

METHOXYFENOZIDE (209)

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EXPLANATION

Methoxyfenozide was evaluated by the JMPR in 2003 when an ADI of 0-0.1 mg/kg bw and ARfD of 0.9 mg/kg bw were established, and a number of maximum residue levels were estimated.

The cranberry industry performed a number of supervised trials within the Interregional Research Project No. 4 to provide data for the establishment of US tolerances for methoxyfenozide residues in cranberry. The relevant labels and reports of supervised trials were submitted for evaluation by the 2006 JMPR.

RESIDUE ANALYSIS

Analytical methods

The harvested fruit samples were analyzed by the method detecting the parent compound (Stein and Wu 1998, Report No. 34-98-87). The limit of quantification for methoxyfenozide in cranberries was 0.01 mg/kg.

No quantifiable residues were observed in the control samples. The recoveries obtained during the analysis of samples fortified between 0.01 and 1 mg/kg ranged from 76% to 109% with an average of 87% (n=17) and coefficient of variation of 15%.

Stability of pesticide residues in stored analytical samples

The maximum storage interval for field-treated samples was 115 days. To evaluate storage stability, control samples were fortified with 1.0 mg/kg methoxyfenozide, stored at < -15°C and analyzed after 109 days of frozen storage. The average residues that survived in fortified samples (79%, n=3) were not significantly different ($\alpha=0.01$) from the analytical average recovery (87%).

The 2003 JMPR reported the results of numerous studies on various plant commodities that indicated that methoxyfenozide residues were stable for more than 6 months (FAO 2003).

USE PATTERN

The Intrepid 2F containing 22.6% methoxyfenozide is registered to control various moths and worms in cranberry.

It can be applied to protect cranberry as shown in Table 1.

Table 1. Use pattern of Methoxyfenozide on cranberry.

Method	Application			Rate kg ai/ha	PHI day
	No	Interval, days	Water l/ha		
Ground, aerial	Max 4	10-18	Min 40 ¹ -80	0.18-0.28 ¹	14
Chemigation	Max 2	NS	Max 3400	0.28-0.56 ²	30

1 For aerial application and young or small plants.

2 Do not exceed 1.12 kg ai/ha/season.

3 NS: not specified

RESIDUES RESULTING FROM SUPERVISED TRIALS

During the 1999 growing season six trials were conducted on cranberries in four geographical regions of the USA and British Columbia, Canada (Dorschner, 2002).

The cranberry crops were grown and maintained according to typical agricultural practices for each geographical region.

Each treated plot received four foliar broadcast applications of the test substance at a rate of approximately 0.28 kg ai/ha each, for a total of approximately 1.12 kg ai/ha. All applications were made 7 to 11 days apart.

Two replicate samples of mature or nearly mature cranberry fruit were collected by hand at 13 to 15 days following the last application. The sampling positions were selected randomly within the control and treated plots, and the fruits were placed in plastic bags.

The residue results from the supervised field trials are presented in Table 2.

Table 2. Residues of methoxyfenozide in/on cranberry fruits following four foliar broadcast applications.

Field Trial Location (City, State)	Spray Volume (l/ha)	Days between Appl.	Dosage kg ai/ha	PHI (days)	Residue mg/kg ¹	
					Replicate samples	Average
East Wareham, MA (99-MA01)	703–768	10–11	0.26–0.28 ²	14	0.028–0.035	0.03
Tabernacle, NJ (99-NJ14)	323	9–11	0.28–0.49 ³	14	0.206–0.262	0.23
Wisconsin Rapids, WI (99-WI09)	284–318	9–10	0.28 (1X)	13	0.088–0.104	0.10
Biron, WI (99-WI10)	285–306	9–10	0.28 (1X)	13	0.064–0.076	0.07
Bandon, OR (99-OR13)	319–348	9–11	0.28 (1X)	15	0.374–0.407	0.39
Delta, BC (99-BC04)	365–382	7–11	0.28 (1X)	14	0.138–0.160	0.15

1 The LOQ was 0.01 mg/kg for cranberries.

2 The third application was under-applied by approximately 7%. The total amount of test substance applied, 1.09 kg ai/ha, was within -5 to +10% of the protocol rate of 1.12 kg ai/ha.

3 The fourth application was over-applied by approximately 75%, thus the seasonal maximum rate was exceeded by 20%.

APPRAISAL

Methoxyfenozide was evaluated by the JMPR in 2003 and an ADI of 0-0.1 mg/kg bw/day and an ARfD of 0.9 mg/kg bw/day were established, and a number of maximum residue levels were estimated. The JMPR defined the residues as parent compound for compliance with MRLs and for dietary intake estimations.

Results of supervised trials carried out on cranberry according the US registered uses were submitted for evaluation.

Results of supervised residue trials on crops

Six trials were conducted on cranberries in four geographical regions of the USA and British Columbia, Canada. Each treated plot received four foliar broadcast applications of the test substance approximately according to GAP. Two replicate samples of mature or nearly mature cranberry fruit were collected around the registered PHI.

The harvested fruit samples were analyzed by a method determining the parent compound alone. The method was validated at 0.01 mg/kg level. The average recovery of 87% was obtained in

the residue range of 0.01 and 1 mg/kg. Stability of residues (< -15°C) was tested in three samples indicating that the residues were stable during the storage period.

The residues of parent methoxyfenozide found in fruit treated according to GAP in rank order were: 0.03, 0.03, 0.07, 0.10, 0.15 and 0.39 mg/kg.

The Meeting estimated a maximum residue level of 0.7 mg/kg, HR of 0.39 mg/kg and STMR of 0.085 mg/kg.

RECOMMENDATION

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 dietary intake assessment.

Summary of recommendations for MRLs, STMRs and HRs for methoxyfenozide

CCN	Commodity	MRL, mg/kg		STMR or STMR-P, mg/kg	HR or HR/P mg/kg
		New	Previous		
FB 0265	Cranberry	0.7		0.085	0.39

DIETARY RISK ASSESSMENT

Long-term intake

The GEMS/Food Consumption Cluster Diets specifies the following long-term cranberry consumption (g/day/person) for various cluster diets: A (0.1); D (0.3); F (0.6); M (2.5). The cranberry consumption in the other regions is nil.

The highest IEDI in the 13 GEMS/Food regional diets based on estimated STMR was < 0.01% of the maximum ADI (0.1 mg/kg bw).

The Meeting concluded that the long-term intake of residues of methoxyfenozide use on cranberry will not practically increase the intake of residues from other uses considered earlier by the JMPR.

Short-term intake

The GEMS/Food regional diet specifies the large portion size for cranberry of 3.53 g/kg bw for adults and 6.78 g/kg bw for children (both are from the USA).

The IESTIs of methoxyfenozide calculated on the basis of the large portion size and the estimated HR of 0.39 mg/kg are 0.15% and 0.3% of the ARfD for adults and children, respectively.

The Meeting concluded that the short-term intake of residues of methoxyfenozide resulting from the use on cranberry that has been considered by the JMPR is unlikely to present a public health concern.

REFERENCES

Author, Date, Title, Institute, Report Reference, Document No.

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