP	0.0015	4.87	0.01	93.78	0.14	24.28	0.04	12.76	0.02	39.28	0.06	18.15	0.03
–	Barley malt	PP	0.005	0.09	0.00	1.04	0.01	0.18	0.00	0.33	0.00	0.04	0.00	0.10	0.00
GC 0647	Oats, raw (incl. rolled)	RAC	0.05	0.05	0.00	7.05	0.35	0.10	0.01	1.71	0.09	0.96	0.05	0.04	0.00
CM 0649 (GC 0649)	Rice, husked, dry (incl. flour, incl. oil, incl. beverages, incl. starch, excl. polished)	REP	0.68	1.26	0.86	1.58	1.07	31.05	21.11	5.43	3.69	0.90	0.61	2.18	1.48
CM 1205	Rice polished, dry	PP	0.06	34.21	2.05	10.39	0.62	41.72	2.50	82.38	4.94	150.24	9.01	70.47	4.23
GC 0651	Sorghum, raw (incl. flour, incl. beer) (i.e. chicken corn, dari seed, durra, feterita)	RAC	1.85	4.34	8.03	0.01	0.02	16.25	30.06	15.82	29.27	10.97	20.29	2.92	5.40
GC 0645	Maize, raw (incl. glucose & dextrose & isoglucose, incl. beer, incl. germ, incl. starch, excl. flour, excl. oil)	RAC	0.01	0.97	0.01	0.24	0.00	1.58	0.02	4.10	0.04	2.56	0.03	13.31	0.13
CF 1255	Maize, flour (white flour and wholemeal flour)	PP	0.01	22.72	0.23	35.61	0.36	87.27	0.87	34.92	0.35	46.71	0.47	49.12	0.49
OR 0645	Maize oil	PP	0.06	0.96	0.06	0.85	0.05	0.29	0.02	5.42	0.33	0.42	0.03	2.10	0.13
GS 0659	Sugar cane, raw	RAC	0.02	38.16	0.76	NC	–	12.58	0.25	0.34	0.01	17.79	0.36	42.78	0.86
–	Sugar cane, molasses	PP	0.05	NC	–	NC	–	NC	–	NC	–	0.01	0.00	NC	–
–	Sugar cane, sugar (incl. non-centrifugal sugar, incl. refined sugar and maltose)	PP	0.0066	61.52	0.41	86.27	0.57	18.80	0.12	80.02	0.53	66.39	0.44	56.32	0.37
TN 0660	Almonds, nutmeat	RAC	0.01	1.38	0.01	0.08	0.00	0.01	0.00	1.00	0.01	0.06	0.00	0.81	0.01

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
TN 0662	Brazil nuts, nutmeat	RAC	0.01	0.01	0.00	0.01	0.00	0.03	0.00	0.02	0.00	0.02	0.00	0.01	0.00
TN 0295	Cashew nuts, nutmeat	RAC	0.01	0.01	0.00	0.02	0.00	0.24	0.00	0.47	0.00	0.32	0.00	0.05	0.00
TN 0664	Chestnut, raw	RAC	0.01	0.03	0.00	0.02	0.00	0.01	0.00	0.31	0.00	0.09	0.00	0.67	0.01
TN 0665	Coconut, nutmeat (incl. copra, incl. desiccated, incl. oil)	RAC	0.01	1.73	0.02	1.20	0.01	6.63	0.07	10.18	0.10	13.07	0.13	2.98	0.03
TN 0666	Hazelnuts, nutmeat	RAC	0.01	0.03	0.00	0.13	0.00	0.01	0.00	0.11	0.00	0.01	0.00	1.11	0.01
TN 0669	Macadamia nuts, nutmeat (i.e. Queensland nuts)	RAC	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.04	0.00	NC	–	0.03	0.00
TN 0672	Pecan, nutmeat	RAC	0.01	0.05	0.00	0.05	0.00	0.02	0.00	0.14	0.00	0.09	0.00	0.13	0.00
TN 0673	Pine nut, nutmeat (i.e. pignolia nuts)	RAC	0.01	0.18	0.00	0.18	0.00	0.08	0.00	0.49	0.00	0.25	0.00	0.43	0.00
TN 0675	Pistachio nut, nutmeat	RAC	0.44	0.41	0.18	0.07	0.03	0.01	0.00	0.85	0.37	0.02	0.01	1.08	0.48
TN 0678	Walnut, nutmeat	RAC	0.01	0.23	0.00	1.49	0.01	0.01	0.00	0.33	0.00	0.07	0.00	2.06	0.02
SO 0495	Rape seed, raw (incl. oil)	RAC	0.02	0.93	0.02	1.16	0.02	0.49	0.01	2.53	0.05	9.32	0.19	2.02	0.04
SO 0702	Sunflower seed, raw	RAC	0.04	0.09	0.00	0.33	0.01	0.09	0.00	0.24	0.01	0.02	0.00	0.01	0.00
OR 0702	Sunflower seed oil, edible	PP	0.01	2.97	0.03	14.42	0.14	0.43	0.00	3.46	0.03	2.20	0.02	5.53	0.06
SO 0691	Cotton seed, raw (incl. oil)	RAC	0.01	20.53	0.21	9.80	0.10	6.42	0.06	4.73	0.05	7.14	0.07	18.68	0.19
SO 0697	Peanuts, nutmeat, raw (incl. roasted, incl. butter, excl. oil)	RAC	0.01	0.46	0.00	1.21	0.01	6.64	0.07	2.71	0.03	1.26	0.01	1.84	0.02

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
OR 0697	Peanut oil, edible	PP	0.03	0.36	0.01	0.01	0.00	2.57	0.08	0.07	0.00	2.29	0.07	0.36	0.01
SB 0716	Coffee bean, raw (i.e. green coffee)	RAC	0.01	0.96	0.01	0.16	0.00	0.91	0.01	0.27	0.00	1.37	0.01	0.46	0.00
SM 0716	Coffee bean, roasted	PP	0.006	0.19	0.00	0.91	0.01	0.16	0.00	2.50	0.02	0.39	0.00	0.40	0.00
–	Coffee bean, instant coffee (incl. essences and concentrates)	PP	0.0106	0.07	0.00	0.94	0.01	0.07	0.00	0.70	0.01	0.07	0.00	0.29	0.00
HH 0092	Group of herbs, raw (incl. dried)	RAC	23	1.69	38.87	1.91	43.93	1.18	27.14	3.35	77.05	0.55	12.65	1.64	37.72
HS 0444	Peppers, chili, dried	PP	3.5	0.42	1.47	0.53	1.86	0.84	2.94	0.50	1.75	0.95	3.33	0.37	1.30
DH 1100	Hops, dry	RAC	8.4	0.01	0.08	0.04	0.34	0.01	0.08	0.01	0.08	NC	–	0.01	0.08
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.01	24.96	0.25	57.95	0.58	16.70	0.17	38.38	0.38	26.46	0.26	29.00	0.29
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.015	6.24	0.09	14.49	0.22	4.18	0.06	9.60	0.14	6.62	0.10	7.25	0.11
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.015	3.29	0.05	6.14	0.09	0.82	0.01	1.57	0.02	2.23	0.03	1.07	0.02
MO 0105	Edible offal (mammalian), raw	RAC	0.02	4.79	0.10	9.68	0.19	2.97	0.06	5.49	0.11	3.84	0.08	5.03	0.10
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.01	289.65	2.90	485.88	4.86	26.92	0.27	239.03	2.39	199.91	2.00	180.53	1.81
PM 0110	Poultry meat, raw (incl. prepared)	RAC	0	14.63	0.00	29.76	0.00	8.04	0.00	129.68	0.00	25.04	0.00	35.66	0.00
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.10	0.00	0.10	0.00

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0	0.12	0.00	0.12	0.00	0.11	0.00	5.37	0.00	0.24	0.00	0.10	0.00
PE 0112	Eggs, raw (incl. dried)	RAC	0	7.84	0.00	23.08	0.00	2.88	0.00	14.89	0.00	9.81	0.00	14.83	0.00
	Total intake (ug/person) =				366.9		1031.8		946.2		565.8		334.9		719.5
	Body weight per region (kg bw) =				60		60		60		60		60		60
	ADI (ug/person) =				1800		1800		1800		1800		1800		1800
	%ADI =				20.4%		57.3%		52.6%		31.4%		18.6%		40.0%
	Rounded %ADI =				20%		60%		50%		30%		20%		40%

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FC 0001	Group of citrus fruit, raw (incl. kumquat commodities)	RAC	0.4802	38.66	18.56	54.93	26.38	26.36	12.66	51.46	24.71	51.06	24.52	466.36	223.95
JF 0001	Group of citrus fruit, juice	PP	0.015	36.84	0.55	3.75	0.06	0.30	0.00	21.62	0.32	21.82	0.33	46.67	0.70
FC 0303	Kumquats, raw (incl. juice)	RAC	4.9	4.67	22.88	5.86	28.71	1.96	9.60	1.45	7.11	17.05	83.55	1.37	6.71

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FS 0013	Subgroup of cherries, raw	RAC	0.74	1.40	1.04	4.21	3.12	0.04	0.03	2.93	2.17	1.50	1.11	NC	–
FS 0014	Subgroup of plums, raw	RAC	0.74	3.75	2.78	3.33	2.46	5.94	4.40	2.64	1.95	2.50	1.85	0.06	0.04
DF 0014	Plums, dried (prunes)	PP	0.14	0.61	0.09	0.35	0.05	0.05	0.01	0.35	0.05	0.49	0.07	0.13	0.02
FS 2001	Subgroup of peaches, raw (incl. dried apricots)	RAC	0.74	13.03	9.64	16.29	12.05	8.29	6.13	12.95	9.58	5.35	3.96	0.04	0.03
FB 2005	Subgroup of caneberries, raw	RAC	1	0.56	0.56	1.43	1.43	0.14	0.14	1.23	1.23	1.14	1.14	0.01	0.01
FB 2006	Subgroup of bush berries, raw (including processed)	RAC	1	1.31	1.31	5.50	5.50	0.01	0.01	2.57	2.57	0.82	0.82	2.15	2.15
FB 2007	Subgroup of large shrub/tree berries, raw (including processed)	RAC	1	8.26	8.26	0.14	0.14	0.07	0.07	0.13	0.13	0.19	0.19	1.87	1.87
FB 0269	Grapes, raw (i.e. table grapes)	RAC	0.53	6.33	3.35	11.22	5.95	5.21	2.76	9.38	4.97	4.55	2.41	0.78	0.41
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.24	3.09	0.74	1.51	0.36	0.03	0.01	1.38	0.33	4.26	1.02	0.42	0.10
JF 0269	Grape juice (from wine grapes)	PP	0.19	0.56	0.11	1.96	0.37	0.02	0.00	2.24	0.43	2.27	0.43	0.34	0.06
–	Grape must (from wine grapes)	PP	0.28	0.16	0.04	0.09	0.03	0.01	0.00	0.12	0.03	0.11	0.03	NC	–
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.36	88.93	32.01	62.41	22.47	1.84	0.66	25.07	9.03	61.17	22.02	5.84	2.10
FB 0265	Cranberry, raw	RAC	0.23	0.06	0.01	0.01	0.00	0.01	0.00	1.22	0.28	0.11	0.03	NC	–
FB 0275	Strawberry, raw	RAC	1.3	4.49	5.84	5.66	7.36	0.02	0.03	6.63	8.62	5.75	7.48	0.05	0.07
FT 0289	Carambola, raw	RAC	0.023	NC	–	0.01	0.00	0.05	0.00	NC	–	NC	–	NC	–

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as ug/person/day									
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FT 0336	Guava, raw	RAC	0.055	0.01	0.00	NC	–	0.42	0.02	NC	–	NC	–	NC	–
FI 0326	Avocado, raw	RAC	0.06	2.65	0.16	0.87	0.05	0.46	0.03	1.64	0.10	1.30	0.08	0.96	0.06
FI 0327	Banana, raw (incl. plantains) (incl. dried)	RAC	0.03	25.76	0.77	23.65	0.71	23.83	0.71	24.37	0.73	19.43	0.58	101.55	3.05
FI 0345	Mango, raw (incl. canned mango, incl. mango juice)	RAC	0.035	1.80	0.06	0.63	0.02	10.05	0.35	1.07	0.04	3.52	0.12	16.44	0.58
FI 0350	Papaya, raw	RAC	0.1	0.31	0.03	0.18	0.02	1.50	0.15	0.51	0.05	0.54	0.05	1.08	0.11
FI 0353	Pineapple, raw (incl. canned pineapple, incl. dried pineapple, excl. pineapple juice)	RAC	0.01	8.17	0.08	7.53	0.08	5.95	0.06	7.61	0.08	8.17	0.08	16.18	0.16
JF 0341	Pineapple juice (single strength, incl. concentrated)	PP	0.022	2.91	0.06	2.11	0.05	0.58	0.01	3.95	0.09	16.73	0.37	1.54	0.03
FI 2540	Pitaya, raw (i.e. dragon fruit or pitahaya)	RAC	0.041	NC	–	NC	–	0.08	0.00	NC	–	NC	–	NC	–
VA 0035	Group of bulb vegetables, raw	RAC	2.2	26.24	57.73	36.47	80.23	39.29	86.44	39.37	86.61	29.12	64.06	20.21	44.46
VB 0040	Group of brassica vegetables (excl. brassica leafy vegetables), raw	RAC	1.2	20.71	24.85	39.81	47.77	25.06	30.07	37.93	45.52	18.12	21.74	16.74	20.09
VC 2039	Subgroup of cucumbers and squashes, raw	RAC	0.17	7.14	1.21	16.92	2.88	37.58	6.39	15.16	2.58	4.42	0.75	12.67	2.15
VC 2040	Subgroup of melons, pumpkins and winter squashes	RAC	0.02	20.68	0.41	25.00	0.50	85.72	1.71	34.31	0.69	11.54	0.23	23.32	0.47
VO 0448	Tomato, raw	RAC	0.35	32.13	11.25	51.27	17.94	34.92	12.22	73.37	25.68	15.15	5.30	8.88	3.11
–	Tomato, canned (& peeled)	PP	0.05	7.57	0.38	2.66	0.13	0.30	0.02	0.97	0.05	7.31	0.37	0.41	0.02
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	1.1	4.96	5.46	3.20	3.52	0.15	0.17	1.61	1.77	6.88	7.57	0.52	0.57

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.16	0.80	0.13	0.07	0.01	0.05	0.01	0.61	0.10	0.40	0.06	0.08	0.01
VO 0051	Subgroup of peppers, raw (incl. dried sweet peppers, excl. dried chili peppers), incl. okra	RAC	0.35	6.39	2.24	15.53	5.44	19.13	6.70	10.53	3.69	8.29	2.90	5.25	1.84
VO 2046	Subgroup of eggplants	RAC	0.35	1.01	0.35	1.69	0.59	21.37	7.48	3.00	1.05	1.40	0.49	NC	–
VL 0483	Lettuce, leaf, raw	RAC	0.28	14.50	4.06	11.76	3.29	13.14	3.68	19.50	5.46	4.81	1.35	2.23	0.62
VL 2832	Witloof chicory (sprouts)	RAC	0.05	1.50	0.08	0.95	0.05	NC	–	1.84	0.09	0.65	0.03	0.13	0.01
VP 0060	Group of legume vegetables, raw	RAC	1	18.21	18.21	8.91	8.91	7.22	7.22	10.04	10.04	23.22	23.22	0.17	0.17
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.01	1.51	0.02	1.50	0.02	1.90	0.02	5.11	0.05	1.36	0.01	23.43	0.23
VD 0523	Broad bean, dry, raw (incl. horse-bean, field bean) (Vicia faba)	RAC	0.01	0.02	0.00	0.01	0.00	1.16	0.01	0.40	0.00	NC	–	0.06	0.00
VD 0527	Cowpea, dry, raw (Vigna sinensis, Dolichos sinensis)	RAC	0.01	NC	–	NC	–	0.16	0.00	0.01	0.00	NC	–	NC	–
VD 0541	Soya bean, dry, raw (incl. flour, incl. paste, incl. curd, incl. sauce, excl. oil)	RAC	0.06	0.47	0.03	0.77	0.05	9.12	0.55	8.05	0.48	0.04	0.00	6.06	0.36
OR 0541	Soya oil, refined	PP	0.05	19.06	0.95	21.06	1.05	5.94	0.30	33.78	1.69	40.05	2.00	13.39	0.67
–	Beans (dry) NES: including inter alia lablab or hyacinth bean (Dolichos spp.); jack or sword bean (Canavalia spp.); winged bean (Psophocarpus tetragonolobus); guar bean (Cyamopsis tetragonoloba); velvet bean (Stizolobium spp.); yam bean (Pachyrrhizus erosus)	RAC	0.01	0.01	0.00	NC	–	0.57	0.01	0.11	0.00	0.16	0.00	0.94	0.01

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
VD 2066	Subgroup of dry peas, raw	RAC	0.01	5.01	0.05	3.76	0.04	1.82	0.02	3.44	0.03	3.49	0.03	5.15	0.05
VD 2067	Subgroup of dry underground pulses, raw	RAC	0.01	NC	–	NC	–	NC	–	NC	–	NC	–	NC	–
VR 0574	Beetroot, raw	RAC	0.23	9.91	2.28	6.34	1.46	NC	–	9.65	2.22	19.11	4.40	6.47	1.49
VR 0575	Burdock, greater or edible, raw	RAC	0.23	NC	–	NC	–	NC	–	0.48	0.11	NC	–	0.06	0.01
VR 0577	Carrots, raw	RAC	0.23	26.26	6.04	27.13	6.24	10.07	2.32	16.49	3.79	44.69	10.28	8.75	2.01
VR 0578	Celeriac, raw	RAC	0.23	2.97	0.68	1.79	0.41	NC	–	0.06	0.01	16.91	3.89	3.22	0.74
VR 0469	Chicory, roots, raw	RAC	0.23	0.01	0.00	0.51	0.12	0.01	0.00	0.01	0.00	21.12	4.86	NC	–
VR 0583	Horseradish, raw	RAC	0.23	0.01	0.00	0.42	0.10	13.01	2.99	0.26	0.06	2.70	0.62	0.97	0.22
VR 0587	Parsley turnip-rooted, raw	RAC	0.23	NC	–	NC	–	NC	–	NC	–	NC	–	0.61	0.14
VR 0588	Parsnip, raw	RAC	0.23	4.42	1.02	0.06	0.01	NC	–	NC	–	NC	–	1.12	0.26
VR 0494	Radish roots, raw	RAC	0.23	3.83	0.88	11.99	2.76	NC	–	5.26	1.21	2.19	0.50	4.37	1.01
VR 0591	Japanese radish, raw (i.e. Chinese radish, daikon)	RAC	0.23	NC	–	NC	–	26.64	6.13	18.92	4.35	NC	–	3.59	0.83
VR 0498	Salsify, raw (i.e. oysterplant)	RAC	0.23	1.02	0.23	0.52	0.12	NC	–	NC	–	2.08	0.48	0.39	0.09
VR 0596	Sugar beet, raw	RAC	1.35	0.01	0.01	NC	–	0.01	0.01	0.01	0.01	NC	–	NC	–
–	Sugar beet, sugar	PP	0.023	0.01	0.00	NC	–	0.01	0.00	NC	–	NC	–	NC	–
VR 0573	Arrowroot, raw	RAC	0.23	0.02	0.00	0.01	0.00	2.05	0.47	0.21	0.05	NC	–	0.76	0.17

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day				Intake as ug/person/day									
				G07 diet		G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake	
VR 0463	Cassava raw (incl. starch, incl. tapioca, incl. flour) (i.e. manioc)	RAC	0.23	0.01		0.00	NC	–	20.96	4.82	0.14	0.03	NC	–	9.62	2.21	
VR 0463	Cassava raw (incl. starch, incl. flour, excl. tapioca) (i.e. manioc)	RAC	0.23	0.01	0.00	NC	–	17.67	4.06	0.01	0.00	NC	–	9.62	2.21		
VR 0463	Cassava raw (incl. starch, incl. tapioca, excl. flour) (i.e. manioc)	RAC	0.23	NC	–	NC	–	19.91	4.58	0.13	0.03	NC	–	9.62	2.21		
VR 0463	Cassava raw (incl. tapioca, incl. flour, excl. starch) (i.e. manioc)	RAC	0.23	0.01	0.00	NC	–	20.96	4.82	0.14	0.03	NC	–	9.62	2.21		
VR 0463	Cassava raw (incl. starch, excl. tapioca, excl. flour) (i.e. manioc)	RAC	0.23	NC	–	NC	–	16.62	3.82	NC	–	NC	–	9.62	2.21		
VR 0463	Cassava raw (incl. tapioca, excl. flour, excl. starch) (i.e. manioc)	RAC	0.23	NC	–	NC	–	19.90	4.58	0.13	0.03	NC	–	9.62	2.21		
VR 0463	Cassava raw (incl. flour, excl. tapioca, excl. starch) (i.e. manioc)	RAC	0.23	0.01	0.00	NC	–	17.67	4.06	0.01	0.00	NC	–	9.62	2.21		
VR 0463	Cassava, raw (i.e. manioc)	RAC	0.23	NC	–	NC	–	16.61	3.82	NC	–	NC	–	9.62	2.21		
–	Cassava, flour	PP	0.23	0.01	0.00	NC	–	0.29	0.07	0.01	0.00	NC	–	NC	–		
–	Cassava, starch	PP	0.23	NC	–	NC	–	0.01	0.00	NC	–	NC	–	NC	–		
–	Cassava, tapioca	PP	0.23	NC	–	NC	–	0.92	0.21	0.04	0.01	NC	–	NC	–		
VR 0585	Jerusalem artichoke, raw (i.e. topinambur)	RAC	0.23	0.11	0.03	0.01	0.00	NC	–	0.22	0.05	NC	–	0.78	0.18		

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day		Intake as ug/person/day											
				G07 diet		G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake	
VR 0589	Potato, raw (incl. flour, incl. frozen, incl. starch, incl. tapioca)	RAC	2.3	225.03	517.57	234.24	538.75	71.48	164.40	177.55	408.37	234.55	539.47	37.71	86.73		
VR 0508	Sweet potato, raw (incl. dried)	RAC	0.48	0.93	0.45	0.32	0.15	64.65	31.03	5.37	2.58	0.30	0.14	3.13	1.50		
VR 0504	Tannia, raw (i.e. tanier, yautia)	RAC	0.23	NC	–	NC	–	NC	–	0.01	0.00	NC	–	10.74	2.47		
VR 0505	Taro, raw (i.e. dasheen, eddoe)	RAC	0.23	NC	–	NC	–	1.93	0.44	0.84	0.19	NC	–	19.94	4.59		
VR 0600	Yams, raw (incl. dried)	RAC	0.23	NC	–	NC	–	0.03	0.01	0.71	0.16	NC	–	17.57	4.04		
VR 3001	Chinese water chestnut, raw	RAC	0.23	NC	–	NC	–	3.42	0.79	NC	–	NC	–	NC	–		
VS 0624	Celery	RAC	0.43	7.68	3.30	2.85	1.23	NC	–	3.34	1.44	16.83	7.24	4.04	1.74		
VS 0621	Asparagus, raw	RAC	0.01	0.84	0.01	2.08	0.02	7.11	0.07	1.01	0.01	1.69	0.02	0.04	0.00		
VS 0620	Artichoke globe, raw	RAC	1.8	0.98	1.76	3.65	6.57	0.07	0.13	1.67	3.01	0.26	0.47	NC	–		
GC 0650	Rye, raw (incl. flour)	RAC	0.01	3.21	0.03	35.38	0.35	0.21	0.00	6.50	0.07	1.49	0.01	NC	–		
GC 0653	Triticale, raw (incl. flour)	RAC	0.01	0.01	0.00	0.17	0.00	0.29	0.00	0.01	0.00	NC	–	NC	–		
GC 0654	Wheat, raw (incl. meslin)	RAC	0.01	NC	–	NC	–	NC	–	0.01	0.00	NC	–	NC	–		
CP 1212	Wheat, wholemeal bread	PP	0.001	0.03	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.05	0.00	0.02	0.00		
CP 1211	Wheat, white bread	PP	0.001	1.30	0.00	0.46	0.00	0.06	0.00	0.22	0.00	2.44	0.00	0.77	0.00		
CF 1211	Wheat, white flour (incl. white flour products: starch, gluten, macaroni, pastry)	PP	0.003	198.08	0.59	193.03	0.58	106.24	0.32	185.09	0.56	168.67	0.51	131.59	0.39		

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day		Intake as ug/person/day											
				G07 diet		G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake	
GC 0640	Barley, raw (incl. malt extract, incl. pot & pearled, incl. flour & grits, excl. beer, excl. malt)	RAC	0.05	1.69	0.08	4.15	0.21	0.60	0.03	2.39	0.12	2.14	0.11	0.63	0.03		
–	Barley beer	PP	0.0015	180.21	0.27	259.46	0.39	45.91	0.07	172.36	0.26	234.42	0.35	65.30	0.10		
–	Barley malt	PP	0.005	0.19	0.00	NC	–	0.04	0.00	0.08	0.00	NC	–	2.14	0.01		
GC 0647	Oats, raw (incl. rolled)	RAC	0.05	7.50	0.38	6.26	0.31	0.15	0.01	4.87	0.24	3.16	0.16	2.98	0.15		
CM 0649 (GC 0649)	Rice, husked, dry (incl. flour, incl. oil, incl. beverages, incl. starch, excl. polished)	REP	0.68	3.70	2.52	2.11	1.43	1.51	1.03	1.75	1.19	0.29	0.20	5.12	3.48		
CM 1205	Rice polished, dry	PP	0.06	13.38	0.80	10.80	0.65	262.08	15.72	57.16	3.43	12.83	0.77	62.78	3.77		
GC 0651	Sorghum, raw (incl. flour, incl. beer) (i.e. chicken corn, dari seed, durra, feterita)	RAC	1.85	NC	–	NC	–	1.44	2.66	1.15	2.13	NC	–	7.12	13.17		
GC 0645	Maize, raw (incl. glucose & dextrose & isoglucose, incl. beer, incl. germ, incl. starch, excl. flour, excl. oil)	RAC	0.01	0.10	0.00	9.93	0.10	1.71	0.02	21.57	0.22	0.33	0.00	0.05	0.00		
CF 1255	Maize, flour (white flour and wholemeal flour)	PP	0.01	14.27	0.14	12.86	0.13	19.71	0.20	12.55	0.13	4.21	0.04	52.30	0.52		
OR 0645	Maize oil	PP	0.06	0.90	0.05	0.47	0.03	0.15	0.01	3.01	0.18	1.86	0.11	0.36	0.02		
GS 0659	Sugar cane, raw	RAC	0.02	NC	–	NC	–	4.27	0.09	0.01	0.00	NC	–	3.24	0.06		
–	Sugar cane, molasses	PP	0.05	NC	–	NC	–	0.08	0.00	NC	–	NC	–	NC	–		
–	Sugar cane, sugar (incl. non-centrifugal sugar, incl. refined sugar and maltose)	PP	0.0066	92.24	0.61	95.72	0.63	24.12	0.16	77.39	0.51	117.73	0.78	100.67	0.66		

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day		Intake as ug/person/day											
				G07 diet		G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake	
TN 0660	Almonds, nutmeat	RAC	0.01	0.81	0.01	2.21	0.02	0.03	0.00	1.02	0.01	1.47	0.01	NC	–		
TN 0662	Brazil nuts, nutmeat	RAC	0.01	0.12	0.00	0.05	0.00	0.01	0.00	0.05	0.00	0.13	0.00	NC	–		
TN 0295	Cashew nuts, nutmeat	RAC	0.01	0.59	0.01	0.23	0.00	0.18	0.00	0.52	0.01	1.75	0.02	2.78	0.03		
TN 0664	Chestnut, raw	RAC	0.01	0.34	0.00	0.21	0.00	1.14	0.01	0.52	0.01	0.09	0.00	NC	–		
TN 0665	Coconut, nutmeat (incl. copra, incl. desiccated, incl. oil)	RAC	0.01	4.13	0.04	2.73	0.03	13.15	0.13	5.85	0.06	6.92	0.07	22.24	0.22		
TN 0666	Hazelnuts, nutmeat	RAC	0.01	0.45	0.00	1.12	0.01	0.02	0.00	0.34	0.00	1.63	0.02	NC	–		
TN 0669	Macadamia nuts, nutmeat (i.e. Queensland nuts)	RAC	0.01	NC	–	0.40	0.00	NC	–	NC	–	NC	–	0.07	0.00		
TN 0672	Pecan, nutmeat	RAC	0.01	0.38	0.00	NC	–	NC	–	0.27	0.00	NC	–	0.26	0.00		
TN 0673	Pine nut, nutmeat (i.e. pignolia nuts)	RAC	0.01	0.99	0.01	0.66	0.01	0.22	0.00	0.27	0.00	1.89	0.02	0.89	0.01		
TN 0675	Pistachio nut, nutmeat	RAC	0.44	0.35	0.15	0.48	0.21	0.07	0.03	0.39	0.17	0.23	0.10	0.02	0.01		
TN 0678	Walnut, nutmeat	RAC	0.01	0.34	0.00	0.84	0.01	0.28	0.00	0.39	0.00	0.45	0.00	NC	–		
SO 0495	Rape seed, raw (incl. oil)	RAC	0.02	32.68	0.65	19.91	0.40	7.83	0.16	15.69	0.31	NC	–	NC	–		
SO 0702	Sunflower seed, raw	RAC	0.04	0.01	0.00	1.32	0.05	0.03	0.00	1.17	0.05	NC	–	0.02	0.00		
OR 0702	Sunflower seed oil, edible	PP	0.01	9.50	0.10	11.37	0.11	0.49	0.00	5.15	0.05	2.63	0.03	2.80	0.03		
SO 0691	Cotton seed, raw (incl. oil)	RAC	0.01	10.71	0.11	4.23	0.04	7.19	0.07	7.54	0.08	5.66	0.06	2.38	0.02		
SO 0697	Peanuts, nutmeat, raw (incl. roasted, incl. butter, excl.	RAC	0.01	3.26	0.03	2.22	0.02	5.38	0.05	4.85	0.05	1.54	0.02	1.82	0.02		

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day		Intake as ug/person/day											
				G07 diet		G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake	
	oil)																
OR 0697	Peanut oil, edible	PP	0.03	1.02	0.03	0.23	0.01	1.81	0.05	0.42	0.01	5.23	0.16	0.01	0.00		
SB 0716	Coffee bean, raw (i.e. green coffee)	RAC	0.01	0.60	0.01	NC	–	0.62	0.01	1.71	0.02	NC	–	3.51	0.04		
SM 0716	Coffee bean, roasted	PP	0.006	7.02	0.04	9.75	0.06	0.02	0.00	5.09	0.03	13.38	0.08	0.77	0.00		
–	Coffee bean, instant coffee (incl. essences and concentrates)	PP	0.0106	0.75	0.01	0.30	0.00	0.04	0.00	0.67	0.01	2.43	0.03	1.43	0.02		
HH 0092	Group of herbs, raw (incl. dried)	RAC	23	2.61	60.03	2.31	53.13	8.89	204.47	3.92	90.16	1.16	26.68	2.06	47.38		
HS 0444	Peppers, chili, dried	PP	3.5	0.11	0.39	0.21	0.74	0.36	1.26	0.21	0.74	0.25	0.88	0.15	0.53		
DH 1100	Hops, dry	RAC	8.4	NC	–	NC	–	0.02	0.17	0.02	0.17	NC	–	NC	–		
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.01	112.02	1.12	120.71	1.21	63.46	0.63	88.99	0.89	96.24	0.96	41.02	0.41		
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.015	28.01	0.42	30.18	0.45	15.86	0.24	22.25	0.33	24.06	0.36	10.25	0.15		
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.015	6.44	0.10	15.51	0.23	3.79	0.06	8.29	0.12	18.44	0.28	8.00	0.12		
MO 0105	Edible offal (mammalian), raw	RAC	0.02	15.17	0.30	5.19	0.10	6.30	0.13	6.78	0.14	3.32	0.07	3.17	0.06		
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.01	388.92	3.89	335.88	3.36	49.15	0.49	331.25	3.31	468.56	4.69	245.45	2.45		
PM 0110	Poultry meat, raw (incl. prepared)	RAC	0	73.76	0.00	53.86	0.00	23.98	0.00	87.12	0.00	53.38	0.00	84.45	0.00		

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day				Intake as ug/person/day									
				G07 diet		G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake	
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.71	0.00	NC	–		
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0	0.33	0.00	0.72	0.00	0.27	0.00	0.35	0.00	0.80	0.00	NC	–		
PE 0112	Eggs, raw (incl. dried)	RAC	0	25.84	0.00	29.53	0.00	28.05	0.00	33.19	0.00	36.44	0.00	8.89	0.00		
	Total intake (ug/person) =				843.6		912.7		672.8		793.7		892.3		516.9		
	Body weight per region (kg bw) =				60		60		55		60		60		60		
	ADI (ug/person) =				1800		1800		1650		1800		1800		1800		
	%ADI =				46.9%		50.7%		40.8%		44.1%		49.6%		28.7%		
	Rounded %ADI =				50%		50%		40%		40%		50%		30%		

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day				Intake = daily intake: ug/person							
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake		
FC 0001	Group of citrus fruit, raw (incl. kumquat commodities)	RAC	0.4802	20.93	10.05	2.35	1.13	30.71	14.75	0.15	0.07	4.45	2.14		
JF 0001	Group of citrus fruit, juice	PP	0.015	0.11	0.00	0.29	0.00	13.55	0.20	0.14	0.00	0.33	0.00		
FC 0303	Kumquats, raw (incl. juice)	RAC	4.9	18.35	89.92	0.23	1.13	1.78	8.72	0.08	0.39	3.35	16.42		
FS 0013	Subgroup of cherries, raw	RAC	0.74	0.01	0.01	0.01	0.01	5.96	4.41	0.01	0.01	NC	–		

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day			Intake = daily intake: ug/person						
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FS 0014	Subgroup of plums, raw	RAC	0.74	0.07	0.05	0.01	0.01	15.56	11.51	0.01	0.01	NC	–
DF 0014	Plums, dried (prunes)	PP	0.14	0.01	0.00	0.01	0.00	0.37	0.05	0.01	0.00	NC	–
FS 2001	Subgroup of peaches, raw (incl. dried apricots)	RAC	0.74	0.02	0.01	0.01	0.01	10.76	7.96	0.01	0.01	NC	–
FB 2005	Subgroup of caneberries, raw	RAC	1	0.01	0.01	7.30	7.30	2.29	2.29	0.01	0.01	NC	–
FB 2006	Subgroup of bush berries, raw (including processed)	RAC	1	0.82	0.82	4.05	4.05	5.94	5.94	0.43	0.43	2.66	2.66
FB 2007	Subgroup of large shrub/tree berries, raw (including processed)	RAC	1	0.71	0.71	7.32	7.32	NC	–	0.38	0.38	2.32	2.32
FB 0269	Grapes, raw (i.e. table grapes)	RAC	0.53	0.14	0.07	0.36	0.19	15.22	8.07	0.01	0.01	0.09	0.05
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.24	0.01	0.00	0.13	0.03	1.06	0.25	0.01	0.00	0.03	0.01
JF 0269	Grape juice (from wine grapes)	PP	0.19	0.01	0.00	0.01	0.00	0.41	0.08	0.01	0.00	NC	–
–	Grape must (from wine–grapes)	PP	0.28	0.01	0.00	0.01	0.00	0.11	0.03	0.01	0.00	0.19	0.05
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.36	0.31	0.11	0.23	0.08	60.43	21.75	0.52	0.19	31.91	11.49
FB 0265	Cranberry, raw	RAC	0.23	NC	–	NC	–	0.03	0.01	NC	–	NC	–
FB 0275	Strawberry, raw	RAC	1.3	0.01	0.01	0.01	0.01	3.35	4.36	0.01	0.01	0.01	0.01
FT 0289	Carambola, raw	RAC	0.023	0.01	0.00	0.01	0.00	NC	–	0.01	0.00	0.04	0.00
FT 0336	Guava, raw	RAC	0.055	0.10	0.01	0.08	0.00	NC	–	0.14	0.01	3.11	0.17

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day			Intake = daily intake: ug/person						
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FI 0326	Avocado, raw	RAC	0.06	1.12	0.07	0.01	0.00	0.84	0.05	0.01	0.00	6.60	0.40
FI 0327	Banana, raw (incl. plantains) (incl. dried)	RAC	0.03	44.80	1.34	118.17	3.55	25.25	0.76	454.49	13.63	310.23	9.31
FI 0345	Mango, raw (incl. canned mango, incl. mango juice)	RAC	0.035	12.25	0.43	6.83	0.24	0.76	0.03	0.01	0.00	20.12	0.70
FI 0350	Papaya, raw	RAC	0.1	6.47	0.65	0.25	0.03	0.19	0.02	0.01	0.00	26.42	2.64
FI 0353	Pineapple, raw (incl. canned pineapple, incl. dried pineapple, excl. pineapple juice)	RAC	0.01	7.68	0.08	6.15	0.06	4.79	0.05	0.15	0.00	24.94	0.25
JF 0341	Pineapple juice (single strength, incl. concentrated)	PP	0.022	0.49	0.01	0.07	0.00	1.23	0.03	0.02	0.00	NC	–
FI 2540	Pitaya, raw (i.e. dragon fruit or pitahaya)	RAC	0.041	0.01	0.00	0.01	0.00	NC	–	0.01	0.00	0.04	0.00
VA 0035	Group of bulb vegetables, raw	RAC	2.2	11.28	24.82	23.80	52.36	36.11	79.44	9.66	21.25	8.69	19.12
VB 0040	Group of brassica vegetables (excl. brassica leafy vegetables), raw	RAC	1.2	5.46	6.55	4.28	5.14	58.72	70.46	0.02	0.02	NC	–
VC 2039	Subgroup of cucumbers and squashes, raw	RAC	0.17	0.92	0.16	3.20	0.54	13.55	2.30	1.91	0.32	0.05	0.01
VC 2040	Subgroup of melons, pumpkins and winter squashes	RAC	0.02	5.04	0.10	6.54	0.13	38.26	0.77	11.70	0.23	NC	–
VO 0448	Tomato, raw	RAC	0.35	12.99	4.55	4.79	1.68	58.40	20.44	0.92	0.32	0.09	0.03
–	Tomato, canned (& peeled)	PP	0.05	0.07	0.00	0.08	0.00	2.42	0.12	0.07	0.00	NC	–
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	1.1	0.58	0.64	0.22	0.24	2.21	2.43	0.24	0.26	3.10	3.41
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.16	0.05	0.01	0.01	0.00	0.42	0.07	0.01	0.00	0.02	0.00

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VO 0051	Subgroup of peppers, raw (incl. dried sweet peppers, excl. dried chili peppers), incl. okra	RAC	0.35	15.20	5.32	14.23	4.98	25.14	8.80	0.91	0.32	NC	–
VO 2046	Subgroup of eggplants	RAC	0.35	1.31	0.46	8.26	2.89	3.95	1.38	0.01	0.00	NC	–
VL 0483	Lettuce, leaf, raw	RAC	0.28	0.29	0.08	0.03	0.01	6.71	1.88	0.01	0.00	NC	–
VL 2832	Witloof chicory (sprouts)	RAC	0.05	0.02	0.00	0.01	0.00	0.01	0.00	0.01	0.00	NC	–
VP 0060	Group of legume vegetables, raw	RAC	1	0.58	0.58	3.16	3.16	10.38	10.38	0.04	0.04	NC	–
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.01	7.11	0.07	2.33	0.02	3.76	0.04	44.70	0.45	3.27	0.03
VD 0523	Broad bean, dry, raw (incl. horse-bean, field bean) (Vicia faba)	RAC	0.01	3.70	0.04	0.03	0.00	0.17	0.00	0.01	0.00	NC	–
VD 0527	Cowpea, dry, raw (Vigna sinensis, Dolichos sinensis)	RAC	0.01	12.77	0.13	0.99	0.01	0.01	0.00	4.33	0.04	NC	–
VD 0541	Soya bean, dry, raw (incl. flour, incl. paste, incl. curd, incl. sauce, excl. oil)	RAC	0.06	2.89	0.17	0.21	0.01	0.48	0.03	3.16	0.19	0.26	0.02
OR 0541	Soya oil, refined	PP	0.05	2.32	0.12	2.54	0.13	18.70	0.94	2.51	0.13	6.29	0.31
–	Beans (dry) NES: including inter alia lablab or hyacinth bean (Dolichos spp.); jack or sword bean (Canavalia spp.); winged bean (Psophocarpus tetragonolobus); guar bean (Cyamopsis tetragonoloba); velvet bean (Stizolobium spp.); yam bean (Pachyrrhizus erosus)	RAC	0.01	2.54	0.03	1.77	0.02	0.03	0.00	0.03	0.00	3.99	0.04
VD 2066	Subgroup of dry peas, raw	RAC	0.01	4.43	0.04	11.36	0.11	4.22	0.04	9.36	0.09	1.21	0.01

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day		Intake = daily intake: ug/person							
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VD 2067	Subgroup of dry underground pulses, raw	RAC	0.01	0.20	0.00	NC	–	NC	–	NC	–	NC	–
VR 0574	Beetroot, raw	RAC	0.23	5.86	1.35	4.23	0.97	9.46	2.18	3.96	0.91	7.91	1.82
VR 0575	Burdock, greater or edible, raw	RAC	0.23	0.06	0.01	0.04	0.01	NC	–	0.04	0.01	0.08	0.02
VR 0577	Carrots, raw	RAC	0.23	2.07	0.48	3.00	0.69	25.29	5.82	0.05	0.01	NC	–
VR 0578	Celeriac, raw	RAC	0.23	2.91	0.67	2.10	0.48	7.59	1.75	1.97	0.45	3.93	0.90
VR 0469	Chicory, roots, raw	RAC	0.23	0.01	0.00	0.03	0.01	0.10	0.02	NC	–	NC	–
VR 0583	Horseradish, raw	RAC	0.23	0.88	0.20	0.63	0.14	0.54	0.12	0.59	0.14	1.19	0.27
VR 0587	Parsley turnip-rooted, raw	RAC	0.23	0.55	0.13	0.40	0.09	4.29	0.99	0.37	0.09	0.74	0.17
VR 0588	Parsnip, raw	RAC	0.23	1.02	0.23	0.74	0.17	3.50	0.81	0.69	0.16	1.37	0.32
VR 0494	Radish roots, raw	RAC	0.23	3.96	0.91	2.86	0.66	3.30	0.76	2.67	0.61	5.34	1.23
VR 0591	Japanese radish, raw (i.e. Chinese radish, daikon)	RAC	0.23	3.25	0.75	2.35	0.54	NC	–	2.20	0.51	4.39	1.01
VR 0498	Salsify, raw (i.e. oysterplant)	RAC	0.23	0.36	0.08	0.26	0.06	NC	–	0.24	0.06	0.48	0.11
VR 0596	Sugar beet, raw	RAC	1.35	0.01	0.01	NC	–	NC	–	NC	–	NC	–
–	Sugar beet, sugar	PP	0.023	0.56	0.01	0.24	0.01	NC	–	NC	–	5.13	0.12
VR 0573	Arrowroot, raw	RAC	0.23	13.83	3.18	18.24	4.20	0.01	0.00	0.05	0.01	19.60	4.51
VR 0463	Cassava raw (incl. starch, incl. tapioca, incl. flour) (i.e. manioc)	RAC	0.23	91.92	21.14	34.12	7.85	NC	–	259.92	59.78	45.48	10.46

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VR 0463	Cassava raw (incl. starch, incl. flour, excl. tapioca) (i.e. manioc)	RAC	0.23	87.78	20.19	33.53	7.71	NC	–	259.92	59.78	45.48	10.46
VR 0463	Cassava raw (incl. starch, incl. tapioca, excl. flour) (i.e. manioc)	RAC	0.23	41.16	9.47	34.12	7.85	NC	–	203.39	46.78	45.48	10.46
VR 0463	Cassava raw (incl. tapioca, incl. flour, excl. starch) (i.e. manioc)	RAC	0.23	91.92	21.14	34.05	7.83	NC	–	259.92	59.78	45.48	10.46
VR 0463	Cassava raw (incl. starch, excl. tapioca, excl. flour) (i.e. manioc)	RAC	0.23	37.02	8.51	33.53	7.71	NC	–	203.39	46.78	45.48	10.46
VR 0463	Cassava raw (incl. tapioca, excl. flour, excl. starch) (i.e. manioc)	RAC	0.23	41.16	9.47	34.05	7.83	NC	–	203.38	46.78	45.48	10.46
VR 0463	Cassava raw (incl. flour, excl. tapioca, excl. starch) (i.e. manioc)	RAC	0.23	87.77	20.19	33.46	7.70	NC	–	259.92	59.78	45.48	10.46
VR 0463	Cassava, raw (i.e. manioc)	RAC	0.23	37.01	8.51	33.46	7.70	NC	–	203.38	46.78	45.48	10.46
–	Cassava, flour	PP	0.23	14.21	3.27	NC	–	NC	–	15.83	3.64	NC	–
–	Cassava, starch	PP	0.23	0.01	0.00	0.02	0.00	NC	–	0.01	0.00	NC	–
–	Cassava, tapioca	PP	0.23	1.16	0.27	0.16	0.04	NC	–	0.01	0.00	NC	–
VR 0585	Jerusalem artichoke, raw (i.e. topinambur)	RAC	0.23	14.22	3.27	18.75	4.31	0.01	0.00	0.06	0.01	20.14	4.63
VR 0589	Potato, raw (incl. flour, incl. frozen, incl. starch, incl. tapioca)	RAC	2.3	23.96	55.11	13.56	31.19	213.41	490.84	104.35	240.01	8.56	19.69

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									
				Intake = daily intake: ug/person									
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VR 0508	Sweet potato, raw (incl. dried)	RAC	0.48	28.83	13.84	61.55	29.54	0.15	0.07	221.94	106.53	NC	–
VR 0504	Tannia, raw (i.e. tanier, yautia)	RAC	0.23	NC	–	NC	–	0.01	0.00	NC	–	NC	–
VR 0505	Taro, raw (i.e. dasheen, eddoe)	RAC	0.23	6.71	1.54	31.91	7.34	NC	–	10.73	2.47	264.31	60.79
VR 0600	Yams, raw (incl. dried)	RAC	0.23	70.93	16.31	30.62	7.04	0.07	0.02	5.65	1.30	30.85	7.10
VR 3001	Chinese water chestnut, raw	RAC	0.23	NC	–	NC	–	NC	–	NC	–	NC	–
VS 0624	Celery	RAC	0.43	3.66	1.57	2.65	1.14	4.84	2.08	2.47	1.06	4.94	2.12
VS 0621	Asparagus, raw	RAC	0.01	0.01	0.00	0.01	0.00	0.17	0.00	0.01	0.00	NC	–
VS 0620	Artichoke globe, raw	RAC	1.8	0.01	0.02	NC	–	0.08	0.14	0.01	0.02	NC	–
GC 0650	Rye, raw (incl. flour)	RAC	0.01	0.03	0.00	0.01	0.00	13.95	0.14	0.01	0.00	0.88	0.01
GC 0653	Triticale, raw (incl. flour)	RAC	0.01	0.01	0.00	NC	–	NC	–	NC	–	NC	–
GC 0654	Wheat, raw (incl. meslin)	RAC	0.01	NC	–	NC	–	NC	–	NC	–	0.97	0.01
CP 1212	Wheat, wholemeal bread	PP	0.001	0.01	0.00	0.01	0.00	0.03	0.00	0.01	0.00	0.01	0.00
CP 1211	Wheat, white bread	PP	0.001	0.43	0.00	0.41	0.00	1.56	0.00	0.11	0.00	0.07	0.00
CF 1211	Wheat, white flour (incl. white flour products: starch, gluten, macaroni, pastry)	PP	0.003	44.78	0.13	86.96	0.26	214.05	0.64	20.31	0.06	103.60	0.31
GC 0640	Barley, raw (incl. malt extract, incl. pot & pearled, incl. flour & grits, excl. beer, excl. malt)	RAC	0.05	8.49	0.42	0.02	0.00	3.01	0.15	0.01	0.00	0.11	0.01

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
–	Barley beer	PP	0.0015	16.25	0.02	11.36	0.02	225.21	0.34	19.49	0.03	52.17	0.08
–	Barley malt	PP	0.005	0.01	0.00	0.11	0.00	0.67	0.00	0.01	0.00	4.61	0.02
GC 0647	Oats, raw (incl. rolled)	RAC	0.05	0.37	0.02	0.07	0.00	2.79	0.14	0.10	0.01	NC	–
CM 0649 (GC 0649)	Rice, husked, dry (incl. flour, incl. oil, incl. beverages, incl. starch, excl. polished)	REP	0.68	13.58	9.23	4.29	2.92	2.17	1.48	0.01	0.01	8.84	6.01
CM 1205	Rice polished, dry	PP	0.06	30.20	1.81	218.34	13.10	12.77	0.77	15.24	0.91	51.35	3.08
GC 0651	Sorghum, raw (incl. flour, incl. beer) (i.e. chicken corn, dari seed, durra, feterita)	RAC	1.85	89.16	164.95	2.02	3.74	NC	–	35.38	65.45	NC	–
GC 0645	Maize, raw (incl. glucose & dextrose & isoglucose, incl. beer, incl. germ, incl. starch, excl. flour, excl. oil)	RAC	0.01	0.58	0.01	0.52	0.01	3.26	0.03	7.96	0.08	NC	–
CF 1255	Maize, flour (white flour and wholemeal flour)	PP	0.01	94.34	0.94	8.09	0.08	28.03	0.28	55.94	0.56	28.07	0.28
OR 0645	Maize oil	PP	0.06	0.33	0.02	0.07	0.00	0.81	0.05	0.01	0.00	NC	–
GS 0659	Sugar cane, raw	RAC	0.02	5.62	0.11	50.91	1.02	NC	–	11.04	0.22	0.10	0.00
–	Sugar cane, molasses	PP	0.05	NC	–	NC	–	NC	–	NC	–	NC	–
–	Sugar cane, sugar (incl. non-centrifugal sugar, incl. refined sugar and maltose)	PP	0.0066	28.13	0.19	55.38	0.37	78.09	0.52	18.04	0.12	45.60	0.30
TN 0660	Almonds, nutmeat	RAC	0.01	0.01	0.00	0.01	0.00	0.61	0.01	0.01	0.00	NC	–
TN 0662	Brazil nuts, nutmeat	RAC	0.01	0.01	0.00	0.01	0.00	0.02	0.00	0.01	0.00	NC	–

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
TN 0295	Cashew nuts, nutmeat	RAC	0.01	0.91	0.01	0.14	0.00	0.11	0.00	0.01	0.00	NC	–
TN 0664	Chestnut, raw	RAC	0.01	0.01	0.00	0.01	0.00	0.75	0.01	0.01	0.00	NC	–
TN 0665	Coconut, nutmeat (incl. copra, incl. desiccated, incl. oil)	RAC	0.01	2.77	0.03	134.37	1.34	2.81	0.03	0.70	0.01	317.67	3.18
TN 0666	Hazelnuts, nutmeat	RAC	0.01	0.01	0.00	0.01	0.00	0.21	0.00	0.01	0.00	NC	–
TN 0669	Macadamia nuts, nutmeat (i.e. Queensland nuts)	RAC	0.01	0.04	0.00	0.05	0.00	NC	–	0.01	0.00	0.01	0.00
TN 0672	Pecan, nutmeat	RAC	0.01	0.15	0.00	0.22	0.00	0.31	0.00	0.01	0.00	0.01	0.00
TN 0673	Pine nut, nutmeat (i.e. pignolia nuts)	RAC	0.01	0.51	0.01	0.74	0.01	0.36	0.00	0.01	0.00	0.05	0.00
TN 0675	Pistachio nut, nutmeat	RAC	0.44	0.01	0.00	0.01	0.00	0.15	0.07	0.01	0.00	NC	–
TN 0678	Walnut, nutmeat	RAC	0.01	0.01	0.00	0.01	0.00	0.81	0.01	0.01	0.00	NC	–
SO 0495	Rape seed, raw (incl. oil)	RAC	0.02	0.19	0.00	0.07	0.00	12.07	0.24	0.08	0.00	NC	–
SO 0702	Sunflower seed, raw	RAC	0.04	0.02	0.00	0.01	0.00	0.03	0.00	2.23	0.09	NC	–
OR 0702	Sunflower seed oil, edible	PP	0.01	0.37	0.00	0.09	0.00	12.98	0.13	4.01	0.04	0.20	0.00
SO 0691	Cotton seed, raw (incl. oil)	RAC	0.01	8.14	0.08	0.32	0.00	2.84	0.03	2.69	0.03	0.97	0.01
SO 0697	Peanuts, nutmeat, raw (incl. roasted, incl. butter, excl. oil)	RAC	0.01	7.14	0.07	0.45	0.00	1.87	0.02	6.22	0.06	0.53	0.01
OR 0697	Peanut oil, edible	PP	0.03	5.02	0.15	0.05	0.00	0.17	0.01	0.29	0.01	NC	–
SB 0716	Coffee bean, raw (i.e. green coffee)	RAC	0.01	0.83	0.01	0.69	0.01	1.09	0.01	2.91	0.03	0.82	0.01

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day			Intake = daily intake: ug/person						
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
SM 0716	Coffee bean, roasted	PP	0.006	0.02	0.00	0.41	0.00	7.50	0.05	0.01	0.00	0.06	0.00
–	Coffee bean, instant coffee (incl. essences and concentrates)	PP	0.0106	0.03	0.00	0.05	0.00	0.60	0.01	0.01	0.00	5.53	0.06
HH 0092	Group of herbs, raw (incl. dried)	RAC	23	1.85	42.55	1.67	38.41	2.80	64.40	1.24	28.52	2.75	63.25
HS 0444	Peppers, chili, dried	PP	3.5	0.58	2.03	1.27	4.45	1.21	4.24	0.12	0.42	NC	–
DH 1100	Hops, dry	RAC	8.4	NC	–	NC	–	0.04	0.34	NC	–	NC	–
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.01	23.34	0.23	40.71	0.41	97.15	0.97	18.06	0.18	57.71	0.58
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.015	5.84	0.09	10.18	0.15	24.29	0.36	4.52	0.07	14.43	0.22
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.015	1.05	0.02	1.14	0.02	18.69	0.28	0.94	0.01	3.12	0.05
MO 0105	Edible offal (mammalian), raw	RAC	0.02	4.64	0.09	1.97	0.04	10.01	0.20	3.27	0.07	3.98	0.08
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.01	108.75	1.09	70.31	0.70	436.11	4.36	61.55	0.62	79.09	0.79
PM 0110	Poultry meat, raw (incl. prepared)	RAC	0	3.92	0.00	12.03	0.00	57.07	0.00	5.03	0.00	55.56	0.00
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0	NC	–	NC	–	0.32	0.00	NC	–	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0	0.10	0.00	0.70	0.00	0.97	0.00	0.10	0.00	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0	3.84	0.00	4.41	0.00	27.25	0.00	1.13	0.00	7.39	0.00
	Total intake (ug/person) =				594.4		314.5		876.7		920.7		338.4

AZOXYSTROBIN (229) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
	Body weight per region (kg bw) =				60		60		60		60		60
	ADI (ug/person) =				1800		1800		1800		1800		1800
	%ADI =				33.0%		17.5%		48.7%		51.1%		18.8%
	Rounded %ADI =				30%		20%		50%		50%		20%

BUPROFEZIN (173) International Estimated Daily Intake (IEDI) ADI = 0–0.009 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as ug/person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FC 0001	Group of citrus fruit, raw (excl. kumquat commodities)	RAC	0.039	29.89	1.17	11.40	0.44	13.51	0.53	61.57	2.40	32.24	1.26	91.26	3.56
JF 0001	Group of citrus fruit, juice	PP	0.12	1.30	0.16	2.37	0.28	0.22	0.03	13.88	1.67	0.75	0.09	2.63	0.32
FC 0303	Kumquats, raw (incl. juice)	RAC	0.23	2.36	0.54	0.27	0.06	3.19	0.73	14.44	3.32	1.66	0.38	1.71	0.39
FP 0226	Apple, raw	RAC	0.28	13.39	3.75	26.46	7.41	0.52	0.15	16.07	4.50	6.37	1.78	47.79	13.38
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.16	0.32	0.05	3.07	0.49	0.07	0.01	5.00	0.80	0.29	0.05	5.57	0.89
–	Apple cider (i.e. fermented apple juice)	PP	0.16	0.07	0.01	0.12	0.02	10.66	1.71	0.15	0.02	0.07	0.01	0.07	0.01

BUPROFEZIN (173) International Estimated Daily Intake (IEDI) ADI = 0–0.009 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FP 0230	Pear, raw	RAC	1.09	2.16	2.35	6.24	6.80	0.05	0.05	4.07	4.44	1.16	1.26	5.34	5.82
FS 0013	Subgroup of cherries, raw	RAC	0.73	0.92	0.67	9.15	6.68	0.01	0.01	0.61	0.45	0.06	0.04	6.64	4.85
FS 0014	Subgroup of plums, raw	RAC	0.155	2.40	0.37	8.60	1.33	0.06	0.01	2.52	0.39	0.58	0.09	4.16	0.64
DF 0014	Plums, dried (prunes)	PP	0.465	0.09	0.04	0.06	0.03	0.01	0.00	0.18	0.08	0.04	0.02	0.06	0.03
–	Peaches and nectarines, raw	RAC	1.355	2.87	3.89	2.21	2.99	0.15	0.20	5.94	8.05	1.47	1.99	15.66	21.22
FB 0269	Grapes, raw (i.e. table grapes)	RAC	0.17	12.68	2.16	9.12	1.55	0.03	0.01	16.88	2.87	3.70	0.63	54.42	9.25
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.27	0.51	0.14	0.51	0.14	0.01	0.00	1.27	0.34	0.12	0.03	2.07	0.56
JF 0269	Grape juice (from wine grapes)	PP	0.073	0.14	0.01	0.29	0.02	0.05	0.00	0.30	0.02	0.24	0.02	0.05	0.00
–	Grape must (from wine–grapes)	PP	0.17	0.33	0.06	0.13	0.02	0.01	0.00	0.02	0.00	0.01	0.00	0.02	0.00
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.2	0.67	0.13	12.53	2.51	2.01	0.40	1.21	0.24	3.53	0.71	4.01	0.80
FB 0275	Strawberry, raw	RAC	0.44	0.70	0.31	2.01	0.88	0.04	0.02	1.36	0.60	0.37	0.16	2.53	1.11
FT 0305	Table olives, raw	RAC	1.125	0.08	0.09	0.16	0.18	NC	–	0.24	0.27	0.01	0.01	0.65	0.73
DM 0305	Table olives, preserved	PP	0.76	0.58	0.44	0.15	0.11	0.01	0.01	1.22	0.93	0.15	0.11	1.13	0.86
FI 0326	Avocado, raw	RAC	0.01	0.13	0.00	0.03	0.00	2.05	0.02	2.54	0.03	2.34	0.02	0.12	0.00
FI 0327	Banana, raw (incl. plantains) (incl. dried)	RAC	0.01	5.23	0.05	6.94	0.07	99.45	0.99	32.47	0.32	48.30	0.48	24.70	0.25
FI 0345	Mango, raw (incl. canned mango, incl. mango juice)	RAC	0.01	10.48	0.10	0.01	0.00	7.24	0.07	6.87	0.07	19.98	0.20	6.25	0.06

BUPROFEZIN (173) International Estimated Daily Intake (IEDI) ADI = 0–0.009 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VC 0045	Group of fruiting vegetables, cucurbits, raw	RAC	0.195	53.14	10.36	86.21	16.81	6.28	1.22	92.76	18.09	15.64	3.05	155.30	30.28
VO 0448	Tomato, raw	RAC	0.24	41.73	10.02	75.65	18.16	10.66	2.56	82.87	19.89	24.75	5.94	200.93	48.22
–	Tomato, canned (& peeled)	PP	0.041	0.20	0.01	0.31	0.01	0.02	0.00	1.11	0.05	0.11	0.00	1.50	0.06
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.22	2.34	0.51	1.33	0.29	1.57	0.35	4.24	0.93	0.34	0.07	2.83	0.62
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.053	0.29	0.02	0.29	0.02	0.01	0.00	0.38	0.02	0.05	0.00	0.14	0.01
VO 0051	Subgroup of peppers, raw (incl. dried sweet peppers, excl. dried chili peppers), incl. okra	RAC	0.33	10.45	3.45	13.74	4.53	13.81	4.56	14.53	4.79	15.25	5.03	27.93	9.22
VD 0541	Soya bean, dry, raw (incl. paste, incl. curd, incl. oil, incl. sauce)	RAC	0.01	72.79	0.73	59.05	0.59	20.55	0.21	74.20	0.74	61.12	0.61	73.24	0.73
TN 0085	Group of tree nuts, raw (incl. processed)	RAC	0.05	4.06	0.20	3.27	0.16	7.01	0.35	13.93	0.70	14.01	0.70	9.36	0.47
SO 0305	Olives for oil production, raw	RAC	1.125	1.47	1.65	0.67	0.75	NC	–	1.26	1.42	0.04	0.05	7.63	8.58
–	Olive oil (virgin and residue oil)	PP	3.9	2.17	8.46	0.13	0.51	0.05	0.20	1.32	5.15	0.10	0.39	2.76	10.76
SB 0716	Coffee bean, raw (i.e. green coffee)	RAC	0.08	0.96	0.08	0.16	0.01	0.91	0.07	0.27	0.02	1.37	0.11	0.46	0.04
SM 0716	Coffee bean, roasted	PP	0.0256	0.19	0.00	0.91	0.02	0.16	0.00	2.50	0.06	0.39	0.01	0.40	0.01
–	Coffee bean, instant coffee (incl. essences and concentrates)	PP	0.016	0.07	0.00	0.94	0.02	0.07	0.00	0.70	0.01	0.07	0.00	0.29	0.00
–	Coffee bean, substitutes, containing coffee	PP	0.4	0.01	0.00	0.01	0.00	0.16	0.06	0.17	0.07	0.02	0.01	0.03	0.01

BUPROFEZIN (173) International Estimated Daily Intake (IEDI) ADI = 0–0.009 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
HH 0722	Basil leaves, raw (incl. dried)	RAC	0.45	0.14	0.06	0.26	0.12	0.16	0.07	0.38	0.17	NC	–	0.19	0.09
HS 0444	Peppers, chili, dried	PP	2.31	0.42	0.97	0.53	1.22	0.84	1.94	0.50	1.16	0.95	2.19	0.37	0.85
DT 1114	Tea, green or black, fermented and dried, (including concentrates)	RAC	9	2.28	20.52	1.98	17.82	0.46	4.14	2.43	21.87	1.29	11.61	3.04	27.36
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.05	24.96	1.25	57.95	2.90	16.70	0.84	38.38	1.92	26.46	1.32	29.00	1.45
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.05	6.24	0.31	14.49	0.72	4.18	0.21	9.60	0.48	6.62	0.33	7.25	0.36
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.05	3.29	0.16	6.14	0.31	0.82	0.04	1.57	0.08	2.23	0.11	1.07	0.05
MO 0105	Edible offal (mammalian), raw	RAC	0.05	4.79	0.24	9.68	0.48	2.97	0.15	5.49	0.27	3.84	0.19	5.03	0.25
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.01	289.65	2.90	485.88	4.86	26.92	0.27	239.03	2.39	199.91	2.00	180.53	1.81
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0	13.17	0.00	26.78	0.00	7.24	0.00	116.71	0.00	22.54	0.00	32.09	0.00
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0	1.46	0.00	2.98	0.00	0.80	0.00	12.97	0.00	2.50	0.00	3.57	0.00
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.10	0.00	0.10	0.00
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.05	0.12	0.01	0.12	0.01	0.11	0.01	5.37	0.27	0.24	0.01	0.10	0.01
PE 0112	Eggs, raw (incl. dried)	RAC	0.05	7.84	0.39	23.08	1.15	2.88	0.14	14.89	0.74	9.81	0.49	14.83	0.74
	Total intake (ug/person) =				78.8		103.5		22.3		113.1		43.6		206.7

BUPROFEZIN (173) International Estimated Daily Intake (IEDI) ADI = 0–0.009 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
	Body weight per region (kg bw) =				60		60		60		60		60		60
	ADI (ug/person) =				540		540		540		540		540		540
	%ADI =				14.6%		19.2%		4.1%		20.9%		8.1%		38.3%
	Rounded %ADI =				10%		20%		4%		20%		8%		40%

BUPROFEZIN (173) International Estimated Daily Intake (IEDI) ADI = 0–0.009 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FC 0001	Group of citrus fruit, raw (excl. kumquat commodities)	RAC	0.039	33.99	1.33	49.07	1.91	24.40	0.95	50.01	1.95	34.01	1.33	464.99	18.13
JF 0001	Group of citrus fruit, juice	PP	0.12	36.84	4.42	3.75	0.45	0.30	0.04	21.62	2.59	21.82	2.62	46.67	5.60
FC 0303	Kumquats, raw (incl. juice)	RAC	0.23	4.67	1.07	5.86	1.35	1.96	0.45	1.45	0.33	17.05	3.92	1.37	0.32
FP 0226	Apple, raw	RAC	0.28	27.44	7.68	49.21	13.78	21.57	6.04	31.09	8.71	51.60	14.45	1.77	0.50
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.16	14.88	2.38	11.98	1.92	0.15	0.02	9.98	1.60	30.32	4.85	3.47	0.56
–	Apple cider (i.e. fermented apple juice)	PP	0.16	10.05	1.61	5.34	0.85	3.72	0.60	0.36	0.06	0.25	0.04	0.93	0.15
FP 0230	Pear, raw	RAC	1.09	8.79	9.58	8.44	9.20	12.37	13.48	9.60	10.46	10.27	11.19	0.23	0.25

BUPROFEZIN (173) International Estimated Daily Intake (IEDI) ADI = 0–0.009 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day								Intake as ug/person/day			
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FS 0013	Subgroup of cherries, raw	RAC	0.73	1.40	1.02	4.21	3.07	0.04	0.03	2.93	2.14	1.50	1.10	NC	–
FS 0014	Subgroup of plums, raw	RAC	0.155	3.75	0.58	3.33	0.52	5.94	0.92	2.64	0.41	2.50	0.39	0.06	0.01
DF 0014	Plums, dried (prunes)	PP	0.465	0.61	0.28	0.35	0.16	0.05	0.02	0.35	0.16	0.49	0.23	0.13	0.06
–	Peaches and nectarines, raw	RAC	1.355	8.76	11.87	12.98	17.59	8.23	11.15	10.09	13.67	3.64	4.93	0.04	0.05
FB 0269	Grapes, raw (i.e. table grapes)	RAC	0.17	6.33	1.08	11.22	1.91	5.21	0.89	9.38	1.59	4.55	0.77	0.78	0.13
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.27	3.09	0.83	1.51	0.41	0.03	0.01	1.38	0.37	4.26	1.15	0.42	0.11
JF 0269	Grape juice (from wine grapes)	PP	0.073	0.56	0.04	1.96	0.14	0.02	0.00	2.24	0.16	2.27	0.17	0.34	0.02
–	Grape must (from wine grapes)	PP	0.17	0.16	0.03	0.09	0.02	0.01	0.00	0.12	0.02	0.11	0.02	NC	–
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.2	88.93	17.79	62.41	12.48	1.84	0.37	25.07	5.01	61.17	12.23	5.84	1.17
FB 0275	Strawberry, raw	RAC	0.44	4.49	1.98	5.66	2.49	0.02	0.01	6.63	2.92	5.75	2.53	0.05	0.02
FT 0305	Table olives, raw	RAC	1.125	0.04	0.05	0.01	0.01	0.01	0.01	0.03	0.03	0.01	0.01	NC	–
DM 0305	Table olives, preserved	PP	0.76	1.85	1.41	2.34	1.78	0.01	0.01	1.11	0.84	1.54	1.17	0.26	0.20
FI 0326	Avocado, raw	RAC	0.01	2.65	0.03	0.87	0.01	0.46	0.00	1.64	0.02	1.30	0.01	0.96	0.01
FI 0327	Banana, raw (incl. plantains) (incl. dried)	RAC	0.01	25.76	0.26	23.65	0.24	23.83	0.24	24.37	0.24	19.43	0.19	101.55	1.02
FI 0345	Mango, raw (incl. canned mango, incl. mango juice)	RAC	0.01	1.80	0.02	0.63	0.01	10.05	0.10	1.07	0.01	3.52	0.04	16.44	0.16
VC 0045	Group of fruiting vegetables, cucurbits, raw	RAC	0.195	27.81	5.42	41.93	8.18	123.30	24.04	49.47	9.65	15.95	3.11	35.99	7.02

BUPROFEZIN (173) International Estimated Daily Intake (IEDI) ADI = 0–0.009 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
VO 0448	Tomato, raw	RAC	0.24	32.13	7.71	51.27	12.30	34.92	8.38	73.37	17.61	15.15	3.64	8.88	2.13
–	Tomato, canned (& peeled)	PP	0.041	7.57	0.31	2.66	0.11	0.30	0.01	0.97	0.04	7.31	0.30	0.41	0.02
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.22	4.96	1.09	3.20	0.70	0.15	0.03	1.61	0.35	6.88	1.51	0.52	0.11
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.053	0.80	0.04	0.07	0.00	0.05	0.00	0.61	0.03	0.40	0.02	0.08	0.00
VO 0051	Subgroup of peppers, raw (incl. dried sweet peppers, excl. dried chili peppers), incl. okra	RAC	0.33	6.39	2.11	15.53	5.12	19.13	6.31	10.53	3.47	8.29	2.74	5.25	1.73
VD 0541	Soya bean, dry, raw (incl. paste, incl. curd, incl. oil, incl. sauce)	RAC	0.01	106.33	1.06	117.78	1.18	42.12	0.42	195.70	1.96	222.52	2.23	80.47	0.80
TN 0085	Group of tree nuts, raw (incl. processed)	RAC	0.05	8.52	0.43	8.94	0.45	15.09	0.75	9.60	0.48	14.57	0.73	26.26	1.31
SO 0305	Olives for oil production, raw	RAC	1.125	0.35	0.39	0.01	0.01	0.01	0.01	0.57	0.64	0.06	0.07	NC	–
–	Olive oil (virgin and residue oil)	PP	3.9	3.40	13.26	9.49	37.01	0.02	0.08	4.28	16.69	2.74	10.69	0.48	1.87
SB 0716	Coffee bean, raw (i.e. green coffee)	RAC	0.08	0.60	0.05	NC	–	0.62	0.05	1.71	0.14	NC	–	3.51	0.28
SM 0716	Coffee bean, roasted	PP	0.0256	7.02	0.18	9.75	0.25	0.02	0.00	5.09	0.13	13.38	0.34	0.77	0.02
–	Coffee bean, instant coffee (incl. essences and concentrates)	PP	0.016	0.75	0.01	0.30	0.00	0.04	0.00	0.67	0.01	2.43	0.04	1.43	0.02
–	Coffee bean, substitutes, containing coffee	PP	0.4	0.08	0.03	0.09	0.04	0.02	0.01	0.02	0.01	0.07	0.03	0.15	0.06
HH 0722	Basil leaves, raw (incl. dried)	RAC	0.45	0.52	0.23	0.05	0.02	3.23	1.45	0.18	0.08	0.12	0.05	0.27	0.12

BUPROFEZIN (173) International Estimated Daily Intake (IEDI) ADI = 0–0.009 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as ug/person/day								
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
HS 0444	Peppers, chili, dried	PP	2.31	0.11	0.25	0.21	0.49	0.36	0.83	0.21	0.49	0.25	0.58	0.15	0.35
DT 1114	Tea, green or black, fermented and dried, (including concentrates)	RAC	9	2.91	26.19	1.73	15.57	1.14	10.26	1.85	16.65	2.29	20.61	0.74	6.66
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.05	112.02	5.60	120.71	6.04	63.46	3.17	88.99	4.45	96.24	4.81	41.02	2.05
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.05	28.01	1.40	30.18	1.51	15.86	0.79	22.25	1.11	24.06	1.20	10.25	0.51
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.05	6.44	0.32	15.51	0.78	3.79	0.19	8.29	0.41	18.44	0.92	8.00	0.40
MO 0105	Edible offal (mammalian), raw	RAC	0.05	15.17	0.76	5.19	0.26	6.30	0.32	6.78	0.34	3.32	0.17	3.17	0.16
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.01	388.92	3.89	335.88	3.36	49.15	0.49	331.25	3.31	468.56	4.69	245.45	2.45
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0	66.38	0.00	48.47	0.00	21.58	0.00	78.41	0.00	48.04	0.00	76.01	0.00
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0	7.38	0.00	5.39	0.00	2.40	0.00	8.71	0.00	5.34	0.00	8.45	0.00
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.71	0.00	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.05	0.33	0.02	0.72	0.04	0.27	0.01	0.35	0.02	0.80	0.04	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.05	25.84	1.29	29.53	1.48	28.05	1.40	33.19	1.66	36.44	1.82	8.89	0.44
	Total intake (ug/person) =				137.4		165.2		94.4		133.0		123.7		57.0
	Body weight per region (kg bw) =				60		60		55		60		60		60

BUPROFEZIN (173) International Estimated Daily Intake (IEDI) ADI = 0–0.009 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
	ADI (ug/person) =				540		540		495		540		540		540
	%ADI =				25.4%		30.6%		19.1%		24.6%		22.9%		10.6%
	Rounded %ADI =				30%		30%		20%		20%		20%		10%

BUPROFEZIN (173) International Estimated Daily Intake (IEDI) ADI = 0–0.009 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FC 0001	Group of citrus fruit, raw (excl. kumquat commodities)	RAC	0.039	2.57	0.10	2.12	0.08	28.93	1.13	0.07	0.00	1.10	0.04
JF 0001	Group of citrus fruit, juice	PP	0.12	0.11	0.01	0.29	0.03	13.55	1.63	0.14	0.02	0.33	0.04
FC 0303	Kumquats, raw (incl. juice)	RAC	0.23	18.35	4.22	0.23	0.05	1.78	0.41	0.08	0.02	3.35	0.77
FP 0226	Apple, raw	RAC	0.28	0.21	0.06	2.05	0.57	54.48	15.25	0.10	0.03	1.38	0.39
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.16	0.03	0.00	0.10	0.02	7.19	1.15	0.03	0.00	NC	–
–	Apple cider (i.e. fermented apple juice)	PP	0.16	48.75	7.80	0.01	0.00	0.99	0.16	138.03	22.08	NC	–
FP 0230	Pear, raw	RAC	1.09	0.07	0.08	0.14	0.15	9.45	10.30	0.01	0.01	0.14	0.15
FS 0013	Subgroup of cherries, raw	RAC	0.73	0.01	0.01	0.01	0.01	5.96	4.35	0.01	0.01	NC	–

BUPROFEZIN (173) International Estimated Daily Intake (IEDI) ADI = 0–0.009 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									
				Intake = daily intake: ug/person									
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FS 0014	Subgroup of plums, raw	RAC	0.155	0.07	0.01	0.01	0.00	15.56	2.41	0.01	0.00	NC	–
DF 0014	Plums, dried (prunes)	PP	0.465	0.01	0.00	0.01	0.00	0.37	0.17	0.01	0.00	NC	–
–	Peaches and nectarines, raw	RAC	1.355	0.02	0.03	0.01	0.01	7.47	10.12	0.01	0.01	NC	–
FB 0269	Grapes, raw (i.e. table grapes)	RAC	0.17	0.14	0.02	0.36	0.06	15.22	2.59	0.01	0.00	0.09	0.02
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.27	0.01	0.00	0.13	0.04	1.06	0.29	0.01	0.00	0.03	0.01
JF 0269	Grape juice (from wine grapes)	PP	0.073	0.01	0.00	0.01	0.00	0.41	0.03	0.01	0.00	NC	–
–	Grape must (from wine grapes)	PP	0.17	0.01	0.00	0.01	0.00	0.11	0.02	0.01	0.00	0.19	0.03
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.2	0.31	0.06	0.23	0.05	60.43	12.09	0.52	0.10	31.91	6.38
FB 0275	Strawberry, raw	RAC	0.44	0.01	0.00	0.01	0.00	3.35	1.47	0.01	0.00	0.01	0.00
FT 0305	Table olives, raw	RAC	1.125	NC	–	NC	–	0.01	0.01	NC	–	NC	–
DM 0305	Table olives, preserved	PP	0.76	0.01	0.01	0.01	0.01	1.65	1.25	0.01	0.01	0.23	0.17
FI 0326	Avocado, raw	RAC	0.01	1.12	0.01	0.01	0.00	0.84	0.01	0.01	0.00	6.60	0.07
FI 0327	Banana, raw (incl. plantains) (incl. dried)	RAC	0.01	44.80	0.45	118.17	1.18	25.25	0.25	454.49	4.54	310.23	3.10
FI 0345	Mango, raw (incl. canned mango, incl. mango juice)	RAC	0.01	12.25	0.12	6.83	0.07	0.76	0.01	0.01	0.00	20.12	0.20
VC 0045	Group of fruiting vegetables, cucurbits, raw	RAC	0.195	5.96	1.16	9.74	1.90	51.82	10.10	13.61	2.65	0.05	0.01
VO 0448	Tomato, raw	RAC	0.24	12.99	3.12	4.79	1.15	58.40	14.02	0.92	0.22	0.09	0.02

BUPROFEZIN (173) International Estimated Daily Intake (IEDI) ADI = 0–0.009 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									Intake = daily intake: ug/person
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
–	Tomato, canned (& peeled)	PP	0.041	0.07	0.00	0.08	0.00	2.42	0.10	0.07	0.00	NC	–
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.22	0.58	0.13	0.22	0.05	2.21	0.49	0.24	0.05	3.10	0.68
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.053	0.05	0.00	0.01	0.00	0.42	0.02	0.01	0.00	0.02	0.00
VO 0051	Subgroup of peppers, raw (incl. dried sweet peppers, excl. dried chili peppers), incl. okra	RAC	0.33	15.20	5.02	14.23	4.70	25.14	8.30	0.91	0.30	NC	–
VD 0541	Soya bean, dry, raw (incl. paste, incl. curd, incl. oil, incl. sauce)	RAC	0.01	15.80	0.16	14.29	0.14	104.36	1.04	17.11	0.17	35.20	0.35
TN 0085	Group of tree nuts, raw (incl. processed)	RAC	0.05	4.39	0.22	135.53	6.78	6.11	0.31	0.72	0.04	317.74	15.89
SO 0305	Olives for oil production, raw	RAC	1.125	NC	–	NC	–	0.02	0.02	NC	–	NC	–
–	Olive oil (virgin and residue oil)	PP	3.9	0.03	0.12	0.02	0.08	2.14	8.35	0.01	0.04	0.10	0.39
SB 0716	Coffee bean, raw (i.e. green coffee)	RAC	0.08	0.83	0.07	0.69	0.06	1.09	0.09	2.91	0.23	0.82	0.07
SM 0716	Coffee bean, roasted	PP	0.0256	0.02	0.00	0.41	0.01	7.50	0.19	0.01	0.00	0.06	0.00
–	Coffee bean, instant coffee (incl. essences and concentrates)	PP	0.016	0.03	0.00	0.05	0.00	0.60	0.01	0.01	0.00	5.53	0.09
–	Coffee bean, substitutes, containing coffee	PP	0.4	0.01	0.00	0.03	0.01	0.13	0.05	0.01	0.00	NC	–
HH 0722	Basil leaves, raw (incl. dried)	RAC	0.45	0.25	0.11	0.18	0.08	0.13	0.06	0.17	0.08	0.33	0.15
HS 0444	Peppers, chili, dried	PP	2.31	0.58	1.34	1.27	2.93	1.21	2.80	0.12	0.28	NC	–
DT 1114	Tea, green or black, fermented and dried, (including	RAC	9	0.53	4.77	5.25	47.25	0.86	7.74	0.56	5.04	0.88	7.92

BUPROFEZIN (173) International Estimated Daily Intake (IEDI) ADI = 0–0.009 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
	concentrates)												
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.05	23.34	1.17	40.71	2.04	97.15	4.86	18.06	0.90	57.71	2.89
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.05	5.84	0.29	10.18	0.51	24.29	1.21	4.52	0.23	14.43	0.72
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.05	1.05	0.05	1.14	0.06	18.69	0.93	0.94	0.05	3.12	0.16
MO 0105	Edible offal (mammalian), raw	RAC	0.05	4.64	0.23	1.97	0.10	10.01	0.50	3.27	0.16	3.98	0.20
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.01	108.75	1.09	70.31	0.70	436.11	4.36	61.55	0.62	79.09	0.79
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0	3.53	0.00	10.83	0.00	51.36	0.00	4.53	0.00	50.00	0.00
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0	0.39	0.00	1.20	0.00	5.71	0.00	0.50	0.00	5.56	0.00
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0	NC	–	NC	–	0.32	0.00	NC	–	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.05	0.10	0.01	0.70	0.04	0.97	0.05	0.10	0.01	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.05	3.84	0.19	4.41	0.22	27.25	1.36	1.13	0.06	7.39	0.37
	Total intake (ug/person) =				32.3		71.1		132.1		38.0		42.1
	Body weight per region (kg bw) =				60		60		60		60		60
	ADI (ug/person) =				540		540		540		540		540
	%ADI =				6.0%		13.2%		24.5%		7.0%		7.8%

BUPROFEZIN (173) International Estimated Daily Intake (IEDI) ADI = 0–0.009 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
	Rounded %ADI =				6%		10%		20%		7%		8%

CHLORMEQUAT (15) International Estimated Daily Intake (IEDI) ADI = 0–0.04 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as ug/person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FB 0269	Grapes, raw (incl. must, incl. dried, incl. juice, incl. wine)	RAC	0.04	16.25	0.65	28.96	1.16	2.87	0.11	24.22	0.97	9.33	0.37	68.64	2.75
GC 0650	Rye, raw (incl. flour)	RAC	1.1	0.13	0.14	19.38	21.32	0.10	0.11	0.12	0.13	0.03	0.03	2.15	2.37
GC 0653	Triticale, raw (incl. flour)	RAC	0.92	NC	–	NC	–	NC	–	0.01	0.01	0.39	0.36	NC	–
GC 0654	Wheat, raw (incl. bulgur, incl. fermented beverages, incl. white flour products, incl. white bread, excl. germ, excl. wholemeal bread)	RAC	0.855	381.15	325.88	341.54	292.02	38.34	32.78	281.87	241.00	172.65	147.62	434.06	371.12
CF 1210	Wheat, germ	PP	4.3	NC	–	NC	–	0.01	0.04	0.01	0.04	0.14	0.60	0.01	0.04
CP 1212	Wheat, wholemeal bread	PP	0.46	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.03	0.01	0.01	0.00
CF 1211	Wheat, white flour (incl. white flour products: starch, gluten, macaroni, pastry)	PP	0.16	301.24	48.20	268.64	42.98	30.21	4.83	222.51	35.60	134.73	21.56	343.12	54.90
GC 0640	Barley, raw	RAC	0.59	2.49	1.47	NC	–	0.02	0.01	0.03	0.02	0.18	0.11	0.38	0.22
–	Barley, pot & pearled	PP	0.32	7.12	2.28	7.34	2.35	0.02	0.01	0.03	0.01	0.67	0.21	0.20	0.06

CHLORMEQUAT (15) International Estimated Daily Intake (IEDI) ADI = 0–0.04 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
–	Barley, flour (white flour and wholemeal flour)	PP	0.11	2.93	0.32	0.30	0.03	0.02	0.00	0.01	0.00	0.48	0.05	0.01	0.00
–	Barley beer	PP	0.12	4.87	0.58	93.78	11.25	24.28	2.91	12.76	1.53	39.28	4.71	18.15	2.18
–	Barley malt	PP	0.12	0.09	0.01	1.04	0.12	0.18	0.02	0.33	0.04	0.04	0.00	0.10	0.01
GC 0647	Oats, raw	RAC	1.3	0.01	0.01	NC	–	0.01	0.01	0.45	0.59	0.01	0.01	0.01	0.01
GC 0647	Oats, rolled (i.e. oatmeal dry)	PP	1.04	0.03	0.03	3.88	4.04	0.05	0.05	0.69	0.72	0.53	0.55	0.02	0.02
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.04	24.96	1.00	57.95	2.32	16.70	0.67	38.38	1.54	26.46	1.06	29.00	1.16
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.04	6.24	0.25	14.49	0.58	4.18	0.17	9.60	0.38	6.62	0.26	7.25	0.29
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.04	3.29	0.13	6.14	0.25	0.82	0.03	1.57	0.06	2.23	0.09	1.07	0.04
MO 0105	Edible offal (mammalian), raw	RAC	0.2	4.79	0.96	9.68	1.94	2.97	0.59	5.49	1.10	3.84	0.77	5.03	1.01
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.069	289.65	19.99	485.88	33.53	26.92	1.86	239.03	16.49	199.91	13.79	180.53	12.46
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.04	13.17	0.53	26.78	1.07	7.24	0.29	116.71	4.67	22.54	0.90	32.09	1.28
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.04	1.46	0.06	2.98	0.12	0.80	0.03	12.97	0.52	2.50	0.10	3.57	0.14
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.04	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.10	0.00	0.10	0.00
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.043	0.12	0.01	0.12	0.01	0.11	0.00	5.37	0.23	0.24	0.01	0.10	0.00
PE 0112	Eggs, raw (incl. dried)	RAC	0.049	7.84	0.38	23.08	1.13	2.88	0.14	14.89	0.73	9.81	0.48	14.83	0.73

CHLORMEQUAT (15) International Estimated Daily Intake (IEDI) ADI = 0–0.04 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
	Total intake (ug/person) =				402.9		416.2		44.7		306.4		193.7		450.8
	Body weight per region (kg bw) =				60		60		60		60		60		60
	ADI (ug/person) =				2328		2328		2328		2328		2328		2328
	%ADI =				17.3%		17.9%		1.9%		13.2%		8.3%		19.4%
	Rounded %ADI =				20%		20%		2%		10%		8%		20%

CHLORMEQUAT (15) International Estimated Daily Intake (IEDI) ADI = 0–0.04 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FB 0269	Grapes, raw (incl. must, incl. dried, incl. juice, incl. wine)	RAC	0.04	142.23	5.69	105.77	4.23	7.87	0.31	52.44	2.10	109.22	4.37	10.96	0.44
GC 0650	Rye, raw (incl. flour)	RAC	1.1	3.21	3.53	35.38	38.92	0.21	0.23	6.50	7.15	1.49	1.64	NC	–
GC 0653	Triticale, raw (incl. flour)	RAC	0.92	0.01	0.01	0.17	0.16	0.29	0.27	0.01	0.01	NC	–	NC	–
GC 0654	Wheat, raw (incl. bulgur, incl. fermented beverages, incl. white flour products, incl. white bread, excl. germ, excl. wholemeal bread)	RAC	0.855	252.06	215.51	244.62	209.15	134.41	114.92	235.10	201.01	216.33	184.96	167.34	143.08
CF 1210	Wheat, germ	PP	4.3	0.97	4.17	0.10	0.43	0.03	0.13	0.01	0.04	NC	–	0.04	0.17

CHLORMEQUAT (15) International Estimated Daily Intake (IEDI) ADI = 0–0.04 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
CP 1212	Wheat, wholemeal bread	PP	0.46	0.03	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.05	0.02	0.02	0.01
CF 1211	Wheat, white flour (incl. white flour products: starch, gluten, macaroni, pastry)	PP	0.16	198.08	31.69	193.03	30.88	106.24	17.00	185.09	29.61	168.67	26.99	131.59	21.05
GC 0640	Barley, raw	RAC	0.59	0.01	0.01	NC	–	0.03	0.02	1.36	0.80	NC	–	NC	–
–	Barley, pot & pearled	PP	0.32	0.57	0.18	2.56	0.82	0.33	0.11	0.56	0.18	0.36	0.12	NC	–
–	Barley, flour (white flour and wholemeal flour)	PP	0.11	0.08	0.01	0.03	0.00	0.01	0.00	0.05	0.01	0.68	0.07	0.05	0.01
–	Barley beer	PP	0.12	180.21	21.63	259.46	31.14	45.91	5.51	172.36	20.68	234.42	28.13	65.30	7.84
–	Barley malt	PP	0.12	0.19	0.02	NC	–	0.04	0.00	0.08	0.01	NC	–	2.14	0.26
GC 0647	Oats, raw	RAC	1.3	NC	–	NC	–	0.01	0.01	0.01	0.01	NC	–	0.23	0.30
GC 0647	Oats, rolled (i.e. oatmeal dry)	PP	1.04	4.12	4.28	3.44	3.58	0.08	0.08	2.67	2.78	1.74	1.81	1.51	1.57
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.04	112.02	4.48	120.71	4.83	63.46	2.54	88.99	3.56	96.24	3.85	41.02	1.64
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.04	28.01	1.12	30.18	1.21	15.86	0.63	22.25	0.89	24.06	0.96	10.25	0.41
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.04	6.44	0.26	15.51	0.62	3.79	0.15	8.29	0.33	18.44	0.74	8.00	0.32
MO 0105	Edible offal (mammalian), raw	RAC	0.2	15.17	3.03	5.19	1.04	6.30	1.26	6.78	1.36	3.32	0.66	3.17	0.63
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.069	388.92	26.84	335.88	23.18	49.15	3.39	331.25	22.86	468.56	32.33	245.45	16.94

CHLORMEQUAT (15) International Estimated Daily Intake (IEDI) ADI = 0–0.04 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as ug/person/day								
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.04	66.38	2.66	48.47	1.94	21.58	0.86	78.41	3.14	48.04	1.92	76.01	3.04
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.04	7.38	0.30	5.39	0.22	2.40	0.10	8.71	0.35	5.34	0.21	8.45	0.34
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.04	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.71	0.03	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.043	0.33	0.01	0.72	0.03	0.27	0.01	0.35	0.02	0.80	0.03	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.049	25.84	1.27	29.53	1.45	28.05	1.37	33.19	1.63	36.44	1.79	8.89	0.44
–	–	–		–	–	–	–	–	–	–	–	–	–	–	–
	Total intake (ug/person) =				326.7		353.8		148.9		298.5		290.6		198.5
	Body weight per region (kg bw) =				60		60		55		60		60		60
	ADI (ug/person) =				2328		2328		2134		2328		2328		2328
	%ADI =				14.0%		15.2%		7.0%		12.8%		12.5%		8.5%
	Rounded %ADI =				10%		20%		7%		10%		10%		9%

CHLORMEQUAT (15) International Estimated Daily Intake (IEDI) ADI = 0–0.04 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day		Intake = daily intake: ug/person									
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake		
FB 0269	Grapes, raw (incl. must, incl. dried, incl. juice, incl.	RAC	0.04	0.60	0.02	1.26	0.05	103.25	4.13	0.74	0.03	44.23	1.77		

CHLORMEQUAT (15) International Estimated Daily Intake (IEDI) ADI = 0–0.04 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day				Intake = daily intake: ug/person					
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
	wine)												
GC 0650	Rye, raw (incl. flour)	RAC	1.1	0.03	0.03	0.01	0.01	13.95	15.35	0.01	0.01	0.88	0.97
GC 0653	Triticale, raw (incl. flour)	RAC	0.92	0.01	0.01	NC	–	NC	–	NC	–	NC	–
GC 0654	Wheat, raw (incl. bulgur, incl. fermented beverages, incl. white flour products, incl. white bread, excl. germ, excl. wholemeal bread)	RAC	0.855	57.15	48.86	110.46	94.44	272.58	233.06	25.81	22.07	132.04	112.89
CF 1210	Wheat, germ	PP	4.3	0.04	0.17	0.01	0.04	0.01	0.04	0.01	0.04	NC	–
CP 1212	Wheat, wholemeal bread	PP	0.46	0.01	0.00	0.01	0.00	0.03	0.01	0.01	0.00	0.01	0.00
CF 1211	Wheat, white flour (incl. white flour products: starch, gluten, macaroni, pastry)	PP	0.16	44.78	7.16	86.96	13.91	214.05	34.25	20.31	3.25	103.60	16.58
GC 0640	Barley, raw	RAC	0.59	0.01	0.01	0.01	0.01	0.16	0.09	NC	–	NC	–
–	Barley, pot & pearled	PP	0.32	5.46	1.75	0.01	0.00	1.44	0.46	0.01	0.00	NC	–
–	Barley, flour (white flour and wholemeal flour)	PP	0.11	0.02	0.00	NC	–	0.32	0.04	0.01	0.00	NC	–
–	Barley beer	PP	0.12	16.25	1.95	11.36	1.36	225.21	27.03	19.49	2.34	52.17	6.26
–	Barley malt	PP	0.12	0.01	0.00	0.11	0.01	0.67	0.08	0.01	0.00	4.61	0.55
GC 0647	Oats, raw	RAC	1.3	0.01	0.01	0.02	0.03	NC	–	0.09	0.12	NC	–
GC 0647	Oats, rolled (i.e. oatmeal dry)	PP	1.04	0.20	0.21	0.03	0.03	1.54	1.60	0.01	0.01	NC	–
MM 0095	Meat from mammals other than marine mammals, raw	RAC	0.04	23.34	0.93	40.71	1.63	97.15	3.89	18.06	0.72	57.71	2.31

CHLORMEQUAT (15) International Estimated Daily Intake (IEDI) ADI = 0–0.04 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
	(incl. prepared meat) – 80% as muscle												
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.04	5.84	0.23	10.18	0.41	24.29	0.97	4.52	0.18	14.43	0.58
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.04	1.05	0.04	1.14	0.05	18.69	0.75	0.94	0.04	3.12	0.12
MO 0105	Edible offal (mammalian), raw	RAC	0.2	4.64	0.93	1.97	0.39	10.01	2.00	3.27	0.65	3.98	0.80
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.069	108.75	7.50	70.31	4.85	436.11	30.09	61.55	4.25	79.09	5.46
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.04	3.53	0.14	10.83	0.43	51.36	2.05	4.53	0.18	50.00	2.00
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.04	0.39	0.02	1.20	0.05	5.71	0.23	0.50	0.02	5.56	0.22
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.04	NC	–	NC	–	0.32	0.01	NC	–	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.043	0.10	0.00	0.70	0.03	0.97	0.04	0.10	0.00	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.049	3.84	0.19	4.41	0.22	27.25	1.34	1.13	0.06	7.39	0.36
–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Total intake (ug/person) =				70.2		118.0		357.5		34.0		150.9
	Body weight per region (kg bw) =				60		60		60		60		60
	ADI (ug/person) =				2328		2328		2328		2328		2328
	%ADI =				3.0%		5.1%		15.4%		1.5%		6.5%

CHLORMEQUAT (15) International Estimated Daily Intake (IEDI) ADI = 0–0.04 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
	Rounded %ADI =				3%		5%		20%		1%		6%

CYPROCONAZOLE (239) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as ug/person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VP 0064	Peas without pods (Pisum spp) (succulent seeds)	RAC	0.01	1.97	0.02	0.51	0.01	0.02	0.00	0.79	0.01	3.68	0.04	3.80	0.04
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.01	2.39	0.02	1.61	0.02	10.47	0.10	1.84	0.02	12.90	0.13	7.44	0.07
VD 0523	Broad bean, dry, raw (incl. horse-bean, field bean) (Vicia faba)	RAC	0.01	1.27	0.01	0.01	0.00	0.12	0.00	2.49	0.02	0.23	0.00	5.54	0.06
VD 0527	Cowpea, dry, raw (Vigna sinensis, Dolichos sinensis)	RAC	0.01	0.05	0.00	NC	–	1.74	0.02	0.01	0.00	0.01	0.00	0.07	0.00
VD 0541	Soya bean, dry, raw (incl. flour, incl. paste, incl. curd, incl. sauce, excl. oil)	RAC	0.02	0.63	0.01	1.09	0.02	0.40	0.01	1.40	0.03	1.68	0.03	0.48	0.01
OR 0541	Soya oil, refined	PP	0.036	12.99	0.47	10.43	0.38	3.63	0.13	13.10	0.47	10.70	0.39	13.10	0.47
–	Beans (dry) NES: including inter alia lablab or hyacinth bean (Dolichos spp.); jack or sword bean (Canavalia spp.); winged bean (Psophocarpus tetragonolobus); guar bean (Cyamopsis tetragonoloba); velvet bean (Stizolobium spp.); yam bean (Pachyrrhizus erosus)	RAC	0.01	1.70	0.02	0.01	0.00	3.00	0.03	1.80	0.02	1.64	0.02	1.33	0.01

CYPROCONAZOLE (239) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VD 2066	Subgroup of dry peas, raw	RAC	0.01	9.09	0.09	3.35	0.03	1.06	0.01	9.48	0.09	15.11	0.15	10.58	0.11
VR 0596	Sugar beet, raw (incl. sugar)	RAC	0.02	0.13	0.00	NC	–	0.08	0.00	0.66	0.01	0.47	0.01	88.94	1.78
GC 2086	Subgroup of wheat, similar grains and pseudocereals without husks, raw (including processed)	RAC	0.02	381.29	7.63	360.94	7.22	38.45	0.77	282.01	5.64	173.32	3.47	436.22	8.72
GC 2087	Subgroup of barley, similar grains, and pseudocereals with husks, raw (including processed)	RAC	0.02	19.96	0.40	38.62	0.77	5.13	0.10	4.81	0.10	10.80	0.22	4.44	0.09
GC 0645	Maize, raw (incl. glucose & dextrose & isoglucose, incl. flour, incl. oil, incl. beer, incl. germ, incl. starch)	RAC	0.01	29.81	0.30	44.77	0.45	108.95	1.09	52.37	0.52	60.28	0.60	75.69	0.76
SO 0495	Rape seed, raw	RAC	0.065	0.02	0.00	NC	–	NC	–	0.01	0.00	0.75	0.05	0.01	0.00
OR 0495	Rape seed oil, edible	PP	0.0052	0.35	0.00	0.44	0.00	0.19	0.00	0.97	0.01	3.28	0.02	0.77	0.00
SB 0716	Coffee bean, raw (i.e. green coffee)	RAC	0.03	0.96	0.03	0.16	0.00	0.91	0.03	0.27	0.01	1.37	0.04	0.46	0.01
SM 0716	Coffee bean, roasted	PP	0.039	0.19	0.01	0.91	0.04	0.16	0.01	2.50	0.10	0.39	0.02	0.40	0.02
–	Coffee bean, instant coffee (incl. essences and concentrates)	PP	0.048	0.07	0.00	0.94	0.05	0.07	0.00	0.70	0.03	0.07	0.00	0.29	0.01
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat)	RAC	0.003	31.20	0.09	72.44	0.22	20.88	0.06	47.98	0.14	33.08	0.10	36.25	0.11
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered	RAC	0.003	3.29	0.01	6.14	0.02	0.82	0.00	1.57	0.00	2.23	0.01	1.07	0.00

CYPROCONAZOLE (239) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as ug/person/day								
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
	fats)														
MO 0105	Edible offal (mammalian), raw	RAC	0.14	4.79	0.67	9.68	1.36	2.97	0.42	5.49	0.77	3.84	0.54	5.03	0.70
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.009	289.65	2.61	485.88	4.37	26.92	0.24	239.03	2.15	199.91	1.80	180.53	1.62
PM 0110	Poultry meat, raw (incl. prepared)	RAC	0.01	14.63	0.15	29.76	0.30	8.04	0.08	129.68	1.30	25.04	0.25	35.66	0.36
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.01	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.10	0.00	0.10	0.00
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.01	0.12	0.00	0.12	0.00	0.11	0.00	5.37	0.05	0.24	0.00	0.10	0.00
PE 0112	Eggs, raw (incl. dried)	RAC	0.01	7.84	0.08	23.08	0.23	2.88	0.03	14.89	0.15	9.81	0.10	14.83	0.15
	Total intake (ug/person) =				12.6		15.5		3.1		11.7		8.0		15.1
	Body weight per region (kg bw) =				60		60		60		60		60		60
	ADI (ug/person) =				1200		1200		1200		1200		1200		1200
	%ADI =				1.1%		1.3%		0.3%		1.0%		0.7%		1.3%
	Rounded %ADI =				1%		1%		0%		1%		1%		1%

CYPROCONAZOLE (239) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
VP 0064	Peas without pods (Pisum spp) (succulent seeds)	RAC	0.01	10.72	0.11	1.99	0.02	2.72	0.03	4.26	0.04	4.23	0.04	NC	–
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.01	1.51	0.02	1.50	0.02	1.90	0.02	5.11	0.05	1.36	0.01	23.43	0.23
VD 0523	Broad bean, dry, raw (incl. horse-bean, field bean) (Vicia faba)	RAC	0.01	0.02	0.00	0.01	0.00	1.16	0.01	0.40	0.00	NC	–	0.06	0.00
VD 0527	Cowpea, dry, raw (Vigna sinensis, Dolichos sinensis)	RAC	0.01	NC	–	NC	–	0.16	0.00	0.01	0.00	NC	–	NC	–
VD 0541	Soya bean, dry, raw (incl. flour, incl. paste, incl. curd, incl. sauce, excl. oil)	RAC	0.02	0.47	0.01	0.77	0.02	9.12	0.18	8.05	0.16	0.04	0.00	6.06	0.12
OR 0541	Soya oil, refined	PP	0.036	19.06	0.69	21.06	0.76	5.94	0.21	33.78	1.22	40.05	1.44	13.39	0.48
–	Beans (dry) NES: including inter alia lablab or hyacinth bean (Dolichos spp.); jack or sword bean (Canavalia spp.); winged bean (Psophocarpus tetragonolobus); guar bean (Cyamopsis tetragonoloba); velvet bean (Stizolobium spp.); yam bean (Pachyrrhizus erosus)	RAC	0.01	0.01	0.00	NC	–	0.57	0.01	0.11	0.00	0.16	0.00	0.94	0.01
VD 2066	Subgroup of dry peas, raw	RAC	0.01	5.01	0.05	3.76	0.04	1.82	0.02	3.44	0.03	3.49	0.03	5.15	0.05
VR 0596	Sugar beet, raw (incl. sugar)	RAC	0.02	0.01	0.00	NC	–	0.01	0.00	0.01	0.00	NC	–	NC	–
GC 2086	Subgroup of wheat, similar grains and pseudocereals without husks, raw (including processed)	RAC	0.02	256.28	5.13	280.29	5.61	134.94	2.70	241.61	4.83	217.88	4.36	167.40	3.35
GC 2087	Subgroup of barley, similar grains, and pseudocereals with husks, raw (including	RAC	0.02	43.68	0.87	60.49	1.21	9.72	0.19	40.47	0.81	49.83	1.00	18.90	0.38

CYPROCONAZOLE (239) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
	processed)														
GC 0645	Maize, raw (incl. glucose & dextrose & isoglucose, incl. flour, incl. oil, incl. beer, incl. germ, incl. starch)	RAC	0.01	18.51	0.19	26.18	0.26	26.04	0.26	39.99	0.40	7.36	0.07	64.58	0.65
SO 0495	Rape seed, raw	RAC	0.065	NC	–	NC	–	0.01	0.00	NC	–	NC	–	NC	–
OR 0495	Rape seed oil, edible	PP	0.0052	12.52	0.07	7.63	0.04	3.00	0.02	6.01	0.03	NC	–	NC	–
SB 0716	Coffee bean, raw (i.e. green coffee)	RAC	0.03	0.60	0.02	NC	–	0.62	0.02	1.71	0.05	NC	–	3.51	0.11
SM 0716	Coffee bean, roasted	PP	0.039	7.02	0.27	9.75	0.38	0.02	0.00	5.09	0.20	13.38	0.52	0.77	0.03
–	Coffee bean, instant coffee (incl. essences and concentrates)	PP	0.048	0.75	0.04	0.30	0.01	0.04	0.00	0.67	0.03	2.43	0.12	1.43	0.07
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat)	RAC	0.003	140.03	0.42	150.89	0.45	79.32	0.24	111.24	0.33	120.30	0.36	51.27	0.15
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.003	6.44	0.02	15.51	0.05	3.79	0.01	8.29	0.02	18.44	0.06	8.00	0.02
MO 0105	Edible offal (mammalian), raw	RAC	0.14	15.17	2.12	5.19	0.73	6.30	0.88	6.78	0.95	3.32	0.46	3.17	0.44
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.009	388.92	3.50	335.88	3.02	49.15	0.44	331.25	2.98	468.56	4.22	245.45	2.21
PM 0110	Poultry meat, raw (incl. prepared)	RAC	0.01	73.76	0.74	53.86	0.54	23.98	0.24	87.12	0.87	53.38	0.53	84.45	0.84
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.01	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.71	0.01	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.01	0.33	0.00	0.72	0.01	0.27	0.00	0.35	0.00	0.80	0.01	NC	–

CYPROCONAZOLE (239) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
PE 0112	Eggs, raw (incl. dried)	RAC	0.01	25.84	0.26	29.53	0.30	28.05	0.28	33.19	0.33	36.44	0.36	8.89	0.09
	Total intake (ug/person) =				14.5		13.4		5.8		13.4		13.6		9.2
	Body weight per region (kg bw) =				60		60		55		60		60		60
	ADI (ug/person) =				1200		1200		1100		1200		1200		1200
	%ADI =				1.2%		1.1%		0.5%		1.1%		1.1%		0.8%
	Rounded %ADI =				1%		1%		1%		1%		1%		1%

CYPROCONAZOLE (239) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day		Intake = daily intake: ug/person							
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VP 0064	Peas without pods (Pisum spp) (succulent seeds)	RAC	0.01	0.21	0.00	0.02	0.00	5.51	0.06	0.02	0.00	NC	–
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.01	7.11	0.07	2.33	0.02	3.76	0.04	44.70	0.45	3.27	0.03
VD 0523	Broad bean, dry, raw (incl. horse-bean, field bean) (Vicia faba)	RAC	0.01	3.70	0.04	0.03	0.00	0.17	0.00	0.01	0.00	NC	–
VD 0527	Cowpea, dry, raw (Vigna sinensis, Dolichos sinensis)	RAC	0.01	12.77	0.13	0.99	0.01	0.01	0.00	4.33	0.04	NC	–
VD 0541	Soya bean, dry, raw (incl. flour, incl. paste, incl. curd, incl. sauce, excl. oil)	RAC	0.02	2.89	0.06	0.21	0.00	0.48	0.01	3.16	0.06	0.26	0.01

CYPROCONAZOLE (239) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day					Intake = daily intake: ug/person					
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
OR 0541	Soya oil, refined	PP	0.036	2.32	0.08	2.54	0.09	18.70	0.67	2.51	0.09	6.29	0.23
–	Beans (dry) NES: including inter alia lablab or hyacinth bean (Dolichos spp.); jack or sword bean (Canavalia spp.); winged bean (Psophocarpus tetragonolobus); guar bean (Cyamopsis tetragonoloba); velvet bean (Stizolobium spp.); yam bean (Pachyrrhizus erosus)	RAC	0.01	2.54	0.03	1.77	0.02	0.03	0.00	0.03	0.00	3.99	0.04
VD 2066	Subgroup of dry peas, raw	RAC	0.01	4.43	0.04	11.36	0.11	4.22	0.04	9.36	0.09	1.21	0.01
VR 0596	Sugar beet, raw (incl. sugar)	RAC	0.02	3.93	0.08	1.68	0.03	NC	–	NC	–	36.12	0.72
GC 2086	Subgroup of wheat, similar grains and pseudocereals without husks, raw (including processed)	RAC	0.02	57.23	1.14	110.47	2.21	286.57	5.73	25.82	0.52	132.92	2.66
GC 2087	Subgroup of barley, similar grains, and pseudocereals with husks, raw (including processed)	RAC	0.02	11.99	0.24	5.22	0.10	49.50	0.99	3.82	0.08	16.26	0.33
GC 0645	Maize, raw (incl. glucose & dextrose & isoglucose, incl. flour, incl. oil, incl. beer, incl. germ, incl. starch)	RAC	0.01	116.66	1.17	10.52	0.11	38.46	0.38	76.60	0.77	34.44	0.34
SO 0495	Rape seed, raw	RAC	0.065	NC	–	0.01	0.00	NC	–	NC	–	NC	–
OR 0495	Rape seed oil, edible	PP	0.0052	0.07	0.00	0.03	0.00	4.62	0.02	0.03	0.00	NC	–
SB 0716	Coffee bean, raw (i.e. green coffee)	RAC	0.03	0.83	0.02	0.69	0.02	1.09	0.03	2.91	0.09	0.82	0.02
SM 0716	Coffee bean, roasted	PP	0.039	0.02	0.00	0.41	0.02	7.50	0.29	0.01	0.00	0.06	0.00
–	Coffee bean, instant coffee (incl. essences and concentrates)	PP	0.048	0.03	0.00	0.05	0.00	0.60	0.03	0.01	0.00	5.53	0.27

CYPROCONAZOLE (239) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day				Intake = daily intake: ug/person					
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat)	RAC	0.003	29.18	0.09	50.89	0.15	121.44	0.36	22.58	0.07	72.14	0.22
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.003	1.05	0.00	1.14	0.00	18.69	0.06	0.94	0.00	3.12	0.01
MO 0105	Edible offal (mammalian), raw	RAC	0.14	4.64	0.65	1.97	0.28	10.01	1.40	3.27	0.46	3.98	0.56
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.009	108.75	0.98	70.31	0.63	436.11	3.92	61.55	0.55	79.09	0.71
PM 0110	Poultry meat, raw (incl. prepared)	RAC	0.01	3.92	0.04	12.03	0.12	57.07	0.57	5.03	0.05	55.56	0.56
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.01	NC	–	NC	–	0.32	0.00	NC	–	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.01	0.10	0.00	0.70	0.01	0.97	0.01	0.10	0.00	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.01	3.84	0.04	4.41	0.04	27.25	0.27	1.13	0.01	7.39	0.07
	Total intake (ug/person) =				4.9		4.0		14.9		3.3		6.8
	Body weight per region (kg bw) =				60		60		60		60		60
	ADI (ug/person) =				1200		1200		1200		1200		1200
	%ADI =				0.4%		0.3%		1.2%		0.3%		0.6%
	Rounded %ADI =				0%		0%		1%		0%		1%

ETOFENPROX (184) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FP 0226	Apple, raw (incl. cider, excl. juice)	RAC	0.2	13.49	2.70	26.63	5.33	15.05	3.01	16.28	3.26	6.47	1.29	47.88	9.58
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.012	0.32	0.00	3.07	0.04	0.07	0.00	5.00	0.06	0.29	0.00	5.57	0.07
FP 0230	Pear, raw	RAC	0.2	2.16	0.43	6.24	1.25	0.05	0.01	4.07	0.81	1.16	0.23	5.34	1.07
–	Peaches and nectarines, raw	RAC	0.16	2.87	0.46	2.21	0.35	0.15	0.02	5.94	0.95	1.47	0.24	15.66	2.51
FB 0269	Grapes, raw (incl. must, excl. dried, excl. juice, excl. wine)	RAC	0.73	13.02	9.50	9.25	6.75	0.03	0.02	16.91	12.34	3.70	2.70	54.44	39.74
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	1.5	0.51	0.77	0.51	0.77	0.01	0.02	1.27	1.91	0.12	0.18	2.07	3.11
JF 0269	Grape juice (from wine grapes)	PP	0.029	0.14	0.00	0.29	0.01	0.05	0.00	0.30	0.01	0.24	0.01	0.05	0.00
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.029	0.67	0.02	12.53	0.36	2.01	0.06	1.21	0.04	3.53	0.10	4.01	0.12
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.05	2.39	0.12	1.61	0.08	10.47	0.52	1.84	0.09	12.90	0.65	7.44	0.37
CM 0649 (GC 0649)	Rice, husked, dry (incl. flour, incl. oil, incl. beverages, incl. starch, excl. polished)	REP	0.09	1.26	0.11	1.58	0.14	31.05	2.79	5.43	0.49	0.90	0.08	2.18	0.20
CM 1205	Rice polished, dry	PP	0.01	34.21	0.34	10.39	0.10	41.72	0.42	82.38	0.82	150.24	1.50	70.47	0.70
GC 0645	Maize, raw (incl. glucose & dextrose & isoglucose, incl. flour, incl. oil, incl. beer, incl. germ, incl. starch)	RAC	0.05	29.81	1.49	44.77	2.24	108.95	5.45	52.37	2.62	60.28	3.01	75.69	3.78
SO 0495	Rape seed, raw (incl. oil)	RAC	0.01	0.93	0.01	1.16	0.01	0.49	0.00	2.53	0.03	9.32	0.09	2.02	0.02
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.055	24.96	1.37	57.95	3.19	16.70	0.92	38.38	2.11	26.46	1.46	29.00	1.60

ETOFENPROX (184) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as ug/person/day								
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	1.5	6.24	9.36	14.49	21.73	4.18	6.26	9.60	14.39	6.62	9.92	7.25	10.88
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	1.5	3.29	4.94	6.14	9.21	0.82	1.23	1.57	2.36	2.23	3.35	1.07	1.61
MO 0105	Edible offal (mammalian), raw	RAC	0.072	4.79	0.34	9.68	0.70	2.97	0.21	5.49	0.40	3.84	0.28	5.03	0.36
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.096	289.65	27.81	485.88	46.64	26.92	2.58	239.03	22.95	199.91	19.19	180.53	17.33
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.003	13.17	0.04	26.78	0.08	7.24	0.02	116.71	0.35	22.54	0.07	32.09	0.10
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.4	1.46	0.59	2.98	1.19	0.80	0.32	12.97	5.19	2.50	1.00	3.57	1.43
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.4	0.10	0.04	0.10	0.04	NC	–	0.10	0.04	0.10	0.04	0.10	0.04
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.013	0.12	0.00	0.12	0.00	0.11	0.00	5.37	0.07	0.24	0.00	0.10	0.00
PE 0112	Eggs, raw (incl. dried)	RAC	0.07	7.84	0.55	23.08	1.62	2.88	0.20	14.89	1.04	9.81	0.69	14.83	1.04
	Total intake (ug/person) =				61.0		101.8		24.1		72.3		46.1		95.6
	Body weight per region (kg bw) =				60		60		60		60		60		60
	ADI (ug/person) =				1800		1800		1800		1800		1800		1800
	%ADI =				3.4%		5.7%		1.3%		4.0%		2.6%		5.3%
	Rounded %ADI =				3%		6%		1%		4%		3%		5%

ETOFENPROX (184) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FP 0226	Apple, raw (incl. cider, excl. juice)	RAC	0.2	41.14	8.23	56.49	11.30	26.64	5.33	31.58	6.32	51.94	10.39	3.05	0.61
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.012	14.88	0.18	11.98	0.14	0.15	0.00	9.98	0.12	30.32	0.36	3.47	0.04
FP 0230	Pear, raw	RAC	0.2	8.79	1.76	8.44	1.69	12.37	2.47	9.60	1.92	10.27	2.05	0.23	0.05
–	Peaches and nectarines, raw	RAC	0.16	8.76	1.40	12.98	2.08	8.23	1.32	10.09	1.61	3.64	0.58	0.04	0.01
FB 0269	Grapes, raw (incl. must, excl. dried, excl. juice, excl. wine)	RAC	0.73	6.48	4.73	11.31	8.26	5.21	3.80	9.50	6.94	4.66	3.40	0.78	0.57
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	1.5	3.09	4.64	1.51	2.27	0.03	0.05	1.38	2.07	4.26	6.39	0.42	0.63
JF 0269	Grape juice (from wine grapes)	PP	0.029	0.56	0.02	1.96	0.06	0.02	0.00	2.24	0.06	2.27	0.07	0.34	0.01
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.029	88.93	2.58	62.41	1.81	1.84	0.05	25.07	0.73	61.17	1.77	5.84	0.17
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.05	1.51	0.08	1.50	0.08	1.90	0.10	5.11	0.26	1.36	0.07	23.43	1.17
CM 0649 (GC 0649)	Rice, husked, dry (incl. flour, incl. oil, incl. beverages, incl. starch, excl. polished)	REP	0.09	3.70	0.33	2.11	0.19	1.51	0.14	1.75	0.16	0.29	0.03	5.12	0.46
CM 1205	Rice polished, dry	PP	0.01	13.38	0.13	10.80	0.11	262.08	2.62	57.16	0.57	12.83	0.13	62.78	0.63
GC 0645	Maize, raw (incl. glucose & dextrose & isoglucose, incl. flour, incl. oil, incl. beer, incl. germ, incl. starch)	RAC	0.05	18.51	0.93	26.18	1.31	26.04	1.30	39.99	2.00	7.36	0.37	64.58	3.23
SO 0495	Rape seed, raw (incl. oil)	RAC	0.01	32.68	0.33	19.91	0.20	7.83	0.08	15.69	0.16	NC	–	NC	–
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.055	112.02	6.16	120.71	6.64	63.46	3.49	88.99	4.89	96.24	5.29	41.02	2.26

ETOFENPROX (184) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as ug/person/day								
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	1.5	28.01	42.01	30.18	45.27	15.86	23.80	22.25	33.37	24.06	36.09	10.25	15.38
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	1.5	6.44	9.66	15.51	23.27	3.79	5.69	8.29	12.44	18.44	27.66	8.00	12.00
MO 0105	Edible offal (mammalian), raw	RAC	0.072	15.17	1.09	5.19	0.37	6.30	0.45	6.78	0.49	3.32	0.24	3.17	0.23
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.096	388.92	37.34	335.88	32.24	49.15	4.72	331.25	31.80	468.56	44.98	245.45	23.56
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.003	66.38	0.20	48.47	0.15	21.58	0.06	78.41	0.24	48.04	0.14	76.01	0.23
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.4	7.38	2.95	5.39	2.15	2.40	0.96	8.71	3.48	5.34	2.14	8.45	3.38
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.4	0.10	0.04	0.10	0.04	NC	–	0.10	0.04	0.71	0.28	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.013	0.33	0.00	0.72	0.01	0.27	0.00	0.35	0.00	0.80	0.01	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.07	25.84	1.81	29.53	2.07	28.05	1.96	33.19	2.32	36.44	2.55	8.89	0.62
	Total intake (ug/person) =				126.6		141.7		58.4		112.0		145.0		65.2
	Body weight per region (kg bw) =				60		60		55		60		60		60
	ADI (ug/person) =				1800		1800		1650		1800		1800		1800
	%ADI =				7.0%		7.9%		3.5%		6.2%		8.1%		3.6%
	Rounded %ADI =				7%		8%		4%		6%		8%		4%

ETOFENPROX (184) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day				Intake = daily intake: ug/person					
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FP 0226	Apple, raw (incl. cider, excl. juice)	RAC	0.2	66.67	13.33	2.06	0.41	55.83	11.17	188.29	37.66	1.38	0.28
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.012	0.03	0.00	0.10	0.00	7.19	0.09	0.03	0.00	NC	–
FP 0230	Pear, raw	RAC	0.2	0.07	0.01	0.14	0.03	9.45	1.89	0.01	0.00	0.14	0.03
–	Peaches and nectarines, raw	RAC	0.16	0.02	0.00	0.01	0.00	7.47	1.20	0.01	0.00	NC	–
FB 0269	Grapes, raw (incl. must, excl. dried, excl. juice, excl. wine)	RAC	0.73	0.14	0.10	0.36	0.26	15.33	11.19	0.01	0.01	0.28	0.20
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	1.5	0.01	0.02	0.13	0.20	1.06	1.59	0.01	0.02	0.03	0.05
JF 0269	Grape juice (from wine grapes)	PP	0.029	0.01	0.00	0.01	0.00	0.41	0.01	0.01	0.00	NC	–
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.029	0.31	0.01	0.23	0.01	60.43	1.75	0.52	0.02	31.91	0.93
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.05	7.11	0.36	2.33	0.12	3.76	0.19	44.70	2.24	3.27	0.16
CM 0649 (GC 0649)	Rice, husked, dry (incl. flour, incl. oil, incl. beverages, incl. starch, excl. polished)	REP	0.09	13.58	1.22	4.29	0.39	2.17	0.20	0.01	0.00	8.84	0.80
CM 1205	Rice polished, dry	PP	0.01	30.20	0.30	218.34	2.18	12.77	0.13	15.24	0.15	51.35	0.51
GC 0645	Maize, raw (incl. glucose & dextrose & isoglucose, incl. flour, incl. oil, incl. beer, incl. germ, incl. starch)	RAC	0.05	116.66	5.83	10.52	0.53	38.46	1.92	76.60	3.83	34.44	1.72
SO 0495	Rape seed, raw (incl. oil)	RAC	0.01	0.19	0.00	0.07	0.00	12.07	0.12	0.08	0.00	NC	–
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.055	23.34	1.28	40.71	2.24	97.15	5.34	18.06	0.99	57.71	3.17

ETOFENPROX (184) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	1.5	5.84	8.75	10.18	15.27	24.29	36.43	4.52	6.77	14.43	21.64
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	1.5	1.05	1.58	1.14	1.71	18.69	28.04	0.94	1.41	3.12	4.68
MO 0105	Edible offal (mammalian), raw	RAC	0.072	4.64	0.33	1.97	0.14	10.01	0.72	3.27	0.24	3.98	0.29
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.096	108.75	10.44	70.31	6.75	436.11	41.87	61.55	5.91	79.09	7.59
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.003	3.53	0.01	10.83	0.03	51.36	0.15	4.53	0.01	50.00	0.15
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.4	0.39	0.16	1.20	0.48	5.71	2.28	0.50	0.20	5.56	2.22
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.4	NC	–	NC	–	0.32	0.13	NC	–	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.013	0.10	0.00	0.70	0.01	0.97	0.01	0.10	0.00	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.07	3.84	0.27	4.41	0.31	27.25	1.91	1.13	0.08	7.39	0.52
	Total intake (ug/person) =				44.0		31.1		148.3		59.5		44.9
	Body weight per region (kg bw) =				60		60		60		60		60
	ADI (ug/person) =				1800		1800		1800		1800		1800
	%ADI =				2.4%		1.7%		8.2%		3.3%		2.5%
	Rounded %ADI =				2%		2%		8%		3%		2%

FENPROPIDIN (340) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FI 0327	Banana, raw (incl. plantains) (incl. dried)	RAC	0.097	5.23	0.51	6.94	0.67	99.45	9.65	32.47	3.15	48.30	4.69	24.70	2.40
VR 0596	Sugar beet, raw	RAC	0.01	NC	–	NC	–	NC	–	NC	–	0.01	0.00	NC	–
–	Sugar beet, sugar	PP	0.0025	0.02	0.00	NC	–	0.01	0.00	0.09	0.00	0.07	0.00	12.63	0.03
GC 0654	Wheat, raw (incl. meslin)	RAC	0.01	0.01	0.00	1.12	0.01	NC	–	0.01	0.00	0.56	0.01	NC	–
–	Wheat, bulgur	PP	0.01	NC	–	NC	–	NC	–	0.03	0.00	NC	–	NC	–
CF 1210	Wheat, germ	PP	0.01	NC	–	NC	–	0.01	0.00	0.01	0.00	0.14	0.00	0.01	0.00
CP 1212	Wheat, wholemeal bread	PP	0.0098	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.03	0.00	0.01	0.00
CP 1211	Wheat, white bread	PP	0.01	0.25	0.00	0.63	0.01	0.12	0.00	0.43	0.00	1.39	0.01	0.22	0.00
–	Wheat, fermented beverages (Korean jakju and takju)	PP	0.01	NC	–	NC	–	NC	–	NC	–	NC	–	NC	–
CF 1211	Wheat, white flour (incl. white flour products: starch, gluten, macaroni, pastry)	PP	0.01	301.24	3.01	268.64	2.69	30.21	0.30	222.51	2.23	134.73	1.35	343.12	3.43
CF 1211	Wheat, white flour	PP	0.01	299.27	2.99	263.32	2.63	27.93	0.28	214.18	2.14	133.47	1.33	340.03	3.40
–	Wheat, starch	PP	0.01	0.02	0.00	NC	–	0.01	0.00	0.05	0.00	0.13	0.00	0.01	0.00
–	Wheat, gluten	PP	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.27	0.00	0.01	0.00	0.03	0.00
–	Wheat, macaroni, dry	PP	0.01	0.72	0.01	2.20	0.02	1.22	0.01	3.99	0.04	0.53	0.01	1.66	0.02
–	Wheat, pastry, baked	PP	0.01	1.21	0.01	3.13	0.03	1.05	0.01	4.02	0.04	0.60	0.01	1.40	0.01

FENPROPIDIN (340) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
GC 0640	Barley, raw	RAC	0.05	2.49	0.12	NC	–	0.02	0.00	0.03	0.00	0.18	0.01	0.38	0.02
–	Barley, pot & pearled	PP	0.05	7.12	0.36	7.34	0.37	0.02	0.00	0.03	0.00	0.67	0.03	0.20	0.01
–	Barley, flour (white flour and wholemeal flour)	PP	0.05	2.93	0.15	0.30	0.02	0.02	0.00	0.01	0.00	0.48	0.02	0.01	0.00
–	Barley beer	PP	0.011	4.87	0.05	93.78	1.03	24.28	0.27	12.76	0.14	39.28	0.43	18.15	0.20
–	Barley malt	PP	0.05	0.09	0.00	1.04	0.05	0.18	0.01	0.33	0.02	0.04	0.00	0.10	0.01
–	Barley malt extract	PP	0.05	0.01	0.00	0.05	0.00	0.05	0.00	0.07	0.00	0.08	0.00	0.01	0.00
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.036	24.96	0.90	57.95	2.09	16.70	0.60	38.38	1.38	26.46	0.95	29.00	1.04
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.022	6.24	0.14	14.49	0.32	4.18	0.09	9.60	0.21	6.62	0.15	7.25	0.16
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.022	3.29	0.07	6.14	0.14	0.82	0.02	1.57	0.03	2.23	0.05	1.07	0.02
MO 0105	Edible offal (mammalian), raw	RAC	0.3	4.79	1.44	9.68	2.90	2.97	0.89	5.49	1.65	3.84	1.15	5.03	1.51
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.017	289.65	4.92	485.88	8.26	26.92	0.46	239.03	4.06	199.91	3.40	180.53	3.07
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.018	13.17	0.24	26.78	0.48	7.24	0.13	116.71	2.10	22.54	0.41	32.09	0.58
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.018	1.46	0.03	2.98	0.05	0.80	0.01	12.97	0.23	2.50	0.05	3.57	0.06
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.018	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.10	0.00	0.10	0.00
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.037	0.12	0.00	0.12	0.00	0.11	0.00	5.37	0.20	0.24	0.01	0.10	0.00

FENPROPIDIN (340) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
PE 0112	Eggs, raw (incl. dried)	RAC	0.018	7.84	0.14	23.08	0.42	2.88	0.05	14.89	0.27	9.81	0.18	14.83	0.27
	Total intake (ug/person) =				15.1		22.2		12.8		17.9		14.2		16.2
	Body weight per region (kg bw) =				60		60		60		60		60		60
	ADI (ug/person) =				1200		1200		1200		1200		1200		1200
	%ADI =				1.3%		1.8%		1.1%		1.5%		1.2%		1.4%
	Rounded %ADI =				1%		2%		1%		1%		1%		1%

FENPROPIDIN (340) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FI 0327	Banana, raw (incl. plantains) (incl. dried)	RAC	0.097	25.76	2.50	23.65	2.29	23.83	2.31	24.37	2.36	19.43	1.88	101.55	9.85
VR 0596	Sugar beet, raw	RAC	0.01	0.01	0.00	NC	–	0.01	0.00	0.01	0.00	NC	–	NC	–
–	Sugar beet, sugar	PP	0.0025	0.01	0.00	NC	–	0.01	0.00	NC	–	NC	–	NC	–
GC 0654	Wheat, raw (incl. meslin)	RAC	0.01	NC	–	NC	–	NC	–	0.01	0.00	NC	–	NC	–
–	Wheat, bulgur	PP	0.01	NC	–	NC	–	0.01	0.00	NC	–	NC	–	NC	–
CF 1210	Wheat, germ	PP	0.01	0.97	0.01	0.10	0.00	0.03	0.00	0.01	0.00	NC	–	0.04	0.00

FENPROPIDIN (340) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day								Intake as ug/person/day			
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
CP 1212	Wheat, wholemeal bread	PP	0.0098	0.03	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.05	0.00	0.02	0.00
CP 1211	Wheat, white bread	PP	0.01	1.30	0.01	0.46	0.00	0.06	0.00	0.22	0.00	2.44	0.02	0.77	0.01
–	Wheat, fermented beverages (Korean jakju and takju)	PP	0.01	NC	–	NC	–	NC	–	4.36	0.04	NC	–	NC	–
CF 1211	Wheat, white flour (incl. white flour products: starch, gluten, macaroni, pastry)	PP	0.01	198.08	1.98	193.03	1.93	106.24	1.06	185.09	1.85	168.67	1.69	131.59	1.32
CF 1211	Wheat, white flour	PP	0.01	182.77	1.83	187.54	1.88	103.82	1.04	180.42	1.80	164.00	1.64	118.84	1.19
–	Wheat, starch	PP	0.01	NC	–	NC	–	0.01	0.00	0.31	0.00	NC	–	NC	–
–	Wheat, gluten	PP	0.01	0.68	0.01	NC	–	0.01	0.00	0.01	0.00	NC	–	NC	–
–	Wheat, macaroni, dry	PP	0.01	6.71	0.07	4.98	0.05	2.12	0.02	1.90	0.02	2.89	0.03	4.12	0.04
–	Wheat, pastry, baked	PP	0.01	7.93	0.08	0.51	0.01	0.29	0.00	2.44	0.02	1.78	0.02	8.64	0.09
GC 0640	Barley, raw	RAC	0.05	0.01	0.00	NC	–	0.03	0.00	1.36	0.07	NC	–	NC	–
–	Barley, pot & pearled	PP	0.05	0.57	0.03	2.56	0.13	0.33	0.02	0.56	0.03	0.36	0.02	NC	–
–	Barley, flour (white flour and wholemeal flour)	PP	0.05	0.08	0.00	0.03	0.00	0.01	0.00	0.05	0.00	0.68	0.03	0.05	0.00
–	Barley beer	PP	0.011	180.21	1.98	259.46	2.85	45.91	0.51	172.36	1.90	234.42	2.58	65.30	0.72
–	Barley malt	PP	0.05	0.19	0.01	NC	–	0.04	0.00	0.08	0.00	NC	–	2.14	0.11
–	Barley malt extract	PP	0.05	0.37	0.02	0.08	0.00	0.03	0.00	0.05	0.00	0.18	0.01	0.29	0.01
MM 0095	Meat from mammals other than marine mammals,	RAC	0.036	112.02	4.03	120.71	4.35	63.46	2.28	88.99	3.20	96.24	3.46	41.02	1.48

FENPROPIDIN (340) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
	raw (incl. prepared meat) – 80% as muscle														
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.022	28.01	0.62	30.18	0.66	15.86	0.35	22.25	0.49	24.06	0.53	10.25	0.23
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.022	6.44	0.14	15.51	0.34	3.79	0.08	8.29	0.18	18.44	0.41	8.00	0.18
MO 0105	Edible offal (mammalian), raw	RAC	0.3	15.17	4.55	5.19	1.56	6.30	1.89	6.78	2.03	3.32	1.00	3.17	0.95
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.017	388.92	6.61	335.88	5.71	49.15	0.84	331.25	5.63	468.56	7.97	245.45	4.17
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.018	66.38	1.19	48.47	0.87	21.58	0.39	78.41	1.41	48.04	0.86	76.01	1.37
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.018	7.38	0.13	5.39	0.10	2.40	0.04	8.71	0.16	5.34	0.10	8.45	0.15
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.018	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.71	0.01	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.037	0.33	0.01	0.72	0.03	0.27	0.01	0.35	0.01	0.80	0.03	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.018	25.84	0.47	29.53	0.53	28.05	0.50	33.19	0.60	36.44	0.66	8.89	0.16
	Total intake (ug/person) =				26.3		23.3		11.4		21.8		22.9		22.0
	Body weight per region (kg bw) =				60		60		55		60		60		60
	ADI (ug/person) =				1200		1200		1100		1200		1200		1200
	%ADI =				2.2%		1.9%		1.0%		1.8%		1.9%		1.8%
	Rounded %ADI =				2%		2%		1%		2%		2%		2%

FENPROPIDIN (340) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									
				Intake = daily intake: ug/person									
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FI 0327	Banana, raw (incl. plantains) (incl. dried)	RAC	0.097	44.80	4.35	118.17	11.46	25.25	2.45	454.49	44.09	310.23	30.09
VR 0596	Sugar beet, raw	RAC	0.01	0.01	0.00	NC	–	NC	–	NC	–	NC	–
–	Sugar beet, sugar	PP	0.0025	0.56	0.00	0.24	0.00	NC	–	NC	–	5.13	0.01
GC 0654	Wheat, raw (incl. meslin)	RAC	0.01	NC	–	NC	–	NC	–	NC	–	0.97	0.01
–	Wheat, bulgur	PP	0.01	0.01	0.00	NC	–	NC	–	NC	–	NC	–
CF 1210	Wheat, germ	PP	0.01	0.04	0.00	0.01	0.00	0.01	0.00	0.01	0.00	NC	–
CP 1212	Wheat, wholemeal bread	PP	0.0098	0.01	0.00	0.01	0.00	0.03	0.00	0.01	0.00	0.01	0.00
CP 1211	Wheat, white bread	PP	0.01	0.43	0.00	0.41	0.00	1.56	0.02	0.11	0.00	0.07	0.00
–	Wheat, fermented beverages (Korean jakju and takju)	PP	0.01	NC	–	NC	–	NC	–	NC	–	NC	–
CF 1211	Wheat, white flour (incl. white flour products: starch, gluten, macaroni, pastry)	PP	0.01	44.78	0.45	86.96	0.87	214.05	2.14	20.31	0.20	103.60	1.04
CF 1211	Wheat, white flour	PP	0.01	43.75	0.44	85.81	0.86	206.68	2.07	19.38	0.19	92.92	0.93
–	Wheat, starch	PP	0.01	0.01	0.00	0.02	0.00	NC	–	NC	–	NC	–
–	Wheat, gluten	PP	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.19	0.00
–	Wheat, macaroni, dry	PP	0.01	0.52	0.01	0.63	0.01	2.99	0.03	0.26	0.00	5.18	0.05
–	Wheat, pastry, baked	PP	0.01	0.51	0.01	0.51	0.01	4.36	0.04	0.67	0.01	5.32	0.05
GC 0640	Barley, raw	RAC	0.05	0.01	0.00	0.01	0.00	0.16	0.01	NC	–	NC	–

FENPROPIDIN (340) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									Intake = daily intake: ug/person
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
–	Barley, pot & pearled	PP	0.05	5.46	0.27	0.01	0.00	1.44	0.07	0.01	0.00	NC	–
–	Barley, flour (white flour and wholemeal flour)	PP	0.05	0.02	0.00	NC	–	0.32	0.02	0.01	0.00	NC	–
–	Barley beer	PP	0.011	16.25	0.18	11.36	0.12	225.21	2.48	19.49	0.21	52.17	0.57
–	Barley malt	PP	0.05	0.01	0.00	0.11	0.01	0.67	0.03	0.01	0.00	4.61	0.23
–	Barley malt extract	PP	0.05	0.02	0.00	0.01	0.00	0.03	0.00	0.01	0.00	0.06	0.00
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.036	23.34	0.84	40.71	1.47	97.15	3.50	18.06	0.65	57.71	2.08
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.022	5.84	0.13	10.18	0.22	24.29	0.53	4.52	0.10	14.43	0.32
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.022	1.05	0.02	1.14	0.03	18.69	0.41	0.94	0.02	3.12	0.07
MO 0105	Edible offal (mammalian), raw	RAC	0.3	4.64	1.39	1.97	0.59	10.01	3.00	3.27	0.98	3.98	1.19
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.017	108.75	1.85	70.31	1.20	436.11	7.41	61.55	1.05	79.09	1.34
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.018	3.53	0.06	10.83	0.19	51.36	0.92	4.53	0.08	50.00	0.90
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.018	0.39	0.01	1.20	0.02	5.71	0.10	0.50	0.01	5.56	0.10
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.018	NC	–	NC	–	0.32	0.01	NC	–	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.037	0.10	0.00	0.70	0.03	0.97	0.04	0.10	0.00	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.018	3.84	0.07	4.41	0.08	27.25	0.49	1.13	0.02	7.39	0.13

FENPROPIDIN (340) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
–	–	–		–	–	–	–	–	–	–	–	–	–
	Total intake (ug/person) =				10.1		17.2		25.8		47.6		39.1
	Body weight per region (kg bw) =				60		60		60		60		60
	ADI (ug/person) =				1200		1200		1200		1200		1200
	%ADI =				0.8%		1.4%		2.1%		4.0%		3.3%
	Rounded %ADI =				1%		1%		2%		4%		3%

FENPYROXIMATE (193) International Estimated Daily Intake (IEDI) ADI = 0–0.005 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as ug/person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FC 0002	Subgroup of lemons and limes, raw (excl. kumquat commodities)	RAC	0.085	2.42	0.21	2.15	0.18	0.43	0.04	10.74	0.91	6.59	0.56	14.06	1.20
FC 0303	Kumquats, raw (incl. juice)	RAC	0.37	2.36	0.87	0.27	0.10	3.19	1.18	14.44	5.34	1.66	0.61	1.71	0.63
–	Lemon, juice (single strength, incl. concentrated)	PP	0.037	0.01	0.00	0.01	0.00	0.11	0.00	0.09	0.00	0.18	0.01	0.17	0.01
FC 0003	Subgroup of mandarins, raw	RAC	0.02	6.18	0.12	3.66	0.07	0.25	0.01	6.82	0.14	3.49	0.07	19.38	0.39
–	Subgroup of mandarins, juice	PP	0.005	NC	–	NC	–	NC	–	NC	–	NC	–	NC	–

FENPYROXIMATE (193) International Estimated Daily Intake (IEDI) ADI = 0–0.005 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FC 0004	Subgroup of oranges, sweet, sour, raw	RAC	0.02	20.66	0.41	5.23	0.10	11.90	0.24	37.90	0.76	21.16	0.42	56.46	1.13
JF 0004	Subgroup of oranges, juice (single strength, incl. concentrated)	PP	0.0054	1.27	0.01	2.20	0.01	0.09	0.00	11.81	0.06	0.46	0.00	1.69	0.01
FC 0005	Subgroup of pummelo and grapefruits, raw	RAC	0.044	0.64	0.03	0.35	0.02	0.93	0.04	6.10	0.27	1.01	0.04	1.36	0.06
JF 0203	Grapefruits, juice (single strength, incl. concentrated)	PP	0.019	0.01	0.00	0.16	0.00	0.02	0.00	1.97	0.04	0.12	0.00	0.77	0.01
FP 0226	Apple, raw (incl. cider, excl. juice)	RAC	0.033	13.49	0.45	26.63	0.88	15.05	0.50	16.28	0.54	6.47	0.21	47.88	1.58
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.0053	0.32	0.00	3.07	0.02	0.07	0.00	5.00	0.03	0.29	0.00	5.57	0.03
FP 0230	Pear, raw	RAC	0.078	2.16	0.17	6.24	0.49	0.05	0.00	4.07	0.32	1.16	0.09	5.34	0.42
FS 0013	Subgroup of cherries, raw	RAC	0.585	0.92	0.54	9.15	5.35	0.01	0.01	0.61	0.36	0.06	0.04	6.64	3.88
FS 0014	Subgroup of plums, raw	RAC	0.025	2.40	0.06	8.60	0.22	0.06	0.00	2.52	0.06	0.58	0.01	4.16	0.10
DF 0014	Plums, dried (prunes)	PP	0.05	0.09	0.00	0.06	0.00	0.01	0.00	0.18	0.01	0.04	0.00	0.06	0.00
FS 0240	Apricot, raw (incl. dried)	RAC	0.17	5.15	0.88	3.66	0.62	0.03	0.01	2.25	0.38	0.17	0.03	6.80	1.16
–	Peaches and nectarines, raw	RAC	0.155	2.87	0.44	2.21	0.34	0.15	0.02	5.94	0.92	1.47	0.23	15.66	2.43
FB 2005	Subgroup of caneberries, raw	RAC	0.84	0.42	0.35	1.05	0.88	0.01	0.01	0.02	0.02	0.02	0.02	1.24	1.04
FB 2006	Subgroup of bush berries, raw (including processed)	RAC	0.8	0.53	0.42	1.31	1.05	0.40	0.32	1.66	1.33	0.01	0.01	0.99	0.79
FB 0269	Grapes, raw (i.e. table grapes)	RAC	0.035	12.68	0.44	9.12	0.32	0.03	0.00	16.88	0.59	3.70	0.13	54.42	1.90

FENPYROXIMATE (193) International Estimated Daily Intake (IEDI) ADI = 0–0.005 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.07	0.51	0.04	0.51	0.04	0.01	0.00	1.27	0.09	0.12	0.01	2.07	0.14
JF 0269	Grape juice (from wine grapes)	PP	0.005	0.14	0.00	0.29	0.00	0.05	0.00	0.30	0.00	0.24	0.00	0.05	0.00
–	Grape must (from wine grapes)	PP	0.005	0.33	0.00	0.13	0.00	0.01	0.00	0.02	0.00	0.01	0.00	0.02	0.00
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.005	0.67	0.00	12.53	0.06	2.01	0.01	1.21	0.01	3.53	0.02	4.01	0.02
FB 0275	Strawberry, raw	RAC	0.06	0.70	0.04	2.01	0.12	0.04	0.00	1.36	0.08	0.37	0.02	2.53	0.15
FI 0326	Avocado, raw	RAC	0.05	0.13	0.01	0.03	0.00	2.05	0.10	2.54	0.13	2.34	0.12	0.12	0.01
VC 0424	Cucumber, raw	RAC	0.02	8.01	0.16	30.66	0.61	1.45	0.03	19.84	0.40	0.27	0.01	34.92	0.70
VC 0046	Melons, except watermelon, raw (cantaloupe)	RAC	0.05	8.90	0.45	8.64	0.43	0.80	0.04	17.90	0.90	2.80	0.14	29.17	1.46
VC 0432	Watermelon, raw	RAC	0.1	28.96	2.90	25.65	2.57	1.56	0.16	39.26	3.93	4.94	0.49	66.90	6.69
VO 0448	Tomato, raw (incl. paste, excl. juice, excl. canned)	RAC	0.06	51.07	3.06	80.96	4.86	16.96	1.02	99.83	5.99	26.09	1.57	212.26	12.74
–	Tomato, canned (& peeled)	PP	0.024	0.20	0.00	0.31	0.01	0.02	0.00	1.11	0.03	0.11	0.00	1.50	0.04
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.043	0.29	0.01	0.29	0.01	0.01	0.00	0.38	0.02	0.05	0.00	0.14	0.01
VO 0051	Subgroup of peppers, raw (incl. dried sweet peppers, excl. dried chili peppers), excl. okra	RAC	0.05	8.48	0.42	13.74	0.69	10.13	0.51	11.29	0.56	9.52	0.48	26.36	1.32
VO 2046	Subgroup of eggplants	RAC	0.1	5.58	0.56	4.31	0.43	0.89	0.09	9.31	0.93	13.64	1.36	20.12	2.01

FENPYROXIMATE (193) International Estimated Daily Intake (IEDI) ADI = 0–0.005 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VP 2060	Subgroup of beans with pods (all commodities within this group)	RAC	0.075	0.68	0.05	NC	–	NC	–	0.39	0.03	0.22	0.02	0.49	0.04
VP 2062	Subgroup of succulent beans without pods (all commodities within this group)	RAC	0.1	5.07	0.51	1.02	0.10	0.49	0.05	1.78	0.18	1.19	0.12	8.57	0.86
VR 0589	Potato, raw (incl. flour, incl. frozen, incl. starch, incl. tapioca)	RAC	0	59.74	0.00	316.14	0.00	9.78	0.00	60.26	0.00	54.12	0.00	119.82	0.00
VS 2080	Subgroup of stems and petioles	RAC	0.845	3.11	2.63	5.52	4.66	3.42	2.89	8.29	7.01	0.02	0.02	4.00	3.38
GC 0645	Maize, raw (incl. glucose & dextrose & isoglucose, incl. beer, incl. germ, incl. starch, excl. flour, excl. oil)	RAC	0.01	0.97	0.01	0.24	0.00	1.58	0.02	4.10	0.04	2.56	0.03	13.31	0.13
CF 1255	Maize, flour (white flour and wholemeal flour)	PP	0.0037	22.72	0.08	35.61	0.13	87.27	0.32	34.92	0.13	46.71	0.17	49.12	0.18
OR 0645	Maize oil	PP	0.0099	0.96	0.01	0.85	0.01	0.29	0.00	5.42	0.05	0.42	0.00	2.10	0.02
TN 0085	Group of tree nuts, raw (incl. processed)	RAC	0	4.06	0.00	3.27	0.00	7.01	0.00	13.93	0.00	14.01	0.00	9.36	0.00
SB 0716	Coffee bean raw (incl. roasted, incl. instant coffee, incl. substitutes)	RAC	0.025	1.36	0.03	3.59	0.09	1.44	0.04	5.18	0.13	2.02	0.05	1.70	0.04
DH 1100	Hops, dry	RAC	5.15	0.01	0.05	0.04	0.21	0.01	0.05	0.01	0.05	NC	–	0.01	0.05
DT 1114	Tea, green or black, fermented and dried, (including concentrates)	RAC	1.4	2.28	3.19	1.98	2.77	0.46	0.64	2.43	3.40	1.29	1.81	3.04	4.26
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as	RAC	0.015	24.96	0.37	57.95	0.87	16.70	0.25	38.38	0.58	26.46	0.40	29.00	0.44

FENPYROXIMATE (193) International Estimated Daily Intake (IEDI) ADI = 0–0.005 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
	muscle														
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.063	6.24	0.39	14.49	0.91	4.18	0.26	9.60	0.60	6.62	0.42	7.25	0.46
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.063	3.29	0.21	6.14	0.39	0.82	0.05	1.57	0.10	2.23	0.14	1.07	0.07
MO 0105	Edible offal (mammalian), raw	RAC	0.4	4.79	1.92	9.68	3.87	2.97	1.19	5.49	2.20	3.84	1.54	5.03	2.01
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.005	289.65	1.45	485.88	2.43	26.92	0.13	239.03	1.20	199.91	1.00	180.53	0.90
	Total intake (ug/person) =				24.0		36.9		10.2		40.8		12.4		54.9
	Body weight per region (kg bw) =				60		60		60		60		60		60
	ADI (ug/person) =				300		300		300		300		300		300
	%ADI =				8.0%		12.3%		3.4%		13.6%		4.1%		18.3%
	Rounded %ADI =				8%		10%		3%		10%		4%		20%

FENPYROXIMATE (193) International Estimated Daily Intake (IEDI) ADI = 0–0.005 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FC 0002	Subgroup of lemons and limes, raw (excl.	RAC	0.085	3.78	0.32	8.84	0.75	0.92	0.08	6.71	0.57	4.09	0.35	4.57	0.39

FENPYROXIMATE (193) International Estimated Daily Intake (IEDI) ADI = 0–0.005 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as ug/person/day								
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
	kumquat commodities)														
FC 0303	Kumquats, raw (incl. juice)	RAC	0.37	4.67	1.73	5.86	2.17	1.96	0.73	1.45	0.54	17.05	6.31	1.37	0.51
–	Lemon, juice (single strength, incl. concentrated)	PP	0.037	0.60	0.02	0.36	0.01	0.01	0.00	1.49	0.06	0.43	0.02	0.24	0.01
FC 0003	Subgroup of mandarins, raw	RAC	0.02	12.34	0.25	14.99	0.30	16.08	0.32	10.76	0.22	9.94	0.20	NC	–
–	Subgroup of mandarins, juice	PP	0.005	0.04	0.00	NC	–	0.01	0.00	0.01	0.00	NC	–	NC	–
FC 0004	Subgroup of oranges, sweet, sour, raw	RAC	0.02	15.68	0.31	24.00	0.48	6.80	0.14	29.09	0.58	15.39	0.31	160.47	3.21
JF 0004	Subgroup of oranges, juice (single strength, incl. concentrated)	PP	0.0054	33.31	0.18	1.78	0.01	0.28	0.00	18.97	0.10	14.01	0.08	13.36	0.07
FC 0005	Subgroup of pummelo and grapefruits, raw	RAC	0.044	2.19	0.10	1.24	0.05	0.60	0.03	3.44	0.15	4.60	0.20	299.96	13.20
JF 0203	Grapefruits, juice (single strength, incl. concentrated)	PP	0.019	2.89	0.05	1.61	0.03	0.02	0.00	1.15	0.02	7.39	0.14	33.07	0.63
FP 0226	Apple, raw (incl. cider, excl. juice)	RAC	0.033	41.14	1.36	56.49	1.86	26.64	0.88	31.58	1.04	51.94	1.71	3.05	0.10
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.0053	14.88	0.08	11.98	0.06	0.15	0.00	9.98	0.05	30.32	0.16	3.47	0.02
FP 0230	Pear, raw	RAC	0.078	8.79	0.69	8.44	0.66	12.37	0.96	9.60	0.75	10.27	0.80	0.23	0.02
FS 0013	Subgroup of cherries, raw	RAC	0.585	1.40	0.82	4.21	2.46	0.04	0.02	2.93	1.71	1.50	0.88	NC	–
FS 0014	Subgroup of plums, raw	RAC	0.025	3.75	0.09	3.33	0.08	5.94	0.15	2.64	0.07	2.50	0.06	0.06	0.00
DF 0014	Plums, dried (prunes)	PP	0.05	0.61	0.03	0.35	0.02	0.05	0.00	0.35	0.02	0.49	0.02	0.13	0.01

FENPYROXIMATE (193) International Estimated Daily Intake (IEDI) ADI = 0–0.005 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FS 0240	Apricot, raw (incl. dried)	RAC	0.17	4.27	0.73	3.31	0.56	0.06	0.01	2.86	0.49	1.71	0.29	NC	–
–	Peaches and nectarines, raw	RAC	0.155	8.76	1.36	12.98	2.01	8.23	1.28	10.09	1.56	3.64	0.56	0.04	0.01
FB 2005	Subgroup of caneberries, raw	RAC	0.84	0.56	0.47	1.43	1.20	0.14	0.12	1.23	1.03	1.14	0.96	0.01	0.01
FB 2006	Subgroup of bush berries, raw (including processed)	RAC	0.8	1.31	1.05	5.50	4.40	0.01	0.01	2.57	2.06	0.82	0.66	2.15	1.72
FB 0269	Grapes, raw (i.e. table grapes)	RAC	0.035	6.33	0.22	11.22	0.39	5.21	0.18	9.38	0.33	4.55	0.16	0.78	0.03
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.07	3.09	0.22	1.51	0.11	0.03	0.00	1.38	0.10	4.26	0.30	0.42	0.03
JF 0269	Grape juice (from wine grapes)	PP	0.005	0.56	0.00	1.96	0.01	0.02	0.00	2.24	0.01	2.27	0.01	0.34	0.00
–	Grape must (from wine grapes)	PP	0.005	0.16	0.00	0.09	0.00	0.01	0.00	0.12	0.00	0.11	0.00	NC	–
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.005	88.93	0.44	62.41	0.31	1.84	0.01	25.07	0.13	61.17	0.31	5.84	0.03
FB 0275	Strawberry, raw	RAC	0.06	4.49	0.27	5.66	0.34	0.02	0.00	6.63	0.40	5.75	0.35	0.05	0.00
FI 0326	Avocado, raw	RAC	0.05	2.65	0.13	0.87	0.04	0.46	0.02	1.64	0.08	1.30	0.07	0.96	0.05
VC 0424	Cucumber, raw	RAC	0.02	6.72	0.13	11.03	0.22	32.10	0.64	15.10	0.30	4.05	0.08	9.57	0.19
VC 0046	Melons, except watermelon, raw (cantaloupe)	RAC	0.05	9.20	0.46	11.95	0.60	14.63	0.73	8.99	0.45	7.86	0.39	2.46	0.12
VC 0432	Watermelon, raw	RAC	0.1	4.60	0.46	9.82	0.98	68.50	6.85	13.19	1.32	1.99	0.20	14.56	1.46
VO 0448	Tomato, raw (incl. paste, excl. juice, excl. canned)	RAC	0.06	51.98	3.12	64.09	3.85	35.52	2.13	79.82	4.79	42.65	2.56	10.96	0.66

FENPYROXIMATE (193) International Estimated Daily Intake (IEDI) ADI = 0–0.005 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day				Intake as ug/person/day							
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
–	Tomato, canned (& peeled)	PP	0.024	7.57	0.18	2.66	0.06	0.30	0.01	0.97	0.02	7.31	0.18	0.41	0.01
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.043	0.80	0.03	0.07	0.00	0.05	0.00	0.61	0.03	0.40	0.02	0.08	0.00
VO 0051	Subgroup of peppers, raw (incl. dried sweet peppers, excl. dried chili peppers), excl. okra	RAC	0.05	6.39	0.32	15.53	0.78	19.09	0.95	10.36	0.52	8.29	0.41	4.53	0.23
VO 2046	Subgroup of eggplants	RAC	0.1	1.01	0.10	1.69	0.17	21.37	2.14	3.00	0.30	1.40	0.14	NC	–
VP 2060	Subgroup of beans with pods (all commodities within this group)	RAC	0.075	5.07	0.38	0.83	0.06	0.17	0.01	3.70	0.28	NC	–	NC	–
VP 2062	Subgroup of succulent beans without pods (all commodities within this group)	RAC	0.1	2.42	0.24	6.09	0.61	4.33	0.43	2.09	0.21	18.99	1.90	0.17	0.02
VR 0589	Potato, raw (incl. flour, incl. frozen, incl. starch, incl. tapioca)	RAC	0	225.03	0.00	234.24	0.00	71.48	0.00	177.55	0.00	234.55	0.00	37.71	0.00
VS 2080	Subgroup of stems and petioles	RAC	0.845	9.31	7.87	8.57	7.24	NC	–	3.88	3.28	24.46	20.67	5.89	4.98
GC 0645	Maize, raw (incl. glucose & dextrose & isoglucose, incl. beer, incl. germ, incl. starch, excl. flour, excl. oil)	RAC	0.01	0.10	0.00	9.93	0.10	1.71	0.02	21.57	0.22	0.33	0.00	0.05	0.00
CF 1255	Maize, flour (white flour and wholemeal flour)	PP	0.0037	14.27	0.05	12.86	0.05	19.71	0.07	12.55	0.05	4.21	0.02	52.30	0.19
OR 0645	Maize oil	PP	0.0099	0.90	0.01	0.47	0.00	0.15	0.00	3.01	0.03	1.86	0.02	0.36	0.00
TN 0085	Group of tree nuts, raw (incl. processed)	RAC	0	8.52	0.00	8.94	0.00	15.09	0.00	9.60	0.00	14.57	0.00	26.26	0.00
SB 0716	Coffee bean raw (incl. roasted, incl. instant	RAC	0.025	10.90	0.27	12.44	0.31	0.77	0.02	9.48	0.24	22.07	0.55	8.15	0.20

FENPYROXIMATE (193) International Estimated Daily Intake (IEDI) ADI = 0–0.005 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
	coffee, incl. substitutes)														
DH 1100	Hops, dry	RAC	5.15	NC	–	NC	–	0.02	0.10	0.02	0.10	NC	–	NC	–
DT 1114	Tea, green or black, fermented and dried, (including concentrates)	RAC	1.4	2.91	4.07	1.73	2.42	1.14	1.60	1.85	2.59	2.29	3.21	0.74	1.04
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.015	112.02	1.68	120.71	1.81	63.46	0.95	88.99	1.33	96.24	1.44	41.02	0.62
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.063	28.01	1.76	30.18	1.90	15.86	1.00	22.25	1.40	24.06	1.52	10.25	0.65
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.063	6.44	0.41	15.51	0.98	3.79	0.24	8.29	0.52	18.44	1.16	8.00	0.50
MO 0105	Edible offal (mammalian), raw	RAC	0.4	15.17	6.07	5.19	2.08	6.30	2.52	6.78	2.71	3.32	1.33	3.17	1.27
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.005	388.92	1.94	335.88	1.68	49.15	0.25	331.25	1.66	468.56	2.34	245.45	1.23
	Total intake (ug/person) =				40.5		44.2		25.6		34.4		53.0		33.4
	Body weight per region (kg bw) =				60		60		55		60		60		60
	ADI (ug/person) =				300		300		275		300		300		300
	%ADI =				13.5%		14.7%		9.3%		11.5%		17.7%		11.1%
	Rounded %ADI =				10%		10%		9%		10%		20%		10%

FENPYROXIMATE (193) International Estimated Daily Intake (IEDI) ADI = 0–0.005 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day								Intake = daily intake: ug/person	
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FC 0002	Subgroup of lemons and limes, raw (excl. kumquat commodities)	RAC	0.085	0.61	0.05	0.73	0.06	4.01	0.34	0.01	0.00	NC	–
FC 0303	Kumquats, raw (incl. juice)	RAC	0.37	18.35	6.79	0.23	0.09	1.78	0.66	0.08	0.03	3.35	1.24
–	Lemon, juice (single strength, incl. concentrated)	PP	0.037	0.01	0.00	0.01	0.00	0.16	0.01	0.01	0.00	NC	–
FC 0003	Subgroup of mandarins, raw	RAC	0.02	0.16	0.00	0.27	0.01	9.06	0.18	0.01	0.00	0.02	0.00
–	Subgroup of mandarins, juice	PP	0.005	0.01	0.00	NC	–	NC	–	NC	–	NC	–
FC 0004	Subgroup of oranges, sweet, sour, raw	RAC	0.02	1.18	0.02	1.11	0.02	14.28	0.29	0.05	0.00	1.08	0.02
JF 0004	Subgroup of oranges, juice (single strength, incl. concentrated)	PP	0.0054	0.08	0.00	0.26	0.00	12.61	0.07	0.14	0.00	0.33	0.00
FC 0005	Subgroup of pummelo and grapefruits, raw	RAC	0.044	0.63	0.03	0.01	0.00	1.58	0.07	0.01	0.00	NC	–
JF 0203	Grapefruits, juice (single strength, incl. concentrated)	PP	0.019	0.03	0.00	0.02	0.00	0.78	0.01	0.01	0.00	NC	–
FP 0226	Apple, raw (incl. cider, excl. juice)	RAC	0.033	66.67	2.20	2.06	0.07	55.83	1.84	188.29	6.21	1.38	0.05
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.0053	0.03	0.00	0.10	0.00	7.19	0.04	0.03	0.00	NC	–
FP 0230	Pear, raw	RAC	0.078	0.07	0.01	0.14	0.01	9.45	0.74	0.01	0.00	0.14	0.01
FS 0013	Subgroup of cherries, raw	RAC	0.585	0.01	0.01	0.01	0.01	5.96	3.49	0.01	0.01	NC	–
FS 0014	Subgroup of plums, raw	RAC	0.025	0.07	0.00	0.01	0.00	15.56	0.39	0.01	0.00	NC	–
DF 0014	Plums, dried (prunes)	PP	0.05	0.01	0.00	0.01	0.00	0.37	0.02	0.01	0.00	NC	–

FENPYROXIMATE (193) International Estimated Daily Intake (IEDI) ADI = 0–0.005 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day				Intake = daily intake: ug/person					
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FS 0240	Apricot, raw (incl. dried)	RAC	0.17	0.01	0.00	0.01	0.00	3.29	0.56	0.01	0.00	NC	–
–	Peaches and nectarines, raw	RAC	0.155	0.02	0.00	0.01	0.00	7.47	1.16	0.01	0.00	NC	–
FB 2005	Subgroup of caneberries, raw	RAC	0.84	0.01	0.01	7.30	6.13	2.29	1.92	0.01	0.01	NC	–
FB 2006	Subgroup of bush berries, raw (including processed)	RAC	0.8	0.82	0.66	4.05	3.24	5.94	4.75	0.43	0.34	2.66	2.13
FB 0269	Grapes, raw (i.e. table grapes)	RAC	0.035	0.14	0.00	0.36	0.01	15.22	0.53	0.01	0.00	0.09	0.00
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.07	0.01	0.00	0.13	0.01	1.06	0.07	0.01	0.00	0.03	0.00
JF 0269	Grape juice (from wine grapes)	PP	0.005	0.01	0.00	0.01	0.00	0.41	0.00	0.01	0.00	NC	–
–	Grape must (from wine grapes)	PP	0.005	0.01	0.00	0.01	0.00	0.11	0.00	0.01	0.00	0.19	0.00
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.005	0.31	0.00	0.23	0.00	60.43	0.30	0.52	0.00	31.91	0.16
FB 0275	Strawberry, raw	RAC	0.06	0.01	0.00	0.01	0.00	3.35	0.20	0.01	0.00	0.01	0.00
FI 0326	Avocado, raw	RAC	0.05	1.12	0.06	0.01	0.00	0.84	0.04	0.01	0.00	6.60	0.33
VC 0424	Cucumber, raw	RAC	0.02	0.68	0.01	1.81	0.04	10.40	0.21	0.01	0.00	0.04	0.00
VC 0046	Melons, except watermelon, raw (cantaloupe)	RAC	0.05	0.19	0.01	0.10	0.01	4.98	0.25	0.01	0.00	NC	–
VC 0432	Watermelon, raw	RAC	0.1	4.29	0.43	0.30	0.03	28.70	2.87	0.01	0.00	NC	–
VO 0448	Tomato, raw (incl. paste, excl. juice, excl. canned)	RAC	0.06	15.33	0.92	5.65	0.34	67.23	4.03	1.88	0.11	12.48	0.75
–	Tomato, canned (& peeled)	PP	0.024	0.07	0.00	0.08	0.00	2.42	0.06	0.07	0.00	NC	–

FENPYROXIMATE (193) International Estimated Daily Intake (IEDI) ADI = 0–0.005 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									
				Intake = daily intake: ug/person									
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.043	0.05	0.00	0.01	0.00	0.42	0.02	0.01	0.00	0.02	0.00
VO 0051	Subgroup of peppers, raw (incl. dried sweet peppers, excl. dried chili peppers), excl. okra	RAC	0.05	8.97	0.45	14.13	0.71	25.14	1.26	0.91	0.05	NC	–
VO 2046	Subgroup of eggplants	RAC	0.1	1.31	0.13	8.26	0.83	3.95	0.40	0.01	0.00	NC	–
VP 2060	Subgroup of beans with pods (all commodities within this group)	RAC	0.075	NC	–	NC	–	NC	–	NC	–	NC	–
VP 2062	Subgroup of succulent beans without pods (all commodities within this group)	RAC	0.1	0.37	0.04	3.14	0.31	4.88	0.49	0.01	0.00	NC	–
VR 0589	Potato, raw (incl. flour, incl. frozen, incl. starch, incl. tapioca)	RAC	0	23.96	0.00	13.56	0.00	213.41	0.00	104.35	0.00	8.56	0.00
VS 2080	Subgroup of stems and petioles	RAC	0.845	5.33	4.50	3.85	3.25	5.80	4.90	3.60	3.04	7.20	6.08
GC 0645	Maize, raw (incl. glucose & dextrose & isoglucose, incl. beer, incl. germ, incl. starch, excl. flour, excl. oil)	RAC	0.01	0.58	0.01	0.52	0.01	3.26	0.03	7.96	0.08	NC	–
CF 1255	Maize, flour (white flour and wholemeal flour)	PP	0.0037	94.34	0.35	8.09	0.03	28.03	0.10	55.94	0.21	28.07	0.10
OR 0645	Maize oil	PP	0.0099	0.33	0.00	0.07	0.00	0.81	0.01	0.01	0.00	NC	–
TN 0085	Group of tree nuts, raw (incl. processed)	RAC	0	4.39	0.00	135.53	0.00	6.11	0.00	0.72	0.00	317.74	0.00
SB 0716	Coffee bean raw (incl. roasted, incl. instant coffee, incl. substitutes)	RAC	0.025	0.95	0.02	1.32	0.03	11.64	0.29	2.96	0.07	14.73	0.37
DH 1100	Hops, dry	RAC	5.15	NC	–	NC	–	0.04	0.21	NC	–	NC	–

FENPYROXIMATE (193) International Estimated Daily Intake (IEDI) ADI = 0–0.005 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
DT 1114	Tea, green or black, fermented and dried, (including concentrates)	RAC	1.4	0.53	0.74	5.25	7.35	0.86	1.20	0.56	0.78	0.88	1.23
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.015	23.34	0.35	40.71	0.61	97.15	1.46	18.06	0.27	57.71	0.87
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.063	5.84	0.37	10.18	0.64	24.29	1.53	4.52	0.28	14.43	0.91
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.063	1.05	0.07	1.14	0.07	18.69	1.18	0.94	0.06	3.12	0.20
MO 0105	Edible offal (mammalian), raw	RAC	0.4	4.64	1.86	1.97	0.79	10.01	4.00	3.27	1.31	3.98	1.59
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.005	108.75	0.54	70.31	0.35	436.11	2.18	61.55	0.31	79.09	0.40
	Total intake (ug/person) =				20.6		25.1		44.4		13.2		16.4
	Body weight per region (kg bw) =				60		60		60		60		60
	ADI (ug/person) =				300		300		300		300		300
	%ADI =				6.9%		8.4%		14.8%		4.4%		5.5%
	Rounded %ADI =				7%		8%		10%		4%		5%

FIPRONIL (202) International Estimated Daily Intake (IEDI) ADI = 0–0.0002 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FI 0327	Banana, raw (incl. plantains) (incl. dried)	RAC	0	5.23	0.00	6.94	0.00	99.45	0.00	32.47	0.00	48.30	0.00	24.70	0.00
VA 2031	Subgroup of bulb onions	RAC	0.02	31.65	0.63	43.28	0.87	3.68	0.07	38.48	0.77	20.46	0.41	47.29	0.95
VB 0040	Group of brassica vegetables (except brassica leafy vegetables), raw	RAC	0	6.43	0.00	40.26	0.00	0.80	0.00	9.94	0.00	12.07	0.00	17.73	0.00
VO 2045	Subgroup of tomatoes, raw (incl. processed) (Lycopersicum spp. only)	RAC	0.008	51.75	0.41	81.80	0.65	16.99	0.14	102.02	0.82	26.32	0.21	214.77	1.72
VL 0053	Group of leafy vegetables, raw	RAC	0	8.47	0.00	22.36	0.00	7.74	0.00	25.51	0.00	45.77	0.00	21.22	0.00
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.001	2.39	0.00	1.61	0.00	10.47	0.01	1.84	0.00	12.90	0.01	7.44	0.01
VD 0523	Broad bean, dry, raw (incl. horse-bean, field bean) (Vicia faba)	RAC	0.001	1.27	0.00	0.10	0.00	0.12	0.00	2.49	0.00	0.23	0.00	5.54	0.01
VD 0527	Cowpea, dry, raw (Vigna sinensis, Dolichos sinensis)	RAC	0.001	0.10	0.00	NC	–	1.74	0.00	0.10	0.00	0.10	0.00	0.10	0.00
VD 0541	Soya bean, dry, raw (incl. flour, incl. paste, incl. curd, incl. sauce, excl. oil)	RAC	0.002	0.63	0.00	1.09	0.00	0.40	0.00	1.40	0.00	1.68	0.00	0.48	0.00
OR 0541	Soya oil, refined	PP	0.0088	12.99	0.11	10.43	0.09	3.63	0.03	13.10	0.12	10.70	0.09	13.10	0.12
–	Beans (dry) NES: including inter alia lablab or hyacinth bean (Dolichos spp.); jack or sword bean (Canavalia spp.); winged bean (Psophocarpus tetragonolobus); guar bean (Cyamopsis tetragonoloba); velvet bean (Stizolobium spp.); yam bean (Pachyrrhizus erosus)	RAC	0.001	1.70	0.00	0.10	0.00	3.00	0.00	1.80	0.00	1.64	0.00	1.33	0.00

FIPRONIL (202) International Estimated Daily Intake (IEDI) ADI = 0–0.0002 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day								Intake as ug/person/day			
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VD 2066	Subgroup of dry peas, raw	RAC	0.001	9.09	0.01	3.35	0.00	1.06	0.00	9.48	0.01	15.11	0.02	10.58	0.01
VR 0574	Beetroot, raw	RAC	0	3.42	0.00	6.06	0.00	3.75	0.00	9.11	0.00	NC	–	4.39	0.00
VR 0575	Burdock, greater or edible, raw	RAC	0	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	NC	–	0.10	0.00
VR 0577	Carrots, raw	RAC	0	9.51	0.00	30.78	0.00	0.37	0.00	8.75	0.00	2.80	0.00	6.10	0.00
VR 0578	Celeriac, raw	RAC	0	1.70	0.00	3.01	0.00	1.87	0.00	4.53	0.00	NC	–	2.19	0.00
VR 0469	Chicory, roots, raw	RAC	0	0.10	0.00	0.20	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00
VR 0583	Horseradish, raw	RAC	0	0.51	0.00	0.91	0.00	0.56	0.00	1.37	0.00	NC	–	0.66	0.00
VR 0587	Parsley turnip-rooted, raw	RAC	0	0.32	0.00	0.57	0.00	0.35	0.00	0.85	0.00	NC	–	0.41	0.00
VR 0588	Parsnip, raw	RAC	0	0.59	0.00	1.05	0.00	0.65	0.00	1.58	0.00	NC	–	0.76	0.00
VR 0494	Radish roots, raw	RAC	0	2.31	0.00	4.09	0.00	2.53	0.00	6.15	0.00	5.88	0.00	2.97	0.00
VR 0591	Japanese radish, raw (i.e. Chinese radish, daikon)	RAC	0	1.90	0.00	3.36	0.00	2.08	0.00	5.06	0.00	NC	–	2.44	0.00
VR 0498	Salsify, raw (i.e. oysterplant)	RAC	0	0.21	0.00	0.37	0.00	0.23	0.00	0.55	0.00	NC	–	0.27	0.00
VR 0596	Sugar beet, raw (incl. sugar)	RAC	0.003	0.13	0.00	NC	–	0.10	0.00	0.66	0.00	0.47	0.00	88.94	0.27
VR 0589	Potato, raw (incl. flour, incl. frozen, incl. starch, incl. tapioca)	RAC	0.00495	59.74	0.30	316.14	1.56	9.78	0.05	60.26	0.30	54.12	0.27	119.82	0.59
GC 2086	Subgroup of wheat, similar grains and pseudocereals without husks, raw (including processed)	RAC	0.008	381.29	3.05	360.94	2.89	38.45	0.31	282.01	2.26	173.32	1.39	436.22	3.49

FIPRONIL (202) International Estimated Daily Intake (IEDI) ADI = 0–0.0002 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
GC 2087	Subgroup of barley, similar grains, and pseudocereals with husks, raw (including processed)	RAC	0.002	19.96	0.04	38.62	0.08	5.13	0.01	4.81	0.01	10.80	0.02	4.44	0.01
CM 0649 (GC 0649)	Rice, husked, dry (incl. flour, incl. oil, incl. beverages, incl. starch, excl. polished)	REP	0.002	1.26	0.00	1.58	0.00	31.05	0.06	5.43	0.01	0.90	0.00	2.18	0.00
CM 0649 (GC 0649)	Rice, husked, dry (incl. oil, incl. beverages, incl. starch, excl. polished, excl. flour)	REP	0.0020025	1.20	0.00	1.30	0.00	31.05	0.06	4.79	0.01	0.61	0.00	2.16	0.00
CM 1205	Rice polished, dry	PP	0.002	34.21	0.07	10.39	0.02	41.72	0.08	82.38	0.16	150.24	0.30	70.47	0.14
GC 2091	Subgroup of maize cereals	RAC	0.004	29.81	0.12	44.77	0.18	108.95	0.44	52.37	0.21	60.28	0.24	75.69	0.30
GS 0659	Sugar cane, raw	RAC	0.003	38.16	0.11	NC	–	12.58	0.04	0.34	0.00	17.79	0.05	42.78	0.13
–	Sugar cane, molasses	PP	0.00007	NC	–	NC	–	NC	–	NC	–	0.10	0.00	NC	–
–	Sugar cane, sugar (incl. non-centrifugal sugar, incl. refined sugar and maltose)	PP	0.00007	61.52	0.00	86.27	0.01	18.80	0.00	80.02	0.01	66.39	0.00	56.32	0.00
OR 0691	Cotton seed oil, edible	PP	0.0006	3.22	0.00	1.54	0.00	1.01	0.00	0.74	0.00	1.12	0.00	2.93	0.00
SO 0702	Sunflower seed, raw (incl. oil)	RAC	0.008	7.40	0.06	35.86	0.29	1.15	0.01	8.76	0.07	5.45	0.04	13.62	0.11
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.0043	24.96	0.11	57.95	0.25	16.70	0.07	38.38	0.17	26.46	0.11	29.00	0.12
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.068	6.24	0.42	14.49	0.99	4.18	0.28	9.60	0.65	6.62	0.45	7.25	0.49

FIPRONIL (202) International Estimated Daily Intake (IEDI) ADI = 0–0.0002 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as ug/person/day								
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.068	3.29	0.22	6.14	0.42	0.82	0.06	1.57	0.11	2.23	0.15	1.07	0.07
MO 0105	Edible offal (mammalian), raw	RAC	0.0141	4.79	0.07	9.68	0.14	2.97	0.04	5.49	0.08	3.84	0.05	5.03	0.07
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.0044	289.65	1.27	485.88	2.14	26.92	0.12	239.03	1.05	199.91	0.88	180.53	0.79
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.0107	13.17	0.14	26.78	0.29	7.24	0.08	116.71	1.25	22.54	0.24	32.09	0.34
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.0382	1.46	0.06	2.98	0.11	0.80	0.03	12.97	0.50	2.50	0.10	3.57	0.14
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.0382	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.10	0.00	0.10	0.00
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.0303	0.12	0.00	0.12	0.00	0.11	0.00	5.37	0.16	0.24	0.01	0.10	0.00
PE 0112	Eggs, raw (incl. dried)	RAC	0.0322	7.84	0.25	23.08	0.74	2.88	0.09	14.89	0.48	9.81	0.32	14.83	0.48
	Total intake (ug/person) =				7.5		11.7		2.1		9.2		5.4		10.4
	Body weight per region (kg bw) =				60		60		60		60		60		60
	ADI (ug/person) =				12		12		12		12		12		12
	%ADI =				62.4%		97.7%		17.4%		76.7%		44.9%		86.5%
	Rounded %ADI =				60%		100%		20%		80%		40%		90%

FIPRONIL (202) International Estimated Daily Intake (IEDI) ADI = 0–0.0002 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FI 0327	Banana, raw (incl. plantains) (incl. dried)	RAC	0	25.76	0.00	23.65	0.00	23.83	0.00	24.37	0.00	19.43	0.00	101.55	0.00
VA 2031	Subgroup of bulb onions	RAC	0.02	20.67	0.41	31.32	0.63	37.52	0.75	35.08	0.70	11.77	0.24	13.74	0.27
VB 0040	Group of brassica vegetables (except brassica leafy vegetables), raw	RAC	0	20.71	0.00	39.81	0.00	25.06	0.00	37.93	0.00	18.12	0.00	16.74	0.00
VO 2045	Subgroup of tomatoes, raw (incl. processed) (Lycopersicum spp. only)	RAC	0.008	64.74	0.52	68.31	0.55	36.05	0.29	82.09	0.66	54.50	0.44	11.69	0.09
VL 0053	Group of leafy vegetables, raw	RAC	0	18.83	0.00	21.85	0.00	121.23	0.00	43.09	0.00	18.18	0.00	18.32	0.00
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.001	1.51	0.00	1.50	0.00	1.90	0.00	5.11	0.01	1.36	0.00	23.43	0.02
VD 0523	Broad bean, dry, raw (incl. horse-bean, field bean) (Vicia faba)	RAC	0.001	0.10	0.00	0.10	0.00	1.16	0.00	0.40	0.00	NC	–	0.10	0.00
VD 0527	Cowpea, dry, raw (Vigna sinensis, Dolichos sinensis)	RAC	0.001	NC	–	NC	–	0.16	0.00	0.10	0.00	NC	–	NC	–
VD 0541	Soya bean, dry, raw (incl. flour, incl. paste, incl. curd, incl. sauce, excl. oil)	RAC	0.002	0.47	0.00	0.77	0.00	9.12	0.02	8.05	0.02	0.10	0.00	6.06	0.01
OR 0541	Soya oil, refined	PP	0.0088	19.06	0.17	21.06	0.19	5.94	0.05	33.78	0.30	40.05	0.35	13.39	0.12
–	Beans (dry) NES: including inter alia lablab or hyacinth bean (Dolichos spp.); jack or sword bean (Canavalia spp.); winged bean (Psophocarpus tetragonolobus); guar bean (Cyamopsis tetragonoloba); velvet bean (Stizolobium spp.); yam bean (Pachyrrhizus erosus)	RAC	0.001	0.10	0.00	NC	–	0.57	0.00	0.11	0.00	0.16	0.00	0.94	0.00

FIPRONIL (202) International Estimated Daily Intake (IEDI) ADI = 0–0.0002 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
VD 2066	Subgroup of dry peas, raw	RAC	0.001	5.01	0.01	3.76	0.00	1.82	0.00	3.44	0.00	3.49	0.00	5.15	0.01
VR 0574	Beetroot, raw	RAC	0	9.91	0.00	6.34	0.00	NC	–	9.65	0.00	19.11	0.00	6.47	0.00
VR 0575	Burdock, greater or edible, raw	RAC	0	NC	–	NC	–	NC	–	0.48	0.00	NC	–	0.10	0.00
VR 0577	Carrots, raw	RAC	0	26.26	0.00	27.13	0.00	10.07	0.00	16.49	0.00	44.69	0.00	8.75	0.00
VR 0578	Celeriac, raw	RAC	0	2.97	0.00	1.79	0.00	NC	–	0.10	0.00	16.91	0.00	3.22	0.00
VR 0469	Chicory, roots, raw	RAC	0	0.10	0.00	0.51	0.00	0.10	0.00	0.10	0.00	21.12	0.00	NC	–
VR 0583	Horseradish, raw	RAC	0	0.10	0.00	0.42	0.00	13.01	0.00	0.26	0.00	2.70	0.00	0.97	0.00
VR 0587	Parsley turnip-rooted, raw	RAC	0	NC	–	NC	–	NC	–	NC	–	NC	–	0.61	0.00
VR 0588	Parsnip, raw	RAC	0	4.42	0.00	0.10	0.00	NC	–	NC	–	NC	–	1.12	0.00
VR 0494	Radish roots, raw	RAC	0	3.83	0.00	11.99	0.00	NC	–	5.26	0.00	2.19	0.00	4.37	0.00
VR 0591	Japanese radish, raw (i.e. Chinese radish, daikon)	RAC	0	NC	–	NC	–	26.64	0.00	18.92	0.00	NC	–	3.59	0.00
VR 0498	Salsify, raw (i.e. oysterplant)	RAC	0	1.02	0.00	0.52	0.00	NC	–	NC	–	2.08	0.00	0.39	0.00
VR 0596	Sugar beet, raw (incl. sugar)	RAC	0.003	0.10	0.00	NC	–	0.10	0.00	0.10	0.00	NC	–	NC	–
VR 0589	Potato, raw (incl. flour, incl. frozen, incl. starch, incl. tapioca)	RAC	0.00495	225.03	1.11	234.24	1.16	71.48	0.35	177.55	0.88	234.55	1.16	37.71	0.19
GC 2086	Subgroup of wheat, similar grains and pseudocereals without husks, raw (including processed)	RAC	0.008	256.28	2.05	280.29	2.24	134.94	1.08	241.61	1.93	217.88	1.74	167.40	1.34

FIPRONIL (202) International Estimated Daily Intake (IEDI) ADI = 0–0.0002 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
GC 2087	Subgroup of barley, similar grains, and pseudocereals with husks, raw (including processed)	RAC	0.002	43.68	0.09	60.49	0.12	9.72	0.02	40.47	0.08	49.83	0.10	18.90	0.04
CM 0649 (GC 0649)	Rice, husked, dry (incl. flour, incl. oil, incl. beverages, incl. starch, excl. polished)	REP	0.002	3.70	0.01	2.11	0.00	1.51	0.00	1.75	0.00	0.29	0.00	5.12	0.01
CM 0649 (GC 0649)	Rice, husked, dry (incl. oil, incl. beverages, incl. starch, excl. polished, excl. flour)	REP	0.0020025	2.43	0.00	1.62	0.00	0.58	0.00	1.69	0.00	NC	–	5.03	0.01
CM 1205	Rice polished, dry	PP	0.002	13.38	0.03	10.80	0.02	262.08	0.52	57.16	0.11	12.83	0.03	62.78	0.13
GC 2091	Subgroup of maize cereals	RAC	0.004	18.51	0.07	26.18	0.10	26.04	0.10	39.99	0.16	7.36	0.03	64.58	0.26
GS 0659	Sugar cane, raw	RAC	0.003	NC	–	NC	–	4.27	0.01	0.10	0.00	NC	–	3.24	0.01
–	Sugar cane, molasses	PP	0.00007	NC	–	NC	–	0.10	0.00	NC	–	NC	–	NC	–
–	Sugar cane, sugar (incl. non-centrifugal sugar, incl. refined sugar and maltose)	PP	0.00007	92.24	0.01	95.72	0.01	24.12	0.00	77.39	0.01	117.73	0.01	100.67	0.01
OR 0691	Cotton seed oil, edible	PP	0.0006	1.68	0.00	0.66	0.00	1.13	0.00	1.18	0.00	0.89	0.00	0.37	0.00
SO 0702	Sunflower seed, raw (incl. oil)	RAC	0.008	23.40	0.19	29.33	0.23	1.24	0.01	13.85	0.11	6.48	0.05	6.91	0.06
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.0043	112.02	0.48	120.71	0.52	63.46	0.27	88.99	0.38	96.24	0.41	41.02	0.18
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.068	28.01	1.90	30.18	2.05	15.86	1.08	22.25	1.51	24.06	1.64	10.25	0.70

FIPRONIL (202) International Estimated Daily Intake (IEDI) ADI = 0–0.0002 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as ug/person/day								
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.068	6.44	0.44	15.51	1.05	3.79	0.26	8.29	0.56	18.44	1.25	8.00	0.54
MO 0105	Edible offal (mammalian), raw	RAC	0.0141	15.17	0.21	5.19	0.07	6.30	0.09	6.78	0.10	3.32	0.05	3.17	0.04
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.0044	388.92	1.71	335.88	1.48	49.15	0.22	331.25	1.46	468.56	2.06	245.45	1.08
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.0107	66.38	0.71	48.47	0.52	21.58	0.23	78.41	0.84	48.04	0.51	76.01	0.81
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.0382	7.38	0.28	5.39	0.21	2.40	0.09	8.71	0.33	5.34	0.20	8.45	0.32
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.0382	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.71	0.03	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.0303	0.33	0.01	0.72	0.02	0.27	0.01	0.35	0.01	0.80	0.02	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.0322	25.84	0.83	29.53	0.95	28.05	0.90	33.19	1.07	36.44	1.17	8.89	0.29
	Total intake (ug/person) =				11.3		12.1		6.4		11.2		11.5		6.5
	Body weight per region (kg bw) =				60		60		55		60		60		60
	ADI (ug/person) =				12		12		11		12		12		12
	%ADI =				93.8%		101.2%		57.9%		93.7%		95.9%		54.4%
	Rounded %ADI =				90%		100%		60%		90%		100%		50%

FIPRONIL (202) International Estimated Daily Intake (IEDI) ADI = 0–0.0002 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FI 0327	Banana, raw (incl. plantains) (incl. dried)	RAC	0	44.80	0.00	118.17	0.00	25.25	0.00	454.49	0.00	310.23	0.00
VA 2031	Subgroup of bulb onions	RAC	0.02	9.83	0.20	22.30	0.45	34.69	0.69	9.65	0.19	2.39	0.05
VB 0040	Group of brassica vegetables (except brassica leafy vegetables), raw	RAC	0	5.46	0.00	4.28	0.00	58.72	0.00	0.10	0.00	NC	–
VO 2045	Subgroup of tomatoes, raw (incl. processed) (Lycopersicum spp. only)	RAC	0.008	15.50	0.12	5.78	0.05	71.52	0.57	2.00	0.02	12.50	0.10
VL 0053	Group of leafy vegetables, raw	RAC	0	12.42	0.00	8.75	0.00	7.53	0.00	7.07	0.00	14.11	0.00
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.001	7.11	0.01	2.33	0.00	3.76	0.00	44.70	0.04	3.27	0.00
VD 0523	Broad bean, dry, raw (incl. horse-bean, field bean) (Vicia faba)	RAC	0.001	3.70	0.00	0.10	0.00	0.17	0.00	0.10	0.00	NC	–
VD 0527	Cowpea, dry, raw (Vigna sinensis, Dolichos sinensis)	RAC	0.001	12.77	0.01	0.99	0.00	0.10	0.00	4.33	0.00	NC	–
VD 0541	Soya bean, dry, raw (incl. flour, incl. paste, incl. curd, incl. sauce, excl. oil)	RAC	0.002	2.89	0.01	0.21	0.00	0.48	0.00	3.16	0.01	0.26	0.00
OR 0541	Soya oil, refined	PP	0.0088	2.32	0.02	2.54	0.02	18.70	0.16	2.51	0.02	6.29	0.06
–	Beans (dry) NES: including inter alia lablab or hyacinth bean (Dolichos spp.); jack or sword bean (Canavalia spp.); winged bean (Psophocarpus tetragonolobus); guar bean (Cyamopsis tetragonoloba); velvet bean (Stizolobium spp.); yam bean (Pachyrrhizus erosus)	RAC	0.001	2.54	0.00	1.77	0.00	0.10	0.00	0.10	0.00	3.99	0.00

FIPRONIL (202) International Estimated Daily Intake (IEDI) ADI = 0–0.0002 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VD 2066	Subgroup of dry peas, raw	RAC	0.001	4.43	0.00	11.36	0.01	4.22	0.00	9.36	0.01	1.21	0.00
VR 0574	Beetroot, raw	RAC	0	5.86	0.00	4.23	0.00	9.46	0.00	3.96	0.00	7.91	0.00
VR 0575	Burdock, greater or edible, raw	RAC	0	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.10	0.00
VR 0577	Carrots, raw	RAC	0	2.07	0.00	3.00	0.00	25.29	0.00	0.10	0.00	NC	–
VR 0578	Celeriac, raw	RAC	0	2.91	0.00	2.10	0.00	7.59	0.00	1.97	0.00	3.93	0.00
VR 0469	Chicory, roots, raw	RAC	0	0.10	0.00	0.10	0.00	0.10	0.00	NC	–	NC	–
VR 0583	Horseradish, raw	RAC	0	0.88	0.00	0.63	0.00	0.54	0.00	0.59	0.00	1.19	0.00
VR 0587	Parsley turnip-rooted, raw	RAC	0	0.55	0.00	0.40	0.00	4.29	0.00	0.37	0.00	0.74	0.00
VR 0588	Parsnip, raw	RAC	0	1.02	0.00	0.74	0.00	3.50	0.00	0.69	0.00	1.37	0.00
VR 0494	Radish roots, raw	RAC	0	3.96	0.00	2.86	0.00	3.30	0.00	2.67	0.00	5.34	0.00
VR 0591	Japanese radish, raw (i.e. Chinese radish, daikon)	RAC	0	3.25	0.00	2.35	0.00	NC	–	2.20	0.00	4.39	0.00
VR 0498	Salsify, raw (i.e. oysterplant)	RAC	0	0.36	0.00	0.26	0.00	NC	–	0.24	0.00	0.48	0.00
VR 0596	Sugar beet, raw (incl. sugar)	RAC	0.003	3.93	0.01	1.68	0.01	NC	–	NC	–	36.12	0.11
VR 0589	Potato, raw (incl. flour, incl. frozen, incl. starch, incl. tapioca)	RAC	0.00495	23.96	0.12	13.56	0.07	213.41	1.06	104.35	0.52	8.56	0.04
GC 2086	Subgroup of wheat, similar grains and pseudocereals without husks, raw (including processed)	RAC	0.008	57.23	0.46	110.47	0.88	286.57	2.29	25.82	0.21	132.92	1.06

FIPRONIL (202) International Estimated Daily Intake (IEDI) ADI = 0–0.0002 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
GC 2087	Subgroup of barley, similar grains, and pseudocereals with husks, raw (including processed)	RAC	0.002	11.99	0.02	5.22	0.01	49.50	0.10	3.82	0.01	16.26	0.03
CM 0649 (GC 0649)	Rice, husked, dry (incl. flour, incl. oil, incl. beverages, incl. starch, excl. polished)	REP	0.002	13.58	0.03	4.29	0.01	2.17	0.00	0.10	0.00	8.84	0.02
CM 0649 (GC 0649)	Rice, husked, dry (incl. oil, incl. beverages, incl. starch, excl. polished, excl. flour)	REP	0.0020025	13.54	0.03	4.12	0.01	1.96	0.00	0.10	0.00	8.84	0.02
CM 1205	Rice polished, dry	PP	0.002	30.20	0.06	218.34	0.44	12.77	0.03	15.24	0.03	51.35	0.10
GC 2091	Subgroup of maize cereals	RAC	0.004	116.66	0.47	10.52	0.04	38.46	0.15	76.60	0.31	34.44	0.14
GS 0659	Sugar cane, raw	RAC	0.003	5.62	0.02	50.91	0.15	NC	–	11.04	0.03	0.10	0.00
–	Sugar cane, molasses	PP	0.00007	NC	–	NC	–	NC	–	NC	–	NC	–
–	Sugar cane, sugar (incl. non-centrifugal sugar, incl. refined sugar and maltose)	PP	0.00007	28.13	0.00	55.38	0.00	78.09	0.01	18.04	0.00	45.60	0.00
OR 0691	Cotton seed oil, edible	PP	0.0006	1.28	0.00	0.10	0.00	0.45	0.00	0.42	0.00	0.15	0.00
SO 0702	Sunflower seed, raw (incl. oil)	RAC	0.008	0.94	0.01	0.22	0.00	32.01	0.26	12.12	0.10	0.48	0.00
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.0043	23.34	0.10	40.71	0.18	97.15	0.42	18.06	0.08	57.71	0.25
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.068	5.84	0.40	10.18	0.69	24.29	1.65	4.52	0.31	14.43	0.98
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered	RAC	0.068	1.05	0.07	1.14	0.08	18.69	1.27	0.94	0.06	3.12	0.21

FIPRONIL (202) International Estimated Daily Intake (IEDI) ADI = 0–0.0002 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
	fats)												
MO 0105	Edible offal (mammalian), raw	RAC	0.0141	4.64	0.07	1.97	0.03	10.01	0.14	3.27	0.05	3.98	0.06
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.0044	108.75	0.48	70.31	0.31	436.11	1.92	61.55	0.27	79.09	0.35
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.0107	3.53	0.04	10.83	0.12	51.36	0.55	4.53	0.05	50.00	0.54
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.0382	0.39	0.01	1.20	0.05	5.71	0.22	0.50	0.02	5.56	0.21
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.0382	NC	–	NC	–	0.32	0.01	NC	–	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.0303	0.10	0.00	0.70	0.02	0.97	0.03	0.10	0.00	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.0322	3.84	0.12	4.41	0.14	27.25	0.88	1.13	0.04	7.39	0.24
	Total intake (ug/person) =				2.9		3.8		12.4		2.4		4.6
	Body weight per region (kg bw) =				60		60		60		60		60
	ADI (ug/person) =				12		12		12		12		12
	%ADI =				24.1%		31.3%		103.5%		19.7%		38.1%
	Rounded %ADI =				20%		30%		100%		20%		40%

FLUBENDIAMIDE (242) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FP 0009	Group of pome fruits, raw (incl. apple cider, excl. apple juice)	RAC	0.25	19.35	4.84	34.06	8.52	17.87	4.47	25.74	6.44	7.69	1.92	56.85	14.21
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.015	0.32	0.00	3.07	0.05	0.07	0.00	5.00	0.08	0.29	0.00	5.57	0.08
FS 0012	Group of stone fruits, raw (incl. dried plums, incl. dried apricots)	RAC	0.585	11.60	6.79	23.79	13.92	0.25	0.15	11.84	6.93	2.41	1.41	33.44	19.56
DF 0014	Plums, dried (prunes)	PP	0.53	0.09	0.05	0.06	0.03	0.01	0.01	0.18	0.10	0.04	0.02	0.06	0.03
FB 0269	Grapes, raw (incl. must, excl. dried, excl. juice, excl. wine)	RAC	0.42	13.02	5.47	9.25	3.89	0.03	0.01	16.91	7.10	3.70	1.55	54.44	22.86
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.7	0.51	0.36	0.51	0.36	0.01	0.01	1.27	0.89	0.12	0.08	2.07	1.45
JF 0269	Grape juice (from wine grapes)	PP	0.054	0.14	0.01	0.29	0.02	0.05	0.00	0.30	0.02	0.24	0.01	0.05	0.00
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.079	0.67	0.05	12.53	0.99	2.01	0.16	1.21	0.10	3.53	0.28	4.01	0.32
VB 0040	Group of brassica vegetables (excl. brassica leafy vegetables), raw	RAC	0.365	6.43	2.35	40.26	14.69	0.80	0.29	9.94	3.63	12.07	4.41	17.73	6.47
VC 0045	Group of fruiting vegetables, cucurbits, raw	RAC	0.045	53.14	2.39	86.21	3.88	6.28	0.28	92.76	4.17	15.64	0.70	155.30	6.99
VO 0448	Tomato, raw	RAC	0.35	41.73	14.61	75.65	26.48	10.66	3.73	82.87	29.00	24.75	8.66	200.93	70.33
–	Tomato, canned (& peeled)	PP	0.1	0.20	0.02	0.31	0.03	0.02	0.00	1.11	0.11	0.11	0.01	1.50	0.15
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	1.4	2.34	3.28	1.33	1.86	1.57	2.20	4.24	5.94	0.34	0.48	2.83	3.96

FLUBENDIAMIDE (242) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.17	0.29	0.05	0.29	0.05	0.01	0.00	0.38	0.06	0.05	0.01	0.14	0.02
VO 0051	Subgroup of peppers, raw (incl. dried sweet peppers, excl. dried chili peppers), incl. okra	RAC	0.09	10.45	0.94	13.74	1.24	13.81	1.24	14.53	1.31	15.25	1.37	27.93	2.51
VL 0483	Lettuce, leaf, raw	RAC	1.7	0.53	0.90	0.36	0.61	0.16	0.27	6.21	10.56	1.90	3.23	6.05	10.29
VP 0060	Group of legume vegetables, raw	RAC	0.43	7.73	3.32	1.53	0.66	0.51	0.22	2.95	1.27	5.08	2.18	12.86	5.53
VD 0070	Group of pulses, raw (incl. processed)	RAC	0.18	87.29	15.71	64.04	11.53	37.15	6.69	89.82	16.17	91.02	16.38	98.20	17.68
OR 0541	Soya oil, refined	PP	0.001	12.99	0.01	10.43	0.01	3.63	0.00	13.10	0.01	10.70	0.01	13.10	0.01
VS 0624	Celery	RAC	1.7	2.14	3.64	3.79	6.44	2.35	4.00	5.69	9.67	0.02	0.03	2.75	4.68
CM 0649 (GC 0649)	Rice, husked, dry (incl. paddy rice)	REP	0.03	1.17	0.04	1.30	0.04	31.05	0.93	4.79	0.14	0.25	0.01	2.16	0.06
CM 1205	Rice polished, dry	PP	0.01	34.21	0.34	10.39	0.10	41.72	0.42	82.38	0.82	150.24	1.50	70.47	0.70
GC 0645	Maize, raw (incl. glucose & dextrose & isoglucose, incl. beer, incl. germ, incl. starch, excl. flour, excl. oil)	RAC	0.01	0.97	0.01	0.24	0.00	1.58	0.02	4.10	0.04	2.56	0.03	13.31	0.13
CF 1255	Maize, flour (white flour and wholemeal flour)	PP	0.021	22.72	0.48	35.61	0.75	87.27	1.83	34.92	0.73	46.71	0.98	49.12	1.03
OR 0645	Maize oil	PP	0.0045	0.96	0.00	0.85	0.00	0.29	0.00	5.42	0.02	0.42	0.00	2.10	0.01
GC 0447	Sweet corn on the cob, raw (incl. frozen kernels, incl. canned kernels)	RAC	0.01	0.14	0.00	0.94	0.01	5.70	0.06	2.61	0.03	1.94	0.02	0.22	0.00
TN 0085	Group of tree nuts, raw (incl. processed)	RAC	0.015	4.06	0.06	3.27	0.05	7.01	0.11	13.93	0.21	14.01	0.21	9.36	0.14

FLUBENDIAMIDE (242) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as ug/person/day								
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
SO 0691	Cotton seed, raw (incl. oil)	RAC	0.15	20.53	3.08	9.80	1.47	6.42	0.96	4.73	0.71	7.14	1.07	18.68	2.80
OR 0691	Cotton seed oil, edible	PP	0.1	3.22	0.32	1.54	0.15	1.01	0.10	0.74	0.07	1.12	0.11	2.93	0.29
HS 0444	Peppers, chili, dried	PP	0.9	0.42	0.38	0.53	0.48	0.84	0.76	0.50	0.45	0.95	0.86	0.37	0.33
DT 1114	Tea, green or black, fermented and dried	RAC	23	2.28	52.44	1.92	44.16	0.46	10.58	2.40	55.20	1.29	29.67	3.04	69.92
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.06	24.96	1.50	57.95	3.48	16.70	1.00	38.38	2.30	26.46	1.59	29.00	1.74
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.62	6.24	3.87	14.49	8.98	4.18	2.59	9.60	5.95	6.62	4.10	7.25	4.50
MO 0105	Edible offal (mammalian), raw	RAC	0.32	4.79	1.53	9.68	3.10	2.97	0.95	5.49	1.76	3.84	1.23	5.03	1.61
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.066	289.65	19.12	485.88	32.07	26.92	1.78	239.03	15.78	199.91	13.19	180.53	11.91
	Total intake (ug/person) =				147.9		190.1		45.8		187.8		97.3		282.3
	Body weight per region (kg bw) =				60		60		60		60		60		60
	ADI (ug/person) =				1200		1200		1200		1200		1200		1200
	%ADI =				12.3%		15.8%		3.8%		15.6%		8.1%		23.5%
	Rounded %ADI =				10%		20%		4%		20%		8%		20%

FLUBENDIAMIDE (242) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FP 0009	Group of pome fruits, raw (incl. apple cider, excl. apple juice)	RAC	0.25	51.09	12.77	65.40	16.35	42.71	10.68	45.29	11.32	62.51	15.63	7.74	1.94
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.015	14.88	0.22	11.98	0.18	0.15	0.00	9.98	0.15	30.32	0.45	3.47	0.05
FS 0012	Group of stone fruits, raw (incl. dried plums, incl. dried apricots)	RAC	0.585	19.98	11.69	24.87	14.55	14.41	8.43	19.54	11.43	10.78	6.31	0.50	0.29
DF 0014	Plums, dried (prunes)	PP	0.53	0.61	0.32	0.35	0.19	0.05	0.03	0.35	0.19	0.49	0.26	0.13	0.07
FB 0269	Grapes, raw (incl. must, excl. dried, excl. juice, excl. wine)	RAC	0.42	6.48	2.72	11.31	4.75	5.21	2.19	9.50	3.99	4.66	1.96	0.78	0.33
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.7	3.09	2.16	1.51	1.06	0.03	0.02	1.38	0.97	4.26	2.98	0.42	0.29
JF 0269	Grape juice (from wine grapes)	PP	0.054	0.56	0.03	1.96	0.11	0.02	0.00	2.24	0.12	2.27	0.12	0.34	0.02
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.079	88.93	7.03	62.41	4.93	1.84	0.15	25.07	1.98	61.17	4.83	5.84	0.46
VB 0040	Group of brassica vegetables (excl. brassica leafy vegetables), raw	RAC	0.365	20.71	7.56	39.81	14.53	25.06	9.15	37.93	13.84	18.12	6.61	16.74	6.11
VC 0045	Group of fruiting vegetables, cucurbits, raw	RAC	0.045	27.81	1.25	41.93	1.89	123.30	5.55	49.47	2.23	15.95	0.72	35.99	1.62
VO 0448	Tomato, raw	RAC	0.35	32.13	11.25	51.27	17.94	34.92	12.22	73.37	25.68	15.15	5.30	8.88	3.11
–	Tomato, canned (& peeled)	PP	0.1	7.57	0.76	2.66	0.27	0.30	0.03	0.97	0.10	7.31	0.73	0.41	0.04
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	1.4	4.96	6.94	3.20	4.48	0.15	0.21	1.61	2.25	6.88	9.63	0.52	0.73

FLUBENDIAMIDE (242) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.17	0.80	0.14	0.07	0.01	0.05	0.01	0.61	0.10	0.40	0.07	0.08	0.01
VO 0051	Subgroup of peppers, raw (incl. dried sweet peppers, excl. dried chili peppers), incl. okra	RAC	0.09	6.39	0.58	15.53	1.40	19.13	1.72	10.53	0.95	8.29	0.75	5.25	0.47
VL 0483	Lettuce, leaf, raw	RAC	1.7	14.50	24.65	11.76	19.99	13.14	22.34	19.50	33.15	4.81	8.18	2.23	3.79
VP 0060	Group of legume vegetables, raw	RAC	0.43	18.21	7.83	8.91	3.83	7.22	3.10	10.04	4.32	23.22	9.98	0.17	0.07
VD 0070	Group of pulses, raw (incl. processed)	RAC	0.18	112.88	20.32	123.05	22.15	47.73	8.59	204.75	36.86	227.52	40.95	110.05	19.81
OR 0541	Soya oil, refined	PP	0.001	19.06	0.02	21.06	0.02	5.94	0.01	33.78	0.03	40.05	0.04	13.39	0.01
VS 0624	Celery	RAC	1.7	7.68	13.06	2.85	4.85	NC	–	3.34	5.68	16.83	28.61	4.04	6.87
CM 0649 (GC 0649)	Rice, husked, dry (incl. paddy rice)	REP	0.03	2.43	0.07	1.62	0.05	0.42	0.01	1.06	0.03	NC	–	5.02	0.15
CM 1205	Rice polished, dry	PP	0.01	13.38	0.13	10.80	0.11	262.08	2.62	57.16	0.57	12.83	0.13	62.78	0.63
GC 0645	Maize, raw (incl. glucose & dextrose & isoglucose, incl. beer, incl. germ, incl. starch, excl. flour, excl. oil)	RAC	0.01	0.10	0.00	9.93	0.10	1.71	0.02	21.57	0.22	0.33	0.00	0.05	0.00
CF 1255	Maize, flour (white flour and wholemeal flour)	PP	0.021	14.27	0.30	12.86	0.27	19.71	0.41	12.55	0.26	4.21	0.09	52.30	1.10
OR 0645	Maize oil	PP	0.0045	0.90	0.00	0.47	0.00	0.15	0.00	3.01	0.01	1.86	0.01	0.36	0.00
GC 0447	Sweet corn on the cob, raw (incl. frozen kernels, incl. canned kernels)	RAC	0.01	11.43	0.11	3.71	0.04	0.74	0.01	13.63	0.14	3.07	0.03	1.50	0.02
TN 0085	Group of tree nuts, raw (incl. processed)	RAC	0.015	8.52	0.13	8.94	0.13	15.09	0.23	9.60	0.14	14.57	0.22	26.26	0.39

FLUBENDIAMIDE (242) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as ug/person/day								
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
SO 0691	Cotton seed, raw (incl. oil)	RAC	0.15	10.71	1.61	4.23	0.63	7.19	1.08	7.54	1.13	5.66	0.85	2.38	0.36
OR 0691	Cotton seed oil, edible	PP	0.1	1.68	0.17	0.66	0.07	1.13	0.11	1.18	0.12	0.89	0.09	0.37	0.04
HS 0444	Peppers, chili, dried	PP	0.9	0.11	0.10	0.21	0.19	0.36	0.32	0.21	0.19	0.25	0.23	0.15	0.14
DT 1114	Tea, green or black, fermented and dried	RAC	23	2.71	62.33	0.82	18.86	1.14	26.22	1.59	36.57	1.82	41.86	0.53	12.19
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.06	112.02	6.72	120.71	7.24	63.46	3.81	88.99	5.34	96.24	5.77	41.02	2.46
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.62	28.01	17.36	30.18	18.71	15.86	9.84	22.25	13.79	24.06	14.92	10.25	6.36
MO 0105	Edible offal (mammalian), raw	RAC	0.32	15.17	4.85	5.19	1.66	6.30	2.02	6.78	2.17	3.32	1.06	3.17	1.01
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.066	388.92	25.67	335.88	22.17	49.15	3.24	331.25	21.86	468.56	30.92	245.45	16.20
	Total intake (ug/person) =				250.9		203.7		134.4		237.9		240.3		87.1
	Body weight per region (kg bw) =				60		60		55		60		60		60
	ADI (ug/person) =				1200		1200		1100		1200		1200		1200
	%ADI =				20.9%		17.0%		12.2%		19.8%		20.0%		7.3%
	Rounded %ADI =				20%		20%		10%		20%		20%		7%

FLUBENDIAMIDE (242) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FP 0009	Group of pome fruits, raw (incl. apple cider, excl. apple juice)	RAC	0.25	68.85	17.21	10.93	2.73	70.82	17.71	189.78	47.45	19.56	4.89
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.015	0.03	0.00	0.10	0.00	7.19	0.11	0.03	0.00	NC	–
FS 0012	Group of stone fruits, raw (incl. dried plums, incl. dried apricots)	RAC	0.585	0.09	0.05	0.03	0.02	33.36	19.52	0.01	0.01	NC	–
DF 0014	Plums, dried (prunes)	PP	0.53	0.01	0.01	0.01	0.01	0.37	0.20	0.01	0.01	NC	–
FB 0269	Grapes, raw (incl. must, excl. dried, excl. juice, excl. wine)	RAC	0.42	0.14	0.06	0.36	0.15	15.33	6.44	0.01	0.00	0.28	0.12
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.7	0.01	0.01	0.13	0.09	1.06	0.74	0.01	0.01	0.03	0.02
JF 0269	Grape juice (from wine grapes)	PP	0.054	0.01	0.00	0.01	0.00	0.41	0.02	0.01	0.00	NC	–
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.079	0.31	0.02	0.23	0.02	60.43	4.77	0.52	0.04	31.91	2.52
VB 0040	Group of brassica vegetables (excl. brassica leafy vegetables), raw	RAC	0.365	5.46	1.99	4.28	1.56	58.72	21.43	0.02	0.01	NC	–
VC 0045	Group of fruiting vegetables, cucurbits, raw	RAC	0.045	5.96	0.27	9.74	0.44	51.82	2.33	13.61	0.61	0.05	0.00
VO 0448	Tomato, raw	RAC	0.35	12.99	4.55	4.79	1.68	58.40	20.44	0.92	0.32	0.09	0.03
–	Tomato, canned (& peeled)	PP	0.1	0.07	0.01	0.08	0.01	2.42	0.24	0.07	0.01	NC	–
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	1.4	0.58	0.81	0.22	0.31	2.21	3.09	0.24	0.34	3.10	4.34
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.17	0.05	0.01	0.01	0.00	0.42	0.07	0.01	0.00	0.02	0.00

FLUBENDIAMIDE (242) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VO 0051	Subgroup of peppers, raw (incl. dried sweet peppers, excl. dried chili peppers), incl. okra	RAC	0.09	15.20	1.37	14.23	1.28	25.14	2.26	0.91	0.08	NC	–
VL 0483	Lettuce, leaf, raw	RAC	1.7	0.29	0.49	0.03	0.05	6.71	11.41	0.01	0.02	NC	–
VP 0060	Group of legume vegetables, raw	RAC	0.43	0.58	0.25	3.16	1.36	10.38	4.46	0.04	0.02	NC	–
VD 0070	Group of pulses, raw (incl. processed)	RAC	0.18	46.57	8.38	30.77	5.54	112.53	20.26	75.53	13.60	43.68	7.86
OR 0541	Soya oil, refined	PP	0.001	2.32	0.00	2.54	0.00	18.70	0.02	2.51	0.00	6.29	0.01
VS 0624	Celery	RAC	1.7	3.66	6.22	2.65	4.51	4.84	8.23	2.47	4.20	4.94	8.40
CM 0649 (GC 0649)	Rice, husked, dry (incl. paddy rice)	REP	0.03	13.53	0.41	3.48	0.10	1.96	0.06	0.01	0.00	8.84	0.27
CM 1205	Rice polished, dry	PP	0.01	30.20	0.30	218.34	2.18	12.77	0.13	15.24	0.15	51.35	0.51
GC 0645	Maize, raw (incl. glucose & dextrose & isoglucose, incl. beer, incl. germ, incl. starch, excl. flour, excl. oil)	RAC	0.01	0.58	0.01	0.52	0.01	3.26	0.03	7.96	0.08	NC	–
CF 1255	Maize, flour (white flour and wholemeal flour)	PP	0.021	94.34	1.98	8.09	0.17	28.03	0.59	55.94	1.17	28.07	0.59
OR 0645	Maize oil	PP	0.0045	0.33	0.00	0.07	0.00	0.81	0.00	0.01	0.00	NC	–
GC 0447	Sweet corn on the cob, raw (incl. frozen kernels, incl. canned kernels)	RAC	0.01	3.63	0.04	20.50	0.21	8.78	0.09	0.02	0.00	0.17	0.00
TN 0085	Group of tree nuts, raw (incl. processed)	RAC	0.015	4.39	0.07	135.53	2.03	6.11	0.09	0.72	0.01	317.74	4.77
SO 0691	Cotton seed, raw (incl. oil)	RAC	0.15	8.14	1.22	0.32	0.05	2.84	0.43	2.69	0.40	0.97	0.15

FLUBENDIAMIDE (242) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
OR 0691	Cotton seed oil, edible	PP	0.1	1.28	0.13	0.05	0.01	0.45	0.05	0.42	0.04	0.15	0.02
HS 0444	Peppers, chili, dried	PP	0.9	0.58	0.52	1.27	1.14	1.21	1.09	0.12	0.11	NC	–
DT 1114	Tea, green or black, fermented and dried	RAC	23	0.53	12.19	5.25	120.75	0.63	14.49	0.56	12.88	0.82	18.86
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.06	23.34	1.40	40.71	2.44	97.15	5.83	18.06	1.08	57.71	3.46
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.62	5.84	3.62	10.18	6.31	24.29	15.06	4.52	2.80	14.43	8.95
MO 0105	Edible offal (mammalian), raw	RAC	0.32	4.64	1.48	1.97	0.63	10.01	3.20	3.27	1.05	3.98	1.27
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.066	108.75	7.18	70.31	4.64	436.11	28.78	61.55	4.06	79.09	5.22
	Total intake (ug/person) =				72.3		160.4		213.7		90.6		72.3
	Body weight per region (kg bw) =				60		60		60		60		60
	ADI (ug/person) =				1200		1200		1200		1200		1200
	%ADI =				6.0%		13.4%		17.8%		7.5%		6.0%
	Rounded %ADI =				6%		10%		20%		8%		6%

FLUPYRADIFURONE (285) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
JF 0001	Group of citrus fruit, juice	PP	0.068	1.30	0.09	2.37	0.16	0.22	0.01	13.88	0.94	0.75	0.05	2.63	0.18
FC 0002	Subgroup of lemons and limes, raw (incl. kumquat commodities)	RAC	0.32	4.78	1.53	2.42	0.77	3.61	1.16	25.18	8.06	8.25	2.64	15.77	5.05
FC 0003	Subgroup of mandarins, raw	RAC	0.44	6.18	2.72	3.66	1.61	0.25	0.11	6.82	3.00	3.49	1.54	19.38	8.53
FC 0004	Subgroup of oranges, sweet, sour, raw	RAC	0.505	20.66	10.43	5.23	2.64	11.90	6.01	37.90	19.14	21.16	10.69	56.46	28.51
FC 0005	Subgroup of pummelo and grapefruits, raw	RAC	0.21	0.64	0.13	0.35	0.07	0.93	0.20	6.10	1.28	1.01	0.21	1.36	0.29
FP 0009	Group of pome fruits, raw (incl. apple cider, excl. apple juice)	RAC	0.45	19.35	8.71	34.06	15.33	17.87	8.04	25.74	11.58	7.69	3.46	56.85	25.58
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.14	0.32	0.04	3.07	0.43	0.07	0.01	5.00	0.70	0.29	0.04	5.57	0.78
FS 0013	Subgroup of cherries, raw	RAC	0.555	0.92	0.51	9.15	5.08	0.01	0.01	0.61	0.34	0.06	0.03	6.64	3.69
FS 0014	Subgroup of plums, raw	RAC	0.23	2.40	0.55	8.60	1.98	0.06	0.01	2.52	0.58	0.58	0.13	4.16	0.96
DF 0014	Plums, dried (prunes)	PP	1.15	0.09	0.10	0.06	0.07	0.01	0.01	0.18	0.21	0.04	0.05	0.06	0.07
FS 2001	Subgroup of peaches, raw (incl. dried apricots)	RAC	0.39	8.01	3.12	5.87	2.29	0.18	0.07	8.19	3.19	1.64	0.64	22.46	8.76
FB 2006	Subgroup of bush berries, raw (including processed)	RAC	0.725	0.53	0.38	1.31	0.95	0.40	0.29	1.66	1.20	0.01	0.01	0.99	0.72
FB 0269	Grapes, raw (incl. must, excl. dried, excl. juice, excl. wine)	RAC	0.63	13.02	8.20	9.25	5.83	0.03	0.02	16.91	10.65	3.70	2.33	54.44	34.30
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	1.6	0.51	0.82	0.51	0.82	0.01	0.02	1.27	2.03	0.12	0.19	2.07	3.31

FLUPYRADIFURONE (285) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
JF 0269	Grape juice (from wine grapes)	PP	0.43	0.14	0.06	0.29	0.12	0.05	0.02	0.30	0.13	0.24	0.10	0.05	0.02
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.26	0.67	0.17	12.53	3.26	2.01	0.52	1.21	0.31	3.53	0.92	4.01	1.04
FB 0275	Strawberry, raw	RAC	1.505	0.70	1.05	2.01	3.03	0.04	0.06	1.36	2.05	0.37	0.56	2.53	3.81
FT 0305	Table olives, raw (incl. preserved)	RAC	0.485	0.70	0.34	0.32	0.16	0.01	0.00	1.53	0.74	0.17	0.08	1.85	0.90
VA 0035	Group of Bulb vegetables, raw	RAC	0.18	34.29	6.17	46.37	8.35	4.73	0.85	41.36	7.44	21.08	3.79	52.54	9.46
VB 0404	Cauliflower, raw	RAC	0.48	1.65	0.79	0.32	0.15	0.01	0.00	2.33	1.12	4.79	2.30	2.03	0.97
VB 0041	Cabbages, head, raw	RAC	0.79	2.73	2.16	27.92	22.06	0.55	0.43	4.47	3.53	4.27	3.37	10.25	8.10
VC 0431	Squash, summer (courgette, marrow, zucchetti, zucchini), raw	RAC	0.655	0.78	0.51	2.06	1.35	0.30	0.20	1.61	1.05	2.25	1.47	2.36	1.55
VO 0448	Tomato, raw (incl. canned, excl. juice, excl. paste)	RAC	0.71	42.04	29.85	76.13	54.05	10.69	7.59	84.59	60.06	24.92	17.69	203.27	144.32
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	1.3	2.34	3.04	1.33	1.73	1.57	2.04	4.24	5.51	0.34	0.44	2.83	3.68
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.48	0.29	0.14	0.29	0.14	0.01	0.00	0.38	0.18	0.05	0.02	0.14	0.07
VO 0051	Subgroup of peppers, raw (incl. dried sweet peppers, excl. dried chili peppers), incl. okra	RAC	0.68	10.45	7.11	13.74	9.34	13.81	9.39	14.53	9.88	15.25	10.37	27.93	18.99
VL 0483	Lettuce, leaf, raw	RAC	2.6	0.53	1.38	0.36	0.94	0.16	0.42	6.21	16.15	1.90	4.94	6.05	15.73
VL 0502	Spinach, raw	RAC	8.5	0.74	6.29	0.22	1.87	0.02	0.17	0.91	7.74	0.04	0.34	2.92	24.82
VL 0485	Mustard greens, raw (i.e. Indian mustard, amsoi,	RAC	12	0.03	0.36	0.31	3.72	0.01	0.12	0.05	0.60	0.47	5.64	0.11	1.32

FLUPYRADIFURONE (285) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as ug/person/day									
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
	mustard cabbage)														
VP 2060	Subgroup of beans with pods (all commodities within this group)	RAC	2.63	0.68	1.79	NC	–	NC	–	0.39	1.03	0.22	0.58	0.49	1.29
VP 2062	Subgroup of succulent beans without pods (all commodities within this group)	RAC	1.17	5.07	5.93	1.02	1.19	0.49	0.57	1.78	2.08	1.19	1.39	8.57	10.03
VP 0064	Peas without pods (Pisum spp) (succulent seeds)	RAC	2.78	1.97	5.48	0.51	1.42	0.02	0.06	0.79	2.20	3.68	10.23	3.80	10.56
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	3.22	2.39	7.70	1.61	5.18	10.47	33.71	1.84	5.92	12.90	41.54	7.44	23.96
VD 0523	Broad bean, dry, raw (incl. horse-bean, field bean) (Vicia faba)	RAC	2.49	1.27	3.16	0.01	0.02	0.12	0.30	2.49	6.20	0.23	0.57	5.54	13.79
VD 0541	Soya bean, dry, raw (incl. flour, incl. paste, incl. curd, incl. sauce, excl. oil)	RAC	3.44	0.63	2.17	1.09	3.75	0.40	1.38	1.40	4.82	1.68	5.78	0.48	1.65
OR 0541	Soya oil, refined	PP	0.13	12.99	1.69	10.43	1.36	3.63	0.47	13.10	1.70	10.70	1.39	13.10	1.70
–	Soya flour	PP	5.3	0.05	0.27	0.86	4.56	0.02	0.11	1.02	5.41	0.01	0.05	0.15	0.80
VD 0072	Peas (dry) (Pisum spp), raw	RAC	3.605	1.62	5.84	3.22	11.61	0.92	3.32	1.50	5.41	2.90	10.45	0.17	0.61
VD 0524	Chickpea (dry) (Cicer spp), raw	RAC	2.49	5.34	13.30	0.13	0.32	0.01	0.02	4.69	11.68	7.24	18.03	5.52	13.74
VD 0533	Lentil (dry) (Lens spp), raw	RAC	2.49	2.12	5.28	0.01	0.02	0.03	0.07	3.21	7.99	1.60	3.98	4.90	12.20
VD 0537	Pigeon pea (dry) (Cajanus spp), raw	RAC	2.49	NC	–	NC	–	0.10	0.25	0.07	0.17	3.38	8.42	NC	–
VR 0573	Arrowroot, raw	RAC	0.29	1.53	0.44	0.01	0.00	0.93	0.27	1.33	0.39	0.47	0.14	0.02	0.01

FLUPYRADIFURONE (285) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day				Intake as ug/person/day							
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VR 0463	Cassava raw (incl. starch, incl. tapioca, incl. flour) (i.e. manioc)	RAC	0.29	0.08	0.02	0.01	0.00	482.56	139.94	0.99	0.29	25.75	7.47	3.29	0.95
VR 0585	Jerusalem artichoke, raw (i.e. topinambur)	RAC	0.29	1.57	0.46	0.01	0.00	0.96	0.28	1.36	0.39	0.48	0.14	0.02	0.01
VR 0589	Potato, raw (incl. flour, incl. frozen, incl. tapioca, excl. starch)	RAC	0.291	59.60	17.34	316.10	91.99	9.77	2.84	59.59	17.34	54.12	15.75	119.82	34.87
–	Potato, starch	PP	0.16	0.03	0.00	0.01	0.00	0.01	0.00	0.15	0.02	0.01	0.00	0.01	0.00
VR 0508	Sweet potato, raw (incl. dried)	RAC	0.291	0.18	0.05	0.18	0.05	42.16	12.27	1.61	0.47	3.06	0.89	6.67	1.94
VR 0504	Tannia, raw (i.e. tanier, yautia)	RAC	0.29	NC	–	NC	–	NC	–	0.01	0.00	0.26	0.08	1.27	0.37
VR 0505	Taro, raw (i.e. dasheen, eddoe)	RAC	0.29	0.01	0.00	NC	–	25.12	7.28	0.04	0.01	0.01	0.00	0.97	0.28
VR 0600	Yams, raw (incl. dried)	RAC	0.29	0.02	0.01	NC	–	90.40	26.22	6.45	1.87	0.74	0.21	0.65	0.19
VS 0624	Celery	RAC	2.38	2.14	5.09	3.79	9.02	2.35	5.59	5.69	13.54	0.02	0.05	2.75	6.55
GC 0648	Quinoa, raw	RAC	1.315	NC	–	NC	–	NC	–	NC	–	0.07	0.09	NC	–
GC 0650	Rye, raw (incl. flour)	RAC	1.315	0.13	0.17	19.38	25.48	0.10	0.13	0.12	0.16	0.03	0.04	2.15	2.83
GC 0653	Triticale, raw (incl. flour)	RAC	1.315	NC	–	NC	–	NC	–	0.01	0.01	0.39	0.51	NC	–
GC 0654	Wheat, raw (incl. bulgur, incl. fermented beverages, incl. germ, incl. wholemeal bread, excl. white flour products, excl. white bread)	RAC	3	0.01	0.03	1.13	3.39	0.01	0.03	0.05	0.15	0.74	2.22	0.01	0.03
CF 1210	Wheat, germ	PP	1.64	NC	–	NC	–	0.01	0.02	0.01	0.02	0.14	0.23	0.01	0.02

FLUPYRADIFURONE (285) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
CP 1212	Wheat, wholemeal bread	PP	1.62	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.03	0.05	0.01	0.02
CP 1211	Wheat, white bread	PP	0.42	0.25	0.11	0.63	0.26	0.12	0.05	0.43	0.18	1.39	0.58	0.22	0.09
CF 1211	Wheat, white flour (incl. white flour products: starch, gluten, macaroni, pastry)	PP	0.59	301.24	177.73	268.64	158.50	30.21	17.82	222.51	131.28	134.73	79.49	343.12	202.44
–	Wheat, starch	PP	0.034	0.02	0.00	NC	–	0.01	0.00	0.05	0.00	0.13	0.00	0.01	0.00
–	Wheat, gluten	PP	0.53	0.01	0.01	0.01	0.01	0.01	0.01	0.27	0.14	0.01	0.01	0.03	0.02
GC 0640	Barley, raw (incl. malt extract, incl. flour & grits, incl. malt, excl. pot & pearled, excl. beer)	RAC	1.315	8.03	10.56	2.05	2.70	0.39	0.51	0.62	0.82	1.27	1.67	0.56	0.74
–	Barley, pot & pearled	PP	0.16	7.12	1.14	7.34	1.17	0.02	0.00	0.03	0.00	0.67	0.11	0.20	0.03
–	Barley beer	PP	0.099	4.87	0.48	93.78	9.28	24.28	2.40	12.76	1.26	39.28	3.89	18.15	1.80
GC 2089	Subgroup of sorghum grain and millet	RAC	1.315	5.80	7.63	2.32	3.05	23.09	30.36	16.72	21.99	27.14	35.69	2.92	3.84
GC 0645	Maize, raw (incl. glucose & dextrose & isoglucose, incl. beer, excl. flour, excl. oil, excl. germ, excl. starch)	RAC	0.49	0.84	0.41	0.24	0.12	1.56	0.76	0.46	0.23	2.21	1.08	13.13	6.43
CF 1255	Maize, flour (white flour and wholemeal flour)	PP	0.44	22.72	10.00	35.61	15.67	87.27	38.40	34.92	15.36	46.71	20.55	49.12	21.61
–	Maize, germ	PP	0.51	0.01	0.01	NC	–	0.01	0.01	0.01	0.01	0.22	0.11	NC	–
–	Maize starch	PP	0.44	0.08	0.04	NC	–	0.01	0.00	2.29	1.01	0.08	0.04	0.11	0.05
OR 0645	Maize oil	PP	0.44	0.96	0.42	0.85	0.37	0.29	0.13	5.42	2.38	0.42	0.18	2.10	0.92

FLUPYRADIFURONE (285) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
GC 0447	Sweet corn on the cob, raw (incl. frozen kernels, incl. canned kernels)	RAC	0.56	0.14	0.08	0.94	0.53	5.70	3.19	2.61	1.46	1.94	1.09	0.22	0.12
TN 0672	Pecan, nutmeat	RAC	0.06	0.05	0.00	0.05	0.00	0.02	0.00	0.14	0.01	0.09	0.01	0.13	0.01
SO 0495	Rape seed, raw (incl. oil)	RAC	0.36	0.93	0.33	1.16	0.42	0.49	0.18	2.53	0.91	9.32	3.36	2.02	0.73
SO 0691	Cotton seed, raw (incl. oil)	RAC	0.395	20.53	8.11	9.80	3.87	6.42	2.54	4.73	1.87	7.14	2.82	18.68	7.38
OR 0691	Cotton seed oil, edible	PP	0.079	3.22	0.25	1.54	0.12	1.01	0.08	0.74	0.06	1.12	0.09	2.93	0.23
SO 0697	Peanuts, nutmeat, raw	RAC	0.225	0.40	0.09	1.01	0.23	6.60	1.49	1.47	0.33	1.17	0.26	1.82	0.41
–	Peanuts, roasted	PP	0.17	0.06	0.01	0.19	0.03	0.04	0.01	1.05	0.18	0.08	0.01	0.02	0.00
OR 0697	Peanut oil, edible	PP	0.13	0.36	0.05	0.01	0.00	2.57	0.33	0.07	0.01	2.29	0.30	0.36	0.05
–	Peanut butter	PP	0.17	0.01	0.00	0.01	0.00	0.01	0.00	0.19	0.03	0.01	0.00	0.01	0.00
SO 0305	Olives for oil production, raw	RAC	0.485	1.47	0.71	0.67	0.32	NC	–	1.26	0.61	0.04	0.02	7.63	3.70
–	Olive oil (virgin and residue oil)	PP	0.1067	2.17	0.23	0.13	0.01	0.05	0.01	1.32	0.14	0.10	0.01	2.76	0.29
HS 0444	Peppers, chili, dried	PP	6.8	0.42	2.86	0.53	3.60	0.84	5.71	0.50	3.40	0.95	6.46	0.37	2.52
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.3	24.96	7.49	57.95	17.39	16.70	5.01	38.38	11.52	26.46	7.94	29.00	8.70
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.15	6.24	0.94	14.49	2.17	4.18	0.63	9.60	1.44	6.62	0.99	7.25	1.09
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered	RAC	0.15	3.29	0.49	6.14	0.92	0.82	0.12	1.57	0.24	2.23	0.33	1.07	0.16

FLUPYRADIFURONE (285) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as ug/person/day								
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
	fats)														
MO 0105	Edible offal (mammalian), raw	RAC	0.87	4.79	4.17	9.68	8.42	2.97	2.58	5.49	4.78	3.84	3.34	5.03	4.38
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.11	289.65	31.86	485.88	53.45	26.92	2.96	239.03	26.29	199.91	21.99	180.53	19.86
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.27	13.17	3.56	26.78	7.23	7.24	1.95	116.71	31.51	22.54	6.08	32.09	8.67
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.11	1.46	0.16	2.98	0.33	0.80	0.09	12.97	1.43	2.50	0.28	3.57	0.39
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.11	0.10	0.01	0.10	0.01	NC	–	0.10	0.01	0.10	0.01	0.10	0.01
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.39	0.12	0.05	0.12	0.05	0.11	0.04	5.37	2.09	0.24	0.09	0.10	0.04
PE 0112	Eggs, raw (incl. dried)	RAC	0.15	7.84	1.18	23.08	3.46	2.88	0.43	14.89	2.23	9.81	1.47	14.83	2.22
	Total intake (ug/person) =				444.2		601.4		390.8		533.9		404.7		792.8
	Body weight per region (kg bw) =				60		60		60		60		60		60
	ADI (ug/person) =				4800		4800		4800		4800		4800		4800
	%ADI =				9.3%		12.5%		8.1%		11.1%		8.4%		16.5%
	Rounded %ADI =				9%		10%		8%		10%		8%		20%

FLUPYRADIFURONE (285) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
JF 0001	Group of citrus fruit, juice	PP	0.068	36.84	2.51	3.75	0.26	0.30	0.02	21.62	1.47	21.82	1.48	46.67	3.17
FC 0002	Subgroup of lemons and limes, raw (incl. kumquat commodities)	RAC	0.32	8.45	2.70	14.69	4.70	2.88	0.92	8.16	2.61	21.14	6.76	5.93	1.90
FC 0003	Subgroup of mandarins, raw	RAC	0.44	12.34	5.43	14.99	6.60	16.08	7.08	10.76	4.73	9.94	4.37	NC	–
FC 0004	Subgroup of oranges, sweet, sour, raw	RAC	0.505	15.68	7.92	24.00	12.12	6.80	3.43	29.09	14.69	15.39	7.77	160.47	81.04
FC 0005	Subgroup of pummelo and grapefruits, raw	RAC	0.21	2.19	0.46	1.24	0.26	0.60	0.13	3.44	0.72	4.60	0.97	299.96	62.99
FP 0009	Group of pome fruits, raw (incl. apple cider, excl. apple juice)	RAC	0.45	51.09	22.99	65.40	29.43	42.71	19.22	45.29	20.38	62.51	28.13	7.74	3.48
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.14	14.88	2.08	11.98	1.68	0.15	0.02	9.98	1.40	30.32	4.24	3.47	0.49
FS 0013	Subgroup of cherries, raw	RAC	0.555	1.40	0.78	4.21	2.34	0.04	0.02	2.93	1.63	1.50	0.83	NC	–
FS 0014	Subgroup of plums, raw	RAC	0.23	3.75	0.86	3.33	0.77	5.94	1.37	2.64	0.61	2.50	0.58	0.06	0.01
DF 0014	Plums, dried (prunes)	PP	1.15	0.61	0.70	0.35	0.40	0.05	0.06	0.35	0.40	0.49	0.56	0.13	0.15
FS 2001	Subgroup of peaches, raw (incl. dried apricots)	RAC	0.39	13.03	5.08	16.29	6.35	8.29	3.23	12.95	5.05	5.35	2.09	0.04	0.02
FB 2006	Subgroup of bush berries, raw (including processed)	RAC	0.725	1.31	0.95	5.50	3.99	0.01	0.01	2.57	1.86	0.82	0.59	2.15	1.56
FB 0269	Grapes, raw (incl. must, excl. dried, excl. juice, excl. wine)	RAC	0.63	6.48	4.08	11.31	7.13	5.21	3.28	9.50	5.99	4.66	2.94	0.78	0.49
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	1.6	3.09	4.94	1.51	2.42	0.03	0.05	1.38	2.21	4.26	6.82	0.42	0.67

FLUPYRADIFURONE (285) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
JF 0269	Grape juice (from wine grapes)	PP	0.43	0.56	0.24	1.96	0.84	0.02	0.01	2.24	0.96	2.27	0.98	0.34	0.15
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.26	88.93	23.12	62.41	16.23	1.84	0.48	25.07	6.52	61.17	15.90	5.84	1.52
FB 0275	Strawberry, raw	RAC	1.505	4.49	6.76	5.66	8.52	0.02	0.03	6.63	9.98	5.75	8.65	0.05	0.08
FT 0305	Table olives, raw (incl. preserved)	RAC	0.485	2.00	0.97	2.48	1.20	0.01	0.00	1.21	0.59	1.64	0.80	0.27	0.13
VA 0035	Group of Bulb vegetables, raw	RAC	0.18	26.24	4.72	36.47	6.56	39.29	7.07	39.37	7.09	29.12	5.24	20.21	3.64
VB 0404	Cauliflower, raw	RAC	0.48	5.27	2.53	5.01	2.40	NC	–	2.70	1.30	5.57	2.67	0.49	0.24
VB 0041	Cabbages, head, raw	RAC	0.79	8.97	7.09	27.12	21.42	1.44	1.14	24.96	19.72	4.55	3.59	11.23	8.87
VC 0431	Squash, summer (courgette, marrow, zucchetti, zucchini), raw	RAC	0.655	NC	–	NC	–	5.48	3.59	NC	–	NC	–	1.03	0.67
VO 0448	Tomato, raw (incl. canned, excl. juice, excl. paste)	RAC	0.71	43.88	31.15	55.41	39.34	35.38	25.12	74.88	53.16	26.50	18.82	9.51	6.75
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	1.3	4.96	6.45	3.20	4.16	0.15	0.20	1.61	2.09	6.88	8.94	0.52	0.68
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.48	0.80	0.38	0.07	0.03	0.05	0.02	0.61	0.29	0.40	0.19	0.08	0.04
VO 0051	Subgroup of peppers, raw (incl. dried sweet peppers, excl. dried chili peppers), incl. okra	RAC	0.68	6.39	4.35	15.53	10.56	19.13	13.01	10.53	7.16	8.29	5.64	5.25	3.57
VL 0483	Lettuce, leaf, raw	RAC	2.6	14.50	37.70	11.76	30.58	13.14	34.16	19.50	50.70	4.81	12.51	2.23	5.80
VL 0502	Spinach, raw	RAC	8.5	2.20	18.70	1.76	14.96	13.38	113.73	2.94	24.99	5.53	47.01	0.02	0.17
VL 0485	Mustard greens, raw (i.e. Indian mustard, amsoi,	RAC	12	NC	–	NC	–	NC	–	NC	–	NC	–	0.13	1.56

FLUPYRADIFURONE (285) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day								Intake as ug/person/day			
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
	mustard cabbage)														
VP 2060	Subgroup of beans with pods (all commodities within this group)	RAC	2.63	5.07	13.33	0.83	2.18	0.17	0.45	3.70	9.73	NC	–	NC	–
VP 2062	Subgroup of succulent beans without pods (all commodities within this group)	RAC	1.17	2.42	2.83	6.09	7.13	4.33	5.07	2.09	2.45	18.99	22.22	0.17	0.20
VP 0064	Peas without pods (Pisum spp) (succulent seeds)	RAC	2.78	10.72	29.80	1.99	5.53	2.72	7.56	4.26	11.84	4.23	11.76	NC	–
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	3.22	1.51	4.86	1.50	4.83	1.90	6.12	5.11	16.45	1.36	4.38	23.43	75.44
VD 0523	Broad bean, dry, raw (incl. horse-bean, field bean) (Vicia faba)	RAC	2.49	0.02	0.05	0.01	0.02	1.16	2.89	0.40	1.00	NC	–	0.06	0.15
VD 0541	Soya bean, dry, raw (incl. flour, incl. paste, incl. curd, incl. sauce, excl. oil)	RAC	3.44	0.47	1.62	0.77	2.65	9.12	31.37	8.05	27.69	0.04	0.14	6.06	20.85
OR 0541	Soya oil, refined	PP	0.13	19.06	2.48	21.06	2.74	5.94	0.77	33.78	4.39	40.05	5.21	13.39	1.74
–	Soya flour	PP	5.3	0.22	1.17	0.27	1.43	0.29	1.54	0.17	0.90	NC	–	NC	–
VD 0072	Peas (dry) (Pisum spp), raw	RAC	3.605	3.80	13.70	1.25	4.51	0.90	3.24	2.33	8.40	2.70	9.73	3.83	13.81
VD 0524	Chickpea (dry) (Cicer spp), raw	RAC	2.49	0.27	0.67	1.33	3.31	0.32	0.80	0.15	0.37	0.08	0.20	0.04	0.10
VD 0533	Lentil (dry) (Lens spp), raw	RAC	2.49	0.95	2.37	1.18	2.94	0.40	1.00	0.96	2.39	0.71	1.77	1.28	3.19
VD 0537	Pigeon pea (dry) (Cajanus spp), raw	RAC	2.49	NC	–	NC	–	0.20	0.50	NC	–	NC	–	NC	–
VR 0573	Arrowroot, raw	RAC	0.29	0.02	0.01	0.01	0.00	2.05	0.59	0.21	0.06	NC	–	0.76	0.22

FLUPYRADIFURONE (285) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
VR 0463	Cassava raw (incl. starch, incl. tapioca, incl. flour) (i.e. manioc)	RAC	0.29	0.01	0.00	NC	–	20.96	6.08	0.14	0.04	NC	–	9.62	2.79
VR 0585	Jerusalem artichoke, raw (i.e. topinambur)	RAC	0.29	0.11	0.03	0.01	0.00	NC	–	0.22	0.06	NC	–	0.78	0.23
VR 0589	Potato, raw (incl. flour, incl. frozen, incl. tapioca, excl. starch)	RAC	0.291	225.03	65.48	226.35	65.87	71.26	20.74	173.36	50.45	234.55	68.25	37.71	10.97
–	Potato, starch	PP	0.16	NC	–	1.74	0.28	0.05	0.01	0.92	0.15	NC	–	NC	–
VR 0508	Sweet potato, raw (incl. dried)	RAC	0.291	0.93	0.27	0.32	0.09	64.65	18.81	5.37	1.56	0.30	0.09	3.13	0.91
VR 0504	Tannia, raw (i.e. tanier, yautia)	RAC	0.29	NC	–	NC	–	NC	–	0.01	0.00	NC	–	10.74	3.11
VR 0505	Taro, raw (i.e. dasheen, eddoe)	RAC	0.29	NC	–	NC	–	1.93	0.56	0.84	0.24	NC	–	19.94	5.78
VR 0600	Yams, raw (incl. dried)	RAC	0.29	NC	–	NC	–	0.03	0.01	0.71	0.21	NC	–	17.57	5.10
VS 0624	Celery	RAC	2.38	7.68	18.28	2.85	6.78	NC	–	3.34	7.95	16.83	40.06	4.04	9.62
GC 0648	Quinoa, raw	RAC	1.315	NC	–	NC	–	NC	–	NC	–	NC	–	NC	–
GC 0650	Rye, raw (incl. flour)	RAC	1.315	3.21	4.22	35.38	46.52	0.21	0.28	6.50	8.55	1.49	1.96	NC	–
GC 0653	Triticale, raw (incl. flour)	RAC	1.315	0.01	0.01	0.17	0.22	0.29	0.38	0.01	0.01	NC	–	NC	–
GC 0654	Wheat, raw (incl. bulgur, incl. fermented beverages, incl. germ, incl. wholemeal bread, excl. white flour products, excl. white bread)	RAC	3	1.00	3.00	0.11	0.33	0.05	0.15	0.84	2.52	0.06	0.18	0.06	0.18
CF 1210	Wheat, germ	PP	1.64	0.97	1.59	0.10	0.16	0.03	0.05	0.01	0.02	NC	–	0.04	0.07

FLUPYRADIFURONE (285) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
CP 1212	Wheat, wholemeal bread	PP	1.62	0.03	0.05	0.01	0.02	0.01	0.02	0.01	0.02	0.05	0.08	0.02	0.03
CP 1211	Wheat, white bread	PP	0.42	1.30	0.55	0.46	0.19	0.06	0.03	0.22	0.09	2.44	1.02	0.77	0.32
CF 1211	Wheat, white flour (incl. white flour products: starch, gluten, macaroni, pastry)	PP	0.59	198.08	116.87	193.03	113.89	106.24	62.68	185.09	109.20	168.67	99.52	131.59	77.64
–	Wheat, starch	PP	0.034	NC	–	NC	–	0.01	0.00	0.31	0.01	NC	–	NC	–
–	Wheat, gluten	PP	0.53	0.68	0.36	NC	–	0.01	0.01	0.01	0.01	NC	–	NC	–
GC 0640	Barley, raw (incl. malt extract, incl. flour & grits, incl. malt, excl. pot & pearled, excl. beer)	RAC	1.315	1.07	1.41	0.21	0.28	0.15	0.20	1.64	2.16	1.58	2.08	3.52	4.63
–	Barley, pot & pearled	PP	0.16	0.57	0.09	2.56	0.41	0.33	0.05	0.56	0.09	0.36	0.06	NC	–
–	Barley beer	PP	0.099	180.21	17.84	259.46	25.69	45.91	4.55	172.36	17.06	234.42	23.21	65.30	6.46
GC 2089	Subgroup of sorghum grain and millet	RAC	1.315	0.03	0.04	0.16	0.21	3.19	4.19	1.85	2.43	NC	–	7.12	9.36
GC 0645	Maize, raw (incl. glucose & dextrose & isoglucose, incl. beer, excl. flour, excl. oil, excl. germ, excl. starch)	RAC	0.49	0.10	0.05	9.93	4.87	1.40	0.69	10.26	5.03	0.33	0.16	0.04	0.02
CF 1255	Maize, flour (white flour and wholemeal flour)	PP	0.44	14.27	6.28	12.86	5.66	19.71	8.67	12.55	5.52	4.21	1.85	52.30	23.01
–	Maize, germ	PP	0.51	0.01	0.01	NC	–	NC	–	0.01	0.01	NC	–	0.01	0.01
–	Maize starch	PP	0.44	NC	–	NC	–	0.19	0.08	7.13	3.14	NC	–	NC	–
OR 0645	Maize oil	PP	0.44	0.90	0.40	0.47	0.21	0.15	0.07	3.01	1.32	1.86	0.82	0.36	0.16

FLUPYRADIFURONE (285) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
GC 0447	Sweet corn on the cob, raw (incl. frozen kernels, incl. canned kernels)	RAC	0.56	11.43	6.40	3.71	2.08	0.74	0.41	13.63	7.63	3.07	1.72	1.50	0.84
TN 0672	Pecan, nutmeat	RAC	0.06	0.38	0.02	NC	–	NC	–	0.27	0.02	NC	–	0.26	0.02
SO 0495	Rape seed, raw (incl. oil)	RAC	0.36	32.68	11.76	19.91	7.17	7.83	2.82	15.69	5.65	NC	–	NC	–
SO 0691	Cotton seed, raw (incl. oil)	RAC	0.395	10.71	4.23	4.23	1.67	7.19	2.84	7.54	2.98	5.66	2.24	2.38	0.94
OR 0691	Cotton seed oil, edible	PP	0.079	1.68	0.13	0.66	0.05	1.13	0.09	1.18	0.09	0.89	0.07	0.37	0.03
SO 0697	Peanuts, nutmeat, raw	RAC	0.225	2.39	0.54	2.05	0.46	5.25	1.18	4.39	0.99	1.30	0.29	0.62	0.14
–	Peanuts, roasted	PP	0.17	0.80	0.14	0.14	0.02	0.11	0.02	0.43	0.07	0.10	0.02	0.45	0.08
OR 0697	Peanut oil, edible	PP	0.13	1.02	0.13	0.23	0.03	1.81	0.24	0.42	0.05	5.23	0.68	0.01	0.00
–	Peanut butter	PP	0.17	0.07	0.01	0.04	0.01	0.01	0.00	0.03	0.01	0.15	0.03	0.75	0.13
SO 0305	Olives for oil production, raw	RAC	0.485	0.35	0.17	0.01	0.00	0.01	0.00	0.57	0.28	0.06	0.03	NC	–
–	Olive oil (virgin and residue oil)	PP	0.1067	3.40	0.36	9.49	1.01	0.02	0.00	4.28	0.46	2.74	0.29	0.48	0.05
HS 0444	Peppers, chili, dried	PP	6.8	0.11	0.75	0.21	1.43	0.36	2.45	0.21	1.43	0.25	1.70	0.15	1.02
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.3	112.02	33.61	120.71	36.21	63.46	19.04	88.99	26.70	96.24	28.87	41.02	12.30
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.15	28.01	4.20	30.18	4.53	15.86	2.38	22.25	3.34	24.06	3.61	10.25	1.54
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered	RAC	0.15	6.44	0.97	15.51	2.33	3.79	0.57	8.29	1.24	18.44	2.77	8.00	1.20

FLUPYRADIFURONE (285) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as ug/person/day								
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
	fats)														
MO 0105	Edible offal (mammalian), raw	RAC	0.87	15.17	13.20	5.19	4.52	6.30	5.48	6.78	5.90	3.32	2.89	3.17	2.76
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.11	388.92	42.78	335.88	36.95	49.15	5.41	331.25	36.44	468.56	51.54	245.45	27.00
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.27	66.38	17.92	48.47	13.09	21.58	5.83	78.41	21.17	48.04	12.97	76.01	20.52
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.11	7.38	0.81	5.39	0.59	2.40	0.26	8.71	0.96	5.34	0.59	8.45	0.93
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.11	0.10	0.01	0.10	0.01	NC	–	0.10	0.01	0.71	0.08	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.39	0.33	0.13	0.72	0.28	0.27	0.11	0.35	0.14	0.80	0.31	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.15	25.84	3.88	29.53	4.43	28.05	4.21	33.19	4.98	36.44	5.47	8.89	1.33
	Total intake (ug/person) =				657.5		661.1		480.9		672.3		610.0		536.7
	Body weight per region (kg bw) =				60		60		55		60		60		60
	ADI (ug/person) =				4800		4800		4400		4800		4800		4800
	%ADI =				13.7%		13.8%		10.9%		14.0%		12.7%		11.2%
	Rounded %ADI =				10%		10%		10%		10%		10%		10%

FLUPYRADIFURONE (285) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day		Intake = daily intake: ug/person							
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
JF 0001	Group of citrus fruit, juice	PP	0.068	0.11	0.01	0.29	0.02	13.55	0.92	0.14	0.01	0.33	0.02
FC 0002	Subgroup of lemons and limes, raw (incl. kumquat commodities)	RAC	0.32	18.96	6.07	0.97	0.31	5.79	1.85	0.09	0.03	3.35	1.07
FC 0003	Subgroup of mandarins, raw	RAC	0.44	0.16	0.07	0.27	0.12	9.06	3.99	0.01	0.00	0.02	0.01
FC 0004	Subgroup of oranges, sweet, sour, raw	RAC	0.505	1.18	0.60	1.11	0.56	14.28	7.21	0.05	0.03	1.08	0.55
FC 0005	Subgroup of pummelo and grapefruits, raw	RAC	0.21	0.63	0.13	0.01	0.00	1.58	0.33	0.01	0.00	NC	–
FP 0009	Group of pome fruits, raw (incl. apple cider, excl. apple juice)	RAC	0.45	68.85	30.98	10.93	4.92	70.82	31.87	189.78	85.40	19.56	8.80
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.14	0.03	0.00	0.10	0.01	7.19	1.01	0.03	0.00	NC	–
FS 0013	Subgroup of cherries, raw	RAC	0.555	0.01	0.01	0.01	0.01	5.96	3.31	0.01	0.01	NC	–
FS 0014	Subgroup of plums, raw	RAC	0.23	0.07	0.02	0.01	0.00	15.56	3.58	0.01	0.00	NC	–
DF 0014	Plums, dried (prunes)	PP	1.15	0.01	0.01	0.01	0.01	0.37	0.43	0.01	0.01	NC	–
FS 2001	Subgroup of peaches, raw (incl. dried apricots)	RAC	0.39	0.02	0.01	0.01	0.00	10.76	4.20	0.01	0.00	NC	–
FB 2006	Subgroup of bush berries, raw (including processed)	RAC	0.725	0.82	0.59	4.05	2.94	5.94	4.31	0.43	0.31	2.66	1.93
FB 0269	Grapes, raw (incl. must, excl. dried, excl. juice, excl. wine)	RAC	0.63	0.14	0.09	0.36	0.23	15.33	9.66	0.01	0.01	0.28	0.18
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	1.6	0.01	0.02	0.13	0.21	1.06	1.70	0.01	0.02	0.03	0.05

FLUPYRADIFURONE (285) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day		Intake = daily intake: ug/person							
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
JF 0269	Grape juice (from wine grapes)	PP	0.43	0.01	0.00	0.01	0.00	0.41	0.18	0.01	0.00	NC	–
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.26	0.31	0.08	0.23	0.06	60.43	15.71	0.52	0.14	31.91	8.30
FB 0275	Strawberry, raw	RAC	1.505	0.01	0.02	0.01	0.02	3.35	5.04	0.01	0.02	0.01	0.02
FT 0305	Table olives, raw (incl. preserved)	RAC	0.485	0.01	0.00	0.01	0.00	1.75	0.85	0.01	0.00	0.24	0.12
VA 0035	Group of Bulb vegetables, raw	RAC	0.18	11.28	2.03	23.80	4.28	36.11	6.50	9.66	1.74	8.69	1.56
VB 0404	Cauliflower, raw	RAC	0.48	0.01	0.00	0.01	0.00	2.73	1.31	0.01	0.00	NC	–
VB 0041	Cabbages, head, raw	RAC	0.79	3.82	3.02	2.99	2.36	49.16	38.84	0.01	0.01	NC	–
VC 0431	Squash, summer (courgette, marrow, zucchetti, zucchini), raw	RAC	0.655	0.09	0.06	1.01	0.66	NC	–	1.91	1.25	NC	–
VO 0448	Tomato, raw (incl. canned, excl. juice, excl. paste)	RAC	0.71	13.10	9.30	4.90	3.48	62.16	44.13	1.04	0.74	0.09	0.06
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	1.3	0.58	0.75	0.22	0.29	2.21	2.87	0.24	0.31	3.10	4.03
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.48	0.05	0.02	0.01	0.00	0.42	0.20	0.01	0.00	0.02	0.01
VO 0051	Subgroup of peppers, raw (incl. dried sweet peppers, excl. dried chili peppers), incl. okra	RAC	0.68	15.20	10.34	14.23	9.68	25.14	17.10	0.91	0.62	NC	–
VL 0483	Lettuce, leaf, raw	RAC	2.6	0.29	0.75	0.03	0.08	6.71	17.45	0.01	0.03	NC	–
VL 0502	Spinach, raw	RAC	8.5	0.17	1.45	0.01	0.09	0.81	6.89	0.01	0.09	NC	–
VL 0485	Mustard greens, raw (i.e. Indian mustard, amsoi, mustard cabbage)	RAC	12	0.04	0.48	0.03	0.36	NC	–	0.01	0.12	NC	–

FLUPYRADIFURONE (285) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day		Intake = daily intake: ug/person							
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VP 2060	Subgroup of beans with pods (all commodities within this group)	RAC	2.63	NC	–	NC	–	NC	–	NC	–	NC	–
VP 2062	Subgroup of succulent beans without pods (all commodities within this group)	RAC	1.17	0.37	0.43	3.14	3.67	4.88	5.71	0.01	0.01	NC	–
VP 0064	Peas without pods (Pisum spp) (succulent seeds)	RAC	2.78	0.21	0.58	0.02	0.06	5.51	15.32	0.02	0.06	NC	–
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	3.22	7.11	22.89	2.33	7.50	3.76	12.11	44.70	143.93	3.27	10.53
VD 0523	Broad bean, dry, raw (incl. horse-bean, field bean) (Vicia faba)	RAC	2.49	3.70	9.21	0.03	0.07	0.17	0.42	0.01	0.02	NC	–
VD 0541	Soya bean, dry, raw (incl. flour, incl. paste, incl. curd, incl. sauce, excl. oil)	RAC	3.44	2.89	9.94	0.21	0.72	0.48	1.65	3.16	10.87	0.26	0.89
OR 0541	Soya oil, refined	PP	0.13	2.32	0.30	2.54	0.33	18.70	2.43	2.51	0.33	6.29	0.82
–	Soya flour	PP	5.3	0.11	0.58	0.08	0.42	0.07	0.37	0.01	0.05	0.03	0.16
VD 0072	Peas (dry) (Pisum spp), raw	RAC	3.605	1.53	5.52	2.52	9.08	3.52	12.69	3.56	12.83	0.74	2.67
VD 0524	Chickpea (dry) (Cicer spp), raw	RAC	2.49	1.09	2.71	1.56	3.88	0.33	0.82	0.18	0.45	0.47	1.17
VD 0533	Lentil (dry) (Lens spp), raw	RAC	2.49	0.67	1.67	7.26	18.08	0.37	0.92	0.08	0.20	NC	–
VD 0537	Pigeon pea (dry) (Cajanus spp), raw	RAC	2.49	1.14	2.84	0.03	0.07	NC	–	5.53	13.77	NC	–
VR 0573	Arrowroot, raw	RAC	0.29	13.83	4.01	18.24	5.29	0.01	0.00	0.05	0.01	19.60	5.68
VR 0463	Cassava raw (incl. starch, incl. tapioca, incl. flour) (i.e. manioc)	RAC	0.29	91.92	26.66	34.12	9.89	NC	–	259.92	75.38	45.48	13.19

FLUPYRADIFURONE (285) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day		Intake = daily intake: ug/person							
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VR 0585	Jerusalem artichoke, raw (i.e. topinambur)	RAC	0.29	14.22	4.12	18.75	5.44	0.01	0.00	0.06	0.02	20.14	5.84
VR 0589	Potato, raw (incl. flour, incl. frozen, incl. tapioca, excl. starch)	RAC	0.291	23.96	6.97	13.54	3.94	213.41	62.10	104.35	30.37	8.56	2.49
–	Potato, starch	PP	0.16	0.01	0.00	0.01	0.00	NC	–	NC	–	NC	–
VR 0508	Sweet potato, raw (incl. dried)	RAC	0.291	28.83	8.39	61.55	17.91	0.15	0.04	221.94	64.58	NC	–
VR 0504	Tannia, raw (i.e. tanier, yautia)	RAC	0.29	NC	–	NC	–	0.01	0.00	NC	–	NC	–
VR 0505	Taro, raw (i.e. dasheen, eddoe)	RAC	0.29	6.71	1.95	31.91	9.25	NC	–	10.73	3.11	264.31	76.65
VR 0600	Yams, raw (incl. dried)	RAC	0.29	70.93	20.57	30.62	8.88	0.07	0.02	5.65	1.64	30.85	8.95
VS 0624	Celery	RAC	2.38	3.66	8.71	2.65	6.31	4.84	11.52	2.47	5.88	4.94	11.76
GC 0648	Quinoa, raw	RAC	1.315	NC	–	NC	–	NC	–	NC	–	NC	–
GC 0650	Rye, raw (incl. flour)	RAC	1.315	0.03	0.04	0.01	0.01	13.95	18.34	0.01	0.01	0.88	1.16
GC 0653	Triticale, raw (incl. flour)	RAC	1.315	0.01	0.01	NC	–	NC	–	NC	–	NC	–
GC 0654	Wheat, raw (incl. bulgur, incl. fermented beverages, incl. germ, incl. wholemeal bread, excl. white flour products, excl. white bread)	RAC	3	0.05	0.15	0.01	0.03	0.05	0.15	0.01	0.03	0.97	2.91
CF 1210	Wheat, germ	PP	1.64	0.04	0.07	0.01	0.02	0.01	0.02	0.01	0.02	NC	–
CP 1212	Wheat, wholemeal bread	PP	1.62	0.01	0.02	0.01	0.02	0.03	0.05	0.01	0.02	0.01	0.02
CP 1211	Wheat, white bread	PP	0.42	0.43	0.18	0.41	0.17	1.56	0.66	0.11	0.05	0.07	0.03

FLUPYRADIFURONE (285) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day		Intake = daily intake: ug/person							
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
CF 1211	Wheat, white flour (incl. white flour products: starch, gluten, macaroni, pastry)	PP	0.59	44.78	26.42	86.96	51.31	214.05	126.29	20.31	11.98	103.60	61.12
–	Wheat, starch	PP	0.034	0.01	0.00	0.02	0.00	NC	–	NC	–	NC	–
–	Wheat, gluten	PP	0.53	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.19	0.10
GC 0640	Barley, raw (incl. malt extract, incl. flour & grits, incl. malt, excl. pot & pearled, excl. beer)	RAC	1.315	0.10	0.13	0.15	0.20	1.71	2.25	0.02	0.03	6.34	8.34
–	Barley, pot & pearled	PP	0.16	5.46	0.87	0.01	0.00	1.44	0.23	0.01	0.00	NC	–
–	Barley beer	PP	0.099	16.25	1.61	11.36	1.12	225.21	22.30	19.49	1.93	52.17	5.16
GC 2089	Subgroup of sorghum grain and millet	RAC	1.315	150.90	198.43	2.80	3.68	NC	–	68.93	90.64	NC	–
GC 0645	Maize, raw (incl. glucose & dextrose & isoglucose, incl. beer, excl. flour, excl. oil, excl. germ, excl. starch)	RAC	0.49	0.54	0.26	0.51	0.25	3.26	1.60	7.96	3.90	NC	–
CF 1255	Maize, flour (white flour and wholemeal flour)	PP	0.44	94.34	41.51	8.09	3.56	28.03	12.33	55.94	24.61	28.07	12.35
–	Maize, germ	PP	0.51	0.01	0.01	NC	–	NC	–	NC	–	NC	–
–	Maize starch	PP	0.44	0.02	0.01	0.01	0.00	NC	–	NC	–	NC	–
OR 0645	Maize oil	PP	0.44	0.33	0.15	0.07	0.03	0.81	0.36	0.01	0.00	NC	–
GC 0447	Sweet corn on the cob, raw (incl. frozen kernels, incl. canned kernels)	RAC	0.56	3.63	2.03	20.50	11.48	8.78	4.92	0.02	0.01	0.17	0.10
TN 0672	Pecan, nutmeat	RAC	0.06	0.15	0.01	0.22	0.01	0.31	0.02	0.01	0.00	0.01	0.00

FLUPYRADIFURONE (285) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day		Intake = daily intake: ug/person							
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
SO 0495	Rape seed, raw (incl. oil)	RAC	0.36	0.19	0.07	0.07	0.03	12.07	4.35	0.08	0.03	NC	–
SO 0691	Cotton seed, raw (incl. oil)	RAC	0.395	8.14	3.22	0.32	0.13	2.84	1.12	2.69	1.06	0.97	0.38
OR 0691	Cotton seed oil, edible	PP	0.079	1.28	0.10	0.05	0.00	0.45	0.04	0.42	0.03	0.15	0.01
SO 0697	Peanuts, nutmeat, raw	RAC	0.225	7.12	1.60	0.32	0.07	1.34	0.30	6.21	1.40	0.53	0.12
–	Peanuts, roasted	PP	0.17	0.02	0.00	0.10	0.02	0.48	0.08	0.01	0.00	NC	–
OR 0697	Peanut oil, edible	PP	0.13	5.02	0.65	0.05	0.01	0.17	0.02	0.29	0.04	NC	–
–	Peanut butter	PP	0.17	0.01	0.00	0.03	0.01	0.05	0.01	NC	–	NC	–
SO 0305	Olives for oil production, raw	RAC	0.485	NC	–	NC	–	0.02	0.01	NC	–	NC	–
–	Olive oil (virgin and residue oil)	PP	0.1067	0.03	0.00	0.02	0.00	2.14	0.23	0.01	0.00	0.10	0.01
HS 0444	Peppers, chili, dried	PP	6.8	0.58	3.94	1.27	8.64	1.21	8.23	0.12	0.82	NC	–
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.3	23.34	7.00	40.71	12.21	97.15	29.15	18.06	5.42	57.71	17.31
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.15	5.84	0.88	10.18	1.53	24.29	3.64	4.52	0.68	14.43	2.16
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.15	1.05	0.16	1.14	0.17	18.69	2.80	0.94	0.14	3.12	0.47
MO 0105	Edible offal (mammalian), raw	RAC	0.87	4.64	4.04	1.97	1.71	10.01	8.71	3.27	2.84	3.98	3.46
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.11	108.75	11.96	70.31	7.73	436.11	47.97	61.55	6.77	79.09	8.70

FLUPYRADIFURONE (285) International Estimated Daily Intake (IEDI) ADI = 0–0.08 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.27	3.53	0.95	10.83	2.92	51.36	13.87	4.53	1.22	50.00	13.50
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.11	0.39	0.04	1.20	0.13	5.71	0.63	0.50	0.06	5.56	0.61
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.11	NC	–	NC	–	0.32	0.04	NC	–	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.39	0.10	0.04	0.70	0.27	0.97	0.38	0.10	0.04	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.15	3.84	0.58	4.41	0.66	27.25	4.09	1.13	0.17	7.39	1.11
	Total intake (ug/person) =				512.1		249.7		672.7		608.4		306.6
	Body weight per region (kg bw) =				60		60		60		60		60
	ADI (ug/person) =				4800		4800		4800		4800		4800
	%ADI =				10.7%		5.2%		14.0%		12.7%		6.4%
	Rounded %ADI =				10%		5%		10%		10%		6%

FOLPET (41) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as ug/person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FB 0020	Blueberries, raw	RAC	8	0.01	0.08	0.03	0.24	0.01	0.08	0.01	0.08	0.01	0.08	0.01	0.08
JF 0269	Grape juice (from wine grapes)	PP	3.5	0.14	0.49	0.29	1.02	0.05	0.18	0.30	1.05	0.24	0.84	0.05	0.18

FOLPET (41) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
–	Grape must (from wine grapes)	PP	8.7	0.33	2.87	0.13	1.13	0.01	0.09	0.02	0.17	0.01	0.09	0.02	0.17
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.73	0.67	0.49	12.53	9.15	2.01	1.47	1.21	0.88	3.53	2.58	4.01	2.93
FB 0265	Cranberry, raw	RAC	1.8	0.02	0.04	0.01	0.02	NC	–	0.03	0.05	0.01	0.02	0.01	0.02
FI 0327	Banana, raw (incl. plantains) (incl. dried)	RAC	0.06	5.23	0.31	6.94	0.42	99.45	5.97	32.47	1.95	48.30	2.90	24.70	1.48
VR 0589	Potato, raw (incl. flour, incl. frozen, incl. starch, incl. tapioca)	RAC	0.78	59.74	46.60	316.14	246.59	9.78	7.63	60.26	47.00	54.12	42.21	119.82	93.46
GC 0654	Wheat, raw (incl. bulgur, incl. fermented beverages, incl. germ, incl. wholemeal bread, incl. white flour products, incl. white bread)	RAC	0.38	381.15	144.84	341.55	129.79	38.35	14.57	281.89	107.12	172.83	65.68	434.07	164.95
GC 0640	Barley, raw (incl. malt extract, incl. pot & pearled, incl. flour & grits, incl. beer, incl. malt)	RAC	1.5	19.91	29.87	31.16	46.74	5.04	7.56	3.10	4.65	9.77	14.66	4.31	6.47
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.029	24.96	0.72	57.95	1.68	16.70	0.48	38.38	1.11	26.46	0.77	29.00	0.84
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.029	6.24	0.18	14.49	0.42	4.18	0.12	9.60	0.28	6.62	0.19	7.25	0.21
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.029	3.29	0.10	6.14	0.18	0.82	0.02	1.57	0.05	2.23	0.06	1.07	0.03
MO 0105	Edible offal (mammalian), raw	RAC	0.33	4.79	1.58	9.68	3.19	2.97	0.98	5.49	1.81	3.84	1.27	5.03	1.66
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.024	289.65	6.95	485.88	11.66	26.92	0.65	239.03	5.74	199.91	4.80	180.53	4.33

FOLPET (41) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as ug/person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.04	13.17	0.53	26.78	1.07	7.24	0.29	116.71	4.67	22.54	0.90	32.09	1.28
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.04	1.46	0.06	2.98	0.12	0.80	0.03	12.97	0.52	2.50	0.10	3.57	0.14
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.04	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.10	0.00	0.10	0.00
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.16	0.12	0.02	0.12	0.02	0.11	0.02	5.37	0.86	0.24	0.04	0.10	0.02
PE 0112	Eggs, raw (incl. dried)	RAC	0.1	7.84	0.78	23.08	2.31	2.88	0.29	14.89	1.49	9.81	0.98	14.83	1.48
	Total intake (ug/person) =				236.5		455.7		40.4		179.5		138.2		279.7
	Body weight per region (kg bw) =				60		60		60		60		60		60
	ADI (ug/person) =				6000		6000		6000		6000		6000		6000
	%ADI =				3.9%		7.6%		0.7%		3.0%		2.3%		4.7%
	Rounded %ADI =				4%		8%		1%		3%		2%		5%

FOLPET (41) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G07 diet	Intake as ug/person/day G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FB 0020	Blueberries, raw	RAC	8	0.04	0.32	0.23	1.84	0.01	0.08	0.83	6.64	0.33	2.64	NC	–
JF 0269	Grape juice (from wine grapes)	PP	3.5	0.56	1.96	1.96	6.86	0.02	0.07	2.24	7.84	2.27	7.95	0.34	1.19

FOLPET (41) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
–	Grape must (from wine grapes)	PP	8.7	0.16	1.39	0.09	0.78	0.01	0.09	0.12	1.04	0.11	0.96	NC	–
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.73	88.93	64.92	62.41	45.56	1.84	1.34	25.07	18.30	61.17	44.65	5.84	4.26
FB 0265	Cranberry, raw	RAC	1.8	0.06	0.11	0.01	0.02	0.01	0.02	1.22	2.20	0.11	0.20	NC	–
FI 0327	Banana, raw (incl. plantains) (incl. dried)	RAC	0.06	25.76	1.55	23.65	1.42	23.83	1.43	24.37	1.46	19.43	1.17	101.55	6.09
VR 0589	Potato, raw (incl. flour, incl. frozen, incl. starch, incl. tapioca)	RAC	0.78	225.03	175.52	234.24	182.71	71.48	55.75	177.55	138.49	234.55	182.95	37.71	29.41
GC 0654	Wheat, raw (incl. bulgur, incl. fermented beverages, incl. germ, incl. wholemeal bread, incl. white flour products, incl. white bread)	RAC	0.38	253.07	96.17	244.73	93.00	134.44	51.09	235.10	89.34	216.39	82.23	167.40	63.61
GC 0640	Barley, raw (incl. malt extract, incl. pot & pearled, incl. flour & grits, incl. beer, incl. malt)	RAC	1.5	36.18	54.27	53.45	80.18	9.39	14.09	35.25	52.88	46.68	70.02	15.92	23.88
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.029	112.02	3.25	120.71	3.50	63.46	1.84	88.99	2.58	96.24	2.79	41.02	1.19
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.029	28.01	0.81	30.18	0.88	15.86	0.46	22.25	0.65	24.06	0.70	10.25	0.30
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.029	6.44	0.19	15.51	0.45	3.79	0.11	8.29	0.24	18.44	0.53	8.00	0.23
MO 0105	Edible offal (mammalian), raw	RAC	0.33	15.17	5.01	5.19	1.71	6.30	2.08	6.78	2.24	3.32	1.10	3.17	1.05
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.024	388.92	9.33	335.88	8.06	49.15	1.18	331.25	7.95	468.56	11.25	245.45	5.89

FOLPET (41) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.04	66.38	2.66	48.47	1.94	21.58	0.86	78.41	3.14	48.04	1.92	76.01	3.04
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.04	7.38	0.30	5.39	0.22	2.40	0.10	8.71	0.35	5.34	0.21	8.45	0.34
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.04	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.71	0.03	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.16	0.33	0.05	0.72	0.12	0.27	0.04	0.35	0.06	0.80	0.13	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.1	25.84	2.58	29.53	2.95	28.05	2.81	33.19	3.32	36.44	3.64	8.89	0.89
	Total intake (ug/person) =				420.4		432.2		133.4		338.7		415.1		141.4
	Body weight per region (kg bw) =				60		60		55		60		60		60
	ADI (ug/person) =				6000		6000		5500		6000		6000		6000
	%ADI =				7.0%		7.2%		2.4%		5.6%		6.9%		2.4%
	Rounded %ADI =				7%		7%		2%		6%		7%		2%

FOLPET (41) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day						Intake = daily intake: ug/person					
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake		
FB 0020	Blueberries, raw	RAC	8	NC	–	NC	–	0.20	1.60	NC	–	NC	–		
JF 0269	Grape juice (from wine grapes)	PP	3.5	0.01	0.04	0.01	0.04	0.41	1.44	0.01	0.04	NC	–		

FOLPET (41) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									
				Intake = daily intake: ug/person									
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
–	Grape must (from wine grapes)	PP	8.7	0.01	0.09	0.01	0.09	0.11	0.96	0.01	0.09	0.19	1.65
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.73	0.31	0.23	0.23	0.17	60.43	44.11	0.52	0.38	31.91	23.29
FB 0265	Cranberry, raw	RAC	1.8	NC	–	NC	–	0.03	0.05	NC	–	NC	–
FI 0327	Banana, raw (incl. plantains) (incl. dried)	RAC	0.06	44.80	2.69	118.17	7.09	25.25	1.52	454.49	27.27	310.23	18.61
VR 0589	Potato, raw (incl. flour, incl. frozen, incl. starch, incl. tapioca)	RAC	0.78	23.96	18.69	13.56	10.58	213.41	166.46	104.35	81.39	8.56	6.68
GC 0654	Wheat, raw (incl. bulgur, incl. fermented beverages, incl. germ, incl. wholemeal bread, incl. white flour products, incl. white bread)	RAC	0.38	57.20	21.74	110.47	41.98	272.62	103.60	25.82	9.81	132.04	50.18
GC 0640	Barley, raw (incl. malt extract, incl. pot & pearled, incl. flour & grits, incl. beer, incl. malt)	RAC	1.5	11.58	17.37	2.33	3.50	46.71	70.07	3.72	5.58	16.26	24.39
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.029	23.34	0.68	40.71	1.18	97.15	2.82	18.06	0.52	57.71	1.67
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.029	5.84	0.17	10.18	0.30	24.29	0.70	4.52	0.13	14.43	0.42
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.029	1.05	0.03	1.14	0.03	18.69	0.54	0.94	0.03	3.12	0.09
MO 0105	Edible offal (mammalian), raw	RAC	0.33	4.64	1.53	1.97	0.65	10.01	3.30	3.27	1.08	3.98	1.31
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.024	108.75	2.61	70.31	1.69	436.11	10.47	61.55	1.48	79.09	1.90
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.04	3.53	0.14	10.83	0.43	51.36	2.05	4.53	0.18	50.00	2.00

FOLPET (41) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.04	0.39	0.02	1.20	0.05	5.71	0.23	0.50	0.02	5.56	0.22
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.04	NC	–	NC	–	0.32	0.01	NC	–	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.16	0.10	0.02	0.70	0.11	0.97	0.16	0.10	0.02	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.1	3.84	0.38	4.41	0.44	27.25	2.73	1.13	0.11	7.39	0.74
	Total intake (ug/person) =				66.4		68.3		412.8		128.1		133.2
	Body weight per region (kg bw) =				60		60		60		60		60
	ADI (ug/person) =				6000		6000		6000		6000		6000
	%ADI =				1.1%		1.1%		6.9%		2.1%		2.2%
	Rounded %ADI =				1%		1%		7%		2%		2%

FOSETYL ALUMINIUM (302) International Estimated Daily Intake (IEDI) ADI = 0–1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as ug/person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FC 0003	Subgroup of mandarins, raw (incl. mandarin juice)	RAC	13	6.18	80.34	3.66	47.58	0.25	3.25	6.82	88.66	3.49	45.37	19.38	251.94
FC 0004	Subgroup of oranges, sweet, sour, raw	RAC	18	20.66	371.88	5.23	94.14	11.90	214.20	37.90	682.20	21.16	380.88	56.46	1016.28
JF 0004	Subgroup of oranges, juice (single strength, incl.	PP	9.8	1.27	12.45	2.20	21.56	0.09	0.88	11.81	115.74	0.46	4.51	1.69	16.56

FOSETYL ALUMINIUM (302) International Estimated Daily Intake (IEDI) ADI = 0–1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
	concentrated)														
FP 0009	Group of pomefruits, raw	RAC	15	19.24	288.60	33.89	508.35	3.34	50.10	25.53	382.95	7.59	113.85	56.76	851.40
JF 0226	Apple juice, single strength (incl. concentrated)	PP	14	0.32	4.48	3.07	42.98	0.07	0.98	5.00	70.00	0.29	4.06	5.57	77.98
FB 0264	Blackberries, raw	RAC	5.95	0.35	2.08	0.11	0.65	0.01	0.06	0.02	0.12	0.01	0.06	1.23	7.32
FB 0269	Grapes, raw (incl. dried, excl. must, excl. juice, excl. wine)	RAC	15.5	14.82	229.71	11.26	174.53	0.05	0.78	22.16	343.48	4.19	64.95	63.05	977.28
JF 0269	Grape juice (from wine grapes)	PP	15	0.14	2.10	0.29	4.35	0.05	0.75	0.30	4.50	0.24	3.60	0.05	0.75
–	Grape must (from wine grapes)	PP	9.1	0.33	3.00	0.13	1.18	0.01	0.09	0.02	0.18	0.01	0.09	0.02	0.18
–	Grape wine (incl. vermouths) (from wine grapes)	PP	12	0.67	8.04	12.53	150.36	2.01	24.12	1.21	14.52	3.53	42.36	4.01	48.12
FB 0275	Strawberry, raw	RAC	11	0.70	7.70	2.01	22.11	0.04	0.44	1.36	14.96	0.37	4.07	2.53	27.83
FI 0326	Avocado, raw	RAC	3.4	0.13	0.44	0.03	0.10	2.05	6.97	2.54	8.64	2.34	7.96	0.12	0.41
FI 0353	Pineapple, raw (incl. canned pineapple, incl. pineapple juice, incl. dried pineapple)	RAC	2.35	0.61	1.43	1.56	3.67	7.89	18.54	9.36	22.00	8.76	20.59	1.30	3.06
FI 0341	Kiwifruit, raw	RAC	34.5	0.03	1.04	0.36	12.42	0.01	0.35	1.17	40.37	0.06	2.07	0.69	23.81
VB 0042	Subgroup of flowerhead brassica, raw	RAC	0.2	2.54	0.51	0.49	0.10	0.01	0.00	3.57	0.71	7.79	1.56	3.12	0.62
VB 2036	Subgroup of head brassicas, raw	RAC	0.2	3.81	0.76	38.89	7.78	0.77	0.15	6.23	1.25	4.27	0.85	14.28	2.86
VC 0424	Cucumber, raw	RAC	14	8.01	112.14	30.66	429.24	1.45	20.30	19.84	277.76	0.27	3.78	34.92	488.88

FOSETYL ALUMINIUM (302) International Estimated Daily Intake (IEDI) ADI = 0–1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VC 0431	Squash, summer (courgette, marrow, zucchetti, zucchini), raw	RAC	25.5	0.78	19.89	2.06	52.53	0.30	7.65	1.61	41.06	2.25	57.38	2.36	60.18
VC 0046	Melons, except watermelon, raw (cantaloupe)	RAC	14	8.90	124.60	8.64	120.96	0.80	11.20	17.90	250.60	2.80	39.20	29.17	408.38
VO 0448	Tomato, raw	RAC	0.34	41.73	14.19	75.65	25.72	10.66	3.62	82.87	28.18	24.75	8.42	200.93	68.32
–	Tomato, canned (& peeled)	PP	0.3	0.20	0.06	0.31	0.09	0.02	0.01	1.11	0.33	0.11	0.03	1.50	0.45
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.48	2.34	1.12	1.33	0.64	1.57	0.75	4.24	2.04	0.34	0.16	2.83	1.36
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.27	0.29	0.08	0.29	0.08	0.01	0.00	0.38	0.10	0.05	0.01	0.14	0.04
VO 0445	Peppers, sweet, raw	RAC	0.36	1.43	0.51	2.61	0.94	1.05	0.38	2.01	0.72	2.59	0.93	6.24	2.25
VL 0483	Lettuce, leaf, raw	RAC	41	0.53	21.73	0.36	14.76	0.16	6.56	6.21	254.61	1.90	77.90	6.05	248.05
VL 0502	Spinach, raw	RAC	4.1	0.74	3.03	0.22	0.90	0.02	0.08	0.91	3.73	0.04	0.16	2.92	11.97
VL 0480	Kale (borecole, collards), raw	RAC	0.2	0.57	0.11	5.77	1.15	0.11	0.02	0.92	0.18	5.25	1.05	2.12	0.42
CM 0649 (GC 0649)	Rice, husked, dry (incl. flour, incl. oil, incl. beverages, incl. starch, excl. polished)	REP	12.6	1.26	15.88	1.58	19.91	31.05	391.23	5.43	68.42	0.90	11.34	2.18	27.47
CM 1205	Rice polished, dry	PP	8.5	34.21	290.79	10.39	88.32	41.72	354.62	82.38	700.23	150.24	1277.04	70.47	599.00
TN 0085	Group of tree nuts, raw (incl. processed)	RAC	54	4.06	219.24	3.27	176.58	7.01	378.54	13.93	752.22	14.01	756.54	9.36	505.44
SB 0716	Coffee bean raw (incl. roasted, incl. instant coffee, incl. substitutes)	RAC	8.8	1.36	11.97	3.59	31.59	1.44	12.67	5.18	45.58	2.02	17.78	1.70	14.96

FOSETYL ALUMINIUM (302) International Estimated Daily Intake (IEDI) ADI = 0–1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as ug/person/day								
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
DH 1100	Hops, dry	RAC	350	0.01	3.50	0.04	14.00	0.01	3.50	0.01	3.50	NC	–	0.01	3.50
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.062	24.96	1.55	57.95	3.59	16.70	1.04	38.38	2.38	26.46	1.64	29.00	1.80
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.13	6.24	0.81	14.49	1.88	4.18	0.54	9.60	1.25	6.62	0.86	7.25	0.94
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.13	3.29	0.43	6.14	0.80	0.82	0.11	1.57	0.20	2.23	0.29	1.07	0.14
MO 0105	Edible offal (mammalian), raw	RAC	0.33	4.79	1.58	9.68	3.19	2.97	0.98	5.49	1.81	3.84	1.27	5.03	1.66
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.051	289.65	14.77	485.88	24.78	26.92	1.37	239.03	12.19	199.91	10.20	180.53	9.21
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0	13.17	0.00	26.78	0.00	7.24	0.00	116.71	0.00	22.54	0.00	32.09	0.00
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0	1.46	0.00	2.98	0.00	0.80	0.00	12.97	0.00	2.50	0.00	3.57	0.00
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.10	0.00	0.10	0.00
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0	0.12	0.00	0.12	0.00	0.11	0.00	5.37	0.00	0.24	0.00	0.10	0.00
PE 0112	Eggs, raw (incl. dried)	RAC	0.02	7.84	0.16	23.08	0.46	2.88	0.06	14.89	0.30	9.81	0.20	14.83	0.30
	Total intake (ug/person) =				1872.7		2104.0		1516.9		4237.7		2963.0		5761.1
	Body weight per region (kg bw) =				60		60		60		60		60		60
	ADI (ug/person) =				60000		60000		60000		60000		60000		60000
	%ADI =				3.1%		3.5%		2.5%		7.1%		4.9%		9.6%

FOSETYL ALUMINIUM (302) International Estimated Daily Intake (IEDI) ADI = 0–1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
	Rounded %ADI =				3%		4%		3%		7%		5%		10%

FOSETYL ALUMINIUM (302) International Estimated Daily Intake (IEDI) ADI = 0–1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FC 0003	Subgroup of mandarins, raw (incl. mandarin juice)	RAC	13	12.42	161.46	14.99	194.87	16.08	209.04	10.78	140.14	9.94	129.22	NC	–
FC 0004	Subgroup of oranges, sweet, sour, raw	RAC	18	15.68	282.24	24.00	432.00	6.80	122.40	29.09	523.62	15.39	277.02	160.47	2888.46
JF 0004	Subgroup of oranges, juice (single strength, incl. concentrated)	PP	9.8	33.31	326.44	1.78	17.44	0.28	2.74	18.97	185.91	14.01	137.30	13.36	130.93
FP 0009	Group of pomefruits, raw	RAC	15	37.39	560.85	58.13	871.95	37.64	564.60	44.80	672.00	62.17	932.55	6.47	97.05
JF 0226	Apple juice, single strength (incl. concentrated)	PP	14	14.88	208.32	11.98	167.72	0.15	2.10	9.98	139.72	30.32	424.48	3.47	48.58
FB 0264	Blackberries, raw	RAC	5.95	0.09	0.54	0.52	3.09	0.14	0.83	0.24	1.43	NC	–	0.01	0.06
FB 0269	Grapes, raw (incl. dried, excl. must, excl. juice, excl. wine)	RAC	15.5	19.22	297.91	17.53	271.72	5.32	82.46	15.12	234.36	22.29	345.50	2.51	38.91
JF 0269	Grape juice (from wine grapes)	PP	15	0.56	8.40	1.96	29.40	0.02	0.30	2.24	33.60	2.27	34.05	0.34	5.10
–	Grape must (from wine grapes)	PP	9.1	0.16	1.46	0.09	0.82	0.01	0.09	0.12	1.09	0.11	1.00	NC	–
–	Grape wine (incl. vermouths) (from wine grapes)	PP	12	88.93	1067.16	62.41	748.92	1.84	22.08	25.07	300.84	61.17	734.04	5.84	70.08

FOSETYL ALUMINIUM (302) International Estimated Daily Intake (IEDI) ADI = 0–1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FB 0275	Strawberry, raw	RAC	11	4.49	49.39	5.66	62.26	0.02	0.22	6.63	72.93	5.75	63.25	0.05	0.55
FI 0326	Avocado, raw	RAC	3.4	2.65	9.01	0.87	2.96	0.46	1.56	1.64	5.58	1.30	4.42	0.96	3.26
FI 0353	Pineapple, raw (incl. canned pineapple, incl. pineapple juice, incl. dried pineapple)	RAC	2.35	13.13	30.86	11.13	26.16	6.94	16.31	14.36	33.75	36.74	86.34	18.81	44.20
FI 0341	Kiwifruit, raw	RAC	34.5	2.46	84.87	3.62	124.89	0.04	1.38	1.48	51.06	7.43	256.34	0.03	1.04
VB 0042	Subgroup of flowerhead brassica, raw	RAC	0.2	9.50	1.90	6.77	1.35	NC	–	3.21	0.64	9.36	1.87	0.75	0.15
VB 2036	Subgroup of head brassicas, raw	RAC	0.2	11.20	2.24	29.79	5.96	25.06	5.01	34.72	6.94	8.73	1.75	15.64	3.13
VC 0424	Cucumber, raw	RAC	14	6.72	94.08	11.03	154.42	32.10	449.40	15.10	211.40	4.05	56.70	9.57	133.98
VC 0431	Squash, summer (courgette, marrow, zucchetti, zucchini), raw	RAC	25.5	NC	–	NC	–	5.48	139.74	NC	–	NC	–	1.03	26.27
VC 0046	Melons, except watermelon, raw (cantaloupe)	RAC	14	9.20	128.80	11.95	167.30	14.63	204.82	8.99	125.86	7.86	110.04	2.46	34.44
VO 0448	Tomato, raw	RAC	0.34	32.13	10.92	51.27	17.43	34.92	11.87	73.37	24.95	15.15	5.15	8.88	3.02
–	Tomato, canned (& peeled)	PP	0.3	7.57	2.27	2.66	0.80	0.30	0.09	0.97	0.29	7.31	2.19	0.41	0.12
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.48	4.96	2.38	3.20	1.54	0.15	0.07	1.61	0.77	6.88	3.30	0.52	0.25
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.27	0.80	0.22	0.07	0.02	0.05	0.01	0.61	0.16	0.40	0.11	0.08	0.02
VO 0445	Peppers, sweet, raw	RAC	0.36	NC	–	NC	–	8.25	2.97	3.03	1.09	NC	–	0.91	0.33
VL 0483	Lettuce, leaf, raw	RAC	41	14.50	594.50	11.76	482.16	13.14	538.74	19.50	799.50	4.81	197.21	2.23	91.43

FOSETYL ALUMINIUM (302) International Estimated Daily Intake (IEDI) ADI = 0–1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
VL 0502	Spinach, raw	RAC	4.1	2.20	9.02	1.76	7.22	13.38	54.86	2.94	12.05	5.53	22.67	0.02	0.08
VL 0480	Kale (borecole, collards), raw	RAC	0.2	NC	–	NC	–	14.54	2.91	NC	–	NC	–	2.32	0.46
CM 0649 (GC 0649)	Rice, husked, dry (incl. flour, incl. oil, incl. beverages, incl. starch, excl. polished)	REP	12.6	3.70	46.62	2.11	26.59	1.51	19.03	1.75	22.05	0.29	3.65	5.12	64.51
CM 1205	Rice polished, dry	PP	8.5	13.38	113.73	10.80	91.80	262.08	2227.68	57.16	485.86	12.83	109.06	62.78	533.63
TN 0085	Group of tree nuts, raw (incl. processed)	RAC	54	8.52	460.08	8.94	482.76	15.09	814.86	9.60	518.40	14.57	786.78	26.26	1418.04
SB 0716	Coffee bean raw (incl. roasted, incl. instant coffee, incl. substitutes)	RAC	8.8	10.90	95.92	12.44	109.47	0.77	6.78	9.48	83.42	22.07	194.22	8.15	71.72
DH 1100	Hops, dry	RAC	350	NC	–	NC	–	0.02	7.00	0.02	7.00	NC	–	NC	–
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.062	112.02	6.95	120.71	7.48	63.46	3.93	88.99	5.52	96.24	5.97	41.02	2.54
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.13	28.01	3.64	30.18	3.92	15.86	2.06	22.25	2.89	24.06	3.13	10.25	1.33
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.13	6.44	0.84	15.51	2.02	3.79	0.49	8.29	1.08	18.44	2.40	8.00	1.04
MO 0105	Edible offal (mammalian), raw	RAC	0.33	15.17	5.01	5.19	1.71	6.30	2.08	6.78	2.24	3.32	1.10	3.17	1.05
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.051	388.92	19.83	335.88	17.13	49.15	2.51	331.25	16.89	468.56	23.90	245.45	12.52
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0	66.38	0.00	48.47	0.00	21.58	0.00	78.41	0.00	48.04	0.00	76.01	0.00
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0	7.38	0.00	5.39	0.00	2.40	0.00	8.71	0.00	5.34	0.00	8.45	0.00

FOSETYL ALUMINIUM (302) International Estimated Daily Intake (IEDI) ADI = 0–1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.71	0.00	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0	0.33	0.00	0.72	0.00	0.27	0.00	0.35	0.00	0.80	0.00	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.02	25.84	0.52	29.53	0.59	28.05	0.56	33.19	0.66	36.44	0.73	8.89	0.18
	Total intake (ug/person) =				4688.4		4535.9		5523.6		4725.7		4957.4		5728.5
	Body weight per region (kg bw) =				60		60		55		60		60		60
	ADI (ug/person) =				60000		60000		55000		60000		60000		60000
	%ADI =				7.8%		7.6%		10.0%		7.9%		8.3%		9.5%
	Rounded %ADI =				8%		8%		10%		8%		8%		10%

FOSETYL ALUMINIUM (302) International Estimated Daily Intake (IEDI) ADI = 0–1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FC 0003	Subgroup of mandarins, raw (incl. mandarin juice)	RAC	13	0.16	2.08	0.27	3.51	9.06	117.78	0.01	0.13	0.02	0.26
FC 0004	Subgroup of oranges, sweet, sour, raw	RAC	18	1.18	21.24	1.11	19.98	14.28	257.04	0.05	0.90	1.08	19.44
JF 0004	Subgroup of oranges, juice (single strength, incl.	PP	9.8	0.08	0.78	0.26	2.55	12.61	123.58	0.14	1.37	0.33	3.23

FOSETYL ALUMINIUM (302) International Estimated Daily Intake (IEDI) ADI = 0–1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									
				Intake = daily intake: ug/person									
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
	concentrated)												
FP 0009	Group of pomefruits, raw	RAC	15	2.39	35.85	10.93	163.95	69.47	1042.05	1.59	23.85	19.56	293.40
JF 0226	Apple juice, single strength (incl. concentrated)	PP	14	0.03	0.42	0.10	1.40	7.19	100.66	0.03	0.42	NC	–
FB 0264	Blackberries, raw	RAC	5.95	0.01	0.06	7.29	43.38	0.25	1.49	0.01	0.06	NC	–
FB 0269	Grapes, raw (incl. dried, excl. must, excl. juice, excl. wine)	RAC	15.5	0.16	2.48	0.92	14.26	19.62	304.11	0.02	0.31	0.21	3.26
JF 0269	Grape juice (from wine grapes)	PP	15	0.01	0.15	0.01	0.15	0.41	6.15	0.01	0.15	NC	–
–	Grape must (from wine grapes)	PP	9.1	0.01	0.09	0.01	0.09	0.11	1.00	0.01	0.09	0.19	1.73
–	Grape wine (incl. vermouths) (from wine grapes)	PP	12	0.31	3.72	0.23	2.76	60.43	725.16	0.52	6.24	31.91	382.92
FB 0275	Strawberry, raw	RAC	11	0.01	0.11	0.01	0.11	3.35	36.85	0.01	0.11	0.01	0.11
FI 0326	Avocado, raw	RAC	3.4	1.12	3.81	0.01	0.03	0.84	2.86	0.01	0.03	6.60	22.44
FI 0353	Pineapple, raw (incl. canned pineapple, incl. pineapple juice, incl. dried pineapple)	RAC	2.35	8.51	20.00	6.27	14.73	6.89	16.19	0.18	0.42	24.94	58.61
FI 0341	Kiwifruit, raw	RAC	34.5	0.01	0.35	0.01	0.35	2.00	69.00	0.01	0.35	NC	–
VB 0042	Subgroup of flowerhead brassica, raw	RAC	0.2	0.02	0.00	0.02	0.00	4.86	0.97	0.01	0.00	NC	–
VB 2036	Subgroup of head brassicas, raw	RAC	0.2	5.31	1.06	4.16	0.83	52.05	10.41	0.01	0.00	NC	–
VC 0424	Cucumber, raw	RAC	14	0.68	9.52	1.81	25.34	10.40	145.60	0.01	0.14	0.04	0.56

FOSETYL ALUMINIUM (302) International Estimated Daily Intake (IEDI) ADI = 0–1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									
				Intake = daily intake: ug/person									
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VC 0431	Squash, summer (courgette, marrow, zucchetti, zucchini), raw	RAC	25.5	0.09	2.30	1.01	25.76	NC	–	1.91	48.71	NC	–
VC 0046	Melons, except watermelon, raw (cantaloupe)	RAC	14	0.19	2.66	0.10	1.40	4.98	69.72	0.01	0.14	NC	–
VO 0448	Tomato, raw	RAC	0.34	12.99	4.42	4.79	1.63	58.40	19.86	0.92	0.31	0.09	0.03
–	Tomato, canned (& peeled)	PP	0.3	0.07	0.02	0.08	0.02	2.42	0.73	0.07	0.02	NC	–
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.48	0.58	0.28	0.22	0.11	2.21	1.06	0.24	0.12	3.10	1.49
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.27	0.05	0.01	0.01	0.00	0.42	0.11	0.01	0.00	0.02	0.01
VO 0445	Peppers, sweet, raw	RAC	0.36	1.24	0.45	1.27	0.46	NC	–	0.01	0.00	NC	–
VL 0483	Lettuce, leaf, raw	RAC	41	0.29	11.89	0.03	1.23	6.71	275.11	0.01	0.41	NC	–
VL 0502	Spinach, raw	RAC	4.1	0.17	0.70	0.01	0.04	0.81	3.32	0.01	0.04	NC	–
VL 0480	Kale (borecole, collards), raw	RAC	0.2	0.79	0.16	0.62	0.12	NC	–	0.01	0.00	NC	–
CM 0649 (GC 0649)	Rice, husked, dry (incl. flour, incl. oil, incl. beverages, incl. starch, excl. polished)	REP	12.6	13.58	171.11	4.29	54.05	2.17	27.34	0.01	0.13	8.84	111.38
CM 1205	Rice polished, dry	PP	8.5	30.20	256.70	218.34	1855.89	12.77	108.55	15.24	129.54	51.35	436.48
TN 0085	Group of tree nuts, raw (incl. processed)	RAC	54	4.39	237.06	135.53	7318.62	6.11	329.94	0.72	38.88	317.74	#######
SB 0716	Coffee bean raw (incl. roasted, incl. instant coffee, incl. substitutes)	RAC	8.8	0.95	8.36	1.32	11.62	11.64	102.43	2.96	26.05	14.73	129.62
DH 1100	Hops, dry	RAC	350	NC	–	NC	–	0.04	14.00	NC	–	NC	–

FOSETYL ALUMINIUM (302) International Estimated Daily Intake (IEDI) ADI = 0–1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.062	23.34	1.45	40.71	2.52	97.15	6.02	18.06	1.12	57.71	3.58
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.13	5.84	0.76	10.18	1.32	24.29	3.16	4.52	0.59	14.43	1.88
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.13	1.05	0.14	1.14	0.15	18.69	2.43	0.94	0.12	3.12	0.41
MO 0105	Edible offal (mammalian), raw	RAC	0.33	4.64	1.53	1.97	0.65	10.01	3.30	3.27	1.08	3.98	1.31
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.051	108.75	5.55	70.31	3.59	436.11	22.24	61.55	3.14	79.09	4.03
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0	3.53	0.00	10.83	0.00	51.36	0.00	4.53	0.00	50.00	0.00
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0	0.39	0.00	1.20	0.00	5.71	0.00	0.50	0.00	5.56	0.00
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0	NC	–	NC	–	0.32	0.00	NC	–	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0	0.10	0.00	0.70	0.00	0.97	0.00	0.10	0.00	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.02	3.84	0.08	4.41	0.09	27.25	0.55	1.13	0.02	7.39	0.15
	Total intake (ug/person) =				807.3		9572.7		3950.8		285.0		18634.3
	Body weight per region (kg bw) =				60		60		60		60		60
	ADI (ug/person) =				60000		60000		60000		60000		60000
	%ADI =				1.3%		16.0%		6.6%		0.5%		31.1%
	Rounded %ADI =				1%		20%		7%		0%		30%

HEXYTHIAZOX (176) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day				
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet
FC 0002	Subgroup of lemons and limes, raw (incl. lemon juice) (incl. kumquat commodities)	RAC	0.074	4.82	0.36	2.45	0.18	3.93	0.29	25.44	1.88	8.74	0.65	16.23
FC 0003	Subgroup of mandarins, raw (incl. mandarin juice)	RAC	0.074	6.18	0.46	3.66	0.27	0.25	0.02	6.82	0.50	3.49	0.26	19.38
FC 0004	Subgroup of oranges, sweet, sour, raw	RAC	0.074	20.66	1.53	5.23	0.39	11.90	0.88	37.90	2.80	21.16	1.57	56.46
JF 0004	Subgroup of oranges, juice (single strength, incl. concentrated)	PP	0.024	1.27	0.03	2.20	0.05	0.09	0.00	11.81	0.28	0.46	0.01	1.69
FC 0005	Subgroup of pummelo and grapefruits, raw (incl. grapefruit juice)	RAC	0.074	0.66	0.05	0.69	0.05	0.96	0.07	10.20	0.75	1.25	0.09	2.97
FP 0009	Group of pome fruits, raw (incl. apple juice, incl. apple cider)	RAC	0.11	19.79	2.18	38.25	4.21	17.96	1.98	32.56	3.58	8.08	0.89	64.45
FS 0013	Subgroup of cherries, raw	RAC	0.09	0.92	0.08	9.15	0.82	0.01	0.00	0.61	0.05	0.06	0.01	6.64
FS 0014	Subgroup of plums, raw	RAC	0.09	2.40	0.22	8.60	0.77	0.06	0.01	2.52	0.23	0.58	0.05	4.16
DF 0014	Plums, dried (prunes)	PP	0.41	0.09	0.04	0.06	0.02	0.01	0.00	0.18	0.07	0.04	0.02	0.06
FS 2001	Subgroup of peaches, raw (incl. dried apricots)	RAC	0.09	8.01	0.72	5.87	0.53	0.18	0.02	8.19	0.74	1.64	0.15	22.46
FB 2005	Subgroup of caneberries, raw	RAC	1	0.42	0.42	1.05	1.05	0.01	0.01	0.02	0.02	0.02	0.02	1.24
FB 0269	Grapes, raw (incl. must, incl. wine, excl. dried, excl. juice)	RAC	0.2	13.94	2.79	26.46	5.29	2.79	0.56	18.58	3.72	8.54	1.71	59.95

HEXYTHIAZOX (176) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day				
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.32	0.51	0.16	0.51	0.16	0.01	0.00	1.27	0.41	0.12	0.04	2.07
JF 0269	Grape juice (from wine grapes)	PP	0.084	0.14	0.01	0.29	0.02	0.05	0.00	0.30	0.03	0.24	0.02	0.05
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.01	0.67	0.01	12.53	0.13	2.01	0.02	1.21	0.01	3.53	0.04	4.01
FB 0275	Strawberry, raw	RAC	0.54	0.70	0.38	2.01	1.09	0.04	0.02	1.36	0.73	0.37	0.20	2.53
FT 0295	Date, raw (incl. dried)	RAC	0.26	9.94	2.58	0.30	0.08	0.02	0.01	64.54	16.78	0.40	0.10	20.46
VC 0045	Group of fruiting vegetables, cucurbits, raw	RAC	0.05	53.14	2.66	86.21	4.31	6.28	0.31	92.76	4.64	15.64	0.78	155.30
VO 0448	Tomato, raw (incl. juice, incl. paste, incl. canned)	RAC	0.05	51.75	2.59	81.80	4.09	16.99	0.85	102.02	5.10	26.32	1.32	214.77
VO 0440	Eggplant, raw (i.e. aubergine)	RAC	0.05	5.58	0.28	4.31	0.22	0.89	0.04	9.31	0.47	13.64	0.68	20.12
TN 0085	Group of tree nuts, raw (incl. processed)	RAC	0	4.06	0.00	3.27	0.00	7.01	0.00	13.93	0.00	14.01	0.00	9.36
DH 1100	Hops, dry	RAC	6	0.01	0.06	0.04	0.24	0.01	0.06	0.01	0.06	NC	–	0.01
DT 1114	Tea, green or black, fermented and dried, (including concentrates)	RAC	4.55	2.28	10.37	1.98	9.01	0.46	2.09	2.43	11.06	1.29	5.87	3.04
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0	24.96	0.00	57.95	0.00	16.70	0.00	38.38	0.00	26.46	0.00	29.00
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.01	6.24	0.06	14.49	0.14	4.18	0.04	9.60	0.10	6.62	0.07	7.25
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.01	3.29	0.03	6.14	0.06	0.82	0.01	1.57	0.02	2.23	0.02	1.07

HEXYTHIAZOX (176) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as ug/person/day							
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet
MO 0105	Edible offal (mammalian), raw	RAC	0.01	4.79	0.05	9.68	0.10	2.97	0.03	5.49	0.05	3.84	0.04	5.03
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.01	289.65	2.90	485.88	4.86	26.92	0.27	239.03	2.39	199.91	2.00	180.53
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0	13.17	0.00	26.78	0.00	7.24	0.00	116.71	0.00	22.54	0.00	32.09
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.002	1.46	0.00	2.98	0.01	0.80	0.00	12.97	0.03	2.50	0.01	3.57
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.002	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.10	0.00	0.10
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.01	0.12	0.00	0.12	0.00	0.11	0.00	5.37	0.05	0.24	0.00	0.10
PE 0112	Eggs, raw (incl. dried)	RAC	0.002	7.84	0.02	23.08	0.05	2.88	0.01	14.89	0.03	9.81	0.02	14.83
	Total intake (ug/person) =				31.0		38.2		7.6		56.6		16.6	
	Body weight per region (kg bw) =				60		60		60		60		60	
	ADI (ug/person) =				1800		1800		1800		1800		1800	
	%ADI =				1.7%		2.1%		0.4%		3.1%		0.9%	
	Rounded %ADI =				2%		2%		0%		3%		1%	

HEXYTHIAZOX (176) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FC 0002	Subgroup of lemons and limes, raw (incl. lemon juice) (incl. kumquat commodities)	RAC	0.074	10.12	0.75	15.69	1.16	2.88	0.21	12.30	0.91	22.32	1.65	6.59	0.49
FC 0003	Subgroup of mandarins, raw (incl. mandarin juice)	RAC	0.074	12.42	0.92	14.99	1.11	16.08	1.19	10.78	0.80	9.94	0.74	NC	–
FC 0004	Subgroup of oranges, sweet, sour, raw	RAC	0.074	15.68	1.16	24.00	1.78	6.80	0.50	29.09	2.15	15.39	1.14	160.47	11.87
JF 0004	Subgroup of oranges, juice (single strength, incl. concentrated)	PP	0.024	33.31	0.80	1.78	0.04	0.28	0.01	18.97	0.46	14.01	0.34	13.36	0.32
FC 0005	Subgroup of pummelo and grapefruits, raw (incl. grapefruit juice)	RAC	0.074	8.21	0.61	4.60	0.34	0.64	0.05	5.85	0.43	19.98	1.48	368.86	27.30
FP 0009	Group of pome fruits, raw (incl. apple juice, incl. apple cider)	RAC	0.11	71.38	7.85	81.73	8.99	42.91	4.72	58.89	6.48	103.85	11.42	12.48	1.37
FS 0013	Subgroup of cherries, raw	RAC	0.09	1.40	0.13	4.21	0.38	0.04	0.00	2.93	0.26	1.50	0.14	NC	–
FS 0014	Subgroup of plums, raw	RAC	0.09	3.75	0.34	3.33	0.30	5.94	0.53	2.64	0.24	2.50	0.23	0.06	0.01
DF 0014	Plums, dried (prunes)	PP	0.41	0.61	0.25	0.35	0.14	0.05	0.02	0.35	0.14	0.49	0.20	0.13	0.05
FS 2001	Subgroup of peaches, raw (incl. dried apricots)	RAC	0.09	13.03	1.17	16.29	1.47	8.29	0.75	12.95	1.17	5.35	0.48	0.04	0.00
FB 2005	Subgroup of caneberries, raw	RAC	1	0.56	0.56	1.43	1.43	0.14	0.14	1.23	1.23	1.14	1.14	0.01	0.01
FB 0269	Grapes, raw (incl. must, incl. wine, excl. dried, excl. juice)	RAC	0.2	128.64	25.73	97.04	19.41	7.74	1.55	43.94	8.79	88.68	17.74	8.80	1.76
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.32	3.09	0.99	1.51	0.48	0.03	0.01	1.38	0.44	4.26	1.36	0.42	0.13

HEXYTHIAZOX (176) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
JF 0269	Grape juice (from wine grapes)	PP	0.084	0.56	0.05	1.96	0.16	0.02	0.00	2.24	0.19	2.27	0.19	0.34	0.03
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.01	88.93	0.89	62.41	0.62	1.84	0.02	25.07	0.25	61.17	0.61	5.84	0.06
FB 0275	Strawberry, raw	RAC	0.54	4.49	2.42	5.66	3.06	0.02	0.01	6.63	3.58	5.75	3.11	0.05	0.03
FT 0295	Date, raw (incl. dried)	RAC	0.26	0.52	0.14	0.30	0.08	0.22	0.06	0.20	0.05	0.32	0.08	0.01	0.00
VC 0045	Group of fruiting vegetables, cucurbits, raw	RAC	0.05	27.81	1.39	41.93	2.10	123.30	6.17	49.47	2.47	15.95	0.80	35.99	1.80
VO 0448	Tomato, raw (incl. juice, incl. paste, incl. canned)	RAC	0.05	64.74	3.24	68.31	3.42	36.05	1.80	82.09	4.10	54.50	2.73	11.69	0.58
VO 0440	Eggplant, raw (i.e. aubergine)	RAC	0.05	1.01	0.05	1.69	0.08	21.37	1.07	3.00	0.15	1.40	0.07	NC	–
TN 0085	Group of tree nuts, raw (incl. processed)	RAC	0	8.52	0.00	8.94	0.00	15.09	0.00	9.60	0.00	14.57	0.00	26.26	0.00
DH 1100	Hops, dry	RAC	6	NC	–	NC	–	0.02	0.12	0.02	0.12	NC	–	NC	–
DT 1114	Tea, green or black, fermented and dried, (including concentrates)	RAC	4.55	2.91	13.24	1.73	7.87	1.14	5.19	1.85	8.42	2.29	10.42	0.74	3.37
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0	112.02	0.00	120.71	0.00	63.46	0.00	88.99	0.00	96.24	0.00	41.02	0.00
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.01	28.01	0.28	30.18	0.30	15.86	0.16	22.25	0.22	24.06	0.24	10.25	0.10
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.01	6.44	0.06	15.51	0.16	3.79	0.04	8.29	0.08	18.44	0.18	8.00	0.08
MO 0105	Edible offal (mammalian), raw	RAC	0.01	15.17	0.15	5.19	0.05	6.30	0.06	6.78	0.07	3.32	0.03	3.17	0.03

HEXYTHIAZOX (176) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as ug/person/day								
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.01	388.92	3.89	335.88	3.36	49.15	0.49	331.25	3.31	468.56	4.69	245.45	2.45
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0	66.38	0.00	48.47	0.00	21.58	0.00	78.41	0.00	48.04	0.00	76.01	0.00
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.002	7.38	0.01	5.39	0.01	2.40	0.00	8.71	0.02	5.34	0.01	8.45	0.02
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.002	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.71	0.00	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.01	0.33	0.00	0.72	0.01	0.27	0.00	0.35	0.00	0.80	0.01	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.002	25.84	0.05	29.53	0.06	28.05	0.06	33.19	0.07	36.44	0.07	8.89	0.02
	Total intake (ug/person) =				67.1		58.4		24.9		46.6		61.3		51.9
	Body weight per region (kg bw) =				60		60		55		60		60		60
	ADI (ug/person) =				1800		1800		1650		1800		1800		1800
	%ADI =				3.7%		3.2%		1.5%		2.6%		3.4%		2.9%
	Rounded %ADI =				4%		3%		2%		3%		3%		3%

HEXYTHIAZOX (176) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day						Intake = daily intake: ug/person			
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FC 0002	Subgroup of lemons and limes, raw (incl. lemon juice) (incl. kumquat commodities)	RAC	0.074	18.97	1.40	0.97	0.07	6.23	0.46	0.09	0.01	3.35	0.25
FC 0003	Subgroup of mandarins, raw (incl. mandarin juice)	RAC	0.074	0.16	0.01	0.27	0.02	9.06	0.67	0.01	0.00	0.02	0.00
FC 0004	Subgroup of oranges, sweet, sour, raw	RAC	0.074	1.18	0.09	1.11	0.08	14.28	1.06	0.05	0.00	1.08	0.08
JF 0004	Subgroup of oranges, juice (single strength, incl. concentrated)	PP	0.024	0.08	0.00	0.26	0.01	12.61	0.30	0.14	0.00	0.33	0.01
FC 0005	Subgroup of pummelo and grapefruits, raw (incl. grapefruit juice)	RAC	0.074	0.68	0.05	0.05	0.00	3.21	0.24	0.01	0.00	NC	–
FP 0009	Group of pome fruits, raw (incl. apple juice, incl. apple cider)	RAC	0.11	68.89	7.58	11.06	1.22	80.62	8.87	189.82	20.88	19.56	2.15
FS 0013	Subgroup of cherries, raw	RAC	0.09	0.01	0.00	0.01	0.00	5.96	0.54	0.01	0.00	NC	–
FS 0014	Subgroup of plums, raw	RAC	0.09	0.07	0.01	0.01	0.00	15.56	1.40	0.01	0.00	NC	–
DF 0014	Plums, dried (prunes)	PP	0.41	0.01	0.00	0.01	0.00	0.37	0.15	0.01	0.00	NC	–
FS 2001	Subgroup of peaches, raw (incl. dried apricots)	RAC	0.09	0.02	0.00	0.01	0.00	10.76	0.97	0.01	0.00	NC	–
FB 2005	Subgroup of caneberries, raw	RAC	1	0.01	0.01	7.30	7.30	2.29	2.29	0.01	0.01	NC	–
FB 0269	Grapes, raw (incl. must, incl. wine, excl. dried, excl. juice)	RAC	0.2	0.57	0.11	0.69	0.14	98.34	19.67	0.73	0.15	44.12	8.82
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.32	0.01	0.00	0.13	0.04	1.06	0.34	0.01	0.00	0.03	0.01
JF 0269	Grape juice (from wine grapes)	PP	0.084	0.01	0.00	0.01	0.00	0.41	0.03	0.01	0.00	NC	–

HEXYTHIAZOX (176) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day				Intake = daily intake: ug/person					
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.01	0.31	0.00	0.23	0.00	60.43	0.60	0.52	0.01	31.91	0.32
FB 0275	Strawberry, raw	RAC	0.54	0.01	0.01	0.01	0.01	3.35	1.81	0.01	0.01	0.01	0.01
FT 0295	Date, raw (incl. dried)	RAC	0.26	2.20	0.57	0.62	0.16	0.18	0.05	0.01	0.00	NC	–
VC 0045	Group of fruiting vegetables, cucurbits, raw	RAC	0.05	5.96	0.30	9.74	0.49	51.82	2.59	13.61	0.68	0.05	0.00
VO 0448	Tomato, raw (incl. juice, incl. paste, incl. canned)	RAC	0.05	15.50	0.78	5.78	0.29	71.52	3.58	2.00	0.10	12.50	0.63
VO 0440	Eggplant, raw (i.e. aubergine)	RAC	0.05	1.31	0.07	8.26	0.41	3.95	0.20	0.01	0.00	NC	–
TN 0085	Group of tree nuts, raw (incl. processed)	RAC	0	4.39	0.00	135.53	0.00	6.11	0.00	0.72	0.00	317.74	0.00
DH 1100	Hops, dry	RAC	6	NC	–	NC	–	0.04	0.24	NC	–	NC	–
DT 1114	Tea, green or black, fermented and dried, (including concentrates)	RAC	4.55	0.53	2.41	5.25	23.89	0.86	3.91	0.56	2.55	0.88	4.00
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0	23.34	0.00	40.71	0.00	97.15	0.00	18.06	0.00	57.71	0.00
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.01	5.84	0.06	10.18	0.10	24.29	0.24	4.52	0.05	14.43	0.14
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.01	1.05	0.01	1.14	0.01	18.69	0.19	0.94	0.01	3.12	0.03
MO 0105	Edible offal (mammalian), raw	RAC	0.01	4.64	0.05	1.97	0.02	10.01	0.10	3.27	0.03	3.98	0.04
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.01	108.75	1.09	70.31	0.70	436.11	4.36	61.55	0.62	79.09	0.79
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0	3.53	0.00	10.83	0.00	51.36	0.00	4.53	0.00	50.00	0.00

HEXYTHIAZOX (176) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.002	0.39	0.00	1.20	0.00	5.71	0.01	0.50	0.00	5.56	0.01
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.002	NC	–	NC	–	0.32	0.00	NC	–	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.01	0.10	0.00	0.70	0.01	0.97	0.01	0.10	0.00	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.002	3.84	0.01	4.41	0.01	27.25	0.05	1.13	0.00	7.39	0.01
–	–	–		–	–	–	–	–	–	–	–	–	–
	Total intake (ug/person) =				14.6		35.0		54.9		25.1		17.3
	Body weight per region (kg bw) =				60		60		60		60		60
	ADI (ug/person) =				1800		1800		1800		1800		1800
	%ADI =				0.8%		1.9%		3.1%		1.4%		1.0%
	Rounded %ADI =				1%		2%		3%		1%		1%

METHOPRENE (147) International Estimated Daily Intake (IEDI) ADI = 0–0.05 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as ug/person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VD 0541	Soya bean, dry, raw (incl. paste, incl. curd, incl. oil,	RAC	2.4	72.79	174.70	59.05	141.72	20.55	49.32	74.20	178.08	61.12	146.69	73.24	175.78

METHOPRENE (147) International Estimated Daily Intake (IEDI) ADI = 0–0.05 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
	incl. sauce)														
GC 0648	Quinoa, raw	RAC	4.85	NC	–	NC	–	NC	–	NC	–	0.07	0.34	NC	–
GC 0650	Rye, raw (incl. flour)	RAC	4.85	0.13	0.63	19.38	93.99	0.10	0.49	0.12	0.58	0.03	0.15	2.15	10.43
GC 0653	Triticale, raw (incl. flour)	RAC	4.85	NC	–	NC	–	NC	–	0.01	0.05	0.39	1.89	NC	–
GC 0654	Wheat, raw (incl. meslin)	RAC	4.85	0.01	0.05	1.12	5.43	NC	–	0.01	0.05	0.56	2.72	NC	–
–	Wheat, bulgur	PP	4.85	NC	–	NC	–	NC	–	0.03	0.15	NC	–	NC	–
CF 1210	Wheat, germ	PP	23.3	NC	–	NC	–	0.01	0.23	0.01	0.23	0.14	3.26	0.01	0.23
CP 1212	Wheat, wholemeal bread	PP	4.51	0.01	0.05	0.01	0.05	0.01	0.05	0.01	0.05	0.03	0.14	0.01	0.05
CP 1211	Wheat, white bread	PP	1.72	0.25	0.43	0.63	1.08	0.12	0.21	0.43	0.74	1.39	2.39	0.22	0.38
–	Wheat, fermented beverages (Korean jakju and takju)	PP	4.85	NC	–	NC	–	NC	–	NC	–	NC	–	NC	–
CF 1211	Wheat, white flour (incl. white flour products: starch, gluten, macaroni, pastry)	PP	1.72	301.24	518.13	268.64	462.06	30.21	51.96	222.51	382.72	134.73	231.74	343.12	590.17
GC 0640	Barley, raw (incl. malt extract, incl. pot & pearled, incl. flour & grits, incl. beer, incl. malt)	RAC	4.85	19.91	96.56	31.16	151.13	5.04	24.44	3.10	15.04	9.77	47.38	4.31	20.90
GC 0641	Buckwheat, raw (incl. flour)	RAC	4.85	NC	–	0.40	1.94	0.01	0.05	0.01	0.05	0.07	0.34	0.09	0.44
GC 0647	Oats, raw (incl. rolled)	RAC	4.85	0.05	0.24	7.05	34.19	0.10	0.49	1.71	8.29	0.96	4.66	0.04	0.19
CM 0649 (GC 0649)	Rice, husked, dry (incl. flour, incl. oil, incl. beverages, incl. starch, excl. polished)	REP	1.07	1.26	1.35	1.58	1.69	31.05	33.22	5.43	5.81	0.90	0.96	2.18	2.33

METHOPRENE (147) International Estimated Daily Intake (IEDI) ADI = 0–0.05 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as ug/person/day								
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
CM 1205	Rice polished, dry	PP	0.1	34.21	3.42	10.39	1.04	41.72	4.17	82.38	8.24	150.24	15.02	70.47	7.05
GC 0646	Millet, raw (incl. flour, incl. beer)	RAC	4.85	1.46	7.08	2.32	11.25	5.84	28.32	0.89	4.32	16.17	78.42	0.01	0.05
GC 0651	Sorghum, raw (incl. flour, incl. beer) (i.e. chicken corn, dari seed, durra, feterita)	RAC	4.85	4.34	21.05	0.01	0.05	16.25	78.81	15.82	76.73	10.97	53.20	2.92	14.16
GC 0645	Maize, raw (incl. glucose & dextrose & isoglucose, incl. flour, incl. beer, incl. germ, incl. starch, excl. oil)	RAC	4.85	28.85	139.92	43.93	213.06	108.66	527.00	46.94	227.66	59.87	290.37	73.58	356.86
OR 0645	Maize oil	PP	0	0.96	0.00	0.85	0.00	0.29	0.00	5.42	0.00	0.42	0.00	2.10	0.00
–	Cereals, NES, raw (including processed): canagua, quihuicha, Job's tears and wild rice	RAC	4.85	2.04	9.89	2.99	14.50	1.86	9.02	19.17	92.97	3.33	16.15	1.66	8.05
TN 0085	Group of tree nuts raw, excl. coconut commodities	RAC	2.1	2.33	4.89	2.07	4.35	0.39	0.82	3.75	7.88	0.93	1.95	6.38	13.40
SO 2090	Subgroup of small seed oilseeds, raw (incl. processed)	RAC	2	2.19	4.38	1.22	2.44	1.05	2.10	7.10	14.20	10.29	20.58	4.83	9.66
SO 2091	Subgroup of sunflower seeds, raw (incl. processed)	RAC	2	7.43	14.86	36.06	72.12	1.15	2.30	8.77	17.54	5.74	11.48	13.63	27.26
SO 0691	Cotton seed, raw (incl. oil)	RAC	2	20.53	41.06	9.80	19.60	6.42	12.84	4.73	9.46	7.14	14.28	18.68	37.36
–	Castor bean, raw (incl. oil)	RAC	2	NC	–	0.07	0.14	NC	–	NC	–	NC	–	0.01	0.02
SO 3155	Melonseed	RAC	2	0.06	0.12	NC	–	1.08	2.16	0.38	0.76	0.01	0.02	0.25	0.50
SO 0696	Palm kernels, raw (incl. oil)	RAC	2	5.81	11.62	3.77	7.54	20.07	40.14	24.53	49.06	5.94	11.88	8.99	17.98
SO 0697	Peanuts, nutmeat, raw (incl. roasted, incl. oil, incl. butter)	RAC	5	1.30	6.50	1.23	6.15	12.62	63.10	2.87	14.35	6.59	32.95	2.67	13.35

METHOPRENE (147) International Estimated Daily Intake (IEDI) ADI = 0–0.05 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as ug/person/day								
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
SO 0701	Shea nut (karite nuts), nutmeat, raw (incl. butter)	RAC	2	NC	–	NC	–	0.34	0.68	NC	–	NC	–	NC	–
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.007	24.96	0.17	57.95	0.41	16.70	0.12	38.38	0.27	26.46	0.19	29.00	0.20
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.092	6.24	0.57	14.49	1.33	4.18	0.38	9.60	0.88	6.62	0.61	7.25	0.67
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.092	3.29	0.30	6.14	0.56	0.82	0.08	1.57	0.14	2.23	0.21	1.07	0.10
MO 0105	Edible offal (mammalian), raw	RAC	0.014	4.79	0.07	9.68	0.14	2.97	0.04	5.49	0.08	3.84	0.05	5.03	0.07
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.044	289.65	12.74	485.88	21.38	26.92	1.18	239.03	10.52	199.91	8.80	180.53	7.94
PM 0110	Poultry meat, raw (incl. prepared)	RAC	0.007	14.63	0.10	29.76	0.21	8.04	0.06	129.68	0.91	25.04	0.18	35.66	0.25
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.007	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.10	0.00	0.10	0.00
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.007	0.12	0.00	0.12	0.00	0.11	0.00	5.37	0.04	0.24	0.00	0.10	0.00
PE 0112	Eggs, raw (incl. dried)	RAC	0.006	7.84	0.05	23.08	0.14	2.88	0.02	14.89	0.09	9.81	0.06	14.83	0.09
	Total intake (ug/person) =				1071.0		1269.7		933.8		1127.9		999.0		1315.9
	Body weight per region (kg bw) =				60		60		60		60		60		60
	ADI (ug/person) =				3000		3000		3000		3000		3000		3000
	%ADI =				35.7%		42.3%		31.1%		37.6%		33.3%		43.9%
	Rounded %ADI =				40%		40%		30%		40%		30%		40%

METHOPRENE (147) International Estimated Daily Intake (IEDI) ADI = 0–0.05 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day				Intake as ug/person/day							
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
VD 0541	Soya bean, dry, raw (incl. paste, incl. curd, incl. oil, incl. sauce)	RAC	2.4	106.33	255.19	117.78	282.67	42.12	101.09	195.70	469.68	222.52	534.05	80.47	193.13
GC 0648	Quinoa, raw	RAC	4.85	NC	–	NC	–	NC	–	NC	–	NC	–	NC	–
GC 0650	Rye, raw (incl. flour)	RAC	4.85	3.21	15.57	35.38	171.59	0.21	1.02	6.50	31.53	1.49	7.23	NC	–
GC 0653	Triticale, raw (incl. flour)	RAC	4.85	0.01	0.05	0.17	0.82	0.29	1.41	0.01	0.05	NC	–	NC	–
GC 0654	Wheat, raw (incl. meslin)	RAC	4.85	NC	–	NC	–	NC	–	0.01	0.05	NC	–	NC	–
–	Wheat, bulgur	PP	4.85	NC	–	NC	–	0.01	0.05	NC	–	NC	–	NC	–
CF 1210	Wheat, germ	PP	23.3	0.97	22.60	0.10	2.33	0.03	0.70	0.01	0.23	NC	–	0.04	0.93
CP 1212	Wheat, wholemeal bread	PP	4.51	0.03	0.14	0.01	0.05	0.01	0.05	0.01	0.05	0.05	0.23	0.02	0.09
CP 1211	Wheat, white bread	PP	1.72	1.30	2.24	0.46	0.79	0.06	0.10	0.22	0.38	2.44	4.20	0.77	1.32
–	Wheat, fermented beverages (Korean jakju and takju)	PP	4.85	NC	–	NC	–	NC	–	4.36	21.15	NC	–	NC	–
CF 1211	Wheat, white flour (incl. white flour products: starch, gluten, macaroni, pastry)	PP	1.72	198.08	340.70	193.03	332.01	106.24	182.73	185.09	318.35	168.67	290.11	131.59	226.33
GC 0640	Barley, raw (incl. malt extract, incl. pot & pearled, incl. flour & grits, incl. beer, incl. malt)	RAC	4.85	36.18	175.47	53.45	259.23	9.39	45.54	35.25	170.96	46.68	226.40	15.92	77.21
GC 0641	Buckwheat, raw (incl. flour)	RAC	4.85	0.01	0.05	0.79	3.83	0.18	0.87	0.35	1.70	NC	–	NC	–

GC 0647	Oats, raw (incl. rolled)	RAC	4.85	7.50	36.38	6.26	30.36	0.15	0.73	4.87	23.62	3.16	15.33	2.98	14.45
CM 0649 (GC 0649)	Rice, husked, dry (incl. flour, incl. oil, incl. beverages, incl. starch, excl. polished)	REP	1.07	3.70	3.96	2.11	2.26	1.51	1.62	1.75	1.87	0.29	0.31	5.12	5.48
CM 1205	Rice polished, dry	PP	0.1	13.38	1.34	10.80	1.08	262.08	26.21	57.16	5.72	12.83	1.28	62.78	6.28
GC 0646	Millet, raw (incl. flour, incl. beer)	RAC	4.85	0.03	0.15	0.16	0.78	1.75	8.49	0.69	3.35	NC	–	NC	–
GC 0651	Sorghum, raw (incl. flour, incl. beer) (i.e. chicken corn, dari seed, durra, feterita)	RAC	4.85	NC	–	NC	–	1.44	6.98	1.15	5.58	NC	–	7.12	34.53
GC 0645	Maize, raw (incl. glucose & dextrose & isoglucose, incl. flour, incl. beer, incl. germ, incl. starch, excl. oil)	RAC	4.85	17.61	85.41	25.71	124.69	25.89	125.57	36.98	179.35	5.49	26.63	64.23	311.52
OR 0645	Maize oil	PP	0	0.90	0.00	0.47	0.00	0.15	0.00	3.01	0.00	1.86	0.00	0.36	0.00
–	Cereals, NES, raw (including processed): canagua, quihuicha, Job's tears and wild rice	RAC	4.85	6.17	29.92	3.01	14.60	0.76	3.69	3.30	16.01	3.38	16.39	15.84	76.82
TN 0085	Group of tree nuts raw, excl. coconut commodities	RAC	2.1	4.38	9.20	6.21	13.04	1.94	4.07	3.76	7.90	7.65	16.07	4.01	8.42
SO 2090	Subgroup of small seed oilseeds, raw (incl. processed)	RAC	2	33.60	67.20	20.72	41.44	9.72	19.44	17.21	34.42	1.11	2.22	0.54	1.08
SO 2091	Subgroup of sunflower seeds, raw (incl. processed)	RAC	2	23.43	46.86	29.34	58.68	1.24	2.48	14.00	28.00	6.48	12.96	6.91	13.82
SO 0691	Cotton seed, raw (incl. oil)	RAC	2	10.71	21.42	4.23	8.46	7.19	14.38	7.54	15.08	5.66	11.32	2.38	4.76
–	Castor bean, raw (incl. oil)	RAC	2	NC	–	NC	–	0.01	0.02	NC	–	NC	–	NC	–
SO 3155	Melonseed	RAC	2	NC	–	NC	–	0.01	0.02	NC	–	NC	–	NC	–
SO 0696	Palm kernels, raw (incl. oil)	RAC	2	5.33	10.66	5.04	10.08	11.83	23.66	7.94	15.88	10.77	21.54	4.53	9.06
SO 0697	Peanuts, nutmeat, raw (incl. roasted, incl. oil, incl. butter)	RAC	5	5.63	28.15	2.75	13.75	9.58	47.90	5.82	29.10	13.71	68.55	1.84	9.20
SO 0701	Shea nut (karite nuts), nutmeat, raw (incl. butter)	RAC	2	NC	–	NC	–	NC	–	NC	–	NC	–	NC	–

MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.007	112.02	0.78	120.71	0.84	63.46	0.44	88.99	0.62	96.24	0.67	41.02	0.29
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.092	28.01	2.58	30.18	2.78	15.86	1.46	22.25	2.05	24.06	2.21	10.25	0.94
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.092	6.44	0.59	15.51	1.43	3.79	0.35	8.29	0.76	18.44	1.70	8.00	0.74
MO 0105	Edible offal (mammalian), raw	RAC	0.014	15.17	0.21	5.19	0.07	6.30	0.09	6.78	0.09	3.32	0.05	3.17	0.04
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.044	388.92	17.11	335.88	14.78	49.15	2.16	331.25	14.58	468.56	20.62	245.45	10.80
PM 0110	Poultry meat, raw (incl. prepared)	RAC	0.007	73.76	0.52	53.86	0.38	23.98	0.17	87.12	0.61	53.38	0.37	84.45	0.59
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.007	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.71	0.00	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.007	0.33	0.00	0.72	0.01	0.27	0.00	0.35	0.00	0.80	0.01	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.006	25.84	0.16	29.53	0.18	28.05	0.17	33.19	0.20	36.44	0.22	8.89	0.05
	Total intake (ug/person) =				1174.6		1393.0		623.6		1398.9		1280.7		1007.9
	Body weight per region (kg bw) =				60		60		55		60		60		60
	ADI (ug/person) =				3000		3000		2750		3000		3000		3000
	%ADI =				39.2%		46.4%		22.7%		46.6%		42.7%		33.6%
	Rounded %ADI =				40%		50%		20%		50%		40%		30%

METHOPRENE (147) International Estimated Daily Intake (IEDI) ADI = 0–0.05 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day				Intake = daily intake: ug/person					
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VD 0541	Soya bean, dry, raw (incl. paste, incl. curd, incl. oil, incl. sauce)	RAC	2.4	15.80	37.92	14.29	34.30	104.36	250.46	17.11	41.06	35.20	84.48
GC 0648	Quinoa, raw	RAC	4.85	NC	–	NC	–	NC	–	NC	–	NC	–
GC 0650	Rye, raw (incl. flour)	RAC	4.85	0.03	0.15	0.01	0.05	13.95	67.66	0.01	0.05	0.88	4.27
GC 0653	Triticale, raw (incl. flour)	RAC	4.85	0.01	0.05	NC	–	NC	–	NC	–	NC	–
GC 0654	Wheat, raw (incl. meslin)	RAC	4.85	NC	–	NC	–	NC	–	NC	–	0.97	4.70
–	Wheat, bulgur	PP	4.85	0.01	0.05	NC	–	NC	–	NC	–	NC	–
CF 1210	Wheat, germ	PP	23.3	0.04	0.93	0.01	0.23	0.01	0.23	0.01	0.23	NC	–
CP 1212	Wheat, wholemeal bread	PP	4.51	0.01	0.05	0.01	0.05	0.03	0.14	0.01	0.05	0.01	0.05
CP 1211	Wheat, white bread	PP	1.72	0.43	0.74	0.41	0.71	1.56	2.68	0.11	0.19	0.07	0.12
–	Wheat, fermented beverages (Korean jakju and takju)	PP	4.85	NC	–	NC	–	NC	–	NC	–	NC	–
CF 1211	Wheat, white flour (incl. white flour products: starch, gluten, macaroni, pastry)	PP	1.72	44.78	77.02	86.96	149.57	214.05	368.17	20.31	34.93	103.60	178.19
GC 0640	Barley, raw (incl. malt extract, incl. pot & pearled, incl. flour & grits, incl. beer, incl. malt)	RAC	4.85	11.58	56.16	2.33	11.30	46.71	226.54	3.72	18.04	16.26	78.86
GC 0641	Buckwheat, raw (incl. flour)	RAC	4.85	0.04	0.19	2.82	13.68	0.01	0.05	0.01	0.05	NC	–
GC 0647	Oats, raw (incl. rolled)	RAC	4.85	0.37	1.79	0.07	0.34	2.79	13.53	0.10	0.49	NC	–
CM 0649	Rice, husked, dry (incl. flour, incl. oil, incl. beverages,	REP	1.07	13.58	14.53	4.29	4.59	2.17	2.32	0.01	0.01	8.84	9.46

METHOPRENE (147) International Estimated Daily Intake (IEDI) ADI = 0–0.05 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day				Intake = daily intake: ug/person					
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
(GC 0649)	incl. starch, excl. polished)												
CM 1205	Rice polished, dry	PP	0.1	30.20	3.02	218.34	21.83	12.77	1.28	15.24	1.52	51.35	5.14
GC 0646	Millet, raw (incl. flour, incl. beer)	RAC	4.85	61.13	296.48	0.78	3.78	NC	–	33.55	162.72	NC	–
GC 0651	Sorghum, raw (incl. flour, incl. beer) (i.e. chicken corn, dari seed, durra, feterita)	RAC	4.85	89.16	432.43	2.02	9.80	NC	–	35.38	171.59	NC	–
GC 0645	Maize, raw (incl. glucose & dextrose & isoglucose, incl. flour, incl. beer, incl. germ, incl. starch, excl. oil)	RAC	4.85	116.33	564.20	10.45	50.68	37.65	182.60	76.60	371.51	34.44	167.03
OR 0645	Maize oil	PP	0	0.33	0.00	0.07	0.00	0.81	0.00	0.01	0.00	NC	–
–	Cereals, NES, raw (including processed): canagua, quihuicha, Job's tears and wild rice	RAC	4.85	17.71	85.89	2.00	9.70	9.61	46.61	0.45	2.18	4.55	22.07
TN 0085	Group of tree nuts raw, excl. coconut commodities	RAC	2.1	1.61	3.38	1.16	2.44	3.31	6.95	0.02	0.04	0.07	0.15
SO 2090	Subgroup of small seed oilseeds, raw (incl. processed)	RAC	2	2.63	5.26	0.93	1.86	12.79	25.58	9.98	19.96	0.01	0.02
SO 2091	Subgroup of sunflower seeds, raw (incl. processed)	RAC	2	0.99	1.98	0.22	0.44	32.01	64.02	12.12	24.24	0.48	0.96
SO 0691	Cotton seed, raw (incl. oil)	RAC	2	8.14	16.28	0.32	0.64	2.84	5.68	2.69	5.38	0.97	1.94
–	Castor bean, raw (incl. oil)	RAC	2	NC	–	NC	–	NC	–	NC	–	NC	–
SO 3155	Melonseed	RAC	2	1.81	3.62	NC	–	0.01	0.02	NC	–	NC	–
SO 0696	Palm kernels, raw (incl. oil)	RAC	2	60.84	121.68	12.77	25.54	5.41	10.82	0.57	1.14	53.45	106.90
SO 0697	Peanuts, nutmeat, raw (incl. roasted, incl. oil, incl.	RAC	5	18.82	94.10	0.57	2.85	2.28	11.40	6.90	34.50	0.53	2.65

METHOPRENE (147) International Estimated Daily Intake (IEDI) ADI = 0–0.05 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day				Intake = daily intake: ug/person					
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
	butter)												
SO 0701	Shea nut (karite nuts), nutmeat, raw (incl. butter)	RAC	2	0.95	1.90	NC	–	NC	–	NC	–	NC	–
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.007	23.34	0.16	40.71	0.28	97.15	0.68	18.06	0.13	57.71	0.40
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.092	5.84	0.54	10.18	0.94	24.29	2.23	4.52	0.42	14.43	1.33
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.092	1.05	0.10	1.14	0.10	18.69	1.72	0.94	0.09	3.12	0.29
MO 0105	Edible offal (mammalian), raw	RAC	0.014	4.64	0.06	1.97	0.03	10.01	0.14	3.27	0.05	3.98	0.06
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.044	108.75	4.79	70.31	3.09	436.11	19.19	61.55	2.71	79.09	3.48
PM 0110	Poultry meat, raw (incl. prepared)	RAC	0.007	3.92	0.03	12.03	0.08	57.07	0.40	5.03	0.04	55.56	0.39
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.007	NC	–	NC	–	0.32	0.00	NC	–	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.007	0.10	0.00	0.70	0.00	0.97	0.01	0.10	0.00	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.006	3.84	0.02	4.41	0.03	27.25	0.16	1.13	0.01	7.39	0.04
	Total intake (ug/person) =				1825.5		348.9		1311.3		893.3		673.0
	Body weight per region (kg bw) =				60		60		60		60		60
	ADI (ug/person) =				3000		3000		3000		3000		3000
	%ADI =				60.9%		11.6%		43.7%		29.8%		22.4%

METHOPRENE (147) International Estimated Daily Intake (IEDI) ADI = 0–0.05 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day										Intake = daily intake: ug/person	
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake		
	Rounded %ADI =				60%		10%		40%		30%		20%		

NOVALURON (217) International Estimated Daily Intake (IEDI) ADI = 0–0.01 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FP 0009	Group of pome fruits, raw (incl. apple cider, excl. apple juice)	RAC	0.65	19.35	12.58	34.06	22.14	17.87	11.62	25.74	16.73	7.69	5.00	56.85	36.95
FP 0226	Apple, raw (incl. juice, incl. cider)	RAC	0.065	13.94	0.91	30.81	2.00	15.14	0.98	23.10	1.50	6.86	0.45	55.48	3.61
FS 0013	Subgroup of cherries, raw	RAC	2.2	0.92	2.02	9.15	20.13	0.10	0.22	0.61	1.34	0.10	0.22	6.64	14.61
FS 0014	Subgroup of plums, raw	RAC	2.2	2.40	5.28	8.60	18.92	0.10	0.22	2.52	5.54	0.58	1.28	4.16	9.15
DF 0014	Plums, dried (prunes)	PP	1.27	0.10	0.13	0.10	0.13	0.10	0.13	0.18	0.23	0.10	0.13	0.10	0.13
FS 2001	Subgroup of peaches, raw (incl. dried apricots)	RAC	2.2	8.01	17.62	5.87	12.91	0.18	0.40	8.19	18.02	1.64	3.61	22.46	49.41
FB 0020	Blueberries, raw	RAC	2.1	0.10	0.21	0.10	0.21	0.10	0.21	0.10	0.21	0.10	0.21	0.10	0.21
FB 0275	Strawberry, raw	RAC	0.15	0.70	0.11	2.01	0.30	0.10	0.02	1.36	0.20	0.37	0.06	2.53	0.38
VB 0040	Group of brassica vegetables (except brassica leafy vegetables), raw	RAC	0.105	6.43	0.68	40.26	4.23	0.80	0.08	9.94	1.04	12.07	1.27	17.73	1.86

NOVALURON (217) International Estimated Daily Intake (IEDI) ADI = 0–0.01 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VC 0045	Group of fruiting vegetables, cucurbits, raw	RAC	0.05	53.14	2.66	86.21	4.31	6.28	0.31	92.76	4.64	15.64	0.78	155.30	7.77
VO 0050	Group of fruiting vegetables other than cucurbits, raw (incl. processed commodities)	RAC	0.1	70.72	7.07	103.53	10.35	37.61	3.76	129.38	12.94	61.87	6.19	265.39	26.54
VL 0464	Chard, raw (i.e. beet leaves; silver beet)	RAC	4	0.40	1.60	0.70	2.80	0.44	1.76	1.06	4.24	4.66	18.64	0.51	2.04
VL 0485	Mustard greens, raw (i.e. Indian mustard, amsoi, mustard cabbage)	RAC	3.6	0.10	0.36	0.31	1.12	0.10	0.36	0.10	0.36	0.47	1.69	0.11	0.40
VP 2060	Subgroup of beans with pods (all commodities within this group)	RAC	0.165	0.68	0.11	NC	–	NC	–	0.39	0.06	0.22	0.04	0.49	0.08
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.05	2.39	0.12	1.61	0.08	10.47	0.52	1.84	0.09	12.90	0.65	7.44	0.37
VR 0589	Potato, raw (incl. flour, incl. frozen, incl. starch, incl. tapioca)	RAC	0.01	59.74	0.60	316.14	3.16	9.78	0.10	60.26	0.60	54.12	0.54	119.82	1.20
CM 0649 (GC 0649)	Rice, husked, dry (incl. flour, incl. oil, incl. starch, excl. beverages, excl. polished)	REP	0.6	1.26	0.76	1.58	0.95	31.05	18.63	5.43	3.26	0.90	0.54	2.18	1.31
CM 1205	Rice polished, dry	PP	0.015	34.21	0.51	10.39	0.16	41.72	0.63	82.38	1.24	150.24	2.25	70.47	1.06
GS 0659	Sugar cane, raw (incl. sugar, incl. molasses)	RAC	0.08	99.68	7.97	86.27	6.90	31.38	2.51	80.36	6.43	84.18	6.73	99.10	7.93
TN 0085	Tree nuts, raw (incl. processed)	RAC	0.015	4.06	0.06	3.27	0.05	7.01	0.11	13.93	0.21	14.01	0.21	9.36	0.14
OR 0691	Cotton seed oil, edible	PP	0.041	3.22	0.13	1.54	0.06	1.01	0.04	0.74	0.03	1.12	0.05	2.93	0.12
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.096	24.96	2.40	57.95	5.56	16.70	1.60	38.38	3.68	26.46	2.54	29.00	2.78

NOVALURON (217) International Estimated Daily Intake (IEDI) ADI = 0–0.01 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.599	6.24	3.74	14.49	8.68	4.18	2.50	9.60	5.75	6.62	3.96	7.25	4.34
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.599	3.29	1.97	6.14	3.68	0.82	0.49	1.57	0.94	2.23	1.34	1.07	0.64
MO 0105	Edible offal (mammalian), raw	RAC	0.15	4.79	0.72	9.68	1.45	2.97	0.45	5.49	0.82	3.84	0.58	5.03	0.75
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.1176	289.65	34.06	485.88	57.14	26.92	3.17	239.03	28.11	199.91	23.51	180.53	21.23
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.0297	13.17	0.39	26.78	0.80	7.24	0.21	116.71	3.47	22.54	0.67	32.09	0.95
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.919	1.46	1.34	2.98	2.73	0.80	0.74	12.97	11.92	2.50	2.30	3.57	3.28
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.919	0.10	0.09	0.10	0.09	NC	–	0.10	0.09	0.10	0.09	0.10	0.09
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.0943	0.12	0.01	0.12	0.01	0.11	0.01	5.37	0.51	0.24	0.02	0.10	0.01
PE 0112	Eggs, raw (incl. dried)	RAC	0.1845	7.84	1.45	23.08	4.26	2.88	0.53	14.89	2.75	9.81	1.81	14.83	2.74
	Total intake (ug/person) =				107.7		195.3		52.3		137.0		87.3		202.1
	Body weight per region (kg bw) =				60		60		60		60		60		60
	ADI (ug/person) =				600		600		600		600		600		600
	%ADI =				17.9%		32.6%		8.7%		22.8%		14.6%		33.7%
	Rounded %ADI =				20%		30%		9%		20%		10%		30%

NOVALURON (217) International Estimated Daily Intake (IEDI) ADI = 0–0.01 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FP 0009	Group of pome fruits, raw (incl. apple cider, excl. apple juice)	RAC	0.65	51.09	33.21	65.40	42.51	42.71	27.76	45.29	29.44	62.51	40.63	7.74	5.03
FP 0226	Apple, raw (incl. juice, incl. cider)	RAC	0.065	61.44	3.99	72.81	4.73	26.84	1.74	45.18	2.94	93.28	6.06	7.78	0.51
FS 0013	Subgroup of cherries, raw	RAC	2.2	1.40	3.08	4.21	9.26	0.10	0.22	2.93	6.45	1.50	3.30	NC	–
FS 0014	Subgroup of plums, raw	RAC	2.2	3.75	8.25	3.33	7.33	5.94	13.07	2.64	5.81	2.50	5.50	0.10	0.22
DF 0014	Plums, dried (prunes)	PP	1.27	0.61	0.77	0.35	0.44	0.10	0.13	0.35	0.44	0.49	0.62	0.13	0.17
FS 2001	Subgroup of peaches, raw (incl. dried apricots)	RAC	2.2	13.03	28.67	16.29	35.84	8.29	18.24	12.95	28.49	5.35	11.77	0.10	0.22
FB 0020	Blueberries, raw	RAC	2.1	0.10	0.21	0.23	0.48	0.10	0.21	0.83	1.74	0.33	0.69	NC	–
FB 0275	Strawberry, raw	RAC	0.15	4.49	0.67	5.66	0.85	0.10	0.02	6.63	0.99	5.75	0.86	0.10	0.02
VB 0040	Group of brassica vegetables (except brassica leafy vegetables), raw	RAC	0.105	20.71	2.17	39.81	4.18	25.06	2.63	37.93	3.98	18.12	1.90	16.74	1.76
VC 0045	Group of fruiting vegetables, cucurbits, raw	RAC	0.05	27.81	1.39	41.93	2.10	123.30	6.17	49.47	2.47	15.95	0.80	35.99	1.80
VO 0050	Group of fruiting vegetables other than cucurbits, raw (incl. processed commodities)	RAC	0.1	72.92	7.29	86.99	8.70	79.04	7.90	97.13	9.71	65.96	6.60	17.98	1.80
VL 0464	Chard, raw (i.e. beet leaves; silver beet)	RAC	4	NC	–	NC	–	NC	–	NC	–	NC	–	0.75	3.00
VL 0485	Mustard greens, raw (i.e. Indian mustard, amsoi, mustard cabbage)	RAC	3.6	NC	–	NC	–	NC	–	NC	–	NC	–	0.13	0.47
VP 2060	Subgroup of beans with pods (all commodities within this group)	RAC	0.165	5.07	0.84	0.83	0.14	0.17	0.03	3.70	0.61	NC	–	NC	–

NOVALURON (217) International Estimated Daily Intake (IEDI) ADI = 0–0.01 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.05	1.51	0.08	1.50	0.08	1.90	0.10	5.11	0.26	1.36	0.07	23.43	1.17
VR 0589	Potato, raw (incl. flour, incl. frozen, incl. starch, incl. tapioca)	RAC	0.01	225.03	2.25	234.24	2.34	71.48	0.71	177.55	1.78	234.55	2.35	37.71	0.38
CM 0649 (GC 0649)	Rice, husked, dry (incl. flour, incl. oil, incl. starch, excl. beverages, excl. polished)	REP	0.6	3.70	2.22	2.11	1.27	1.50	0.90	1.22	0.73	0.29	0.17	5.12	3.07
CM 1205	Rice polished, dry	PP	0.015	13.38	0.20	10.80	0.16	262.08	3.93	57.16	0.86	12.83	0.19	62.78	0.94
GS 0659	Sugar cane, raw (incl. sugar, incl. molasses)	RAC	0.08	92.24	7.38	95.72	7.66	28.47	2.28	77.39	6.19	117.73	9.42	103.90	8.31
TN 0085	Tree nuts, raw (incl. processed)	RAC	0.015	8.52	0.13	8.94	0.13	15.09	0.23	9.60	0.14	14.57	0.22	26.26	0.39
OR 0691	Cotton seed oil, edible	PP	0.041	1.68	0.07	0.66	0.03	1.13	0.05	1.18	0.05	0.89	0.04	0.37	0.02
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.096	112.02	10.75	120.71	11.59	63.46	6.09	88.99	8.54	96.24	9.24	41.02	3.94
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.599	28.01	16.78	30.18	18.08	15.86	9.50	22.25	13.33	24.06	14.41	10.25	6.14
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.599	6.44	3.86	15.51	9.29	3.79	2.27	8.29	4.97	18.44	11.05	8.00	4.79
MO 0105	Edible offal (mammalian), raw	RAC	0.15	15.17	2.28	5.19	0.78	6.30	0.95	6.78	1.02	3.32	0.50	3.17	0.48
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.1176	388.92	45.74	335.88	39.50	49.15	5.78	331.25	38.96	468.56	55.10	245.45	28.86
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.0297	66.38	1.97	48.47	1.44	21.58	0.64	78.41	2.33	48.04	1.43	76.01	2.26
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.919	7.38	6.78	5.39	4.95	2.40	2.20	8.71	8.01	5.34	4.91	8.45	7.76

NOVALURON (217) International Estimated Daily Intake (IEDI) ADI = 0–0.01 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.919	0.10	0.09	0.10	0.09	NC	–	0.10	0.09	0.71	0.65	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.0943	0.33	0.03	0.72	0.07	0.27	0.03	0.35	0.03	0.80	0.08	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.1845	25.84	4.77	29.53	5.45	28.05	5.18	33.19	6.12	36.44	6.72	8.89	1.64
	Total intake (ug/person) =				195.9		219.5		118.9		186.5		195.3		85.1
	Body weight per region (kg bw) =				60		60		55		60		60		60
	ADI (ug/person) =				600		600		550		600		600		600
	%ADI =				32.7%		36.6%		21.6%		31.1%		32.5%		14.2%
	Rounded %ADI =				30%		40%		20%		30%		30%		10%

NOVALURON (217) International Estimated Daily Intake (IEDI) ADI = 0–0.01 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FP 0009	Group of pome fruits, raw (incl. apple cider, excl. apple juice)	RAC	0.65	68.85	44.75	10.93	7.10	70.82	46.03	189.78	123.36	19.56	12.71
FP 0226	Apple, raw (incl. juice, incl. cider)	RAC	0.065	66.71	4.34	2.19	0.14	65.63	4.27	188.34	12.24	1.38	0.09

NOVALURON (217) International Estimated Daily Intake (IEDI) ADI = 0–0.01 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day				Intake = daily intake: ug/person					
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FS 0013	Subgroup of cherries, raw	RAC	2.2	0.10	0.22	0.10	0.22	5.96	13.11	0.10	0.22	NC	–
FS 0014	Subgroup of plums, raw	RAC	2.2	0.10	0.22	0.10	0.22	15.56	34.23	0.10	0.22	NC	–
DF 0014	Plums, dried (prunes)	PP	1.27	0.10	0.13	0.10	0.13	0.37	0.47	0.10	0.13	NC	–
FS 2001	Subgroup of peaches, raw (incl. dried apricots)	RAC	2.2	0.10	0.22	0.10	0.22	10.76	23.67	0.10	0.22	NC	–
FB 0020	Blueberries, raw	RAC	2.1	NC	–	NC	–	0.20	0.42	NC	–	NC	–
FB 0275	Strawberry, raw	RAC	0.15	0.10	0.02	0.10	0.02	3.35	0.50	0.10	0.02	0.10	0.02
VB 0040	Group of brassica vegetables (except brassica leafy vegetables), raw	RAC	0.105	5.46	0.57	4.28	0.45	58.72	6.17	0.10	0.01	NC	–
VC 0045	Group of fruiting vegetables, cucurbits, raw	RAC	0.05	5.96	0.30	9.74	0.49	51.82	2.59	13.61	0.68	0.10	0.01
VO 0050	Group of fruiting vegetables other than cucurbits, raw (incl. processed commodities)	RAC	0.1	36.09	3.61	37.19	3.72	109.09	10.91	3.78	0.38	12.50	1.25
VL 0464	Chard, raw (i.e. beet leaves; silver beet)	RAC	4	0.68	2.72	0.49	1.96	NC	–	0.46	1.84	0.92	3.68
VL 0485	Mustard greens, raw (i.e. Indian mustard, amsoi, mustard cabbage)	RAC	3.6	0.10	0.36	0.10	0.36	NC	–	0.10	0.36	NC	–
VP 2060	Subgroup of beans with pods (all commodities within this group)	RAC	0.165	NC	–	NC	–	NC	–	NC	–	NC	–
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.05	7.11	0.36	2.33	0.12	3.76	0.19	44.70	2.24	3.27	0.16
VR 0589	Potato, raw (incl. flour, incl. frozen, incl. starch, incl. tapioca)	RAC	0.01	23.96	0.24	13.56	0.14	213.41	2.13	104.35	1.04	8.56	0.09

NOVALURON (217) International Estimated Daily Intake (IEDI) ADI = 0–0.01 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									Intake = daily intake: ug/person
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
CM 0649 (GC 0649)	Rice, husked, dry (incl. flour, incl. oil, incl. starch, excl. beverages, excl. polished)	REP	0.6	13.58	8.15	4.29	2.57	2.17	1.30	0.10	0.06	8.84	5.30
CM 1205	Rice polished, dry	PP	0.015	30.20	0.45	218.34	3.28	12.77	0.19	15.24	0.23	51.35	0.77
GS 0659	Sugar cane, raw (incl. sugar, incl. molasses)	RAC	0.08	33.75	2.70	106.29	8.50	78.09	6.25	29.09	2.33	45.70	3.66
TN 0085	Tree nuts, raw (incl. processed)	RAC	0.015	4.39	0.07	135.53	2.03	6.11	0.09	0.72	0.01	317.74	4.77
OR 0691	Cotton seed oil, edible	PP	0.041	1.28	0.05	0.10	0.00	0.45	0.02	0.42	0.02	0.15	0.01
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.096	23.34	2.24	40.71	3.91	97.15	9.33	18.06	1.73	57.71	5.54
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.599	5.84	3.50	10.18	6.10	24.29	14.55	4.52	2.71	14.43	8.64
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.599	1.05	0.63	1.14	0.68	18.69	11.20	0.94	0.56	3.12	1.87
MO 0105	Edible offal (mammalian), raw	RAC	0.15	4.64	0.70	1.97	0.30	10.01	1.50	3.27	0.49	3.98	0.60
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.1176	108.75	12.79	70.31	8.27	436.11	51.29	61.55	7.24	79.09	9.30
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.0297	3.53	0.10	10.83	0.32	51.36	1.53	4.53	0.13	50.00	1.49
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.919	0.39	0.36	1.20	1.11	5.71	5.24	0.50	0.46	5.56	5.11
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.919	NC	–	NC	–	0.32	0.29	NC	–	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.0943	0.10	0.01	0.70	0.07	0.97	0.09	0.10	0.01	NC	–

NOVALURON (217) International Estimated Daily Intake (IEDI) ADI = 0–0.01 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
PE 0112	Eggs, raw (incl. dried)	RAC	0.1845	3.84	0.71	4.41	0.81	27.25	5.03	1.13	0.21	7.39	1.36
	Total intake (ug/person) =				90.5		53.2		252.6		159.1		66.4
	Body weight per region (kg bw) =				60		60		60		60		60
	ADI (ug/person) =				600		600		600		600		600
	%ADI =				15.1%		8.9%		42.1%		26.5%		11.1%
	Rounded %ADI =				20%		9%		40%		30%		10%

PHOSMET (103) International Estimated Daily Intake (IEDI) ADI = 0–0.006 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as ug/person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FB 0020	Blueberries, raw	RAC	4.5	0.01	0.05	0.03	0.14	0.01	0.05	0.01	0.05	0.01	0.05	0.01	0.05
FB 0265	Cranberry, raw	RAC	1.15	0.02	0.02	0.01	0.01	NC	–	0.03	0.03	0.01	0.01	0.01	0.01
VR 0589	Potato, raw (incl. flour, incl. frozen, incl. starch, incl. tapioca)	RAC	0	59.74	0.00	316.14	0.00	9.78	0.00	60.26	0.00	54.12	0.00	119.82	0.00
	Total intake (ug/person) =				0.1		0.1		0.0		0.1		0.1		0.1

PHOSMET (103) International Estimated Daily Intake (IEDI) ADI = 0–0.006 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as ug/person/day								
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
	Body weight per region (kg bw) =				60		60		60		60		60		60
	ADI (ug/person) =				360		360		360		360		360		360
	%ADI =				0.0%		0.0%		0.0%		0.0%		0.0%		0.0%
	Rounded %ADI =				0%		0%		0%		0%		0%		0%

PHOSMET (103) International Estimated Daily Intake (IEDI) ADI = 0–0.006 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as ug/person/day								
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FB 0020	Blueberries, raw	RAC	4.5	0.04	0.18	0.23	1.04	0.01	0.05	0.83	3.74	0.33	1.49	NC	–
FB 0265	Cranberry, raw	RAC	1.15	0.06	0.07	0.01	0.01	0.01	0.01	1.22	1.40	0.11	0.13	NC	–
VR 0589	Potato, raw (incl. flour, incl. frozen, incl. starch, incl. tapioca)	RAC	0	225.03	0.00	234.24	0.00	71.48	0.00	177.55	0.00	234.55	0.00	37.71	0.00
	Total intake (ug/person) =				0.2		1.0		0.1		5.1		1.6		0.0
	Body weight per region (kg bw) =				60		60		55		60		60		60
	ADI (ug/person) =				360		360		330		360		360		360

PHOSMET (103) International Estimated Daily Intake (IEDI) ADI = 0–0.006 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
	%ADI =				0.1%		0.3%		0.0%		1.4%		0.4%		0.0%
	Rounded %ADI =				0%		0%		0%		1%		0%		0%

PHOSMET (103) International Estimated Daily Intake (IEDI) ADI = 0–0.006 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FB 0020	Blueberries, raw	RAC	4.5	NC	–	NC	–	0.20	0.90	NC	–	NC	–
FB 0265	Cranberry, raw	RAC	1.15	NC	–	NC	–	0.03	0.03	NC	–	NC	–
VR 0589	Potato, raw (incl. flour, incl. frozen, incl. starch, incl. tapioca)	RAC	0	23.96	0.00	13.56	0.00	213.41	0.00	104.35	0.00	8.56	0.00
	Total intake (ug/person) =				0.0		0.0		0.9		0.0		0.0
	Body weight per region (kg bw) =				60		60		60		60		60
	ADI (ug/person) =				360		360		360		360		360
	%ADI =				0.0%		0.0%		0.3%		0.0%		0.0%
	Rounded %ADI =				0%		0%		0%		0%		0%

PHTHALIC ACID (NA) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FB 0020	Blueberries, raw	RAC	7.4	0.01	0.07	0.03	0.22	0.01	0.07	0.01	0.07	0.01	0.07	0.01	0.07
JF 0269	Grape juice (from wine grapes)	PP	7.7	0.14	1.08	0.29	2.23	0.05	0.39	0.30	2.31	0.24	1.85	0.05	0.39
–	Grape must (from wine grapes)	PP	4.9	0.33	1.62	0.13	0.64	0.01	0.05	0.02	0.10	0.01	0.05	0.02	0.10
–	Grape wine (incl. vermouths) (from wine grapes)	PP	5	0.67	3.35	12.53	62.65	2.01	10.05	1.21	6.05	3.53	17.65	4.01	20.05
FB 0265	Cranberry, raw	RAC	1.7	0.02	0.03	0.01	0.02	NC	–	0.03	0.05	0.01	0.02	0.01	0.02
FI 0327	Banana, raw (incl. plantains) (incl. dried)	RAC	0.054	5.23	0.28	6.94	0.37	99.45	5.37	32.47	1.75	48.30	2.61	24.70	1.33
VR 0589	Potato, raw (incl. flour, incl. frozen, incl. starch, incl. tapioca)	RAC	0.23	59.74	13.74	316.14	72.71	9.78	2.25	60.26	13.86	54.12	12.45	119.82	27.56
GC 0654	Wheat, raw (incl. bulgur, incl. fermented beverages, incl. germ, incl. wholemeal bread, incl. white flour products, incl. white bread)	RAC	0.32	381.15	121.97	341.55	109.30	38.35	12.27	281.89	90.20	172.83	55.31	434.07	138.90
GC 0640	Barley, raw (incl. malt extract, incl. pot & pearled, incl. flour & grits, incl. beer, incl. malt)	RAC	0.79	19.91	15.73	31.16	24.62	5.04	3.98	3.10	2.45	9.77	7.72	4.31	3.40
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0	24.96	0.00	57.95	0.00	16.70	0.00	38.38	0.00	26.46	0.00	29.00	0.00
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.064	6.24	0.40	14.49	0.93	4.18	0.27	9.60	0.61	6.62	0.42	7.25	0.46
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.064	3.29	0.21	6.14	0.39	0.82	0.05	1.57	0.10	2.23	0.14	1.07	0.07

PHTHALIC ACID (NA) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as ug/person/day								
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
MO 0105	Edible offal (mammalian), raw	RAC	0.051	4.79	0.24	9.68	0.49	2.97	0.15	5.49	0.28	3.84	0.20	5.03	0.26
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0	289.65	0.00	485.88	0.00	26.92	0.00	239.03	0.00	199.91	0.00	180.53	0.00
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0	13.17	0.00	26.78	0.00	7.24	0.00	116.71	0.00	22.54	0.00	32.09	0.00
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0	1.46	0.00	2.98	0.00	0.80	0.00	12.97	0.00	2.50	0.00	3.57	0.00
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.10	0.00	0.10	0.00
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.053	0.12	0.01	0.12	0.01	0.11	0.01	5.37	0.28	0.24	0.01	0.10	0.01
PE 0112	Eggs, raw (incl. dried)	RAC	0.05	7.84	0.39	23.08	1.15	2.88	0.14	14.89	0.74	9.81	0.49	14.83	0.74
	Total intake (ug/person) =				159.1		275.7		35.1		118.9		99.0		193.4
	Body weight per region (kg bw) =				60		60		60		60		60		60
	ADI (ug/person) =				6000		6000		6000		6000		6000		6000
	%ADI =				2.7%		4.6%		0.6%		2.0%		1.6%		3.2%
	Rounded %ADI =				3%		5%		1%		2%		2%		3%

PHTHALIC ACID (NA) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FB 0020	Blueberries, raw	RAC	7.4	0.04	0.30	0.23	1.70	0.01	0.07	0.83	6.14	0.33	2.44	NC	–
JF 0269	Grape juice (from wine grapes)	PP	7.7	0.56	4.31	1.96	15.09	0.02	0.15	2.24	17.25	2.27	17.48	0.34	2.62
–	Grape must (from wine grapes)	PP	4.9	0.16	0.78	0.09	0.44	0.01	0.05	0.12	0.59	0.11	0.54	NC	–
–	Grape wine (incl. vermouths) (from wine grapes)	PP	5	88.93	444.65	62.41	312.05	1.84	9.20	25.07	125.35	61.17	305.85	5.84	29.20
FB 0265	Cranberry, raw	RAC	1.7	0.06	0.10	0.01	0.02	0.01	0.02	1.22	2.07	0.11	0.19	NC	–
FI 0327	Banana, raw (incl. plantains) (incl. dried)	RAC	0.054	25.76	1.39	23.65	1.28	23.83	1.29	24.37	1.32	19.43	1.05	101.55	5.48
VR 0589	Potato, raw (incl. flour, incl. frozen, incl. starch, incl. tapioca)	RAC	0.23	225.03	51.76	234.24	53.88	71.48	16.44	177.55	40.84	234.55	53.95	37.71	8.67
GC 0654	Wheat, raw (incl. bulgur, incl. fermented beverages, incl. germ, incl. wholemeal bread, incl. white flour products, incl. white bread)	RAC	0.32	253.07	80.98	244.73	78.31	134.44	43.02	235.10	75.23	216.39	69.24	167.40	53.57
GC 0640	Barley, raw (incl. malt extract, incl. pot & pearled, incl. flour & grits, incl. beer, incl. malt)	RAC	0.79	36.18	28.58	53.45	42.23	9.39	7.42	35.25	27.85	46.68	36.88	15.92	12.58
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0	112.02	0.00	120.71	0.00	63.46	0.00	88.99	0.00	96.24	0.00	41.02	0.00
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.064	28.01	1.79	30.18	1.93	15.86	1.02	22.25	1.42	24.06	1.54	10.25	0.66
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.064	6.44	0.41	15.51	0.99	3.79	0.24	8.29	0.53	18.44	1.18	8.00	0.51

PHTHALIC ACID (NA) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as ug/person/day								
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
MO 0105	Edible offal (mammalian), raw	RAC	0.051	15.17	0.77	5.19	0.26	6.30	0.32	6.78	0.35	3.32	0.17	3.17	0.16
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0	388.92	0.00	335.88	0.00	49.15	0.00	331.25	0.00	468.56	0.00	245.45	0.00
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0	66.38	0.00	48.47	0.00	21.58	0.00	78.41	0.00	48.04	0.00	76.01	0.00
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0	7.38	0.00	5.39	0.00	2.40	0.00	8.71	0.00	5.34	0.00	8.45	0.00
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.71	0.00	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.053	0.33	0.02	0.72	0.04	0.27	0.01	0.35	0.02	0.80	0.04	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.05	25.84	1.29	29.53	1.48	28.05	1.40	33.19	1.66	36.44	1.82	8.89	0.44
	Total intake (ug/person) =				617.1		509.7		80.7		300.6		492.4		113.9
	Body weight per region (kg bw) =				60		60		55		60		60		60
	ADI (ug/person) =				6000		6000		5500		6000		6000		6000
	%ADI =				10.3%		8.5%		1.5%		5.0%		8.2%		1.9%
	Rounded %ADI =				10%		8%		1%		5%		8%		2%

PHTHALIC ACID (NA) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day				Intake = daily intake: ug/person					
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FB 0020	Blueberries, raw	RAC	7.4	NC	–	NC	–	0.20	1.48	NC	–	NC	–
JF 0269	Grape juice (from wine grapes)	PP	7.7	0.01	0.08	0.01	0.08	0.41	3.16	0.01	0.08	NC	–
–	Grape must (from wine grapes)	PP	4.9	0.01	0.05	0.01	0.05	0.11	0.54	0.01	0.05	0.19	0.93
–	Grape wine (incl. vermouths) (from wine grapes)	PP	5	0.31	1.55	0.23	1.15	60.43	302.15	0.52	2.60	31.91	159.55
FB 0265	Cranberry, raw	RAC	1.7	NC	–	NC	–	0.03	0.05	NC	–	NC	–
FI 0327	Banana, raw (incl. plantains) (incl. dried)	RAC	0.054	44.80	2.42	118.17	6.38	25.25	1.36	454.49	24.54	310.23	16.75
VR 0589	Potato, raw (incl. flour, incl. frozen, incl. starch, incl. tapioca)	RAC	0.23	23.96	5.51	13.56	3.12	213.41	49.08	104.35	24.00	8.56	1.97
GC 0654	Wheat, raw (incl. bulgur, incl. fermented beverages, incl. germ, incl. wholemeal bread, incl. white flour products, incl. white bread)	RAC	0.32	57.20	18.30	110.47	35.35	272.62	87.24	25.82	8.26	132.04	42.25
GC 0640	Barley, raw (incl. malt extract, incl. pot & pearled, incl. flour & grits, incl. beer, incl. malt)	RAC	0.79	11.58	9.15	2.33	1.84	46.71	36.90	3.72	2.94	16.26	12.85
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0	23.34	0.00	40.71	0.00	97.15	0.00	18.06	0.00	57.71	0.00
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.064	5.84	0.37	10.18	0.65	24.29	1.55	4.52	0.29	14.43	0.92
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.064	1.05	0.07	1.14	0.07	18.69	1.20	0.94	0.06	3.12	0.20
MO 0105	Edible offal (mammalian), raw	RAC	0.051	4.64	0.24	1.97	0.10	10.01	0.51	3.27	0.17	3.98	0.20

PHTHALIC ACID (NA) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0	108.75	0.00	70.31	0.00	436.11	0.00	61.55	0.00	79.09	0.00
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0	3.53	0.00	10.83	0.00	51.36	0.00	4.53	0.00	50.00	0.00
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0	0.39	0.00	1.20	0.00	5.71	0.00	0.50	0.00	5.56	0.00
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0	NC	–	NC	–	0.32	0.00	NC	–	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.053	0.10	0.01	0.70	0.04	0.97	0.05	0.10	0.01	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.05	3.84	0.19	4.41	0.22	27.25	1.36	1.13	0.06	7.39	0.37
	Total intake (ug/person) =				37.9		49.0		486.6		63.0		236.0
	Body weight per region (kg bw) =				60		60		60		60		60
	ADI (ug/person) =				6000		6000		6000		6000		6000
	%ADI =				0.6%		0.8%		8.1%		1.1%		3.9%
	Rounded %ADI =				1%		1%		8%		1%		4%

PROCHLORAZ (142) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FI 0326	Avocado, raw	RAC	1.6	0.13	0.21	0.03	0.05	2.05	3.28	2.54	4.06	2.34	3.74	0.12	0.19
GC 0650	Rye, raw (incl. flour)	RAC	0.012	0.13	0.00	19.38	0.23	0.10	0.00	0.12	0.00	0.03	0.00	2.15	0.03
GC 0653	Triticale, raw (incl. flour)	RAC	0.012	NC	–	NC	–	NC	–	0.01	0.00	0.39	0.00	NC	–
GC 0654	Wheat, raw (incl. bulgur, incl. fermented beverages, incl. germ, incl. wholemeal bread, incl. white flour products, incl. white bread)	RAC	0.035	381.15	13.34	341.55	11.95	38.35	1.34	281.89	9.87	172.83	6.05	434.07	15.19
GC 0640	Barley, raw (incl. malt extract, incl. flour & grits, excl. pot & pearled, excl. beer, excl. malt)	RAC	0.0245	7.91	0.19	0.64	0.02	0.15	0.00	0.18	0.00	1.21	0.03	0.41	0.01
–	Barley, pot & pearled	PP	0.00588	7.12	0.04	7.34	0.04	0.02	0.00	0.03	0.00	0.67	0.00	0.20	0.00
–	Barley beer	PP	0.00588	4.87	0.03	93.78	0.55	24.28	0.14	12.76	0.08	39.28	0.23	18.15	0.11
–	Barley malt	PP	0.02107	0.09	0.00	1.04	0.02	0.18	0.00	0.33	0.01	0.04	0.00	0.10	0.00
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.0041	24.96	0.10	57.95	0.24	16.70	0.07	38.38	0.16	26.46	0.11	29.00	0.12
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.015	6.24	0.09	14.49	0.22	4.18	0.06	9.60	0.14	6.62	0.10	7.25	0.11
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.015	3.29	0.05	6.14	0.09	0.82	0.01	1.57	0.02	2.23	0.03	1.07	0.02
MO 0105	Edible offal (mammalian), raw	RAC	0.22	4.79	1.05	9.68	2.13	2.97	0.65	5.49	1.21	3.84	0.84	5.03	1.11
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.0057	289.65	1.65	485.88	2.77	26.92	0.15	239.03	1.36	199.91	1.14	180.53	1.03

PROCHLORAZ (142) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.014	13.17	0.18	26.78	0.37	7.24	0.10	116.71	1.63	22.54	0.32	32.09	0.45
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.01	1.46	0.01	2.98	0.03	0.80	0.01	12.97	0.13	2.50	0.03	3.57	0.04
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.01	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.10	0.00	0.10	0.00
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.1	0.12	0.01	0.12	0.01	0.11	0.01	5.37	0.54	0.24	0.02	0.10	0.01
PE 0112	Eggs, raw (incl. dried)	RAC	0.13	7.84	1.02	23.08	3.00	2.88	0.37	14.89	1.94	9.81	1.28	14.83	1.93
	Total intake (ug/person) =				18.0		21.7		6.2		21.2		13.9		20.3
	Body weight per region (kg bw) =				60		60		60		60		60		60
	ADI (ug/person) =				1200		1200		1200		1200		1200		1200
	%ADI =				1.5%		1.8%		0.5%		1.8%		1.2%		1.7%
	Rounded %ADI =				1%		2%		1%		2%		1%		2%

PROCHLORAZ (142) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FI 0326	Avocado, raw	RAC	1.6	2.65	4.24	0.87	1.39	0.46	0.74	1.64	2.62	1.30	2.08	0.96	1.54

PROCHLORAZ (142) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day								Intake as ug/person/day			
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
GC 0650	Rye, raw (incl. flour)	RAC	0.012	3.21	0.04	35.38	0.42	0.21	0.00	6.50	0.08	1.49	0.02	NC	–
GC 0653	Triticale, raw (incl. flour)	RAC	0.012	0.01	0.00	0.17	0.00	0.29	0.00	0.01	0.00	NC	–	NC	–
GC 0654	Wheat, raw (incl. bulgur, incl. fermented beverages, incl. germ, incl. wholemeal bread, incl. white flour products, incl. white bread)	RAC	0.035	253.07	8.86	244.73	8.57	134.44	4.71	235.10	8.23	216.39	7.57	167.40	5.86
GC 0640	Barley, raw (incl. malt extract, incl. flour & grits, excl. pot & pearled, excl. beer, excl. malt)	RAC	0.0245	0.82	0.02	0.21	0.01	0.09	0.00	1.53	0.04	1.58	0.04	0.63	0.02
–	Barley, pot & pearled	PP	0.00588	0.57	0.00	2.56	0.02	0.33	0.00	0.56	0.00	0.36	0.00	NC	–
–	Barley beer	PP	0.00588	180.21	1.06	259.46	1.53	45.91	0.27	172.36	1.01	234.42	1.38	65.30	0.38
–	Barley malt	PP	0.02107	0.19	0.00	NC	–	0.04	0.00	0.08	0.00	NC	–	2.14	0.05
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.0041	112.02	0.46	120.71	0.49	63.46	0.26	88.99	0.36	96.24	0.39	41.02	0.17
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.015	28.01	0.42	30.18	0.45	15.86	0.24	22.25	0.33	24.06	0.36	10.25	0.15
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.015	6.44	0.10	15.51	0.23	3.79	0.06	8.29	0.12	18.44	0.28	8.00	0.12
MO 0105	Edible offal (mammalian), raw	RAC	0.22	15.17	3.34	5.19	1.14	6.30	1.39	6.78	1.49	3.32	0.73	3.17	0.70
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.0057	388.92	2.22	335.88	1.91	49.15	0.28	331.25	1.89	468.56	2.67	245.45	1.40
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.014	66.38	0.93	48.47	0.68	21.58	0.30	78.41	1.10	48.04	0.67	76.01	1.06

PROCHLORAZ (142) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.01	7.38	0.07	5.39	0.05	2.40	0.02	8.71	0.09	5.34	0.05	8.45	0.08
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.01	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.71	0.01	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.1	0.33	0.03	0.72	0.07	0.27	0.03	0.35	0.04	0.80	0.08	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.13	25.84	3.36	29.53	3.84	28.05	3.65	33.19	4.31	36.44	4.74	8.89	1.16
	Total intake (ug/person) =				25.1		20.8		11.9		21.7		21.1		12.7
	Body weight per region (kg bw) =				60		60		55		60		60		60
	ADI (ug/person) =				1200		1200		1100		1200		1200		1200
	%ADI =				2.1%		1.7%		1.1%		1.8%		1.8%		1.1%
	Rounded %ADI =				2%		2%		1%		2%		2%		1%

PROCHLORAZ (142) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									
				Intake = daily intake: ug/person									
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FI 0326	Avocado, raw	RAC	1.6	1.12	1.79	0.01	0.02	0.84	1.34	0.01	0.02	6.60	10.56
GC 0650	Rye, raw (incl. flour)	RAC	0.012	0.03	0.00	0.01	0.00	13.95	0.17	0.01	0.00	0.88	0.01
GC 0653	Triticale, raw (incl. flour)	RAC	0.012	0.01	0.00	NC	–	NC	–	NC	–	NC	–

PROCHLORAZ (142) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
GC 0654	Wheat, raw (incl. bulgur, incl. fermented beverages, incl. germ, incl. wholemeal bread, incl. white flour products, incl. white bread)	RAC	0.035	57.20	2.00	110.47	3.87	272.62	9.54	25.82	0.90	132.04	4.62
GC 0640	Barley, raw (incl. malt extract, incl. flour & grits, excl. pot & pearled, excl. beer, excl. malt)	RAC	0.0245	0.09	0.00	0.01	0.00	0.80	0.02	0.01	0.00	0.11	0.00
–	Barley, pot & pearled	PP	0.00588	5.46	0.03	0.01	0.00	1.44	0.01	0.01	0.00	NC	–
–	Barley beer	PP	0.00588	16.25	0.10	11.36	0.07	225.21	1.32	19.49	0.11	52.17	0.31
–	Barley malt	PP	0.02107	0.01	0.00	0.11	0.00	0.67	0.01	0.01	0.00	4.61	0.10
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.0041	23.34	0.10	40.71	0.17	97.15	0.40	18.06	0.07	57.71	0.24
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.015	5.84	0.09	10.18	0.15	24.29	0.36	4.52	0.07	14.43	0.22
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.015	1.05	0.02	1.14	0.02	18.69	0.28	0.94	0.01	3.12	0.05
MO 0105	Edible offal (mammalian), raw	RAC	0.22	4.64	1.02	1.97	0.43	10.01	2.20	3.27	0.72	3.98	0.88
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.0057	108.75	0.62	70.31	0.40	436.11	2.49	61.55	0.35	79.09	0.45
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.014	3.53	0.05	10.83	0.15	51.36	0.72	4.53	0.06	50.00	0.70
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.01	0.39	0.00	1.20	0.01	5.71	0.06	0.50	0.01	5.56	0.06
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.01	NC	–	NC	–	0.32	0.00	NC	–	NC	–

PROCHLORAZ (142) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.1	0.10	0.01	0.70	0.07	0.97	0.10	0.10	0.01	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.13	3.84	0.50	4.41	0.57	27.25	3.54	1.13	0.15	7.39	0.96
	Total intake (ug/person) =				6.3		5.9		22.6		2.5		19.1
	Body weight per region (kg bw) =				60		60		60		60		60
	ADI (ug/person) =				1200		1200		1200		1200		1200
	%ADI =				0.5%		0.5%		1.9%		0.2%		1.6%
	Rounded %ADI =				1%		0%		2%		0%		2%

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as ug/person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FC 0001	Group of citrus fruit, raw (incl. kumquat commodities)	RAC	0.21	32.25	6.77	11.67	2.45	16.70	3.51	76.01	15.96	33.90	7.12	92.97	19.52
JF 0001	Group of citrus fruit, juice	PP	0.004	1.30	0.01	2.37	0.01	0.22	0.00	13.88	0.06	0.75	0.00	2.63	0.01
–	Lemon, juice (single strength, incl. concentrated)	PP	0.004	0.01	0.00	0.01	0.00	0.11	0.00	0.09	0.00	0.18	0.00	0.17	0.00
–	Subgroup of mandarins, juice	PP	0.004	NC	–	NC	–	NC	–	NC	–	NC	–	NC	–

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
JF 0004	Subgroup of oranges, juice (single strength, incl. concentrated)	PP	0.004	1.27	0.01	2.20	0.01	0.09	0.00	11.81	0.05	0.46	0.00	1.69	0.01
JF 0203	Grapefruits, juice (single strength, incl. concentrated)	PP	0.004	0.01	0.00	0.16	0.00	0.02	0.00	1.97	0.01	0.12	0.00	0.77	0.00
FP 0009	Group of pomefruits, raw	RAC	0.06	19.24	1.15	33.89	2.03	3.34	0.20	25.53	1.53	7.59	0.46	56.76	3.41
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.004	0.32	0.00	3.07	0.01	0.07	0.00	5.00	0.02	0.29	0.00	5.57	0.02
–	Apple cider (i.e. fermented apple juice)	PP	0.004	0.07	0.00	0.12	0.00	10.66	0.04	0.15	0.00	0.07	0.00	0.07	0.00
FS 0013	Subgroup of cherries, raw	RAC	0.395	0.92	0.36	9.15	3.61	0.01	0.00	0.61	0.24	0.06	0.02	6.64	2.62
FS 0014	Subgroup of plums, raw	RAC	0.15	2.40	0.36	8.60	1.29	0.06	0.01	2.52	0.38	0.58	0.09	4.16	0.62
DF 0014	Plums, dried (prunes)	PP	0.34	0.09	0.03	0.06	0.02	0.01	0.00	0.18	0.06	0.04	0.01	0.06	0.02
FS 2001	Subgroup of peaches, raw (incl. dried apricots)	RAC	0.21	8.01	1.68	5.87	1.23	0.18	0.04	8.19	1.72	1.64	0.34	22.46	4.72
FB 2005	Subgroup of caneberries, raw	RAC	0.815	0.42	0.34	1.05	0.86	0.01	0.01	0.02	0.02	0.02	0.02	1.24	1.01
FB 2006	Subgroup of bush berries, raw (including processed)	RAC	0.88	0.53	0.47	1.31	1.15	0.40	0.35	1.66	1.46	0.01	0.01	0.99	0.87
FB 0267	Elderberries, raw (incl. processed)	RAC	0.88	0.44	0.39	0.27	0.24	0.34	0.30	1.41	1.24	NC	–	0.87	0.77
FB 0269	Grapes, raw (i.e. table grapes)	RAC	0.29	12.68	3.68	9.12	2.64	0.03	0.01	16.88	4.90	3.70	1.07	54.42	15.78
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.71	0.51	0.36	0.51	0.36	0.01	0.01	1.27	0.90	0.12	0.09	2.07	1.47

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
JF 0269	Grape juice (from wine grapes)	PP	0.017	0.14	0.00	0.29	0.00	0.05	0.00	0.30	0.01	0.24	0.00	0.05	0.00
–	Grape must (from wine grapes)	PP	0.31	0.33	0.10	0.13	0.04	0.01	0.00	0.02	0.01	0.01	0.00	0.02	0.01
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.091	0.67	0.06	12.53	1.14	2.01	0.18	1.21	0.11	3.53	0.32	4.01	0.36
FB 0275	Strawberry, raw	RAC	0.185	0.70	0.13	2.01	0.37	0.04	0.01	1.36	0.25	0.37	0.07	2.53	0.47
FI 0345	Mango, raw (incl. canned mango, incl. mango juice)	RAC	0.01	10.48	0.10	0.01	0.00	7.24	0.07	6.87	0.07	19.98	0.20	6.25	0.06
FI 2540	Pitaya, raw (i.e. dragon fruit or pitahaya)	RAC	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	NC	–	0.01	0.00
VA 2031	Subgroup of bulb onions	RAC	0.07	31.65	2.22	43.28	3.03	3.68	0.26	38.48	2.69	20.46	1.43	47.29	3.31
VA 2032	Subgroup of green onions	RAC	0.36	2.64	0.95	3.09	1.11	1.05	0.38	2.89	1.04	0.61	0.22	5.24	1.89
VB 0042	Subgroup of flowerhead brassica, raw	RAC	0.39	2.54	0.99	0.49	0.19	0.01	0.00	3.57	1.39	7.79	3.04	3.12	1.22
VB 2036	Subgroup of head brassicas, raw	RAC	0.065	3.81	0.25	38.89	2.53	0.77	0.05	6.23	0.40	4.27	0.28	14.28	0.93
VB 2016	Subgroup of stem brassicas, raw	RAC	0.02	0.09	0.00	0.89	0.02	0.02	0.00	0.14	0.00	NC	–	0.33	0.01
VC 0045	Group of fruiting vegetables, cucurbits, raw	RAC	0.12	53.14	6.38	86.21	10.35	6.28	0.75	92.76	11.13	15.64	1.88	155.30	18.64
VO 0448	Tomato, raw	RAC	0.11	41.73	4.59	75.65	8.32	10.66	1.17	82.87	9.12	24.75	2.72	200.93	22.10
–	Tomato, canned (& peeled)	PP	0.005	0.20	0.00	0.31	0.00	0.02	0.00	1.11	0.01	0.11	0.00	1.50	0.01
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.075	2.34	0.18	1.33	0.10	1.57	0.12	4.24	0.32	0.34	0.03	2.83	0.21
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.005	0.29	0.00	0.29	0.00	0.01	0.00	0.38	0.00	0.05	0.00	0.14	0.00

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VO 0051	Subgroup of peppers, raw (Capsicum spp. only), excl. okra	RAC	0.11	5.42	0.60	9.91	1.09	3.97	0.44	7.63	0.84	2.59	0.28	23.68	2.60
VO 0442	Okra, raw (i.e. lady's finger, gombo)	RAC	0.02	1.97	0.04	NC	–	3.68	0.07	3.24	0.06	5.72	0.11	1.57	0.03
VO 2046	Subgroup of eggplants	RAC	0.11	5.58	0.61	4.31	0.47	0.89	0.10	9.31	1.02	13.64	1.50	20.12	2.21
VL 0483	Lettuce, leaf, raw	RAC	5.3	0.53	2.81	0.36	1.91	0.16	0.85	6.21	32.91	1.90	10.07	6.05	32.07
VL 0054	Subgroup of leaves of brassicaceae, raw	RAC	0.02	2.63	0.05	9.27	0.19	1.86	0.04	5.82	0.12	19.53	0.39	4.90	0.10
VL 2052	Subgroup of leaves of root and tuber vegetables	RAC	0.02	0.18	0.00	0.31	0.01	0.84	0.02	0.47	0.01	2.06	0.04	0.23	0.00
VP 2060	Subgroup of beans with pods (all commodities within this group)	RAC	0.045	0.68	0.03	NC	–	NC	–	0.39	0.02	0.22	0.01	0.49	0.02
014B	Peas with pods	–	0.12	–	–	–	–	–	–	–	–	–	–	–	–
VP 2062	Subgroup of succulent beans without pods (all commodities within this group)	RAC	0.033	5.07	0.17	1.02	0.03	0.49	0.02	1.78	0.06	1.19	0.04	8.57	0.28
VP 2063	Subgroup of succulent peas without pods	RAC	0.031	1.97	0.06	0.51	0.02	0.02	0.00	0.79	0.02	3.68	0.11	3.80	0.12
014E	Underground immature beans and peas	–	0.02	–	–	–	–	–	–	–	–	–	–	–	–
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.028	2.39	0.07	1.61	0.05	10.47	0.29	1.84	0.05	12.90	0.36	7.44	0.21
VD 0523	Broad bean, dry, raw (incl. horse-bean, field bean) (Vicia faba)	RAC	0.028	1.27	0.04	0.01	0.00	0.12	0.00	2.49	0.07	0.23	0.01	5.54	0.16
VD 0527	Cowpea, dry, raw (Vigna sinensis, Dolichos sinensis)	RAC	0.028	0.05	0.00	NC	–	1.74	0.05	0.01	0.00	0.01	0.00	0.07	0.00

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VD 0541	Soya bean, dry, raw (Glycine soja)	RAC	0.028	0.58	0.02	0.05	0.00	0.37	0.01	0.03	0.00	1.65	0.05	0.30	0.01
–	Soya paste (i.e. miso)	PP	0.004	NC	–	NC	–	NC	–	NC	–	NC	–	NC	–
–	Soya curd (i.e. tofu)	PP	0.004	NC	–	NC	–	NC	–	NC	–	NC	–	NC	–
OR 0541	Soya oil, refined	PP	0.005	12.99	0.06	10.43	0.05	3.63	0.02	13.10	0.07	10.70	0.05	13.10	0.07
–	Soya sauce	PP	0.002	0.01	0.00	0.02	0.00	0.01	0.00	0.34	0.00	0.03	0.00	0.01	0.00
–	Soya flour	PP	0.002	0.05	0.00	0.86	0.00	0.02	0.00	1.02	0.00	0.01	0.00	0.15	0.00
–	Beans (dry) NES: including inter alia lablab or hyacinth bean (Dolichos spp.); jack or sword bean (Canavalia spp.); winged bean (Psophocarpus tetragonolobus); guar bean (Cyamopsis tetragonoloba); velvet bean (Stizolobium spp.); yam bean (Pachyrrhizus erosus)	RAC	0.028	1.70	0.05	0.01	0.00	3.00	0.08	1.80	0.05	1.64	0.05	1.33	0.04
VD 2066	Subgroup of dry peas, raw	RAC	0.028	9.09	0.25	3.35	0.09	1.06	0.03	9.48	0.27	15.11	0.42	10.58	0.30
VR 2070	Subgroup of root vegetables, raw	RAC	0.08	24.72	1.98	57.71	4.62	17.01	1.36	49.58	3.97	9.33	0.75	114.41	9.15
–	Sugar beet, sugar	PP	0.004	0.02	0.00	NC	–	0.01	0.00	0.09	0.00	0.07	0.00	12.63	0.05
VR 0573	Arrowroot, raw	RAC	0.03	1.53	0.05	0.01	0.00	0.93	0.03	1.33	0.04	0.47	0.01	0.02	0.00
VR 0463	Cassava raw (incl. starch, incl. tapioca, incl. flour) (i.e. manioc)	RAC	0.03	0.08	0.00	0.01	0.00	482.56	14.48	0.99	0.03	25.75	0.77	3.29	0.10
VR 0585	Jerusalem artichoke, raw (i.e. topinambur)	RAC	0.03	1.57	0.05	0.01	0.00	0.96	0.03	1.36	0.04	0.48	0.01	0.02	0.00

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VR 0589	Potato, raw (incl. frozen, incl. tapioca, excl. flour, excl. starch)	RAC	0.03	59.36	1.78	315.64	9.47	9.38	0.28	55.58	1.67	53.71	1.61	119.55	3.59
–	Potato, flour	PP	0.014	0.05	0.00	0.10	0.00	0.09	0.00	0.88	0.01	0.09	0.00	0.06	0.00
–	Potato, starch	PP	0.014	0.03	0.00	0.01	0.00	0.01	0.00	0.15	0.00	0.01	0.00	0.01	0.00
VR 0508	Sweet potato, raw (incl. dried)	RAC	0.03	0.18	0.01	0.18	0.01	42.16	1.26	1.61	0.05	3.06	0.09	6.67	0.20
VR 0504	Tannia, raw (i.e. tanier, yautia)	RAC	0.03	NC	–	NC	–	NC	–	0.01	0.00	0.26	0.01	1.27	0.04
VR 0505	Taro, raw (i.e. dasheen, eddoe)	RAC	0.03	0.01	0.00	NC	–	25.12	0.75	0.04	0.00	0.01	0.00	0.97	0.03
VR 0600	Yams, raw (incl. dried)	RAC	0.03	0.02	0.00	NC	–	90.40	2.71	6.45	0.19	0.74	0.02	0.65	0.02
VS 2080	Subgroup of stems and petioles	RAC	4.4	3.11	13.68	5.52	24.29	3.42	15.05	8.29	36.48	0.02	0.09	4.00	17.60
GC 0648	Quinoa, raw	RAC	0.063	NC	–	NC	–	NC	–	NC	–	0.07	0.00	NC	–
GC 0650	Rye, raw (incl. flour)	RAC	0.063	0.13	0.01	19.38	1.22	0.10	0.01	0.12	0.01	0.03	0.00	2.15	0.14
GC 0653	Triticale, raw (incl. flour)	RAC	0.063	NC	–	NC	–	NC	–	0.01	0.00	0.39	0.02	NC	–
GC 0654	Wheat, raw (incl. bulgur, incl. fermented beverages, excl. germ, excl. wholemeal bread, excl. white flour products, excl. white bread)	RAC	0.063	0.01	0.00	1.12	0.07	NC	–	0.03	0.00	0.56	0.04	NC	–
CF 1210	Wheat, germ	PP	0.091	NC	–	NC	–	0.01	0.00	0.01	0.00	0.14	0.01	0.01	0.00
CP 1212	Wheat, wholemeal bread	PP	0.027	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.03	0.00	0.01	0.00
CP 1211	Wheat, white bread	PP	0.02	0.25	0.01	0.63	0.01	0.12	0.00	0.43	0.01	1.39	0.03	0.22	0.00

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day				Intake as ug/person/day							
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
CF 1211	Wheat, white flour	PP	0.02	299.27	5.99	263.32	5.27	27.93	0.56	214.18	4.28	133.47	2.67	340.03	6.80
–	Wheat, starch	PP	0.002	0.02	0.00	NC	–	0.01	0.00	0.05	0.00	0.13	0.00	0.01	0.00
–	Wheat, gluten	PP	0.11	0.01	0.00	0.01	0.00	0.01	0.00	0.27	0.03	0.01	0.00	0.03	0.00
–	Wheat, macaroni, dry	PP	0.02	0.72	0.01	2.20	0.04	1.22	0.02	3.99	0.08	0.53	0.01	1.66	0.03
–	Wheat, pastry, baked	PP	0.02	1.21	0.02	3.13	0.06	1.05	0.02	4.02	0.08	0.60	0.01	1.40	0.03
GC 0640	Barley, raw (incl. malt extract, incl. beer, incl. malt, excl. pot & pearled, excl. flour & grits)	RAC	0.23	3.55	0.82	19.31	4.44	4.98	1.15	3.02	0.69	7.85	1.81	3.98	0.92
–	Barley, pot & pearled	PP	0.01	7.12	0.07	7.34	0.07	0.02	0.00	0.03	0.00	0.67	0.01	0.20	0.00
–	Barley, flour (white flour and wholemeal flour)	PP	0.053	2.93	0.16	0.30	0.02	0.02	0.00	0.01	0.00	0.48	0.03	0.01	0.00
GC 0641	Buckwheat, raw (incl. flour)	RAC	0.23	NC	–	0.40	0.09	0.01	0.00	0.01	0.00	0.07	0.02	0.09	0.02
GC 0647	Oats, raw	RAC	0.23	0.01	0.00	NC	–	0.01	0.00	0.45	0.10	0.01	0.00	0.01	0.00
GC 0647	Oats, rolled (i.e. oatmeal dry)	PP	0.003	0.03	0.00	3.88	0.01	0.05	0.00	0.69	0.00	0.53	0.00	0.02	0.00
GC 2088	Subgroup of rice cereals	REP	0.03	45.40	1.36	14.99	0.45	84.88	2.55	111.73	3.35	194.75	5.84	93.12	2.79
GC 0646	Millet, raw (incl. flour, incl. beer)	RAC	0.03	1.46	0.04	2.32	0.07	5.84	0.18	0.89	0.03	16.17	0.49	0.01	0.00
GC 0651	Sorghum, raw (incl. beer, excl. flour) (i.e. chicken corn, dari seed, durra, feterita)	RAC	0.515	NC	–	0.01	0.01	3.34	1.72	0.01	0.01	NC	–	NC	–
–	Sorghum, flour (white flour and wholemeal flour)	PP	0.45	3.91	1.76	NC	–	11.62	5.23	14.24	6.41	9.87	4.44	2.62	1.18

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
GC 0645	Maize, raw (incl. glucose & dextrose & isoglucose, incl. beer, excl. flour, excl. oil, excl. germ, excl. starch)	RAC	0.03	0.84	0.03	0.24	0.01	1.56	0.05	0.46	0.01	2.21	0.07	13.13	0.39
CF 1255	Maize, flour (white flour and wholemeal flour)	PP	0.048	22.72	1.09	35.61	1.71	87.27	4.19	34.92	1.68	46.71	2.24	49.12	2.36
–	Maize, germ	PP	0.063	0.01	0.00	NC	–	0.01	0.00	0.01	0.00	0.22	0.01	NC	–
–	Maize starch	PP	0.013	0.08	0.00	NC	–	0.01	0.00	2.29	0.03	0.08	0.00	0.11	0.00
OR 0645	Maize oil	PP	0.057	0.96	0.05	0.85	0.05	0.29	0.02	5.42	0.31	0.42	0.02	2.10	0.12
–	Cereals, NES, raw (including processed): canagua, quihuicha, Job's tears and wild rice	RAC	0.03	2.04	0.06	2.99	0.09	1.86	0.06	19.17	0.58	3.33	0.10	1.66	0.05
GC 2090	Subgroup of sweet corns	RAC	0.03	0.14	0.00	0.94	0.03	5.70	0.17	2.61	0.08	1.94	0.06	0.22	0.01
TN 0085	Group of tree nuts, raw (incl. processed)	RAC	0.01	4.06	0.04	3.27	0.03	7.01	0.07	13.93	0.14	14.01	0.14	9.36	0.09
SO 0090	Subgroup of mustard seeds, raw (incl. flour, incl. oil)	RAC	0.0945	0.02	0.00	0.05	0.00	0.01	0.00	0.31	0.03	0.03	0.00	0.04	0.00
SO 0693	Linseed, raw (incl. oil)	RAC	0.0945	0.02	0.00	NC	–	NC	–	0.01	0.00	0.13	0.01	NC	–
SO 0698	Poppy seed, raw (incl. oil)	RAC	0.0945	0.01	0.00	0.01	0.00	0.01	0.00	0.03	0.00	0.01	0.00	0.01	0.00
SO 0495	Rape seed, raw	RAC	0.0945	0.02	0.00	NC	–	NC	–	0.01	0.00	0.75	0.07	0.01	0.00
OR 0495	Rape seed oil, edible	PP	0.035	0.35	0.01	0.44	0.02	0.19	0.01	0.97	0.03	3.28	0.11	0.77	0.03
SO 0700	Sesame seed, raw (incl. oil)	RAC	0.0945	1.22	0.12	0.01	0.00	0.54	0.05	4.23	0.40	0.82	0.08	2.77	0.26
SO 2091	Subgroup of sunflower seeds, raw (incl. processed)	RAC	0.09	7.43	0.67	36.06	3.25	1.15	0.10	8.77	0.79	5.74	0.52	13.63	1.23

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
OR 0702	Sunflower seed oil, edible	PP	0.005	2.97	0.01	14.42	0.07	0.43	0.00	3.46	0.02	2.20	0.01	5.53	0.03
SO 0691	Cotton seed, raw (incl. oil)	RAC	0.063	20.53	1.29	9.80	0.62	6.42	0.40	4.73	0.30	7.14	0.45	18.68	1.18
OR 0691	Cotton seed oil, edible	PP	0.0019	3.22	0.01	1.54	0.00	1.01	0.00	0.74	0.00	1.12	0.00	2.93	0.01
SO 0697	Peanuts, nutmeat, raw (incl. roasted, incl. butter, excl. oil)	RAC	0.03	0.46	0.01	1.21	0.04	6.64	0.20	2.71	0.08	1.26	0.04	1.84	0.06
OR 0697	Peanut oil, edible	PP	0.072	0.36	0.03	0.01	0.00	2.57	0.19	0.07	0.01	2.29	0.16	0.36	0.03
SB 0716	Coffee bean, raw (i.e. green coffee)	RAC	0.01	0.96	0.01	0.16	0.00	0.91	0.01	0.27	0.00	1.37	0.01	0.46	0.00
SM 0716	Coffee bean, roasted	PP	0.0077	0.19	0.00	0.91	0.01	0.16	0.00	2.50	0.02	0.39	0.00	0.40	0.00
–	Coffee bean, instant coffee (incl. essences and concentrates)	PP	0.0077	0.07	0.00	0.94	0.01	0.07	0.00	0.70	0.01	0.07	0.00	0.29	0.00
–	Coffee bean, substitutes, containing coffee	PP	0.01	0.01	0.00	0.01	0.00	0.16	0.00	0.17	0.00	0.02	0.00	0.03	0.00
HS 0444	Peppers, chili, dried	PP	1.1	0.42	0.46	0.53	0.58	0.84	0.92	0.50	0.55	0.95	1.05	0.37	0.41
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.02	24.96	0.50	57.95	1.16	16.70	0.33	38.38	0.77	26.46	0.53	29.00	0.58
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.02	6.24	0.12	14.49	0.29	4.18	0.08	9.60	0.19	6.62	0.13	7.25	0.15
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.02	3.29	0.07	6.14	0.12	0.82	0.02	1.57	0.03	2.23	0.04	1.07	0.02
MO 0105	Edible offal (mammalian), raw	RAC	0.09	4.79	0.43	9.68	0.87	2.97	0.27	5.49	0.49	3.84	0.35	5.03	0.45

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day				Intake as ug/person/day							
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.02	289.65	5.79	485.88	9.72	26.92	0.54	239.03	4.78	199.91	4.00	180.53	3.61
PM 0110	Poultry meat, raw (incl. prepared)	RAC	0.02	14.63	0.29	29.76	0.60	8.04	0.16	129.68	2.59	25.04	0.50	35.66	0.71
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.02	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.10	0.00	0.10	0.00
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.02	0.12	0.00	0.12	0.00	0.11	0.00	5.37	0.11	0.24	0.00	0.10	0.00
PE 0112	Eggs, raw (incl. dried)	RAC	0.02	7.84	0.16	23.08	0.46	2.88	0.06	14.89	0.30	9.81	0.20	14.83	0.30
	Total intake (ug/person) =				75.5		117.0		64.8		162.6		62.6		193.1
	Body weight per region (kg bw) =				60		60		60		60		60		60
	ADI (ug/person) =				6000		6000		6000		6000		6000		6000
	%ADI =				1.3%		1.9%		1.1%		2.7%		1.0%		3.2%
	Rounded %ADI =				1%		2%		1%		3%		1%		3%

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day				Intake as ug/person/day							
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FC 0001	Group of citrus fruit, raw (incl. kumquat	RAC	0.21	38.66	8.12	54.93	11.54	26.36	5.54	51.46	10.81	51.06	10.72	466.36	97.94

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
	commodities)														
JF 0001	Group of citrus fruit, juice	PP	0.004	36.84	0.15	3.75	0.02	0.30	0.00	21.62	0.09	21.82	0.09	46.67	0.19
–	Lemon, juice (single strength, incl. concentrated)	PP	0.004	0.60	0.00	0.36	0.00	0.01	0.00	1.49	0.01	0.43	0.00	0.24	0.00
–	Subgroup of mandarins, juice	PP	0.004	0.04	0.00	NC	–	0.01	0.00	0.01	0.00	NC	–	NC	–
JF 0004	Subgroup of oranges, juice (single strength, incl. concentrated)	PP	0.004	33.31	0.13	1.78	0.01	0.28	0.00	18.97	0.08	14.01	0.06	13.36	0.05
JF 0203	Grapefruits, juice (single strength, incl. concentrated)	PP	0.004	2.89	0.01	1.61	0.01	0.02	0.00	1.15	0.00	7.39	0.03	33.07	0.13
FP 0009	Group of pomefruits, raw	RAC	0.06	37.39	2.24	58.13	3.49	37.64	2.26	44.80	2.69	62.17	3.73	6.47	0.39
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.004	14.88	0.06	11.98	0.05	0.15	0.00	9.98	0.04	30.32	0.12	3.47	0.01
–	Apple cider (i.e. fermented apple juice)	PP	0.004	10.05	0.04	5.34	0.02	3.72	0.01	0.36	0.00	0.25	0.00	0.93	0.00
FS 0013	Subgroup of cherries, raw	RAC	0.395	1.40	0.55	4.21	1.66	0.04	0.02	2.93	1.16	1.50	0.59	NC	–
FS 0014	Subgroup of plums, raw	RAC	0.15	3.75	0.56	3.33	0.50	5.94	0.89	2.64	0.40	2.50	0.38	0.06	0.01
DF 0014	Plums, dried (prunes)	PP	0.34	0.61	0.21	0.35	0.12	0.05	0.02	0.35	0.12	0.49	0.17	0.13	0.04
FS 2001	Subgroup of peaches, raw (incl. dried apricots)	RAC	0.21	13.03	2.74	16.29	3.42	8.29	1.74	12.95	2.72	5.35	1.12	0.04	0.01
FB 2005	Subgroup of caneberries, raw	RAC	0.815	0.56	0.46	1.43	1.17	0.14	0.11	1.23	1.00	1.14	0.93	0.01	0.01
FB 2006	Subgroup of bush berries, raw (including processed)	RAC	0.88	1.31	1.15	5.50	4.84	0.01	0.01	2.57	2.26	0.82	0.72	2.15	1.89

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FB 0267	Elderberries, raw (incl. processed)	RAC	0.88	8.20	7.22	0.14	0.12	NC	–	NC	–	NC	–	1.87	1.65
FB 0269	Grapes, raw (i.e. table grapes)	RAC	0.29	6.33	1.84	11.22	3.25	5.21	1.51	9.38	2.72	4.55	1.32	0.78	0.23
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.71	3.09	2.19	1.51	1.07	0.03	0.02	1.38	0.98	4.26	3.02	0.42	0.30
JF 0269	Grape juice (from wine grapes)	PP	0.017	0.56	0.01	1.96	0.03	0.02	0.00	2.24	0.04	2.27	0.04	0.34	0.01
–	Grape must (from wine grapes)	PP	0.31	0.16	0.05	0.09	0.03	0.01	0.00	0.12	0.04	0.11	0.03	NC	–
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.091	88.93	8.09	62.41	5.68	1.84	0.17	25.07	2.28	61.17	5.57	5.84	0.53
FB 0275	Strawberry, raw	RAC	0.185	4.49	0.83	5.66	1.05	0.02	0.00	6.63	1.23	5.75	1.06	0.05	0.01
FI 0345	Mango, raw (incl. canned mango, incl. mango juice)	RAC	0.01	1.80	0.02	0.63	0.01	10.05	0.10	1.07	0.01	3.52	0.04	16.44	0.16
FI 2540	Pitaya, raw (i.e. dragon fruit or pitahaya)	RAC	0.01	NC	–	NC	–	0.08	0.00	NC	–	NC	–	NC	–
VA 2031	Subgroup of bulb onions	RAC	0.07	20.67	1.45	31.32	2.19	37.52	2.63	35.08	2.46	11.77	0.82	13.74	0.96
VA 2032	Subgroup of green onions	RAC	0.36	5.57	2.01	5.15	1.85	1.77	0.64	4.28	1.54	17.34	6.24	6.48	2.33
VB 0042	Subgroup of flowerhead brassica, raw	RAC	0.39	9.50	3.71	6.77	2.64	NC	–	3.21	1.25	9.36	3.65	0.75	0.29
VB 2036	Subgroup of head brassicas, raw	RAC	0.065	11.20	0.73	29.79	1.94	25.06	1.63	34.72	2.26	8.73	0.57	15.64	1.02
VB 2016	Subgroup of stem brassicas, raw	RAC	0.02	NC	–	3.25	0.07	NC	–	NC	–	0.02	0.00	0.36	0.01
VC 0045	Group of fruiting vegetables, cucurbits, raw	RAC	0.12	27.81	3.34	41.93	5.03	123.30	14.80	49.47	5.94	15.95	1.91	35.99	4.32
VO 0448	Tomato, raw	RAC	0.11	32.13	3.53	51.27	5.64	34.92	3.84	73.37	8.07	15.15	1.67	8.88	0.98

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
–	Tomato, canned (& peeled)	PP	0.005	7.57	0.04	2.66	0.01	0.30	0.00	0.97	0.00	7.31	0.04	0.41	0.00
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.075	4.96	0.37	3.20	0.24	0.15	0.01	1.61	0.12	6.88	0.52	0.52	0.04
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.005	0.80	0.00	0.07	0.00	0.05	0.00	0.61	0.00	0.40	0.00	0.08	0.00
VO 0051	Subgroup of peppers, raw (Capsicum spp. only), excl. okra	RAC	0.11	5.57	0.61	14.00	1.54	16.50	1.82	8.80	0.97	6.44	0.71	3.44	0.38
VO 0442	Okra, raw (i.e. lady's finger, gombo)	RAC	0.02	NC	–	NC	–	0.04	0.00	0.17	0.00	NC	–	0.72	0.01
VO 2046	Subgroup of eggplants	RAC	0.11	1.01	0.11	1.69	0.19	21.37	2.35	3.00	0.33	1.40	0.15	NC	–
VL 0483	Lettuce, leaf, raw	RAC	5.3	14.50	76.85	11.76	62.33	13.14	69.64	19.50	103.35	4.81	25.49	2.23	11.82
VL 0054	Subgroup of leaves of brassicaceae, raw	RAC	0.02	0.10	0.00	NC	–	26.78	0.54	5.00	0.10	0.58	0.01	5.68	0.11
VL 2052	Subgroup of leaves of root and tuber vegetables	RAC	0.02	NC	–	NC	–	NC	–	NC	–	NC	–	0.33	0.01
VP 2060	Subgroup of beans with pods (all commodities within this group)	RAC	0.045	5.07	0.23	0.83	0.04	0.17	0.01	3.70	0.17	NC	–	NC	–
014B	Peas with pods	–	0.12	–	–	–	–	–	–	–	–	–	–	–	–
VP 2062	Subgroup of succulent beans without pods (all commodities within this group)	RAC	0.033	2.42	0.08	6.09	0.20	4.33	0.14	2.09	0.07	18.99	0.63	0.17	0.01
VP 2063	Subgroup of succulent peas without pods	RAC	0.031	10.72	0.33	1.99	0.06	2.72	0.08	4.26	0.13	4.23	0.13	NC	–
014E	Underground immature beans and peas	–	0.02	–	–	–	–	–	–	–	–	–	–	–	–

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.028	1.51	0.04	1.50	0.04	1.90	0.05	5.11	0.14	1.36	0.04	23.43	0.66
VD 0523	Broad bean, dry, raw (incl. horse-bean, field bean) (Vicia faba)	RAC	0.028	0.02	0.00	0.01	0.00	1.16	0.03	0.40	0.01	NC	–	0.06	0.00
VD 0527	Cowpea, dry, raw (Vigna sinensis, Dolichos sinensis)	RAC	0.028	NC	–	NC	–	0.16	0.00	0.01	0.00	NC	–	NC	–
VD 0541	Soya bean, dry, raw (Glycine soja)	RAC	0.028	0.02	0.00	0.33	0.01	6.64	0.19	3.94	0.11	NC	–	5.78	0.16
–	Soya paste (i.e. miso)	PP	0.004	NC	–	NC	–	NC	–	1.87	0.01	NC	–	NC	–
–	Soya curd (i.e. tofu)	PP	0.004	NC	–	NC	–	0.68	0.00	0.87	0.00	NC	–	NC	–
OR 0541	Soya oil, refined	PP	0.005	19.06	0.10	21.06	0.11	5.94	0.03	33.78	0.17	40.05	0.20	13.39	0.07
–	Soya sauce	PP	0.002	0.45	0.00	0.29	0.00	2.93	0.01	4.35	0.01	0.09	0.00	0.70	0.00
–	Soya flour	PP	0.002	0.22	0.00	0.27	0.00	0.29	0.00	0.17	0.00	NC	–	NC	–
–	Beans (dry) NES: including inter alia lablab or hyacinth bean (Dolichos spp.); jack or sword bean (Canavalia spp.); winged bean (Psophocarpus tetragonolobus); guar bean (Cyamopsis tetragonoloba); velvet bean (Stizolobium spp.); yam bean (Pachyrrhizus erosus)	RAC	0.028	0.01	0.00	NC	–	0.57	0.02	0.11	0.00	0.16	0.00	0.94	0.03
VD 2066	Subgroup of dry peas, raw	RAC	0.028	5.01	0.14	3.76	0.11	1.82	0.05	3.44	0.10	3.49	0.10	5.15	0.14
VR 2070	Subgroup of root vegetables, raw	RAC	0.08	64.22	5.14	65.78	5.26	49.73	3.98	57.68	4.61	113.82	9.11	37.27	2.98
–	Sugar beet, sugar	PP	0.004	0.01	0.00	NC	–	0.01	0.00	NC	–	NC	–	NC	–

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day								Intake as ug/person/day			
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
VR 0573	Arrowroot, raw	RAC	0.03	0.02	0.00	0.01	0.00	2.05	0.06	0.21	0.01	NC	–	0.76	0.02
VR 0463	Cassava raw (incl. starch, incl. tapioca, incl. flour) (i.e. manioc)	RAC	0.03	0.01	0.00	NC	–	20.96	0.63	0.14	0.00	NC	–	9.62	0.29
VR 0585	Jerusalem artichoke, raw (i.e. topinambur)	RAC	0.03	0.11	0.00	0.01	0.00	NC	–	0.22	0.01	NC	–	0.78	0.02
VR 0589	Potato, raw (incl. frozen, incl. tapioca, excl. flour, excl. starch)	RAC	0.03	221.34	6.64	224.14	6.72	70.42	2.11	172.24	5.17	227.39	6.82	37.41	1.12
–	Potato, flour	PP	0.014	0.81	0.01	0.48	0.01	0.19	0.00	0.25	0.00	1.57	0.02	0.07	0.00
–	Potato, starch	PP	0.014	NC	–	1.74	0.02	0.05	0.00	0.92	0.01	NC	–	NC	–
VR 0508	Sweet potato, raw (incl. dried)	RAC	0.03	0.93	0.03	0.32	0.01	64.65	1.94	5.37	0.16	0.30	0.01	3.13	0.09
VR 0504	Tannia, raw (i.e. tanier, yautia)	RAC	0.03	NC	–	NC	–	NC	–	0.01	0.00	NC	–	10.74	0.32
VR 0505	Taro, raw (i.e. dasheen, eddoe)	RAC	0.03	NC	–	NC	–	1.93	0.06	0.84	0.03	NC	–	19.94	0.60
VR 0600	Yams, raw (incl. dried)	RAC	0.03	NC	–	NC	–	0.03	0.00	0.71	0.02	NC	–	17.57	0.53
VS 2080	Subgroup of stems and petioles	RAC	4.4	9.31	40.96	8.57	37.71	NC	–	3.88	17.07	24.46	107.62	5.89	25.92
GC 0648	Quinoa, raw	RAC	0.063	NC	–	NC	–	NC	–	NC	–	NC	–	NC	–
GC 0650	Rye, raw (incl. flour)	RAC	0.063	3.21	0.20	35.38	2.23	0.21	0.01	6.50	0.41	1.49	0.09	NC	–
GC 0653	Triticale, raw (incl. flour)	RAC	0.063	0.01	0.00	0.17	0.01	0.29	0.02	0.01	0.00	NC	–	NC	–
GC 0654	Wheat, raw (incl. bulgur, incl. fermented beverages, excl. germ, excl. wholemeal bread, excl. white flour	RAC	0.063	NC	–	NC	–	0.02	0.00	0.83	0.05	NC	–	NC	–

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day								Intake as ug/person/day			
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
	products, excl. white bread)														
CF 1210	Wheat, germ	PP	0.091	0.97	0.09	0.10	0.01	0.03	0.00	0.01	0.00	NC	–	0.04	0.00
CP 1212	Wheat, wholemeal bread	PP	0.027	0.03	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.05	0.00	0.02	0.00
CP 1211	Wheat, white bread	PP	0.02	1.30	0.03	0.46	0.01	0.06	0.00	0.22	0.00	2.44	0.05	0.77	0.02
CF 1211	Wheat, white flour	PP	0.02	182.77	3.66	187.54	3.75	103.82	2.08	180.42	3.61	164.00	3.28	118.84	2.38
–	Wheat, starch	PP	0.002	NC	–	NC	–	0.01	0.00	0.31	0.00	NC	–	NC	–
–	Wheat, gluten	PP	0.11	0.68	0.07	NC	–	0.01	0.00	0.01	0.00	NC	–	NC	–
–	Wheat, macaroni, dry	PP	0.02	6.71	0.13	4.98	0.10	2.12	0.04	1.90	0.04	2.89	0.06	4.12	0.08
–	Wheat, pastry, baked	PP	0.02	7.93	0.16	0.51	0.01	0.29	0.01	2.44	0.05	1.78	0.04	8.64	0.17
GC 0640	Barley, raw (incl. malt extract, incl. beer, incl. malt, excl. pot & pearled, excl. flour & grits)	RAC	0.23	35.17	8.09	49.45	11.37	8.86	2.04	34.31	7.89	44.87	10.32	15.82	3.64
–	Barley, pot & pearled	PP	0.01	0.57	0.01	2.56	0.03	0.33	0.00	0.56	0.01	0.36	0.00	NC	–
–	Barley, flour (white flour and wholemeal flour)	PP	0.053	0.08	0.00	0.03	0.00	0.01	0.00	0.05	0.00	0.68	0.04	0.05	0.00
GC 0641	Buckwheat, raw (incl. flour)	RAC	0.23	0.01	0.00	0.79	0.18	0.18	0.04	0.35	0.08	NC	–	NC	–
GC 0647	Oats, raw	RAC	0.23	NC	–	NC	–	0.01	0.00	0.01	0.00	NC	–	0.23	0.05
GC 0647	Oats, rolled (i.e. oatmeal dry)	PP	0.003	4.12	0.01	3.44	0.01	0.08	0.00	2.67	0.01	1.74	0.01	1.51	0.00
GC 2088	Subgroup of rice cereals	REP	0.03	20.96	0.63	16.04	0.48	339.67	10.19	75.51	2.27	16.86	0.51	86.13	2.58

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day								Intake as ug/person/day			
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
GC 0646	Millet, raw (incl. flour, incl. beer)	RAC	0.03	0.03	0.00	0.16	0.00	1.75	0.05	0.69	0.02	NC	–	NC	–
GC 0651	Sorghum, raw (incl. beer, excl. flour) (i.e. chicken corn, dari seed, durra, feterita)	RAC	0.515	NC	–	NC	–	0.01	0.01	1.15	0.59	NC	–	7.12	3.67
–	Sorghum, flour (white flour and wholemeal flour)	PP	0.45	NC	–	NC	–	1.29	0.58	0.01	0.00	NC	–	NC	–
GC 0645	Maize, raw (incl. glucose & dextrose & isoglucose, incl. beer, excl. flour, excl. oil, excl. germ, excl. starch)	RAC	0.03	0.10	0.00	9.93	0.30	1.40	0.04	10.26	0.31	0.33	0.01	0.04	0.00
CF 1255	Maize, flour (white flour and wholemeal flour)	PP	0.048	14.27	0.68	12.86	0.62	19.71	0.95	12.55	0.60	4.21	0.20	52.30	2.51
–	Maize, germ	PP	0.063	0.01	0.00	NC	–	NC	–	0.01	0.00	NC	–	0.01	0.00
–	Maize starch	PP	0.013	NC	–	NC	–	0.19	0.00	7.13	0.09	NC	–	NC	–
OR 0645	Maize oil	PP	0.057	0.90	0.05	0.47	0.03	0.15	0.01	3.01	0.17	1.86	0.11	0.36	0.02
–	Cereals, NES, raw (including processed): canagua, quihuicha, Job's tears and wild rice	RAC	0.03	6.17	0.19	3.01	0.09	0.76	0.02	3.30	0.10	3.38	0.10	15.84	0.48
GC 2090	Subgroup of sweet corns	RAC	0.03	11.43	0.34	3.71	0.11	0.74	0.02	13.63	0.41	3.07	0.09	1.50	0.05
TN 0085	Group of tree nuts, raw (incl. processed)	RAC	0.01	8.52	0.09	8.94	0.09	15.09	0.15	9.60	0.10	14.57	0.15	26.26	0.26
SO 0090	Subgroup of mustard seeds, raw (incl. flour, incl. oil)	RAC	0.0945	0.30	0.03	0.48	0.05	0.33	0.03	0.63	0.06	1.03	0.10	0.40	0.04
SO 0693	Linseed, raw (incl. oil)	RAC	0.0945	NC	–	NC	–	0.02	0.00	0.01	0.00	NC	–	NC	–
SO 0698	Poppy seed, raw (incl. oil)	RAC	0.0945	0.02	0.00	0.25	0.02	0.01	0.00	0.02	0.00	NC	–	NC	–

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
SO 0495	Rape seed, raw	RAC	0.0945	NC	–	NC	–	0.01	0.00	NC	–	NC	–	NC	–
OR 0495	Rape seed oil, edible	PP	0.035	12.52	0.44	7.63	0.27	3.00	0.11	6.01	0.21	NC	–	NC	–
SO 0700	Sesame seed, raw (incl. oil)	RAC	0.0945	0.61	0.06	0.09	0.01	1.53	0.14	0.85	0.08	0.08	0.01	0.14	0.01
SO 2091	Subgroup of sunflower seeds, raw (incl. processed)	RAC	0.09	23.43	2.11	29.34	2.64	1.24	0.11	14.00	1.26	6.48	0.58	6.91	0.62
OR 0702	Sunflower seed oil, edible	PP	0.005	9.50	0.05	11.37	0.06	0.49	0.00	5.15	0.03	2.63	0.01	2.80	0.01
SO 0691	Cotton seed, raw (incl. oil)	RAC	0.063	10.71	0.67	4.23	0.27	7.19	0.45	7.54	0.48	5.66	0.36	2.38	0.15
OR 0691	Cotton seed oil, edible	PP	0.0019	1.68	0.00	0.66	0.00	1.13	0.00	1.18	0.00	0.89	0.00	0.37	0.00
SO 0697	Peanuts, nutmeat, raw (incl. roasted, incl. butter, excl. oil)	RAC	0.03	3.26	0.10	2.22	0.07	5.38	0.16	4.85	0.15	1.54	0.05	1.82	0.05
OR 0697	Peanut oil, edible	PP	0.072	1.02	0.07	0.23	0.02	1.81	0.13	0.42	0.03	5.23	0.38	0.01	0.00
SB 0716	Coffee bean, raw (i.e. green coffee)	RAC	0.01	0.60	0.01	NC	–	0.62	0.01	1.71	0.02	NC	–	3.51	0.04
SM 0716	Coffee bean, roasted	PP	0.0077	7.02	0.05	9.75	0.08	0.02	0.00	5.09	0.04	13.38	0.10	0.77	0.01
–	Coffee bean, instant coffee (incl. essences and concentrates)	PP	0.0077	0.75	0.01	0.30	0.00	0.04	0.00	0.67	0.01	2.43	0.02	1.43	0.01
–	Coffee bean, substitutes, containing coffee	PP	0.01	0.08	0.00	0.09	0.00	0.02	0.00	0.02	0.00	0.07	0.00	0.15	0.00
HS 0444	Peppers, chili, dried	PP	1.1	0.11	0.12	0.21	0.23	0.36	0.40	0.21	0.23	0.25	0.28	0.15	0.17
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.02	112.02	2.24	120.71	2.41	63.46	1.27	88.99	1.78	96.24	1.92	41.02	0.82

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as ug/person/day								
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.02	28.01	0.56	30.18	0.60	15.86	0.32	22.25	0.44	24.06	0.48	10.25	0.21
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.02	6.44	0.13	15.51	0.31	3.79	0.08	8.29	0.17	18.44	0.37	8.00	0.16
MO 0105	Edible offal (mammalian), raw	RAC	0.09	15.17	1.37	5.19	0.47	6.30	0.57	6.78	0.61	3.32	0.30	3.17	0.29
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.02	388.92	7.78	335.88	6.72	49.15	0.98	331.25	6.63	468.56	9.37	245.45	4.91
PM 0110	Poultry meat, raw (incl. prepared)	RAC	0.02	73.76	1.48	53.86	1.08	23.98	0.48	87.12	1.74	53.38	1.07	84.45	1.69
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.02	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.71	0.01	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.02	0.33	0.01	0.72	0.01	0.27	0.01	0.35	0.01	0.80	0.02	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.02	25.84	0.52	29.53	0.59	28.05	0.56	33.19	0.66	36.44	0.73	8.89	0.18
	Total intake (ug/person) =				215.4		207.4		141.8		214.5		227.4		184.1
	Body weight per region (kg bw) =				60		60		55		60		60		60
	ADI (ug/person) =				6000		6000		5500		6000		6000		6000
	%ADI =				3.6%		3.5%		2.6%		3.6%		3.8%		3.1%
	Rounded %ADI =				4%		3%		3%		4%		4%		3%

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									Intake = daily intake: ug/person
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FC 0001	Group of citrus fruit, raw (incl. kumquat commodities)	RAC	0.21	20.93	4.40	2.35	0.49	30.71	6.45	0.15	0.03	4.45	0.93
JF 0001	Group of citrus fruit, juice	PP	0.004	0.11	0.00	0.29	0.00	13.55	0.05	0.14	0.00	0.33	0.00
–	Lemon, juice (single strength, incl. concentrated)	PP	0.004	0.01	0.00	0.01	0.00	0.16	0.00	0.01	0.00	NC	–
–	Subgroup of mandarins, juice	PP	0.004	0.01	0.00	NC	–	NC	–	NC	–	NC	–
JF 0004	Subgroup of oranges, juice (single strength, incl. concentrated)	PP	0.004	0.08	0.00	0.26	0.00	12.61	0.05	0.14	0.00	0.33	0.00
JF 0203	Grapefruits, juice (single strength, incl. concentrated)	PP	0.004	0.03	0.00	0.02	0.00	0.78	0.00	0.01	0.00	NC	–
FP 0009	Group of pomefruits, raw	RAC	0.06	2.39	0.14	10.93	0.66	69.47	4.17	1.59	0.10	19.56	1.17
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.004	0.03	0.00	0.10	0.00	7.19	0.03	0.03	0.00	NC	–
–	Apple cider (i.e. fermented apple juice)	PP	0.004	48.75	0.20	0.01	0.00	0.99	0.00	138.03	0.55	NC	–
FS 0013	Subgroup of cherries, raw	RAC	0.395	0.01	0.00	0.01	0.00	5.96	2.35	0.01	0.00	NC	–
FS 0014	Subgroup of plums, raw	RAC	0.15	0.07	0.01	0.01	0.00	15.56	2.33	0.01	0.00	NC	–
DF 0014	Plums, dried (prunes)	PP	0.34	0.01	0.00	0.01	0.00	0.37	0.13	0.01	0.00	NC	–
FS 2001	Subgroup of peaches, raw (incl. dried apricots)	RAC	0.21	0.02	0.00	0.01	0.00	10.76	2.26	0.01	0.00	NC	–
FB 2005	Subgroup of caneberries, raw	RAC	0.815	0.01	0.01	7.30	5.95	2.29	1.87	0.01	0.01	NC	–
FB 2006	Subgroup of bush berries, raw (including processed)	RAC	0.88	0.82	0.72	4.05	3.56	5.94	5.23	0.43	0.38	2.66	2.34
FB 0267	Elderberries, raw (incl. processed)	RAC	0.88	0.71	0.62	3.52	3.10	NC	–	0.38	0.33	2.32	2.04

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FB 0269	Grapes, raw (i.e. table grapes)	RAC	0.29	0.14	0.04	0.36	0.10	15.22	4.41	0.01	0.00	0.09	0.03
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.71	0.01	0.01	0.13	0.09	1.06	0.75	0.01	0.01	0.03	0.02
JF 0269	Grape juice (from wine grapes)	PP	0.017	0.01	0.00	0.01	0.00	0.41	0.01	0.01	0.00	NC	–
–	Grape must (from wine grapes)	PP	0.31	0.01	0.00	0.01	0.00	0.11	0.03	0.01	0.00	0.19	0.06
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.091	0.31	0.03	0.23	0.02	60.43	5.50	0.52	0.05	31.91	2.90
FB 0275	Strawberry, raw	RAC	0.185	0.01	0.00	0.01	0.00	3.35	0.62	0.01	0.00	0.01	0.00
FI 0345	Mango, raw (incl. canned mango, incl. mango juice)	RAC	0.01	12.25	0.12	6.83	0.07	0.76	0.01	0.01	0.00	20.12	0.20
FI 2540	Pitaya, raw (i.e. dragon fruit or pitahaya)	RAC	0.01	0.01	0.00	0.01	0.00	NC	–	0.01	0.00	0.04	0.00
VA 2031	Subgroup of bulb onions	RAC	0.07	9.83	0.69	22.30	1.56	34.69	2.43	9.65	0.68	2.39	0.17
VA 2032	Subgroup of green onions	RAC	0.36	1.45	0.52	1.50	0.54	1.42	0.51	0.01	0.00	6.30	2.27
VB 0042	Subgroup of flowerhead brassica, raw	RAC	0.39	0.02	0.01	0.02	0.01	4.86	1.90	0.01	0.00	NC	–
VB 2036	Subgroup of head brassicas, raw	RAC	0.065	5.31	0.35	4.16	0.27	52.05	3.38	0.01	0.00	NC	–
VB 2016	Subgroup of stem brassicas, raw	RAC	0.02	0.12	0.00	0.10	0.00	1.81	0.04	0.01	0.00	NC	–
VC 0045	Group of fruiting vegetables, cucurbits, raw	RAC	0.12	5.96	0.72	9.74	1.17	51.82	6.22	13.61	1.63	0.05	0.01
VO 0448	Tomato, raw	RAC	0.11	12.99	1.43	4.79	0.53	58.40	6.42	0.92	0.10	0.09	0.01
–	Tomato, canned (& peeled)	PP	0.005	0.07	0.00	0.08	0.00	2.42	0.01	0.07	0.00	NC	–

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									Intake = daily intake: ug/person
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.075	0.58	0.04	0.22	0.02	2.21	0.17	0.24	0.02	3.10	0.23
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.005	0.05	0.00	0.01	0.00	0.42	0.00	0.01	0.00	0.02	0.00
VO 0051	Subgroup of peppers, raw (Capsicum spp. only), excl. okra	RAC	0.11	4.72	0.52	4.83	0.53	16.30	1.79	0.01	0.00	NC	–
VO 0442	Okra, raw (i.e. lady's finger, gombo)	RAC	0.02	6.23	0.12	0.10	0.00	NC	–	NC	–	NC	–
VO 2046	Subgroup of eggplants	RAC	0.11	1.31	0.14	8.26	0.91	3.95	0.43	0.01	0.00	NC	–
VL 0483	Lettuce, leaf, raw	RAC	5.3	0.29	1.54	0.03	0.16	6.71	35.56	0.01	0.05	NC	–
VL 0054	Subgroup of leaves of brassicaceae, raw	RAC	0.02	3.58	0.07	2.64	0.05	NC	–	1.83	0.04	3.65	0.07
VL 2052	Subgroup of leaves of root and tuber vegetables	RAC	0.02	0.30	0.01	0.22	0.00	NC	–	0.20	0.00	0.41	0.01
VP 2060	Subgroup of beans with pods (all commodities within this group)	RAC	0.045	NC	–	NC	–	NC	–	NC	–	NC	–
014B	Peas with pods	–	0.12	–	–	–	–	–	–	–	–	–	–
VP 2062	Subgroup of succulent beans without pods (all commodities within this group)	RAC	0.033	0.37	0.01	3.14	0.10	4.88	0.16	0.01	0.00	NC	–
VP 2063	Subgroup of succulent peas without pods	RAC	0.031	0.21	0.01	0.02	0.00	5.51	0.17	0.02	0.00	NC	–
014E	Underground immature beans and peas	–	0.02	–	–	–	–	–	–	–	–	–	–
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.028	7.11	0.20	2.33	0.07	3.76	0.11	44.70	1.25	3.27	0.09
VD 0523	Broad bean, dry, raw (incl. horse-bean, field bean) (Vicia	RAC	0.028	3.70	0.10	0.03	0.00	0.17	0.00	0.01	0.00	NC	–

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
	faba)												
VD 0527	Cowpea, dry, raw (Vigna sinensis, Dolichos sinensis)	RAC	0.028	12.77	0.36	0.99	0.03	0.01	0.00	4.33	0.12	NC	–
VD 0541	Soya bean, dry, raw (Glycine soja)	RAC	0.028	2.76	0.08	0.07	0.00	0.33	0.01	3.16	0.09	NC	–
–	Soya paste (i.e. miso)	PP	0.004	NC	–	NC	–	NC	–	NC	–	NC	–
–	Soya curd (i.e. tofu)	PP	0.004	NC	–	NC	–	NC	–	NC	–	NC	–
OR 0541	Soya oil, refined	PP	0.005	2.32	0.01	2.54	0.01	18.70	0.09	2.51	0.01	6.29	0.03
–	Soya sauce	PP	0.002	0.01	0.00	0.13	0.00	0.17	0.00	0.01	0.00	0.56	0.00
–	Soya flour	PP	0.002	0.11	0.00	0.08	0.00	0.07	0.00	0.01	0.00	0.03	0.00
–	Beans (dry) NES: including inter alia lablab or hyacinth bean (Dolichos spp.); jack or sword bean (Canavalia spp.); winged bean (Psophocarpus tetragonolobus); guar bean (Cyamopsis tetragonoloba); velvet bean (Stizolobium spp.); yam bean (Pachyrrhizus erosus)	RAC	0.028	2.54	0.07	1.77	0.05	0.03	0.00	0.03	0.00	3.99	0.11
VD 2066	Subgroup of dry peas, raw	RAC	0.028	4.43	0.12	11.36	0.32	4.22	0.12	9.36	0.26	1.21	0.03
VR 2070	Subgroup of root vegetables, raw	RAC	0.08	31.84	2.55	23.38	1.87	68.28	5.46	17.52	1.40	71.01	5.68
–	Sugar beet, sugar	PP	0.004	0.56	0.00	0.24	0.00	NC	–	NC	–	5.13	0.02
VR 0573	Arrowroot, raw	RAC	0.03	13.83	0.41	18.24	0.55	0.01	0.00	0.05	0.00	19.60	0.59
VR 0463	Cassava raw (incl. starch, incl. tapioca, incl. flour) (i.e. manioc)	RAC	0.03	91.92	2.76	34.12	1.02	NC	–	259.92	7.80	45.48	1.36

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									Intake = daily intake: ug/person
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VR 0585	Jerusalem artichoke, raw (i.e. topinambur)	RAC	0.03	14.22	0.43	18.75	0.56	0.01	0.00	0.06	0.00	20.14	0.60
VR 0589	Potato, raw (incl. frozen, incl. tapioca, excl. flour, excl. starch)	RAC	0.03	23.72	0.71	12.61	0.38	211.06	6.33	101.89	3.06	8.53	0.26
–	Potato, flour	PP	0.014	0.05	0.00	0.20	0.00	0.52	0.01	0.54	0.01	0.01	0.00
–	Potato, starch	PP	0.014	0.01	0.00	0.01	0.00	NC	–	NC	–	NC	–
VR 0508	Sweet potato, raw (incl. dried)	RAC	0.03	28.83	0.86	61.55	1.85	0.15	0.00	221.94	6.66	NC	–
VR 0504	Tannia, raw (i.e. tanier, yautia)	RAC	0.03	NC	–	NC	–	0.01	0.00	NC	–	NC	–
VR 0505	Taro, raw (i.e. dasheen, eddoe)	RAC	0.03	6.71	0.20	31.91	0.96	NC	–	10.73	0.32	264.31	7.93
VR 0600	Yams, raw (incl. dried)	RAC	0.03	70.93	2.13	30.62	0.92	0.07	0.00	5.65	0.17	30.85	0.93
VS 2080	Subgroup of stems and petioles	RAC	4.4	5.33	23.45	3.85	16.94	5.80	25.52	3.60	15.84	7.20	31.68
GC 0648	Quinoa, raw	RAC	0.063	NC	–	NC	–	NC	–	NC	–	NC	–
GC 0650	Rye, raw (incl. flour)	RAC	0.063	0.03	0.00	0.01	0.00	13.95	0.88	0.01	0.00	0.88	0.06
GC 0653	Triticale, raw (incl. flour)	RAC	0.063	0.01	0.00	NC	–	NC	–	NC	–	NC	–
GC 0654	Wheat, raw (incl. bulgur, incl. fermented beverages, excl. germ, excl. wholemeal bread, excl. white flour products, excl. white bread)	RAC	0.063	0.01	0.00	NC	–	NC	–	NC	–	0.97	0.06
CF 1210	Wheat, germ	PP	0.091	0.04	0.00	0.01	0.00	0.01	0.00	0.01	0.00	NC	–
CP 1212	Wheat, wholemeal bread	PP	0.027	0.01	0.00	0.01	0.00	0.03	0.00	0.01	0.00	0.01	0.00

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									Intake = daily intake: ug/person
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
CP 1211	Wheat, white bread	PP	0.02	0.43	0.01	0.41	0.01	1.56	0.03	0.11	0.00	0.07	0.00
CF 1211	Wheat, white flour	PP	0.02	43.75	0.88	85.81	1.72	206.68	4.13	19.38	0.39	92.92	1.86
–	Wheat, starch	PP	0.002	0.01	0.00	0.02	0.00	NC	–	NC	–	NC	–
–	Wheat, gluten	PP	0.11	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.19	0.02
–	Wheat, macaroni, dry	PP	0.02	0.52	0.01	0.63	0.01	2.99	0.06	0.26	0.01	5.18	0.10
–	Wheat, pastry, baked	PP	0.02	0.51	0.01	0.51	0.01	4.36	0.09	0.67	0.01	5.32	0.11
GC 0640	Barley, raw (incl. malt extract, incl. beer, incl. malt, excl. pot & pearled, excl. flour & grits)	RAC	0.23	3.15	0.72	2.31	0.53	43.92	10.10	3.72	0.86	16.26	3.74
–	Barley, pot & pearled	PP	0.01	5.46	0.05	0.01	0.00	1.44	0.01	0.01	0.00	NC	–
–	Barley, flour (white flour and wholemeal flour)	PP	0.053	0.02	0.00	NC	–	0.32	0.02	0.01	0.00	NC	–
GC 0641	Buckwheat, raw (incl. flour)	RAC	0.23	0.04	0.01	2.82	0.65	0.01	0.00	0.01	0.00	NC	–
GC 0647	Oats, raw	RAC	0.23	0.01	0.00	0.02	0.00	NC	–	0.09	0.02	NC	–
GC 0647	Oats, rolled (i.e. oatmeal dry)	PP	0.003	0.20	0.00	0.03	0.00	1.54	0.00	0.01	0.00	NC	–
GC 2088	Subgroup of rice cereals	REP	0.03	52.55	1.58	286.02	8.58	18.64	0.56	19.67	0.59	75.09	2.25
GC 0646	Millet, raw (incl. flour, incl. beer)	RAC	0.03	61.13	1.83	0.78	0.02	NC	–	33.55	1.01	NC	–
GC 0651	Sorghum, raw (incl. beer, excl. flour) (i.e. chicken corn, dari seed, durra, feterita)	RAC	0.515	4.73	2.44	NC	–	NC	–	13.36	6.88	NC	–

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									Intake = daily intake: ug/person
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
–	Sorghum, flour (white flour and wholemeal flour)	PP	0.45	75.99	34.20	1.82	0.82	NC	–	19.82	8.92	NC	–
GC 0645	Maize, raw (incl. glucose & dextrose & isoglucose, incl. beer, excl. flour, excl. oil, excl. germ, excl. starch)	RAC	0.03	0.54	0.02	0.51	0.02	3.26	0.10	7.96	0.24	NC	–
CF 1255	Maize, flour (white flour and wholemeal flour)	PP	0.048	94.34	4.53	8.09	0.39	28.03	1.35	55.94	2.69	28.07	1.35
–	Maize, germ	PP	0.063	0.01	0.00	NC	–	NC	–	NC	–	NC	–
–	Maize starch	PP	0.013	0.02	0.00	0.01	0.00	NC	–	NC	–	NC	–
OR 0645	Maize oil	PP	0.057	0.33	0.02	0.07	0.00	0.81	0.05	0.01	0.00	NC	–
–	Cereals, NES, raw (including processed): canagua, quihuicha, Job's tears and wild rice	RAC	0.03	17.71	0.53	2.00	0.06	9.61	0.29	0.45	0.01	4.55	0.14
GC 2090	Subgroup of sweet corns	RAC	0.03	3.63	0.11	20.50	0.62	8.78	0.26	0.02	0.00	0.17	0.01
TN 0085	Group of tree nuts, raw (incl. processed)	RAC	0.01	4.39	0.04	135.53	1.36	6.11	0.06	0.72	0.01	317.74	3.18
SO 0090	Subgroup of mustard seeds, raw (incl. flour, incl. oil)	RAC	0.0945	0.04	0.00	0.19	0.02	0.32	0.03	0.06	0.01	0.01	0.00
SO 0693	Linseed, raw (incl. oil)	RAC	0.0945	0.07	0.01	NC	–	0.03	0.00	NC	–	NC	–
SO 0698	Poppy seed, raw (incl. oil)	RAC	0.0945	0.01	0.00	0.01	0.00	0.11	0.01	NC	–	NC	–
SO 0495	Rape seed, raw	RAC	0.0945	NC	–	0.01	0.00	NC	–	NC	–	NC	–
OR 0495	Rape seed oil, edible	PP	0.035	0.07	0.00	0.03	0.00	4.62	0.16	0.03	0.00	NC	–
SO 0700	Sesame seed, raw (incl. oil)	RAC	0.0945	2.34	0.22	0.66	0.06	0.26	0.02	9.84	0.93	NC	–

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									Intake = daily intake: ug/person
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
SO 2091	Subgroup of sunflower seeds, raw (incl. processed)	RAC	0.09	0.99	0.09	0.22	0.02	32.01	2.88	12.12	1.09	0.48	0.04
OR 0702	Sunflower seed oil, edible	PP	0.005	0.37	0.00	0.09	0.00	12.98	0.06	4.01	0.02	0.20	0.00
SO 0691	Cotton seed, raw (incl. oil)	RAC	0.063	8.14	0.51	0.32	0.02	2.84	0.18	2.69	0.17	0.97	0.06
OR 0691	Cotton seed oil, edible	PP	0.0019	1.28	0.00	0.05	0.00	0.45	0.00	0.42	0.00	0.15	0.00
SO 0697	Peanuts, nutmeat, raw (incl. roasted, incl. butter, excl. oil)	RAC	0.03	7.14	0.21	0.45	0.01	1.87	0.06	6.22	0.19	0.53	0.02
OR 0697	Peanut oil, edible	PP	0.072	5.02	0.36	0.05	0.00	0.17	0.01	0.29	0.02	NC	–
SB 0716	Coffee bean, raw (i.e. green coffee)	RAC	0.01	0.83	0.01	0.69	0.01	1.09	0.01	2.91	0.03	0.82	0.01
SM 0716	Coffee bean, roasted	PP	0.0077	0.02	0.00	0.41	0.00	7.50	0.06	0.01	0.00	0.06	0.00
–	Coffee bean, instant coffee (incl. essences and concentrates)	PP	0.0077	0.03	0.00	0.05	0.00	0.60	0.00	0.01	0.00	5.53	0.04
–	Coffee bean, substitutes, containing coffee	PP	0.01	0.01	0.00	0.03	0.00	0.13	0.00	0.01	0.00	NC	–
HS 0444	Peppers, chili, dried	PP	1.1	0.58	0.64	1.27	1.40	1.21	1.33	0.12	0.13	NC	–
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.02	23.34	0.47	40.71	0.81	97.15	1.94	18.06	0.36	57.71	1.15
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.02	5.84	0.12	10.18	0.20	24.29	0.49	4.52	0.09	14.43	0.29
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.02	1.05	0.02	1.14	0.02	18.69	0.37	0.94	0.02	3.12	0.06

PYDIFLUMETOFEN (309) International Estimated Daily Intake (IEDI) ADI = 0–0.1 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
MO 0105	Edible offal (mammalian), raw	RAC	0.09	4.64	0.42	1.97	0.18	10.01	0.90	3.27	0.29	3.98	0.36
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.02	108.75	2.18	70.31	1.41	436.11	8.72	61.55	1.23	79.09	1.58
PM 0110	Poultry meat, raw (incl. prepared)	RAC	0.02	3.92	0.08	12.03	0.24	57.07	1.14	5.03	0.10	55.56	1.11
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.02	NC	–	NC	–	0.32	0.01	NC	–	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.02	0.10	0.00	0.70	0.01	0.97	0.02	0.10	0.00	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.02	3.84	0.08	4.41	0.09	27.25	0.55	1.13	0.02	7.39	0.15
	Total intake (ug/person) =				99.4		64.8		170.1		67.3		79.5
	Body weight per region (kg bw) =				60		60		60		60		60
	ADI (ug/person) =				6000		6000		6000		6000		6000
	%ADI =				1.7%		1.1%		2.8%		1.1%		1.3%
	Rounded %ADI =				2%		1%		3%		1%		1%

SPINOSAD (203) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FC 0001	Group of citrus fruit, raw (incl. citrus fruit juice, incl. kumquat commodities)	RAC	0.01	34.91	0.35	16.51	0.17	17.23	0.17	104.48	1.04	35.57	0.36	98.49	0.98
JF 0004	Subgroup of oranges, juice (single strength, incl. concentrated)	PP	0.0072	1.27	0.01	2.20	0.02	0.09	0.00	11.81	0.09	0.46	0.00	1.69	0.01
FP 0226	Apple, raw (incl. cider, excl. juice)	RAC	0.0165	13.49	0.22	26.63	0.44	15.05	0.25	16.28	0.27	6.47	0.11	47.88	0.79
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.0013	0.32	0.00	3.07	0.00	0.07	0.00	5.00	0.01	0.29	0.00	5.57	0.01
FS 0012	Group of stone fruits, raw (incl. dried plums, incl. dried apricots)	RAC	0.0265	11.60	0.31	23.79	0.63	0.25	0.01	11.84	0.31	2.41	0.06	33.44	0.89
FB 0264	Blackberries, raw	RAC	0.14	0.35	0.05	0.11	0.02	0.01	0.00	0.02	0.00	0.01	0.00	1.23	0.17
FB 0266	Dewberries, incl. boysen- & loganberry, raw	RAC	0.14	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00
FB 0272	Raspberries, red, black, raw	RAC	0.14	0.07	0.01	0.93	0.13	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00
FB 0020	Blueberries, raw	RAC	0.11	0.01	0.00	0.03	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00
FB 0269	Grapes, raw (incl. must, incl. juice, excl. dried, excl. wine)	RAC	0.084	13.19	1.11	9.61	0.81	0.09	0.01	17.28	1.45	4.00	0.34	54.50	4.58
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.13	0.51	0.07	0.51	0.07	0.01	0.00	1.27	0.17	0.12	0.02	2.07	0.27
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.027	0.67	0.02	12.53	0.34	2.01	0.05	1.21	0.03	3.53	0.10	4.01	0.11
FB 0265	Cranberry, raw	RAC	0.01	0.02	0.00	0.01	0.00	NC	–	0.03	0.00	0.01	0.00	0.01	0.00
FI 0345	Mango, raw (incl. canned mango, incl. mango	RAC	0	10.48	0.00	0.01	0.00	7.24	0.00	6.87	0.00	19.98	0.00	6.25	0.00

SPINOSAD (203) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
	juice)														
FI 0341	Kiwifruit, raw	RAC	0.02	0.03	0.00	0.36	0.01	0.01	0.00	1.17	0.02	0.06	0.00	0.69	0.01
FI 0351	Passion fruit, raw	RAC	0.23	0.58	0.13	0.01	0.00	0.59	0.14	0.60	0.14	0.18	0.04	0.08	0.02
VA 2031	Subgroup of bulb onions	RAC	0.01	31.65	0.32	43.28	0.43	3.68	0.04	38.48	0.38	20.46	0.20	47.29	0.47
–	Onions, green, raw	RAC	0.2	2.45	0.49	1.49	0.30	1.02	0.20	2.60	0.52	0.60	0.12	2.03	0.41
VB 0040	Group of brassica vegetables (excl. brassica leafy vegetables), raw	RAC	0.27	6.43	1.74	40.26	10.87	0.80	0.22	9.94	2.68	12.07	3.26	17.73	4.79
VC 0045	Group of fruiting vegetables, cucurbits, raw	RAC	0.046	53.14	2.44	86.21	3.97	6.28	0.29	92.76	4.27	15.64	0.72	155.30	7.14
VO 0448	Tomato, raw (incl. canned, excl. juice, excl. paste)	RAC	0.03	42.04	1.26	76.13	2.28	10.69	0.32	84.59	2.54	24.92	0.75	203.27	6.10
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.059	2.34	0.14	1.33	0.08	1.57	0.09	4.24	0.25	0.34	0.02	2.83	0.17
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.0075	0.29	0.00	0.29	0.00	0.01	0.00	0.38	0.00	0.05	0.00	0.14	0.00
VO 0051	Subgroup of peppers, raw (incl. dried sweet peppers, excl. dried chili peppers), incl. okra	RAC	0.056	10.45	0.59	13.74	0.77	13.81	0.77	14.53	0.81	15.25	0.85	27.93	1.56
VL 0053	Group of leafy vegetables, raw	RAC	1.9	8.47	16.09	22.36	42.48	7.74	14.71	25.51	48.47	45.77	86.96	21.22	40.32
VP 0060	Group of legume vegetables, raw	RAC	0.041	7.73	0.32	1.53	0.06	0.51	0.02	2.95	0.12	5.08	0.21	12.86	0.53
VD 0541	Soya bean, dry, raw (incl. paste, incl. curd, incl. oil, incl. sauce)	RAC	0	72.79	0.00	59.05	0.00	20.55	0.00	74.20	0.00	61.12	0.00	73.24	0.00

SPINOSAD (203) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VR 0589	Potato, raw (incl. flour, incl. frozen, incl. starch, incl. tapioca)	RAC	0	59.74	0.00	316.14	0.00	9.78	0.00	60.26	0.00	54.12	0.00	119.82	0.00
VS 0624	Celery	RAC	0.97	2.14	2.08	3.79	3.68	2.35	2.28	5.69	5.52	0.02	0.02	2.75	2.67
GC 0080	Group of cereal grains, raw (incl. processed) (incl. sweet corn)	RAC	0.7	484.43	339.10	464.63	325.24	262.36	183.65	486.81	340.77	469.62	328.73	614.04	429.83
CP 1211	Wheat, white bread	PP	0.098	0.25	0.02	0.63	0.06	0.12	0.01	0.43	0.04	1.39	0.14	0.22	0.02
CF 1211	Wheat, white flour (incl. white flour products: starch, gluten, macaroni, pastry)	PP	0.18	301.24	54.22	268.64	48.36	30.21	5.44	222.51	40.05	134.73	24.25	343.12	61.76
CM 0649 (GC 0649)	Rice, husked, dry (incl. flour, incl. oil, incl. beverages, incl. starch, excl. polished)	REP	0.077	1.26	0.10	1.58	0.12	31.05	2.39	5.43	0.42	0.90	0.07	2.18	0.17
CM 1205	Rice polished, dry	PP	0.015	34.21	0.51	10.39	0.16	41.72	0.63	82.38	1.24	150.24	2.25	70.47	1.06
CF 1255	Maize, flour (white flour and wholemeal flour)	PP	0.13	22.72	2.95	35.61	4.63	87.27	11.35	34.92	4.54	46.71	6.07	49.12	6.39
GC 0447	Sweet corn on the cob, raw (incl. frozen kernels, incl. canned kernels)	RAC	0.01	0.14	0.00	0.94	0.01	5.70	0.06	2.61	0.03	1.94	0.02	0.22	0.00
TN 0085	Group of tree nuts, raw (incl. processed)	RAC	0.026	4.06	0.11	3.27	0.09	7.01	0.18	13.93	0.36	14.01	0.36	9.36	0.24
SO 0691	Cotton seed, raw (incl. oil)	RAC	0.01	20.53	0.21	9.80	0.10	6.42	0.06	4.73	0.05	7.14	0.07	18.68	0.19
OR 0691	Cotton seed oil, edible	PP	0.002	3.22	0.01	1.54	0.00	1.01	0.00	0.74	0.00	1.12	0.00	2.93	0.01
DT 1114	Tea, green or black, fermented and dried, (including concentrates)	RAC	0.325	2.28	0.74	1.98	0.64	0.46	0.15	2.43	0.79	1.29	0.42	3.04	0.99

SPINOSAD (203) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
MM 0810	Buffalo meat, raw – 80% as muscle	RAC	0.01	3.12	0.03	0.15	0.00	0.08	0.00	0.08	0.00	1.24	0.01	2.41	0.02
MM 0810	Buffalo meat, raw – 20% as fat	RAC	0.32	0.78	0.25	0.04	0.01	0.02	0.01	0.02	0.01	0.31	0.10	0.60	0.19
MM 0811	Camel meat, raw (including meat of other domestic camelids) – 80% as muscle	RAC	0.01	0.30	0.00	0.08	0.00	0.00	0.00	3.48	0.03	0.08	0.00	0.38	0.00
MM 0811	Camel meat, raw (including meat of other domestic camelids) – 20% as fat	RAC	0.32	0.08	0.02	0.02	0.01	0.00	0.00	0.87	0.28	0.02	0.01	0.10	0.03
MM 0812	Cattle meat, raw (incl. calf meat, incl. prepared meat)	RAC	0.078	14.05	1.10	35.15	2.74	8.04	0.63	22.64	1.77	20.19	1.57	16.40	1.28
MM 0814	Goat meat, raw (incl. kids' meat) – 80% as muscle	RAC	0.01	2.95	0.03	0.97	0.01	1.14	0.01	2.82	0.03	0.80	0.01	2.02	0.02
MM 0814	Goat meat, raw (incl. kids' meat) – 20% as fat	RAC	0.32	0.74	0.24	0.24	0.08	0.28	0.09	0.71	0.23	0.20	0.06	0.51	0.16
MM 0816	Horse meat raw, incl. meat of other equidae (asses, mules) – 80% as muscle	RAC	0.01	0.21	0.00	2.43	0.02	0.08	0.00	0.08	0.00	0.16	0.00	0.08	0.00
MM 0816	Horse meat raw, incl. meat of other equidae (asses, mules) –20% as fat	RAC	0.32	0.05	0.02	0.61	0.19	0.02	0.01	0.02	0.01	0.04	0.01	0.02	0.01
MM 0818	Pig meat, raw (incl. prepared meat) – 80% as muscle	RAC	0.01	0.14	0.00	21.30	0.21	4.44	0.04	2.22	0.02	6.71	0.07	3.07	0.03
MM 0818	Pig meat, raw (incl. prepared meat) –20% as fat	RAC	0.32	0.03	0.01	5.33	1.70	1.11	0.36	0.56	0.18	1.68	0.54	0.77	0.25
–	Rabbit meat, raw (including other domestic rodents' meat) – 80% as muscle	RAC	0.01	0.08	0.00	0.42	0.00	0.08	0.00	0.08	0.00	0.45	0.00	0.72	0.01

SPINOSAD (203) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
–	Rabbit meat, raw (including other domestic rodents' meat) – 20% as muscle	RAC	0.32	0.02	0.01	0.10	0.03	0.02	0.01	0.02	0.01	0.11	0.04	0.18	0.06
MM 0822	Sheep meat, raw (incl. lamb meat) – 80% as muscle	RAC	0.01	6.72	0.07	4.54	0.05	0.61	0.01	11.71	0.12	0.86	0.01	7.12	0.07
MM 0822	Sheep meat, raw (incl. lamb meat) – 20% as fat	RAC	0.32	1.68	0.54	1.14	0.36	0.15	0.05	2.93	0.94	0.22	0.07	1.78	0.57
–	Game meat, raw – 80% as muscle	RAC	0.01	0.24	0.00	0.08	0.00	4.06	0.04	0.08	0.00	0.08	0.00	0.11	0.00
–	Game meat, raw –20% as fat	RAC	0.32	0.06	0.02	0.02	0.01	1.02	0.33	0.02	0.01	0.02	0.01	0.03	0.01
MF 0810	Buffalo fat, raw	RAC	0.32	0.32	0.10	NC	–	NC	–	0.10	0.03	NC	–	0.10	0.03
MF 0811	Camel fat, raw (incl. fat of other camelids)	RAC	0.32	0.10	0.03	NC	–	NC	–	0.10	0.03	0.10	0.03	0.10	0.03
MF 0812	Cattle fat, raw (incl. rendered)	RAC	0.565	2.20	1.24	1.99	1.12	0.49	0.28	0.74	0.42	0.81	0.46	0.80	0.45
MF 0814	Goat fat, raw	RAC	0.32	0.19	0.06	0.10	0.03	0.10	0.03	0.10	0.03	0.10	0.03	0.10	0.03
MF 0818	Pig fat, raw (incl. rendered)	RAC	0.32	0.10	0.03	4.12	1.32	0.26	0.08	0.35	0.11	1.41	0.45	0.14	0.04
MF 0822	Sheep fat, raw	RAC	0.32	0.53	0.17	0.10	0.03	0.10	0.03	0.42	0.13	0.10	0.03	0.10	0.03
MO 0810	Buffalo edible offal, raw	RAC	0.5	0.43	0.22	NC	–	NC	–	0.10	0.05	0.36	0.18	0.48	0.24
MO 0811	Camel edible offal, raw (including edible offals of other camelids)	RAC	0.5	0.10	0.05	NC	–	NC	–	0.68	0.34	0.10	0.05	0.10	0.05
MO 0812	Cattle edible offal, raw	RAC	0.66	1.81	1.19	7.21	4.76	1.77	1.17	2.07	1.37	2.18	1.44	2.56	1.69
MO 0814	Goat edible offal, raw	RAC	0.5	1.06	0.53	0.10	0.05	0.26	0.13	0.71	0.36	0.16	0.08	0.38	0.19

SPINOSAD (203) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day								Intake as ug/person/day			
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
MO 0816	Horse edible offal, raw	RAC	0.5	0.10	0.05	0.10	0.05	0.10	0.05	NC	–	0.10	0.05	0.10	0.05
MO 0818	Pig edible offal, raw	RAC	0.5	0.10	0.05	1.67	0.84	0.80	0.40	0.32	0.16	0.94	0.47	0.18	0.09
MO 0822	Sheep edible offal, raw	RAC	0.5	1.43	0.72	0.70	0.35	0.12	0.06	1.70	0.85	0.20	0.10	1.39	0.70
ML 0810	Buffalo milk, raw or skimmed (incl. dairy products)	RAC	0.022	107.99	2.38	0.19	0.00	NC	–	0.10	0.00	51.71	1.14	11.74	0.26
ML 0811	Camel milk, raw	RAC	0.022	0.51	0.01	0.10	0.00	NC	–	9.19	0.20	0.10	0.00	NC	–
ML 0812	Cattle milk, raw or skimmed (incl. dairy products)	RAC	0.65	164.82	107.13	476.23	309.55	25.81	16.78	204.56	132.96	141.82	92.18	149.95	97.47
ML 0814	Goat milk, raw or skimmed (incl. dairy products)	RAC	0.022	8.28	0.18	2.98	0.07	0.88	0.02	18.03	0.40	6.33	0.14	7.20	0.16
ML 0822	Sheep milk, raw or skimmed (incl. dairy products)	RAC	0.022	7.90	0.17	6.48	0.14	0.24	0.01	7.25	0.16	0.10	0.00	11.64	0.26
–	Horse milk, raw, incl. milk of other equidae (suckmilk)	RAC	0.022	0.16	0.00	NC	–	NC	–	NC	–	NC	–	NC	–
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.01	13.17	0.13	26.78	0.27	7.24	0.07	116.71	1.17	22.54	0.23	32.09	0.32
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.05	1.46	0.07	2.98	0.15	0.80	0.04	12.97	0.65	2.50	0.13	3.57	0.18
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.05	0.10	0.01	0.10	0.01	NC	–	0.10	0.01	0.10	0.01	0.10	0.01
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.01	0.12	0.00	0.12	0.00	0.11	0.00	5.37	0.05	0.24	0.00	0.10	0.00
PE 0112	Eggs, raw (incl. dried)	RAC	0.01	7.84	0.08	23.08	0.23	2.88	0.03	14.89	0.15	9.81	0.10	14.83	0.15
	Total intake (ug/person) =				542.7		771.4		244.2		600.6		556.3		677.8

SPINOSAD (203) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as ug/person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
	Body weight per region (kg bw) =				60		60		60		60		60		60
	ADI (ug/person) =				1200		1200		1200		1200		1200		1200
	%ADI =				45.2%		64.3%		20.4%		50.1%		46.4%		56.5%
	Rounded %ADI =				50%		60%		20%		50%		50%		60%

SPINOSAD (203) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G07 diet	Intake as ug/person/day G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FC 0001	Group of citrus fruit, raw (incl. citrus fruit juice, incl. kumquat commodities)	RAC	0.01	114.42	1.14	62.91	0.63	26.97	0.27	96.72	0.97	96.22	0.96	563.19	5.63
JF 0004	Subgroup of oranges, juice (single strength, incl. concentrated)	PP	0.0072	33.31	0.24	1.78	0.01	0.28	0.00	18.97	0.14	14.01	0.10	13.36	0.10
FP 0226	Apple, raw (incl. cider, excl. juice)	RAC	0.0165	41.14	0.68	56.49	0.93	26.64	0.44	31.58	0.52	51.94	0.86	3.05	0.05
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.0013	14.88	0.02	11.98	0.02	0.15	0.00	9.98	0.01	30.32	0.04	3.47	0.00
FS 0012	Group of stone fruits, raw (incl. dried plums, incl. dried apricots)	RAC	0.0265	19.98	0.53	24.87	0.66	14.41	0.38	19.54	0.52	10.78	0.29	0.50	0.01

SPINOSAD (203) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day								Intake as ug/person/day			
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FB 0264	Blackberries, raw	RAC	0.14	0.09	0.01	0.52	0.07	0.14	0.02	0.24	0.03	NC	–	0.01	0.00
FB 0266	Dewberries, incl. boysen- & loganberry, raw	RAC	0.14	0.01	0.00	NC	–	0.01	0.00	0.01	0.00	NC	–	0.01	0.00
FB 0272	Raspberries, red, black, raw	RAC	0.14	0.47	0.07	0.91	0.13	0.01	0.00	0.99	0.14	1.14	0.16	NC	–
FB 0020	Blueberries, raw	RAC	0.11	0.04	0.00	0.23	0.03	0.01	0.00	0.83	0.09	0.33	0.04	NC	–
FB 0269	Grapes, raw (incl. must, incl. juice, excl. dried, excl. wine)	RAC	0.084	7.18	0.60	13.73	1.15	5.24	0.44	12.27	1.03	7.46	0.63	1.21	0.10
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.13	3.09	0.40	1.51	0.20	0.03	0.00	1.38	0.18	4.26	0.55	0.42	0.05
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.027	88.93	2.40	62.41	1.69	1.84	0.05	25.07	0.68	61.17	1.65	5.84	0.16
FB 0265	Cranberry, raw	RAC	0.01	0.06	0.00	0.01	0.00	0.01	0.00	1.22	0.01	0.11	0.00	NC	–
FI 0345	Mango, raw (incl. canned mango, incl. mango juice)	RAC	0	1.80	0.00	0.63	0.00	10.05	0.00	1.07	0.00	3.52	0.00	16.44	0.00
FI 0341	Kiwifruit, raw	RAC	0.02	2.46	0.05	3.62	0.07	0.04	0.00	1.48	0.03	7.43	0.15	0.03	0.00
FI 0351	Passion fruit, raw	RAC	0.23	0.01	0.00	0.01	0.00	NC	–	NC	–	0.02	0.00	NC	–
VA 2031	Subgroup of bulb onions	RAC	0.01	20.67	0.21	31.32	0.31	37.52	0.38	35.08	0.35	11.77	0.12	13.74	0.14
–	Onions, green, raw	RAC	0.2	1.55	0.31	0.74	0.15	1.05	0.21	3.74	0.75	0.94	0.19	6.45	1.29
VB 0040	Group of brassica vegetables (excl. brassica leafy vegetables), raw	RAC	0.27	20.71	5.59	39.81	10.75	25.06	6.77	37.93	10.24	18.12	4.89	16.74	4.52
VC 0045	Group of fruiting vegetables, cucurbits, raw	RAC	0.046	27.81	1.28	41.93	1.93	123.30	5.67	49.47	2.28	15.95	0.73	35.99	1.66

SPINOSAD (203) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
VO 0448	Tomato, raw (incl. canned, excl. juice, excl. paste)	RAC	0.03	43.88	1.32	55.41	1.66	35.38	1.06	74.88	2.25	26.50	0.80	9.51	0.29
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.059	4.96	0.29	3.20	0.19	0.15	0.01	1.61	0.09	6.88	0.41	0.52	0.03
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.0075	0.80	0.01	0.07	0.00	0.05	0.00	0.61	0.00	0.40	0.00	0.08	0.00
VO 0051	Subgroup of peppers, raw (incl. dried sweet peppers, excl. dried chili peppers), incl. okra	RAC	0.056	6.39	0.36	15.53	0.87	19.13	1.07	10.53	0.59	8.29	0.46	5.25	0.29
VL 0053	Group of leafy vegetables, raw	RAC	1.9	18.83	35.78	21.85	41.52	121.23	230.34	43.09	81.87	18.18	34.54	18.32	34.81
VP 0060	Group of legume vegetables, raw	RAC	0.041	18.21	0.75	8.91	0.37	7.22	0.30	10.04	0.41	23.22	0.95	0.17	0.01
VD 0541	Soya bean, dry, raw (incl. paste, incl. curd, incl. oil, incl. sauce)	RAC	0	106.33	0.00	117.78	0.00	42.12	0.00	195.70	0.00	222.52	0.00	80.47	0.00
VR 0589	Potato, raw (incl. flour, incl. frozen, incl. starch, incl. tapioca)	RAC	0	225.03	0.00	234.24	0.00	71.48	0.00	177.55	0.00	234.55	0.00	37.71	0.00
VS 0624	Celery	RAC	0.97	7.68	7.45	2.85	2.76	NC	–	3.34	3.24	16.83	16.33	4.04	3.92
GC 0080	Group of cereal grains, raw (incl. processed) (incl. sweet corn)	RAC	0.7	345.63	241.94	386.16	270.31	514.33	360.03	402.72	281.90	295.30	206.71	359.97	251.98
CP 1211	Wheat, white bread	PP	0.098	1.30	0.13	0.46	0.05	0.06	0.01	0.22	0.02	2.44	0.24	0.77	0.08
CF 1211	Wheat, white flour (incl. white flour products: starch, gluten, macaroni, pastry)	PP	0.18	198.08	35.65	193.03	34.75	106.24	19.12	185.09	33.32	168.67	30.36	131.59	23.69
CM 0649	Rice, husked, dry (incl. flour, incl. oil, incl.	REP	0.077	3.70	0.28	2.11	0.16	1.51	0.12	1.75	0.13	0.29	0.02	5.12	0.39

SPINOSAD (203) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
(GC 0649)	beverages, incl. starch, excl. polished)														
CM 1205	Rice polished, dry	PP	0.015	13.38	0.20	10.80	0.16	262.08	3.93	57.16	0.86	12.83	0.19	62.78	0.94
CF 1255	Maize, flour (white flour and wholemeal flour)	PP	0.13	14.27	1.86	12.86	1.67	19.71	2.56	12.55	1.63	4.21	0.55	52.30	6.80
GC 0447	Sweet corn on the cob, raw (incl. frozen kernels, incl. canned kernels)	RAC	0.01	11.43	0.11	3.71	0.04	0.74	0.01	13.63	0.14	3.07	0.03	1.50	0.02
TN 0085	Group of tree nuts, raw (incl. processed)	RAC	0.026	8.52	0.22	8.94	0.23	15.09	0.39	9.60	0.25	14.57	0.38	26.26	0.68
SO 0691	Cotton seed, raw (incl. oil)	RAC	0.01	10.71	0.11	4.23	0.04	7.19	0.07	7.54	0.08	5.66	0.06	2.38	0.02
OR 0691	Cotton seed oil, edible	PP	0.002	1.68	0.00	0.66	0.00	1.13	0.00	1.18	0.00	0.89	0.00	0.37	0.00
DT 1114	Tea, green or black, fermented and dried, (including concentrates)	RAC	0.325	2.91	0.95	1.73	0.56	1.14	0.37	1.85	0.60	2.29	0.74	0.74	0.24
MM 0810	Buffalo meat, raw – 80% as muscle	RAC	0.01	0.00	0.00	0.00	0.00	0.88	0.01	0.08	0.00	0.00	0.00	0.00	0.00
MM 0810	Buffalo meat, raw – 20% as fat	RAC	0.32	0.00	0.00	0.00	0.00	0.22	0.07	0.02	0.01	0.00	0.00	0.00	0.00
MM 0811	Camel meat, raw (including meat of other domestic camelids) – 80% as muscle	RAC	0.01	0.00	0.00	0.00	0.00	0.08	0.00	0.08	0.00	0.00	0.00	0.00	0.00
MM 0811	Camel meat, raw (including meat of other domestic camelids) – 20% as fat	RAC	0.32	0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.01	0.00	0.00	0.00	0.00
MM 0812	Cattle meat, raw (incl. calf meat, incl. prepared meat)	RAC	0.078	52.97	4.13	24.56	1.92	8.72	0.68	54.63	4.26	41.75	3.26	22.18	1.73
MM 0814	Goat meat, raw (incl. kids' meat) – 80% as muscle	RAC	0.01	0.10	0.00	0.19	0.00	1.98	0.02	0.11	0.00	0.08	0.00	0.35	0.00

SPINOSAD (203) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day								Intake as ug/person/day					
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake		
MM 0814	Goat meat, raw (incl. kids' meat) – 20% as fat	RAC	0.32	0.02	0.01	0.05	0.02	0.49	0.16	0.03	0.01	0.02	0.01	0.09	0.03		
MM 0816	Horse meat raw, incl. meat of other equidae (asses, mules) – 80% as muscle	RAC	0.01	0.78	0.01	0.14	0.00	0.44	0.00	0.46	0.00	1.53	0.02	0.00	0.00		
MM 0816	Horse meat raw, incl. meat of other equidae (asses, mules) –20% as fat	RAC	0.32	0.20	0.06	0.04	0.01	0.11	0.04	0.12	0.04	0.38	0.12	0.00	0.00		
MM 0818	Pig meat, raw (incl. prepared meat) – 80% as muscle	RAC	0.01	55.37	0.55	94.18	0.94	50.51	0.51	41.70	0.42	58.26	0.58	22.46	0.22		
MM 0818	Pig meat, raw (incl. prepared meat) –20% as fat	RAC	0.32	13.84	4.43	23.55	7.53	12.63	4.04	10.42	3.34	14.57	4.66	5.62	1.80		
–	Rabbit meat, raw (including other domestic rodents' meat) – 80% as muscle	RAC	0.01	0.88	0.01	1.66	0.02	0.62	0.01	0.74	0.01	0.15	0.00	0.00	0.00		
–	Rabbit meat, raw (including other domestic rodents' meat) – 20% as muscle	RAC	0.32	0.22	0.07	0.42	0.13	0.15	0.05	0.19	0.06	0.04	0.01	0.00	0.00		
MM 0822	Sheep meat, raw (incl. lamb meat) – 80% as muscle	RAC	0.01	12.23	0.12	3.91	0.04	2.02	0.02	1.67	0.02	2.78	0.03	0.46	0.00		
MM 0822	Sheep meat, raw (incl. lamb meat) – 20% as fat	RAC	0.32	3.06	0.98	0.98	0.31	0.51	0.16	0.42	0.13	0.69	0.22	0.11	0.04		
–	Game meat, raw – 80% as muscle	RAC	0.01	0.30	0.00	0.98	0.01	0.08	0.00	0.58	0.01	0.11	0.00	0.00	0.00		
–	Game meat, raw –20% as fat	RAC	0.32	0.07	0.02	0.24	0.08	0.02	0.01	0.15	0.05	0.03	0.01	0.00	0.00		
MF 0810	Buffalo fat, raw	RAC	0.32	NC	–	NC	–	0.10	0.03	NC	–	NC	–	NC	–		
MF 0811	Camel fat, raw (incl. fat of other camelids)	RAC	0.32	NC	–	NC	–	NC	–	0.10	0.03	NC	–	NC	–		
MF 0812	Cattle fat, raw (incl. rendered)	RAC	0.565	2.43	1.37	1.74	0.98	0.66	0.37	4.27	2.41	5.01	2.83	1.43	0.81		

SPINOSAD (203) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
MF 0814	Goat fat, raw	RAC	0.32	0.10	0.03	NC	–	0.10	0.03	0.10	0.03	NC	–	0.10	0.03
MF 0818	Pig fat, raw (incl. rendered)	RAC	0.32	4.00	1.28	13.78	4.41	3.08	0.99	4.02	1.29	13.43	4.30	6.55	2.10
MF 0822	Sheep fat, raw	RAC	0.32	0.10	0.03	NC	–	0.10	0.03	0.10	0.03	NC	–	0.10	0.03
MO 0810	Buffalo edible offal, raw	RAC	0.5	NC	–	NC	–	0.24	0.12	0.10	0.05	NC	–	NC	–
MO 0811	Camel edible offal, raw (including edible offals of other camelids)	RAC	0.5	NC	–	NC	–	NC	–	0.10	0.05	NC	–	NC	–
MO 0812	Cattle edible offal, raw	RAC	0.66	8.22	5.43	1.97	1.30	2.10	1.39	3.39	2.24	0.98	0.65	2.42	1.60
MO 0814	Goat edible offal, raw	RAC	0.5	0.10	0.05	0.10	0.05	0.45	0.23	0.10	0.05	0.10	0.05	0.10	0.05
MO 0816	Horse edible offal, raw	RAC	0.5	0.10	0.05	0.10	0.05	0.10	0.05	0.10	0.05	0.10	0.05	NC	–
MO 0818	Pig edible offal, raw	RAC	0.5	5.24	2.62	2.62	1.31	3.19	1.60	3.30	1.65	2.10	1.05	0.60	0.30
MO 0822	Sheep edible offal, raw	RAC	0.5	1.68	0.84	0.53	0.27	0.34	0.17	0.10	0.05	0.20	0.10	0.10	0.05
ML 0810	Buffalo milk, raw or skimmed (incl. dairy products)	RAC	0.022	NC	–	NC	–	4.44	0.10	0.10	0.00	NC	–	NC	–
ML 0811	Camel milk, raw	RAC	0.022	NC	–	NC	–	0.10	0.00	0.10	0.00	NC	–	NC	–
ML 0812	Cattle milk, raw or skimmed (incl. dairy products)	RAC	0.65	386.24	251.06	333.72	216.92	41.04	26.68	329.16	213.95	468.40	304.46	245.45	159.54
ML 0814	Goat milk, raw or skimmed (incl. dairy products)	RAC	0.022	1.78	0.04	1.17	0.03	2.62	0.06	1.53	0.03	NC	–	NC	–
ML 0822	Sheep milk, raw or skimmed (incl. dairy products)	RAC	0.022	0.89	0.02	0.99	0.02	1.03	0.02	0.48	0.01	0.16	0.00	NC	–
–	Horse milk, raw, incl. milk of other equidae	RAC	0.022	NC	–	NC	–	NC	–	NC	–	NC	–	NC	–

SPINOSAD (203) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G07 diet	Intake as ug/person/day G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
	(suckmilk)														
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.01	66.38	0.66	48.47	0.48	21.58	0.22	78.41	0.78	48.04	0.48	76.01	0.76
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.05	7.38	0.37	5.39	0.27	2.40	0.12	8.71	0.44	5.34	0.27	8.45	0.42
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.05	0.10	0.01	0.10	0.01	NC	–	0.10	0.01	0.71	0.04	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.01	0.33	0.00	0.72	0.01	0.27	0.00	0.35	0.00	0.80	0.01	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.01	25.84	0.26	29.53	0.30	28.05	0.28	33.19	0.33	36.44	0.36	8.89	0.09
	Total intake (ug/person) =				615.5		611.5		672.3		657.2		627.7		507.5
	Body weight per region (kg bw) =				60		60		55		60		60		60
	ADI (ug/person) =				1200		1200		1100		1200		1200		1200
	%ADI =				51.3%		51.0%		61.1%		54.8%		52.3%		42.3%
	Rounded %ADI =				50%		50%		60%		50%		50%		40%

SPINOSAD (203) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day				Intake = daily intake: ug/person					
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FC 0001	Group of citrus fruit, raw (incl. citrus fruit juice, incl. kumquat commodities)	RAC	0.01	21.16	0.21	2.94	0.03	58.52	0.59	0.44	0.00	5.13	0.05
JF 0004	Subgroup of oranges, juice (single strength, incl. concentrated)	PP	0.0072	0.08	0.00	0.26	0.00	12.61	0.09	0.14	0.00	0.33	0.00
FP 0226	Apple, raw (incl. cider, excl. juice)	RAC	0.0165	66.67	1.10	2.06	0.03	55.83	0.92	188.29	3.11	1.38	0.02
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.0013	0.03	0.00	0.10	0.00	7.19	0.01	0.03	0.00	NC	–
FS 0012	Group of stone fruits, raw (incl. dried plums, incl. dried apricots)	RAC	0.0265	0.09	0.00	0.03	0.00	33.36	0.88	0.01	0.00	NC	–
FB 0264	Blackberries, raw	RAC	0.14	0.01	0.00	7.29	1.02	0.25	0.04	0.01	0.00	NC	–
FB 0266	Dewberries, incl. boysen- & loganberry, raw	RAC	0.14	0.01	0.00	0.01	0.00	NC	–	0.01	0.00	NC	–
FB 0272	Raspberries, red, black, raw	RAC	0.14	0.01	0.00	0.01	0.00	2.04	0.29	0.01	0.00	NC	–
FB 0020	Blueberries, raw	RAC	0.11	NC	–	NC	–	0.20	0.02	NC	–	NC	–
FB 0269	Grapes, raw (incl. must, incl. juice, excl. dried, excl. wine)	RAC	0.084	0.15	0.01	0.38	0.03	15.84	1.33	0.01	0.00	0.28	0.02
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.13	0.01	0.00	0.13	0.02	1.06	0.14	0.01	0.00	0.03	0.00
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.027	0.31	0.01	0.23	0.01	60.43	1.63	0.52	0.01	31.91	0.86
FB 0265	Cranberry, raw	RAC	0.01	NC	–	NC	–	0.03	0.00	NC	–	NC	–
FI 0345	Mango, raw (incl. canned mango, incl. mango juice)	RAC	0	12.25	0.00	6.83	0.00	0.76	0.00	0.01	0.00	20.12	0.00

SPINOSAD (203) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day				Intake = daily intake: ug/person					
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FI 0341	Kiwifruit, raw	RAC	0.02	0.01	0.00	0.01	0.00	2.00	0.04	0.01	0.00	NC	–
FI 0351	Passion fruit, raw	RAC	0.23	0.12	0.03	0.10	0.02	0.01	0.00	0.18	0.04	3.81	0.88
VA 2031	Subgroup of bulb onions	RAC	0.01	9.83	0.10	22.30	0.22	34.69	0.35	9.65	0.10	2.39	0.02
–	Onions, green, raw	RAC	0.2	1.43	0.29	0.05	0.01	0.20	0.04	NC	–	6.30	1.26
VB 0040	Group of brassica vegetables (excl. brassica leafy vegetables), raw	RAC	0.27	5.46	1.47	4.28	1.16	58.72	15.85	0.02	0.01	NC	–
VC 0045	Group of fruiting vegetables, cucurbits, raw	RAC	0.046	5.96	0.27	9.74	0.45	51.82	2.38	13.61	0.63	0.05	0.00
VO 0448	Tomato, raw (incl. canned, excl. juice, excl. paste)	RAC	0.03	13.10	0.39	4.90	0.15	62.16	1.86	1.04	0.03	0.09	0.00
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.059	0.58	0.03	0.22	0.01	2.21	0.13	0.24	0.01	3.10	0.18
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.0075	0.05	0.00	0.01	0.00	0.42	0.00	0.01	0.00	0.02	0.00
VO 0051	Subgroup of peppers, raw (incl. dried sweet peppers, excl. dried chili peppers), incl. okra	RAC	0.056	15.20	0.85	14.23	0.80	25.14	1.41	0.91	0.05	NC	–
VL 0053	Group of leafy vegetables, raw	RAC	1.9	12.42	23.60	8.75	16.63	7.53	14.31	7.07	13.43	14.11	26.81
VP 0060	Group of legume vegetables, raw	RAC	0.041	0.58	0.02	3.16	0.13	10.38	0.43	0.04	0.00	NC	–
VD 0541	Soya bean, dry, raw (incl. paste, incl. curd, incl. oil, incl. sauce)	RAC	0	15.80	0.00	14.29	0.00	104.36	0.00	17.11	0.00	35.20	0.00
VR 0589	Potato, raw (incl. flour, incl. frozen, incl. starch, incl. tapioca)	RAC	0	23.96	0.00	13.56	0.00	213.41	0.00	104.35	0.00	8.56	0.00

SPINOSAD (203) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									
				Intake = daily intake: ug/person									
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VS 0624	Celery	RAC	0.97	3.66	3.55	2.65	2.57	4.84	4.69	2.47	2.40	4.94	4.79
GC 0080	Group of cereal grains, raw (incl. processed) (incl. sweet corn)	RAC	0.7	407.04	284.93	417.04	291.93	402.79	281.95	195.30	136.71	263.26	184.28
CP 1211	Wheat, white bread	PP	0.098	0.43	0.04	0.41	0.04	1.56	0.15	0.11	0.01	0.07	0.01
CF 1211	Wheat, white flour (incl. white flour products: starch, gluten, macaroni, pastry)	PP	0.18	44.78	8.06	86.96	15.65	214.05	38.53	20.31	3.66	103.60	18.65
CM 0649 (GC 0649)	Rice, husked, dry (incl. flour, incl. oil, incl. beverages, incl. starch, excl. polished)	REP	0.077	13.58	1.05	4.29	0.33	2.17	0.17	0.01	0.00	8.84	0.68
CM 1205	Rice polished, dry	PP	0.015	30.20	0.45	218.34	3.28	12.77	0.19	15.24	0.23	51.35	0.77
CF 1255	Maize, flour (white flour and wholemeal flour)	PP	0.13	94.34	12.26	8.09	1.05	28.03	3.64	55.94	7.27	28.07	3.65
GC 0447	Sweet corn on the cob, raw (incl. frozen kernels, incl. canned kernels)	RAC	0.01	3.63	0.04	20.50	0.21	8.78	0.09	0.02	0.00	0.17	0.00
TN 0085	Group of tree nuts, raw (incl. processed)	RAC	0.026	4.39	0.11	135.53	3.52	6.11	0.16	0.72	0.02	317.74	8.26
SO 0691	Cotton seed, raw (incl. oil)	RAC	0.01	8.14	0.08	0.32	0.00	2.84	0.03	2.69	0.03	0.97	0.01
OR 0691	Cotton seed oil, edible	PP	0.002	1.28	0.00	0.05	0.00	0.45	0.00	0.42	0.00	0.15	0.00
DT 1114	Tea, green or black, fermented and dried, (including concentrates)	RAC	0.325	0.53	0.17	5.25	1.71	0.86	0.28	0.56	0.18	0.88	0.29
MM 0810	Buffalo meat, raw – 80% as muscle	RAC	0.01	0.00	0.00	0.27	0.00	0.08	0.00	0.00	0.00	0.00	0.00
MM 0810	Buffalo meat, raw – 20% as fat	RAC	0.32	0.00	0.00	0.07	0.02	0.02	0.01	0.00	0.00	0.00	0.00

SPINOSAD (203) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
MM 0811	Camel meat, raw (including meat of other domestic camelids) – 80% as muscle	RAC	0.01	0.76	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MM 0811	Camel meat, raw (including meat of other domestic camelids) – 20% as fat	RAC	0.32	0.19	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MM 0812	Cattle meat, raw (incl. calf meat, incl. prepared meat)	RAC	0.078	15.34	1.20	4.73	0.37	29.58	2.31	9.56	0.75	16.86	1.32
MM 0814	Goat meat, raw (incl. kids' meat) – 80% as muscle	RAC	0.01	3.84	0.04	0.22	0.00	0.22	0.00	1.86	0.02	0.13	0.00
MM 0814	Goat meat, raw (incl. kids' meat) – 20% as fat	RAC	0.32	0.96	0.31	0.05	0.02	0.05	0.02	0.47	0.15	0.03	0.01
MM 0816	Horse meat raw, incl. meat of other equidae (asses, mules) – 80% as muscle	RAC	0.01	0.15	0.00	0.08	0.00	0.35	0.00	0.00	0.00	0.00	0.00
MM 0816	Horse meat raw, incl. meat of other equidae (asses, mules) –20% as fat	RAC	0.32	0.04	0.01	0.02	0.01	0.09	0.03	0.00	0.00	0.00	0.00
MM 0818	Pig meat, raw (incl. prepared meat) – 80% as muscle	RAC	0.01	1.82	0.02	6.55	0.07	67.68	0.68	6.01	0.06	27.34	0.27
MM 0818	Pig meat, raw (incl. prepared meat) –20% as fat	RAC	0.32	0.46	0.15	1.64	0.52	16.92	5.41	1.50	0.48	6.84	2.19
–	Rabbit meat, raw (including other domestic rodents' meat) – 80% as muscle	RAC	0.01	0.08	0.00	0.00	0.00	1.20	0.01	0.22	0.00	0.00	0.00
–	Rabbit meat, raw (including other domestic rodents' meat) – 20% as muscle	RAC	0.32	0.02	0.01	0.00	0.00	0.30	0.10	0.05	0.02	0.00	0.00
MM 0822	Sheep meat, raw (incl. lamb meat) – 80% as muscle	RAC	0.01	2.82	0.03	2.73	0.03	3.45	0.03	0.52	0.01	16.74	0.17
MM 0822	Sheep meat, raw (incl. lamb meat) – 20% as fat	RAC	0.32	0.71	0.23	0.68	0.22	0.86	0.28	0.13	0.04	4.19	1.34

SPINOSAD (203) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
–	Game meat, raw – 80% as muscle	RAC	0.01	1.65	0.02	27.15	0.27	0.59	0.01	1.81	0.02	0.00	0.00
–	Game meat, raw –20% as fat	RAC	0.32	0.41	0.13	6.79	2.17	0.15	0.05	0.45	0.14	0.00	0.00
MF 0810	Buffalo fat, raw	RAC	0.32	NC	–	0.10	0.03	NC	–	NC	–	NC	–
MF 0811	Camel fat, raw (incl. fat of other camelids)	RAC	0.32	0.10	0.03	NC	–	NC	–	NC	–	NC	–
MF 0812	Cattle fat, raw (incl. rendered)	RAC	0.565	0.65	0.37	0.50	0.28	2.44	1.38	0.24	0.14	0.98	0.55
MF 0814	Goat fat, raw	RAC	0.32	0.13	0.04	0.10	0.03	NC	–	0.10	0.03	0.10	0.03
MF 0818	Pig fat, raw (incl. rendered)	RAC	0.32	0.15	0.05	0.61	0.20	16.25	5.20	0.60	0.19	2.13	0.68
MF 0822	Sheep fat, raw	RAC	0.32	0.11	0.04	0.10	0.03	0.10	0.03	0.10	0.03	0.10	0.03
MO 0810	Buffalo edible offal, raw	RAC	0.5	NC	–	0.10	0.05	NC	–	NC	–	NC	–
MO 0811	Camel edible offal, raw (including edible offals of other camelids)	RAC	0.5	0.13	0.07	NC	–	NC	–	NC	–	NC	–
MO 0812	Cattle edible offal, raw	RAC	0.66	2.66	1.76	1.08	0.71	3.29	2.17	1.85	1.22	1.68	1.11
MO 0814	Goat edible offal, raw	RAC	0.5	0.93	0.47	0.10	0.05	0.10	0.05	0.67	0.34	0.10	0.05
MO 0816	Horse edible offal, raw	RAC	0.5	0.10	0.05	NC	–	0.10	0.05	NC	–	NC	–
MO 0818	Pig edible offal, raw	RAC	0.5	0.16	0.08	0.73	0.37	6.15	3.08	0.61	0.31	2.24	1.12
MO 0822	Sheep edible offal, raw	RAC	0.5	0.75	0.38	0.10	0.05	0.55	0.28	0.14	0.07	0.10	0.05
ML 0810	Buffalo milk, raw or skimmed (incl. dairy products)	RAC	0.022	NC	–	2.42	0.05	NC	–	NC	–	NC	–

SPINOSAD (203) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
ML 0811	Camel milk, raw	RAC	0.022	6.10	0.13	NC	–	NC	–	NC	–	NC	–
ML 0812	Cattle milk, raw or skimmed (incl. dairy products)	RAC	0.65	84.32	54.81	67.43	43.83	420.83	273.54	59.87	38.92	79.09	51.41
ML 0814	Goat milk, raw or skimmed (incl. dairy products)	RAC	0.022	12.02	0.26	0.46	0.01	0.90	0.02	1.54	0.03	NC	–
ML 0822	Sheep milk, raw or skimmed (incl. dairy products)	RAC	0.022	6.31	0.14	NC	–	14.37	0.32	0.14	0.00	NC	–
–	Horse milk, raw, incl. milk of other equidae (suckmilk)	RAC	0.022	NC	–	NC	–	NC	–	NC	–	NC	–
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.01	3.53	0.04	10.83	0.11	51.36	0.51	4.53	0.05	50.00	0.50
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.05	0.39	0.02	1.20	0.06	5.71	0.29	0.50	0.03	5.56	0.28
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.05	NC	–	NC	–	0.32	0.02	NC	–	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.01	0.10	0.00	0.70	0.01	0.97	0.01	0.10	0.00	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.01	3.84	0.04	4.41	0.04	27.25	0.27	1.13	0.01	7.39	0.07
	Total intake (ug/person) =				400.1		390.6		668.8		211.0		312.7
	Body weight per region (kg bw) =				60		60		60		60		60
	ADI (ug/person) =				1200		1200		1200		1200		1200
	%ADI =				33.3%		32.6%		55.7%		17.6%		26.1%
	Rounded %ADI =				30%		30%		60%		20%		30%

TEBUCONAZOLE (189) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FC 0003	Subgroup of mandarins, raw (incl. mandarin juice)	RAC	0.05	6.18	0.31	3.66	0.18	0.25	0.01	6.82	0.34	3.49	0.17	19.38	0.97
FC 0004	Subgroup of oranges, sweet, sour, raw (incl. orange juice)	RAC	0.05	23.26	1.16	9.71	0.49	12.09	0.60	62.02	3.10	22.09	1.10	59.91	3.00
FP 0226	Apple, raw	RAC	0.275	13.39	3.68	26.46	7.28	0.52	0.14	16.07	4.42	6.37	1.75	47.79	13.14
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.063	0.32	0.02	3.07	0.19	0.07	0.00	5.00	0.32	0.29	0.02	5.57	0.35
FP 0230	Pear, raw	RAC	0.275	2.16	0.59	6.24	1.72	0.05	0.01	4.07	1.12	1.16	0.32	5.34	1.47
FS 0013	Subgroup of cherries, raw	RAC	0.86	0.92	0.79	9.15	7.87	0.01	0.01	0.61	0.52	0.06	0.05	6.64	5.71
FS 0014	Subgroup of plums, raw	RAC	0.08	2.40	0.19	8.60	0.69	0.06	0.00	2.52	0.20	0.58	0.05	4.16	0.33
DF 0014	Plums, dried (prunes)	PP	0.232	0.09	0.02	0.06	0.01	0.01	0.00	0.18	0.04	0.04	0.01	0.06	0.01
FS 2001	Subgroup of peaches, raw (incl. dried apricots)	RAC	0.46	8.01	3.68	5.87	2.70	0.18	0.08	8.19	3.77	1.64	0.75	22.46	10.33
FB 0267	Elderberries, raw (incl. processed)	RAC	0.345	0.44	0.15	0.27	0.09	0.34	0.12	1.41	0.49	NC	–	0.87	0.30
FB 0269	Grapes, raw (i.e. table grapes)	RAC	0.72	12.68	9.13	9.12	6.57	0.03	0.02	16.88	12.15	3.70	2.66	54.42	39.18
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.86	0.51	0.44	0.51	0.44	0.01	0.01	1.27	1.09	0.12	0.10	2.07	1.78
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.2	0.67	0.13	12.53	2.51	2.01	0.40	1.21	0.24	3.53	0.71	4.01	0.80
FT 0305	Table olives, raw (incl. preserved)	RAC	0	0.70	0.00	0.32	0.00	0.01	0.00	1.53	0.00	0.17	0.00	1.85	0.00
FI 0327	Banana, raw (incl. plantains) (incl. dried)	RAC	0.07	5.23	0.37	6.94	0.49	99.45	6.96	32.47	2.27	48.30	3.38	24.70	1.73

TEBUCONAZOLE (189) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day								Intake as ug/person/day			
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FI 0345	Mango, raw (incl. canned mango, incl. mango juice)	RAC	0.05	10.48	0.52	0.01	0.00	7.24	0.36	6.87	0.34	19.98	1.00	6.25	0.31
FI 0350	Papaya, raw	RAC	0.18	0.35	0.06	0.01	0.00	3.05	0.55	0.80	0.14	7.28	1.31	1.00	0.18
FI 0351	Passion fruit, raw	RAC	0.1	0.58	0.06	0.01	0.00	0.59	0.06	0.60	0.06	0.18	0.02	0.08	0.01
VA 2031	Subgroup of bulb onions	RAC	0.055	31.65	1.74	43.28	2.38	3.68	0.20	38.48	2.12	20.46	1.13	47.29	2.60
VA 0381	Garlic, raw	RAC	0.02	2.29	0.05	5.78	0.12	0.11	0.00	3.69	0.07	1.65	0.03	3.91	0.08
VA 0384	Leek, raw	RAC	0.195	0.18	0.04	1.59	0.31	0.03	0.01	0.28	0.05	0.01	0.00	3.21	0.63
–	Onions, green, raw	RAC	0.1	2.45	0.25	1.49	0.15	1.02	0.10	2.60	0.26	0.60	0.06	2.03	0.20
VB 0400	Broccoli, raw	RAC	0.015	0.88	0.01	0.17	0.00	0.01	0.00	1.25	0.02	3.00	0.05	1.09	0.02
VB 0404	Cauliflower, raw	RAC	0.05	1.65	0.08	0.32	0.02	0.01	0.00	2.33	0.12	4.79	0.24	2.03	0.10
VB 0402	Brussels sprouts, raw	RAC	0.095	0.63	0.06	6.41	0.61	0.13	0.01	1.03	0.10	NC	–	2.35	0.22
VB 0041	Cabbages, head, raw	RAC	0.05	2.73	0.14	27.92	1.40	0.55	0.03	4.47	0.22	4.27	0.21	10.25	0.51
VC 0424	Cucumber, raw	RAC	0.05	8.01	0.40	30.66	1.53	1.45	0.07	19.84	0.99	0.27	0.01	34.92	1.75
VC 0431	Squash, summer (courgette, marrow, zucchetti, zucchini), raw	RAC	0.05	0.78	0.04	2.06	0.10	0.30	0.02	1.61	0.08	2.25	0.11	2.36	0.12
VC 0046	Melons, except watermelon, raw (cantaloupe)	RAC	0.02	8.90	0.18	8.64	0.17	0.80	0.02	17.90	0.36	2.80	0.06	29.17	0.58
VO 0448	Tomato, raw	RAC	0.15	41.73	6.26	75.65	11.35	10.66	1.60	82.87	12.43	24.75	3.71	200.93	30.14
–	Tomato, paste (i.e. concentrated tomato	PP	0.48	2.34	1.12	1.33	0.64	1.57	0.75	4.24	2.04	0.34	0.16	2.83	1.36

TEBUCONAZOLE (189) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
	sauce/puree)														
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.033	0.29	0.01	0.29	0.01	0.01	0.00	0.38	0.01	0.05	0.00	0.14	0.00
VO 0445	Peppers, sweet, raw	RAC	0.185	1.43	0.26	2.61	0.48	1.05	0.19	2.01	0.37	2.59	0.48	6.24	1.15
VO 0440	Eggplant, raw (i.e. aubergine)	RAC	0.04	5.58	0.22	4.31	0.17	0.89	0.04	9.31	0.37	13.64	0.55	20.12	0.80
VL 0483	Lettuce, leaf, raw	RAC	0.98	0.53	0.52	0.36	0.35	0.16	0.16	6.21	6.09	1.90	1.86	6.05	5.93
VP 2060	Subgroup of beans with pods (all commodities within this group)	RAC	0.315	0.68	0.21	NC	–	NC	–	0.39	0.12	0.22	0.07	0.49	0.15
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.05	2.39	0.12	1.61	0.08	10.47	0.52	1.84	0.09	12.90	0.65	7.44	0.37
VD 0541	Soya bean, dry, raw (incl. paste, incl. curd, incl. oil, incl. sauce)	RAC	0.02	72.79	1.46	59.05	1.18	20.55	0.41	74.20	1.48	61.12	1.22	73.24	1.46
OR 0541	Soya oil, refined	PP	0.001	12.99	0.01	10.43	0.01	3.63	0.00	13.10	0.01	10.70	0.01	13.10	0.01
VR 0577	Carrots, raw	RAC	0.11	9.51	1.05	30.78	3.39	0.37	0.04	8.75	0.96	2.80	0.31	6.10	0.67
VS 0621	Asparagus, raw	RAC	0.02	0.01	0.00	0.01	0.00	0.01	0.00	0.03	0.00	0.07	0.00	0.21	0.00
VS 0620	Artichoke globe, raw	RAC	0.145	0.69	0.10	0.01	0.00	0.01	0.00	0.32	0.05	0.26	0.04	1.21	0.18
GC 0650	Rye, raw (incl. flour)	RAC	0.05	0.13	0.01	19.38	0.97	0.10	0.01	0.12	0.01	0.03	0.00	2.15	0.11
GC 0653	Triticale, raw (incl. flour)	RAC	0.05	NC	–	NC	–	NC	–	0.01	0.00	0.39	0.02	NC	–
GC 0654	Wheat, raw (incl. bulgur, incl. fermented beverages, incl. germ, incl. wholemeal bread, incl. white flour	RAC	0.05	381.15	19.06	341.55	17.08	38.35	1.92	281.89	14.09	172.83	8.64	434.07	21.70

TEBUCONAZOLE (189) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
	products, incl. white bread)														
GC 0640	Barley, raw	RAC	0.085	2.49	0.21	NC	–	0.02	0.00	0.03	0.00	0.18	0.02	0.38	0.03
–	Barley beer	PP	0.002	4.87	0.01	93.78	0.19	24.28	0.05	12.76	0.03	39.28	0.08	18.15	0.04
GC 0647	Oats, raw	RAC	0.085	0.01	0.00	NC	–	0.01	0.00	0.45	0.04	0.01	0.00	0.01	0.00
CM 0649 (GC 0649)	Rice, husked, dry (incl. polished, incl. flour, incl. starch, incl. oil, incl. beverages)	REP	0.275	45.40	12.49	14.99	4.12	84.88	23.34	111.73	30.73	194.75	53.56	93.12	25.61
GC 0447	Sweet corn on the cob, raw (i.e. kernels plus cob without husks)	RAC	0.06	0.08	0.00	0.09	0.01	5.67	0.34	0.05	0.00	1.77	0.11	NC	–
TN 0085	Group of tree nuts, raw (incl. processed)	RAC	0	4.06	0.00	3.27	0.00	7.01	0.00	13.93	0.00	14.01	0.00	9.36	0.00
SO 0495	Rape seed, raw	RAC	0.1	0.02	0.00	NC	–	NC	–	0.01	0.00	0.75	0.08	0.01	0.00
OR 0495	Rape seed oil, edible	PP	0.11	0.35	0.04	0.44	0.05	0.19	0.02	0.97	0.11	3.28	0.36	0.77	0.08
SO 2091	Subgroup of sunflower seeds, raw	RAC	0.04	0.09	0.00	0.33	0.01	0.09	0.00	0.24	0.01	0.02	0.00	0.01	0.00
SO 0691	Cotton seed, raw (incl. oil)	RAC	0.05	20.53	1.03	9.80	0.49	6.42	0.32	4.73	0.24	7.14	0.36	18.68	0.93
OR 0691	Cotton seed oil, edible	PP	0	3.22	0.00	1.54	0.00	1.01	0.00	0.74	0.00	1.12	0.00	2.93	0.00
SO 0697	Peanuts, nutmeat, raw (incl. roasted, incl. oil, incl. butter)	RAC	0.035	1.30	0.05	1.23	0.04	12.62	0.44	2.87	0.10	6.59	0.23	2.67	0.09
SB 0716	Coffee bean, raw (i.e. green coffee)	RAC	0.04	0.96	0.04	0.16	0.01	0.91	0.04	0.27	0.01	1.37	0.05	0.46	0.02
SM 0716	Coffee bean, roasted	PP	0.08	0.19	0.02	0.91	0.07	0.16	0.01	2.50	0.20	0.39	0.03	0.40	0.03

TEBUCONAZOLE (189) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
–	Coffee bean, instant coffee (incl. essences and concentrates)	PP	0.032	0.07	0.00	0.94	0.03	0.07	0.00	0.70	0.02	0.07	0.00	0.29	0.01
HS 0780	Cumin, seed	RAC	0.22	0.08	0.02	0.01	0.00	0.01	0.00	0.19	0.04	0.04	0.01	0.05	0.01
HS 0444	Peppers, chili, dried	PP	1.85	0.42	0.78	0.53	0.98	0.84	1.55	0.50	0.93	0.95	1.76	0.37	0.68
DH 1100	Hops, dry	RAC	9.65	0.01	0.10	0.04	0.39	0.01	0.10	0.01	0.10	NC	–	0.01	0.10
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat)	RAC	0	31.20	0.00	72.44	0.00	20.88	0.00	47.98	0.00	33.08	0.00	36.25	0.00
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0	3.29	0.00	6.14	0.00	0.82	0.00	1.57	0.00	2.23	0.00	1.07	0.00
MO 0105	Edible offal (mammalian), raw	RAC	0.06	4.79	0.29	9.68	0.58	2.97	0.18	5.49	0.33	3.84	0.23	5.03	0.30
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0	289.65	0.00	485.88	0.00	26.92	0.00	239.03	0.00	199.91	0.00	180.53	0.00
PM 0110	Poultry meat, raw (incl. prepared)	RAC	0	14.63	0.00	29.76	0.00	8.04	0.00	129.68	0.00	25.04	0.00	35.66	0.00
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.10	0.00	0.10	0.00
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.05	0.12	0.01	0.12	0.01	0.11	0.01	5.37	0.27	0.24	0.01	0.10	0.01
PE 0112	Eggs, raw (incl. dried)	RAC	0	7.84	0.00	23.08	0.00	2.88	0.00	14.89	0.00	9.81	0.00	14.83	0.00
	Total intake (ug/person) =				69.8		80.7		41.9		106.3		89.9		178.4
	Body weight per region (kg bw) =				60		60		60		60		60		60
	ADI (ug/person) =				1800		1800		1800		1800		1800		1800

TEBUCONAZOLE (189) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
	%ADI =				3.9%		4.5%		2.3%		5.9%		5.0%		9.9%
	Rounded %ADI =				4%		4%		2%		6%		5%		10%

TEBUCONAZOLE (189) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FC 0003	Subgroup of mandarins, raw (incl. mandarin juice)	RAC	0.05	12.42	0.62	14.99	0.75	16.08	0.80	10.78	0.54	9.94	0.50	NC	–
FC 0004	Subgroup of oranges, sweet, sour, raw (incl. orange juice)	RAC	0.05	83.66	4.18	27.64	1.38	7.37	0.37	67.80	3.39	43.97	2.20	187.74	9.39
FP 0226	Apple, raw	RAC	0.275	27.44	7.55	49.21	13.53	21.57	5.93	31.09	8.55	51.60	14.19	1.77	0.49
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.063	14.88	0.94	11.98	0.75	0.15	0.01	9.98	0.63	30.32	1.91	3.47	0.22
FP 0230	Pear, raw	RAC	0.275	8.79	2.42	8.44	2.32	12.37	3.40	9.60	2.64	10.27	2.82	0.23	0.06
FS 0013	Subgroup of cherries, raw	RAC	0.86	1.40	1.20	4.21	3.62	0.04	0.03	2.93	2.52	1.50	1.29	NC	–
FS 0014	Subgroup of plums, raw	RAC	0.08	3.75	0.30	3.33	0.27	5.94	0.48	2.64	0.21	2.50	0.20	0.06	0.00
DF 0014	Plums, dried (prunes)	PP	0.232	0.61	0.14	0.35	0.08	0.05	0.01	0.35	0.08	0.49	0.11	0.13	0.03

TEBUCONAZOLE (189) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day								Intake as ug/person/day			
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FS 2001	Subgroup of peaches, raw (incl. dried apricots)	RAC	0.46	13.03	5.99	16.29	7.49	8.29	3.81	12.95	5.96	5.35	2.46	0.04	0.02
FB 0267	Elderberries, raw (incl. processed)	RAC	0.345	8.20	2.83	0.14	0.05	NC	–	NC	–	NC	–	1.87	0.65
FB 0269	Grapes, raw (i.e. table grapes)	RAC	0.72	6.33	4.56	11.22	8.08	5.21	3.75	9.38	6.75	4.55	3.28	0.78	0.56
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.86	3.09	2.66	1.51	1.30	0.03	0.03	1.38	1.19	4.26	3.66	0.42	0.36
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.2	88.93	17.79	62.41	12.48	1.84	0.37	25.07	5.01	61.17	12.23	5.84	1.17
FT 0305	Table olives, raw (incl. preserved)	RAC	0	2.00	0.00	2.48	0.00	0.01	0.00	1.21	0.00	1.64	0.00	0.27	0.00
FI 0327	Banana, raw (incl. plantains) (incl. dried)	RAC	0.07	25.76	1.80	23.65	1.66	23.83	1.67	24.37	1.71	19.43	1.36	101.55	7.11
FI 0345	Mango, raw (incl. canned mango, incl. mango juice)	RAC	0.05	1.80	0.09	0.63	0.03	10.05	0.50	1.07	0.05	3.52	0.18	16.44	0.82
FI 0350	Papaya, raw	RAC	0.18	0.31	0.06	0.18	0.03	1.50	0.27	0.51	0.09	0.54	0.10	1.08	0.19
FI 0351	Passion fruit, raw	RAC	0.1	0.01	0.00	0.01	0.00	NC	–	NC	–	0.02	0.00	NC	–
VA 2031	Subgroup of bulb onions	RAC	0.055	20.67	1.14	31.32	1.72	37.52	2.06	35.08	1.93	11.77	0.65	13.74	0.76
VA 0381	Garlic, raw	RAC	0.02	0.98	0.02	1.49	0.03	12.88	0.26	3.74	0.07	2.05	0.04	1.14	0.02
VA 0384	Leek, raw	RAC	0.195	4.01	0.78	4.41	0.86	0.72	0.14	0.54	0.11	16.41	3.20	0.03	0.01
–	Onions, green, raw	RAC	0.1	1.55	0.16	0.74	0.07	1.05	0.11	3.74	0.37	0.94	0.09	6.45	0.65
VB 0400	Broccoli, raw	RAC	0.015	4.24	0.06	1.76	0.03	NC	–	0.51	0.01	3.79	0.06	0.26	0.00
VB 0404	Cauliflower, raw	RAC	0.05	5.27	0.26	5.01	0.25	NC	–	2.70	0.14	5.57	0.28	0.49	0.02

TEBUCONAZOLE (189) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day								Intake as ug/person/day			
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
VB 0402	Brussels sprouts, raw	RAC	0.095	2.24	0.21	2.67	0.25	6.23	0.59	0.32	0.03	4.19	0.40	2.58	0.25
VB 0041	Cabbages, head, raw	RAC	0.05	8.97	0.45	27.12	1.36	1.44	0.07	24.96	1.25	4.55	0.23	11.23	0.56
VC 0424	Cucumber, raw	RAC	0.05	6.72	0.34	11.03	0.55	32.10	1.61	15.10	0.76	4.05	0.20	9.57	0.48
VC 0431	Squash, summer (courgette, marrow, zucchetti, zucchini), raw	RAC	0.05	NC	–	NC	–	5.48	0.27	NC	–	NC	–	1.03	0.05
VC 0046	Melons, except watermelon, raw (cantaloupe)	RAC	0.02	9.20	0.18	11.95	0.24	14.63	0.29	8.99	0.18	7.86	0.16	2.46	0.05
VO 0448	Tomato, raw	RAC	0.15	32.13	4.82	51.27	7.69	34.92	5.24	73.37	11.01	15.15	2.27	8.88	1.33
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.48	4.96	2.38	3.20	1.54	0.15	0.07	1.61	0.77	6.88	3.30	0.52	0.25
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.033	0.80	0.03	0.07	0.00	0.05	0.00	0.61	0.02	0.40	0.01	0.08	0.00
VO 0445	Peppers, sweet, raw	RAC	0.185	NC	–	NC	–	8.25	1.53	3.03	0.56	NC	–	0.91	0.17
VO 0440	Eggplant, raw (i.e. aubergine)	RAC	0.04	1.01	0.04	1.69	0.07	21.37	0.85	3.00	0.12	1.40	0.06	NC	–
VL 0483	Lettuce, leaf, raw	RAC	0.98	14.50	14.21	11.76	11.52	13.14	12.88	19.50	19.11	4.81	4.71	2.23	2.19
VP 2060	Subgroup of beans with pods (all commodities within this group)	RAC	0.315	5.07	1.60	0.83	0.26	0.17	0.05	3.70	1.17	NC	–	NC	–
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.05	1.51	0.08	1.50	0.08	1.90	0.10	5.11	0.26	1.36	0.07	23.43	1.17
VD 0541	Soya bean, dry, raw (incl. paste, incl. curd, incl. oil, incl. sauce)	RAC	0.02	106.33	2.13	117.78	2.36	42.12	0.84	195.70	3.91	222.52	4.45	80.47	1.61

TEBUCONAZOLE (189) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day								Intake as ug/person/day			
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
OR 0541	Soya oil, refined	PP	0.001	19.06	0.02	21.06	0.02	5.94	0.01	33.78	0.03	40.05	0.04	13.39	0.01
VR 0577	Carrots, raw	RAC	0.11	26.26	2.89	27.13	2.98	10.07	1.11	16.49	1.81	44.69	4.92	8.75	0.96
VS 0621	Asparagus, raw	RAC	0.02	0.84	0.02	2.08	0.04	7.11	0.14	1.01	0.02	1.69	0.03	0.04	0.00
VS 0620	Artichoke globe, raw	RAC	0.145	0.98	0.14	3.65	0.53	0.07	0.01	1.67	0.24	0.26	0.04	NC	–
GC 0650	Rye, raw (incl. flour)	RAC	0.05	3.21	0.16	35.38	1.77	0.21	0.01	6.50	0.33	1.49	0.07	NC	–
GC 0653	Triticale, raw (incl. flour)	RAC	0.05	0.01	0.00	0.17	0.01	0.29	0.01	0.01	0.00	NC	–	NC	–
GC 0654	Wheat, raw (incl. bulgur, incl. fermented beverages, incl. germ, incl. wholemeal bread, incl. white flour products, incl. white bread)	RAC	0.05	253.07	12.65	244.73	12.24	134.44	6.72	235.10	11.76	216.39	10.82	167.40	8.37
GC 0640	Barley, raw	RAC	0.085	0.01	0.00	NC	–	0.03	0.00	1.36	0.12	NC	–	NC	–
–	Barley beer	PP	0.002	180.21	0.36	259.46	0.52	45.91	0.09	172.36	0.34	234.42	0.47	65.30	0.13
GC 0647	Oats, raw	RAC	0.085	NC	–	NC	–	0.01	0.00	0.01	0.00	NC	–	0.23	0.02
CM 0649 (GC 0649)	Rice, husked, dry (incl. polished, incl. flour, incl. starch, incl. oil, incl. beverages)	REP	0.275	20.96	5.76	16.04	4.41	339.67	93.41	75.51	20.77	16.86	4.64	86.13	23.69
GC 0447	Sweet corn on the cob, raw (i.e. kernels plus cob without husks)	RAC	0.06	4.94	0.30	0.30	0.02	0.58	0.03	5.33	0.32	0.07	0.00	NC	–
TN 0085	Group of tree nuts, raw (incl. processed)	RAC	0	8.52	0.00	8.94	0.00	15.09	0.00	9.60	0.00	14.57	0.00	26.26	0.00
SO 0495	Rape seed, raw	RAC	0.1	NC	–	NC	–	0.01	0.00	NC	–	NC	–	NC	–

TEBUCONAZOLE (189) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
OR 0495	Rape seed oil, edible	PP	0.11	12.52	1.38	7.63	0.84	3.00	0.33	6.01	0.66	NC	–	NC	–
SO 2091	Subgroup of sunflower seeds, raw	RAC	0.04	0.01	0.00	1.32	0.05	0.03	0.00	1.18	0.05	NC	–	0.02	0.00
SO 0691	Cotton seed, raw (incl. oil)	RAC	0.05	10.71	0.54	4.23	0.21	7.19	0.36	7.54	0.38	5.66	0.28	2.38	0.12
OR 0691	Cotton seed oil, edible	PP	0	1.68	0.00	0.66	0.00	1.13	0.00	1.18	0.00	0.89	0.00	0.37	0.00
SO 0697	Peanuts, nutmeat, raw (incl. roasted, incl. oil, incl. butter)	RAC	0.035	5.63	0.20	2.75	0.10	9.58	0.34	5.82	0.20	13.71	0.48	1.84	0.06
SB 0716	Coffee bean, raw (i.e. green coffee)	RAC	0.04	0.60	0.02	NC	–	0.62	0.02	1.71	0.07	NC	–	3.51	0.14
SM 0716	Coffee bean, roasted	PP	0.08	7.02	0.56	9.75	0.78	0.02	0.00	5.09	0.41	13.38	1.07	0.77	0.06
–	Coffee bean, instant coffee (incl. essences and concentrates)	PP	0.032	0.75	0.02	0.30	0.01	0.04	0.00	0.67	0.02	2.43	0.08	1.43	0.05
HS 0780	Cumin, seed	RAC	0.22	0.11	0.02	0.04	0.01	NC	–	0.02	0.00	0.06	0.01	0.01	0.00
HS 0444	Peppers, chili, dried	PP	1.85	0.11	0.20	0.21	0.39	0.36	0.67	0.21	0.39	0.25	0.46	0.15	0.28
DH 1100	Hops, dry	RAC	9.65	NC	–	NC	–	0.02	0.19	0.02	0.19	NC	–	NC	–
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat)	RAC	0	140.03	0.00	150.89	0.00	79.32	0.00	111.24	0.00	120.30	0.00	51.27	0.00
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0	6.44	0.00	15.51	0.00	3.79	0.00	8.29	0.00	18.44	0.00	8.00	0.00
MO 0105	Edible offal (mammalian), raw	RAC	0.06	15.17	0.91	5.19	0.31	6.30	0.38	6.78	0.41	3.32	0.20	3.17	0.19

TEBUCONAZOLE (189) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0	388.92	0.00	335.88	0.00	49.15	0.00	331.25	0.00	468.56	0.00	245.45	0.00
PM 0110	Poultry meat, raw (incl. prepared)	RAC	0	73.76	0.00	53.86	0.00	23.98	0.00	87.12	0.00	53.38	0.00	84.45	0.00
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.71	0.00	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.05	0.33	0.02	0.72	0.04	0.27	0.01	0.35	0.02	0.80	0.04	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0	25.84	0.00	29.53	0.00	28.05	0.00	33.19	0.00	36.44	0.00	8.89	0.00
	Total intake (ug/person) =				108.2		108.0		152.3		119.6		90.3		64.7
	Body weight per region (kg bw) =				60		60		55		60		60		60
	ADI (ug/person) =				1800		1800		1650		1800		1800		1800
	%ADI =				6.0%		6.0%		9.2%		6.6%		5.0%		3.6%
	Rounded %ADI =				6%		6%		9%		7%		5%		4%

TEBUCONAZOLE (189) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FC 0003	Subgroup of mandarins, raw (incl. mandarin juice)	RAC	0.05	0.16	0.01	0.27	0.01	9.06	0.45	0.01	0.00	0.02	0.00

TEBUCONAZOLE (189) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FC 0004	Subgroup of oranges, sweet, sour, raw (incl. orange juice)	RAC	0.05	1.34	0.07	1.65	0.08	40.03	2.00	0.33	0.02	1.76	0.09
FP 0226	Apple, raw	RAC	0.275	0.21	0.06	2.05	0.56	54.48	14.98	0.10	0.03	1.38	0.38
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.063	0.03	0.00	0.10	0.01	7.19	0.45	0.03	0.00	NC	–
FP 0230	Pear, raw	RAC	0.275	0.07	0.02	0.14	0.04	9.45	2.60	0.01	0.00	0.14	0.04
FS 0013	Subgroup of cherries, raw	RAC	0.86	0.01	0.01	0.01	0.01	5.96	5.13	0.01	0.01	NC	–
FS 0014	Subgroup of plums, raw	RAC	0.08	0.07	0.01	0.01	0.00	15.56	1.24	0.01	0.00	NC	–
DF 0014	Plums, dried (prunes)	PP	0.232	0.01	0.00	0.01	0.00	0.37	0.09	0.01	0.00	NC	–
FS 2001	Subgroup of peaches, raw (incl. dried apricots)	RAC	0.46	0.02	0.01	0.01	0.00	10.76	4.95	0.01	0.00	NC	–
FB 0267	Elderberries, raw (incl. processed)	RAC	0.345	0.71	0.24	3.52	1.21	NC	–	0.38	0.13	2.32	0.80
FB 0269	Grapes, raw (i.e. table grapes)	RAC	0.72	0.14	0.10	0.36	0.26	15.22	10.96	0.01	0.01	0.09	0.06
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.86	0.01	0.01	0.13	0.11	1.06	0.91	0.01	0.01	0.03	0.03
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.2	0.31	0.06	0.23	0.05	60.43	12.09	0.52	0.10	31.91	6.38
FT 0305	Table olives, raw (incl. preserved)	RAC	0	0.01	0.00	0.01	0.00	1.75	0.00	0.01	0.00	0.24	0.00
FI 0327	Banana, raw (incl. plantains) (incl. dried)	RAC	0.07	44.80	3.14	118.17	8.27	25.25	1.77	454.49	31.81	310.23	21.72
FI 0345	Mango, raw (incl. canned mango, incl. mango juice)	RAC	0.05	12.25	0.61	6.83	0.34	0.76	0.04	0.01	0.00	20.12	1.01

TEBUCONAZOLE (189) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FI 0350	Papaya, raw	RAC	0.18	6.47	1.16	0.25	0.05	0.19	0.03	0.01	0.00	26.42	4.76
FI 0351	Passion fruit, raw	RAC	0.1	0.12	0.01	0.10	0.01	0.01	0.00	0.18	0.02	3.81	0.38
VA 2031	Subgroup of bulb onions	RAC	0.055	9.83	0.54	22.30	1.23	34.69	1.91	9.65	0.53	2.39	0.13
VA 0381	Garlic, raw	RAC	0.02	0.82	0.02	2.06	0.04	3.79	0.08	0.03	0.00	0.29	0.01
VA 0384	Leek, raw	RAC	0.195	0.02	0.00	1.44	0.28	1.22	0.24	0.01	0.00	NC	–
–	Onions, green, raw	RAC	0.1	1.43	0.14	0.05	0.01	0.20	0.02	NC	–	6.30	0.63
VB 0400	Broccoli, raw	RAC	0.015	0.01	0.00	0.01	0.00	2.13	0.03	0.01	0.00	NC	–
VB 0404	Cauliflower, raw	RAC	0.05	0.01	0.00	0.01	0.00	2.73	0.14	0.01	0.00	NC	–
VB 0402	Brussels sprouts, raw	RAC	0.095	0.88	0.08	0.69	0.07	2.89	0.27	0.01	0.00	NC	–
VB 0041	Cabbages, head, raw	RAC	0.05	3.82	0.19	2.99	0.15	49.16	2.46	0.01	0.00	NC	–
VC 0424	Cucumber, raw	RAC	0.05	0.68	0.03	1.81	0.09	10.40	0.52	0.01	0.00	0.04	0.00
VC 0431	Squash, summer (courgette, marrow, zucchetti, zucchini), raw	RAC	0.05	0.09	0.00	1.01	0.05	NC	–	1.91	0.10	NC	–
VC 0046	Melons, except watermelon, raw (cantaloupe)	RAC	0.02	0.19	0.00	0.10	0.00	4.98	0.10	0.01	0.00	NC	–
VO 0448	Tomato, raw	RAC	0.15	12.99	1.95	4.79	0.72	58.40	8.76	0.92	0.14	0.09	0.01
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.48	0.58	0.28	0.22	0.11	2.21	1.06	0.24	0.12	3.10	1.49
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.033	0.05	0.00	0.01	0.00	0.42	0.01	0.01	0.00	0.02	0.00

TEBUCONAZOLE (189) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VO 0445	Peppers, sweet, raw	RAC	0.185	1.24	0.23	1.27	0.23	NC	–	0.01	0.00	NC	–
VO 0440	Eggplant, raw (i.e. aubergine)	RAC	0.04	1.31	0.05	8.26	0.33	3.95	0.16	0.01	0.00	NC	–
VL 0483	Lettuce, leaf, raw	RAC	0.98	0.29	0.28	0.03	0.03	6.71	6.58	0.01	0.01	NC	–
VP 2060	Subgroup of beans with pods (all commodities within this group)	RAC	0.315	NC	–	NC	–	NC	–	NC	–	NC	–
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.05	7.11	0.36	2.33	0.12	3.76	0.19	44.70	2.24	3.27	0.16
VD 0541	Soya bean, dry, raw (incl. paste, incl. curd, incl. oil, incl. sauce)	RAC	0.02	15.80	0.32	14.29	0.29	104.36	2.09	17.11	0.34	35.20	0.70
OR 0541	Soya oil, refined	PP	0.001	2.32	0.00	2.54	0.00	18.70	0.02	2.51	0.00	6.29	0.01
VR 0577	Carrots, raw	RAC	0.11	2.07	0.23	3.00	0.33	25.29	2.78	0.05	0.01	NC	–
VS 0621	Asparagus, raw	RAC	0.02	0.01	0.00	0.01	0.00	0.17	0.00	0.01	0.00	NC	–
VS 0620	Artichoke globe, raw	RAC	0.145	0.01	0.00	NC	–	0.08	0.01	0.01	0.00	NC	–
GC 0650	Rye, raw (incl. flour)	RAC	0.05	0.03	0.00	0.01	0.00	13.95	0.70	0.01	0.00	0.88	0.04
GC 0653	Triticale, raw (incl. flour)	RAC	0.05	0.01	0.00	NC	–	NC	–	NC	–	NC	–
GC 0654	Wheat, raw (incl. bulgur, incl. fermented beverages, incl. germ, incl. wholemeal bread, incl. white flour products, incl. white bread)	RAC	0.05	57.20	2.86	110.47	5.52	272.62	13.63	25.82	1.29	132.04	6.60
GC 0640	Barley, raw	RAC	0.085	0.01	0.00	0.01	0.00	0.16	0.01	NC	–	NC	–

TEBUCONAZOLE (189) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day				Intake = daily intake: ug/person					
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
–	Barley beer	PP	0.002	16.25	0.03	11.36	0.02	225.21	0.45	19.49	0.04	52.17	0.10
GC 0647	Oats, raw	RAC	0.085	0.01	0.00	0.02	0.00	NC	–	0.09	0.01	NC	–
CM 0649 (GC 0649)	Rice, husked, dry (incl. polished, incl. flour, incl. starch, incl. oil, incl. beverages)	REP	0.275	52.55	14.45	286.02	78.66	18.64	5.13	19.67	5.41	75.09	20.65
GC 0447	Sweet corn on the cob, raw (i.e. kernels plus cob without husks)	RAC	0.06	3.61	0.22	20.45	1.23	6.00	0.36	0.01	0.00	0.17	0.01
TN 0085	Group of tree nuts, raw (incl. processed)	RAC	0	4.39	0.00	135.53	0.00	6.11	0.00	0.72	0.00	317.74	0.00
SO 0495	Rape seed, raw	RAC	0.1	NC	–	0.01	0.00	NC	–	NC	–	NC	–
OR 0495	Rape seed oil, edible	PP	0.11	0.07	0.01	0.03	0.00	4.62	0.51	0.03	0.00	NC	–
SO 2091	Subgroup of sunflower seeds, raw	RAC	0.04	0.06	0.00	0.01	0.00	0.03	0.00	2.23	0.09	NC	–
SO 0691	Cotton seed, raw (incl. oil)	RAC	0.05	8.14	0.41	0.32	0.02	2.84	0.14	2.69	0.13	0.97	0.05
OR 0691	Cotton seed oil, edible	PP	0	1.28	0.00	0.05	0.00	0.45	0.00	0.42	0.00	0.15	0.00
SO 0697	Peanuts, nutmeat, raw (incl. roasted, incl. oil, incl. butter)	RAC	0.035	18.82	0.66	0.57	0.02	2.28	0.08	6.90	0.24	0.53	0.02
SB 0716	Coffee bean, raw (i.e. green coffee)	RAC	0.04	0.83	0.03	0.69	0.03	1.09	0.04	2.91	0.12	0.82	0.03
SM 0716	Coffee bean, roasted	PP	0.08	0.02	0.00	0.41	0.03	7.50	0.60	0.01	0.00	0.06	0.00
–	Coffee bean, instant coffee (incl. essences and concentrates)	PP	0.032	0.03	0.00	0.05	0.00	0.60	0.02	0.01	0.00	5.53	0.18

TEBUCONAZOLE (189) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
HS 0780	Cumin, seed	RAC	0.22	0.01	0.00	0.25	0.06	NC	–	0.01	0.00	0.01	0.00
HS 0444	Peppers, chili, dried	PP	1.85	0.58	1.07	1.27	2.35	1.21	2.24	0.12	0.22	NC	–
DH 1100	Hops, dry	RAC	9.65	NC	–	NC	–	0.04	0.39	NC	–	NC	–
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat)	RAC	0	29.18	0.00	50.89	0.00	121.44	0.00	22.58	0.00	72.14	0.00
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0	1.05	0.00	1.14	0.00	18.69	0.00	0.94	0.00	3.12	0.00
MO 0105	Edible offal (mammalian), raw	RAC	0.06	4.64	0.28	1.97	0.12	10.01	0.60	3.27	0.20	3.98	0.24
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0	108.75	0.00	70.31	0.00	436.11	0.00	61.55	0.00	79.09	0.00
PM 0110	Poultry meat, raw (incl. prepared)	RAC	0	3.92	0.00	12.03	0.00	57.07	0.00	5.03	0.00	55.56	0.00
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0	NC	–	NC	–	0.32	0.00	NC	–	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.05	0.10	0.01	0.70	0.04	0.97	0.05	0.10	0.01	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0	3.84	0.00	4.41	0.00	27.25	0.00	1.13	0.00	7.39	0.00
	Total intake (ug/person) =				30.3		103.2		110.1		43.4		66.7
	Body weight per region (kg bw) =				60		60		60		60		60
	ADI (ug/person) =				1800		1800		1800		1800		1800
	%ADI =				1.7%		5.7%		6.1%		2.4%		3.7%

TEBUCONAZOLE (189) International Estimated Daily Intake (IEDI) ADI = 0–0.03 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
	Rounded %ADI =				2%		6%		6%		2%		4%

TEBUFENOZIDE (196) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as ug/person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FC 0001	Group of citrus fruit, raw (incl. kumquat commodities)	RAC	0.079	32.25	2.55	11.67	0.92	16.70	1.32	76.01	6.00	33.90	2.68	92.97	7.34
JF 0001	Group of citrus fruit, juice	PP	0.0077	1.30	0.01	2.37	0.02	0.22	0.00	13.88	0.11	0.75	0.01	2.63	0.02
FP 0009	Group of pome fruits, raw (incl. apple cider, excl. apple juice)	RAC	0.16	19.35	3.10	34.06	5.45	17.87	2.86	25.74	4.12	7.69	1.23	56.85	9.10
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.02	0.32	0.01	3.07	0.06	0.07	0.00	5.00	0.10	0.29	0.01	5.57	0.11
–	Peaches and nectarines, raw	RAC	0.11	2.87	0.32	2.21	0.24	0.15	0.02	5.94	0.65	1.47	0.16	15.66	1.72
FB 0272	Raspberries, red, black, raw	RAC	0.56	0.07	0.04	0.93	0.52	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
FB 0020	Blueberries, raw	RAC	0.685	0.01	0.01	0.03	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
FB 0269	Grapes, raw (incl. must, excl. dried, excl. juice, excl. wine)	RAC	0.745	13.02	9.70	9.25	6.89	0.03	0.02	16.91	12.60	3.70	2.76	54.44	40.56
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.551	0.51	0.28	0.51	0.28	0.01	0.01	1.27	0.70	0.12	0.07	2.07	1.14

TEBUFENOZIDE (196) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
JF 0269	Grape juice (from wine grapes)	PP	0.097	0.14	0.01	0.29	0.03	0.05	0.00	0.30	0.03	0.24	0.02	0.05	0.00
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.216	0.67	0.14	12.53	2.71	2.01	0.43	1.21	0.26	3.53	0.76	4.01	0.87
FB 0265	Cranberry, raw	RAC	0.042	0.02	0.00	0.01	0.00	NC	–	0.03	0.00	0.01	0.00	0.01	0.00
FI 0326	Avocado, raw	RAC	0.21	0.13	0.03	0.03	0.01	2.05	0.43	2.54	0.53	2.34	0.49	0.12	0.03
FI 0341	Kiwifruit, raw	RAC	0.14	0.03	0.00	0.36	0.05	0.01	0.00	1.17	0.16	0.06	0.01	0.69	0.10
VB 0400	Broccoli, raw	RAC	0.11	0.88	0.10	0.17	0.02	0.01	0.00	1.25	0.14	3.00	0.33	1.09	0.12
VB 0041	Cabbages, head, raw	RAC	0.34	2.73	0.93	27.92	9.49	0.55	0.19	4.47	1.52	4.27	1.45	10.25	3.49
VO 0448	Tomato, raw (incl. canned, excl. juice, excl. paste)	RAC	0.13	42.04	5.47	76.13	9.90	10.69	1.39	84.59	11.00	24.92	3.24	203.27	26.43
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.095	2.34	0.22	1.33	0.13	1.57	0.15	4.24	0.40	0.34	0.03	2.83	0.27
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.023	0.29	0.01	0.29	0.01	0.01	0.00	0.38	0.01	0.05	0.00	0.14	0.00
VO 0445	Peppers, sweet, raw (incl. dried)	RAC	0.064	4.49	0.29	6.44	0.41	7.21	0.46	5.68	0.36	9.52	0.61	8.92	0.57
VL 0053	Group of leafy vegetables, raw	RAC	2.45	8.47	20.75	22.36	54.78	7.74	18.96	25.51	62.50	45.77	112.14	21.22	51.99
CM 0649 (GC 0649)	Rice, husked, dry (incl. flour, incl. oil, incl. beverages, incl. starch, excl. polished)	REP	0.175	1.26	0.22	1.58	0.28	31.05	5.43	5.43	0.95	0.90	0.16	2.18	0.38
CM 1205	Rice polished, dry	PP	0.045	34.21	1.54	10.39	0.47	41.72	1.88	82.38	3.71	150.24	6.76	70.47	3.17
GS 0659	Sugar cane, raw	RAC	0.12	38.16	4.58	NC	–	12.58	1.51	0.34	0.04	17.79	2.13	42.78	5.13

TEBUFENOZIDE (196) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day								Intake as ug/person/day			
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
–	Sugar cane, molasses	PP	0.708	NC	–	NC	–	NC	–	NC	–	0.01	0.01	NC	–
–	Sugar cane, sugar (incl. non-centrifugal sugar, incl. refined sugar and maltose)	PP	0.003	61.52	0.18	86.27	0.26	18.80	0.06	80.02	0.24	66.39	0.20	56.32	0.17
TN 0660	Almonds, nutmeat	RAC	0.0205	1.38	0.03	0.08	0.00	0.01	0.00	1.00	0.02	0.06	0.00	0.81	0.02
TN 0672	Pecan, nutmeat	RAC	0.01	0.05	0.00	0.05	0.00	0.02	0.00	0.14	0.00	0.09	0.00	0.13	0.00
TN 0678	Walnut, nutmeat	RAC	0.003	0.23	0.00	1.49	0.00	0.01	0.00	0.33	0.00	0.07	0.00	2.06	0.01
SO 0495	Rape seed, raw	RAC	0.95	0.02	0.02	NC	–	NC	–	0.01	0.01	0.75	0.71	0.01	0.01
OR 0495	Rape seed oil, edible	PP	2.2	0.35	0.77	0.44	0.97	0.19	0.42	0.97	2.13	3.28	7.22	0.77	1.69
HH 0738	Mint, raw	RAC	8.35	0.50	4.18	0.01	0.08	NC	–	NC	–	NC	–	NC	–
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.02	24.96	0.50	57.95	1.16	16.70	0.33	38.38	0.77	26.46	0.53	29.00	0.58
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.054	6.24	0.34	14.49	0.78	4.18	0.23	9.60	0.52	6.62	0.36	7.25	0.39
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.054	3.29	0.18	6.14	0.33	0.82	0.04	1.57	0.08	2.23	0.12	1.07	0.06
MO 0105	Edible offal (mammalian), raw	RAC	0.028	4.79	0.13	9.68	0.27	2.97	0.08	5.49	0.15	3.84	0.11	5.03	0.14
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.01	289.65	2.90	485.88	4.86	26.92	0.27	239.03	2.39	199.91	2.00	180.53	1.81
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.02	13.17	0.26	26.78	0.54	7.24	0.14	116.71	2.33	22.54	0.45	32.09	0.64

TEBUFENOZIDE (196) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.02	1.46	0.03	2.98	0.06	0.80	0.02	12.97	0.26	2.50	0.05	3.57	0.07
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.02	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.10	0.00	0.10	0.00
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.02	0.12	0.00	0.12	0.00	0.11	0.00	5.37	0.11	0.24	0.00	0.10	0.00
PE 0112	Eggs, raw (incl. dried)	RAC	0.02	7.84	0.16	23.08	0.46	2.88	0.06	14.89	0.30	9.81	0.20	14.83	0.30
	Total intake (ug/person) =				60.0		102.5		36.7		115.2		147.0		158.4
	Body weight per region (kg bw) =				60		60		60		60		60		60
	ADI (ug/person) =				1200		1200		1200		1200		1200		1200
	%ADI =				5.0%		8.5%		3.1%		9.6%		12.3%		13.2%
	Rounded %ADI =				5%		9%		3%		10%		10%		10%

TEBUFENOZIDE (196) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FC 0001	Group of citrus fruit, raw (incl. kumquat commodities)	RAC	0.079	38.66	3.05	54.93	4.34	26.36	2.08	51.46	4.07	51.06	4.03	466.36	36.84
JF 0001	Group of citrus fruit, juice	PP	0.0077	36.84	0.28	3.75	0.03	0.30	0.00	21.62	0.17	21.82	0.17	46.67	0.36

TEBUFENOZIDE (196) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FP 0009	Group of pome fruits, raw (incl. apple cider, excl. apple juice)	RAC	0.16	51.09	8.17	65.40	10.46	42.71	6.83	45.29	7.25	62.51	10.00	7.74	1.24
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.02	14.88	0.30	11.98	0.24	0.15	0.00	9.98	0.20	30.32	0.61	3.47	0.07
–	Peaches and nectarines, raw	RAC	0.11	8.76	0.96	12.98	1.43	8.23	0.91	10.09	1.11	3.64	0.40	0.04	0.00
FB 0272	Raspberries, red, black, raw	RAC	0.56	0.47	0.26	0.91	0.51	0.01	0.01	0.99	0.55	1.14	0.64	NC	–
FB 0020	Blueberries, raw	RAC	0.685	0.04	0.03	0.23	0.16	0.01	0.01	0.83	0.57	0.33	0.23	NC	–
FB 0269	Grapes, raw (incl. must, excl. dried, excl. juice, excl. wine)	RAC	0.745	6.48	4.83	11.31	8.43	5.21	3.88	9.50	7.08	4.66	3.47	0.78	0.58
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.551	3.09	1.70	1.51	0.83	0.03	0.02	1.38	0.76	4.26	2.35	0.42	0.23
JF 0269	Grape juice (from wine grapes)	PP	0.097	0.56	0.05	1.96	0.19	0.02	0.00	2.24	0.22	2.27	0.22	0.34	0.03
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.216	88.93	19.21	62.41	13.48	1.84	0.40	25.07	5.42	61.17	13.21	5.84	1.26
FB 0265	Cranberry, raw	RAC	0.042	0.06	0.00	0.01	0.00	0.01	0.00	1.22	0.05	0.11	0.00	NC	–
FI 0326	Avocado, raw	RAC	0.21	2.65	0.56	0.87	0.18	0.46	0.10	1.64	0.34	1.30	0.27	0.96	0.20
FI 0341	Kiwifruit, raw	RAC	0.14	2.46	0.34	3.62	0.51	0.04	0.01	1.48	0.21	7.43	1.04	0.03	0.00
VB 0400	Broccoli, raw	RAC	0.11	4.24	0.47	1.76	0.19	NC	–	0.51	0.06	3.79	0.42	0.26	0.03
VB 0041	Cabbages, head, raw	RAC	0.34	8.97	3.05	27.12	9.22	1.44	0.49	24.96	8.49	4.55	1.55	11.23	3.82
VO 0448	Tomato, raw (incl. canned, excl. juice, excl. paste)	RAC	0.13	43.88	5.70	55.41	7.20	35.38	4.60	74.88	9.73	26.50	3.45	9.51	1.24

TEBUFENOZIDE (196) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.095	4.96	0.47	3.20	0.30	0.15	0.01	1.61	0.15	6.88	0.65	0.52	0.05
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.023	0.80	0.02	0.07	0.00	0.05	0.00	0.61	0.01	0.40	0.01	0.08	0.00
VO 0445	Peppers, sweet, raw (incl. dried)	RAC	0.064	0.82	0.05	1.53	0.10	10.85	0.69	4.59	0.29	1.84	0.12	2.00	0.13
VL 0053	Group of leafy vegetables, raw	RAC	2.45	18.83	46.13	21.85	53.53	121.23	297.01	43.09	105.57	18.18	44.54	18.32	44.88
CM 0649 (GC 0649)	Rice, husked, dry (incl. flour, incl. oil, incl. beverages, incl. starch, excl. polished)	REP	0.175	3.70	0.65	2.11	0.37	1.51	0.26	1.75	0.31	0.29	0.05	5.12	0.90
CM 1205	Rice polished, dry	PP	0.045	13.38	0.60	10.80	0.49	262.08	11.79	57.16	2.57	12.83	0.58	62.78	2.83
GS 0659	Sugar cane, raw	RAC	0.12	NC	–	NC	–	4.27	0.51	0.01	0.00	NC	–	3.24	0.39
–	Sugar cane, molasses	PP	0.708	NC	–	NC	–	0.08	0.06	NC	–	NC	–	NC	–
–	Sugar cane, sugar (incl. non-centrifugal sugar, incl. refined sugar and maltose)	PP	0.003	92.24	0.28	95.72	0.29	24.12	0.07	77.39	0.23	117.73	0.35	100.67	0.30
TN 0660	Almonds, nutmeat	RAC	0.0205	0.81	0.02	2.21	0.05	0.03	0.00	1.02	0.02	1.47	0.03	NC	–
TN 0672	Pecan, nutmeat	RAC	0.01	0.38	0.00	NC	–	NC	–	0.27	0.00	NC	–	0.26	0.00
TN 0678	Walnut, nutmeat	RAC	0.003	0.34	0.00	0.84	0.00	0.28	0.00	0.39	0.00	0.45	0.00	NC	–
SO 0495	Rape seed, raw	RAC	0.95	NC	–	NC	–	0.01	0.01	NC	–	NC	–	NC	–
OR 0495	Rape seed oil, edible	PP	2.2	12.52	27.54	7.63	16.79	3.00	6.60	6.01	13.22	NC	–	NC	–
HH 0738	Mint, raw	RAC	8.35	NC	–	NC	–	NC	–	NC	–	NC	–	NC	–

TEBUFENOZIDE (196) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.02	112.02	2.24	120.71	2.41	63.46	1.27	88.99	1.78	96.24	1.92	41.02	0.82
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.054	28.01	1.51	30.18	1.63	15.86	0.86	22.25	1.20	24.06	1.30	10.25	0.55
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.054	6.44	0.35	15.51	0.84	3.79	0.20	8.29	0.45	18.44	1.00	8.00	0.43
MO 0105	Edible offal (mammalian), raw	RAC	0.028	15.17	0.42	5.19	0.15	6.30	0.18	6.78	0.19	3.32	0.09	3.17	0.09
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.01	388.92	3.89	335.88	3.36	49.15	0.49	331.25	3.31	468.56	4.69	245.45	2.45
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.02	66.38	1.33	48.47	0.97	21.58	0.43	78.41	1.57	48.04	0.96	76.01	1.52
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.02	7.38	0.15	5.39	0.11	2.40	0.05	8.71	0.17	5.34	0.11	8.45	0.17
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.02	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.71	0.01	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.02	0.33	0.01	0.72	0.01	0.27	0.01	0.35	0.01	0.80	0.02	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.02	25.84	0.52	29.53	0.59	28.05	0.56	33.19	0.66	36.44	0.73	8.89	0.18
	Total intake (ug/person) =				135.2		139.4		340.4		178.0		99.2		101.6
	Body weight per region (kg bw) =				60		60		55		60		60		60
	ADI (ug/person) =				1200		1200		1100		1200		1200		1200
	%ADI =				11.3%		11.6%		30.9%		14.8%		8.3%		8.5%
	Rounded %ADI =				10%		10%		30%		10%		8%		8%

TEBUFENOZIDE (196) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									Intake = daily intake: ug/person
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FC 0001	Group of citrus fruit, raw (incl. kumquat commodities)	RAC	0.079	20.93	1.65	2.35	0.19	30.71	2.43	0.15	0.01	4.45	0.35
JF 0001	Group of citrus fruit, juice	PP	0.0077	0.11	0.00	0.29	0.00	13.55	0.10	0.14	0.00	0.33	0.00
FP 0009	Group of pome fruits, raw (incl. apple cider, excl. apple juice)	RAC	0.16	68.85	11.02	10.93	1.75	70.82	11.33	189.78	30.36	19.56	3.13
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.02	0.03	0.00	0.10	0.00	7.19	0.14	0.03	0.00	NC	–
–	Peaches and nectarines, raw	RAC	0.11	0.02	0.00	0.01	0.00	7.47	0.82	0.01	0.00	NC	–
FB 0272	Raspberries, red, black, raw	RAC	0.56	0.01	0.01	0.01	0.01	2.04	1.14	0.01	0.01	NC	–
FB 0020	Blueberries, raw	RAC	0.685	NC	–	NC	–	0.20	0.14	NC	–	NC	–
FB 0269	Grapes, raw (incl. must, excl. dried, excl. juice, excl. wine)	RAC	0.745	0.14	0.10	0.36	0.27	15.33	11.42	0.01	0.01	0.28	0.21
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.551	0.01	0.01	0.13	0.07	1.06	0.58	0.01	0.01	0.03	0.02
JF 0269	Grape juice (from wine grapes)	PP	0.097	0.01	0.00	0.01	0.00	0.41	0.04	0.01	0.00	NC	–
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.216	0.31	0.07	0.23	0.05	60.43	13.05	0.52	0.11	31.91	6.89
FB 0265	Cranberry, raw	RAC	0.042	NC	–	NC	–	0.03	0.00	NC	–	NC	–
FI 0326	Avocado, raw	RAC	0.21	1.12	0.24	0.01	0.00	0.84	0.18	0.01	0.00	6.60	1.39

TEBUFENOZIDE (196) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day									
				Intake = daily intake: ug/person									
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FI 0341	Kiwifruit, raw	RAC	0.14	0.01	0.00	0.01	0.00	2.00	0.28	0.01	0.00	NC	–
VB 0400	Broccoli, raw	RAC	0.11	0.01	0.00	0.01	0.00	2.13	0.23	0.01	0.00	NC	–
VB 0041	Cabbages, head, raw	RAC	0.34	3.82	1.30	2.99	1.02	49.16	16.71	0.01	0.00	NC	–
VO 0448	Tomato, raw (incl. canned, excl. juice, excl. paste)	RAC	0.13	13.10	1.70	4.90	0.64	62.16	8.08	1.04	0.14	0.09	0.01
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.095	0.58	0.06	0.22	0.02	2.21	0.21	0.24	0.02	3.10	0.29
JF 0448	Tomato, juice (single strength, incl. concentrated)	PP	0.023	0.05	0.00	0.01	0.00	0.42	0.01	0.01	0.00	0.02	0.00
VO 0445	Peppers, sweet, raw (incl. dried)	RAC	0.064	5.49	0.35	10.57	0.68	8.84	0.57	0.91	0.06	NC	–
VL 0053	Group of leafy vegetables, raw	RAC	2.45	12.42	30.43	8.75	21.44	7.53	18.45	7.07	17.32	14.11	34.57
CM 0649 (GC 0649)	Rice, husked, dry (incl. flour, incl. oil, incl. beverages, incl. starch, excl. polished)	REP	0.175	13.58	2.38	4.29	0.75	2.17	0.38	0.01	0.00	8.84	1.55
CM 1205	Rice polished, dry	PP	0.045	30.20	1.36	218.34	9.83	12.77	0.57	15.24	0.69	51.35	2.31
GS 0659	Sugar cane, raw	RAC	0.12	5.62	0.67	50.91	6.11	NC	–	11.04	1.32	0.10	0.01
–	Sugar cane, molasses	PP	0.708	NC	–	NC	–	NC	–	NC	–	NC	–
–	Sugar cane, sugar (incl. non-centrifugal sugar, incl. refined sugar and maltose)	PP	0.003	28.13	0.08	55.38	0.17	78.09	0.23	18.04	0.05	45.60	0.14
TN 0660	Almonds, nutmeat	RAC	0.0205	0.01	0.00	0.01	0.00	0.61	0.01	0.01	0.00	NC	–
TN 0672	Pecan, nutmeat	RAC	0.01	0.15	0.00	0.22	0.00	0.31	0.00	0.01	0.00	0.01	0.00

TEBUFENOZIDE (196) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
TN 0678	Walnut, nutmeat	RAC	0.003	0.01	0.00	0.01	0.00	0.81	0.00	0.01	0.00	NC	–
SO 0495	Rape seed, raw	RAC	0.95	NC	–	0.01	0.01	NC	–	NC	–	NC	–
OR 0495	Rape seed oil, edible	PP	2.2	0.07	0.15	0.03	0.07	4.62	10.16	0.03	0.07	NC	–
HH 0738	Mint, raw	RAC	8.35	NC	–	NC	–	NC	–	NC	–	NC	–
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.02	23.34	0.47	40.71	0.81	97.15	1.94	18.06	0.36	57.71	1.15
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.054	5.84	0.32	10.18	0.55	24.29	1.31	4.52	0.24	14.43	0.78
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.054	1.05	0.06	1.14	0.06	18.69	1.01	0.94	0.05	3.12	0.17
MO 0105	Edible offal (mammalian), raw	RAC	0.028	4.64	0.13	1.97	0.06	10.01	0.28	3.27	0.09	3.98	0.11
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.01	108.75	1.09	70.31	0.70	436.11	4.36	61.55	0.62	79.09	0.79
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.02	3.53	0.07	10.83	0.22	51.36	1.03	4.53	0.09	50.00	1.00
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.02	0.39	0.01	1.20	0.02	5.71	0.11	0.50	0.01	5.56	0.11
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.02	NC	–	NC	–	0.32	0.01	NC	–	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.02	0.10	0.00	0.70	0.01	0.97	0.02	0.10	0.00	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.02	3.84	0.08	4.41	0.09	27.25	0.55	1.13	0.02	7.39	0.15
	Total intake (ug/person) =				53.8		45.6		107.9		51.7		55.1

TEBUFENOZIDE (196) International Estimated Daily Intake (IEDI) ADI = 0–0.02 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: ug/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
	Body weight per region (kg bw) =				60		60		60		60		60
	ADI (ug/person) =				1200		1200		1200		1200		1200
	%ADI =				4.5%		3.8%		9.0%		4.3%		4.6%
	Rounded %ADI =				4%		4%		9%		4%		5%

TETRANILIPROLE (324) International Estimated Daily Intake (IEDI) ADI = 0–2 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as ug/person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FC 0002	Subgroup of lemons and limes, raw (incl. lemon juice) (incl. kumquat commodities)	RAC	0.19	4.82	0.92	2.45	0.47	3.93	0.75	25.44	4.83	8.74	1.66	16.23	3.08
FC 0003	Subgroup of mandarins, raw (incl. mandarin juice)	RAC	0.185	6.18	1.14	3.66	0.68	0.25	0.05	6.82	1.26	3.49	0.65	19.38	3.59
FC 0004	Subgroup of oranges, sweet, sour, raw	RAC	0.015	20.66	0.31	5.23	0.08	11.90	0.18	37.90	0.57	21.16	0.32	56.46	0.85
JF 0004	Subgroup of oranges, juice (single strength, incl. concentrated)	PP	0.01	1.27	0.01	2.20	0.02	0.09	0.00	11.81	0.12	0.46	0.00	1.69	0.02
FC 0005	Subgroup of pummelo and grapefruits, raw (incl. grapefruit juice)	RAC	0.091	0.66	0.06	0.69	0.06	0.96	0.09	10.20	0.93	1.25	0.11	2.97	0.27
FP 0226	Apple, raw (incl. cider, excl. juice)	RAC	0.13	13.49	1.75	26.63	3.46	15.05	1.96	16.28	2.12	6.47	0.84	47.88	6.22

TETRANILIPROLE (324) International Estimated Daily Intake (IEDI) ADI = 0–2 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.065	0.32	0.02	3.07	0.20	0.07	0.00	5.00	0.33	0.29	0.02	5.57	0.36
FP 0228	Loquat, raw (incl. processed) (i.e. Japanese medlar)	RAC	0.13	0.59	0.08	0.36	0.05	0.46	0.06	1.88	0.24	NC	–	1.15	0.15
FP 0229	Medlar, raw (incl. processed)	RAC	0.13	0.47	0.06	0.29	0.04	0.36	0.05	1.49	0.19	NC	–	0.92	0.12
FP 0230	Pear, raw	RAC	0.13	2.16	0.28	6.24	0.81	0.05	0.01	4.07	0.53	1.16	0.15	5.34	0.69
FP 0307	Persimmon, Japanese, raw (i.e. kaki fruit)	RAC	0.13	1.91	0.25	0.01	0.00	1.94	0.25	1.96	0.25	NC	–	0.25	0.03
FP 0231	Quince, raw	RAC	0.13	0.73	0.09	0.54	0.07	0.01	0.00	0.07	0.01	0.06	0.01	1.31	0.17
FS 0013	Subgroup of cherries, raw	RAC	0.29	0.92	0.27	9.15	2.65	0.01	0.00	0.61	0.18	0.06	0.02	6.64	1.93
FS 0014	Subgroup of plums, raw	RAC	0.033	2.40	0.08	8.60	0.28	0.06	0.00	2.52	0.08	0.58	0.02	4.16	0.14
DF 0014	Plums, dried (prunes)	PP	0.125	0.09	0.01	0.06	0.01	0.01	0.00	0.18	0.02	0.04	0.01	0.06	0.01
FS 2001	Subgroup of peaches, raw (incl. dried apricots)	RAC	0.089	8.01	0.71	5.87	0.52	0.18	0.02	8.19	0.73	1.64	0.15	22.46	2.00
FB 0269	Grapes, raw (i.e. table grapes)	RAC	0.275	12.68	3.49	9.12	2.51	0.03	0.01	16.88	4.64	3.70	1.02	54.42	14.97
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.35	0.51	0.18	0.51	0.18	0.01	0.00	1.27	0.44	0.12	0.04	2.07	0.72
JF 0269	Grape juice (from wine grapes)	PP	0.067	0.14	0.01	0.29	0.02	0.05	0.00	0.30	0.02	0.24	0.02	0.05	0.00
–	Grape must (from wine grapes)	PP	0.16	0.33	0.05	0.13	0.02	0.01	0.00	0.02	0.00	0.01	0.00	0.02	0.00
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.14	0.67	0.09	12.53	1.75	2.01	0.28	1.21	0.17	3.53	0.49	4.01	0.56
VB 0042	Subgroup of flowerhead brassica, raw	RAC	0.145	2.54	0.37	0.49	0.07	0.01	0.00	3.57	0.52	7.79	1.13	3.12	0.45

TETRANILIPROLE (324) International Estimated Daily Intake (IEDI) ADI = 0–2 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VB 0041	Cabbages, head, raw	RAC	0.135	2.73	0.37	27.92	3.77	0.55	0.07	4.47	0.60	4.27	0.58	10.25	1.38
VO 0448	Tomato, raw (incl. juice, incl. canned, excl. paste)	RAC	0.075	42.41	3.18	76.50	5.74	10.69	0.80	85.07	6.38	24.98	1.87	203.44	15.26
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.39	2.34	0.91	1.33	0.52	1.57	0.61	4.24	1.65	0.34	0.13	2.83	1.10
VO 0444	Peppers, chili, raw	RAC	0.075	3.99	0.30	7.30	0.55	2.93	0.22	5.62	0.42	NC	–	17.44	1.31
VO 0445	Peppers, sweet, raw	RAC	0.075	1.43	0.11	2.61	0.20	1.05	0.08	2.01	0.15	2.59	0.19	6.24	0.47
–	Peppers, sweet, dried	PP	0.75	0.42	0.32	0.53	0.40	0.84	0.63	0.50	0.38	0.95	0.71	0.37	0.28
VO 0440	Eggplant, raw (i.e. aubergine)	RAC	0.075	5.58	0.42	4.31	0.32	0.89	0.07	9.31	0.70	13.64	1.02	20.12	1.51
VL 0054	Subgroup of leaves of brassicaceae, raw	RAC	4	2.63	10.52	9.27	37.08	1.86	7.44	5.82	23.28	19.53	78.12	4.90	19.60
VD 0541	Soya bean, dry, raw (incl. paste, incl. curd, incl. oil, incl. sauce)	RAC	0.026	72.79	1.89	59.05	1.54	20.55	0.53	74.20	1.93	61.12	1.59	73.24	1.90
VR 2071	Subgroup of tuberous and corm vegetables, raw (incl. processed)	RAC	0.01	63.11	0.63	316.33	3.16	651.91	6.52	72.06	0.72	84.88	0.85	132.70	1.33
GC 2086	Subgroup of wheat, similar grains and pseudocereals without husks, raw (including processed)	RAC	0.01	381.29	3.81	360.94	3.61	38.45	0.38	282.01	2.82	173.32	1.73	436.22	4.36
GC 2087	Subgroup of barley, similar grains, and pseudocereals with husks, raw (including processed)	RAC	0.01	19.96	0.20	38.62	0.39	5.13	0.05	4.81	0.05	10.80	0.11	4.44	0.04
CM 0649 (GC 0649)	Rice, husked, dry (incl. polished, incl. flour, incl. starch, incl. oil, incl. beverages)	REP	0.01	45.40	0.45	14.99	0.15	84.88	0.85	111.73	1.12	194.75	1.95	93.12	0.93

TETRANILIPROLE (324) International Estimated Daily Intake (IEDI) ADI = 0–2 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				Intake as ug/person/day											
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
GC 0645	Maize, raw (incl. glucose & dextrose & isoglucose, incl. beer, incl. germ, excl. flour, excl. oil, excl. starch)	RAC	0.01	0.84	0.01	0.24	0.00	1.56	0.02	0.46	0.00	2.44	0.02	13.13	0.13
CF 1255	Maize, flour (white flour and wholemeal flour)	PP	0.012	22.72	0.27	35.61	0.43	87.27	1.05	34.92	0.42	46.71	0.56	49.12	0.59
–	Maize starch	PP	0.01	0.08	0.00	NC	–	0.01	0.00	2.29	0.02	0.08	0.00	0.11	0.00
OR 0645	Maize oil	PP	0.01	0.96	0.01	0.85	0.01	0.29	0.00	5.42	0.05	0.42	0.00	2.10	0.02
GC 2090	Subgroup of sweet corns	RAC	0.01	0.14	0.00	0.94	0.01	5.70	0.06	2.61	0.03	1.94	0.02	0.22	0.00
TN 0085	Group of tree nuts, raw (incl. processed)	RAC	0.01	4.06	0.04	3.27	0.03	7.01	0.07	13.93	0.14	14.01	0.14	9.36	0.09
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.047	24.96	1.17	57.95	2.72	16.70	0.79	38.38	1.80	26.46	1.24	29.00	1.36
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.26	6.24	1.62	14.49	3.77	4.18	1.09	9.60	2.49	6.62	1.72	7.25	1.89
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.26	3.29	0.86	6.14	1.60	0.82	0.21	1.57	0.41	2.23	0.58	1.07	0.28
MO 0105	Edible offal (mammalian), raw	RAC	0.43	4.79	2.06	9.68	4.16	2.97	1.28	5.49	2.36	3.84	1.65	5.03	2.16
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.12	289.65	34.76	485.88	58.31	26.92	3.23	239.03	28.68	199.91	23.99	180.53	21.66
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.01	13.17	0.13	26.78	0.27	7.24	0.07	116.71	1.17	22.54	0.23	32.09	0.32
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.01	1.46	0.01	2.98	0.03	0.80	0.01	12.97	0.13	2.50	0.03	3.57	0.04
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.01	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.10	0.00	0.10	0.00

TETRANILIPROLE (324) International Estimated Daily Intake (IEDI) ADI = 0–2 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.01	0.12	0.00	0.12	0.00	0.11	0.00	5.37	0.05	0.24	0.00	0.10	0.00
PE 0112	Eggs, raw (incl. dried)	RAC	0.01	7.84	0.08	23.08	0.23	2.88	0.03	14.89	0.15	9.81	0.10	14.83	0.15
	Total intake (ug/person) =				74.4		142.9		29.9		96.3		125.8		114.5
	Body weight per region (kg bw) =				60		60		60		60		60		60
	ADI (ug/person) =				120000		120000		1E+05		120000		120000		120000
	%ADI =				0.1%		0.1%		0.0%		0.1%		0.1%		0.1%
	Rounded %ADI =				0%		0%		0%		0%		0%		0%

TETRANILIPROLE (324) International Estimated Daily Intake (IEDI) ADI = 0–2 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FC 0002	Subgroup of lemons and limes, raw (incl. lemon juice) (incl. kumquat commodities)	RAC	0.19	10.12	1.92	15.69	2.98	2.88	0.55	12.30	2.34	22.32	4.24	6.59	1.25
FC 0003	Subgroup of mandarins, raw (incl. mandarin juice)	RAC	0.185	12.42	2.30	14.99	2.77	16.08	2.97	10.78	1.99	9.94	1.84	NC	–
FC 0004	Subgroup of oranges, sweet, sour, raw	RAC	0.015	15.68	0.24	24.00	0.36	6.80	0.10	29.09	0.44	15.39	0.23	160.47	2.41

TETRANILIPROLE (324) International Estimated Daily Intake (IEDI) ADI = 0–2 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
JF 0004	Subgroup of oranges, juice (single strength, incl. concentrated)	PP	0.01	33.31	0.33	1.78	0.02	0.28	0.00	18.97	0.19	14.01	0.14	13.36	0.13
FC 0005	Subgroup of pummelo and grapefruits, raw (incl. grapefruit juice)	RAC	0.091	8.21	0.75	4.60	0.42	0.64	0.06	5.85	0.53	19.98	1.82	368.86	33.57
FP 0226	Apple, raw (incl. cider, excl. juice)	RAC	0.13	41.14	5.35	56.49	7.34	26.64	3.46	31.58	4.11	51.94	6.75	3.05	0.40
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.065	14.88	0.97	11.98	0.78	0.15	0.01	9.98	0.65	30.32	1.97	3.47	0.23
FP 0228	Loquat, raw (incl. processed) (i.e. Japanese medlar)	RAC	0.13	0.96	0.12	NC	–	NC	–	3.92	0.51	NC	–	2.49	0.32
FP 0229	Medlar, raw (incl. processed)	RAC	0.13	NC	–	NC	–	NC	–	NC	–	NC	–	1.98	0.26
FP 0230	Pear, raw	RAC	0.13	8.79	1.14	8.44	1.10	12.37	1.61	9.60	1.25	10.27	1.34	0.23	0.03
FP 0307	Persimmon, Japanese, raw (i.e. kaki fruit)	RAC	0.13	0.01	0.00	0.30	0.04	3.59	0.47	0.15	0.02	0.02	0.00	NC	–
FP 0231	Quince, raw	RAC	0.13	0.19	0.02	0.18	0.02	0.11	0.01	0.04	0.01	0.28	0.04	NC	–
FS 0013	Subgroup of cherries, raw	RAC	0.29	1.40	0.41	4.21	1.22	0.04	0.01	2.93	0.85	1.50	0.44	NC	–
FS 0014	Subgroup of plums, raw	RAC	0.033	3.75	0.12	3.33	0.11	5.94	0.20	2.64	0.09	2.50	0.08	0.06	0.00
DF 0014	Plums, dried (prunes)	PP	0.125	0.61	0.08	0.35	0.04	0.05	0.01	0.35	0.04	0.49	0.06	0.13	0.02
FS 2001	Subgroup of peaches, raw (incl. dried apricots)	RAC	0.089	13.03	1.16	16.29	1.45	8.29	0.74	12.95	1.15	5.35	0.48	0.04	0.00
FB 0269	Grapes, raw (i.e. table grapes)	RAC	0.275	6.33	1.74	11.22	3.09	5.21	1.43	9.38	2.58	4.55	1.25	0.78	0.21
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.35	3.09	1.08	1.51	0.53	0.03	0.01	1.38	0.48	4.26	1.49	0.42	0.15

TETRANILIPROLE (324) International Estimated Daily Intake (IEDI) ADI = 0–2 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day						Intake as ug/person/day					
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
JF 0269	Grape juice (from wine grapes)	PP	0.067	0.56	0.04	1.96	0.13	0.02	0.00	2.24	0.15	2.27	0.15	0.34	0.02
–	Grape must (from wine grapes)	PP	0.16	0.16	0.03	0.09	0.01	0.01	0.00	0.12	0.02	0.11	0.02	NC	–
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.14	88.93	12.45	62.41	8.74	1.84	0.26	25.07	3.51	61.17	8.56	5.84	0.82
VB 0042	Subgroup of flowerhead brassica, raw	RAC	0.145	9.50	1.38	6.77	0.98	NC	–	3.21	0.47	9.36	1.36	0.75	0.11
VB 0041	Cabbages, head, raw	RAC	0.135	8.97	1.21	27.12	3.66	1.44	0.19	24.96	3.37	4.55	0.61	11.23	1.52
VO 0448	Tomato, raw (incl. juice, incl. canned, excl. paste)	RAC	0.075	44.88	3.37	55.49	4.16	35.44	2.66	75.65	5.67	27.00	2.03	9.61	0.72
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.39	4.96	1.93	3.20	1.25	0.15	0.06	1.61	0.63	6.88	2.68	0.52	0.20
VO 0444	Peppers, chili, raw	RAC	0.075	5.57	0.42	14.00	1.05	8.25	0.62	5.77	0.43	6.44	0.48	2.53	0.19
VO 0445	Peppers, sweet, raw	RAC	0.075	NC	–	NC	–	8.25	0.62	3.03	0.23	NC	–	0.91	0.07
–	Peppers, sweet, dried	PP	0.75	0.11	0.08	0.21	0.16	0.36	0.27	0.21	0.16	0.25	0.19	0.15	0.11
VO 0440	Eggplant, raw (i.e. aubergine)	RAC	0.075	1.01	0.08	1.69	0.13	21.37	1.60	3.00	0.23	1.40	0.11	NC	–
VL 0054	Subgroup of leaves of brassicaceae, raw	RAC	4	0.10	0.40	NC	–	26.78	107.12	5.00	20.00	0.58	2.32	5.68	22.72
VD 0541	Soya bean, dry, raw (incl. paste, incl. curd, incl. oil, incl. sauce)	RAC	0.026	106.33	2.76	117.78	3.06	42.12	1.10	195.70	5.09	222.52	5.79	80.47	2.09
VR 2071	Subgroup of tuberous and corm vegetables, raw (incl. processed)	RAC	0.01	226.09	2.26	234.58	2.35	161.10	1.61	185.04	1.85	234.85	2.35	100.25	1.00
GC 2086	Subgroup of wheat, similar grains and pseudocereals	RAC	0.01	256.28	2.56	280.29	2.80	134.94	1.35	241.61	2.42	217.88	2.18	167.40	1.67

TETRANILIPROLE (324) International Estimated Daily Intake (IEDI) ADI = 0–2 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
	without husks, raw (including processed)														
GC 2087	Subgroup of barley, similar grains, and pseudocereals with husks, raw (including processed)	RAC	0.01	43.68	0.44	60.49	0.60	9.72	0.10	40.47	0.40	49.83	0.50	18.90	0.19
CM 0649 (GC 0649)	Rice, husked, dry (incl. polished, incl. flour, incl. starch, incl. oil, incl. beverages)	REP	0.01	20.96	0.21	16.04	0.16	339.67	3.40	75.51	0.76	16.86	0.17	86.13	0.86
GC 0645	Maize, raw (incl. glucose & dextrose & isoglucose, incl. beer, incl. germ, excl. flour, excl. oil, excl. starch)	RAC	0.01	0.10	0.00	9.93	0.10	1.40	0.01	10.26	0.10	0.33	0.00	0.05	0.00
CF 1255	Maize, flour (white flour and wholemeal flour)	PP	0.012	14.27	0.17	12.86	0.15	19.71	0.24	12.55	0.15	4.21	0.05	52.30	0.63
–	Maize starch	PP	0.01	NC	–	NC	–	0.19	0.00	7.13	0.07	NC	–	NC	–
OR 0645	Maize oil	PP	0.01	0.90	0.01	0.47	0.00	0.15	0.00	3.01	0.03	1.86	0.02	0.36	0.00
GC 2090	Subgroup of sweet corns	RAC	0.01	11.43	0.11	3.71	0.04	0.74	0.01	13.63	0.14	3.07	0.03	1.50	0.02
TN 0085	Group of tree nuts, raw (incl. processed)	RAC	0.01	8.52	0.09	8.94	0.09	15.09	0.15	9.60	0.10	14.57	0.15	26.26	0.26
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.047	112.02	5.27	120.71	5.67	63.46	2.98	88.99	4.18	96.24	4.52	41.02	1.93
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.26	28.01	7.28	30.18	7.85	15.86	4.12	22.25	5.78	24.06	6.26	10.25	2.67
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.26	6.44	1.67	15.51	4.03	3.79	0.99	8.29	2.16	18.44	4.79	8.00	2.08
MO 0105	Edible offal (mammalian), raw	RAC	0.43	15.17	6.52	5.19	2.23	6.30	2.71	6.78	2.92	3.32	1.43	3.17	1.36

TETRANILIPROLE (324) International Estimated Daily Intake (IEDI) ADI = 0–2 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.12	388.92	46.67	335.88	40.31	49.15	5.90	331.25	39.75	468.56	56.23	245.45	29.45
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.01	66.38	0.66	48.47	0.48	21.58	0.22	78.41	0.78	48.04	0.48	76.01	0.76
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.01	7.38	0.07	5.39	0.05	2.40	0.02	8.71	0.09	5.34	0.05	8.45	0.08
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.01	0.10	0.00	0.10	0.00	NC	–	0.10	0.00	0.71	0.01	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.01	0.33	0.00	0.72	0.01	0.27	0.00	0.35	0.00	0.80	0.01	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.01	25.84	0.26	29.53	0.30	28.05	0.28	33.19	0.33	36.44	0.36	8.89	0.09
	Total intake (ug/person) =				116.1		112.8		150.2		119.2		126.0		110.6
	Body weight per region (kg bw) =				60		60		55		60		60		60
	ADI (ug/person) =				120000		120000		110000		120000		120000		120000
	%ADI =				0.1%		0.1%		0.1%		0.1%		0.1%		0.1%
	Rounded %ADI =				0%		0%		0%		0%		0%		0%

TETRANILIPROLE (324) International Estimated Daily Intake (IEDI) ADI = 0–2 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day		Intake = daily intake: ug/person							
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FC 0002	Subgroup of lemons and limes, raw (incl. lemon juice)	RAC	0.19	18.97	3.60	0.97	0.18	6.23	1.18	0.09	0.02	3.35	0.64

TETRANILIPROLE (324) International Estimated Daily Intake (IEDI) ADI = 0–2 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day				Intake = daily intake: ug/person					
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
	(incl. kumquat commodities)												
FC 0003	Subgroup of mandarins, raw (incl. mandarin juice)	RAC	0.185	0.16	0.03	0.27	0.05	9.06	1.68	0.01	0.00	0.02	0.00
FC 0004	Subgroup of oranges, sweet, sour, raw	RAC	0.015	1.18	0.02	1.11	0.02	14.28	0.21	0.05	0.00	1.08	0.02
JF 0004	Subgroup of oranges, juice (single strength, incl. concentrated)	PP	0.01	0.08	0.00	0.26	0.00	12.61	0.13	0.14	0.00	0.33	0.00
FC 0005	Subgroup of pummelo and grapefruits, raw (incl. grapefruit juice)	RAC	0.091	0.68	0.06	0.05	0.00	3.21	0.29	0.01	0.00	NC	–
FP 0226	Apple, raw (incl. cider, excl. juice)	RAC	0.13	66.67	8.67	2.06	0.27	55.83	7.26	188.29	24.48	1.38	0.18
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.065	0.03	0.00	0.10	0.01	7.19	0.47	0.03	0.00	NC	–
FP 0228	Loquat, raw (incl. processed) (i.e. Japanese medlar)	RAC	0.13	0.94	0.12	4.68	0.61	NC	–	0.50	0.07	3.08	0.40
FP 0229	Medlar, raw (incl. processed)	RAC	0.13	0.75	0.10	3.73	0.48	4.87	0.63	0.40	0.05	2.45	0.32
FP 0230	Pear, raw	RAC	0.13	0.07	0.01	0.14	0.02	9.45	1.23	0.01	0.00	0.14	0.02
FP 0307	Persimmon, Japanese, raw (i.e. kaki fruit)	RAC	0.13	0.41	0.05	0.32	0.04	0.02	0.00	0.58	0.08	12.51	1.63
FP 0231	Quince, raw	RAC	0.13	NC	–	NC	–	0.65	0.08	NC	–	NC	–
FS 0013	Subgroup of cherries, raw	RAC	0.29	0.01	0.00	0.01	0.00	5.96	1.73	0.01	0.00	NC	–
FS 0014	Subgroup of plums, raw	RAC	0.033	0.07	0.00	0.01	0.00	15.56	0.51	0.01	0.00	NC	–
DF 0014	Plums, dried (prunes)	PP	0.125	0.01	0.00	0.01	0.00	0.37	0.05	0.01	0.00	NC	–

TETRANILIPROLE (324) International Estimated Daily Intake (IEDI) ADI = 0–2 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day				Intake = daily intake: ug/person					
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FS 2001	Subgroup of peaches, raw (incl. dried apricots)	RAC	0.089	0.02	0.00	0.01	0.00	10.76	0.96	0.01	0.00	NC	–
FB 0269	Grapes, raw (i.e. table grapes)	RAC	0.275	0.14	0.04	0.36	0.10	15.22	4.19	0.01	0.00	0.09	0.02
DF 0269	Grapes, dried (= currants, raisins and sultanas) (from table grapes)	PP	0.35	0.01	0.00	0.13	0.05	1.06	0.37	0.01	0.00	0.03	0.01
JF 0269	Grape juice (from wine grapes)	PP	0.067	0.01	0.00	0.01	0.00	0.41	0.03	0.01	0.00	NC	–
–	Grape must (from wine grapes)	PP	0.16	0.01	0.00	0.01	0.00	0.11	0.02	0.01	0.00	0.19	0.03
–	Grape wine (incl. vermouths) (from wine grapes)	PP	0.14	0.31	0.04	0.23	0.03	60.43	8.46	0.52	0.07	31.91	4.47
VB 0042	Subgroup of flowerhead brassica, raw	RAC	0.145	0.02	0.00	0.02	0.00	4.86	0.70	0.01	0.00	NC	–
VB 0041	Cabbages, head, raw	RAC	0.135	3.82	0.52	2.99	0.40	49.16	6.64	0.01	0.00	NC	–
VO 0448	Tomato, raw (incl. juice, incl. canned, excl. paste)	RAC	0.075	13.17	0.99	4.92	0.37	62.69	4.70	1.04	0.08	0.11	0.01
–	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.39	0.58	0.23	0.22	0.09	2.21	0.86	0.24	0.09	3.10	1.21
VO 0444	Peppers, chili, raw	RAC	0.075	3.47	0.26	3.56	0.27	16.30	1.22	0.01	0.00	NC	–
VO 0445	Peppers, sweet, raw	RAC	0.075	1.24	0.09	1.27	0.10	NC	–	0.01	0.00	NC	–
–	Peppers, sweet, dried	PP	0.75	0.58	0.44	1.27	0.95	1.21	0.91	0.12	0.09	NC	–
VO 0440	Eggplant, raw (i.e. aubergine)	RAC	0.075	1.31	0.10	8.26	0.62	3.95	0.30	0.01	0.00	NC	–
VL 0054	Subgroup of leaves of brassicaceae, raw	RAC	4	3.58	14.32	2.64	10.56	NC	–	1.83	7.32	3.65	14.60
VD 0541	Soya bean, dry, raw (incl. paste, incl. curd, incl. oil, incl.	RAC	0.026	15.80	0.41	14.29	0.37	104.36	2.71	17.11	0.44	35.20	0.92

TETRANILIPROLE (324) International Estimated Daily Intake (IEDI) ADI = 0–2 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day				Intake = daily intake: ug/person					
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
	sauce)												
VR 2071	Subgroup of tuberous and corm vegetables, raw (incl. processed)	RAC	0.01	250.41	2.50	208.74	2.09	213.64	2.14	602.70	6.03	388.95	3.89
GC 2086	Subgroup of wheat, similar grains and pseudocereals without husks, raw (including processed)	RAC	0.01	57.23	0.57	110.47	1.10	286.57	2.87	25.82	0.26	132.92	1.33
GC 2087	Subgroup of barley, similar grains, and pseudocereals with husks, raw (including processed)	RAC	0.01	11.99	0.12	5.22	0.05	49.50	0.50	3.82	0.04	16.26	0.16
CM 0649 (GC 0649)	Rice, husked, dry (incl. polished, incl. flour, incl. starch, incl. oil, incl. beverages)	REP	0.01	52.55	0.53	286.02	2.86	18.64	0.19	19.67	0.20	75.09	0.75
GC 0645	Maize, raw (incl. glucose & dextrose & isoglucose, incl. beer, incl. germ, excl. flour, excl. oil, excl. starch)	RAC	0.01	0.55	0.01	0.51	0.01	3.26	0.03	7.96	0.08	NC	–
CF 1255	Maize, flour (white flour and wholemeal flour)	PP	0.012	94.34	1.13	8.09	0.10	28.03	0.34	55.94	0.67	28.07	0.34
–	Maize starch	PP	0.01	0.02	0.00	0.01	0.00	NC	–	NC	–	NC	–
OR 0645	Maize oil	PP	0.01	0.33	0.00	0.07	0.00	0.81	0.01	0.01	0.00	NC	–
GC 2090	Subgroup of sweet corns	RAC	0.01	3.63	0.04	20.50	0.21	8.78	0.09	0.02	0.00	0.17	0.00
TN 0085	Group of tree nuts, raw (incl. processed)	RAC	0.01	4.39	0.04	135.53	1.36	6.11	0.06	0.72	0.01	317.74	3.18
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 80% as muscle	RAC	0.047	23.34	1.10	40.71	1.91	97.15	4.57	18.06	0.85	57.71	2.71
MM 0095	Meat from mammals other than marine mammals, raw (incl. prepared meat) – 20% as fat	RAC	0.26	5.84	1.52	10.18	2.65	24.29	6.31	4.52	1.17	14.43	3.75

TETRANILIPROLE (324) International Estimated Daily Intake (IEDI) ADI = 0–2 mg/kg bw

Codex code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day				Intake = daily intake: ug/person					
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
MF 0100	Mammalian fats, raw, excl. milk fats (incl. rendered fats)	RAC	0.26	1.05	0.27	1.14	0.30	18.69	4.86	0.94	0.24	3.12	0.81
MO 0105	Edible offal (mammalian), raw	RAC	0.43	4.64	2.00	1.97	0.85	10.01	4.30	3.27	1.41	3.98	1.71
ML 0106	Milks, raw or skimmed (incl. dairy products)	RAC	0.12	108.75	13.05	70.31	8.44	436.11	52.33	61.55	7.39	79.09	9.49
PM 0110	Poultry meat, raw (incl. prepared) – 90% as muscle	RAC	0.01	3.53	0.04	10.83	0.11	51.36	0.51	4.53	0.05	50.00	0.50
PM 0110	Poultry meat, raw (incl. prepared) – 10% as fat	RAC	0.01	0.39	0.00	1.20	0.01	5.71	0.06	0.50	0.01	5.56	0.06
PF 0111	Poultry fat, raw (incl. rendered)	RAC	0.01	NC	–	NC	–	0.32	0.00	NC	–	NC	–
PO 0111	Poultry edible offal, raw (incl. prepared)	RAC	0.01	0.10	0.00	0.70	0.01	0.97	0.01	0.10	0.00	NC	–
PE 0112	Eggs, raw (incl. dried)	RAC	0.01	3.84	0.04	4.41	0.04	27.25	0.27	1.13	0.01	7.39	0.07
	Total intake (ug/person) =				53.1		37.7		127.0		51.2		53.2
	Body weight per region (kg bw) =				60		60		60		60		60
	ADI (ug/person) =				120000		120000		120000		120000		120000
	%ADI =				0.0%		0.0%		0.1%		0.0%		0.0%
	Rounded %ADI =				0%		0%		0%		0%		0%

Annex 4. International Estimate of Short-term Intake of pesticide residues

Table A4.1 International Estimate of Short-term Intake of pesticide residues

			ACETAMIPRID (246)										IESTI						
			Acute RfD = 0.1 mg/kg bw (100 µg/kg bw)										Maximum %ARfD:			1%		0%	1%
																all		gen. pop.	child
Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n		Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded		% acute RfD rounded		% acute RfD rounded
VD 0071	Beans (dry) (Phaseolus spp) (all commodities)	highest utilization: Total	0.032	0	1.000	PRIMO-UK	infant	P97.5	159.00	<25	NR	3	0.06–0.58	0–1%		0–0%		0–1%	
VD 0523	Broad bean (dry) (Vicia spp) (all commodities)	highest utilization: Total	0.032	0	1.000	PRIMO-UK	infant	P97.5	159.00	<25	NR	3	0.02–0.58	0–1%		0–0%		0–1%	
VD 0531	Lablab bean (dry) (Lablab spp) (all commodities)	highest utilization: Total	0.032	0	1.000	PRIMO-UK	infant	P97.5	159.00	<25	NR	3	0.23–0.58	0–1%		0–0%		1–1%	
VD 0541	Soya bean (dry) (Glycine spp) (all commodities)	highest utilization: Total	0.01	0	1.000	CN	Child, 1–6 yrs..	179	239.05	<25	NR	3	0–0.15	0–0%		0–0%		0–0%	
VD 0072	Peas (dry) (Pisum spp)	highest utilization:	0.025	0	0.400	CN	Gen. pop.,	268	1673.82	<25	NR	3	0.02–0.31	0–0%		0–0%		0–0%	

	(all commodities)	cooked/boiled					> 1 yrs.									
VD 0524	Chickpea (dry) (Cicer spp) (all commodities)	highest utilization: canned/preserved	0.025	0	0.400	PRIMO-NL	child	P100	328.80	<25	NR	3	0.02–0.18	0–0%	0–0%	0–0%
VD 0533	Lentil (dry) (Lens spp) (all commodities)	highest utilization: Total	0.025	0	1.000	PRIMO-UK	Child, 11–14 yrs.	P97.5	321.50	<25	NR	3	0.05–0.17	0–0%	0–0%	0–0%
VD 0537	Pigeon pea (dry) (Cajanus spp)	Total	0.025	–	1.000	PRIMO-UK	child, 11–14 yrs.	P97.5	315.00	<25	NR	3	0.164	0%	0%	0%

ACIBENZOLAR-S-METHYL (228) IESTI

Acute RfD = 0.5 mg/kg bw (500 µg/kg bw) Maximum %ARfD: 1% 0% 1%

all gen. pop. child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
FP 0226	Apple (all commodities)	highest utilization: raw with peel (incl. consumption without peel)	0.01	0.01–0.031	1.000	CN	Child, 1–6 yrs.	1314	403.39	255	3	2a	0.04–0.57	0–0%	0–0%	0–0%
VS 0623	Cardoon (all commodities)	highest utilization: cooked/boiled	0	0.1	1.000	PRIMO-NL	Gen. pop.	E	200.00	100	3	2a	0.44–0.61	0–0%	0–0%	0–0%
VS 0624	Celery (all commodities)	highest utilization: raw	0.073	0.1	1.000	CN	Child, 1–6 yrs.	454	180.29	861	3	2b	0–3.35	0–1%	0–0%	0–1%

VS 0380	Fennel, bulb (Florence fennel) (all commodities)	highest utilization: cooked/boiled	0.073	0.1	1.000	PRIMO-NL	child	E	166.80	251	3	2b	0–2.72	0–1%	0–0%	0–1%
VS 0627	Rhubarb (all commodities)	highest utilization: Total	0.073	0.1	1.000	AU	gen. pop., > 2 yrs.	58	539.42	57	3	2a	0.59–0.97	0–0%	0–0%	0–0%

BUPROFEZIN (173)

Acute RfD = 0.5 mg/kg bw (500 µg/kg bw)

IESTI

Maximum %ARfD: 0.0% all | 0.0% gen. pop. | 0.0% child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
MM 0095	Meat from mammals other than marine mammals	Total	NA	NA	1.000	CN	Child, 1–6 yrs.	4329	261.46	NR	NR	1	NA	0%	0%	0%
MM 0095	Meat from mammals other than marine mammals: 20% as fat	Total	–	0.05	1.000	CN	Child, 1–6 yrs.	4329	52.29	NR	NR	1	0.162	0%	0%	0%
MM 0095	Meat from mammals other than marine mammals: 80% as muscle	Total	–	0.05	1.000	CN	Child, 1–6 yrs.	4329	209.17	NR	NR	1	0.648	0%	0%	0%
MF 0100	Mammalian fats (except milk fats)	Total	–	0.05	1.000	PRIMO-UK	infant	P97.5	18.10	NR	NR	1	0.104	0%	0%	0%

BUPROFEZIN (173)

Acute RfD = 0.5 mg/kg bw (500 µg/kg bw)

IESTI

Maximum %ARfD: 0.0% all | 0.0% gen. pop. | 0.0% child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
MO 0105	Edible offal (mammalian)	Total	–	0.05	1.000	ZA	Gen. pop., > 10 yrs.	–	523.58	NR	NR	1	0.470	0%	0%	0%
ML 0106	Milks	Total	0.01		1.000	PRIMO-UK	infant	P97.5	1080.70	NR	NR	3	1.242	0%	0%	0%
PM 0110	Poultry meat	Total	NA	NA	1.000	CN	Child, 1–6 yrs.	175	347.00	NR	NR	1	NA	0%	0%	0%
PM 0110	Poultry meat: 10% as fat	Total	–	0	1.000	CN	Child, 1–6 yrs.	175	34.70	NR	NR	1	0.000	0%	0%	0%
PM 0110	Poultry meat: 90% as muscle	Total	–	0	1.000	CN	Child, 1–6 yrs.	175	312.30	NR	NR	1	0.000	0%	0%	0%
PF 0111	Poultry, fats	Total	–	0	1.000	CA	Child, <6 yrs.	66	49.38	NR	NR	1	0.000	0%	0%	0%
PO 0111	Poultry, edible offal (includes kidney and liver)	Total	–	0.05	1.000	CN	Gen. pop., > 1 yrs.	421	345.63	NR	NR	1	0.325	0%	0%	0%
PE 0112	Eggs	Total	–	0.05	1.000	PRIMO-UK	infant	P97.5	108.00	NR	NR	1	0.621	0%	0%	0%

Chlormequat (15) IESTI

Acute RfD = 0.0388 mg/kg bw (39 µg/kg bw) Maximum %ARfD: 40% 20% 40%

all gen. pop. child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
GC 0640	Barley (all commodities)	highest utilization: flakes	0.11–0.59	0	0.800	CA	Child, <6 yrs.	1909	539.23	NR	NR	3	0.05–16.19	0–40%	0–20%	1–40%

CYPROCONAZOLE (239) IESTI

Acute RfD = 0.06 mg/kg bw (60 µg/kg bw) Maximum %ARfD: 0% 0% 0%

all gen. pop. child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
VD 0071	Beans (dry) (Phaseolus spp) (all commodities)	highest utilization: Total	0.01	0	1.000	PRIMO-UK	infant	P97.5	159.00	<25	NR	3	0.02–0.18	0–0%	0–0%	0–0%
VD 0523	Broad bean (dry) (Vicia spp)	highest utilization: Total	0.01	0	1.000	PRIMO-UK	infant	P97.5	159.00	<25	NR	3	0.01–0.18	0–0%	0–0%	0–0%

	(all commodities)															
VD 0531	Lablab bean (dry) (Lablab spp) (all commodities)	highest utilization: Total	0.01	0	1.000	PRIMO-UK	infant	P97.5	159.00	<25	NR	3	0.07–0.18	0–0%	0–0%	0–0%
VD 0072	Peas (dry) (Pisum spp) (all commodities)	highest utilization: cooked/boiled	0.01	0	0.400	CN	Gen. pop., > 1 yrs.	268	1673.82	<25	NR	3	0.01–0.13	0–0%	0–0%	0–0%
VD 0524	Chickpea (dry) (Cicer spp) (all commodities)	highest utilization: canned/preserved	0.01	0	0.400	PRIMO-NL	child	P100	328.80	<25	NR	3	0.01–0.07	0–0%	0–0%	0–0%
VD 0533	Lentil (dry) (Lens spp) (all commodities)	highest utilization: Total	0.01	0	1.000	PRIMO-UK	Child, 11–14 yrs.	P97.5	321.50	<25	NR	3	0.02–0.07	0–0%	0–0%	0–0%
VD 0537	Pigeon pea (dry) (Cajanus spp)	Total	0.01		1.000	PRIMO-UK	child, 11–14 yrs.	P97.5	315.00	<25	NR	3	0.066	0%	0%	0%

ETOFENPROX (184)

Acute RfD = 1 mg/kg bw (1000 µg/kg bw)

IESTI

Maximum %ARfD: 9% all 5% gen. pop. 9% child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
GC 0649	Rice (all commodities)	highest utilization: Total	0.006–3.1	0	1.000	CA	Child, <6 yrs.	666	461.40	<25	NR	3	0.15–93.63	0–9%	0–5%	0–9%
MM 0095	Meat from mammals other than marine	Total	NA	NA	1.000	CN	Child, 1–6	4329	261.46	NR	NR	1	NA	1%	1%	1%

ETOFENPROX (184)

Acute RfD = 1 mg/kg bw (1000 µg/kg bw)

IESTI

Maximum %ARfD: 9% all | 5% gen. pop. | 9% child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
	mammals						yrs.									
MM 0095	Meat from mammals other than marine mammals: 20% as fat	Total	–	2.4	1.000	CN	Child, 1–6 yrs.	4329	52.29	NR	NR	1	7.778	1%	1%	1%
MM 0095	Meat from mammals other than marine mammals: 80% as muscle	Total	–	0.062	1.000	CN	Child, 1–6 yrs.	4329	209.17	NR	NR	1	0.804	0%	0%	0%
MF 0100	Mammalian fats (except milk fats)	Total	–	2.4	1.000	PRIMO-UK	infant	P97.5	18.10	NR	NR	1	4.993	0%	0%	0%
MO 0105	Edible offal (mammalian)	Total	–	0.093	1.000	ZA	Gen. pop., > 10 yrs.	–	523.58	NR	NR	1	0.874	0%	0%	0%
ML 0106	Milks	Total	0.096		1.000	PRIMO-UK	infant	P97.5	1080.70	NR	NR	3	11.925	1%	0%	1%
PM 0110	Poultry meat	Total	NA	NA	1.000	CN	Child, 1–6 yrs.	175	347.00	NR	NR	1	NA	0%	0%	0%
PM 0110	Poultry meat: 10% as fat	Total	–	0.4	1.000	CN	Child, 1–6 yrs.	175	34.70	NR	NR	1	0.860	0%	0%	0%

ETOFENPROX (184)

Acute RfD = 1 mg/kg bw (1000 µg/kg bw)

IESTI

Maximum %ARfD:	9%	5%	9%
	all	gen. pop.	child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
PM 0110	Poultry meat: 90% as muscle	Total	–	0.003	1.000	CN	Child, 1–6 yrs.	175	312.30	NR	NR	1	0.058	0%	0%	0%
PF 0111	Poultry, fats	Total	–	0.4	1.000	CA	Child, <6 yrs.	66	49.38	NR	NR	1	1.161	0%	0%	0%
PO 0111	Poultry, edible offal (includes kidney and liver)	Total	–	0.013	1.000	CN	Gen. pop., > 1 yrs.	421	345.63	NR	NR	1	0.084	0%	0%	0%
PE 0112	Eggs	Total	–	0.07	1.000	PRIMO-UK	infant	P97.5	108.00	NR	NR	1	0.869	0%	0%	0%

FENPROPIDIN (340) IESTI

Acute RfD = 0.03 mg/kg bw (30 µg/kg bw) Maximum %ARfD: 40%

women

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded
FI 0327	Banana (incl. dwarf banana & plantain) (all commodities)	highest utilization: Total	0.097	1.2	1.000	CA	women, 15–49 yrs.	1152	249.59	767	3	2b	0.01–13.49	0–40%
VR 0596	Sugar beet (all commodities)	highest utilization: composite foods; unspecified ind. processed	0.01	0	1.000	NL	gen. pop., > 1 yrs.	####	372.76	NR	NR	3	0.02–0.06	0–0%
GC 0653	Triticale	Total	0.01		1.000	US	women, 13–49 yrs.	63	12.45	<25	NR	3	0.002	0%
GC 0654	Wheat (all commodities)	highest utilization: Pasta/noodles (dry)	0.01–0.043	0	1.000	CA	women, 15–49 yrs.	1520	514.80	NR	NR	3	0–0.08	0–0%
GC 0640	Barley (all commodities)	highest utilization: beer	0.05	0	0.190	CA	women, 15–49 yrs.	411	2281.31	NR	NR	3	0–0.32	0–1%
MM 0095	Meat from mammals other than marine mammals	Total	NA	NA	1.000	AU	gen. pop., > 2 yrs.	16	496.39	NR	NR	1	NA	1%
MM 0095	Meat from mammals other than marine mammals: 20% as fat	Total	–	0.044	1.000	AU	gen. pop., > 2 yrs.	16	99.28	NR	NR	1	0.065	0%
MM 0095	Meat from mammals other than marine mammals: 80%	Total	–	0.046	1.000	AU	gen. pop., > 2 yrs.	16	397.11	NR	NR	1	0.273	1%

FENPROPIDIN (340) IESTI

Acute RfD = 0.03 mg/kg bw (30 µg/kg bw) Maximum %ARfD: 40%

women

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded
	as muscle													
MF 0100	Mammalian fats (except milk fats)	Total	–	0.046	1.000	US	women, 13–49 yrs.	6730	45.60	NR	NR	1	0.029	0%
MO 0105	Edible offal (mammalian)	Total	–	0.96	1.000	PRIMO-DE	women, 14–50 yrs.	P100	188.92	NR	NR	1	2.688	9%
ML 0106	Milks	Total	0.017		1.000	AU	gen. pop., > 2 yrs.	####	3235.19	NR	NR	3	0.821	3%
PM 0110	Poultry meat	Total	NA	NA	1.000	PRIMO-UK	vegetarian	P97.5	783.50	NR	NR	1	NA	1%
PM 0110	Poultry meat: 10% as fat	Total	–	0.021	1.000	PRIMO-UK	vegetarian	P97.5	78.35	NR	NR	1	0.025	0%
PM 0110	Poultry meat: 90% as muscle	Total	–	0.021	1.000	PRIMO-UK	vegetarian	P97.5	705.15	NR	NR	1	0.222	1%
PF 0111	Poultry, fats	Total	–	0.021	1.000	CA	women, 15–49 yrs.	195	78.63	NR	NR	1	0.025	0%
PO 0111	Poultry, edible offal (includes kidney and liver)	Total	–	0.074	1.000	CN	gen. pop., > 1 yrs.	421	345.63	NR	NR	1	0.481	2%

FENPROPIDIN (340) IESTI

Acute RfD = 0.03 mg/kg bw (30 µg/kg bw) Maximum %ARfD: 40%

women

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded
PE 0112	Eggs	Total	–	0.021	1.000	CN	gen. pop., > 1 yrs.	454	339.57	NR	NR	1	0.134	0%

FENPYROXIMATE (193) IESTI

Acute RfD = 0.005 mg/kg bw (5 µg/kg bw) Maximum %ARfD: 160% 140% 160%

all gen. pop. child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
FC 0003	Subgroup of mandarins (incl. mandarin-like hybrids) (all commodities)	highest utilization: raw, without peel	0.02	0.03	1.000	CN	Child, 1–6 yrs.	151	586.75	124	3	2a	0–1.55	0–30%	0–10%	0–30%
FC 0004	Subgroup of oranges, sweet, sour (incl. orange-like hybrids)	highest utilization: Total	0.02	0.02	1.000	AU	Child, 2–6 yrs.	1735	800.83	156	3	2a	0.01–1.17	0–20%	0–10%	0–20%

FENPYROXIMATE (193)

Acute RfD = 0.005 mg/kg bw (5 µg/kg bw)

IESTI

Maximum %ARfD: 160% all | 140% gen. pop. | 160% child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
	(all commodities)															
FP 0226	Apple (all commodities)	highest utilization: raw with peel (incl. consumption without peel)	0.0053–0.033	0.072–0.32	1.000	CN	Child, 1–6 yrs.	1314	403.39	255	3	2a	0.06–4.08	1–80%	1–30%	1–80%
VC 0424	Cucumber (all commodities)	highest utilization: raw with skin	0.02	0.03	1.000	CN	Child, 1–6 yrs.	340	212.11	458	3	2b	0.01–1.18	0–20%	0–10%	0–20%
VO 0448	Tomato (all commodities)	highest utilization: raw with peel	0.024–0.06	0.047–0.12	1.000	CN	Child, 1–6 yrs.	1117	263.76	175	3	2a	0.27–4.56	5–90%	1–30%	5–90%
VO 0440	Eggplant (aubergine) (all other commodities)	highest utilization: Total	0.1	0.17	1.000	AU	Child, 2–6 yrs.	29	128.25	318	3	2b	0.11–3.44	2–70%	1–60%	2–70%
VO 0440	Eggplant (aubergine)	raw with skin	–	0.17	1.000	CN	Child, 1–6 yrs.	969	253.44	444	3	2b	8.010	160%	90%	160%
VO 0443	Pepino (melon pear, Tree melon)	Total	–	0.17	1.000	PRIMO-NL	Gen. pop.	P95	424.02	340	3	2a	2.850	60%	60%	50%
VO 2713	Scarlet eggplant (gilo, Ethiopian eggplant) (all commodities)	highest utilization: Total	0	0.17	1.000	PRIMO-NL	Gen. pop.	P95	424.02	28	3	2a	1.1–1.24	20–20%	20–20%	30–30%

FENPYROXIMATE (193)

Acute RfD = 0.005 mg/kg bw (5 µg/kg bw)

IESTI

Maximum %ARfD: 160% all | 140% gen. pop. | 160% child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
VP 0061	Beans with pods (Phaseolus spp): (immature pods + succulent seeds)	Total	–	0.42	1.000	CA	Child, <6 yrs.	261	203.31	<25	NR	1	5.670	110%	60%	110%
VP 0061	Beans with pods (Phaseolus spp): (immature pods + succulent seeds) (all other commodities)	highest utilization: dried	0.075	0.42	5.000	NL	Gen. pop., > 1 yrs.	E	50.01	<25	NR	1	0.11–1.6	2–30%	1–30%	2–10%
VP 0061	Beans with pods (Phaseolus spp): (immature pods + succulent seeds)	cooked/boiled	–	0.42	1.000	PRIMO-NL	toddler	P97.5	127.90	<25	NR	1	5.266	110%	70%	110%
VP 0061	Beans with pods (Phaseolus spp): (immature pods + succulent seeds)	canned/preserved	–	0.42	1.000	NL	toddler, 8–20 m	E	127.90	2	NR	1	5.266	110%	60%	110%
VP 0061	Beans with pods (Phaseolus spp): (immature pods + succulent seeds)	frozen	–	0.42	1.000	NL	toddler, 8–20 m	E	116.60	1	NR	1	4.801	100%	60%	100%

FENPYROXIMATE (193)

Acute RfD = 0.005 mg/kg bw (5 µg/kg bw)

IESTI

Maximum %ARfD: 160% all | 140% gen. pop. | 160% child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
VP 0522	Broad bean with pods (immature pods + succulent seeds) (Vicia spp)	Total	–	0.42	1.000	PRIMO-NL	toddler	E	116.60	<25	NR	1	4.801	100%	60%	100%
VP 0522	Broad bean with pods (immature pods + succulent seeds) (Vicia spp)	cooked/boiled	–	0.42	1.000	JP	Gen. pop., > 1 yrs.	216	153.00	<25	NR	1	1.158	20%	20%	4%
VP 0542	Sword bean with pods (immature pods + succulent seeds) (Canavalia spp) (all commodities)	highest utilization: cooked/boiled	0	0.42	1.000	CN	Gen. pop., > 1 yrs.	891	316.83	<25	NR	1	2.5–2.5	50–50%	50–50%	0–0%
MM 0095	Meat from mammals other than marine mammals	Total	NA	NA	1.000	CN	Child, 1–6 yrs.	4329	261.46	NR	NR	1	NA	20%	10%	20%
MM 0095	Meat from mammals other than marine mammals: 20% as fat	Total	–	0.13	1.000	CN	Child, 1–6 yrs.	4329	52.29	NR	NR	1	0.421	8%	6%	9%
MM 0095	Meat from mammals other than marine	Total	–	0.041	1.000	CN	Child, 1–6	4329	209.17	NR	NR	1	0.531	10%	8%	10%

FENPYROXIMATE (193) IESTI

Acute RfD = 0.005 mg/kg bw (5 µg/kg bw) Maximum %ARfD: 160% 140% 160%

all gen. pop. child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
	mammals: 80% as muscle						yrs.									
MF 0100	Mammalian fats (except milk fats)	Total	–	0.13	1.000	PRIMO-UK	infant	P97.5	18.10	NR	NR	1	0.270	5%	5%	5%
MO 0105	Edible offal (mammalian)	Total	–	0.77	1.000	ZA	Gen. pop., > 10 yrs.	–	523.58	NR	NR	1	7.238	140%	140%	120%
ML 0106	Milks	Total	0.005	–	1.000	PRIMO-UK	infant	P97.5	1080.70	NR	NR	3	0.621	10%	5%	10%

FIPRONIL (202)

Acute RfD = 0.03 mg/kg bw (30 µg/kg bw)

IESTI

Maximum %ARfD: 20% all | 7% gen. pop. | 20% child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
FI 0327	Banana (incl. dwarf banana & plantain) (all commodities)	highest utilization: raw without peel	0	0	1.000	CN	Child, 1–6 yrs.	286	455.81	767	3	2b	0–0	0–0%	0–0%	0–0%
VA 0385	Onion, bulb (all commodities)	highest utilization: raw without skin	0.02	0.033	1.000	JP	Child, 1–6 yrs.	748	102.00	244	3	2b	0.01–0.62	0–2%	0–1%	0–2%
VO 0448	Tomato (all commodities)	highest utilization: raw with peel	0.008	0.008	1.000	CN	Child, 1–6 yrs.	1117	263.76	175	3	2a	0.04–0.3	0–1%	0–0%	0–1%
VL 0460	Amaranth leaves (bledo) (all commodities)	highest utilization: Total	0	0.02919	1.000	PRIMO-BE	toddler	P97.5	402.30	<25	NR	1	0.32–0.66	1–2%	1–1%	2–2%
VL 0464	Chard (beet leaves, silver beet) (all commodities)	highest utilization: cooked/boiled	0	0.02919	1.000	PRIMO-NL	child	P100	81.80	105	3	2b	0.1–0.39	0–1%	0–1%	1–1%
VL 0465	Chervil (all commodities)	highest utilization: Total	0	0.02919	1.000	PRIMO-BE	toddler	P100	23.00	<25	NR	1	0.01–0.04	0–0%	0–0%	0–0%
VL 0469	Chicory leaves (green and red cultivars) (sugar loaf) (all commodities)	highest utilization: Total	0	0.02919	1.000	PRIMO-BE	toddler	P100	143.00	440	3	2b	0.45–0.7	1–2%	0–1%	1–2%

FIPRONIL (202)

Acute RfD = 0.03 mg/kg bw (30 µg/kg bw)

IESTI

Maximum %ARfD: 20% all | 7% gen. pop. | 20% child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
VL 2752	Chrysanthemum, edible leaved (all commodities)	highest utilization: Total	0	0.02919	1.000	PRIMO-BE	toddler	P97.5	402.30	<25	NR	1	0.18–0.66	1–2%	0–1%	2–2%
VL 0470	Corn salad (lambs lettuce) (all commodities)	highest utilization: Total	0	0.02919	1.000	PRIMO-BE	toddler	P100	50.00	<25	NR	1	0.02–0.08	0–0%	0–0%	0–0%
VL 0510	Cos lettuce (all commodities)	highest utilization: Total	0	0.02919	1.000	PRIMO-NL	child	P97.5	140.10	290	3	2b	0.27–0.67	1–2%	1–1%	2–2%
VL 0474	Dandelion (Laiteron, Pissenlit) (all commodities)	highest utilization: Total	0	0.02919	1.000	PRIMO-BE	toddler	P100	143.00	35	3	2a	0.05–0.35	0–1%	0–1%	1–1%
VL 0476	Endive (i.e. Scarole) (all commodities)	highest utilization: cooked/boiled	0	0.02919	1.000	PRIMO-NL	toddler	P95	135.20	251	3	2b	0.63–1.16	2–4%	1–1%	2–4%
VL 0482	Lettuce, head (all commodities)	highest utilization: Total	0	0.02919	1.000	PRIMO-NL	child	P97.5	140.10	290	3	2b	0.29–0.67	1–2%	1–1%	2–2%
VL 0483	Lettuce, leaf (all commodities)	highest utilization: Total	0	0.02919	1.000	CN	Child, 1–6 yrs.	243	387.25	305	3	2a	0.17–1.81	1–6%	1–2%	2–6%
VL 0492	Purslane	highest utilization:	0	0.02919	1.000	PRIMO-	Gen. pop.	P100	271.20	<25	NR	1	0.03–0.12	0–0%	0–0%	0–0%

FIPRONIL (202)

Acute RfD = 0.03 mg/kg bw (30 µg/kg bw)

IESTI

Maximum %ARfD: 20% all | 7% gen. pop. | 20% child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
	(all commodities)	cooked/boiled				NL										
VL 0501	Sowthistle (all commodities)	highest utilization: raw	0	0.02919	1.000	CN	Gen. pop., > 1 yrs.	1187	592.49	35	3	2a	0.36–0.36	1–1%	1–1%	0–0%
VL 0502	Spinach (all commodities)	highest utilization: Total	0	0.02919	1.000	PRIMO-BE	toddler	P97.5	402.30	<25	NR	1	0.13–0.66	0–2%	0–1%	0–2%
VL 0401	Broccoli, Chinese (i.e. kailan) (all commodities)	highest utilization: raw	0	0.02919	1.000	CN	Child, 1–6 yrs.	334	222.48	311	3	2b	0.73–1.21	2–4%	1–2%	2–4%
VL 0466	Chinese cabbage (type Pak-choi) (i.e. celery mustard) (all commodities)	highest utilization: raw	0	0.02919	1.000	CN	Child, 1–6 yrs.	1966	327.07	1548	3	2b	0.36–1.78	1–6%	1–3%	1–6%
VL 0472	Cress, garden (all commodities)	highest utilization: raw	0	0.02919	1.000	CN	Gen. pop., > 1 yrs.	1443	352.50	<25	NR	1	0.01–0.19	0–1%	0–1%	0–0%
VL 0468	Flowering white cabbage (Choisum) (all commodities)	highest utilization: Total	0	0.02919	1.000	PRIMO-BE	toddler	P97.5	148.10	186	3	2b	0.63–0.73	2–2%	1–2%	2–2%
VL 0480	Kale (borecole, collards)	highest utilization:	0	0.02919	1.000	PRIMO-	child	P100	142.12	672	3	2b	0.48–0.77	2–3%	1–2%	2–3%

FIPRONIL (202)

Acute RfD = 0.03 mg/kg bw (30 µg/kg bw)

IESTI

Maximum %ARfD: 20% all | 7% gen. pop. | 20% child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
	(all commodities)	Total				DE										
VL 0481	Komatsuna	Total		0.02919	1.000	PRIMO-BE	toddler	P100	114.40	<25	NR	1	0.188	1%	0%	1%
VL 2781	Mizuna	Total		0.02919	1.000	PRIMO-BE	toddler	P100	114.40	<25	NR	1	0.188	1%	0%	1%
VL 0485	Mustard greens (Indian mustard, amsoi, mustard cabbage, red mustards) (all commodities)	highest utilization: raw	0	0.02919	1.000	CN	Child, 1–6 yrs.	635	299.31	245	3	2a	0.35–1.43	1–5%	1–2%	2–5%
VL 0494	Radish leaves	Total		0.02919	1.000	PRIMO-DE	child	P100	142.12	<25	NR	1	0.257	1%	0%	1%
VL 0495	Rape greens (all commodities)	highest utilization: Total	0	0.02919	1.000	PRIMO-DE	child	P100	142.12	<25	NR	1	0.11–0.26	0–1%	0–0%	1–1%
VL 0496	Rucola (arugula, rocket salad, roquette, Roman rocket) (all commodities)	highest utilization: Total	0	0.02919	1.000	PRIMO-DE	child	P100	43.44	<25	NR	1	0.03–0.08	0–0%	0–1%	0–0%

FIPRONIL (202)

Acute RfD = 0.03 mg/kg bw (30 µg/kg bw)

IESTI

Maximum %ARfD: 20% all | 7% gen. pop. | 20% child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
VL 0506	Turnip greens (Namenia, tendergreen) (all commodities)	highest utilization: Total	0	0.02919	1.000	PRIMO-BE	toddler	P100	114.40	35	3	2a	0.05–0.3	0–1%	0–1%	0–1%
VL 2832	Witloof chicory sprouts (Belgian endives) (all commodities)	highest utilization: cooked/boiled	0	0.02919	1.000	PRIMO-NL	toddler	P97.5	160.65	124	3	2a	0.26–1.17	1–4%	1–1%	1–4%
VD 0071	Beans (dry) (Phaseolus spp) (all commodities)	highest utilization: Total	0.001	0	1.000	PRIMO-UK	infant	P97.5	159.00	<25	NR	3	0–0.02	0–0%	0–0%	0–0%
VD 0523	Broad bean (dry) (Vicia spp) (all commodities)	highest utilization: Total	0.001	0	1.000	PRIMO-UK	infant	P97.5	159.00	<25	NR	3	0–0.02	0–0%	0–0%	0–0%
VD 0531	Lablab bean (dry) (Lablab spp) (all commodities)	highest utilization: Total	0.001	0	1.000	PRIMO-UK	infant	P97.5	159.00	<25	NR	3	0.01–0.02	0–0%	0–0%	0–0%
VD 0541	Soya bean (dry) (Glycine spp) (all commodities)	highest utilization: Total	0.002–0.0088	0	1.000	CN	Child, 1–6 yrs.	179	239.05	<25	NR	3	0–0.03	0–0%	0–0%	0–0%
VD 0072	Peas (dry) (Pisum spp)	highest utilization:	0.001	0	0.400	CN	Gen. pop.,	268	1673.82	<25	NR	3	0–0.01	0–0%	0–0%	0–0%

FIPRONIL (202)

Acute RfD = 0.03 mg/kg bw (30 µg/kg bw)

IESTI

Maximum %ARfD: 20% all | 7% gen. pop. | 20% child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
	(all commodities)	cooked/boiled					> 1 yrs.									
VD 0524	Chickpea (dry) (Cicer spp) (all commodities)	highest utilization: canned/preserved	0.001	0	0.400	PRIMO-NL	child	P100	328.80	<25	NR	3	0–0.01	0–0%	0–0%	0–0%
VD 0533	Lentil (dry) (Lens spp) (all commodities)	highest utilization: Total	0.001	0	1.000	PRIMO-UK	Child, 11–14 yrs.	P97.5	321.50	<25	NR	3	0–0.01	0–0%	0–0%	0–0%
VD 0537	Pigeon pea (dry) (Cajanus spp)	Total	0.001		1.000	PRIMO-UK	child, 11–14 yrs.	P97.5	315.00	<25	NR	3	0.007	0%	0%	0%
VR 0574	Beetroot (all commodities)	highest utilization: Total	0	0.00212	1.000	AU	Child, 2–6 yrs.	53	314.08	135	3	2a	0–0.07	0–0%	0–0%	0–0%
VR 0575	Burdock, greater or edible	Total	–	0.00212	1.000	PRIMO-BE	toddler	P100	99.90	75	3	2a	0.030	0%	0%	0%
VR 0577	Carrot (all commodities)	highest utilization: raw with skin	0	0.00212	1.000	CN	Child, 1–6 yrs.	400	234.68	300	3	2b	0.02–0.09	0–0%	0–0%	0–0%
VR 0578	Celeriac (turnip rooted celery) (all commodities)	highest utilization: Total	0	0.00212	1.000	PRIMO-BE	toddler	P100	196.90	749	3	2b	0.01–0.07	0–0%	0–0%	0–0%

FIPRONIL (202)

Acute RfD = 0.03 mg/kg bw (30 µg/kg bw)

IESTI

Maximum %ARfD: 20% all | 7% gen. pop. | 20% child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
VR 0469	Chicory, roots (all commodities)	highest utilization: Total	0	0.00212	1.000	AU	Gen. pop., > 2 yrs.	175	26.16	48	3	2b	0–0	0–0%	0–0%	0–0%
VR 0583	Horseradish (all commodities)	highest utilization: Total	0	0.00212	1.000	PRIMO-DE	Gen. pop.	P97.5	79.50	220	3	2b	0–0.01	0–0%	0–0%	0–0%
VR 0587	Parsley, turnip-rooted (Hamburg roots)	Total		0.00212	1.000	PRIMO-NL	Gen. pop.	P97.5	96.60	140	3	2b	0.009	0%	0%	0%
VR 0588	Parsnip (all commodities)	highest utilization: cooked/boiled (without skin)	0	0.00212	1.000	PRIMO-NL	child	E	133.30	227	3	2b	0–0.05	0–0%	0–0%	0–0%
VR 0494	Radish (all commodities)	highest utilization: Total	0	0.00212	1.000	PRIMO-NL	child	E	64.40	172	3	2b	0–0.02	0–0%	0–0%	0–0%
VR 0590	Radish, black (all commodities)	highest utilization: Total	0	0.00212	1.000	PRIMO-NL	child	E	64.40	172	3	2b	0–0.02	0–0%	0–0%	0–0%
VR 0591	Radish, Japanese (Chinese radish, daikon) (all commodities)	highest utilization: raw without skin	0	0.00212	1.000	CN	Child, 1–6 yrs.	1187	293.37	1000	3	2b	0–0.12	0–0%	0–0%	0–0%
VR 0498	Salsify (oyster plant) (all commodities)	highest utilization: Total	0	0.00212	1.000	PRIMO-BE	toddler	P100	99.90	75	3	2a	0.03–0.03	0–0%	0–0%	0–0%

FIPRONIL (202)

Acute RfD = 0.03 mg/kg bw (30 µg/kg bw)

IESTI

Maximum %ARfD: 20% all | 7% gen. pop. | 20% child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
VR 0596	Sugar beet (all commodities)	highest utilization: composite foods; unspecified ind. processed	0.003	0	1.000	NL	Child, 2–6 yrs.	2554	168.93	NR	NR	3	0.01–0.03	0–0%	0–0%	0–0%
VR 0497	Swede (rutabaga) (all commodities)	highest utilization: Total	0	0.00212	1.000	PRIMO-UK	infant	P97.5	90.00	500	3	2b	0–0.07	0–0%	0–0%	0–0%
VR 0506	Turnip, garden (all commodities)	highest utilization: cooked/boiled (without peel)	0	0.00212	1.000	PRIMO-NL	child	E	133.31	176	3	2b	0.03–0.05	0–0%	0–0%	0–0%
VR 0573	Arrowroot (all commodities)	highest utilization: Total	0	0.00212	1.000	AU	Child, 2–6 yrs.	689	0.20	45	3	2b	0–0	0–0%	0–0%	0–0%
VR 0463	Cassava (manioc) (all commodities)	highest utilization: cooked/boiled (without peel)	0	0.00212	1.000	PRIMO-NL	Gen. pop.	E	250.00	356	3	2b	0.02–0.02	0–0%	0–0%	0–0%
VR 0585	Jerusalem artichoke (i.e. topinambur) (all commodities)	highest utilization: cooked/boiled (without peel)	0	0.00212	1.000	PRIMO-NL	child	E	133.30	56	3	2a	0.01–0.03	0–0%	0–0%	0–0%
VR 0589	Potato (all commodities)	highest utilization: Total	0.00223–0.00493	0.01095–0.0296	1.000	PRIMO-UK	infant	P97.5	191.10	216	3	2b	0–1.95	0–7%	0–2%	0–7%

FIPRONIL (202)

Acute RfD = 0.03 mg/kg bw (30 µg/kg bw)

IESTI

Maximum %ARfD: 20% all | 7% gen. pop. | 20% child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
VR 0508	Sweet potato (all commodities)	highest utilization: Total	0	0.00212	1.000	CA	Child, <6 yrs.	91	358.61	546	3	2b	0.05–0.18	0–1%	0–0%	0–1%
VR 0504	Tannia (tanier, yautia) (all commodities)	highest utilization: cooked/boiled (without peel)	0	0.00212	1.000	NL	Gen. pop., > 1 yrs.	E	249.97	170	3	2a	0.01–0.02	0–0%	0–0%	0–0%
VR 0505	Taro (dasheen, eddoe) (all commodities)	highest utilization: cooked/boiled (without peel)	0	0.00212	1.000	CN	Child, 1–6 yrs.	199	384.18	668	3	2b	0.02–0.15	0–1%	0–0%	0–1%
VR 0600	Yams (all commodities)	highest utilization: Total	0	0.00212	1.000	PRIMO-UK	adult	P97.5	693.70	365	3	2a	0.02–0.04	0–0%	0–0%	0–0%
GC 0648	Quinoa	Total	0.008		1.000	PRIMO-FI	child 3 yrs.	P97.5	75.69	<25	NR	3	0.040	0%	0%	0%
GC 0650	Rye (all commodities)	highest utilization: flakes	0.008	0	1.000	CA	Child, <6 yrs.	1909	539.23	NR	NR	3	0.01–0.27	0–1%	0–0%	0–1%
GC 0653	Triticale	Total	0.008		1.000	PRIMO-UK	child, 4–6 yrs.	P97.5	296.20	<25	NR	3	0.116	0%	0%	0%
GC 0654	Wheat (all commodities)	highest utilization: flakes	0.008	0	1.000	CA	Child, <6 yrs.	1909	539.23	NR	NR	3	0.01–0.27	0–1%	0–0%	0–1%

FIPRONIL (202)

Acute RfD = 0.03 mg/kg bw (30 µg/kg bw)

IESTI

Maximum %ARfD: 20% all | 7% gen. pop. | 20% child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
GC 0640	Barley (all commodities)	highest utilization: flakes	0.002	0	1.000	CA	Child, <6 yrs.	1909	539.23	NR	NR	3	0–0.07	0–0%	0–0%	0–0%
GC 0641	Buckwheat (all commodities)	highest utilization: flakes	0.002	0	1.000	CA	Child, <6 yrs.	1909	539.23	NR	NR	3	0–0.07	0–0%	0–0%	0–0%
GC 0647	Oats (all commodities)	highest utilization: flakes (rolled oats)	0.002	0	1.000	CA	Child, <6 yrs.	1909	539.23	NR	NR	3	0–0.07	0–0%	0–0%	0–0%
GC 0649	Rice (all commodities)	highest utilization: polished rice (cooked)	0.002	0	0.400	CN	Child, 1–6 yrs.	8752	1004.28	<25	NR	3	0–0.05	0–0%	0–0%	0–0%
GC 0645	Maize (corn) (all commodities)	highest utilization: flakes	0.004	0	1.000	CA	Child, <6 yrs.	1909	539.23	NR	NR	3	0–0.14	0–0%	0–0%	0–0%
GS 0659	Sugar cane (all commodities)	highest utilization: thick juice	0.00007–0.003	0	1.000	CN	Gen. pop., > 1 yrs.	436	1817.52	NR	NR	3	0–0.06	0–0%	0–0%	0–0%
SO 0699	Safflower seed (all commodities)	highest utilization: Total	0.008	0	1.000	PRIMO-DE	child	P95	49.74	<25	NR	3	0–0.02	0–0%	0–0%	0–0%
SO 0702	Sunflower seed (all commodities)	highest utilization: Total	0.008	0	1.000	CA	women, 15–49 yrs.	121	296.25	<25	NR	3	0–0.04	0–0%	0–0%	0–0%
SO 0691	Cotton seed	highest utilization:	0.0006–	0	1.000	US	Child, < 6	6354	3.13	NR	NR	3	0–0	0–0%	0–0%	0–0%

FIPRONIL (202)

Acute RfD = 0.03 mg/kg bw (30 µg/kg bw)

IESTI

Maximum %ARfD: 20% 7% 20%

all gen. pop. child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
	(all commodities)	Oil (refined)	0.002				yrs.									
MM 0095	Meat from mammals other than marine mammals	Total	NA	NA	1.000	CN	Child, 1–6 yrs.	4329	261.46	NR	NR	1	NA	3%	2%	3%
MM 0095	Meat from mammals other than marine mammals: 20% as fat	Total	–	0.1912	1.000	CN	Child, 1–6 yrs.	4329	52.29	NR	NR	1	0.620	2%	1%	2%
MM 0095	Meat from mammals other than marine mammals: 80% as muscle	Total	–	0.0221	1.000	CN	Child, 1–6 yrs.	4329	209.17	NR	NR	1	0.286	1%	1%	1%
MF 0100	Mammalian fats (except milk fats)	Total	–	0.1912	1.000	PRIMO-UK	infant	P97.5	18.10	NR	NR	1	0.398	1%	1%	1%
MO 0105	Edible offal (mammalian)	Total	–	0.059	1.000	ZA	Gen. pop., > 10 yrs.	–	523.58	NR	NR	1	0.555	2%	2%	2%
ML 0106	Milks	Total	0.04321		1.000	PRIMO-UK	infant	P97.5	1080.70	NR	NR	3	5.367	20%	7%	20%
FM 0812	Cattle milk fat	Total	0.12		1.000	BR	Gen. pop.,	441	150.00	NR	NR	3	0.279	1%	1%	1%

FIPRONIL (202) IESTI

Acute RfD = 0.03 mg/kg bw (30 µg/kg bw) Maximum %ARfD: 20% 7% 20%

all gen. pop. child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
							> 10 yrs.									
PM 0110	Poultry meat	Total	NA	NA	1.000	CN	Child, 1–6 yrs.	175	347.00	NR	NR	1	NA	3%	1%	3%
PM 0110	Poultry meat: 10% as fat	Total	–	0.0922	1.000	CN	Child, 1–6 yrs.	175	34.70	NR	NR	1	0.198	1%	0%	1%
PM 0110	Poultry meat: 90% as muscle	Total	–	0.0288	1.000	CN	Child, 1–6 yrs.	175	312.30	NR	NR	1	0.557	2%	1%	2%
PF 0111	Poultry, fats	Total	–	0.0922	1.000	CA	Child, <6 yrs.	66	49.38	NR	NR	1	0.268	1%	1%	1%
PO 0111	Poultry, edible offal (includes kidney and liver)	Total	–	0.038	1.000	CN	Gen. pop., > 1 yrs.	421	345.63	NR	NR	1	0.247	1%	1%	1%
PE 0112	Eggs	Total	–	0.0566	1.000	PRIMO-UK	infant	P97.5	108.00	NR	NR	1	0.703	2%	1%	2%

FLUBENDIAMIDE IESTI

Acute RfD = mg/kg bw (0 µg/kg bw) Maximum %ARfD: 0% 0% 0%

all gen. pop. child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
GC 0649	Rice (all commodities)	highest utilization: Total	0.01–1.15	0	1.000	CA	Child, <6 yrs.	666	461.40	<25	NR	3	0.07–34.73	0–0%	0–0%	0–0%

FLUPYRADIFURONE (285) IESTI

Acute RfD = 0.2 mg/kg bw (200 µg/kg bw) Maximum %ARfD: 6% 3% 6%

all gen. pop. child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
FT 0305	Table olives (all commodities)	highest utilization: Total	0.495	3.3	1.000	US	Child, < 6 yrs.	132	54.38	<25	NR	1	0.15–12.38	0–6%	0–3%	0–6%
SO 0495	Rape seed (Canola) (all commodities)	highest utilization: Oil (refined)	0.36	0	1.000	CA	Child, <6 yrs.	1127	26.46	NR	NR	3	0.32–0.59	0–0%	0–0%	0–0%
SO 0305	Olives for oil production (all commodities)	highest utilization: Total	0.09415–0.495	0	1.000	PRIMO-ES	child	P97.5	44.15	<25	NR	3	0.06–0.63	0–0%	0–0%	0–0%

PHOSMET (103)

Acute RfD = 0.03 mg/kg bw (30 µg/kg bw)

IESTI

Maximum %ARfD: 650% all | 520% gen. pop. | 650% child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
FB 0020	Blueberries	Total	–	17	1.000	CA	Child, <6 yrs.	189	176.21	<25	NR	1	194.581	650%	520%	650%
FB 0020	Blueberries	raw with skin	–	17	1.000	DE	Gen. pop., 14–80 yrs.	70	388.00	<25	NR	1	86.369	290%	290%	230%
FB 0020	Blueberries	canned/preserved	–	17	1.000	NL	Child, 2–6 yrs.	E	61.70	<25	NR	1	57.001	190%	80%	190%
FB 0020	Blueberries	dried	–	17	3.000	AU	Child, 2–6 yrs.	56	14.86	<25	NR	1	39.886	130%	60%	130%
FB 0020	Blueberries (all other commodities)	highest utilization: sauce/puree	4.5	–	1.000	NL	Child, 2–6 yrs.	E	109.70	NR	NR	3	0.65–26.83	2–90%	1–40%	2–90%
FB 0265	Cranberry (all commodities)	highest utilization: Total	1.15	2.2	1.000	AU	Child, 2–16 yrs.	103	279.66	<25	NR	1	0.02–16.19	0–50%	0–20%	0–50%
VR 0589	Potato (all commodities)	highest utilization: Total	0	0	1.000	PRIMO-UK	infant	P97.5	191.10	216	3	2b	0–0	0–0%	0–0%	0–0%

PPYDIFLUMETOFEN (309)

Acute RfD = 0.3 mg/kg bw (300 µg/kg bw)

IESTI

Maximum %ARfD: 370% all | 120% gen. pop. | 370% child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
FB 0264	Blackberries (all commodities)	highest utilization: jam	2.6	0.815	1.000	CA	Child, <6 yrs.	443	78.10	NR	NR	3	0.18–13.21	0–4%	0–2%	0–4%
FB 0266	Dewberries (incl. boysenberry, loganberry) (all commodities)	highest utilization: Total	0	0.815	1.000	PRIMO-UK	toddler	P97.5	25.50	<25	NR	1	1.43–1.43	0–0%	0–0%	0–0%
FB 0272	Raspberries, red, black (all commodities)	highest utilization: juice (pasteurized)	2.6	0.815	1.000	PRIMO-DE	child	P95	188.96	NR	NR	3	0.27–30.42	0–10%	0–2%	0–10%
FI 0345	Mango (all commodities)	highest utilization: raw without peel	0.01	0.01	1.000	NL	toddler, 8–20 m	11	160.43	289	3	2b	0–0.47	0–0%	0–0%	0–0%
FI 2540	Pitaya (dragon fruit, pitahaya) (all commodities)	highest utilization: raw without peel	0	0.03	1.000	TH	Child, 3–6 yrs.	307	202.46	280	3	2b	1.07–1.07	0–0%	0–0%	0–0%
VL 0482	Lettuce, head (all commodities)	highest utilization: Total	5.25	10	1.000	PRIMO-NL	child	P97.5	140.10	290	3	2b	3.09–228.42	1–80%	1–30%	1–80%
VL 0483	Lettuce, leaf	Total	–	18	1.000	CN	Child, 1–6 yrs.	243	387.25	305	3	2a	1113.286	370%	120%	370%
VL 0483	Lettuce, leaf	raw	–	18	1.000	NL	Child, 2–6	91	140.10	118	3	2a	367.452	120%	40%	120%

PPYDIFLUMETOFEN (309)

Acute RfD = 0.3 mg/kg bw (300 µg/kg bw)

IESTI

Maximum %ARfD: 370% all | 120% gen. pop. | 370% child

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
							yrs.									
VL 0483	Lettuce, leaf (all other commodities)	highest utilization: cooked/boiled	5.3	18	1.000	NL	Gen. pop., > 1 yrs.	2	220.89	79	3	2a	3.12–103.65	1–30%	1–30%	1%
SO 0691	Cotton seed (all commodities)	highest utilization: Oil (refined)	0.063	0	1.000	US	Child, < 6 yrs.	6354	3.13	NR	NR	3	0.01–0.01	0–0%	0–0%	0–0%
SB 0716	Coffee bean (all commodities)	highest utilization: extract (beverage)	0.01	0	0.180	CA	women, 15–49 yrs.	2666	2088.65	NR	NR	3	0–0.05	0–0%	0–0%	0–0%

TEBUCONAZOLE (189) IESTI

Acute RfD = 0.3 mg/kg bw (300 µg/kg bw) Maximum %ARfD: 0%

women

Codex code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded
HS 0780	Cumin, seed (all commodities)	highest utilization: composite foods; unspecified ind. processed	0.22	0	1.000	PRIMO-NL	Gen. pop.	P97.5	2.40	NR	NR	3	0.01–0.01	0–0%

TEBUFENOZIDE (196) IESTI

Acute RfD = 0.9 mg/kg bw (900 µg/kg bw) Maximum %ARfD: 20% 8% 20%

all gen. pop. child

Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
highest utilization: Total	0.045–4.7	0	1.000	CA	Child, <6 yrs.	666	461.40	<25	NR	3	0.27–141.95	0–20%	0–8%	0–20%
Total	NA	NA	1.000	CN	Child, 1–6 yrs.	4329	261.46	NR	NR	1	NA	0%	0%	0%
Total	0.054	0.17	1.000	CN	Child, 1–6	4329	52.29	NR	NR	1	0.551	0%	0%	0%

TEBUFENOZIDE (196)

Acute RfD = 0.9 mg/kg bw (900 µg/kg bw)

IESTI

Maximum %ARfD: 20% all | 8% gen. pop. | 20% child

Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
					yrs.									
Total	0.02	0.029	1.000	CN	Child, 1–6 yrs.	4329	209.17	NR	NR	1	0.376	0%	0%	0%
Total	0.054	0.17	1.000	PRIMO-UK	infant	P97.5	18.10	NR	NR	1	0.354	0%	0%	0%
Total	0.028	0.053	1.000	ZA	Gen. pop., > 10 yrs.	–	523.58	NR	NR	1	0.498	0%	0%	0%
Total	0.01	–	1.000	PRIMO-UK	infant	P97.5	1080.70	NR	NR	3	1.242	0%	0%	0%
Total	NA	NA	1.000	CN	Child, 1–6 yrs.	175	347.00	NR	NR	1	NA	0%	0%	0%
Total	0.02	0.02	1.000	CN	Child, 1–6 yrs.	175	34.70	NR	NR	1	0.043	0%	0%	0%
Total	0.02	0.02	1.000	CN	Child, 1–6 yrs.	175	312.30	NR	NR	1	0.387	0%	0%	0%
Total	0.02	0.02	1.000	CA	Child, <6 yrs.	66	49.38	NR	NR	1	0.058	0%	0%	0%
Total	0.02	0.02	1.000	CN	Gen. pop., > 1 yrs.	421	345.63	NR	NR	1	0.130	0%	0%	0%

TEBUFENOZIDE (196)

Acute RfD = 0.9 mg/kg bw (900 µg/kg bw)

IESTI

Maximum %ARfD: 20% all | 8% gen. pop. | 20% child

Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
Total	0.02	0.02	1.000	PRIMO-UK	infant	P97.5	108.00	NR	NR	1	0.248	0%	0%	0%

Annex 5. Livestock dietary burden calculation

Table A5.1 Livestock dietary burden calculation

ETOFENPROX (184) BEEF CATTLE

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Rice hulls	CM/CF	13	STMR	90	14.44	–	–	5	–	–	–	0.722	–
Rice grain	GC	3.1	STMR	88	3.52	20	–	40	–	0.705	–	1.409	–
Rice bran/pollard	CM/CF	3.1	STMR	90	3.44	15	–	35	20	0.517	–	1.206	0.689
Bean seed	VD	0.05	STMR	88	0.06	–	20	20	–	–	0.011	0.011	–
Corn, field grain	GC	0.05	STMR	88	0.06	65	80	–	75	0.037	0.045	–	0.043
Rice straw	AF/AS	0.025	HR	90	0.03	–	–	–	5	–	–	–	0.001
Total	–	–	–	–	–	100	100	100	100	1.258	0.057	3.348	0.733

ETOFENPROX (184) BEEF CATTLE

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Rice hulls	CM/CF	13	STMR	90	14.44	–	–	5	–	–	–	0.722	–
Rice grain	GC	3.1	STMR	88	3.52	20	–	40	–	0.705	–	1.409	–
Rice bran/pollard	CM/CF	3.1	STMR	90	3.44	15	–	35	20	0.517	–	1.206	0.689
Bean seed	VD	0.05	STMR	88	0.06	–	20	20	–	–	0.011	0.011	–
Corn, field grain	GC	0.05	STMR	88	0.06	65	80	–	75	0.037	0.045	–	0.043
Rice straw	AF/AS	0.01	STMR	90	0.01	–	–	–	5	–	–	–	6E-04
Total	–	–	–	–	–	100	100	100	100	1.258	0.057	3.348	0.732

ETOFENPROX (184) DAIRY CATTLE

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP

Rice hulls	CM/CF	13	STMR	90	14.44	–	–	10	–	–	–	1.444	–
Rice grain	GC	3.1	STMR	88	3.52	20	–	20	–	0.705	–	0.705	–
Rice bran/pollard	CM/CF	3.1	STMR	90	3.44	15	20	30	10	0.517	0.689	1.033	0.344
Bean seed	VD	0.05	STMR	88	0.06	–	20	15	–	–	0.011	0.009	–
Corn, field grain	GC	0.05	STMR	88	0.06	25	30		80	0.014	0.017	–	0.045
Rice straw	AF/AS	0.025	HR	90	0.03	–	5	20	10	–	0.001	0.006	0.003
Canola meal	SM	0.01	STMR	88	0.01	10	10	5	–	0.001	0.001	6E-04	–
Total	–	–	–	–	–	70	85	100	100	1.237	0.72	3.197	0.393

ETOFENPROX (184) DAIRY CATTLE

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Rice hulls	CM/CF	13	STMR	90	14.44	–	0	10	–	–	0	1.444	–
Rice grain	GC	3.1	STMR	88	3.52	20	–	20		0.704545	–	0.705	–
Rice bran/pollard	CM/CF	3.1	STMR	90	3.44	15	20	30	10	0.516667	0.689	1.033	0.344
Bean seed	VD	0.05	STMR	88	0.06	0	20	15	–	0	0.011	0.009	–
Corn, field grain	GC	0.05	STMR	88	0.06	25	30	–	80	0.014205	0.017	–	0.045
Rice straw	AF/AS	0.01	STMR	90	0.01	0	5	20	10	0	6E-04	0.002	0.001
Canola meal	SM	0.01	STMR	88	0.01	10	10	5		0.001136	0.001	6E-04	–
Total	–	–	–	–	–	70	85	100	100	1.236553	0.719	3.194	0.391

ETOFENPROX (184) POUTRY BROILER

Estimated maximum and mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Rice grain	GC	3.1	STMR	88	3.52	20	–	50	–	0.705	–	1.761	–
Rice bran/pollard	CM/CF	3.1	STMR	90	3.44	10	10	20	5	0.344	0.344	0.689	0.172
Bean seed	VD	0.05	STMR	88	0.06	–	20	30	–	–	0.011	0.017	–
Corn, field grain	GC	0.05	STMR	88	0.06	70	70	–	70	0.040	0.04	–	0.04
Total	–	–	–	–	–	100	100	100	75	1.089	0.396	2.467	0.212

ETOFENPROX (184) POUTRY LAYER

Estimated maximum and mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Rice grain	GC	3.1	STMR	88	3.52	20	–	50	–	0.705	–	1.761	–
Rice bran/pollard	CM/CF	3.1	STMR	90	3.44	10	5	20	20	0.344	0.172	0.689	0.689
Bean seed	VD	0.05	STMR	88	0.06	–	20	30	–	–	0.011	0.017	–
Corn, field grain	GC	0.05	STMR	88	0.06	70	70	–	80	0.040	0.04	–	0.045
Canola meal	SM	0.01	STMR	88	0.01	–	5	–	–	–	6E-04	–	–
Total	–	–	–	–	–	100	100	100	100	1.089	0.224	2.467	0.734

FENPROPIDIN (340) BEEF CATTLE

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Beet, sugar tops	AM/AV	4.5	HR	23	19.57	–	20	–	–	–	3.913	–	–
Wheat straw	AF/AS	6.4	HR	88	7.27	10	20	80	–	0.727	1.455	5.818	–
Barley straw	AF/AS	6.4	HR	89	7.19	–	10	20	–	–	0.719	1.438	–
Beet, sugar dried pulp	AB	0.081	STMR	88	0.09	15	20	–	5	0.014	0.018	–	0.005
Beet, sugar ensiled pulp	AB	0.013	STMR	15	0.09	–	5	–	–	–	0.004	–	–
Barley grain	GC	0.055	STMR	88	0.06	50	25	–	70	0.031	0.016	–	0.044
Wheat milled bypdts.	CM/CF	0.027	STMR	88	0.03	25	–	–	25	0.008	–	–	0.008
Total	–	–	–	–	–	100	100	100	100	0.780	6.125	7.256	0.056

FENPROPIDIN (340) BEEF CATTLE

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Beet, sugar tops	AM/AV	1.35	STMR	23	5.87	–	20	–	–	–	1.174	–	–
Wheat straw	AF/AS	1.6	STMR	88	1.82	10	20	80	–	0.181818	0.364	1.455	–
Barley straw	AF/AS	1.6	STMR	89	1.80	–	10	20	–	–	0.18	0.36	–

Beet, sugar dried pulp	AB	0.081	STMR-P	88	0.09	15	20	–	5	0.013807	0.018	–	0.005
Beet, sugar ensiled pulp	AB	0.013	STMR-P	15	0.09		5	–	–	–	0.004	–	–
Barley grain	GC	0.055	STMR	88	0.06	50	25		70	0.03125	0.016	–	0.044
Wheat milled bypdts.	CM/CF	0.027	STMR-P	88	0.03	25	–	–	25	0.00767	–	–	0.008
Total	–	–	–	–	–	100	100	100	100	0.234545	1.756	1.814	0.056

FENPROPIDIN (340) DAIRY CATTLE

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Beet, sugar tops	AM/AV	4.5	HR	23	19.57	–	30	–	–	–	5.87	–	–
Wheat straw	AF/AS	6.4	HR	88	7.27	10	20	20	–	0.727	1.455	1.455	–
Barley straw	AF/AS	6.4	HR	89	7.19	–	10		–	–	0.719	–	–
Triticale straw	AF/AS	6.4	HR	90	7.11	–	–	50	–	–	–	3.556	–
Beet, sugar dried pulp	AB	0.081	STMR-P	88	0.09	15	20		40	0.014	0.018	–	0.037
Beet, sugar ensiled pulp	AB	0.013	STMR-P	15	0.09	–	20	–	–	–	0.017	–	–
Barley grain	GC	0.055	STMR	88	0.06	45	–	30	40	0.028	–	0.019	0.025
Wheat milled bypdts.	CM/CF	0.027	STMR-P	88	0.03	30	–	–	20	0.009	–	–	0.006
Total	–	–	–	–	–	100	100	100	100	0.778	8.079	5.029	0.068

FENPROPIDIN (340) DAIRY CATTLE

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Beet, sugar tops	AM/AV	1.35	STMR	23	5.87	–	30	0	–	–	1.761	0	–
Wheat straw	AF/AS	1.6	STMR	88	1.82	10	20	20	–	0.181818	0.364	0.364	–
Barley straw	AF/AS	1.6	STMR	89	1.80	0	10	–	–	0	0.18	–	–
Triticale straw	AF/AS	1.6	STMR	90	1.78	0		50	–	0	–	0.889	–
Beet, sugar dried pulp	AB	0.081	STMR-P	88	0.09	15	20	–	40	0.013807	0.018	–	0.037

Beet, sugar ensiled pulp	AB	0.013	STMR-P	15	0.09	0	20	–	–	0	0.017	–	–
Barley grain	GC	0.055	STMR	88	0.06	45	–	30	40	0.028125	–	0.019	0.025
Wheat milled bypdts.	CM/CF	0.027	STMR-P	88	0.03	30	–	–	20	0.009205	–	–	0.006
Total	–	–	–	–	–	100	100	100	100	0.232955	2.34	1.271	0.068

FENPROPIDIN (340) POULTRY BROILER

Estimated maximum and mean dietary burden													
						Diet content (%)				Residue contribution (ppm)			
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Barley grain	GC	0.055	STMR	88	0.06	75	70	15	10	0.047	0.044	0.009	0.006
Wheat milled bypdts.	CM/CF	0.027	STMR-p	88	0.03	25	20	20	5	0.008	0.006	0.006	0.002
Wheat grain	GC	0.01	STMR	89	0.01		–	65	–	–	–	0.007	–
Total	–	–	–	–	–	100	90	100	15	0.055	0.05	0.023	0.008

FENPROPIDIN (340) POULTRY LAYER

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Beet, sugar tops	AM/AV	4.5	HR	23	19.57	–	5	–	–	–	0.978	–	–
Wheat straw	AF/AS	6.4	HR	88	7.27	–	10	–	–	–	0.727	–	–
Barley grain	GC	0.055	STMR	88	0.06	75	85	15	–	0.047	0.053	0.009	–
Wheat milled bypdts.	CM/CF	0.027	STMR-P	88	0.03	25	–	20	30	0.008	–	0.006	0.009
Wheat grain	GC	0.01	STMR	89	0.01	–	–	40	–	–	–	0.004	–
Total	–	–	–	–	–	100	100	75	30	0.055	1.759	0.02	0.009

FENPROPIDIN (340) POULTRY LAYER

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Beet, sugar tops	AM/AV	1.35	STMR	23	5.87	–	5	–	–	–	0.293	–	–
Wheat straw	AF/AS	1.6	STMR	88	1.82	–	10	–	–	–	0.182	–	–

Barley grain	GC	0.055	STMR	88	0.06	75	85	15		0.046875	0.053	0.009	–
Wheat milled bypdts.	CM/CF	0.027	STMR-P	88	0.03	25	–	20	30	0.00767	–	0.006	0.009
Wheat grain	GC	0.01	STMR	89	0.01	–	–	40	–	–	–	0.004	–
Total	–	–	–	–	–	100	100	75	30	0.054545	0.528	0.02	0.009

FIPRONIL (202) BEEF CATTLE

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Potato culls	VR	0.0282	HR	20	0.14	30	30	10	–	0.042	0.042	0.014	–
Beet, sugar tops	AM/AV	0.03	HR	23	0.13	–	20	–	–	–	0.026	–	–
Potato process waste	AB	0.00623	STMR	12	0.05	30	40	5	–	0.016	0.021	0.003	–
Barley hay	AF/AS	0.0341	HR	88	0.04	15	–	85	–	0.006	–	0.033	–
Rye straw	AF/AS	0.0341	HR	88	0.04		10	–	–	–	0.004	–	–
Soybean hulls	SM	0.00975	STMR	90	0.01	15	–	–	5	0.002	–	–	5E-04
Rye grain	GC	0.006	STMR	88	0.01	10	–	–	35	0.001	–	–	0.002
Corn, field grain	GC	0.003	STMR	88	0.00		–	–	60		–	–	0.002
Total	–	–	–	–	–	100	100	100	100	0.066	0.093	0.050	0.005

FIPRONIL (202) BEEF CATTLE

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Potato process waste	AB	0.00623	STMR-P	12	0.05	30	40	5	–	0.015575	0.021	0.003	–
Barley hay	AF/AS	0.03	STMR	88	0.03	15		95	–	0.005113636		0.032	–
Barley straw	AF/AS	0.03	STMR	89	0.03	–	30	–	–	–	0.01	–	–
Potato culls	VR	0.0045	STMR	20	0.02	30	30	–	–	0.00675	0.007	–	–
Soybean hulls	SM	0.00975	STMR	90	0.01	15	–	–	5	0.001625	–	–	5E-04
Rye grain	GC	0.006	STMR	88	0.01	10	–	–	35	0.000681818	–	–	0.002
Corn, field	GC	0.003	STMR	88	0.00	–	–	–	60	–	–	–	0.002

grain													
Total	–	–	–	–	–	100	100	100	100	0.030	0.038	0.035	0.005

FIPRONIL (202) DAIRY CATTLE

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
Potato culls	VR	0.0282	HR	20	0.14	10	30	10	–	0.014	0.042	0.014	–
Beet, sugar tops	AM/AV	0.03	HR	23	0.13	–	30		–	–	0.039	–	–
Kale leaves	AM/AV	0.01135	HR	15	0.08	–	–	40	–	–	–	0.03	–
Potato process waste	AB	0.00623	STMR	12	0.05	10	30	–	–	0.005	0.016	–	–
Barley hay	AF/AS	0.0341	HR	88	0.04	20	–	50	–	0.008		0.019	–
Rye straw	AF/AS	0.0341	HR	88	0.04	–	10	–	5	–	0.004	–	0.002
Oat hay	AF/AS	0.0341	HR	90	0.04	10	–	–	–	0.004	–	–	–
Corn, field forage/silage	AF/AS	0.006	HR	40	0.02	15	–	–	45	0.002	–	–	0.007
Soybean hulls	SM	0.00975	STMR	90	0.01	10	–	–		0.001	–	–	–
Rye grain	GC	0.006	STMR	88	0.01	20	–	–	15	0.001	–	–	0.001
Corn, field grain	GC	0.003	STMR	88	0.00	5	–	–	35	0.000	–	–	0.001
Total	–	–	–	–	–	100	100	100	100	0.036	0.101	0.064	0.011

FIPRONIL (202) DAIRY CATTLE

Estimated mean dietary burden													
Potato process waste	AB	0.00623	STMR-P	12	0.05	10	30	0	–	0.005191667	0.016	0	–
Barley hay	AF/AS	0.03	STMR	88	0.03	20	–	50	–	0.006818182		0.017	–
Barley straw	AF/AS	0.03	STMR	89	0.03	0	30	–	–	0	0.01	–	–
Oat hay	AF/AS	0.03	STMR	90	0.03	10		50	5	0.003333333	–	0.017	0.002
Potato culls	VR	0.0045	STMR	20	0.02	10	30	–	–	0.00225	0.007	–	–
Beet, sugar tops	AM/AV	0.004	STMR	23	0.02	0	10	–	–	0	0.002	–	–
Corn, field forage/silage	AF/AS	0.006	STMR	40	0.02	15	–	–	45	0.002	–	–	0.007
Soybean hulls	SM	0.00975	STMR	90	0.01	10	–	–	–	0.001	–	–	–
Rye grain	GC	0.006	STMR	88	0.01	20	–	–	15	0.001363636	–	–	0.001
Corn, field grain	GC	0.003	STMR	88	0.00	5	–	–	35	0.000170455	–	–	0.001

Total	–	–	–	–	–	100	100	100	100	0.022460606	0.034	0.034	0.011

FIPRONIL (202) POULTRY BROILER

Estimated maximum dietary burden													
						Diet content (%)				Residue contribution (ppm)			
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Potato culls	VR	0.0282	HR	20	0.14	–	10	–	–	–	0.014	–	–
Soybean hulls	SM	0.00975	STMR	90	0.01	–	5	–	–	–	5E-04	–	–
Rye grain	GC	0.006	STMR	88	0.01	35	70	50	–	0.002	0.005	0.003	–
Triticale grain	GC	0.006	STMR	89	0.01	65	–	–	–	0.004	–	–	–
Cassava/tapioca roots	VR	0.00212	HR	37	0.01	–	15	–	–	–	9E-04	–	–
Corn, field grain	GC	0.003	STMR	88	0.00	–	–	–	70	–	–	–	0.002
Bean seed	VD	0.0015	STMR	88	0.00	–	–	50	–	–	–	9E-04	–
Total	–	–	–	–	–	100	100	100	70	0.007	0.02	0.004	0.002

FIPRONIL (202) POULTRY BROILER

Estimated mean dietary burden													
						Diet content (%)				Residue contribution (ppm)			
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Potato culls	VR	0.0045	STMR	20	0.02	–	10	–	–	–	0.002	–	–
Soybean hulls	SM	0.00975	STMR	90	0.01	–	5	–	–	–	5E-04	–	–
Rye grain	GC	0.006	STMR	88	0.01	35	70	50	–	0.002	0.005	0.003	–
Triticale grain	GC	0.006	STMR	89	0.01	65	–	–	–	0.004	–	–	–
Corn, field grain	GC	0.003	STMR	88	0.00	–	–	–	70	–	–	–	0.002
Bean seed	VD	0.0015	STMR	88	0.00	–	15	50		–	3E-04	9E-04	–
Total	–	–	–	–	–	100	100	100	70	0.0068	0.008	0.004	0.002

FIPRONIL (202) POULTRY LAYER

Estimated maximum dietary burden

Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Potato culls	VR	0.0282	HR	20	0.14	–	10	–	–	–	0.014	–	–
Beet, sugar tops	AM/AV	0.03	HR	23	0.13	–	5	–	–	–	0.007	–	–
Barley straw	AF/AS	0.0341	HR	89	0.04	–	5	–	–	–	0.002	–	–
Sorghum, grain stover	AF/AS	0.03112	HR	88	0.04	–	5	–	–	–	0.002	–	–
Soybean hulls	SM	0.00975	STMR	90	0.01	–	5	–	–	–	5E-04	–	–
Rye grain	GC	0.006	STMR	88	0.01	35	35	35	–	0.002	0.002	0.002	–
Triticale grain	GC	0.006	STMR	89	0.01	65		–	–	0.004	–	–	–
Cassava/tapioca roots	VR	0.00212	HR	37	0.01	–	5	–	–	–	3E-04	–	–
Corn, field grain	GC	0.003	STMR	88	0.00	–	30	–	80	–	0.001	–	0.00
Bean seed	VD	0.0015	STMR	88	0.00	–	–	65	–	–	–	0.001	–
Total	–	–	–	–	–	100	100	100	80	0.007	0.029	0.003	0.003

FIPRONIL (202) POULTRY LAYER

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Barley straw	AF/AS	0.03	STMR	89	0.03	–	5	–	–	–	0.002	–	–
Sorghum, grain stover	AF/AS	0.02117	STMR	88	0.02	–	5	–	–	–	0.001	–	–
Potato culls	VR	0.0045	STMR	20	0.02	–	10	–	–	–	0.002	–	–
Beet, sugar tops	AM/AV	0.004	STMR	23	0.02	–	5	–	–	–	9E-04	–	–
Soybean hulls	SM	0.00975	STMR	90	0.01	–	5	–	–	–	5E-04	–	–
Rye grain	GC	0.006	STMR	88	0.01	35	35	35	–	0.002386364	0.002	0.002	–
Triticale grain	GC	0.006	STMR	89	0.01	65	–	–	–	0.004382022		–	–
Corn, field grain	GC	0.003	STMR	88	0.00	–	35	–	80	–	0.001	–	0.003
Bean seed	VD	0.0015	STMR	88	0.00	–	–	65	–	–		0.001	–
Total	–	–	–	–	–	100	100	100	80	0.007	0.010	0.003	0.003

FLORPYRAUXIFEN-BENZYL (341) BEEF CATTLE

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Rice whole crop silage	AF/AS	12.04	HR	40	30.10	–	–	–	5	–	–	–	1.505
Grass hay	AF/AS	4.49	HR	88	5.10	15	50	100	35	0.765	2.551	5.102	1.786
Rice straw	AF/AS	1.85	HR	90	2.06	–	–	–	15	–	–	–	0.308
Corn, field forage/silage	AF/AS	0.03	HR	40	0.08	–	50	–	–	–	0.038	–	–
Corn, pop grain	GC	0.03	STMR	88	0.03	80		–	45	0.027	–	–	0.015
Total	–	–	–	–	–	95	100	100	100	0.793	2.589	5.102	3.614

FLORPYRAUXIFEN-BENZYL (341) BEEF CATTLE

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Rice whole crop silage	AF/AS	6.6	STMR	40	16.50	–	–	–	5	–	–	–	0.825
Grass forage (fresh)	AF/AS	0.348	STMR	25	1.39	–	50	100		–	0.696	1.392	–
Grass hay	AF/AS	0.796	STMR	88	0.90	15	–	–	35	0.135682	–	–	0.317
Rice straw	AF/AS	0.087	STMR	90	0.10	–	–	–	15	–	–	–	0.015
Corn, field forage/silage	AF/AS	0.03	STMR	40	0.08	–	50	–	–	–	0.038	–	–
Corn, pop grain	GC	0.03	STMR	88	0.03	80	–	–	45	0.027273	–	–	0.015
Total	–	–	–	–	–	95	100	100	100	0.162955	0.734	1.392	1.171

FLORPYRAUXIFEN-BENZYL (341) DAIRY CATTLE

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Rice whole crop silage	AF/AS	12.04	HR	40	30.10	–	–	–	55	–	–	–	16.56
Grass hay	AF/AS	4.49	HR	88	5.10	45	60	60	45	2.296	3.061	3.061	2.296
Grass forage (fresh)	AF/AS	0.891	HR	25	3.56	–	40	40	–	–	1.426	1.426	–
Corn, pop grain	GC	0.03	STMR	88	0.03	45	–	–	–	0.015	–	–	–

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Total	–	–	–	–	–	90	100	100	100	2.311	4.487	4.487	18.85

FLORPYRAUXIFEN-BENZYL (341) DAIRY CATTLE

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Rice whole crop silage	AF/AS	6.6	STMR	40	16.50	–	0	0	55	–	0	0	9.075
Grass forage (fresh)	AF/AS	0.348	STMR	25	1.39	45	60	100		0.6264	0.835	1.392	–
Grass silage	AF/AS	0.465	STMR	40	1.16	0	40		45	0	0.465		0.523
Corn, pop grain	GC	0.03	STMR	88	0.03	45	–	–	–	0.015341	–	–	–
Total	–	–	–	–	–	90	100	100	100	0.641741	1.3	1.392	9.598

FLORPYRAUXIFEN-BENZYL (341) POULTRY BROILER

Estimated maximum and mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Corn, pop grain	GC	0.03	STMR	88	0.03	75	–	–	70	0.026	–	–	0.024
Cowpea seed	VD	0.03	STMR	88	0.03	10	5	5	–	0.003	0.002	0.002	–
Rice grain	GC	0.03	STMR	88	0.03	–		50	–	–	–	0.017	–
Total	–	–	–	–	–	85	5	55	70	0.029	0.002	0.019	0.024

FLORPYRAUXIFEN-BENZYL (341) POULTRY LAYER

Estimated maximum and mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Corn, pop grain	GC	0.03	STMR	88	0.03	75	–	–	80	0.026	–	–	0.027
Cowpea seed	VD	0.03	STMR	88	0.03	10	10	5	–	0.003	0.003	0.002	–
Rice grain	GC	0.03	STMR	88	0.03	–	–	50	–	–	–	0.017	–

Total	–	–	–	–	–	85	10	55	80	0.029	0.003	0.019	0.027

FLUOXAPIPROLIN (342) BEEF AND DAIRY CATTLE

Estimated maximum and mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Grape pomace, wet	AB	0.099	STMR-p	15	0.66	–	–	20	–	–	–	0.132	–
Total	–	–	–	–	–	–	–	20	–	–	–	0.132	–

FOLPET (041) BEEF CATTLE

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Barley hay	AF/AS	27.3	HR	88	31.02	15	–	100	–	4.653	–	31.02	–
Wheat hay	AF/AS	27.3	HR	88	31.02	–	20	–	–	–	6.205	–	–
Barley straw	AF/AS	27.3	HR	89	30.67	–	10	–	–	–	3.067	–	–
Wheat asp. gr. fn.	CM/CF	2.1	STMR-p	85	2.47	5	–	–	–	0.124	–	–	–
Barley bran fractions	CM/CF	0.12	STMR-p	90	0.13	–	–	–	10	–	–	–	0.013
Barley grain	GC	0.077	STMR	88	0.09	50	70	–	70	0.044	0.061	–	0.061
Wheat milled bypdts.	CM/CF	0.003	STMR-p	88	0.00	30	–	–	20	0.001	–	–	7E-04
Total	–	–	–	–	–	100	100	100	100	4.822	9.333	31.02	0.075

FOLPET (041) BEEF CATTLE

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Grape pomace, wet	AB	1.7	STMR-P	15	11.33	–	–	20	–	–	–	2.267	–
Barley hay	AF/AS	3.9	STMR	88	4.43	15	–	80	–	0.664773	–	3.545	–
Wheat hay	AF/AS	3.9	STMR	88	4.43	–	20	–	–	–	0.886	–	–
Barley straw	AF/AS	3.9	STMR	89	4.38	–	10	–	–	–	0.438	–	–
Wheat asp. gr. fn.	CM/CF	2.1	STMR-P	85	2.47	5	–	–	–	0.123529	–	–	–

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Barley bran fractions	CM/CF	0.12	STMR-P	90	0.13		–	–	10	–	–	–	0.013
Barley grain	GC	0.077	STMR	88	0.09	50	70	–	70	0.04375	0.061	–	0.061
Wheat milled bypdts.	CM/CF	0.003	STMR-P	88	0.00	30	–	–	20	0.001023	–	–	7E-04
Total	–	–	–	–	–	100	100	100	100	0.833	1.386	5.812	0.075

FOLPET (041) DAIRY CATTLE

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Barley hay	AF/AS	27.3	HR	88	31.02	20	–	50	–	6.205	–	15.51	–
Wheat hay	AF/AS	27.3	HR	88	31.02	–	20	–	–	–	6.205	–	–
Barley straw	AF/AS	27.3	HR	89	30.67	–	10	–	–	–	3.067	–	–
Grape pomace, wet	AB	1.7	STMR-P	15	11.33	–	–	20	–	–	–	2.267	–
Barley grain	GC	0.077	STMR	88	0.09	45	40	30	40	0.039	0.035	0.026	0.035
Wheat milled bypdts.	CM/CF	0.003	STMR-P	88	0.00	30	30	–	45	0.001	0.001	–	0.002
Wheat gluten meal	CM/CF	0.0009	STMR-P	40	0.00	5	–	–	–	0.000	–	–	–
Brewer's grain dried	SM	0.0005	STMR-P	92	0.00	–	–	–	15	–	–	–	8E-05
Total	–	–	–	–	–	100	100	100	100	6.245	9.308	17.8	0.037

FOLPET (041) DAIRY CATTLE

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Grape pomace, wet	AB	1.7	STMR-P	15	11.33	–	0	20	–	–	0	2.267	–
Barley hay	AF/AS	3.9	STMR	88	4.43	20	–	50	–	0.88636	–	2.216	–
Wheat hay	AF/AS	3.9	STMR-P	88	4.43	0	20	–	–	0	0.886	–	–

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Barley straw	AF/AS	3.9	STMR-P	89	4.38	0	10	–	–	0	0.438	–	–
Barley grain	GC	0.077	STMR-P	88	0.09	45	40	30	40	0.03937	0.035	0.026	0.035
Wheat milled bypdts.	CM/CF	0.003	STMR-P	88	0.00	30	30	–	45	0.00102	0.001	–	0.002
Wheat gluten meal	CM/CF	0.0009	STMR-P	40	0.00	5	–	–		0.00011	–	–	–
Brewer's grain dried	SM	0.0005	STMR-P	92	0.00	0	–	–	15	0	–	–	8E-05
Total	–	–	–	–	–	100	100	100	100	0.92687	1.361	4.509	0.037

FOLPET (041) POULTRY BROILER

Estimated maximum and mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Barley bran fractions	CM/CF	0.12	STMR-P	90	0.13	8	–	–	–	0.01	–	–	–
Barley grain	GC	0.077	STMR	88	0.09	75	70	15	10	0.07	0.061	0.013	0.009
Wheat grain	GC	0.01	STMR	89	0.01	–	–	55	–	–	–	0.006	–
Wheat milled bypdts.	CM/CF	0.003	STMR-P	88	0.00	17	20	20	5	0.00	7E-04	7E-04	2E-04
Brewer's grain dried	SM	0.0005	STMR-P	92	0.00	–	10	–	–	–	5E-05	–	–
Distiller's grain dried	SM	0.0009	STMR-P	92	0.00	–	–	–	5	–	–	–	5E-05
Total	–	–	–	–	–	100	100	90	20	0.08	0.062	0.02	0.009

FOLPET (041) POULTRY LAYER

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Wheat hay	AF/AS	27.3	HR	88	31.02	–	10	–	–	–	3.102	–	–
Barley bran fractions	CM/CF	0.12	STMR-P	90	0.13	–	–	–	5	–	–	–	0.007
Barley grain	GC	0.077	STMR	88	0.09	75	90	15	–	0.066	0.079	0.013	–
Wheat grain	GC	0.01	STMR	89	0.01	–	–	40	–	–	–	0.004	–

Wheat milled bypdts.	CM/CF	0.003	STMR-P	88	0.00	25	–	20	25	0.001	–	7E-04	9E-04
Distiller's grain dried	SM	0.0009	STMR-P	92	0.00	–	–	–	5	–	–	–	5E-05
Total	–	–	–	–	–	100	100	75	35	0.066	3.181	0.018	0.008

FOLPET (041) POULTRY LAYER

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Wheat hay	AF/AS	3.9	STMR	88	4.43	–	10	–	–	–	0.443		––
Barley bran fractions	CM/CF	0.12	STMR-P	90	0.13	–	–	–	5	–	–	–	0.007
Barley grain	GC	0.077	STMR	88	0.09	75	90	15		0.065625	0.079	0.013	–
Wheat grain	GC	0.01	STMR	89	0.01	–	–	40	–	–	–	0.004	–
Wheat milled bypdts.	CM/CF	0.003	STMR-P	88	0.00	25	–	20	25	0.000852	–	7E-04	9E-04
Distiller's grain dried	SM	0.0009	STMR-P	92	0.00	–	–	–	5	–	–	–	5E-05
Total	–	–	–	–	–	100	100	75	35	0.066477	0.522	0.018	0.008

FOSETYL-AL (302) BEEF CATTLE

Estimated maximum and mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Grape pomace, wet	AB	22	STMR-P	15	146.67	–	–	20	–	–	–	29.33	–
Citrus dried pulp	AB	41.4	STMR-P	100	41.40	10	5	10		4.140	2.07	4.14	–
Apple pomace, wet	AB	15	STMR-P	40	37.50		15	–	–	–	5.625	–	–
Rice grain	GC	12.6	STMR	88	14.32	20	–	40	–	2.864	–	5.727	–
Pineapple process waste	AB	11.5	STMR-P	87	13.22	–	–	30	–	–	–	3.966	–
Cabbage heads, leaves	AM/AV	0.2	HR	15	1.33	–	20	–	–	–	0.267	–	–
Total	–	–	–	–	–	30	40	100		7.004	7.962	43.17	–

FOSETYL-AL (302) DAIRY CATTLE

Estimated maximum and mean dietary burden							
Commodity	CC	Residue	Basis	DM	Residue dw	Diet content (%)	Residue contribution (ppm)

Estimated maximum and mean dietary burden													
		(mg/kg)		(%)	(mg/kg)	US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Grape pomace, wet	AB	22	STMR	15	146.67	–	–	20	–	–	–	29.33	–
Citrus dried pulp	AB	41.4	STMR	100	41.40	10	20	10	–	4.140	8.28	4.14	–
Rice grain	GC	12.6	STMR	88	14.32	20		20	–	2.864	–	2.864	–
Cabbage heads, leaves	AM/AV	0.2	HR	15	1.33	–	20	–	–	–	0.267	–	–
Kale leaves	AM/AV	0.2	HR	15	1.33	–	–	40	–	–	–	0.533	–
Total	–	–	–	–	–	30	40	90	–	7.004	8.547	36.87	–

FOSETYL-AL (302) POULTRY BROILER

Estimated maximum and mean dietary burden													
						Diet content (%)				Residue contribution (ppm)			
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Rice grain	GC	12.6	STMR	88	14.32	20	–	50	–	2.864	–	7.159	–
Total	–	–	–	–	–	20	–	50	–	2.864	–	7.159	–

FOSETYL-AL (302) POULTRY LAYER

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Rice grain	GC	12.6	STMR	88	14.32	20	–	50	–	2.864	–	7.159	–
Cabbage heads, leaves	AM/AV	0.2	HR	15	1.33	–	5	–	–	–	0.067	–	–
Total	–	–	–	–	–	20	5	50	–	2.864	0.067	7.159	–

FOSETYL-AL (302) POULTRY LAYER

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Rice grain	GC	12.6	STMR	88	14.32	20	–	50	–	2.864	–	7.159	–
Cabbage heads, leaves	AM/AV	0.2	STMR	15	1.33		5	–	–	–	0.067	–	–
Total	–	–	–	–	–	20	5	50	–	2.864	0.067	7.159	–

MALEIC HYDRAZIDE (102) BEEF AND DAIRY CATTLE

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Carrot culls	VR	19	HR	12	158.33	–	15	5	–	–	23.75	7.917	–
Total	–	–	–	–	–	–	15	5	–	–	23.75	7.917	–

MALEIC HYDRAZIDE (102) BEEF AND DAIRY CATTLE

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Carrot culls	VR	3.9	STMR	12	32.50	–	15	5	–	–	4.875	1.625	–
Total	–	–	–	–	–	–	15	5	–	–	4.875	1.625	–

MALEIC HYDRAZIDE (102) POULTRY BROILER AND LAYER

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Carrot culls	VR	19	HR	12	158.33	–	10	–	–	–	15.83	–	–
Total	–	–	–	–	–	–	10	–	–	–	15.83	–	–

MALEIC HYDRAZIDE (102) POULTRY BROILER AND LAYER

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Carrot culls	VR	3.9	STMR	12	32.50	–	10	–	–	–	3.25	–	–
Total	–	–	–	–	–	–	10	–	–	–	3.25	–	–

NOVALURON (217) BEEF CATTLE

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP

Estimated maximum dietary burden													
Apple pomace, wet	AB	4.7	STMR-P	40	11.75	–	20	20	–	–	2.35	2.35	–
Almond hulls	AM/AV	4.46	STMR	90	4.96	–		10	–	–	–	0.496	–
Cabbage heads, leaves	AM/AV	0.48	HR	15	3.20	–	20	–	–	–	0.64	–	–
Rice grain	GC	0.6	STMR	88	0.68	20		40	–	0.136	–	0.273	–
Cotton undelinted seed	SO	0.068	STMR	88	0.08	–		30	–	–	–	0.023	–
Bean seed	VD	0.05	STMR	88	0.06	–	20	–	–	–	0.011	–	–
Cotton meal	SM	0.041	STMR	89	0.05	5	5	–	–	0.002	0.002	–	–
Cotton hulls	SM	0.041	STMR	90	0.05	5	–	–	–	0.002	–	–	–
Soybean seed	VD	0.01	STMR	89	0.01	5	–	–	15	0.001	–	–	0.002
Total	–	–	–	–	–	35	65	100	15	0.142	3.004	3.141	0.002

NOVALURON (217) BEEF CATTLE

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Apple pomace, wet	AB	4.7	STMR-P	40	11.75	–	20	20	–	–	2.35	2.35	–
Almond hulls	AM/AV	4.46	STMR	90	4.96	–	–	10	–	–	–	0.496	–
Cabbage heads, leaves	AM/AV	0.105	STMR	15	0.70	–	20	–	–	–	0.14	–	–
Rice grain	GC	0.6	STMR	88	0.68	20	–	40	–	0.136363636	–	0.273	–
Cotton undelinted seed	SO	0.068	STMR	88	0.08	–	–	30	–	–	–	0.023	–
Bean seed	VD	0.05	STMR	88	0.06	–	20	–	–	–	0.011	–	–
Potato culls	VR	0.01	STMR	20	0.05	30	30	–	–	0.015	0.015	–	–
Cotton meal	SM	0.041	STMR	89	0.05	5	5	–	–	0.002303371	0.002	–	–
Cotton hulls	SM	0.041	STMR	90	0.05	5	–	–	–	0.002	–	–	–
Soybean seed	VD	0.01	STMR	89	0.01	5	–	–	15	0.001	–	–	0.002
Total	–	–	–	–	–	65	95	100	15	0.157	2.519	3.141	0.002

NOVALURON (217) DAIRY CATTLE

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Apple pomace, wet	AB	4.7	STMR_P	40	11.75	10	10	10	–	1.175	1.175	1.175	–
Almond hulls	AM/AV	4.46	STMR	90	4.96	10	–	10	–	0.496	–	0.496	–
Cabbage heads, leaves	AM/AV	0.48	HR	15	3.20	–	20	–	–	–	0.64	–	–
Kale leaves	AM/AV	0.48	HR	15	3.20	–	–	30	–	–	–	0.96	–
Rice grain	GC	0.6	STMR	88	0.68	20	–	20	–	0.136	–	0.136	–
Cotton undelinted seed	SO	0.068	STMR	88	0.08	10	10	20	–	0.008	0.008	0.015	–
Bean seed	VD	0.05	STMR	88	0.06	–	20	10	–	–	0.011	0.006	–
Cotton meal	SM	0.041	STMR	89	0.05	10	5	–	–	0.005	0.002	–	–
Soybean seed	VD	0.01	STMR	89	0.01	10	–	–	10	0.001	–	–	0.001
Total	–	–	–	–	–	70	65	100	10	1.820	1.836	2.788	0.001

NOVALURON (217) DAIRY CATTLE

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Apple pomace, wet	AB	4.7	STMR-P	40	11.75	10	10	10	–	1.175	1.175	1.175	–
Almond hulls	AM/AV	4.46	STMR	90	4.96	10	–	10	–	0.495555556	–	0.496	–
Cabbage heads, leaves	AM/AV	0.105	STMR	15	0.70	0	20	–	–	0	0.14	–	–
Kale leaves	AM/AV	0.105	STMR	15	0.70	0		30	–	0	–	0.21	–
Rice grain	GC	0.6	STMR	88	0.68	20		20	–	0.136363636	–	0.136	–
Cotton undelinted seed	SO	0.068	STMR	88	0.08	10	10	20	–	0.007727273	0.008	0.015	–
Bean seed	VD	0.05	STMR	88	0.06	0	20	10	–	0	0.011	0.006	–
Potato culls	VR	0.01	STMR	20	0.05	10	30	–	–	0.005	0.015	–	–
Cotton meal	SM	0.041	STMR	89	0.05	10	5	–	–	0.004606742	0.002	–	–
Soybean seed	VD	0.01	STMR	89	0.01	10	–	–	10	0.001123596	–	–	0.001
Total	–	–	–	–	–	80	95	100	10	1.825376802	1.351	2.038	0.001

NOVALURON (217) POULTRY BROILER

Estimated maximum and mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Rice grain	GC	0.6	STMR	88	0.68	20	–	50	–	0.136	–	0.341	–
Bean seed	VD	0.05	STMR	88	0.06	–	20	50	–	–	0.011	0.028	–
Cotton meal	SM	0.041	STMR	89	0.05	20	5	–	–	0.009	0.002	–	–
Soybean seed	VD	0.01	STMR	89	0.01	20	–	–	–	0.002		–	–
Total	–	–	–	–	–	60	25	100	–	0.148	0.014	0.369	–

NOVALURON (217) POULTRY LAYER

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Cabbage heads, leaves	AM/AV	0.48	HR	15	3.20	–	5	–	–	–	0.16	–	–
Rice grain	GC	0.6	STMR	88	0.68	20	–	50	–	0.136		0.341	–
Bean seed	VD	0.05	STMR	88	0.06	–	20	50	–	–	0.011	0.028	–
Cotton meal	SM	0.041	STMR	89	0.05	20	5	–	–	0.009	0.002	–	–
Soybean seed	VD	0.01	STMR	89	0.01	20	–	–	–	0.002	–	–	–
Total	–	–	–	–	–	60	30	100	–	0.148	0.174	0.369	–

NOVALURON (217) POULTRY LAYER

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Cabbage heads, leaves	AM/AV	0.105	STMR	15	0.70	–	5	–	–	–	0.035	–	–
Rice grain	GC	0.6	STMR	88	0.68	20	–	50	–	0.136363636	–	0.341	–
Bean seed	VD	0.05	STMR	88	0.06	–	20	50	–	–	0.011	0.028	–
Potato culls	VR	0.01	STMR	20	0.05	–	10	–	–	–	0.005	–	–
Cotton meal	SM	0.041	STMR	89	0.05	20	5	–	–	0.009213483	0.002	–	–
Soybean seed	VD	0.01	STMR	89	0.01	20		–	–	0.002247191	–	–	–
Total	–	–	–	–	–	60	40	100	–	0.147824311	0.054	0.369	–

PROCHLORAZ (142) BEEF CATTLE

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Wheat forage	AF/AS	11	HR	25	44.00	–	20	100	–	–	8.8	44	–
Barley forage	AF/AS	10	HR	30	33.33	–	10	–	–	–	3.333	–	–
Rye straw	AF/AS	19	HR	88	21.59	10	–	–	–	2.159	–	–	–
Wheat grain	GC	0.11	STMR	89	0.12	20	40	–	25	0.025	0.049	–	0.031
Barley grain	GC	0.066	STMR	88	0.08	30	30	–	45	0.023	0.023	–	0.034
Rye grain	GC	0.018	STMR	88	0.02	–	–	–	30	–	–	–	0.006
Total	–	–	–	–	–	60	100	100	100	2.206	12.21	44	0.071

PROCHLORAZ (142) BEEF CATTLE

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Wheat forage	AF/AS	8.85	STMR	25	35.40	–	20	100	–	–	7.08	35.4	–
Barley forage	AF/AS	8.95	STMR	30	29.83	–	10	–	–	–	2.983	–	–
Rye straw	AF/AS	7.7	STMR	88	8.75	10	–	–	–	0.875	–	–	–
Wheat grain	GC	0.11	STMR	89	0.12	20	40	–	25	0.024719	0.049	–	0.031
Barley grain	GC	0.066	STMR	88	0.08	30	30	–	45	0.0225	0.023	–	0.034
Rye grain	GC	0.018	STMR	88	0.02	–	–	–	30	–	–	–	0.006
Total	–	–	–	–	–	60	100	100	100	0.922219	10.14	35.4	0.071

PROCHLORAZ (142) DAIRY CATTLE

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Wheat forage	AF/AS	11	HR	25	44.00	20	20	60	–	8.800	8.8	26.4	–
Barley forage	AF/AS	10	HR	30	33.33	–	10	–	–	–	3.333	–	–
Oat forage	AF/AS	9	HR	30	30.00	10	–	40	5	3.000	–	12	1.5

Estimated maximum dietary burden													
Wheat grain	GC	0.11	STMR	89	0.12	20	40	–	10	0.025	0.049	–	0.012
Barley grain	GC	0.066	STMR	88	0.08	25	–	–	30	0.019	–	–	0.023
Total	–	–	–	–	–	75	70	100	45	11.843	12.18	38.4	1.535

PROCHLORAZ (142) DAIRY CATTLE

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Wheat forage	AF/AS	8.85	STMR	25	35.40	20	20	60	–	7.08	7.08	21.24	–
Barley forage	AF/AS	8.95	STMR	30	29.83	0	10	–	–	0	2.983	–	–
Oat forage	AF/AS	6.6	STMR	30	22.00	10		40	5	2.2		8.8	1.1
Wheat grain	GC	0.11	STMR	89	0.12	20	40		10	0.024719	0.049	–	0.012
Barley grain	GC	0.066	STMR	88	0.08	25	–	–	30	0.01875	–	–	0.023
Total	–	–	–	–	–	75	70	100	45	9.323469	10.11	30.04	1.135

PROCHLORAZ (142) POULTRY BROILER

Estimated maximum and mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Wheat grain	GC	0.11	STMR	89	0.12	75	70	70	10	0.093	0.087	0.087	0.012
Total	–	–	–	–	–	75	70	70	10	0.093	0.087	0.087	0.012

PROCHLORAZ (142) POULTRY LAYER

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Wheat forage	AF/AS	11	HR	25	44.00	–	10	–	–	–	4.4	–	–
Wheat grain	GC	0.11	STMR	89	0.12	75	70	55	–	0.093	0.087	0.068	–
Barley grain	GC	0.066	STMR	88	0.08	–	20	–	–	–	0.015	–	–
Total	–	–	–	–	–	75	100	55	–	0.093	4.502	0.068	–

PROCHLORAZ (142) POULTRY LAYER

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Wheat forage	AF/AS	8.85	STMR	25	35.40	–	10	–	–	–	3.54	–	–
Wheat grain	GC	0.11	STMR	89	0.12	75	70	55	–	0.092697	0.087	0.068	–
Barley grain	GC	0.066	STMR	88	0.08	–	20	–	–	–	0.015	–	–
Total	–	–	–	–	–	75	100	55	–	0.092697	3.642	0.068	–

PYDIFLUMETOFEN (309) BEEF CATTLE

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Barley hay	AF/AS	40	HR	88	45.45	15	–	100	–	6.818	–	45.45	–
Rye straw	AF/AS	40	HR	88	45.45	–	20	–	–	–	9.091	–	–
Barley straw	AF/AS	40	HR	89	44.94	–	10	–	–	–	4.494	–	–
Sorghum, grain asp. gr. fn.	CM/CF	31.9	STMR-P	85	37.53	5	–	–	–	1.876	–	–	–
Beet, sugar tops	AM/AV	8	HR	23	34.78	–	20	–	–	–	6.957	–	–
Turnip tops (leaves)	AM/AV	8	HR	30	26.67	–	20	–	–	–	5.333	–	–
Trefoil hay	AL	15	HR	85	17.65	15	20	–	–	2.647	3.529	–	–
Vetch hay	AL	15	HR	85	17.65	–	10	–	5	–	1.765	–	0.882
Soybean asp. gr. fn.	SM	3.9	STMR-P	85	4.59	5	–	–	–	0.229	–	–	–
Cotton gin by-products	AM/AV	3.4	HR	90	3.78	5	–	–	–	0.189	–	–	–
Sorghum, grain	GC	0.515	STMR	86	0.60	40	–	–	35	0.240	–	–	0.21
Potato process waste	AB	0.063	STMR-P	12	0.53	15	–	–	–	0.079	–	–	–
Wheat milled bypdts.	CM/CF	0.38	STMR-P	88	0.43	–	–	–	55	–	–	–	0.238
Rice straw	AF/AS	0.28	HR	90	0.31	–	–	–	5	–	–	–	0.02
Total	–	–	–	–	–	100	100	100	100	12.078	31.17	45.45	1.345

PYDIFLUMETOFEN (309) BEEF CATTLE

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Sorghum, grain asp. gr. fn.	CM/CF	31.9	STMR-P	85	37.53	5	–	20	–	1.876471	–	7.506	–
Peanut hay	AL	15	STMR	85	17.65	–	–	60	–	–	–	10.59	–
Trefoil hay	AL	9.2	STMR	85	10.82	15	20	20	–	1.623529	2.165	2.165	–
Vetch hay	AL	9.2	STMR	85	10.82	–	5	–	5	–	0.541	–	0.541
Wheat forage	AF/AS	2.7	STMR	25	10.80	–	20	–	–	–	2.16	–	–
Cowpea hay	AL	9.2	STMR	86	10.70	–	10	–	–	–	1.07	–	–
Barley hay	AF/AS	9.2	STMR	88	10.45	15	–	–	–	1.568182		–	–
Barley straw	AF/AS	9.2	STMR	89	10.34	–	10	–	–	–	1.034	–	–
Beet, sugar tops	AM/AV	1.5	STMR	23	6.52	–	20	–	–	–	1.304	–	–
Barley forage	AF/AS	1.95	STMR	30	6.50	–	15	–	–	–	0.975	–	–
Soybean asp. gr. fn.	SM	3.9	STMR-P	85	4.59	5	–	–	–	0.229	–	–	–
Cotton gin by-products	AM/AV	1.7	STMR-P	90	1.89	5	–	–	–	0.094	–	–	–
Sorghum, grain	GC	0.515	STMR	86	0.60	40	–	–	35	0.240	–	–	0.21
Potato process waste	AB	0.063	STMR-P	12	0.53	15	–	–		0.079	–	–	–
Wheat milled bypdts.	CM/CF	0.38	STMR-P	88	0.43	–	–	–	55	–	–	–	0.2375
Beet, sugar dried pulp	AB	0.24	STMR-P	88	0.27	–	–	–	5	–	–	–	0.014
Total	–	–	–	–	–	100	100	100	100	5.710323	9.249	20.26	1.002

PYDIFLUMETOFEN (309) DAIRY CATTLE

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Barley hay	AF/AS	40	HR	88	45.45	20	–	50	–	9.091	–	22.73	–
Rye straw	AF/AS	40	HR	88	45.45	–	20	–	5	–	9.091	–	2.273
Triticale hay	AF/AS	40	HR	88	45.45	–	–	50	–	–	–	22.73	–

Estimated maximum dietary burden													
Barley straw	AF/AS	40	HR	89	44.94	–	10	–	–	–	4.494	–	–
Oat hay	AF/AS	40	HR	90	44.44	10	–	–	–	4.444	–	–	–
Beet, sugar tops	AM/AV	8	HR	23	34.78	–	30	–	–	–	10.43	–	–
Turnip tops (leaves)	AM/AV	8	HR	30	26.67	30	–	–	–	8.000	–	–	–
Trefoil hay	AL	15	HR	85	17.65	40	40	–	–	7.059	7.059	–	–
Vetch hay	AL	15	HR	85	17.65	–	–	–	25	–	–	–	4.412
Corn, field forage/silage	AF/AS	4.9	HR	40	12.25	–	–	–	45	–	–	–	5.513
Sorghum, grain forage	AF/AS	0.73	HR	35	2.09	–	–	–	25	–	–	–	0.521
Total	–	–	–	–	–	100	100	100	100	28.594	31.08	45.45	12.72

PYDIFLUMETOFEN (309) DAIRY CATTLE

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Peanut hay	AL	15	STMR	85	17.65	15	0	60	–	2.647059	0	10.59	–
Trefoil hay	AL	9.2	STMR	85	10.82	25	40	–	–	2.705882	4.329	–	–
Vetch hay	AL	9.2	STMR	85	10.82	0	–	–	25	0	–	–	2.706
Wheat forage	AF/AS	2.7	STMR	25	10.80	20	20	40	–	2.16	2.16	4.32	–
Rye straw	AF/AS	9.2	STMR	88	10.45	0	–	–	5	0	–	–	0.523
Barley straw	AF/AS	9.2	STMR	89	10.34	0	10	–	–	0	1.034	–	–
Oat hay	AF/AS	9.2	STMR	90	10.22	10	–	–	–	1.022222	–	–	–
Beet, sugar tops	AM/AV	1.5	STMR	23	6.52	0	30	–	–	0	1.957	–	–
Turnip tops (leaves)	AM/AV	1.5	STMR	30	5.00	30	–	–	–	1.5	–	–	–
Corn, field forage/silage	AF/AS	1.15	STMR	40	2.88	0	–	–	45	0	–	–	1.294
Sorghum, grain forage	AF/AS	0.23	STMR	35	0.66	0	–	–	25	0	–	–	0.164
Total	–	–	–	–	–	100	100	100	100	10.03516	9.48	14.91	4.687

PYDIFLUMETOFEN (309) POULTRY BROILER

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Swede roots	VR	0.25	HR	10	2.50	–	10	–	–	–	0.25	–	–
Sorghum, grain	GC	0.515	STMR	86	0.60	75	70	70	65	0.449	0.419	0.419	0.389
Wheat milled bypdts.	CM/CF	0.38	STMR	88	0.43	25	20	20	5	0.108	0.086	0.086	0.022
Corn, field grain	GC	0.03	STMR	88	0.03	–	–	–	30	–	–	–	0.01
Soybean seed	VD	0.028	STMR	89	0.03	–	–	10	–	–	–	0.003	–
Total	–	–	–	–	–	100	100	100	100	0.557	0.756	0.509	0.421

PYDIFLUMETOFEN (309) POULTRY BROILER

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Swede roots	VR	0.08	STMR	10	0.80	–	10	–	–	–	0.08	–	–
Sorghum, grain	GC	0.515	STMR/STMR-P	86	0.60	75	70	70	65	0.45	0.419	0.419	0.389
Wheat milled bypdts.	CM/CF	0.38	STMR-P	88	0.43	25	20	20	5	0.11	0.086	0.086	0.022
Corn, field grain	GC	0.03	STMR-P	88	0.03	–	–	–	30	–	–	–	0.01
Soybean seed	VD	0.028	STMR-P	89	0.03	–	–	10	–	–	–	0.003	–
Total	–	–	–	–	–	100	100	100	100	0.56	0.586	0.509	0.421

PYDIFLUMETOFEN (309) POULTRY LAYER

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Wheat hay	AF/AS	40	HR	88	45.45	–	10	–	–	–	4.545	–	–
Beet, sugar tops	AM/AV	8	HR	23	34.78	–	5	–	–	–	1.739	–	–
Trefoil hay	AL	15	HR	85	17.65	–	10	–	–	–	1.765	–	–
Swede roots	VR	0.25	HR	10	2.50	–	10	–	–	–	0.25	–	–
Sorghum, grain	GC	0.515	STMR	86	0.60	75	65	70	55	0.449	0.389	0.419	0.329
Wheat milled bypdts.	CM/CF	0.38	STMR	88	0.43	25	–	20	30	0.108	–	0.086	0.13

Estimated maximum dietary burden													
Corn, field grain	GC	0.03	STMR	88	0.03	–	–	–	15	–	–	–	0.005
Soybean seed	VD	0.028	STMR	89	0.03	–	–	10	–	–	–	0.003	–
Total	–	–	–	–	–	100	100	100	100	0.56	8.689	0.509	0.46

PYDIFLUMETOFEN (309) POULTRY LAYER

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Trefoil hay	AL	9.2	STMR	85	10.82	–	10	–	–	–	1.082	–	–
Wheat forage	AF/AS	2.7	STMR	25	10.80	–	10	–	–	–	1.08	–	–
Beet, sugar tops	AM/AV	1.5	STMR	23	6.52	–	5	–	–	–	0.326	–	–
Swede roots	VR	0.08	STMR	10	0.80	–	10	–	–	–	0.08	–	–
Sorghum, grain	GC	0.515	STMR	86	0.60	75	65	70	55	0.449128	0.389	0.419	0.329
Wheat milled bypdts.	CM/CF	0.38	STMR-P	88	0.43	25	–	20	30	0.107955	–	0.086	0.13
Corn, field grain	GC	0.03	STMR-P	88	0.03	–	–	–	15	–	–	–	0.005
Soybean seed	VD	0.028	STMR	89	0.03	–	–	10	–	–	–	0.003	–
Total	–	–	–	–	–	100	100	100	100	0.557	2.958	0.509	0.46

TEBUFENOZIDE (196) BEEF CATTLE

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Kale leaves	AM/AV	6.9	HR	15	46.00	–	20	–	–	–	9.2	–	–
Rice hulls	CM/CF	25.38	STMR	90	28.20	–	–	5	–	–	–	1.41	–
Grape pomace, wet	AB	2.9	STMR-P	15	19.33	–	–	20	–	–	–	3.867	–
Almond hulls	AM/AV	15.5	STMR	90	17.22	–	–	10	–	–	–	1.722	–
Rice straw	AF/AS	7.7	HR	90	8.56	–	10	60	55	–	0.856	5.133	4.706
Rice grain	GC	4.7	STMR	88	5.34	20	–	5	–	1.068	–	0.267	–
Apple pomace, wet	AB	0.4	STMR-P	40	1.00	–	20	–	–	–	0.2	–	–
Sugarcane molasses	DM	0.71	STMR-P	75	0.95	10	10	–	–	0.095	0.095	–	–

Estimated maximum dietary burden													
Citrus dried pulp	AB	0.38	STMR-P	91	0.42	10	–	–	–	0.042	–	–	–
Canola meal	SM	0.14	STMR-P	88	0.16	5	–	–	–	0.008	–	–	–
Rape meal	SM	0.14	STMR-P	88	0.16	–	20	–	15	–	0.032	–	0.024
Total	–	–	–	–	–	45	80	100	70	1.213	10.38	12.4	4.729

TEBUFENOZIDE (196) BEEF CATTLE

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Rice hulls	CM/CF	25.38	STMR	90	28.20	–	–	5	–	–	–	1.41	–
Grape pomace, wet	AB	2.9	STMR-P	15	19.33	–	–	20	–	–	–	3.867	–
Almond hulls	AM/AV	15.5	STMR	90	17.22	–	–	10	–	–	–	1.722	–
Kale leaves	AM/AV	2.5	STMR	15	16.67	–	20	–	–	–	3.333	–	–
Rice straw	AF/AS	5.05	STMR	90	5.61	–	10	60	55	–	0.561	3.367	3.086
Rice grain	GC	4.7	STMR	88	5.34	20	–	5	–	1.068182	–	0.267	–
Apple pomace, wet	AB	0.4	STMR-P	40	1.00	–	20	–	–	–	0.2	–	–
Sugarcane molasses	DM	0.71	STMR-P	75	0.95	10	10	–	–	0.094667	0.095	–	–
Citrus dried pulp	AB	0.38	STMR-P	91	0.42	10	–	–	–	0.042	–	–	–
Canola meal	SM	0.14	STMR-P	88	0.16	5	–	–	–	0.008	–	–	–
Rape meal	SM	0.14	STMR-P	88	0.16	–	20		15	–	0.032	–	0.024
Total	–	–	–	–	–	45	80	100	70	1.213	4.221	10.63	3.11

TEBUFENOZIDE (196) DAIRY CATTLE

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Kale leaves	AM/AV	6.9	HR	15	46.00	–	20	40	–	–	9.2	18.4	–
Rice hulls	CM/CF	25.38	STMR	90	28.20	–	–	10	–	–	–	2.82	–
Grape pomace, wet	AB	2.9	STMR	15	19.33	–	–	20	–	–	–	3.867	–
Almond hulls	AM/AV	15.5	STMR	90	17.22	10	–	–	–	1.722	–	–	–

Estimated maximum dietary burden													
Rice straw	AF/AS	7.7	HR	90	8.56	–	5	20	25	–	0.428	1.711	2.139
Rice grain	GC	4.7	STMR	88	5.34	20		10	–	1.068	–	0.534	–
Apple pomace, wet	AB	0.4	STMR	40	1.00	10	10	–	–	0.100	0.1	–	–
Sugarcane molasses	DM	0.71	STMR	75	0.95	10	10	–	–	0.095	0.095	–	–
Citrus dried pulp	AB	0.38	STMR	91	0.42	–	10	–	–	–	0.042	–	–
Canola meal	SM	0.14	STMR	88	0.16	10	10	–	–	0.016	0.016	–	–
Rape meal	SM	0.14	STMR	88	0.16	–		–	25	–	–	–	0.04
Total	–	–	–	–	–	60	65	100	50	3.001	9.88	27.33	2.179

TEBUFENOZIDE (196) DAIRY CATTLE

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Rice hulls	CM/CF	25.38	STMR	90	28.20	–	0	10	–	–	0	2.82	–
Grape pomace, wet	AB	2.9	STMR-P	15	19.33	0	–	20	–	0	–	3.867	–
Almond hulls	AM/AV	15.5	STMR	90	17.22	10	–	10	–	1.722222	–	1.722	–
Kale leaves	AM/AV	2.5	STMR	15	16.67	0	20	30	–	0	3.333	5	–
Rice straw	AF/AS	5.05	STMR	90	5.61	0	5	20	25	0	0.281	1.122	1.403
Rice grain	GC	4.7	STMR	88	5.34	20	–	10	–	1.068182	–	0.534	–
Apple pomace, wet	AB	0.4	STMR-P	40	1.00	10	10	–	–	0.1	0.1	–	–
Sugarcane molasses	DM	0.71	STMR-P	75	0.95	10	10	–	–	0.094667	0.095	–	–
Citrus dried pulp	AB	0.38	STMR-P	91	0.42	0	10	–	–	0	0.042	–	–
Canola meal	SM	0.14	STMR-P	88	0.16	10	10	–	–	0.015909	0.016	–	–
Rape meal	SM	0.14	STMR-P	88	0.16	0	–	–	25	0	–	–	0.04
Total	–	–	–	–	–	60	65	100	50	3.00098	3.866	15.07	1.443

TEBUFENOZIDE (196) POULTRY BROILER

Estimated maximum and mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP

Estimated maximum and mean dietary burden													
Rice grain	GC	4.7	STMR	88	5.34	20		50	–	1.068	–	2.67	–
Canola meal	SM	0.14	STMR	88	0.16	15	18	5	–	0.024	0.029	0.008	–
Rape meal	SM	0.14	STMR	88	0.16	–	–	–	5	–	–	–	0.008
Total	–	–	–	–	–	35	18	55	5	1.092	0.029	2.678	0.008

TEBUFENOZIDE (196) POULTRY LAYER

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Cabbage heads, leaves	AM/AV	4.6	HR	15	30.67	–	5	–	–	–	1.533	–	–
Rice grain	GC	4.7	STMR	88	5.34	20	–	50	–	1.068	–	2.67	–
Canola meal	SM	0.14	STMR-p	88	0.16	15	10	5	–	0.024	0.016	0.008	–
Rape meal	SM	0.14	STMR-p	88	0.16	–	–	–	15	–	–	–	0.024
Total	–	–	–	–	–	35	15	55	15	1.092	1.549	2.678	0.024

TEBUFENOZIDE (196) POULTRY LAYER

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Rice grain	GC	4.7	STMR	88	5.34	20	–	50	–	1.068182	–	2.67	–
Cabbage heads, leaves	AM/AV	0.34	STMR	15	2.27	–	5	–	–	–	0.113	–	–
Canola meal	SM	0.14	STMR-P	88	0.16	15	10	5		0.023864	0.016	0.008	–
Rape meal	SM	0.14	STMR-P	88	0.16	–	–	–	15	–	–	–	0.024
Total	–	–	–	–	–	35	15	55	15	1.092045	0.129	2.678	0.024

Note: US–CAN: United States–Canada; EU: European Union; AU: Australia; JP: Japan.

Annex 6. SAS Code used to run the GECDE calculations

There are two pieces of SAS code used to run the GECDE calculations. The first is used to clean and arrange the input data, and the second to run the exposure calculations.

The input datasets are:

- the STMRs;
- recipe database to derive STMRs for mixed foods;
- the CIFOCOss consumption data; and
- the ADIs for each of the compounds being assessed.

SAS code for data preparation

```
libname CONS 'E:\AQRac\WHO\JMPR 2024\Input_Cons';

libname Output 'E:\AQRac\WHO\JMPR 2024\Output';


/*Données de consommation CIFOCOS*/

PROC IMPORT OUT=CONS.Cifocos

            DATAFILE= "E:\AQRac\WHO\JMPR 2024\Input_Cons\fullcifocoss_sept2024.xlsx"

            DBMS=EXCELCS REPLACE;

     SHEET="fullcifocoss_sept2024";

     SCANTEXT=YES;

     USEDATE=YES;

     SCANTIME=YES;

RUN;


PROC SQL;

   CREATE TABLE CONS.Cifocos2 AS

   SELECT t1.BW,

             t1.Country,
```

```
        t1.Year,
        t1.FoodCode,
        t1.FoodName,
        t1.AgeClass,
            t1.SourceAgeClass,
        t1.Gender,
        t1.Number_of_consumers as N_consumers,
        t1.Consumers_Mean,
        t1.Consumers_Median,
        t1.Consumers_P05,
        t1.Consumers_P90,
        t1.Consumers_P95,
        t1.Consumers_P975,
        t1.Consumers_Standard_deviation,
        t1.Number_of_subjects as N_subjects,
        t1.Total_Mean,
        t1.Total_Median,
        t1.Total_P05,
        t1.Total_P90,
        t1.Total_P95,
        t1.Total_P975,
        t1.Total_Standard_deviation
    FROM CONS.Cifocos_select t1;
QUIT;
/*Sélection des lignes sans poids corporel*/
data CONS.Cifocos_select_SBW;
set CONS.Cifocos2;
```

```
if BW=0;
run;
/*Sélection des lignes avec poids corporel*/
data CONS.Cifocos_select_BW;
set CONS.Cifocos2;
if BW=1;
run;
proc sort data=CONS.Cifocos_select_SBW;
by Country Year     AgeClass Gender SourceAgeClass N_subjects N_consumers ;
run;
proc sort data=CONS.Cifocos_select_BW;
by Country Year AgeClass Gender SourceAgeClass     N_subjects N_consumers;
run;
DATA CONS.temp0 CONS.SansPoidsCorporel;
        MERGE CONS.Cifocos_select_SBW ( IN = A )
                CONS.Cifocos_select_BW ( IN = B ) ;
        BY     Country Year AgeClass Gender SourceAgeClass N_subjects N_consumers;
        IF A eq 1 and B eq 1 then output CONS.temp0 ;
        IF A eq 1 and B eq 0 then output CONS.SansPoidsCorporel ;

   RUN ;
/*Remove lines of coutries for which ALL=FEMALE */
data CONS.Cifocos_select_BW_SALL;
set CONS.Cifocos_select_BW;
if country='Benin' and Gender='All' then delete;
if country='Burkina Faso' and Gender='All' then delete;
if country='Democratic Republic of the Congo' and Gender='All' then delete;
```

```
if country='Ethiopia' and Gender='All' then delete;
if country='Guatemala' and Gender='All' then delete;
if country='Kenya' and Gender='All' then delete;
if country='India' and Gender='All' then delete;
if country='Indonesia' and Gender='All' then delete;
if country='Lao People"s Democratic Republic' and Gender='All' then delete;
if country='Mozambique' and Gender='All' then delete;
if country='Nigeria' and Gender='All' then delete;
if country='Pakistan' and Gender='All' then delete;
if country='Philippines' and Gender='All' and SourceAgeClass='>75 years' then delete;
if country='Philippines' and Gender='All' and SourceAgeClass='50-74 years' then delete;
if country='Uganda' and Gender='All' then delete;
if country='Zambia' and Gender='All' then delete;
run;

proc summary data=CONS.Cifocos_select_BW_SALL;
                    by Country year AgeClass Gender SourceAgeClass N_subjects;
                    var N_subjects;
                        /*id AgeClass;*/
                    output out=CONS.table_conso N=nb_subjects;
run;
PROC EXPORT DATA=CONS.table_conso
                    OUTFILE= "E:\AQRac\WHO\JMPR 2024\Output\Conso_descript_5.xlsx"
                    DBMS=EXCELCS REPLACE;
        SHEET="Conso_descript";
RUN;
```

```
/*Remove older surveys*/
data CONS.Cifocos_select_BW_WS;
set CONS.Cifocos_select_BW_SALL;
if country='Austria' and year='2010' then delete;
if country='Belgium' and year='2002' and AgeClass='Children and Adolescents' then delete;
if country='Belgium' and year='2004' and SourceAgeClass='Adults' then delete;
if country='Belgium' and year='2004' and AgeClass='Children and Adolescents' then delete;
if country='Bangladesh' and year='2010' then delete;
if country='Brazil' and year='2010' then delete;
if country='Cyprus' and year='2003' then delete;
if country='Denmark' and year='2000' then delete;
if country='Ethiopia' and year='2013' then delete;
if country='Finland' and year='2000' then delete;
if country='Finland' and year='2003' then delete;
if country='Finland' and year='2007' and AgeClass='Adults and Elderly' then delete;
if country='France' and year='2007' then delete;
if country='Greece' and year='2004' then delete;
if country='Ireland' and year='1997' then delete;
if country='Kenya' and year='2012' then delete;
if country='Kenya' and year='2014' then delete;
if country='Kenya' and year='2015' then delete;
if country='Kenya' and year='2016' then delete;
if country='Latvia' and year='2008' then delete;
if country='Netherlands' and year='2003' then delete;
if country='Netherlands' and     year='2006' then delete;
if country='Netherlands' and year='2007' then delete;
if country='Netherlands' and year='2010' then delete;
```

```
if country='Philippines' and year='2000' and AgeClass='Adults and Elderly' then delete;
if country='Philippines' and year='2000' and AgeClass='All' then delete;
if country='Philippines' and year='2002' and AgeClass='Adults and Elderly' then delete;
if country='Philippines' and year='2002' and AgeClass='All' then delete;
if country='Philippines' and year='2003' and AgeClass='Adults and Elderly' then delete;
if country='Philippines' and year='2003' and AgeClass='All' then delete;
if country='Philippines' and year='2005' and AgeClass='Adults and Elderly' and Gender='female' then delete;
if country='Philippines' and year='2005' and AgeClass='All' and Gender='female' then delete;
if country='Philippines' and year='2013' and AgeClass='Adults and Elderly' then delete;
if country='Philippines' and year='2013' and AgeClass='All' then delete;
if country='Romania' and year='2012' and SourceAgeClass='Adults' then delete;
if country='Romania' and year='2012' and SourceAgeClass='Elderly' then delete;
if country='Romania' and year='2012' and SourceAgeClass='Very elderly' then delete;
if country='Spain' and year='1998' then delete;
if country='Spain' and year='1999' then delete;
if country='Spain' and year='2004' then delete;
if country='Spain' and year='2009' then delete;
if country='Sweden' and year='1997' then delete;
if country='United Kingdom' and year='2000' then delete;
if country='United Kingdom' and year='2008' and AgeClass='Infants and Toddlers' then delete;
run;
proc summary data=CONS.Cifocos_select_BW_WS;
                by Country year AgeClass Gender SourceAgeClass N_subjects;
                var N_subjects;
                        /*id AgeClass;*/
                output out=CONS.table_conso_WS N=nb_food;
run;
```

```
PROC EXPORT DATA=CONS.table_conso_WS
                OUTFILE= "E:\AQRac\WHO\JMPR 2024\Output\Conso_descript_5.xlsx"
                DBMS=EXCELCS REPLACE;
        SHEET="Conso_descript_WS";
RUN;
proc summary data=CONS.Cifocos_select_BW_WS;
                 by Country year AgeClass Gender SourceAgeClass /*N_subjects*/;
                 var N_subjects;
                        /*id AgeClass;*/
                 output out=CONS.table_conso_WS2 N=nb_food;
run;
PROC EXPORT DATA=CONS.table_conso_WS2
                OUTFILE= "E:\AQRac\WHO\JMPR 2024\Output\Conso_descript_5.xlsx"
                DBMS=EXCELCS REPLACE;
        SHEET="Conso_descript_WS2";
RUN;
proc summary data=CONS.table_conso_WS;
                 by Country year AgeClass Gender;
                 var N_subjects;
                        /*id AgeClass;*/
                 output out=CONS.table_conso_WS3 sum=nb_subjects;
run;
PROC EXPORT DATA=CONS.table_conso_WS3
                OUTFILE= "E:\AQRac\WHO\JMPR 2024\Output\Conso_descript_5.xlsx"
                DBMS=EXCELCS REPLACE;
        SHEET="Conso_descript_WS3";
RUN;
```

```
proc summary data=CONS.Cifocos_select_BW_WS;
                    by Country /*year AgeClass Gender SourceAgeClass*/;
                    var N_subjects;
                        /*id AgeClass;*/
                    output out=CONS.table_conso_C N=nb_subjects;
run;
PROC EXPORT DATA=CONS.table_conso_C
                   OUTFILE= "E:\AQRac\WHO\JMPR 2024\Output\Conso_descript_5.xlsx"
                   DBMS=EXCELCS REPLACE;
        SHEET="Country_WS";
RUN;
proc summary data=CONS.Cifocos_select_BW_WS;
                    by Country year /*AgeClass Gender SourceAgeClass*/;
                    var N_subjects;
                        /*id AgeClass;*/
                    output out=CONS.table_conso_S N=nb_subjects;
run;
PROC EXPORT DATA=CONS.table_conso_S
                   OUTFILE= "E:\AQRac\WHO\JMPR 2024\Output\Conso_descript_5.xlsx"
                   DBMS=EXCELCS REPLACE;
        SHEET="Survey_WS";
RUN;
```

SAS code for running the GECDE

```
libname JMPR 'E:\AQRac\WHO\JMPR 2024\Input';
libname CONS 'E:\AQRac\WHO\JMPR 2024\Input_Cons';
```

```
libname Output 'E:\AQRac\WHO\JMPR 2024\Output';


/*Données STMR de 2024*/
PROC IMPORT OUT=JMPR.STMR_codes
            DATAFILE= "E:\AQRac\WHO\JMPR 2024\Input\JMPR 2024 summed STMR\Output03_summedSTMR_per_food_Spinosad_Final.xlsx"
                DBMS=EXCELCS REPLACE;
     SHEET="Output03";
     SCANTEXT=YES;
     USEDATE=YES;
     SCANTIME=YES;
RUN;

PROC SQL;
   CREATE TABLE JMPR.STMR_codes2 AS
   SELECT t1.CIFOCOssName as FoodName,
          t1.FoodEx2Code as FoodCode,
          t1.CIFOCOss_Keep_Level,
            t1.Ingredient_max_STMR as Food_Ingredients, /*t1.Food_Ingredients,*/
          t1.Searchterm_max_STMR as Commodity_Name, /*t1.Commodity_Name, */
          /*t1.Codex_Code,*/
            t1.Summed_STMRxpropxdefPF as level,
            t1.Unit
            FROM JMPR.STMR_codes t1
WHERE t1.Summed_STMRxpropxdefPF and t1.CIFOCOss_Keep_Level is NOT missing;
QUIT;

PROC SQL;
```

```
CREATE TABLE JMPR.Conso_STMR AS
SELECT t1.Country,
        t1.Year,
        t1.FoodCode,
        t1.FoodName,
        t1.AgeClass,
            t1.SourceAgeClass,
        t1.Gender,
        t1.N_consumers,
        t1.Consumers_Mean,
        t1.Consumers_Median,
        t1.Consumers_P05,
        t1.Consumers_P90,
        t1.Consumers_P95,
        t1.Consumers_P975,
        t1.Consumers_Standard_deviation,
        t1.N_subjects,
        t1.Total_Mean,
        t1.Total_Median,
        t1.Total_P05,
        t1.Total_P90,
        t1.Total_P95,
        t1.Total_P975,
        t1.Total_Standard_deviation,
            t2.level,
            t2.Food_Ingredients,
            t2.Commodity_Name
```

```
        FROM CONS.Cifocos_select_BW_WS t1
            LEFT JOIN JMPR.STMR_codes2 t2 ON (t1.FoodCode = t2.FoodCode);
QUIT;


PROC SQL;
    CREATE TABLE JMPR.Conso_STMR2 AS
    SELECT t1.Country,
            t1.Year,
            t1.FoodCode,
            t1.FoodName,
            t1.AgeClass,
                t1.SourceAgeClass,
            t1.Gender,
                t1.FoodCode,
            t1.FoodName,
            t1.N_consumers,
                t1.Consumers_Mean as C_Mean,
            t1.Consumers_Median as C_P50,
            t1.Consumers_P90 as C_P90,
            t1.Consumers_P95 as C_P95,
            t1.Consumers_P975 as C_P975,
            t1.N_subjects,
            t1.Total_Mean,
            t1.level
                FROM JMPR.Conso_STMR t1 where t1.level is not missing;
QUIT;
/*Estimate mean exposure and high percentile exposure*/
```

```
data who3;
set JMPR.Conso_STMR2;
length Pesticide $20;
Pesticide ='Spinosad';
ADI = 0.02; /*mg/kg bw/d*/

if gender = 'male' then gender = 'Male';
if gender = 'female' then gender = 'Female';

High_cons = Total_Mean;
if C_P50 ne .    and N_consumers gt 11 then    High_cons = C_P50;
if C_P90 ne .    and N_consumers gt 30 then    High_cons = C_P90;
if C_P95 ne .    and N_consumers gt 60 then    High_cons = C_P95;
if C_P975 ne . and N_consumers gt 180 then High_cons = C_P975;

level_propor=level;

Mean_All_exp = (Total_Mean)/1000 * level_propor; /*/ bw*/; /*expo moyenne population totale mg/kg par food item */
High_Food_Cons_exp = (high_cons)/1000 * level_propor; /*/ bw*/; /*expo fort consommateurs, consommateurs only mg/kg par food item*/

if Mean_All_exp                = . then Mean_All_exp = 0;
if High_Food_Cons_exp      = . then High_Food_Cons_exp = 0;

run;

proc sort data=WHO3;
```

```
by pesticide ADI Ageclass SourceAgeClass country year Gender     descending High_Food_Cons_exp;
run;
/*Rank the high percentile exposure to find the highest contributor*/
proc rank data=WHO3 out=Exposure_Rank ties=low descending;
var High_Food_Cons_exp;
by pesticide ADI Ageclass SourceAgeClass country year Gender ;
ranks rang;
run;
/*Attribute the high percentile food with rank 1 and mean exposure for the other*/
data Exposure_Rank2;
set Exposure_Rank;
if rang = 1 then High_Cons_exp = High_Food_Cons_exp; else High_Cons_exp = Mean_All_exp;
run;
/*Sum on all food*/
proc univariate data=Exposure_Rank2 noprint;
var Mean_All_exp High_Cons_exp;
by pesticide ADI Ageclass SourceAgeClass country year Gender;
output out=Exposure_sum sum = Mean_All_exp High_Cons_exp ;
run;

/*Estimate % of ADI*/
data exposure_Perct;
set exposure_sum;
Perc_All_exp=(Mean_All_exp)/ADI*100;
Perc_High_Cons_exp=(High_Cons_exp)/ADI*100;
run;
/*Sort the rank table*/
```

```
proc sort data=Exposure_Rank2;
by descending High_cons_exp;
run;

PROC SQL;
    CREATE TABLE WORK.Exposure_detail AS
    SELECT
                t1.pesticide,
                t1.ADI,
                t1.Ageclass,
                t1.SourceAgeClass,
            t1.country,
                t1.year,
            t1.gender,
            t1.N_subjects,
            t1.N_consumers,
                t1.FoodCode,
            t1.FoodName,
                t1.level,
            t1.Total_Mean,
                t1.C_Mean,
            t1.C_P50,
            t1.C_P90,
            t1.C_P95,
            t1.C_P975,
            t1.High_cons,
            t1.Mean_All_exp,
```

```
            t1.High_Food_Cons_exp,
            t1.rang as Ranking,
            t1.High_Cons_exp
        FROM WORK.Exposure_Rank2 t1;
QUIT;

PROC TABULATE
DATA=WORK.Exposure_perct
        OUT=WORK.All_Exp2;

        VAR Mean_All_exp High_Cons_exp Perc_All_exp Perc_High_Cons_exp;

        CLASS Ageclass /    ORDER=UNFORMATTED MISSING;
        CLASS gender /      ORDER=UNFORMATTED MISSING;
        CLASS pesticide /   ORDER=UNFORMATTED MISSING;
        CLASS ADI /  ORDER=UNFORMATTED MISSING;
        TABLE /* Row Dimension */
pesticide*ADI*Ageclass*Gender,
/* Column Dimension */
N
Mean_All_exp*(
   Min
   Max)
High_Cons_exp*(
   Min
   Max)
Perc_All_exp*(
```

```
    Min
    Max)
Perc_High_Cons_exp*(
    Min
    Max)                    ;
    where Mean_All_exp gt 0;
RUN;



data All_Exp3;
set All_Exp2 (drop=_page_ _table_ _type_);

rename N = N_groups;

if ageclass in (
'Adults and Elderly'
'All'
'Children and Adolescents'
'Infants and Toddlers'
);

if gender in (
'Male'
'Female'
'All'
);
```

```
run;

data output.Spinosad_summary;
set All_Exp3;
run;

PROC EXPORT DATA= WORK.All_Exp3
            OUTFILE= "E:\AQRac\WHO\JMPR 2024\Output\Spinosad results.xlsx"
            DBMS=EXCELCS REPLACE;
     SHEET="Summary";
RUN;

PROC EXPORT DATA= WORK.Exposure_Perct
            OUTFILE= "E:\AQRac\WHO\JMPR 2024\Output\Spinosad results.xlsx"
            DBMS=EXCELCS REPLACE;
     SHEET="Age_country";
RUN;

PROC EXPORT DATA= WORK.Exposure_detail
            OUTFILE= "E:\AQRac\WHO\JMPR 2024\Output\Spinosad results.xlsx"
            DBMS=EXCELCS REPLACE;
     SHEET="Age_country_food";
RUN;

PROC EXPORT DATA= JMPR.STMR_codes2
            OUTFILE= "E:\AQRac\WHO\JMPR 2024\Output\Spinosad results.xlsx"
            DBMS=EXCELCS REPLACE;
```

```
        SHEET="Input STMR";
RUN;

proc sort data=JMPR.Conso_STMR2;
by Country year AgeClass Gender;
run;
proc summary data=JMPR.Conso_STMR2;
                    by Country year AgeClass Gender;
                    var N_subjects;
                        /*id AgeClass;*/
                    output out=WORK.table_conso_WS N=nb_subjects;
run;

PROC EXPORT DATA=WORK.table_conso_WS
                   OUTFILE= "E:\AQRac\WHO\JMPR 2024\Output\Spinosad results.xlsx"
                   DBMS=EXCELCS REPLACE;
        SHEET="Conso_descript_WS";
RUN;

proc summary data=JMPR.Conso_STMR2;
                    by Country /*year AgeClass Gender SourceAgeClass*/;
                    var N_subjects;
                        /*id AgeClass;*/
                    output out=WORK.table_conso_C N=nb_subjects;
run;
PROC EXPORT DATA=WORK.table_conso_C
                   OUTFILE= "E:\AQRac\WHO\JMPR 2024\Output\Spinosad results.xlsx"
```

```
                DBMS=EXCELCS REPLACE;
        SHEET="Country_WS";
RUN;

/*Estimation of proportion and main food contributors for countries with exceedance of the MEAN*/
/*Selection of countries with exceendance*/
data JMPR.coutriesexceed_Mean;
set WORK.Exposure_Perct;
if Perc_All_exp > = 100;
run;
data JMPR.coutriesexceed_Mean;
set JMPR.coutriesexceed_Mean;
rename High_Cons_exp = Total_High_Cons_exp;
rename Mean_All_exp = Total_Mean_All_exp;
run;
/*Combination with the table with exposure by food*/

proc sort data=JMPR.coutriesexceed_Mean;
by Pesticide ADI AgeClass SourceAgeClass Country Year Gender;
run;

proc sort data=WORK.Exposure_detail;
by Pesticide ADI AgeClass SourceAgeClass Country Year Gender;
run;

DATA JMPR.temp0_Mean;
        MERGE WORK.Exposure_detail ( IN = A )
```

```
                JMPR.coutriesexceed_Mean ( IN = B ) ;
        BY    Pesticide ADI AgeClass SourceAgeClass Country Year Gender;
        IF A eq 1 and B eq 1 then output JMPR.temp0_Mean ;
    RUN ;
/*Remove null exposure*/
data JMPR.temp1_Mean;
set JMPR.temp0_Mean;
if Mean_All_exp ne 0;
run;
/*Name country with exceeedance*/
proc sort data=JMPR.temp1_Mean;
by Country;
run;
proc summary data=JMPR.temp1_Mean;
                    by Country;
                    var N_subjects;
                        output out=JMPR.Countries_exceedance_Mean N=nb_subjects;
run;
PROC EXPORT DATA=JMPR.Countries_exceedance_Mean
                    OUTFILE= "E:\AQRac\WHO\JMPR 2024\Output\Spinosad results.xlsx"
                    DBMS=EXCELCS REPLACE;
        SHEET="Countries_exceedance_Mean";
RUN;

/*Name country and population with exceeedance*/
proc sort data=JMPR.temp1_Mean;
by AgeClass SourceAgeClass Gender Country;
```

```
run;
proc summary data=JMPR.temp1_Mean;
                    by AgeClass SourceAgeClass Gender Country;
                    var N_subjects;
                        output out=JMPR.Populations_exceedance_Mean N=nb_subjects;
run;
PROC EXPORT DATA=JMPR.Populations_exceedance_Mean
                   OUTFILE= "E:\AQRac\WHO\JMPR 2024\Output\Spinosad results.xlsx"
                   DBMS=EXCELCS REPLACE;
        SHEET="Populations_exceedance_Mean";
RUN;

/*Count the number of populations group with exceedance*/
proc sort data=JMPR.Populations_exceedance_Mean;
by AgeClass Gender ;
run;
proc summary data=JMPR.Populations_exceedance_Mean;
                    by AgeClass Gender;
                    var nb_subjects;
                        output out=JMPR.Nb_Populations_exceedance_Mean N=nb_subjects;
run;
proc sort data=WORK.All_Exp3;
by AgeClass Gender;
run;
proc sort data=JMPR.Nb_Populations_exceedance_Mean;
by AgeClass Gender;
run;
```

```
DATA JMPR.summary_final;
        MERGE WORK.All_Exp3 ( IN = A )
                JMPR.Nb_Populations_exceedance_Mean ( IN = B ) ;
        BY    AgeClass Gender;
        IF A eq 1 or B eq 1 then output JMPR.summary_final;
    RUN ;
data JMPR.summary_final;
set JMPR.summary_final;
Perc_groups_exceed_Mean= nb_subjects/N_groups*100;
drop _TYPE_ _FREQ_ nb_subjects;
run;

/*Estimate the % of each mean food to total mean exposure; the % of the mean food to ADI */
data JMPR.Contributions_Mean;
set JMPR.temp1_Mean;
Contrib_Mean=Mean_All_exp/Total_Mean_All_exp*100;
Perc_food_ADI_Mean=Mean_All_exp/ADI*100;
run;

/*Rank the mean exposure*/
proc sort data=JMPR.Contributions_Mean;
by pesticide ADI Ageclass SourceAgeClass country year Gender ;
run;

proc rank data=JMPR.Contributions_Mean out=JMPR.Contributions_Mean_inter ties=low descending;
var Contrib_Mean;
by pesticide ADI Ageclass SourceAgeClass country year Gender ;
```

```
ranks Ranking_mean;
run;

proc sort data=JMPR.STMR_codes2;
by Foodcode;
run;
proc sort data=JMPR.Contributions_Mean_inter;
by Foodcode;
run;
DATA JMPR.Contributions2_Mean;
        MERGE JMPR.Contributions_Mean_inter ( IN = A )
                JMPR.STMR_codes2 ( IN = B ) ;
        BY    Foodcode;
        IF A eq 1 and B eq 1 then output JMPR.Contributions2_Mean ;
     RUN ;
data JMPR.Contributions3_Mean;
set JMPR.Contributions2_Mean;
drop CIFOCOss_Keep_Level Food_Ingredients unit;
run;
data JMPR.Food_exceedance_Mean;
set JMPR.Contributions3_Mean;
if Perc_food_ADI_Mean >=100;
run;

proc sort data=JMPR.Contributions3_Mean;
by AgeClass SourceAgeClass Country Gender descending Contrib_Mean;
run;
```

```
proc sort data=JMPR.Food_exceedance_Mean;
by AgeClass SourceAgeClass Country Gender descending Perc_food_ADI_Mean;
run;

PROC EXPORT DATA=JMPR.Contributions3_Mean
                OUTFILE= "E:\AQRac\WHO\JMPR 2024\Output\Spinosad results.xlsx"
                DBMS=EXCELCS REPLACE;
        SHEET="All food country exceed_Mean";
RUN;

PROC EXPORT DATA=JMPR.Food_exceedance_Mean
                OUTFILE= "E:\AQRac\WHO\JMPR 2024\Output\Spinosad results.xlsx"
                DBMS=EXCELCS REPLACE;
        SHEET="Food_ADI_exceed_Mean";
RUN;

data JMPR.ThreeFirst_Mean;
set JMPR.Contributions3_Mean;
if Ranking_Mean= 1 or Ranking_Mean=2 or Ranking_Mean =3;
run;
proc sort data=JMPR.ThreeFirst_Mean;
by AgeClass SourceAgeClass Gender Ranking_Mean;
run;

PROC TABULATE
DATA=JMPR.ThreeFirst_Mean
```

```
	OUT=JMPR.Summary_contrib_Mean;

	VAR Contrib_Mean;

	CLASS Ageclass /	ORDER=UNFORMATTED MISSING;
	CLASS gender /		ORDER=UNFORMATTED MISSING;
	CLASS pesticide /	ORDER=UNFORMATTED MISSING;
	CLASS ADI /	ORDER=UNFORMATTED MISSING;
	CLASS Ranking_Mean /		ORDER=UNFORMATTED MISSING;
		CLASS Commodity_Name / ORDER=UNFORMATTED MISSING;
	CLASS FoodName /	ORDER=UNFORMATTED MISSING;
	TABLE /* Row Dimension */
pesticide*ADI*Ageclass*Gender*Ranking_Mean*Commodity_Name*FoodName,
/* Column Dimension */
N
Contrib_Mean*(Min Max);

RUN;

data JMPR.Summary_contrib_Mean;
set JMPR.Summary_contrib_Mean;
drop _TYPE_ _PAGE_ _TABLE_;
rename N=Nb_countries;
run ;
proc sort data=JMPR.Summary_contrib_Mean;
by AgeClass Gender Ranking_Mean Commodity_Name;
run;
```

```
PROC EXPORT DATA=JMPR.Summary_contrib_Mean
                OUTFILE= "E:\AQRac\WHO\JMPR 2024\Output\Spinosad results.xlsx"
                DBMS=EXCELCS REPLACE;
        SHEET="Summary_contrib_Mean";
RUN;
PROC TABULATE
DATA=JMPR.ThreeFirst_Mean
        OUT=JMPR.Main_food_contributors_Mean;

        VAR Contrib_Mean;

        CLASS Ranking_Mean /       ORDER=UNFORMATTED MISSING;
        CLASS Commodity_Name / ORDER=UNFORMATTED MISSING;
        TABLE /* Row Dimension */
Ranking_Mean*Commodity_Name,
/* Column Dimension */
N
Contrib_Mean*(Min Max);
RUN;
proc sort data=JMPR.Main_food_contributors_Mean;
by Ranking_Mean descending Contrib_Mean_Min;
run;
PROC EXPORT DATA=JMPR.Main_food_contributors_Mean
                OUTFILE= "E:\AQRac\WHO\JMPR 2024\Output\Spinosad results.xlsx"
                DBMS=EXCELCS REPLACE;
        SHEET="Main_food_contrib_byRank_Mean";
RUN;
```

```
PROC TABULATE
DATA=JMPR.ThreeFirst_Mean
        OUT=JMPR.Main_food_contrib_overRank_Mean;


        VAR Contrib_Mean;


        CLASS Commodity_Name / ORDER=UNFORMATTED MISSING;
        TABLE /* Row Dimension */
Commodity_Name,
/* Column Dimension */
N
Contrib_Mean*(Min Max);
RUN;


PROC EXPORT DATA=JMPR.Main_food_contrib_overRank_Mean
                OUTFILE= "E:\AQRac\WHO\JMPR 2024\Output\Spinosad results.xlsx"
                DBMS=EXCELCS REPLACE;
       SHEET="Main_food_contrib_overRank_Mean";
RUN;



/*Estimation of proportion and main food contributors for countries with exceedance for the High percentile*/
/*Selection of countries with exceedance*/
data JMPR.coutriesexceed;
set WORK.Exposure_Perct;
if Perc_High_Cons_exp > = 100;
run;
```

```
/*Combination with the table with exposure by food*/

proc sort data=JMPR.coutriesexceed;
by Pesticide ADI AgeClass SourceAgeClass Country Year Gender;
run;

proc sort data=WORK.Exposure_detail;
by Pesticide ADI AgeClass SourceAgeClass Country Year Gender;
run;

DATA JMPR.temp0;
        MERGE WORK.Exposure_detail ( IN = A )
                JMPR.coutriesexceed ( IN = B ) ;
        BY    Pesticide ADI AgeClass SourceAgeClass Country Year Gender;
        IF A eq 1 and B eq 1 then output JMPR.temp0 ;
     RUN ;
/*Remove null exposure*/
data JMPR.temp1;
set JMPR.temp0;
if High_Cons_exp ne 0;
run;
/*Name country with exceeedance*/
proc sort data=JMPR.temp1;
by Country;
run;
proc summary data=JMPR.temp1;
```

```
                    by Country;
                    var N_subjects;
                        output out=JMPR.Countries_exceedance N=nb_subjects;
run;
PROC EXPORT DATA=JMPR.Countries_exceedance
                    OUTFILE= "E:\AQRac\WHO\JMPR 2024\Output\Spinosad results.xlsx"
                    DBMS=EXCELCS REPLACE;
        SHEET="Countries_exceedance_High";
RUN;

/*Name country and population with exceeedance*/
proc sort data=JMPR.temp1;
by AgeClass SourceAgeClass Gender Country;
run;
proc summary data=JMPR.temp1;
                    by AgeClass SourceAgeClass Gender Country;
                    var N_subjects;
                        output out=JMPR.Populations_exceedance N=nb_subjects;
run;
PROC EXPORT DATA=JMPR.Populations_exceedance
                    OUTFILE= "E:\AQRac\WHO\JMPR 2024\Output\Spinosad results.xlsx"
                    DBMS=EXCELCS REPLACE;
        SHEET="Populations_exceedance_High";
RUN;
/*Count the number of populations group with exceedance*/
proc sort data=JMPR.Populations_exceedance;
by AgeClass Gender;
```

```
run;
proc summary data=JMPR.Populations_exceedance;
                    by AgeClass Gender;
                    var nb_subjects;
                        output out=JMPR.Nb_Populations_exceedance N=nb_subjects;
run;
proc sort data=WORK.Summary final;
by AgeClass Gender;
run;
proc sort data=JMPR.Nb_Populations_exceedance;
by AgeClass Gender;
run;
DATA JMPR.summary_final2;
        MERGE JMPR.summary_final ( IN = A )
                JMPR.Nb_Populations_exceedance ( IN = B ) ;
        BY    AgeClass Gender;
        IF A eq 1 or B eq 1 then output JMPR.summary_final2 ;
    RUN ;
data JMPR.summary_final2;
set JMPR.summary_final2;
Perc_groups_exceed_High= nb_subjects/N_groups*100;
drop _TYPE_ _FREQ_ nb_subjects;
run;

PROC EXPORT DATA= JMPR.summary_final2
                    OUTFILE= "E:\AQRac\WHO\JMPR 2024\Output\Spinosad results.xlsx"
                    DBMS=EXCELCS REPLACE;
```

```
        SHEET="Summary";
RUN;
/*Select RAnk=1*/
data JMPR.Select_Total;
set JMPR.temp1;
if Ranking=1;
rename High_Cons_exp = Total_High_Cons_exp;
run;
proc sort data=JMPR.Select_Total;
by Pesticide ADI AgeClass SourceAgeClass Country Year Gender;
run;
proc sort data=JMPR.temp1;
by Pesticide ADI AgeClass SourceAgeClass Country Year Gender;
run;
/*Combine main food contributors and other foods for countries with exceedance*/
DATA JMPR.temp2;
        MERGE JMPR.temp1 ( IN = A )
                JMPR.Select_Total ( IN = B ) ;
        BY    Pesticide ADI AgeClass SourceAgeClass Country Year Gender;
        IF A eq 1 and B eq 1 then output JMPR.temp2 ;
    RUN ;
/*Estimate the % of the higher food to total high exposure; the % of the higher food to ADI and the ratio between
the high percentile of consumption and the mean*/
data JMPR.Contributions;
set JMPR.temp2;
Contrib_High=High_Food_Cons_exp/Total_High_Cons_exp*100;
Perc_food_ADI_High=High_Food_Cons_exp/ADI*100;
Ratio_mean_HRP=High_Cons/C_mean;
```

```
run;
proc sort data=JMPR.STMR_codes2;
by Foodcode;
run;
proc sort data=JMPR.Contributions;
by Foodcode;
run;
DATA JMPR.Contributions2;
        MERGE JMPR.Contributions ( IN = A )
                JMPR.STMR_codes2 ( IN = B ) ;
        BY    Foodcode;
        IF A eq 1 and B eq 1 then output JMPR.Contributions2 ;
     RUN ;
data JMPR.Contributions3;
set JMPR.Contributions2;
drop CIFOCOss_Keep_Level Food_Ingredients unit;
run;
data JMPR.Food_exceedance;
set JMPR.Contributions3;
if Perc_food_ADI_High >=100;
run;

proc sort data=JMPR.Contributions3;
by AgeClass SourceAgeClass Country Gender descending Contrib_High;
run;

proc sort data=JMPR.Food_exceedance;
```

```
by AgeClass SourceAgeClass Country Gender descending Perc_food_ADI_High;
run;

PROC EXPORT DATA=JMPR.Contributions3
                OUTFILE= "E:\AQRac\WHO\JMPR 2024\Output\Spinosad results.xlsx"
                DBMS=EXCELCS REPLACE;
        SHEET="All food country exceed_High";
RUN;

PROC EXPORT DATA=JMPR.Food_exceedance
                OUTFILE= "E:\AQRac\WHO\JMPR 2024\Output\Spinosad results.xlsx"
                DBMS=EXCELCS REPLACE;
        SHEET="Food_ADI_exceed_High";
RUN;
data JMPR.ThreeFirst;
set JMPR.Contributions3;
if Ranking= 1 or Ranking=2 or Ranking =3;
run;
proc sort data=JMPR.ThreeFirst;
by AgeClass SourceAgeClass Gender Ranking;
run;

PROC TABULATE
DATA=JMPR.ThreeFirst
         OUT=JMPR.Summary_contrib;

         VAR Contrib_High Ratio_mean_HRP;
```

```
        CLASS Ageclass /     ORDER=UNFORMATTED MISSING;
        CLASS gender /       ORDER=UNFORMATTED MISSING;
        CLASS pesticide /    ORDER=UNFORMATTED MISSING;
        CLASS ADI /   ORDER=UNFORMATTED MISSING;
        CLASS Ranking /      ORDER=UNFORMATTED MISSING;
        /*CLASS Codex_Code /       ORDER=UNFORMATTED MISSING;*/
        CLASS Commodity_Name / ORDER=UNFORMATTED MISSING;
        CLASS FoodName /  ORDER=UNFORMATTED MISSING;
        TABLE /* Row Dimension */
pesticide*ADI*Ageclass*Gender*Ranking*Commodity_Name*FoodName,
/* Column Dimension */
N
Contrib_High*(Min Max)
Ratio_mean_HRP*(Min Max);
RUN;

data JMPR.Summary_contrib;
set JMPR.Summary_contrib;
drop _TYPE_ _PAGE_ _TABLE_;
rename N=Nb_countries;
run ;
proc sort data=JMPR.Summary_contrib;
by AgeClass Gender Ranking Commodity_Name;
run;
PROC EXPORT DATA=JMPR.Summary_contrib
                OUTFILE= "E:\AQRac\WHO\JMPR 2024\Output\Spinosad results.xlsx"
```

```
                DBMS=EXCELCS REPLACE;
        SHEET="Summary_contrib_High";
RUN;
PROC TABULATE
DATA=JMPR.ThreeFirst
        OUT=JMPR.Main_food_contributors;

        VAR Contrib_High Ratio_mean_HRP;

        CLASS Ranking /      ORDER=UNFORMATTED MISSING;
        CLASS Commodity_Name / ORDER=UNFORMATTED MISSING;
        TABLE /* Row Dimension */
Ranking*Commodity_Name,
/* Column Dimension */
N
Contrib_High*(Min Max)
Ratio_mean_HRP*(Min Max);
RUN;
proc sort data=JMPR.Main_food_contributors;
by Ranking descending Contrib_High_Min;
run;
PROC EXPORT DATA=JMPR.Main_food_contributors
                OUTFILE= "E:\AQRac\WHO\JMPR 2024\Output\Spinosad results.xlsx"
                DBMS=EXCELCS REPLACE;
        SHEET="Main_food_contrib_byRank_High";
RUN;
```

```
PROC TABULATE
DATA=JMPR.ThreeFirst
        OUT=JMPR.Main_food_contrib_overRank;


        VAR Contrib_High Ratio_mean_HRP;


        CLASS Commodity_Name / ORDER=UNFORMATTED MISSING;
        TABLE /* Row Dimension */
Commodity_Name,
/* Column Dimension */
N
Contrib_High*(Min Max)
Ratio_mean_HRP*(Min Max);
RUN;
PROC EXPORT DATA=JMPR.Main_food_contrib_overRank
                OUTFILE= "E:\AQRac\WHO\JMPR 2024\Output\Spinosad results.xlsx"
                DBMS=EXCELCS REPLACE;
       SHEET="Main_food_contrib_overRank_High";
RUN;
```

Annex 7. Additional information for the dietary exposure estimates from the GECDE for risk characterization purposes

This annex, new to the JMPR report for the first time in 2024, is a result of the discussions held within the meeting in 2023 which were captured in the general consideration, *Developments in dietary exposure methodology for pesticide residues in food*.

It was discussed that when there is an exceedance of the ADI for at least one subpopulation from dietary exposures estimated using the GECDE (mean or high) that additional information be provided to assist in characterising risk and to assist in informing risk management decisions. This information included the number of subpopulations for which the ADI was exceeded (included in Chapter 4 of this report) and the foods that were major contributors to the dietary exposure estimates (provided in this annex).

"Rank", as used in the context of high contributors in this annex, refers to the first, second or third highest contributors to estimated dietary exposures. The data presented in this annex is provided for the first three highest contributors.

For some chemicals, there was no exceedance of the ADI for any subpopulation groups for the GECDE-mean. For these chemicals, the contributors are presented based on the results from the GECDE-high. It should be noted that within these results, the commodities and reported contributions are likely to be skewed as a result of there being one commodity in the calculation of the dietary exposure based on a consumption value at the highest reliable percentile (HRP) for consumers only. All other foods have consumption values at the mean for all survey respondents. No additional information is provided at this stage as to which commodity is the one for which the HRP was used in the GECDE-high calculation, or where these may have been captured within the results presented.

NOTE: It should be noted that the information contained within this annex may be modified, refined or changed for subsequent JMPR meetings. This may be a result of further analyses of relevant results undertaken by experts at the meeting and/or based on feedback from risk managers on the usefulness of such information.

Table A7.1 Azoxystrobin

	Range of contribution to the GECDE-mean (%)		Number of subpopulations where this food ranks among top three contributors (n)		
Food	**Minimum**	**Maximum**	**Rank 1**	**Rank 2**	**Rank 3**
Group of bulb vegs, raw	4	44	0	14	13
Group of citrus fruits, flesh	17	34	0	3	5
Group of citrus fruits, whole fruit	6	42	0	3	1
Group of herbs, dried	18	98	14	17	13
Group of herbs, raw	4	96	27	13	19
Group of legume vegs, raw	4	6	0	1	2
Group of other fruiting vegs, raw	1	28	0	0	3
Group of root & tuber vegs, raw	3	3	0	0	1
Group of stone fruits, w/o stones	17	64	1	2	3
Potato, raw	23	75	24	17	11
Sorghum grains, dry	98	99	5	0	0

Strawberry, raw	5	78	18	6	3

Table A7.2 Buprofezin

	Range of contribution to the GECDE-mean (%)		Number of subpopulations where this food ranks among top three contributors (n)		
Food	**Minimum**	**Maximum**	**Rank 1**	**Rank 2**	**Rank 3**
Apple, juice	13	32	0	0	4
Apple, raw	4	46	2	11	18
Group of citrus fruits, juice	17	17	0	0	1
Group of cucurbits, whole fruit	4	41	0	2	10
Nectarine, w/o stone	19	70	4	7	12
Olive, virgin oil	18	82	9	18	14
Peach, w/o stone	2	100	34	40	22
Pear, raw	1	98	46	15	21
Strawberry, raw	13	80	2	2	4
Subgroup of cherries, w/o stones	35	57	0	2	4
Subgroup of peppers, raw	61	97	3	4	0
Tea green, dry	90	96	12	0	0
Tomato, sauce/puree	30	54	0	6	0

Table A7.3 Fenpyroximate

	Range of contribution to the GECDE-mean (%)		Number of subpopulations where this food ranks among top three contributors (n)		
Food	**Minimum**	**Maximum**	**Rank 1**	**Rank 2**	**Rank 3**
Subgroup of stems & petioles, raw	10	37	2	2	2

Table A7.4 Fipronil

	Range of contribution to the GECDE-mean (%)		Number of subpopulations where this food ranks among top three contributors (n)		
Food	**Minimum**	**Maximum**	**Rank 1**	**Rank 2**	**Rank 3**
Bulb onion, raw	6	19	0	16	11
Mammalian fats	9	9	0	1	0
Mammalian meat 80M+20F	6	9	0	3	2
Milk fats	4	15	15	12	22
Milks	5	50	86	50	47
Poultry edible offal	9	13	0	6	3
Poultry eggs	4	19	3	12	17
Subgroup of wheat & similar, dry	7	23	4	8	6

Table A7.5 Flubendiamide

There were no exceedances of the ADI at the GECDE-mean, therefore no rank contributor information was provided. Results are therefore shown for the GECDE-high. Note qualifiers above about this information.

	Range of contribution to the GECDE-high (%)		Number of subpopulations where this food ranks among top three contributors (n)		
Food	**Minimum**	**Maximum**	**Rank 1**	**Rank 2**	**Rank 3**
Celery, raw	27	65	2	2	1
Subgroup of tea green & black, dry	96	98	12	0	0
Group of stone fruits, w/o stones	2	77	10	9	9
Milks	1	43	0	10	6
Tomato, paste	1	3	0	3	4
Group of pome fruits, raw	2	15	0	0	2
Milk fats	1	1	0	0	2

Table A7.6 Flupyradifurone

There were no exceedances of the ADI at the GECDE-mean, therefore no rank contributor information was provided. Results are therefore shown for the GECDE-high. Note qualifiers above about this information.

	Range of contribution to the GECDE-high (%)		Number of subpopulations where this food ranks among top three contributors (n)		
Food	**Minimum**	**Maximum**	**Rank 1**	**Rank 2**	**Rank 3**
Spinach, raw	27	75	3	3	2
Mustard greens, raw	94	96	12	0	0
Strawberry, raw	27	27	0	0	1
Phaseolus beans with pods, raw	15	21	0	0	4

Table A7.7 Folpet

There were no exceedances of the ADI at the GECDE-mean, therefore no rank contributor information was provided. Results are therefore shown for the GECDE-high. Note qualifiers above about this information.

	Range of contribution to the GECDE-high (%)		Number of subpopulations where this food ranks among top three contributors (n)		
Food	**Minimum**	**Maximum**	**Rank 1**	**Rank 2**	**Rank 3**
Blueberries, raw	32	83	1	1	1

Table A7.8 Fosetyl Al

There were no exceedances of the ADI at the GECDE-mean, therefore no rank contributor information was provided. Results are therefore shown for the GECDE-high. Note qualifiers above about this information.

Food	Range of contribution to the GECDE-high (%)		Number of subpopulations where this food ranks among top three contributors (n)		
	Minimum	Maximum	Rank 1	Rank 2	Rank 3
Kiwifruit, flesh	29	87	20	1	7
Summer squash, whole fruit	15	58	0	10	5
Group of tree nuts, nutmeat	15	45	0	4	4
Group of pome fruits, raw	15	29	0	3	3
Subgroup of oranges, flesh	17	21	0	2	1

Table A7.9 Methoprene

Food	Range of contribution to the GECDE-mean (%)		Number of subpopulations where this food ranks among top three contributors (n)		
	Minimum	Maximum	Rank 1	Rank 2	Rank 3
Sorghum grains, dry	1	97	8	0	3
Maize grains, dry	1	81	6	0	5
Wheat grains, dry	6	65	3	3	3
Peanut, nutmeat	2	24	0	8	3
Millet grains, dry	1	38	0	6	2
Wheat, refined flour	1	1	0	0	1

Table A7.10 Novaluron

Food	Range of contribution to the GECDE-mean (%)		Number of subpopulations where this food ranks among top three contributors (n)		
	Minimum	Maximum	Rank 1	Rank 2	Rank 3
Group of stone fruits, w/o stones	5	53	62	39	31
Milks	5	20	14	29	35
Group of pome fruits, raw	5	25	9	16	14
Rice grains, dry	3	80	2	0	1
Milk fats	8	11	0	2	5
Chard, raw	12	18	0	1	1

Table A7.11 Phosmet

There were no exceedances of the ADI at the GECDE-mean, therefore no rank contributor information was provided. Results are therefore shown for the GECDE-high. Note qualifiers above about this information.

	Range of contribution to the GECDE-high (%)		Number of subpopulations where this food ranks among top three contributors (n)		
Food	**Minimum**	**Maximum**	**Rank 1**	**Rank 2**	**Rank 3**
Blueberries, raw	<1	100	58	55	53
Cranberry, raw	1	100	2	3	5

Table A7.12 Prochloraz

There were no exceedances of the ADI at the GECDE-mean, therefore no rank contributor information was provided. Results are therefore shown for the GECDE-high. Note qualifiers above about this information.

	Range of contribution to the GECDE-high (%)		Number of subpopulations where this food ranks among top three contributors (n)		
Food	**Minimum**	**Maximum**	**Rank 1**	**Rank 2**	**Rank 3**
Avocado, flesh	98	99	18	0	0
Milks	0	2	0	11	14
Poultry eggs	1	3	0	6	4
Wheat grains, dry	1	1	0	1	0

Table A7.13 Pydiflumetofen

There were no exceedances of the ADI at the GECDE-mean, therefore no rank contributor information was provided. Results are therefore shown for the GECDE-high. Note qualifiers above about this information.

	Range of contribution to the GECDE-high (%)		Number of subpopulations where this food ranks among top three contributors (n)		
Food	**Minimum**	**Maximum**	**Rank 1**	**Rank 2**	**Rank 3**
Subgroup of bush berries, raw	2	11	0	7	4
Subgroup of leafy greens, raw	3	97	19	12	15

Table A7.14 Spinosad

	Range of contribution to the GECDE-mean (%)		Number of subpopulations where this food ranks among top three contributors (n)		
Food	**Minimum**	**Maximum**	**Rank 1**	**Rank 2**	**Rank 3**
Group of cereal grains, dry	7	13	0	2	8
Group of leafy vegs, raw	5	21	0	8	22

Milk fats	5	17	0	5	4
Milks	5	57	71	56	37

Table A7.15 Tebufenozide

There were no exceedances of the ADI at the GECDE-mean, therefore no rank contributor information was provided. Results are therefore shown for the GECDE-high. Note qualifiers above about this information.

	Range of contribution to the GECDE-high (%)		Number of subpopulations where this food ranks among top three contributors (n)		
Food	**Minimum**	**Maximum***	**Rank 1**	**Rank 2**	**Rank 3**
Group of leafy vegs, raw	15	100	21	16	13
Rape seed, crude oil	17	27	0	1	2

Annex 8. Reports and other documents resulting from previous joint meetings of the FAO panel of experts on pesticide residues in food and the environment and the WHO core assessment group on pesticide residues

1. Principles governing consumer safety in relation to pesticide residues. Report of a meeting of a WHO Expert Committee on Pesticide Residues held jointly with the FAO Panel of Experts on the Use of Pesticides in Agriculture. FAO Plant Production and Protection Division Report, No. PL/1961/11; WHO Technical Report Series, No. 240, 1962.
2. Evaluation of the toxicity of pesticide residues in food. Report of a Joint Meeting of the FAO Committee on Pesticides in Agriculture and the WHO Expert Committee on Pesticide Residues. FAO Meeting Report, No. PL/1963/13; WHO/Food Add./23, 1964.
3. Evaluation of the toxicity of pesticide residues in food. Report of the Second Joint Meeting of the FAO Committee on Pesticides in Agriculture and the WHO Expert Committee on Pesticide Residues. FAO Meeting Report, No. PL/1965/10; WHO/Food Add./26.65, 1965.
4. Evaluation of the toxicity of pesticide residues in food. FAO Meeting Report, No. PL/1965/10/1; WHO/Food Add./27.65, 1965.
5. Evaluation of the hazards to consumers resulting from the use of fumigants in the protection of food. FAO Meeting Report, No. PL/1965/10/2; WHO/Food Add./28.65, 1965.
6. Pesticide residues in food. Joint report of the FAO Working Party on Pesticide Residues and the WHO Expert Committee on Pesticide Residues. FAO Agricultural Studies, No. 73; WHO Technical Report Series, No. 370, 1967.
7. Evaluation of some pesticide residues in food. FAO/PL:CP/15; WHO/Food Add./67.32, 1967.
8. Pesticide residues. Report of the 1967 Joint Meeting of the FAO Working Party and the WHO Expert Committee. FAO Meeting Report, No. PL:1967/M/11; WHO Technical Report Series, No. 391, 1968.
9. 1967 Evaluations of some pesticide residues in food. FAO/PL:1967/M/11/1; WHO/Food Add./68.30, 1968.
10. Pesticide residues in food. Report of the 1968 Joint Meeting of the FAO Working Party of Experts on Pesticide Residues and the WHO Expert Committee on Pesticide Residues. FAO Agricultural Studies, No. 78; WHO Technical Report Series, No. 417, 1968.
11. 1968 Evaluations of some pesticide residues in food. FAO/PL:1968/M/9/1; WHO/Food Add./69.35, 1969.
12. Pesticide residues in food. Report of the 1969 Joint Meeting of the FAO Working Party of Experts on Pesticide Residues and the WHO Expert Group on Pesticide Residues. FAO Agricultural Studies, No. 84; WHO Technical Report Series, No. 458, 1970.
13. 1969 Evaluations of some pesticide residues in food. FAO/PL:1969/M/17/1; WHO/Food Add./70.38, 1970.
14. Pesticide residues in food. Report of the 1970 Joint Meeting of the FAO Working Party of Experts on Pesticide Residues and the WHO Expert Committee on Pesticide Residues. FAO Agricultural Studies, No. 87; WHO Technical Report Series, No. 4574, 1971.
15. 1970 Evaluations of some pesticide residues in food. AGP:1970/M/12/1; WHO/Food Add./71.42, 1971.

16. Pesticide residues in food. Report of the 1971 Joint Meeting of the FAO Working Party of Experts on Pesticide Residues and the WHO Expert Committee on Pesticide Residues. FAO Agricultural Studies, No. 88; WHO Technical Report Series, No. 502, 1972.
17. 1971 Evaluations of some pesticide residues in food. AGP:1971/M/9/1; WHO Pesticide Residue Series, No. 1, 1972.
18. Pesticide residues in food. Report of the 1972 Joint Meeting of the FAO Working Party of Experts on Pesticide Residues and the WHO Expert Committee on Pesticide Residues. FAO Agricultural Studies, No. 90; WHO Technical Report Series, No. 525, 1973.
19. 1972 Evaluations of some pesticide residues in food. AGP:1972/M/9/1; WHO Pesticide Residue Series, No. 2, 1973.
20. Pesticide residues in food. Report of the 1973 Joint Meeting of the FAO Working Party of Experts on Pesticide Residues and the WHO Expert Committee on Pesticide Residues. FAO Agricultural Studies, No. 92; WHO Technical Report Series, No. 545, 1974.
21. 1973 Evaluations of some pesticide residues in food. FAO/AGP/1973/M/9/1; WHO Pesticide Residue Series, No. 3, 1974.
22. Pesticide residues in food. Report of the 1974 Joint Meeting of the FAO Working Party of Experts on Pesticide Residues and the WHO Expert Committee on Pesticide Residues. FAO Agricultural Studies, No. 97; WHO Technical Report Series, No. 574, 1975.
23. 1974 Evaluations of some pesticide residues in food. FAO/AGP/1974/M/11; WHO Pesticide Residue Series, No. 4, 1975.
24. Pesticide residues in food. Report of the 1975 Joint Meeting of the FAO Working Party of Experts on Pesticide Residues and the WHO Expert Committee on Pesticide Residues. FAO Plant Production and Protection Series, No. 1; WHO Technical Report Series, No. 592, 1976.
25. 1975 Evaluations of some pesticide residues in food. AGP:1975/M/13; WHO Pesticide Residue Series, No. 5, 1976.
26. Pesticide residues in food. Report of the 1976 Joint Meeting of the FAO Panel of Experts on Pesticide Residues and the Environment and the WHO Expert Group on Pesticide Residues. FAO Food and Nutrition Series, No. 9; FAO Plant Production and Protection Series, No. 8; WHO Technical Report Series, No. 612, 1977.
27. 1976 Evaluations of some pesticide residues in food. AGP:1976/M/14, 1977.
28. Pesticide residues in food–1977. Report of the Joint Meeting of the FAO Panel of Experts on Pesticide Residues and Environment and the WHO Expert Group on Pesticide Residues. FAO Plant Production and Protection Paper 10 Rev, 1978.
29. Pesticide residues in food: 1977 evaluations. FAO Plant Production and Protection Paper 10 Suppl., 1978.
30. Pesticide residues in food–1978. Report of the Joint Meeting of the FAO Panel of Experts on Pesticide Residues and Environment and the WHO Expert Group on Pesticide Residues. FAO Plant Production and Protection Paper 15, 1979.
31. Pesticide residues in food: 1978 evaluations. FAO Plant Production and Protection Paper 15 Suppl., 1979.
32. Pesticide residues in food–1979. Report of the Joint Meeting of the FAO Panel of Experts on Pesticide Residues in Food and the Environment and the WHO Expert Group on Pesticide Residues. FAO Plant Production and Protection Paper 20, 1980.
33. Pesticide residues in food: 1979 evaluations. FAO Plant Production and Protection Paper 20 Suppl., 1980
34. Pesticide residues in food–1980. Report of the Joint Meeting of the FAO Panel of Experts on Pesticide Residues in Food and the Environment and the WHO Expert Group on Pesticide Residues. FAO Plant Production and Protection Paper 26, 1981.

35. Pesticide residues in food: 1980 evaluations. FAO Plant Production and Protection Paper 26 Suppl., 1981.
36. Pesticide residues in food–1981. Report of the Joint Meeting of the FAO Panel of Experts on Pesticide Residues in Food and the Environment and the WHO Expert Group on Pesticide Residues. FAO Plant Production and Protection Paper 37, 1982.
37. Pesticide residues in food: 1981 evaluations. FAO Plant Production and Protection Paper 42, 1982.
38. Pesticide residues in food–1982. Report of the Joint Meeting of the FAO Panel of Experts on Pesticide Residues in Food and the Environment and the WHO Expert Group on Pesticide Residues. FAO Plant Production and Protection Paper 46, 1982.
39. Pesticide residues in food: 1982 evaluations. FAO Plant Production and Protection Paper 49, 1983.
40. Pesticide residues in food–1983. Report of the Joint Meeting of the FAO Panel of Experts on Pesticide Residues in Food and the Environment and the WHO Expert Group on Pesticide Residues. FAO Plant Production and Protection Paper 56, 1985.
41. Pesticide residues in food: 1983 evaluations. FAO Plant Production and Protection Paper 61, 1985.
42. Pesticide residues in food–1984. Report of the Joint Meeting on Pesticide Residues. FAO Plant Production and Protection Paper 62, 1985.
43. Pesticide residues in food–1984 evaluations. FAO Plant Production and Protection Paper 67, 1985.
44. Pesticide residues in food–1985. Report of the Joint Meeting of the FAO Panel of Experts on Pesticide Residues in Food and the Environment and a WHO Expert Group on Pesticide Residues. FAO Plant Production and Protection Paper 68, 1986.
45. Pesticide residues in food–1985 evaluations. Part I. Residues. FAO Plant Production and Protection Paper 72/1, 1986.
46. Pesticide residues in food–1985 evaluations. Part II. Toxicology. FAO Plant Production and Protection Paper 72/2, 1986.
47. Pesticide residues in food–1986. Report of the Joint Meeting of the FAO Panel of Experts on Pesticide Residues in Food and the Environment and a WHO Expert Group on Pesticide Residues. FAO Plant Production and Protection Paper 77, 1986.
48. Pesticide residues in food–1986 evaluations. Part I. Residues. FAO Plant Production and Protection Paper 78, 1986.
49. Pesticide residues in food–1986 evaluations. Part II. Toxicology. FAO Plant Production and Protection Paper 78/2, 1987.
50. Pesticide residues in food–1987. Report of the Joint Meeting of the FAO Panel of Experts on Pesticide Residues in Food and the Environment and a WHO Expert Group on Pesticide Residues. FAO Plant Production and Protection Paper 84, 1987.
51. Pesticide residues in food–1987 evaluations. Part I. Residues. FAO Plant Production and Protection Paper 86/1, 1988.
52. Pesticide residues in food–1987 evaluations. Part II. Toxicology. FAO Plant Production and Protection Paper 86/2, 1988.
53. Pesticide residues in food–1988. Report of the Joint Meeting of the FAO Panel of Experts on Pesticide Residues in Food and the Environment and a WHO Expert Group on Pesticide Residues. FAO Plant Production and Protection Paper 92, 1988.
54. Pesticide residues in food–1988 evaluations. Part I. Residues. FAO Plant Production and Protection Paper 93/1, 1988.
55. Pesticide residues in food–1988 evaluations. Part II. Toxicology. FAO Plant Production and Protection Paper 93/2, 1989.

56. Pesticide residues in food–1989. Report of the Joint Meeting of the FAO Panel of Experts on Pesticide Residues in Food and the Environment and a WHO Expert Group on Pesticide Residues. FAO Plant Production and Protection Paper 99, 1989.
57. Pesticide residues in food–1989 evaluations. Part I. Residues. FAO Plant Production and Protection Paper 100, 1990.
58. Pesticide residues in food–1989 evaluations. Part II. Toxicology. FAO Plant Production and Protection Paper 100/2, 1990.
59. Pesticide residues in food–1990. Report of the Joint Meeting of the FAO Panel of Experts on Pesticide Residues in Food and the Environment and a WHO Expert Group on Pesticide Residues. FAO Plant Production and Protection Paper 102, Rome, 1990.
60. Pesticide residues in food–1990 evaluations. Part I. Residues. FAO Plant Production and Protection Paper 103/1, Rome, 1990.
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Annex 9. Errata

The following tables are estimated dietary burden calculations that were not included in Annex 6 of the 2023 WHO/FAO JMPR Report.

Table A9.1 Errata

FLUOPYRAM (243) **BEEF CATTLE**

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Bean vines	AL	25	HR	35	71.43	–	–	60	–	–	–	42.86	–
Pea hay	AL	48	HR	88	54.55	–	25	40	–	–	13.64	21.82	–
Beet. sugar tops	AM/AV	8.3	HR	23	36.09	–	20	–	–	–	7.217	–	–
Corn. field asp. gr. fn.	CM/CF	16	STMR	85	18.82	5	–	–	–	0.941176	–	–	–
Corn. field stover	AF/AS	13	HR	83	15.66	15	25	–	–	2.349398	3.916	–	–
Cotton gin by-products	AM/AV	14	HR	90	15.56	5	–	–	–	0.777778	–	–	–
Corn. field forage/silage	AF/AS	3.9	HR	40	9.75	–	30	–	–	–	2.925	–	–
Rice straw	AF/AS	6.7	HR	90	7.44	–	–	–	55	–	–	–	4.094
Soybean asp. gr. fn.	SM	4.6	STMR	85	5.41	5	–	–	–	0.270588	–	–	–
Rice bran/pollard	CM/CF	0.68	STMR	90	0.76	10	–	–	20	0.075556	–	–	0.151
Potato process waste	AB	0.09	STMR	12	0.75	30	–	–	–	0.225	–	–	–
Rice grain	GC	0.615	STMR	88	0.70	20	–	–	–	0.139773	–	–	–
Potato culls	VR	0.069	HR	20	0.35	10	–	–	–	0.0345	–	–	–
Rape meal	SM	0.23	STMR	88	0.26	–	–	–	15	–	–	–	0.039
Sorghum. grain	GC	0.175	STMR	86	0.20	–	–	–	10	–	–	–	0.02
Total	–	–	–	–	–	100	100	100	100	4.81	27.8	64.7	4.30

FLUOPYRAM (243) **BEEF CATTLE**

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Bean vines	AL	14	STMR	35	40.00	–	–	60	–	–	–	24	–
Pea vines	AL	5.6	STMR	25	22.40	–	20	–	–	–	4.48	–	–
Pea hay	AL	18	STMR	88	20.45	–	5	40	–	–	1.023	8.182	–
Corn. field asp. gr. fn.	CM/CF	16	STMR-P	85	18.82	5	–	–	–	0.941176	–	–	–
Cotton gin by-products	AM/AV	5.4	STMR-P	90	6.00	5	–	–	–	0.3	–	–	–

Soybean asp. gr. fn.	SM	4.6	STMR-P	85	5.41	5	–	–	–	0.270588	–	–	–
Corn. field forage/silage	AF/AS	2	STMR	40	5.00	15	75	–	–	0.75	3.75	–	–
Rice straw	AF/AS	2.55	STMR	90	2.83	–	–	–	55	–	–	–	1.558
Rice bran/pollard	CM/CF	0.68	STMR-P	90	0.76	10	–	–	20	0.075556	–	–	0.151
Potato process waste	AB	0.09	STMR-P	12	0.75	30	–	–	–	0.225	–	–	–
Rice grain	GC	0.615	STMR	88	0.70	20	–	–	–	0.139773	–	–	–
Rape meal	SM	0.23	STMR-P	88	0.26		–	–	15	–	–	–	0.039
Sorghum. grain	GC	0.175	STMR	86	0.20	10	–	–	10	0.020349	–	–	0.02
Total	–	–	–	–	–	100	100	100	100	2.72	9.25	32.2	1.77

FLUOPYRAM (243) **DAIRY CATTLE**

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Bean vines	AL	25	HR	35	71.43	–	20	70	–	–	14.29	50	–
Pea hay	AL	48	HR	88	54.55	10	10	–	–	5.454545	5.455	–	–
Beet. sugar tops	AM/AV	8.3	HR	23	36.09	–	30	–	–	–	10.83	–	–
Peanut hay	AL	21	HR	85	24.71	5	–	–	–	1.235294	–	–	–
Soybean hay	AL	20	HR	85	23.53	5	–	–	–	1.176471	–	–	–
Corn. field stover	AF/AS	13	HR	83	15.66	15	20	30	–	2.349398	3.133	4.699	–
Corn. field forage/silage	AF/AS	3.9	HR	40	9.75	30	20	–	50	2.925	1.95		4.875
Almond hulls	AM/AV	3.6	STMR	90	4.00	10	–	–	–	0.4	–	–	–
Carrot culls	VR	0.19	HR	12	1.58	10	–	–	–	0.158333	–	–	–
Apple pomace. wet	AB	0.31	STMR	40	0.78	10	–	–	–	0.0775	–	–	–
Rice bran/pollard	CM/CF	0.68	STMR	90	0.76	5	–	–	10	0.037778	–	–	0.076
Rape meal	SM	0.23	STMR	88	0.26	–	–	–	25		–	–	0.065
Sorghum. grain	GC	0.175	STMR	86	0.20	–	–	–	15		–	–	0.031
Total	–	–	–	–	–	100	100	100	100	13.8	35.6	54.7	5.05

FLUOPYRAM (243) DAIRY CATTLE

Estimated mean dietary burden													
					Residue	Diet content (%)				Residue Contribution (ppm)			
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	dw (mg/kg)	US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Bean vines	AL	14	STMR	35	40.00	–	20	70	–	–	8	28	–
Pea vines	AL	5.6	STMR/	25	22.40	10	–	–	–	2.24	–	–	–
Pea hay	AL	18	STMR/	88	20.45	0	10	–	–	0	2.045	–	–
Grape pomace. wet	AB	1.9	STMR-P	15	12.67	0	–	20	–	0	–	2.533	–
Soybean hay	AL	6.1	STMR	85	7.18	10	–	–	–	0.717647	–	–	–
Corn. field forage/silage	AF/AS	2	STMR	40	5.00	45	60	10	50	2.25	3	0.5	2.5
Almond hulls	AM/AV	3.6	STMR-P	90	4.00	10	–	–	–	0.4	–	–	–
Beet. sugar tops	AM/AV	0.46	STMR	23	2.00	0	10	–	–	0	0.2	–	–
Apple pomace. wet	AB	0.31	STMR-P	40	0.78	10	–	–	–	0.0775	–	–	–
Rice bran/pollard	CM/CF	0.68	STMR-P	90	0.76	15	–	–	10	0.113333	–	–	0.076
Rape meal	SM	0.23	STMR-P	88	0.26	0	–	–	25	0	–	–	0.065
Sorghum. grain	GC	0.175	STMR	86	0.20	0	–	–	15	0	–	–	0.031
Total	–	–	–	–	–	100	100	100	100	5.80	13.2	31.0	2.67

FLUOPYRAM (243) POULTRY BROILER

Estimated maximum dietary burden													
					Residue	Diet content (%)				Residue Contribution (ppm)			
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	dw (mg/kg)	US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Carrot culls	VR	0.19	HR	12	1.58	–	10	–	–	–	0.158	–	–
Rice bran/pollard	CM/CF	0.68	STMR	90	0.76	10	10	20	5	0.075556	0.076	0.151	0.038
Rice grain	GC	0.615	STMR	88	0.70	20		50	–	0.139773		0.349	–
Canola meal	SM	0.23	STMR	88	0.26	15	18	5		0.039205	0.047	0.013	–
Rape meal	SM	0.23	STMR	88	0.26	–	–	–	5	–	–	–	0.013
Sorghum. grain	GC	0.175	STMR	86	0.20	55	62	20	65	0.111919	0.126	0.041	0.132
Pea seed	VD	0.058	STMR	90	0.06	–	–	5		–	–	0.003	–
Corn. field grain	GC	0.01	STMR	88	0.01	–	–	–	5	–	–	–	6E-4
Soybean meal	SM	0.00095	STMR	92	0.00	–	–	–	20	–	–	–	2E-4
Total	–	–	–	–	–	100	100	100	100	0.37	0.41	0.56	0.18

FLUOPYRAM (243) POULTRY BROILER

Estimated mean dietary burden													
					Residue	Diet content (%)				Residue Contribution (ppm)			
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	dw (mg/kg)	US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Rice bran/pollard	CM/CF	0.68	STMR	90	0.76	10	10	20	5	0.075556	0.076	0.151	0.038
Carrot culls	VR	0.09	STMR	12	0.75	–	10	–	–	–	0.075	–	–
Rice grain	GC	0.615	STMR	88	0.70	20	–	50	–	0.139773	–	0.349	–
Canola meal	SM	0.23	STMR-P	88	0.26	15	18	5	–	0.039205	0.047	0.013	–

Rape meal	SM	0.23	STMR-P	88	0.26	–	–	–	5	–	–	–	0.013
Sorghum. grain	GC	0.175	STMR	86	0.20	55	62	20	65	0.111919	0.126	0.041	0.132
Pea seed	VD	0.058	STMR	90	0.06	–	–	5	–	–	–	0.003	–
Corn. field grain	GC	0.01	STMR	88	0.01	–	–	–	5	–	–	–	6E-04
Soybean meal	SM	0.00095	STMR-P	92	0.00	–	–	–	20	–	–	–	2E-04
Total	–	–	–	–	–	100	100	100	100	0.37	0.32	0.56	0.18

FLUOPYRAM (243) **POULTRY LAYER**

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Pea hay	AL	48	HR	88	54.55	–	10	–	–	–	5.455	–	–
Beet. sugar tops	AM/AV	8.3	HR	23	36.09	–	5	–	–	–	1.804	–	–
Corn. field stover	AF/AS	13	HR	83	15.66	–	10	–	–	–	1.566	–	–
Carrot culls	VR	0.19	HR	12	1.58	–	10	–	–	–	0.158	–	–
Rice bran/pollard	CM/CF	0.68	STMR	90	0.76	10	5	20	20	0.075556	0.038	0.151	0.151
Rice grain	GC	0.615	STMR	88	0.70	20		50	–	0.139773		0.349	–
Canola meal	SM	0.23	STMR	88	0.26	15	10	5	–	0.039205	0.026	0.013	–
Rape meal	SM	0.23	STMR	88	0.26	–		–	15	–		–	0.039
Sorghum. grain	GC	0.175	STMR	86	0.20	55	50	20	55	0.111919	0.102	0.041	0.112
Pea seed	VD	0.058	STMR	90	0.06	–		5	–	–	–	0.003	–
Corn. field grain	GC	0.01	STMR	88	0.01	–		–	10	–	–	–	0.001
Total	–	–	–	–	–	100	100	100	100	0.366451	9.149	0.558	0.303

FLUOPYRAM (243) **POULTRY LAYER**

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Pea vines	AL	5.6	STMR	25	22.40	–	10	–	–	–	2.24	–	–
Corn. field forage/silage	AF/AS	2	STMR	40	5.00	–	10	–	–	–	0.5	–	–
Beet. sugar tops	AM/AV	0.46	STMR	23	2.00	–	5	–	–	–	0.1	–	–
Rice bran/pollard	CM/CF	0.68	STMR-P	90	0.76	10	5	20	20	0.07555	0.038	0.151	0.151
Carrot culls	VR	0.09	STMR	12	0.75	–	10	–	–	–	0.075	–	–
Rice grain	GC	0.615	STMR	88	0.70	20	–	50	–	0.1398	–	0.349	–
Canola meal	SM	0.23	STMR-P	88	0.26	15	10	5	–	0.0392	0.026	0.013	–
Rape meal	SM	0.23	STMR-P	88	0.26	–	–	–	15	–	–	–	0.039
Sorghum. grain	GC	0.175	STMR	86	0.20	55	50	20	55	0.1119	0.102	0.041	0.112
Pea seed	VD	0.058	STMR	90	0.06	–	–	5		–	–	0.003	–
Corn. field grain	GC	0.01	STMR	88	0.01	–	–	–	10	–	–	–	0.001
Total	–	–	–	–	–	100	100	100	100	0.37	3.1	0.56	0.30

ISOCYCLOSERAM (334) BEEF CATTLE

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Cabbage heads, leaves	AM/AV	2.7	HR	15	18.00	–	20	–	–	–	3.6	–	–
Soybean hay	AL	14	HR	85	16.47	–	–	80	–	–	–	13.18	–
Soybean asp. gr. fn.	SM	12	STMR	85	14.12	5	–	–	–	0.706	–	–	–
Soybean forage	AL	4.8	HR	56	8.57	–	–	20	–	–	–	1.714	–
Corn, field forage/silage	AF/AS	1.6	HR	40	4.00	15	80	–	–	0.600	3.2	–	–
Citrus dried pulp	AB	0.41	STMR	91	0.45	10	–	–	–	0.045	–	–	–
Soybean hulls	SM	0.14	STMR	90	0.16	10	–	–	5	0.016	–	–	0.008
Corn gluten feed	CM/CF	0.01	STMR	40	0.03	60	–	–	25	0.015	–	–	0.006
Soybean seed	VD	0.02	STMR	89	0.02	–	–	–	15	–	–	–	0.003
Corn, field grain	GC	0.01	STMR	88	0.01	–	–	–	55	–	–	–	0.006
Total	–	–	–	–	–	100	100	100	100	1.381	6.8	14.89	0.024

ISOCYCLOSERAM (334) BEEF CATTLE

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Soybean asp. gr. fn.	SM	12	STMR-P	85	14.12	5	–	–	–	0.705882	–	–	–
Tomato pomace, wet	AB	1.6	STMR-P	20	8.00	–	–	10	–	–	–	0.8	–
Apple pomace, wet	AB	0.25	STMR-P	40	0.63	–	20	10	–	–	0.125	0.063	–
Citrus dried pulp	AB	0.41	STMR-P	91	0.45	10		10	–	0.045055	–	0.045	–
Soybean hulls	SM	0.14	STMR-P	90	0.16	10	10	–	5	0.015556	0.016	–	0.008
Cotton undelinted seed	SO	0.11	STMR-P	88	0.13	–	–	30	–	–	–	0.038	–
Corn gluten feed	CM/CF	0.01	STMR-P	40	0.03	75	30	20	25	0.01875	0.008	0.005	0.006
Soybean seed	VD	0.02	STMR	89	0.02	–	10	20	15	–	0.002	0.004	0.003
Corn, field grain	GC	0.01	STMR	88	0.01	–	30	–	55	–	0.003	–	0.006
Total	–	–	–	–	–	100	100	100	100	0.785	0.154	0.955	0.024

ISOCYCLOSERAM (334) DAIRY CATTLE

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Cabbage heads, leaves	AM/AV	2.7	HR	15	18.00	–	20	–	–	–	3.6	–	–
Soybean hay	AL	14	HR	85	16.47	20	–	40	–	3.294	–	6.588	–
Tomato pomace, wet	AB	1.6	STMR	20	8.00	–	–	10	–	–	–	0.8	–
Corn, field forage/silage	AF/AS	1.6	HR	40	4.00	45	60	50	50	1.800	2.4	2	2
Apple pomace, wet	AB	0.25	STMR	40	0.63	10	10	–	–	0.063	0.063	–	–
Citrus dried pulp	AB	0.41	STMR	91	0.45	–	10	–		–	0.045	–	–

Soybean hulls	SM	0.14	STMR	90	0.16	10	–	–		0.016	–	–	–
Cotton undelinted seed	SO	0.11	STMR	88	0.13	10	–	–		0.013	–	–	–
Corn gluten feed	CM/CF	0.01	STMR	40	0.03	5	–	–	25	0.001	–	–	0.006
Soybean seed	VD	0.02	STMR	89	0.02	–	–	–	10	–	–	–	0.002
Corn, field grain	GC	0.01	STMR	88	0.01	–	–	–	15	–	–	–	0.002
Total	–	–	–	–	–	100	100	100	100	5.186	6.108	9.388	2.01

ISOCYCLOSERAM (334) DAIRY CATTLE

Estimated mean dietary burden													
						Diet content (%)				Residue Contribution (ppm)			
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Tomato pomace, wet	AB	1.6	STMR-P	20	8.00	–	0	10	–	–	0	0.8	–
Apple pomace, wet	AB	0.25	STMR-P	40	0.63	10	10	–	–	0.0625	0.063		–
Citrus dried pulp	AB	0.41	STMR-P	91	0.45	0	10	20	–	0	0.045	0.09	–
Soybean hulls	SM	0.14	STMR-P	90	0.16	10	–	–	–	0.015556	–	–	–
Cotton undelinted seed	SO	0.11	STMR-P	88	0.13	10	10	20	–	0.0125	0.013	0.025	–
Corn gluten feed	CM/CF	0.01	STMR-P	40	0.03	25	30		25	0.00625	0.008		0.006
Soybean seed	VD	0.02	STMR	89	0.02	10	10	20	10	0.002247	0.002	0.004	0.002
Corn, field milled bypdts.	CM/CF	0.01	STMR-P	85	0.01	0	–	15	–	0	–	0.002	–
Corn, field grain	GC	0.01	STMR	88	0.01	35	30	15	65	0.003977	0.003	0.002	0.007
Total	–	–	–	–	–	100	100	100	100	0.10303	0.133	0.923	0.016

ISOCYCLOSERAM (334) POULTRY BROILER

Estimated maximum dietary burden													
						Diet content (%)				Residue Contribution (ppm)			
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Soybean hulls	SM	0.14	STMR	90	0.16	–	5	–	–	–	0.008	–	–
Corn gluten feed	CM/CF	0.01	STMR	40	0.03	–	10	–	–	–	0.003	–	–
Soybean seed	VD	0.02	STMR	89	0.02	20	20	15	–	0.004	0.004	0.003	–
Corn, field milled bypdts.	CM/CF	0.01	STMR	85	0.01	50	50	–	–	0.006	0.006	–	–
Corn, field grain	GC	0.01	STMR	88	0.01	30	15	–	70	0.003	0.002	–	0.008
Distiller's grain dried	SM	0.01	STMR	92	0.01	–	–	–	5	–	–	–	5E-04
Soybean meal	SM	0.0045	STMR	92	0.00	–	–	25	25	–	–	0.001	0.001
Total	–	–	–	–	–	100	100	40	100	0.014	0.022	0.005	0.01

ISOCYCLOSERAM (334) POULTRY BROILER

Estimated mean dietary burden													
						Diet content (%)				Residue Contribution (ppm)			
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Soybean hulls	SM	0.14	STMR-P	90	0.16	–	5	–	–	–	0.008	–	–
Corn gluten feed	CM/CF	0.01	STMR-P	40	0.03	–	10	–	–	–	0.003	–	–

Soybean seed	VD	0.02	STMR/	89	0.02	20	20	15	–	0.00	0.004	0.003	–
Corn, field milled bypdts.	CM/CF	0.01	STMR-P	85	0.01	50	50	–	–	0.01	0.006		–
Corn, field grain	GC	0.01	STMR/	88	0.01	30	15	–	70	0.00	0.002		0.008
Distiller's grain dried	SM	0.01	STMR-P	92	0.01	–	–	–	5	–	–	–	5E-04
Soybean meal	SM	0.0045	STMR-P	92	0.00	–	–	25	25	–	–	0.001	0.001
Total	–	–	–	–	–	100	100	40	100	0.013786	0.022	0.005	0.01

ISOCYCLOSERAM (334) POULTRY LAYER

Estimated maximum dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Cabbage heads, leaves	AM/AV	2.7	HR	15	18.00	–	5	–	–	–	0.9	–	–
Soybean hay	AL	14	HR	85	16.47	–	10	–	–	–	1.647	–	–
Soybean hulls	SM	0.14	STMR	90	0.16	–	5	–	–	–	0.008	–	–
Corn gluten feed	CM/CF	0.01	STMR	40	0.03	–		–	10	–	–	–	0.003
Corn gluten meal	CM/CF	0.01	STMR	40	0.03	–	10	–	–	–	0.003	–	–
Soybean seed	VD	0.02	STMR	89	0.02	20	15	15	–	0.004	0.003	0.003	–
Corn, field milled bypdts.	CM/CF	0.01	STMR	85	0.01	50	40	–	–	0.006	0.005	–	–
Corn, field grain	GC	0.01	STMR	88	0.01	30	15	–	80	0.003	0.002	–	0.009
Distiller's grain dried	SM	0.01	STMR	92	0.01	–	–	–	5	–	–	–	0.00
Soybean meal	SM	0.0045	STMR	92	0.00	–	–	25	5	–	–	0.001	2E-04
Total	–	–	–	–	–	100	100	40	100	0.014	2.567	0.005	0.012

ISOCYCLOSERAM (334) POULTRY LAYER

Estimated mean dietary burden													
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US–CAN	EU	AU	JP	US–CAN	EU	AU	JP
Soybean hulls	SM	0.14	STMR-P	90	0.16	–	5	–	–	–	0.008	–	–
Corn gluten feed	CM/CF	0.01	STMR-P	40	0.03	–	–	–	10	–	–	–	0.003
Corn gluten meal	CM/CF	0.01	STMR-P	40	0.03	–	10	–	–	–	0.003	–	–
Soybean seed	VD	0.02	STMR	89	0.02	20	15	15	–	0.004494	0.003	0.003	–
Corn, field milled bypdts.	CM/CF	0.01	STMR-P	85	0.01	50	40	–	–	0.005882	0.005	–	–
Corn, field grain	GC	0.01	STMR	88	0.01	30	30	–	80	0.003409	0.003	–	0.009
Distiller's grain dried	SM	0.01	STMR-P	92	0.01	–	–	–	5	–	–	–	5E-04
Soybean meal	SM	0.0045	STMR-P	92	0.00	–	–	25	5	–	–	0.001	2E-04
Total	–	–	–	–	–	100	100	40	100	0.014	0.022	0.005	0.01

Note: US–CAN: United States–Canada; EU: European Union; AU: Australia; JP: Japan.

Annex 10. Dissenting opinion to Section 2.1

The pesticide residue experts, who participated in JMPR 2024, expressed their dissent against Section 2.1 because of the following:

- There was disagreement that the analysis presented in Section 2.1 in response to questions raised by CCPR and JMPR 2023 was sufficient to adopt the use of the GECDE-high model.
- The GECDE-high methodology results in long-term exposure estimates which are significantly higher than the current IEDI model, and may result in an unrealistic overestimation of the long-term dietary risk.
- More detailed information is needed to clearly describe the documentation on the model, data sources, underlying assumptions, model output, and how these were applied within the GECDE model.

The annual Joint Meeting of the Food and Agriculture Organization of the United Nations (FAO) Panel of Experts on Pesticide Residues in Food and the Environment and the World Health Organization (WHO) Core Assessment Group on Pesticide Residues (JMPR) was held at FAO headquarters in Rome, Italy, from 17 to 26 September 2024 and virtually on 9 October 2024. The FAO panel of experts had met in preparatory sessions from 11 to 16 September 2024. The Meeting was held in pursuance of recommendations made by previous Meetings and accepted by the governing bodies of FAO and WHO that studies should be undertaken jointly by experts to evaluate possible hazards to humans arising from the occurrence of pesticide residues in foods. During the meeting the FAO Panel of Experts was responsible for reviewing pesticide use patterns (use of good agricultural practices), data on the chemistry and composition of the pesticides and methods of analysis for pesticide residues and for estimating the maximum residue levels that might occur as a result of the use of the pesticides according to good agricultural use practices. The WHO Core Assessment Group was responsible for reviewing toxicological and related data and for estimating, where possible and appropriate, acceptable daily intakes (ADIs) and acute reference doses (ARfDs) of the pesticides for humans.
This report contains information on ADIs, ARfDs, maximum residue levels, and general principles for the evaluation of pesticides. The recommendations of the Joint Meeting, including further research and information, are proposed for use by Member governments of the respective agencies and other interested parties.

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