

HEXYTHIAZOX (176)

EXPLANATION

Hexythiazox was first evaluated in 1991. At the 1993 CCPR some delegations criticized the presentation of the information on GAP by country rather than by commodity in the 1991 monograph (ALINORM 93/24A, para 197). Concerns were expressed at the wide range of GAP, particularly at the large differences in the recommended pre-harvest intervals. In addition, Germany expressed reservations regarding the proposals for stone fruits, citrus, grapes and tomatoes; France reserved its position on the proposals for cherries, apples and citrus; the USA reserved its position on pears, and Japan suggested higher MRLs for cucumbers, plums and strawberries. Delegations were invited to submit additional data on GAP and residues for the consideration of the JMPR by a circular letter (CL 1993/11-PR).

The Meeting received revised information on GAP, listed in the order of the commodities.

No new residue data were received from Germany, France or the USA.

New residue data were provided by Japan on plums, by The Netherlands on French beans, and by Poland on apples and black currants.

Germany, Spain and Poland provided summaries of their GAP.

USE PATTERN

Hexythiazox is an acaricide which has ovicidal, larvicidal and nymphicidal activities and is applied at any stage of plant growth from budding to fruiting. There are several application timings to protect top fruits, e.g. the winter eggs are controlled in early spring, other infection in late spring, and reinfection in summer and occasionally early autumn. Many countries recommend one application a year to avoid the emergence of resistant mites. If early season application is adopted a long PHI will be recommended, with a shorter PHI for use in summer. Especially in Japan and Korea, where mite infections occur even in early autumn, a 7-day PHI is necessary for orchards (apples and pears). Large differences in national PHIs occur because of differing climatic conditions.

Table 1. Registered uses of hexythiazox (September 19, 1994).

Crop	Country	Application			PH, days
		Rate per appl., kg ai/ha	Spray conc., kg ai/hl	No.	
Apple	Australia	0.038-0.075	0.0025-0.005	1	3
	Belgium	0.045-0.075	0.003-0.005	1	30

Crop	Country	Application			PH, days
		Rate per appl., kg ai/ha	Spray conc., kg ai/hl	No.	
	France	0.05	0.005	1	30
	Germany (P)	0.06-0.075	0.004-0.005	1	28
	Italy	0.08-0.1	0.05	1	14
	Japan	0.2-0.3	0.0033-0.005	1-2	7
	Korea	0.3	0.005	1-2	7
	Netherlands	0.04-0.06	0.004	1	28
	New Zealand (P)	0.063-0.1	0.0025-0.005	1	42
	Poland	0.05-0.1	0.005	1-2	
	South Africa	0.2	0.004	1	30
	Spain (P)	0.075-0.15	0.005-0.008	1	14
	Switzerland (P)	0.075-0.1		1	42
Blackberries	Netherlands	0.05-0.06	0.005	1	14
Cherries	Australia (S)	0.038-0.075	0.0025-0.005	1	3
	Japan	0.2-0.3	0.0033-0.005	1-2	7
	Netherlands	0.04-0.06	0.004	1	28
	New Zealand (S)	0.063-0.1	0.0025-0.005	1	28
	Spain (S)	0.075	0.005-0.0075	1	14
	Switzerland (S)	0.075-0.1		1	42
Citrus	Brazil	0.015	0.0015	1	30
fruits	France	0.05	0.005	1	7
	Italy	0.08-0.1	0.005	1	14
	Japan	0.15-0.3	0.0033-0.005	1-2	7
	Korea	0.2	0.0033	1-2	7
	New Zealand	0.1	0.0025	1	28
	Spain	0.04-0.06	0.001-0.0015	1	14
Common	Italy (F)	0.08-0.1	0.005	1	7
bean	Japan (A)	0.1-0.15	0.0033-0.005	1-2	14
	Netherlands	0.004-0.02	0.002	1	3
	Spain (F or G)	0.03-0.045	0.002-0.003		15
Cotton	Spain	0.03-0.045	0.005-0.0075		14
Cucumber	France		0.05		1-23
	Belgium (V)	0.045	0.003	1	7
	Italy	0.08-0.1	0.005	1	7
	Japan	0.1-0.15	0.0033-0.005	1-2	1
	Netherlands (G)	0.025-0.075	0.005	1	3
Cucurbits	Poland		0.05-0.1	0.005	1-2
	France	0.05		2	3

Crop	Country	Application			PH, days
		Rate per appl., kg ai/ha	Spray conc., kg ai/hl	No.	
	Spain (F or G)	0.075-0.11	0.005-0.0075	1	7
Currant, Black, Red	Netherlands	0.05-0.06	0.005	1	14
	Poland		0.05-0.1	0.005	1-2
Egg plant	Netherlands (G)		0.025-0.075	0.005	13
	Italy	0.08-0.1	0.005	1	7
	Japan	0.1-0.15	0.0033-0.005	1-2	1
Figs	Japan	0.1-0.15	0.0033-0.005	1-2	1
Garlic	Spain (F or G)	0.03-0.045	0.002-0.003		15
Gherkin	Netherlands (G)	0.025-0.075	0.005	1	3
	Netherlands (F)	0.03-0.05	0.005	1	3
Gooseberry	Netherlands	0.05-0.06	0.005	1	14
Grapes	France	0.025	0.0025	1	21
	Germany	0.024-0.064	0.004	1-2	42
	Italy	0.08-0.1	0.005	1	14
	Japan	0.1-0.15	0.0033-0.005	1	7
	Spain	0.05-0.075	0.005-0.0075	1	14
	Switzerland	0.075-0.1		1	42
Kiwifruit	Italy	0.08-0.1	0.005	1	14
Hops	Japan	0.02-0.03	0.0033-0.005	2	7
Maize	Spain	0.03-0.045	0.005-0.0075		14
	France	0.025		2	3
Melons, except watermelon	Netherlands	0.025-0.075	0.005	1	3
	France	0.05		2	3
	Italy	0.08-0.1	0.005	1	7
	Japan	0.15	0.005	2	3
Peach	Australia (S)	0.038-0.075	0.0025-0.005	1	3
	France	0.05	0.005	1	3
	Italy	0.08-0.1	0.005	1	14
	Japan	0.2-0.3	0.0033-0.005	1-2	7
	New Zealand (S)	0.063-0.1	0.0025-0.005	1	28
	Spain	0.075-0.11	0.005-0.0075	1	14
Peppers, Chilli	Netherlands (G)	0.025-0.075	0.005	1	3
Peppers, Sweet	Netherlands (G)	0.025-0.075	0.005	1	3
	Spain (F or G)	0.03-0.045	0.002-0.003		15
	Italy	0.08-0.1	0.005	1	14
	Japan	0.1-0.15	0.003-0.005	2	1
Pear	Australia	0.038-0.075	0.0025-0.005	1	3

Crop	Country	Application			PH, days
		Rate per appl., kg ai/ha	Spray conc., kg ai/hl	No.	
	Belgium	0.045-0.075	0.003-0.005	1	30
	Germany (P)	0.04-0.06	0.004	1-2	28
	Italy	0.08-0.1	0.005	1	14
	Japan	0.2-0.3	0.0033-0.005	1	7
	Korea	0.3	0.005	1	7
	Netherlands	0.04-0.06	0.004	1	28
	New Zealand (P)	0.063-0.1	0.0025-0.005	1	42
	Poland	0.05-0.1	0.005	1-2	
	Spain (P)	0.075	0.005-0.008	1	14
	South Africa	0.2	0.004	1	30
	USA	0.14-0.21		1	28
Plums	France	0.02	0.005	1	3
(including Prunes)	Germany	0.04-0.06	0.004	1-2	28
	Japan	0.13-0.2	0.0033	1-2	7
	Netherlands	0.04-0.06	0.004	1	28
	New Zealand (S)	0.063-0.1	0.0025-0.005	1	28
Raspberries, Red, Black	Netherlands	0.05-0.06	0.005	1	14
Small fruits	Belgium	0.075		1	-
Soya bean	Italy	0.08-0.1	0.005	1	34
Squash, Summer	Netherlands	0.025-0.075	0.005	1	3
Strawberry	Australia	0.038	0.0025	1	1
	Belgium	0.075	0.005	1	
	France	0.05		2	3
	Italy	0.08-0.1	0.005	1	7
	Japan	0.05-0.075	0.0033-0.005	1-2	1
	Netherlands	0.03-0.05	0.005	1	3
	Spain (F or G)	0.075-0.11	0.005-0.0075	1	7
Sugar beet	Japan	0.15	0.005	2	7
Tea	Japan	0.2	0.005	2	35
Tomato	Belgium	0.045	0.003	1	3
	Italy	0.08-0.1	0.005	1	7
	Netherlands (G)	0.025-0.075	0.005	1	3
Watermelon	Japan	0.1-0.15	0.0033-0.005	2	3
Winter squash	Netherlands	0.025-0.075	0.005	1	
Vegetables	Belgium	0.045		1	7

P: pome fruits S: stone fruits V: vegetables
G: glasshouse F: outdoor

RESIDUES RESULTING FROM SUPERVISED TRIALS

It should be noted that in the 1991 evaluation on page 448, the fourth sentence of the "Residues resulting from supervised trials" section should read "In most of the experiments the parent hexythiazox was determined, except in the USA, Brazil and Germany, where the total residues which contain the 5-(4-chlorophenyl)thiazolidin-2-one moiety in their structures were measured in apples, grapes, oranges, pears and plums".

New supervised trials data were provided on apples, plums and French beans. The residues underlined in Tables 2 to 6 are from treatments according to GAP.

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Apples. The 1991 Meeting recommended an MRL of 0.5 mg/kg on the basis of supervised trials (see 1991 monograph, Table 2) in five countries with residues from <0.05 mg/kg (28-day PHI, Germany) to 0.22 mg/kg (7-day PHI, Japan). The present Meeting received a report of one new trial from Poland (Table 2).

Table 2. Residues of hexythiazox in apples, Poland 1991.

Application				PHI, days	Residues, mg/kg	Reference
Form	No	kg ai/ha	kg ai/hl			
EC	1	0.03	0.002	0	0.04	Anon, 1993a
				3	0.01	
				7	0.01	
				10	0.01	
				15	<0.01	
				21	<0.01	

Plums. The 1991 JMPR's recommended MRL of 0.2 mg/kg was based on only three trials in accordance with GAP from New Zealand and Germany, although three South African trials on prunes were considered on the basis of New Zealand GAP. The residues ranged from <0.05 to 0.06 mg/kg after a 28-day PHI (JMPR 1991, Table 4). The results of two new trials from Japan are shown in Table 3.

Table 3. Residues of hexythiazox in plums (Japan, 1988).

Application				PHI, days	Residues, mg/kg	Reference
Form	No	kg ai/ha	kg ai/hl			
WP	2	0.2	0.005	1	0.7	Anon, 1993b
				7	0.48	
				14	0.24	
WP	2	0.3	0.005	1	1.3	
				7	0.78	
				14	0.67	

Currants. Reports of two new trials on black currants were received from Poland (Table 4).

Table 4. Residues of hexythiazox in black currants, Poland 1991.

Application				PHI, days	Residues, mg/kg	Reference
Form	No	kg ai/ha	kg ai/hl			
EC	1	0.04	0.003	0	0.12	Anon, 1993c
				3	0.08	
				7	0.09	
				10	0.1	
				15	0.06	
				21	0.03	
EC	1	0.03	0.002	0	0.06	Anon, 1993c
				3	0.03	
				7	0.02	
				10	0.06	
				15	0.04	
				21	0.04	

Common beans (pods and/or immature seeds). The 1991 JMPR evaluated four trials on French beans (three in France, one in Italy, see JMPR 1991 monograph, Table 11) and recommended an MRL of 0.5 mg/kg. Two new trials were reported by The Netherlands (Table 5).

Table 5. Residues of hexythiazox in common beans (French beans), Netherlands 1990 (Ref. Duphar, 1991, 56630/24/91).

Type of site	Application				PHI, days	Residues, mg/kg
	Form	No	kg ai/ha	kg ai/hl		
Glasshouse	SC	1	0.125	0.005	0	0.17
					1	0.12
					3	0.13
					7	0.09
					14	0.06
Field	SC	1	0.075	0.005	0	0.23
					1	0.13
					3	0.15
					7	0.11
					14	0.14

NATIONAL MAXIMUM RESIDUE LIMITS

Australia, The Netherlands and Spain reported their current national MRLs to the Meeting (December 1993).

Country	Commodity	MRL, mg/kg
Australia	Berries and other small fruits	1
	Pome fruits	1
	Stone fruits	1
Netherlands	Beans	0.2
	Berries	0.2
	Fruiting vegetables	0.1
	Pome fruits	0.05
	Raspberries	0.2
	Strawberry	0.1
	Other food commodities	0.02*
	Other small fruits	0.02*
Spain	Citrus fruits	1
	Common bean (pods and/or immature seeds)	0.05
	Cotton seed	0.05
	Cucurbits	0.1
	Garlic	0.05
	Grapes	0.5

Country	Commodity	MRL, mg/kg
	Maize	0.05
	Pepper	0.5
	Pome fruits	0.5
	Stone fruits	0.5
	Strawberry	0.5

APPRAISAL

Hexythiazox was reviewed by the 1991 JMPR, which estimated maximum residue levels for apple, cherries, citrus fruits, common bean (pods and/or immature seeds), cucumber, currants, grapes, peach, pear, plums (including prunes), strawberry and tomato. At the 25th (1993) Session of the CCPR several delegations expressed concern regarding the GAP information and residue data considered by the 1991 JMPR (ALINORM 93/24A para 197).

The Meeting received the requested clarification of the information on GAP and additional supervised trials data for apples, plums, black currants and French beans.

At the 1993 CCPR several delegations had expressed reservations regarding the recommended MRLs for citrus fruits, pear, cherries, grapes, strawberry, tomato and cucumber, but no new residue data were received.

Apple. The 1991 JMPR estimated a maximum residue level of 0.5 mg/kg, based on nine trials according to GAP: two in Japan with residues of 0.12 and 0.22 mg/kg at a 7-day PHI; one in The Netherlands (0.03 mg/kg, 28-day PHI); two in New Zealand (0.04 and 0.06 mg/kg, 37-day PHI); two in South Africa (0.08 and 0.09 mg/kg, 30-day PHI) and two in Germany (<0.05 and 0.16 mg/kg, 28-day PHI). The result of a newly reported trial from Poland supported the residue results reported in the 1991 monograph.

The Meeting concluded that the large difference in the application rates and recommended PHIs between Japan and Korea (0.2-0.3 kg ai/ha, 7-day PHI) on the one hand and New Zealand and the European States (0.04-0.1 kg ai/ha, 14-42-day PHI) on the other leads to different residue levels. The Meeting agreed to maintain the current recommendation of 0.5 mg/kg for apple.

Plums. The 1991 Meeting recommended a 0.2 mg/kg MRL based on one New Zealand trial and two German trials according to GAP (0.04-0.06 kg ai/ha, 28-day PHI) and supported by four South African trials on prunes which were evaluated on the basis of New Zealand GAP (0.06-0.1 kg ai/ha, 28-day PHI). The residue values ranged from 0.01 mg/kg to 0.06 mg/kg. As with apples, the GAP authorized in Japan, 0.13-0.2 kg ai/ha and a 7-day PHI, would be expected to lead to higher residues. The residue data from the new Japanese supervised trials (residue in one trial according to GAP 0.48 mg/kg), suggest that a higher MRL is required, but the data were not sufficient to support a revision of the current recommendation (0.2 mg/kg).

Currants. The 1991 Meeting recommended an MRL of 0.2 mg/kg for red and white currants. The two trials on black currants from Poland provided to the present Meeting were not enough to recommend an MRL for black currants.

Common bean (pods and/or immature seeds). The 1991 JMPR recommended an MRL of 0.5

mg/kg. The two new trials provided by The Netherlands, one indoor and one outdoor, were at higher application rates than are allowed by Dutch GAP. The results suggest that a lower limit is required, but the data were not sufficient to support a revision of the current recommendation (0.5 mg/kg).

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