

**TRIADIMENOL (168)**

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**EXPLANATION**

Triadimenol is a systemic fungicide formed as the primary metabolite of triadimefon but also used as an active substance on its own. Its main mode of action is an inhibition of the ergosterol biosyntheses in fungi. Triadimenol was evaluated by JMPR several times since 1978 and the last time in 2004 for toxicology, when an ADI of 0–0.03 mg/kg bw and an ARfD of 0.08 mg/kg bw was established and in 2007 for residues.

Definition of the residue in plant and animal commodities (for the estimation of dietary intake and for compliance with MRLs): *sum of triadimefon and triadimenol*

In 2007 the Meeting evaluated use patterns of triadimefon and triadimenol in grapes; however, a short-term dietary intake concern was identified without opportunity for an alternative GAP.

The current Meeting received new information on use patterns for triadimenol in grapes supported by new supervised residue trials on grapes from Europe.

**ANALYTICAL METHODS**

*Method 01072/M001 (Bomke, S; 2010)*

The basic principle of method 01072/M001 involves extraction of homogenized samples with methanol/water (4/1; v/v) by high-speed blending. After filtration, an aliquot of the extract was evaporated to dryness, re-dissolved under addition of deuterated internal standard, filtered and measured by LC-MS/MS (silica based C18-column using acetonitrile/water eluent).

The characteristic mass transition for triadimenol used for quantification are m/z 296.1 → 70.2 and m/z 298.0 → 70.1 for confirmation.

In the following table the recoveries in selected fortified samples are reported.

Table 1 Recovery data for method 01072/M001 in plant matrices (LC-MS/MS, m/z: 296.1 → 70.2 & m/z: 298.0 → 70.2)

Matrix	Fortification level (mg/kg)	n	Recovery range (%)	Recovery, mean (%)	RSD (%)	Analyte, reference, MRM transition
Lettuce	0.01	5	90–110	102	8	Triadimenol
	0.1	5	80–112	93	13	Bomke, S; 2010
Wheat grain	0.01	5	90–110	98	9	m/z: 296.1 → 70.2 (quantification)
	0.1	5	87–122	101	14	
Beans without pods	0.01	5	100–120	110	9	
	0.1	5	89–108	103	8	
Orange fruits	0.01	5	80–100	88	10	
	0.1	5	86–110	100	10	
Avocado fruits	0.01	5	100–110	108	4	
	0.1	5	93–112	104	7	
Lettuce	0.01	5	90–110	98	9	Triadimenol
	0.1	5	80–106	90	12	Bomke, S; 2010
Wheat grain	0.01	5	90–120	102	11	m/z: 298.0 → 70.1 (confirmation)
	0.1	5	88–104	97	8	
Beans without pods	0.01	5	90–110	102	8	
	0.1	5	90–99	93	4	
Orange fruits	0.01	5	80–110	94	14	

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	0.1	5	81–94	88	7	
Avocado fruits	0.01	5	90–100	96	6	
	0.1	5	92–107	98	6	

### *Method 00480/M001 (Bomke, S; 2010a)*

The basic principle of method 01072/M001 involves extraction of homogenized samples by refluxing with methanol/water (7/3, v/v). After filtration, the extract was concentrated to the aqueous remainder. The remaining water was enzymatically hydrolysed to release conjugated residues (glucosides). An aliquot was purified on a SPE cartridge. The analytes were eluted with cyclohexane/ethyl acetate (85/15, v/v) and the eluate was evaporated to dryness. The remainder was resolved in internal standard solution and subjected to HPLC-MS/MS. The analytes were chromatographed by reversed-phase HPLC on a silica-based C18-column using a gradient acetonitrile/water eluent containing acetic acid.

The characteristic mass transition for triadimenol used for quantification are  $m/z$  296.1  $\rightarrow$  70.2 and  $m/z$  298.0  $\rightarrow$  70.1 for confirmation. For triadimenol-hydroxy, which is the remaining analyte after cleavage of conjugates, mass transition used for quantification are  $m/z$  312.0  $\rightarrow$  70.1 and  $m/z$  314.0  $\rightarrow$  70.1 for confirmation.

In the following table the recoveries in selected fortified samples are reported.

Table 2 Recovery data for method 01072/M001 in plant matrices (LC-MS/MS,  $m/z$ : 296.1  $\rightarrow$  70.2 &  $m/z$ : 298.0  $\rightarrow$  70.2)

Matrix	Fortification level (mg/kg)	n	Recovery range (%)	Recovery, mean (%)	RSD (%)	Analyte, reference, MRM transition
Apple fruit	0.01	5	88–99	95	4	Triadimenol
	0.1	5	86–98	93	5	Bomke, S; 2010a
Orange fruit	0.01	5	89–109	98	7	$m/z$ : 296.1 $\rightarrow$ 70.2 (quantification)
	0.1	5	91–103	98	5	
Wheat grain	0.01	5	89–99	94	4	
	0.1	5	91–97	93	3	
Beans without pods	0.01	5	83–99	89	7	
	0.1	5	87–99	90	6	
Sunflower seeds	0.01	5	81–91	86	5	
	0.1	5	82–92	88	5	
Apple fruit	0.01	5	94–103	98	4	Triadimenol
	0.1	5	84–94	89	5	Bomke, S; 2010a
Orange fruit	0.01	5	84–101	93	8	$m/z$ : 298.0 $\rightarrow$ 70.1 (confirmation)
	0.1	5	88–98	93	5	
Wheat grain	0.01	5	86–92	88	3	
	0.1	5	87–97	91	4	
Beans without pods	0.01	5	82–90	85	4	
	0.1	5	82–95	87	6	
Sunflower seeds	0.01	5	75–88	83	6	
	0.1	5	79–86	81	4	
Apple fruit	0.01	5	87–98	92	5	Triadimenol-hydroxy
	0.1	5	81–105	91	10	Bomke, S; 2010a
Orange fruit	0.01	5	86–98	92	6	$m/z$ : 312.0 $\rightarrow$ 70.1 (quantification)
	0.1	5	87–94	91	3	
Wheat grain	0.01	5	85–95	92	4	
	0.1	5	91–100	95	4	
Beans without pods	0.01	5	80–88	85	4	
	0.1	5	78–87	83	4	
Sunflower seeds	0.01	5	79–90	86	6	
	0.1	5	87–90	88	2	

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Matrix	Fortification level (mg/kg)	n	Recovery range (%)	Recovery, mean (%)	RSD (%)	Analyte, reference, MRM transition
Apple fruit	0.01	5	88–106	97	8	Triadimenol-hydroxy
	0.1	5	87–97	90	5	Bomke, S; 2010a
Orange fruit	0.01	5	81–91	88	5	m/z: 314.0 → 70.1 (confirmation)
	0.1	5	86–96	89	5	
Wheat grain	0.01	5	87–103	94	6	
	0.1	5	86–99	92	6	
Beans without pods	0.01	5	73–87	81	7	
	0.1	5	80–88	84	4	
Sunflower seeds	0.01	5	84–93	88	4	
	0.1	5	83–93	89	4	

### USE PATTERN

Crop (code)	Country	Form	Application					PHI, days
			Method	Rate kg ai/ha	Spray conc, kg ai/hL	Number	Interval	
Grapes	France	EC 7.5%	foliar spray	0.019	–	3	14 d	21
Table grapes	Spain	SC 31%	foliar spray	0.063	–	4	not stated	15
Wine grapes	Spain	SC 31%	foliar spray	0.063	–	4	not stated	21

### RESIDUES RESULTING FROM SUPERVISED TRIALS ON CROPS

The Meeting received additional information on supervised residue trials of triadimenol to grapes from Europe. In addition, a large dataset on grapes was reported in the 2007 JMPR Evaluation on triadimenol, which is repeated for consistency.

Application rates were reported as triadimenol. Unquantifiable residues are shown as below reported LOQ (< 0.01 mg/kg). Residue data are recorded unadjusted for percentage recoveries or for residues values in control samples, unless otherwise stated. Where multiple samples were taken from a single plot, individual values are reported. Where multiple analyses were conducted on a single sample, the average value is reported. Where results from separate plots with distinguishing characteristics such as different formulations, varieties or treatment schedules were reported, results are listed for each plot.

Residues from the trials conducted according to critical GAP have been used for the estimation of maximum residue levels. These results are underlined.

Table 3 Residues of triadimenol in grapes following foliar treatment (submitted in 2007)

Location (variety)	Year	Form	Application			Analysis			Reference, Report No.
			kg ai/ha	kg ai/hL	No	Sample	DAT	Residues	
cGAP France		EC	0.019	–	3		PHI 21		
France (Clairette)	1993	300 EC	0.019	0.023	3	Bunch of grapes	0* 0 7 14 21	< 0.02 0.03 0.02 < 0.02 < <u>0.02</u>	Bachmann, J, 1994d RA-2084/93
France (Sorgues)	1993	300 EC	0.014–0.015	0.023	3	Bunch of grapes	0* 0 7 14	< 0.02 < 0.02 < 0.02 < 0.02	Bachmann, J, 1994d RA-2084/93

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Location (variety)	Year	Form	Application			Analysis			Reference, Report No.
			kg ai/ha	kg ai/hL	No	Sample	DAT	Residues	
(Cinsault)							25	< 0.02	
cGAP Spain		SC	0.063	–	4		Table grapes: PHI 15d, Wine grapes: PHI 21d		
France St. Andiol  1996 (Muscat de Hambourg)		250 EC	0.038–0.063	0.038– 0.063	4	Bunch of grapes	0* 0 7 14 21	0.02 0.09 0.04 <u>0.04</u> <u>0.02</u>	Heinemann, O; Allmendinger, H, 1998  RA-2025/96
						Berries	7	0.03	
France Laudun  1995 (Clairette)		250 EC	0.038–0.063	0.038– 0.063	4	Bunch of grapes	0* 0 7 14 21 28	< 0.02 0.05 0.03 0.02 < 0.02 <u>0.1</u>	Nuesslein, F, 1996a  RA-2023/95
						Berries	7	0.03	
Greece Ano Diminio - Korinthias  1995 (Sultanina)		250 EC	0.038–0.063	0.0048– 0.0078	4	Bunch of grapes	0 3 7 14	0.15 0.17 0.19 <u>0.11</u>	Nuesslein, F, 1996a  RA-2023/95
						Berries	7	0.06	
Italy Capriata d'Orba  1996 (Barbera)		250 EC	0.038–0.063	0.0038– 0.0063	4	Bunch of grapes	0 7 14 21	0.06 0.05 <u>0.05</u> <u>0.04</u>	Heinemann, O; Allmendinger, H, 1998  RA-2025/96
						Berries	7	0.04	
Italy Borgo Piave  1995 (Trebbiano Toscana)		250 EC	0.038–0.063	0.0038– 0.0063	4	Bunch of grapes	0* 0 3 7 14	0.04 0.18 0.11 0.10 <u>0.06</u>	Nuesslein, F, 1996a  RA-2023/95
						Berries	7	0.07	
Spain Lavern  1996 (Carinena)		250 EC	0.038–0.063	0.0063– 0.011	4	Bunch of grapes	0 7 14 21	0.04 0.03 <u>0.02</u> <u>0.02</u>	Heinemann, O; Allmendinger, H, 1998  RA-2025/96
Spain E-41808 Villanueva 1996 Garrido fino		250 EC	0.038–0.063	0.0063– 0.011	4	Bunch of grapes	0* 0	< 0.02 0.09	Heinemann, O; Allmendinger, H, 1998
						Berries	7 14 21	< 0.02 < 0.02 < 0.02	RA-2025/96
Spain Umbrete, Sevilla  1995 (Garrido fino)		250 EC	0.038–0.063	0.0063– 0.011	4	Bunch of grapes	0* 0 7 14 21 28	0.04 0.16 0.03 < 0.02 < 0.02 < 0.02	Nuesslein, F, 1996a  RA-2023/95
						Berries	7	0.02	
Spain Sant Marçal  1993 (Xarelo)		250 EC	0.038–0.05	0.0083– 0.019	3	Bunch of grapes	0* 0 13 21 27 34	< 0.02 0.10 <u>0.07</u> <u>0.04</u> 0.02 0.03	Nuesslein, F, 1996b  RA-2016/93
Spain		250	0.038–0.063	0.011–	3	Bunch of grapes	0*	0.02	Nuesslein, F,

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Location (variety)	Year	Form	Application			Analysis			Reference, Report No.
			kg ai/ha	kg ai/hL	No	Sample	DAT	Residues	
Les Gunyoles 1993 (Macabeo)		EC		0.019			0 14 21 28 34	0.12 <u>0.04</u> <u>0.04</u> 0.04 0.04	1996b  RA-2016/93
Turkey Manisa, Salihli, Taytan 1988 (Sultana Seedless)		50 EW	0.05	0.005	4	Fruit	0 14 21 56	0.12 <u>0.04</u> < <u>0.02</u> < 0.02	Anon., 1989g  0100-88
Turkey Manisa 1990 (Sultanine)		50 EW	0.05	0.005	4	Fruit	0 20	0.2 <u>0.03</u>	Anon., 1992c  0604-90
Turkey Izmir 1990 (Sultanine)		50 EW	0.05	0.005	4	Fruit	0 20	0.07 < <u>0.02</u>	Anon., 1992f  0608-90
Turkey Izmir 1990 (Sultanine)		50 EW	0.05	0.005	4	Fruit	0 13	0.39 <u>0.08</u>	Anon., 1992g  0609-9

Table 4 Residues of triadimenol in grapes following foliar treatment (submitted in 2014)

Location (variety)	Year	Form	Application			Analysis					Reference, Report No.
			kg ai/ha	kg ai/hL	No	Sample	DAT	triadimenol	triadimenol incl. conj.	triadimenol-hydroxy incl. conj.	
cGAP France		EC	0.019	–	3		PHI 21				
France (North), Athée sur Cher 2010 (Chardonnay)		EC 300	0.019	0.01	3	bunch of grapes	–0 0 3 7 14 21	0.02 0.03 0.03 0.02 0.01 <u>0.01</u>	0.02 0.03 0.03 0.02 0.01 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	Schöning, R, Ballmann, C., 2011  10-2203
France (North), Chamay les Macon 2010 (Pinot noir)		EC 300	0.019	0.01	3	bunch of grapes	–0 0 3 7 14 21	0.03 0.05 0.05 0.05 0.04 <u>0.04</u>	0.03 0.05 0.06 0.05 0.04 0.05	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	Schöning, R, Ballmann, C, 2011  10-2203
France (North), Saint Nicolas de Bourgueil 2010 (Cabernet Franc)		EC 300	0.019	0.01	3	bunch of grapes	–0 0 3 7 14 21	< 0.01 0.02 0.01 < 0.01 < 0.01 < <u>0.01</u>	< 0.01 0.02 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	Schöning, R, Ballmann, C, 2011  10-2203
Germany, Veningen 2010 (Huxelrebe)		EC 300	0.019	0.002	3	bunch of grapes	–0 0 3 7 14 21	0.07 0.13 0.12 0.14 0.13 <u>0.13</u>	0.09 0.1 0.13 0.14 0.13 0.13	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	Schöning, R, Ballmann, C, 2011  10-2203
Germany, Uhldingen- Mühldorf		EC 300	0.019	0.002	3	bunch of grapes	–0 0 3 7	0.06 0.11 0.1 0.1	0.06 0.11 0.1 0.1	< 0.01 < 0.01 < 0.01 < 0.01	Schöning, R, Ballmann, C, 2011

## Triadimenol

Location (variety)	Year	Form	Application			Analysis					Reference, Report No.
			kg ai/ha	kg ai/hL	No	Sample	DAT	triadimenol	triadimenol incl. conj.	triadimenol-hydroxy incl. conj.	
2010 (Müller-Thurgau)							14 21	0.08 0.08	0.08 0.08	< 0.01 < 0.01	10-2203
Belgium, Emines	EC 300	0.019	0.002	3	bunch of grapes	-0 0 3 7 14 21	0.04 0.06 0.05 0.04 0.05 0.03	0.04 0.06 0.07 0.05 0.06 0.04	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	Schöning, R, Ballmann, C, 2011	
2010 (Johanitor)											10-2203

Triadimenol analysed with method 01072/M001

Triadimenol incl. conjugates and triadimenol-hydroxy incl. conjugates analysed with method 004800/M001

### APPRAISAL

Triadimenol is a systemic fungicide formed as the primary metabolite of triadimefon but also used as an active substance on its own. Its main mode of action is an inhibition of the ergosterol biosyntheses in fungi. Triadimenol was evaluated by JMPR several times since 1978 and the last time in 2004 for toxicology, when an ADI of 0–0.03 mg/kg bw and an ARfD of 0.08 mg/kg bw was established and in 2007 and 2009 for residues.

Definition of the residue in plant and animal commodities (for the estimation of dietary intake and for compliance with MRLs): sum of triadimefon and triadimenol

In 2007 the Meeting evaluated use patterns of triadimefon and triadimenol in grapes; however, a short-term dietary intake concern was identified without opportunity for an alternative GAP. In 2009 the 2007 evaluation on the use on grapes was repeated by the JMPR, but again no alternative GAP could be identified.

The current Meeting received new information on use patterns for triadimenol in grapes supported by new supervised residue trials on grapes from Europe.

#### *Methods of analysis*

The 2007 Meeting evaluated several methods of analyses for triadimenol in different plant and animal matrices with a LOQ of 0.05 mg/kg (GC-FID or GC-MS), based on the multi-residue method DFG-S19.

To the 2014 Meeting two new analytical methods were provided measuring triadimenol, with a LOQ of 0.01 mg/kg. Both methods involve measurement by HPLC-MS/MS for triadimenol. One of these methods measures also triadimenol including sugar conjugates and triadimenol-hydroxy including sugar conjugates in plant matrices with a LOQ of 0.01 mg/kg. For the determination of conjugates enzymatic treatment may be included in the extraction procedure.

#### *Stability of pesticide residues in stored analytical samples*

In 2007 the Meeting concluded that triadimenol is stable in stored samples of plant and animal origin for at least 24 months.

#### *Results of supervised residue trial on crops*

##### *Grapes*

For grapes, two new GAPs from France and Spain have been submitted to the Meeting.

## Triadimenol

In France, triadimenol is registered for grapes involving three applications of 0.019 kg ai/ha each with a PHI of 21 days. Supervised field trials from Europe matching the GAP were already reported in 2007 (2 trials) and amended by new trial data submitted to the current Meeting (6 trials).

Residues of triadimenol in grapes matching the French GAP were: < 0.01, 0.01, < 0.02(2), 0.03, 0.04, 0.08 and 0.13 mg/kg.

In Spain triadimenol is registered for grapes involving four applications of 0.063 kg ai/ha each with a PHI of 15 days for table grapes and 21 days for wine grapes. Supervised field trials from Southern Europe and Turkey matching the GAP were already reported in 2007.

Residues of triadimenol in table grapes matching the GAP were: < 0.02, < 0.02, 0.02, 0.04(3), 0.05, 0.06, 0.07, 0.08, 0.1, 0.11 mg/kg.

Residues of triadimenol in wine grapes matching the GAP were: < 0.02(4), 0.02, 0.02, 0.03, 0.04(3), 0.1 mg/kg.

Based on the French GAP, the Meeting estimated a maximum residue level of 0.3 mg/kg and HR and STMR values of 0.13 mg/kg and 0.025 mg/kg for grapes, respectively

### *Fate of residues during processing*

The 2007 Meeting estimated processing factors for triadimenol in grapes of 0.45 for juice, 0.42 for wine, 3.1 for raisins, 3 for wet pomace and 5.7 for dry pomace. No additional data were submitted to the current Meeting.

Based on these factors and the newly estimated STMR value of 0.025 mg/kg the Meeting estimated STMR-P values for juice of 0.011 mg/kg, for dried grapes (= raisins) of 0.078 mg/kg, for wet grape pomace of 0.075 mg/kg and for dry grape pomace of 0.14 mg/kg.

Based on the newly estimated STMR value of 0.025 mg/kg for wine grapes, the Meeting estimated STMR-P value of 0.01 mg/kg for wine.

For dried grapes the Meeting estimated a HR-P of 0.4 mg/kg and a maximum residue level of 1 mg/kg to replace its previous recommendation of 10 mg/kg.

### *Residues in animal commodities*

In the 2007 evaluation for triadimenol grape pomace (wet) was already taken into account for the livestock animal dietary burden calculation based on a residue level of 0.5 mg/kg, which is higher than the estimated residue level of 0.075 mg/kg resulting from the current GAPs.

Therefore, the Meeting concluded that the contribution of triadimenol residues in grapes after treatment according to the evaluated GAPs does not influence the overall dietary burden of livestock animals, making a re-assessment of the residue situation in animal commodities unnecessary. The Meeting confirms its previous recommendations for triadimenol in animal commodities.

## RECOMMENDATIONS

Definition of the residue in plant and animal commodities (for the estimation of dietary intake and for compliance with MRLs): sum of triadimefon and triadimenol

On the basis of the additional data from supervised trials on grapes the Meeting recommends the following maximum residue levels for triadimenol.

CCN	Commodity	Recommended MRL mg/kg		STMR or STMR-P mg/kg	HR or HR-P mg/kg
		new	previous		
FB 0269	Grapes	0.3	–	0.025	0.13
DF 0269	Dried grapes	1 <sup>a</sup>	10 <sup>b</sup>	0.155	0.4

<sup>a</sup> Based on uses for triadimenol

<sup>b</sup> Based on uses on triadimefon and triadimenol

## Triadimenol

For dietary intake only

CCN	Commodity	STMR or STMR-P mg/kg	HR or HR-P mg/kg
JF 0269	Grapes juice	0.011	–
	Grape pomace, dry	0.14	–
	Grape pomace, wet	0.075	–
	Wine	0.01	–

### DIETARY RISK ASSESSMENT

#### *Long-term intake*

The International Estimated Daily Intakes (IEDI) of triadimefon and triadimenol was calculated from previously estimated STMRs in 2007 and the new STMRs in 2014 for raw and processed commodities in combination with consumption data for corresponding food commodities. The results are shown in Annex 3.

The IEDI of the 17 GEMS/Food cluster diets, based on the estimated STMRs represented 1–3% of the maximum ADI (0.03 mg/kg bw).

The Meeting concluded that the long-term intake of residues of triadimefon and triadimenol from the uses considered by the Meeting is unlikely to represent a public health concern.

#### *Short-term intake*

The International Estimated Short-Term Intake (IESTI) of triadimenol calculated on the basis of the estimations made by the 2014 JMPR represented for children 0–10% and for the general population 0–5% of the ARfD (0.08 mg/kg bw). The Meeting concluded that the short-term intake of triadimenol from the uses considered by the 2014 JMPR is unlikely to represent a public health concern.

### REFERENCES

Code	Author	Year	Title, Institute & Report reference
	Adato, I and Weissblatt, S	1988	Bayfidan residues in cucumbers, grapes and apples Ministry of Agriculture, Bet-Dagan, State of Israel Bayer CropScience AG, Report No.: 1030-85, Edition Number: M-029917-01-1 Date: 1988-08-21 Non GLP, unpublished
	Allmendinger, H	1995	Determination of residues of Matador 300 EC in/on table grape and grape in Italy Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: RA-2091/95, Edition Number: M-075177-01-1 Date: 1995-12-12 GLP, unpublished
	Allmendinger, H	1997a	Determination of residues of Matador 300 EC on grape in France Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: RA-2090/95, Edition Number: M-075176-01-1 Date: 1997-04-07 GLP, unpublished
	Allmendinger, H	1997b	Determination of residue of Matador 300 EC in/on table grapes and wine grapes in Italy Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: RA-2090/96, Edition Number: M-075175-01-1 Date: 1997-05-16 GLP, unpublished
	Anon.	1987e	KWG 0519; 50 EW; grape; Germany; BBA Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: 9487-86, Edition Number: M-035965-01-2 Date: 1987-04-06 Non GLP, unpublished
	Anon.	1989e	Determination of triadimenol residues in grapes South African Bureau of Standards, Pretoria, South Africa Bayer CropScience AG, Report No.: 311/88431/E441, Edition Number: M-035497-01-1 Date: 1989-06-02 Non GLP, unpublished
	Anon.	1992e	KWG 0519; 50 EW; grape; Turkey; BBA Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: 0607-90, Edition Number: M-035298-01-2 Date: 1992-03-02 Non GLP, unpublished

## Triadimenol

Code	Author	Year	Title, Institute & Report reference
	Anon.	1983c	KWG 0159; 250 EC; grape; Australia Bayer Australia Ltd., Botany, Australia Bayer CropScience AG, Report No.: 13/83, Edition Number: M-036093-01-1 Date: 1983-02-16 Non GLP, unpublished
	Anon.	1984aa	KWG 0519; 25 WG; grape; USA Mobay Chemical Corporation, USA Bayer CropScience AG, Report No.: 84497, Edition Number: M-036035-01-1 Date: 1984-03-06 Non GLP, unpublished
	Anon.	1984ab	KWG 0519; 25 WG; grape; USA Mobay Chemical Corporation, USA Bayer CropScience AG, Report No.: 84501, Edition Number: M-035999-01-1 Date: 1984-03-06 Non GLP, unpublished
	Anon.	1984u	KWG 0519; 25 WG; grape; USA Mobay Chemical Corporation, USA Bayer CropScience AG, Report No.: 84493, Edition Number: M-036088-01-1 Date: 1984-03-06 Non GLP, unpublished
	Anon.	1984v	KWG 0519; 25 WG; grape; USA Mobay Chemical Corporation, USA Bayer CropScience AG, Report No.: 84498, Edition Number: M-036021-01-1 Date: 1984-03-06 Non GLP, unpublished
	Anon.	1984w	KWG 0519; 25 WG; grape; USA Mobay Chemical Corporation, USA Bayer CropScience AG, Report No.: 84499, Edition Number: M-036013-01-1 Date: 1984-03-06 Non GLP, unpublished
	Anon.	1984x	KWG 0519; 25 WG; grape; USA Mobay Chemical Corporation, USA Bayer CropScience AG, Report No.: 84494, Edition Number: M-036077-01-1 Date: 1984-03-06 Non GLP, unpublished
	Anon.	1984y	KWG 0519; 25 WG; grape; USA Mobay Chemical Corporation, USA Bayer CropScience AG, Report No.: 84495, Edition Number: M-036057-01-1 Date: 1984-03-06 Non GLP, unpublished
	Anon.	1984z	KWG 0519; 25 WG; grape; USA Mobay Chemical Corporation, USA Bayer CropScience AG, Report No.: 84496, Edition Number: M-036038-01-1 Date: 1984-03-06 Non GLP, unpublished
	Anon.	1985f	KWG 0519; 50 EW; grape; Germany; BBA Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: 9413-84, Edition Number: M-036351-01-2 Date: 1985-08-12 Non GLP, unpublished
	Anon.	1985g	KWG 0519; 50 EW; grape; Germany; BBA Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: 9414-84, Edition Number: M-036338-01-1 Date: 1985-08-12 Non GLP, unpublished
	Anon.	1985h	KWG 0519; 50 EW; grape; Germany; BBA Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: 9415-84, Edition Number: M-036315-01-2 Date: 1985-08-12 Non GLP, unpublished
	Anon.	1985i	KWG 0519; 50 EW; grape; Germany; BBA Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: 9416-84, Edition Number: M-034902-01-2 Date: 1985-08-12 Non GLP, unpublished
	Anon.	1985j	Triadimenol residues in grapes South African Bureau of Standards, Pretoria, South Africa Bayer CropScience AG, Report No.: 311/88741/B145, Edition Number: M-035897-01-1 Date: 1985-06-21 Non GLP, unpublished
	Anon.	1986h	KWG 0519; 50 EW; grape; Germany; BBA Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: 9430-85, Edition Number: M-034845-01-2 Date: 1986-01-10 Non GLP, unpublished
	Anon.	1986i	KWG 0519; 50 EW; grape; Germany; BBA Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: 9431-85, Edition Number: M-036280-01-1 Date: 1986-01-11 Non GLP, unpublished
	Anon.	1986j	KWG 0519; 50 EW; grape; Germany; BBA Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: 9432-85, Edition Number: M-036275-01-2 Date: 1986-01-10 Non GLP, unpublished
	Anon.	1986k	KWG 0519; 50 EW; grape; Germany; BBA Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: 9433-85, Edition Number: M-036260-01-2 Date: 1986-01-10 Non GLP, unpublished
	Anon.	1987a	KWG 0519; 5 WG; grape; Germany; BBA Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: 9480-86, Edition Number: M-036249-01-2 Date: 1987-04-06 Non GLP, unpublished
	Anon.	1987b	KWG 0519; 5 WG; grape; Germany; BBA Bayer AG, Leverkusen, Germany Bayer

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Code	Author	Year	Title, Institute & Report reference
			CropScience AG, Report No.: 9481-86, Edition Number: M-036199-01-1 Date: 1987-04-06 Non GLP, unpublished
Anon.		1987c	KWG 0519; 5 WG; grape; Germany; BBA Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: 9482-86, Edition Number: M-036193-01-2 Date: 1987-02-19 Non GLP, unpublished
Anon.		1987d	KWG 0519; 5 WG; grape; Germany; BBA Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: 9483-86, Edition Number: M-036119-01-2 Date: 1987-02-19 Non GLP, unpublished
Anon.		1987f	KWG 0519; 5 WP; grape; Morocco; BBA Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: 9440-86, Edition Number: M-035854-01-2 Date: 1987-02-19 Non GLP, unpublished
Anon.		1987g	Bayfidan 5 DF / grapes; seven point decay curve following five applications of Bayfidan 5 DF from 5% capfall to bunch closure Bayer New Zealand, Auckland, New Zealand Bayer CropScience AG, Report No.: NF/05/87, Edition Number: M-036139-01-1 Date: 1987-08-07 Non GLP, unpublished
Anon.		1988	Bayfidan 5 DF / grapes; 6 point decay curve following 2 applications of Bayfidan 5 DF at bunch closure and veraison Bayer New Zealand, Auckland, New Zealand Bayer CropScience AG, Report No.: CF/25/87, Edition Number: M-036143-01-1 Date: 1988-06-24 Non GLP, unpublished
Anon.		1988a	Bayfidan 5 DF / grapes; 6 point decay curve following 2 applications of Bayfidan 5 DF at bunch closure and veraison Bayer New Zealand, Auckland, New Zealand Bayer CropScience AG, Report No.: NF/26/87, Edition Number: M-036156-01-1 Date: 1988-06-24 Non GLP, unpublished
Anon.		1989c	KWG 0519; 97,15 DP; grape; processing; France; BBA Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: 0440-88, Edition Number: M-266061-01-2 Date: 1989-06-27 Non GLP, unpublished
Anon.		1989d	Determination of triadimenol residues in grapes South African Bureau of Standards, Pretoria, South Africa Bayer CropScience AG, Report No.: 311/88430/E440, Edition Number: M-035508-01-1 Date: 1989-06-07 Non GLP, unpublished
Anon.		1989f	Determination of triadimenol residues in grapes South African Bureau of Standards, Pretoria, South Africa Bayer CropScience AG, Report No.: 311/88558/F128, Edition Number: M-035397-01-1 Date: 1989-06-02 Non GLP, unpublished
Anon.		1989g	KWG 0519; 50 EW; grape; Turkey; BBA Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: 0100-88, Edition Number: M-035466-01-2 Date: 1989-09-22 Non GLP, unpublished
Anon.		1990	Determination of triadimenol and tebuconazole residues in grape samples South African Bureau of Standards, Pretoria, South Africa Bayer CropScience AG, Report No.: 311/88866/G299, Edition Number: M-075337-01-1 Date: 1990-09-13 Non GLP, unpublished
Anon.		1990a	Determination of tebuconazole and triadimenol residues in grape samples South African Bureau of Standards, Pretoria, South Africa Bayer CropScience AG, Report No.: 311/88870/G303, Edition Number: M-075327-01-1 Date: 1990-09-24 Non GLP, unpublished
Anon.		1990b	Determination of triadimenol residues in grapes South African Bureau of Standards, Pretoria, South Africa Bayer CropScience AG, Report No.: 311/88670/F358, Edition Number: M-036167-01-1 Date: 1990-02-16 Non GLP, unpublished
Anon.		1991	Determination of tebuconazole and triadimenol residues in grape samples South African Bureau of Standards, Pretoria, South Africa Bayer CropScience AG, Report No.: 311/88086/H187, Edition Number: M-075422-01-1 Date: 1991-07-01 Non GLP, unpublished
Anon.		1991a	Determination of tebuconazole and triadimenol residues in wine grapes South African Bureau of Standards, Pretoria, South Africa Bayer CropScience AG, Report No.: 311/88087/H188, Edition Number: M-075412-01-1 Date: 1991-06-24 Non GLP, unpublished
Anon.		1991b	Determination of triadimenol residues in grapes South African Bureau of Standards, Pretoria, South Africa Bayer CropScience AG, Report No.: 311/88872/G305, Edition Number: M-036161-01-1 Date: 1991-09-09 Non GLP, unpublished
Anon.		1992b	KWG 0519; 50 EW; grape; Turkey; BBA Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: 0603-90, Edition Number: M-035371-01-2 Date:

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Code	Author	Year	Title, Institute & Report reference
			1992-03-02 Non GLP, unpublished
	Anon.	1992c	KWG 0519; 50 EW; grape; Turkey; BBA Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: 0604-90, Edition Number: M-035350-01-1 Date: 1992-03-02 Non GLP, unpublished
	Anon.	1992d	KWG 0519; 50 EW; grape; Turkey; BBA Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: 0606-90, Edition Number: M-035331-01-2 Date: 1992-03-02 Non GLP, unpublished
	Anon.	1992f	KWG 0519; 50 EW; grape; Turkey; BBA Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: 0608-90, Edition Number: M-035275-01-2 Date: 1992-03-02 Non GLP, unpublished
	Anon.	1992g	KWG 0519; 50 EW; grape; Turkey; BBA Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: 0609-90, Edition Number: M-035922-01-1 Date: 1992-03-02 Non GLP, unpublished
	Bachmann, J	1994d	Determination of residues of Matador 300 EC in/on grapes under actual use conditions in France Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: RA-2084/93, Edition Number: M-075223-01-1 Date: 1994-09-21 GLP, unpublished
	Bachmann, J	1995	Determination of residues of Bayfidan 250 EC and Bayfidan spezial 5 WG in/on grape under actual use conditions in the Federal Republic of Germany Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: RA-2015/93, Edition Number: M-033673-01-1 Date: 1995-03-07 GLP, unpublished
	Bomke, S	2010	Modification M001 of the residue analytical method 01072 for the determination of triadimenol in/on lettuce (head), wheat (grain), bean (bean without pod), orange (fruit) and avocado (fruit) by HPLC-MS/MS, Bayer CropScience AG, Report No. MR-10/091, unpublished
	Bomke, S	2010a	Modification M001 of the residue analytical method 00480 for the determination of triadimenol and KWG 1342 in/on apple (fruit), orange (fruit), bean (bean without pod), wheat (grain) and sunflower (seed) by HPLC-MS/MS, Bayer CropScience AG, MR-10/092
	Heinemann, O and Allmendinger, H	1998	Determination of residues of Bayfidan 250 EC in/on grape following spray application in the field in Spain, France and Italy Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: RA-2025/96, Edition Number: M-033660-01-1 Date: 1998-08-11 GLP, unpublished
	MacGregor, A	1997	Determination of triadimenol residues in fresh grapes, dried fruit and wine after application of Bayfidan 250 EC to sultana and cabernet sauvignon grapevines Bayer Australia Ltd., Pymble, Australia Bayer CropScience AG, Report No.: MJG 038/97, Edition Number: M-047990-01-1 Date: 1997-08-25 Non GLP, unpublished also filed: 3.1.2.1B /69
	Nuesslein, F	1996a	Determination of residues of Bayfidan (250 EC) on grape in Spain, France, Italy and Greece Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: RA-2023/95, Edition Number: M-033664-01-1 Date: 1996-12-16 GLP, unpublished
	Nuesslein, F	1996b	Determination of residues of Bayfidan 250 EC in/on grapes under actual use conditions in Spain Bayer AG, Leverkusen, Germany Bayer CropScience AG, Report No.: RA-2016/93, Edition Number: M-027240-02-1 Date: 1996-07-08, Amended: 1999-12-13 GLP, unpublished
	Schöning, R, and Ballmann, C	2011	Determination of the residues of tebuconazole and triadimenol in/on grape after spray application, and spray application with low-volume of Tebuconazole & Triadimenol. EC 300 in the field in France (North), Germany and Belgium, Bayer CropScience AG, 10-2203
	Williams, BB and Woodard, DL	1991	Triadimenol—Magnitude of the residue on grapes, 25DF Mobay Chemical Corporation, Stilwell, KS, USA Bayer CropScience AG, Report No.: 100123, Edition Number: M-033706-02-1 Date: 1991-02-01, Amended: 1999-10-04 GLP, unpublished

