FLUOPYRAM (243)

First draft was prepared by Mr David Lunn, Ministry for Primary Industries, Wellington, New Zealand.

EXPLANATION

Fluopyram, a pyridylethylamide broad spectrum fungicide was evaluated for the first time by the 2010 JMPR, where an ADI of 0–0.01 mg/kg bw and an ARfD of 0.5 mg/kg bw were established, and maximum residue levels were recommended for a limited number of uses where GAP information was available.

The 2010 JMPR also established residue definitions for fluopyram:

For plant products (compliance with MRLs and dietary intake assessment): *fluopyram.*

For animal products (compliance with MRLs): *sum of fluopyram and 2-(trifluoromethyl) benzamide, expressed as fluopyram.*

For animal products (dietary intake assessment): *sum of fluopyram, 2-(trifluoromethyl)benzamide and the combined residues N-{(E)-2-[3-chloro-5-(trifluoromethyl)pyridin-2-yl]ethenyl}-2-trifluoromethyl) benzamide and N-{(Z)-2-[3-chloro-5-(trifluoromethyl)pyridin-2-yl]ethenyl}-2-trifluoromethyl) benzamide, all expressed as fluopyram*.

New GAP information, supporting residue data and additional analytical sample storage stability studies were provided by the manufacturer for evaluation by the Meeting.

In this evaluation, the values presented in the tables are as reported in the various studies, but in the accompanying text, they have generally been rounded to two significant digits. Abbreviations have also been used for the various fluopyram metabolites mentioned in the study reports. These are:

- BZM = AE C656948-benzamide
- PAA = AE C656948-pyridyl-acetic acid
- PCA = AE C656948-carboxylic acid
- 7-OH = AE C656948-7-hydroxy

METHODS OF RESIDUE ANALYSIS

Analytical methods

The 2010 JMPR reviewed and summarized analytical method descriptions and validation data for fluopyram and major metabolites (BZM, 7-OH, PCA, PAA and the methyl-sulfoxide) in crop and animal commodities and in soil.

Method GM-001-P07-01

A minor modification of Method 00984 [Ref: 2010 JMPR] was used to measure residues of the parent compound in the new supervised residue trials on grapes and apples and Method 00984 was used in the extended storage stability studies..

Stability of residues in stored analytical samples

The 2010 JMPR reviewed freezer storage stability studies on a range of representative substrates covering those with a high water content (lettuce), a high starch content (wheat grain), a high protein content (dry pea seed), a high oil content (rape seed) and a high acid content (orange) and concluded that fluopyram and major metabolites (BZM, PAA and PCA) are stable in these representative substrates for at least 24 months in frozen storage. The 2010 JMPR also concluded that residues of the

PCA metabolite are stable in grapes, potato tubers, cabbage leaves and wheat grain for at least 30 months in frozen storage and that residues of the methyl-sulfoxide metabolite in wheat forage, straw and grain are stable for at least 25 months in frozen storage [Ref: 2010 JMPR-E].

The Meeting received updated reports on several of these studies and on the stability of the 7-OH and methyl-sulfoxide metabolites (found predominantly in rotational crops) in dry pea seed, rape seed and orange fruit.

In a study reported by Cavaille & Meilland-Berthier, 2010 [Ref: MR-10/044], updating the interim results provided to the 2010 JMPR, the stability of fluopyram and its BZM, PCA PAA and 7-OH metabolites was investigated in lettuce, wheat grain, dry pea seed and rape seed matrices stored under frozen conditions.

Samples of the test commodities were purchased in the market and half were fortified at 0.2 mg/kg of each analyte. The spiked and the control samples were sealed in 125 mL polypropylene bottles and stored in the dark at or below -18 ºC. Samples were taken for extraction and analysis after 0, 3, 6, 13, 18, 24 and 36–37 months, with the stored control samples being freshly fortified with each analyte and analysed concurrently to determine the procedural recovery efficiency. Analysis was by LC-MS/MS (Method 00984), with mean procedural recovery rates of 75–109% for all analytes and matrices (fortified at 0.01 mg/kg and 0.2 mg/kg).

After 36–37 months storage the measured residues of fluopyram and major metabolites in stored samples of representative plant matrices with high water, starch, protein and oil content were greater than 93% of the spiked level (fluopyram) and for the fluopyram metabolites were more than 77%.

Table 1 Stability of fluopyram residues in plant matrices spiked at 0.2 mg/kg and stored ≤ -18 °C

COMMODITY	STORAGE INTERVAL (MONTHS)	RESIDUES (MG/KG)	% REMAINING	PROCEDURAL RECOVERY (%)
Lettuce (head)	0 3 6 13 18 24 *36*	0.21, 0.19, 0.21 0.21, 0.2, 0.21 0.21, 0.21, 0.22 0.18, 0.2, 0.22 0.21, 0.19, 0.2 0.19, 0.18, 0.19 *0.2, 0.21, 0.22*	101 102 106 100 101 93 *106*	105 107 99 114 96 93 *98*
Wheat (grain)	0 3 6 13 18 24 *36*	0.21, 0.2, 0.21 0.2, 0.2, 0.2 0.2, 0.19, 0.18 0.21, 0.21, 0.2 0.21, 0.21, 0.21 0.21, 0.19, 0.21 *0.21, 0.22, 0.22*	102 100 95 104 104 102 *108*	96 104 99 114 104 101 *98*
Dry pea (seed)	0 3 6 13 18 24 *36*	0.18, 0.19, 0.19 0.2, 0.2, 0.2 0.19, 0.19, 0.19 *0.21, 0.2, 0.21* *0.2, 0.21, 0.2* *0.2, 0.2, 0.18* *0.2, 0.2, 0.2*	95 100 96 103 102 97 *99*	92 104 98 111 100 97 *91*
Rape (seed)	0 3 6 13 18 24 *37*	0.24, 0.22, 0.23 0.21, 0.21, 0.22 0.2, 0.2, 0.19 0.2, 0.29, 0.2 0.19, 0.19, 0.2 0.19, 0.19, 0.19 *0.2, 0.21, 0.18*	115 106 98 99 97 95 *99*	104 109 100 108 93 93 *93*

Results in italics are for the extended storage periods reported in the updated study reports

Table 2 Stability of residues of the BZM metabolite of fluopyram in plant matrices spiked at 0.2 mg/kg and stored ≤ -18 °C

COMMODITY	STORAGE INTERVAL (MONTHS)	RESIDUES REMAINING (MG/KG)	% RESIDUES REMAINING	PROCEDURAL RECOVERY (%)
Lettuce (head)	0	0.18, 0.18, 0.19	93	103
	3	0.2, 0.19, 0.18	96	103
	6	0.19, 0.19, 0.19	95	97
	13	0.16, 0.17, 0.17	84	109
	18	0.18, 0.19, 0.2	96	91
	24	0.18, 0.18, 0.18	89	92
	36	*0.18, 0.18, 0.18*	*91*	*95*
Wheat (grain)	0	0.18, 0.19, 0.19	92	92
	3	0.2, 0.2, 0.2	101	105
	6	0.18, 0.19, 0.19	93	96
	13	0.18, 0.17, 0.17	86	110
	18	0.19, 0.2, 0.2	99	98
	24	0.18, 0.18, 0.18	90	95
	36	*0.19, 0.18, 0.18*	*92*	*93*
Dry pea (seed)	0	0.18, 0.18, 0.18	90	90
	3	0.2, 0.19, 0.19	96	98
	6	0.18, 0.18, 0.18	91	94
	13	0.16, 0.16, 0.17	83	108
	18	0.18, 0.18, 0.19	92	92
	24	0.18, 0.18, 0.17	88	92
	36	*0.17, 0.18, 0.18*	*87*	*93*
Rape (seed)	0	0.17, 0.17, 0.17	85	94
	3	0.25, 0.25, 0.25	124	124
	6	0.2, 0.2, 0.19	97	93
	13	0.17, 0.17, 0.18	86	107
	18	0.2, 0.2, 0.19	96	91
	24	0.17, 0.18, 0.17	86	84
	37	*0.19, 0.18, 0.18*	*92*	*94*

Results in italics are for the extended storage periods reported in the updated study reports

Table 3 Stability of residues of the PAA metabolite of fluopyram in plant matrices spiked at 0.2 mg/kg and stored ≤ -18 °C

COMMODITY	STORAGE INTERVAL (MONTHS)	RESIDUES REMAINING (MG/KG)	% RESIDUES REMAINING	PROCEDURAL RECOVERY (%)
Lettuce (head)	0	0.19, 0.19, 0.2	95	94
	3	0.19, 0.19, 0.18	94	99
	6	0.19, 0.19, 0.18	93	96
	13	0.17, 0.17, 0.16	83	108
	18	0.16, 0.15, 0.17	81	98
	24	0.16, 0.16, 0.16	80	92
	36	*0.15, 0.14, 0.14*	*73*	*92*
Wheat (grain)	0	0.17, 0.16, 0.17	82	84
	3	0.17, 0.18, 0.17	87	91
	6	0.17, 0.17, 0.17	86	87
	13	0.19, 0.19, 0.18	93	103
	18	0.18, 0.19, 0.2	95	95
	24	0.17, 0.18, 0.17	88	87
	36	*0.16, 0.17, 0.16*	*82*	*81*

COMMODITY	STORAGE INTERVAL (MONTHS)	RESIDUES REMAINING (MG/KG)	% RESIDUES REMAINING	PROCEDURAL RECOVERY (%)
Dry pea (seed)	0	0.16, 0.16, 0.17	82	80
	3	0.17, 0.17, 0.18	88	88
	6	0.17, 0.16, 0.16	83	85
	13	0.18, 0.17, 0.18	87	102
	18	0.17, 0.19, 0.18	90	85
	24	0.16, 0.15, 0.15	77	78
	36	*0.15, 0.16, 0.17*	*80*	*85*
Rape (seed)	0	0.18, 0.18, 0.18	91	91
	3	0.17, 0.17, 0.17	87	91
	6	0.16, 0.18, 0.17	85	89
	13	0.19, 0.19, 0.19	96	105
	18	0.18, 0.17, 0.18	89	85
	24	0.16, 0.17, 0.16	82	80
	37	*0.15, 0.17, 0.16*	*80*	*86*

Results in italics are for the extended storage periods reported in the updated study reports

Table 4 Stability of residues of the PCA metabolite of fluopyram in plant matrices spiked at 0.2 mg/kg and stored ≤ -18 °C

COMMODITY	STORAGE INTERVAL (MONTHS)	RESIDUES REMAINING (MG/KG)	% RESIDUES REMAINING	PROCEDURAL RECOVERY (%)
Dry pea (seed)	0	0.18, 0.19, 0.18	91	89
	3	0.19, 0.21, 0.21	101	100
	6	0.19, 0.19, 0.19	95	88
	13	0.17, 0.17	87	85
	18	0.17, 0.17	87	89
	24	0.19, 0.19, 0.18	93	87
	36	*0.16, 0.18, 0.18*	*88*	*90*
Rape (seed)	0	0.18, 0.17, 0.18	88	99
	3	0.17, 0.17, 0.18	87	92
	6	0.19, 0.18, 0.19	93	91
	13	0.19, 0.19, 0.19	95	97
	18	0.19, 0.21	101	102
	24	0.14, 0.13, 0.13	67	64
	37	*0.13, 0.13, 0.16*	*70*	*66*

Results in italics are for the extended storage periods reported in the updated study reports

Table 5 Stability of residues of the 7-OH metabolite of fluopyram in plant matrices spiked at 0.2 mg/kg and stored ≤ -18 °C

COMMODITY	STORAGE INTERVAL (MONTHS)	RESIDUES REMAINING (MG/KG)	% RESIDUES REMAINING	PROCEDURAL RECOVERY (%)
Lettuce (head)	0	0.21, 0.2, 0.22	104	108
	3	0.19, 0.19, 0.2	98	104
	6	0.19, 0.2, 0.2	98	101
	13	0.2, 0.2, 0.19	98	111
	18	0.19, 0.18, 0.2	96	97
	24	0.19, 0.19, 0.19	95	97
	36	*0.2, 0.2, 0.2*	*101*	*97*

COMMODITY	STORAGE INTERVAL (MONTHS)	RESIDUES REMAINING (MG/KG)	% RESIDUES REMAINING	PROCEDURAL RECOVERY (%)
Wheat (grain)	0	0.21, 0.2, 0.21	104	99
	3	0.2, 0.2, 0.2	101	107
	6	0.19, 0.19, 0.19	94	100
	13	0.21, 0.2, 0.21	104	116
	18	0.2, 0.2, 0.19	97	95
	24	0.2, 0.19, 0.19	97	98
	36	*0.2, 0.2, 0.2*	*99*	*97*

Results in italics are for the extended storage periods reported in the updated study reports

In a study reported by Cavaille & Meilland-Berthier, 2010 [Ref: MR-08/036], updating the interim results provided to the 2010 JMPR, the stability of fluopyram and its BZM, PCA and PAA metabolites was investigated in orange fruit stored under frozen conditions.

Oranges were purchased in the market and half were fortified at 0.2 mg/kg of each analyte. The spiked and the control samples were sealed in 125 mL polypropylene bottles and stored in the dark at or below -18 °C. Samples were taken for extraction and analysis after 0, 4, 6, 12, 19, 24 and 36 months, with the stored control samples being freshly fortified with each analyte and analysed concurrently to determine the procedural recovery efficiency. Analysis was by LC-MS/MS (Method 00984), with mean procedural recovery rates of 70–107% for all analytes and matrices (fortified at 0.01 mg/kg and 0.2 mg/kg).

After 36 months storage the measured residues of fluopyram and major metabolites in stored samples of orange (representing matrices with high acid content) were greater than 95% of the nominal level (0.2 mg/kg) except for the PAA metabolite, where levels decreased to about 60% after 36 months storage.

Table 6 Residue stability of fluopyram and major plant metabolites in orange fruit spiked at 0.2 mg/kg and stored ≤ -18 °C

ANALYTE	STORAGE INTERVAL (MONTHS)	RESIDUES REMAINING (MG/KG)	% RESIDUES REMAINING	PROCEDURAL RECOVERY (%)
Fluopyram	0	0.22, 0.2, 0.22	107	103
	4	0.2, 0.2, 0.2	100	97
	6	0.21, 0.21, 0.21	104	100
	12	0.21, 0.19, 0.2	101	98
	19	0.2, 0.2, 0.18	97	93
	24	0.19, 0.19, 0.18	93	94
	36	*0.2, 0.22, 0.22*	*107*	*107*
BZM	0	0.21, 0.2, 0.2	102	102
	4	0.17, 0.17, 0.17	86	93
	6	0.17, 0.2, 0.18	87	93
	12	0.19, 0.2, 0.2	98	94
	19	0.18, 0.19, 0.18	92	90
	24	0.18, 0.18, 0.19	91	90
	36	*0.21, 0.19, 0.2*	*100*	*97*
PAA	0	0.18, 0.18, 0.18	91	88
	4	0.16, 0.17, 0.17	83	91
	6	0.16, 0.15, 0.15	78	81
	12	0.12, 0.11, 0.12	58	72
	19	0.12, 0.13, 0.12	62	85
	24	0.12, 0.12, 0.11	57	83
	36	*0.1, 0.1, 0.1*	*48*	*79*

ANALYTE	STORAGE INTERVAL (MONTHS)	RESIDUES REMAINING (MG/KG)	% RESIDUES REMAINING	PROCEDURAL RECOVERY (%)
PCA	0	0.21, 0.2, 0.2	102	99
	4	0.19, 0.19, 0.19	96	99
	6	0.19, 0.19, 0.2	96	95
	12	0.19, 0.2, 0.18	95	101
	19	0.18, 0.18	93	93
	24	0.18, 0.18	92	96
	36	*0.2, 0.19*	*98*	*96*

Results in italics are for the extended storage periods reported in the updated study reports

In a study reported by Cavaille & Meilland-Berthier, 2010 [Ref: MR-10/045], the stability of the 7-OH and methyl-sulfoxide metabolites of fluopyram was investigated in dry pea seed, rape seed and orange fruit stored under frozen conditions.

Samples of dry pea seed, rape seed and orange were fortified at 0.2 mg/kg of each analyte with the spiked and the control samples stored in sealed 125 mL polypropylene bottles in the dark at or below -18 °C. Samples were taken for extraction and analysis at various intervals up 24–25 months, with the stored control samples being freshly fortified with each analyte and analysed concurrently to determine the procedural recovery efficiency. Analysis was by LC-MS/MS (Method 00984), with mean procedural recovery rates of 73–122% for both analytes and all matrices (fortified at 0.01 mg/kg and 0.2 mg/kg).

After 24–25 months frozen storage, the measured residues of the 7-OH and –methyl sulfoxide metabolites of fluopyram in stored samples of orange (representing matrices with high acid content), dry pea seed (representing high protein matrices) and rape seed (representing oily matrices) were greater than 92% of the nominal level (0.2 mg/kg).

Table 7 Stability of methyl-sulfoxide metabolite of fluopyram residues in plant matrices spiked at 0.2 mg/kg and stored ≤ -18 °C

COMMODITY	STORAGE INTERVAL (MONTHS)	RESIDUES (MG/KG)	% REMAINING	PROCEDURAL RECOVERY (%)
Orange	0	0.2, 0.2, 0.2	100	100
	3	0.22, 0.21, 0.21	105	103
	7	0.23, 0.2, 0.21	107	109
	12	0.24, 0.23, 0.22	115	120
	18	0.2, 0.21, 0.19	99	101
	25	0.22, 0.22, 0.22	112	120
Dry pea (seed)	0	0.2, 0.2, 0.2	99	91
	4	0.16, 0.16, 0.16	81	82
	7	0.21, 0.2, 0.19	100	99
	13	0.22, 0.2, 0.2	103	108
	19	0.19, 0.18, 0.18	91	92
	25	0.19, 0.2, 0.19	96	104
Rape (seed)	0	0.19, 0.21, 0.21	100	100
	3	0.21, 0.22, 0.21	106	106
	6	0.21, 0.21, 0.21	104	108
	12	0.22, 0.21, 0.23	109	109
	18	0.2, 0.21, 0.19	99	103
	24	0.2, 0.21, 0.22	104	113

Table 8 Stability of 7-OH metabolite of fluopyram residues in plant matrices spiked at 0.2 mg/kg and stored ≤ -18 °C

COMMODITY	STORAGE INTERVAL (MONTHS)	RESIDUES (MG/KG)	% REMAINING	PROCEDURAL RECOVERY (%)
Orange	0 3 7 12 18 25	0.2, 0.2, 0.2 0.18, 0.18, 0.18 0.2, 0.19, 0.19 0.2, 0.2, 0.2 0.2, 0.2, 0.19 0.22, 0.2, 0.2	100 91 97 101 100 103	100 95 94 99 101 104
Dry pea (seed)	0 4 7 13 19 25	0.2, 0.2, 0.2 0.17, 0.18, 0.16 0.19, 0.2, 0.19 0.2, 0.19, 0.18 0.18, 0.18, 0.19 0.19, 0.19, 0.19	99 81 100 103 91 96	91 82 99 108 92 104
Rape (seed)	0 3 6 12 18 24	0.2, 0.19, 0.2 0.18, 0.18, 0.19 0.18, 0.18, 0.18 0.18, 0.19, 0.18 0.19, 0.18, 0.19 0.19, 0.19, 0.19	96 91 91 92 93 95	98 96 93 94 95 98

USE PATTERNS

Information on GAP in Canada, Germany, Guatemala, Morocco, Panama, Turkey, the Ukraine and the USA was provided to the Meeting for foliar applications to a range of fruit, vegetables, pulses, tree nuts and oil seed crops, and summarized in the following Table.

Table 9 Registered uses of fluopyram (SC formulations) 2012

Crop	Country	Application				Max/season		PHI (days)	Remarks:
		method	kg ai/ha	kg ai/hL	water L/ha (min)	no	kg ai/ha		
Pome fruits									
Apple	Canada	spray	0.15		500	3	0.5	7	7–14 d intervals
Apple	Turkey	spray [b]		0.007				14	10–12 d intervals
Apple	Ukraine	spray [c]	0.06–0.08			2		20	
Apple	USA	spray	0.09–0.25		470		0.5	7	7–10 d intervals
Apple	USA	spray [a]	0.09–0.15		470		0.5	72	7–10 d intervals
Apple	USA	spray [b]	0.07–0.15		470		0.5	75	7–10 d intervals
Apple	USA	spray [c]	0.06–0.11		470		0.39	14	7–14 d intervals
Pear	Turkey	spray [b]		0.007				14	10–12 d intervals
Pome fruit	Germany	spray [b]	0.025–0.05 /metre canopy height		up to 500/ha/metre canopy height	4		14	14 d intervals
Stone fruits									
Apricot	Turkey	spray [b]		0.005		2		14	Up to full flowering
Cherries	Canada	spray	0.125		500	3	0.375	0	14 d intervals
Cherries	Turkey	spray [b]		0.005		3		3	Over flowering and at colour change
Cherries	USA	spray	0.1		470 (ground) 140 (air)		0.21	0	5–7 d intervals

Crop	Country	Application				Max/season		PHI (days)	Remarks:
		method	kg ai/ha	kg ai/hL	water L/ha (min)	no	kg ai/ha		
Cherries	USA	spray [b]	0.08–0.1		470 (ground) 140 (air)		0.21	0	7 d intervals
Cherries	USA	spray [c]	0.06–0.1		470 (ground) 140 (air)		0.21	1	7–14 d intervals
Peach	Turkey	spray [b]		0.005				3	10–14 d intervals
Peach	Ukraine	spray [c]	0.06–0.08			3		30	
Berries & other small fruit									
Grapes (wine)	Canada	spray	0.25		500	2	0.5	7	
Grapes (wine)	Germany	spray [b]	0.025–0.25	0.006	400–1600	3		28	12–14 d intervals
Grapes	Romania	spray	0.2–0.25		800–1000	2	0.5	3 (table) 12 (wine)	See 2010 JMPR
Grapes (wine)	Turkey	spray [b]		0.005				14	14 d intervals
Grapes (wine)	USA	spray	0.09–0.25		470		0.5	7	12–21 d intervals
Grapes (wine)	USA	spray [a]	0.09–0.25		470		0.5	7	12–21 d intervals
Grapes (wine)	USA	spray [b]	0.07–0.13		470		0.5	14	
Grapes (wine)	USA	spray [c]	0.04–0.14		470	6	0.5	14	12–21 d intervals
Strawberries	Canada	drip irrig	0.25				0.5	0	5–7 d intervals
Strawberries	Morocco	spray [c]		0.015		2		3	7 d interval
Strawberries	USA	drip irrig	0.25				0.5	0 (field) 1(indoor)	5–7 d intervals Min 4 ha greenhouses
Other fruit									
Banana	Panama	spray	0.08–0.1		NS (ground) 12–15 (air)		5	0	With 7–10 L oil/ha (air)
Bulb vegetables									
Garlic	Guatemala	spray [b]	0.08–0.1			4		7	7–14 d intervals
Garlic	Panama	spray [b]	0.08–0.1		400–600 (ground) 50–100 (air)	4		7	7–14 d intervals
Leek	Guatemala	spray [b]	0.08–0.1			4		7	7–14 d intervals
Leek	Panama	spray [b]	0.08–0.1		400–600 (ground) 50–100 (air)	4		7	7–14 d intervals
Onion	Guatemala	spray [b]	0.08–0.1			4		7	7–14 d intervals
Onion	Panama	spray [b]	0.08–0.1		400–600 (ground) 50–100 (air)	4		7	7–14 d intervals
Brassica vegetables									
Broccoli	Guatemala	spray [b]	0.08–0.1			4		7	7–14 d intervals
Broccoli	Panama	spray [b]	0.08–0.1		400–600 (ground) 50–100 (air)	4		7	7–14 d intervals
Cabbage	Guatemala	spray [b]	0.08–0.1			4		7	7–14 d intervals
Cabbage	Panama	spray [b]	0.08–0.1		400–600 (ground) 50–100 (air)	4		7	7–14 d intervals
Cabbage	Ukraine	spray [b]	0.07–0.15			2		30	

Crop	Country	Application				Max/season		PHI (days)	Remarks:
		method	kg ai/ha	kg ai/hL	water L/ha (min)	no	kg ai/ha		
Cauliflower	Guatemala	spray [b]	0.08–0.1			4		7	7–14 d intervals
Cauliflower	Panama	spray [b]	0.08–0.1		400–600 (ground) 50–100 (air)	4		7	7–14 d intervals
Cucurbits									
Cucumber	China	spray	0.038–0.075			3		2	See 2010 JMPR
Cucumber	Guatemala	spray [b]	0.08–0.1			4		7	7–14 d intervals
Cucumber	Panama	spray [b]	0.08–0.1		400–600 (ground) 50–100 (air)	4		7	7–14 d intervals
Cucumber	Ukraine	spray [b]	0.07–0.15			2		14	
Cucumber (indoor)	Turkey	spray [b]		0.006				3	10 d intervals
Melons	Guatemala	spray [b]	0.08–0.1			4		7	7–14 d intervals
Melons	Panama	spray [b]	0.08–0.1		400–600 (ground) 50–100 (air)	4		7	7–14 d intervals
Squash (indoor)	Turkey	spray [b]		0.006				3	10 d intervals
Watermelon	Canada	spray	0.08–0.25		200	6	0.5	0	7–14 d intervals
Watermelon	Guatemala	spray [b]	0.08–0.1			4		7	7–14 d intervals
Watermelon	Panama	spray [b]	0.08–0.1		400–600 (ground) 50–100 (air)	4		7	7–14 d intervals
Watermelon	USA	drip irrig	0.25				0.5	7	5–10 d intervals Min 4 ha greenhouses
Watermelon	USA	spray	0.09–0.25		94 (ground)		0.5	0(field) 3(indoor)	7–14 d intervals Min 4 ha greenhouses
Watermelon	USA	spray [b]	0.07–0.25		94 (ground)		0.5	7	10–14 d intervals Min 4 ha greenhouses
Watermelon	USA	spray [c]	0.06–0.14		94 (ground)	4	0.5	0(field) 3(indoor)	10–14 d intervals Min 4 ha greenhouses
Zucchini	Guatemala	spray [b]	0.08–0.1			4		7	7–14 d intervals
Zucchini	Panama	spray [b]	0.08–0.1		400–600 (ground) 50–100 (air)	4		7	7–14 d intervals
Fruiting vegetables									
Eggplant	Guatemala	spray [b]	0.08–0.1			4		7	7–14 d intervals
Eggplant	Turkey	spray [b]		0.006				3	
Peppers	Guatemala	spray [b]	0.08–0.1			4		7	7–14 d intervals
Peppers	Panama	spray [b]	0.08–0.1		400–600 (ground) 50–100 (air)	4		7	7–14 d intervals
Peppers	Turkey	spray [b]		0.006				3	
Tomato	Guatemala	spray [b]	0.08–0.1			4		7	7–14 d intervals
Tomato	Morocco	spray [c]		0.008–0.0125		2		3	7 d interval
Tomato	Panama	spray [b]	0.08–0.1		400–600 (ground) 50–100 (air)	4		7	7–14 d intervals
Tomato	Turkey	spray [b]		0.006				3	
Tomato	Ukraine	spray [b]	0.07–0.15			2		14	
Legume vegetables									
Beans (incl string beans)	Guatemala	spray [b]	0.08–0.1			4		7	7–14 d intervals

Crop	Country	Application				Max/season		PHI (days)	Remarks:
		method	kg ai/ha	kg ai/hL	water L/ha (min)	no	kg ai/ha		
Beans (incl string beans)	Panama	spray [b]	0.08–0.1		400–600 (ground) 50–100 (air)	4		7	7–14 d intervals
Peas	Guatemala	spray [b]	0.08–0.1			4		7	7–14 d intervals
Peas	Panama	spray [b]	0.08–0.1		400–600 (ground) 50–100 (air)	4		7	7–14 d intervals
Pulses									
Beans (dry) [g]	Canada	spray	0.08–0.15		200		0.3	14	7–14 d intervals No grazing or for animal feed
Beans (dry) [g]	USA	spray	0.15		94 (ground) 47 (air)		0.3	14	7–14 d intervals No grazing or for animal feed
Beans (dry) [g]	USA	spray [d]	0.1–0.15		94 (ground) 47 (air)		0.3	14 7 (cutting)	7–14 d intervals No grazing or for animal feed
Root & tuber vegetables									
Carrot	Guatemala	spray [b]	0.08–0.1			4		7	7–14 d intervals
Carrot	Panama	spray [b]	0.08–0.1		400–600 (ground) 50–100 (air)	4		7	7–14 d intervals
Carrot	Ukraine	spray [b]	0.07–0.15			2		30	
Potato	Canada	spray	0.08–0.15		200 (ground) 50 (air)		0.4	7	7–12 d intervals
Potato	Guatemala	spray [b]	0.08–0.1			4		7	7–14 d intervals
Potato	Panama	spray [b]	0.08–0.1		400–600 (ground) 50–100 (air)	4		7	7–14 d intervals
Potato	USA	spray	0.15–0.2 (ground) 0.1 (air)		94 (ground) 47 (air)		0.4 (ground) 0.31 (air)	7	5–7 d intervals
Potato	USA	spray [a]	0.1 (ground) 0.1 (air)		94 (ground) 47 (air)		0.4 (ground) 0.3 (air)	7	7–14 d intervals
Potato	USA	spray [c]	0.09–0.11 (ground) 0.1 (air)		94 (ground) 47 (air)	4	0.4 (ground) 0.31 (air)	7	14 d intervals
Sugar beet	USA	spray	0.125		94 (ground)		0.25	7	5–7 d intervals
Sugar beet	USA	spray [c]	0.126		94 (ground)		0.25	21	10–21 d intervals
Sugar beet	USA	spray [d]	0.125		94 (ground)		0.25	7	14 d intervals
Tree nuts									
Almond	Canada	spray	0.12–0.25		500		0.5	14	14 d intervals
Almond	USA	spray [a]	0.11–0.25		470 (ground) 140 (air)		0.5	30	7–14 d intervals
Almond	USA	spray [b]	0.07–0.25		470 (ground) 140 (air)		0.5	35	7–14 d intervals
Almond	USA	spray [c]	0.07–0.14		470 (ground) 140 (air)	4	0.5	60	7–14 d intervals Up to hull split
Pecan	USA	spray [b]	0.13–0.25		470 (ground) 140 (air)		0.5		14 d intervals Up to shuck split
Pecan	USA	spray [c]	0.07–0.14		470 (ground) 140 (air)	6	0.5	30	14 d intervals Up to shuck split
Pistachio	USA	spray [a]	0.15–0.25		470 (ground) 140 (air)		0.5	30	7–14 d intervals

Crop	Country	Application				Max/season		PHI (days)	Remarks:
		method	kg ai/ha	kg ai/hL	water L/ha (min)	no	kg ai/ha		
Pistachio	USA	spray [b]	0.09–0.25		470 (ground) 140 (air)		0.5	35	
Pistachio	USA	spray [c]	0.09–0.14		470 (ground) 140 (air)	4	0.42	28	14–21 d intervals
Tree nuts [f]	USA	spray	0.12–0.25		470 (ground) 140 (air)		0.5	14	7–14 d intervals
Tree nuts [f]	USA	spray [b]	0.13–0.25		470 (ground) 140 (air)		0.5	35	except almonds, pecans, pistachio 7–14 d intervals
Tree nuts [f]	USA	spray [c]	0.1–0.14		470 (ground) 140 (air)		0.28	60	except almonds, pecans, pistachio 7–14 d intervals
Oilseeds									
Oil seed rape	Germany	spray [e]	0.125		200–400	1		End of flowering	
Oil seed rape	Ukraine	spray [e]	0.1–0.11			2		30	
Peanut	USA	spray [b]	0.18–0.23		94 (ground) 47 (air)		0.5	14	14 d intervals No grazing or for animal feed
Peanut	USA	spray [c]	0.13		94 (ground) 47 (air)		0.5	14	14 d intervals No grazing or for animal feed
Peanut	USA	spray [d]	0.2		94 (ground) 47 (air)		0.82	14	14 d intervals No grazing or for animal feed
Peanut	Canada	spray	0.12–0.25		200		0.5	7	14 d intervals No grazing or for animal feed
Peanut	USA	spray	0.2–0.25		94 (ground) 47 (air)		0.5	7	14 d intervals No grazing or for animal feed
Sunflower	Ukraine	spray [e]	0.1–0.11			2		50	

[a] SC formulation containing 125 g ai/L fluopyram + 374 g ai/L pyrimethanil

[b] SC formulation containing 200 g ai/L fluopyram + 200 g ai/L tebuconazole

[c] SC formulation containing 250 g ai/L fluopyram + 250 g ai/L trifloxystrobin

[d] SC formulation containing 200 g ai/L fluopyram + 200 g ai/L prothioconazole

[e] SE formulation containing 125 g ai/L fluopyram + 125 g ai/L prothioconazole

[f] Tree nuts = almond, beech nut, Brazil nut, butternut, cashew, chestnut, chinquapin, filbert (hazelnut), hickory nut, macadamia nut, pecan, pistachio, walnuts

[g] Dry beans = Dried Shelled Bean, Bean (Lupinus spp., includes grain lupin, sweet lupin, white lupin, and white sweet lupin), Bean (Phaseolus spp., includes field bean, kidney bean, lima bean (dry), navy bean, pinto bean, tepary bean), Bean (Vigna spp., includes adzuki bean, black-eyed pea, catjang, Crowder pea, moth bean, mung bean, rice bean, Southern pea, Urd bean), Other Beans [Broad bean (dry), chickpea, Lablab bean, Lentil].

RESIDUES RESULTING FROM SUPERVISED TRIALS ON CROPS

The Meeting received new information on supervised field trials involving foliar applications of fluopyram to the following crops.

Crop group	Commodity	Country	Table No.
Pome fruit	Apple	Canada, USA	Table 10
Berries & small fruit	Grapes (wine)	USA	Table 14
Fruiting vegetables	Peppers, Sweet	Turkey	Table 17

The supervised trials were well documented with laboratory and field reports. Laboratory reports included method validation including procedural recoveries with spiking at residue levels similar to those occurring in samples from the supervised trials. Dates of analyses or duration of residue sample storage were also provided. Although trials included control plots, no control data are recorded in the tables unless residues in control samples exceeded the LOQ. Residue data are recorded unadjusted for recovery.

When multiple applications were made to a crop, the application rate, spray concentration and spray volume were not always identical from one application to the next. If the variation was small, only the final values for application rate, concentration and spray volume were recorded. For larger variations all values were recorded.

Intervals of freezer storage between sampling and analysis were recorded for all trials and were covered by the conditions of the freezer storage stability studies.

Results from replicated field plots are presented as individual values. When residues were not detected they are shown as below the LOQ (e.g., < 0.01 mg/kg). Residues and application rates have been rounded to two significant digits (or if close to the LOQ, rounded to one significant digit). Average values and proportionally adjusted residues have been calculated from the residue results prior to rounding and the results from trials used for the estimation of maximum residue levels have been (underlined).

The results from trials previously evaluated by the 2010 JMPR and either matching critical GAP or where the results can be proportionally adjusted (scaled) to reflect GAP application rates are summarized in the following 'Interpretation tables'. The approach used to scale the results from trials where the application rates range from 0.33× GAP to 5× GAP (but otherwise match the critical GAP) is described in the Report of the 2010 JMPR (Section 2.8).

Crop group	Commodity	Country	Table No.
Pome fruit	Apples	Canada, USA	Table 11
Stone fruit	Cherries	USA	Table 12
	Peaches	S Europe	Table 13
Berries & small fruit	Strawberries	USA	Table 15
Assorted tropical fruit	Bananas	C America	Table 16
Fruiting vegetables	Sweet peppers, Tomatoes	Europe	Tables 18, 19
Pulses	Beans (dry)	USA	Table 20
Root & tuber vegetables	Carrots	N Europe	Table 21
	Potatoes, Sugar beet	USA	Tables 22, 23
Tree nuts	Almonds, Pecans	USA	Tables 24, 25
Oilseeds	Peanuts	USA	Table 26
	Rape seed	N Europe	Table 27
Animal feedstuffs	Sugar beet tops	USA	Table 28
	Almond hulls	USA	Table 29

Pome fruits

Apples

Results from supervised trials from the USA on apples and pears were provided to the Meeting. In these trials, three applications of fluopyram (SC 500 formulation) were made with spray adjuvant to mature, full-sized trees 12–14 days apart as foliar sprays using ground-based airblast equipment. At most sites, two application methods were used, one involving low volume sprays (440–630 L/ha) and one using high volume treatments (1900–2600 L/ha). Plot sizes in these trials ranged from 29–290 m^2 and involved at least four trees per plot.

Duplicate samples of at least 2 kg fruit were taken from at least four trees/plot, frozen within 4 hours of sampling and stored at -15 °C for up to 225 days before whole fruit was analyzed for

fluopyram using LC/MS/MS Method GM-001-P07-01. The reported LOQ was 0.01 mg/kg and the mean recovery rates in samples spiked with 0.01–0.5 mg/kg fluopyram ranged from 90–103%.

Table 10 Residues on apples from trials in Canada and the USA involving foliar applications of fluopyram (500 SC formulations)

APPLES Country, year Location (variety)	Application				PHI (days)	Residues (mg/kg)		Reference & Comments
	no	kg ai/ha	water (L/ha)	kg ai/hL		Fluopyram	mean	
USA, 2009 Hereford, PA (Starkrimson Red Delicious)	3 [b]	0.1	2200	0.005	12	0.08, 0.07	0.07	RAGMP162 GM001-09HA-B
USA, 2009 Hereford, PA (Starkrimson Red Delicious)	3 [a]	0.1	530	0.019	12	0.09, 0.09	0.09	RAGMP162 GM001-09HA-A
USA, 2009 Alton, NY (Cortland)	3 [b]	0.1	1900	0.005	14	0.08, 0.07	0.07	RAGMP162 GM002-09HA-B
USA, 2009 Alton, NY (Cortland)	3 [a]	0.1	560	0.018	14	0.1, 0.09	0.1	RAGMP162 GM002-09HA-A
USA, 2009 North Rose, NY (Rome)	3 [b]	0.1	2100	0.005	14	0.1, 0.1	0.1	RAGMP162 GM003-09HA-B
USA, 2009 North Rose, NY (Rome)	3 [a]	0.1	610	0.016	14	0.08, 0.08	0.08	RAGMP162 GM003-09HA-A
USA, 2009 Alto, GA (Stayman Red)	3 [b]	0.1	2600	0.004	14	0.07, 0.07	0.07	RAGMP162 GM004-09HA-B
USA, 2009 Alto, GA (Stayman Red)	3 [a]	0.1	580	0.017	14	0.05, 0.05	0.05	RAGMP162 GM004-09HA-A
USA, 2009 Arkansaw, WI (Connel Red)	3 [b]	0.1	1900	0.005	14	0.15, 0.16	0.15	RAGMP162 GM005-09HA-B
USA, 2009 Arkansaw, WI (Connel Red)	3 [a]	0.1	480	0.021	14	0.14, 0.12	0.13	RAGMP162 GM005-09HA-A
USA, 2009 Conklin, MI (Red Delicious)	3 [b]	0.1	2300	0.004	14	0.07, 0.07	0.07	RAGMP162 GM006-09HA-B
USA, 2009 Conklin, MI (Red Delicious)	3 [a]	0.1	580	0.017	14	0.09, 0.08	0.08	RAGMP162 GM006-09HA-A
Canada, 2009 Branchton, ON (Northern Spy)	3 [b]	0.096	2000	0.005	14	0.04, 0.04	0.04	RAGMP162 GM007-09HA-B
Canada, 2009 Branchton, ON (Northern Spy)	3 [a]	0.1	620	0.016	14	0.07, 0.06	0.06	RAGMP162 GM007-09HA-A
Canada, 2009 Waterdown, ON (Mutsu -crispin)	3 [b]	0.1	1900–2300	0.005-0.004	14	0.07, 0.09	0.08	RAGMP162 GM008-09HA-B
Canada, 2009 Waterdown, ON (Mutsu -crispin)	3 [a]	0.1	470–550	0.021-0.018	14	0.1, 0.12	0.11	RAGMP162 GM008-09HA-A

APPLES Country, year Location (variety)	Application				PHI (days)	Residues (mg/kg)		Reference & Comments
	no	kg ai/ha	water (L/ha)	kg ai/hL		Fluopyram	mean	
Canada, 2009 Simcoe (Royal Gala)	3 [b]	0.1	2200	0.005	14	0.05, 0.05	0.05	RAGMP162 GM009-09HA-B
Canada, 2009 Simcoe (Royal Gala)	3 [a]	0.1	530	0.019	14	0.07, 0.05	0.06	RAGMP162 GM009-09HA-A
USA, 2009 Arkansaw, WI (Regents)	3 [b]	0.1	1900	0.005	14	0.09, 0.09	0.09	RAGMP162 GM010-09HA-B
USA, 2009 Arkansaw, WI (Regents)	3 [a]	0.1	480	0.021	14	0.06, 0.07	0.06	RAGMP162 GM010-09HA-A
USA, 2009 Hart, MI (Golden Delicious)	3 [b]	0.1	2100	0.005	0 7 14 17 21	0.28, 0.43 0.19, 0.28 0.22, 0.25 0.22, 0.27 0.17, 0.26	0.35 0.24 0.23 0.24 0.21	RAGMP162 GM011-09DA-B
USA, 2009 Hart, MI (Golden Delicious)	3 [a]	0.1	500–480	0.02-0.021	14	0.15, 0.25	0.2	RAGMP162 GM011-09DA-A
USA, 2009 Perry, UT (Gala)	3 [b]	0.1	1900–2000	0.005	14	0.1, 0.11	0.11	RAGMP162 GM012-09HA-B
USA, 2009 Perry, UT (Gala)	3 [a]	0.1	580–500	0.017-0.02	14	0.13, 0.14	0.14	RAGMP162 GM012-09HA-A
USA, 2009 Sanger, CA (Pink Lady)	3 [b]	0.1	2300–2100	0.004-0.005	14	0.04, 0.04	0.04	RAGMP162 GM013-09HA-B
USA, 2009 Sanger, CA (Pink Lady)	3 [a]	0.1	580–440	0.02-0.023	14	0.03, 0.03	0.03	RAGMP162 GM013-09HA-A
USA, 2009 Hood River, OR (Jonagold)	3 [b]	0.1	2400–2500	0.004	14	0.08, 0.07	0.08	RAGMP162 GM014-09HA-B
USA, 2009 Hood River, OR (Jonagold)	3 [a]	0.1	560–540	0.019	14	0.09, 0.04	0.06	RAGMP162 GM014-09HA-A
USA, 2009 Ephrata, WA (Red Delicious)	3 [b]	0.1	1900	0.005	14	0.11, 0.13	0.12	RAGMP162 GM015-09HA-B
USA, 2009 Ephrata, WA (Red Delicious)	3 [a]	0.1	470	0.021	14	0.16, 0.21	0.18	RAGMP162 GM015-09HA-A
USA, 2009 Ephrata, WA (Braeburn)	3 [b]	0.1	1900	0.005	14	0.07, 0.09	0.08	RAGMP162 GM016-09HA-B
USA, 2009 Ephrata, WA (Braeburn)	3 [a]	0.1	470	0.021	14	0.15, 0.14	0.14	RAGMP162 GM016-09HA-A
USA, 2009 Weiser, ID (Law Rome)	3 [b]	0.1	1900	0.005	0 7 14 17 20	0.14, 0.13 0.11, 0.11 0.11, 0.12 0.12, 0.1 0.1, 0.1	0.14 0.11 0.11 0.11 0.1	RAGMP162 GM017-09DA-B

APPLES Country, year Location (variety)	Application				PHI (days)	Residues (mg/kg)		Reference & Comments
	no	kg ai/ha	water (L/ha)	kg ai/hL		Fluopyram	mean	
USA, 2009 Weiser, ID (Law Rome)	3 [a]	0.1	560	0.018	14	0.14, 0.12	0.13	RAGMP162 GM017-09DA-A

All treatments included 0.125% v/v/ 'Induce' spray adjuvant

[a] = low volume airblast application

[d] =high volume airblast application

Table 11 Interpretation table of fluopyram residues on apples and pears from trials matching the GAP of Germany and considered valid for MRL and STMR estimation

Crop	Country, Year	Application			PHI, (days)	Residues (mg/kg)	Trial [a]
		no	kg ai/ha	kg ai/hL		Fluopyram	
Pome fruit	Germany GAP	4	0.05/ha/m canopy height		14		max 0.5 kg ai/ha/season
Apple	France (N), 2007	4	0.12	0.008	14	0.11	0479-07
Apple	UK, 2007	3	0.15	0.03	14	0.11	0469-07
Apple	France (N), 2007	3	0.15	0.01	14	0.12	0468-07
Apple	UK, 2007	4	0.12-0.13	0.025	14	0.15	0480-07
Apple	Germany, 2007	3	0.15	0.015	14	0.21	0177-07
Apple	Germany, 2007	4	0.12	0.013	14	0.28	0214-07
Pear	Germany, 2007	3	0.15	0.03	14	0.12	0211-07
Pear	Germany, 2007	4	0.12	0.025	14	0.2	0215-07

Tree canopy height of about 3 m with application rates equivalent to 0.05 kg ai/ha/m canopy height

[a] See JMPR 2010 Fluopyram Evaluation, Table 86 (apples), Table 87 (pears)

Stone fruits

Cherries

Relevant data from trials with fluopyram on cherries, evaluated by JMPR in 2010 [Ref: JMPR 2010 E] are interpreted in light of current GAP in North America.

Table 12 Interpretation table of fluopyram residues on cherries from trials matching the GAP of Canada and the USA and considered valid for MRL and STMR estimation

Crop	Country, Year	Application			PHI, (days)	Residues (mg/kg)			Trial [a]
		No	kg ai/ha	kg ai/hL		Fluopyram	mean	Scaled to GAP [b]	
Cherries	USA GAP		0.1		0				max 0.21 kg ai/ha/season
Cherry	USA, 2006	2	0.26	0.061	0	0.07, 0.07	0.07	0.03	GM181-06HA
Cherry	USA, 2006	2	0.25	0.012	0	0.16, 0.15	0.15	0.06	GM181-06HA
Cherry	USA, 2006	2	0.25	0.05	0	0.19, 0.23	0.21	0.08	GM183-06HA
Cherry	USA, 2006	2	0.25	0.009	0	0.31, 0.25	0.28	0.11	GM183-06HA
Cherry	USA, 2006	2	0.255	0.011	0	0.35, 0.36	0.35	0.14	GM182-06DA c=0.04 mg/kg
Cherry	USA, 2006	2	0.26	0.012	0	0.58, 0.44	0.51	0.2	GM180-06HA
Cherry	USA, 2006	2	0.25	0.041	0	0.55, 0.48	0.51	0.21	GM182-06DA c=0.04 mg/kg
Cherry (sour)	USA, 2006	2	0.25	0.045	0	0.51, 0.6	0.55	0.22	GM178-06HA

Crop	Country, Year	Application			PHI, (days)	Residues (mg/kg)			Trial [a]
		No	kg ai/ha	kg ai/hL		Fluopyram	mean	Scaled to GAP [b]	
Cherry (sour)	USA, 2006	2	0.26	0.053	0	0.64, 0.5	0.57	0.22	GM179-06HA
Cherry (sour)	USA, 2006	2	0.25	0.011	0	0.66, 0.6	0.63	0.25	GM179-06HA
Cherry	USA, 2006	2	0.25	0.041	0	0.64, 0.64	0.64	0.26	GM180-06HA
Cherry (sour)	USA, 2006	2	0.25	0.013	0	1.2, 1.1	1.17	0.47	GM178-06HA

[a] See JMPR 2010 Fluopyram Evaluation, Table 92

[b] Mean residues scaled to GAP application rate

Peach

Relevant data from trials with fluopyram on peaches, evaluated by JMPR in 2010 [Ref: JMPR 2010 E] are interpreted in light of current GAP of Turkey.

Table 13 Interpretation table of fluopyram residues on peaches from trials matching the GAP iof Turkey and considered valid for MRL and STMR estimation

Crop	Country, Year	Application			PHI, (days)	Residues (mg/kg)		Trial [a]
		No	kg ai/ha	kg ai/hL		Fluopyram	Scaled to GAP [b]	
Peaches	Turkey GAP			0.005	3			
Peach	Portugal, 2006	3	0.124	0.017	3	0.11	0.03	0489-06
Peach	France, 2006	3	0.124	0.012	3	0.15	0.06	0362-06
Peach	Italy, 2006	3	0.124	0.01	3	0.2	0.1	0487-06
Peach	France, 2007	3	0.125	0.01	3	0.24	0.12	0225-07
Peach	Spain, 2007	3	0.125	0.01	2	0.33	0.14	0496-07
Peach	Spain, 2006	3	0.124	0.01	3	0.34	0.16	0488-06
Peach	Italy, 2007	3	0.125	0.012	3 7 10	0.27 0.27 0.34	0.11 0.11 0.16	0497-07
Peach	Greece, 2007	3	0.125	0.018	3	0.26	0.17	0498-07

[a] See JMPR 2010 Fluopyram Evaluation, Table 90

[b] Mean residues scaled to GAP application rate

Berries and other small fruits

Grapes

Results from supervised trials from the USA on grapes were provided to the Meeting. In these trials, unreplicated plots were treated with three foliar spray applications of fluopyram (SC 500 formulation) with spray adjuvant, 13–15 days apart, using ground-based airblast sprayers to apply 0.09–0.12 kg ai/ha. At most sites, two application methods were used, one involving low volume sprays (3600–640 L/ha) and one using high volume treatments (1900–3400 L/ha). Plot sizes in these trials ranged from 24–109 m^2.

Duplicate samples of at least 1 kg grapes (berries) were taken from at least four separate vines, frozen within 3.3 hours of sampling and stored frozen for up to 267 days before analysis for fluopyram using LC/MS/MS Method GM-001-P07-01. The reported LOQ was 0.01 mg/kg. Mean recovery rates in samples spiked with 0.01–5 mg/kg fluopyram ranged from 88–96%.

Table 14 Fluopyram residues in grapes from supervised trials in USA, involving three foliar applications of fluopyram (500 SC formulation)

GRAPE Country, year Location (variety)	Application				PHI, (days)	Residues (mg/kg)			Reference & Comments
	no	kg ai/ha	kg ai/hL	water (L/ha)			Fluopyram	mean	
USA GAP		0.087–0.25			7				max 0.5 kg ai/ha/season
USA, 2009 Dundee, NY (Vidal)	3 [b]	0.12	0.005	2300	14	fruit	0.5, 0.56	0.53	RAGMP164 GM027-09HA-B
USA, 2009 Dundee, NY (Vidal)	3 [a]	0.12	0.026	470	14	fruit	0.35, 0.41	0.38	RAGMP164 GM027-09HA-A
USA, 2009 Orefield, PA (Niagara)	3 [b]	0.12	0.004	2700	12	fruit	0.3, 0.37	0.34	RAGMP164 GM028-09HA-B
USA, 2009 Orefield, PA (Niagara)	3 [a]	0.12 + 0.09 + 0.12	0.024 + 0.017 + 0.023	510-530	12	fruit	0.25, 0.2	0.22	RAGMP164 GM028-09HA-A
USA, 2009 Nashville, IL (Niagara)	3 [b]	0.12	0.005	2300	13	fruit	0.5, 0.52	0.51	RAGMP164 GM029-09HA-B
USA, 2009 Nashville, IL (Niagara)	3 [a]	0.12	0.02	610	13	fruit	0.3, 0.42	0.36	RAGMP164 GM029-09HA-A
Canada, 2009 Branchton, ON (Marechal Foch)	3 [b]	0.12	0.006	2000	14	fruit	0.17, 0.19	0.18	RAGMP164 GM030-09HA-B
Canada, 2009 Branchton, ON (Marechal Foch)	3 [a]	0.12	0.02	610	14	fruit	0.09, 0.11	0.1	RAGMP164 GM030-09HA-A
USA, 2009 Comstock Park, MI (Concord)	3 [b]	0.12	0.006	2100	14	fruit	0.59, 0.69	0.64	RAGMP164 GM031-09HA-B
USA, 2009 Comstock Park, MI (Concord)	3 [a]	0.12	0.022	550	14	fruit	0.47, 0.5	0.48	RAGMP164 GM031-09HA-A
USA, 2009 Lawton, MI (Niagara)	3 [b]	0.12	0.005	2300	14	fruit	0.14, 0.12	0.13	RAGMP164 GM032-09HA-B
USA, 2009 Lawton, MI (Niagara)	3 [a]	0.12	0.022	550	14	fruit	0.19, 0.21	0.2	RAGMP164 GM032-09HA-A
USA, 2009 Madera, CA (Thompson Seedless)	3 [b]	0.12	0.006	2000	0 7 14 17 21	fruit	0.32, 0.36 0.23, 0.31 0.25, 0.26 0.26, 0.25 0.24, 0.27	0.34 0.27 0.25 0.26 0.25	RAGMP164 GM033-09DA-B
USA, 2009 Madera, CA (Thompson Seedless)	3 [a]	0.12	0.02	610	14	fruit	0.21, 0.15	0.18	RAGMP164 GM033-09DA-A
USA, 2009 Hickman, CA (Chardonnay)	3 [b]	0.12	0.006	2100	14	fruit	0.69, 0.64	0.67	RAGMP164 GM034-09HA-B
USA, 2009 Hickman, CA (Chardonnay)	3 [a]	0.12	0.022	540	14	fruit	0.56, 0.61	0.58	RAGMP164 GM034-09HA-A

GRAPE Country, year Location (variety)	Application				PHI, (days)	Residues (mg/kg)			Reference & Comments
	no	kg ai/ha	kg ai/hL	water (L/ha)			Fluopyram	mean	
USA, 2009 Sanger, CA (Granache)	3 [b]	0.12	0.006	2100	14	fruit	0.29, 0.22	0.26	RAGMP164 GM035-09HA-B
USA, 2009 Sanger, CA (Granache)	3 [a]	0.12	0.022	540	14	fruit	0.45, 0.21	0.33	RAGMP164 GM035-09HA-A
USA, 2009 Kerman, CA (Thompson Seedless)	3 [b]	0.12	0.004	2800	14	fruit	0.81, 0.91	0.86	RAGMP164 GM036-09HA-B
USA, 2009 Kerman, CA (Thompson Seedless)	3 [a]	0.12	0.021	570	14	fruit	0.7, 0.78	0.74	RAGMP164 GM036-09HA-A
USA, 2009 Templeton, CA (Syrah)	3 [b]	0.12	0.006	2100	14	fruit	0.29, 0.28	0.29	RAGMP164 GM037-09HA-B
USA, 2009 Templeton, CA (Syrah)	3 [a]	0.12	0.027	440	14	fruit	0.08, 0.09	0.08	RAGMP164 GM037-09HA-A
USA, 2009 Aromas, CA (Zinfandel)	3 [b]	0.12	0.005	2500	13	fruit	0.85, 0.8	0.83	RAGMP164 GM038-09HA-B
USA, 2009 Aromas, CA (Zinfandel)	3 [a]	0.12	0.033	360	13	fruit	0.36, 0.45	0.41	RAGMP164 GM038-09HA-A
USA, 2009 Artois, CA (Rubired)	3 [b]	0.12	0.005	2300	14	fruit	0.44, 0.42	0.43	RAGMP164 GM039-09HA-B
USA, 2009 Artois, CA (Rubired)	3 [a]	0.12	0.025	470	14	fruit	0.28, 0.25	0.26	RAGMP164 GM039-09HA-A
USA, 2009 Plainview, CA (Crimson)	3 [b]	0.12	0.005	2600	14	fruit	4.5, 3.5	4.0	RAGMP164 GM040-09HA-B
USA, 2009 Plainview, CA (Crimson)	3 [a]	0.12	0.019	620	14	fruit	1.5, 1.6	1.6	RAGMP164 GM040-09HA-A
USA, 2009 Hood River, OR (Reisling)	3 [b]	0.12	0.004	2700	14	fruit	0.3, 0.3	0.3	RAGMP164 GM041-09HA-B
USA, 2009 Hood River, OR (Reisling)	3 [a]	0.12	0.024	500	14	fruit	0.09, 0.1	0.09	RAGMP164 GM041-09HA-A
USA, 2009 Ephrata, WA (White Riesling)	3 [b]	0.12	0.006	2000	14	fruit	0.78, 0.59	0.68	RAGMP164 GM042-09HA-B
USA, 2009 Ephrata, WA (White Riesling)	3 [a]	0.12	0.026	470	14	fruit	0.28, 0.29	0.29	RAGMP164 GM042-09HA-A

All treatments included 0.125% v/v/ 'Induce' spray adjuvant

[a] low volume airblast application

[b] high volume airblast application

Strawberry

Relevant data from trials with fluopyram on strawberries, evaluated by JMPR in 2010 [Ref: JMPR 2010 E] are interpreted in light of current GAPs in North America and Morocco.

Table 15 Interpretation table of fluopyram residues on strawberries from trials matching the GAP for drip irrigation applications in Canada and considered valid for MRL and STMR estimation

Crop	Country, Year	Application			PHI, (days)	Residues (mg/kg)		Trial [a]
		No	kg ai/ha	water (L/ha)		Fluopyram	mean	
Strawberries (drip irrigation)	Canada GAP	2	0.25		0			Max 0.5 kg ai/ha/season
Strawberries	USA, 2007	2	0.25	1	0	< 0.01, < 0.01	< 0.01	GM072-07HA
Strawberries	USA, 2007	2	0.25	2.1	0 7	0.05, 0.05 0.12, 0.09	0.05 0.1	GM073-07HA
Strawberries	USA, 2007	2	0.25	1.9	0 7	0.03, 0.03 0.06, 0.06	0.03 0.06	GM074-07HA
Strawberries	USA, 2007	2	0.25	2.2	0 7	< 0.01, < 0.01 0.03, 0.02	< 0.01 0.02	GM075-07HA
Strawberries	USA, 2007	2	0.25	1.8	0 7	< 0.01, < 0.01 0.02, 0.01	< 0.01 0.01	GM076-07HA
Strawberries	USA, 2007	2	0.25	1	0 7	< 0.01, < 0.01 < 0.01, < 0.01	< 0.01 < 0.01	GM077-07HA
Strawberries	USA, 2007	2	0.25	1.4	0 3 7 10	< 0.01, < 0.01 0.01, 0.02 0.02, 0.02 0.03, 0.03	< 0.01 0.01 0.02 0.03	GM078-07DA
Strawberries	USA, 2007	2	0.25	1.1	0 7	0.08, 0.11 0.22, 0.24	0.1 0.23	GM079-07HA
Strawberries	USA, 2007	2	0.26	1.7	0 7	< 0.01, 0.01 0.03, 0.02	0.01 0.03	GM080-07HA
Strawberries	USA, 2007	2	0.25	1.5	0 7	0.04, < 0.01 < 0.01, < 0.01	0.02 < 0.01	GM081-07HA

[a] See JMPR 2010 Fluopyram Evaluation, Table 100

Banana

Relevant data from trials with fluopyram on bananas, evaluated by JMPR in 2010 [Ref: JMPR 2010 E] are interpreted in light of current GAP in Panama.

Table 16 Interpretation table of fluopyram residues on bananas from trials matching the GAP of Panama and considered valid for MRL and STMR estimation

Crop	Country, Year	Application			PHI, (days)	Residues (mg/kg)			Trial [a]
		No	kg ai/ha	water (L/ha)		sample	Fluopyram	mean	
Banana	Panama GAP	5	0.075–0.1		0				max 0.5 kg ai/ha/season
Banana	Costa Rica, 2007	6	0.1	22	0	Bagged Unbagged	< 0.01, < 0.01 0.02, 0.02	< 0.01 0.02	GM149-07HA
Banana	Costa Rica, 2007	6	0.1	40–45	0	Bagged Unbagged	0.04, 0.04 0.26, 0.15	0.04 0.21	GM150-07HA
Banana	Costa Rica, 2007	6	0.1	40–46	0	Bagged Unbagged	0.02, 0.02 0.28, 0.22	0.02 0.25	GM151-07HA
Banana	Ecuador, 2007	6	0.1	29–30	0	Bagged Unbagged	0.03, 0.02 0.37, 0.31	0.02 0.34	GM152-07HA

Crop	Country, Year	Application			PHI, (days)	Residues (mg/kg)			Trial [a]
		No	kg ai/ha	water (L/ha)		sample	Fluopyram	mean	
Banana	Ecuador, 2007	6	0.1	57–63	0	Bagged Unbagged	0.01, < 0.01 0.19, 0.17	0.01 <u>0.18</u>	GM153-07HA
Banana	Ecuador, 2007	6	0.1	28–30	0	Bagged Unbagged	0.02, 0.03 0.53, 0.49	0.02 <u>0.51</u>	GM154-07HA
Banana	Ecuador, 2007	6	0.1	56–63	0	Bagged Unbagged	< 0.01, < 0.01 0.25, 0.2	< 0.01 <u>0.22</u>	GM155-07HA
Banana	Guatemala, 2007	6	0.11	23–29	0	Bagged Unbagged	0.01, < 0.01 0.06, 0.05	0.01 <u>0.05</u>	GM156-07HA
Banana	Guatemala, 2007	6	0.11	24–35	0	Bagged Unbagged	0.01, 0.01 0.04, 0.04	0.01 <u>0.04</u>	GM157-07HA
Banana	Guatemala, 2007	6	0.1	21–30	0	Bagged Unbagged	0.02, 0.01 0.07, 0.05	0.01 <u>0.06</u>	GM158-07HA
Banana	Mexico, 2007	6	0.1	43–56	0 0 2 5	Bagged Unbagged Unbagged Unbagged	0.02, 0.02 0.13, 0.2 0.15, 0.18 0.21, 0.14	0.02 0.17 0.17 <u>0.18</u>	GM159-07DA
Banana	Colombia, 2007	6	0.1	29–30	0	Bagged Unbagged	< 0.01, 0.01 0.05, 0.05	0.01 <u>0.05</u>	GM160-07HA
Banana	Colombia, 2007	6	0.1	30	0	Bagged Unbagged	< 0.01, < 0.01 0.07, 0.26	< 0.01 <u>0.17</u>	GM161-07HA
Banana	Costa Rica, 2007	6	0.11	22–26	0 0	Bagged Unbagged	0.03, 0.03 0.04, 0.03	0.03 <u>0.04</u>	GM148-07DA

[a] See JMPR 2010 Fluopyram Evaluation, Table 102 (pp. 1522–1523)

Fruiting vegetables, other than Cucurbits

Peppers, Sweet (including Pimento or pimiento)

The Meeting received new information on supervised field trials on greenhouse sweet/bell peppers in Turkey and relevant data from trials with fluopyram on sweet peppers, evaluated by JMPR in 2010 [Ref: JMPR 2010 E] are interpreted in light of current GAP in Turkey.

In these trials, two applications of 6 g ai fluopyram/100 L (SC formulation of 200 g ai/L fluopyram and 200 g ai/L tebuconazole) were applied to mature plants, 10 days apart as foliar sprays using motorised knapsack sprayers, applying 900–1000 Lspray mix/ha (0.054–0.06 kg ai/ha). Plot sizes in these trials were 120m^2.

Samples of mature fresh peppers (min 1 kg) were taken from each plot and stored frozen until analysis for fluopyram using the published QuEChERS Method with a reported LOQ of 0.005 mg/kg.

Table 17 Fluopyram residues in protected sweet peppers from supervised trials in Turkey involving two foliar applications of fluopyram (500 SC formulations)

PEPPER, SWEET Country, year Location (variety)	Application				PHI, (days)	Residues (mg/kg)		Reference & Comments
	no	kg ai/ha	kg ai/hL	water (L/ha)		sample	Fluopyram	
Turkey, 2010 Aksu/Antalya (Pepper)	2	0.06	0.006	1000	0 1 3 4 5	fruit	0.17 0.22 <u>0.23</u> 0.14 0.19	M-418047 Aksu-A

PEPPER, SWEET Country, year Location (variety)	Application				PHI, (days)	Residues (mg/kg)		Reference & Comments
	no	kg ai/ha	kg ai/hL	water (L/ha)		sample	Fluopyram	
Turkey, 2010 Kumluca/Antalya (Pepper)	2	0.054	0.006	900	0 1 3 4 5	fruit	0.22 0.23 0.21 0.24 0.18	M-418047 Kumluca-B

Table 18 Interpretation table of fluopyram residues on sweet peppers from trials matching the GAP of Turkey and considered valid for MRL and STMR estimation

Crop	Country, year	Application			PHI, (days)	Residues (mg/kg)		Trial [a]
		no	kg ai/ha	kg ai/hL		Fluopyram	Scaled to GAP [b]	
Peppers, sweet	Turkey GAP			0.006	3			
Peppers, sweet (greenhouse)	Netherlands, 2006	2	0.3	0.03	3	0.16	0.03	0554-06
Peppers, sweet (greenhouse)	Portugal, 2006	2	0.3	0.05	3	0.25	0.03	0560-06
Peppers, sweet (greenhouse)	Italy, 2006	2	0.3	0.04	3	0.29	0.04	0556-06
Peppers, sweet (greenhouse)	France, 2006	2	0.3	0.03	3	0.25	0.05	0555-06
Peppers, sweet (greenhouse)	Greece, 2006	2	0.3	0.04	3	0.31	0.05	0559-06
Peppers, sweet (greenhouse)	Germany, 2006	2	0.3 0.36	0.03	3	0.42	0.08	0364-06
Peppers, sweet (greenhouse)	Spain, 2006	2	0.28 0.3	0.025	3 7	0.26 0.29	0.07 0.08	0558-06
Peppers, sweet (greenhouse)	Spain, 2006	2	0.3	0.02	3 7	0.28 0.31	0.08 0.09	0557-06
Peppers, sweet (greenhouse)	Italy, 2007	2	0.3	0.027	3 7	0.51 0.58	0.12 0.13	0236-07

[a] See JMPR 2010 Fluopyram Evaluation, Tables 131, 132

[b] Mean residues scaled to GAP application rate—values underlined if within the scaling range of 0.3× – 5× GAP

Tomatoes

Relevant data from trials with fluopyram on tomatoes, evaluated by JMPR in 2010 [Ref: JMPR 2010 E] are interpreted in light of current GAP in Morocco.

Table 19 Interpretation table of fluopyram residues on tomatoes from trials matching the GAP of Turkey and considered valid for MRL and STMR estimation

Crop	Country, year	Application			PHI, (days)	Residues (mg/kg)		Trial [a]
		no	kg ai/ha	kg ai/hL		Fluopyram	Scaled to GAP [b]	
Tomatoes	Morocco GAP	2		0.0125	3			
Tomatoes (indoor)	Germany, 2007 Cherry tomato	2	0.3	0.03	3	0.13	0.05	0235-07
Tomatoes (indoor)	Greece, 2006	2	0.3	0.03	3	0.15	0.06	0550-06
Tomatoes (indoor)	Germany, 2006	2	0.3	0.03	3	0.15	0.06	0552-06
Tomatoes (indoor)	Netherlands, 2006	2	0.3	0.03	3	0.15	0.06	0553-06
Tomatoes (indoor)	Italy	2	0.3	0.03	3	0.19	0.08	0547-06

Crop	Country, year	Application			PHI, (days)	Residues (mg/kg)		Trial [a]
		no	kg ai/ha	kg ai/hL		Fluopyram	Scaled to GAP [b]	
Tomatoes (indoor)	Germany, 2007 Cherry tomato	2	0.3	0.03	3	0.19	0.08	0519-07
Tomatoes (indoor)	Italy, 2007 Cherry tomato	2	0.3	0.02	3 7	0.13 0.16	0.08 0.1	0518-07
Tomatoes (indoor)	France, 2006	2	0.3	0.02	3	0.24	0.15	0363-06
Tomatoes (indoor)	Spain, 2006	2	0.32	0.02	3 7	0.26 0.28	0.16 0.18	0546-06
Tomatoes (indoor)	Germany, 2006	2	0.3	0.04	4 8	0.61 0.62	0.19 0.19	0545-06
Tomatoes (indoor)	Portugal, 2006	2	0.3	0.025	3 7	0.31 0.44	0.16 0.22	0549-06
Tomatoes (indoor)	Spain, 2007 Cherry tomato	2	0.3	0.02	3	0.36	0.23	0517-07

[a] See JMPR 2010 Fluopyram Evaluation, Tables 128, 129

[b] Mean residues scaled to GAP application rate

Pulses

Beans (dry)

Relevant data from trials with fluopyram on beans, evaluated by JMPR in 2010 [Ref: JMPR 2010 E] are interpreted in light of current GAP in the USA and Canada.

Table 20 Interpretation table of fluopyram residues on beans (dry) from trials matching the GAP of the USA and Canada and considered valid for MRL and STMR estimation

CROP	COUNTRY, YEAR	APPLICATION			PHI, (DAYS)	RESIDUES (MG/KG)			TRIAL [A]
		NO	KG AI/HA	KG AI/HL		FLUOPYRAM	MEAN	SCALED TO GAP [C]	
Beans (dry)	USA GAP		0.1–0.15		14				max 0.3 kg ai/ha/season
Beans (dry)	USA, 2006	2	0.25	0.23	14	0.01, 0.02	0.01	< 0.01	GM325-06HA
Beans (dry)	USA, 2006	2	0.25	0.15	14	0.01, 0.01	0.01	< 0.01	GM327-06HA
Beans (dry)	USA, 2006	2	0.25	0.2	14	< 0.01, < 0.01	< 0.01	< 0.01	GM328-06HA
Beans (dry)	USA, 2006	2	0.24	0.16	14 + 17 [b]	< 0.01, < 0.01	< 0.01	< 0.01	GM330-06HA
Beans (dry)	USA, 2006	2	0.25	0.28	14 + 10 [b]	< 0.01, < 0.01	< 0.01	< 0.01	GM332-06HA
Beans (dry)	USA, 2006	2	0.25	0.14	14	0.02, 0.01	0.01	< 0.01	GM324-06DA
Beans (dry)	USA, 2006	2	0.25	0.2	13 + 1 [b]	0.03, 0.02	0.03	0.02	GM326-06HA
Beans (dry)	USA, 2007	2	0.25	0.21	0 + 14 [b]	0.05, 0.06	0.05	0.03	GM331-06HA
Beans (dry)	USA, 2006	2	0.25	0.18	13	0.06, 0.08	0.07	0.04	GM329-06HA

[a] See JMPR 2010 Fluopyram Evaluation, Tables 149, 150

[b] Drying interval between cutting and sampling

[c] Mean residues scaled to GAP application rate

Root and tuber vegetables

Carrot

Relevant data from trials with fluopyram on carrots, evaluated by JMPR in 2010 [Ref: JMPR 2010 E] and interpreted in light of current GAP in the Ukraine.

Table 21 Interpretation table of fluopyram residues on carrots from trials matching the GAP of the Ukraine and considered valid for MRL and STMR estimation

Crop	Country, Year	Application			PHI, (days)	Residues (mg/kg)	Trial [a]
		No	kg ai/ha	kg ai/hL		Fluopyram	
Carrots	Ukraine GAP	2	0.07–0.15		30		
Carrots	United Kingdom, 2007	3	0.15	0.05	27	0.03	0578-07
Carrots	United Kingdom, 2006	3	0.15	0.05	28	0.04	0481-06
Carrots	Germany, 2007	3	0.15	0.05	28	0.07	0577-07
Carrots	Netherlands, 2006	3	0.15	0.019	28	0.08	0480-06
Carrots	Germany, 2007	3	0.15	0.025	28	0.1	0579-07
Carrots	France, 2007	3	0.15	0.05	28	0.13	0062-07
Carrots	France, 2006	3	0.15	0.03	28	0.15	0358-06
Carrots	Germany, 2006	3	0.15	0.05	28	0.19	0482-06

[a] See JMPR 2010 Fluopyram Evaluation, Table 156

Potato

Relevant data from trials with fluopyram on potatoes, evaluated by JMPR in 2010 [Ref: JMPR 2010 E] and interpreted in light of current GAP in USA.

Table 22 Interpretation table of fluopyram residues on potato from trials matching the GAP of the USA and considered valid for MRL and STMR estimation

Crop	Country, Year	Application			PHI, (days)	Residues (mg/kg)		Trial [a]
		No	kg ai/ha	kg ai/hL		Fluopyram	mean	
Potato	USA GAP	2	max 0.2		7			max 0.4 kg ai/ha/season
Potato	USA, 2006	2	0.25	0.14	7	< 0.01, < 0.01	< 0.01	GM274-06HA
Potato	USA, 2006	2	0.25	0.15	7	< 0.01, < 0.01	< 0.01	GM275-06HA
Potato	USA, 2006	2	0.25	0.23	7	< 0.01, < 0.01	< 0.01	GM277-06HA
Potato	USA, 2006	2	0.25	0.19	6	< 0.01, < 0.01	< 0.01	GM279-06HA
Potato	USA, 2006	2	0.25	0.18	7	< 0.01, < 0.01	< 0.01	GM280-06HA
Potato	USA, 2006	2	0.24	0.15	6	< 0.01, < 0.01	< 0.01	GM281-06HA
Potato	USA, 2006	2	0.25	0.16	7	< 0.01, < 0.01	< 0.01	GM282-06HA
Potato	USA, 2006	2	0.25	0.14	7	< 0.01, < 0.01	< 0.01	GM283-06HA
Potato	USA, 2006	2	0.25	0.26	6	< 0.01, < 0.01	< 0.01	GM285-06HA
Potato	USA, 2006	2	0.25	0.18	6	< 0.01, < 0.01	< 0.01	GM286-06HA
Potato	USA, 2006	2	0.25	0.15	7	< 0.01, < 0.01	< 0.01	GM287-06HA
Potato	USA, 2006	2	0.25	0.14	7	< 0.01, < 0.01	< 0.01	GM288-06HA
Potato	USA, 2006	2	0.25	0.21	7	< 0.01, < 0.01	< 0.01	GM289-06HA
Potato	USA, 2006	2	0.25	0.14	7	< 0.01, < 0.01	< 0.01	GM284-06DA
Potato	USA, 2006	2	0.25	0.18	7 14 21	< 0.01, < 0.01 < 0.01, < 0.01 0.01, 0.01	< 0.01 < 0.01 0.01	GM278-06DA
Potato	USA, 2006	2	0.26	0.27	7	0.02, 0.02	0.02	GM276-06HA

[a] See JMPR 2010 Fluopyram Evaluation, Tables 157

Sugar beet

Relevant data from trials with fluopyram on sugar beet, evaluated by JMPR in 2010 [Ref: JMPR 2010 E] and interpreted in light of current GAP in USA.

Table 23 Interpretation table of fluopyram residues on sugar beet (roots) from trials matching the GAP of the USA and Canada and considered valid for MRL and STMR estimation

Crop	Country, Year	Application			PHI, (days)	Residues (mg/kg)			Trial [a]
		No	kg ai/ha	kg ai/hL		Fluopyram	mean	Scaled to GAP [b]	
Sugar beet	USA GAP		0.125		7				max 0.25 kg ai/ha/season
Sugar beet	USA, 2006	2	0.25	0.28	7	0.02, 0.02	0.02	< 0.01	GM175-06HA
Sugar beet	USA, 2006	2	0.25	0.12	6 13	0.01, 0.02 0.02, 0.02	0.02 0.02	< 0.01 < 0.01	GM165-06DA
Sugar beet	USA, 2006	2	0.26	0.14	7	0.02, 0.02	0.02	0.01	GM166-06HA
Sugar beet	USA, 2006	2	0.24	0.15	7	0.03, 0.03	0.03	0.01	GM168-06HA
Sugar beet	USA, 2006	2	0.25	0.2	7	0.03, 0.02	0.03	0.01	GM170-06HA
Sugar beet	USA, 2006	2	0.25	0.14	7	0.01, 0.03	0.02	0.01	GM174-06HA
Sugar beet	USA, 2006	2	0.25	0.19	7	0.03, 0.05	0.04	0.02	GM167-06HA
Sugar beet	USA, 2006	2	0.25	0.14	7	0.04, 0.03	0.04	0.02	GM169-06HA
Sugar beet	USA, 2006	2	0.25	0.18	6	0.04, 0.04	0.04	0.02	GM171-06HA
Sugar beet	USA, 2006	2	0.25	0.14	7	0.05, 0.02	0.03	0.02	GM173-06HA
Sugar beet	USA, 2006	2	0.25	0.15	7	0.04, 0.05	0.05	0.02	GM176-06HA

[a] See JMPR 2010 Fluopyram Evaluation, Tables 159

[b] Mean residues scaled to GAP application rate

Tree nuts

Relevant data from trials with fluopyram on almonds and pecans, evaluated by JMPR in 2010 [Ref: JMPR 2010 E] are interpreted in light of current GAP in USA.

Almonds

Table 24 Interpretation table of fluopyram residues in almonds (nutmeat) from trials matching the GAP in USA and considered valid for MRL and STMR estimation

Crop	Country, Year	Application			PHI, (days)	Residues (mg/kg)			Trial [a]
		No	kg ai/ha	kg ai/hL		sample	Fluopyram	mean	
Almonds	USA GAP	2	max 0.25		14				max 0.5 kg ai/ha/season
Almonds	USA, 2006	2 [c]	0.25	0.01	14	nutmeat	< 0.01, < 0.01	< 0.01	GM205-06HA
Almonds	USA, 2006	2 [b]	0.25	0.045	14	nutmeat	< 0.01, < 0.01	< 0.01	GM202-06HA
Almonds	USA, 2006	2 [c]	0.25	0.012	14	nutmeat	< 0.01, < 0.01	< 0.01	GM203-06HA
Almonds	USA, 2006	2 [c]	0.25	0.013	14	nutmeat	< 0.01, < 0.01	< 0.01	GM204-06HA
Almonds	USA, 2006	2 [b]	0.25	0.05	14	nutmeat	0.02, 0.02	0.02	GM201-06DA

[a] See JMPR 2010 Fluopyram Evaluation, Table 174

[b] low volume airblast application

[c] high volume airblast application

Pecans

Table 25 Interpretation table of fluopyram residues in pecan (nutmeat) from trials matching the GAP in USA and considered valid for residue estimation

Crop	Country, Year	Application			PHI, (days)	Residues (mg/kg)			Trial [a]
		No	kg ai/ha	kg ai/hL		sample	Fluopyram	mean	
Pecans	USA GAP		max 0.25		14				max 0.5 kg ai/ha/season
Pecans	USA, 2006	2 [c]	0.25	0.009	14	nutmeat	< 0.01, < 0.01	< 0.01	GM206-06DA
Pecans	USA, 2006	2 [b]	0.26	0.05	14	nutmeat	< 0.01, < 0.01	< 0.01	GM208-06DA
Pecans	USA, 2006	2 [c]	0.25	0.012	13	nutmeat	< 0.01, < 0.01	< 0.01	GM209-06HA
Pecans	USA, 2006	2 [b]	0.25	0.065	14	nutmeat	< 0.01, 0.01	0.01	GM207-06HA
Pecans	USA, 2006	2 [c]	0.25	0.012	12	nutmeat	0.02, 0.05	0.03	GM210-06HA

[a] See JMPR 2010 Fluopyram Evaluation, Table 175

[b] low volume airblast application

[c] high volume airblast application

Oilseeds

Relevant data from trials with fluopyram on peanuts, rape seed and sunflower seed, evaluated by JMPR in 2010 [Ref: JMPR 2010 E] are interpreted in light of current GAP in USA.

Peanut

Table 26 Interpretation table of fluopyram residues in peanut (nutmeat) from trials matching the GAP in USA and Canada and considered valid for residue estimation

Crop	Country, Year	Application			PHI, (days)	Residues (mg/kg)		Trial [a]
		No	kg ai/ha	kg ai/hL		Fluopyram	mean	
Peanuts	USA GAP		0.2–0.25		7			max 0. 5 kg ai/ha/season
Peanut	USA, 2006	2	0.24 0.25	0.18 0.22	7	< 0.01, < 0.01	< 0.01	GM133-06HA
Peanut	USA, 2006	2	0.25 0.25	0.17 0.18	6	< 0.01, < 0.01	< 0.01	GM134-06HA
Peanut	USA, 2006	2	0.26 0.25	0.27 0.25	7	< 0.01, < 0.01	< 0.01	GM135-06HA
Peanut	USA, 2006	2	0.25 0.25	0.15 0.15	7	< 0.01, < 0.01	< 0.01	GM136-06HA
Peanut	USA, 2006	2	0.25 0.25	0.18 0.19	7	< 0.01, < 0.01	< 0.01	GM137-06HA
Peanut	USA, 2006	2	0.25 0.25	0.16 0.15	7	< 0.01, < 0.01	< 0.01	GM138-06HA
Peanut	USA, 2006	2	0.25 0.25	0.16 0.15	7	< 0.01, < 0.01	< 0.01	GM139-06HA
Peanut	USA, 2006	2	0.25 0.25	0.19 0.27	7	< 0.01, < 0.01	< 0.01	GM142-06HA
Peanut	USA, 2006	2	0.25 0.25	0.18 0.18	7	< 0.01, < 0.01	< 0.01	GM143-06HA
Peanut	USA, 2006	2	0.25 0.25	0.17 0.16	6	< 0.01, < 0.01	< 0.01	GM132-06DA
Peanut	USA, 2006	2	0.24 0.25	0.15 0.15	7	0.01, 0.01	0.01	GM141-06HA

Crop	Country, Year	Application			PHI, (days)	Residues (mg/kg)		Trial [a]
		No	kg ai/ha	kg ai/hL		Fluopyram	mean	
Peanut	USA, 2006	2	0.26 0.25	0.14 0.14	7	0.02, 0.02	0.02	GM140-06HA

[a] See JMPR 2010 Fluopyram Evaluation, Table 176

Rape seed

Table 27 Interpretation table of fluopyram residues in rape seed from trials matching the GAP in Germany and considered valid for residue estimation

Crop	Country, Year	Application				PHI, (days)	Residues (mg/kg)		Trial [a]
		No	BBCH [b]	kg ai/ha	kg ai/hL		sample	Fluopyram	
Rape seed	Germany GAP	1		0.125		End of flowering			
Rape seed	France (N), 2006	2	73	0.125	0.05	66	seed	0.02	0408-06
Rape seed	Germany, 2006	2	73	0.125	0.042	57	seed	0.04	0409-06
Rape seed	Germany, 2007	2	73	0.125	0.042	69	seed	0.08	0808-07
Rape seed	France (N), 2007	2	73	0.125	0.042	50	seed	0.09	0238-07
Rape seed	UK, 2006	2	73	0.125	0.062	43	seed	0.1	0410-06
Rape seed	Germany, 2006	2	73	0.125	0.042	50	seed	0.11	0406-06
Rape seed	Germany, 2007	2	73	0.125	0.042	61	seed	0.11 (c=0.02)	0809-07
Rape seed	UK, 2007	2	73	0.125	0.042	57	seed	0.19 (c=0.01)	0810-07

[a] See JMPR 2010 Fluopyram Evaluation, Table 177

[b] BBCH Growth Stage at last application

Animal feeds

Sugar beet (tops)

Relevant data from trials with fluopyram on sugar beet, evaluated by JMPR in 2010 [Ref: JMPR 2010 E] and interpreted in light of current GAP in USA.

Table 28 Interpretation table of fluopyram residues on sugar beet (tops) from trials matching the GAP in USA and Canada and considered valid for residue estimation.

Crop	Country, Year	Application			PHI, (days)	Residues (mg/kg)			Trial [a]
		No	kg ai/ha	kg ai/hL		Fluopyram	mean	Scaled to GAP [b]	
Sugar beet	USA GAP	2	0.125		7				max 0.25 kg ai/ha/season
Sugar beet	USA, 2006	2	0.25	0.15	7	0.41, 0.29	0.35	0.18	GM176-06HA
Sugar beet	USA, 2006	2	0.25	0.28	7	0.3, 0.46	0.38	0.19	GM175-06HA
Sugar beet	USA, 2006	2	0.25	0.14	7	0.77, 0.58	0.67	0.34	GM169-06HA
Sugar beet	USA, 2006	2	0.25	0.12	6	0.82, 0.56	0.69	0.35	GM165-06DA
Sugar beet	USA, 2006	2	0.25	0.18	6	0.79, 0.7	0.7	0.37	GM171-06HA
Sugar beet	USA, 2006	2	0.24	0.15	7	1.0, 0.76	0.89	0.46	GM168-06HA
Sugar beet	USA, 2006	2	0.25	0.2	7	1.7, 1.8	1.8	0.89	GM170-06HA
Sugar beet	USA, 2006	2	0.25	0.19	7	3.8, 2.6	3.2	1.6	GM167-06HA
Sugar beet	USA, 2006	2	0.26	0.14	7	4.7, 4.7	4.7	2.3	GM166-06HA
Sugar beet	USA, 2006	2	0.25	0.14	7	8.4, 10.5	9.4	4.7	GM174-06HA
Sugar beet	USA, 2006	2	0.25	0.14	7	18.7, 14.3	16.5	8.3	GM173-06HA

[a] See JMPR 2010 Fluopyram Evaluation, Table 159

[b] Mean residues scaled to GAP application rate

Almond hulls

Relevant data from trials with fluopyram on almonds, evaluated by JMPR in 2010 [Ref: JMPR 2010 E] are interpreted in light of current GAP in USA.

Table 29 Interpretation table of fluopyram residues on almond hulls from trials matching the GAP in USA and Canada and considered valid for residue estimation

Crop	Country, Year	Application			PHI, (days)	Residues (mg/kg)			Trial [a]
		No	kg ai/ha	kg ai/hL		sample	Fluopyram	mean	
Almonds	Canada GAP	2	max 0.25		14				max 0.5 kg ai/ha/season
Almonds	USA, 2006	2 [c]	0.25	0.012	14	hulls (91% DM)	2.3, 2.6	2.4	GM203-06HA
Almonds	USA, 2006	2 [b]	0.25	0.051	14 21 28	hulls (24% DM)	1.9, 2.0 2.6, 3.1 3.1, 3.2	2.0 2.8 3.2	GM201-06DA
Almonds	USA, 2006	2 [c]	0.25	0.013	14	hulls (65% DM)	3.8, 3.5	3.6	GM204-06HA
Almonds	USA, 2006	2 [b]	0.25	0.045	14	hulls (57% DM)	4.2, 4.3	4.3	GM202-06HA
Almonds	USA, 2006	2 [c]	0.25	0.01	14	hulls (81% DM)	4.8, 6.1	5.4	GM205-06HA

[a] See JMPR 2010 Fluopyram Evaluation, Table 174

[b] low volume airblast application

[c] high volume airblast application

FATE OF RESIDUES IN STORAGE AND IN PROCESSING

Magnitude of the residue in processing

Information was provided to the 2010 JMPR on the residue distribution of fluopyram in peel and pulp (melons), on the effects of trimming, washing and cooking of strawberries, blueberries, cabbage, broccoli, summer squash, lettuce, spinach, Mustard greens, celery and on the effects of simulated commercial processing on residues of fluopyram and metabolites in oranges, apples, plums, grapes, tomatoes, potatoes, sugar beet, soya beans, wheat, maize, peanut, rape seed, cotton seed and sunflower seed.

Processing factors derived by the 2010 JMPR of relevance to the commodities considered for maximum residue levels, dietary intake or livestock dietary burden estimation by the current meeting are summarized below:

Table 30 Summary of selected processing factors for fluopyram

RAW AGRICULTURAL COMMODITY	PROCESSED COMMODITY	CALCULATED PROCESSING FACTORS [A]	PROCESSING FACTOR (MEAN OR MEDIAN)
Apples	Dried fruit	0.03, 0.62, 0.64, 0.88, 0.91	0.64 (median)
	Sauce	0.01, 0.24, 0.36, 0.36, 0.63	0.36 (median)
	Juice	< 0.05, < 0.09, < 0.09, < 0.13, 0.44	< 0.09 (median)
	Pomace (wet)	1.2, 1.7, 2.3, 2.5, 4.1	2.3 (median)
Grape	Juice	< 0.02, < 0.02, < 0.02, < 0.03, 0.53	< 0.02 (median)
	Red wine	0.14, 0.17, 0.2, 0.2	0.18

RAW AGRICULTURAL COMMODITY	PROCESSED COMMODITY	CALCULATED PROCESSING FACTORS [A]	PROCESSING FACTOR (MEAN OR MEDIAN)
	Pomace (wet)	2.2, 3.1, 3.6, 3.9	3.2
	Raisins	2.0, 2.4, 2.9, 3.2, 6.6	2.9 (median)
Strawberry	Preserve	0.25, 0.27, 0.33, 0.4	0.31
	Jam	0.28, 0.58, 0.63, 0.64, 0.74, 1.0	0.65
Tomato	Juice	0.09, 0.27, 0.42, 0.44, 0.56	0.36
	Pomace (wet)	0.08, 0.09, 0.11, 0.13	0.1
	Preserve	0.07, 0.18, 0.21, 0.25, 0.33	0.21
	Puree	0.18, 0.46, 0.73, 0.94, 2.2	0.73 (median)
	Paste	0.46	0.46
Potato	Wet peel (process waste)	< 0.64	< 0.64
	Peeled tubers	< 0.64	< 0.64
	Crisps	< 0.64	< 0.64
	Flakes	1	1
Sugar beet	Sugar	1.3	1.3
	Molasses (thick juice)	0.92	0.92
	Dried pulp	1.3	1.3
Peanut	Meal	0.19	0.19
	Butter	0.22	0.22
	Oil	0.01	0.01

[a] Each value represents a separate study where residues were above the LOQ in the RAC. The factor is the ratio of the total residue in the processed item divided by the total residue in the RAC.

Commodities in italics are livestock feed items

LIVESTOCK FEEDING STUDIES

Lactating dairy cows

The 2010 JMPR reviewed a feeding study with fluopyram on lactating dairy cows, reported by Schoening & Wolters, 2008 [Ref: JMPR 2010 E] and the following table summarizes the residues found in cow's milk and tissues after oral dosing for 29 consecutive days with fluopyram at levels corresponding to feed concentrations of 1.5 ppm to 133 ppm.

Table 31 Residues of fluopyram and its BZM and total-olefine metabolites in cow tissues [a]

Feeding level	1.5 ppm (0.1×)		14.4 ppm (1×)		44 ppm (3×)		133 ppm (10×)	
Fluopyram residues (mg/kg)								
Commodity	mean	max	mean	max	mean	max	mean	max
Milk skim milk cream	nd	nd	0.01	0.02	0.05	0.09	0.12 0.02 1.3	0.15 0.02 1.4
Perirenal Fat	< 0.01	< 0.01	0.04	0.06	0.25	0.33	0.49	0.6
Mesenteric Fat	< 0.01	< 0.01	0.04	0.07	0.25	0.33	0.69	0.71
Subcutaneous Fat	< 0.01	< 0.01	0.04	0.07	0.25	0.33	0.57	0.65
Liver	0.25	0.26	0.71	0.98	2.07	2.8	4.0	4.0
Muscle	nd	nd	< 0.01	< 0.01	0.02	0.04	0.03	0.03
Kidney	nd	nd	< 0.01	< 0.01	0.03	0.05	0.07	0.08

Feeding level	1.5 ppm (0.1×)		14.4 ppm (1×)		44 ppm (3×)		133 ppm (10×)	
BZM residues (mg/kg)								
Commodity	mean	max	mean	max	mean	max	mean	max
Milk skim milk cream	0.02	0.02	0.24	0.37	0.57	0.77	1.3 1.4 0.85	1.4 1.5 0.98
Perirenal Fat	< 0.01	< 0.01	0.18	0.33	0.27	0.34	0.85	0.94
Mesenteric Fat	< 0.01	< 0.01	0.16	0.29	0.26	0.31	0.72	0.8
Subcutaneous Fat	0.01	0.01	0.18	0.31	0.37	0.45	1	1.1
Liver	0.1	0.1	1.21	1.9	2.8	3.2	6.9	7.0
Muscle	0.02	0.02	0.29	0.44	0.6	0.79	1.4	1.5
Kidney	0.03	0.03	0.28	0.38	0.72	0.88	1.6	1.6
Total-olefines residues (mg/kg)								
Commodity	mean	max	mean	max	mean	max	mean	max
Milk skim milk cream	nd	nd	< 0.02	0.02	0.03	0.05	0.12 nd 1.0	0.14 nd 1.3
Perirenal Fat	< 0.02	< 0.02	0.09	0.12	0.28	0.29	0.85	0.86
Mesenteric Fat	< 0.02	< 0.02	0.07	0.09	0.29	0.32	0.9	0.94
Subcutaneous Fat	< 0.02	< 0.02	0.06	0.08	0.18	0.23	0.55	0.57
Liver	nd	< 0.02	0.04	0.06	0.12	0.13	0.5	0.58
Muscle	nd	nd	< 0.02	< 0.02	0.02	0.03	0.04	0.04
Kidney	nd	nd	< 0.02	< 0.02	0.04	0.04	0.13	0.15

[a] See JMPR 2010 Fluopyram Evaluation, Table 222

Poultry

The 2010 JMPR also reviewed a feeding study with fluopyram on poultry, reported by Billian, 2008 [Ref: JMPR 2010 E] and the following table summarizes the residues found in hen eggs and tissues after oral dosing for 28 consecutive days with fluopyram at levels corresponding to feed concentrations of 0.5 ppm to 4.8 ppm.

Table 32 Residues of fluopyram and metabolites in hen eggs and tissues

Feeding level	0.05 ppm (0.1× group)		0.49 ppm (1× group)		1.6 ppm (3× group)		4.8 ppm (10× group)	
Fluopyram residues (mg/kg)								
Commodity	mean	max	mean	max	mean	max	mean	max
eggs	nd	nd	nd	nd	nd	nd	nd	nd
Skin with Fat	nd	nd	nd	nd	nd	nd	nd	< 0.01
Liver	nd	nd	nd	nd	nd	nd	nd	nd
Muscle	nd	nd	nd	nd	nd	nd	nd	nd
BZM residues (mg/kg)								
Commodity	mean	max	mean	max	mean	max	mean	max
eggs	nd	< 0.01	0.08	0.09	0.22	0.23	0.72	0.92
Skin with Fat	< 0.01	< 0.01	0.04	0.04	0.1	0.11	0.41	0.63
Liver	0.01	0.02	0.16	0.16	0.41	0.43	1.4	1.6
Muscle	< 0.01	< 0.01	0.03	0.04	0.09	0.1	0.29	0.33
Total-olefines residues (mg/kg)								
Commodity	mean	max	mean	max	mean	max	mean	max
eggs	nd	nd	nd	nd	nd	< 0.02	0.02	0.03

Feeding level	0.05 ppm (0.1× group)		0.49 ppm (1× group)		1.6 ppm (3× group)		4.8 ppm (10× group)	
Skin with Fat	nd	nd	< 0.02	< 0.02	0.02	0.03	0.05	0.08
Liver	nd	nd	nd	nd	< 0.02	< 0.02	< 0.02	0.02
Muscle	nd	nd	nd	nd	nd	nd	0.02	0.06

[a] See JMPR 2010 Fluopyram Evaluation, Table 225

Results are the mean residues from 3 sub-groups (of 3 animals each) in each dose group

APPRAISAL

Fluopyram, a pyridylethylamide broad spectrum fungicide was evaluated for the first time by the 2010 JMPR, where an ADI of 0–0.01 mg/kg bw and an ARfD of 0.5 mg/kg bw were established, residue definitions were proposed and maximum residue levels were recommended for a number of uses where GAP information was available.

Residue definitions recommended by the 2010 JMPR are:

- For compliance with the MRL and for dietary intake estimation for plant commodities: *fluopyram*
- For MRL-compliance for animal commodities: s*um of fluopyram and 2-(trifluoromethyl) benzamide, expressed as fluopyram*
- For dietary intake estimation for animal products: *sum of fluopyram, 2-(trifluoromethyl)benzamide and the combined residues N-{(E)-2-[3-chloro-5-(trifluoromethyl)pyridin-2-yl]ethenyl}-2-trifluoromethyl) benzamide and N-{(Z)-2-[3-chloro-5-(trifluoromethyl)pyridin-2-yl]ethenyl}-2-trifluoromethyl) benzamide, all expressed as fluopyram*

The residue is not fat-soluble.

New GAP information, supporting residue data and additional analytical sample storage stability studies were provided by the manufacturer for evaluation by the Meeting.

Stability of residues in stored analytical samples

The Meeting received updated information on the stability of residues in frozen analytical samples of representative substrates covering those with a high water content (lettuce), a high starch content (wheat grain), a high protein content (dry pea seed), a high oil content (rape seed) and a high acid content (orange).

Residues of fluopyram and its -benzamide, -pyridyl-acetic acid and -pyridyl-carboxylic acid metabolites were all stable in these representative substrates (except orange) stored frozen for up to 36–37 months. In orange, levels of the -pyridyl-acetic acid metabolite decreased from about 80% of the spiked level after 6 months to about 50% after 36 months storage.

Results of supervised residue trials on crops

The Meeting received new supervised trial data for foliar applications of fluopyram (SC formulations) on apples, wine grapes and peppers and agreed to use the data provided to the 2010 JMPR to estimate maximum residue levels for commodities for which new GAP information was available.

The results from these new trials and those previously reported by the 2010 JMPR and either matching critical GAP or where the results can be proportionally adjusted (scaled) to reflect GAP application rates were used to estimate maximum residue levels, STMRs and HRs for a number of commodities. The approach used to scale the results from trials where the application rates range from 0.33 × GAP to 5 × GAP (but otherwise match the critical GAP) is described in the Report of the 2010 JMPR (Section 2.8).

The OECD MRL calculator was used as a tool to assist in the estimation of maximum residue levels from the selected residue data set obtained from the supervised residue trials. As a first step, the Meeting reviewed all relevant factors related to each data set in arriving at a best estimate of the maximum residue level using expert judgement. Then the OECD calculator was employed. If the statistical calculation spreadsheet suggested a different value from that recommended by the Meeting, a brief explanation of the deviation was supplied.

Pome fruits

Results from supervised field trials on apples and pears conducted in Europe and North America were provided to the 2010 JMPR and the results from additional trials on apples in North America were provided to the Meeting.

The critical GAP for pome fruit is in Germany, a maximum of 4 applications of 0.05 kg ai/ha/metre of canopy height, PHI 14 days (equivalent to 0.15 kg ai/ha for 3m canopy trees). In trials on apples (6) and pears (2) from northern Europe, reported by the 2010 JMPR and matching the GAP in Germany, fluopyram residues were: 0.11, 0.11, 0.12, 0.12, 0.15, 0.2, 0.21 and 0.28 mg/kg.

The Meeting estimated a group maximum residue level of 0.5 mg/kg, an STMR of 0.135 mg/kg and an HR of 0.28 mg/kg for fluopyram on pome fruits.

Stone fruits

Results from supervised field trials on cherries conducted in USA and peaches conducted in Europe and USA were provided to the 2010 JMPR.

Cherries

The critical GAP for cherries is in Canada, up to 3 applications of 0.125 kg ai/ha, 14 days apart, PHI 0 days and a maximum seasonal rate of 0.375 kg ai/ha. None of the trials reported by the 2010 JMPR matched this GAP.

GAP for cherries in USA is 0.1 kg ai/ha, PHI 0 days, a 5–7 day spraying interval and a maximum of 0.21 kg ai/ha/season. In trials from USA reported by the 2010 JMPR, where cherries were treated with 2 × 0.25–0.26 kg ai/ha fluopyram, residues at 0 DAT (days after the last treatment) were: 0.07, 0.15, 0.21, 0.28, 0.35, 0.51, 0.51, 0.57, 0.63, 0.64 and 1.2 mg/kg. When proportionally adjusted to the 0.1 kg ai/ha GAP application rate (scaling factors of 0.38–0.4), fluopyram residues in cherries from these trials were: 0.03, 0.06, 0.08, 0.11, 0.14, 0.20, 0.21, 0.22, 0.22, 0.25, 0.26 and 0.47 mg/kg (n = 12).

The Meeting agreed to use the proportionally adjusted data matching the GAP of the USA for cherries to estimate a maximum residue level of 0.7 mg/kg, an STMR of 0.205 mg/kg and an HR of 0.47 mg/kg for fluopyram on cherries.

Peach

The critical GAP for peaches is in Turkey, 0.005 kg ai/hL, PHI 3 days. In trials from Southern Europe reported by the 2010 JMPR, where peaches were treated with 3 × 0.01–0.018 kg ai/hL fluopyram, residues at 3 DAT were: 0.11, 0.15, 0.2, 0.24, 0.26, 0.33, 0.34 and 0.34 mg/kg. When proportionally adjusted to the 0.005 kg ai/hL GAP application rate (scaling factors of 0.28–0.5), fluopyram residues in peaches from these trials were: 0.03, 0.06, 0.10, 0.12, 0.14, 0.16, 0.16 and 0.17 mg/kg (n = 9).

The Meeting agreed to use the Southern European trial results, proportionally adjusted to match the GAP in Turkey to estimate a maximum residue level of 0.4 mg/kg, an STMR of 0.13 mg/kg and an HR of 0.17 mg/kg for fluopyram on peach.

Berries and other small fruits

Grapes

Results from supervised field trials on wine and table grapes conducted in Europe and on table grapes in USA were provided to the 2010 JMPR and additional trial results on wine grapes from USA were provided to the Meeting.

New GAP information was provided to the Meeting for wine grapes in USA (0.25 kg ai/ha, PHI 7 days with a maximum seasonal rate of 0.5 kg ai/ha) and in North American trials matching this GAP, fluopyram residues in grapes were: 0.1, 0.15, 0.15, 0.19, 0.21, 0.27, 0.32, 0.37, 0.43, 0.47, 0.49, 0.52, 0.57, 0.62, 0.63 and 0.95 mg/kg (n = 16).

The Meeting noted that the 2010 JMPR had estimated a maximum residue level of 2 mg/kg, an STMR of 0.58 mg/kg and an HR of 1 mg/kg for fluopyram on grape, based on data from European trials matching the Romanian GAP for table grapes (2 × 0.25 kg ai/ha, PHI 3 days) and that this 2010 recommendation accommodated the new GAP in USA.

Strawberry

Results from supervised field trials on strawberries in USA (foliar applications and drip irrigation treatments) and Europe (foliar applications) to strawberries were provided to the 2010 JMPR.

The critical GAP for strawberries is in Morocco, 2 applications of 0.015 kg ai/hL, PHI 3 days but none of the European trials matched this GAP.

GAP for strawberries in Canada is for a maximum of 2 drip irrigation treatments of up to 0.25 kg ai/ha, PHI 0 days with a maximum seasonal application rate of 0.5 kg ai/ha. In trials from USA, reported by the 2010 JMPR and matching the GAP in Canada, fluopyram residues were: < 0.01, < 0.01, 0.01, 0.02, 0.02, 0.03, 0.03, 0.06, 0.1 and 0.23 mg/kg (n = 10).

The Meeting estimated a maximum residue level of 0.4 mg/kg, an STMR of 0.025 mg/kg and an HR of 0.23 mg/kg for fluopyram on strawberries..

Banana

Results from supervised field trials on bagged and unbagged bananas in Mexico, Central and South America were provided to the 2010 JMPR.

The critical GAP for bananas is in Panama, a maximum of 5 foliar applications of 0.1 kg ai/ha, PHI 0 days. In trials on bananas, reported by the 2010 JMPR and matching the GAP in Panama (but involving 6 applications), fluopyram residues in unbagged bananas (whole fruit) were: 0.02, 0.04, 0.04, 0.05, 0.05, 0.06, 0.17, 0.18, 0.18, 0.21, 0.22, 0.25, 0.34 and 0.51 mg/kg (n = 14).

The Meeting considered that residue contribution from the first of the six applications, applied at least 30 days before harvest would not significantly influence the final residue.

The Meeting estimated a maximum residue level of 0.8 mg/kg, an STMR of 0.175 mg/kg and an HR of 0.51 mg/kg for fluopyram on banana.

Cucumber

The 2010 JMPR evaluated residue trial data and GAP information on the use of fluopyram as a foliar spray on cucumber in China (3 × 0.075 kg ai/ha, 2-day PHI) and estimated an STMR of 0.11 mg/kg, an HR of 0.19 mg/kg and recommended a maximum residue level of 0.5 mg/kg for fluopyram on cucumbers.

New information was provided to the Meeting on the GAP in Turkey for cucumbers grown under cover (0.006 kg ai/hL, 3 day PHI). None of the trials in Europe, reported by the 2010 JMPR, matched the GAP in Turkey.

Fruiting vegetables, other than Cucurbits

Peppers

The critical GAP for peppers is in Turkey, 0.006 kg ai/hL, 3 day PHI. In the two new trials provided to the Meeting on peppers grown under cover in Turkey and matching the GAP in Turkey, fluopyram residues were 0.23 and 0.24 mg/kg.

In trials reported by the 2010 JMPR, where fluopyram was applied 2 × 0.025–0.03 kg ai/hL to peppers grown under cover, residues 3 DAT were: 0.16, 0.25, 0.29, 0.31, 0.42 and 0.58 mg/kg. When proportionally adjusted to the 0.006 kg ai/hl GAP application rate in Turkey (scaling factors of 0.2–0.3), residues of fluopyram in peppers were: 0.03, 0.05, 0.08, 0.08, 0.09 and 0.13 mg/kg (n = 6).

The combined data set of results from the pepper trials matching the GAP in Turkey, including the proportionally scaled results were: 0.03, 0.05, 0.08, 0.08, 0.09, 0.13, 0.23 and 0.24 mg/kg (n = 8).

The Meeting estimated a maximum residue level of 0.5 mg/kg, an STMR of 0.085 mg/kg and an HR of 0.24 mg/kg for fluopyram on peppers.

For dried chili peppers, using the data set for peppers and a dehydration factor of 10, the Meeting estimated an STMR of 0.85 mg/kg, an HR of 2.4 mg/kg and recommended a maximum residue level of 5 mg/kg for fluopyram on peppers chili, dried.

Tomato

The critical GAP for tomato is in Morocco, up to 2 applications/season of 0.0125 kg ai/hL, 3 day PHI. None of the trials on tomatoes in Europe, reported by the 2010 JMPR, matched the GAP in Morocco and the Meeting decided to assess the results of the trials on indoor-grown tomatoes against the Moroccan GAP. In these trials, where fluopyram was applied 2 × 0.02 or 0.03 kg ai/hL (2 × 0.3 kg ai/ha), residues 3 DAT were: 0.13, 0.15, 0.15, 0.15, 0.16, 0.19, 0.19, 0.24, 0.28, 0.36, 0.44 and 0.62 mg/kg. When proportionally adjusted to the 0.0125 kg ai/hl GAP application rate (scaling factors of 0.31–0.63), fluopyram residues in tomatoes were: 0.05, 0.06 (3), 0.08, 0.08, 0.1, 0.15, 0.18, 0.19, 0.22 and 0.23 mg/kg (n = 12).

Based on the results of the trials on indoor-grown tomatoes, the Meeting estimated a maximum residue level of 0.4 mg/kg, an STMR of 0.09 mg/kg and an HR of 0.23 mg/kg for fluopyram on tomato.

Beans (dry)

The critical GAP for dry beans (except soya beans) is in USA, 0.15 kg ai/ha, at 7-10 day intervals, 14 day PHI with a maximum seasonal rate of 0.3 kg ai/ha. None of the trials reported by the 2010 JMPR matched the USA GAP but in trials in USA on dry beans where fluopyram was applied 2 × 0.24–0.26 kg ai/ha, residues 14 DAT were: < 0.01, < 0.01, < 0.01, 0.01, 0.01, 0.01, 0.03, 0.05 and 0.07 mg/kg. When proportionally adjusted to the 0.15 kg ai/ha GAP application rate (scaling factors of 0.58-0.63), fluopyram residues in beans (dry) from these trials were: < 0.01 (6), 0.02, 0.03 and 0.04 mg/kg (n = 9).

The Meeting noted that the GAP in USA for 'dry beans' crop group includes lupins, chick-pea and lentil, which are not covered by the Codex 'beans (dry)' crop group and agreed to extrapolate the data for dry beans to these commodities.

The Meeting estimated a maximum residue level of 0.07 mg/kg and an STMR of 0.01 mg/kg for fluopyram on beans (dry), lupin (dry), chick-pea (dry) and lentil (dry).

Root and tuber vegetables

Results from supervised field trials on carrots, potatoes and sugar beet in North America and on carrots in Europe were provided to the 2010 JMPR.

Carrots

GAP for carrots in Ukraine is for a maximum of 2 foliar applications of 0.15 kg ai/ha, 30 day PHI. In carrot trials in Northern Europe matching the GAP in Ukraine and reported by the 2010 JMPR, residues were: 0.03, 0.04, 0.07, 0.08, 0.1, 0.13, 0.15 and 0.19 mg/kg (n = 8).

The Meeting estimated a maximum residue level of 0.4 mg/kg, an STMR of 0.09 mg/kg and an HR of 0.19 mg/kg for fluopyram on carrot.

Potato

The critical GAP for potatoes is in USA, 0.2 kg ai/ha, 7 day PHI with a maximum seasonal rate of 0.4 kg ai/ha. In potato trials in USA matching the GAP in USA and reported by the 2010 JMPR, residues were: < 0.01 (14), 0.01 and 0.02 mg/kg (n = 16).

The Meeting estimated a maximum residue level of 0.03 mg/kg, an STMR of 0.01 mg/kg and an HR of 0.02 mg/kg for fluopyram on potatoes. The OECD Calculator recommended a value of 0.02 mg/kg but the Meeting noted the high level of censored data and proposed a higher level.

Sugar beet

The critical GAP for sugar beet in USA is 0.125 kg ai/ha, 7 day PHI with a maximum seasonal rate of 0.25 kg ai/ha. None of the sugar beet trials reported by the 2010 JMPR matched the GAP in USA, but in trials in USA where fluopyram was applied 2 × 0.24–0.26 kg ai/ha, residues 7 DAT in sugar beet roots were: 0.02 (4), 0.03 (3), 0.04 (3) and 0.05 mg/kg. When proportionally adjusted to the 0.125 kg ai/ha GAP application rate (scaling factors of 0.48–0.52), fluopyram residues in sugar beet roots were: < 0.01, < 0.01, 0.01, 0.01, 0.01, 0.01, 0.02, 0.02, 0.02, 0.02 and 0.02 mg/kg (n = 11).

The Meeting estimated a maximum residue level of 0.04 mg/kg, an STMR of 0.01 mg/kg and an HR of 0.02 mg/kg for fluopyram on sugar beet roots.

Tree nuts

The critical GAP for tree nuts is in USA, 0.25 kg ai/ha, 14 day PHI with a seasonal maximum rate of 0.5 kg ai/ha.

In almond trials in USA, reported by the 2010 JMPR, matching the GAP for tree nuts in USA, fluopyram residues in almond nutmeat were: < 0.01, < 0.01, < 0.01, 0.01 and 0.02 mg/kg (n = 5).

In pecan trials in USA, reported by the 2010 JMPR, matching the GAP for tree nuts in USA, fluopyram residues in pecan nutmeat were: < 0.01, < 0.01, < 0.01, 0.01 and 0.03 mg/kg (n = 5).

The Meeting noted that the residue distributions in almonds and pecans were similar and agreed to combine them to support a group maximum residue level. The combined data set is: < 0.01 (6), 0.01, 0.01, 0.02 and 0.03 mg/kg (n = 12).

The Meeting estimated a maximum residue level of 0.04 mg/kg, an STMR of 0.01 mg/kg and an HR of 0.03 mg/kg for fluopyram on tree nuts.

Oilseeds

Peanut

The critical GAP for peanuts is in USA, 0.25 kg ai/ha, 7 day PHI with a maximum seasonal rate of 0.5 kg ai/ha.

In peanut trials reported by the 2010 JMPR, matching the GAP in USA, fluopyram residues in peanut (nutmeat) were: < 0.01 (10), 0.01 and 0.02 mg/kg (n = 12).

The Meeting estimated a maximum residue level of 0.03 mg/kg and an STMR of 0.01 mg/kg for fluopyram on peanut.

Rape seed

The critical GAP for oilseed rape is in Germany, a single application of 0.125 kg ai/ha over the flowering period (from BBCH 57 to BBCH 69, i.e., up to the end of flowering). In the Northern European supervised trials on oilseed rape reported by the 2010 JMPR, one fluopyram application of 0.125 kg ai/ha was made early flowering (about BBCH 63) and a second treatment was applied between 14 and 39 days later, at BBCH 73 (30% pods at full size).

Fluopyram residues in rape seed from these Northern European trials were: 0.02, 0.04, 0.08, 0.09, 0.1, 0.11, 0.11 and 0.19 mg/kg.

The Meeting agreed that these trials did not match the GAP in Germany and could not be used to estimate a maximum residue level for rape seed.

Animal feeds

Bean forage and fodder

The critical GAP for dry beans (except soya beans) is in USA, 0.15 kg ai/ha, at 7–10 day intervals, 14 day PHI with a maximum seasonal rate of 0.3 kg ai/ha, but as the GAP includes a restriction that livestock should not be grazed on or fed hay or threshings from treated crops, the Meeting did not estimate a median residue for livestock dietary burden estimation.

Sugar beet tops

The critical GAP for sugar beet in USA is 0.125 kg ai/ha, 7 day PHI with a maximum seasonal rate of 0.25 kg ai/ha. None of the sugar beet trials reported by the 2010 JMPR matched the GAP in USA, but in trials in USA where fluopyram was applied 2 × 0.24–0.26 kg ai/ha, residues 7 DAT in sugar beet tops were: 0.35, 0.38, 0.67, 0.69, 0.7, 0.89, 1.8, 3.2, 4.7, 9.4 and 16.5 mg/kg. When proportionally adjusted to the 0.125 kg ai/ha GAP application rate (scaling factors of 0.48-0.52), fluopyram residues in sugar beet tops were: 0.18, 0.19, 0.34, 0.35, 0.37, 0.46, 0.89, 1.6, 2.3, 4.7 and 8.3 mg/kg.

For livestock dietary burden estimation, the Meeting estimated a median residue of 0.46 mg/kg and a highest residue of 8.3 mg/kg for fluopyram on sugar beet tops.

Almond hulls

The critical GAP for tree nuts is in USA; 0.25 kg ai/ha, 14 day PHI with a seasonal maximum rate of 0.5 kg ai/ha. In almond trials in USA, reported by the 2010 JMPR, matching the GAP for tree nuts in USA, fluopyram residues in almond hulls were: 2.4, 3.2, 3.6, 4.3 and 5.4 mg/kg.

For animal dietary burden estimation, the Meeting estimated a median residue of 3.6 mg/kg for fluopyram on almond hulls.

Peanut forage and fodder

The critical GAP for peanuts is in USA; 0.25 kg ai/ha, 7 day PHI with a maximum seasonal rate of 0.5 kg ai/ha but as the GAP includes a restriction that livestock should not be grazed on or fed hay or threshings from treated crops, the Meeting did not estimate a median residue for livestock dietary burden estimation.

Fate of residues during processing

The 2010 JMPR reported that fluopyram was stable under conditions simulating pasteurisation, boiling and sterilisation and also estimated processing factors and STMR-Ps for a range of commodities. Relevant processing factors and STMR-Ps for the commodities considered at this Meeting and used for dietary intake risk assessment or for estimating livestock animal burdens are summarized below.

Summary of relevant processing factors and STMR-P values for fluopyram residues.

Raw agricultural commodity	Processed commodity	Processing factor [a] (mean or median)	RAC STMR (HR) (mg/kg)	STMR-P (HR-P) (mg/kg)
Tomato	Juice	0.36	0.09	0.03
Tomato	Pomace (wet)	0.1	0.09	0.01
Tomato	Preserve	0.21	0.09	0.02
Tomato	Puree	0.73	0.09	0.07
Tomato	Paste	0.46	0.09	0.04
Potato	Peeled tubers	< 0.64	0.01 (0.02)	< 0.006 (< 0.013)
Potato	Chips (crisps)	< 0.64	0.01	< 0.006
Potato	Flakes	1	0.01	0.01
Potato	Wet peel (process waste)	4.3	0.01	0.04
Sugar beet	Sugar	1.3	0.01	0.01
Sugar beet	Thick juice (Molasses)	0.92	0.01	0.01
Sugar beet	Dried pulp	1.3	0.01	0.01
Apples	Dried fruit	0.64 (median)	0.135	0.09
Apples	Sauce	0.36 (median)	0.135	0.05
Apples	Juice	< 0.09 (median)	0.135	< 0.01
Apples	Pomace (wet)	2.3 (median)	0.135	0.31
Peanut	Meal	0.19	0.01	0.002
Peanut	Butter	0.22	0.01	0.002
Peanut	Oil	0.01	0.01	0.0001
Strawberry	Preserve	0.31	0.025	0.008
Strawberry	Jam	0.65	0.025	0.02

[a] The processing factor is the ratio of the total residue in the processed item divided by the total residue in the RAC.

Residues in animal commodities

Farm animal dietary burden

The Meeting estimated the dietary burden of fluopyram in farm animals on the basis of the diets listed in Annex 6 of the 2009 JMPR Report (OECD Feedstuffs Derived from Field Crops).

	Animal dietary burden, fluopyram, ppm of dry matter diet							
	US-Canada		EU		Australia		Japan	
	Max	Mean	Max	Mean	Max	Mean	Max	Mean
Beef cattle	0.13	0.12	7.69	0.74	2.97	2.93[c]	-	-
Dairy cattle	0.64	0.55	11.2 [a b]	0.87	2.96	2.92[d]	-	-
Poultry – broiler	0.002	0.002	0.16	0.08	0.008	0.008	-	-
Poultry – layer	0.002	0.002	1.97[e g]	0.18[f h]	0.008	0.008	-	-

[a] Highest maximum beef or dairy cattle dietary burden suitable for MRL estimates for mammalian tissues

[b] Highest maximum dairy cattle dietary burden suitable for MRL estimates for mammalian milk

[c] Highest mean beef or dairy cattle dietary burden suitable for STMR estimates for mammalian tissues.

[d] Highest mean dairy cattle dietary burden suitable for STMR estimates for milk.

[e] Highest maximum poultry dietary burden suitable for MRL estimates for poultry tissues.

[f] Highest mean poultry dietary burden suitable for STMR estimates for poultry tissues.

[g] Highest maximum poultry dietary burden suitable for MRL estimates for poultry eggs.

[h] Highest mean poultry dietary burden suitable for STMR estimates for poultry eggs.

Farm animal feeding studies

The 2010 JMPR reviewed feeding studies with fluopyram on lactating dairy cows and laying hens and the conclusions from these residue transfer studies were used to estimate residue levels of fluopyram and its metabolites in milk, eggs and livestock tissues, based on the above dietary burdens.

Animal commodity maximum residue levels

Cattle

Maximum and mean residues expected in milk and tissues were obtained by using the residue transfer factors estimated by the 2007 JMPR.

For maximum residue estimation, the high residues of fluopyram and BZM (expressed as fluopyram equivalents) were calculated by interpolating the maximum dietary burden (11.2 ppm) from the 1.5:14.4 ppm feeding levels in the dairy cow feeding study and using the highest tissue concentrations of fluopyram plus BZM (fluopyram equivalents) from individual animals within those feeding groups. The same interpolation was used to calculate the highest tissue concentrations of fluopyram, BZM plus total olefins (fluopyram equivalents) for estimating HRs for dietary intake estimation.

The STMR values for the tissues were calculated by interpolating the STMR dietary burden (2.93 ppm from the same feeding levels and using the mean tissue concentrations of fluopyram, BZM plus total olefins (fluopyram equivalents) from those feeding groups.

For milk MRL estimation, the high residues in the milk were calculated by interpolating the maximum dietary burden for dairy cattle (11.2 ppm) from the 1.5:14.4 ppm feeding levels in the dairy cow feeding study and using the mean milk concentrations of fluopyram and BZM (fluopyram equivalents) from this feeding group.

The STMR value for milk was calculated by interpolating the mean dietary burden for dairy cows (2.92 ppm) from the 1.5:14.4 ppm feeding levels and using the mean milk concentrations of fluopyram, BZM plus total olefins (fluopyram equivalents).

	Feed level for milk (ppm)	Residues in milk (mg/kg)	Feed level for tissues (ppm)	Residues (mg/kg)			
				Muscle	Liver	Kidney	Fat
Maximum residue level beef or dairy cattle ((fluopyram + BZM)							
Feeding study (1)	1.5 14.4	0.02 0.25	1.5 14.4	0.02 < 0.45	0.36 2.88	0.03 < 0.39	< 0.02 0.4
Dietary burden/residue estimate	11.2[b]	0.193	2.43[a]	0.343	2.25	0.301	0.306
High residue beef or dairy cattle (fluopyram + BZM + Total olefins)							
Feeding study (2)			1.5 14.4	0.02 < 0.47	< 0.38 2.94	0.03 < 0.41	< 0.04 0.52
Dietary burden/residue estimate			2.43[a]	0.358	2.305	0.316	0.401
STMR beef or dairy cattle ((fluopyram + BZM + Total olefins)							
Feeding study (2)	1.5 14.4	0.02 < 0.27	1.5 14.4	0.02 < 0.47	0.36 2.92	0.03 < 0.41	< 0.04 0.49
Dietary burden/residue estimate	2.92	0.048	2.93	0.053	0.527	0.061	0.059

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

[b] Mean residues for tissues and for milk

Combined residues of fluopyram and BZM (expressed as fluopyram equivalents) expected in cattle milk and tissues for use in estimating maximum residue levels are: 0.31 mg/kg (fat), 0.34 mg/kg (muscle), 2.25 mg/kg (liver) and 0.3 mg/kg (kidney) and the mean residue for milk is 0.19 mg/kg.

The Meeting estimated maximum residue levels of 0.5 mg/kg for fluopyram in meat (from mammals other than marine mammals), 3 mg/kg for liver of cattle, goats, pigs and sheep, 0.5 mg/kg for kidney of cattle, goats, pigs and sheep and 0.3 mg/kg for milks and agreed to withdraw the previous recommendations for meat (from mammals other than marine mammals), edible offal (mammalian) and milks.

Estimated HRs for dietary intake estimation for fluopyram (and including residues of BZM and total olefins) are 0.4 mg/kg for mammalian fat, 0.36 mg/kg for mammalian muscle, 2.3 mg/kg for liver and 0.32 mg/kg for kidney.

Estimated STMRs for dietary intake estimation for fluopyram (and including residues of BZM and total olefins) are 0.06 mg/kg for mammalian fat, 0.05 mg/kg for mammalian muscle, 0.53 mg/kg for liver of cattle, goats, pigs and sheep, 0.06 mg/kg for kidney of cattle, goats, pigs and sheep and 0.05 mg/kg for milks

Poultry

The dietary burdens for poultry broilers are 0.18 ppm (maximum) and 0.08 ppm (mean) but the Meeting decided to estimate residue levels in poultry tissues using the higher mean/maximum dietary burden in poultry layers (1.97 ppm) as they may also be consumed. Tissue concentrations of fluopyram plus BZM (fluopyram equivalents) for maximum residue level estimation and of fluopyram, BZM plus total olefins (fluopyram equivalents) for dietary intake were obtained by interpolation between the 1.6 ppm and the 4.8 ppm feeding levels in the poultry study reported by the 2010 JMPR.

For eggs, for MRL estimation, residue levels in eggs were also estimated by interpolation between the higher dose levels (1.6 ppm and 4.8 ppm) because of the higher poultry layer dietary burden (1.97 ppm) but for estimating the STMR, based on a mean dietary burden of 0.18 ppm for poultry layers, mean residue levels were estimated by interpolation between the 0.05 ppm and the 0.49 ppm feeding levels.

	Feed level for eggs (ppm)	Residues in eggs (mg/kg)	Feed level for tissues (ppm)	Residues (mg/kg)		
				Muscle	Liver	Skin with Fat
Maximum residue level broiler or laying hen (fluopyram + BZM)						
Feeding study (1)	1.6 4.8	0.22 0.72	1.6 4.8	0.1 0.33	0.43 1.6	0.11 < 0.64
Dietary burden/residue estimate	1.97 [b]	0.193	1.97 [a]	0.127	0.565	0.171
High residue broiler or laying hen (fluopyram + BZM + Total olefins)						
Feeding study (2)			1.6 4.8	0.1 0.39	< 0.45 1.8	< 0.14 < 072
Dietary burden/residue estimate			1.97 [a]	0.134	0.585	0.207
STMR broiler or laying hen (fluopyram + BZM + Total olefins)						
Feeding study (2)	0.05 0.49	0 0.8	0.05 0.49	< 0.01 0.03	0.1 0.16	< 0.01 < 0.06
Dietary burden/residue estimate	0.18	0.008	0.18	0.011	0.02	0.013

[a] Highest residues for tissues and mean residues for eggs

[b] Mean residues for tissues and for eggs

Combined residues of fluopyram and BZM (expressed as fluopyram equivalents) expected in poultry eggs and tissues for use in estimating maximum residue levels are: 0.17 mg/kg (fat), 0.13 mg/kg (muscle), 0.56 mg/kg (liver) and 0.19 mg/kg (eggs).

The Meeting estimated maximum residue levels of 0.2 mg/kg for fluopyram in poultry meat, 0.7 mg/kg for poultry edible offal and 0.3 mg/kg for eggs.

Estimated HRs for dietary intake estimation for fluopyram (and including residues of BZM and total olefins) are 0.2 mg/kg for poultry fat, 0.13 mg/kg for poultry muscle and 0.58 mg/kg for poultry edible offal.

Estimated STMRs for dietary intake estimation for fluopyram (and including residues of BZM and total olefins) are 0.01 mg/kg for poultry fat, 0.01 mg/kg for poultry muscle, 0.02 mg/kg for poultry edible offal and 0.008 mg/kg for eggs.

RECOMMENDATIONS

On the basis of the data from supervised trials the Meeting concluded that the residue levels listed below are suitable for establishing maximum residue limits and for IEDI assessment.

Definition of the residue for compliance with the MRL and for the estimation of dietary intake for plant commodities: *fluopyram.*

Definition of the residue for compliance with the MRL for animal commodities: *Sum of fluopyram and 2-(trifluoromethyl) benzamide, expressed as fluopyram.*

Definition of the residue for the estimation of dietary intake for animal commodities: *Sum of fluopyram, 2-(trifluoromethyl)benzamide and the combined residues N-{(E)-2-[3-chloro-5-(trifluoromethyl)pyridin-2-yl]ethenyl}-2-trifluoromethyl) benzamide and N-{(Z)-2-[3-chloro-5-(trifluoromethyl)pyridin-2-yl]ethenyl}-2-trifluoromethyl) benzamide, all expressed as fluopyram*.

The residue is not fat soluble.

CCN	Commodity Name	MRL (mg/kg) New	Prev	STMR or STMR-P	HR or HR-P
FI 0327	Banana	0.8		0.175	0.51
VD 0071	Beans (dry)	0.07		0.01	
VR 0577	Carrot	0.4		0.09	0.19
FS 0013	Cherries	0.7		0.205	0.47
VD 0524	Chick-pea (dry)	0.07		0.01	
MO 0105	Edible offal (mammalian)	W	0.7		
PE 0112	Eggs	0.3		0.008	
MO 0098	Kidney of cattle, goats, pigs and sheep	0.5		0.06	0.32
VD 0533	Lentil (dry)	0.07		0.01	
MO 0099	Liver of cattle, goats, pigs and sheep	3		0.53	2.3
VD 0545	Lupin (dry)	0.07		0.01	
MM 0095	Meat (from mammals other than marine mammals)	0.5	0.1	0.05 (muscle) 0.06 (fat)	0.36 (muscle) 0.4 (fat)
ML 0106	Milks	0.3	0.07	0.05	
FS 0247	Peach	0.4		0.13	0.17
SO 0697	Peanut	0.03		0.01	
VO 0051	Peppers	0.5		0.085	0.24
HS 0444	Peppers Chili, dried	5		0.85	2.4
FP 0009	Pome fruits	0.5		0.135	0.28
VR 0589	Potato	0.03		0.01	0.02
PM 0110	Poultry meat	0.2		0.01 (muscle) 0.01 (fat)	0.13 (muscle) 0.2 (fat)
PO 0105	Poultry, Edible offal of	0.7		0.02	0.58

CCN	Commodity Name	MRL (mg/kg) New	Prev	STMR or STMR-P	HR or HR-P
FB 0275	Strawberry	0.4		0.025	0.23
VR 0596	Sugar beet	0.04		0.01	0.02
VO 0448	Tomato	0.4		0.09	0.23
TN 0085	Tree nuts	0.04		0.01	0.03
AM 0660	Almond hulls			3.6	
DF 0226	Apple, dried			0.09	
JF 0226	Apple juice			0.01	
AB 1230	Apple pomace, wet			0.31	
	Apple sauce			0.05	
	Peanut butter			0.002	
	Peanut meal			0.002	
OR 0697	Peanut oil			0.0001	
	Potato (peeled)			0.006	0.013
	Potato chips (crisps)			0.006	
	Potato flakes			0.01	
	Potato wet peel (process waste)			0.04	
	Strawberry jam			0.02	
	Strawberry preserve			0.008	
	Sugar beet (sugar)			0.01	
	Sugar beet pulp (dry)			0.01	
DM 0596	Sugar beet thick juice (molasses)			0.01	
	Sugar beet tops			0.46	8.3
JF 0448	Tomato juice			0.03	
VW 0448	Tomato paste			0.04	
	Tomato pomace (wet)			0.01	
	Tomato preserve			0.02	
	Tomato puree			0.07	

DIETARY RISK ASSESSMENT

Long-term intake

The International Estimated Daily Intakes (IEDIs) for fluopyram were calculated for the food commodities for which STMRs or HRs were estimated and for which consumption data were available. The results are shown in Annex 3 of the 2012 JMPR Report.

The International Estimated Daily Intakes of fluopyram for the 13 GEMS/Food regional diets, based on estimated STMRs were 2–20% of the ADI of 0–0.01 mg/kg bw. The Meeting concluded that the long-term intake of residues of fluopyram from uses that have been considered by the JMPR is unlikely to present a public health concern.

Short-term intake

The International Estimated Short-term Intakes (IESTIs) for fluopyram were calculated for the food commodities for which STMRs or HRs were estimated and for which consumption data were available (see Annex 4 of the 2012 JMPR REport).

For fluopyram the IESTI varied from 0–10% of the ARfD (0.5 mg/kg bw) and the Meeting concluded that the short-term intake of residues of fluopyram from uses considered by the Meeting is

REFERENCES

Code	Author(s)	Year	Title, Institute, Report reference
JMPR 2010 E	Anon	2010	Pesticide residues in food—2010 Evaluations. Part I. Residues. Fluopyram (243), pp 1415-1701. FAO Plant Production and Protection Paper 206, 2011. Published.
M-418047	Anon.	2011	Determination of the residues of AE C656948 and Tebuconazole in/on pepper after spraying of AE C656948 & HWG 1608 (400 SC) in the field in Turkey—Parts 1 & 2 M-387923-01-1
MR-08/036	Cavaillé, C & Meilland-Berthier, I	2010	Storage stability of residues of AE C656948 and its metabolites (AE F148815, AE C657188 and BCS-AA10139) in orange during deep freeze storage for up to 36 months. Bayer CropScience S.A., Lyon, France. Bayer CropScience Report No 07-02, 2009. Amended 2010-09-09—Report No MR-08/036. GLP, unpublished M-356046-02-2
MR-10/044	Cavaillé, C & Meilland-Berthier, I	2010	Storage stability of residues of AE C656948 and its metabolites (AE F148815, AE C657188, BCS-AA10139 and BCS-AA10065) in plants during deep freeze storage for up to 36 months. Bayer CropScience S.A., Lyon, France. Bayer CropScience Report No 06-06, 2008. Amended 2010-06-28—Report No MR-10/044. GLP, unpublished M-299461-03-3
MR-10/044	Cavaillé, C & Meilland-Berthier, I	2010	Storage stability of residues of AE C656948 metabolites (AE 1344122 and BCS-AA10065) in dry pea, rape and orange during deep freeze storage for up to 24 months. Bayer CropScience S.A., Lyon, France. Bayer CropScience Report No MR-10/045. Date 2010-09-10. GLP, unpublished M-389465-01-2
RAGMP162	Krolski, ME	2010	Fluopyram 500 SC—Magnitude of the residue in apple. Bayer CropScience LP, Environmental Research, Stilwell, KS, USA. Bayer CropScience Report No.: RAGMP162, Date 2010-08-13. GLP, unpublished M-387923-01-1
RAGMP164	Fischer, DR	2010	AE C656948 500 SC—Magnitude of the residue in/on grapes. Bayer CropScience LP, Environmental Research, Stilwell, KS, USA. Bayer CropScience Report No.: RAGMP164, Date 2010-07-23. GLP, unpublished M-386732-01-1