METHOXYFENOZIDE (209)

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EXPLANATION

Methoxyfenozide was first evaluated for toxicology and residues by the 2003 JMPR. The 2003 Meeting established an ADI of 0–0.1 mg/kg bw and an ARfD of 0.9 mg/kg bw, and recommended a number of maximum residue levels for food and feed commodities. In 2006 and 2009, the JMPR additionally estimated maximum residue levels for various commodities. Currently, maximum residue limits for 47 commodities are established at the Codex Alimentarius Commission in 2012 (REP 12/CAC, Appendix Ⅲ). The residue is defined as parent methoxyfenozide for compliance with MRLs and for dietary intake estimation in both plant and animal commodities. The compound is fat-soluble in its distribution between meat muscle and fat, but not in its distribution in milk.

The evaluation of additional uses of compound was scheduled by CCPR 2011.

The present Meeting received supervised field trial data for citrus fruits (oranges, lemons, and grapefruit), tropical fruits (guava, litchi and papaya), bulb vegetables (spring onions), cucurbits (cucumber, melons and summer squash), leafy vegetables (spinach), legume vegetables (beans and peas), pulses (dry peas), stalk and stem vegetables (globe artichokes), and feed commodities (alfalfa, clover, bean and pea foliage). Information was also provided for field accumulation in rotational crops, analytical methods, stability of residues in stored analytical samples, and effect of processing on oranges.

METABOLISM AND ENVIRONMENTAL FATE

Field accumulation in rotational crop

A residue study was conducted to determine the residues of methoxyfenozide in rotational crops at ten trial locations (Georgia, Mississippi, Louisiana, North Dakota (two trials), Illinois, Missouri, Wisconsin, Colorado and Idaho) in the USA (Barney, W.P. 2001, 2003). Leaf lettuce, used as the cover crop, was planted to plots at each location for subsequent planting of rotational crops. Five applications of methoxyfenozide 80WP were made on 7–10 day intervals to the leaf lettuce crop at 0.45 kg ai/ha per application with a season total of 2.25 kg ai/ha. The leaf lettuce cover crop was harvested and removed from the plot at 1 to 3 days after the last application. Rotational crops represented leafy vegetables (mustard greens), fruiting vegetables (tomatoes), cucurbits (cucumbers), roots and tubers (turnips), cereal grain (wheat), legumes (soybeans) and bulb vegetables (green onions). These crop groups were planted at 7 to 10 days after the last applications. Crops were collected at normal maturity.

Mustard greens, turnips, onions, cucumbers, and tomatoes (high moisture crops) were analysed for methoxyfenozide by LC-UV and confirmatory LC-MS with LOQ and LOD of 0.02 mg/kg and 0.005 mg/kg, respectively. Wheat and soybeans (low moisture crops) were analysed for methoxyfenozide and three other metabolites, RH-1055 (glucose conjugate of the A-ring phenol), RH-2072 (malonyl glycosyl conjugate of the A-ring phenol), and RH-7236 (A-ring phenol, hydroxymethoxyfenozide). However, during analysis the unstable RH-2072 was converted to RH-1055; therefore, methoxyfenozide, RH-7236, and RH-1055 are the reported values. Analysis was performed using LC-MS and confirmatory LC-MS/MS. The LOQ and LOD for methoxyfenozide and RH-7236 were 0.02 and 0.006 mg/kg, respectively, and the LOQ and LOD for RH-1055 were 0.05 and 0.02 mg/kg, respectively, in wheat and soybeans. Results are summarized in Table 1.

Table 1 Residues in rotational crops planted 7–10 days after the last treatment with methoxyfenozide

Crop	Residue range (mg/kg)		
	Methoxyfenozide	RH-1055 [a]	RH-7236 [a]
Mustard green	< 0.02–0.031		

Crop	Residue range (mg/kg)		
	Methoxyfenozide	RH-1055 [a]	RH-7236 [a]
Turnip tops	< 0.02–0.038		
Turnip roots	< 0.02		
Green onions	0.028–0.060		
Tomatoes	< 0.02		
Cucumbers	< 0.02		
Wheat grain	< 0.02	< 0.05	< 0.02
Wheat forage	< 0.02	0.091–1.318	< 0.02–0.038
Wheat hay	< 0.02–0.022	0.218–0.857	0.008–0.510
Wheat straw	< 0.02–0.023	0.123–0.845	0.153–0.841
Soybean seed	< 0.02	< 0.05–0.826	< 0.02
Soybean forage	< 0.02–0.077	< 0.05–0.376	< 0.02–0.058
Soybean hay	< 0.02–0.136	< 0.05–0.907	< 0.02–0.218

"Less than" values mean LOQ value.
[a] Residue in methoxyfenozide equivalents

RESIDUE ANALYSIS

Analytical methods

This meeting received four validation studies for residue analytical methods—method 02.24 and method 02.25—developed by Dow AgroSciences. These methods were fully validated with various plant matrices.

Method 02.24

A validation of method 02.24 for the determination of methoxyfenozide and metabolites in low moisture crop samples was performed using LC-MS/MS (Byrne, SL 2003a). Tested crops were cowpea (forage, hay and seed), dried lima (seed and hay) dried peas (seed, hay and vine), English pea seed, lima bean seed, rice (grain and straw), snap bean seeds plus pods, snow pea seeds plus pods, sorghum (grain, forage and stover) and soybeans (see, oil, meal, hulls, forage, hay and aspirated fractions).

Methoxyfenozide residues were extracted from crops using methanol:water (90:10). An aliquot of the extract was heated to convert the malonyl conjugate to the glucose conjugate. After cooling, the sample was dried and reconstituted with extraction solvent and water and then purified using a Phenomenex Strata 96-well solid phase extraction (SPE) plate. The SPE plate was washed with a water:methanol:formic acid (60:40:0.1) solution then eluted with acetonitrile. The eluate was evaporated to dryness, and the residues were reconstituted in water:acetonitrile:formic acid (70:30:0.1). The purified extract was then analysed. Control samples were fortified with methoxyfenozide at levels of 0.02 to 1.0 mg/kg for all matrices. Fortification concentrations of metabolites were at 0.02 to 1.0 mg/kg for hydroxy methoxyfenozide and 0.05–2.0 mg/kg for glucose conjugate of methoxyfenozide. Table 2 summarizes the recovery results by various matrices.

Table 2 Recovery results of methoxyfenozide and metabolites for validation of method 02.24

Crop	Recovery (%)								
	n	Range	Mean	n	Range	Mean	n	Range	Mean
	Methoxyfenozide			Hydroxymethoxyfenozide (RH-7236)			Glucose conjugate of methoxyfenozide (RH-1055)		
Cowpea forage	4	86–97	92	4	82–93	88	5	85–91	88
Cowpea hay	4	76–90	83	4	69–82	75	5	77–85	81
Cowpea seed	4	94–105	99	4	83–93	88	4	82–89	86
Dried lima hay	4	82–85	84	4	75–84	79	5	72–80	75
Dried lima seed	4	91–97	94	4	80–92	88	4	86–97	90
Dried pea hay	4	94–110	104	4	93–113	100	5	74–91	79
Dried pea seed	4	94–97	96	4	87–97	93	4[a]	81–87	84
Dried pea vine	4	93–101	97	4	91–98	94	5	76–82	79
English pea seed	4	105–110	109	4	98–110	102	4	86–97	92

Crop	Recovery (%)								
	n	Range	Mean	n	Range	Mean	n	Range	Mean
	Methoxyfenozide			Hydroxymethoxyfenozide (RH-7236)			Glucose conjugate of methoxyfenozide (RH-1055)		
Lima bean seed	4	93–100	97	4	89–94	92	4	85–88	87
Rice grain	4	95–102	98	4	98–100	99	4	81–89	87
Rice straw	4	96–109	101	4	84–92	88	5	83–91	87
Snap bean seed plus pod	4	85–93	89	4	92–96	93	4	79–81	80
Snow pea seed plus pod	4	99–110, 131 (one recovery)	113	4	97–108, 122 (one recovery)	106	4	86–111	94
Sorghum forage	4	91–115	99	8	94–98	96	11	85–94	89
Sorghum grain	8	90–111	99	4	93–98	96	4	91–95	93
Sorghum stover	8	94–110	100	8	90–97	94	11	80–91	87
Soybean aspirated fractions	0[b]	–	–	4	94–105	98	4	88–97	91
Soybean forage	4	99–106	102	4	88–100	93	5	88–95	93
Soybean hay	6	94–109	101	6	89–98	94	8	76–93	85
Soybean hulls	4	94–107	100	4	90–103	95	4	72–106	91
Soybean meal	4	95–102	98	4	85–95	92	4	89–101	95
Soybean oil	4	94–98	97	4	95–101	98	4	99–109	104
Soybean seed	15	87–101	95	15	84–98	92	15	82–101	93
Overall	112	76–115	99	116	69–113	93	131	72–109	88

Fortification levels for methoxyfenozide and hydroxymethoxyfenozide were 0.02–1.0 mg/kg in all matrices but 0.05–2.0 mg/kg for glucose conjugate of methoxyfenozide. LOQs were 0.02 mg/kg for methoxyfenozide and hydroxymethoxyfenozide and 0.05 mg/kg for glucose conjugate of methoxyfenozide, respectively, in all tested matrices.

[a] Two values had control levels that were not quantifiable, and thus the control residue levels were not subtracted.

[b] Soybean aspirated fractions consisted of four samples, two of which could not be calculated because the methoxyfenozide in the control sample far exceeded the fortification level, and two of which were not used in analyses.

An independent laboratory validation of method GRM 02.24 was performed for the determination of residues of methoxyfenozide in low moisture crops, with only few minor modifications to the method, which had no impact on the results of the study (Reed, D 2003). Control soybean seed (n = 12) and succulent pea (n = 12) samples were fortified with methoxyfenozide and its metabolite, hydroxymethoxyfenozide (at levels of 0.02, 0.04 and 0.2 mg/kg). These same samples were also fortified at 0.05, 0.1, and 0.5 mg/kg, respectively, with the glucose conjugate of methoxyfenozide. Separate control samples of soybean seed (n = 12) and succulent pea (n = 12) were fortified at 0.05, 0.1 and 0.5 mg/kg with the malonyl conjugate of methoxyfenozide. All mean recoveries were within the range of 70 to 110% with RSDs of < 6%. LOQs were 0.02 mg/kg for methoxyfenozide and its hydroxyl metabolite in soybean seed and succulent pea, and 0.05 mg/kg for the malonyl and glucose conjugates in both matrices.

Method 02.25

A validation of method 02.25 for the determination of methoxyfenozide in high moisture crop samples was performed using LC-MS/MS (Byrne, SL 2003b). Tested crops were bulb onions, carrots, green onions, potatoes, radishes (roots and tops) and sugar beet (roots and tops).

Methoxyfenozide residues were extracted from crops using methanol and 0.1N hydrochloric acid solution (90:10). An aliquot of the extract was diluted with water and purified using a Phenomenex Strata 30-mg solid phase extraction (SPE) plate. The SPE plate was washed with a water:methanol:formic acid (60:40:0.1) solution then eluted with acetonitrile. The eluate was evaporated to dryness and the residues were reconstituted in water:acetonitrile:formic acid (70:30:0.1). The purified extract was then analysed. Control samples were fortified with methoxyfenozide at levels of 0.02 to 1.0 mg/kg for all matrices. Table 3 summarizes the recovery results by various matrices.

Table 3 Recovery results of methoxyfenozide for validation of method 02.25

Crop	Recovery (%)		
	n	Range	Mean

Crop	Recovery (%)		
	n	Range	Mean
Bulb onion	11	77–108	89
Carrot	4	89–95	92
Green onion	4	81–88	84
Potato	4	90–95	93
Radish roots	6	77–86	81
Radish tops	11	80–110	89
Sugar beet roots	4	84–92	88
Sugar beet tops	4	87–94	92
Overall	48	77–109	88

LOQs were 0.02 mg/kg in all matrices fortified with 0.02–1.0 mg/kg of methoxyfenozide.

An independent laboratory validation of method GRM 02.25 was performed for the determination of residues of methoxyfenozide in high moisture crops, with only minor modifications to the method, which had no impact on the results of the study (Lala, M and Mollica, J 2003). Control samples of radish root (n = 12) were fortified with methoxyfenozide at levels of 0.02, 0.1 and 0.2 mg/kg, and control samples of bulb onion (n = 10) were fortified with methoxyfenozide at levels of 0.02 and 0.2 mg/kg. The overall mean recovery over the whole validation range was 101% with a RSD of 9%. LOQs of methoxyfenozide were 0.02 mg/kg in both matrices.

Samples were analysed using modified methods derived from “tolerance enforcement method for parent methoxyfenozide in pome fruit” (EM) or "tolerance enforcement method for methoxyfenozide in whole cottonseed and its processed fractions (meal, hull, refined oil and gin trash)" of Rohm and Hass Company. Methoxyfenozide residues were extracted by using methanol and 0.1N hydrochloric acid. After filtration, the filtrate was purified by partitioning with hexane and then methylene chloride. Further clean-up was performed by solid phase extraction using a silica column followed by a carbon column. Quantification was achieved by LC-UV detection.

This meeting also received analytical methods used for analysis of methoxyfenozide in the supervised trial samples. For some crops, either method 02.24 or method 02.25 was applied with minor modifications. All analytical methods used were validated sufficiently. Briefly, the analytical methods are summarised below and recovery results are shown in the Table 4.

Spinach

Methoxyfenozide residues were extracted by using acidic methanol and water. The extract was partially purified by liquid-liquid partitions and final purification was accomplished using basic alumina column chromatography followed by solid phase extraction. Quantification was performed by LC-UV detection.

Table 4 Recoveries of methoxyfenozide residues from various matrices

Crop	No	Spike level, mg/kg	Recovery, %		Method
			Average	Range	
Citrus (orange, grapefruit, lemon)	15	0.05–5	91 ± 6	82–100	GRM02.25
Guava	14	0.01–5	94	82–100	EM
Litchi	13	0.025–5	91	75–105	EM
Papaya	18	0.05–5	98	85–107	EM
Spring onion	18	0.05–5	101	91–109	EM
Melons	18	0.01–5	93	50–118	EM
Cucumber	14	0.01–1	104	79–122, 153 (one recovery)	EM
Squash, summer	11	0.01–1	82	66–112	EM
Spinach	21	0.02–1	91 excl. one recovery (60%)	79–106, 60% (one recovery)	Spinach
Beans (pods)	18	0.05, 1, 15	96	81–116	EM

Crop	No	Spike level, mg/kg	Recovery, %		Method
			Average	Range	
Beans foliage	18	0.05, 1, 15, 40	98 excl. one recovery (134%)	85–114, 134% (one recovery)	EM
Pea (pods)	18	0.05, 1, 15	96 ± 12	79–118, 68 (one recovery)	EM
Pea vines	18	0.05, 1, 15	95 ± 11	81–112, 65 (one recovery)	EM
Pea (dry)	16	0.01–1	87 ± 8	67–100	GRM 02.25
Artichoke, globe	17	0.01–2	98 ± 9	88–115	EM
Alfalfa forage	31	0.02, 0.2, 1, 80	88	70–104	GRM 02.24
Alfalfa fodder	2	80	106	106	GRM 02.24
Clover	12	0.02, 0.2, 1, 80	93	86–108	GRM 02.24
Clover hay	2	80	106	105–106	GRM 02.24

Stability of pesticide residues in stored analytical samples

The JMPR previously reported stability of residues over 1–2 years in various samples. These samples were apples, apple juice, tomatoes, lettuce, cotton seed, cottonseed processed products in the 2003 evaluation, and oranges (including pulp, juice and oil), peas (pods and foliage), radishes (root and tops), sugar beet (roots and tops, refined sugar, molasses and dried pulp), sweet potatoes, peanuts (meat, meal, oil and hay) in the 2009 evaluation. New information is shown in Table 5.

Crops for which stability testing was not carried out are covered with the studies reported by the previous JMPR (2003 and 2009) as well as new test results provided. Those non-tested crops were melons (125 days), squash, summer (125 days), spinach (390 days), bean, podded (517 days), bean foliage (531 days), alfalfa forage (251 days), alfalfa fodder (254 days), clover (262 days) and clover hay (253 days).

Table 5 Stability of methoxyfenozide during frozen storage

Commodity	Max period for samples stored, days	Stability of residues tested for days	No. of tests	Spike level, mg/kg	Percentage remained
Guava	42	46	3	1.0	78–81
Litchi	182	187	3	1.0	95–106
Papaya	230	235	3	1.0	97–101
Spring onion	640	621	3	1.0	67, 81,114
Cucumber	167	175	3	1.0	106, 119, 136[a]
Pea (dry)	448	426	3	0.1	85–89
Artichoke, globe	225	200	3	1.0	81–120

[a] It corresponds to 123% if compared to the average concurrent recoveries (111%).

USE PATTERN

Methoxyfenozide is an insecticide potentially useful for the control of Lepidoptera larvae pest species and currently registered for use on a range of crops. Authorized uses of methoxyfenozide on crops which were submitted for evaluation by the 2012 JMPR, are summarised in Table 6.

Table 6 Registered uses of methoxyfenozide in the USA on crops submitted for evaluation

Crop	Method	Application [a]				PHI, days
		Rate, kg ai/ha	Number	Interval days	Total/season, kg ai/ha	
Citrus fruits [b]	Foliar, G	0.134–0.28		14	1.12	1
Guava	Foliar, G, A	0.18–0.28	5	6	1.12	3
Litchi	Foliar, G, A	0.18–0.28	5	10	1.12	14
Papaya	Foliar, G, A	0.18–0.28	5	10	1.12	3
Spring onion	Foliar, G, A	0.067–0.21	6		1.12	1

Crop	Method	Application [a]				PHI, days
		Rate, kg ai/ha	Number	Interval days	Total/season, kg ai/ha	
Cucurbit vegetables	Foliar, G, A	0.067–0.18	4	7	0.72	3
Spinach	Foliar, G, A	0.067–0.28			1.12	1
Legume vegetables [c]	Foliar, G, A	0.067–0.28	4	7	1.12	7
Peas (dry) [d]	Foliar, G, A	0.067–0.28	4	7	1.12	7
Artichoke, globe	Foliar, G, A	0.067–0.28	4		1.12	4
Alfalfa, Clover	Foliar, G, A	0.067–0.134	1 per cutting		0.56	0 or 7[e]

[a] SC formulation of 240 g ai/L (240SC, 22.6%, w/w) is registered for use of methoxyfenozide in the USA.

[b] Do not make more than three consecutive applications of 240SC.

[c] Legume vegetables include, among others, asparagus beans, blackeyed peas, pigeon peas, Chinese longbeans, chick peas, garbanzo beans, green lima beans, jackbeans, lentils, grain lupines, moth beans, kidney beans, lima beans, mung beans, dwarf peas, edible-pod pesa, English peas, field peas, runner beans, snap bean, snow peas, soybeans (immature seed), southern peas, succulent broad beans, sugar snap pesa, sword beans, broad beans and fava beans.

[d] Do not make more than two consecutive applications of 240SC. Do not use adjuvants in the tank mix when applying this product to dry peas and beans. Do not apply to dry peas by aerial ULV.

[e] Do not apply within 7 days of hay harvest; there is no pre-harvest interval for forage. Livestock can enter and graze on treated area immediately after application.

RESIDUES RESULTING FROM SUPERVISED TRIALS ON CROPS

The Meeting received information on supervised field trials on the following crops.

Commodity	Table No.
Orange	7
Grapefruit	8
Lemon	9
Guava	10
Litchi	11
Papaya	–
Spring onion (Onion, green)	12
Melons (Cantaloupe)	13
Cucumber	14
Squash, summer	15
Spinach	16
Common bean (pods and/or immature seeds) (Edible podded bean)	17
Peas (pods and succulent = immature seeds) (Edible podded pea)	18
Peas (dry)	19
Artichoke, globe	20
Alfalfa forage (green) and fodder	21
Clover forage and hay	22
Bean forage (green) (Edible podded bean foliage)	23
Pea vines (green) (Edible podded pea foliage)	24

All trials were conducted in the USA except one trial on oranges in Brazil. Many of the trials were carried out within the IR-4 programmes of the USA, and some trials were conducted by Dow AgroSciences. The trials were performed according to GLP principles.

In all trials, two residue values coming from duplicate random samples in each treated plot. were reported. Mean of the replicates was used in estimating a maximum residue level according to guidance for use of OECD MRL calculator. The 2010 JMPR concluded to use the average of replicate field trial. The mean values used for estimation of maximum residue levels are underlined in the following tables.

Citrus fruits

The present Meeting received fifteen supervised trials on citrus fruits. Additionally, seven trials evaluated by the 2009 JMPR but not used in estimating a maximum residue level, were re-submitted so that would be used for estimating a maximum residue level on citrus fruits based on the US GAP. The previous Meeting estimated a maximum residue level on citrus based on the European GAP quite different with the US GAP.

Oranges

The present Meeting received residue information for eleven supervised trials on oranges, which includes three trials evaluated by the 2009 JMPR. Ten of the eleven trials were conducted during the 2005 and 2008 growing seasons in California, Florida and Texas, and one trial (Trial No. GHB-P 1014) was conducted in Brazil. One trial, No. 06 CA142 (processing study) was not re-evaluated by the present Meeting as the trial was used for estimating processing factors by the previous JMPR.

Nine trials were conducted in the USA with four applications of 2F formulation at a rate of 0.27 to 0.29 kg ai/ha. Latron® B-1956, Latron CS-7 and Crossfire were used as adjuvants. Applications were made on 12 to 17 day schedule and marketable oranges were harvested 1 day after the last application, Trial No.08-CA69, which had PHIs of 1, 3, 7 and 14.

Grapefruit

The present Meeting received residue information for six trials on grapefruits. Two of the six trials were evaluated by the 2009 JMPR. Trials were conducted in California, Florida and Texas from 2005 to 2008.

Trials were conducted with four applications of 2F formulation at a rate of 0.27 to 0.29 g ai/ha, with an adjuvant in the spray solutions. Applications were made on a 12 to 21 day schedule until citrus fruit was ready to be harvested. The citrus fruits were harvested 1 day after the last application.

Lemon

Residue information for five trials on lemons was submitted; of which, two trials were evaluated by the 2009 JMPR. All trials were conducted in California from 2005 to 2008.

Trials were conducted with four foliar applications of 2F formulation at a rate of 0.28 to 0.29 g ai/ha, with an adjuvant in the spray solutions. Applications were made on a 13 to 17 day schedule until citrus fruit was ready to be harvested. The citrus fruits were harvested 1 day after the last application.

Table 7 Residues of methoxyfenozide from supervised trials on oranges in the USA

Location Year (Variety)	Application				PHI days	Residue, mg/kg.			Report No./ Trial [a] No.
	Rate, kg ai/ha	No.	Interval days	Total /season, kg ai/ha		Sample results		Mean	
GAP, USA, Orange	0.13–0.28		14	1.12	1				
Mogi Mirim 2003	0.009	2	16	0.018	14	0.1	0.2	0.15	GHB-P 1014
	0.018	2	16	0.036	14	0.7	0.3	0.5	
Exeter, CA 2005 (Atwood Navel)	0.28–0.29	4	14	1.13	1	0.14	0.17	0.16	IR-4 09367/ 05-CA115 [b]
Riverside, CA 2005–2006 (Bonanza navel)	0.28	4	14–17	1.12	1	1.6	1.7	1.7	IR-4 09367/ 05-CA117 [b]
Eustis, FL 2008 (Valencia)	0.28	4	13–15	1.12	1	0.28	0.36	0.32	IR-4 A9367/ 08-FL14
Mt. Dora, FL 2008 (Valencia)	0.27–0.28	4	13–15	1.11	1	0.25	0.27	0.26	IR-4 A9367/ 08-FL15

Location Year (Variety)	Application				PHI days	Residue, mg/kg.			Report No./ Trial [a] No.
	Rate, kg ai/ha	No.	Interval days	Total /season, kg ai/ha		Sample results		Mean	
Loxahatchee, FL 2008 (Vernia)	0.28–0.29	4	12–14	1.14	1	0.20	0.22	0.21	IR-4 A9367/ 08-FL16
La Feria, TX 2008 (Valencia)	0.28	4	13–14	1.12	1	0.24	0.26	0.25	IR-4 A9367/ 08-TX29
Oviedo, FL 2008 (Navel)	0.28–0.29	4	13–14	1.13	1	0.31	0.32	0.32	IR-4 A9367/ 08-FL12/
Oviedo, FL 2008 (Hamlin)	0.28	4	13–14	1.12	1	0.43	0.66	0.55	IR-4 A9367/08-FL13
Exeter, CA 2008 (Cutter Valencia)	0.28	4	13	1.12	1	0.27	0.29	0.28	IR-4 A9367 08-CA69
					3	0.21	0.23	0.22	
					7	0.16	0.19	0.18	
					14	0.19	0.29	0.24	

[a] Trials were conducted in the USA, except for GHB-P 1014.

[b] Residue trial evaluated by the 2009 JMPR

Table 8 Residues of methoxyfenozide from supervised trials on grapefruit in the USA

Location Year (Variety)	Application				PHI days	Residue, mg/kg.			Report No./ Trial No.
	Rate, kg ai/ha	No.	Interval days	Total /season, kg ai/ha		Sample results		Mean	
GAP, USA Grapefruit	0.13–0.28		14	1.12	1				
Lindcove, CA 2005 (Oro Blanco)	0.28–0.29	4	14	1.14	1	0.23	0.28	0.26	IR-4 09367/ 05-CA114 [a]
La Feria, TX 2005 (Rio Red)	0.28	4	13–21	1.12	1	0.11	0.12	0.12	IR-4 09367/ 05-TX30 [a]
Loxahatchee, FL 2008 (Red)	0.28	4	12–14	1.12	1	0.25	0.31	0.28	IR-4 09367/ 08-FL17
Loxahatchee, FL 2008 (Flame)	0.27-0.28	4	12–14	1.11	1	0.19	0.24	0.22	IR-4 A9367/ 08-FL18
Oviedo, FL 2008 (Flame)	0.28-0.29	4	13–14	1.13	1	0.26	0.27	0.27	IR-4 A9367/ 08-FL19
Strathmore, CA 2008 (Melogold)	0.28-0.29	4	14	1.13	1	0.14	0.15	0.15	IR-4 A9367/ 08-CA70

[a] Trials evaluated by the 2009 JMPR

Table 9 Residues of methoxyfenozide from supervised trials on lemons in the USA

Location (Variety)	Application				PHI days	Residue, mg/kg.			Trial No.
	Rate, kg ai/ha	No.	Interval days	Total /season, kg ai/ha		Sample results		Mean	
GAP, USA Lemon	0.13–0.28		14	1.12	1				
Exeter, CA 2005–2006 (Lisbon)	0.28	4	14–16	1.12	1	0.37	0.41	0.39	IR-4 09367/ 05-CA116 a
Riverside, CA 2005–2006 (Lisbon)	0.28	4	14–17	1.12	1	0.65	0.93	0.79	IR-4 09367/05-CA118 a
Orange Cove, CA 2008 (Lisbon)	0.28–0.29	4	13–15	1.12	1	0.31	0.34	0.33	IR-4 A9367/ 08-CA66
Orange Cove, CA 2008 (Lisbon)	0.28	4	14	1.12	1	0.19	0.22	0.21	IR-4 A9367/ 08-CA67
Nipomo, CA	0.28	4	14	1.12	1	0.31	0.39	0.35	IR-4 A9367/

Location (Variety)	Application				PHI days	Residue, mg/kg.			Trial No.
	Rate, kg ai/ha	No.	Interval days	Total /season, kg ai/ha		Sample results		Mean	
2008 (Lisbon)									08-CA68

[a] Trials evaluated by the 2009 JMPR

Assorted tropical and sub-tropical fruits-edible peel

Guava

Three field trials were conducted on guava during the 2004 growing season in Florida. At each trial, four foliar applications of 2F formulation were made at a rate of 0.28–0.29 kg ai/ha each, for a total of 1.15–1.16 kg ai/ha. The adjuvant Latron B-1956 was added to the spray mixtures. The foliar applications were made 6 to 8 days apart and commercially ripe guava were harvested 3 to 4 days after the final application. The trials were conducted at the same site with the same varies with a few days difference in application dates.

Table 10 Residues of methoxyfenozide from supervised trials on Guava in the USA in 2004 (IR-4 Study No. 07064)

Location (Variety)	Application				PHI days	Residue, mg/kg.			Trial No.
	Rate, kg ai/ha	No.	Interval days	Total /season, kg ai/ha		Sample results		Mean	
GAP, USA Guava	0.18–0.28	5	6	1.12	3				
Homestead, FL (Homestead)	0.28–0.29	4	7	1.15	3	0.15	0.19	0.17	04-FL30
Homestead, FL (Homestead)	0.29	4	7	1.16	3	0.18	0.12	0.19	04-FL31
Homestead, FL (Homestead)	0.28–0.29	4	7–8	1.15	4	0.058	0.059	0.06	04-FL32

Three trials were conducted at the same site and with the same variety, on 1st application 1–2 days apart, thus they were not independent.

Assorted tropical and sub-tropical fruits—inedible peel

Litchi

Residue data were collected from three field trials on litchi conducted in southern Florida. Each treated plot received six foliar-directed applications of 2F formulation at a rate of a 0.25–0.33 kg ai/ha each, for a total of 1.52–1.68 kg ai/ha. All applications were made 9 to 16 days apart and marketable litchi were collected 13 days following the final application. Whole litchi and peeled litchi were analysed.

Table 11 Residues of methoxyfenozide from supervised trials on litchi in the USA in 1999 (IR-4 Study No. 07069)

Location (Variety)	Application				PHI days	Residue, mg/kg.			Trial No.
	Rate, kg ai/ha	No.	Interval days	Total /season, kg ai/ha		Sample results		Mean	
GAP, USA Litchi	0.18–0.28	5	10	1.12	14				
Homestead, FL (Mauritius)	0.25–0.26	6	10–11	1.52	13	0.49 < 0.05 [a]	0.54	0.52	99-FL07

Location (Variety)	Application				PHI days	Residue, mg/kg.			Trial No.
	Rate, kg ai/ha	No.	Interval days	Total /season, kg ai/ha		Sample results		Mean	
Homestead, FL (Mauritius)	0.28–0.33	6	9–12	1.68	13	1.2 < 0.05 [a]	1.3	1.3	99-FL08
Homestead, FL (Mauritius)	0.28	6	9–16	1.68	13	0.51 < 0.05 [a]	1.1	0.81	99-FL09

Field sites of the three trials were located at within 10 km. The trials were conducted with the same variety at application dates 0–7days apart, using the same soil type and different irrigation types (non-irrigation, in-line drip and drip). These trials were not considered independent.

[a] Residue concentration in peeled litchi was at below LOQ.

Papaya

Four trials evaluated by the 2009 JMPR were submitted again for consideration of the possibility of extrapolation of residues in papaya and avocado to mango and pomegranate.

The 2009 JMPR concluded that from the four trials two (01-FL30 and 01-FL32) were not independent and the fruits sampled were cut on the field. Consequently the data provided was not sufficient for estimation of maximum residue levels. This Meeting did not evaluate again the residue trial information.

Bulb vegetables

Spring onions

Five field trials were performed during the 2004 and 2005 growing seasons, one each in New Jersey, Ohio and Washington, and two in California. At each trial, four foliar applications of 2F formulation were made at a rate of 0.27–0.29 kg ai/ha each, for a total of 1.10–1.13 kg ai/ha. An adjuvant of Latron® B-1956 was added to the spray mixtures. The foliar applications were made 9 to 14 days apart and mature green onions were harvested 1 day after the final application.

Table 12 Residues of methoxyfenozide from supervised trials on spring onions in the USA (IR-4 PR No. 09067)

Location Year (Variety)	Application				PHI days	Residue, mg/kg.			Trial No.
	Rate, kg ai/ha	No.	Interval days	Total /season, kg ai/ha		Sample results		Mean	
GAP, USA Spring onion	0.07–0.21	6		1.12	1				
Bridgeton, NJ 2004 (Feast)	0.27–0.29	4	10–11	1.11	1	3.7	3.3	3.5	04-NJ17
Willard, OH 2004 (Ishikura Improved Bunching)	0.27–0.29	4	10	1.12	1	< 0.05	0.06	0.060	04-OH*08
Moxee, WA 2004 (Ishikura)	0.28–0.29	4	10–11	1.13	1	0.59	0.61	0.60	04-WA*06
Salinas, CA 2004 (White Spear)	0.27–0.29	4	9–11	1.13	1	1.6	1.5	1.6	04-CA*86
Holtville CA 2005 (TSX-33)	0.27–0.28	4	10–14	1.10	1	0.56	0.43	0.50	04-CA85

Fruiting vegetables, Cucurbits

Melons

The Meeting received residue information for seven trials on melons evaluated in the 2009 JMPR with a suggestion of applying proportionality. The previous JMPR did not estimate a maximum residue level as the application rate did not match the related GAP by exceeding the allowable level (25%).

The trials were conducted in Georgia, South Carolina, Texas, Ohio, and California in 1999. Each trial received four foliar applications of 80WP formulation (800 g ai/kg) at a rate of 0.27 to 0.30 kg ai/ha, 6 to 8 days apart. Marketable melons were harvested 2 or 3 days after the last application.

Cucumbers

Eight field trials on cucumbers evaluated in the 2009 JMPR were re-submitted and the Meeting was asked for applying proportionality. The previous Meeting did not estimate a maximum residue level as the application rate exceeded the allowable level (25%).

Trials were conducted in Maryland, Georgia, South Carolina, Florida, Texas, Ohio, Wisconsin and California in 1999. Each trial received four foliar applications of 80WP formulation (800 g ai/kg) at a rate of 0.27–0.37 kg ai/ha, 6 to 8 days apart. Mature cucumber was harvested 2 or 3 days after the last treatment.

Squash, Summer

Six field trials on squash evaluated in the 2009 JMPR were re-submitted with a suggestion of applying proportionality. The previous Meeting did not estimate a maximum residue level as the application rate exceeded an allowable level (25%).

The six residue trials on summer squash were conducted in New Jersey, South Carolina, Georgia, Florida, Ohio and California in 1999. Each trial received four foliar applications of 80WP formulation (800 g ai/ha) at a rate of 0.26 to 0.30 kg ai/ha, 6 to 8 days apart. No adjuvant was added to the spray solutions. The squash was harvested 2 or 3 days after the last application.

Table 13 Residues of methoxyfenozide from supervised trials on melons in the USA in 1999 (IR-4 Study No. 07195)

Location (Variety)	Application [a]				PHI days	Residue, mg/kg.			Trial [b] No.
	Rate, kg ai/ha	No.	Interval days	Total /season, kg ai/ha		Sample results		Mean	
GAP, USA Cucurbits-Melons	0.067–0.18	4	7	0.72	3				
Tifton, GA (Cordele)	0.28–0.29	4	6–7	1.15	3	0.13	0.16	0.15	99-GA*17
Charleston, SC (Touchdown)	0.27	4	7–8	1.08	3	0.050	0.091	0.071	99-SC*05
Weslaco, TX (Hy Mark)	0.28–0.30	4	6	1.16	2	0.15	0.26	0.21	99-TX16
Fremont, OH (Eclipse)	0.28–0.29	4	7	1.14	2	0.12	0.13	0.13	99-OH*13
Holtville, CA (Hy Mark)	0.27–0.28	4	7	1.11	3	0.067	0.15	0.11	99-CA48
Holtville, CA (Mission)	0.28	4	7	1.12	2	0.16	0.21	0.19	99-CA49
Huron, CA (F1)	0.28–0.29	4	7	1.13	3	0.11	0.14	0.13	99-CA124

[a] 80WP formulation (800 g ai/kg)

[b] Trials evaluated by the 2009 JMPR

Table 14 Residues of methoxyfenozide from supervised trials on cucumbers in the USA in 1999 (IR-4 Study No. 07016)

Location (Variety)	Application [a]				PHI days	Residue, mg/kg.			Trial [b] No.
	Rate, kg ai/ha	No.	Interval days	Total /season, kg ai/ha		Sample results		Mean	
GAP, USA Cucurbits-Cucumber	0.067–0.18	4	7	0.72	3				
Salisbury, MD (Regal pickling)	0.28–0.29	4	6–7	1.12	2	0.031	0.034	0.033	99-MD02
Tifton, GA (Thunder slicing)	0.29	4	6–8	1.12	2	0.049	0.055	0.052	99-GA*18
Charleston, SC (Regal pickling)	0.27–0.37	4	7	1.12	2	< 0.01	0.011	0.011	99-SC*04
Grainesville, FL (Dasher II slicing)	0.29–0.30	4	7	1.18	3	0.016	0.080	0.048	99-FL24
Weslaco, TX (Calypso pickling)	0.27–0.29	4	6–7	1.12	3	0.033	0.068	0.051	99-TX15
Fremont, OH (FMX 5020 pickling)	0.27–0.30	4	6–8	1.12	3	0.033	0.033	0.033	99-OH*14
Arlington, WI (Fanfare slicing)	0.28–0.29	4	6–7	1.12	3	0.018	0.019	0.019	99-WI12
Holtville, CA (Conquistador slicing)	0.27–0.28	4	7	1.12	3	0.021	0.031	0.026	99-CA47

[a] 80WP formulation (800 g ai/kg)

[b] Trials evaluated by the 2009 JMPR

Table 15 Residues of methoxyfenozide from supervised trials on summer squash in the USA in 1999 (IR-4 Study No. 07194)

Location (Variety)	Application [a]				PHI days	Residue, mg/kg.			Trial [b] No.
	Rate, kg ai/ha	No.	Interval days	Total /season, kg ai/ha		Sample results		Mean	
GAP, USA Cucurbits	0.067–0.18	4	7	0.72	3				
Bridgeton, NJ (Yellow-Lemon Drop)	0.26–0.28	4	6–7	1.11	2	0.082	0.096	0.089	99-NJ15
Charleston, SC (Early Prolific)	0.27–0.28	4	7–8	1.10	3	< 0.02	< 0.02	< 0.02	99-SC*03
Tifton, GA (Prelude)	0.28–0.29	4	6–8	1.14	2	0.094	0.11	0.10	99-GA*09
Gainesville, FL (Enterprise)	0.28–0.29	4	7	1.14	3	< 0.02	< 0.02	< 0.02	99-FL23
USA, Fremont, OH (Ambassador)	0.27–0.30	4	6–8	1.13	2	0.033	0.034	0.034	99-OH*08
Holtville, CA (Enterprise)	0.27–0.28	4	7	1.11	3	0.15,	0.16	0.16	99-CA46

[a] 80WP formulation (800 g ai/kg)

[b] Trials evaluated by the 2009 JMPR

Spinach

The current Meeting received residue information for six trials on spinach, three of which were evaluated by the 2003 JMPR. The 2003 JMPR evaluated six trials and concluded that residue information for spinach precludes an estimate that the short-term dietary intake by children would be below the acute reference dose.

Non-submitted three trials evaluated by the 2003 JMPR were regarded by provider's evaluation as non-representative of commercial practices due to late planning, non-commercial raw width, plant density, plant spacing and below standard temperatures.

Thus this Meeting evaluated submitted six trials that were conducted in Pennsylvania, Georgia, California, Texas, and Colorado from 1998 to 2000.

Trials received four foliar applications of 80WP formulation (800 g ai/kg). Two of the trials were bridging trials and had an addition of treated plot that received four applications of 240SC formulation (240 g ai/L). All applications were made at a rate of 0.24 to 0.29 kg ai/ha. An additive of Latron CS-7 was added to the spray solutions. Applications were made on a 7 to 11 day schedule until spinach was ready to be harvested. The spinach was harvested 1 day after the last application, except for the CA 1999 trial (TR 34-01-22), which had PHIs of 0, 1, 3, 7, and 10.

Table 16 Residues of methoxyfenozide from supervised trials on spinach in the USA

Location Year (Variety)	Application					PHI days	Residue, mg/kg			Report No./ Trial No.
	Form	Rate, kg ai/ha	No.	Interval days	Total /season, kg ai/ha		Sample results		Mean	
GAP, USA Spinach	240SC	0.07–0.28			0.28–1.12	1				
Oxnard, CA 1998 (Spring Field)	80WP	0.28	4	7–9	1.12	1	13	14	14	TR 34-99-75/ 61198054[a]
East Bernard, TX 1998 (Bloomsdale)	80WP	0.27–0.28	4	7–11	1.11	1	16	17	17	TR 34-99-75[a]/ 61198055[a, b]
	240SC	0.25–0.26	4	7–11	1.03	1	17	18	18	
Center, CO 1998 (Unipak 151)	80WP	0.28–0.29	4	7–9	1.14	1	9.7	10	9.9	TR 34-99-75/ 61198056[a, b]
	240SC	0.24–0.26	4	7–9	0.99	1	10	11	11	
Germansville , PA 2000 (Tyee)	80WP	0.28–0.29	4	7–10	1.15	1	9.0	11	10	TR 34-01-22/ 1559950
Athens, GA 2000 (Bloomsdale)	80WP	0.28	4	8	1.12	1	5.4	5.6	5.5	TR 34-01-22/ 1559951
Poplar, CA 1998 (Polka)	80WP	0.28–0.29	4	7	1.13	0	7.3	9.9	8.6	TR 34-01-22/ 1559952
						1	6.6	9.3	8.0	
						3	9.3	11	10	
						7	5.5	8.1	6.8	
						10	5.7	10	7.9	

[a] Trials evaluated by the 2003 JMPR

[b] Bridging trial

Legume vegetables

Common beans (pods and/or immature seeds)

Eight trials, including six trials evaluated by the 2009 JMPR, were submitted so that a maximum residue level would be re-evaluated by the present JMPR.

The 2009 JMPR recommended a maximum residue level of 2 mg/kg instead of 0.45 mg/kg derived from use of the NAFTA calculator. The derived value was considered too low as 2 of valid 6 residue values were higher.

The eight trials submitted were conducted in Georgia, Ohio, Washington, California, New York, Florida, Wisconsin and Indiana. Each treated plot received four foliar applications of 80WP formulation (800 g ai/kg) at a rate of 0.27–0.30 kg ai/ha each, for a total of 1.10–1.16 kg ai/ha. An adjuvant was not used in any trials. All applications were made 6 to 8 days apart, and mature edible podded beans and bean foliage were collected 6 to 8 days following the final application.

Table 17 Residues of methoxyfenozide from supervised trials on common beans in the USA in 2000–2001 (IR-4 PR No. 07532)

Location (Variety)	Application [a]				PHI days	Residue, mg/kg.			Trial No.
	Rate, kg ai/ha	No.	Interval days	Total /season, kg ai/ha		Sample results		Mean	
GAP, USA Beans, podded	0.067–0.28	4	7	1.12	7				
Tifton, GA (Brono garden)	0.28–0.29	4	6–8	1.13	8	0.52	0.62	0.57	00-GA*17 [b]
Fremont, OH (Strike)	0.27–0.30	4	7–8	1.15	8	< 0.05	< 0.05	< 0.05	00-OH*14 [b]
Moxee, WA (Jade)	0.28	4	6–8	1.12	6	< 0.05	< 0.05	< 0.05	00-WA*15 [b]
Porterville, CA (Kentucky Wonder 125 bush)	0.28	4	7	1.12	7	0.63	0.99	0.81	00-CA141 [b]
Freeville, NY (Labrador snap)	0.27–0.28	4	7	1.10	8	< 0.05	< 0.05	< 0.05	01-NY18 [b]
Gainesville, FL (Blue Lake snap)	0.29	4	7	1.16	7	< 0.05	0.079	0.075	01-FL33 [b]
Arlington, WI (Hy Style snap)	0.28	4	6–7	1.12	6	< 0.05	< 0.05	< 0.05	01-WI13
Lafayette, IN (Earliserve)	0.27	4	6–7	1.08	8	0.099	0.10	0.10	01-IN01

[a] 80WP formulation

[b] Trials evaluated by the 2009 JMPR

Peas (pods and succulent = immature seeds)

Three field trials were performed in New Jersey, Washington and California. At each trial, four foliar applications of 80WP formulation (800 g ai/kg) were made at a rate of 0.28–0.30 kg ai/ha, for a total of 1.12–1.17 kg ai/ha. Each application was made 6 to 7 days apart and samples of edible podded peas and pea foliage were collected 6 to 7 days following the final application. The homogenized subsamples were stored at below 0 ℃ for approximately, eight months until extraction for analysis.

Table 18 Residues of methoxyfenozide from supervised trials on peas (pods and succulent) in the USA in 2000 (IR-4 PR No. 07529)

Location (Variety)	Application [a]				PHI days	Residue, mg/kg			Trial No.
	Rate, kg ai/ha	No.	Interval days	Total /season, kg ai/ha		Sample results		Mean	
GAP, USA Peas (pods)	0.067–0.28	4	7	1.12	7				
Bridgeton, NJ (Spring Mix pea)	0.28–0.30	4	6–7	1.17	6	0.38	0.45	0.42	00-NJ22
Moxee, WA (Oregon Giant	0.28	4	6–7	1.12	7	0.095	0.12	0.11	00-WA*16

Location (Variety)	Application [a]				PHI days	Residue, mg/kg			Trial No.
	Rate, kg ai/ha	No.	Interval days	Total /season, kg ai/ha		Sample results		Mean	
pea)									
Visalia, CA (Oregon Sugar Pod II)	0.28	4	7	1.12	7	0.11	0.14	0.13	00-CA129

[a] 80WP formulation

Peas (dry)

Six field trials were conducted during 2006 growing season; one in South Dakota, two in North Dakota and three in Washington. At each trial, four foliar applications of 2F formulation were made at a rate of 0.27–0.28 kg ai/ha each for a total of 1.09–1.12 kg ai/ha, except in two trials of North Dakota where two applications were made at 0.28 kg ai/ha for a total of 0.56 kg ai/ha. This was done due to the excessive dryness of the season in North Dakota, which caused the peas to ripen and dry prematurely. The foliar applications were made 6 to 7 days apart and mature dry, shelled peas were harvested 6 or 7 days after the final application.

Table 19 Residues of methoxyfenozide from supervised trials on peas (dry) in the USA in 2006 (IR-4 PR No. 07527)

Location (Variety)	Application				PHI days	Residue, mg/kg.			Trial No.
	Rate, kg ai/ha	No.	Interval days	Total /season, kg ai/ha		Sample results		Mean	
GAP, USA Pea shelled dried	0.067–0.28	4	7	1.12	7				
Fargo, ND (Admiral)	0.28	2	6	0.56	7	0.063	0.049	0.056	06-ND10
Fargo, ND (Marquee)	0.28	2	6	0.56	7	0.044	0.040	0.042	06-ND15
Aurora, SD (Stirling)	0.28	4	7–8	1.12	6	0.062	0.073	0.068	06-SD06
Moxee, WA (Columbian)	0.27–0.28	4	6–7	1.10	7	0.11	0.084	0.097	06-WA*32
Monee,WA (Carousel yellow)	0.27–0.28	4	7	1.09	7	0.16	0.17	0.17	06-WA*33
Moxee, WA (Cruiser)	0.28	4	7	1.12	7	0.17	0.17	0.17	06-WA*34

Artichokes, Globe

Three trials were conducted in California in 1999. Each treated plot of three trials received four applications of 80WP formulation (800 g ai/ha) at a rate of 0.28 kg ai/ha each, for a total of 1.12 kg ai/ha. All applications were made 6 to 8 day apart, and mature artichoke buds were collected 4 days following the final application.

Table 20 Residues of methoxyfenozide from supervised trials on globe artichoke in the USA in 1999 (IR-4 PR No. 07323)

Location (Variety)	Application [a]				PHI days	Residue, mg/kg.			Trial [b] No.
	Rate, kg ai/ha	No.	Interval days	Total /season, kg ai/ha		Sample results		Mean	
GAP, USA Artichoke, globe	0.067–0.28	4		1.12	4				
Castroville, CA (Green)	0.28	4	6–8	1.12	4	0.74	1.2	0.97	(99-CA43)
Castroville, CA (Green)	0.28	4	6–8	1.12	4	0.78	1.7	1.2	(99-CA44)
Castroville, CA (Green)	0.28	4	6–8	1.12	4	0.86	1.3	1.1	(99-CA45)

[a] 80WP formulation

[b] Three trials were conducted on different farms located in the same town with the same variety at the same date of application. Thus they were not independent.

Legume animal feeds

Alfalfa (forage and fodder)

Nine supervised trials were conducted in the USA in 2004. Trials received four foliar applications with 2F formulation. Two applications were made with 7-day interval. After 21–33 days, two applications were made again with 7-day interval. An adjuvant of Agridex was used in all trials.

The forage was harvested 0 and 3 days and hay was harvested 3 days after the last treatment. Hay was dried in the field for 2–6 days after harvesting prior to being placed in frozen storage.

Table 21 Residues of methoxyfenozide from supervised trials on alfalfa in the USA in 2004 (Report No. 040072)

Location (Variety)	Application				PHI days	Residue [a], mg/kg.			Trial No.
	Rate, kg ai/ha	No.	Interval days	Total /season, kg ai/ha		Sample results		Mean	
GAP, USA Alfalfa	0.07–0.13	1 per cutting		0.56	0 (no-pre-harvest interval) [b] 7[c]				
Mineral, VA (Unknown)	0.14	4	7–33	0.56	0 3 *3* [d]	14 13 *38*[d]	13 12 *43*[d]	14 13 *41*[d]	Alfalfa1
Carlyle, IL (WL 318)	0.14	4	7–26	0.56	0 3 *3*	12 9.6 *40*	9.2 9.8 *44*	11 9.7 *42*	Alfalfa2
Danville, IN (Vernal)	0.14	4	7–29	0.56	0 3 *3*	16 14 *51*	15 15 *45*	16 15 *48*	Alfalfa3
Paynesville, MN (Blazer)	0.14	4	7–26	0.56	0 3 *3*	12 10 *23*	8.8 9.3 *33*	10 9.7 *28*	Alfalfa4
Frankfort, SD (Fargo)	0.14	4	7–21	0.56	0 3 *3*	20 10 *36*	18 7.0 *35*	19 8.5 *36*	Alfalfa5
Redfield, SD (Redwing)	0.14	4	7–21	0.56	0 3 *3*	15 5.5 *12*	12 5.8 *15*	14 5.7 *14*	Alfalfa6

Location (Variety)	Application				PHI days	Residue [a], mg/kg.			Trial No.
	Rate, kg ai/ha	No.	Interval days	Total /season, kg ai/ha		Sample results		Mean	
Trenton, UT (Proleaf)	0.14	4	7–30	0.56	0 3 *3*	13 15 *41*	13 13 *41*	13 14 *41*	Alfalfa7
Porterville, CA (Germains)	0.14	4	7–29	0.56	0 3 *3*	21 35 *43*	27 40 *47*	24 38 *45*	Alfalfa8
American Falls, ID (Agate)	0.14	4	7–30	0.56	0 3 *3*	12 8.7 *39*	11 7.6 *35*	13 8.2 *37*	Alfalfa9

[a] Forage and fodder contains 35% and 89% dry-matter, respectively.

[b] PHI for alfalfa forage

[c] PHI for alfalfa fodder

[d] Italic figures mean a PHI and residue concentrations for alfalfa fodder.

Clover (forage and hay)

Nine supervised trials on clover were conducted in the USA in 2004. Trials received four foliar applications with 2F formulation, with an adjuvant of Agridex added to the spray solutions. Two applications were made with 7-day interval. After 21–33 days, two applications were made again with 7-day interval.

The forage was harvested 0 and 3 days and hay was harvested 3 days after the last treatment. Hay was dried in the field for 2–6 days after harvesting prior to being placed in frozen storage.

Table 22 Residues of methoxyfenozide from supervised trials on clover in the USA in 2004 (Report No. 040072)

Location (Variety)	Application				PHI days	Residue [a], mg/kg.			Trial No.
	Rate, kg ai/ha	No.	Interval days	Total /season, kg ai/ha		Sample results		Mean	
GAP, USA Clover	0.07–0.13	1 per cutting		0.56	0 (no-pre-harvest interval) [b] 7[c]				
Mineral, VA (Unknown)	0.14	4	7–33	0.56	0 3 *3*[d]	5.2 12 *37*[d]	9.0 15 *41*[d]	7.1 14 *39*[d]	Clover1
Montpelier, VA (Unknown)	0.14	4	7–33	0.56	0 3 *3*	8.9 7.0 *18*	11 7.2 *19*	10 7.1 *19*	Clover2
Marion, AR (Red)	0.14	4	7–26	0.56	0 3 *3*	9.2 4.0 *13*	9.2 5.0 *13*	9.2 4.5 *13*	Clover3
Carlyle, IL (Red)	0.14	4	7–26	0.56	0 3 *3*	8.4 8.1 *40*	10 12 *48*	9.2 10 *44*	Clover4
Paynesville, MN (Red)	0.14	4	7–25	0.56	0 3 3	6.4.2.3 *8.4*	7.4 3.3 *8.4*	6.9 2.8 *8.4*	Clover5
USA, Madill, OK (Ladino)	0.14	4	7–16	0.56	0 3 3	5.3 6.0 *37*	6.7 6.3 *37*	6.0 6.2 *37*	Clover6
Redfield, SD (Midden)	0.14	4	7–21	0.56	0 3 3	3.4 1.5 *4.6*	7.4 1.7 *5.8*	5.4 1.6 *5.2*	Clover7

Location (Variety)	Application				PHI days	Residue [a], mg/kg.			Trial No.
	Rate, kg ai/ha	No.	Interval days	Total /season, kg ai/ha		Sample results		Mean	
Claude, TX (Ladino)	0.14	4	7–35	0.56	0 3 3	6.0 6.9 *30*	8.0 7.3 *35*	7.0 7.1 *33*	Clover8
Porterville, CA (Ladino)	0.14	4	7–24	0.56	0 3 3	14 9.9 *49*	14 10 *54*	14 10 *52*	Clover9

[a] Forage and hay contains 35% and 89% dry-matter, respectively.

[b] PHI for clover

[c] PHI for clover hay

[d] Italic figures mean a PHI and residue concentrations for clover hay.

Bean forage and pea vines

The trial conditions were described under the food commodities.

Table 23 Residues of methoxyfenozide from supervised trials on bean forage in the USA in 2000–2001 (IR-4 PR No. 07532)

Location (Variety)	Application [a]				PHI days	Residue, mg/kg.			Trial No.
	Rate, kg ai/ha	No.	Interval days	Total /season, kg ai/ha		Sample results		Mean	
GAP, USA Beans, podded	0.067–0.28	4	7	1.12	7				
Tifton, GA [b] (Brono garden)	0.28–0.29	4	6–8	1.13	8	20	32	26	00-GA*17 [b]
Fremont, OH [b] (Strike)	0.27–0.30	4	7–8	1.15	8	4.9	5.3	5.1	00-OH*14 [b]
Moxee, WA [b] (Jade)	0.28	4	6–8	1.12	6	3.1	3.4	3.3	00-WA*15 [b]
Porterville, CA [b] (Kentucky Wonder 125 bush)	0.28	4	7	1.12	7	13	16	15	00-CA141 [b]
Freeville, NY [b] (Labrador snap)	0.27–0.28	4	7	1.10	8	5.0	6.6	5.8	01-NY18 [b]
Gainesville, FL [b] (Blue Lake snap)	0.29	4	7	1.16	7	3.5	4.6	4.1	01-FL33 [b]
Arlington, WI (Hy Style snap)	0.28	4	6–7	1.12	6	4.5	4.7	4.6	01-WI13
Lafayette, IN (Earliserve)	0.27	4	6–7	1.08	8	3.1	4.0	3.6	01-IN01

[a] 80WP formulation

[b] Trials evaluated by the 2009 JMPR

Table 24 Residues of methoxyfenozide from supervised trials on pea vines in the USA in 2000 (IR-4 PR No. 07529)

Location (Variety)	Application [a]				PHI days	Residue, mg/kg			Trial No.
	Rate, kg ai/ha	No.	Interval days	Total /season, kg ai/ha		Sample results		Mean	
GAP, USA Peas, podded	0.067–0.28	4	7	1.12	7				
Bridgeton, NJ (Spring Mix pea)	0.28–0.30	4	6–7	1.17	6	7.6	9.6	8.6	00-NJ22
Moxee, WA (Oregon Giant pea)	0.28	4	6–7	1.12	7	3.0	3.9	3.5	00-WA*16

Location (Variety)	Application [a]				PHI days	Residue, mg/kg			Trial No.
	Rate, kg ai/ha	No.	Interval days	Total /season, kg ai/ha		Sample results		Mean	
Visalia, CA (Oregon Sugar Pod II)	0.28	4	7	1.12	7	4.7	7.4	6.1	00-CA129

[a] 80WP formulation

FATES OF RESIDUES IN STORAGE AND PROCESSING

One processing study for orange products was not re-evaluated by the present Meeting as the 2009 Meeting had previously estimated processing factors based on this study.

APPRAISAL

Methoxyfenozide was evaluated for residues and toxicology by the 2003 JMPR. The 2003 Meeting established an ADI of 0–0.1 mg/kg bw and an ARfD of 0.9 mg/kg bw, and made a number of maximum residue level recommendations. The 2009 JMPR also recommended a number of maximum residue levels. The residue was defined as methoxyfenozide for compliance with MRLs and for dietary intake estimation in both plant and animal commodities. The residue is fat-soluble, but is not classified as fat-soluble with respect to its distribution in milk.

The current Meeting evaluated residue trial data for various crops including field accumulation data in rotational crops, analytical methods, and storage stability tests.

Methods of analysis

Analytical methods used in field trials, based on LC-MS/MS detection, were fully validated for representative samples of high and low-moisture content crops. Recoveries of methoxyfenozide ranged between 69% and 113% at fortification levels of 0.02–1.0 mg/kg.

The LOQ of 0.02 mg/kg was also confirmed by independent validation.

Stability of residues in stored analytical samples

The tests for stability of residues under frozen conditions were performed in guava, litchi, papaya, spring onion, cucumber, pea (pods and vines) and globe artichoke. They indicated that the residues were stable during the frozen storage intervals prevailed in the field trials. Residues in non-tested commodities were also considered stable. The results conform to previous JMPR reviews indicating that methoxyfenozide residues are stable for 1–2 years in various matrices under frozen conditions.

Results of supervised residue trials on crops

The Meeting received information on supervised field trials in citrus fruits, guava, litchi, papaya, spring onion, melons, cucumber, summer squash, spinach, common bean, pea (pods), pea (dry), globe artichoke, alfalfa and clover.

As a representative residue value for each field trial, the mean of replicate samples was used for estimation of a maximum residue level.

The OECD MRL calculator was used as a tool in estimation of the maximum residue level. Where different estimates were made, the reasons are indicated under corresponding recommendations.

Citrus fruits

The 2009 JMPR estimated a maximum residue level of 0.7 mg/kg on citrus based on the European GAP. The present Meeting received new residue information on US citrus trials matching the GAP of the USA.

The maximum US GAP for citrus fruits is a rate of 0.28 kg ai/ha, four applications at 14–17 days intervals with a 1 day PHI.

Residues from nine trials on oranges, in ranked order, were: 0.16, 0.21, 0.25, 0.26, 0.28, 0.32, 0.32, 0.55, and 1.7 mg/kg.

For grapefruits, residues for six trials, in ranked order, were: 0.12, 0.15, 0.22, 0.26, 0.27, and 0.28 mg/kg.

For lemon, residues from five trials were: 0.21, 0.33, 0.35, 0.39 and 0.79 mg/kg.

As the residue distributions in oranges, grapefruits and lemon were not significantly different, the datasets could be combined (n = 20): 0.12, 0.15, 0.16, 0.21, 0.21, 0.22, 0.25, 0.26 (2), 0.27, 0.28, 0.28, 0.32, 0.32, 0.33, 0.35, 0.39, 0.55, 0.79 and 1.7 mg/kg. The Meeting decided to estimate a group MRL for citrus fruits. Based on the residues the Meeting estimated a maximum residue level of 2 mg/kg, an STMR of 0.28 mg/kg and an HR of 1.7 mg/kg for citrus fruits. The Meeting agreed to withdraw its previous maximum residue level of 0.7 mg/kg for citrus fruits.

Assorted tropical and sub-tropical fruits-edible peel

Guava

The GAP in the USA consists of six applications at a rate of 0.18–0.28 kg ai/ha with 6 day intervals, total seasonal rate of 1.12 kg ai/ha, and a 3 day PHI. Three trials were conducted in the USA matching maximum US GAP, in which methoxyfenozide was applied four times at a rate of 0.28–0.29 kg ai/ha, at 7–8 day intervals and 3–4 day PHI.

The Meeting decided the trials were not independent as they were conducted at the same site, same variety and with only few days' difference in treatment dates. As a result the Meeting considered them insufficient to estimate a maximum residue level.

Assorted tropical and sub-tropical - fruits-inedible peel

Litchi

The GAP in the USA consists of five applications at rate of 0.18–0.28 kg ai/ha, 10 day intervals, and a 14 day PHI. Three trials were conducted in the USA matching maximum US GAP (0.25–0.33 kg ai/ha with six applications, at 9–16 interval days, 13 day PHI).

However, as the trials were conducted with the same variety at neighbouring locations with application dates 0–7 days apart the Meeting judged the trials not to be independent. As a result the Meeting considered them insufficient to estimate a maximum residue level.

Mango and Pomegranate

The 2009 JMPR recommended maximum residue levels of 1 mg/kg for papaya and 0.7 mg/kg for avocado. The present Meeting received a request of extrapolating existing information for papaya and avocado to mango and pomegranate.

According to US GAP, the four crops have different PHIs (2 days for avocado, 3 days for papaya and mango and 7 days for pomegranate). As the GAPs are different, the Meeting could not consider the extrapolation of residue data from papaya and avocado to mango and pomegranate.

Spring onion

The GAP in the USA is for six applications at 0.21 kg ai/ha, total seasonal rate of 1.12 kg ai/ha and a 1 day PHI. Five trials were conducted in the USA with application rates of 4 × 0.28 kg ai/ha, which is 1.33 times higher than maximum US GAP rate. The residues, in ranked order, were: 0.060, 0.50, 0.60, 1.6, and 3.5 mg/kg.

The lack of two applications early in the growing season was considered non-influential on the final residue levels. The Meeting applied the proportionality principle and used the scaling factor of 0.8. The resultant scaled residue values were: 0.048, 0.40, 0.48, 1.3, and 2.8 mg/kg.

The Meeting estimated a maximum residue level of 6 mg/kg, an STMR of 0.48 mg/kg and an HR of 2.8 mg/kg for spring onion.

Fruiting vegetables, Cucurbits

Melons, except watermelon

Seven field trials conducted in the USA in 1999 on cantaloupe were re-submitted. The use of proportionality approach was considered by this Meeting for estimating a maximum residue level.

The 2009 Meeting did not estimate a maximum residue level, as the trials did not match US GAP. The treatment rate in the trials was 1.55 times the maximum US GAP (4 × 0.18 kg ai/ha at 7 day, PHI of 3 days) and resulted in which were: 0.071, 0.11, 0.13, 0.13, 0.15, 0.19, and 0.21 mg/kg.

The Meeting noted that other residue information on melons was not available. The Meeting agreed to use a proportionality approach with a scaling factor of 0.7 (rounded value for 0.60–0.67). The adjusted residue values were: 0.050, 0.077, 0.091, 0.091, 0.11, 0.13, and 0.15 mg/kg at maximum US GAP.

Cucumber

Eight trials conducted in cucumber in the USA in 1999 were re-submitted. The application of proportionality for estimating a maximum residue level was considered by this Meeting.

The 2009 Meeting did not estimate a maximum residue level as the trials did not match US GAP. The residue concentrations in cucumber were: 0.011, 0.019, 0.026, 0.033, 0.033, 0.048, 0.051, and 0.052 mg/kg, at dosage rate of 1.55 times maximum US GAP (4 × 0.18 kg ai/ha at 7 day, PHI of 3 days).

The Meeting noted that other residue information on cucumber was not available. In addition, it was considered that the proportionality approach could be applied. The Meeting decided to use the proportionality approach and estimate a scaling factor.

Using a scaling factor of 0.7 (rounded value for 0.60–0.67), the adjusted residue values were: < 0.01, 0.013, 0.018, 0.023, 0.023, 0.034, 0.036, and 0.036 mg/kg at maximum US GAP.

Squash, Summer

Six trials conducted in the USA in 1999 were re-submitted. The application of proportionality in estimating a maximum residue level was considered by this Meeting.

The 2009 Meeting did not estimate a maximum residue level as the trials did not match US GAP. The residue concentrations were: < 0.02, 0.02, 0.034, 0.089, 0.10, and 0.16 mg/kg, at 1.55 times the maximum US GAP rate (4 × 0.18 kg ai/ha at 7 day, PHI of 3 days).

Other residue information on cucumber was not available. The Meeting agreed to apply a proportionality approach and estimate a scaling factor.

Using the scaling factor of 0.7 (rounded from 0.64–0.67), adjusted residue values were: < 0.02, < 0.02, 0.024, 0.062, 0.070, and 0.11 mg/kg at maximum US GAP.

Taking into account that GAPs for melons, cucumber, and summer squash are the same, the Meeting decided to estimate a group maximum residue level of 0.3 mg/kg for fruiting vegetables, cucurbits, except watermelon based on residues in melons. For dietary intake purposes of cucurbits except watermelon, the Meeting estimated an STMR 0.091 mg/kg and an HR of 0.15 mg/kg.

Leafy vegetables

Spinach

The current Meeting received residue information for three new trials. As the GAP was not changed, the Meeting also considered the residue data evaluated by the 2003 JMPR and combined the data, thus residues are in rank order: *5.5,10, 10*, 11, 12, 14, 18, 23, and 43 mg/kg (*new data in italic*).

The Meeting maintained its previous estimates for the maximum residue level of 50 mg/kg, the HR of 43 mg/kg, and estimated an STMR of 12 mg/kg.

Legume vegetables

Common bean (pods and/or immature seeds)

The Meeting received two new trials which were assessed with six trials previously evaluated by the 2009 JMPR. All trials were conducted at maximum US GAP (4 × 0.28 kg ai/ha at 7 days, with a PHI of 7 days). Residues were: < 0.05 (4), *0.075, 0.10*, 0.57, and 0.81 mg/kg (*new data in italic*). The new trials did not affect the estimates made by 2009 JMPR.

Peas (pods and succulent=immature seeds)

Three trials were conducted in the USA according to maximum US GAP (4 × 0.28 kg ai/ha at 7 days, with a PHI of 7 days). The residues in peas with pods were: 0.11, 0.13, and 0.42 mg/kg.

The Meeting considered the similarity of common bean and pea crops, and noted that three residue data measured in peas were in the range of those in common beans. The combined data base of residues in common bean and peas (pods) supports the estimation of maximum residue level of 2 mg/kg, an STMR of 0.10, an HR of 0.81 mg/kg for peas *(pods and succulent=immature seeds)*.

Thus, the Meeting agreed to recommend a maximum residue level of 2 mg/kg, an STMR of 0.10 mg/kg and an HR of 0.81 mg/kg for peas *(pods and succulent=immature seeds)*.

Peas (dry)

Six trials were conducted in the USA. Four trials matched maximum US GAP (4 × 0.28 kg ai/ha at 7 day intervals, a PHI of 7 days.

Residue concentrations from the four trials were: 0.068, 0.097, 0.17, and 0.17 mg/kg.

The 2009 Meeting evaluated data in cowpea, in which residues were: 0.13, 0.17, 0.56, 0.67, and 3.4 mg/kg.

As the GAPs for pea (dry) and cowpea are the same, the Meeting decided to estimate a group maximum residue level. The combined residues were: 0.068, 0.097, 0.13, 0.17 (n = 3), 0.56, 0.67, and 3.4 mg/kg. The Meeting estimated a maximum residue level of 5 mg/kg and an STMR of 0.17 mg/kg for peas (dry), based on the combined dataset. The Meeting withdrew its previous recommendation for a maximum residue level of 5 mg/kg for cowpea (dry).

Artichoke, Globe

Three trials conducted in the USA matched maximum US GAP (4 × 0.28 kg ai/ha at PHI of 4 days and total seasonal rate of 1.12 kg ai/ha). The residues were: 0.97, 1.1, and 1.2 mg/kg.

The trials were not independent as they were conducted at the same site using the same variety with the same dates of application.

The Meeting did not consider the data sufficient to estimate a maximum residue level for globe artichoke.

Legume animal feeds

Alfalfa (forage and fodder)

Nine trials for alfalfa forage and fodder each were conducted in the USA (US GAP: at a rate of 0.13 kg ai/ha, one application per cutting, and 0 day PHI for forage, 7 day PHI for fodder).

The treatment regime in the forage trials differed from the US GAP (4 × 0.14 kg ai/ha per cutting and a 0 day PHI). For the fodder trials the PHI also differed from the US GAP (4 × 0.14 kg ai/ha per cutting and 3 day PHI).

As the alfalfa trials did not match US GAP the Meeting did not estimate a maximum residue level for alfalfa fodder.

Clover (forage and hay)

Nine trials for clover forage and hay each were conducted in the USA (US GAP: a dosage rate of 0.13 kg ai/ha, one application per cutting, and 0 day PHI for forage, 7 day PHI for hay).

The treatment regime in the forage trials differed from the US GAP (4 × 0.14 kg ai/ha per cutting and a 0 day PHI). For the hay trials the PHI also differed from the US GAP (4 × 0.14 kg ai/ha per cutting and 3 day PHI).

As the clover trials did not match US GAP the Meeting did not estimate a maximum residue level for clover hay.

Bean forage

The residues were measured in bean foliage derived from supervised trials conducted according to maximum US GAP for the common bean commodity described previously.

Residues from eight trials conducted according to maximum US GAP were: 3.3, 3.6, 4.1, 4.6, 5.1, 5.8, 15, and 26 mg/kg. The Meeting estimated a median residue of 4.9 mg/kg and the highest residue of 26 mg/kg.

Pea vines

The residues in pea foliage were derived from the supervised trials for pea (pods), which were conducted according to maximum US GAP as described previously under the common bean commodity: 3.5, 6.1, and 8.6 mg/kg.

The Meeting decided to combine the data for bean forage, beans and peas for mutual support. The resulting residues were: 3.3, 3.5, 3.6, 4.1, 4.6, 5.1, 5.8, 6.1, 8.6, 15, and 26 mg/kg.

The Meeting estimated a median residue of 5.1 mg/kg and the highest residue of 26 mg/kg for bean forage and pea vines and withdrew its previous recommendations for bean forage.

Fate of residues during processing

The 2009 JMPR estimated processing factors for orange products. Taking into account the STMR for citrus fruits estimated by the present Meeting, new STMR-Ps for citrus products were calculated. The STMR-P values are summarized below.

Raw agricultural commodity (RAC)	Processed commodity	Processing factor	RAC-STMR (mg/kg)	STMR-P (mg/kg)
Citrus	Citrus juice	0.22	0.28	0.062
	Marmalade	0.77	0.28	0.22
	Citrus oil	42.5	0.28	12
	Citrus dry pulp	1.1	0.28	0.31

Residues in animal commodities

Estimated dietary burdens of farm animals

The Meeting estimated the dietary burden of methoxyfenozide residues by applying the OECD feed table for maximum proportion of agricultural commodities in animal feed (FAO Manual 2nd ed. 2009, Appendix IX).

Dietary burden calculations for beef cattle, dairy cattle are provided in Annex 6. A mean and maximum dietary burden for livestock, based on methoxyfenozide use, is shown below.

	Livestock dietary burden, methoxyfenozide, ppm of dry matter diet							
	US-Canada		EU		Australia		Japan	
	max	mean	max	mean	max	mean	max	mean
Beef cattle	16.97	9.01	110.8	48.19	110.8	48.25	0.0222	0.0222
Dairy cattle	66.10	29.57	96.57	38.40	110.8[a]	48.25[b]	56.30	27.54
Poultry, broilers	0.0923	0.0923	0.321	0.171	0.0668	0.0668	0.0159	0.0159
Poultry, layers	0.0923	0.0923	24.03[c]	8.058[d]	0.0668	0.0668	0.0182	0.0182

[a] Highest maximum beef or dairy cattle dietary burden suitable for maximum residue level estimates for mammalian meat, edible offal and milk

[b] Highest mean beef or dairy cattle dietary burden suitable for STMR estimates for mammalian meat, edible offal and milk

[c] Highest maximum broiler or layer poultry dietary burden suitable for maximum residue level estimates for poultry meat, edible offal and eggs

[d] Highest mean broiler or layer poultry dietary burden suitable for STMR estimates for poultry meat, edible offal and eggs

Farm animal feeding studies

The present Meeting used the feeding studies utilized by the 2003 and 2009 JMPR. In the studies, cows at each level were dosed orally at feeding levels of 16, 54 or 180 ppm for 28 consecutive days. The methoxyfenozide residues detected in various tissues are summarized below.

Tissue	Feeding level in cows					
	16 ppm		54 ppm		180 ppm	
	Maximum Res [a], mg/kg	Average Res, mg/kg	Maximum Res, mg/kg	Average Res, mg/kg	Maximum Res, mg/kg	Average Res, mg/kg
Milk	< 0.01	< 0.01	< 0.01	< 0.01	0.1	0.028
Muscle	< 0.003	< 0.003	< 0.003	< 0.003	0.01	0.0073
Fat	0.011	< 0.01	0.082	0.041	0.44	0.28
Liver	< 0.01	< 0.01	0.03	0.028	0.15	0.13
Kidney	< 0.01	< 0.01	< 0.01	< 0.01	0.034	0.026

[a] Methoxyfenozide

Estimated residues in animal commodities

The residues in animal commodities were estimated based on the calculated animal dietary burden and by interpolating with feeding study residues. The following table shows the expected residues in animal commodities.

	Feed level (ppm) for milk residues	Residues (mg/kg) in milk	Feed level (ppm) for tissue residues	Residues (mg/kg) in			
				Muscle	Liver	Kidney	Fat
Maximum residue level beef or dairy cattle							
Feeding study [a]	54 180	< 0.01 0.028	54 180	< 0.003 0.01	0.03 0.15	< 0.01 0.034	0.082 0.44
Dietary burden and residue estimate	110.8	0.018	110.8	0.0062	0.096	0.021	0.24
STMR beef or dairy cattle							
Feeding study [b]	16	< 0.01	16	< 0.003	< 0.01	< 0.01	< 0.01

	Feed level (ppm) for milk residues	Residues (mg/kg) in milk	Feed level (ppm) for tissue residues	Residues (mg/kg) in			
				Muscle	Liver	Kidney	Fat
	54	< 0.01	54	< 0.003	0.028	< 0.01	0.041
Dietary burden and residue estimate	48.3	< 0.01	48.3	< 0.003	0.025	< 0.01	0.036

[a] Highest residues for tissues and mean residue for milk

[b] Mean residues for tissues and milk

For meat from mammals other than marine mammals, the Meeting estimated a maximum residue level of 0.3 mg/kg, an STMR of 0.036 mg/kg and an HR of 0.24 mg/kg, based on fat, and an STMR of < 0.003 mg/kg and an HR of 0.0062 mg/kg, based on muscle. For edible offal from mammals, the Meeting estimated a maximum residue level of 0.2 mg/kg, an STMR of 0.025 mg/kg and an HR of 0.096 mg/kg, based on residues in liver. In addition, the Meeting withdrew its previous estimates for those commodities. The maximum residue levels for milk, as recommended by the 2009 JMPR, remained the same.

Estimated STMRs or HRs for the poultry commodities based on present animal burden calculation did not affect previous JMPR recommendations.

RECOMMENDATIONS

On the basis of the data from supervised trials, the Meeting concluded that the residue concentrations listed below are suitable for establishing MRLs and for assessing IEDIs and IESTIs.

Definition of the residue (for compliance with the MRL and for estimation of dietary intake) for plant and animal commodities: methoxyfenozide.

The residue is fat-soluble, but is not classified as fat-soluble with respect to its distribution in milk.

CCN	Commodity Name	Recommended MRL mg/kg		STMR or STMR-P mg/kg	HR or HR-P mg/kg
		New	Previous		
JF 0001	Citrus fruits	2	0.7	0.28	1.7
VA 0389	Spring onion	6		0.48	2.8
VC 0045	Fruiting vegetable, cucurbits, except watermelon	0.3		0.091	0.15
VP 0526	Common bean (pods and/or immature seeds)		2	0.065	0.99
VP 0063	Pea (pods and succulent=immature seeds)	2		0.10	0.81
VD 0072	Peas (dry)	5		0.17	
AL 1030	Bean forage (green)			4.9 fresh wt	26 fresh wt
	Pea vines			5.1 fresh wt	26 fresh wt
MF 0100	Mammalian fats (except milk fats)	0.3	0.2	0.036	0.24
MF 0100	Meat (from mammals other than marine mammals)	0.3 (fat)	0.2 (fat)	0.036 (fat) < 0.003 (muscle)	0.24 (fat) 0.0062 (muscle)
MO 0105	Edible offal (mammalian)	0.2	0.1	0.025	0.096
	Citrus pulp, dry			0.31	
	Citrus juice			0.062	
	Marmalade			0.22	
	Citrus oil	70		12	

DIETARY RISK ASSESSMENT

Long-term intake

The ADI for methoxyfenozide is 0–0.1 mg/kg bw. The International Estimated Daily Intakes (IEDI) for methoxyfenozide were estimated for the 13 GEMS/Food Consumption Cluster Diets using the STMR or STMR-P values estimated by the previous and present JMPR. The results are shown in Annex 3 of the 2012 JMPR Report. The IEDI ranged 0–5% of the maximum ADI. The Meeting concluded that the long-term intake of residues of methoxyfenozide from uses considered by the JMPR is unlikely to present a public health concern.

Short-term intake

The ARfD for methoxyfenozide is 0.9 mg/kg bw. The International Estimated Short-Term Intake (IESTI) for methoxyfenozide was calculated for the food commodities for which STMRs or HRs were estimated by the present Meeting and for which consumption data were available. The results are shown in Annex 4 of the 2012 JMPR Report. The IESTI varied from 0–10% of the ARfD.

The Meeting concluded that the short-term intake of residues of methoxyfenozide from other uses that have been considered by the present Meeting is unlikely to present a public health concern.

REFERENCES

Code	Author	Year	Title, Institute, Report reference
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