



Food and Agriculture Organization
of the United Nations



World Health
Organization

JOINT FAO/WHO MEETING ON PESTICIDE RESIDUES

13–22 September 2022

SUMMARY REPORT

**ACCEPTABLE DAILY INTAKES, ACUTE REFERENCE DOSES, RESIDUE
DEFINITIONS,
RECOMMENDED MAXIMUM RESIDUE LIMITS, SUPERVISED TRIALS MEDIAN
RESIDUE VALUES
AND OTHER VALUES RECORDED
BY THE 2022 MEETING**

Issued October 2022

The following extracts of the results of the 2022 Joint FAO/WHO Meeting on Pesticide Residues (JMPR) are provided to make them accessible to interested parties at an early date.

The Meeting evaluated 34 pesticides. The Meeting estimated maximum residue levels, which it recommended for use as maximum residue limits (MRLs) by the CCPR. It also estimated supervised trials median residue (STMR) and highest residue (HR) levels as a basis for estimation of the dietary exposure to residues of the pesticides reviewed. The allocations and estimates are shown in the table.

Pesticides for which the estimated dietary exposures might, on the basis of the available information, exceed their Acceptable Daily Intakes (ADIs) are marked with footnotes, which are also applied to specific commodities when the available information indicated that the Acute Reference Dose (ARfD) of a pesticide might be exceeded when the commodity was consumed.

The table includes the Codex reference numbers of the compounds and the Codex classification numbers (CCNs) of the commodities, to facilitate reference to the Codex maximum limits for pesticide residues (Codex Alimentarius, Vol. 2B) and other documents and working documents of the Codex Alimentarius Commission. Both compounds and commodities are listed in alphabetical order.

Apart from the abbreviations indicated above, the following qualifications are used in the Table.

* (following recommended MRL) At or about the limit of quantification

| | |
|--|---|
| ar | The median or highest residue is reported at the moisture content of the feed commodity “as received” |
| dw | The value is reported in the dry weight of the feed commodity |
| HR-P | Highest residue in a processed commodity, in mg/kg, calculated by multiplying the HR in the raw commodity by the processing factor |
| Po | The recommendation accommodates post-harvest treatment of the commodity. |
| PoP (following recommendation for processed foods) (classes D and E in the Codex classification) | The recommendation accommodates post-harvest treatment of the primary food commodity. |
| STMR-P | An STMR for a processed commodity calculated by applying the concentration or reduction factor for the process to the STMR calculated for the raw agricultural commodity. |
| W (in place of a recommended MRL) | The previous recommendation is withdrawn, or withdrawal of the recommended MRL or existing Codex or draft MRL is recommended. |

| | CCN | Commodity | Recommended Maximum residue level (mg/kg) | | STMR or STMR-P mg/kg | HR or HR-P mg/kg |
|--|--------------|---|---|----------|-----------------------------|-----------------------------|
| | | | New | Previous | | |
| Afidopyropen (312) ADI: 0–0.08 mg/kg bw ARfD: 0.2 mg/kg bw (women of child bearing age) ARfD: 0.3 mg/kg bw (Adults and children) | AL 1020 | Alfalfa, fodder | 8 (dw) | - | Median: 4.13 (ar) | Highest: 5.46 (ar) |
| | AL 1031 | Clover, fodder | 10 (dw) | - | Median: 3.5 (ar) | Highest: 8.55 (ar) |
| | AS 0162 | Grass, hay | 15 (dw) | - | Median: 6.32 (dw) | Highest: 14.9 (dw) |
| | MO 0096 | Edible offal (mammalian) | 0.3 | 0.3 | liver: 0.25 Kidney: 0.13 | liver: 0.45 kidney: 0.15 |
| | PE 0112 | Eggs | 0.03 | 0.01* | 0.138 | 0.149 |
| | MF 0100 | Mammalian fats (except milk fats) | 0.01* | 0.01* | 0.13 | 0.15 |
| | MM 0095 | Meat (from mammals other than marine mammals) | 0.01* | 0.01* | muscle: 0.21 fat: 0.13 | muscle: 0.34 fat 0.15 |
| | ML 0106 | Milks | 0.001* | 0.001* | 0.024 | |
| | PO 0111 | Poultry, edible offal of | 0.02 | 0.01* | 0.156 (liver) | 0.22 (liver) |
| | PF 0111 | Poultry, fats | 0.015 | 0.01* | 0.138 | 0.16 |
| | PM 0110 | Poultry, meat | 0.01* | 0.01* | 0.13 | 0.134 |
| | GC 0651 | Sorghum | 0.2 | - | 0.0365 | |
| | AS 0651 | Sorghum, stover | 0.3 (dw) | - | Median: 0.0505 (ar) | Highest: 0.155 (ar) |
| | Strawberries | 0.15 | - | 0.0539 | 0.0778 | |

(ar) – as received

Definition of the residue for compliance with the MRL for plant and animal commodities: *afidopyropen*

Definition of the residue for dietary risk assessment for plant commodities: *sum of afidopyropen + dimer of [(3R,6R,6aR,12S,12bR)-3-[(cyclopropanecarbonyl)oxy]-6,12-dihydroxy-4,6a,12b-trimethyl-11-oxo-9-(pyridin-3-yl)-1,3,4,4a,5,6,6a,12,12a,12b-decahydro-2H,11H-naphtho[2,1-b]pyrano[3,4-e]pyran-4-yl]methyl rac-cyclopropanecarboxylate (M007)*

Definition of the residue for dietary risk assessment for animal commodities, except liver: *afidopyropen + M001 + CPCA and its carnitine conjugate, expressed as afidopyropen*

| | CCN | Commodity | Recommended Maximum residue level (mg/kg) | | STMR or STMR-P mg/kg | HR or HR-P mg/kg |
|---|---------|--|---|----------|----------------------|------------------|
| | | | New | Previous | | |
| Definition of the residue for dietary risk assessment for liver: <i>afidopyropen + M001 + M017 + CPCA and its camitine conjugate, expressed as afidopyropen</i> <i>The residue is not fat-soluble</i> | | | | | | |
| Azoxystrobin (229) ADI: 0–0.2 mg/kg bw ARfD: Unnecessary | FI 0345 | Mango | 4 (Po) | 0.7 | 0.035 | |
| | FI 0350 | Papaya | 4 (Po) | 0.3 | 0.1 | |
| | VR 0596 | Sugar beet | 4 (Po) | -- | 1.35 | |
| | VR 0075 | Root and tuber vegetables, Group of (except potato) | W | 1 | 0.23 | |
| | VR 0075 | Root and tuber vegetables, Group of (except potato and sugar beet) | 1 | -- | 0.23 | |
| | | | | | | |
| | DM 0596 | Sugar beet molasses | -- | -- | 0.27 | |
| | DM 3523 | Sugar beet refined sugar | -- | -- | 0.023 | |
| Definition of the residue for compliance with the MRL and for dietary risk assessment for plant and animal commodities: <i>azoxystrobin</i> <i>The residue is fat-soluble.</i> | | | | | | |
| Benzovindiflupyr (261) ADI: 0–0.05 mg/kg bw ARfD: 0.1 mg/kg bw | FB 0020 | Blueberries | 2 | | 0.65 | 0.98 |
| | DV 0604 | Ginseng, dried including red ginseng | 0.3 | | 0.081 | 0.16 |
| | DT 0604 | Ginseng, dried | 0.3 | | 0.081 | 0.16 |
| | AS 3358 | Maize stover | 7 (dw) | | Median 1.6 (ar) | Highest 2.9 (ar) |
| | AS 0656 | Popcorn stover | 7 (dw) | | Median 1.6 (ar) | Highest 2.9 (ar) |
| | GC 0645 | Maize | 0.02 | | 0.01 | |
| | GC 0656 | Popcorn | 0.02 | | 0.01 | |
| | | | | | | |
| | CF 1255 | Maize flour | | | 0.0025 | |
| | | Maize grits | | | 0.0025 | |
| | OR 0645 | Maize oil, edible | | | 0.0050 | |
| | | Maize starch | | | 0.0025 | |
| | CF 3517 | Maize gluten | | | 0.0075 | |
| | | Maize bran, unprocessed | | | 0.0050 | |
| (ar) – as received; (dw) – dry weight Definition of the residue for compliance with the MRL and dietary risk assessment for plant and animal commodities: <i>benzovindiflupyr</i> <i>The residue is fat-soluble.</i> | | | | | | |
| Benzpyrimoxan (325)* ADI: 0–0.1 mg/kg bw ARfD: Unnecessary | | | | | | |
| | | | | | | |
| Definition of the residue for compliance with the MRL for plant commodities: <i>Benzpyrimoxan</i> Definition of the residue for dietary risk assessment for plant commodities: <i>Sum of benzpyrimoxan and benzpyrimoxan-2-OH, expressed as benzpyrimoxan</i> Definition of the residue for compliance with the MRL and dietary risk assessment for animal commodities: <i>Sum of benzpyrimoxan, benzpyrimoxan-acid and benzpyrimoxan-acid-2-OH, expressed as benzpyrimoxan</i> <i>The residue is not fat-soluble.</i> | | | | | | |
| Bifenthrin (178) | FI 0326 | Avocado | 0.5 | | 0.089 | 0.23 |

| | CCN | Commodity | Recommended Maximum residue level (mg/kg) | | STMR or STMR-P mg/kg | HR or HR-P mg/kg |
|---|--------------------|---|---|----------|--|---------------------|
| | | | New | Previous | | |
| ADI: 0–0.01 mg/kg bw ARfD: 0.01 mg/kg bw | FP 0009 | Group of Pome fruits (except persimmon, Japanese)# | 0.7# | | 0.195 | 0.45 |
| | SO 0697 | Peanut | 0.05* | | 0.05 | |
| | HS 0444 | Pepper, chilli, dry | 4 | 5 | 0.98 | 2.2 |
| | FI 0355 | Pomegranate | 0.5 | | 0.165 | 0.22 |
| | VO 20046 | Eggplant, Subgroup of | 0.4 | | 0.12 | 0.31 |
| | FS 2001 | Peaches, Subgroup of # | 0.8# | | 0.22 | 0.49 |
| | VO 0051 | Peppers, Subgroup of (except okra, martynia and roselle) | 0.4 | 0.5 | 0.12 | 0.31 |
| | | | | | | |
| | JF 0226 | Apple juice | | | 0.0096 | |
| OR 0697 | Peanut oil, edible | | | 0.05 | | |
| # On the basis of information provided to the JMPR it was concluded that the estimated acute dietary exposure to residues of bifenthrin for the consumption of Peaches, Subgroup of and Pome fruit, Group of (except Japanese persimmon) may present a public health concern | | | | | | |
| Definition of the residue for compliance with the MRL and for dietary risk assessment for animal and plant commodities is <i>bifenthrin</i> (sum of isomers). | | | | | | |
| The residue is fat-soluble. | | | | | | |
| Broflanilide (326)* ADI: 0–0.02 mg/kg bw ARfD: Unnecessary | VB 0041 | Cabbages, Head | 2 | - | 0.19 | |
| | VB 0467 | Chinese cabbage, (type Pe-tsai) | 2 | - | 0.19 | |
| | SB 0716 | Coffee bean, green | 0.01 | - | 0.0023 | - |
| | MO 0105 | Edible offal (mammalian) | 0.03 | - | 0.02 | - |
| | PE 0112 | Eggs | 0.03 | - | 0.02 | - |
| | GC 0080 | Cereal grains, Group of (except rice) | 0.001* | - | 0 (cereal grains) 0.001 (sweet corns) | - |
| | AS 3569 | Maize, bran | 0.002 | - | 0 | - |
| | CF 1255 | Maize, flour | 0.002 | - | 0 | - |
| | MF 0100 | Mammalian fats | 0.15 | - | 0.033 | - |
| | MM 0095 | Meat (from mammals other than marine mammals) | 0.15 (fat) | - | 0.02 (muscle) 0.033 (fat) | - |
| | FM 0183 | Milk fats | 0.4 | - | 0.08 | - |
| | ML 0106 | Milks | 0.015 | - | 0.004 | - |
| | VR 0591 | Radish, Japanese | 0.01* | - | 0.01 | - |
| | PO 0111 | Poultry edible offal | 0.03 | - | 0.02 | - |
| | PM 0110 | Poultry meat | 0.02* | - | 0.02 (muscle) 0.034 (fat) | - |
| | PF 0111 | Poultry fats | 0.15 | - | 0.034 | - |
| | VR 2071 | Subgroup of tuberous and corn vegetables | 0.04 | - | 0.00175 | |
| | AS 3304 | Subgroup of cereal grains (including pseudocereals) feed products with low water (<20%) content (hay, straw), except rice feed products | 0.01 (dw) | - | Median 0.001 (ar) | Highest 0.0016 (ar) |

| | CCN | Commodity | Recommended Maximum residue level (mg/kg) | | STMR or STMR-P mg/kg | HR or HR-P mg/kg |
|---|---------|--|---|----------|---|--|
| | | | New | Previous | | |
| | CF 1210 | Wheat, germ | 0.002 | - | 0 | - |
| | | Coffee bean, instant coffee | - | - | 0.0002 | |
| | SM 0716 | Coffee bean, roasted | - | - | 0.0019 | |
| | OR 0645 | Maize oil, edible | - | - | 0 | |
| | | Maize starch | - | - | 0 | |
| | | Maize germ | - | - | 0 | |
| | | Potato, starch | - | - | 0.0005 | |
| | CF 1211 | Wheat, flour | - | - | 0 | |
| | CF 3522 | Wheat, gluten meal | - | - | 0 | |
| | | Wheat starch | - | - | 0 | |
| | CP 1212 | Wheat, wholemeal bread | - | - | 0 | |
| <p>(ar) – as received; (dw) – dry weight</p> <p>Definition of the residue for compliance with the MRL and dietary risk assessment for plant commodities: <i>Broflanilide</i></p> <p>Definition of the residue for compliance with the MRL and dietary risk assessment for animal commodities: <i>Sum of broflanilide plus 3-benzamido-N-[2-bromo-4-(perfluoropropan-2-yl)-6-(trifluoromethyl)phenyl]-2-fluorobenzamide (DM-8007), expressed as broflanilide</i></p> <p>The residue is fat-soluble</p> | | | | | | |
| Chlorantraniliprole (230) ADI: 0–2 mg/kg bw ARfD: Unnecessary | FI0326 | Avocado | 0.3 | | 0.083 | |
| | DT1114 | Tea, green, black (black, fermented and dried) | 80 | | 24.5 | |
| | | Tea infusion | | | 0.20 | |
| <p>Definition of the residue for compliance with the MRL and for dietary risk assessment for plant and animal commodities: <i>chlorantraniliprole</i>.</p> <p>The residue is fat-soluble.</p> | | | | | | |
| Chlormequat (015) ADI: 0–0.05 mg/kg bw ARfD: 0.05 mg/kg bw | GC 0640 | Barley | 2 | 2 | 0.37 | - |
| | AS 0640 | Barley, hay and/or straw | 200 (dw) | | Median: 34.5 (hay) 8.25 (straw) (ar) | Highest: 73 (hay) 32 (straw) (ar) |
| | | Barley, straw and fodder, dry | W | 50 (dw) | | |
| | MO 0105 | Edible offal (mammalian) | 0.5 | 1 | 0.036 (liver) 0.20 (kidney) | 0.11 (liver) 0.40 (kidney) |
| | PE 0269 | Eggs | 0.2 | 0.1 | 0.049 | 0.094 |
| | MF 0100 | Mammalian fats (except milk fats) | 0.1 | 0.1 | 0.04 | 0.043 |
| | MM 0095 | Meat (from mammals other than marine mammals) | 0.2 | 0.2 | 0.04 (muscle) 0.04 (fat) | 0.085 (muscle) 0.043 (fat) |
| | ML 0095 | Milks | 0.2 | 0.3 | 0.069 | - |
| | PF 0111 | Poultry fats | 0.04* | 0.04* | 0.04 | 0.04 |
| | PM 0111 | Poultry meat | 0.04* | 0.04* | 0.04 (muscle, fat) | 0.04 (muscle, fat) |

| | CCN | Commodity | Recommended Maximum residue level (mg/kg) | | STMR or STMR-P mg/kg | HR or HR-P mg/kg |
|--|---------|------------------------------|---|----------|---|---|
| | | | New | Previous | | |
| | PO 0111 | Poultry, edible offal of | 0.2 | 0.1 | 0.043 | 0.085 |
| | GC 0654 | Wheat | 4 | 2 | 0.855 | - |
| | CM 0654 | Wheat bran, unprocessed | 10 | 7 | 2.3 | - |
| | AS 0654 | Wheat, hay and/or straw | 200 (dw) | 80 (dw) | Median: 42.5 (hay) 20.5 (straw) (ar) | Highest: 117 (hay) 55 (straw) (ar) |
| | CF 1210 | Wheat germ | 20 | - | 4.3 | |
| | | | | | | |
| | CF 1211 | Wheat, flour | | | 0.16 | |
| | CF 1212 | Wheat wholemeal | | | 0.855 | |
| | | Wheat wholemeal bread | | | 0.46 | |
| | CF 0640 | Barley bran, processed | | | 0.34 | |
| | CM 0640 | Barley, pearled (pot barley) | | | 0.12 | |
| | CF 3511 | Barley, flour | | | 0.066 | |
| | | Barley malt | | | 0.33 | |
| | | Barley beer | | | 0.074 | |

(ar) – as received; (dw) – dry weight

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

The residue is not fat soluble.

Diazinon (022)**

ADI: 0–0.003 mg/kg bw
ARfD: 0.03 mg/kg bw

| | | | | | |
|---------|---|---|----------|--|--|
| AM 0660 | Almond hulls | W | 5 | | |
| TN 0660 | Almonds | W | 0.05 | | |
| FB 0264 | Blackberries | W | 0.1 | | |
| FB 4079 | Boysenberry | W | 0.1 | | |
| VB 0400 | Broccoli | W | 0.5 | | |
| VB 0041 | Cabbage, head | W | 0.5 | | |
| VC 4199 | Cantaloupe | W | 0.2 | | |
| VR 0577 | Carrot | W | 0.5 | | |
| FS 0013 | Cherries | W | 1 | | |
| PE 0840 | Chicken eggs | W | 0.02* | | |
| PM 0840 | Chicken meat | W | 0.02* | | |
| PO 0840 | Chicken, edible offal of | W | 0.02* | | |
| VL 0467 | Chinese cabbage | W | 0.05 | | |
| VP 0526 | Common bean Pods and/or immature seeds) | W | 0.2 | | |
| FB 0265 | Cranberry | W | 0.2 | | |
| VC 0424 | Cucumber | W | 0.1 | | |
| FB 0021 | Currants, black, red and white | W | 0.2 | | |
| VP 0529 | Garden pea, shelled (succulent seed) | W | 0.2 | | |
| MM 0814 | Goat meat | W | 2 (fat)† | | |
| DH 1100 | Hops, dry | W | 0.5 | | |
| VL 0480 | Kale (including collards, curly, scotch and thousand-headed | W | 0.05 | | |

| | CCN | Commodity | Recommended Maximum residue level (mg/kg) | | STMR or STMR-P mg/kg | HR or HR-P mg/kg |
|--|---------|---|---|----------|----------------------|------------------|
| | | | New | Previous | | |
| | | kale; not including marrow-stem kele) | | | | |
| | MO 0098 | Kidney of cattle, goats, pigs and sheep | W | 0.03† | | |
| | FI 0341 | Kiwifruit | W | 0.2 | | |
| | VB 0405 | Kohlrabi | W | 0.2 | | |
| | VL 0482 | Lettuce, head | W | 0.5 | | |
| | VL 0483 | Lettuce, leaf | W | 0.5 | | |
| | MO 0099 | Liver of cattle, goat, pigs and sheep | W | 0.03† | | |
| | GC 0646 | Maize | W | 0.02* | | |
| | MM 0097 | Meat of cattle, pigs and sheep | W | 2 (fat)† | | |
| | ML 0106 | Milks | W | 0.02 | | |
| | VA 0385 | Onion, bulb | W | 0.05 | | |
| | FS 0247 | Peach | W | 0.2 | | |
| | HS 0444 | Peppers chili, dried | W | 0.5 | | |
| | VO 0445 | Peppers, sweet | W | 0.05 | | |
| | FI 0353 | Pineapple | W | 0.1 | | |
| | FS 0014 | Plums | W | 1 | | |
| | FP 0009 | Pome fruits | W | 0.3 | | |
| | VR 0589 | Potato | W | 0.01* | | |
| | DF 0014 | Prunes, dried | W | 2 | | |
| | VR 0494 | Radish | W | 0.1 | | |
| | FB 0272 | Raspberries, red, black | W | 0.2 | | |
| | HS 0191 | Spices, fruit and berries | W | 0.1* | | |
| | HS 0193 | Spices, roots and rhizomes | W | 0.5 | | |
| | HS 0190 | Spices, seeds | W | 5 | | |
| | VL 0502 | Spinach | W | 0.5 | | |
| | VA 0389 | Spring onion | W | 1 | | |
| | VC 0431 | Squash, summer | W | 0.05 | | |
| | FB 0275 | Strawberry | W | 0.1 | | |
| | VR 0596 | Sugar beet | W | 0.1 | | |
| | VO 0447 | Sweet corn (corn on the cob) | W | 0.02 | | |
| | VO 0448 | Tomato | W | 0.5 | | |
| | TN 0578 | Walnuts | W | 0.01* | | |

† The Codex MRL accommodated external animal treatment

The definition of the residue for compliance with the MRL for plant commodities: *diazinon*.

The Meeting was unable to conclude on a residue definition for dietary risk assessment for plant commodities.

The Meeting was unable to conclude on a residue definition for compliance with the MRL and for dietary risk assessment for animal commodities.

| | | | | | | |
|---|---------|---|----|-----|------|------|
| Difenoconazole (224) ADI: 0–0.01 mg/kg bw ARfD: 0.3 mg/kg bw | VO 2704 | Goji berry | 5 | - | 0.65 | 2.4 |
| | DV 2704 | Goji berry, dried | 15 | - | 1.6 | 5.5 |
| | VO 0050 | Group of fruiting vegetables other than cucurbits (except peppers, chili) | W | 0.6 | 0.14 | 0.39 |

| | CCN | Commodity | Recommended Maximum residue level (mg/kg) | | STMR or STMR-P mg/kg | HR or HR-P mg/kg |
|--|---------|---|---|----------|----------------------|------------------|
| | | | New | Previous | | |
| | VO 0050 | Group of fruiting vegetables other than cucurbits (except goji berry and pepper, chili) | 0.6 | - | 0.14 | 0.39 |
| | VR 2950 | Pencil yam | 0.02 | - | 0.01 | 0.01 |
| | | Pencil yam, dried | 0.07 | - | 0.029 | 0.029 |
| | HS 0784 | Ginger, rhizome | 0.2 | - | 0.022 | 0.1 |
| | DV 0784 | Ginger rhizome, dried | 1.5 | - | 0.13 | - |
| | DT 1114 | Tea, green, black (black, fermented and dried) | 20 | 20 | 4.86 | |
| <p>Definition of the residue for compliance with the MRL and for dietary risk assessment for plant commodities: <i>difenoconazole</i>.</p> <p>Definition of the residue for compliance with the MRL and for dietary risk assessment for animal commodities: <i>sum of difenoconazole and 1-[2-chloro-4-(4-chloro-phenoxy)-phenyl]-2-(1,2,4-triazol)-1-yl-ethanol</i>, expressed as <i>difenoconazole</i>.</p> <p>The residue is fat-soluble.</p> | | | | | | |

| | CCN | Commodity | Recommended Maximum residue level (mg/kg) | | STMR _{chronic} or STMR-P _{chronic} mg/kg | STMR _{acute} or STMR-P _{acute} mg/kg | HR or HR-P mg/kg |
|--|--------------|---|---|----------|--|--|---------------------------------|
| | | | New | Previous | | | |
| Dimethoate (027)/ Omethoate (055) ADI: 0–0.001 mg/kg bw ARfD: 0.02 mg/kg bw | FC 0003 | Mandarins, Subgroup of | 2 | | 0.081 | 0.16 | 0.19 |
| | FC 0004 | Oranges, Subgroup of ^a | 2 | | 0.31 | 0.32 | 0.4 |
| | FI 0236 | Avocado | 2 | | 0.11 | 0.37 | 0.49 |
| | VB 0402 | Brussels sprouts | 0.1 | | 0.086 | 0.23 | 0.25 |
| | VO 0448 | Tomato | 0.01(*) | | 0.0175 | 0.055 | 0.055 |
| | VP 0544 | Yard-long bean (pods) | 0.07 | | 0.175 | 0.55 | 0.55 |
| | VD 2065 | Dry beans, Subgroup of (except soya bean) | 0.7 | | 0.175 | 0.55 | |
| | SO 0495 | Rape seed | 0.15 | | 0.0775 | 0.23 | |
| | GC 0654 | Wheat | 0.06 | | 0.011 | 0.032 | |
| | CF 0654 | Wheat bran, processed | 0.26 | | 0.041 | 0.11 | |
| | CF 1210 | Wheat germ | 0.17 | | 0.025 | 0.065 | |
| | MO 0105 | Edible offal (Mammalian) | 0.001(*) | | 0.0025 (liver) 0 (kidney) | | 0.031 (liver) 0.022 (kidney) |
| | MF 0100 | Mammalian fats (except milk fats) | 0.03 | | 0.003 | | 0.047 |
| | MM 0095 | Meat (from mammals other than marine mammals) | 0.001(*) | | 0.0025 (muscle) 0.003 (fat) | | 0.03 (muscle) 0.047 (fat) |
| | ML 0106 | Milks | 0.001(*) | | 0.0025 | 0.01 | |
| PE 0112 | Eggs | 0.001(*) | | 0 | | 0 | |
| PF 0111 | Poultry fats | 0.001(*) | | 0 | | 0 | |

| | CCN | Commodity | Recommended Maximum residue level (mg/kg) | | STMR _{chronic} OR STMR-P _{chronic} mg/kg | STMR _{acute} OR STMR-P _{acute} mg/kg | HR or HR-P mg/kg |
|---|--|--------------------------|---|----------|--|--|--------------------|
| | | | New | Previous | | | |
| | PM 0110 | Poultry meat | 0.001(*) | | 0 | | 0 |
| | PO 0111 | Poultry, Edible offal of | 0.001(*) | | 0 | | 0 |
| | AS 0654 | Wheat, hay and/or straw | 4 dw | | Median: 0.06 (dw) | | Highest : 2.7 (dw) |
| | AB 0001 | Citrus pulp, dry [FEED] | 5 | | 1.36 | | |
| | JF 0004 | Orange juice | | | 0.088 | 0.093 | |
| | OR 0004 | Orange oil, edible | | | 0.12 | 0.12 | |
| | | Orange molasses | | | 3.6 | 3.8 | |
| | | Wheat Wholemeal flour | | | 0.006 | 0.016 | |
| | | Wheat White flour | | | 0.0042 | 0.14 | |
| | | | | | | | |
| STMR(-P) _{chronic} | Expressed as toxic equivalent residues (dimethoate + 2.5×omethoate) | | | | | | |
| STMR(-P) _{acute} | Expressed as toxic equivalent residues (dimethoate + 10×omethoate) | | | | | | |
| HR | Expressed as toxic equivalent residues (dimethoate + 10×omethoate) | | | | | | |
| Median | median total residue (sum of dimethoate and omethoate) for livestock dietary burden estimation | | | | | | |
| <p>^a On the basis of the information provided to the JMPR it was concluded that the estimated acute dietary exposure to residues of dimethoate and omethoate for the consumption of commodities in the subgroup of oranges may present a public health concern</p> <p>Dimethoate (see also omethoate)</p> <p>Definition of the residue for compliance with the MRL for plant and animal commodities: <i>Dimethoate and omethoate (measured and reported separately)</i></p> <p>Definition of the residue for dietary risk assessment for plant and animal commodities: Sum of dimethoate plus 2.5× omethoate for long-term dietary exposure and the sum of dimethoate plus 10× omethoate for acute dietary exposure.</p> <p>The residue is not fat-soluble.</p> | | | | | | | |

| | CCN | Commodity | Recommended Maximum residue level (mg/kg) | | STMR or STMR-P mg/kg | HR or HR-P mg/kg |
|--|---------|---|---|----------|----------------------|------------------|
| | | | New | Previous | | |
| Omethoate (055) ADI: 0–0.0004 mg/kg bw ARfD: 0.002 mg/kg bw | FC 0003 | Mandarins, Subgroup of | 0.02 | | | |
| | FC 0004 | Oranges, Subgroup of ^a | 0.02 | | | |
| | FI 0236 | Avocado | 0.15 | | | |
| | VB 0402 | Brussels sprouts | 0.03 | | | |
| | VO 0448 | Tomato | 0.01 | | | |
| | VP 0544 | Yard-long bean (pods) | 0.05 | | | |
| | VD 2065 | Dry beans, Subgroup of (except soya bean) | 0.08 | | | |
| | SO 0495 | Rape seed | 0.03 | | | |
| | GC 0654 | Wheat | 0.03 | | | |
| | CF 0654 | Wheat bran, processed | 0.105 | | | |
| | CF 1210 | Wheat germ | 0.06 | | | |
| | AS 0654 | Wheat hay and/or straw | 0.3 dw | | | |

| | CCN | Commodity | Recommended Maximum residue level (mg/kg) | | STMR or STMR-P mg/kg | HR or HR-P mg/kg |
|--|---------|---|---|----------|----------------------|------------------|
| | | | New | Previous | | |
| | AB 0001 | Citrus pulp, dry | 0.032 | | | |
| | MO 0105 | Edible offal (Mammalian) | 0.005 | | | |
| | MF 0100 | Mammalian fats (except milk fats) | 0.003 | | | |
| | MM 0095 | Meat (from mammals other than marine mammals) | 0.005 | | | |
| | ML 0106 | Milks | 0.0015 | | | |
| | PE 0112 | Eggs | 0.001(*) | | | |
| | PF 0111 | Poultry fats | 0.001(*) | | | |
| | PM 0110 | Poultry meat | 0.001(*) | | | |
| | PO 0111 | Poultry, Edible offal of | 0.001(*) | | | |

^a On the basis of the information provided to the JMPR it was concluded that the estimated acute dietary exposure to residues of dimethoate and omethoate for the consumption of commodities in the subgroup of oranges may present a public health concern

Omethoate (from the use of dimethoate)

| | | | | | | |
|--|---------|---|--------|-------|----------|--------|
| Emamectin benzoate (247) ADI: 0–0.0005 mg/kg bw ARfD: 0.02 mg/kg bw | HH 0722 | Basil, leaves | 0.06 | - | 0.0045 | 0.032 |
| | DH 0722 | Basil leaves, dry | 0.4 | - | 0.029 | 0.205 |
| | VL 0054 | Brassica leafy vegetables, subgroup of | 0.2 | - | 0.01 | 0.219 |
| | VA 2605 | Chives | 0.01 | - | 0.001 | 0.006 |
| | DH 2605 | Chive, dried | 0.05 | - | 0.005 | 0.025 |
| | VB 0042 | Flowerhead brassicas, subgroup of | 0.007 | - | 0.002 | 0.004 |
| | MF 0100 | Mammalian fats (except milk fats) | 0.02 | 0.02 | 0.002 | 0.012 |
| | MM 0095 | Meat (from mammals other than marine mammals) | 0.005 | 0.004 | 0.002 | 0.0046 |
| | ML 0106 | Milks | 0.003 | 0.002 | 0.0005 | - |
| | MO 0105 | Edible offal (mammalian) | 0.1 | 0.08 | 0.0071 | 0.088 |
| | VL 0502 | Spinach | 0.05 | - | 0.006 | 0.036 |
| | VD 0541 | Soya bean (dry) | 0.001* | - | 0 | |
| | DT 1114 | Tea, Black, Green, dried and fermented | 0.1 | - | 0.009 | |
| | | Tea infusion | - | - | 0.000018 | |

Definition of the residue for compliance with the MRL and for dietary risk assessment for plant and animal commodities: *emamectin B1a benzoate*.

The residue not fat soluble.

| | | | | | | |
|--|---------|--|-----|-----|------|------|
| Famoxadone (208) ADI: 0–0.006 mg/kg bw ARfD: 0.6 mg/kg bw | VC 0424 | Cucumber | W | 0.2 | | |
| | MU 1100 | Hops, dried | 50 | -- | 13 | |
| | HS 0444 | Peppers chili, dried | 50 | | 4.7 | 37 |
| | VO 0444 | Peppers, chili | 5 | -- | 0.47 | 3.7 |
| | VO 0445 | Peppers, sweet (including pimento or pimiento) | 5 | -- | 0.47 | 3.7 |
| | VC 0431 | Squash, Summer | W | 0.2 | | |
| | VA 2031 | Subgroup of bulb onions | 0.4 | -- | 0.02 | 0.23 |
| | FB 2005 | Subgroup of cane berries | 10 | -- | 1.1 | 6.6 |

| | CCN | Commodity | Recommended Maximum residue level (mg/kg) | | STMR or STMR-P mg/kg | HR or HR-P mg/kg |
|---|---------|---|---|----------|----------------------|---------------------|
| | | | New | Previous | | |
| | VC 2039 | Subgroup of fruiting vegetables, cucurbits – cucumbers and summer squashes | 0.6 | -- | 0.17 | 0.37 |
| | VO 0448 | Tomato | 2 | 2 | 0.1 | 1.1 |
| Definition of the residue for compliance with the MRL and dietary risk assessment for plant and animal commodities: <i>famoxadone</i> . | | | | | | |
| <i>The residue is fat-soluble.</i> | | | | | | |
| Fenazaquin (297) | FC 0002 | Lemons and Limes (incl. Citron), Subgroup of | 0.3 | | 0.01 (Kumquat 0.08) | 0.01 (Kumquat 0.12) |
| ADI: 0–0.05 mg/kg bw | FC 0004 | Oranges, Sweet, Sour (incl. Orange-like hybrids), Subgroup of | 0.4 | | 0.01 | 0.01 |
| ARfD: 0.1 mg/kg bw | FC 0005 | Pummelo and Grapefruits (incl. Shaddock-like hybrids, among others Grapefruit), Subgroup of | 0.3 | | 0.01 | 0.01 |
| | FC 0003 | Mandarins (incl. Mandarin-like hybrids), Subgroup of | 0.3 | | 0.01 | 0.01 |
| | OR 0001 | Citrus oil, edible | 40 | | 9.84 | |
| | FP 0226 | Apples | 0.3 | | 0.08 | 0.18 |
| | FS 0014 | Plums, Subgroup of | 0.5 | | 0.145 | 0.25 |
| | DF 0014 | Prune, dried | 3 | | 0.7 | 1.2 |
| | FS 2001 | Peaches (incl. Nectarine and Apricots), Subgroup of | 1.5 | | 0.38 | 1.2 |
| | FB 2005 | Cane berries, Subgroup of | 0.7 | | 0.18 | 0.41 |
| | FB 2006 | Bush berries, Subgroup of | 0.8 | | 0.235 | 0.42 |
| | FB 2008 | Small fruit vine climbing, Subgroup of | 0.7 | | 0.19 | 0.4 |
| | DF 0269 | Dried grapes (=Currants, Raisins and Sultanas) | 1.5 | | 0.42 | 0.88 |
| | FB 2009 | Low growing berries, Subgroup of | 2 | | 0.49 | 1.2 |
| | FI 0326 | Avocado | 0.15 | | 0.01 | 0.01 |
| | VC 0045 | Fruiting vegetables, Cucurbits, Group of | 0.3 | | 0.06 | 0.19 |
| | VO 2045 | Tomatoes, Subgroup of | 0.3 | | 0.052 | 0.19 |
| | VO 0051 | Peppers, Subgroup of (except martynia, okra and roselle) | 0.3 | | 0.079 | 0.22 |
| | HS 0444 | Peppers Chili, dried | 3 | | 0.79 | 2.2 |
| | VO 2046 | Eggplants, Subgroup of | 0.3 | | 0.079 | 0.22 |
| | MO 0105 | Edible offal (Mammalian) | 0.02 (*) | | 0.00056 (liver) | 0.0065 (liver) |
| | MF 0100 | Mammalian fats (except milk fats) | 0.02 (*) | | 0.00065 | 0.00081 |
| | MM 0095 | Meat (from mammals other than marine mammals) | 0.02 (*) (fat) | | 0 | 0 |
| | ML 0106 | Milks | 0.02 (*) (fat) | | 0 | |
| | FM 0183 | Milk fats | 0.02 (*) (fat) | | 0 | |
| | | | | | | |
| | | Grape wine (red) | | | 0.0038 | |
| | JF 0269 | Grape juice | | | 0.027 | |

| | CCN | Commodity | Recommended Maximum residue level (mg/kg) | | STMR or STMR-P mg/kg | HR or HR-P mg/kg |
|---|--------------------------|--|---|---------------|----------------------|------------------|
| | | | New | Previous | | |
| | JF 0204 | Lemon juice | | | 0.0008 | 0.01 |
| | JF 0004 | Orange juice | | | 0.00125 | |
| | JF 0203 | Grapefruit juice | | | 0.0007 | |
| | FCT7003 | Mandarin juice | | | 0.0008 | |
| | DM 0448 | Tomato paste | | | 0.047 | |
| | DM 0448 | Tomato puree | | | 0.021 | |
| <p>Definition of the residue for compliance with the MRL and for dietary risk assessment for plant commodities: <i>Fenazaquin</i>.</p> <p>Definition of the residue for compliance with the MRL for animal commodities: <i>Sum of fenazaquin and 2-hydroxy-fenazaquin acid, expressed as fenazaquin equivalents</i>.</p> <p>Definition of the residue for dietary risk assessment for animal commodities: <i>Sum of fenazaquin, and 2-hydroxy-fenazaquin acid and tautomeric forms of 4-hydroxyquinazoline, expressed as fenazaquin equivalents</i>.</p> <p><i>The residue is fat-soluble</i></p> | | | | | | |
| Fluazaindolizine (327)* ADI: 0–0.3 mg/kg bw ARfD: 1 mg/kg bw | VC2039 | Cucumbers and summer squashes, Subgroup of | 0.15 | | 0.1092 | 0.3674 |
| | VC2040 | Melons, pumpkins and winter squashes, Subgroup of | 0.1 | | 0.1253 | 0.3395 |
| | VO2045 | Tomato, Subgroup of | 0.15 | | 0.0748 | 0.963 |
| | VO2046 | Eggplant, Subgroup of | 0.15 | | 0.1253 | 0.3395 |
| | VO0051 | Peppers, Subgroup of (except martynia, okra, roselle) | 0.03 | | 0.074 | 0.3102 |
| | HS0444 | Peppers, Chili, dried | 0.3 | | 0.74 | 3.102 |
| | VR 0577 | Carrot | 0.4 | | 0.1503 | 1.973 |
| | VR 2071 | Tuberous and corm vegetables, Subgroup of | 0.2 | | 0.1558 | 0.7356 |
| | FB 0275 | Strawberries | 0.015 | | 0.04635 | 0.0705 |
| | VB 0040 | Brassica vegetables, Group of (except Brassica leafy vegetables) | 0.02 | | 0.04335 | 0.0705 |
| | VL 0053 | Leafy vegetables, Group of (including Brassica leafy vegetables) | 0.04 | | 0.4315 | 1.275 |
| | VP 0060 | Legume vegetables, Group of | 0.04 | | 0.0709 | 0.1589 |
| | VD 0070 | Pulses, Group of | 0.09 | | 0.0656 | |
| | VR 0075 | Root vegetables, Group of (except Carrot) | 0.04 | | 0.1935 | 0.9322 |
| | VS 0078 | Stalk and stem vegetables, Group of | 0.04 | | 0.0674 | 0.8281 |
| | VA 0035 | Bulb vegetables, Group of | 0.04 | | 0.0674 | 0.8281 |
| | GC 0080 | Cereal grains, Group of | 0.03 | | 0.0676 | |
| | SO 0088 | Oilseeds and oilfruits, Group of | 0.04 | | 0.1627 | |
| | MO 0105 | Edible offal (Mammalian) | 0.01 | | 0.2217 (liver) | 0.7592 (kidney) |
| | MF 0100 | Mammalian fats (except milk fats) | 0.01* | | 0.0098 | 0.0431 |
| | MM 0095 | Meat (from mammals other than marine mammals) | 0.01* | | 0.0096 | 0.0415 |
| ML 0106 | Milks | 0.01* | | 0.0033 | 0.0119 | |
| FM0183 | Milk fats | 0.01* | | 0.0033 | 0.0119 | |
| PE0112 | Eggs | 0.01* | | 0.0008 | 0.00263 | |
| PO0111 | Poultry, Edible offal of | 0.02 | | 0.035 (liver) | 0.1182 (liver) | |

| | CCN | Commodity | Recommended Maximum residue level (mg/kg) | | STMR or STMR-P mg/kg | HR or HR-P mg/kg |
|--|---------|---|---|----------|----------------------|------------------|
| | | | New | Previous | | |
| | PF0111 | Poultry fats | 0.01* | | 0.00093 | 0.0032 |
| | PM 0110 | Poultry meat | 0.01* | | 0.0021 | 0.0071 |
| | AS 0081 | Straw and fodder (dry) of cereal grains | 0.09 (dw) | | | |
| | AL 0157 | Legume animal feeds | 0.17 (dw) | | | |
| | AM 3583 | Rape seed, hay and/or straw | 0.05 (dw) | | | |
| | DV 0448 | Tomato dried | 0.5 | | 0.4624 | 6.696 |
| | | Strawberry juice | | | 0.0130 | 0.0734 |
| | | Strawberry canned | | | 0.0074 | 0.0419 |
| | | Strawberry jam | | | 0.0037 | 0.0210 |
| | DF 0275 | Strawberry, dried | | | 0.0761 | 0.4297 |
| | | Tomato canned | | | 0.0711 | 0.9389 |
| | JF 0448 | Tomato juice | | | 0.0590 | 0.8314 |
| | | Tomato paste | | | 0.2476 | 3.5309 |
| | DM 0448 | Tomato purée | | | 0.1268 | 1.8056 |
| | DV 0589 | Potato flakes/granules | | | 0.0956 | 1.0275 |
| | | Potato crisps | | | 0.0673 | 0.6757 |
| | | French fries peeled | | | 0.0319 | 0.3213 |
| | | French fries unpeeled | | | 0.1215 | 1.0607 |
| | | Potatoes boiled unpeeled | | | 0.0560 | 0.6538 |
| | | Potatoes boiled peeled | | | 0.0343 | 0.3695 |
| | | Potatoes baked microwaved unpeeled | | | 0.1661 | 1.3600 |
| | | Soya bean meal (mechanically extracted) | | | 0.1876 | |
| | | Soya bean meal (solvent extracted) | | | 0.2118 | |
| | OR 0541 | Soya bean oil, refined | | | 0 | |
| | | Maize starch | | | 0 | |
| | | Maize grits | | | 0.0138 | |
| | CF 1255 | Maize flour | | | 0.0326 | |
| | CF 0645 | Maize, meal | | | 0.0596 | |
| | OR 0645 | Maize oil, edible | | | 0 | |
| | CM 0654 | Wheat bran, unprocessed | | | 0 | |
| | CF 1211 | Wheat, flour | | | 0 | |
| | CF 1210 | Wheat, germ | | | 0 | |

Definition of the residue for compliance with the MRL for plant and animal commodities: *fluazaindolizine*.

Definition of the residue for dietary risk assessment for plant commodities:

fluazaindolizine, and free and conjugated forms of the following compounds: 2-chloro-5-hydroxybenzenesulfonamide (IN-A5760), 2-chloro-5-methoxybenzenesulfonamide (IN-F4106), 8-chloro-6-(trifluoromethyl)imidazo[1,2-a]pyridine-2-carboxylic acid (IN-QEK31), 3-[[2-chloro-5-methoxyphenyl)sulfonyl]amino]-L-alanine (IN-QZY47), 8-chloro-N-[(2-chloro-5-hydroxyphenyl)sulfonyl]-6-(trifluoromethyl)imidazo[1,2-a]pyridine-2-carboxamide (IN-REG72), 8-chloro-6-(trifluoromethyl)imidazo[1,2-a]pyridine-2-carboxamide (IN-RYC33) and 3-[[2-chloro-5-methoxyphenyl)sulfonyl]amino]-(2R)-hydroxypropanoic acid (IN-TMQ01) (expressed as fluazaindolizine). *This can be*

| | CCN | Commodity | Recommended Maximum residue level (mg/kg) | | STMR or STMR-P mg/kg | HR or HR-P mg/kg |
|---|---------|--|---|----------|---------------------------|------------------|
| | | | New | Previous | | |
| <p>implemented by taking the maximum of the sum of compounds containing the imidazopyridine ring and hydrolysed using acid to IN-A5760, IN-F4106, IN-QZY47 and IN-TMQ01 (expressed as fluazaindolizine) OR compounds containing the phenyl ring and hydrolysed to 8-chloro-6-(trifluoromethyl)imidazo[1,2-a]pyridine-2-carboxylic acid (IN-QEK31) (expressed as fluazaindolizine).</p> <p>Definition of the residue for dietary risk assessment for animal commodities: the sum of fluazaindolizine, 2-chloro-5-hydroxybenzenesulfonamide (IN-A5760), 2-chloro-5-methoxybenzenesulfonamide (IN-F4106), and 3-[(2-chloro-5-methoxyphenyl)sulfonyl]amino)-(2R)-hydroxypropanoic acid (IN-TMQ01) (expressed as fluazaindolizine).</p> <p>The residue is not fat-soluble</p> | | | | | | |
| Fludioxonil (211) ADI: 0–0.4 mg/kg bw ARfD: Unnecessary | AM 0660 | Almond hulls | 20 | | 1.8 | |
| | OR 0660 | Almond oil | 0.3 | | 0.015 | |
| | FI 0327 | Banana | 2 (Po) | | 0.013 | |
| | VD 0071 | Beans (dry) | W | 0.5 | | |
| | VP 0061 | Beans (<i>Phaseolus</i> spp.) immature pods and succulent seeds | W | 0.6 | | |
| | VP 2060 | Beans with pods, Subgroup of (except soya beans (succulent seeds in pods)) | 0.8 | | 0.055 | |
| | VD 0524 | Chick-pea (dry) | W | 0.3 | | |
| | VD 2065 | Dry beans, Subgroup of (except soya beans) | 0.3 | | 0.029 | |
| | VD 2066 | Dry peas, Subgroup of | 0.3 | | 0.11 | |
| | MO 0105 | Edible offal (mammalian) | 0.15 | 0.1 | 0.037 | |
| | VD 0533 | Lentil (dry) | W | 0.3 | | |
| | FI 0345 | Mango | 7 (Po) | 2 | 0.04 | |
| | MF 0100 | Mammalian fats (except milk fats) | 0.02 | 0.02 | 0.006 | |
| | MM 0095 | Meat (from mammals other than marine mammals) | 0.02 | 0.02 | fat 0.006 muscle 0.006 | |
| | ML 0106 | Milks | 0.07 | 0.04 | 0.016 | |
| | FI 0350 | Papaya | 5 (Po) | | 0.15 | |
| | VD 0072 | Peas (dry) | W | 0.07 | | |
| | VP 0063 | Peas (pods and succulent=immature seeds) | W | 0.3 | | |
| | VP 2061 | Peas with pods, Subgroup of | 0.8 | | 0.055 | |
| | VP 4453 | Snap beans (young pods) | W | 0.6 | | |
| | VR 0596 | Sugar beet | 4 (Po) | | 1.1 | |
| | TN 0085 | Tree nuts (except Canarium nut, Chilean hazelnut, and pistachios) | 0.3 | | 0.01 | |
| | | | | | | |
| | | Almonds, roasted | | | 0.008 | |
| | DM 0596 | Sugar beet molasses | | | 0.62 | |
| | DM 3523 | Sugar beet, sugar refined | | | 0.11 | |
| | | | | | | |
| <p>Definition of the residue for compliance with the MRL and for dietary risk assessment for plant commodities: <i>fludioxonil</i>.</p> <p>Definition of the residue for compliance with the MRL and for dietary risk assessment for animal commodities: <i>sum of fludioxonil and its benzopyrrole metabolites, determined as 2,2-difluoro-benzo[1,3]dioxole-4-carboxylic acid and expressed as fludioxonil.</i></p> <p>The residue is fat-soluble.</p> | | | | | | |

| | CCN | Commodity | Recommended Maximum residue level (mg/kg) | | STMR or STMR-P mg/kg | HR or HR-P mg/kg |
|--|---------|--|---|----------|--|---|
| | | | New | Previous | | |
| Fluindapyr (328)* ADI: 0–0.04 mg/kg bw ARfD: 0.6 mg/kg bw | AM 0660 | Almond hulls | 20 (dw) | | Median: 3.4 | - |
| | GC 2091 | Maize cereals, Subgroup of | 0.01* | | 0.02 | 0.02 |
| | AS 3558 | Maize, stover | 5 (dw) | | Median: 0.95 (ar) | Highest: 3.0 (ar) |
| | GC 2089 | Sorghum Grain and Millet, Subgroup of | 1 | | 0.395 | - |
| | AS 3561 | Sorghum, stover | 3 (dw) | | Median: 0.395 | Highest: 2.4 |
| | GC 0447 | Sweet corn (corn-on-the cob) (kernels plus cob with husk removed) | 0.01* | | 0.02 | 0.02 |
| | AS 3563 | Sweet corn, stover | 30 (dw) | | 0.855 | 13 (ar) |
| | TN 0085 | Tree nuts, Group of | 0.04 | | 0.0205 | 0.035 |
| | GC 2086 | Wheat, similar grains, and pseudo cereals without husks, Subgroup of | 0.4 | | 0.074 | - |
| | AS 0654 | Wheat, hay and/or straw | 15 (dw) | - | Median: hay: 1.9 (ar) straw: 1.8 (ar) | Median: hay: 7.1 (ar) straw: 13 (ar) |
| | | | | | | |
| | CF 1255 | Maize, flour | - | - | 0.02 | |
| | - | Maize, grits | - | - | 0.02 | |
| | CF 0645 | Maize, meal | - | - | 0.02 | |
| | - | Maize, starch | - | - | 0.02 | |
| | OR 0645 | Maize, refined deodorized oil | - | | 0.036 | |
| | CF 3520 | Sorghum, Grain, flour | - | - | 0.17 | |
| | CF 0654 | Wheat, bran, processed | - | - | 0.92 | |
| | CF 3522 | Wheat, gluten meal | - | - | 0.034 | |
| | CF 1210 | Wheat, germ | - | - | 0.031 | |
| | CF 1212 | Wheat, whole meal | - | - | 0.063 | |
| | CF 1211 | Wheat, flour | - | - | 0.026 | |
| | - | Wheat, wholemeal bread | - | - | 0.037 | |
| | | | | | | |
| (ar) – as received; (dw) – dry weight Definition of the residue for compliance with the MRL assessment for plant commodities: <i>fluindapyr</i> Definition of the residue for compliance with the MRL assessment for animal commodities: <i>fluindapyr</i> Definition of the residue for dietary risk assessment for plant commodities: <i>sum of fluindapyr and 3-(difluoromethyl)-N-[7-fluoro-1-(hydroxymethyl)-1,3-dimethyl-2,3-dihydro-1H-inden-4-yl]-1-methyl-1H-pyrazole-4-carboxamide (1-OH-Met-fluindapyr) and its conjugates, expressed as parent</i> Definition of the residue for dietary risk assessment for animal commodities: <i>sum of fluindapyr, 4-(3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxamido)-7-fluoro-1,3-dimethyl-2,3-dihydro-1H-indene-1-carboxylic acid (1-COOH-fluindapyr), 3-(difluoromethyl)-N-[7-fluoro-1-(hydroxymethyl)-1,3-dimethyl-2,3-dihydro-1H-inden-4-yl]-1-methyl-1H-pyrazole-4-carboxamide (1-OH-Met-fluindapyr), 3-(difluoromethyl)-N-[7-fluoro-1-(hydroxymethyl)-1,3-dimethyl-2,3-dihydro-1H-inden-4-yl]-1H-pyrazole-4-carboxamide (1-OH-Met-N-DesMet-fluindapyr) and their conjugates, and 3-(difluoromethyl)-N-(7-fluoro-1,1,3-trimethyl-2,3-dihydro-1H-inden-4-yl)-1H-pyrazole-4-carboxamide (N-DesMet-fluindapyr), , expressed as fluindapyr.</i> <i>The residue is fat-soluble.</i> | | | | | | |
| Flupyradifurone (285) | FI 0353 | Pineapple | 0.3 | | 0.13 | 0.19 |

| | 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 | SO 2091 | Sunflower seeds (subgroup) | 0.8 | | 0.31 | |
| | SO 0700 | Sesame seed | 3 | | 1 | |
| | OC 7000 | Sesame seed oil (crude) | | | 0.13 | |
| | JF 0341 | Pineapple juice | | | 0.044 | |

Definition of the residue for compliance with the MRL for plant commodities: *Flupyradifurone*
Definition of the residue for dietary risk assessment for plant commodities: Sum of flupyradifurone, difluoroacetic acid (DFA) and 6-chloronicotinic acid (6-CNA), expressed as parent equivalents.
Definition of the residue for compliance with the MRL for animal commodities: Sum of flupyradifurone and difluoroacetic acid, expressed as parent equivalents.
Definition of the residue for dietary risk assessment for animal commodities: Sum of flupyradifurone and difluoroacetic acid, expressed as parent equivalents
The residue is not fat-soluble.

| Flutriafol (248) ADI: 0–0.01 mg/kg bw ARfD: 0.05 mg/kg bw | TN 0660 | Almonds | 0.8 | | 0.064 | 0.42 |
|--|---------|---|-----------|-----------|----------------------|---|
| | | GC0640 | Barley | 1.5 | | 0.2 |
| | MO0105 | Edible offal, mammalian | 1 | 1 | 0.3 | 0.53 |
| | PE0112 | Eggs | 0.01(*) | 0.01(*) | 0.0047 | 0.0072 |
| | MF0100 | Mammalian fats (except milk fat) | 0.02 | 0.02 | 0.0092 | 0.014 |
| | MM0095 | Meat (from mammals other than marine mammals) | 0.02(fat) | 0.02(fat) | 0.0042 | 0.0083 |
| | ML0106 | Milks | 0.01(*) | 0.01(*) | 0.0047 | 0.0066 |
| | PO0111 | Poultry, edible offal of | 0.03 | 0.03 | 0.011 | 0.024 |
| | PF0111 | Poultry fats | 0.03 | 0.02 | 0.0094 | 0.017 |
| | PM0110 | Poultry meat | 0.03(fat) | 0.01(*) | 0.0043 | 0.0048 |
| | CM0649 | Rice, husked | 1 | | 0.37 | |
| | CM1205 | Rice, polished | 1.5 | | 0.40 | |
| | AM0660 | Almond hulls | 15 (dw) | | 2.00 (ar) | |
| | AS0640 | Barley hay and/or straw | 10 (dw) | | Median: 1.0 (ar) | Highest: Straw: 6.4 (ar) Hay: 5.0 (ar) |
| | GC0649 | Rice | 4 | | 1.1 | |
| | AS0649 | Rice, hay and/or straw | 6 (dw) | | Median: 1.40 (ar) | Highest: 4.0 (ar) |
| | AS 3570 | Rice, hulls (husks) | 20 (dw) | | Median: 6.8 (ar) | |
| | CM0640 | Barley, pearled | | | 0.099 | |
| | CF0640 | Barley bran, processed | | | 0.17 | |
| | CM1206 | Rice bran, unprocessed | | | 0.068 (ar) | |

(ar) – as received

Definition of the residue for compliance with the MRL and dietary risk assessment for plant and animal commodities: *flutriafol*

The residue is fat-soluble.

| Indoxacarb (216) ADI: 0–0.01 mg/kg bw | AM 0660 | Almond hulls | 9 (dw) | - | 2.65 | 3.80 |
|---|---------|--------------|--------------------------|---|------|------|
| | | FB 2006 | Bushberries, Subgroup of | 2 | - | 0.58 |

| | CCN | Commodity | Recommended Maximum residue level (mg/kg) | | STMR or STMR-P mg/kg | HR or HR-P mg/kg |
|---|---------|---|---|----------|----------------------|--------------------|
| | | | New | Previous | | |
| ARfD: 0.1 mg/kg bw | VD 2065 | Beans, dry, Subgroup of (except cowpea, mung bean and soya bean), | 0.09 | - | 0.01 | |
| | VP 2060 | Beans with pods, Subgroup of (except soya bean) | 0.9 | - | 0.16 | 0.59 |
| | VR 0574 | Beetroot | 0.5 | - | 0.18 | 0.22 |
| | MO 0105 | Edible offal (Mammalian) | 0.05 | 0.05 | 0.03 | 0.06 |
| | MF 0100 | Mammalian fats (except milk fats) | 2 | - | 0.66 | 1.9 |
| | MM 0095 | Meat (from mammals other than marine mammals) | 2 (fat) | 2 (fat) | 0.15 | 0.46 |
| | GC 2091 | Maize cereals, Subgroup of | 0.015 | - | 0.01 | |
| | AS 0645 | Maize fodder (dry) | W | 25 | | |
| | AS 3558 | Maize, stover | 25 (dw) | - | Median: 3.7 | Highest: 9.8 |
| | ML 0106 | Milks | 0.2 | 0.1 | 0.07 | - |
| | FM 0183 | Milk fats | 6 | 2 | 1.7 | - |
| | TN 0085 | Tree nuts | 0.07 | - | 0.013 | 0.046 |
| <p>(ar) – as received; (dw) – dry weight</p> <p>Definition of the residue for compliance with the MRL and dietary risk assessment for plant commodities: the sum of indoxacarb and its R enantiomer</p> <p>Definition of the residue for compliance with the MRL for animal commodities: the sum of indoxacarb and its R enantiomer</p> <p>Definition of the residue for dietary risk assessment for animal commodities: sum of indoxacarb, its R enantiomer and methyl 7-chloro-2,5-dihydro-2-[[[4-(trifluoromethoxy)phenyl]amino]carbonyl]indeno[1,2-e][1,3,4]oxadiazine-4a(3H)-carboxylate (IN-JT333), expressed as indoxacarb.</p> <p>The residue is fat-soluble.</p> | | | | | | |
| Inpyrfluxam (329)* ADI: 0–0.06 mg/kg bw ARfD: 0.3 mg/kg bw | FP 0226 | Apples | 4 | | 0.91 | 1.88 |
| | VD 0541 | Soya bean (dry) | 0.01(*) | | 0 | - |
| | VR 0596 | Sugar beet | 0.01(*) | | 0 | 0 |
| | GC 0649 | Husked rice | 0.01(*) | | 0 | |
| | GC 0645 | Maize grain | 0.01(*) | | 0 | - |
| | GC 0656 | Popcorn | 0.01(*) | | 0 | - |
| | GC 0447 | Sweet corn (Corn-on-the-cob) (kernels plus cob with husk removed) | 0.01(*) | | 0 | 0 |
| | SO 0697 | Peanut | 0.01(*) | | 0.01 | 0.01 |
| | AL 0697 | Peanut, hay and/or straw | 3 | | Median: 0.35 (ar) | Highest: 2 (ar) |
| | AS 3558 | Maize stover | 0.02(*) | | Median: 0.02 (ar) | Highest: 0.02 (ar) |
| | MM 0095 | Meat from mammals other than marine mammals | 0.02(*) | | 0 | 0 |
| | MF 0100 | Mammalian fats | 0.02(*) | | 0 | 0 |
| | MO 0105 | Edible offal (mammalian) | 0.02(*) | | 0 | 0 |
| | ML 0106 | Milk | 0.02(*) | | 0 | 0 |
| | PM 0110 | Poultry meat | 0.02(*) | | 0 | 0 |
| | PF 0111 | Poultry fat | 0.02(*) | | 0 | 0 |
| | PO 0111 | Poultry edible offal | 0.02(*) | | 0 | 0 |
| | PE 0112 | Eggs | 0.02(*) | | 0 | 0 |
| | JF 0226 | Apple, juice | - | | 0.11 | - |

| | CCN | Commodity | Recommended Maximum residue level (mg/kg) | | STMR or STMR-P mg/kg | HR or HR-P mg/kg |
|--|---------|--|---|----------|----------------------|------------------|
| | | | New | Previous | | |
| <p>The definition of the residue for compliance with the MRL for plant commodities is <i>inpyrfluxam</i>. The definition of the residue for dietary risk assessment for plant commodities is <i>inpyrfluxam</i>. The definition of the residue for compliance with the MRL and dietary risk assessment for animal commodities is <i>inpyrfluxam</i> and <i>1'-CH₂OH-S-2840</i> (free or conjugated) expressed as <i>inpyrfluxam</i>. The residue is not fat soluble.</p> | | | | | | |
| <p>Isoflucypram (330)* ADI: 0–0.06 mg/kg bw ARfD: Unnecessary</p> | | | | | | |
| <p>Definition of the residue for compliance with the MRL for plant and animal commodities: <i>Isoflucypram</i>. Definition of the residue for dietary risk assessment for plant and animal commodities: <i>A conclusion could not be reached</i>. The residue is fat-soluble.</p> | | | | | | |
| <p>Mancozeb (050)/ Dithiocarbamates (105) ADI: 0–0.03 mg/kg bw ADI: 0–0.004 mg/kg bw (ETU) ARfD: Not established</p> | | | | | | |
| | SO 0691 | Cottonseed | 0.3 | | 0.75 | |
| | FI 0342 | Longan | 15 | | 9.8 | |
| | GC 0645 | Maize | 0.15 | | 0.83 | |
| | GC 0649 | Rice grain | 1.5 | | | |
| | CM 0649 | Rice, husked | 0.1 | | 3.2 | |
| | CM 1205 | Rice, polished | 0.1 | | 3.2 | |
| | VD 0541 | Soya bean (dry) | 0.3 | | 0.75 | |
| | | Soya bean – all processed commodities | | | 0.75 | |
| | | Maize – all processed commodities | | | 0.83 | |
| | | Rice – all processed commodities | | | 3.2 | |
| | | Cottonseed – all processed commodities | | | 0.75 | |
| <p>Definition of the residue for compliance with the MRL in plant and animal commodities: Total dithiocarbamates, determined as CS₂, evolved during acid digestion and expressed as mg CS₂/kg. Definition of the residue for dietary risk assessment in plant and animal commodities: mancozeb plus ethylenethiourea (ETU) The Meeting assessed combined residues of mancozeb and ETU using the ratio of the ADIs (7.5) to express residues in terms of mancozeb-toxicity-equivalents (MTE). Dithiocarbamate residues are not fat-soluble</p> | | | | | | |
| <p>Mandipropamid (231) ADI: 0–0.2 mg/kg bw ARfD: Unnecessary</p> | | | | | | |
| | HH 0722 | Basil, leaves | 30 | | 8.75 | |
| | DH 0722 | Basil leaves, dried | 200 | | 62.5 | |
| | VA 2031 | Bulb Onions, Subgroup of | 0.05 | | 0.01 | |
| | VC 0424 | Cucumber | W | 0.2 | | |
| | VO 2046 | Eggplants, Subgroup of | 0.7 | | 0.09 | |
| | VC 2039 | Fruiting vegetables, Cucurbits – Cucumber and Summer squashes, Subgroup of | 0.2 | | 0.0475 | |

| | CCN | Commodity | Recommended Maximum residue level (mg/kg) | | STMR or STMR-P mg/kg | HR or HR-P mg/kg |
|--|---------|---|---|----------|----------------------|------------------|
| | | | New | Previous | | |
| | VC 2040 | Fruiting vegetables, Cucurbits – Melons, Pumpkins and Winter squashes, Subgroup of | 0.4 | | 0.01 | |
| | VR 0604 | Ginseng | 0.15 | | 0.01 | |
| | DV 0604 | Ginseng, dried including red ginseng | 4 | | 0.46 | |
| | VC 0046 | Melon, except watermelon | W | 0.5 | | |
| | VA 0385 | Onion, bulb | W | 0.1 | | |
| | VO 0051 | Peppers, Subgroup of (except Martynia, Okra and Roselle) | 0.7 | 1 | 0.09 | |
| | HS 0444 | Peppers, Chili, dried | 7 | 10 | 0.9 | |
| | VA 0389 | Spring onion | W | 7 | | |
| | VC 0431 | Squash, summer | W | 0.2 | | |
| | VO 0448 | Tomato | W | 0.3 | | |
| | VO 2045 | Tomatoes, Subgroup of | 1 | | 0.26 | |
| | | Tomato, canned | | | 0.101 | |
| | JF 0448 | Tomato juice | | | 0.26 | |
| | | Tomato paste | | | 0.91 | |
| | DM 0448 | Tomato puree | | | 0.286 | |
| <p>Definition of the residue for compliance with the MRL and for estimation of dietary exposure for plant and animal commodities: <i>mandipropamid</i></p> <p>The residue is not fat-soluble</p> | | | | | | |
| <p>Mefentrifluconazole (320)* ADI: 0–0.04 mg/kg bw ARfD: 0.3 mg/kg bw</p> | FC 0002 | Lemons and Limes (including Citron), Subgroup of | 1.5 | | 0.37 | 0.98 |
| | FC 0003 | Mandarins (including Mandarin-like hybrids), Subgroup of | 1.5 | | 0.37 | 0.98 |
| | FC 0004 | Oranges, Sweet, Sour (including Orange-like hybrids), Subgroup of | 1 | | 0.215 | 0.7 |
| | FC 0005 | Pummelo and Grapefruits (including Shaddock-like hybrids, among others Grapefruit), Subgroup of | 0.5 | | 0.16 | 0.24 |
| | FP 0009 | Pome fruits except persimmon, Japanese, Group of | 1.5 | | 0.39 | 1.12 |
| | FS 0013 | Cherries, Subgroup of | 5 | | 1.1 | 2.4 |
| | FS 0014 | Plums (including fresh Prunes), Subgroup of | 1.5 | | 0.26 | 1 |
| | FS 2001 | Peaches (including Nectarine and Apricots), Subgroup of | 2 | | 0.56 | 1.04 |
| | FB 2005 | Cane berries, Subgroup of | 3 | | 0.96 | 1.62 |
| | FB 2006 | Bush berries, Subgroup of | 5 | | 0.58 | 3.2 |
| | FB 0267 | Elderberries | 5 | | 0.58 | 3.2 |
| | FB 2254 | Guelder rose | 5 | | 0.58 | 3.2 |
| | FB 1236 | Wine-grapes | 2 | | 0.54 | 1.1 |
| | FB 2009 | Low growing berries, Subgroup of | 2 | | 0.29 | 1.1 |
| | FI 0326 | Avocado | 1 | | 0.36 | 0.5 |

| | CCN | Commodity | Recommended Maximum residue level (mg/kg) | | STMR or STMR-P mg/kg | HR or HR-P mg/kg |
|--|---------|--|---|----------|----------------------|------------------|
| | | | New | Previous | | |
| | FI 0327 | Banana | 1.5 | | 0.09 (pulp) | 0.57 (pulp) |
| | FI 0345 | Mango | 0.6 | | 0.01 | 0.01 |
| | FI 0350 | Papaya | 0.5 | | 0.07 | 0.22 |
| | VA 2031 | Bulb Onions, Subgroup of | 0.2 | | 0.05 | 0.14 |
| | VA 2032 | Green Onions, Subgroup of | 4 | | 0.39 | 2.2 |
| | VC 2039 | Fruiting vegetables, Cucurbits - Cucumbers and Summer squashes, Subgroup of | 0.15 | | 0.035 | 0.12 |
| | VC 2040 | Fruiting vegetables, Cucurbits – Melons, Pumpkins and Winter Squashes, Subgroup of | 0.5 | | 0.15 | 0.23 |
| | VO 2045 | Tomatoes, Subgroup of | 0.7 | | 0.14 | 0.45 |
| | VO 0051 | Peppers, Subgroup of (except martynia, okra and roselle) | 1.5 | | 0.25 | 0.84 |
| | HS 0444 | Peppers, Chili, dried | 15 | | 2.5 | 8.4 |
| | VO 2046 | Eggplants, Subgroup of | 1.5 | | 0.25 | 0.84 |
| | VL 2050 | Leafy greens, Subgroup of ^a | 30 | | 8.1 | 18 |
| | VL 0054 | Leaves of Brassicaceae, Subgroup of ^a | 30 | | 6.65 | 12 |
| | VP 2060 | Beans with pods, except soya bean (succulent seeds in pods), Subgroup of | 0.05 | | 0.01 | 0.03 |
| | VP 2061 | Peas with pods, Subgroup of | 0.15 | | 0.01 | 0.1 |
| | VP 2062 | Succulent beans without pods, except soya bean (succulent seeds), Subgroup of | 0.03 | | 0.01 | 0.02 |
| | VP 2063 | Succulent peas without pods, Subgroup of | 0.01* | | 0.01 | 0.01 |
| | VD 2065 | Dry beans, except soya bean (dry), Subgroup of | 0.07 | | 0.01 | |
| | VD 2066 | Dry peas, except lentil (dry), Subgroup of | 0.15 | | 0.015 | |
| | VD 0533 | Lentil (dry) | 1.5 | | 0.22 | |
| | VD 0541 | Soya bean (dry) | 0.4 | | 0.01 | |
| | VR 2070 | Root vegetables, except sugar beet, Subgroup of | 0.5 | | 0.1 | 0.38 |
| | VR 0596 | Sugar beet | 0.6 | | 0.06 | |
| | VR 2071 | Tuberous and corm vegetables, Subgroup of | 0.05 | | 0.01 | 0.04 |
| | GC 0650 | Rye | 0.4 | | 0.09 | |
| | GC 0653 | Triticale | 0.4 | | 0.09 | |
| | GC 0654 | Wheat | 0.4 | | 0.09 | |
| | GC 0640 | Barley | 3 | | 0.425 | |
| | GC 0647 | Oats | 3 | | 0.425 | |
| | GC 0649 | Rice | 5 | | 0.2 | |
| | CM 0649 | Rice, husked | 1.5 | | 0.11 | |
| | GC 0646 | Millet | 2 | | 0.41 | |
| | GC 0651 | Sorghum Grain | 2 | | 0.41 | |
| | GC 0645 | Maize | 0.01* | | 0.01 | |
| | GC 0656 | Popcorn | 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 | | |
| | GC 0447 | Sweet corn (Corn-on-the-cob) (kernels plus cob with husk removed) | 0.04 | | 0.01 | 0.02 |
| | GS 0659 | Sugar cane | 1.5 | | 0.37 | |
| | TN 0085 | Tree nuts, Group of | 0.06 | | 0.01 | 0.06 |
| | SO 2090 | Small seed oilseeds, Subgroup of | 1 | | 0.06 | |
| | SO 2091 | Sunflower seeds, Subgroup of | 0.15 | | 0.01 | |
| | SO 0691 | Cottonseed, Subgroup of | 0.2 | | 0.04 | |
| | SO 0697 | Peanut | 0.01* | | 0.01 | |
| | SB 0716 | Coffee bean | 0.4 | | 0.01 | |
| | ML 0106 | Milks | 0.1 | | 0.07 | |
| | MM 0095 | Meat (from mammals other than marine mammals) | 0.15 (fat) | | 0.04 (muscle) 0.39 (fat) | 0.14 (muscle) 1.26 (fat) |
| | MO 0105 | Edible offal (mammalian) | 2 | | 0.61 (liver) 0.34 (kidney) | 1.91 (liver) 1.36 (kidney) |
| | MF 0100 | Mammalian fats (except milk fats) | 1.5 | | 1.5 | 0.39 |
| | PE 0112 | Eggs | 0.04 | | 0.04 | 0.03 |
| | PO 0111 | Poultry, edible offal | 0.07 | | 0.07 | 0.12 |
| | PF 0111 | Poultry, fats | 0.2 | | 0.2 | 0.12 |
| | PM 0110 | Poultry, meat | 0.03 (fat) | | 0.01 (muscle) 0.12 (fat) | 0.05 (muscle) 0.50 (fat) |
| | | Citrus peel | 4 | | 0.96 | 2.5 |
| | OR 0001 | Citrus oil, edible | 70 | | 15.2 | |
| | DF 0014 | Prune, dried | 7 | | 1.1 | 4.1 |
| | AL 0541 | Soya bean, hay and/or straw | 20 (dw) | | Median: 4.75 | Highest 12 |
| | AS 3304 | Cereal grains (including pseudocereals) feed products with low water (<20%) content (hay and/or straw), Subgroup of | 50 (dw) | | Median: 10.3 | Highest 25.7 |
| | AB 0226 | Apple pomace, dried | 15 | | 3.9 | |
| | AB 0269 | Grape pomace, dried | 9 | | 2.3 | |
| | DV 0448 | Tomato, dried | 7 | | 1.3 | 4.1 |
| | AM 3599 | Sugar beet, pulp, dry | 3 | | 0.29 | |
| | AM 0660 | Almond, hulls | 4 | | Median: 1.2 | |
| | AL 0697 | Peanut, hay and/or straw | 40 (dw) | | Median: 8.9 | Highest: 30 |
| | CF 3511 | Barley, flour | 15 | | 1.6 | |
| | CM 3510 | Barley bran, unprocessed | 15 | | 2.1 | |
| | AS 3564 | Dried distiller's grain from barley | 8 | | 1 | |
| | AS 3570 | Rice hulls | 15 | | 1.8 | |

| | CCN | Commodity | Recommended Maximum residue level (mg/kg) | | STMR or STMR-P mg/kg | HR or HR-P mg/kg |
|--|---------|--|---|----------|----------------------|------------------|
| | | | New | Previous | | |
| | | Soya bean aspirated grain fractions | 40 | | 0.93 | |
| | | Potato, dried pulp | 0.12 | | 0.24 | |
| | CM 0654 | Wheat bran, unprocessed | 1.5 | | 0.26 | |
| | CF 1210 | Wheat, germ | 0.5 | | 0.10 | |
| | CF 3514 | Wheat middlings | 1 | | 0.2 | |
| | CF 3515 | Wheat shorts (cereal grain milling by-product) | 1.5 | | 0.32 | |
| | CF 3521 | Wheat aspirated grain fractions | 16 | | 3.5 | |
| | JF 0001 | Citrus juice | | | 0.007 | |
| | | Citrus marmalade | | | 0.044 | |
| | | Canned apples | | | 0.051 | |
| | | Apple fruit syrup | | | 0.16 | 0.45 |
| | | Apple sauce | | | 0.043 | |
| | DF 0226 | Apple, dried | | | 0.12 | 0.35 |
| | JF 0226 | Apple, juice | | | 0.051 | |
| | | Prune juice | | | 0.039 | |
| | | Prune puree | | | 0.15 | |
| | JF 0269 | Grape, juice | | | 0.070 | |
| | - | Grape, wine (red) | | | 0.016 | |
| | | Grape, wine (white) | | | 0.011 | |
| | | Canned strawberries | | | 0.27 | |
| | | Strawberry fruit syrup | | | 0.058 | 0.22 |
| | | Strawberry jam | | | 0.12 | |
| | | Pickled gherkins | | | 0.026 | 0.088 |
| | | Potato, peeled tuber | | | 0.0033 | 0.0132 |
| | | Potato, stove boiled -without peel | | | 0.0033 | 0.0132 |
| | | Potato, crisps/chips – without peel | | | 0.0033 | 0.0132 |
| | DV 0589 | Potato flakes/granules | | | 0.0033 | |
| | | Potato, baked with peel | | | 0.0033 | 0.0132 |
| | | Potato, fried without peel | | | 0.0033 | 0.0132 |
| | | Potato, starch | | | 0.0033 | |
| | | Tomato, canned | | | 0.0084 | 0.027 |
| | VW 0448 | Tomato, paste | | | 0.069 | |
| | DM 0448 | Tomato puree | | | 0.039 | |
| | JF 0448 | Tomato, juice | | | 0.011 | |
| | CM 1205 | Rice, polished | | | 0.0085 | |
| | CM 1206 | Rice bran, unprocessed | | | 0.44 | |
| | OC 0541 | Soya bean oil, crude | | | 0.01 | |
| | | Soya bean, tofu | | | 0.0083 | |

| | CCN | Commodity | Recommended Maximum residue level (mg/kg) | | STMR or STMR-P mg/kg | HR or HR-P mg/kg |
|--|---------|-----------------------------------|---|----------|----------------------|------------------|
| | | | New | Previous | | |
| | | Soya bean, soya sauce | | | 0.0083 | |
| | | Soya bean, flour | | | 0.0083 | |
| | | Soya bean, miso | | | 0.0083 | |
| | OR 0541 | Soya bean oil, refined | | | 0.0083 | |
| | DM 3523 | Sugar beet, sugar refined | | | 0.0036 | |
| | CF 3522 | Wheat gluten meal | | | 0.05 | |
| | | Wheat starch | | | 0.026 | |
| | CF 1212 | Wheat, whole meal flour | | | 0.071 | |
| | | Whole grain bread | | | 0.050 | |
| | | Wheat milled by-products | | | 0.056 | |
| | CM 0640 | Barley, pearled | | | 0.051 | |
| | | Barley, brewing malt | | | 0.21 | |
| | | Barley, beer | | | 0.13 | |
| | OR 0691 | Cotton seed oil, edible | | | 0.00016 | |
| | | Coffee beans, concentrated liquor | | | 0.00075 | |
| | | Coffee beans, instant coffee | | | 0.0016 | |
| | SM 0716 | Coffee beans, roasted | | | 0.0062 | |

^a On the basis of the information provided to the JMPR it was concluded that the estimated acute dietary exposure to residues of mefenftrifluconazole for the consumption of commodities from the subgroups of Leafy greens and Leaves of Brassicaceae may present a public health concern

Definition of the residue for compliance with the MRL and dietary risk assessment for plant commodities: *mefenftrifluconazole*

Definition of the residue for compliance with the MRL for animal commodities: *mefenftrifluconazole (free and conjugated)*

Definition of the residue for dietary risk assessment for animal commodities: sum of *mefenftrifluconazole (free and conjugated)* + 2-[4-(4-chlorophenoxy)-2-(trifluoromethyl)phenyl]propane-1,2-diol (M750F022), *free and conjugated, expressed as mefenftrifluconazole equivalents*. The molecular weight conversion factor to express M750F022 in mefenftrifluconazole equivalents = 1.15.

The residue is fat soluble.

| | | | | | | |
|------------------------|---------|--------------------------------------|------------|--|-------|-------|
| Metalaxyl (138) | FI 0353 | Pineapple | 0.1 (M) | | 0.026 | 0.078 |
| ADI: 0–0.08 mg/kg bw | DV 0604 | Ginseng, dried including red ginseng | 0.06* (MM) | | 0.06 | 0.06 |
| ARfD: 0.5 mg/kg bw | | | | | | |

Residue data that was the basis for the estimation: metalaxyl (M), metalaxyl-M (MM)

Definition of the residue for compliance with the MRL for plant commodities: *metalaxyl (sum of enantiomers)*

Definition of the residue for dietary risk assessment in plant commodities: Metalaxyl (sum of enantiomers) and N-(2-hydroxymethyl-6-methylphenyl)-N-(methoxyacetyl)alanine methyl ester (M8; free and conjugated; sum of enantiomers), expressed as metalaxyl.

Definition of the residue for compliance with the MRL in animal commodities: Sum of metalaxyl (sum of enantiomers) and metabolites (free + conjugated) M3 (N-(2,6-dimethylphenyl)-N-(hydroxyacetyl)alanine methyl ester) and M8 (N-(2-hydroxymethyl-6-methylphenyl)-N-(methoxyacetyl)alanine methyl ester (sum of enantiomers), expressed as metalaxyl.

Definition of the residue for dietary risk assessment in animal commodities: Sum of metalaxyl (sum of enantiomers) and metabolites (free + conjugated) M1 (N-(2,6-dimethylphenyl)-N-(methoxyacetyl) alanine), M3 (N-(2,6-dimethylphenyl)-N-(hydroxyacetyl)alanine methyl ester), M6 (N-(2,6-dimethylphenyl)-N-(hydroxyacetyl)alanine), M7 (N-(2,6-dimethyl-5-hydroxyphenyl)-N-(methoxyacetyl)alanine methyl ester) and M8 (N-(2-hydroxymethyl-6-methylphenyl)-N-(methoxyacetyl)alanine methyl ester (sum of enantiomers), expressed as metalaxyl.

The residue is not fat-soluble

| | CCN | Commodity | Recommended Maximum residue level (mg/kg) | | STMR or STMR-P mg/kg | HR or HR-P mg/kg |
|--|---------|---|---|-------------|-------------------------------------|------------------|
| | | | New | Previous | | |
| Methidathion (051)** ADI: 0–0.002 mg/kg bw ARfD: 0.01 mg/kg bw | FC 0226 | Apple | W | 0.5 | | |
| | FS 0013 | Cherries, Subgroup of | W | 0.2 | | |
| | FB 0269 | Grapes | W | 1 | | |
| | FC 0206 | Mandarins (including mandarin like hybrids)(subgroup) | W | 5 | | |
| | FP 0230 | Pear | W | 1 | | |
| | DT 1114 | Tea, green, black (black, fermented and dried) | W | 0.5 | | |
| <p>Definition of the residue for compliance with the MRL for plant commodities: methidathion</p> <p>Definition of the residue for long-term dietary exposure assessment for plant commodities: <i>sum of methidathion, S-2,3,-dihydro-5-methoxy-2-oxo-1,3,4-thiadiazol-3-ylmethyl O-methyl phosphorodithioate and 2,3-dihydro-5-methoxy-1,3,4-thiadiazol-2-one (free and conjugate), and 4x S-2,3-dihydro-5-methoxy-2-oxo-1,3,4-thiadiazol-3-ylmethyl O,O-dimethyl phosphorothioate, expressed as methidathion</i></p> <p>Definition of the residue for acute dietary exposure assessment for plant commodities: <i>sum of methidathion and 4x S-2,3-dihydro-5-methoxy-2-oxo-1,3,4-thiadiazol-3-ylmethyl O,O-dimethyl phosphorothioate, expressed as methidathion.</i></p> <p>The Meeting was unable to reach a conclusion on the residue definitions for compliance with the MRL and dietary risk assessment for animal commodities.</p> <p>The residue is not fat soluble.</p> | | | | | | |
| Pyridate (315)* ADI: 0–0.2 mg/kg bw ARfD: 2 mg/kg bw | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| <p>Definition of the residue for compliance with the MRL for plant and animal commodities: Sum of pyridate and 6-chloro-4-hydroxy-3-phenylpridazine (pyridafol) (incl. conjugates), expressed as pyridate</p> <p>The Meeting was unable to reach a conclusion on the residue definitions for dietary risk assessment for plant and animal commodities.</p> <p>The residue is not fat-soluble.</p> | | | | | | |
| Quinlorac (287) ADI: 0–0.4 mg/kg bw ARfD: 2 mg/kg bw | FB 0265 | Cranberries | 1.5 | 1.5 | 0.375 | 0.88 |
| | SO 0495 | Rape seeds | 0.15 | 0.15 | 0.64 (median: 0.017 for feed calc.) | |
| | OR 0495 | Rape seed oil, edible | | | 0.70 | |
| <p>Definition of the residue for compliance with the MRL for plant commodities: quinlorac plus quinlorac conjugates</p> <p>Definition of the residue for dietary risk assessment for plant commodities: quinlorac plus quinlorac conjugates plus quinlorac methyl ester expressed as quinlorac.</p> <p>Definition of the residue for compliance with the MRL and dietary risk assessment for animal commodities: quinlorac plus quinlorac conjugates.</p> <p>The residue is fat-soluble.</p> | | | | | | |
| Quintozene (064)** ADI: 0–0.01 mg/kg bw ARfD: Unnecessary | GC 0640 | Barley | W | 0.01 (*) | | |
| | AS 0640 | Barley straw and fodder, Dry | W | 0.01(*) | | |
| | VB 0400 | Broccoli | W | 0.05 | | |
| | VB 0041 | Cabbages, head | W | 0.1 | | |
| | PM 0840 | Chicken meat | W | 0.1 (*) fat | | |
| | PO 084- | Chicken, Edible offal of | W | 0.1 (*) | | |
| | VD 0526 | Common bean (dry) | W | 0.02 | | |

| | CCN | Commodity | Recommended Maximum residue level (mg/kg) | | STMR or STMR-P mg/kg | HR or HR-P mg/kg |
|--|---------|--|---|----------|----------------------|------------------|
| | | | New | Previous | | |
| | VP 0526 | Common bean (pods and/or immature seeds) | W | 0.1 | | |
| | SO 0691 | Cotton seed | W | 0.01 | | |
| | PE 0112 | Eggs | W | 0.03 (*) | | |
| | GC 0645 | Maize | W | 0.01 (*) | | |
| | AS 0645 | Maize fodder (dry) | W | 0.01 | | |
| | AL 0072 | Pea hay or pea fodder (dry) | W | 0.05 | | |
| | SO 0697 | Peanut | W | 0.5 | | |
| | VD 0072 | Peas (dry) | W | 0.01 | | |
| | HS 0444 | Peppers Chili, dried | W | 0.1 | | |
| | VO 0445 | Peppers, Sweet (including pimento or pimiento) | W | 0.05 (*) | | |
| | HS 0191 | Spices, Fruits and Berries | W | 0.02 | | |
| | HS 0193 | Spices, Roots and Rhizomes | W | 2 | | |
| | HS 0190 | Spices, seeds | W | 0.1 | | |
| | VD 0541 | Soya bean (dry) | W | 0.01 (*) | | |
| | VR 0598 | Sugar beet | W | 0.01 (*) | | |
| | VO 0448 | Tomato | W | 0.02 | | |
| | CG 0654 | Wheat | W | 0.01 | | |
| | AS 0654 | Wheat straw and fodder, dry | W | 0.03 | | |

Definition of the residue for compliance with the MRL for plant commodities: Quintozene.

The Meeting was unable to reach a conclusion on the residue definition for dietary risk assessment in plant commodities.

The Meeting was unable to reach a conclusion on the residue definition for compliance with the MRL or dietary risk assessment for animal commodities

| | | | | | | |
|--|---------|---|-------|--|-------|--|
| Spiromesifen (294) ADI: 0–0.03 mg/kg bw ARfD: Unnecessary | FC 0004 | Subgroup of oranges, Sweet, Sour | 0.15 | | 0.043 | |
| | FI 0345 | Mango | 0.5 | | 0.024 | |
| | FI 0350 | Papaya | 0.7 | | 0.13 | |
| | VP 0061 | Beans with pods (Phaseolus spp.) immature pods and succulent seeds) | 0.5 | | 0.16 | |
| | VP 0062 | Beans without pods (Phaseolus spp.) (succulent seeds) | 0.15* | | 0.12* | |
| | VD 2065 | Dry beans, subgroup | 0.03* | | 0.024 | |
| | OR 0004 | Orange oil, edible | 30 | | 8.6 | |
| | OC 0541 | Soya bean oil, crude | 0.03* | | 0.006 | |
| | AB 0001 | Citrus pulp, dried | 0.3 | | 0.086 | |
| | AL 3538 | Soya bean, hulls | 0.03* | | 0.03 | |
| | AL 3539 | Soya bean meal | 0.03* | | 0.005 | |

Definition of the residue for compliance with the MRL for plant and animal commodities and for dietary risk assessment for animal commodities: *sum of spiromesifen and spiromesifen-enol, expressed as spiromesifen.*

Definition of the residue for dietary risk assessment for plant commodities: *sum of spiromesifen, spiromesifen-enol and 4-hydroxymethyl-spiromesifen-enol (free and conjugated), expressed as spiromesifen.*

The residue is fat-soluble.

| | | | | | | |
|---|---------|------------------------------|-----|--|-------|------|
| Sulfoxaflor(252) ADI: 0–0.05 mg/kg bw ARfD: 0.3 mg/kg bw | VS 0620 | Globe artichoke | 0.9 | | 0.245 | 0.45 |
| | SO 2091 | Sunflower seeds, Subgroup of | 0.4 | | 0.047 | |
| | | | | | | |

| | CCN | Commodity | Recommended Maximum residue level (mg/kg) | | STMR or STMR-P mg/kg | HR or HR-P mg/kg |
|---|-----------------------|---|---|---------------------|-----------------------------|--------------------|
| | | | New | Previous | | |
| | OR 0702 | Sunflower seed oil, edible | -- | -- | 0.033 | -- |
| Definition of the residue for compliance with the MRL and for dietary risk assessment for plant and animal commodities: <i>sulfoxaflo</i> . <i>The residue is not fat-soluble.</i> | | | | | | |
| Tetraniliprole (324)* ADI: 0–2 mg/kg bw ARfD: Unnecessary | AM 0660 | Almond hulls | 4 (dw) | - | Median: 0.80 (ar) | |
| | VB 0041 | Cabbages, Head | 2 | - | 0.012, Median: 0.135 | Highest: 1.2 |
| | AS 3304 | Cereal grains (including pseudocereals) feed products with low water (<20%) content (hay and/or straw) Subgroup of, excluding rice, maize/field corn, and sweet corn) | 0.2 (dw) | - | Median: 0.01 (ar) | Highest: 0.14 (ar) |
| | FS 0013 | Cherries, Subgroup of | 1.5 | - | 0.29 | |
| | MO 0105 | Edible offal (Mammalian) | 1 | - | kidney: 0.10 liver: 0.43 | |
| | PE 0112 | Eggs | 0.01* | - | 0 | |
| | VB 0042 | Flowerhead Brassicas, Subgroup of | 0.5 | - | 0.145 | |
| | VO 0050 | Fruiting vegetables, other than Cucurbits, Group of, excluding okra, martynia and roselle | 0.4 | - | 0.075 | |
| | VL 0054 | Leaves of Brassicaceae, Subgroup of | 15 | - | 4 | |
| | FC 0002 | Lemons and Limes (including Citron), Subgroup of | 1.5 | - | 0.19 | |
| | GC 2091 | Maize cereals, Subgroup of | 0.015 | - | 0.01 | |
| | AS 3558 | Maize stover | 30 (dw) | - | Median: 2.5 (ar) | Highest: 17 (ar) |
| | MF 0100 | Mammalian fats (except milk fats) | 0.15 | - | 0.26 | |
| | FC 0003 | Mandarins (including Mandarin-like hybrids), Subgroup of | 1 | - | 0.185 | |
| | MM 0095 | Meat (from mammals other than marine mammals) | 0.1 | - | muscle: 0.047 fat: 0.26 | |
| | ML 0106 | Milks | 0.15 | - | 0.12 | |
| | FC 0004 | Oranges, Sweet, Sour (including Orange-like hybrids), Subgroup of | 0.5 | - | 0.015# | |
| | FS 2001 | Peaches (including Nectarines and Apricots), Subgroup of | 0.7 | - | 0.089 | |
| | FS 0014 | Plums, Subgroup of | 0.3 | - | 0.033 | |
| | FP 0009 | Pome fruits, Group of, excluding Japanese persimmon | 0.4 | - | 0.13 | |
| PO 0111 | Poultry, edible offal | 0.01* | - | 0 | | |
| PF 0111 | Poultry, fats | 0.01* | - | 0 | | |
| PM 0110 | Poultry, meat | 0.01* | - | muscle: 0 fat: 0 | | |

| | CCN | Commodity | Recommended Maximum residue level (mg/kg) | | STMR or STMR-P mg/kg | HR or HR-P mg/kg |
|--|---------|--|---|----------|----------------------|--------------------|
| | | | New | Previous | | |
| | AL 3301 | Products of legume feeds with low water (<20%) content (hay), Subgroup of | 0.3 (dw) | - | Median: 0.01 (ar) | Highest: 0.22 (ar) |
| | FC 0005 | Pummelos and Grapefruits (including Shaddock-like hybrids, among others grapefruit), Subgroup of | 0.9 | - | 0.091 | |
| | GC 2088 | Rice cereals, Subgroup of | 0.02 | - | 0.01 | |
| | CM 0649 | Rice, husked | 0.01* | - | 0.01 | |
| | CM 1205 | Rice, polished | 0.01* | - | 0.01 | |
| | AS 0649 | Rice, hay and/or straw | 20 (dw) | - | Median: 2.8 (ar) | Highest: 8.2 (ar) |
| | FB 2008 | Small fruit vine climbing, Subgroup of | 1.5 | - | 0.275 | |
| | VD 0541 | Soya bean (dry) | 0.2 | - | 0.026 | |
| | GC 0447 | Sweet Corn (corn-on-the-cob) | 0.01* | - | 0.01 | |
| | TN 0085 | Tree nuts, Group of | 0.03 | - | 0.01 | |
| | VR 2071 | Tuberous and corm vegetables, Subgroup of | 0.02 | - | 0.01 | |
| | HS 0444 | Peppers, Chili, dried | 4 | - | 0.75 | |
| | DF 0269 | Grape, dried (=Currants, Raisins, and Sultanas) | 2 | - | 0.35 | |
| | DF 0014 | Prune, dried | 1.5 | - | 0.125 | |
| | DM 0448 | Tomato paste | 1.5 | | 0.39 | |
| | | | | | | |
| | CF 1255 | Maize flour | - | - | 0.012 | |
| | CF 0645 | Maize, meal | -- | | 0.011 | |
| | - | Maize grits | - | - | 0.01 | |
| | - | Maize starch | - | - | 0.01 | |
| | OR 0645 | Maize, refined bleached deodorized oil | - | - | 0.01 | |
| | JF 0009 | Group of Pome Fruit, juices | - | - | 0.065 | |
| | - | Group of Pome Fruit, sauce | - | - | 0.01 | |
| | DF 0009 | Group of Pome Fruit, dried | - | - | 0.01 | |
| | JF 0269 | Grape, juice | - | - | 0.067 | |
| | - | Grape, wine | - | - | 0.14 | |
| | - | Grape, must | - | - | 0.16 | |
| | JF 0004 | Orange, juice | - | - | 0.01 | |
| | - | Orange, marmalade | - | - | 0.01 | |
| | - | Orange, peeled | - | - | 0.015 | |
| | HS 3382 | Orange, peel | - | - | 0.39 | |
| | OR 0004 | Orange oil, edible | - | - | 1.27 | |
| | - | Potato, crisps | - | - | 0.01 | |
| | DV 0589 | Potato, flakes | - | | 0.01 | |
| | - | Potato, peeled | - | - | 0.01 | - |
| | | | | | | |

| | CCN | Commodity | Recommended Maximum residue level (mg/kg) | | STMR or STMR-P mg/kg | HR or HR-P mg/kg |
|---|---------|---|---|----------|--|--|
| | | | New | Previous | | |
| <p>(ar) – as received; (dw) – dry weight; #STMR for flesh only based on 0.14 mg/kg x PF of 0.11</p> <p>Definition of the residue for compliance with the MRL for plant commodities: <i>tetraniliprole</i>.</p> <p>Definition of the residue for dietary risk assessment for plant commodities: <i>tetraniliprole</i> + <i>tetraniliprole-N-methyl-quinazolinone</i>, expressed as <i>tetraniliprole</i>.</p> <p>Definition of the residue for compliance with the MRL for animal commodities: <i>tetraniliprole</i>.</p> <p>Definition of the residue for dietary risk assessment for animal commodities: <i>tetraniliprole</i> + <i>tetraniliprole-N-methyl-quinazolinone</i> + <i>tetraniliprole-benzylalcohol</i>, expressed as <i>tetraniliprole</i>.</p> <p><i>The residue is not fat-soluble.</i></p> | | | | | | |
| <p>Triflumuron (317)</p> <p>ADI: 0–0.008 mg/kg bw ARfD: Unnecessary</p> <p>4-trifluoromethoxyaniline (metabolite M07) ADI: 0-0.02 mg/kg bw ARfD: 0.02 mg/kg bw</p> | VD 0541 | Soya bean (dry) | 0.1 | | 0.043 (triflumuron+M02) 0.020 (M07) | |
| | ML 0106 | Milks | 0.01(*) | | 0 | |
| | MO 0105 | Edible offal (Mammalian) | 0.05(*) | | 0.05 | |
| | MM 0095 | Meat (from mammals other than marine mammals) | 0.1(*) (fat) | | 0.1 | |
| | MF 0100 | Mammalian fats (except milk fats) | 0.1(*) | | 0.1 | |
| | | | Soya oil, refined | | | 0.0043 (triflumuron+M02) 0.0020 (M07) |
| <p>Definition of the residue for compliance with the MRL for plant and animal commodities: triflumuron</p> <p>Definition of the residue for dietary risk assessment for plant commodities: sum of triflumuron and 2-chlorobenzoic acid (M02), expressed as triflumuron and 4-trifluoromethoxyaniline (M07) assessed separately.</p> <p>Definition of the residue for dietary risk assessment for animal commodities: triflumuron</p> <p>The residue is fat-soluble</p> | | | | | | |

2. General considerations

2.1 Requirements for data on the impact of residues on the human intestinal microbiome

For almost 20 years the Joint FAO/WHO Expert Committee on Food Additives (JECFA) has been assessing residues of veterinary drugs for their possible impact on the human microbiome, specifically for two end-points of concern: disruption of the bacterial colonization barrier and increase in bacterial resistance. To facilitate these assessments, guidance from International Cooperation on Harmonisation of Technical Requirements for Registration of Veterinary Medicinal Products, VICH GL36(R), was adopted by the sixty-sixth meeting of the JECFA Committee, for food-producing animal drugs. Essentially VICH GL36(R) comprises a stepwise approach to determine if a microbiological acceptable daily intake (mADI) would be necessary, based on an evaluation of whether product residues reaching the human colon are microbiologically active. It entails answering three questions to determine the need for establishing a mADI. First, determine if the product residues, and/or its metabolites, are microbiologically active against representatives of the human intestinal microbiota. Second, determine whether the product residues enter the human colon. Third, examine whether the residues entering the human colon remain microbiologically active. If the answer to any of these questions is “no”, then there is no need to calculate a mADI, and the assessment does not need to be completed. However, if a mADI needs to be calculated, the two end-points of concern for human health must be considered. The guidance also discusses test systems to address these toxicological end-points of concern, taking into consideration the complexity of the human intestinal microbiome. More recently, JECFA has adapted this approach to assess the acute effects of veterinary drug residues to establish a mARfD, as necessary.

Whilst the initial focus of JECFA was on antibiotics, it is now recognized that other drugs can have detrimental effects regarding these end-points of concern, and the Committee now systematically assesses the possible need for a mADI and mARfD for all drugs. Over the last decade evidence has accumulated that a wide range of compounds can affect the human microbiome, including pesticides. Hence, JMPR needs to consider how it will address this concern. A good starting point would be VICH GL36(R), and its provisions may well be sufficient for this purpose.

At present, the assessment considers only bacteria, yet the intestinal microbiome also includes, fungi, archaea, protozoa, and viruses, all of which play an important role in human health. Thus, consideration needs to be given to whether, and if so how, the impact of residues on some/all of the other components of the human intestinal microbiome should be addressed, particularly in the case of fungicides. Also, consideration should be given to extending the assessment of possible impact of residues on the human microbiome to beyond the two existing end-points of concern discussed above.

The Meeting recommended that the joint secretariat convene a microbiome expert working group to consider the above points with a view to developing draft guidance for discussion and eventual adoption by JMPR.

General references

- VICH GL36(R) (Safety), (2013). Studies to evaluate the safety of residues of veterinary drugs in human food: general approach to establish a microbiological ADI. International Cooperation on Harmonisation of Technical Requirements for Registration of Medicinal products (VICH). EMA/CVMP/VICH/467/2003
- WHO, (2006). Evaluation of certain veterinary drug residues in food (Sixty-sixth report of the Joint FAO/WHO Expert Committee on Food Additives). Technical Report Series No. 939, 2006.
- Yuan X, Pan Z, Jin C, Ni Y, Fu Z, Jin Y. (2019). Gut microbiota: an underestimated and unintended recipient for pesticide-induced toxicity. *Chemosphere*, 227:425–434. doi.org/10.1016/j.chemosphere.2019.04.088
- Lynch SV, Pedersen O. (2016). The human intestinal microbiome in health and disease. *New Engl. J. Med.*, 375:2369–2379. doi.org/10.1056/NEJMra1600266

2.2 Non-linear kinetics (KMD)

Following the recommendation of JMPR 2019 and 2021, the electronic working group on the assessment and interpretation of non-linear dispositional kinetics was established. The purpose of the electronic working group was to develop guidance on the assessment and interpretation of non-linear dispositional kinetics. The electronic working group is proposing to focus on five key areas:

- a) kinetic non-linearity associated with systemic absorption;
- b) kinetic non-linearity associated with distribution to a keystone target organ (tissue or cell);
- c) kinetic non-linearity associated with elimination;
- d) kinetic non-linearity associated with metabolism to the keystone ultimate toxicant(s);
- e) guidance on the extrapolation of non-linear kinetic findings in animals to human health risk assessment in the JMPR context.

Development of the guidance would be enhanced by the consideration of relevant case studies. Therefore JMPR invites industry and others to submit for consideration, draft case studies (with their supporting data) in the five areas of focus.

2.3 Interpretation and follow-up of positive results in in-vitro gene mutation assays

Information on genotoxicity is a key component in hazard/risk assessment of all chemical agents used for anthropic use, including pesticides. Many regulatory agencies and advisory bodies have made recommendations on strategies for genotoxicity testing and assessment (for example EFSA, 2011; WHO, 2020). The majority of testing strategies recommend the use of a basic test battery comprising two or more in vitro tests to cover the three main mutagenicity end-points: gene mutation, clastogenicity (structural chromosome aberrations) and aneugenicity (changes in the number of chromosomes). In addition they recommend an in vivo test as a follow-up to assess whether any genotoxic potential observed in vitro is expressed in vivo. The choice of an in vivo study is not established by default but rather should reflect the positive end-point observed in vitro.

In the case of follow-up for positive in vitro gene mutation tests either in bacteria and/or mammalian cells (HPRT, XPRT and *tk* loci) the most appropriate in vivo assays would be the in vivo transgenic rodent somatic and germ cell gene mutation assays (for example the Muta™ mouse or Big Blue® mouse and rat assays), as the intent is to determine whether the findings of in vitro gene mutation is replicated by in vivo gene mutation (that is, whether they are biologically relevant to the in vitro results). The in vivo alkaline comet assay could be an acceptable alternative to confirm positive in vitro gene mutation results in general. Although it does not directly detect gene mutations the in vivo alkaline comet assay is sensitive to DNA lesions that may ultimately result in gene mutation. However, for bacterial gene mutation caused by non-DNA reactive gene mutagens (for instance intercalating agents likely to be detected only by tester strains such as TA 1537 used in the Ames test) the in vivo alkaline comet assay is not appropriate and the transgenic rodent somatic and germ cell gene mutation assays are the recommended test.

In the case of a positive in vitro chromosomal aberration assay or in vitro micronucleus assay the recommended follow-up is the in vivo micronucleus assay.

In the absence of such follow-up information it is not possible to discount the relevance of the positive in vitro results.

References

- EFSA (2011). Scientific opinion on genotoxicity testing strategies applicable to food and feed safety assessment. *EFSA Journal*, 9(9) September 2011, 2379 . doi.org/10.2903/j.efsa.2011.2379
- WHO (2020). Environmental Health Criteria (EHC) 240, *Principles and methods for risk assessment of chemicals in food*, (2009). <https://www.who.int/publications/i/item/9789241572408>
Updated chapter 4.5 in second edition (2020). https://cdn.who.int/media/docs/default-source/food-safety/publications/section4-5-genotoxicity.pdf?sfvrsn=8ec3434_2

2.4 A risk-based decision tree approach for the safety evaluation of residues of pesticides, veterinary drugs, food additives and contaminants

The Joint FAO/WHO Meeting on Pesticide Residues (JMPR) and Joint FAO/WHO Expert Committee on Food additives (JECFA) are sometimes variously asked for advice on substances for which the establishment of health-based guidance values (HBGVs) and/or recommendation of maximum residue limits (MRLs) is not appropriate, for example when there is an incomplete data package. Such substances may be legacy compounds for which there is still a niche use, compounds with no commercial sponsor but supported by a member state, compounds with no authorized use but which cause contamination of food because of environmental persistence, or the misuse or abuse of authorized compounds. Occasionally, the conclusion may be that a substance is a genotoxic carcinogen. Some of these considerations are more relevant to some committees than to others. In the absence of HBGVs and/or MRLs, approaches are needed to enable the committees to give meaningful advice to risk managers on such compounds. JECFA has developed such approaches for contaminants, but for authorized substances there is no agreed solution.

In the early 2000s, a number of activities were undertaken to discuss possible approaches to these situations with regard to veterinary drugs, including a Joint FAO/WHO “Technical workshop on residues of veterinary drugs without ADI/MRL”, convened in Bangkok in 2004, and an FAO/RIVM/WHO workshop: “Updating the principles and methods of risk assessment: maximum residue levels (MRLs) for pesticides and veterinary drugs”, held in Bilthoven, The Netherlands in 2005. Subsequently this led to the publication of EHC 240, *Principles and methods for the risk assessment of chemicals in food*, in 2009. The Codex Committee on Residues of Veterinary Drugs in Foods (CCRVDF) considered a report of a working group on residues of veterinary drugs without ADI/MRL at their Sixteenth Session, in Cancun, Mexico, 2006.

This issue was raised at the sixty-sixth JECFA meeting (2006), together with a number of related activities. The Committee concluded that there was need for an overarching approach, and recommended that the JECFA Secretariat convene a working group to develop a decision-tree for the evaluation of veterinary drugs. This led to the development of a decision tree approach for the safety evaluation of residues of veterinary drugs, which was discussed at the seventieth meeting of JECFA (2008). The scheme was endorsed by the Committee and a number of revisions suggested. The scheme was revised accordingly and submitted under the title “A risk-based decision tree approach for the safety evaluation of veterinary drugs” to CCRVDF for its Eighteenth Session (2009), as a work-in-progress. CCRVDF agreed with the proposed general principles and supported further work on the approach.

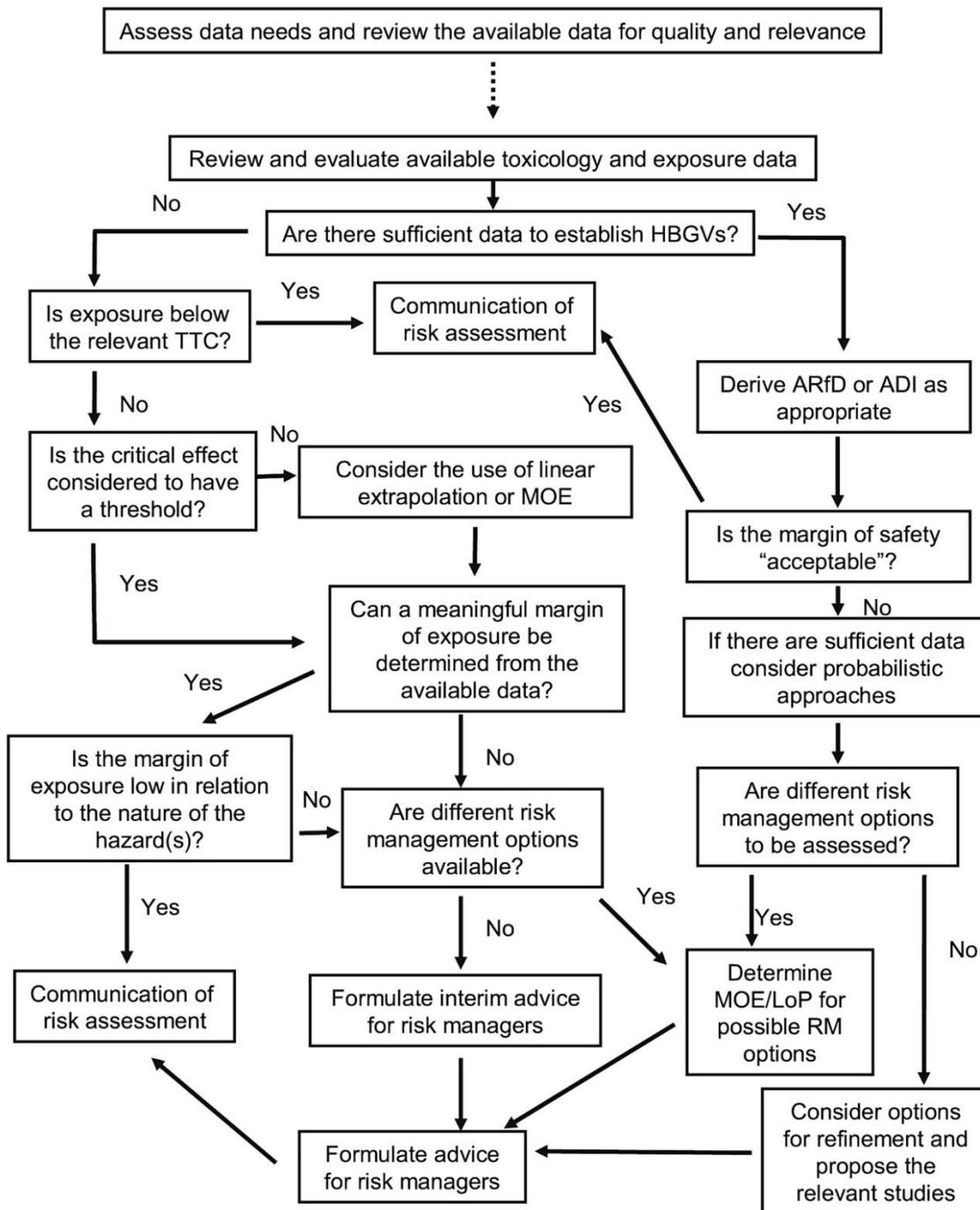
The scheme was discussed at the seventy-fifth meeting of JECFA (2011) and a number of follow-up actions recommended. However, these were not taken up immediately, due to resource limitations. The seventy-eighth meeting of JECFA (2013) reiterated the recommendations, which included the establishment of an e-Working group to develop guidance for establishing ARfDs for residues of veterinary drugs. This was done, and such guidance has been developed and adopted by JECFA. Since then, approaches for the establishment of a microbiological ARfD have been developed and guidance adopted by JECFA.

A number of other recommendations to further develop the decision tree were made by the seventy-fifth meeting of JECFA (2013), which included undertaking work on preliminary risk assessment, and on the feasibility of using a threshold of toxicological concern (TTC) approach for residues of veterinary drugs. These were not followed up. A number of sections in the draft document note that extensive further work was required. These included characterization of exposure and management of risk. Since then, much work has been undertaken on exposure assessment, but consideration has yet to be given to how this might be integrated into the decision tree. Guidance on some parts of the scheme was developed, but has yet to be adopted by JECFA, such as on the identification of strengths and weaknesses in the risk assessment (uncertainties and sensitivity analysis).

The 2022 meeting of JECFA discussed the decision tree and concluded that there was a continuing need for such an approach. It was agreed that the approach should be finalized and published as guidance for JECFA. There was a need to develop some aspects further, for instance to include some additional aspects and there may be others that can be omitted. The Committee noted that the scheme was essentially generic and should be applicable to additional committees that provide advice to the Codex Alimentarius on food safety, such as JMPR. Thus JECFA recommended that the joint secretariat, together with other secretariats as appropriate, convene an electronic working group comprising experts from the three committees under JECFA, JMPR, and in exposure assessment, to further develop the decision-tree approach, with a view to its finalization in 2023 or 2024.

The present JMPR discussed the decision tree and agreed that in principle it would be of value to their work. It would provide an opportunity to integrate issues, such as the microbiological assessment of pesticide residues and less-than-lifetime exposure, into the work of JMPR. The Meeting endorsed the recommendation that a cross-committee electronic working group be convened, to further develop the decision-tree approach with a view to generalizing this to the work of JECFA and JMPR.

A diagrammatic outline of the current decision tree approach is shown below.



Decision tree approach in the risk assessment of residues of veterinary drugs

2.5 Unnecessary use of in vitro animal studies

The Meeting noted that a number of the submissions it received had included in vivo studies, which were either duplicates of existing studies or were addressing end-points where validated in vitro alternatives were available.

The Meeting believes that in the interests of animal welfare:

- sponsors should not duplicate existing in vivo studies;
- where validated non-animal alternative tests exist, these should be utilized;
- if using alternative testing strategies, where OECD (or equivalent) guidance exists this should be followed.

If an in vivo study which is covered by the above descriptions identifies adverse effects it should be submitted to JMPR for consideration.

2.6 Establishment of MRLs for pesticides for okra

The current Meeting received request by Fifty-second Session of the CCPR regarding the establishment of MRLs for pesticides for okra. Specifically, advice on the following three options was sought in combination with the submission of monitoring data on chilli pepper and okra, as well as supervised field trial data on these crops. The following options were outlined in the CCPR Report 52 (158):

Option 1: Include a footnote to the current Subgroup 12B reading: Only data from chili pepper can be used to set a CXL or

Option 2: Create a separate Subgroup 12D Okra with chili pepper as the representative commodity.

Option 3: Create a separate Subgroup 12D Okra (including martynia and roselle) with okra as the representative commodity.

In context of the options, the Meeting first considered the data submitted and added new information to its database used in 2018, following the methodology described in the respective JMPR Report.

Monitoring data on chilli peppers and okra

The Meeting received monitoring data from the EU, India (based on data from 2012-2019; additional data from 2017-2021 was only provided as summary information) and Singapore on okra in combination with data from chilli pepper from Singapore. A simple analysis on the data was conducted, showing that the Overall data populations (based on all quantified results without stratification according to the different analytes or years of sampling) were significantly different ($p < 0.05$). For monitoring data from Singapore, which was the only source of data both on chilli peppers and okra, weak statistical similarity was observed ($p = 0.064$), but no similarity was identified between chilli pepper data from Singapore and okra data from India or the EU.

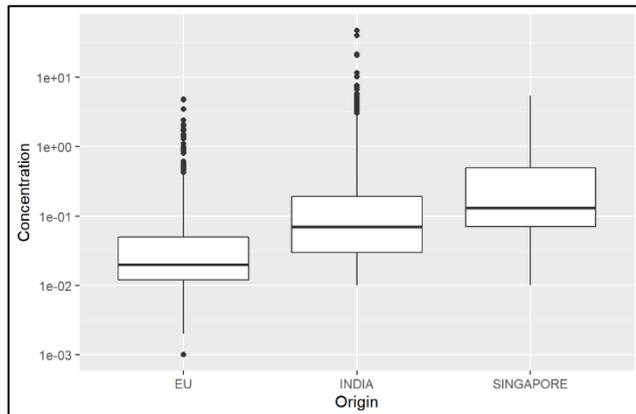


Figure 1: Comparison of residues (mg/kg) in okra from different regions

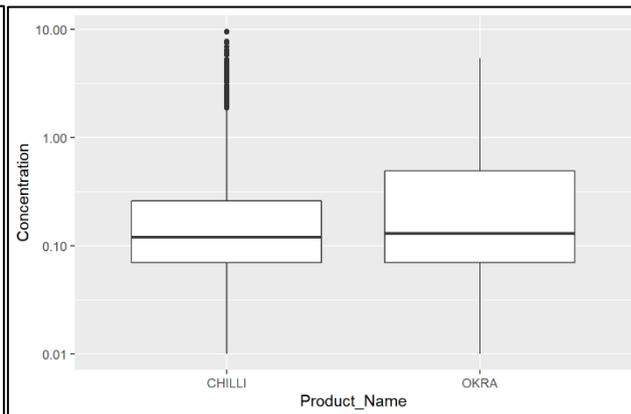


Figure 2: Comparison of residues (mg/kg) in chilli pepper and okra from Singapore

The Meeting noted that the use of monitoring data is of very limited use to draw conclusions regarding similarity of residues in crops for extrapolation of maximum residue levels. The underlying treatment regimes and GAP conditions are unknown and it remains open if similarities in the data are indeed based on comparable use pattern/residue concentration relationships or coincidence following application of different amounts of pesticide in the field. In addition, monitoring data address the residue population for products on the market. Quality control systems often involve mechanisms to ensure national/supranational MRL compliance of consignments before marketing by analysis of residues. Since local MRLs for okra have normally been established in Codex Member countries based on their national regulatory practices (e.g. by extrapolation, being member in a commodity group or default MRL systems), the underlying residue distribution described by monitoring data is expected to be truncated at established MRL levels compared to unbiased data from supervised field trials.

In summary, the Meeting concluded that monitoring data does not give sufficient information on the underlying relationship between application of a pesticide and the resulting residue levels to support extrapolation of MRLs. In addition, comparison of datasets, especially regarding upper limit residue concentrations relevant for MRL setting, is flawed. Identification of representative commodities for group recommendations should be based on supervised field trials, ideally conducted under side-by-side conditions to minimise variability in the data.

Field trial data on pepper (bell, chilli) and okra

The Meeting received field trial information from Thailand on the use of pesticides on Bell pepper, chilli peppers and/or okra. In addition, Crop Life International sent summarized residue data on okra from India involving treatment with cypermethrin in the 1979-1981. Further field trial data were submitted by IAEA involving application of two compounds to one plot in Uganda.

A study conducted in Australia with supervised field trial results for Bell-peppers (“Capsicum”), chilli peppers and okra treated according to the same use pattern (3 × 0.028 kg alpha-cypermethrin/ha, 7 day RTI, sampling: -1, 0, 1 and 3 or 4 days) was also made available to the Meeting. In some trials, twice as high application rates were applied in parallel plots. Residues found were:

| Crop, Trial ID | Residues in mg/kg | | | |
|-----------------------------------|-------------------|-------|-------|------------|
| | -1 DAT | 0 DAT | 1 DAT | 3 or 4 DAT |
| Bell pepper, S16-07411-01 | <0.01 (0.005) | 0.011 | 0.025 | 0.011 |
| Bell pepper, S16-07411-03 | 0.11 | 0.12 | 0.098 | 0.094 |
| Bell pepper, S16-07411-03 2x rate | 0.094 | 0.25 | 0.17 | 0.21 |
| Chilli pepper, Trial S16-07411-04 | 0.014 | 0.057 | 0.05 | 0.036 |

| Crop, Trial ID | Residues in mg/kg | | | |
|---|-------------------|-------|-------|---------------|
| | -1 DAT | 0 DAT | 1 DAT | 3 or 4 DAT |
| Chilli pepper, Trial S16-07411-04 2x rate | 0.056 | 0.21 | 0.1 | 0.056 |
| Chilli pepper, Trial S16-07411-05 | 0.033 | 0.045 | 0.034 | 0.025 |
| Bell pepper, Trial S16-07411-06 | 0.098 | 0.21 | 0.18 | 0.087 |
| Bell pepper, Trial S16-07411-06 2x rate | 0.22 | 0.61 | 0.56 | 0.29 |
| Okra, Trial S16-07411-07 | 0.012 | 0.011 | 0.011 | <0.01 (0.009) |

The Meeting noted that only one trial was conducted on okra, not allowing robust comparison of potential residues to chilli pepper, but is added to the database of information previously reported by the JMPR, according to the procedure described in the 2018 JMPR Report.

From Thailand, a use pattern in okra (undefined number of sprayings, undefined intervals, 0.084 kg ai/ha per application, PHI: 5 days) and supervised field trials for cypermethrin were submitted (4×0.084 kg ai/ha, 7 days RTI, Sampling 0 to 20 DALA). Without information on the local practice regarding number of sprayings and their interval, the Meeting could not conclude on the GAP compliance of the supervised field trials. Residues in okra at the PHI were: 0.01, 0.02, 0.05, 0.18 and 0.20 mg/kg.

The information on okra submitted by CropLife International on okra in India involved data from four sites with three sub-plots each (except one trial with two sub-plots only). Cypermethrin was applied as foliar spray with two applications involving 25 to 100 g ai/ha and plot per treatment. Samples were collected either after 7 or 14/15 days. However, the Meeting noted that no GAP information from India is available allowing selection of proper analytical results. In addition, no samples were collected at day zero, which would ease comparison with residues directly after treatment in other crops to identify morphological differences or similarities. Overall, the information was not added to the database of information previously reported by the JMPR, according to the procedure described in the 2018 JMPR Report.

The trial in Uganda was performed on okra (Onen, Goeffrey; 9-September-2022, no report number) following a use pattern of 0.175+0.088 kg ai/ha (single dose) and 0.35+0.18 kg ai/ha (double dose) for tebuconazole and trifloxystrobin, respectively, in two foliar spraying, 7 day RTI, with sampling intervals ranging from immediately after harvest to 20 DALA. In total, three replicates were conducted for each experiment. Residues in okra fruits found were:

| Replicate, Analyte | Residues in mg/kg | | | | | | | |
|---|-------------------|-------|-------|-------|-------|--------|--------|--------|
| | 0 DAT | 1 DAT | 3 DAT | 5 DAT | 7 DAT | 10 DAT | 15 DAT | 20 DAT |
| 2 × 0.175 + 0.088 kg ai/ha (tebuconazole and trifloxystrobin, respectively), 7 day RTI, foliar spray | | | | | | | | |
| Rep.1, Tebuconazole | 0.64 | 0.49 | 0.27 | 0.026 | <0.01 | 0.07 | <0.01 | <0.01 |
| Rep.2, Tebuconazole | 0.56 | 0.44 | 0.38 | 0.21 | 0.14 | <0.01 | <0.01 | <0.01 |
| Rep.3, Tebuconazole | 1.12 | 0.65 | 0.3 | 0.36 | 0.29 | <0.01 | <0.01 | <0.01 |
| Rep.1, Trifloxystrobin | 0.29 | 0.06 | 0.02 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Rep.2, Trifloxystrobin | 0.15 | 0.12 | 0.04 | 0.02 | 0.014 | <0.01 | <0.01 | <0.01 |
| Rep.3, Trifloxystrobin | 0.31 | 0.11 | 0.043 | 0.03 | <0.01 | <0.01 | <0.01 | <0.01 |
| 2 × 0.35 + 0.18 kg ai/ha (tebuconazole and trifloxystrobin, respectively), 7 day RTI, foliar spray | | | | | | | | |
| Rep.1, Tebuconazole | 1.48 | 0.42 | 0.39 | 0.074 | 0.07 | 0.08 | <0.01 | <0.01 |
| Rep.2, Tebuconazole | 1.02 | 0.72 | 0.87 | 0.53 | 0.46 | 0.17 | 0.03 | 0.03 |

| Replicate, Analyte | Residues in mg/kg | | | | | | | |
|------------------------|-------------------|-------|-------|-------|-------|--------|--------|--------|
| | 0 DAT | 1 DAT | 3 DAT | 5 DAT | 7 DAT | 10 DAT | 15 DAT | 20 DAT |
| Rep.3, Tebuconazole | 1.2 | 0.92 | 0.98 | 0.42 | 0.25 | 0.03 | <0.01 | <0.01 |
| Rep.1, Trifloxystrobin | 0.08 | 0.07 | 0.06 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Rep.2, Trifloxystrobin | 0.24 | 0.12 | 0.1 | 0.04 | 0.04 | <0.01 | <0.01 | <0.01 |
| Rep.3, Trifloxystrobin | 0.35 | 0.19 | 0.18 | 0.1 | 0.04 | <0.01 | <0.01 | <0.01 |

Since previous analysis by 2018 JMPR involved comparison of normalised residues at day 0 to identify potential similarities or differences between crops based on morphology – not to address the variability between different fields – the Meeting decided to consider each residue value reported immediately after harvest as an independent trial. The values were added to the database of information previously reported by the JMPR, according to the procedure described in the 2018 JMPR Report.

Additional information from public literature

Information are available on residues in okra following treatment with pesticides in public literature. Respective studies are cited below with a brief summary of use conditions and reported residue concentrations for okra at day zero. This information was also added to the database of information previously reported by the JMPR, according to the procedure described in the 2018 JMPR Report.

Khan *et al.*, Short communication - *Evaluation of cypermethrin dissipation rate in tomato, okra and cauliflower*, 2021, Soil Environ. 40(2): 141-145, 2021, DOI:10.25252/SE/2021/222714

In this paper cypermethrin was applied in two supervised field trials on okra conducted in Pakistan. The active substance was sprayed at rates of 0.06 kg ai/ha. Residues in okra (day 0) were 2.19 and 1.55 mg/kg.

Kavitha *et al.*, *Dissipation and persistence studies of certain pesticides in/on Okra*, 2021, International Journal of Chemical Studies 2021; 9(1): 716-719, DOI: <https://doi.org/10.22271/chemi.2021.v9.i1j.11312>

The active substances cypermethrin and spiromesifen were applied to okra grown in India at foliar spray rates of 0.05 kg ai/ha or 0.125 kg ai/ha, respectively. Residues in okra (day 0) were 0.276 mg/kg for cypermethrin and 2.401 mg/kg for spiromesifen.

Ratnamma *et al.*, *Determination and dissipation of acetamiprid using LC-MS/MS in okra*, 2020, Journal of Entomology and Zoology Studies 2021; 9(1): 110-116

In two trials, acetamiprid was applied at single (10 g ai/ha) or double foliar spray rates (20 g ai/ha) to okra cultivated in India. Residues in okra (day 0) were 2.034 and 4.044 mg/kg.

Rao *et al.*, *Assessment of health risk associated with Ethion dissipation in Okra (Abelmoschus esculentus L.)*, 2022, Journal of Applied Biology & Biotechnology Vol. 10(5), pp. 120-124, Sep-Oct, 2022, DOI: 10.7324/JABB.2022.100515

In a single trial, ethion was applied to okra with a single foliar spray of 469 g ai/ha. Residues in okra (day 0) were 8.02 mg/kg.

Ratnamma *et al.*, *Determination, Dissipation and Decontamination of Thiamethoxam using LC-MS/MS in Okra Fruits*, 2022, Indian Journal of Entomology 84(2): 274-279 (2022), DoI No.: 10.55446/IJE.2021.19

In two trials, thiamethoxam was applied at single (25 g ai/ha) or double foliar spray rates (50 g ai/ha) to okra cultivated in India. Residues in okra (day 0) were 1.541 and 3.117 mg/kg.

Updated analysis of initial residues (normalised to application rate 1 kg ai/ha) for fruiting vegetables, other than cucurbits from the 2018 JMPR Report

After adding additional residue information on okra from the studies presented above to the database used by the 2018 JMPR, a new plot of residues normalised to 1 kg ai/ha was generated:

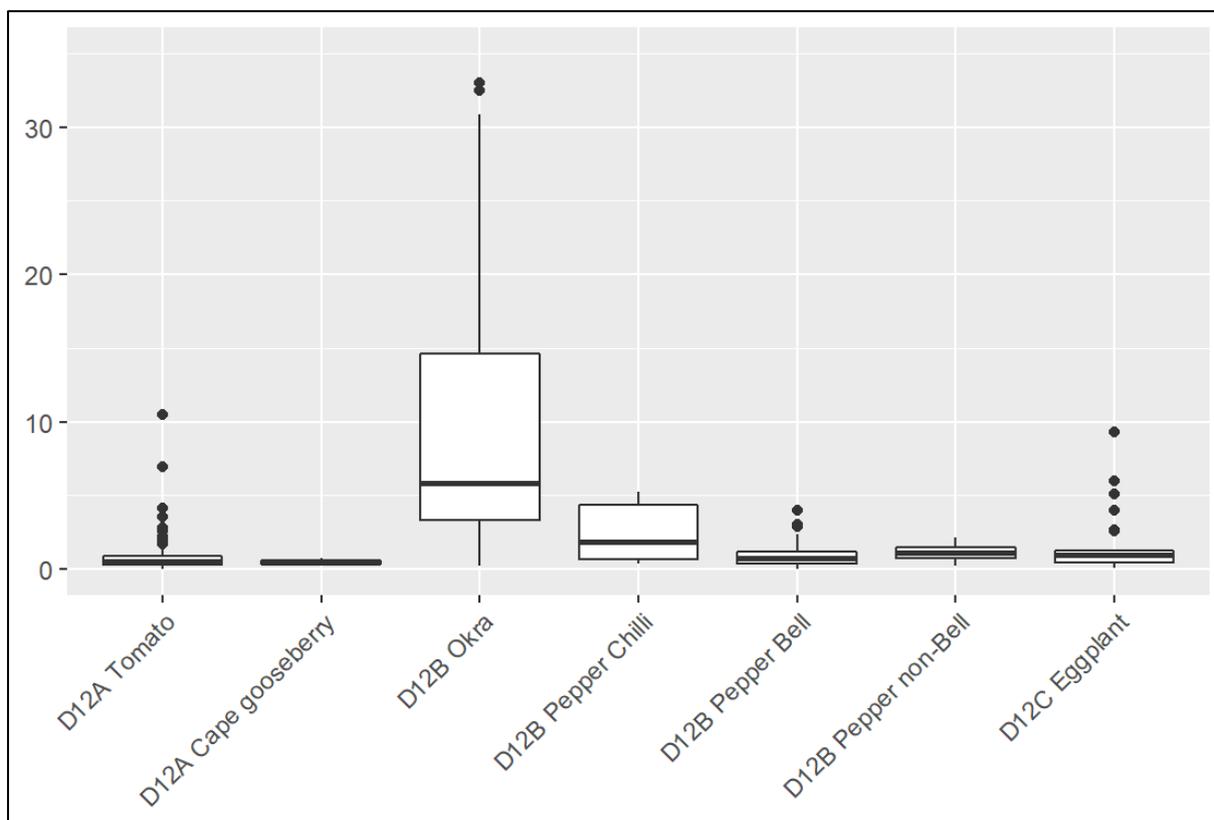


Figure 3 Box-Plot for normalised residues in fruiting vegetables for day 0 residues

Based on the new analysis, the Meeting confirms its conclusion from 2018 that residues in okra differ significantly from those in chilli peppers (Kruskal-Wallis-test, $p=0.002$).

Conclusion

The Meeting concluded that based on the newly submitted data, no scientific evidence was identified supporting correlation of residue data in chilli pepper and okra following treatment according to the same use pattern and refers back to its recommendations for (sub) group maximum residue levels for fruiting vegetables, other than cucurbits outlined in the 2018 JMPR Report (2.9). Consequently, both Option 1 and Option 2 lack a robust data basis to support the proposed grouping or extrapolation.

Regarding Option 3, introduction of a specific sub-group 12D Okra (including martynia and roselle) with okra as the representative commodity would result in appropriate MRL estimates. However, difficulties in the data generation for a minor crop are acknowledged by the Meeting.

Future analysis of residues for okra, chilli pepper and related sub-groups should be based on comparable use patterns with corresponding field trials instead of monitoring data. Ideally, residues should be analysed directly after the last application (“day zero”) in these studies to minimize the variability due to plant growth and/or environmental influences.

2.8 Enhancing operational procedures of JMPR to reduce the backlog

The Meeting noted the discussions at the Fifty-second Session of the Codex Committee on Pesticide

Residues (CCPR) on opportunities for enhancing the operational procedures of the FAO/WHO Joint Meeting on Pesticide Residues (JMPR) and CCPR to reduce the backlog of evaluations and meet the future demands of establishing Codex maximum residue limits (MRLs) for pesticides, as well as establishing an electronic working group to progress the discussions.

Discussions at the current JMPR meeting identified two possible areas of opportunity for increased efficiencies. Actions could usefully be taken by the sponsors of compounds, particularly in relation to improvements in the submission of information for assessments. Also, some potential efficiencies may be achieved within the workflow, evaluation, and consideration processes within JMPR. These proposals will require further consideration and will be brought forward as appropriate to the e-working group.

2.9 OECD Update to the Guidance on Residue Definitions

The Meeting was provided a draft of the OECD Guidance Document on Residue Definitions and a brief overview of the approaches to be proposed. The OECD subgroup working on this project includes many JMPR experts from both the FAO and WHO panels.

The Meeting appreciated the opportunity to preview the work being done by the OECD and will consider the procedures and processes, in whole or in part, once the document has been finalised and published by the OECD.

Further, the Meeting noted that while there were many JMPR experts involved in the project, they were, with one exception, participating as representatives of their national regulatory agencies. The Meeting encouraged the JMPR Secretariats to work with the OECD Residue Chemistry Expert Group to ensure specific JMPR expert representation on future OECD projects working in areas of interest to the JMPR.

2.10 Information on residues in rotational crops following use on paddy rice

The Meeting noted that according to the current edition of the FAO Manual on “Submission and evaluation of pesticide residues data for the estimation of maximum residue levels in food and feed” (FAO, 2016, 3rd Edition), information on rotational crops following treatment in paddy rice are not required.

The present Meeting reconsidered this position, taking into account information on the agricultural practice for paddy rice cultivation and International Harmonised Guidelines (OECD TG504; *OECD Guidelines for the Testing of Chemicals, Residues in Rotational Crops (Limited Field Studies)*), indicating potential crop rotation for this crop. Therefore, uptake of soil residues by follow-on crops needs to be considered in estimating maximum residue levels, STMR and HR values. It was decided that the information given in the FAO Manual from 2016 does not reflect current agricultural practice and considers data on rotational crops (confined rotational crop information, conditional information on field rotational crop studies) as necessary to support uses on paddy rice. The FAO Manual will be amended for the next revision accordingly.

2.11 Common pyrazole metabolites

The Meeting noted that a number of pesticides under consideration at the current meeting had common pyrazole metabolites, which were identified by different company code numbers. The toxicological data available on these pyrazole metabolites varied across the dossiers and this resulted in different conclusions being reached for the same pyrazole metabolite. The Meeting only identified this issue at the last minute and was unable to resolve it within the available time. The Meeting proposed to consider

this at the 2023 meeting of JMPR and invites sponsors to present information to support this activity.

3. Responses to specific concerns

3.1 Chlorothalonil (081)(R)

The United Kingdom submitted a concern form at the Fifty-second CCPR stating that the exposure estimated for the high temperature hydrolysis product R613636 from cranberry exceeded the threshold of toxicological concern for Cramer class III, that the overall chronic exposure to R613636 from all commodities had not been addressed, and that the acute exposure to R613636 from cranberry had not been addressed.

The 2019 Extra Meeting agreed that R613636 could be assessed using the TTC approach as a Cramer Class III compound (1.5 µg/kg per day). As the consumption data within the IEDI model used to assess long-term dietary exposure does not allow specifically for assessment of sterilised foods, the Meeting decided to apply the factor of 0.23 (representing the percentage of TRR recovered as R613636 in simulated hydrolysis studies) to the maximum IEDI of 9.33 µg/kg bw for chlorothalonil to assess exposure to R613636. The estimated exposure was 2.37 µg/kg bw. While this estimate is greater than the threshold of 1.5 µg/kg per day, the Meeting noted that the estimate assumes that all foods are sterilised, and that it is very unlikely that all foods would be subjected to such high-temperature (120°C) treatment. The 2019 Extra Meeting concluded that long-term exposure to R613636 was unlikely to present a public health concern.

The 2021 JMPR did not have information specific to residues of R613636 in processed cranberry commodities and made a preliminary evaluation of the overall chronic and acute exposures. The 2021 Meeting concluded that there were no public health concerns.

Responses to specific concerns

The current Meeting received processing studies on barley, wheat grain, cabbages, common beans with pod (*Phaseolus vulgaris*) and tomato that include analysis for R613636.

From cabbage (chlorothalonil in RAC: 34 mg/kg), boiled cabbages were prepared, and the levels of R613636 in boiled cabbages (4 trials) and cooking water (1 trial) were <0.01 mg/kg.

From tomatoes (chlorothalonil in RAC: 9.6 mg/kg), pasteurized tomato juice and dry pomace as a by-product (4 trials), tomato puree (4 trials) and canned tomatoes (4 trials) were prepared, with levels of R613636 <0.01 mg/kg in all commodities.

From common beans (chlorothalonil in RAC: 6.7 mg/kg), canned beans (4 trials) and boiled beans (4 trials) were prepared, with R613636 <0.01 mg/kg in all commodities.

Two studies were available for barley. In the first study, malt (3 trials), beer (4 trials), pot barley and abrasion dust as a by-product (4 trials) were prepared from barley (chlorothalonil in grain: 0.24 mg/kg), with residues of R613636 <0.01 mg/kg in all commodities. In the second study, malt, beer and pot barley were prepared from barley (chlorothalonil in grain: 0.39 mg/kg and 0.21 mg/kg) with R613636 residues <0.01 mg/kg in all commodities.

From wheat (chlorothalonil in grain: 0.02 mg/kg and 0.01 mg/kg), bran, flour, wholemeal flour, wholemeal bread and wheat germ were prepared. R613636 was <0.01 mg/kg except one sample of wheat germ (0.02 mg/kg).

In summary, the residues of R613636 in various processed commodities, some of which were subject to high temperature treatment, were 0.02 mg/kg or lower. As a conservative assumption that STMR and HR of R613636 were assumed to be 0.02 mg/kg in all commodities previously evaluated by the JMPR (including raw commodities).

The Meeting considered R613636 could be assessed using the threshold of toxicological concern for a Cramer Class III compound of 1.5 ug/kg bw/day. The estimated exposure based on above-mentioned assumption, resulted in the maximum long-term exposure of 0.52 ug/kg bw/day. The estimated exposures are below the threshold of toxicological concern for Cramer Class III compounds. The Meeting concluded that R613636 were unlikely to present a dietary exposure concern from the uses considered by the JMPR.

For acute dietary exposure, the Meeting considered R613636 could be assessed using the threshold of the Cramer class III TTC of 1.5 ug/kg bw/day for chronic exposure as a conservative approach. The estimated exposure based on above-mentioned assumption, resulted in the maximum short-term exposure of 0.15 ug/kg bw/day. The estimated exposures are below the threshold of toxicological concern for Cramer Class III compounds. The Meeting concluded that R613636 were unlikely to present a dietary exposure concern from the uses on cranberry.

Therefore, the Meeting reconfirmed the conclusion that exposure to R613636 from the uses of chlorothalonil is not expected to be a safety concern.

3.2 Terbufos (167) (T)

Both the JMPR and Canadian assessments agree on the NOAEL of 0.15 mg/kg body weight (bw) for the acute neurotoxicity study used in the derivation of the ARfD. The key difference between the Canadian and JMPR assessments is that the Canadian assessment applied an extra 10-fold safety factor (above the default factor of 100-fold) based on what is described as a steep dose response.

The 2003 JMPR monograph describes the effects in the study. At 0.15 mg/kg bw there were no adverse effects reported. At 0.3 mg/kg bw there was no significant inhibition of erythrocyte or brain acetylcholinesterase activity but three (out of 10) males and one (out of 10) females had miosis (constricted pupils). At 0.9 mg/kg bw (six times the NOAEL) marked effects including tremors were seen. The effects were fully reversible, seen on day one but not at the next observation period on day 8.

As only some animals (4/20) at the LOAEL of 0.3 mg/kg bw showed any evidence of an adverse effect (a mild effect) and there were no adverse effects at the NOAEL of 0.15 mg/kg bw, the scientific basis behind the extra 10-fold factor used in the Canadian evaluation is unclear. With a clear threshold at the NOAEL and minimal adverse effects at the LOAEL JMPR would normally apply the default 100-fold safety factor.

On the available evidence the JMPR does not see a reason to review the ARfD and ADI for terbufos ahead of its scheduled periodic review.