



Draft Assessment Report (DAR)

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**Initial risk assessment provided by the rapporteur Member State
The Netherlands for the existing active substance**

ETRIDIAZOLE

**of the third stage (part B) of the review programme
referred to in Article 8(2) of Council Directive 91/414/EEC**

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B.7 Residue data**B.7.1 Metabolism, distribution and expression of residues in plants (Annex IIA 6.1 and Annex IIIA 8.1)****B.7.1.1 Primary crops****STUDY 1****Characteristics**

Reference	: McManus J.P., 1996 (IIA, 6.1/01)	Concentration	: 0.13-10.9 g/L
Type of study	: distribution and metabolism in plants	Vehicle	: Terraclor Super X (95% xylene + 5% surfactant) + water
Year of execution	: 1993-1996	Number of treatments	: 1 at sowing
Test substance	: [3- ¹⁴ C] etridiazole (radiochem. purity 96.8%, lot no: CSL-93-432-01-33) etridiazole (99.2%, lot no: AC-1366-104A)	Interval	: Not applicable
Plant	: Cotton (Stoneville 825)	Total rate	: 0.80-65.5 mg/pot
GLP statement	: Yes	Area	: Greenhouse, pots of 0.03 m ²
Guideline	: US-EPA O:171-4	Harvest (DAT)	: cotton seeds, foliage and fluff, 5 months after treatment
Application rate	: 0.80-65.5 mg/pot	Acceptability	: Provisional (but not relevant for intended use)

Study design

Cotton plants (var. Stoneville 825) were grown in a greenhouse under field simulating conditions in 0.03 m² pots in a sandy loam soil amended with peat moss and vermiculite. The top 2 cm soil layer was treated with a mixture of unlabelled and [3-¹⁴C] etridiazole in a Terraclor Super X (95% xylene + 5% surfactants) + water formulation at 3 different doses (0.80, 8.4 and 65.5 mg/pot). Measured etridiazole concentrations in the top soil layer were 0.94, 9.8, and 78 mg/kg (equivalent to 0.71, 7.4 and 59 kg/ha assuming a soil depth of 5 cm and a bulk density of 1500 kg/m³). The plants were thinned after 5 weeks. Irrigation was performed regularly. Whole plants were harvested five months after treatment and separated into cotton seeds, foliage and fluff.

Total radioactive residues (TRR) in cotton seeds, foliage and fluff were determined by combustion/LSC. Cotton seeds and foliage of the highest treatment group were homogenised and subjected to saponification, resulting in a hexane phase (containing fatty acids), an aqueous phase (polar fraction) and post-extraction solids (PES). Radioactivity in extracts was determined by LSC and in PES by combustion/LSC. The hexane phase was subjected to reversed phase HPLC analysis and the aqueous phase to SPE followed by size exclusion chromatography. PES were subjected to acid and enzyme (β -glucosidase, hemicellulase and pectinase) hydrolysis and the aqueous phase to urease enzymes.

Identification of metabolite fractions was by comparison with reference standards (fatty acids and urea) and by GC-MS analysis.

Results

Total radioactive residues (TRR) in cotton seeds were 0.07, 0.53 and 10.6 mg/kg for the low, middle and high dose, respectively. TRR for other plant parts were not reported.

Extractables (after saponification) from cotton seeds were 78% TRR (65% TRR in the aqueous phase and 13% TRR in the hexane phase). PES accounted for 22% TRR and no additional radioactivity was released by acid/enzyme hydrolysis. The hexane phase consisted of 6 metabolite fractions, of which four were identified as linoleic acid, beta-keto linoleic acid, palmitic acid and stearic acid. No quantitative results were reported. The aqueous phase consisted entirely of urea.

For cotton foliage, extractables in the aqueous phase were 72% TRR and consisted entirely of urea. No other results were reported for cotton foliage.

Conclusions

Following a single application of [3-¹⁴C] etridiazole at a rate of 0.94, 9.8, and 78 mg/kg soil at sowing, total radioactive residues in cotton seed were 0.07, 0.53 and 10.6 mg/kg, respectively. Radioactivity associated with fatty acids accounted for 13% of TRR. The remaining residue of cotton seeds consisted of urea (65% TRR) and unextractables (22% TRR). In cotton foliage, 72%TRR was urea. The study is not applicable for the intended uses (tomato/pepper/cucumber) and provisionally accepted (see comment 2 below).

Guidelines and limitations

1. The study was performed in a greenhouse, simulating field conditions: temperature 15-40°C, 10 hr dark/14 hr light cycle and a relative humidity of 32-100%. This is considered acceptable.
2. It was reported that samples were stable during storage. No chromatograms to verify this claim were submitted and storage periods were not given (study period 1993-1996). Additional information was provided by the notifier, demonstrating that all extractions and HPLC analysis of the low and middle dose samples and high dose foliage sample was performed within 4 months. This is according to US-EPA OPPTS guidelines (no storage stability data required when work performed within 4-6 months). For the high dose seeds, last extractions and chromatographic work were performed 19-21 months after harvest. As the use on cotton is not supported, the notifier chose not to submit data on the claimed stability of these samples.

STUDY 2

Characteristics

Reference	: Charlton R.R., 2004 (IIA, 6.1/02)	Application rate	: 21.3, 114 and 229 mg/plant (1.1N, 5.7N & 11.5N, respectively)
Type of study	: distribution and metabolism in plants	Concentration	: 0.14, 0.74 and 1.5 g/L
Year of execution	: 1999-2004	Vehicle	: water + terrazole 25EC (0.02-0.2%)
Test substance	: [3- ¹⁴ C] etridiazole (radiochem. purity 97.1%, lot no: CSL-96-647-62-30) etridiazole (98.5%, lot no: AC-1366-104C)	Number of treatments	: low dose: 2 middle/high dose: 1
Plant	: Cucumber (Corona F1)	Interval	: 15 d (low dose)
GLP statement	: Yes	Total rate	: 42.6, 114 and 229 mg/plant
Guideline	: 7028/VI/95 rev. 3 OPPTS 860.1000 / 860.1300	Area	: hydroponic culture
		Harvest (DAT)	: 3, 5, 11, 15, 21, 26, 39, 46
		Acceptability	: Provisional (see remarks 1 and 2)

Study design

Cucumber plants (var. Corona F1) were grown in a greenhouse in a hydroponic growth system (rockwool plugs with nutrient recycling). Cucumber plants (six per application rate) were treated with 150 mL treatment solution applied directly to the rockwool plug containing the plant roots. The treatment solutions contained 0.14, 0.74 and 1.5 g/L labelled ([3-¹⁴C]) and unlabelled etridiazole (equivalent to 21.3, 114 and 229 mg/plant, corresponding to 1.1N, 5.7N & 11.5N, respectively). The low dose was applied a second time, 15 days after the first treatment. Nutrients were added when needed and the pH of the nutrient solution was maintained between 5.6 and 5.8 by adding 10% acetic acid solution when needed. Pest control against thrips, aphids, whiteflies and mildew was performed. The temperature was 16-37 °C and relative humidity was 23-96%. Cucumbers of 25 cm or longer of the low dose were harvested at 3, 5, 11, 15, 21, 26, 39 and 46 days after the first treatment (DAT1). A limited number of samples was taken for the middle and high dose treatment.

Cucumbers were homogenised and subsamples were subjected to combustion/LSC for determination of total radioactive residues (TRR). Cucumbers were extracted three times with water and extractable radioactivity was determined by LSC. The extracts were combined, lyophilised and reconstituted in water or water:MeOH prior to chromatographic analysis. In selected cases, the extracts were partitioned into an organic (MeOH or acetonitrile) and aqueous phase by SPE prior to chromatographic analysis. Alternatively, aqueous extracts were sometimes partitioned against hexane and EtOAc. Chromatographic analysis was by HPLC-RAM or HPLC-fraction collection-LSC and/or TLE (thin layer electrophoresis). Identifications were performed by comparison with reference standards and confirmed by LC-MS/MS analysis (on peak isolates).

Results

Total radioactive residues (TRR) in cucumber (3-46 DAT1) following two treatments of 21.3 mg etridiazole/plant (interval 15 days) were 0.297 – 0.911 mg eq/kg (Table B.7.1-01, -02 and -03). The TRRs for the middle and high dose at 2 DAT1 or 3 DAT1 were 1.0 and 3.3 mg eq/kg, respectively. Between 93 and 105% of TRR was extractable with water. Because almost the entire TRR was extractable, post extraction solids were not quantified nor further investigated. Selected extracts from the middle and high dose groups were used for identifications by LC-MS/MS. Detailed results of chromatographic analysis were not reported and therefore only the results for the low dose were

included in the Tables below.

Etridiazole was detected in the first sampling point after the first application (23% / 0.1 mg/kg) and in the first two sampling points after the second application (1.8% TRR / 0.017 mg/kg and 0.85% TRR / 0.005 mg/kg, respectively). Radioactive fractions were identified as 5-hydroxyethoxy etridiazole acid (max 33%TRR / 0.18 mg eq/kg), 3-hydroxymethyl etridiazole (max 12% TRR / 0.09 mg eq/kg), etridiazole acid (max 18%TRR / 0.15 mg eq/kg), dichloro-etridiazole (max 3.9%TRR / 0.036 mg eq/kg) and the glucose conjugate of 3-hydroxymethyl etridiazole (17% TRR / 0.073 mg eq/kg). The identity of etridiazole, etridiazole acid, 3-hydroxymethyl etridiazole, glucose-3-hydroxymethyl etridiazole and 5-hydroxyethoxy etridiazole acid was confirmed by MS/MS analysis (of middle and high dose samples). The remaining radioactivity was characterised as a large number of polar components (which included glucose, fructose, the organic acids malonic acid, oxalic acid, acetic acid and formic acid and the amino acids glycine, glutamic acid, aspartic acid and leucine). In total 78-99% TRR was characterised/identified.

Table B.7.1-01 Distribution/identification of radioactivity in cucumbers following two treatments of 21.3 mg etridiazole/plant (interval 15 days).

Days after the 1 st trtmt	3 d		6 d		11 d	
Days after the 2 nd trtmt	-		-		-	
	% TRR	mg eq/kg	% TRR	mg eq/kg	% TRR	mg eq/kg
TRR	100	0.442	100	0.384	100	0.315
Water extractable	104	0.461	101	0.388	93	0.294
Polar 1	27	0.118	39	0.150	46	0.145
Other polars	3.8	0.017	8.3	0.032	9.8	0.031
5-OH etridiazole acid	2.8	0.012	8.5	0.033	14	0.045
Glucose conjugate of 3-OH methyl etridiazole	9.5	0.042	5.4	0.021	5.5	0.017
3-OH methyl etridiazole	9.5	0.042	6.9	0.026	5.5	0.017
Etridiazole acid	18	0.078	10.3	0.040	0.84	0.003
Dichloro-etridiazole	0.80	0.004	nd		nd	
Etridiazole	23	0.100	nd		nd	
PES	na		na		na	
Total characterised	93	0.413	78	0.301	82	0.258

na = not analysed
nd = not detected

Table B.7.1-02 Distribution/identification of radioactivity in cucumbers following two treatments of 21.3 mg etridiazole/plant (interval 15 days).

Days after the 1 st trtmt	15 d		21 d		26 d	
Days after the 2 nd trtmt	-		6 d		11 d	
	% TRR	mg eq/kg	% TRR	mg eq/kg	% TRR	mg eq/kg
TRR	100	0.297	100	0.911	100	0.588
Water extractable	97	0.289	99	0.904	102	0.602
Polar 1	28	0.083	47	0.424	59	0.345
Other polars	nd		8.5	0.077	nd	
5-OH etridiazole acid	nc		3.0	0.028	16	0.091
Glucose conjugate of 3-OH methyl etridiazole	17	0.049	4.9	0.045	7.5	0.044
3-OH methyl etridiazole	12	0.037	9.8	0.090	3	0.018
Etridiazole acid	8.8	0.026	17	0.152	5.1	0.030
Dichloro-etridiazole	nd		3.9	0.036	1.7	0.010
Etridiazole	nd		1.8	0.017	0.85	0.005
PES	na		na		na	
Total characterised	66	0.195	95	0.868	92	0.542

na = not analysed

nd = not detected

nc = could not be calculated

Table B.7.1-03 Distribution/identification of radioactivity in cucumbers following two treatments of 21.3 mg etridiazole/plant (interval 15 days).

Days after the 1 st trtmt	33 d		39 d		46 d	
Days after the 2 nd trtmt	18 d		24 d		31 d	
	% TRR	mg eq/kg	% TRR	mg eq/kg	% TRR	mg eq/kg
TRR	100	0.628	100	0.549	100	0.531
Water extractable	94	0.590	105	0.574	101	0.534
Polar 1	nc		51	0.282	45	0.238
Other polars	nc		3.9	0.021	2.6	0.014
5-OH etridiazole acid	nc		16	0.088	33	0.177
Glucose conjugate of 3-OH methyl etridiazole	12	0.073	7.2	0.040	14	0.072
3-OH methyl etridiazole	2.5	0.016	1.4	0.008	2.5	0.013
Etridiazole acid	nc		8.2	0.045	2.1	0.011
Dichloro-etridiazole	nd		nd		nd	
Etridiazole	nd		nd		nd	
PES	na		na		na	
Total characterised	14	0.089	88	0.484	99	0.526

na = not analysed

nd = not detected

nc = could not be calculated

Conclusions

Total radioactive residues in cucumber (3-46 DAT) following two treatments of 21.3 mg etridiazole/plant (interval 15 days) were 0.297 – 0.911 mg eq/kg. Between 93 and 105% of TRR was extractable with water. Etridiazole was detected 3 days after the first application and up to 11 days after the second application (max 23% TRR / 0.1 mg/kg). Radioactive fractions were identified as 5-hydroxyethoxy etridiazole acid (max 33%TRR / 0.18 mg eq/kg), 3-hydroxymethyl etridiazole (max 12% TRR / 0.09 mg eq/kg), etridiazole acid (max 18%TRR / 0.15 mg eq/kg, dichloro-etridiazole (max 3.9%TRR / 0.036 mg eq/kg) and the glucose conjugate of 3-hydroxymethyl etridiazole (17% TRR / 0.073 mg eq/kg). The remaining radioactivity was characterised as a large number of polar components associated with natural plant constituents. In total 78-99% TRR was characterised/identified. The study is acceptable.

B.7.1.2 Succeeding and rotational crops

The intended uses in ornamentals, tomatoes, peppers and cucumbers only include substrate grown cultivation in greenhouses. Studies in succeeding and rotational crops are not relevant for these uses.

B.7.1.3 Summary of studies in plants

Two studies were submitted on the metabolism of etridiazole: one in cotton and one in cucumbers. Only the results for cucumber (study 2) are considered relevant for the intended use of etridiazole (on substrate grown tomato, peppers and cucumber) and are further discussed below.

The low dose used in the study is according to cGAP in tomatoes, peppers and cucumbers. The number of treatments, interval and method of application were also in agreement with GAP. Sampling times encompassed the relevant PHI (3, 7 and 14 days according to GAP) and extended up to 31 days after treatment.

The study lacked data on sample processing procedures (recoveries) and the extended storage periods (mostly >6 months prior to the first chromatographic analysis) lower the reliability of the results. The notifier is requested to resolve these issues. The results are therefore taken into consideration on a provisional basis.

Total radioactive residues in cucumber (3-46 DAT) following two treatments of 21.3 mg etridiazole/plant (interval 15 days) were 0.297 – 0.911 mg eq/kg. Between 93 and 105% of TRR was extractable with water. Etridiazole was only detected 3 days after the first application and up to 11 days after the second application (max 23% TRR / 0.1 mg/kg). Radioactive fractions were identified as 5-hydroxyethoxy etridiazole acid (max 33%TRR / 0.18 mg eq/kg), 3-hydroxymethyl etridiazole (max 12% TRR / 0.09 mg eq/kg), etridiazole acid (max 18%TRR / 0.15 mg eq/kg, dichloro-etridiazole (max 3.9%TRR / 0.036 mg eq/kg) and the glucose conjugate of 3-hydroxymethyl etridiazole (17% TRR /

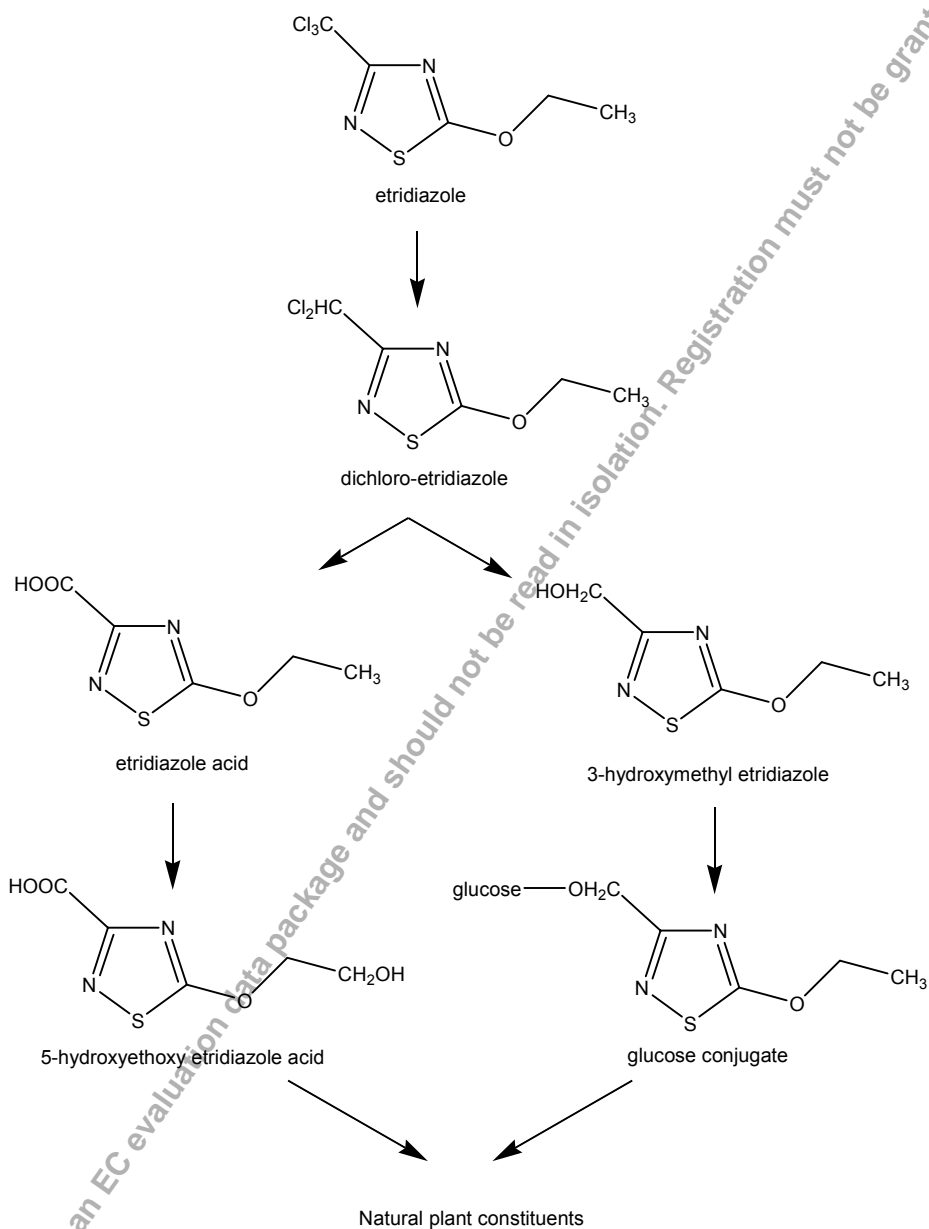
0.073 mg eq/kg). The remaining radioactivity was characterised as a large number of polar components associated with natural plant constituents. In total 78-99% TRR was characterised/identified.

In summary, etridiazole is relatively rapid metabolised/degraded in cucumbers. The major pathways in the degradation of etridiazole are de-chlorination to dichloro-etridiazole and further oxidation to the alcohol (3-hydroxymethyl etridiazole) or carboxy-acid (etridiazole acid). Hydroxylation of the methyl group (5-hydroxyethoxy etridiazole acid), glucose conjugate formation (of 3-hydroxymethyl etridiazole) and incorporation into natural plant constituents was observed.

B.7.1.4 List of identified compounds

Code	Compounds	Description	Crop/Commodity
Etridiazole	5-ethoxy-3-(trichloromethyl)-1,2,4-thiadiazole	Parent	Cucumber
Dichloro-etridiazole	3-(dichloromethyl)-5-ethoxy-1,2,4-thiadiazole	Metabolite	Cucumber
Etridiazole acid	5-ethoxy-1,2,4-thiadiazole-3-carboxylic acid	Metabolite	Cucumber
3-hydroxymethyl etridiazole ¹	(5-ethoxy-1,2,4-thiadiazol-3-yl)-methanol	Metabolite	Cucumber
5-hydroxyethoxy etridiazole acid	5-(2-hydroxyethoxy)-1,2,4-thiadiazole-3-carboxylic acid	Metabolite	Cucumber

¹ Free and glucose-conjugated

B.7.1.5 Metabolic pathway

B.7.2 Metabolism, distribution and expression of residues in livestock (Annex IIA 6.2 and Annex IIIA 8.1)

Peppers, cucumbers and tomatoes are not constituents of animal feed. Therefore, metabolism studies in livestock are not required.

B.7.3 Definition of the residue (Annex IIA 6.7; Annex IIIA 8.6)

B.7.3.1 Definition of the residue in plant material

The major ($\geq 10\%$ TRR, ≥ 0.1 mg/kg) identified components of the residue in cucumber were etridiazole, etridiazole acid, 3-hydroxymethyl etridiazole (including the glucose-conjugate) and 5-hydroxyethoxy etridiazole acid. Given the intended uses, the residue composition in fruits at harvest is variable. Fruits harvested at or close to the PHI will contain relatively more etridiazole, whereas fruits harvested later will contain relatively more 3-hydroxymethyl etridiazole (including the glucose-conjugate) and 5-hydroxyethoxy etridiazole acid.

Etridiazole acid was a major metabolite in urine/faeces of rat. Etridiazole acid has a lower acute and semichronic toxic potential than etridiazole and is non-genotoxic. In addition, etridiazole acid levels observed in residue trials were always <LOQ. Therefore, etridiazole acid is not included in the residue definition for monitoring or risk assessment.

3-Hydroxymethyl etridiazole and 5-hydroxyethoxy etridiazole acid were not observed in rat studies and their toxicological relevance is unknown. The metabolite 5-hydroxyethoxy etridiazole acid has been shown to be of no toxicological concern, compared to the parent compound, based on acute, subchronic and genotoxic data. Based on the structural similarity with the acid metabolite and parent etridiazole, the low concentration of 3-hydroxymethyl-etridiazole at time of harvest, the rapid and extensive excretion of etridiazole in the rat and the degradation to natural plant constituents, the metabolites are not expected to be of toxicological relevance.

Residue definition for monitoring (provisional): etridiazole (tomato, peppers, cucumbers).

Residue definition risk assessment (provisional): etridiazole

Conversion factor, CF: 1

B.7.3.2 Definition of the residue in animal products

Peppers, cucumbers and tomatoes are not constituents of animal feed. Therefore, use of etridiazole on substrate grown peppers, cucumbers and tomatoes will not lead to residues in animal products. Hence, no definition of residues in animal products is required.

B.7.4 Use pattern

The formulation Aaterra 700 ME, a 700 g as/L formulation of etridiazole, is submitted for use in Northern and Southern Europe as a fungicide against *Pythium* and *Phytophthora* in the cultivation of substrate-grown tomato (glasshouse), pepper (glasshouse) and cucumbers (glasshouse) and non-soil bound ornamentals (glasshouse). The intended uses for Northern and Southern European regions (which are identical) are given in Table 7.4.1.

Table B.7.4-1 Intended use pattern of Northern European regions

INTENDED USE PATTERN, NORTHERN & SOUTHERN EUROPE														
Crop and/or situation	Member State or Country	F, G or I	Pests or group of pests controlled	Formulation		Application				Application rate per treatment			PHI (days)	Remarks:
				type	conc of as	method kind	growth stage	number (range)	interval (days)	as (kg/ha)	water (l/ha)	as (kg/ha)		
Non-soil bound glasshouse ornamental crops	N-EU & S-EU	G	Soil and root fungi (<i>Pythium</i> & <i>Phytophthora</i>)	ME	700 g/l	Application through irrigation system	Na	1-2	14	-	-	7 kg/ha	Na	
Substrate grown tomatoes	N-EU & S-EU	G	Soil and root fungi (<i>Pythium</i> & <i>Phytophthora</i>)	ME	700 g/l	Application through irrigation system	Na	1-2	14	-	-	0.28-0.56 kg/ha	3	At 30,000 plants/ha 9.3 – 18.7 mg/plant
Substrate grown peppers	N-EU & S-EU	G	Soil and root fungi (<i>Pythium</i> & <i>Phytophthora</i>)	ME	700 g/l	Application through irrigation system	Na	1-2	14	-	-	0.28-0.56 kg/ha	7	At 30,000 plants/ha 9.3 – 18.7 mg/plant
Substrate grown cucumbers	N-EU & S-EU	G	Soil and root fungi (<i>Pythium</i> & <i>Phytophthora</i>)	ME	700 g/l	Application through irrigation system	Na	1-2	14	-	-	0.28 kg/ha	14	At 14,000 plants/ha 20 mg/plant

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B.7.5 Identification of critical GAPs

A summary of the cGAPs for Northern and Southern European regions (which are identical) is given in Table B.7.5-1.

Table B.7.5-1 Identification of the cGAP of Northern European regions

INTENDED USE PATTERN, NORTHERN EUROPE															
Crop and/or situation	Member State or Country	F, G or I	Pests or group of pests controlled	Formulation		Application				Application rate per treatment				PHI (days)	Remarks:
				type	conc of as	method kind	growth stage	number (range)	interval (days)	as (kg./hl)	water (l/ha)	as (kg/ha)			
Non-soil bound glasshouse ornamental crops	N-EU & S-EU	G	Soil and root fungi (<i>Pythium</i> & <i>Phytophthora</i>)	ME	700 g/l	Application through irrigation system	Na	2	14	-	-	7 kg/ha	Na		
Substrate grown tomatoes	N-EU & S-EU	G	Soil and root fungi (<i>Pythium</i> & <i>Phytophthora</i>)	ME	700 g/l	Application through irrigation system	Na	2	14	-	-	0.56 kg/ha	3	At 30,000 plants/ha 18.7 mg/plant	
Substrate grown peppers	N-EU & S-EU	G	Soil and root fungi (<i>Pythium</i> & <i>Phytophthora</i>)	ME	700 g/l	Application through irrigation system	Na	2	14	-	-	0.56 kg/ha	7	At 30,000 plants/ha 18.7 mg/plant	
Substrate grown cucumbers	N-EU & S-EU	G	Soil and root fungi (<i>Pythium</i> & <i>Phytophthora</i>)	ME	700 g/l	Application through irrigation system	Na	2	14	-	-	0.28 kg/ha	14	At 14,000 plants/ha 20 mg/plant	

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B.7.6 Residues resulting from supervised trials (Annex IIA 6.3; Annex IIIA 8.2)

B.7.6.1 Methods of analysis applied in the supervised trials

Etridiazole residues in tomato, cucumber and pepper fruits were determined using an analytical method (AC-3012) validated for the determination of etridiazole in pepper fruit (LOQ 0.01 mg/kg). Detection was by GC-ECD or GC-MS. Method validations were found to be acceptable (Volume 3 B 5.2) and can be extrapolated to tomatoes and cucumbers (crops with high water content). Concurrent procedural recoveries at the LOQ and a higher level were included in the analytical phase of the field studies and found to be acceptable (between 70-110%). For studies /01, /02, /05 and /06, the LOQ was 0.02 mg/kg. Etridiazole residues are stable during frozen storage in (tomatoes) matrix for at least 13.8 months (B.7.6.3). Stability in stored extracts was not investigated, and results are therefore only accepted in case storage in extracts was at most approximately one month. Results for which storage periods exceeded these periods, are given in italics in the Tables and can only be accepted when additional data on storage stability are made available.

Etridiazole acid residues in tomato, cucumber and pepper fruits were determined using an analytical method (AC-3011) validated for the determination of etridiazole acid in pepper fruit (LOQ 0.025 mg/kg). Detection was by GC-MS. Method validations were found to be acceptable (Volume 3 B 5.2) and can be extrapolated to tomatoes and cucumbers (crops with high water content). Concurrent procedural recoveries at the LOQ and a higher level were included in the analytical phase of the field studies and found to be acceptable (between 70-110%) for the low level only. Stability in stored matrix and extracts was not investigated, and results are therefore only accepted in case storage in matrix or extracts was at most approximately one month. Results for which storage periods exceeded these periods, are given in italics in the Tables and can only be accepted when additional data on storage stability are made available.

B.7.6.2 Supervised residue trials

The discussion below refers only to etridiazole residues (because etridiazole acid is not included in the residue definition). Regarding the method of treatment is application by drenching considered worst case compared to application through drip irrigation (intended use).

Tomato - Northern Europe

In total 12 residue trials in greenhouse tomato in Northern Europe were submitted covering several growing periods. The formulation used in all trials was Aaterra ME 700 g/L. The trials performed in The Netherlands encompassed the appropriate PHI and cultivation/application methods (substrate-grown). The dose/plant in the Haren trial (study /02) was 0.029 g/plant, which exceeds the cGAP dose of 0.019 g/plant (>25% deviation). As residue levels were >LOQ at PHI 3, these cannot be used for the setting of the MRL. The Haren trials (study /01 and /02) are considered to be replicate trials, as all conditions (variety, location, application dates etc.) are identical, except for the sampling (decline vs. harvest study). The results from the decline studies are used, as these show residue levels < LOQ at PHI 3 when the dose of 0.029 g/plant applied deviated >25% from the cGAP (0.019 g/plant), this is

consistent with other trials in which no residues >LOQ at PHI 3 were detected and the dose/plant exceeded the cGAP with >25%. The dose/plant in the Elshout trial (study /03) was 0.042 g/plant, which exceeds the cGAP dose of 0.019 g/plant (>25% deviation). As residue levels were <LOQ at PHI 3, these can be used for the setting of the MRL. For the same reason, the Waterham trial (study /03) can be accepted. All other trials performed in The Netherlands are performed according to cGAP and are appropriate for the setting of the MRL. The trials performed in the UK encompassed the appropriate PHI and cultivation/application technique. Residue values for the setting of the MRL are underlined. In total, 10 residue values are available.

Tomato - Southern Europe

In total, 7 residue trials in greenhouse tomato in Southern Europe were submitted covering several growing periods (June-October 2002). The formulation used in the trials was a 48EC (Spain) or 25EC (Italy). Etridiazole was applied as a single exaggerated dose of ~1 kg/ha (cGAP: 2 x 0.56 kg/ha with 14 day interval). In addition, the cultivation/application method was not according to cGAP: soil-bound cultivation with homogeneous application over area (instead of substrate-grown cultivation with application at the base of the plant). It can therefore not be concluded that the trials represent worst-case conditions (e.g. reduced uptake due to soil adsorption, no nutrient/pesticide residues recycling). Therefore, the trials are considered not suitable for setting of MRLs.

Cucumber - Northern Europe

In total 12 residue trials in greenhouse cucumber in Northern Europe were submitted covering several growing periods. The formulation used in all trials was Aaterra ME 700 g/L. Appropriate cultivation/application methods were employed in all trials. All Haren trials (study /05 and /06) and the Fen, Brough, Elshout and Haarsteeg trials (study /08) did not include the appropriate PHI of 14 days and are therefore not appropriate for setting of the MRL. In the Brough study (study /08) the dose per plant was 0.008 g/plant, which is below the cGAP dose of 0.020 g/plant (>25% deviation), this trial cannot be used for the setting of the MRL. Studies /05 and /06 are replicate trials, as all conditions (variety, location, application dates etc.) are identical, except for the sampling (decline vs. harvest study). Only the results of the Dongen trial (study /08), the Ooltgensplaat trial (study /08) and the Nazeing trial (study /08) are appropriate for the setting of the MRL (underlined residue value).

Cucumber - Southern Europe

In total, 8 residue trials in greenhouse cucumber in Southern Europe were submitted covering several growing periods (June-October 2002). The formulation used in the trials was a 48EC (Spain) or 25EC (Italy). Etridiazole was applied as a single exaggerated dose of ~1 kg/ha (cGAP: 2 x 0.56 kg/ha with 14 day interval). In addition, the cultivation/application method was not according to cGAP: soil-bound cultivation with homogeneous application over area (instead of substrate-grown cultivation with application at the base of the plant). It can therefore not be concluded that the trials represent worst-case conditions (e.g. reduced uptake due to soil adsorption, no nutrient/pesticide residues recycling). Further, 5 of the 8 trials did not include the appropriate PHI and the results for two trials were rejected

because storage stability was not demonstrated for the employed storage period. In summary, the trials are considered not suitable for setting of MRLs.

Pepper - Northern Europe

In total 4 residue trials in greenhouse pepper in Northern Europe were submitted covering several growing periods (june-october 2002). The formulation used in all trials was Aaterra ME 700 g/L. Appropriate cultivation/application methods were employed in all trials. The Fen and Huissen trials (study /10) did not include the appropriate PHI of 7 days and are therefore not appropriate for setting of the MRL. Only the results of the Est trial (study /10) and the Waltam trial (study /10) are appropriate for the setting of the MRL (underlined residue value).

Pepper - Southern Europe

In total, 8 residue trials in greenhouse pepper in Southern Europe were submitted covering several growing periods (april-september 2002). The formulation used in the trials was a 48EC (Spain) or 25EC (Italy) formulation. Etridiazole was applied as a single exaggerated dose of ~1 kg/ha (cGAP: 2 x 0.56 kg/ha with 14 day interval). In addition, the cultivation/application method was not according to cGAP: soil-bound cultivation with homogeneous application over area or at base of plant (instead of substrate-grown cultivation with application at the base of the plant). It can therefore not be concluded that the trials represent worst-case conditions (e.g. reduced uptake due to soil adsorption, no nutrient/pesticide residues recycling). Therefore, the trials are considered not suitable for setting of MRLs.

Overall conclusion

For greenhouse uses, the minimum required number of trials for major crops is 8. No distinction between Northern and Southern Europe has to be made for greenhouse applications. Tomatoes, cucumbers and peppers are major crops within the EU (pepper only in Southern Europe). A total number of minimum 8 trials is required for each crop.

For tomatoes, 10 trials are available. A sufficient number of residue trials is available.

For cucumber, 3 trials are available. Five more trials are needed.

For pepper, 2 trials are available. Six more trials are needed.

Table B.7.6.2-1 Summary of supervised trials with tomato for the Northern European regions

SUPERVISED RESIDUE TRIALS, Northern Europe														
Location	Commodity/ Variety	Data of 1. Sowing or planting 2. Flowering 3. Harvest	Method of treat- ment*	Application rate per treatment			Number of treat- ments and last treatment date	Growth stage at last treatment or date	Portion analysed	Residues (mg/kg)		DAT	Reference, Interval between applications	
				as (kg/hL) etridiazole	Water (L/ha)	as (kg/ha) etridiazole				Etridiazole	Etridiazole acid			
Tomato														
Haren, The Netherlands	Aramato	1.24-02-97 2.n.d. 3.06 to 26- 05-97	Drench 1	0.029 0.029	ns ns	ns ² ns ²	2 06-05-97	BBCH 85	Fruit	<0.02	-	0.25	Schreuder, 2000, 7.6.2/01, 7 days	
										0.021	-	1		
										<0.02	-	3		
										<0.02	-	6		
Haren, The Netherlands	Aramato	1.24-02-97 2.n.d. 3.09 to 29- 05-97	Drench 1	0.029 0.029	ns ns	ns ² ns ²	2 09-05-97	BBCH 85	Fruit	<0.02	-	13	Schreuder, 2000, 7.6.2/01, 7 days	
										<0.02	-	20		
										0.030	-	0.25		
										0.035	-	1		
Haren, The Netherlands	Aramato	1.24-02-97 2.n.d. 3.09-05-97	Drench 1	0.029 0.029	ns ns	ns ² ns ²	2 06-05-97	BBCH 85	Fruit	0.034	-	3	Schreuder, 1997, 7.6.2/02, 7 days	
										0.023	-	3		
Charlton, Shropshire, UK	Solution	1.01-03-02 2.n.d. 3.22 to 25- 07-02	Drench 3	0.014 0.014	4000 4000	0.56 0.56	2 22-07-02	BBCH 87	Fruit	<0.01	<0.025	-0	Oxspring, 2003, 7.6.2/03, 14 days	
										<0.01	<0.025	3		
Waterham, Kent, UK	Encore	1.03-01-02 2.n.d. 3.15 to 18- 10-02	Drench 3	0.033 0.033	1705 1705	0.56 ⁵ 0.56 ⁵	2 15-10-02	BBCH 85-87	Fruit	<0.01	<0.025	-0	Oxspring, 2003, 7.6.2/03, 14 days	
										<0.01	<0.025	3		
Brough, East Yorkshire, UK	Encore	1.07 -01-02 2.n.d. 3.14-10 to 13-11-02	Drench 3	0.014 0.014	4000 4000	0.56 ⁴ 0.56 ⁴	2 14-10-02	BBCH 81	Fruit	<0.01	<0.025	-0	Oxspring, 2003, 7.6.2/03, 14 days	
										<0.01	<0.025	1		
										<0.01	<0.025	3		
										<0.01	<0.025	7		
										<0.01	<0.025	14		
										<0.01	<0.025	30		

Brough, East Yorkshire, UK	Encore	1, 09-01-02 2. n.d. 3. 14-10 to 13-11-02	Drench 3	0.016 0.016	3500 3500	0.56 ⁵ 0.56 ⁶	2 14-10-02	BBCH 81	Fruit	<0.01 <0.01 0.01 <0.01 <0.01 <0.01	<0.025 <0.025 <0.025 <0.025 <0.025 <0.025	-0 1 3 7 14 30	Oxspring, 2003, 7.6.2/03, 14 days
Huissen, The Netherlands	Durintha	1.04-12-01 2. n.d. 3. 17 to 20- 06-01	Drench 3	0.020 0.020	2813 2813	0.57 ⁴ 0.57 ⁴	2 17-06-02	BBCH 60-89	Fruit	<0.01 0.01	<0.025 <0.025	-0 3	Oxspring, 2003, 7.6.2/03, 14 days
Harmelen, The Netherlands	Aromato	1.15-12-01 2. n.d. 3. 27 to 30- 09-02	Drench 3	0.020 0.020	2917 2917	0.57 ⁴ 0.57 ⁴	2 27-09-02	BBCH 60-89	Fruit	<0.01(2) mean <0.01 <0.01(2) mean <0.01	<0.025(2) mean <0.025 <0.025(2) mean <0.025	-0 3	Oxspring, 2003, 7.6.2/03, 14 days
Bemmel, The Netherlands	Clothilde	1.04-11-01 2. n.d. 3. 17-06 to 17-07-02	Drench 3	0.020 0.020	2813 2813	0.57 ⁴ 0.57 ⁴	2 17-06-02	BBCH 60-89	Fruit	<0.01 <0.01 0.01 <0.01 <0.01 <0.01	<0.025 <0.025 <0.025 <0.025 <0.025 <0.025	-0 1 3 7 14 30	Oxspring, 2003, 7.6.2/03, 14 days
Elshout, The Netherlands	Durintha	1.14-06-02 2. n.d. 3. 25-09 to 25-10-02	Drench 3	0.033 0.033	1719 1719	0.57 ⁴ 0.57 ⁴	2 25-09-02	BBCH 60-89	Fruit	<0.01 <0.01 0.01 <0.01 <0.01 <0.01	<0.025 <0.025 <0.025 <0.025 <0.025 <0.025	-0 1 3 7 14 30	Oxspring, 2003, 7.6.2/03, 14 days

*drench application is considered worst case compared to drip irrigation (intended use)

¹applied to base of plants at 100 mL/plant (0.029 g a.i./plant). Plants grown on rockwool substrate.

²ns = not specified in report

³applied at base of plant. Plants grown on substrate (perlite, rockwool) .

⁴ 125 mL/plant; 0.025 g/plant

⁵ 125 mL/plant; 0.059 g/plant

⁶ 125 mL/plant; 0.029 g/plant

⁷ 125 mL/plant; 0.042 g/plant

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Table B.7.6.2-2

SUPERVISED RESIDUE TRIALS, Northern Europe																	
Location	Commodity/ Variety	Data of 1. Sowing or planting 2. Flowering 3. Harvest	Method of treat- ment*	Application rate per treatment			Number of treat- ments and last date	Growth stage at last treatment or date	Portion analysed	Residues (mg/kg)		DAT	Reference, Interval between applications				
				as (kg/hL) etridiazole	Water (L/ha)	as (kg/ha) etridiazole				Etridiazole	Etridiazole acid						
Cucumber																	
Haren, The Netherlands	Korinda	1.29-08-97 2.n.d. 3.10 to 16- 10-97	Drench 1	0.018 0.018	ns ³ ns ³	ns ns	2 10-10-97	BBCH 85	Fruit	<0.02	-	0.25	Schreuder, 1997, 7.6.2/05, 7 days				
										0.098	-	1					
										0.113	-	3					
										0.187	-	6					
Haren, The Netherlands	Korinda	1.29-08-97 2.n.d. 3.14 to 20- 10-97	Drench 1	0.018 0.018	ns ³ ns ³	ns ns	2 14-10-97	BBCH 85	Fruit	0.082	-	0.25	Schreuder, 1997, 7.6.2/05, 7 days				
										0.075	-	1					
										0.215	-	3					
										0.073	-	6					
Haren, The Netherlands	Korinda	1.29-08-97 2.n.d. 3.13-10-97	Drench 1	0.018 0.018	ns ³ ns	ns ns	2 10-10-97	BBCH 85	Fruit	0.104	-	3	Schreuder, 1997, 7.6.2/06, 7 days				
Haren, The Netherlands	Korinda	1.29-08-97 2.n.d.	Drench 1	0.018 0.018	ns ³ ns ³	ns ns	2 14-10-97	BBCH 85	Fruit	0.040	-	3	Schreuder, 1997, 7.6.2/06, 7 days				
Nazeing, Essex, UK	Aviance	1.01-06-02 2. n.d. 3. 20-08 to 19-09-02	Drench 2	0.018 0.018	1600 1600	0.28 ⁴ 0.28 ⁴	2 20-08-02	BBCH 87	Fruit	<0.01	<0.025	-0	Oxspring, 2003, 7.6.2/08, 14 days				
										<0.01	<0.025	1					
										0.08	<0.025	3					
										<0.01	<0.025	7					
										<0.01	<0.025	14					
Brough, East Yorkshire, UK	Taverez	1. 19-08-02 2. n.d. 3. 14 to 28- 10-02	Drench 2	0.008 0.008	3300 3300	0.28 ⁵ 0.28 ⁵	2 14-10-02	BBCH 81-85	Fruit	<0.01	<0.025	-0	Oxspring, 2003, 7.6.2/08, 14 days				
										<0.01	<0.025	1					
										0.01	<0.025	3					
										0.02	<0.025	7					
										<0.01	<0.025	14					
Fen Drayton, Cambridges hire, UK	Aviance	1. 14-08-02 2. n.d. 3. 17 to 20- 09-02	Drench 2	0.018 0.018	1700 1700	0.28 ⁶ 0.28 ⁶	2 17-09-02	BBCH 81	Fruit	<0.01	<0.025	-0	Oxspring, 2003, 7.6.2/08, 14 days				
										0.06	<0.025	3					
Brough, East Yorkshire, UK	Ladner	1.01-07-02 2.n.d. 3.14 to 17- 10-02	Drench 2	0.009 0.009	3000 3000	0.28 ⁷ 0.28 ⁷	2 14-10-02	BBCH 87	Fruit	<0.01	<0.025	-0	Oxspring, 2003, 7.6.2/08, 14 days				
										<0.01	<0.025	3					

Dongen, The Netherlands	Euphoria	1. 31-08-02 2. n.d. 3. 21-10 to 20-11-02	Drench 2	0.021 0.021	1354 1354	0.29 ⁸ 0.29 ⁸	2 21-10-02	BBCH 60-89	Fruit	<0.01 0.02 0.08 0.03 <0.01 -	<0.025 <0.025 <0.025 0.03 <0.025 <0.025	-0 1 3 7 14 30	Oxspring, 2003, 7.6.2/08, 14 days
Ooltgenspla at, The Netherlands	Mijstica	1. 06-12-02 2. n.d. 3. 03-02 to 05-03-03	Drench 2	0.015 0.015	1875 1875	0.29 ⁹ 0.29 ⁹	2 03-02-03	BBCH 60-89	Fruit	0.09 0.16 0.24 0.17 0.07 0.01	- - - - -	-0 1 3 7 14 30	Oxspring, 2003, 7.6.2/08, 14 days
Eilshout, The Netherlands	Euphoria	1. 29-07-02 2. n.d. 3. 25 to 28- 10-02	Drench 2	0.017 0.017	1667 1667	0.29 ¹⁰ 0.29 ¹⁰	2 25-10-02	BBCH 60-89	Fruit	<0.01 0.06	<0.025 <0.025	-0 3	Oxspring, 2003, 7.6.2/08, 14 days
Haarsteeg, The Netherlands	Euphoria	1. 08-07-02 2. n.d. 3. 25 to 28- 10-02	Drench 2	0.016 0.016	1771 1771	0.29 ¹¹ 0.29 ¹¹	2 25-10-02	BBCH 60-89	Fruit	0.02 0.05	<0.025 <0.025	-0 3	Oxspring, 2003, 7.6.2/08, 14 days

*drench application is considered worst case compared to drip irrigation (intended use)

¹ applied to base of plants at 150 mL/plant (0.027 g a.i./plant). Plants grown on rockwool substrate.

² applied at base of plant (125 mL/plant). Plants grown on substrate (rockwool, pumice)

³ ns = not specified in report

⁴ 125 mL/plant; 0.063 g/plant

⁵ 125 mL/plant; 0.030 g/plant

⁶ 125 mL/plant; 0.059 g/plant

⁷ 125 mL/plant; 0.033 g/plant

⁸ 125 mL/plant; 0.026 g/plant

⁹ 125 mL/plant; 0.019 g/plant

¹⁰ 125 mL/plant; 0.021 g/plant

¹¹ 125 mL/plant; 0.020 g/plant

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Table B.7.6.2-3 Summary of supervised trials with peppers for the Northern European regions

SUPERVISED RESIDUE TRIALS, Northern Europe												
Location	Commodity/ Variety	Data of 1. Sowing or planting 2. Flowering 3. Harvest	Method of treat- ment*	Application rate per treatment			Number of treat- ments and last date	Growth stage at last treatment or date	Portion analysed	Residues (mg/kg)		Reference, Interval between applications
				as (kg/hL) etridiazole	Water (L/ha)	as (kg/ha) etridiazole				Etridiazole	Etridiazole acid	
Peppers												
Fen Drayton, Cambridges hire, UK	Praygo	1.16-01-02	Drench 1	0.011	5300	0.56 ²	2	BBCH 85	Fruit	<0.01	<0.025	Oxspring, 2003, 7.6.2/10, 14 days
		2.n.d. 3.24 to 27- 09-02		0.011	5300	0.56 ²	24-09-02			<0.01	<0.025	
Est, The Netherlands	Corsica	1.19-01-02	Drench 1	0.019	2808	0.56 ³	2	BBCH 60-89	Fruit	<0.01	<0.025	Oxspring, 2003, 7.6.2/10, 14 days
		2.n.d. 3.18-06 to 18-07-02		0.020	2913	0.56 ³	18-06-02			<0.01 0.02 <0.01 <0.01	<0.025 - <0.025 <0.025	
Huissen, The Netherlands	Locas	1.28-02-02	Drench 1	0.018	3125	0.56 ⁴	2	BBCH 60-89	Fruit	<0.01	<0.025	Oxspring, 2003, 7.6.2/10, 14 days
		2.n.d. 3.21 to 24- 10-02		0.018	3125	0.56 ⁴	21-10-02			<0.01	<0.025	
Waltham Abbey, Essex, UK	Spirit	1.01-11-01	Drench 1	0.011	4900	0.56 ⁵	2	BBCH 87	Fruit	<0.01	<0.025	Oxspring, 2003, 7.6.2/10, 14 days
		2.n.d. 3.20-08 to 19-09-02		0.011	4900	0.56 ⁵	20-08-02			<0.01 <0.01 <0.01 <0.01	<0.025 <0.025 <0.025 <0.025	

*drench application is considered worst case compared to drip irrigation (intended use)

¹ application (125 mL) to the base of each plant. Substrate grown plants.² 125 mL/plant; 0.019 g/plant³ 125 mL/plant; 0.024-0.025 g/plant⁴ 125 mL/plant; 0.023 g/plant⁵ 125 mL/plant; 0.020 g/plant

Registration must not be granted on the basis of this document.

Table B.7.6.2-4 Summary of supervised trials with tomatoes for the Southern European regions

SUPERVISED RESIDUE TRIALS, Southern Europe													
Location	Commodity/ Variety	Data of 1. Sowing or planting 2. Flowering 3. Harvest	Method of treat- ment*	Application rate per treatment			Number of treat- ments and last date	Growth stage at last treatment or date	Portion analysed	Residues (mg/kg)		DAT	Reference, Interval between applications
				as (kg/hL) etridiazole	Water (L/ha)	as (kg/ha) etridiazole				Etridiazole	Etridiazole acid		
Tomato													
Los Palacios y Villafranca, Spain	Genaro	1.18-02-02 2.n.d. 3.05-06 to 04-07-02	Drench 1	0.0048	20000	0.96	1 04-06-02	BBCH 71	Fruit	<0.01 <0.01 <0.01 <0.01	<0.025 <0.025 <0.025 <0.025	1 3 7 14 30	Oxspring, 2003, 7.6.2/04
Los Palacios y Villafranca, Spain	Bond	1.09-07-02 2.n.d. 3.02 to 31- 10-02	Drench 1	0.0048	20000	0.96	1 01-10-02	BBCH 72	Fruit	<0.01 <0.01 <0.01 <0.01	<0.025 <0.025 <0.025 <0.025	1 3 7 14 30	Oxspring, 2003, 7.6.2/04
Los Palacios y Villafranca, Spain	Bond	1.04-02-02 2.n.d. 3.07-06-02	Drench 1	0.0048	20000	0.96	1 04-06-02	BBCH 71	Fruit	<0.01 mean <0.01	<0.025 (2) mean <0.025	3	Oxspring, 2003, 7.6.2/04
Dos Hermanas, Spain	Bond	4.04-07-02 5.n.d. 6.04-10-02	Drench 1	0.0048	20000	0.96	1 01-10-02	BBCH 78	Fruit	<0.01 mean <0.01	<0.025 (2) mean <0.025	3	Oxspring, 2003, 7.6.2/04
Argelato, Italy	Incas	1.20-06-02 2.n.d. 3.07-09 to 06-10-02	Drench 1	0.005	20000	1.0	1 06-09-02	BBCH 79-81	Fruit	<0.01 <0.01 <0.01 <0.01	<0.025 <0.025 <0.025 <0.025	1 3 7 14 30	Oxspring, 2003, 7.6.2/04
Bologna, Italy	Meteor	1.04-04-02 2.n.d. 3.18-07-02	Drench 1	0.005	20000	1.0	1 15-07-02	BBCH 79-81	Fruit	<0.01	<0.025	3	Oxspring, 2003, 7.6.2/04
S. Matteo Decima, Italy	Arletta	1.20-06-02 2.n.d. 3.26-09-02	Drench 1	0.005	20000	1.0	1 23-09-02	BBCH 81-85	Fruit	<0.01 mean <0.01	<0.025 (2) mean <0.025	3	Oxspring, 2003, 7.6.2/04

*drench application is considered worst case compared to drip irrigation (intended use)

1homogeneously spread over area. Soil-bound cultivation.

Table B.7.6.2-5 Summary of supervised trials with cucumber for the Southern European regions

SUPERVISED RESIDUE TRIALS, Southern Europe													
Location	Commodity/ Variety	Data of 1. Sowing or planting 2. Flowering 3. Harvest	Method of treat- ment*	Application rate per treatment			Number of treat- ments and last date	Growth stage at last treat- ment or date	Portion analysed	Residues (mg/kg)		DAT	Reference, Interval between applications
				as (kg/hL) etridiazole	Water (L/ha)	as (kg/ha) etridiazole				Etridiazole	Etridiazole acid		
Cucumber													
Los Palacios y Villafranca, Spain	Dona	1.05-03-02 2.n.d. 3.05-06 to 04-07-02	Drench ₁	0.0048	20000	0.96	1 04-06-02	BBCH 73	Fruit		<0.01 <0.01 <0.01 <0.01	1 3 7 30	Oxspring, 2003, 7.6.2/07
Los Palacios y Villafranca, Spain	Dona	1.10-08-02 2.n.d. 3.02-10 to 31-10-02	Drench ₁	0.0048	20000	0.96	1 01-10-02	BBCH 73	Fruit		0.03 0.09 0.07 0.03 <0.01	1 3 7 14 30	Oxspring, 2003, 7.6.2/07
Los Palacios y Villafranca, Spain	Torres	1.27-02-02 2.n.d. 3.07-06-02	Drench ₁	0.0048	20000	0.96	1 04-06-02	BBCH 73	Fruit		<0.01	3	Oxspring, 2003, 7.6.2/07
Dos Hermanas, Spain	Dona	1.05-08-02 2.n.d. 3.04-10-02	Drench ₁	0.0048	20000	0.96	1 01-10-02	BBCH 77	Fruit		<0.01	3	Oxspring, 2003, 7.6.2/07
Granarolo, Italy	Darina	1.05-04-02 2.n.d. 3.30-07 to 28-08-02	Drench ₁	0.005	20000	1.0	1 29-07-02	BBCH 68-71	Fruit		<0.01 0.02 <0.01 <0.01 <0.01	1 3 7 14 30	Oxspring, 2003, 7.6.2/07
Cerasolo Ausa, Italy	Akito	1.10-07-02 2.n.d. 3.24-09 to 23-10-02	Drench ₁	0.005	20000	1.0	1 23-09-02	BBCH 68-71	Fruit		<0.01 <0.01 0.03 0.02 <0.01	1 3 7 14 30	Oxspring, 2003, 7.6.2/07
Riolo Terme, Italy	Darina	1.06-03-02 2.n.d. 3.18-07-02	Drench ₁	0.005	20000	1.0	1 15-07-02	BBCH 81-85	Fruit		<0.01	3	Oxspring, 2003, 7.6.2/07
Cerasolo Ausa, Italy	Porto Carraro	1.16-07-02 2.n.d. 3.11-10-02	Drench ₁	0.005	20000	1.0	1 08-10-02	BBCH 68-71	Fruit		<0.01	3	Oxspring, 2003, 7.6.2/07

* 'drench application is considered worst case compared to drip irrigation (intended use)

¹homogeneously spread over area. Soil-bound cultivation.

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Table B.7.6.2-6 Summary of supervised trials with peppers for the Southern European regions

SUPERVISED RESIDUE TRIALS, Southern Europe															
Location	Commodity/ Variety	Data of			Method of treat- ment*	Application rate per treatment			Number of treat- ments and last date	Growth stage at last treatment or date	Portion analysed	Residues (mg/kg)		DAT	Reference, Interval between applications
		1. Sowing or planting	2. Flowering	3. Harvest		as (kg/hL) etridiazole	Water (L/ha)	as (kg/ha) etridiazole				Etridiazole	Etridiazole acid		
Peppers															
Dolores, Spain	Dallas	1.05-12-01 2.n.d. 3.09-04 to 09-05-02			Drench 1	0.0048	20000	0.96	1 09-04-02	BBCH 72	Fruit	<0.01	<0.025	0	Oxspring, 2002, 7.6.2/09
												0.04	<0.025	3	
												<0.01	<0.025	7	
												<0.01	<0.025	14	
												<0.01	<0.025	21	
												<0.01	<0.025	30	
Dolores, Spain	Herminio	1.15-12-01 2.n.d. 3.09-04 to 09-05-02			Drench 1	0.0048	20000	0.96	1 09-04-02	BBCH 73	Fruit	<0.01	<0.025	0	Oxspring, 2002, 7.6.2/09
												0.04	<0.025	3	
												0.02	<0.025	7	
												<0.01	<0.025	14	
												<0.01	<0.025	21	
												<0.01	<0.025	30	
Dolores, Spain	Herminio	1.18-12-01 2.n.d. 3.09-04 to 09-05-02			Drench 1	0.0048	20000	0.96	1 09-04-02	BBCH 72	Fruit	<0.01	<0.025	0	Oxspring, 2002, 7.6.2/09
												0.05	<0.025	3	
												0.02	<0.025	7	
												<0.01	<0.025	14	
												<0.01	<0.025	21	
												<0.01	<0.025	30	
Dolores, Spain	Maribel	1.18-11-01 2.n.d. 3.09-04 to 09-05-02			Drench 1	0.0048	20000	0.96	1 09-04-02	BBCH 73	Fruit	<0.01	<0.025	0	Oxspring, 2002, 7.6.2/09
												0.05	<0.025	3	
												0.02	<0.025	7	
												<0.01	<0.025	14	
												<0.01	<0.025	21	
												<0.01	<0.025	30	
Dolores, Spain	R-4884	1.25-12-01 2.n.d. 3.09-04 to 09-05-02			Drench 1	0.0048	20000	0.96	1 09-04-02	BBCH 73	Fruit	<0.01	<0.025	0	Oxspring, 2002, 7.6.2/09
												0.03	<0.025	3	
												0.02	<0.025	7	
												<0.01	<0.025	14	
												<0.01	<0.025	21	
												<0.01	<0.025	30	
Budrio, Italy	Flavio	1.12-06-02 2.n.d. 3.27-08 to 26-09-02			Drench 2	0.005	20000	1.0	1 27-08-02	BBCH 81-83	Fruit	<0.01	<0.025	0	Oxspring, 2003, 7.6.2/11
												<0.01	<0.025	1	
												<0.01	<0.025	3	
												<0.01	<0.025	7	
												<0.01	<0.025	14	
												<0.01	<0.025	30	

Budrio, Italy	Sienor	1. 12-03-02 2. n.d. 3. 16-09 to 16-10-02	Drench ₂	0.005	20000	1.0	1 16-09-02	BBCH 79-81	Fruit	<0.01 <0.01 <0.01 <0.01 <0.01	<0.025 <0.025 <0.025 <0.025 <0.025	0 1 3 7 14 30	Oxspring, 2003, 7.6.2/11
Rimini, Italy	Eolo	1. 15-03-02 2. n.d. 3. 19-07-02	Drench ₂	0.005	20000	1.0	1 16-07-02	BBCH 81-85	Fruit	<0.01	<0.025	3	Oxspring, 2003, 7.6.2/11

*drench application is considered worst case compared to drip irrigation (intended use)

¹applied to the base of each plant. Soil-bound cultivation.

²homogeneously applied over area. Soil-bound cultivation.

WARNING: This document is part of an EC evaluation data package and should not be read in isolation. Registration must not be granted on the basis of this document.

B.7.6.3 Storage stability

No separate storage stability studies were submitted. Storage stability of etridiazole residues in tomatoes during storage at -20°C was investigated in Schreuder, 2000 (B.7.6.2, study /02). In this study, tomato samples were spiked with etridiazole at 0.1 and 5 mg/kg and stored for 13.8 months at -20°C. Fresh procedural recoveries at 0.1 and 5 mg/kg were included on the day of analysis. The average recovery, relative to the fresh spike, was 90.6% (n=3, RSD 44.5%) for the low level and 78.3% (n=3, RSD 13.7%) for the high level. At the low level, large variability made interpretation of the results difficult. Results for the high dose indicate that etridiazole is stable for up to 13.8 months in tomato matrix during frozen storage.

B.7.6.4 Summary of storage stability studies

Etridiazole is stable for up to 13.8 months in tomato matrix during frozen storage.

B.7.7 Effects of industrial processing and/or household preparation (Annex IIA 6.5; Annex IIIA 8.4)

Substrate-grown tomatoes, peppers and cucumbers in glasshouses are high added value crops which are not intended for industrial processing. Household processing (e.g. washing) may be performed on these commodities. Processing studies may be asked when the intake of residues through a commodity uses >10% of the ADI. The evaluation of the need for processing studies is postponed pending submission of additional data (residue trials) allowing a risk assessment to be made.

B.7.8 Livestock feeding studies (Annex IIA 6.4; Annex III 8.5)

Peppers, cucumbers and tomatoes are not constituents of animal feed. Therefore, use of etridiazole on substrate grown peppers, cucumbers and tomatoes will not lead to residues in animal products. For this reason, no livestock feeding studies are required.

B.7.9 Residues in succeeding or rotational crops (Annex IIA 6.6; Annex III 8.5)

No field studies on residues in succeeding or rotational crops were submitted.

The intended uses in ornamentals, tomatoes, peppers and cucumbers only include substrate grown cultivation in greenhouses. Studies in succeeding and rotational crops are not relevant for these uses.

B.7.10 Proposed pre-harvest intervals for envisaged use, or withholding periods, in the case of post-harvest uses (Annex IIA 6.8; Annex IIIA 8.7)

A PHI of 3 days is proposed for tomato. For cucumber and peppers, PHIs of 14 and 7 days, respectively, are proposed.

B.7.11 Community MRLs and MRLs in EU Member States (Annex IIIA 12.2)

No community MRLs have been established yet. Established MRLs in EU Member States (including Switzerland) are listed in Table B.7.11.1 (data taken from the notifier).

Table B.7.11-1 Established MRLs in EU Member States

Country	Commodity	MRL (mg/kg)	Residue definition
Italy	Strawberry, vegetables	0.05	Etridiazole
Netherlands	Cucumber	0.1	Etridiazole
	Others	0.05*	
Spain	Citrus, pome fruit, stone fruit, fruits with/without peel, wine grapes, cane fruit, small berries, vegetables (fresh, dried), oily seeds, potatoes, tea, hops, spices, cereals, forages, straw	0.05	Etridiazole
	Strawberry	0.1	Etridiazole

B.7.12 Proposed EU MRLs and justification for the acceptability of those MRLs (Annex IIA 6.7; Annex IIIA 8.6)**B.7.12.1 Proposed MRLs**

The MRLs proposed by the notifier are:

Crops	MRL Etridiazole (mg/kg)	STMR
Tomato	0.05	no proposal
Pepper	0.05	no proposal
Cucumber	0.1	no proposal

B.7.12.2 Justification of proposed MRLs

Etridiazole residue values from supervised trials appropriate for the setting of the MRL are given in Table 7.12.2-1. See B.7.6. for details on the selection of residue values. No residue values for 3-hydroxymethyl etridiazole and 5-hydroxyethoxy etridiazole acid are available.

Table 7.12.2-1 Residues used for MRL determination

Tomato fruits	Southern and Northern member states	<0.01	<0.01	<0.01	<0.01	< 0.01	< 0.01	<0.02	<0.02
		<0.01	<0.01						
Pepper fruits	Southern and Northern member states	0.02	<0.01						
Cucumber fruits	Southern member states	<0.01	<0.01	0.07					

B.7.12.3 Summary of proposed MRLs

Because of insufficient residue data, no MRL for pepper and cucumber can be proposed by the RMS at this moment. For etridiazole in tomato the following MRL is proposed:

Tomato	0.02* mg/kg
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B.7.13 Proposed EU Import tolerances and justification for the acceptability of those residues

Not applicable, since no non-EU applications are proposed in the intended use pattern.

B.7.14 Basis for differences, if any, in conclusions reached having regard to established or proposed CAC MRLs

Not applicable, since no Codex MRLs have been established or proposed yet.

B.7.15 Estimates of potential and actual dietary exposure through diet and other means (Annex IIA 6.9; Annex IIIA 8.8)**B.7.15.1 Intakes by domestic animals**

Peppers, cucumbers and tomatoes are not constituents of animal feed. Consequently, no intake of etridiazole residues by domestic animals is anticipated.

B.7.15.2 Intakes by humans (long-term)

The chronic risk assessment is performed using the WHO-EU diet and the UK diet, and the ADI of 0.005 mg/kg bw/d. Chronic intake is highest for the WHO-EU diet (0.4% of the ADI).

Table B.7.15.2-01a Calculation of the Theoretical Maximum Daily Intake using the WHO standard European diet (60 kg bw) and an ADI of 0.005 mg/kg bw/d

Commodity	consumption (g/pers/day)	MRL (mg/kg)	TMDI (µg/pers/day)	%ADI
FRUITING VEGETABLES				
Tomato	66,6	0.02*	1.3	0.4
Total				0.4

Table B.7.15.2-01b Calculation of the Theoretical Maximum Daily Intake using the UK diet for adults (60 kg bw) and an ADI of 0.005 mg/kg bw/d

Commodity	consumption 97.5 percentile (g/pers/day)	MRL (mg/kg)	TMDI (µg/pers/day)	%ADI
FRUITING VEGETABLES				
Tomato	0.105	0.02*	0,00003	0.006
Total				0.006

Table B.7.15.2-01c Calculation of the Theoretical Maximum Daily Intake using the UK diet for toddlers (11kg bw) and an ADI of 0.005 mg/kg bw/d

Commodity	consumption 97.5 percentile (g/pers/day)	MRL (mg/kg)	TMDI (µg/pers/day)	%ADI

Commodity	consumption 97.5 percentile (g/pers/day)	MRL (mg/kg)	TMDI (µg/pers/day)	%ADI
FRUITING VEGETABLES				
Tomato	0.038	0.02*	0,00005	0.01
Total				0.01

B.7.15.3 National estimate for short term intake by humans (acute)

The acute risk assessment is performed using the ARfD of 0.15 mg/kg bw/d. Risk assessment is performed using the WHO-EU diet and the UK diets for adults and toddlers.

Acute intake is highest for UK toddlers (0.6% of the ARfD).

Table B.7.15.3-01a Calculation of the National Estimated Short Term Intake using the UK diet for adults (60 kg bw) and an ARfD of 0.15 mg/kg bw/d

Commodity	Consumption 97.5 percentile (g/pers/day)	HR (mg/kg)	NESTI (µg/pers/day)	%ARfD
FRUITING VEGETABLES				
Tomato	0.2830	0.02	0,00021	0,1

Table B.7.15.3-01b Calculation of the National Estimated Short Term Intake using the UK diet for toddlers (11 kg bw) and an ARfD of 0.15 mg/kg bw/d

Commodity	Consumption 97.5 percentile (g/pers/day)	HR (mg/kg)	NESTI (µg/pers/day)	%ARfD
FRUITING VEGETABLES				
Tomato	0.0905	0.02	0,00083	0,6

B.7.16 Summary and evaluation of residue behaviour (Annex IIA 6.10; Annex IIIA 8.9)

The formulation Aaterra 700 ME, a 700 g as/L formulation of etridiazole, is submitted for use in Northern and Southern Europe as a fungicide against Pythium and Phytophthora in the cultivation of substrate-grown tomato (glasshouse), pepper (glasshouse) and cucumbers (glasshouse) and non-soil bound ornamentals (glasshouse).

Two studies were submitted on the metabolism of etridiazole: one in cotton and one in cucumbers. Only the results for cucumber (study 2) are considered relevant for the intended use of etridiazole (on substrate grown tomato, peppers and cucumber) and are further discussed below.

The lower dose used in the study is according to cGAP in tomatoes, peppers and cucumbers. The number of treatments, interval and method of application were also in agreement with GAP. Sampling times encompassed the relevant PHI (3, 7 and 14 days according to GAP) and extended up to 31 days after the first treatment.

Total residues in cucumber (3-46 DAT) following two treatments of 21.3 mg etridiazole/plant (interval 15 days) were 0.297 – 0.911 mg eq/kg. Between 93 and 105% of TRR was extractable with water. Etridiazole was only detected 3 days after the first application and up to 11 days after the second

application (max 23% TRR / 0.1 mg/kg). Radioactive fractions were identified as 5-hydroxyethoxy etridiazole acid (max 33%TRR / 0.18 mg eq/kg), 3-hydroxymethyl etridiazole (max 12% TRR / 0.09 mg eq/kg), etridiazole acid (max 18%TRR / 0.15 mg eq/kg, dichloro-etridiazole (max 3.9%TRR / 0.036 mg eq/kg) and the glucose conjugate of 3-hydroxymethyl etridiazole (17% TRR / 0.073 mg eq/kg). The remaining radioactivity was characterised as a large number of polar components associated with natural plant constituents. In total 78-99% TRR was characterised/identified.

In summary, etridiazole is relatively rapid metabolised/degraded in cucumbers. The major pathways in the degradation of etridiazole are de-chlorination to dichloro-etridiazole and further oxidation to the alcohol (3-hydroxymethyl etridiazole) or carboxy-acid (etridiazole acid). Hydroxylation of the methyl group (5-hydroxyethoxy etridiazole acid), glucose conjugate formation (of 3-hydroxymethyl etridiazole) and incorporation into natural plant constituents was observed.

The intended uses in ornamentals, tomatoes, peppers and cucumbers only include substrate grown cultivation in greenhouses. Studies in succeeding and rotational crops are not relevant for these uses.

Peppers, cucumbers and tomatoes are not constituents of animal feed. Metabolism studies in livestock are not required.

The residue definition for post-registration monitoring is proposed as etridiazole for tomato, peppers and cucumbers.

The residue definition for risk assessment is provisionally proposed as etridiazole for tomato, peppers and cucumbers.

Peppers, cucumbers and tomatoes are not constituents of animal feed. Therefore, use of etridiazole on substrate grown peppers, cucumbers and tomatoes will not lead to residues in animal products. No definition of the residue in animal products is required.

For tomatoes, 10 supervised residue trials are available. A sufficient number of residue trials is available.

For cucumber, 3 acceptable supervised residue trial is available. Five more trials are needed.

For peppers, 2 acceptable supervised residue trial is available. Six more trials are needed.

Etridiazole is stable for up to 13.8 months in tomato matrix during frozen storage (-20°C).

Due to insufficient residue data, no MRL can be set for cucumbers and peppers at this moment.

For tomato an MRL of 0.02* mg/kg is proposed.

Substrate-grown tomatoes, peppers and cucumbers in glasshouses are high added value crops which are not intended for industrial processing. Household processing (e.g. washing) may be performed on these commodities. Processing studies may be asked when the intake of residues through a commodity uses >10% of the ADI. The evaluation of the need for processing studies is postponed pending submission of additional data (residue trials) allowing a risk assessment to be made.

Peppers, cucumbers and tomatoes are not constituents of animal feed. Therefore, use of etridiazole on substrate grown peppers, cucumbers and tomatoes will not lead to residues in animal products and no livestock feeding studies are required.

Consumer chronic risk assessment shows that chronic intake is 0.4% for the WHO-EU diet, 0.006% of the ADI for UK adults and 0.01% for UK-toddlers. Consumer acute risk assessment show that maximal 0.1% of the ARfD is filled for UK adults and 0.6% of the ARfD is filled for UK-toddlers. Therefore, safe uses are proven for tomato when AATERRA 700 ME is applied according to GAP.

The RMS cannot judge at this moment whether the use of etridiazole according to the intended use for cucumbers and sweet peppers will or will not result in an unacceptable risk of adverse effects due to exposure to residues in these food products.

The notifier is requested to:

- complete the data base for the setting of the MRL in sweet peppers and cucumbers so that a total of 8 residue trials are available for each crop

B.7.17 References relied on

Annex point/ reference number	Author(s)	Year	Title Source (where different from company) Company, Report No GLP or GEP status (where relevant), Published or not	Data Protection Claimed Y/N	Owner
IIA 6.3/03-08-10	Anonymous	2006	Calculation of rates of applied products/ha and per plant using nominal g ai/ha. Data supplied by Agrisearch.	Y	CHEM
6.1/02	Charlton, R.R.	2004	Distribution and metabolism of [14C]etridiazole used as a root drench for cucumbers grown in a greenhouse under hydroponic conditions Report Crompton Corporation, Middlebury, U.S.A. No.99054 TER - 208 GLP, Unpublished	Y	CHEM
6.1/02	Charlton, R.	2006	Addendum to cucumber metabolism study with radio-labelled etridiazole. Chemtura report 9 May 2006	Y	CHEM
IIA 6.3/01	Schreuder, R.G., Melkebeke, T.	2000	Determination of active substance in a decline study following 2 applications in protected tomatoes. European union (northern zone) 1997. Etridiazole (micro emulsion) 700 g per Litre Report Hoechst Schering Agrevo Netherlands, The Netherlands ER 97 NLD 009 184409 TER - 132 GLP, Unpublished	Y	CHEM
IIA 6.3/02	Schreuder, R.G., Vries, R. De	1997	Etridiazole micro emulsion 700 g etridiazole per Litre code: evo 50028-190 determination of active substance in a harvest study following 2 applications in protected tomatoes. European Union (northern zone) 1997 Report Hoechst Schering Agrevo Netherlands, The Netherlands Contract -ER 97 NLD 010 TER - 133 GLP, Unpublished	Y	CHEM
IIA 6.3/03	Oxspring, S.	2003	Aaterra ME: residue levels of etridiazole and its acid metabolite in protected tomatoes from trials carried out in UK and Netherlands during 2002 Report Agrisearch UK Ltd, England No.Af/6630/UR TER - 157 GLP, Unpublished	Y	CHEM
IIA 6.3/04	Oxspring, S.	2003	Terrazole 48 EC and terrazole 25 EC: residue levels of etridiazole and its acid metabolite in protected tomatoes from trials carried out in Spain and Italy during 2002 Report Agrisearch UK Ltd, England No.AF/6632/UR TER - 156 GLP, Unpublished	Y	CHEM
IIA 6.3/05	Schreuder, R.G., Vries, R. De	1997	Etridiazole micro emulsion 700 g etridiazole per litre code: evo 50028-190 determination of active substance in a decline study	Y	CHEM

Annex point/ reference number	Author(s)	Year	Title Source (where different from company) Company, Report No GLP or GEP status (where relevant), Published or not	Data Protection Claimed Y/N	Owner
			following 2 applications in protected cucumbers. European Union (northern zone) 1997 Report Hoechst Schering Agrevo Netherlands, The Netherlands ER 97 NLD 017 204683 TER - 134 GLP, Unpublished		
IIA 6.3/06	Schreuder, R.G., Vries, R. De, Vogels, M.P.W.	1997	Etridiazole micro emulsion 700 g etridiazole per litre code: evo 50028-190 determination of active substance in a harvest study following 2 applications in protected cucumbers. European Union (northern zone) 1997 Report Hoechst Schering Agrevo Netherlands, The Netherlands ER 97 NLD 018 204694 TER - 135 GLP, Unpublished	Y	CHEM
IIA 6.3/07	Oxspring, S.	2003	Terrazole 48 EC and terrazole 25 EC: residue levels of etridiazole and its acid metabolite in protected cucumber from trials carried out in Spain and Italy during 2002 Report Agrisearch UK Ltd, England No.AF/6633/UR TER - 167 GLP, Unpublished	Y	CHEM
IIA 6.3/08	Oxspring, S.	2003	Aaterra ME: residue levels of etridiazole and its acid metabolite in protected cucumbers from trials carried out in UK and Netherlands during 2002 Report Agrisearch Uk Ltd, England No.AF/6631/UR TER - 168 GLP, Unpublished	Y	CHEM
IIA 6.3/09	Oxspring, S.	2002	Terrazole: residue levels in protected peppers from trials carried out in Spain during 2002 Report Agrisearch UK Ltd, England AF/6000/CT TER - 124 GLP, Unpublished	Y	CHEM
IIA 6.3/10	Oxspring, S.	2003	Aaterra ME: residue levels of etridiazole and its acid metabolite in protected peppers from trials carried out in UK and Netherlands during 2002 Report Agrisearch UK Ltd, England No.AF/6629/UR AF/6629/UR TER - 163 GLP, Unpublished	Y	CHEM
IIA 6.3/10	Greig, I	2006	AF/6629-31/UR- AATERRA ME on substrate-grown peppers, tomatoes and cucumbers in the Netherlands and the UK. Letter Agrisearch of 22 .05.2006	Y	CHEM
IIA 6.3/11	Oxspring, S.	2003	Terrazole 25 EC: residue levels of etridiazole and its acid metabolite in protected peppers	Y	CHEM

Annex point/ reference number	Author(s)	Year	Title Source (where different from company) Company, Report No GLP or GEP status (where relevant), Published or not	Data Protection Claimed Y/N	Owner
			from trials carried out in Italy during 2002 Report Agrisearch Uk Ltd, England No.AF/6634/UR AF/6634/UR TER - 164 GLP, Unpublished		