

METHOMYL (094)

*First draft prepared by Yibing He,
Institute for the Control of Agrochemicals, Ministry of Agriculture, China*

EXPLANATION

A residue review of methomyl was conducted in 1975 and supervised field trial data and related data on various crops were considered in 1976-1978, 1986-1991 and most recently in 2001. At its 36th Session (2004), the CCPR noted that new data on mint hay and peppers had been reported and decided to maintain the CXLs for these for four years under the Periodic Review procedure and the evaluation was scheduled for 2004 (ALINORM 04/27/24, para. 124, p 15).

The Meeting received residue data from supervised field trials on peppers and mint hay from the manufacturer. Information on labels and current GAP was also provided.

RESIDUE ANALYSIS

Analytical methods

In the 2001 evaluation of methomyl, a limit of quantification (LOQ) of 0.02 mg/kg was reported for a number of plant commodities. Quantification was by GC with an FPD (sulphur mode) or HPLC with a fluorescence detector.

Peppers. In the method of Pease and Kirkland (1968) residues of methomyl were extracted with ethyl acetate using a homogenizer, the extract centrifuged, and the supernatant decanted. The combined organic extracts were purified by liquid-liquid partitioning and concentrated. Sodium hydroxide was added to hydrolyse methomyl to *S*-methyl *N*-hydroxythioacetimidate (MHTA), which was then extracted with ethyl acetate. Analysis of the final extract was by GC with an FPD (sulphur mode). Recoveries from samples fortified at 0.04-4.0 mg/kg were 80-110% (Ashley, 2001a,b). The LOQ was 0.02 mg/kg.

The method of Rühl and Clark (1994) with slight modifications to the HPLC gradient conditions was also used for determination of methomyl residues in peppers (Françon and Larcinese, 1999). Residues of methomyl were extracted with acetonitrile using a homogenizer. Sodium chloride was added to the extract for phase separation and direct partitioning of methomyl to the acetonitrile layer. The acetonitrile extract was purified by hexane partitioning and passed through a Florisil solid-phase extraction cartridge. Following elution with 50:50 acetone:hexane, the eluate was evaporated to dryness, reconstituted in 15:85 acetonitrile:water and filtered. The final extract was analysed by HPLC with post-column reaction to convert methomyl to methylamine which was derivatized (on-line) and detected by fluorescence. Average recoveries (n=17) from samples fortified at 0.020 and 0.20 mg/kg were 95 ± 13% and 90 ± 12% respectively. The LOQ was 0.02 mg/kg.

Mint hay. The analytical method developed for mint hay (Bishel, 2003) was based on the method of Pease and Kirkland (1968). Mint hay samples were macerated with ethyl acetate, the extracts filtered, water added and the organic solvent removed by evaporation. The aqueous phase was filtered, acidified, and washed with hexane. This was followed by extraction of methomyl into dichloromethane. Sodium hydroxide was added to hydrolyze methomyl to MHTA, and the hydrolysis mixture was acidified and extracted with dichloromethane or ethyl acetate. The extract was dried and concentrated for GC with an FPD (sulphur mode). Recoveries from samples fortified at 0.08-2.0 mg/kg were 64-100%. The LOQ

was 0.02 mg/kg.

Stability of residues in stored analytical samples

The freezer storage stability of methomyl in mint hay was studied (Bishel, 2003). Samples of mint hay fortified with methomyl at 0.1, 0.2, 0.5 and 13.9 mg/kg were stored at -10°C and analysed after 20, 49, 181 and 192 days. The results are shown in Table 1.

Table 1. Stability of residues in mint hay fortified with methomyl.

Sample	Fortification, mg/kg	Storage ($^{\circ}\text{C}$)	Storage (days)	Methomyl remaining (%)	Reference
Fresh and spent mint hay	13.9	-10	20	101	3E 1303-2003
	0.1	-10	49	113	
	0.2	-10	49	95	
	0.5	-10	181	92	
	0.2	-10	192	91	

USE PATTERN

Methomyl is registered for use as a pesticide to control a large variety of chewing and sucking insects on a wide range of crops in many countries. Table 2 is a summary of the registered uses of methomyl on mint and peppers based on labels or label translations provided by the manufacturer.

Table 2. Registered uses of methomyl on mint and peppers.

Crop	Country	F/G ¹	Form type	Concentration	Application method	Rate kg ai/ha	Spray conc., kg ai/hl	No. of applications	PHI (days)
Mint	USA	F	SL	290 g/l	Foliar – aerial/ground	0.75 – 1.0	6.8 – 9.1	4	14
	USA	F	SP	900 g/kg	Foliar – aerial/ground	0.75 – 1.0	6.8 – 9.1	4	14
Pepper	Bulgaria	F	WP	250 g/kg	Foliar		0.023	3	7
	Central America	F	SP	900 g/kg	Foliar	0.45	0.11–0.23	ns	3
	Cyprus	F	SP	900 g/kg	Foliar – high volume	0.42–0.81	0.042-0.081	2 – 3	10
	Cyprus	F	SP	900 g/kg	knapsack	1.00	0.2	2 – 3	10
	Egypt	F	SP	900 g/kg	Foliar	0.64		ns	3
	Greece	F/G	SL	200 g/l	Foliar	0.45		1 – 3	15
	Greece	F/G	SL	200 g/l	soil spraying; incorporated	2.7		1	15
	Greece	F/G	SL	200 g/l	soil spraying followed by irrigation	0.72 - 0.9		1	15
	Greece	F/G	SP	900 g/kg	Foliar	0.45		1 - 3	15
	Greece	F/G	SP	900 g/kg	soil spraying; incorporated	2.7		1	15
	Greece	F/G	SP	900 g/kg	soil spraying followed by irrigation	0.72 - 0.9		1	15
	Greece	F/G	WP	250 g/kg	Foliar	0.45		1 - 3	15
	Greece	F/G	WP	250 g/kg	soil spraying; incorporated	2.7		1	15

Crop	Country	F/G ¹	Form type	Concentration	Application method	Rate kg ai/ha	Spray conc., kg ai/hl	No. of applications	PHI (days)
	Greece	F/G	WP	250 g/kg	soil spraying followed by irrigation	0.72 - 0.9		1	15
	Hungary	G	SL	200 g/l	Foliar	0.72	0.07 - 0.09	ns	5
	Italy	F	SL	200 g/l	Foliar		0.04	ns	10
	Italy	F	WP	250 g/kg	Foliar		0.04	ns	10
	Jordan	F	SP	900 g/kg	Foliar		0.05	ns	7
	Kenya	F	SP	900g/kg	Foliar	0.45 - 0.9	0.09	As needed	5
	Mexico	F	SL	290 g/l	Foliar - ground	0.65	0.16 - 0.33	ns	3
	Mexico	F	SL	290 g/l	Foliar - aerial	0.65	0.81 - 1.3	ns	3
	Morocco	F	WP	250 g/kg	Foliar		0.0375	ns	7
	New Zealand	G	SL	200 g/l	Foliar		0.024	4	2
	Tunisia	F	WP	250 g/kg	Foliar	0.038	0.038	3 - 4	7
	USA	F	SL	290 g/l	Foliar - aerial/ground	0.25 - 1.0	2.3 - 9.1	10	3
	USA	F	SP	900 g/kg	Foliar - aerial/ground	0.25 - 1.0	2.3 - 9.1	10	3
	Venezuela	F	SL	223 g/l	Foliar	0.45		ns	1
	Venezuela	F	SL	288 g/l	Foliar	0.5		ns	1
	Venezuela	F	SP	900 g/kg	Foliar	0.27		ns	1
	Yugoslavia		SP	900 g/kg	Foliar		0.045	As needed	14
Pepper, Chili	India	F	SL	112 g/l	Foliar - high volume	0.04 - 0.05	0.04 - 0.10	ns	4
	Peru	F	SL	240 g/l	Foliar	0.24	0.096	ns	5
	Peru	F	SP	400 g/kg	Foliar	0.4	0.135	ns	7
	Peru	F	SP	900 g/kg	Foliar	0.4	0.135	ns	7
	Thailand	F	SP	400 g/kg	Foliar		0.04 - 0.07	ns	6 - 14
Pepper, Green	Romania	G	SP	900 g/kg	Foliar	0.45	0.045	3	3
Pepper, Green (field)	Japan	F	WP	450 g/kg	Foliar	0.3375 - 1.35	0.0225 - 0.045	1 - 3	14
Pepper, Red	Korea	F	SL	215 g/l	Foliar		0.0215	4	14
	Korea	F	SP	450 g/kg	Foliar		0.0675	3	7
Pepper, Red and Green	Argentina	F	SP	900 g/kg	Foliar	0.225 - 0.45	0.75 - 0.15	ns	10
	Argentina	F	SP	900 g/kg	Foliar - knapsack		0.0225 - 0.045		10

¹ Outdoor or field use (F) or glasshouse application (G).

ns: not stated

RESIDUES RESULTING FROM SUPERVISED TRIALS

Residue levels and application rates were reported as methomyl. Where residues were not detected, they are reported as below the LOQ, e.g. <0.02 mg/kg. Residue data, application rates and spray concentrations have generally been rounded to two significant figures or, for residues near the LOQ, to one significant figure. Although trials included control plots, no control data are given in the Tables except where residues in control samples exceeded the LOQ. Residue data are recorded unadjusted for % recovery. Multiple results are recorded in the Tables where the trial included replicate plots and where separate samples have been identified as being from these replicate plots.

Supervised field trials were reported for peppers and mint hay. Trials are listed in the following Tables. Double-underlined residues are from trials according to GAP used to estimate maximum residue levels.

Peppers. Supervised trials on pepper were conducted in the USA in 1968 and 1970-74, and in Canada in

1971 (Ashley, 2001a,b). US GAP specifies 0.50-1.0 kg ai/ha and a PHI of 3 days. There is no GAP in Canada. Samples were collected at intervals and analysed by GC with sulphur FPD (Pease and Kirkland, 1968). Recoveries from fortified peppers were acceptable in the 0.04-4.0 mg/kg range (Ashley 2001a, b). The results are shown in Table 3.

Table 3. Residues of methomyl in or on peppers after foliar applications in the USA and Canada.

Location/Year/ Variety	Application					PHI, days	Residues, mg/kg	Ref (DuPont report no.)
	Form	kg ai/ha	kg ai/hl	water, l/ha	no.			
Country label	SL, SP	1.0	NSOL ¹	- ²	≤10	PHI: 3 day Note: Do not apply more than 5.0 kg ai/ha/crop		
GAP: Canada	None(use USA)							
Bradenton, FL USA/1968/ -	-	0.56	-	-	6	3 5	0.39 0.38	9F 0814
Bristol, MD USA/1968/-	-	0.56	-	-	5	3	0.10	9F 0814
Niles, MI USA/1968/ -	-	0.56	-	-	4	Control 2 4	0.06 0.28 0.12	9F 0814
Niles, MI USA/1968/ -	-	1.1	-	-	4	2 4	<u>0.44</u> 0.11	9F 0814
Weslaco, Texas USA/1968/-	-	0.56	-	-	8	Control 10	0.06 0.05	9F 0814
Weslaco, Texas USA/1968/-	-	1.1	-	-	8	10	0.03	9F 0814
Weslaco, Texas USA/1968/-	-	2.2	-	-	8	10	0.19	9F 0814
Wilmington, DE USA/1968/ -	-	0.56	-	-	9	2 5	0.16 0.05	9F 0814
Wooster, OH USA/1968/-	-	0.56	-	-	6	2 5	0.02 0.03	9F 0814
Wooster, OH USA/1968/-	-	1.1	-	-	6	2 5	<u>0.08</u> 0.03	9F 0814
Bradenton, FL USA/1970/Bell	SP, 900g/kg	1.1	0.12	898	1→	1 3 5	0.11 <u>0.10</u> 0.04	5F 1616
Niles, MI USA/1970/Bell	SP, 900g/kg	0.50	0.09	561	2→	1 3	0.41 0.13	5F 1616
Riverside, CA USA/1970/Chili	SP, 900g/kg	1.1	0.20	561	3	Control 0 7 14	0.02 1.3, 1.8 0.74, 0.35 0.19, 0.22	5F 1616
Westley, CA USA/1970/-	-	1.1			1	1 3 5	0.05 <u>0.04</u> <0.02	5F 1616
Bakersfield, CA USA/1971/Bell	SP, 900g/kg	0.84	0.22	374	1→	1 2	0.37 <u>0.11</u>	5F 1616
London, Ont Canada/1971/Bell	SP, 900g/kg	0.76	0.20	374	6	1 3 5	0.07 <u>0.02</u> 0.02	5F 1616
Modesto, CA USA/1971/Bell	SP, 900g/kg	1.1	0.12	935	3→	3 7	<u>0.03</u> 0.03	5F 1616
Santa Maria, CA USA/1971/Bell	SP, 900g/kg	1.1	-	-	1→	0 1 3 5	3.2 1.2 <u>0.11</u> 0.09	5F 1616
Immokalee, FL USA/1972/Bell	SP, 900g/kg	0.56	0.06	935	1→	Control 1 3	0.07 0.34 0.29	5F 1616

Location/Year/ Variety	Application					PHI, days	Residues, mg/kg	Ref (DuPont report no.)
	Form	kg ai/ha	kg ai/hl	water, l/ha	no.			
Immokalee, FL USA/1972/Bell	SP, 900g/kg	1.1	0.12	935	1→	1 3	0.46 <u>0.39</u>	5F 1616
Immokalee, FL USA/1972/Bell	L, 216g/l	0.56	0.06	935	1→	1 3	0.26 0.14	5F 1616
Immokalee, FL/ USA1972/Bell	L, 216g/l	1.1	0.12	935	1→	1 3	0.29 <u>0.26</u>	5F 1616
Naples, FL USA/1973/Bell	L, 216g/l	1.0	1.5	65	10	1 3	0.49 <u>0.12</u>	5F 1616
Naples, FL USA/1973/Bell	L, 216g/l	1.0	1.5	65	11	1 3	0.23 <u>0.24</u>	5F 1616
Immokalee, FL USA/1974/Bell	L, 216g/l	1.0	0.11	935	5→	1 3	0.54 <u>0.18</u>	5F 1616
Naples, FL USA/1974/Bell	L, 216g/l	2.0	0.21	935	5	1 3 7	2.2 0.46 0.44	5F 1616
Rio Grande City, TX USA/1974/Bell	L, 216g/l	0.75	-	-	2→	1 3	0.13 <u>0.10</u>	5F 1616
Rio Grande City, TX USA/1974/Bell	L, 216g/l	1.0	-	-	2→	1 3	0.06 <u>0.04</u>	5F 1616
Weslaco, TX/ USA/1974/ Bell	L, 216g/l	1.0	2.1	47	5→	0 3	0.18 <u>0.08</u>	5F 1616
Weslaco, TX USA/1974/Bell	L, 216g/l	1.0 + 2.0	2.1 + 4.3	47	3 + 2	0 3	0.43 0.15	5F 1616

¹not specified on label.

²not available.

→Aerial application.

Field trials on peppers were reported from Italy in 1996 (Weidenauer *et al.*, 1998), and from Italy, France, Portugal, Spain and Greece in 1997 (Françon and Larcinese, 1999). WP and SL formulations were applied at 10-day intervals as foliar sprays in Italy at 0.40 kg ai/hl. GAP in Greece specifies 0.45 kg ai/ha and a PHI of 15 days. There is no GAP in France, Portugal or Spain. Pepper samples were collected and analysed by method AMR 3015-94 (Rühl and Clark, 1994). The analytical laboratory made slight modifications during analysis (Françon and Larcinese, 1999). Adequate recovery was demonstrated at 0.02 mg/kg fortification of control samples (Françon and Larcinese, 1999). The results are shown in Table 4.

Table 4. Residues of methomyl in or on peppers after foliar applications of WP or SL formulations in Italy, France, Spain, Portugal and Greece.

Location/Year/ Variety	Application					PHI, days	Residues, mg/kg	Ref (DuPont report no)
	Form	kg ai/ha	kg ai/hl	water, l/ha	no.			
GAP: Italy	SL, WP	NSOL ¹	0.04	- ²	NSOL	PHI: 10 day Country label		Country label
GAP: France	None(use Italy)							
GAP: Portugal	None(use Italy)							
GAP: Spain	None(use Italy)							
GAP: Greece	SL, WP	0.45	NSOL		1-3	PHI: 15 day		Country label
Montanaso, Lombardo (LO) Italy/1996/Indalo	SL, 200 g/l	0.50	0.050	990	3	7	<u><0.02</u> , <0.02	AMR 3999-96
Montanaso, Lombardo (LO) Italy/1997/Indalo F1	SL, 200 g/l	0.40	0.050	798	3	+3h 1 3 5 7	0.04, 0.05 0.02, <0.02 <0.02, <0.02 <0.02, <0.02 <u>0.02</u> , 0.02, <0.02	AMR 4509-97

Location/Year/ Variety	Application					PHI, days	Residues, mg/kg	Ref (DuPont report no)
	Form	kg ai/ha	kg ai/hl	water, l/ha	no.			
Montanaso, Lombardo (LO) Italy/1997/ Indalo F1	WP, 250 g/kg	0.40	0.050	800	3	+3h	0.06, 0.03	AMR 4509-97
						1	0.04, <0.02	
						3	<0.02, 0.02	
						5	<0.02, <0.02	
						7	<0.02, <0.02	
Bren, Valence Area France/1997/Le Muyo	SL, 200g/l	0.27	0.050	535	3	+3h	0.03, 0.06	AMR 4509-97
						1	<0.02, 0.02	
						3	<0.02, <0.02	
						5	<0.02, <0.02	
						7	<0.02, <0.02	
St Donat sur l'Herbasse, Valence Area France/1997/La Muyo	WP, 250g/kg	0.26	0.050	516	3	+3h	0.03, 0.03	AMR 4509-97
						1	0.02, 0.02	
						3	<0.02, <0.02	
						5	<0.02, <0.02	
						7	<0.02, <0.02	
Bela Curral, Pechão Portugal/1997/ Lamuyo	SL, 200g/l	0.50	0.051	982	3	+3h	0.07, 0.05	AMR 4509-97
						1	0.05, 0.02	
						3	0.03, 0.02	
						5	0.03, 0.02	
						7	<0.02, <0.02	
Utrera, Sevilla Spain/1997/Italico	SL, 200g/l	0.35	0.051	690	3	+3h	0.14, 0.11	AMR 4509-97
						1	0.08, 0.07	
						3	0.06, 0.04	
						5	0.02, 0.04	
						7	<0.02, 0.03	
Utrera, Sevilla Spain/1997/Italico	WP, 250g/kg	0.35	0.051	694	3	+3h	0.14, 0.12	AMR 4509-97
						1	0.08, 0.08	
						3	0.04, 0.04	
						5	0.02, 0.02	
						7	0.02, <0.02	
Palacios, Sevilla Spain/1997/Italico	WP, 250g/kg	0.38	0.051	742	3	7	0.04, 0.03	AMR 4509-97
Metohi, Epanomis Greece/1997/Veria P-14	SL, 200 g/l	0.26	0.050	512	3	+3h	0.25, 0.11	AMR 4509-97
						1	0.06, 0.06	
						3	0.02, <0.02	
						5	<0.02, <0.02	
						7	0.02, 0.02, <0.02	
Metohi, Epanomis Greece/1997/Veria P-14	WP, 250g/kg	0.25	0.052	491	3	+3h	0.12, 0.10	AMR 4509-97
						1	0.09, 0.04	
						3	0.03, 0.03	
						5	0.02, 0.03	
						7	<0.02, <0.02	

¹not specified on label.

²not available.

Mint hay. Supervised field trials on the foliar application of methomyl to spearmint or peppermint to determine residues in mint hay were conducted in the USA at 5 locations (Bishel, 2003). GAP in the USA specifies 0.75-1.0 kg ai/ha and a PHI of 14 days. Mint hay samples were collected at intervals and analysed by method 3E 1303 (Bishel, 2003), developed on the basis of the method of Pease and Kirkland (1968). Recoveries from fortified mint hay were acceptable in the 0.08-2.0 mg/kg range (Bishel, 2003). The results are shown in Table 5.

Table 5. Residues of methomyl in or on mint hay after foliar applications of SP or EC formulations to mint in the USA (3E 1303).

Location/Year/Variety	Application					PHI, days	Residues, mg/kg
	Form	kg ai/ha	kg ai/hl	water, l/ha	no.		
US GAP	SL, SP	1.0	NSOL ¹	- ²	≤4	PHI: 14 days Note: Do not apply more than 2.0 kg ai/ha/crop	
Jasper County, IN USA/1970/-	EC, 360 g/l	0.56	0.30	187	1	22 23	1.5 0.12 ³
Jasper County, IN USA/1970/-	EC, 360 g/l	0.56	0.30	187	2	8 9	3.6, 3.6 0.28 ³
Jasper County, IN USA/1970/-	EC, 360 g/l	1.1	0.60	187	2	8 9	5.2, 5.5 0.34 ³
Jefferson, OR USA/ 1970/-	SP, 900 g/kg	0.56	0.60	94	1→	0 7 14 19	2.1 <0.02 <0.02 <0.02, <0.02 ³
Jefferson, OR USA/ 1970/-	SP, 900 g/kg	1.1	1.2	94	1→	0 7 14 19	4.2 0.02 <u>0.02</u> <0.02, <0.02 ³
Kings Valley, OR USA/1970/-	SP, 900 g/kg	0.56	0.60	94	1→	0 7 14 18	7.5 0.66 0.12 <0.02, 0.05 ³
Kings Valley, OR USA/1970/-	SP, 900 g/kg	1.1	1.2	94	1→	0 7 14 18	14 1.2 <u>0.28</u> 0.02, 0.08 ³
Pulasky County, IN USA/1970/-	EC, 360 g/l	0.56	0.30	187	1	22 23	0.12 0.08 ³
Pulasky County, IN USA/1970/-	EC, 360 g/l	1.1	0.60	187	1	22 23	0.18, 0.16 0.11 ³
Pulasky County, IN USA/1970/-	EC, 360 g/l	0.56	0.30	187	2	8 9	0.37, 0.40 0.29 ³
Pulasky County, IN USA/1970/-	EC, 360 g/l	1.1	0.60	187	2	8 9	0.55, 0.54 0.36 ³
Corvallis, OR USA/1971/-	EC, 360 g/l	0.56	-	-	1→	26	<0.02, <0.02 ³
Corvallis, OR USA/1971/-	EC, 360 g/l	1.1	-	-	1→	0 3 7 14 26	13 1.1 0.19 <u>0.02</u> <0.02, <0.02 ³
Corvallis, OR USA/1971/-	EC, 360 g/l	2.2	-	-	1→	0 3 7 14 26	28 1.6 0.55 0.07 0.02, 0.03 ³
Corvallis, OR USA/1971/-	RB, 1%	0.28			1	13	0.09, <0.02 ³
Jasper County, IN USA/1971/-	SP, 900 g/kg	0.56	0.30	187	1	0 7 14 16	57 3.8 0.23 0.11 ³
Jasper County, IN USA/1971/-	SP, 900 g/kg	1.1	0.60	187	1	0 4 7 14 16	133 18 7.5 <u>0.16</u> <u>0.17</u> ³

Location/Year/Variety	Application					PHI, days	Residues, mg/kg
	Form	kg ai/ha	kg ai/hl	water, l/ha	no.		
Pulasky County, IN USA/1971/-	SP, 900 g/kg	0.56	0.30	187	1	0	10
						3	1.5
						7	0.18
						14	0.02, 0.04 ³
Pulasky County, IN USA/1971/-	SP, 900 g/kg	1.1	0.60	187	1	0	21
						3	2.6
						7	0.31
						14	<u>0.02</u> , <u>0.07</u> ³
Pulasky County, IN USA/1971/-	SP, 900 g/kg	0.56	0.30	187	2	14	0.03, 0.04
						14	0.08 ³ , 0.06 ³
Pulasky County, IN USA/1971/-	SP, 900 g/kg	1.1	0.60	187	2	14	0.05, <u>0.07</u>
						14	<u>0.13</u> ³ , 0.12 ³

¹not specified on label.

²not available.

³spent mint hay.

→ Aerial application

NATIONAL MAXIMUM RESIDUE LIMITS

The manufacturer reported the following national MRLs for methomyl in peppers and mint hay.

Country	Commodity	MRL mg/kg
Argentina	Pepper; tomato; sweet corn	0.1
Australia	Mint	0.5
	Fruiting vegetables, other than Cucurbits	1
Indonesia	Peppers	1
Italy	Peppers	0.1
Japan	Bell Pepper	0.5
Korea	Peppers, Red	1
Netherlands	Paprika	0.05
Poland	Paprika	0.5
Thailand	Peppers	1
USA	Mint hay	2
	Peppers	2

APPRAISAL

Data on methomyl residues were reviewed in 1975, and data from supervised field trials with various crops and related data were considered in 1976, 1978, 1986, 1991 and 2001. At its Thirty-sixth Session, the CCPR noted that new data on mint hay and pepper had been reported and decided to maintain the CXLs for these commodities for 4 years under the periodic review procedure. The evaluation was scheduled for 2004 (ALINORM 04/27/24, para. 124, p 15).

The 2004 Meeting received data on residues from supervised field trials on pepper and mint hay from the manufacturer. Information on labels and current GAP was also provided.

Methods of analysis

The gas chromatographic method for measuring residues of methomyl in many plant commodities, evaluated by the 2001 JMPR, was validated for pepper and mint hay. This method consists of extraction with an organic solvent, liquid–liquid partition and hydrolysis with sodium hydroxide. The latter converts methomyl to methomyl oxime. The final extract is analysed by gas chromatography, usually with a flame photometric detector in the sulfur mode.

A more recent method is based on HPLC. The plant matrix is extracted with solvent, cleaned up on a Florisil column and analysed by HPLC with post-column reaction to convert methomyl to methylamine. Methylamine is derivatized (on-line) and detected by fluorescence.

The gas chromatographic method has been validated for numerous plant commodities at an LOQ of 0.02 mg/kg. The HPLC method and its modifications have been validated at an LOQ of 0.02 mg/kg for methomyl.

The Meeting concluded that adequate methods exist for the determination of methomyl in pepper and mint hay.

Stability of residues in stored analytical samples

As described by the 2001 JMPR, the stability of methomyl under frozen conditions has been demonstrated in a number of crop samples, including broccoli, orange, apple and grape, for up to 24 months.

Data were presented on the stability of methomyl under frozen storage (–10°C) in mint hay. Adequate stability (> 90% remaining) was demonstrated after 6 months' storage.

The Meeting concluded that methomyl is stable under frozen conditions on mint hay and pepper.

Results of supervised trials on crops

Peppers

Supervised trials were conducted on peppers in Canada (no GAP) and the USA (GAP: 1.0 kg ai/ha, 3-day PHI). Fifteen trials (one in Canada, 14 in the USA) were conducted at US GAP, with residue concentrations of 0.02, 0.03, 0.04 (two), 0.08 (two), 0.10 (two), 0.11 (two), 0.12, 0.18, 0.24, 0.26, 0.39 and 0.44 mg/kg.

Supervised trials on peppers were conducted in France (no GAP), Greece (GAP: 0.45 kg ai/ha, 15-day PHI), Italy (GAP: 0.04 kg ai/ha, 10-day PHI), Portugal (no GAP) and Spain (no GAP). In nine trials (two in France, three in Italy, one in Portugal and three in Spain) conducted at about Italian GAP, the ranked order of concentrations was: < 0.02 (five), 0.02 (two), 0.03 and 0.04 mg/kg. The data from southern Europe and the USA were considered to represent different populations. Using only the data from the USA (higher values), the Meeting estimated an STMR value of 0.105 mg/kg, a highest residue of 0.44 mg/kg and a maximum residue level of 0.7 mg/kg, which replaces the previous estimate (1 mg/kg).

Mint hay

Supervised trials were conducted on fresh mint hay in the USA (GAP: 1.0 kg ai/ha, 14-day PHI, maximum of four applications). In the six trials conducted at GAP, the ranked order of concentrations of residues in fresh and spent mint hay was: 0.02 (three), 0.07 (two), 0.13, 0.16, 0.17, and 0.28 mg/kg. The dry matter in fresh and spent mint is 88%. The Meeting estimated an STMR value of 0.08 mg/kg, a highest residue value of 0.32 mg/kg and a maximum residue level of 0.5 mg/kg for mint hay on a dry weight basis. The Meeting agreed to withdraw the previous recommendation (2 mg/kg) and to replace it with the recommendation for mint hay (0.5 mg/kg, dry weight).

Residues in animal commodities

As mint hay is not considered to be a significant feed item, establishment of an MRL for mint hay would not significantly change the dietary exposure of animals. The Meeting therefore decided not to revise the previous MRL recommendations for animal commodities (edible offal, meat, milk) on the basis of the addition of mint hay (fresh and spent).

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 and IESTI assessment.

Definition of residue (for compliance with the MRL and for estimation of dietary intake): sum of thiodicarb and methomyl, expressed as methomyl.

Commodity		MRL, mg/kg		STMR	HR
CCN	Name	New	Previous	mg/kg	(mg/kg)
VO 0051	Peppers	0.7	1	0.105	0.44
AM 0738	Mint hay	0.5	2	0.08	0.32

DIETARY RISK ASSESSMENT

Long-term intake

The Meeting estimated a STMR value for pepper. This STMR value was used in combination with the STMR and STMR-P values estimated by the 2001 Meeting to calculate the long-term dietary intake of methomyl. The result is shown in Annex 3.

The dietary intakes in the five GEMS/Food regional diets, on the basis of the estimated STMRs values, represented 1-20% of the ADI (Annex 3-Report 2004). The Meeting concluded that the intake of residues of methomyl resulting from its uses that have been considered by the JMPR is unlikely to present a public health concern.

Short-term intake

The IESTI for methomyl was calculated for one food commodity for which maximum residue levels, STMR values and highest residues were estimated and for which data on consumption (of large portions and unit weight) were available. The result is shown in Annex 4.

The ARfD for methomyl is 0.02 mg/kg bw. The IESTI represented 20% of the ARfD for children and the general population. The Meeting concluded that the short-term intake of residues of methomyl, resulting from its use on peppers that has been considered by the JMPR, is unlikely to present a public health concern.

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