SPIROTETRAMAT (234)

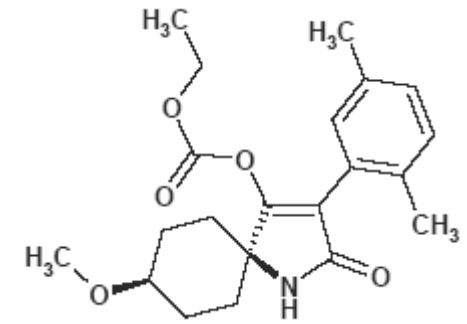
First draft prepared by Mr Stephen Funk, US Environmental Protection Agency, USA

EXPLANATION

Spirotetramat belongs to the chemical class of ketoenols and acts as a systemic insecticide for the control of a broad spectrum of sucking insects. At the 39th session of the CCPR (ALINORM 07/30/24), it was listed as a candidate for evaluation of new compounds by the 2008 JMPR.

The residue studies were submitted by the manufacturer to support various fruits, vegetables, tree nuts and hops.

IDENTITY

ISO common name:	Spirotetramat
IUPAC name:	cis-3-(2,5-xylyl)-4-(ethoxycarbonyloxy)-8-methoxy-1-azaspiro[4.5]dec-3-en-2-one (ISO
Chemical Abstract name:	cis-3-(2,5-dimethylphenyl)-8-methoxy-2- oxo-1-azaspiro[4.5]dec-3-en-4-yl ethyl carbonate
CAS Index Name : (alternative)	Carbonic acid, cis-3-(2,5-dimethylphenyl)-8-methoxy-2-oxo-1-azaspiro[4.5]dec-3-en-4-yl ethyl ester
CAS No.:	203313-25-1
CIPAC No.:	795
Manufacturer's experimental name:	BYI 08330
Molecular Formula:	C21H27NO5
Structural Formula:	
Molecular Weight:	373.45 g/mol

PHYSICAL AND CHEMICAL PROPERTIES

Pure Active Ingredient (except as noted)

Physical-Chemical Property	Guideline and/or method	Test material purity and specification	Results	Reference
Melting point	EC A.1, OECD 102	BYI 08330, mix-batch 08045/0003, purity 99.2%	142 °C.	Franke, J.; 2004 M-063268-01-1

Physical-Chemical Property	Guideline and/or method	Test material purity and specification	Results	Reference
Boiling point	EC A.2, OECD 103	BYI 08330, mix-batch 08045/0003, purity 99.2%	Spirotetramat has no boiling point at atmospheric pressure. Spirotetramat decomposed at a temperature of 235 °C.	Franke, J.; 2004 M-063268-01-1
Relative Density	EC A.3, OECD 109	BYI 08330, mix-batch 08045/0003, purity 99.1%	Active substance, pure: 1.23 g/mL at 20 °C	Muehlberger, B., Lemke, G.; 2004 M-063293-01-1
Relative Density	EC A.3, OECD 109, OPPTS 830.7300	BYI 08330, PFV0586001 Purity 97.5%	Active substance, as manufactured: 1.22 g/mL at 20 °C	Bogdoll B., Lemke, G.; 2006 M-270041-01-1
Vapour pressure	EC A.4, OECD 104	BYI 08330, mix-batch 08045/0003, purity 99.2%	Extrapolated: 5.6×10^{-9} Pa for 20 °C 1.5×10^{-8} Pa for 25 °C 1.5×10^{-6} Pa for 50 °C	Franke, J.; 2004 M-066171-01-1
Henry's law constant	Calculation		Henry's law constants at 20 °C at different pH values: at pH 4: 6.24×10^{-8} Pa × $m^3 \times mol^{-1}$ at pH 7: 6.99×10^{-8} Pa × m^3 x mol^{-1} at pH 9: 1.09×10^{-7} Pa × $m^3 \times mol^{-1}$	Bogdoll, B.; 2005 M-262215-01-1
Description of the physical state and colour, purity of the ai. and of technical grade	OPPTS 830.6302, OPPTS 830.6303	BYI 08330, mix-batch 08045/0003, purity 99.1%	Active substance, pure: light beige powder	Muehlberger, B.; 2003 M-103239-01-1
	OPPTS 830.6302, OPPTS 830.6303	BYI 08330, PFV0586001, purity 97.5%	Active substance as manufactured: white powder	Bogdoll, B., Lemke, G.; 2006 M-270051-01-1
Solubility of purified active substance in water	EC A.6, OECD 105	BYI 08330, mix-batch 08045/0003, purity 99.1%	pH 4 33.5 mg/L at 20 °C pH 7 29.9 mg/L at 20 °C pH 9 19.1 mg/L at 20 °C The HPLC chromatograms show that the test item is unstable in aqueous solution at pH 9 (formation of a degradation product). The degradation does increase with longer stirring time.	Muehlberger, B., Strunk, B.; 2003 M-103256-01-1
	EC A.6, OECD 105, OPPTS 830.7840	BYI 08330, SPT0378-1, purity 99.4%	In distilled water: pH 6.0 - 6.3 33.4 mg/L at 20 °C	Bogdoll, B., Lemke, G.; 2006 M-270060-01-1

Physical-Chemical Property	Guideline and/or method	Test material purity and specification	Results	Reference
Solubility in organic solvents	EC A.6, OECD 105	BYI 08330, mix-batch 08045/0003, purity 99.1%	[g/L at 20 °C] ethanol 44 n-hexane 0.055 toluene 60 dichloromethane > 600 acetone 100 - 120 ethylacetate 67 dimethyl sulfoxide 200 - 300	Muehlberger, B., Eyrich, U.; 2004 M-122802-01-1
n-Octanol/water partition coefficient	EC A.8, OECD 117 (HPLC-method)	BYI 08330, mix-batch 08045/0003, purity 99.1%	pH 4 K_{ow} 324; log K_{ow} 2.5 pH7 K_{ow} 324; log K_{ow} 2.5 pH9 K_{ow} 316; log K_{ow} 2.5	Lemke, G., Muehlberger, B.; 2003 M-103244-01-1
	Flask Shaking Method	BYI 08330 Enol	pH5 log K_{ow} 2.0 pH7 log K_{ow} 0.3 pH 9 log K_{ow} -1.3	Eyrich, U.; Bogdoll, B; 2006 M-276091-01-2
Hydrolysis rate at pH 4, 7 and 9 under sterile and dark conditions	OECD 111, EPA 161-1, DACO 8.2.3.2, MAFF 8147	[Azaspirodecenyl-3-^{14}C]-cis-BYI 08330, radiochemical purity ≥ 99%, specific radioactivity 3.71 MBq/mg [Azaspirodecenyl-5-^{14}C]-cis-BYI 08330, radiochemical purity 98%, specific radioactivity 4.03 MBq/mg	BYI 08330 is hydrolytically labile under acidic, neutral and alkaline conditions at ambient temperature. The experimental half-lives of the test substance at pH 7 were 8.6 days (25 °C) and 13 days (20 °C). The test substance was unstable under acidic and alkaline conditions (half-lives of 32.5 days (25 °C) and 48 days (20 °C) at pH 4) and degraded with a half-life of 7.6 hours at pH 9 (25 °C). The hydrolytic degradation was strongly temperature dependent. One major degradation product occurred in the total pH range tested: BYI 08330-enol	Heinemann, O.; 2004 M-093124-01-2

Physical-Chemical Property	Guideline and/or method	Test material purity and specification	Results	Reference
Direct phototransformation in sterile water using artificial light	EPA 162-1, DACO 8.2.3.3.2	[Azaspirodecenyl-3-^{14}C]-BYI 08330, radiochemical purity > 98%, specific radioactivity 3.67 MBq/mg [Azaspirodecenyl-5-^{14}C]-BYI 08330, radiochemical purity > 98%, specific radioactivity 4.03 MBq/mg	Spirotetramat was degraded in sterile aqueous 0.01 M acetate buffer pH 5 under conditions of direct phototransformation. Four major phototransformation products were found and identified as products of re-arrangement reactions P6 was the main metabolite and increased to max. 39.2% of the AR at DAT-7; P7 was max. 22.1% at DAT-4; P8 increased to 11.1% after 3 days exposure to light and decreased then to 5.3% at the end; P9 was max. 18.2% of the AR at DAT-6. The experimental DT50 was 2.7 days for BYI 08330. Under dark conditions the half life under experimental conditions is 26 days (hydrolysis) and BYI 08330-enol is formed, only.	Stupp, H.-P.; 2005 M-266695-01-1
IIA 2.9.4 Lifetime in the top layer of aqueous systems (calculated and real)	ECETOC, EPA 161-2	BYI 08330, batch M26802, purity 99.2%	This point is covered by point IIA 2.9.3 and in more detail also considering natural water by point IIA 7.6.	Heinemann, O.; 2004 M-092941-01-2
	EPA 162-1, DACO 8.2.3.3.2	[Azaspirodecenyl-3-^{14}C]-BYI 08330, radiochemical purity > 98%, specific radioactivity 3.67 MBq/mg [Azaspirodecenyl-5-^{14}C]-BYI 08330, radiochemical purity > 98%, specific radioactivity 4.03 MBq/mg		Stupp, H-.P.; 2005 M-266753-01-1
Dissociation in water of purified active substance	OECD 112	BYI 08330, mix-batch 08045/0003, purity 99.1%	pKa = 10.7	Muehlberger, B., Eyrich, U.; 2005 M-261598-01-1

Physical-Chemical Property	Guideline and/or method	Test material purity and specification	Results	Reference
pH	OPPTS 830.7000	BYI 08330, batch SPT0378-1, purity 99.4%	Pure substance: 6.3 (1% solution)	Bogdoll, B., Lemke, G.; 2006 M-269907-01-1
		BYI 08330, batch PFV0586001, purity 97.5%	Technical substance: 6.3 (1% solution)	

Technical material

Spirotetramat has not been considered for a specification by the FAO/WHO JMPS.

Formulations

Two formulations are available for pre-harvest foliar application.

Formulation type	Active substance and content	Trade Name
OD (oil dispersion)	Spirotetramat 150 g/L	Movento
SC (soluble concentrate or flowable concentrate)	Spirotetramat 240 g/L	Movento
SC	Spirotetramat 150 g/L	Movento

METABOLISM AND ENVIRONMENTAL FATE

General

The radiolabel-compound studies for plant metabolism, livestock metabolism and confined rotational crop were conducted with the radiolabelled test material azaspirodecenyl-3-[^{14}C] spirotetramat, with the label position indicated by the asterisk (*) in the following structural formula:

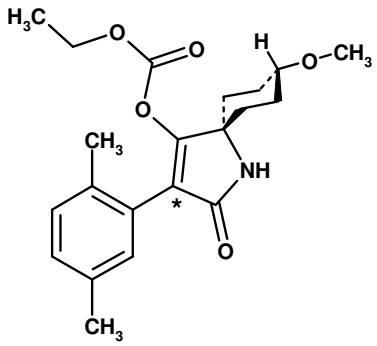
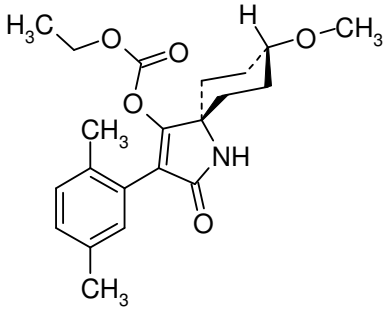
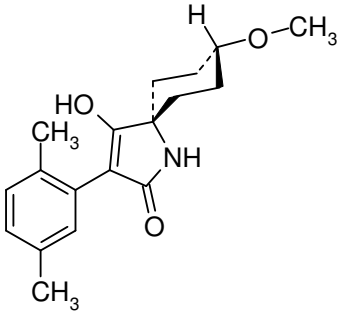
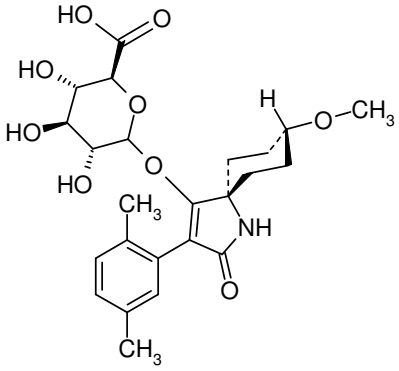
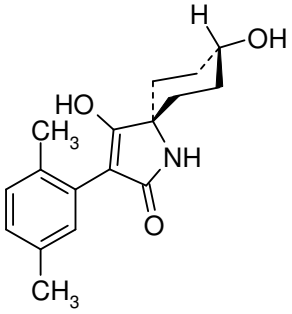
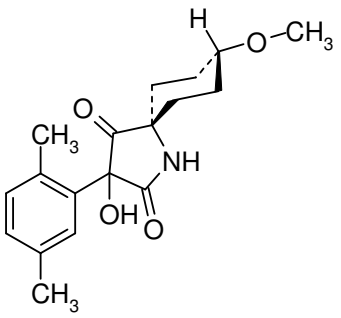
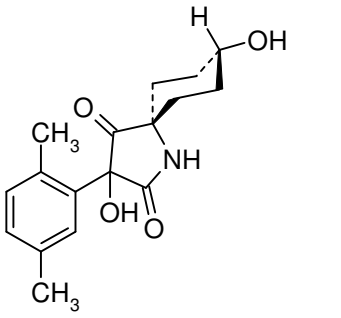
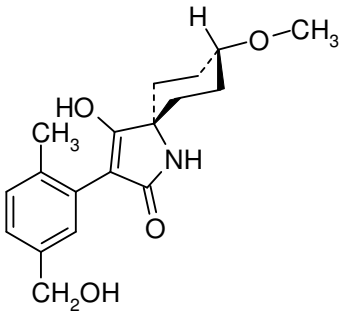
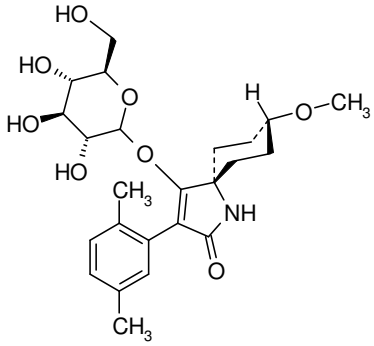


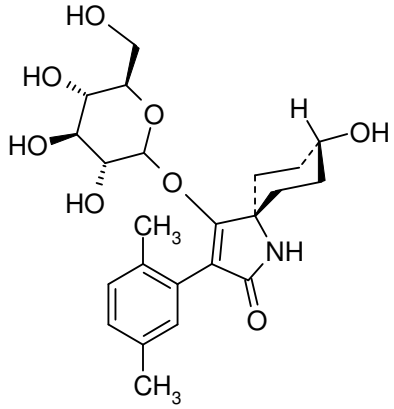
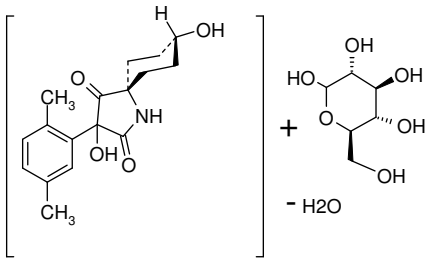
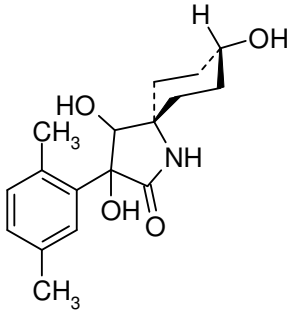
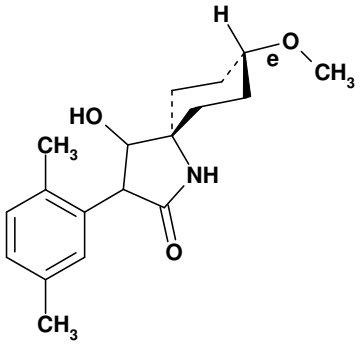
Table 1 summarizes the names, codes, and structures of the parent and principle metabolites found in plant, livestock, rat and rotational crop studies.

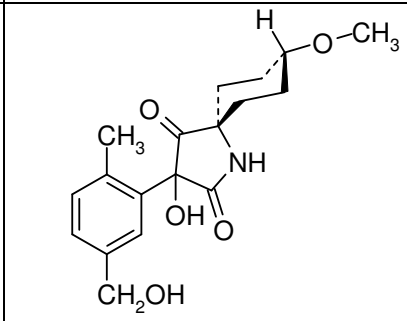
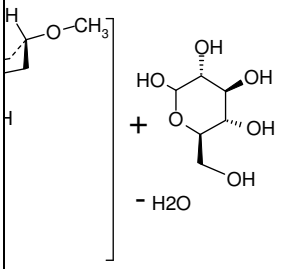
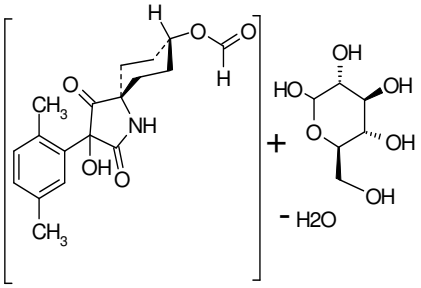
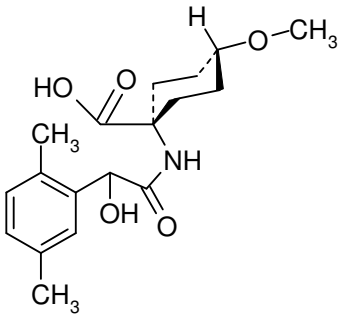
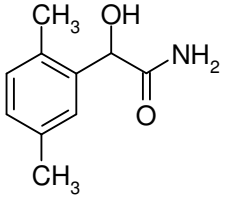
Table 1 Spirotetramat and metabolites/degradates found in metabolism and environmental fate studies.

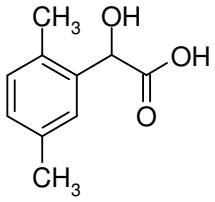
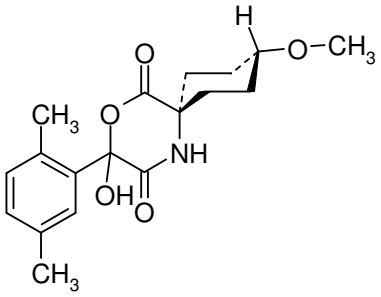
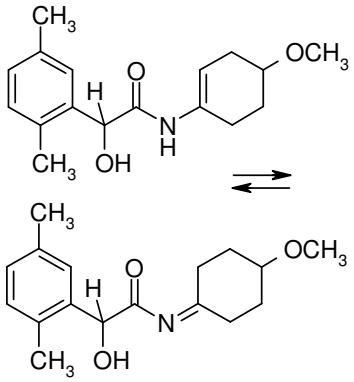
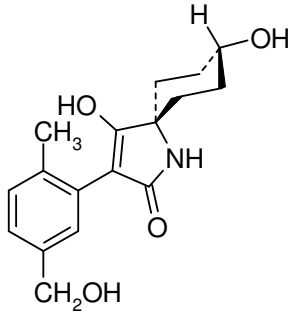
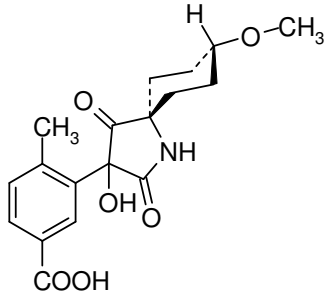
Abbreviation or Code	Chemical Structure	IUPAC Name	Found in
active substance: BYI08330		3-(2,5-dimethylphenyl)-8-methoxy-2-oxo-1-azaspiro[4.5]dec-3-en-4-yl ethyl carbonate	Rat Plant Soil
BYI08330-enol		3-(2,5-dimethylphenyl)-4-hydroxy-8-methoxy-1-azaspiro[4.5]dec-3-en-2-one	Rat Plant Livestock Rotational crop Soil
BYI08330-enol-GA		glucuronic acid conjugate of 3-(2,5-dimethylphenyl)-4-hydroxy-8-methoxy-1-azaspiro[4.5]dec-3-en-2-one	Rat Livestock
BYI08330-desmethyl-enol		3-(2,5-dimethylphenyl)-4,8-dihydroxy-1-azaspiro[4.5]dec-3-en-2-one	Rat Livestock Soil

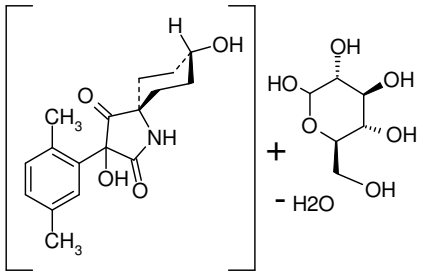
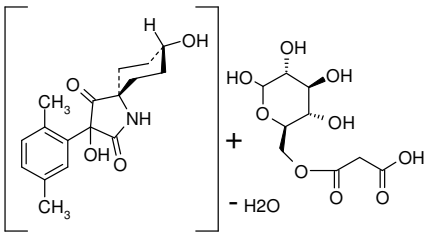
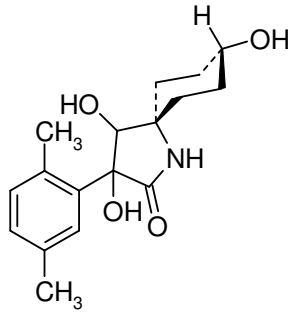
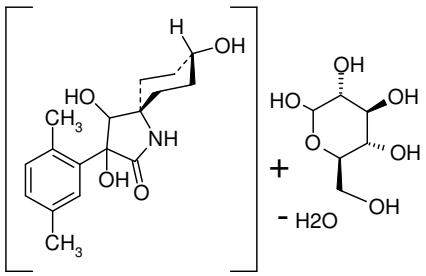
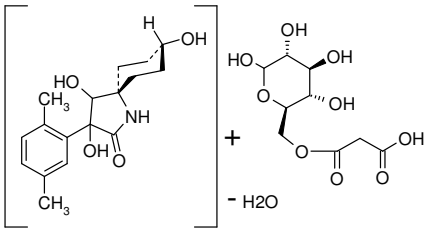
Abbreviation or Code	Chemical Structure	IUPAC Name	Found in
BYI08330-ketohydroxy		3-(2,5-dimethylphenyl)-3-hydroxy-8-methoxy-1-azaspiro[4.5]decane-2,4-dione	Rat Plant Livestock Rotational crop Soil
BYI08330-desmethyl-ketohydroxy		3-(2,5-dimethylphenyl)-3,8-dihydroxy-1-azaspiro[4.5]decane-2,4-dione	Rat Plant Rotational crop
BYI08330-enol-alcohol		4-hydroxy-3-[5-(hydroxymethyl)-2-methylphenyl]-8-methoxy-1-azaspiro[4.5]dec-3-en-2-one	Rat

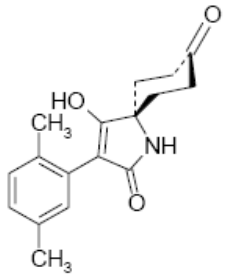
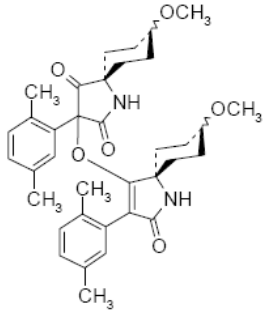
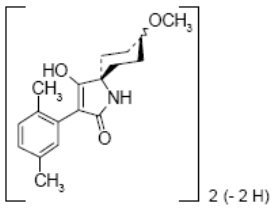
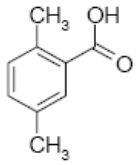
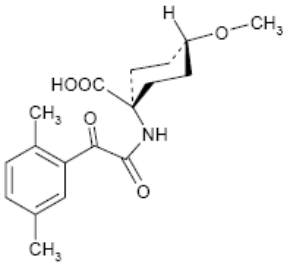
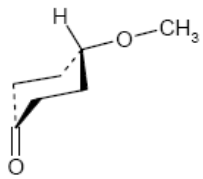
Abbreviation or Code	Chemical Structure	IUPAC Name	Found in
BYI 08330-enol-Glc		glucoside of 3-(2,5-dimethylphenyl)-4-hydroxy-8-methoxy-1-azaspiro[4.5]dec-3-en-2-one	Plant Rotational crop

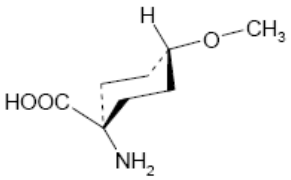
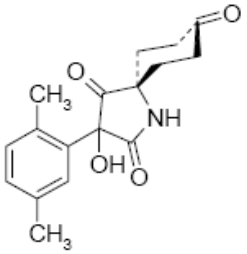
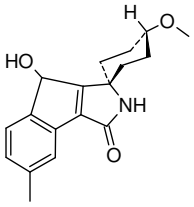
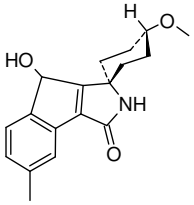
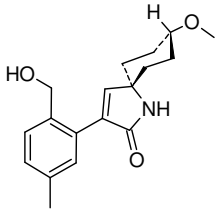
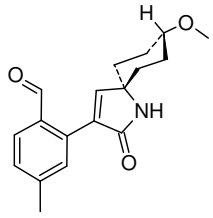
Abbreviation or Code	Chemical Structure	IUPAC Name	Found in
BYI 08330-desmethyl-enol-Glc		glucoside of 3-(2,5-dimethylphenyl)-4,8-dihydroxy-1-azaspiro[4.5]dec-3-en-2-one	Plant
BYI08330-desmethyl-ketohydroxy-glycoside(s)		glycoside isomers: cis-3-(2,5-dimethylphenyl)-8-hydroxy-2,4-dioxo-1-azaspiro[4.5]dec-3-yl hexopyranoside cis-3-(2,5-dimethylphenyl)-3-hydroxy-2,4-dioxo-1-azaspiro[4.5]dec-8-yl hexopyranoside	Plant
BYI 08330-dihydroxy		cis-3-(2,5-dimethylphenyl)-3,4,8-trihydroxy-1-azaspiro[4.5]decan-2-one	Plant Rotational crop
BYI08330-mono-hydroxy		cis-3-(2,5-dimethylphenyl)-4-hydroxy-8-methoxy-1-azaspiro[4.5]decan-2-one	Plant Livestock

Abbreviation or Code	Chemical Structure	IUPAC Name	Found in
BYI 08330-ketohydroxy-alcohol		cis-3-hydroxy-3-[5-(hydroxymethyl)-2-methylphenyl]-8-methoxy-1-azaspiro [4.5]decane-2,4-dione	Plant Rotational crop
BYI08330-ketohydroxy-alcohol-Glc		Glucoside of (5s,8s)-3-hydroxy-3-[5-(hydroxymethyl)-2-methylphenyl]-8-methoxy-1-azaspiro[4.5]decane-2,4-dione	Plant Rotational crop
BYI08330-ketohydroxy-formiate-glycoside		cis-3-(2,5-dimethylphenyl)-3-(hexopyranosyloxy)-2,4-dioxo-1-azaspiro [4.5]dec-8-yl formate	Plant
BYI 08330-MA-amide		1-{[(2,5-dimethylphenyl) (hydroxy)acetyl]amino}-4-methoxycyclohexane-carboxylic acid	Plant Soil
BYI 08330-mandelic acid amide		2-(2,5-dimethylphenyl)-2-hydroxyacetamide	Plant

Abbreviation or Code	Chemical Structure	IUPAC Name	Found in
BYI 08330-mandelic acid		(2,5-dimethylphenyl)(hydroxy) acetic acid	Plant Rotational crop
BYI 08330-hydroxymorpholinedion		3-(2,5-dimethylphenyl)-3-hydroxy-9-methoxy-4-oxa-1-azaspiro[5.5]undecane-2,5-dione	Plant
BYI 08330-olefin		2-(2,5-dimethylphenyl)-2-hydroxy-N-(4-methoxycyclohex-1-en-1-yl)acetamide or 2-(2,5-dimethylphenyl)-2-hydroxy-N-(4-methoxycyclohexylidene)acet-amide	Plant
BYI08330-desmethyl-enol-alcohol		(5s,8s)-4-hydroxy-3-[5-(hydroxy)-2-methylphenyl]-8-methoxy-1-azaspiro[4.5]dec-3-en-2-one	Rotational crop
BYI08330-ketohydroxy-carboxylic acid		3-[(5s,8s)-3-hydroxy-8-methoxy-2,4-dioxo-1-azaspiro[4.5]dec-3-yl]-4-methylbenzoic acid detected after acidic hydrolysis of extracts	Rotational crop

Abbreviation or Code	Chemical Structure	IUPAC Name	Found in
BYI08330-desmethyl-ketohydroxy-Glc		Glucosides of (5s,8s)-3-(2,5-dimethylphenyl)-3,8-dihydroxy-1-azaspiro[4.5]decane-2,4-dione two isomers (1 and 2) detected	Rotational crop
BYI08330-desmethyl-ketohydroxy-Glc-MA		Glucosyl-malonic acid conjugate of (5s,8s)-3-(2,5-dimethylphenyl)-3,8-dihydroxy-1-azaspiro[4.5]decane-2,4-dione two isomers (1 and 2) detected	Rotational crop
BYI08330-desmethyl-di-hydroxy		(5s,8s)-3-(2,5-dimethylphenyl)-3,4,8-trihydroxy-1-azaspiro[4.5]decan-2-one	Rotational crop
BYI08330-desmethyl-di-hydroxy-Glc		Glucoside of (5s,8s)-3-(2,5-dimethylphenyl)-3,4,8-trihydroxy-1-azaspiro[4.5]decan-2-one	Rotational crop
BYI08330-desmethyl-di-hydroxy-Glc-MA		Glucosyl-malonic acid conjugate of (5s,8s)-3-(2,5-dimethylphenyl)-3,4,8-trihydroxy-1-azaspiro[4.5]decan-2-one	Rotational crop

Abbreviation or Code	Chemical Structure	IUPAC Name	Found in
BYI08330-oxo-enol		:3-(2,5-dimethylphenyl)-4-hydroxy-1-azaspiro[4.5]dec-3-ene-2,8-dione	Soil
BYI08330-oxo-enol enol-dimer 1			Soil
BYI08330-oxo-enol enol-dimer 2			Soil
Dimethyl benzoic acid			Soil (photolysis)
BYI08330-glyocylic amide		1s,4s)-1-{[(2,5-dimethylphenyl)(oxo)acetyl]amino}-4-methoxycyclohexanecarboxylic acid	Soil Soil (photolysis)
4-Methoxy cyclohexanone			Soil (photolysis) Water (photolysis)

Abbreviation or Code	Chemical Structure	IUPAC Name	Found in
4-Methoxy-cyclohexyl-aminocarboxylic acid			Water (photolysis)
BYI08330-oxo-ketohydroxy		3-(2,5-dimethylphenyl)-3-hydroxy-1-azaspiro[4,5]decane-2,4,8-trione	Soil
BYI08330-photo-2-methylcarbonate		ethyl 2-[(5s,8s)-8-methoxy-2-oxo-1-azaspiro[4.5]dec-3-en-3-yl]-4-methylbenzyl carbonate	Water (photolysis)
BYI08330-photo-cyclopentyl		(1s,4s)-8'-hydroxy-4-methoxy-5'-methyl-2'H-spiro[cyclohexane-1,1'-indeno[1,2-c]pyrrol]-3'(8'H)-one	Water (photolysis)
BYI08330-photo-2-hydroxy-methyl		(5s,8s)-3-[2-(hydroxymethyl)-5-methylphenyl]-8-methoxy-1-azaspiro[4.5]dec-3-en-2-one	Water (photolysis)
BYI08330-photo-2-formyl		2-[(5s,8s)-8-methoxy-2-oxo-1-azaspiro[4.5]dec-3-yl]-4-methylbenzaldehyde	Water (photolysis)

Animal Metabolism

Metabolism in Goats

A study on the metabolism of spirotetramat (BYI08330) in a lactating goat was conducted with the radiolabelled test material [azaspirodecenyl-3-^{14}C]-spirotetramat (M-269256-01-02**,** Koester and Klempner, 2006).

A lactating goat ("Weiße Deutsche Edelziege" species, weighing 45.0 kg at first administration and 46.2 kg at sacrifice) was given by gavage 4 daily oral administrations of [azaspirodecenyl-3-^{14}C]spirotetramat at a mean dose rate of 2.22 mg/kg bw/day (73 ppm in the diet). The goat was milked

in the morning immediately prior to each administration, about 8 h later in the afternoon and directly before sacrifice 24 h after the final dose. Milk samples were weighed and aliquots were analysed by LSC. Two final extracts of milk were obtained for each sample which was analysed separately by HPLC. Milk samples were stored at -18 °C for metabolite analysis.

The urine fractions were collected under dry ice cooling at intervals of 24 h after the first, second and third administration and at 24 h after the fourth administration (at sacrifice). Urine samples were analysed directly without further preparatory procedures. Aliquots of urine were radioassayed by LSC. The faeces fractions were collected at room temperature at intervals of 24 h after the first, second and third administration and at sacrifice. Each fraction was homogenized following lyophilisation and the total dry weight was recorded. Aliquots of each faeces sample were prepared for radioactivity measurement by combustion/LSC. Samples were stored at room temperature for metabolite analysis.

Following sacrifice, the following organs and tissues were sampled: liver without gall bladder, kidney, three different types of muscle (round, flank and loin) and three different types of fat (perirenal, omental and subcutaneous) and the gall bladder.

Liver, kidney, fat and muscle samples were homogenized 4–5 times in a half-frozen state. Aliquots of the resulting tissue pulp were weighed, freeze-dried, weighed again and homogenized prior to radioactivity measurement by combustion/LSC. Perirenal and omental fat also underwent the determination of total radioactivity by LSC after solubilisation of tissues. The gall bladder was dissected from the liver and punctured for the collection of bile.

Samples were extracted 3–4 times with acetonitrile (ACN): water. Extracts were combined and defatted by reversed-phase solid-phase extraction (SPE). Flow-through fraction and rinse solution were combined and concentrated. In the case of fat and kidney, the concentrates were directly analysed by HPLC. All other concentrated aqueous extracts were further purified by partition and SPE clean-up procedures. In the case of liver, two final extracts were obtained for each sample and were analysed separately by HPLC.

HPLC methods were used for the analysis, quantification and isolation of the parent compound and metabolites from the milk, muscle, fat, liver, kidney and faeces extracts and from urine and bile samples. For HPLC co-chromatography, the sample was mixed with reference items before injection. Detection was carried out by UV absorbance of the non-radiolabelled compound or by ^{14}C-detection of the radiolabelled reference substance. Chromatographic correspondence with the non-radiolabelled reference substance was assessed through comparison of the UV-trace and the associated ^{14}C-trace of the mixture, accounting for the time delay between the radioactivity and UV-absorbance detector. Chromatographic correspondence with the radiolabelled reference compound was assessed by comparison of the ^{14}C-chromatogram of the reference compound with the ^{14}C-chromatogram of the sample with and without the reference compound.

TLC co-chromatography was used for confirmation of metabolites in isolated HPLC fractions. MS was used to confirm the identity of the radiolabelled test item and of metabolites isolated from urine. LC- nuclear-magnetic resonance (NMR)-MS spectroscopy was also performed on some extracts.

The total radioactive residues measured in milk, tissues and excreta are summarized in Table 2

Table 2 Total radioactive residues in milk, tissues, and excreta

Matrix	Collection Timing (hrs after 1st dose)	[Azaspirodecenyl-3-^{14}C] Spirotetramat	
		% AD[a]	mg/kg
Urine	24	11.65	--
	48	24.91	--
	72	21.89	--
	96 (sacrifice)	19.98	--

Matrix	Collection Timing (hrs after 1st dose)		[Azaspirodecenyl-3-^{14}C] Spirotetramat	
			% AD[a]	mg/kg
% Total in Urine (cumulative excretion)			78.43	
Faeces	24		3.39	--
	48		1.83	--
	72		2.54	--
	96 (sacrifice)		3.80	--
% Total in Faeces (cumulative excretion)			11.56	
Muscle-Round	sacrifice		--	0.011
Muscle-Flank			--	0.009
Muscle-Loin			--	0.008
Total body muscle [2]			0.0377	0.011
Fat-Perirenal	sacrifice		--	0.003
Fat-Subcutaneous			--	0.008
Fat-Omental			--	0.003
Total Body Fat [b]			0.0046	0.005
Kidney	sacrifice		0.0057	0.184
Liver	sacrifice		0.0128	0.0496
% Total in tissues			0.0608	
Milk	0	1st dose	--	--
	8		0.0019	0.0113
	24	2nd dose	0.0009	0.0038
	32		0.0024	0.0150
	48	3rd dose	0.0013	0.0053
	56		0.0032	**0.0261**
	72	4th dose	0.0012	0.0061
	80		0.0022	0.0140
	96		0.0009	0.0039
% Total in Milk (per period)			0.014	
Plasma	0.25	1st dose	--	0.267
	0.5		--	0.341
	1		--	0.390
	2		--	0.303
	3		--	0.286
	4		--	0.277
	6		--	0.212
	8		--	0.172
	24	2nd dose	--	0.0218
	32		--	0.196
	48	3rd dose	--	0.026
	56		--	0.107
	72	4th dose	--	0.016
	80		--	0.117
	96		--	0.0203
Sum of Administered Dose (%)			90.06	

[a] Percent values were based on the radioactivity totally administered.

[b] Values were calculated from the body weight, assuming 30% and 12% of the body weight for total body muscle and total body fat, respectively

Table 3 summarizes the identification and characterization of the radioactive residue in milk and tissues, 87.6% TRR in urine (pool sample 0–96 h) consisted of BYI 08330-enol, 6.4% BYI08330-enol-GA and 3.3% BYI08330-desmethyl-enol. In faeces collected on day 4, 73.5% TRR was identified as BYI08330-enol, 16.8% BYI08330-keto-hydroxy and 4.8% BYI08330 desmethyl-enol.

Table 3 Characterization/Identification of Radioactive Residues in Goat Matrices Following Application of ^{14}C-Spirotetramat at 2.2 mg/kg bw for 4 consecutive days.

Compound	Muscle		Fat		Liver		Kidney		Milk (day 4 pool)[b]	
	TRR = 0.011 mg/kg		TRR = 0.003 mg/kg		TRR = 0.050 mg/kg		TRR = 0.184 mg/kg		TRR = 0.008 mg/kg	
	% TRR	mg/kg	% TRR	mg/kg	% TRR	mg/kg	% TRR	mg/kg	% TRR	mg/kg
Spirotetramat (BYI08330)	--	--	--	--	--	--	--	--	--	--
BYI 08330-enol-GA	--	--	**19.4**	0.001	**37.4**	0.019	**14.2**	0.026	**23.9**	0.002
BYI 08330-desmethyl-enol	7.4	0.001	--	--	6.6	0.003	4.4	0.008	7.9	0.001
BYI 08330-mono-hydroxy	--	--	--	--	4.1	0.002	--	--	2.3	< 0.001
BYI 08330-enol	**72.4**	0.008	**59.9**	0.002	**33.7**	0.017	**78.4**	0.144	**48.8**	0.004
BYI 08330-ketohydroxy	9.7	0.001	--	--	2.7	0.001	2.1	0.004	2.3	< 0.001
Unknown	--	--	--	--	10.7	0.005	0.9	0.002	14.9	0.001
Total identified	89.6	0.010	79.3	0.002	84.3	0.042	99.1	0.182	85.1	0.007
Total characterized	--	--	--	--	10.7[c]	0.005	0.9	0.002	14.9[d]	0.001
Total extractable	89.6	0.10	79.3	0.002	95.0	0.047	100	0.184	100	0.008
Unextractable – PES[a]	--	--	20.7	0.001	4.7	0.002	--	--	--	--
Accountability	100	0.011	100	0.003	100	0.05	100	0.184	100	0.008

[a] Post extraction solid

[b] The composition of metabolites differed only slightly between milk pools, with the day-4 milk pool containing slightly more BYI 08330-enol-GA and slightly less BYI 08330-enol.

[c] One minor polar metabolite was detected at 0.9% of the TRR (0.002 mg/kg).

[d] Five minor metabolites were detected but not identified due to the low residue levels (14.9% of the TRR < 0.001 mg/kg).

The proposed scheme for the metabolism of spirotetramat in the goat is given in Figure 1.

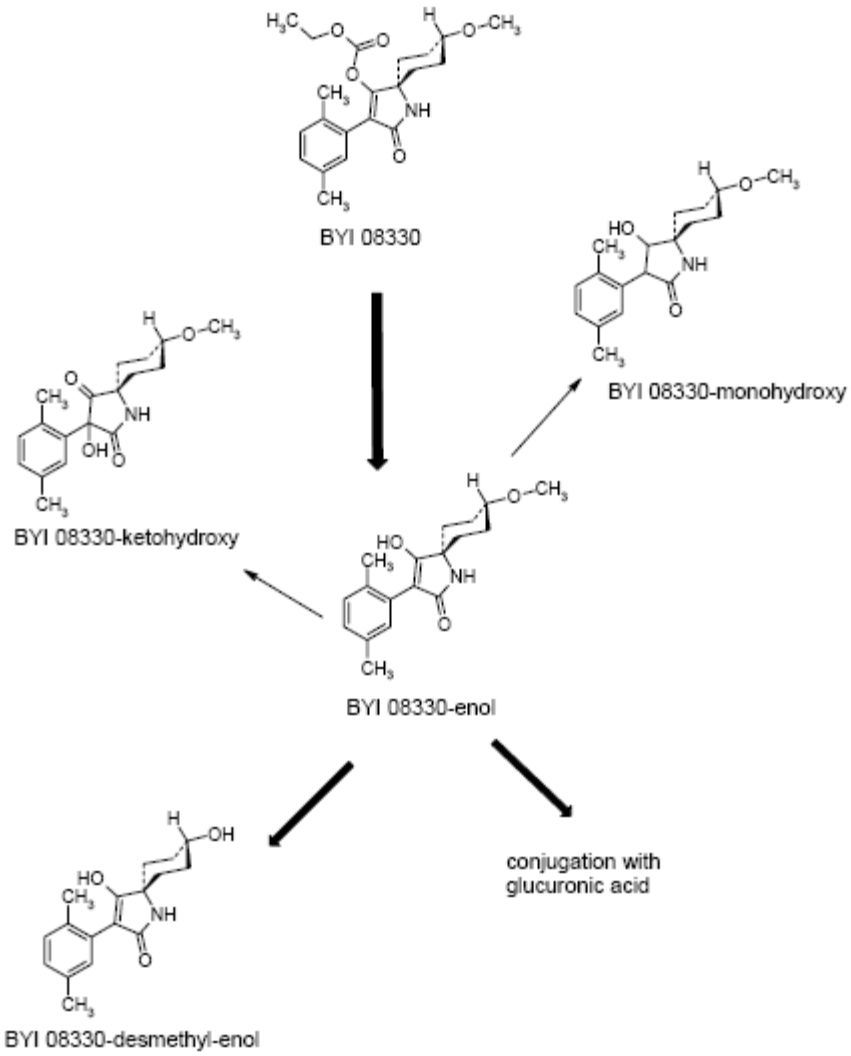


Figure 1Proposed metabolic profile of spirotetramat in goats

Metabolism in Poultry

A study on the metabolism of BYI08330 in laying hens was conducted with [azaspirodecenyl-3-^{14}C] spirotetramat (M-268574-01-2, Koester and Klempner, 2006). Six laying hens were administered 14 oral doses (1 per day) of [azaspirodecenyl-3-^{14}C]spirotetramat at a daily dose rate of 1.01 mg/kg bw/day (12.9 ppm in the diet).

Eggs were collected once daily (in the morning before administration). The eggshells were discarded, and the white and yolk were weighed then thoroughly mixed. An aliquot sample of each egg mix was taken for the determination of the total radioactivity in triplicate by LSC. The residual amount of the egg-mix from all chickens was stored at approximately18 °C in a freezer.

The faecal-urine excreta were collected individually from the collecting tins at room temperature at intervals of 24 h until sacrifice. Following freeze-drying and homogenisation, the total weight of the samples was recorded. From one aliquot each, the radioactivity was determined by combustion / LSC. The remaining sample amount was stored at room temperature for metabolite analysis.

The treated hens were weighed and sacrificed approximately 24 h after the last (14th) dosage. The following organs and tissues were prepared immediately after sacrifice: liver without the bile bladder, kidney, leg and breast muscle, skin without subcutaneous fat, subcutaneous fat, eggs from the ovary and oviduct and gall bladder.

Liver, kidney, muscle samples and subcutaneous fat as well as eggs dissected from the ovary and oviduct were thoroughly homogenised in half-frozen state. An aliquot of each resulting tissue pulp was weighed, freeze-dried, weighed again, homogenised and determined triply for radioactivity by combustion following LSC. Aliquots of subcutaneous fat and skin without fat were weighed and solubilised with tissue solubiliser and measured for radioactivity by LSC.

All samples were divided into equal portions and stored at approximately 18 °C in a freezer until start of metabolite analysis. Corresponding samples of all hens were pooled prior to extraction and analysis. The TRR of each pool were determined by combustion/LSC (solid samples) or direct LSC (e.g., combined eggs and extracts).

Each pooled tissue type was extracted 3–4 times with ACN water. The extracts of each pooled sample were combined and cleaned-up using reverse-phase SPE. Flow through fractions and rinse solution of each sample were combined and concentrated prior to HPLC analysis.

All extracts were analysed by radio-HPLC using a reverse-phase HPLC method for qualitative and quantitative evaluation. Metabolite identification was carried out via HPLC co-chromatography with reference standards. Chromatographic correspondence with non-radiolabelled reference standards was assessed by comparison of the UV-trace and the associated ^{14}C-trace of the mixture, taking into account the time delay between the radioactivity and the UV-absorbance detector. Normal-phase TLC co-chromatography was applied as a second method. For this, aliquots of extracts were fractionated using HPLC method BYI08330-4. Collected peak fractions were concentrated to the aqueous remainder and reanalysed with the same method to prove the purity and stability of the metabolites. Individual peak fractions were subsequently analysed by TLC co-chromatography together with the respective reference items. MS was used to confirm identities.

Table 4 summarizes the radioactivity concentrations (as spirotetramat) measured in eggs and tissues.

Table 4 TRR in eggs and tissues (M-268574-01-2)

Matrix	Hen No.						Mean
	812	813	814	815	816	817	
	TRR (mg equivalents/kg)						
Liver	0.0153	0.0110	0.0185	0.0345	0.0131	0.0121	0.0174
Kidney	0.0160	0.0137	0.0430	0.1074	0.0287	0.0242	**0.0388**
Eggs from ovary/oviduct	0.0183	0.0183	0.0202	0.0208	0.0210	0.0181	0.0194
Muscle (leg)	0.0025	0.0026	0.0040	0.0053	0.0039	0.0025	0.0034
Muscle (breast)	0.0020	0.0019	0.0035	0.0052	0.0033	0.0018	0.0030
Total body muscle[a]	0.0023	0.0023	0.0037	0.0053	0.0036	0.0022	0.0032
Skin without fat	0.0068	0.0062	0.0114	0.0161	0.0087	0.0059	0.0092
Fat (subcutaneous)	0.0035	0.0029	0.0040	0.0061	0.0034	0.0030	0.0038
Eggs							0.015[b]

[a] Values are calculated from the body weights, assuming 40%, 12% and 4% of body weight for total body muscle, fat or skin (without subcutaneous fat)

[b] Mean of egg pool (day 2-14)

Low equivalent concentrations from 0.0005 to 0.0173 mg/kg were measured in the pooled egg samples from various days. The TRR reached a level of 0.0125 mg/kg 2 days after the first

administration and increased to 0.014 mg/kg until day 6 and 0.016 mg/kg for day 7 to day 14. See Figure 2.

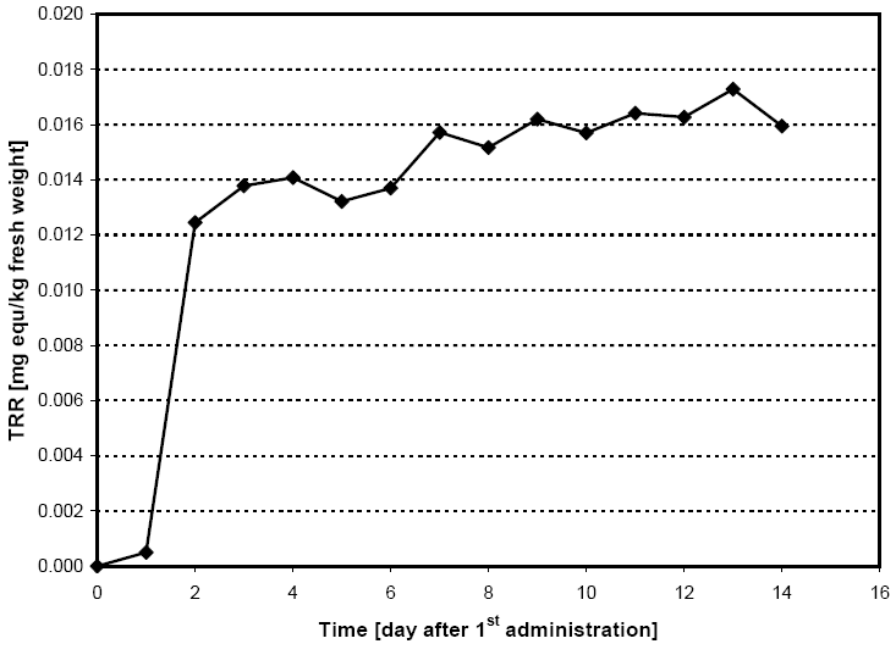


Figure 2 TRR-values in the eggs of the laying hens after oral administration of a mean dose of 1.01 mg [azaspirodecenyl-3-^{14}C]spirotetramat /kg bw for 14 consecutive days (M-268574-01-2)

Table 5 summarizes the characterization and identification of the radioactive residue in eggs and tissues. In excreta, the metabolite BYI08330-enol was detected as the major compound (72.4% of the TRR). BYI08330-enol-GA, BYI08330-desmethyl-enol and BYI08330-ketohydroxy were identified as minor components with approximately 4–5% of the TRR, each.

Table 5 Characterization and identification of radioactive residues in poultry matrices following application of radiolabelled spirotetramat at 1.01mg/kg bw for 14 consecutive days (M-268574-01-2)

Compound	Muscle		Fat		Liver		Eggs	
	TRRs = 0.003 mg/kg		TRRs = 0.004 mg/kg		TRRs = 0.017 mg/kg		TRRs = 0.015 mg/kg	
	% TRR	mg/kg	% TRR	mg/kg	% TRR	mg/kg	%TRR	mg/kg
Spirotetramat	--	--	--	--	--	--	--	--
BYI 08330-enol-GA	4.2	< 0.001	--	--	15.1	0.003	6.9	0.001
Unknown 1	6.9	< 0.001	--	--	3.6	0.001	4.7	0.001
BYI 08330-enol	**64.4**	0.002	**18.4**	0.001	**50.0**	0.009	**83.9**	0.013
Unknown 2[c]	--	--	56.5	0.002	--	--	--	--
Total identified	68.6	0.002	18.4	0.001	65.1	0.011	90.8	0.014
Total characterized	6.9	< 0.001	56.5	0.002	3.6	0.001	4.7	0.001
Total extractable	75.6	0.002	74.9	0.003	68.6	0.012	95.5	0.014
Unextractable (PES)[a]	24.4	0.001	25.1	0.001	30.0	0.005	4.5	0.001
Accountability [b]	100	0.003	100	0.004	98.6	0.017	100	0.015

[a] Residues remaining after exhaustive extractions

[b] Accountability = (Total extractable + Total unextractable)/(TRRs from combustion analysis) × 100.

[c] Characterised as a conjugate of unknown polar compounds by alkaline hydrolysis and tentatively assigned as a fatty

acid conjugate of BYI08330-enol due to its elution behaviour in chromatography.

The proposed metabolic pathway of spirotetramat in poultry is given in Figure 3.

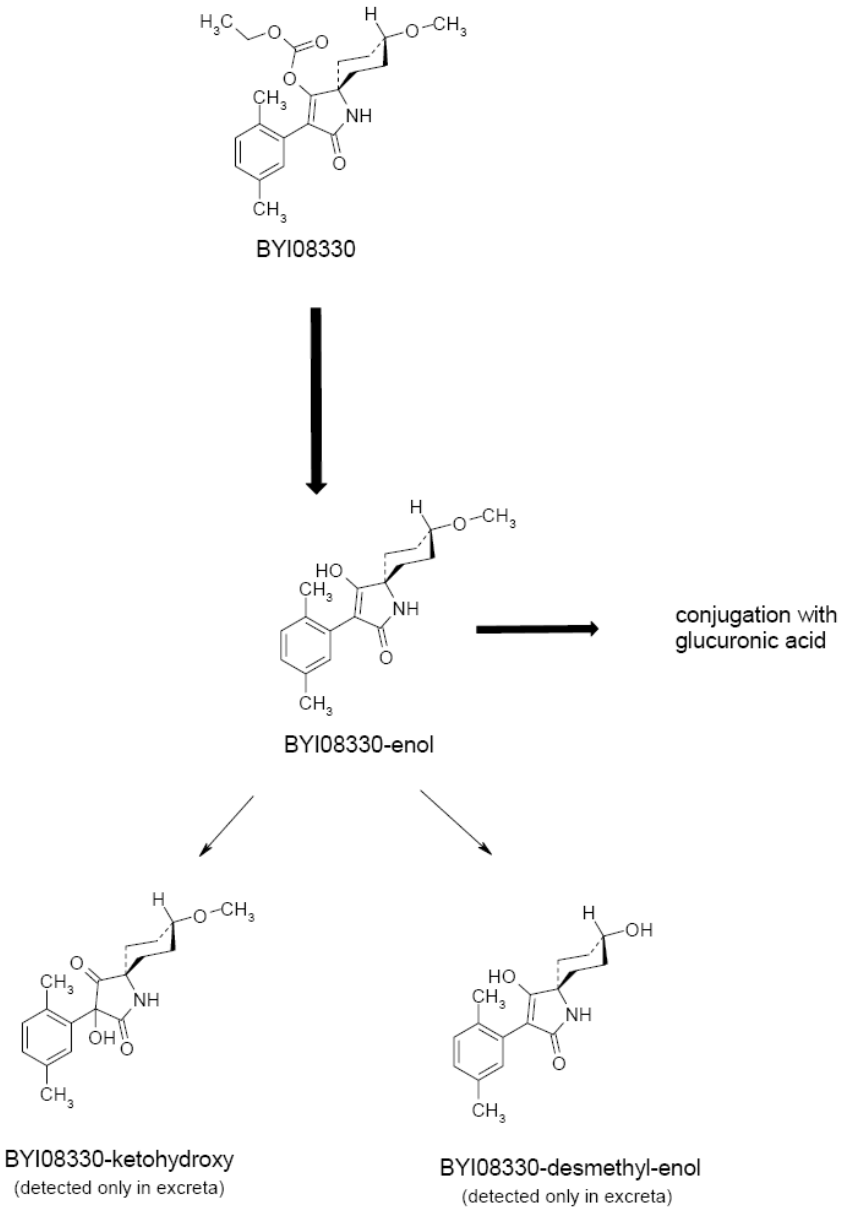


Figure 3 Proposed metabolic profile of spirotetramat in laying hens

Metabolism in Rat

In a metabolism study, four groups of 4 male and 4 female Wistar rats were administered a single gavage dose of [azaspirodecenyl-3-^{14}C]spirotetramat and non-labelled spirotetramat at target doses of 2 or 200 mg/kg bw (M01819128, Klempner, A., 2006). Spirotetramat was completely metabolized by the rat, with no parent compound found in the excreta. Identified metabolites accounted for ≥ 87% of the administered dose. The major metabolite was BYI 08330-enol, about 53–87% of the administered dose. The second most abundant metabolite was BYI 08330-desmethyl-enol, at 5–37% of the administered dose. Minor metabolites included BYI08330-ketohydroxy, BYI08330-desmethyl-ketodroxy, BYI08330-enol-GA and BYI08330-enol-alcohol.

Plant Metabolism

Apple

The Meeting received a report on the metabolism of [Azaspirodecenyl-3-^{14}C]spirotetramat in apple after spray application (MO-05-002993, M-244824-01-2**,** Haas and Henk. 2005). Two spray applications of [azaspirodecenyl-3-^{14}C]spirotetramat in an oil dispersion (OD 100) formulation at a target rate of 576 g as/ha/application were made. The actual total application rate was 1100 g as/ha. Mature apple fruit and leaves were collected at 63 days following the final application. The first application occurred at BBCH growth stage 69 (after fruit setting) and the second application occurred 20 days later at BBCH growth stage 71 (fruit fall after flowering).

Whole apple fruits were washed with dichloromethane, and the surface wash was analysed by LSC. The extract was concentrated and analysed by HPLC).

The solvent-washed apple fruits were homogenized and stored frozen until analysis. An aliquot of the homogenized sample was extracted three times with ACN/water (4:1, v/v). The extracts were radio assayed by LSC, combined, concentrated to an aqueous remainder, and analysed by HPLC.

Leaves were weighed and stored at -20 °C until analysis. An aliquot of the homogenized leaf was extracted three times with ACN/water (4:1, v/v). The extracts were radio assayed, combined and concentrated to the aqueous remainder. The aqueous remainder was partitioned against dichloromethane and the organic and aqueous phases were radio assayed by LSC, concentrated, and analysed by HPLC.

The distribution of the radioactive residue in the washes and extracts is summarized in Table 6.

Table 6 Extractability of radioactive residues in apple fruits and leaves

Fraction	Apple Fruit		Apple Leaves	
	% TRR	mg/kg	% TRR	mg/kg
Dichloromethane (Surface Wash)	48.5	0.30	-	-
ACN/Water extract	49.5	0.31	94.6	34.6
Extracted Solids	2.1	0.01	5.4	1.97
Total (as sum of above)	100	0.61	100	36.6

Extracts were filtered and concentrates were centrifuged prior to analysis by HPLC and TLC. Some metabolites in extracts were identified by co-chromatography with authentic reference compounds or ^{14}C-labelled metabolites obtained from cell cultures.

Radiolabelled metabolites were obtained from the dichloromethane and aqueous phases after extraction and partitioning of the apple fruits and leaves. Isolation of the single compounds was achieved applying semi-preparative HPLC. Fractions containing the purified metabolites were concentrated and subjected to structure elucidation by performing HPLC-mass spectrometry (MS)/MS, ^{1}H-nuclear magnetic resonance (NMR) and/or Fourier Transform (FT)-MS experiments.

The distribution of metabolites in the washes and extracts and the identification and characterization of the radioactive residues are summarized in Tables 7 and 8, respectively.

Table 7 Distribution of the parent and the metabolites in apple matrices from trees treated with ^{14}C-labeled spirotetramat at 2 × 576 g as/ha/, 63 day PHI

Metabolite Fraction	Apple Fruit		Apple Leaves	
	TRR = 0.61 mg/kg		TRR = 36.6 mg/kg	
	%TRR	mg/kg	%TRR	mg/kg
Organosoluble (Surface wash)	48.5	0.30	n/a	n/a
Spirotetramat (BYI08330)	48.5	0.30	ND[a]	ND
Soluble (ACN/Water phase)	49.5	0.31	94.6	34.6
Spirotetramat (parent)	2.8	0.02	72.0	26.37
BYI 08330-ketohydroxy	7.7	0.05	3.0	1.09
BYI 08330-enol	2.1	0.01	11.6	4.26
BYI 08330-mono-hydroxy	15.6	0.10	ND	ND
BYI 08330-desmethyl-ketohydroxy	3.8	0.02	ND	ND
BYI 08330-di-hydroxy	4.4	0.03	ND	ND
BYI 08330-desmethyl-ketohydroxy-glucoside (isomers), in leaves also +BYI 08330-ketohydroxy-formiate-glycoside	1.9	0.01	8.0	2.92
BYI 08330-enol-glycoside	5.1	0.03	ND	ND
Unidentified compound A1	1.4	0.01	ND	ND
Unidentified compound A3	2.2	0.01	ND	ND
Unidentified compound A4	1.2	0.01	ND	ND
Unidentified compound A5	1.2	0.01	ND	ND

[a] Not detected.

Table 8: Characterization and identification of radioactive residues in apple matrices following target application of radiolabelled spirotetramat at 2 × 576 g as/ha, 63 day PHI

Compound	Apple Fruit		Apple Leaves	
	TRR = 0.61 mg/kg		TRR = 36.6 mg/kg	
	% TRR	mg/kg	% TRR	mg/kg
Spirotetramat (BYI08330)	**51.3**	0.32	**72.0**	26.4
BYI 08330-ketohydroxy	7.7	0.05	3.0	1.09
BYI 08330-enol	2.1	0.01	11.6	4.26
BYI 08330-mono-hydroxy	**15.6**	0.10	ND[c]	ND
BYI 08330-desmethyl-ketohydroxy	3.8	0.02	ND	ND
BYI 08330-di-hydroxy	4.4	0.03	ND	ND
BYI 08330-desmethyl-ketohydroxy-glucoside (isomers), in leaves also +BYI 08330-ketohydroxy-formiate-glycoside	1.9	0.01	8.0	2.92
BYI 08330-enol-glycoside	5.1	0.03	ND	ND
Total identified	91.9	0.57	94.6	34.6
Total characterized	6.0	0.04	ND	ND
Total extractable	98.0	0.60	94.6	34.6
Unextractable (PES)[a]	2.1	0.01	5.4	1.97
Accountability [b]	100.0	0.61	100.0	36.6

[a] Residues remaining after extractions; post extraction solid.

[b] Accountability = (Total extractable + Total unextractable)/(TRR from combustion analysis) X 100.

[c] Not detected.

The proposed metabolic pathway for spirotetramat on apples is given in Figure 4.

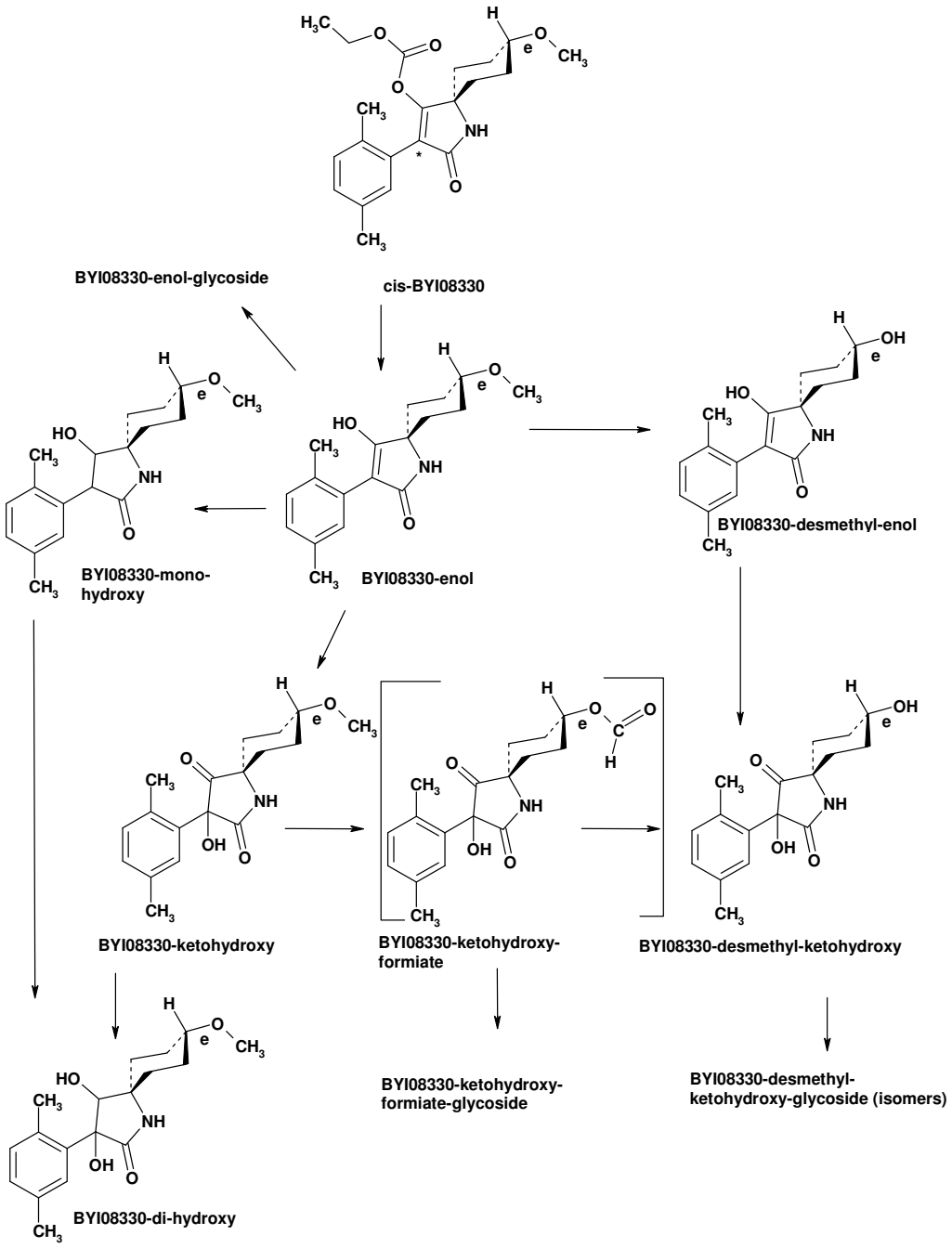


Figure 4 Proposed metabolic pathways of [azaspirodecenyl-3-^{14}C] BYI08330 in apples

Cotton

The Meeting received a study report on the metabolism of [Azaspirodecenyl-3-^{14}C]spirotetramat in foliar application to cotton (M-269105-01-2, Spiegel, K., 2006). Two spray applications of [azaspirodecenyl-3-^{14}Cspirotetramat formulated as a suspension concentrate (240 SC) at target application rates of 96 g as/ha and 216 g as/ha for the first and second applications, respectively, with 134 days between applications were made. The actual total application rate was 264 g as/ha, or 91.7 g ai/ha (1st application) and 172 g ai/ha (2nd application). The cotton plants were grown under artificial light in a greenhouse in Monheim, Germany. The first application occurred at BBCH growth stage 15 (5th true leaf unfolded) and the second application occurred 134 days later at BBCH growth stage 85 (about 50% of the bolls open).

One immature cotton plant was harvested at 19 days (BBCH growth stage 25; five vegetative side shoots visible) after the first application. The plant was cut directly above the soil and was weighed. The plant was homogenized in liquid nitrogen and the homogenate was stored at -20 °C until analysis. Gin trash, lint and undelinted seed samples were collected from the remaining six cotton plants at 39 days (BBCH growth stages 96 to 99, about 60% of leaves discoloured or fallen to harvested product) after the final treatment. The whole bolls together with the distal stems and stalks were separated from the plants. Cotton lint including the seeds were removed from all the open bolls. Seeds were removed manually from the lint resulting in the sample materials "lint" and "undelinted seeds." Empty bolls were combined with the rest of the plants (leaves, sepals, petals and stems), resulting in the sample material "gin trash." Gin trash sample was mixed vigorously and stored at -20 °C until analysis. Undelinted seeds and lint were also stored at -20 °C until homogenization and analysis.

Another experiment was conducted due to the fact that the application solution used for the second treatment of the first experiment contained approximately 20% of degradation products (predominantly the BYI 08330-enol metabolite). Therefore, two untreated plants were treated at 220 g as/ha. One plant was analysed one day after the application (BBCH 15 (5^{th} leaf true unfolded) and the other was analysed at maturity (BBCH 96–99). This bridging experiment was conducted to exclude an influence of the degradation products on the metabolism of plants.

Intermediate samples, gin trash, lint and undelinted seed underwent homogenization and successive extractions with acetonitrile (ACN)/water. However, lint underwent a final extraction with ACN only. Aliquots of combined extracts were subjected to analysis by LSC. The remaining solids were air dried and aliquots were combusted and measured for radioactivity using LSC. TRR values were calculated by combining the radioactivity detected in the extracts and solids, i.e., TRR values were not determined directly on the matrix samples.

Further analysis was undertaken in which the ACN/water extracts were partitioned with dichloromethane (DCM) to yield an organic and aqueous phase. Each phase was measured for radioactivity using LSC and analysed by HPLC.

The majority of the radioactivity remained bound to undelinted seed samples following the extraction steps. Therefore, solids were subjected to exhaustive extraction procedures using boiling hydrochloric acid and subsequent boiling in an aqueous potassium hydroxide solution. Extracts from both procedures were partitioned with DCM and the resulting organic and aqueous phases were measured for radioactivity by LSC and analysed by HPLC if the phases contained high enough amounts of radioactivity to warrant further investigation.

Radiolabelled metabolites were obtained from the DCM and aqueous phases after extraction and partitioning of the intermediate sample, and from gin trash and lint at harvest. Isolation and purification of the single compounds was achieved applying HPLC. Fractions containing the purified metabolites were concentrated and analysed by HPLC-mass spectrometry (MS)/MS and/or Fourier Transform (FT)-MS.

The distribution of the radioactivity in the matrix extracts and post extraction solids is summarized in Table 9.

Table 9 Total radioactive residue (TRR) in cotton (M-269105-01-2)

Matrix	Application Rate	PHI (days)	Extracts		Solids	
			%TRR	mg/kg	%TRR	mg/kg
Intermediate (aerial portion immature plant)	91.7 g ai/ha	19	84.1	2.00	15.9	0.379
Gin Trash	91.7 g ai/ha; 172. g ai/ha	39	88.6	1.43	11.4	0.184
Undelinted Seed	91.7 g ai/ha; 172. g ai/ha	39	36.1	0.043	63.9	0.076
Lint	91.7 g ai/ha; 172.g ai/ha	39	92.5	0.997	7.5	0.080

The distribution and identification of metabolites in the extracts are summarized in Table 10, and the overall identification and characterization are given in Table 11.

Table 10 Distribution of spirotetramat and metabolites in cotton matrices from foliar treatment of cotton plants (91.7 g ai/ha + 172. g ai/ha, PHI 39 days) (M-269105-01-2)

Metabolite Fraction	Intermediate		Gin Trash		Lint		Undelinted Seed	
	TRR=2.381 ppm		TRR=1.614 ppm		TRR=1.078 ppm		TRR=0.119 ppm	
	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm
Organosoluble (DCM) phase	**57.8**	**1.376**	**69.2**	**1.117**	**75.7**	**0.816**	**15.9**	**0.019**
-mandelic acid amide	0.36	0.009	1.03	0.017	11.21	0.121	1.30	0.002
-hydroxymorpholinedion	0.58	0.014	0.64	0.010	-	-	-	-
-desmethyl-ketohydroxy	0.18	0.004	0.24	0.004	-	-	-	-
-MA-amide	0.61	0.014	0.94	0.015	1.39	0.015	-	-
-enol	1.98	0.047	10.07	0.163	5.80	0.062	2.93	0.003
-ketohydroxy	5.40	0.129	29.32	0.473	10.45	0.113	9.04	0.011
BYI 08330-olefine(I1)	0.54	0.013	1.76	0.028	4.35	0.047	-	-
BYI 08330-olefine(I2)	0.43	0.010	2.04	0.033	4.08	0.044	-	-
Spirotetramat (ai.)	46.94	1.117	19.35	0.312	28.41	0.306	0.42	< 0.001
Unidentified L-22.8	-	-	-	-	0.26	0.003	-	-
Unidentified GT-45.4	-	-	0.09	0.001	-	-	-	-
Unidentified S-46.4	-	-	-	-	-	-	0.64	0.001
Unidentified L-47.8	-	-	-	-	0.33	0.004	-	-
Unidentified GT-49.1	-	-	0.11	0.002	-	-	-	-
Unidentified GT-50.6	-	-	0.25	0.004	0.54	0.006	-	-
Unidentified L-51.5	-	-	-	-	0.48	0.005	-	-
Unidentified S-54.5	-	-	-	-	-	-	1.27	0.002
Unidentified GT-58.1	-	-	0.40	0.006	0.43	0.005	-	-
Unidentified L-58.9	-	-	-	-	0.39	0.004	-	-
Unidentified S-68.3	-	-	-	-	-	-	0.03	< 0.001
Unidentified GT-65.8	-	-	1.61	0.026	-	-	-	-
Unidentified L-66.4	-	-	-	-	2.71	0.029	-	-
Unidentified I-67.0	0.20	0.005	-	-	-	-	-	-
Unidentified GT-68.6	-	-	0.25	0.004	1.39	0.015	-	-
Unidentified GT-70.3	-	-	0.21	0.003	-	-	-	-
Unidentified GT-72.4	-	-	0.48	0.008	2.03	0.022	-	-
Unidentified GT-74.2	-	-	0.41	0.007	1.45	0.016	-	-
Unidentified I-81.6	0.57	0.014	-	-	-	-	-	-
Aqueous phase	**26.3**	**0.626**	**19.4**	**0.313**	**16.8**	**0.181**	**20.2**	**0.024**
-enol GLC	4.65	0.111	3.98	0.064	0.16	0.002	3.45	0.004
-mandelic acid	-	-	-	-	0.89	0.010	-	-
-mandelic acid amide	-	-	0.62	0.010	0.66	0.007	-	-
-desmethyl-enol-Glc	3.82	0.091	1.75	0.028	-	-	-	-
-desmethyl-ketohydroxy-Glc (I1)	3.45	0.082	1.42	0.023	-	-	-	-
-desmethyl-ketohydroxy-Glc (I2)	6.31	0.150	2.32	0.038	-	-	-	-
-MA-amide	-	-	0.60	0.010	2.72	0.029	-	-
-enol	-	-	2.02	0.033	3.66	0.039	2.28	0.003
-ketohydroxy	-	-	0.33	0.005	-	-	-	-

Spirotetramat (ai.)	-	-	0.46	0.007	3.92	0.042	-	-
Unidentified (Intermediate) (n=10)	8.08	0.192	-	-	-	-	-	-
Unidentified (Gin Trash) (*n* = 13)	-	-	5.61	0.093	-	-	-	-
Unidentified (Lint) (*n* = 16)	-	-	-	-	4.85	0.052		
Unidentified (Undelinted Seeds) (n)=2)	-	-	-	-	-	-	11.04	0.013
Exhaustive Extraction HCL Extract	-	-	-	-	-	-	**15.2**	**0.018**
-enol	-	-	-	-	-	-	12.69	0.015
-Unidentified (n=1)	-	-	-	-	-	-	2.54	0.003
Exhaustive Extraction KOH Extract	-	-	-	-	-	-	**39.0**	**0.046**
-enol	-	-	-	-	-	-	21.91	0.026
-Unidentified (n=6)	-	-	-	-	-	-	17.1	0.023

Table 11 Characterization and identification of radioactive residues in plant matrices following application of radiolabelled spirotetramat at 264 g ai/ha

Metabolite Fractions	Intermediate		Gin Trash		Lint		Undelinted Seed	
	TRR=2.38 mg/kg		TRR=1.61 mg/kg		TRR=1.08 mg/kg		TRR=0.119 mg/kg	
	%TRR	mg/kg	%TRR	mg/kg	%TRR	mg/kg	%TRR	mg/kg
BYI08330-enol-Glc	4.65	0.111	-	-	-	-	-	-
BYI08330-mandelic acid	-	-	-	-	0.89	0.010	-	-
BYI08330-mandelic acid amide	0.36	0.009	1.65	0.027	11.87	0.128	1.30	0.002
BYI08330-desmethyl-enol-Glc	3.82	0.091	1.75	0.028	-	-	3.46	0.004
BYI08330-desmethyl-ketohydroxy-Glc (I1)	3.45	0.082	1.42	0.023	0.14	0.001	-	-
BYI08330-desmethyl-ketohydroxy-Glc (I2)	6.31	0.150	2.32	0.038	-	-	-	-
BYI08330-hydroxymorpholinedion	0.61	0.014	0.64	0.01	-	-	-	-
BYI08330-desmethyl-ketohydroxy	0.18	0.004	0.56	0.009	-	-	-	-
BYI08330-MA-amide	0.58	0.014	1.54	0.025	4.12	0.044	-	-
BYI08330-enol	1.98	0.047	12.09	0.196	9.46	0.101	**39.8**	**0.047**
BYI08330-ketohydroxy	5.40	0.129	**29.6**	**0.478**	10.45	0.113	9.04	0.011
BYI 08330-olefine(I1)	0.54	0.013	1.76	0.028	4.08	0.044	-	-
BYI 08330-olefine(I2)	0.43	0.010	2.04	0.033	4.35	0.047	-	-
Spirotetramat (BYI08330)	**46.9**	**1.12**	**19.8**	0.319	**32.3**	**0.348**	0.42	< 0.001
Total Identified (conventional extraction methods)	75.3	1.79	79.2	1.278	77.7	0.837	22.9	0.027
Total Identified after exhaustive extraction methods	-	-	-	-	-	-	34.6	0.041
Total Identified Overall	75.3	1.79	79.2	1.278	77.7	0.837	57.5	0.068
Total Characterized	8.8	0.210	9.4	0.152	14.8	0.160	13.9	0.017
Not Analysed	-	-	-	-	-	-	9.1	0.011
Total Extractable	84.1	2.00	88.6	1.430	92.5	0.997	80.5	0.096
Total Bound [a]	15.9	0.379	11.4	0.184	7.5	0.080	9.6	0.011
Precipitate	-	-	-	-	-	-	9.9	0.012
Total/Accountability [b]	100.	2.381	100.	1.614	100.	1.078	100	0.119

[a] Residues remaining after exhaustive extractions

[b] Accountability = (Total extractable + Total unextractable)/(TRR from combustion analysis) × 100.

The results of the bridging study are compared to the main study (Tables 10 and 11) in Table 12.

Table 12 Comparison of the identified compounds in the gin trash samples of the principle experiment (91.7 g ai/ha + 172 g ai/ha, PHI 39 days) and the bridging experiment (220 g as/ha, 33 day PHI) (M-269105-01-2)

Metabolite Fraction	Experiment (39-day PHI)		Bridging Experiment (33-day PHI)	
	% TRR	mg/kg	%TRR	mg/kg
-enol-Glc	3.98	0.064	3.69	0.068
-mandelic acid amide	1.65	0.027	0.61	0.011
-desmethyl-enol-Glc	1.75	0.028	1.68	0.031
-desmethyl-ketohydroxy-Glc (I1)	1.42	0.023	1.60	0.029
-desmethyl-ketohydroxy-Glc (I2)	2.32	0.038	0.99	0.018
-hydroxymorpholinedion	0.64	0.010	0.43	0.008
-desmethyl-ketohydroxy	0.56	0.009	0.27	0.005
-MA-amide	1.54	0.025	1.06	0.019
-enol	12.1	0.196	11.6	0.212
-ketohydroxy	29.6	0.478	20.0	0.366
BYI 08330-olefine(I1)	1.76	0.028	0.86	0.016
BYI 08330-olefine(I2)	2.04	0.033	0.81	0.015
Spirotetramat (ai)	19.8	0.319	43.6	0.798
Total Identified	79.2	1.278	87.1	1.596
Total Characterized	9.4	0.152	4.9	0.089
Total Extractable	88.6	1.430	92.0	1.685
Total Non-Extractable	11.4	0.184	8.0	0.147
Total/Accountability[a]	100.	1.61	100.	1.83

[a] Accountability = (Total extractable + Total unextractable)/(TRR from combustion analysis) × 100.

In cotton, the following metabolic pathway was proposed (Figure 5).

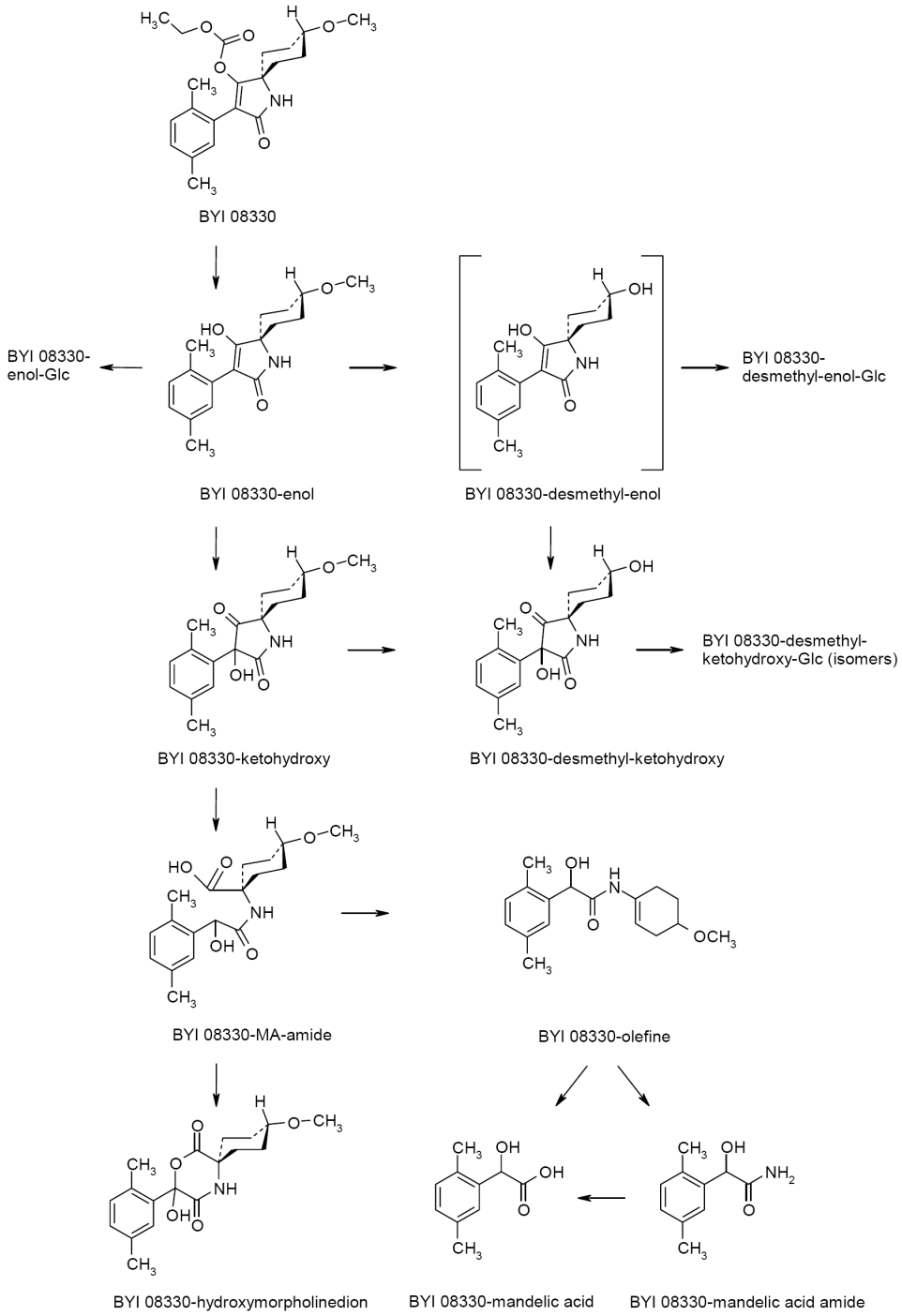


Figure 5 Metabolic pathway of spirotetramat in cotton

Lettuce

A study report was submitted on the metabolism of spirotetramat in lettuce following two spray applications of [azaspirodecenyl-3-^{14}Cspirotetramat formulated as an oil dispersion (100 OD) formulation at a target application rate of 72 g as/ha/application with 14 days between applications (MO-05-000994, M-242667-01-2, Haas, M. and B. Diederich, 2004). The actual total application rate was 167 g as/ha. The lettuce (variety: Alexandrina, 15 heads) was in a planting container with a surface area of about 1 m^2 and was cultivated under artificial light; the experiment was conducted in Monheim, Germany. The first application occurred at BBCH crop growth stage 41 (heads begin to form) and the second application occurred 14 days later at BBCH crop growth stage 44–45 (about

50% of the expected head size reached). Head lettuce samples were collected at 7 days following the final application.

Lettuce plants were harvested by cutting directly above the soil surface. Heads were weighed and cut into smaller pieces and homogenized in liquid nitrogen. Homogenized sample material was stored at –20 °C.

Immediately following harvest, a first extraction was performed. Aliquots of homogenized lettuce were successively extracted with ACN/water (80/20, v/v). After each extraction, the suspension was centrifuged. Extracts were measured for radioactivity by LSC, after which they were combined and concentrated. The remaining lettuce solids were air-dried and aliquots were combusted and radioactivity was measured by LSC.

TRRs were calculated as the sum of the three extracts and the solids. Further analysis of extracts was performed by combining and concentrating the ACN/water extracts and partitioning them successively with DCM, resulting in an organic and an aqueous phase. The phases were measured for radioactivity via LSC and analysed by HPLC.

An aliquot of the remaining solids was exhaustively extracted with ACN/water (1:1) for 30 minutes at 120 °C using a microwave apparatus. The resulting extract was filtered, measured for radioactivity, concentrated and analysed by HPLC.

Five months after harvest, a larger aliquot of the homogenized lettuce was extracted as described above. Isolation of the major compound present in the aqueous phase was achieved by solid-phase extraction (SPE) clean-up (C18 cartridge) and HPLC using methods. The purified metabolite was concentrated and used for structure elucidation by HPLC/mass spectrometry (MS)/MS and nuclear-magnetic resonance (NMR) spectroscopy.

The isolation, characterization and identification of the metabolites are summarized in Tables 13 and 14.

Table 13: Distribution of the parent and the metabolites from lettuce treated at 167 g as/ha, PHI 7 days (MO-05-000994, M-242667-01-2)

Metabolite Fraction	Lettuce	
	TRR = 3.13 mg/kg	
	%TRR	mg/kg
Organosoluble (Dichloromethane phase)	76.9	2.41
Spirotetramat (parent)	55.9	1.75
BYI 08330-ketohydroxy	5.7	0.18
BYI 08330-enol	15.2	0.48
Aqueous (Aqueous phase)	19.0	0.59
BYI 08330-ketohydroxy	0.2	<< 0.01
BYI 08330-enol	0.3	0.01
BYI 08330-enol-glucoside	11.4	0.36
Unidentified Compound LeAq1	0.2	< 0.01
Unidentified Compound LeAq2	0.2	< 0.01
Unidentified Compound LeAq3	0.3	0.01
Unidentified Compound LeAq5	0.2	< 0.01
Unidentified Compound LeAq6	0.2	< 0.01
Unidentified Compound LeAq7	0.2	< 0.01
Unidentified Compound LeAq8	1.9	0.06
Unidentified Compound LeAq9	0.9	0.03
Unidentified Compound LeAq10	0.8	0.03
Unidentified Compound LeAq11	0.3	0.01

Metabolite Fraction	Lettuce	
	TRR = 3.13 mg/kg	
	%TRR	mg/kg
Unidentified Compound LeAq12	0.9	0.03
Unidentified Compound LeAq13	0.8	0.02
Unidentified Compound LeAq14	0.4	0.01
Microwave Extract	2.8	0.09
BYI 08330-ketohydroxy	0.3	< 0.01
BYI 08330-enol	2.3	0.07
Unidentified Compound LeMw1	0.1	< 0.01
Unidentified Compound LeMw2	0.1	< 0.01

Table 14 Characterization and identification of residues in lettuce matrices following foliar application of radiolabelled spirotetramat at 167 g ai/ha/season (MO-05-000994, M-242667-01-2)

Compound	Lettuce Heads	
	TRR =3.13 mg/kg	
	% TRR	mg/kg
Spirotetramat	**55.9**	1.75
BYI 08330-ketohydroxy	6.2	0.20
BYI 08330-enol	**17.8**	0.56
BYI 08330-enol-glucoside	**11.4**	0.36
Total identified	91.4	2.87
Total characterized	7.3	0.22
Total extractable	98.7	3.09
Unextractable (PES)	1.3	0.04
Accountability	100.	3.13

The proposed metabolic pathway for spirotetramat on lettuce is given in Figure 6.

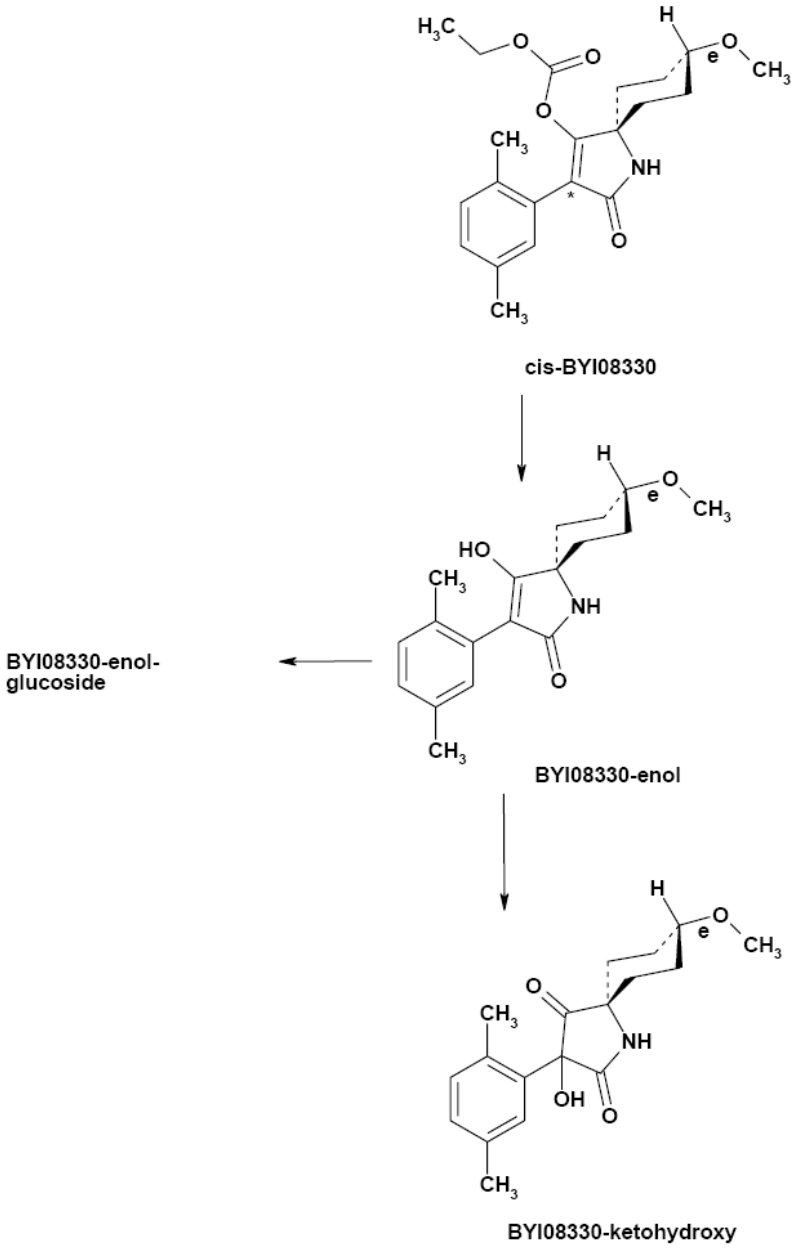


Figure 6 Metabolic pathway of spirotetramat on lettuce

Potato

A study report was received on the metabolism of spirotetramat in potatoes following three spray applications of [azaspirodecenyl-3-^{14}C]spirotetramat formulated as an oil dispersion (100 OD) to potato plants at a target application rate of 96 g ai/ha/application with 21 days between applications (M-267707-01-2, Sur, R., 2005). The actual total application rate was 308 g ai/ha (1.1× to 1.8× the recommended total use rates). The potato plants (variety: Grata) were cultivated in a planting container with a surface area of approximately 1 m^2 in the vegetation area under natural light and temperature conditions.

Test substance applications were made at BBCH crop growth stages 75, 85 and 93. Potato leaves and tubers were collected at 14 days following the final application.

Potato tops were cut off at soil level. Aliquots of tops were homogenized with liquid nitrogen. An aliquot of homogenized sample was used for extraction.

Tubers were dug out of the soil and any surface dirt was removed by washing with water. Washing water was collected and the radioactivity was determined using LSC. Tubers were dried at ambient temperatures and homogenized with liquid nitrogen. An aliquot of the homogenized sample material was used for direct extraction following evaporation of nitrogen.

Residual sample material of tubers and tops (whole and homogenized) were stored in separate aliquots at –20 °C.

Aliquots of tubers and tops were extracted with ACN/water (4:1, v/v) and with ACN. Extracts were filtered and the solids were washed with small amounts of ACN. Corresponding extracts were combined for determination of radioactivity by LSC. Undissolved solids were air dried yielding solids samples for radioactivity determination via combustion and LSC. The results of the combined extracts and the solids were used in the calculation of the TRR. Further analysis was performed in which the combined extracts of tubers and tops were partitioned three times with DCM, yielding an organic and an aqueous phase.

Organic and aqueous phases were analysed by HPLC for quantitation of parent compound and metabolites. A second aliquot of tuber was extracted and partitioned with DCM for the isolation of metabolites from the aqueous phase.

Solids resulting from the first extraction of tubers were further extracted by treatment with diastase. It was then centrifuged and the supernatant decanted. The solid residue was extracted again in the same manner. Both supernatants were combined and aliquots were analysed by HPLC and LSC. Undissolved residues were air dried at room temperature resulting in a secondary set of solids for radioactive analysis via combustion and LSC. A further aliquot of the initial solids was extracted in the same way, however, using pure buffer instead of the diastase to evaluate the influence of the enzyme on extraction efficiency and on the metabolite pattern of the extract.

The enzyme cellulose was used to selectively cleave the *O*-1,4 glycoside bond of BYI 08330-desmethyl-enol-glycoside and BYI 08330-ketohydroxy-alcohol-glycoside to identify the corresponding aglycones. Additionally, the aqueous phase of the tubers was also treated with cellulose. Aliquots of the isolated conjugates or of the aqueous phase were evaporated to dryness and reconstituted with the cellulose containing solution or only with buffer (control sample).

Extracts, aqueous and organic were analysed by HPLC (UV and radioactivity detectors). TLC was employed for the sub-quantitation of metabolites in fractions collected from HPLC and for the identification of metabolites by co-chromatography with reference compounds. HPLC/MS was also used for the identification of metabolites.

The distribution, characterization and identification of the radioactive residue are provided in Tables 15 and 16.

Table 15 Distribution of parent BYI08330 and metabolites in potato matrices following foliar treatment at 308 g ai/ha (M-267707-01-2)

Metabolite Fraction	Tuber		Tops	
	TRR = 0.255 mg/kg		TRR = 11.057 mg/kg	
	%TRR	mg/kg	%TRR	mg/kg
Organosoluble (DCM phase)	**65.3**	**0.162**	**80.1**	**8.85**
Spirotetramat	ND	ND	45.6	5.040
BYI 08330-enol	54.9	0.140	7.1	0.788
BYI 08330-ketohydroxy	5.9	0.015	24.6	2.719
BYI 08330-desmethyl-enol	1.1	0.03	0.5	0.050
3 further unknown metabolites in tuber (each < 1% of TRR)	1.6	0.004	--	--
7 further unknown metabolites in tops (each < 1% of TRR)	--	--	2.3	0.255

Metabolite Fraction	Tuber		Tops	
	TRR = 0.255 mg/kg		TRR = 11.057 mg/kg	
	%TRR	mg/kg	%TRR	mg/kg
Aqueous soluble (Water phase)	**16.7**	**0.043**	**16.0**	**1.76**
Spirotetramat	ND	ND	3.8	0.415
BYI 08330-desmethyl-enol	4.5	0.012	0.6	0.069
BYI 08330-ketohydroxy-alcohol	0.5	0.001	ND	ND
BYI 08330-enol-glucoside	2.5	0.006	3.6	0.395
BYI 08330-desmethyl-enol-glycoside	1.5	0.004	0.5	0.055
BYI08330-ketohydroxy-alcohol-glycoside	0.5	0.001	ND	ND
BYI 08330-enol	0.6	0.002	0.7	0.082
BYI 08330-enol-alcohol	0.6	0.002	0.2	0.020
BYI 08330-ketohydroxy	0.3	0.001	0.2	0.026
BYI 08330-dihydroxy	0.2	0.001	ND	ND
25 further unknown metabolites in tuber (each < 1% TRR)	5.5	0.014	--	--
19 further unknown metabolites in tuber (each < 1% TRR)	--	--	6.4	0.702
Diastase extract	**14.3**	**0.036**	**--**	**--**
BYI 08330-enol	10.3	0.026	--	--
BYI 08330-desmethyl-enol	1.1	0.003	--	--
BYI 08330-ketohydroxy	0.6	0.002	--	--
1 unknown region (in the void volume)	2.3	0.006	--	--

Table 16 Characterization and identification of the radioactive residues in plant matrices following application of radiolabelled spirotetramat at 308 g ai/ha/season to Potatoes (M-267707-01-2)

Compound	Tubers		Tops	
	TRR = 0.255 mg/kg		TRR = 11.0 mg/kg	
	% TRR	mg/kg	% TRR	mg/kg
Spirotetramat (BYI08330)	ND	ND	**49.4**	5.45
BYI 08330-enol	**65.8**	0.168	7.8	0.870
BYI 08330-enol-glucoside	2.5	0.006	3.6	0.395
BYI 08330-desmethyl-enol	6.7	0.018	1.1	0.119
BYI 08330-desmethyl-enol-glycoside	1.5	0.004	0.5	0.055
BYI 08330-enol-alcohol	0.6	0.002	0.2	0.020
BYI 08330-ketohydroxy	6.8	0.018	**24.8**	2.74
BYI 08330-ketohydroxy-alcohol	0.5	0.001	ND[c]	ND
BYI 08330-ketohydroxy-alcohol-glycoside	0.5	0.001	ND	ND
BYI 08330-dihydroxy	0.2	0.001	ND	ND
Total identified	85.1	0.217	87.4	9.659
Total characterized	9.4	0.024	8.7	0.957
Total extractable	94.5	0.241	96.0	10.6
Unextractable (PES)[a]	5.5	0.014	4.0	0.442
Accountability[b]	100	0.255	100	11.0

[a] Residues remaining after exhaustive extractions

[b] Accountability = (Total extractable + Total unextractable)/(TRR from combustion analysis) × 100.

[c] Not detected

The proposed metabolic pathway for spirotetramat on potato is given in Figure 7

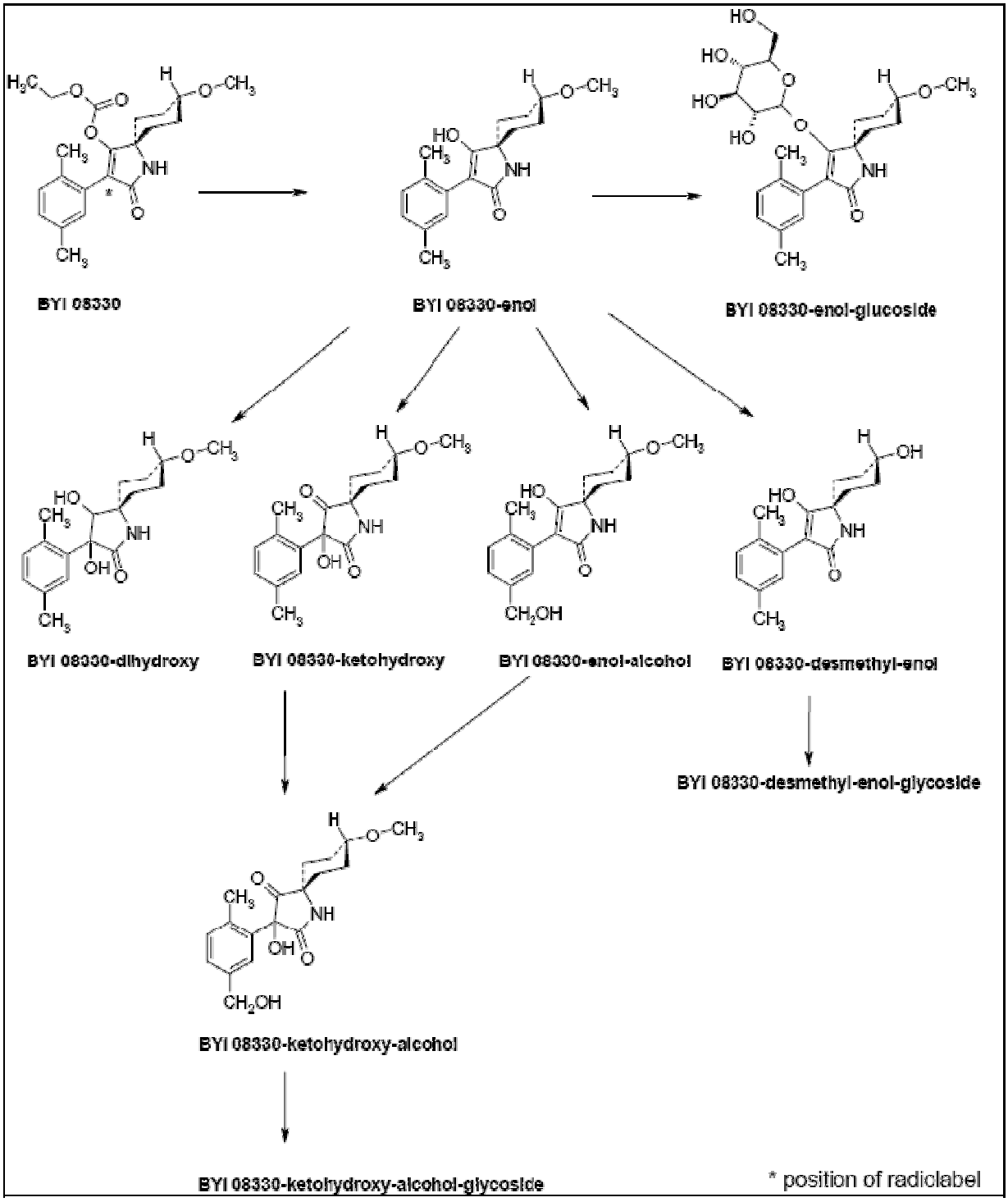
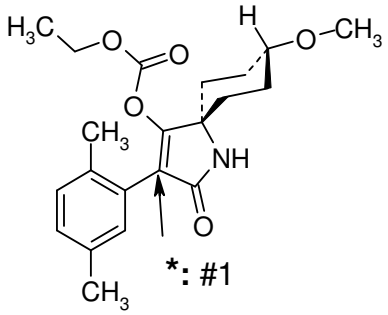


Figure 7: Metabolic Pathway of Spirotetramat on Potato (M-267707-01-2).

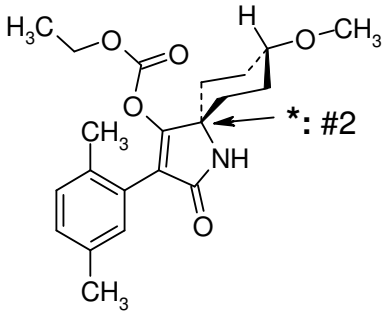
ENVIRONMENTAL FATE

General

The studies concerning the fate and behaviour of spirotetramat in the environment were conducted using one or two radiolabelled forms, the [azaspirodecenyl-3-^{14}C] and [azaspirodecenyl-5-^{14}C]spirotetramat as well as the non-labelled parent compound. The positions of the radiolabels are as follows:



[Azaspirodecenyl-3-^{14}C]spirotetramat (*: label #1)



[Azaspirodecenyl-5-^{14}C]spirotetramat (*: label #2)

* indicates position of radiolabel

Aerobic Degradation in Soil

A report on the aerobic degradation of spirotetramat in soil was provided to the Meeting (M-256849-02-2, Babczinski, P., 2005). The biotransformation of spirotetramat was studied in three EU soils and one US soil for 50 days (EU soils) or 360 days (US soil) under aerobic conditions in the dark at 20 ± 1 °C. Fresh samples (about 40 days prior to the start of the incubation) of all the soils were taken from the respective fields and after removing the stones and plant material, the soils were sieved with a 2 mm sieve. Finally, the soil batches were each mixed thoroughly for optimal batch homogeneity. A weighed amount of dry soil was placed in each test flask.

The soil properties are summarized in Table 17.

Table 17 Soil physicochemical properties (M-256849-02-2)

Designation	Source	Soil Type (USDA)	pH ($CaCl_2$)	Organic Carbon [%]	Texture Analysis [% sand/silt/clay]
Molino	Pensacola, Florida, USA	sandy loam	5.4	0.93	77.3 / 12.7 / 10.0
Laacher Hof AXXa	Monheim, Germany	sandy loam	6.3	1.02	72.4 / 22.6 / 5.0
Laacher Hof AIII	Monheim, Germany	silt loam	6.5	0.83	36.9 / 51.1 / 12.0
Hoefchen am Hohenseh 4a	Burscheid, Germany	silt	6.7	2.11	8.5 / 81.3 / 10.2

The [azaspirodecenyl-3-^{14}C]spirotetramat was applied to the soils at nominal rates of 0.128 mg/kg soil (DM) (US soil) or 0.768 mg/kg soil (DM) (EU soils), equivalent to a single maximum use rate of 288 g/ha (calculation based on homogeneous distribution for 15 cm soil depth (US) and 2.5 cm soil depth (EU)). Treatment was made as small droplets in acetonitrile manually applied directly to the soil surface using an Eppendorf pipette, thus simulating a soil spray application.

The dry soil samples of each sampling interval were extracted. The spirotetramat residues were radio-assayed by LSC and analysed separately in the combined ambient and combined extracts by HPLC on reversed phase (C-18). Solid samples (i.e., soil and paper filters) were combusted and ^{14}C levels were measured using LSC. In order to identify parent compound and the transformation products co-chromatography and spectrometric methods were used.

Results are summarized in Tables 18–21. In all cases, greater than 50% of the BYI08330 was degraded within 0.25 day and at least 90% within one day.

Table 18 Biotransformation of BYI08330 in sandy loam soil Molino under aerobic conditions; mean values expressed as % of AR (M-256849-02-2)

Compound	Days After Treatment (DAT)												
	0	0.25	1	3	7	14	30	50	86	126	179	270	360
BYI08330	96.1	52.2	15.3	7.0	6.5	4.5	5.1	4.0	3.7	2.9	3.5	3.2	3.5
Desmethyl-enol	-	-	1.1	1.0	3.1	1.7	3.7	2.5	3.3	3.2	3.7	3.1	1.4
Oxo-enol	-	-	-	0.3	1.0	0.7	-	1.2	-	-	0.4	-	-
Enol	-	5.0	9.2	13.2	10.5	8.6	6.2	7.4	5.5	7.4	4.6	4.3	2.7
Enol-Dimer 1	-	-	0.6	0.7	1.6	2.8	3.1	2.8	1.6	2.1	1.8	1.1	0.5
Enol-Dimer 2	-	-	1.4	0.5	0.4	1.5	1.8	1.9	2.2	1.0	1.3	0.8	0.8
Ketohydroxy	-	8.0	8.7	12.1	11.8	7.7	9.4	9.9	10.6	14.2	11.0	12.7	13.6
MA-amide	-	0.5	2.5	1.9	4.2	4.2	5.4	5.0	5.4	6.0	6.4	6.2	6.2
Unidentified [a]	1.6	14.6	24.2	19.1	17.6	20.1	22.8	21.5	22.5	21.7	20.1	23.7	23.2
Total extracted	97.7	80.3	63.0	55.7	56.2	51.9	57.5	55.6	54.9	58.5	52.8	55.1	51.8
$^{14}CO_2$	-	0.5	1.7	3.7	5.9	7.6	8.4	9.7	15.5	12.1	15.4	14.8	15.3
Volatile org.	-	-	-	-	-	-	-	-	0.1	-	-	-	-
Unextractable	0.4	19.7	31.8	35.2	33.0	30.5	31.5	30.3	29.9	27.6	27.8	27.2	27.0
Total recovery	98.1	100.5	96.5	94.6	95.1	90.1	97.4	95.6	100.4	98.2	96.0	97.1	94.2

[a] Multiple HPLC peaks; any single peak ≤ 4% AR.

Table 19 Biotransformation of BYI08330 in sandy loam soil Laacher Hof AXXa under aerobic conditions, values expressed as % of AR (M-256849-02-2)

Compound	Days After Treatment (DAT)							
	0	0.25	1	3	7	14	30	50
BYI08330	91.8	38.3	8.3	3.1	3.5	2.6	2.2	2.5
Desmethyl-enol	-	0.2	1.9	1.5	2.7	1.6	2.6	1.8
Oxo-enol	-	-	-	1.0	-	0.4	-	-
Enol	-	6.8	18.8	19.0	11.9	10.2	8.8	9.5
Enol-Dimer 1	-	2.3	2.4	3.5	7.0	7.0	7.4	7.5
Enol-Dimer 2	-	3.1	6.2	5.0	2.7	5.7	5.5	6.9
Ketohydroxy	-	10.6	16.3	14.8	12.8	7.4	5.1	5.9
MA-amide	-	0.4	2.3	3.0	6.0	4.4	3.5	3.1
Unidentified [a]	4.3	8.4	9.7	16.9	15.8	13.7	19.5	19.6
Total extracted	96.0	70.1	65.7	67.7	62.3	53.1	54.6	56.9
$^{14}CO_2$	-	0.3	1.8	3.1	6.3	8.3	10.0	12.2
Volatile org.	-	-	-	-	-	-	-	-
Unextractable	0.1	16.4	27.2	25.4	26.2	24.3	27.9	25.5
Total recovery	96.2	86.8	94.8	96.1	94.8	85.7	92.5	94.7

[a] Up to 17 HPLC peaks/DAT; maximum value for a single peak: 3.1% of AR

Table 20 Biotransformation of BYI08330 in silt loam soil Laacher Hof AIII under aerobic conditions, values expressed as % of AR (M-256849-02-2)

Compound	Days After Treatment (DAT)							
	0	0.25	1	3	7	14	30	50
BYI08330	91.6	41.2	8.9	3.4	3.5	2.8	3.0	3.4
Desmethyl-enol	-	-	0.4	-	2.7	1.9	2.1	2.3
Oxo-enol	-	-	-	-	-	-	-	-
Enol	-	9.4	20.8	24.3	15.1	15.5	11.4	9.9
Enol-Dimer 1	-	4.4	3.3	3.5	12.7	9.4	9.8	7.7
Enol-Dimer 2	-	4.2	7.2	6.3	4.2	8.9	9.2	8.1
Ketohydroxy	-	10.5	15.0	14.3	12.9	8.4	6.6	5.6
MA-amide	-	0.2	1.9	3.1	5.4	3.9	3.3	3.3
Unidentified [a]	2.8	11.1	14.3	18.2	18.1	18.2	20.8	22.3
Total extracted	94.4	81.1	71.9	73.2	74.6	68.9	66.3	62.7
$^{14}CO_2$	-	0.2	1.5	3.0	2.1	6.9	10.7	15.4
Volatile org.	-	-	-	-	-	-	-	-
Unextractable	0.1	14.1	21.3	21.0	19.0	17.4	20.6	21.5
Total recovery	94.5	95.4	94.7	97.1	95.7	93.2	97.6	99.6

[a] Up to 19 HPLC peaks/DAT; maximum value for a single peak: 2.9% of AR.

Table 21 Biotransformation of BYI08330 in silt soil Hoefchen am Hohenseh under aerobic conditions, values expressed as % of AR (M-256849-02-2)

Compound	Days After Treatment (DAT)							
	0 **	0.25	1	3	7	14	30	50
BYI08330	93.2	11.6	5.8	1.9	3.7	2.0	2.1	2.6
Desmethyl-enol	-	1.0	0.6	1.7	2.3	2.3	1.6	1.6
Oxo-enol	-	0.6	-	-	1.1	0.4	-	-
Enol	-	11.6	17.2	16.9	14.1	8.4	9.8	10.4
Enol-Dimer 1	-	4.3	2.1	2.5	5.7	4.2	5.5	4.9
Enol-Dimer 2	-	3.7	3.8	2.1	1.6	3.5	3.8	6.0
Ketohydroxy	-	14.7	9.4	11.8	11.0	4.3	3.8	2.4
MA-amide	-	2.4	2.8	4.8	5.3	2.8	2.0	1.1
Unidentified [a]	5.0	16.0	22.2	16.0	16.4	18.2	20.5	18.3
Total extracted	98.2	65.8	63.8	57.9	61.3	46.1	49.1	47.2
$^{14}CO_2$	-	0.3	1.3	3.2	4.8	11.4	13.3	19.4
Volatile org.	-	-	-	-	-	-	-	-
Unextractable	0.3	32.3	30.9	34.5	32.8	33.8	34.6	31.0
Total recovery	98.5	98.4	96.0	95.6	99.0	91.2	97.0	97.6

[a] Up to 20 HPLC peaks/DAT; maximum value for a single peak: 4.9% of AR.

The biotransformation of cis-[azaspirodecenyl-3-^{14}C]BYI08330-enol and cis-[azaspirodecenyl-5-^{14}C]BYI08330-enol was studied in three EU soils and one US soil for 119 days under aerobic conditions in the dark at 20 ±1 °C (MEF-05/157, Babczinski, P., 2006). Non-extractable ^{14}C-residues increased from 4.2 to 28% of applied radioactivity at DAT-0 (approximately 2 min after application) to 45 to 62% of applied radioactivity at DAT-119 in the four soils. As observed for the extractable ^{14}C-residues, the non-extractable ^{14}C-residues were significantly lower using the 3-^{14}C-

labeled test item as compared to the 5-^{14}C-test item. At study termination, $^{14}CO_2$ accounted for 17 to 28% of applied radioactivity at DAT-119 using the 5-^{14}C-labeled test item, and accounted for 28 to 43% of applied radioactivity using the 3-^{14}C-test item. In all four soils, BYI08330-ketohydroxy was detected at levels > 10% applied radioactivity. BYI08330-enol-dimers were found at ≤ 5% applied radioactivity.

Anaerobic Degradation

The Meeting received a report on the anaerobic degradation of radiolabelled spirotetramat (M-270739-01-2, Menke, U. 2006). The aerobic/anaerobic biotransformation of spirotetramat (spirotetramat) in soil under dark laboratory conditions has been investigated in one sandy loam soil using [azaspirodecenyl-3-^{14}C]spirotetramat. It was applied at a rate of 80 µg/100 g soil (dry matter). Assuming homogeneous distribution in 2.5 cm topsoil layer (EU), this rate was equivalent to 105% of the intended maximum field application rate of 288 g/ha. Samples were incubated for 4.8 h, simulating the half-life in aerobic soil (above), under aerobic conditions in the dark at 20 °C and about 50% of maximum water holding capacity. The samples were flooded with oxygen-depleted de-ionized water (3 cm layer above soil level), set under nitrogen atmosphere, and maintained in the dark under anaerobic conditions for 180 days at 20 °C.

The water layer was analysed directly, without extraction. The soil was extracted at room temperature.

Identification of spirotetramat residues and of its metabolites was achieved by co-elution with certified reference items and by LC-MS and LC-MS/MS of eluted fractions from the HPLC. A limit of quantification (LOQ) of ≤ 0.19% AR for the entire system was calculated for HPLC flow-through radioactivity detection within the sample matrix.

The results are summarized in Table 22.

Table 22 Biotransformation of BYI08330 in Sandy Loam Soil Laacher Hof AIIIa under aerobic followed by anaerobic Conditions (M-270739-01-2)

Compound	Days After Treatment (DAT)											
	-0.2	0.0 [b]	0.6	1	4	6	14	32	60	90	120	180
BYI08330	95.5	59.0	9.4	6.7	3.2	1.4	1.6	1.5	1.5	0.9	1.0	< LOQ
Dihydroxy	< LOQ	< LOQ	0.1	0.6	1.1	1.0	2.0	3.2	2.7	3.2	3.1	2.7
MA-amide	< LOQ	0.8	3.6	4.9	3.0	2.1	1.8	3.9	4.5	5.3	6.5	7.2
Enol	1.8	8.5	26.7	32.5	38.0	45.3	51.6	40.4	46.6	50.1	47.3	54.6
Ketohydroxy	0.5	9.1	16.5	19.3	17.2	15.6	14.6	16.1	15.3	12.6	11.5	7.7
R30	< LOQ	0.5	8.3	4.7	2.0	0.7	0.4	0.5	0.2	0.5	0.3	0.8
Enol-Dimer 1	< LOQ	3.5	6.2	4.1	6.7	7.0	4.1	3.9	0.9	1.1	0.6	0.3
Enol-Dimer 2	< LOQ	1.0	2.8	0.9	1.3	2.3	3.1	4.0	3.1	3.4	4.1	4.6
Unidentified [a]	2.0	2.9	7.5	7.9	8.5	8.3	8.3	14.9	13.5	10.2	13.7	13.0
Total in water & soil extracts	99.8	85.2	81.1	81.6	81.1	83.7	87.6	88.3	88.2	87.3	88.1	90.8
$^{14}CO_2$ total	N/A	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1
Volatile org.	N/A	N/A	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Un-extractable	1.7	11.7	17.5	17.2	16.3	15.5	12.4	12.5	12.2	11.6	10.7	7.9
Total recovery	101.5	97.0	98.7	99.0	97.6	99.4	100.1.	101.0	100.5	99.1	98.9	98.8

[a] Up to 28 different regions in the HPLC chromatogram/DAT; maximum value for a single peak: 1.8% of AR

[b] Start of the anaerobic phase.

Soil Photolysis

The phototransformation of [azaspirodecenyl-3-^{14}C]- and [azaspirodecenyl-5-^{14}C]- spirotetramat (labels #1 and #2) was studied on sandy loam soil (pH 5.4, organic carbon 0.93%) for seven days at 20 ± 1 °C (M-252907-01-2, Heinemann, O., 2005). Spirotetramat was applied directly to the soil at an initial concentration of about 2 mg/kg soil (DM), equivalent to a single maximum use rate of 288 g/ha (calculation based on homogeneous distribution for 1 cm soil depth). The treated samples were continuously exposed to artificial irradiation (xenon lamp). In addition, dark controls were set up. The soil samples were extracted and analysed by reversed phase HPLC with radioactivity detection. Identification and confirmation of the parent compound and transformation products was done by HPLC-MS, HPLC-MS/MS and/or co-chromatography.

Using label #1 the material balance was 101.7 and 99.1% in the dark and irradiated soil samples, respectively. The mass balance for label #2 was 103.1 and 100.5%.

The results are summarized in Tables 23 and 24. Control samples (maintained in the dark) degraded at a rate approximately 4× that of the irradiated samples.

Table 23 Phototransformation of BYI08330 in sandy loam Molino, mean values expressed as % of AR (M-252907-01-2)

Compound	Days After Treatment (DAT)						
	0	0.2	1	2	3	4	7
Label #1							
BYI08330	98.3	94.6	84.2	74.8	68.7	53.7	35.5
BYI08330-enol	< 0.1	1.5	3.8	2.6	1.6	2.0	5.3
- Enol-Dimer 1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
- Benzoic acid	< 0.1	< 0.1	1.4	2.7	3.5	4.0	4.8
- Glyoxylic amide	< 0.1	< 0.1	< 0.1	< 0.1	0.9	0.7	1.1
- Ketohydroxy	< 0.1	1.3	5.8	8.8	8.4	11.4	12.3
- ROI 3[a]	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
- ROI 8	< 0.1	< 0.1	< 0.1	1.3	< 0.1	3.6	< 0.1
- ROI 9	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	4.0
- ROI 10	< 0.1	< 0.1	0.7	2.6	2.4	3.2	4.0
- ROI 11	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	3.9	4.2
Unidentified diffuse RA	< 0.1	< 0.1	< 0.1	< 0.1	2.9	4.0	8.6
Total extracted	99.5	97.7	96.2	93.3	88.8	87.4	81.7
$^{14}CO_2$	n.a.	< 0.1	0.1	0.3	1.0	2.1	3.8
Volatile org.	n.a.	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Unextractable	0.1	3.0	5.3	6.9	8.0	8.4	9.6
Total RA recovery	99.6	100.7	101.7	100.6	97.8	97.9	95.2
Label #2							
BYI08330	101.	82.1	57.3	37.7	35.9	33.2	30.8
BYI08330-enol	< 0.1	10.0	10.1	8.3	7.9	3.4	4.0
- Enol-Dimer 1	< 0.1	< 0.1	1.6	1.9	< 0.1	< 0.1	0.8
- Glyoxylic amide	< 0.1	0.7	3.0	4.1	3.5	2.2	3.4
- Ketohydroxy	< 0.1	6.0	16.6	20.9	19.5	19.1	16.7
- Methoxy cyclohexanone	< 0.1	< 0.1	6.1	10.0	8.8	8.1	6.0
- ROI 1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
- ROI 11	< 0.1	< 0.1	< 0.1	0.7	1.3	< 0.1	< 0.1
- ROI 13	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

Compound	Days After Treatment (DAT)						
	0	0.2	1	2	3	4	7
- ROI 15	< 0.1	< 0.1	< 0.1	0.8	2.3	3.5	3.3
- ROI 16	< 0.1	< 0.1	< 0.1	2.5	2.8	5.6	2.9
- ROI 17	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.9
- ROI 18	< 0.1	< 0.1	< 0.1	< 0.1	3.6	4.7	4.0
Unidentified diffuse RA	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.6	2.7
Total extracted	103.	99.5	95.2	87.6	86.5	81.4	76.5
$^{14}CO_2$	n.a.	< 0.1	0.6	2.3	3.2	5.3	7.3
Volatile organics	n.a.	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Unextractable	0.1	5.2	7.4	9.3	9.8	10.9	12.1
Total RA recovery	103.	105.	103.	99.2	99.5	97.6	95.9

[a] ROI # is the defined region of interest (peak zone) set for radio-detection.

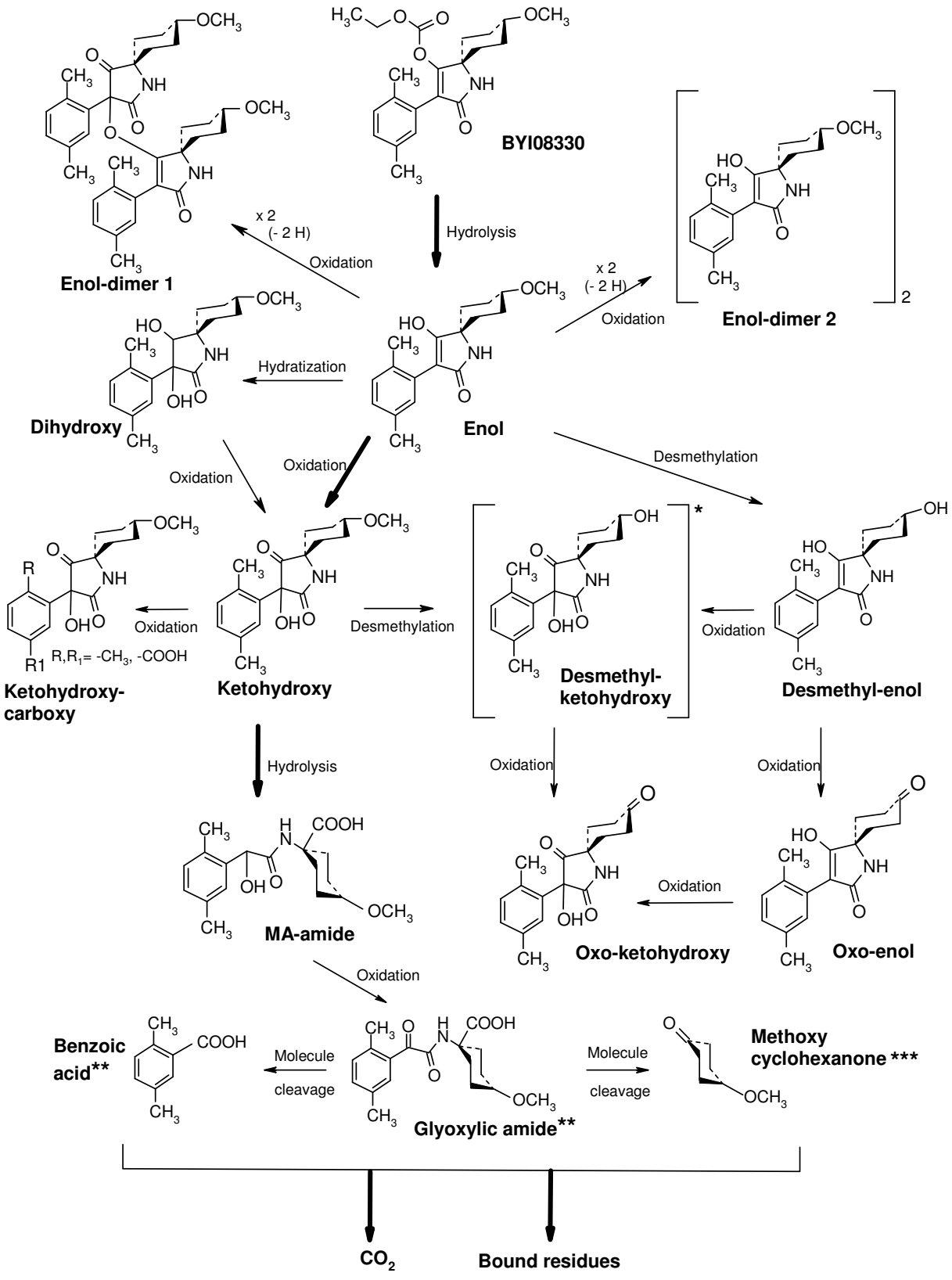
Table 24 Biotransformation of BYI08330 in *dark controls* of sandy loam Molino, mean values expressed as % of AR (M-252907-01-2)

Compound	Days After Treatment (DAT)						
	0	0.2	1	2	3	4	7
Label 1							
BYI08330 (t.i.)	98.3	92.4	53.2	26.7	18.1	14.0	9.4
BYI08330-enol	< 0.1	1.9	12.3	19.8	18.3	15.8	14.2
- Enol-Dimer 1	< 0.1	< 0.1	2.2	3.4	4.1	5.4	4.6
- Benzoic acid	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
- glyoxylic amide	< 0.1	< 0.1	0.7	2.1	2.1	0.8	< 0.1
- Ketohydroxy	< 0.1	2.1	11.3	18.9	22.6	29.5	33.0
- ROI 3 [a]	< 0.1	< 0.1	< 0.1	< 0.1	0.3	0.8	1.9
- ROI 8	< 0.1	< 0.1	< 0.1	0.5	< 0.1	< 0.1	< 0.1
- ROI 9	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
- ROI 10	< 0.1	< 0.1	< 0.1	1.3	1.8	2.5	3.0
- ROI 11	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Unidentified diffuse RA	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total extracted	99.5	96.7	80.7	73.9	68.0	70.2	67.4
$^{14}CO_2$	n.a.	< 0.1	0.3	0.5	1.0	1.0	1.6
Volatile org.	n.a.	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Unextractable	0.1	6.7	21.8	27.8	32.8	30.9	30.9
Total RA recovery	99.6	103.4	102.8	102.1	101.8	102.1	99.9
Label 2							
Compound	Days After Treatment (DAT)						
BYI08330	101.4	76.6	24.3	14.8	10.2	8.6	7.2
BYI08330-enol	< 0.1	11.2	14.2	14.6	15.5	16.6	12.5
- Enol-Dimer 1	< 0.1	1.0	6.5	7.8	8.6	6.5	8.0
- Glyoxylic amide	< 0.1	< 0.1	3.1	2.8	2.2	2.3	1.0
- Ketohydroxy	< 0.1	5.2	24.8	29.2	30.1	32.6	33.9
- Methoxy cyclohexanone	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
- ROI 1	< 0.1	< 0.1	2.4	2.9	2.5	2.6	2.6

Compound	Days After Treatment (DAT)						
	0	0.2	1	2	3	4	7
- ROI 11	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
- ROI 13	< 0.1	< 0.1	< 0.1	< 0.1	2.0	2.1	3.8
- ROI 15	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
- ROI 16	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
- ROI 17	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
- ROI 18	< 0.1	< 0.1	< 0.1	< 0.1	1.6	2.8	3.3
Unidentified diffuse RA*	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total extracted	103.	95.1	76.6	73.7	74.1	75.5	73.7
$^{14}CO_2$	n.a.	< 0.1	0.3	0.7	0.9	1.0	1.4
Volatile org.	n.a.	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Unextractable	0.1	9.1	25.8	27.3	27.9	28.0	27.5
Total RA recovery	103.	104.	103.	102.	103.	104.	103.

[a] ROI # is the defined region of interest (peak zone) set for radio-detection.

Degradation pathways for spirotetramat in soil are summarized in Figure 8.



*: postulated intermediate; ** and *** were identified in studies including light (dependent on radiolabel used)

Figure 8: Proposed Metabolic/Degradation Pathway for Spirotetramat (BYI08330) in Soil

Photolysis in Water

The phototransformation of [azaspirodecenyl-3-^{14}C]- and [azaspirodecenyl-5-^{14}C]- spirotetramat (labels #1 and #2) was studied in sterile 0.01 M aqueous acetate buffer solution of pH 5 at 25 °C at an initial concentration of 1 mg/L (M-266695-01-2**,** Stupp, H.-P., 2005). The test solutions were kept in quartz glass vessels and continuously exposed to artificial irradiation (xenon lamp). In addition, dark controls were set up. Test solutions were analysed directly without extraction by LSC and reversed phase HPLC with radioactivity detection.

Results are summarized in Tables 25 and 26.

Table 25 Transformation of spirotetramat in buffer pH 5, mean values of radiolabel #1 expressed as % of AR (M-266695-01-2)

Compound		Sampling Times [days]						
		0	1	2	3	4	6	7
BYI08330	Irradiated	100.2	72.9	64.0	36.4	34.6	16.8	16.7
	Dark	100.9	102.4	93.5	90.5	88.5	84.5	84.6
Reg1	Irradiated							1.7
	Dark							
P3	Irradiated						2.6	4.2
	Dark							
P4	Irradiated						4.8	5.2
	Dark							
P5	Irradiated				5.1		2.6	3.0
	Dark							
Photo-cyclopentyl (P6)	Irradiated		3.1	5.8	19.2	24.9	37.6	35.4
	Dark							
Photo-2-hydroxymethyl (P7)	Irradiated		16.9	18.4	16.2	22.2	15.8	15.5
	Dark							
Photo-2-formyl (P8)	Irradiated			2.8	10.7	4.9	3.5	6.3
	Dark							
Photo-2-methyl carbonate (P9)	Irradiated		7.2	9.5	14.0	16.1	19.3	17.0
	Dark							
BYI08330-enol	Irradiated							
	Dark		2.3	4.2	6.5	9.0	11.7	13.7
Total RA in test solution	Irradiated	100.	100.	101.	102.	10-3.	103.	105.
	Dark	101.	104.7	97.7	97.0	97.6	96.1	98.3
$^{14}CO_2$	Irradiated	n.m.	0.1	0.2	0.8	1.3	2.6	2.5
	Dark	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.
Volatile organics	Irradiated	n.m.	0.1		0.1			0.8
	Dark	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.
Total recovery of RA	Irradiated	100.	100.	101.	102.	14.	106.	108.
	Dark	101.	105.	97.7	97.0	97.6	96.1	98.3

Blanks represent values below LOD (for radio-HPLC: LOD = 1%; for volatiles: LOD = 0.1%)

Table 26 Transformation of spirotetramat in buffer pH 5, mean values of radiolabel #2 expressed as % of AR (M-266695-01-2)

Compound		Sampling Times [days]						
		0	1	2	3	4	6	7
BYI08330	Irradiated	98.2	78.3	64.5	39.3	41.1	32.7	12.0
	Dark	101.4	97.5	97.3	86.6	89.5	89.1	85.1
Reg1	Irradiated							2.6
	Dark							
P2	Irradiated			1.4	2.6	5.3	4.4	5.2
	Dark							
P4	Irradiated				2.3			3.4
	Dark							
P5	Irradiated				5.5			3.0
	Dark							
Photo-cyclopentyl (P6)	Irradiated		2.3	5.4	15.1	16.6	25.3	42.9
	Dark							
Photo-2-hydroxymethyl (P7)	Irradiated		13.7	18.1	15.4	21.9	22.9	13.8
	Dark							
Photo-2-formyl (P8)	Irradiated		0.0	2.3	11.5	3.9	3.6	4.3
	Dark							
Photo-2-methyl carbonate (P9)	Irradiated		5.5	8.8	11.7	14.7	17.2	18.4
	Dark							
BYI08330-enol	Irradiated							
	Dark		2.6	4.2	6.9	9.8	12.5	13.8
Total RA in test solution	Irradiated	98.2	100.	100.	103.	103.	106.	106.
	Dark	101.	100.	102.	93.8	99.4	102.	98.9
$^{14}CO_2$	Irradiated	n.m.				0.1	0.1	0.2
	Dark	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.
Volatile organics	Irradiated	n.m.	0.3					0.1
	Dark	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.
Total recovery of RA	Irradiated	98.2	100.0	100.5	103.4	103.5	106.2	106.0
	Dark	101.	100.	102.	93.8	99.4	102.	98.9

Blanks represent values below LOD (for radio-HPLC: LOD = 1%; for volatiles: LOD = 0.1%)

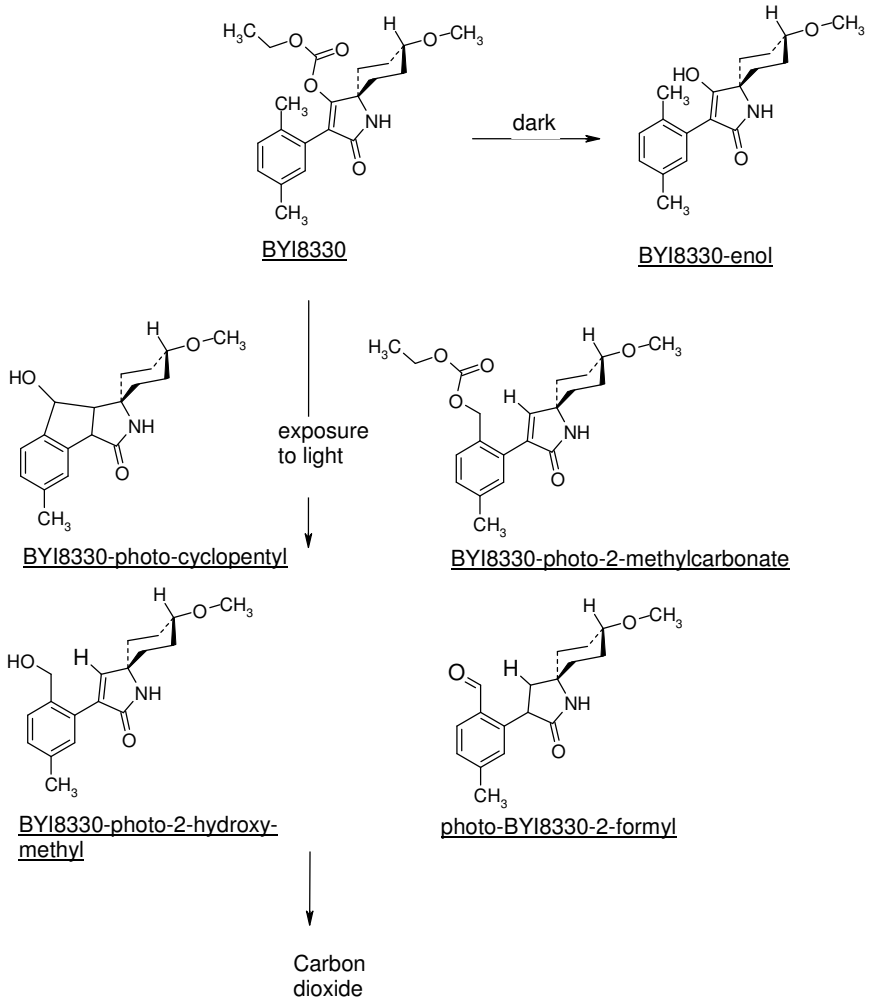


Figure 9 Proposed pathway of direct phototransformation for spirotetramat (BYI08330) in pure water, buffer of pH 5 (M-266695-01-2)

Photolysis of Spirotetramat in Sterile Natural Water

The Meeting received a report on the phototransformation of [azaspirodecenyl-3-^{14}C] and [azaspirodecenyl-5-^{14}C]spirotetramat (labels #1 and #2) in sterile natural water from the river Rhine at 25 °C at an initial concentration of 1 mg/L. The test solutions were kept in quartz glass vessels and continuously exposed to artificial irradiation (xenon lam). In addition, dark controls were set up. Test solutions were analysed directly without extraction by LSC and reversed phase HPLC with radioactivity detection.

Results are summarized in Table 27.

Table 27 Transformation of spirotetramat in Rhine River water; Per Cent of Applied Radioactivity (AR) [a]

Compound	Sampling Times [days]						
	0	1	2	3	6	8	10
Label #1							
BYI08330	80.4% (88.3)	2.6 (61.7)	(35.4)	(21.9)	(3.7)	(1.5)	
BYI08330-enol	16.3 (7.9)	78.3 (37.7)	68.0 (64.8)	56.5 (79.1)	32.7 (98.6)	21.5 (101.)	14.1 (103)
$^{14}CO_2$	-	0.0	0.0	0.1	0.3	0.7	1.1
Volatile organics	-	0.0	0.0	1.5	0.7	1.0	0.7

Compound	Sampling Times [days]						
	0	1	2	3	6	8	10
Label #2							
BYI08330	77.5% (84.0)	1.5 (57.5)	(35.6)	(20.9)	(3.8)	(1.5)	
BYI08330-methoxy-cyclo-hexylamino-caboxylic acid		0.6	1.5	2.7	6.1	9.9	11.3
BYI08330-methoxycyclo-hexanone		3.0	6.0	8.1	15.0	17.5	16.0
BYI08330-enol	19.3 (10.9)	81.9 (40.9)	72.2 (64.7)	58.3 (78.9)	32.1 (97.4)	17.0 (101)	16.8 (102)
$^{14}CO_2$	n.m.	0.0	0.0	0.0	0.1	0.2	0.3
Volatile organics	n.m.	0.0	0.0	0.1	0.1	0.1	0.1

[a] Values in parentheses ( ) are dark control.

Aerobic Aquatic Metabolism (Water Sediment System)

The degradation and metabolism of spirotetramat in water/sediment systems was investigated in two systems of natural water and sediment [Hoenniger Weiher (HW) and Anglerweiher (AW)] using [azaspirodecenyl-3-^{14}C] and [azaspirodecenyl-5-^{14}C]spirotetramat (labels #1 and #2) as test substances (M-269307-01-2, Menke, U., 2006). Samples were incubated in the dark under aerobic conditions at 20 °C for a period of 120 days. The test system consisted of glass vessels. Entire vessels filled with sediment and supernatant water (ratio of 3:1) were applied with [^{14}C]spirotetramat at a rate of 15.7 and 15.9 µg test item per vessel (label #1 and label #2, resp.), equivalent to 105 and 107% of an overspray of the maximum field application rate of 288 g/ha.

The vessels were processed and investigated. The water was decanted and centrifuged and the sediment extracted). The spirotetramat residues were analysed by HPLC/reversed phase. For identification of the transformation products co-chromatography with reference standards was performed. The two major and three minor metabolites were identified in addition by LC-MS and LC-MS/MS spectrometry.

The results are summarized in Table 28

Table 28 Distribution of radioactivity after application of [^{14}C] spirotetramat to water/sediment and aerobic incubation at 20°C as % of applied radioactivity (AR) (M-269307-01-2)[a]

Compound	Source		Sampling time (days after application)									
			0	0.2	1	3	7	14	30	60	91	120
Hoenniger Weiher (HW)												
BYI08330	Water	Mean	79.7	71.8	43.0	6.4						
		SD	±2.7	±1.6	±1.6	±0.1						
	Sediment	Mean	1.8	3.2	3.1	1.7						
		SD	±0.4	±0.1	±0.2	±0.2						
-Enol	Water	Mean	16.6	20.7	42.7	62.1	76.4	68.7	21.5	13.1	6.7	
		SD	±0.9	±0.7	±2.3	±0.8	±1.1	±0.5	±1.8	±6.7	±6.7	
	Sediment	Mean		1.6	6.8	12.8	21.1	28.5	35.2	36.6	22.3	10.5
		SD		±0.1	±0.2	±0.7	±0.7	±1.3	±1.1	±4.6	±6.8	±10.5
-Keto-hydroxy	Water	Mean			0.8	13.5		0.5	3.4	4.7	3.6	12.7
		SD			±0.1	±0.0		±0.5	±0.3	±1.4	±0.3	±4.7
	Sediment	Mean							3.2	5.0	13.2	27.8
		SD							±0.3	±2.7	±0.3	±15.0
-MA-amide	Water	Mean								1.0	1.7	
		SD								±1.0	±0.3	

Compound	Source		Sampling time (days after application) 0	0.2	1	3	7	14	30	60	91	120
	Sediment	Mean									0.5	
		SD									±0.5	
Unidentified	Water	#1	0.7	0.9	0.5	0.9	1.1	0.9	0.4	4.1	4.0	0.3
		#2	0.4	1.0	0.6	2.7	0.8	0.5	0.9	0.5	2.3	0.2
	Sediment	#1	0.5	0.8	1.7	0.6	0.4	0.1	1.3	0.7	4.1	1.0
		#2	0.2	0.9	1.5	0.4	0.5	0.1	1.6	1.1	0.8	1.2
RA in sediment	Extracted	#1	2.7	5.4	12.0	15.9	20.9	27.3	38.2	35.0	33.5	34.8
		#2	1.6	5.9	11.0	14.1	22.3	29.9	41.4	50.0	43.4	44.0
	NER	#1	0.1	0.2	0.8	0.8	0.7	1.2	30.0	29.4	32.0	32.9
		#2		0.2	0.5	0.6	1.1	0.8	31.7	36.7	40.7	36.3
$^{14}CO_2$	Entire system	#1	n.a.[b]				0.1	0.2	2.1	3.7	8.0	11.0
		#2	n.a.				0.1	0.1	0.8	2.2	4.2	5.9
Org. volatiles	entire system	#1	n.a.									
		#2	n.a.									
Total recovery of radioactivity	Water	#1	98.8	92.5	86.4	83.5	78.6	69.2	26.9	29.2	22.7	17.8
		#2	94.8	94.4	87.7	84.0	76.0	70.7	24.3	12.9	7.6	8.2
		Mean	96.8	93.5	87.0	83.8	77.3	69.9	25.6	21.1	15.2	13.0
	Sediment	#1	2.8	5.6	12.8	16.7	21.6	28.5	68.2	64.4	65.5	67.7
		#2	1.6	6.2	11.6	14.7	23.4	30.7	73.1	86.7	84.1	80.3
		Mean	2.2	5.9	12.2	15.7	22.5	29.6	70.7	75.6	74.8	74.0
	Entire system	#1	101.6	98.2	99.2	100.2	100.3	97.8	97.3	97.3	96.2	96.4
		#2	96.4	100.6	99.2	98.7	99.5	101.5	98.1	101.8	95.9	94.4
		Mean	99.0	99.4	99.2	99.5	99.9	99.7	97.7	99.5	96.0	95.4
		SD	±2.5	±1.2	±0.0	±0.8	±0.4	±1.8	±0.4	±2.2	±0.1	±1.0
Anglerweiher (AW)												
BYI08330	Water	Mean	70.7	62.8	39.4	5.6						
		SD	±0.5	±2.1	±0.5	±0.2						
	Sediment	Mean	1.6	2.5	2.0	0.6						
		SD	±0.2	±0.3	±0.0	±0.0						
-Enol	Water	Mean	25.0	30.6	48.3	78.6	78.8	72.0	39.8	15.0	7.1	8.1
		SD	±0.7	±1.4	±2.3	±0.0	±0.9	±0.5	±0.1	±0.1	±0.8	±0.1
	Sediment	Mean		1.6	5.6	7.2	12.7	15.1	14.5	3.1	2.4	3.2
		SD		±0.4	±0.3	±0.1	±1.5	±0.6	±1.1	±0.9	±2.4	±3.2
-Keto-hydroxy	Water	Mean			1.4	2.2	2.8	2.9	6.4	6.2	2.0	4.0
		SD			±0.6	±0.2	±0.6	±0.3	±0.3	±0.5	±0.2	±1.6
	Sediment	Mean			0.3	0.5	0.5	2.3	10.3	20.9	18.9	21.4
		SD			±0.3	±00	±0.5	±0.5	±1.7	±2.1	±5.0	±10.1
-MA-amide	Water	Mean						1.6	2.2	6.9	4.9	1.0
		SD						±0.0	±0.2	±0.8	±1.3	±1.0
	Sediment	Mean								1.7	1.0	
		SD								±0.4	±1.0	
-Oxo-enol isomer	Water	Mean									3.7	3.0
		SD									±0.1	±3.0
	Sediment	Mean										1.2

Compound	Source		Sampling time (days after application) 0	0.2	1	3	7	14	30	60	91	120
		SD										±1.2
-Di-hydroxy	Water	Mean								2.1	2.1	
		SD								±2.1	±2.1	
	Sediment	Mean								1.8	3.8	
		SD								±0.7	±1.7	
Unidentified	Water	#1	1.0	0.6	0.1	1.2	0.3	2.5	0.7	4.7	4.9	0.4
		#2	0.6	0.7	1.5	1.2	0.8	1.0	3.1	0.2	6.6	4.8
	Sediment	#1	0.2	0.5	1.4	2.2	2.7	0.5	1.5	0.7	2.0	3.1
		#2	0.2	0.4	1.5	1.9	1.6	0.6	3.6	1.5	0.6	0.5
RA in sediment	Extracted	#1	1.6	4.5	9.3	10.6	15.0	18.0	26.9	24.2	21.4	23.1
		#2	2.0	4.7	9.4	10.1	15.8	18.1	27.7	33.3	33.2	32.0
	NER	#1		0.1	1.0	2.0	3.8	5.0	22.1	29.3	30.4	32.3
		#2		0.2	1.2	2.2	3.6	4.8	18.4	30.5	33.2	33.9
$^{14}CO_2$	Entire system	#1	n.a.			0.1	0.1	0.4	3.0	10.2	19.7	24.0
		#2	n.a.			0.1	0.1	0.2	1.2	3.7	8.2	13.5
Org. volatiles	Entire system	#1	n.a.									
		#2	n.a.									
Total recovery of radioactivity	Water	#1	95.5	93.3	90.4	88.2	83.3	79.2	49.3	34.2	27.3	20.2
		#2	97.5	94.8	89.4	87.3	80.9	77.3	51.6	31.2	24.0	17.3
		Mean	96.5	94.0	89.9	87.7	82.1	78.2	50.4	32.7	25.7	18.7
	Sediment	#1	1.6	4.6	10.3	12.5	18.8	22.9	49.0	53.5	51.8	55.4
		#2	2.0	4.8	10.6	12.2	19.4	22.8	46.1	63.8	66.4	65.9
		Mean	1.8	4.7	10.4	12.4	19.1	22.9	47.5	58.7	59.1	60.6
	Entire system	#1	97.1	97.9	100.7	100.9	102.2	102.6	101.3	98.0	98.8	99.6
		#2	99.5	99.6	100.0	99.6	100.	100.	98.3	98.7	98.6	96.7
		Mean	98.3	98.8	100.	100.	101.	101.	100.	98.3	98.7	98.1
		SD	±1.2	±0.9	±0.3	±0.6	±0.9	±1.2	±1.2	±0.3	±0.1	±1.4

[a] Where applicable, mean of both radiolabels #1 and #2.

[b] n.a. = not analysed

Residues in Succeeding Crops

Accumulation in Confined Rotational Crops

The metabolism in rotational crops (spring wheat, Swiss chard and turnips) was investigated following spray application of [azaspirodecenyl-3-^{14}C]spirotetramat onto bare soil (day 0) at an application rate of 406 g ai/ha (M-269589-02-2, Sur, R. and Spiegel K., 2006). Crops were sown at day 30, day 135 and day 260. Representative immature and mature plant samples were analysed.

The majority of the radioactivity was extracted conventionally. Approximately 83 to 97% of the TRR in the 30-day rotation crops and 72 to 93% of the TRR in the 135-day rotation crops were extracted (grain excluded). In the 260-day rotation, only wheat straw and wheat hay (contained TRRs > 0.01 mg/kg) were extracted, releasing 81% and 87% of the TRRs, respectively. For wheat grain (30-day and 135-day rotation) and wheat straw (30-day rotation), exhaustive extractions of post-extraction solids (PES 1) were conducted following the conventional extraction steps. The PES 1 of wheat grain containing 50–79% of the TRR was further treated with enzyme diastase and 45–67% of the TRR was

released. The PES 1 of wheat straw containing 8% of the TRR was microwave extracted at 120 °C; and 4% of the TRR was further released.

The radioactivity in the extracts of all RACs obtained after conventional extraction was partitioned with dichloromethane (DCM), yielding a DCM phase and an aqueous phase. The phases were analysed (if the TRR exceeded 0.01 mg/kg) and the metabolites were quantified by HPLC. Identification of metabolites was performed by spectroscopic methods (HPLC-mass spectrometry (MS)/MS, Fourier Transform (FT)-MS and ^{1}H-nuclear-magnetic resonance spectroscopy) or by HPLC and TLC co-chromatography using authentic reference compounds. In total, between 72% and 97% of the TRR was identified or characterized by the chromatographic behaviour of the compounds and/or the extraction procedure.

Since a major part of the residues were represented by conjugates, plant extracts were subjected to acid hydrolysis to cleave the conjugates and to simplify the metabolic profiles for analysis of residues. BYI 08330-desmethyl-di-hydroxy, BYI 08330-ketohydroxy-alcohol and BYI 08330-desmethyl-ketohydroxy were identified as the major constituents of the residues after hydrolysis.

The results are summarized in Tables 29–32.

Table 29 Total Radioactive Residues (TRRs)[a] in Rotational Crops (mg/kg)

Plant-back interval (days)	Wheat				Swiss chard	Turnip	
	forage	hay	straw	grain		tops	roots
30	0.024	0.384	0.998	0.026	0.078	0.123	0.021
135	0.021	0.038	0.097	0.010	0.012	0.015	0.003
260	0.009*	0.014	0.036	0.002	0.006*	0.008*	0.002*

[a] TRR was determined by summation of the radioactivity of the combined ACN/water extracts and the radioactivity of the remaining solid, except as noted by *. For *, TRR was determined by combustion analysis only due to the low residue levels.

Table 30 Summary of characterization and identification of radioactive residues in 30-day PBI rotational crop matrices following application of radiolabelled spirotetramat at 406 g ai/ha

	wheat forage		wheat hay		wheat straw		wheat grain		Swiss chard		turnip leaves		turnip roots	
TRR	0.024 mg/kg		0.384 mg/kg		0.998 mg/kg		0.026 mg/kg		0.078 mg/kg		0.123 mg/kg		0.021 mg/kg	
Metabolite Fraction (BYI 08330)	%TRR	mg/kg	%TRR	mg/kg	%TRR	mg/kg	%TRR	mg/kg	%TRR	mg/kg	%TRR	mg/kg	%TRR	mg/kg
desmethyl-di-hydroxy-Glc	2.6	0.001	6.9	0.027	12.7	0.127	4.5	0.001	3.8	0.003	4.3	0.005	--	--
enol-Glc	--	--	1.3	0.005	4.1	0.041	--	--	--	--	--	--	--	--
desmethyl-di-hydroxy	--	--	1.2	0.005	2.5	0.025	2.3	0.001	--	--	1.9	0.002	--	--
desmethyl-di-hydroxy-Glc-MA	--	--	4.0	0.015	6.0	0.060	1.3	< 0.001	5.3	0.004	3.7	0.005	6.0	0.001
ketohydroxy-alcohol-Glc	2.7	0.001	4.7	0.018	5.8	0.058	1.4	< 0.001	--	--	5.3	0.007	--	--

	wheat forage		wheat hay		wheat straw		wheat grain		Swiss chard		turnip leaves		turnip roots	
TRR	0.024 mg/kg		0.384 mg/kg		0.998 mg/kg		0.026 mg/kg		0.078 mg/kg		0.123 mg/kg		0.021 mg/kg	
Metabolite Fraction (BYI 08330)	%TRR	mg/kg	%TRR	mg/kg	%TRR	mg/kg	%TRR	mg/kg	%TRR	mg/kg	%TRR	mg/kg	%TRR	mg/kg
desmethyl-ketohydroxy-Glc (I1)	--	--	**10.6**	0.041	8.7	0.087	0.8	< 0.001	**15.2**	0.012	--	--	--	--
desmethyl-ketohydroxy-Glc (I2)	**31.7**	0.008	**7.2**	0.028	4.4	0.044	0.8	< 0.001	**9.2**	0.007	5.2	0.006	--	--
desmethyl-enol-alcohol	1.6	< 0.001	0.8	0.003	0.5	0.005	0.5	< 0.001	2.2	0.002	0.3	< 0.001	2.8	0.001
di-hydroxy	5.0	0.001	5.3	0.020	5.7	0.057	2.0	0.001	8.1	0.006	1.5	0.002	7.7	0.002
ketohydroxy-alcohol	--	--	6.9	0.027	1.8	0.018	0.8	< 0.001	1.6	0.001	6.8	0.008	--	--
desmethyl-ketohydroxy-Glc-MA (I1)	1.8	< 0.001	11.5	0.044	8.8	0.088	1.5	< 0.001	--	--	--	--	--	--
desmethyl-ketohydroxy-Glc-MA (I2)	2.2	0.001	4.0	0.016	3.8	0.038	1.4	< 0.001	--	--	4.8	0.006	--	--
desmethyl-ketohydroxy	2.3	0.001	0.6	0.002	2.2	0.022	--	--	0.9	0.001	0.3	< 0.001	4.2	0.001
Ketohydroxy	**31.4**	0.008	8.4	0.032	3.1	0.031	--	--	**17.4**	0.014	2.6	0.003	**29.5**	0.006
Enol	--	--	--	--	--	--	2.9	0.001	--	--	--	--	--	--
Total identified	81.3	0.020	73.5	0.282	70.1	0.700	20.1	0.005	63.7	0.050	36.7	0.045	50.1	0.011
Total characterized	5.3	0.001	20.3	0.078	26.3	0.262	30.0	0.008	27.5	0.021	60.4	0.074	32.5	0.007
Total extractable (conventional)	86.7	0.021	93.6	0.360	92.1	0.919	50.1	0.013	91.3	0.071	97.1	0.120	82.6	0.017
Total bound (solids 1)	13.3	0.003	6.4	0.025	7.9	0.079	49.9	0.013	8.7	0.007	2.9	0.004	17.4	0.004
Total extractable (exhaustive)	--	--	--	--	4.3	0.043	44.5	0.012	--	--	--	--	--	--
Total bound (solids 2)	--	--	--	--	3.6	0.036	5.4	0.001	--	--	--	--	--	--
Accountability	100.	0.024	100.	0.384	100.	0.998	100.	0.026	100.	0.078	100.	0.123	100.	0.021

Table 31 Summary of characterization and identification of radioactive residues in 135-day PBI rotational crop matrices following application of radiolabelled spirotetramat at 406 g ai/ha

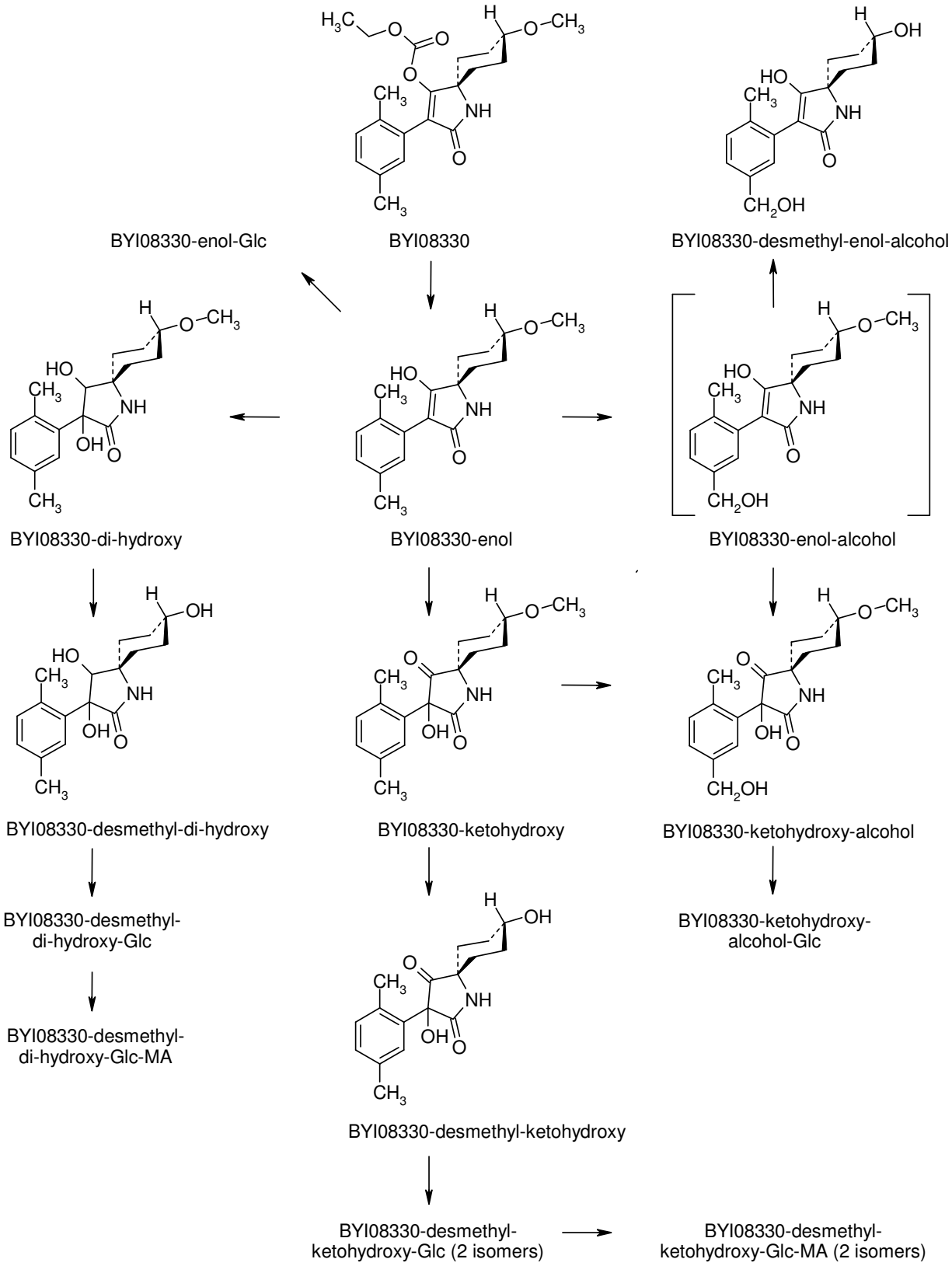
	wheat forage		wheat hay		wheat straw		wheat grain		Swiss chard		turnip leaves		turnip roots	
TRR	0.021 mg/kg		0.038 mg/kg		0.097 mg/kg		0.010 mg/kg		0.012 mg/kg		0.015 mg/kg		0.003 mg/kg	
Metabolite Fraction (BYI 08330)	%TRR	mg/kg	%TRR	mg/kg	%TRR	mg/kg	%TRR	mg/kg	%TRR	mg/kg	%TRR	mg/kg	%TRR	mg/kg
desmethyl-di-hydroxy-Glc	18.3	0.004	14.0	0.005	9.2	0.009	NA	--	4.5	0.001	5.5	0.001	NA	--

	wheat forage		wheat hay		wheat straw		wheat grain		Swiss chard		turnip leaves		turnip roots	
TRR	0.021 mg/kg		0.038 mg/kg		0.097 mg/kg		0.010 mg/kg		0.012 mg/kg		0.015 mg/kg		0.003 mg/kg	
enol-Glc	--	--	1.7	0.001	1.9	0.002			--	--	--	--		
desmethyl-di-hydroxy	--	--	--	--	2.9	0.003			--	--	--	--		
desmethyl-di-hydroxy-Glc-MA	9.1	0.002	11.5	0.004	5.8	0.006			3.5	< 0.001	4.3	0.001		
ketohydroxy-alcohol-Glc	--	--	3.2	0.001	1.3	0.001			--	--	2.6	< 0.001		
desmethyl-ketohydroxy-Glc (I1)	8.7	0.002	6.5	0.002	7.3	0.007			6.2	0.001	--	--		
desmethyl-ketohydroxy-Glc (2)	5.6	0.001	3.2	0.001	2.7	0.003			5.9	0.001	5.5	0.001		
desmethyl-enol-alcohol	--	--	--	--	--	--			--	--	--	--		
di-hydroxy	--	--	--	--	10.6	0.010			16.8	0.002	--	--		
ketohydroxy-alcohol	--	--	--	--	--				3.8	< 0.001	4.6	0.001		
desmethyl-ketohydroxy-Glc-MA (I1)	8.0	0.002	5.4	0.002	5.6	0.005			--	--	--	--		
desmethyl-ketohydroxy-Glc-MA (I2)	2.5	0.001	--	--	2.0	0.002			--	--	--	--		
desmethyl-ketohydroxy	--	--	--	--	1.8	0.002			2.3	< 0.001	3.5	0.001		
ketohydroxy	--	--	--	--	7.1	0.007			14.9	0.002	--	--		
enol	--	--	--	--	--	--			--	--		--		
desmethyl-di-hydroxy-Glc	--	--	--	--	--	--			--	--	--	--		
Total identified	52.2	0.012	45.5	0.017	58.3	0.056	--	--	57.8	0.007	26.0	0.004	--	--
Total characterized	*40.3	*0.009	*39.2	*0.015	29.7	0.029	--	--	26.2	0.003	*59.7	*0.009	--	--
Total extractable (conventional)	92.5	0.021	84.8	0.032	88.0	0.085	21.2	0.002	84.0	0.010	85.7	0.013	71.6	0.002
Total bound (solids 1)	7.5	0.002	15.2	0.006	12.0	0.012	78.8	0.008	16.0	0.002	14.3	0.002	28.4	0.001
Total extractable (exhaustive)	--	--	--	--	--	--	66.8	0.007	--	--	--	--	--	--
Total bound (solids 2)	--	--	--	--	--	--	12.0	0.001	--	--	--	--	--	--
Accountability	100.0	0.021	100.0	0.038	100.0	0.097	100.0	0.010	100.0	0.012	100.0	0.015	100.0	0.003

Table 32 Summary of characterization and identification of radioactive residues in 260-day PBI rotational crop matrices following application of radiolabelled spirotetramat at 406 g ai/ha

	wheat forage		wheat hay		wheat straw		wheat grain		Swiss chard		turnip leaves		turnip roots	
TRR	0.009 mg/kg		0.014 mg/kg		0.036 mg/kg		0.002 mg/kg		0.006 mg/kg		0.008 mg/kg		0.002 mg/kg	
Metabolite Fraction (BYI 08330-)	%TRR	mg/kg	%TRR	mg/kg	%TRR	mg/kg	%TRR	mg/kg	%TRR	mg/kg	%TRR	mg/kg	%TRR	mg/kg
desmethyl-di-hydroxy-Glc	NA	--	5.4	0.001	5.6	0.002	NA	--	NA	--	NA	--	NA	--
enol-Glc			--	--	--	--								
desmethyl-di-hydroxy			--	--	--	--								
desmethyl-di-hydroxy-Glc-MA			9.7	0.001	4.4	0.002								
ketohydroxy-alcohol-Glc			--	--	4.9	0.002								
desmethyl-ketohydroxy-Glc (I1)			6.5	0.001	7.8	0.003								
desmethyl-ketohydroxy-Glc (2)			2.8	< 0.001	4.8	0.002								
desmethyl-enol-alcohol			--	--	--	--								
di-hydroxy			--	--	18.1	0.006								
ketohydroxy-alcohol			--	--	--	--								
desmethyl-ketohydroxy-Glc-MA (I1)			4.2	0.001	7.3	0.003								
desmethyl-ketohydroxy-Glc-MA (I2)			--	--	7.6	0.003								
desmethyl-ketohydroxy			--	--	--	--								
ketohydroxy			--	--	5.3	0.002								
enol			--	--	--	--								
desmethyl-di-hydroxy-Glc			--	--	--	--								
Total identified	--	--	28.7	0.004	65.9	0.024	--	--	--	--	--	--	--	--
Total characterized	--	--	*52.2	*0.007	21.3	**0.008**	--	--	--	--	--	--	--	--
Total extractable (conventional)	--	--	**80.8**	**0.011**	**87.3**	**0.031**	--	--	--	--	--	--	--	--
Total bound (solids 1)	--	--	**19.2**	**0.003**	**12.7**	**0.005**	--	--	--	--	--	--	--	--
Accountability	100.	0.009	100.	0.014	100.	0.036	100.	0.002	100.	0.006	100.	0.008	100.	0.002

The proposed metabolic pathway for spirotetramat in rotational crops is given in Figure 10.



[a] BYI08330 was not found in any rotational crop.

Figure 10 Proposed metabolic pathway for spirotetramat applied to soil subsequently planted [a]

Field Accumulation in Rotational Crops

The field rotational crop study was conducted in three sites in the US using spirotetramat 100 OD, an oil-dispersible formulation containing 100 g ai/L spirotetramat (M-277284-01-1**,** Lemke, V; 2006). Spirotetramat 100 OD was applied, twice at 5–7 days apart, to a primary crop (leafy, *Brassica*, or fruiting vegetables) as foliar broadcast spray for a total rate of 172-180 g ai/ha. After primary crops were removed, rotational crops (mustard greens, turnips and wheat) were planted at a 30-day plant-back interval (PBI) following the last application of spirotetramat 100 OD.

At maturity, samples of mustard greens, turnip (tops and roots) and wheat (forage, hay, straw and grain) were collected and analysed for residues of spirotetramat, BYI 08330-ketohydroxy, BYI 08330-desmethyl-ketohydroxy, BYI 08330-desmethyl-di-hydroxy and BYI 08330-ketohydroxy-alcohol. Adequate method-validation data were provided. No residues were detected above the LOQ in any of the rotational crop matrices. The LOQ for each of spirotetramat and BYI 08330-ketohydroxy was 0.01 mg/kg. The LOQ for each of BYI 08330-desmethyl-ketohydroxy, BYI 08330-desmethy-di-hydroxy and BYI 08330-ketohydroxy-alcohol was 0.02 mg/kg.

The results are summarized in Table 33.

Table 33 Residues of Spirotetramat and Selected Metabolites in Rotational Crops (M-277284-01-1)

Trial ID (City, State/Year)	Crop/ Variety	Com-modity	Total Rate, g ai/ha	Harvest DAP[a]	PBI[b] (days)	Spirotetramat (ppm)	BYI 08330 ketohydroxy (ppm)	desmethyl-di-hydroxy (ppm)	desmethyl-ketohydroxy (ppm)	ketohydroxy-alcohol (ppm)
Molino, FL 2004	Mustard greens/Giant Southern Curled	greens (leaves)	177.3	34	34	< 0.01, < 0.01	< 0.01, < 0.01	< 0.02, < 0.02	< 0.02, < 0.02	< 0.02, < 0.02
Seymour, Il 2004	Mustard greens/Green Wave	greens (leaves)	178.2	46	29	< 0.01, < 0.01	< 0.01, < 0.01	< 0.02, < 0.02	< 0.02, < 0.02	< 0.02, < 0.02
Molino, FL 2004	Turnip/Purple Top White Globe	Tops (leaves)	177.6	48	34	< 0.01, < 0.01	< 0.01, < 0.01	< 0.02, < 0.02	< 0.02, < 0.02	< 0.02, < 0.02
Seymour, Il 2004	Turnip/Purple Top White Globe	Tops (leaves)	179.2	59	29	< 0.01, < 0.01	< 0.01, < 0.01	< 0.02, < 0.02	< 0.02, < 0.02	< 0.02, < 0.02
Molino, FL 2004	Turnip/Purple Top White Globe	Roots	177.6	48	34	< 0.01, < 0.01	< 0.01, < 0.01	< 0.02, < 0.02	< 0.02, < 0.02	< 0.02, < 0.02
Seymour, Il 2004	Turnip/Purple Top White Globe	Roots	179.2	59	29	< 0.01, < 0.01	< 0.01, < 0.01	< 0.02, < 0.02	< 0.02, < 0.02	< 0.02, < 0.02
Molino, FL 2004	Wheat, winter/Coker 9125	Forage	172.0	94	35	< 0.01, < 0.01	< 0.01, < 0.01	< 0.02, < 0.02	< 0.02, < 0.02	< 0.02, < 0.02
Seymour, Il 2004	Wheat, winter/IL94-1653	Forage	180.4	185	29	< 0.01, < 0.01	< 0.01, < 0.01	< 0.02, < 0.02	< 0.02, < 0.02	< 0.02, < 0.02
Molino, FL 2004	Wheat, winter/Coker 9125	Hay	172.0	154	25	< 0.01, < 0.01	< 0.01, < 0.01	< 0.02, < 0.02	< 0.02, < 0.02	< 0.02, < 0.02
Seymour, Il 2004	Wheat, winter/IL94-1653	Hay	180.4	222	29	< 0.01, < 0.01	< 0.01, < 0.01	< 0.02, < 0.02	< 0.02, < 0.02	< 0.02, < 0.02

Trial ID (City, State/Year)	Crop/ Variety	Com-modity	Total Rate, g ai/ha	Harvest DAP[a]	PBI[b] (days)	Spirotetramat (ppm)	BYI 08330 ketohydroxy (ppm)	desmethyl-di-hydroxy (ppm)	desmethyl-ketohydroxy (ppm)	ketohydroxy-alcohol (ppm)
Molino, FL 2004	Wheat, winter/Coker 9125	Grain	172.0	191	35	< 0.01, < 0.01	< 0.01, < 0.01	< 0.02, < 0.02	< 0.02, < 0.02	< 0.02, < 0.02
Seymour, Il 2004	Wheat, winter/IL94-1653	Grain	180.4	257	29	< 0.01, < 0.01	< 0.01, < 0.01	< 0.02, < 0.02	< 0.02, < 0.02	< 0.02, < 0.02
Molino, FL 2004	Wheat, winter/Coker 9125	Straw	172.0	191	35	< 0.01, < 0.01	< 0.01, < 0.01	< 0.02, < 0.02	< 0.02, < 0.02	< 0.02, < 0.02
Seymour, Il 2004	Wheat, winter/IL94-1653	Straw	180.4	257	29	< 0.01, < 0.01	< 0.01, < 0.01	< 0.02, < 0.02	< 0.02, < 0.02	< 0.02, < 0.02

[a] Days After Planting, the number of days from planting of the rotational crop until harvest.

[b] Plant Back Interval, the number of days from final treatment of the primary crop with spirotetramat until the planting of the rotational crop. Nominal 30 days

METHODS OF RESIDUE ANALYSIS

Analytical Methods

A summary of all analytical methods for plants and animals is given in Table 34.

Table 34 Summary of analytical methods developed for plant and animal matrices

Matrix	Analyte	Method No.	Method principle	LOQ (metabolites given as BYI08330 equivalents)	Reference
Plant	BYI08330 BYI08330-enol BYI08330-ketohydroxy BYI08330-monohydroxy BYI08330-enol-glucoside	00857 data collect	HPLC-MS/MS	Hops: BYI08330: 0.1 mg/kg -enol: 0.12 mg/kg -ketohydroxy: 0.12 mg/kg -monohydroxy: 0.12 mg/kg -enol-glucoside: 0.08 mg/kg total residue calc: 0.55 mg/kg All other matrices: BYI08330: 0.01 mg/kg -enol: 0.012 mg/kg -ketohydroxy: 0.012 mg/kg -monohydroxy: 0.012 mg/kg -enol-glucoside: 0.008 mg/kg total residue calc.: 0.055 mg/kg	M-253112-03-1 M-263485-01-2 M-248725-01-2 M-277335-01-1
Plant	BYI08330 BYI08330-enol BYI08330-ketohydroxy BYI08330-monohydroxy BYI08330-enol-glucoside BYI08330-enol-glucuronide	FDA PAM MRM	GC-NPD HPLC-FD	FDA PAM multi-residue method is not applicable for determination of residues of BYI08330 and its plant metabolites	IIA 4.3/05
Plant	BYI08330 BYI08330-enol	00888 Enforce-ment	HPLC-MS/MS	Hops: BYI08330: 0.1 mg/kg BYI08330-enol: 0.1 mg/kg	M-267635-01-1 M-269574-01-1

Matrix	Analyte	Method No.	Method principle	LOQ (metabolites given as BYI08330 equivalents)	Reference
				All other plant matrices: BYI08330: 0.01 mg/kg BYI08330-enol: 0.01 mg/kg	
Plant	BYI08330-enol	DFG method S 19	GC	DFG method S19 is not applicable for determination of BYI08330-enol	IIA 4.3/08
Plant	BYI08330-ketohydroxy-alcohol BYI08330-desmethyl-ketohydroxy BYI08330-desmethyl-di-hydroxy	00929	HPLC-MS/MS	0.02 mg/kg each metabolite	IIA 4.3/09 IIA 4.3/10
Animal	BYI08330 BYI08330-enol BYI08330-enol-glucuronide	00966	HPLC-MS/MS	0.01 mg/kg each metabolite in animal tissues and organs 0.005 mg/kg in milk	IIA 4.3/11 IIA 4.3/12 IIA 4.3/13 IIA 4.3/14
Animal	BYI08330-enol	00969	HPLC-MS/MS	0.01 mg/kg in meat and egg 0.005 mg/kg in milk	IIA 4.3/15 IIA 4.3/16

Plants

Analytical method 00857 was developed for the determination of residues of spirotetramat, the metabolites BYI 08330-enol, BYI 08330-ketohydroxy, BYI 08330-mono-hydroxy and BYI 08330-enol-glucoside (Glc) in plant matrices by HPLC-ESI-MS/MS using isotopically labelled internal standards (M-253112-03-01**,** Schoening, R., Stuke, S., and Billian, P.; 2005; M-263485-01-2, Freitag, T. and Daniels, M.; 2005; M-248725-01-2, Spiegel, K.; 2006; M-277335-01-1, Brookey, F.; 2006). Spirotetramat, BYI 08330-enol, BYI 08330-ketohydroxy, BYI 08330-mono-hydroxy and BYI 08330-enol-Glc were extracted from the plant commodity with acidic acetonitrile (ACN)/water (4/1, v/v). After subsequent clean-up of the extract through a BondElut polyethylene frit, the corresponding *internal* standards were added. The solution was subjected to HPLC-MS/MS with multiple-reaction monitoring (MRM) of two transitions for each matrix and analyte for quantitation and confirmation purposes. The LOQ was 0.01 ppm for each analyte on all tested plant commodities with the exception of hop cones (0.1 ppm). The limit of detection (LOD) for all analytes was estimated to be at about 4 times lower than the corresponding LOQ. The detector response was linear over the range of 5 ng/L to 50 µg/L ($r^2 > 0.997$).

The MRM transitions monitored were as follows:

1st MRM[a]	Spirotetramat	374 to 216 *m/z*
	BYI 08330-enol	302 to 216 *m/z*
	BYI 08330-ketohydroxy	318 to 268 *m/z*
	BYI 08330-mono-hydroxy	304 to 254 *m/z*
	BYI 08330-enol-Glc	464 to 270 *m/z*

2nd MRM[b]	Spirotetramat	374 to 302 *m/z*
	BYI 08330-enol	302 to 270 *m/z*
	BYI 08330-ketohydroxy	318 to 214 *m/z*
	BYI 08330-mono-hydroxy	304 to 119*m/z*
	BYI 08330-enol-Glc	464 to 216 *m/z*

[a] These transitions were used for quantitation

[b] These transitions were used for confirmation.

Untreated control samples of various crops were spiked with spirotetramat, BYI08330-enol, BYI 08330-ketohydroxy, BYI 08330-mono-hydroxy and BYI 08330-enol-Glc at 0.01 ppm and 1.0 ppm, with the exception of hop cones, which were spiked at 0.1 ppm and 10 ppm, The percent recoveries from all matrices were 68–114% for spirotetramat, 67–117% for BYI 08330-enol, 69–112% for BYI 08330-enol-ketohydroxy, 68–120% for BYI 08330-mono-hydroxy, and 70–118% for BYI 08330-enol-Glc . Mean recoveries of all analytes from all matrices were within the acceptable range of 70–120% with RSD < 16%.

The extraction efficiency of method 00857 was tested using incurred cotton gin trash, lettuce, and apples from the metabolism studies. The recoveries of the extracted radioactive residues of spirotetramat and the metabolites in cotton gin trash, lettuce and apple samples using method 00857 were in agreement with those generated in the metabolism studies.

Results are summarized in Tables 35–41.

Table 35 Recovery results from method validation of spirotetramat in plant matrices using the data-gathering Analytical Method 00857 (M-263485-01-2; M-253112-03-1)

Matrix	Spiking Level (ppm)	Recoveries Obtained (%)	% Mean Recovery ± SD (CV)
Orange fruit	0.01	95, 100, 75, 90, 77	87 ± 11 (12.6)
	1.0	87, 86, 95, 92, 92	90 ± 4 (4.2)
Orange juice	0.01	90, 91, 93	91 ± 2 (1.7)
	1.0	68, 88, 92	83 ± 13 (15.6)
Orange pomace	0.01	106, 104, 97	102 ±15 (4.6)
	1.0	94, 85, 73	84 ± 11 (12.5)
Orange jam	0.01	102, 106, 107	105 ± 3 (2.5)
	1.0	96, 97, 99	97 ± 2 (1.6)
Sweet cherry fruit	0.01	100, 99, 87	95 ± 7 (7.6)
	1.0	91, 91, 88	90 ± 2 (1.9)
Plum fruit	0.01	100, 91, 99, 90, 104	97 ± 6 (6.3)
	1.0	96, 87, 85, 83, 91	88 ± 5 (5.9)
Peach fruit	0.01	89, 91, 102	94 ± 7 (7.4)
	1.0	91, 92, 94	92 ± 2 (1.7)
Strawberry	0.01	96, 97, 92	95 ± 3 (2.8)
	1.0	86, 94, 95	92 ± 5 (5.4)
Apple fruit	0.01	84, 92, 95, 73, 93	87 ± 9 (10.4)
	1.0	87, 86, 90, 85, 91	88 ± 3 (2.9)
Apple pomace dried	0.01	96, 94, 94	95 ± 1 (1.2)
	1.0	89, 89, 91	90 ± 1 (1.3)

Matrix	Spiking Level (ppm)	Recoveries Obtained (%)	% Mean Recovery ± SD (CV)
Apple sauce	0.01	98, 91, 91, 99, 95	95 ± 4 (4.0)
	1.0	88, 84, 86, 86, 88	86 ± 2 (1.9)
Tomato fruit	0.01	100, 102, 102, 98, 108	102 ± 4 (3.7)
	1.0	100, 97, 100, 98, 98	99 ± 1 (1.4)
Tomato juice	0.01	93, 100, 100, 97, 98	98 ± 3 (3.0)
	1.0	92, 93, 95, 95, 97	94 ± 2 (2.1)
Tomato preserve	0.01	97, 100, 89	95 ± 6 (6.0)
	1.0	90, 91, 92	91 ± 1 (1.1)
Grape (bunches of grape)	0.01	93, 104, 95, 93, 98	97 ± 5 (4.8)
	1.0	90, 90, 92, 90, 91	91 ± 1 (1.0)
Grape must	0.01	98, 97, 98	98 ± 1 (0.6)
	1.0	92, 94, 93	93 ± 1 (1.1)
Grape pomace	0.01	89, 97, 97	94 ± 5 (4.9)
	1.0	89, 87, 90	89 ± 2 (1.7)
Grape wine	0.01	99, 101, 95	98 ± 3 (3.1)
	1.0	93, 94, 92	93 ± 1 (1.1)
Potato tuber	0.01	91, 95, 97, 90, 91	93 ± 3 (3.3)
	1.0	91, 90, 90, 87, 87	89 ± 2 (2.1)
Melon peel	0.01	97, 99, 95	97 ± 2 (2.1)
	1.0	87, 88, 90	89 ± 3 (3.6)
Melon pulp	0.01	90, 93, 97, 98, 94	94 ± 3 (3.4)
	1.0	86, 85, 90, 90, 92	89 ± 3 (3.3)
Onion bulb	0.01	91, 96, 95, 97, 95	95 ± 2 (2.4)
	1.0	94, 91, 89, 91, 89	91 ± 2 (2.3)
Beer	0.01	108 92, 75, 89, 99	93 ± 12 (13.2)
	1.0	92, 89, 86, 87, 90	89 ± 2 (2.7)
Hop cone dried	0.10	94, 97, 99	97 ± 2 (2.6)
	10.0	93, 87, 87	89 ± 3 (3.9)
Hop green	0.10	86, 95, 100	94 ± 7 (7.6)
	10.0	82, 88, 84	85 ± 3 (3.6)
Broccoli	0.01	95, 104, 104, 107, 87	99 ± 8 (8.3)
	1.0	76, 96, 81, 79, 100	86 ± 11 (12.5)
Cauliflower	0.01	87, 94, 100	94 ± 6 (6.9)
	1.0	93, 72, 92	86 ± 12 (13.8)
Lettuce head	0.01	95, 81, 97	91 ± 9 (9.6)
	1.0	101, 97, 86	95 ± 8 (8.2)
Pepper fruit	0.01	99, 90, 93	94 ± 5 (4.9)
	1.0	90, 70, 90	83 ± 12 (13.9)
Cucumber	0.01	101, 99, 97	99 ± 2 (2.0)
	1.0	79, 94, 90	88 ± 8 (8.9)
Mandarin fruit	0.01	101, 109, 103	104 ± 4 (4.0)
	1.0	98, 94, 96	96 ± 2 (2.1)
Mandarin peel	0.01	104, 103, 105	104 ± 1 (1.0)
	1.0	97, 96, 95	96 ± 1 (1.0)

Matrix	Spiking Level (ppm)	Recoveries Obtained (%)	% Mean Recovery ± SD (CV)
Cabbage head	0.01	99, 99, 94	97 ± 3 (3.0)
	1.0	82, 101, 98	94 ± 10 (10.9)
Cabbage Savoy head	0.01	87, 94, 101	94 ± 7 (7.4)
	1.0	100, 104, 92	99 ± 6 (6.2)
Chinese kale leaf	0.01	100, 106, 99	102 ± 4 (3.7)
	1.0	102, 94, 90	95 ± 6 (6.4)
Curley kale leaf	0.01	89, 94, 99	94 ± 5 (5.3)
	1.0	82, 91, 90	88 ± 5 (5.6)
Kohlrabi tuber	0.01	100, 107, 96	101 ± 6 (5.5)
	1.0	97, 96, 95	96 ± 1 (1.0)
Kohlrabi leaf	0.01	100, 97, 100	99 ± 2 (1.7)
	1.0	89, 95, 98	94 ± 5 (4.9)
Brussels sprout	0.01	94, 106, 101	100 ± 6 (6.0)
	1.0	101, 102, 92	98 ± 5 (5.6)
French climbing bean (with pod)	0.01	84, 102, 97	94 ± 9 (9.8)
	1.0	100, 99, 94	98 ± 3 (3.3)
French climbing bean Washing water	0.01	86, 103, 91	93 ± 9 (9.4)
	1.0	95, 94, 94	94 ± 1 (0.6)
Sour cherry fruit	0.01	103, 80, 96	93 ± 12 (12.7)
	1.0	84, 96, 95	92 ± 7 (7.3)
Apricot fruit	0.01	103, 98, 92	98 ± 5 (5.6)
	1.0	103, 99, 99	100 ± 2 (2.3)
Pear fruit	0.01	99, 98, 100	99 ± 1 (1.0)
	1.0	96, 97, 92	95 ± 3 (2.8)
Almond nutmeat	0.01	99, 95, 102	99 ± 4 (3.6)
	1.0	101, 104, 100	102 ± 2 (2.0)
Wheat straw	0.01	95, 99, 98	97 ± 2 (2.1)
	1.0	96, 96, 97	96 ± 1 (0.6)
Wheat grain	0.01	89, 102, 101	97 ± 7 (7.4)
	1.0	90, 92, 88	90 ± 2 (2.2)
Wheat forage	0.01	95, 94, 81	90 ± 8 (8.7)
	1.0	89, 94, 98	94 ± 5 (4.8)
Wheat flour	0.01	88, 93, 95	92 ± 4 (3.9)
	1.0	93, 102, 88	94 ± 7 (7.5)
Peanut nutmeat	0.01	101, 101, 98	100 ± 2 (1.7)
	1.0	90, 96, 97	94 ± 4 (4.0)
Sugar beet root	0.01	90, 73, 75	79 ± 9 (11.7)
	1.0	89, 88, 97	91 ± 5 (5.4)
Swiss chard leaf	0.01	103, 93, 97	98 ± 5 (5.2)
	1.0	73, 94, 84	84 ± 11 (12.6)
Cotton seed	0.01	95, 88, 86	90 ± 5 (5.3)
	1.0	89, 90, 91	90 ± 1 (1.1)
Peanut oil	0.01	82, 87, 91, 90, 92	88 ± 4 (4.6)
	1.0	99, 95, 95, 100, 96	97 ± 2 (2.4)

Matrix	Spiking Level (ppm)	Recoveries Obtained (%)	% Mean Recovery ± SD (CV)
Sugar beet molasses	0.01	89, 86, 92, 94, 90	90 ± 3 (3.4)
	1.0	109, 102, 104, 104, 114	107 ± 5 (4.6)

Table 36 Results from method validation of BYI 08330-enol in plant matrices using the data-gathering Analytical Method 00857 (M-263485-01-2; M-253112-03-1)

Matrix	Spiking Level (ppm)	Recoveries Obtained (%)	% Mean Recovery ± SD (CV)
Orange fruit	0.01	90, 89, 74, 82, 71	81 ± 9 (10.6)
	1.0	88, 90, 96, 95, 95	93 ± 4 (3.8)
Orange juice	0.01	90, 95, 92	92 ± 2 (2.7)
	1.0	72, 89, 95	85 ± 12 (14.0)
Orange pomace	0.01	100, 96, 91	96 ± 5 (4.7)
	1.0	99, 86, 73	86 ± 13 (15.1)
Orange jam	0.01	97, 104, 102	101 ± 4 (3.6)
	1.0	98, 98, 102	99 ± 2 (2.3)
Sweet cherry fruit	0.01	108, 103, 91	101 ± 9 (8.7)
	1.0	98, 96, 98	97 ± 1 (1.2)
Plum fruit	0.01	100, 96, 103, 98, 100	99 ± 3 (2.6)
	1.0	104, 97, 94, 93, 100	98 ± 5 (4.6)
Peach fruit	0.01	91, 100, 92	94 ± 5 (5.2)
	1.0	101, 90, 103	98 ± 7 (7.1)
Strawberry fruit	0.01	111, 102, 103	105 ± 5 (4.7)
	1.0	98, 104, 107	103 ± 5 (4.4)
Apple fruit	0.01	89, 101, 98, 79, 103	94 ± 10 (10.6)
	1.0	91, 96, 103, 100, 98	98 ± 5 (4.6)
Apple pomace dried	0.01	108, 102, 103	104 ± 3 (3.1)
	1.0	98, 99, 103	100 ± 3 (2.6)
Apple sauce	0.01	106, 101, 102, 105, 102	103 ± 2 (2.1)
	1.0	107, 101, 103, 102, 106	104 ± 3 (2.5)
Tomato fruit	0.01	101, 97, 102, 103, 103	101 ± 3 (2.5)
	1.0	100, 103, 102, 103, 103	102 ± 1 (1.3)
Tomato juice	0.01	97, 96, 100, 102, 99	99 ± 2 (2.4)
	1.0	93, 94, 93, 97, 96	95 ± 2 (1.9)
Tomato preserve	0.01	96, 100, 90	95 ± 5 (5.3)
	1.0	89, 93, 92	91 ± 2 (2.3)
Grape (bunches of grape)	0.01	97, 101, 95, 95, 98	97 ± 3 (2.6)
	1.0	91, 89, 92, 89, 91	90 ± 1 (1.5)
Grape must	0.01	100, 96, 102	99 ± 3 (3.1)
	1.0	94, 95, 92	94 ± 2 (1.6)
Grape pomace	0.01	94, 95, 93	94 ± 1 (1.1)
	1.0	90, 91, 92	91 ± 1 (1.1)
Grape wine	0.01	95, 96, 95	95 ± 1 (0.6)
	1.0	96, 98, 94	96 ± 2 (2.1)

Matrix	Spiking Level (ppm)	Recoveries Obtained (%)	% Mean Recovery ± SD (CV)
Potato tuber	0.01	88, 88, 96, 90, 91	91 ± 3 (3.6)
	1.0	93, 95, 90, 92, 91	92 ± 2 (2.1)
Melon peel	0.01	92, 90, 96	93 ± 3 (3.3)
	1.0	91, 92, 96	93 ± 3 (2.8)
Melon pulp	0.01	87, 92, 93, 88, 94	91 ± 3 (3.4)
	1.0	91, 87, 91, 91, 94	91 ± 2 (2.7)
Onion bulb	0.01	86, 89, 95, 95, 89	91 ± 4 (4.4)
	1.0	96, 92, 92, 97, 91	94 ± 3 (2.9)
Beer	0.01	98, 85, 71, 86, 97	87 ± 11 (12.5)
	1.0	94, 92, 89, 90 93	92 ± 2 (2.3)
Hop cone dried	0.10	94, 88, 92	91 ± 3 (3.3)
	10.0	91, 89, 85	88 ± 3 (3.5)
Hop green	0.10	85, 90, 99	91 ± 7 (7.8)
	10.0	82, 90, 83	85 ± 4 (5.1)
Broccoli	0.01	97, 108, 99, 97, 89	98 ± 7 (6.9)
	1.0	69, 87, 72, 72, 91	78 ± 10 (12.8)
Cauliflower	0.01	82, 91, 93	89 ± 6 (6.6)
	1.0	90, 71, 91	84 ± 11 (13.4)
Lettuce head	0.01	85, 77, 92	85 ± 8 (8.9)
	1.0	92, 94, 84	90 ± 5 (5.9)
Pepper fruit	0.01	93, 82, 88	88 ± 6 (6.3)
	1.0	91, 68, 89	83 ± 13 (15.4)
Cucumber	0.01	96, 95, 93	95 ± 2 (1.6)
	1.0	90, 97, 87	91 ± 5 (5.6)
Mandarin fruit	0.01	90, 91, 95	92 ± 3 (2.9)
	1.0	99, 93, 92	95 ± 4 (4.0)
Mandarin peel	0.01	90, 93, 86	90 ± 4 (3.9)
	1.0	92, 92, 89	91 ± 2 (1.9)
Cabbage head	0.01	92, 92, 94	93 ± 1 (1.2)
	1.0	92, 97, 101	97 ± 5 (4.7)
Cabbage Savoy head	0.01	94, 96, 96	95 ± 1 (1.2)
	1.0	93, 93, 91	92 ± 1 (1.3)
Chinese kale leaf	0.01	84, 92, 90	89 ± 4 (4.7)
	1.0	99, 98, 88	95 ± 6 (6.4)
Curley kale leaf	0.01	99, 98, 98	98 ± 1 (0.6)
	1.0	88, 89, 97	91 ± 5 (5.4)
Kohlrabi tuber	0.01	87, 97, 96	93 ± 5 (5.9)
	1.0	96, 95, 98	96 ± 2 (1.6)
Kohlrabi leaf	0.01	97, 89, 95	94 ± 4 (4.4)
	1.0	97, 97, 95	96 ± 1 (1.2)
Brussels sprout	0.01	86, 95, 101	94 ± 7 (7.6)
	1.0	96, 96, 88	93 ± 5 (4.9)
French climbing bean (with pod)	0.01	87, 99, 101	96 ± 8 (7.9)
	1.0	95, 91, 86	91 ± 5 (5.0)

Matrix	Spiking Level (ppm)	Recoveries Obtained (%)	% Mean Recovery ± SD (CV)
French climbing bean Washing water	0.01	84, 90, 86	87 ± 3 (3.5)
	1.0	95, 90, 91	92 ± 3 (2.9)
Sour cherry fruit	0.01	97, 81, 93	90 ± 8 (9.2)
	1.0	79, 93, 89	87 ± 7 (8.3)
Apricot fruit	0.01	98, 99, 100	99 ± 1 (1.0)
	1.0	95, 95, 95	95 ± 0 (0.0)
Pear fruit	0.01	102, 97, 100	100 ± 3 (2.5)
	1.0	96, 94, 93	94 ± 2 (1.6)
Almond nutmeat	0.01	106, 109, 105	107 ± 2 (2.0)
	1.0	109, 113, 108	110 ± 3 (2.4)
Wheat straw	0.01	99, 99, 97	98 ± 1 (1.2)
	1.0	96, 98, 97	97 ± 1 (1.0)
Wheat grain	0.01	108, 117, 114	113 ± 5 (4.1)
	1.0	97, 98, 97	97 ± 1 (0.6)
Wheat forage	0.01	94, 98, 89	94 ± 5 (4.8)
	1.0	89, 95, 96	93 ± 4 (4.1)
Wheat flour	0.01	96, 100, 107	101 ± 6 (5.5)
	1.0	95, 101, 94	97 ± 4 (3.9)
Peanut nutmeat	0.01	110, 104, 106	107 ± 3 (2.9)
	1.0	93, 95, 95	94 ± 1 (1.2)
Sugar beet root	0.01	90, 70, 74	78 ± 11 (13.6)
	1.0	96, 82, 104	94 ± 11 (11.8)
Swiss chard leaf	0.01	83, 80, 83	82 ± 2 (2.1)
	1.0	67, 85, 75	76 ± 9 (11.9)
Cotton seed	0.01	95, 91, 85	90 ± 5 (5.6)
	1.0	92, 93, 97	94 ± 3 (2.8)

Table 37 Recovery results from method validation of BYI 08330-ketohydroxy in plant matrices using the data-gathering Analytical Method 00857 (M-263485-01-2; M-253112-03-1)

Matrix	Spiking Level (ppm)	Recoveries Obtained (%)	% Mean Recovery ± SD (CV)
Orange fruit	0.01	88, 93, 71, 87, 69	82 ± 11 (13.3)
	1.0	90, 88, 94, 91, 96	92 ± 3 (3.5)
Orange juice	0.01	96, 91, 93	93 ± 3 (2.7)
	1.0	71, 88, 93	84 ± 12 (13.7)
Orange pomace	0.01	93, 107, 92	97 ± 8 (8.6)
	1.0	95, 83, 71	83 ± 12 (14.5)
Orange jam	0.01	97, 100, 101	99 ± 2 (2.1)
	1.0	93, 93, 98	95 ± 3 (3.0)
Sweet cherry fruit	0.01	98, 102, 82	94 ± 11 (11.3)
	1.0	95, 93, 92	93 ± 1 (1.6)
Plum fruit	0.01	97, 91, 100, 93, 89	94 ± 5 (4.8)
	1.0	94, 93, 88, 85, 87	89 ± 4 (4.4)

Matrix	Spiking Level (ppm)	Recoveries Obtained (%)	% Mean Recovery ± SD (CV)
Peach fruit	0.01	89, 96, 90	92 ± 4 (4.1)
	1.0	97, 88, 98	94 ± 5 (5.8)
Strawberry fruit	0.01	94, 88, 91	91 ± 3 (3.3)
	1.0	86, 89, 91	89 ± 2 (2.8)
Apple fruit	0.01	90, 88, 89, 79, 90	87 ± 5 (5.3)
	1.0	88, 90, 92, 95, 92	91 ± 3 (2.9)
Apple pomace dried	0.01	99, 98, 98	98 ± 1 (0.6)
	1.0	93, 95, 100	96 ± 4 (3.8)
Apple sauce	0.01	89, 89, 87, 83, 81	86 ± 4 (4.2)
	1.0	85, 80, 81, 84, 82	82 ± 2 (2.5)
Tomato fruit	0.01	98, 109, 106, 102, 105	104 ± 4 (4.0)
	1.0	101, 99, 98, 99, 97	99 ± 1 (1.5)
Tomato juice	0.01	94, 99, 95, 100, 93	96 ± 3 (3.2)
	1.0	93, 91, 92, 94, 92	92 ± 1 (1.2)
Tomato preserve	0.01	97, 100, 94	97 ± 3 (3.1)
	1.0	96, 93, 97	95 ± 2 (2.2)
Grape (bunches of grape)	0.01	95, 97, 94, 94, 97	95 ± 2 (1.6)
	1.0	98, 92, 96, 94, 96	95 ± 2 (2.4)
Grape must	0.01	98, 99, 99	99 ± 1 (0.6)
	1.0	98, 96, 94	96 ± 2 (2.1)
Grape pomace	0.01	102, 97, 97	99 ± 3 (2.9)
	1.0	92, 94, 91	92 ± 2 (1.7)
Grape wine	0.01	98, 99, 96	98 ± 2 (1.6)
	1.0	95, 91, 94	93 ± 2 (2.2)
Potato tuber	0.01	95, 96, 104, 95, 97	97 ± 4 (3.9)
	1.0	96, 96, 96, 95, 96	96 ± 0.5 (0.5)
Melon peel	0.01	97, 95, 95	96 ± 1 (1.2)
	1.0	90, 93, 96	93 ± 3 (3.2)
Melon pulp	0.01	96, 98, 102, 99, 96	98 ± 2 (2.5)
	1.0	92, 90, 93, 93, 94	92 ± 1 (1.6)
Onion tuber	0.01	96, 94, 96, 91, 93	94 ± 2 (2.3)
	1.0	95, 94, 93, 94, 92	94 ± 1 (1.2)
Beer	0.01	100, 90, 79, 84, 101	91 ± 10 (10.7)
	1.0	97, 94, 90, 91, 96	94 ± 3 (3.3)
Hop cone dried	0.10	95, 94, 97	95 ± 2 (1.6)
	10.0	93, 95, 92	93 ± 1 (1.6)
Hop green	0.10	85, 99, 110	98 ± 13 (12.8)
	10.0	84, 96, 84	88 ± 7 (7.9)
Broccoli	0.01	100, 105, 111, 111, 91	104 ± 8 (8.1)
	1.0	73, 92, 79, 78, 93	83 ± 9 (10.8)
Cauliflower	0.01	89, 98, 100	96 ± 6 (6.1)
	1.0	89, 70, 90	83 ± 11 (13.6)
Lettuce head	0.01	98, 80, 91	90 ± 9 (10.1)
	1.0	97, 94, 86	92 ± 6 (6.2)

Matrix	Spiking Level (ppm)	Recoveries Obtained (%)	% Mean Recovery ± SD (CV)
Pepper fruit	0.01	93, 94, 89	92 ± 3 (2.9)
	1.0	91, 70, 94	85 ± 13 (15.4)
Cucumber	0.01	89, 93, 94	92 ± 3 (2.9)
	1.0	97, 102, 96	98 ± 3 (3.3)
Mandarin fruit	0.01	101, 96, 96	98 ± 3 (3.0)
	1.0	105, 95, 90	97 ± 8 (7.9)
Mandarin peel	0.01	100, 94, 101	98 ± 4 (3.9)
	1.0	96, 98, 96	97 ± 1 (1.2)
Cabbage head	0.01	94, 90, 96	93 ± 3 (3.3)
	1.0	88, 92, 93	91 ± 3 (2.9)
Cabbage Savoy head	0.01	95, 100, 96	97 ± 3 (2.7)
	1.0	96, 97, 96	96 ± 1 (0.6)
Chinese kale leaf	0.01	97, 106, 99	101 ± 5 (4.7)
	1.0	105, 100, 92	99 ± 7 (6.6)
Curley kale leaf	0.01	97, 100, 100	99 ± 2 (1.7)
	1.0	98, 95, 98	97 ± 2 (1.8)
Kohlrabi tuber	0.01	97, 98, 96	97 ± 1 (1.0)
	1.0	97, 94, 98	96 ± 2 (2.2)
Kohlrabi leaf	0.01	98, 94, 97	96 ± 2 (2.2)
	1.0	96, 97, 96	96 ± 1 (0.6)
Brussels sprout	0.01	90, 100, 100	97 ± 6 (6.0)
	1.0	99, 100, 91	97 ± 5 (5.1)
French climbing bean (with pod)	0.01	90, 104, 100	98 ± 7 (7.4)
	1.0	97, 99, 93	96 ± 3 (3.2)
French climbing bean Washing water	0.01	88, 97, 100	95 ± 6 (6.6)
	1.0	97, 97, 95	96 ± 1 (1.2)
Sour cherry fruit	0.01	102, 88, 105	98 ± 9 (9.2)
	1.0	92, 97, 97	95 ± 3 (3.0)
Apricot fruit	0.01	100, 94, 95	96 ± 3 (3.3)
	1.0	96, 99, 96	97 ± 2 (1.8)
Pear fruit	0.01	89, 96, 99	95 ± 5 (5.4)
	1.0	95, 94, 92	94 ± 2 (1.6)
Almond nutmeat	0.01	98, 95, 105	99 ± 5 (5.2)
	1.0	103, 105, 98	102 ± 4 (3.5)
Wheat straw	0.01	107, 107, 97	104 ± 6 (5.6)
	1.0	100, 104, 102	102 ± 2 (2.0)
Wheat grain	0.01	99, 112, 109	107 ± 7 (6.4)
	1.0	99, 99, 98	99 ± 1 (0.6)
Wheat forage	0.01	91, 93, 81	88 ± 6 (7.3)
	1.0	97, 104, 105	102 ± 4 (4.3)
Wheat flour	0.01	105, 99, 105	103 ± 4 (3.4)
	1.0	98, 104, 95	99 ± 5 (4.6)
Peanut nutmeat	0.01	108, 105, 100	104 ± 4 (3.9)
	1.0	87, 93, 91	90 ± 3 (3.4)

Matrix	Spiking Level (ppm)	Recoveries Obtained (%)	% Mean Recovery ± SD (CV)
Sugar beet root	0.01	88, 73, 74	78 ± 8 (10.7)
	1.0	90, 83, 99	91 ± 8 (8.8)
Swiss chard leaf	0.01	93, 90, 103	95 ± 7 (7.1)
	1.0	71, 85, 79	78 ± 7 (9.0)
Cotton seed	0.01	89, 88, 79	85 ± 6 (6.5)
	1.0	93, 94, 94	94 ± 1 (0.6)
Peanut oil	0.01	93, 89, 90, 99, 79	90 ± 7 (8.1)
	1.0	102, 106, 102, 104, 106	104 ± 2 (1.9)
Sugar beet molasses	0.01	100, 90, 105, 106, 97	100 ± 7 (6.5)
	1.0	99, 100, 97, 104, 99	100 ± 3 (2.6)

Table 38 Recovery results from method validation of BYI 08330-monohydroxy in plant matrices using the data-gathering Analytical Method 00857 (M-263485-01-2; M-253112-03-1)

Matrix	Spiking Level (ppm)	Recoveries Obtained (%)	% Mean Recovery ± SD (CV)
Orange fruit	0.01	88, 91, 77, 86, 68	82 ± 9 (11.5)
	1.0	88, 93, 96, 94, 97	94 ± 3 (3.7)
Orange juice	0.01	93, 98, 94	95 ± 3 (2.8)
	1.0	72, 91, 96	86 ± 13 (14.7)
Orange pomace	0.01	100, 104, 100	101 ± 2 (2.3)
	1.0	91, 93, 71	85 ± 12 (14.3)
Orange jam	0.01	103, 105, 103	104 ± 1 (1.1)
	1.0	95, 94, 98	96 ± 2 (2.2)
Sweet cherry fruit	0.01	101, 98, 89	96 ± 6 (6.5)
	1.0	93, 90, 89	91 ± 2 (2.3)
Plum fruit	0.01	100, 96, 97, 95, 97	97 ± 2 (1.9)
	1.0	93, 87, 86, 82, 86	87 ± 4 (4.6)
Peach fruit	0.01	93, 101, 97	97 ± 4 (4.1)
	1.0	97, 85, 94	92 ± 3 (3.8)
Strawberry fruit	0.01	99, 96, 99	98 ± 2 (1.8)
	1.0	86, 91, 90	89 ± 3 (3.0)
Apple fruit	0.01	91, 99, 100, 78, 95	93 ± 9 (9.6)
	1.0	86, 86, 92, 91, 90	89 ± 3 (3.2)
Apple pomace dried	0.01	107, 102, 107	105 ± 3 (2.7)
	1.0	95, 93, 94	94 ± 1 (1.1)
Apple sauce	0.01	97, 96, 97, 92, 93	95 ± 2 (2.5)
	1.0	90, 88, 88, 88, 87	88 ± 1 (1.2)
Tomato fruit	0.01	102, 102, 102, 102, 106	103 ± 2 (1.7)
	1.0	98, 98, 100, 97, 99	98 ± 1 (1.2)
Tomato juice	0.01	94, 98, 99, 98, 98	97 ± 2 (2.0)
	1.0	90, 99, 90, 93, 93	93 ± 4 (4.0)
Tomato preserve	0.01	93, 94, 88	92 ± 3 (3.5)
	1.0	92, 91, 90	91 ± 1 (1.1)

Matrix	Spiking Level (ppm)	Recoveries Obtained (%)	% Mean Recovery ± SD (CV)
Grape (bunches of grape)	0.01	96, 102, 94, 96, 95	97 ± 3 (3.2)
	1.0	91, 88, 88, 87, 89	89 ± 2 (1.7)
Grape must	0.01	96, 93, 94	94 ± 2 (1.6)
	1.0	90, 91, 89	90 ± 1 (1.1)
Grape pomace	0.01	92, 94, 92	93 ± 1 (1.2)
	1.0	89, 88, 89	89 ± 1 (0.7)
Grape wine	0.01	99, 97, 93	96 ± 3 (3.2)
	1.0	95, 94, 93	94 ± 1 (1.1)
Potato tuber	0.01	89, 94, 95, 92, 94	93 ± 2 (2.6)
	1.0	89, 90, 88, 88, 90	89 ± 1 (1.1)
Melon peel	0.01	95, 94, 95	95 ± 1 (0.6)
	1.0	89, 91, 93	91 ± 2 (2.2)
Melon pulp	0.01	93, 94, 92, 96, 92	93 ± 2 (1.8)
	1.0	90, 86, 92, 90, 92	90 ± 2 (2.7)
Onion bulb	0.01	89, 96, 98, 96, 92	94 ± 4 (3.9)
	1.0	94, 89, 90, 92, 90	91 ± 2 (2.2)
Beer	0.01	99, 87, 73, 84, 99	88 ± (12.4)
	1.0	93, 92, 88, 88, 91	90 ± 2 (2.5)
Hop cone dried	0.10	96, 94, 99	96 ± 2 (2.6)
	10.0	89, 86, 85	87 ± 2 (2.4)
Hop green	0.10	91, 98, 99	96 ± 4 (4.5)
	10.0	82, 92, 83	86 ± 6 (6.4)
Broccoli	0.01	99, 108, 110, 107, 91	103 ± 8 (7.7)
	1.0	76, 91, 80, 77, 97	84 ± 9 (11.1)
Cauliflower	0.01	88, 99, 96	94 ± 6 (6.0)
	1.0	89, 70, 89	83 ± 11 (13.3)
Lettuce head	0.01	96, 79, 96	90 ± 10 (10.9)
	1.0	98, 94, 85	92 ± 7 (7.2)
Pepper fruit	0.01	98, 91, 95	95 ± 4 (3.7)
	1.0	95, 76, 94	88 ± 11 (12.1)
Cucumber	0.01	99, 97, 100	99 ± 1 (1.5)
	1.0	98, 102, 100	100 ± 2 (2.0)
Mandarin fruit	0.01	95, 95, 95	95 ± 0 (0.0)
	1.0	101, 97, 98	99 ± 2 (2.1)
Mandarin peel	0.01	100, 97, 94	97 ± 3 (3.1)
	1.0	96, 93, 97	95 ± 2 (2.2)
Cabbage head	0.01	95, 97, 93	95 ± 2 (2.1)
	1.0	94, 96, 94	95 ± 1 (1.2)
Cabbage Savoy head	0.01	97, 99, 98	98 ± 1 (1.0)
	1.0	99, 101, 100	100 ± 1 (1.0)
Chinese kale leaf	0.01	96, 104, 98	99 ± 4 (4.2)
	1.0	95, 93, 84	91 ± 6 (6.5)
Curley kale leaf	0.01	100, 97, 99	99 ± 1 (1.5)
	1.0	86, 87, 100	91 ± 8 (8.6)

Matrix	Spiking Level (ppm)	Recoveries Obtained (%)	% Mean Recovery ± SD (CV)
Kohlrabi tuber	0.01	95, 98, 97	97 ± 2 (1.6)
	1.0	98, 93, 97	96 ± 3 (2.8)
Kohlrabi leaf	0.01	98, 96, 99	98 ± 2 (1.6)
	1.0	94, 93, 96	94 ± 2 (1.6)
Brussels sprout	0.01	91, 98, 104	98 ± 7 (6.7)
	1.0	94, 93, 85	91 ± 5 (5.4)
French climbing bean (with pod)	0.01	89, 97, 104	97 ± 8 (7.8)
	1.0	97, 95, 93	95 ± 2 (2.1)
French climbing bean Washing water	0.01	87, 90, 93	90 ± 3 (3.3)
	1.0	96, 91, 92	93 ± 3 (2.8)
Sour cherry fruit	0.01	100, 88, 100	96 ± 7 (7.2)
	1.0	87, 99, 96	94 ± 6 (6.6)
Apricot fruit	0.01	98, 98, 96	97 ± 1 (1.2)
	1.0	100, 98, 96	98 ± 2 (2.0)
Pear fruit	0.01	97, 97, 96	97 ± 1 (0.6)
	1.0	99, 102, 100	100 ± 2 (1.5)
Almond nutmeat	0.01	92, 96, 98	95 ± 3 (3.2)
	1.0	95, 96, 96	96 ± 1 (0.6)
Wheat straw	0.01	103, 107, 103	104 ± 2 (2.2)
	1.0	97, 97, 96	97 ± 1 (0.6)
Wheat grain	0.01	98, 120, 114	111 ± 11 (10.3)
	1.0	93, 94, 94	94 ± 1 (0.6)
Wheat forage	0.01	90, 98, 82	90 ± 8 (8.9)
	1.0	96, 101, 102	100 ± 3 (3.2)
Wheat flour	0.01	96, 93, 101	97 ± 4 (4.2)
	1.0	93, 102, 95	97 ± 5 (4.9)
Peanut nutmeat	0.01	103, 103, 98	101 ± 3 (2.8)
	1.0	88, 93, 93	91 ± 3 (3.2)
Sugar beet root	0.01	94, 71, 77	81 ± 12 (14.8)
	1.0	89, 82, 103	91 ± 11 (11.7)
Swiss chard leaf	0.01	93, 91, 95	93 ± 2 (2.2)
	1.0	67, 91, 79	79 ± 12 (15.2)
Cotton seed	0.01	101, 96, 89	95 ± 6 (6.3)
	1.0	93, 95, 97	95 ± 2 (2.1)

Table 39 Recovery results from method validation of BYI 08330-enol-glucoside in plant matrices using the data-gathering Analytical Method 00857 (M-263485-01-2; M-253112-03-1)

Matrix	Spiking Level (ppm)	Recoveries Obtained (%)	% Mean Recovery ± SD (CV)
Orange fruit	0.01	91, 94, 70, 86, 70	82 ± 11 (14.0)
	1.0	85, 100, 96, 101, 100	96 ± 7 (6.9)
Orange juice	0.01	91, 96, 91	93 ± 3 (3.1)
	1.0	71, 94, 9587	87 ± 14 (15.7)

Matrix	Spiking Level (ppm)	Recoveries Obtained (%)	% Mean Recovery ± SD (CV)
Orange pomace	0.01	90, 89, 87	89 ± 2 (1.7)
	1.0	98, 90, 77	88 ± 11 (12.0)
Orange jam	0.01	100, 96, 92	96 ± 4 (4.2)
	1.0	93, 91, 90	91 ± 2 (1.7)
Sweet cherry fruit	0.01	99, 106, 88	98 ± 9 (9.3)
	1.0	89, 90, 87	89 ± 2 (1.7)
Plum fruit	0.01	102, 100, 96, 95, 102	99 ± 3 (3.4)
	1.0	94, 89, 85, 83, 86	87 ± 4 (4.9)
Peach fruit	0.01	91, 91, 102	95 ± 6 (6.7)
	1.0	98, 88, 98	95 ± 6 (6.1)
Strawberry fruit	0.01	102, 94, 94	97 ± 5 (4.8)
	1.0	84, 90, 92	89 ± 4 (4.7)
Apple fruit	0.01	86, 86, 91, 75, 95	87 ± 7 (8.7)
	1.0	87, 85, 91, 91, 92	89 ± 3 (3.4)
Apple pomace dried	0.01	90, 95, 99	95 ± 5 (4.8)
	1.0	85, 86, 88	86 ± 2 (1.8)
Apple sauce	0.01	94, 96, 90, 92, 91	93 ± 2 (2.6)
	1.0	90, 89, 91, 90, 91	90 ± 1 (0.9)
Tomato fruit	0.01	103, 97, 99, 96, 101	99 ± 3 (2.9)
	1.0	97, 97, 98, 97, 96	97 ± 1 (0.7)
Tomato juice	0.01	96, 100, 95, 98, 98	97 ± 2 (2.0)
	1.0	90, 91, 90, 93, 91	91 ± 1 (1.3)
Tomato preserve	0.01	94, 92, 85	90 ± 5 (5.2)
	1.0	89, 90, 91	90 ± 1 (1.1)
Grape (bunches of grape)	0.01	93, 95, 93, 98, 93	94 ± 2 (2.3)
	1.0	93, 90, 90, 92, 91	91 ± 1 (1.4)
Grape must	0.01	93, 91, 94	93 ± 1 (1.6)
	1.0	92, 92, 91	92 ± 1 (0.6)
Grape pomace	0.01	93, 94, 92	93 ± 1 (1.1)
	1.0	78, 79, 81	79 ± 2 (1.9)
Grape wine	0.01	90, 92, 92	91 ± 1 (1.3)
	1.0	92, 94, 92	93 ± 1 (1.2)
Potato tuber	0.01	89, 95, 93, 96, 89	92 ± 3 (3.6)
	1.0	91, 89, 88, 89, 87	89 ± 2 (1.7)
Melon peel	0.01	89, 89, 94	91 ± 3 (3.2)
	1.0	88, 90, 95	91 ± 4 (4.0)
Melon pulp	0.01	94, 96, 91, 90, 92	93 ± 2 (2.6)
	1.0	87, 87, 91, 90, 91	89 ± 2 (2.3)
Onion tuber	0.01	90, 86, 92, 85, 90	89 ± 3 (3.3)
	1.0	89, 88, 87, 91, 89	89 ± 2 (1.7)
Beer	0.01	99, 83, 75, 88, 97	88 ± 10 (11.2)
	1.0	94, 97, 98, 99, 92	96 ± 3 (3.0)
Hop cone dried	0.10	89, 92, 93	91 ± 2 (2.3)
	10.0	88, 80, 79	82 ± 5 (6.0)

Matrix	Spiking Level (ppm)	Recoveries Obtained (%)	% Mean Recovery ± SD (CV)
Hop green	0.10	86, 97, 97	93 ± 6 (6.8)
	10.0	81, 89, 83	84 ± 4 (4.9)
Broccoli	0.01	103, 100, 109, 103, 83	100 ± 10 (9.9)
	1.0	71, 86, 73, 79, 88	79 ± 8 (9.5)
Cauliflower	0.01	92, 104, 87	94 ± 9 (9.3)
	1.0	81, 73, 80	78 ± 4 (5.6)
Lettuce head	0.01	98, 82, 99	93 ± 10 (10.3)
	1.0	92, 90, 85	89 ± 4 (4.1)
Pepper fruit	0.01	101, 96, 95	97 ± 3 (3.3)
	1.0	87, 70, 87	81 ± 10 (12.1)
Cucumber	0.01	97, 98, 98	98 ± 1 (0.6)
	1.0	89, 97, 90	92 ± 4 (4.7)
Mandarin fruit	0.01	98, 103, 102	101 ± 3 (2.6)
	1.0	103, 97, 97	99 ± 3 (3.5)
Mandarin peel	0.01	104, 102, 101	102 ± 2 (1.5)
	1.0	97, 95, 96	96 ± 1 (1.0)
Cabbage head	0.01	103, 99, 98	100 ± 3 (2.6)
	1.0	93, 98, 101	97 ± 4 (4.2)
Cabbage Savoy head	0.01	98, 96, 96	97 ± 1 (1.2)
	1.0	96, 92, 92	93 ± 2 (2.5)
Chinese kale leaf	0.01	104, 99, 94	99 ± 5 (5.1)
	1.0	94, 91, 84	90 ± 5 (5.7)
Curley kale leaf	0.01	95, 98, 95	96 ± 2 (1.8)
	1.0	85, 83, 95	88 ± 6 (7.3)
Kohlrabi tuber	0.01	93, 99, 102	98 ± 5 (4.7)
	1.0	98, 92, 94	95 ± 3 (3.2)
Kohlrabi leaf	0.01	98, 93, 90	94 ± 4 (4.3)
	1.0	98, 95, 100	98 ± 3 (2.6)
Brussels sprout	0.01	97, 90, 106	98 ± 8 (8.2)
	1.0	97, 92, 86	92 ± 6 (6.0)
French climbing bean (with pod)	0.01	91, 111, 104	102 ± 10 (9.9)
	1.0	99, 94, 95	96 ± 3 (2.8)
French climbing bean Washing water	0.01	86, 100, 94	93 ± 7 (7.5)
	1.0	90, 88, 92	90 ± 2 (2.2)
Sour cherry fruit	0.01	97, 85, 99	94 ± 8 (8.1)
	1.0	80, 96, 88	88 ± 8 (9.1)
Apricot fruit	0.01	100, 104, 101	102 ± 2 (2.0)
	1.0	97, 97, 95	96 ± 1 (1.2)
Pear fruit	0.01	101, 101, 99	100 ± 1 (1.2)
	1.0	96, 94, 88	93 ± 4 (4.5)
Almond nutmeat	0.01	101, 108, 105	105 ± 4 (3.4)
	1.0	100, 102, 100	101 ± 1 (1.1)
Wheat straw	0.01	83, 90, 94	89 ± 6 (6.3)
	1.0	88, 94, 91	91 ± 3 (3.3)

Matrix	Spiking Level (ppm)	Recoveries Obtained (%)	% Mean Recovery ± SD (CV)
Wheat grain	0.01	99, 118, 106	108 ± 10 (8.9)
	1.0	90, 92, 86	89 ± 3 (3.4)
Wheat forage	0.01	92, 90, 79	87 ± 7 (8.0)
	1.0	91, 97, 98	95 ± 4 (4.0)
Wheat flour	0.01	90, 91, 100	94 ± 6 (5.9)
	1.0	82, 99, 85	89 ± 9 (10.2)
Peanut nutmeat	0.01	99, 99, 98	99 ± 1 (0.6)
	1.0	88, 92, 92	91 ± 2 (2.5)
Sugar beet root	0.01	89, 72, 78	80 ± 9 (10.8)
	1.0	88, 81, 100	90 ± 10 (10.7)
Swiss chard leaf	0.01	107, 100, 101	103 ± 4 (3.7)
	1.0	69, 90, 76	78 ± 11 (13.7)
Cotton seed	0.01	101, 97, 88	95 ± 7 (7.0)
	1.0	86, 85, 88	86 ± 2 (1.8)

Table 40 Extraction efficiency of Method 00857 using radiolabelled samples from cotton, lettuce and apple metabolism studies (M-248725-01-2)

Crops	Cotton gin trash (% extracted)		Lettuce (% extracted)		Apple (% extracted)	
	Method 00857	Metabolism study	Method 00857	Metabolism study	Method 00857	Metabolism study
% TRRs extracted	87.4	88.6	95.5	95.8	96.5	98.0
% of Compounds in the extract						
Spirotetramat	16.8	19.8	48.2	55.9	47.5	51.3
BYI 08330-enol	13.2	12.1	24.0	17.8	2.9	2.1
BYI 08330-enol-Glc	3.6	4.0	11.2	11.4	5.3	5.1
BYI 08330-ketohydroxy	31.8	29.7	12.0	6.2	8.7	7.7
BYI 08330-mono-hydroxy	--	--	--	--	15.6	15.6

Table 41 Independent laboratory validation of Method 00857 (M-277335-01-1)

Analyte	Spike Level (mg/kg)	Range of Recoveries (%) (N = 5)	Mean% ± sd (N = 5)
TOMATO FRUIT			
BY108330 (spirotetramat)	0.0099 0.02 0.099	97–103 98–100 97–101	100±2.4 98±0.9 99±1.6
BY108330-enol	0.0099 0.02 0.099	97–114 94–114 95–100	105±7.4 108±8.1 98±2.1
BY108330-ketohydroxy	0.0091 0.018 0.091	95–100 96–102 94–100	97±1.9 99±2.8 96±2.3
BY108330-monohydroxy	0.0094 0.019 0.094	92–99 94–101 98–102	97±2.7 98±2.6 100±2.0
BY108330-enol-glucoside	0.0069 0.014 0.069	101–115 93–109 94–98	108±6.3 103±7.3 96±1.8

Analyte	Spike Level (mg/kg)	Range of Recoveries (%) (N = 5)	Mean% ± sd (N = 5)
ALMOND NUTMEAT			
BY108330 (spirotetramat)	0.01 0.02 0.10	90–101 95–100 93–99	96±4.7 97±2.3 97±2.3
BY108330-enol	0.01 0.02 0.10	85–109 93–113 90–93	96±11 100±7.7 91±1.1
BY108330-ketohydroxy	0.01 0.02 0.10	95–98 88–93 88–97	96±1.3 90±2.3 94±3.7
BY108330-monohydroxy	0.01 0.02 0.10	88–102 91–97 92–96	96±5.9 95±2.5 95±1.7
BY108330-enol-glucoside	0.01 0.02 0.10	91–102 93–105 89–93	95±4.3 98±5.4 90±1.7

Analytical method 00888 was developed as a variant of method 00857 (M-267635-01-1, Schöning, R. and Stuke, S; 2006; M-269574-01-1**,** Bacher, R.; 2006). The analytical method 00888 (reference IIA 4.3/07) determines spirotetramat and BYI08330-enol only in plant materials. Spirotetramat and BYI08330-enol were extracted from citrus fruit, tomato fruit, potato tuber, avocado fruit and hop cone dried, filtered and cleaned-up prior to being subjected to HPLC-MS/MS. Residues were quantified against external matrix-matched standards. The MRM transitions monitored were identical to those of method 00857.

The correlation between the injected amount of each analyte and the detector response was linear for standards in solvent and also for matrix matched standards in a range from 0.01 µg/L to 10 µg/L on all mass transitions. The correlation coefficients ranged from 0.9978 to 0.9997.

The LOQ (expressed as parent equivalents) for each single analyte is 0.1 mg/kg in hops cone and 0.01 mg/kg in all other matrices tested. For the total residue of spirotetramat (sum of single analyte residues each calculated as spirotetramat equivalents), the LOQ is 0.2 mg/kg for hops cone and 0.02 mg/kg for all other matrices tested.

Samples of citrus fruit, potato tuber, avocado fruit and tomato fruit were fortified with 0.01 and 0.10 mg/kg of spirotetramat and BYI08330-enol, samples from dried hop cones were fortified with 0.1 and 1 mg/kg of each analyte. Recovery results obtained were within 70–110%, RSD ≤ 20%. The results are summarized in Table 42

Table 42 Summary of fortified sample recoveries for Method 00888 for the determination of spirotetramat and BYI08330-Enol (M-267635-01-1)

Analyte	Matrix	Fortification Level [a] [mg/kg]	Mean Recovery (n = 5) [%]	RSD [%]	Overall Mean Recovery [%]	Overall RSD [%]
BYI08330	Citrus Fruit	0.01 0.1	91 95	14.8 7.5	93	11.1
	Potato Tuber	0.01 0.1	94 92	3.7 4.3	93	3.9
	Avocado Fruit	0.01 0.1	103 87	14.2 12.5	95	15.3
	Tomato Fruit	0.01 0.1	94 87	0.9 8.1	91	6.6
	Hop Cone	0.1 1	95 93	3.6 1.8	94	2.8
BYI08330 (374 →302 m/z Confirmation)	Citrus Fruit	0.01 0.1	91 96	16.4 7.2	93	12.0
	Potato Tuber	0.01 0.1	96 94	4.6 3.4	95	4.0

Analyte	Matrix	Fortification Level [a] [mg/kg]	Mean Recovery (n = 5) [%]	RSD [%]	Overall Mean Recovery [%]	Overall RSD [%]
	Avocado Fruit	0.01 0.1	104 88	15.6 12.0	96	15.9
	Tomato Fruit	0.01 0.1	96 90	2.7 7.1	93	6.1
	Hop Cone	0.1 1	94 94	5.0 1.6	94	3.5
BYI08330-enol	Citrus Fruit	0.01 0.1	88 92	12.8 8.1	90	10.2
	Potato Tuber	0.01 0.1	94 93	2.4 4.2	94	3.3
	Avocado Fruit	0.01 0.1	92 84	17.8 12.2	88	15.5
	Tomato Fruit	0.01 0.1	96 93	1.9 6.7	95	4.8
	Hop Cone	0.1 1	97 94	4.7 2.1	96	3.9
BYI08330-enol (302 → 270 m/z Confirmation)	Citrus Fruit	0.01 0.1	87 93	15.5 8.3	90	12.0
	Potato Tuber	0.01 0.1	96 97	4.1 4.3	96	4.0
	Avocado Fruit	0.01 0.1	93 85	17.1 12.6	89	15.2
	Tomato Fruit	0.01 0.1	95 92	5.9 6.2	94	6.0
	Hop Cone	0.1 1	97 95	4.8 2.7	96	3.8

[a] Fortification level of BYI08330-enol given as parent equivalents

Table 43 Independent Laboratory Validation of Method 00888 (M-269574-01-1)

Analyte	Matrix	Fortification Level[a] [mg/kg]	Mean Recovery (n = 5) [%]	RSD [%]	Overall Mean Recovery [%]	Overall RSD [%]
BYI08330 374 → 302 m/z	Tomato fruit	0.01 0.1	96 94	13 9	95	11
	Avocado Fruit	0.01 0.1	83 90	13 9	87	11
	Hop Cone	0.1 1	104 98	11 7	101	9
BYI08330 374 → 216 m/z	Tomato fruit	0.01 0.1	96 85	5 13	96	9
	Avocado Fruit	0.01 0.1	92 88	20 8	90	15
	Hop Cone	0.1 1	91 100	2 6	96	7
BYI08330-enol 302 → 216 m/z	Tomato fruit	0.01 0.1	89 89	3 5	89	5
	Avocado Fruit	0.01 0.1	79 75	11 7	77	9
	Hop Cone	0.1 1	89 93	6 5	91	5
BYI08330 302 → 270 m/z	Tomato fruit	0.01 0.1	89 89	6 5	89	5
	Avocado Fruit	0.01 0.1	87 90	9 9	81	11

Analyte	Matrix	Fortification Level[a] [mg/kg]	Mean Recovery (n = 5) [%]	RSD [%]	Overall Mean Recovery [%]	Overall RSD [%]
	Hop Cone	0.1	91	7	92	5
		1	93	5		

[a] Fortification level of BYI08330-enol given as parent equivalents

Analytical Method 01084 was developed to determine the residues of spirotetramat and the metabolites BYI 08330-enol, BYI 08330-ketohydroxy, BYI 08330-mono-hydroxy and BYI 08330-enol-Glc in/on plant matrices by reverse phase HPLC-MS/MS and was proposed as an enforcement method (MR-08/007, Schöning, R., 2008). It is equivalent to Method 00888 (above). Spirotetramat and the metabolites were extracted from citrus fruit, tomato, potato, avocado and dried hop cones. The cleaned-up extract was subjected to HPLC-MS/MS with monitoring of two multiple-reaction monitoring transitions. Residues were quantified against external matrix matched standards. The recoveries from samples of citrus fruit, tomato, potato and avocado spiked with each analyte at 0.01 and 0.1 ppm, and from samples of dried hop cones spiked at 0.1 and 1.0 ppm were within the acceptable range of 70–120% with RSD < 19%. The method/detector response was linear (coefficient of determination, $r^2 \geq 0.998$) within the range of 0.025–10 µg/L.

Spiked recovery results are summarized in Table 44.

Table 44 Recovery results from method validation of plant matrices using the enforcement method 01084 (See Table 43) (MR-08/007)

Analyte[a]	Matrix	Spiking Level [mg/kg]	Mean Recovery (n = 5) [%]	RSD [%]	Overall Mean Recovery [%]	Overall RSD [%]
BYI 08330 (1st MRM)	Hop Cone Dried	0.10	90	1.5	85	7.0
		1.0	79	1.9		
	Avocado Fruit	0.01	94	2.6	94	3.2
		0.10	93	3.8		
	Orange Fruit	0.01	93	2.6	92	2.2
		0.10	91	0.6		
	Potato Tuber	0.01	93	1.3	91	2.7
		0.10	89	1.8		
	Tomato Fruit	0.01	92	1.5	93	1.4
		0.10	94	0.6		
BYI 08330 (2nd MRM)	Hop Cone Dried	0.10	92	3.2	86	8.1
		1.0	80	1.9		
	Avocado Fruit	0.01	93	2.5	94	2.3
		0.10	94	2.3		
	Orange Fruit	0.01	90	2.9	91	2.2
		0.10	91	1.4		
	Potato Tuber	0.01	92	2.1	90	3.5
		0.10	87	1.1		
	Tomato Fruit	0.01	93	1.8	93	1.4
		0.10	93	1.0		
BYI08330-enol (1st MRM)	Hop Cone Dried	0.10	100	1.8	86	17.2
		1.0	72	2.5		
	Avocado Fruit	0.01	93	3.2	90	3.8
		0.10	88	1.0		
	Orange Fruit	0.01	87	1.4	88	1.6
		0.10	89	1.2		
	Potato Tuber	0.01	88	1.2	89	1.6
		0.10	90	0.9		
	Tomato Fruit	0.01	89	1.0	91	1.9
		0.10	92	0.6		

Analyte[a]	Matrix	Spiking Level [mg/kg]	Mean Recovery (n = 5) [%]	RSD [%]	Overall Mean Recovery [%]	Overall RSD [%]
BYI08330-enol (2nd MRM)	Hop Cone Dried	0.10	102	1.9	87	18.9
		1.0	71	2.3		
	Avocado Fruit	0.01	95	1.5	91	4.3
		0.10	88	1.0		
	Orange Fruit	0.01	86	2.1	87	2.4
		0.10	88	1.3		
	Potato Tuber	0.01	88	1.9	89	1.7
		0.10	90	0.8		
	Tomato Fruit	0.01	89	1.8	90	1.9
		0.10	91	0.6		
BYI08330-ketohydroxy (1st MRM	Hop Cone Dried	0.10	97	5.0	85	15.8
		1.0	72	2.1		
	Avocado Fruit	0.01	94	4.7	91	5.2
		0.10	87	1.0		
	Orange Fruit	0.01	95	3.0	92	4.1
		0.10	89	2.2		
	Potato Tuber	0.01	96	5.1	96	5.3
		0.10	96	6.0		
	Tomato Fruit	0.01	91	3.4	92	3.1
		0.10	94	2.1		
BYI08330-ketohydroxy (2nd MRM)	Hop Cone Dried	0.10	96	3.6	84	15.9
		1.0	72	2.9		
	Avocado Fruit	0.01	91	2.5	91	2.2
		0.10	91	2.1		
	Orange Fruit	0.01	92	2.2	92	2.0
		0.10	91	1.7		
	Potato Tuber	0.01	94	4.2	96	6.1
		0.10	99	6.9		
	Tomato Fruit	0.01	96	4.2	96	3.1
		0.10	95	1.7		
BYI08330-mono-hydroxy (1st MRM)	Hop Cone Dried	0.10	100	3.3	86	17.2
		1.0	72	3.2		
	Avocado Fruit	0.01	97	2.1	92	5.3
		0.10	88	0.5		
	Orange Fruit	0.01	87	3.6	88	2.8
		0.10	90	1.0		
	Potato Tuber	0.01	93	2.0	93	2.0
		0.10	94	1.7		
	Tomato Fruit	0.01	93	1.7	91	2.6
		0.10	89	0.8		
BYI08330-mono-hydroxy (2nd MRM)	Hop Cone Dried	0.10	97	2.8	85	14.4
		1.0	74	3.4		
	Avocado Fruit	0.01	98	3.6	95	4.4
		0.10	91	1.0		
	Orange Fruit	0.01	87	3.5	89	3.3
		0.10	90	1.0		
	Potato Tuber	0.01	89	4.9	96	8.9
		0.10	104	1.5		
	Tomato Fruit	0.01	95	2.1	93	3.1
		0.10	91	2.0		
BYI08330-Glucoside (1st MRM)	Hop Cone Dried	0.10	106	6.2	96	12.6
		1.0	85	4.8		
	Avocado Fruit	0.01	101	6.7	104	5.6
		0.10	107	2.1		
	Orange Fruit	0.01	88	5.2	93	7.1
		0.10	98	2.0		
	Potato Tuber	0.01	90	5.5	93	5.4
		0.10	97	2.7		
	Tomato Fruit	0.01	88	5.5	88	4.0
		0.10	88	2.2		

Analyte[a]	Matrix	Spiking Level [mg/kg]	Mean Recovery (n = 5) [%]	RSD [%]	Overall Mean Recovery [%]	Overall RSD [%]
BYI08330-Glucoside (2nd MRM)	Hop Cone Dried	0.10	100	4.1	90	13.0
		1.0	80	6.9		
	Avocado Fruit	0.01	101	6.8	102	5.0
		0.10	103	3.1		
	Orange Fruit	0.01	84	4.4	89	7.4
		0.10	94	4.5		
	Potato Tuber	0.01	94	3.7	97	5.3
		0.10	99	5.5		
	Tomato Fruit	0.01	85	3.0	89	5.6
		0.10	92	4.9		

[a] Each metabolite is expressed as parent equivalent.

Analytical method 00929 was developed for the determination of residues of BYI08330-ketohydroxy-alcohol, BYI08330-desmethyl-ketohydroxy, and BYI08330-desmethyl-di-hydroxy in/on plant material by HPLC-MS/MS (M-256183-01-2, Freitag, T.; 2005 amended 02.06.2006; M-270054-02-2, Klempner, A. and Spiegel, K; 2006). Note that these metabolites were not determined by methods 00857 or 00888 (above). BYI08330-ketohydroxy-alcohol, BYI08330-desmethyl-ketohydroxy and BYI08330-desmethyl-di-hydroxy and the corresponding conjugates are extracted from the sample material, filtered and the extract acqueous subjected to additional acidic hydrolysis to cleave the conjugates. After filtration and clean-up, the extracts are subjected to HPLC-MS/MS. Chromatography was performed by RP-HPLC with MS/MS detection. For quantification, the corresponding stable-labeled internal standards were used.

Untreated control samples of wheat (grain, forage, straw and flour), cotton undelinted seeds, Swiss chard, peanut (oil and nutmeat), and sugar beets (roots and molasses) were spiked with BYI 08330-ketohydroxy-alcohol, BYI 08330-desmethyl-ketohydroxy, and BYI 08330-desmethyl-di-hydroxy at 0.02 ppm and 0.20 ppm levels. The percent recoveries from all tested plant commodities were 71–95% for BYI 08330-ketohydroxy-alcohol, 73–91% for BYI 08330-desmethyl-ketohydroxy, and 81–114% for BYI 08330-desmethyl-di-hydroxy (Table 45). The demonstrated LOQ thus was 0.02 ppm for each analyte in plant matrices. The LOD for each analyte was estimated to be at least 3 to 4 times the corresponding LOQ.

The extraction efficiency of method 00929 was tested using incurred samples containing radioactive residues from confined rotational crop study. Samples of Swiss chard and wheat straw planted at a 30-day plant back interval were used for the test. The recoveries of the extracted radioactive residues of BYI 08330-ketohydroxy-alcohol, BYI 08330-desmethyl-ketohydroxy, and BYI 08330-desmethyl-di-hydroxy demonstrate that method 00929 was capable of measuring these residues from rotational plants grown on soil treated with spirotetramat (Table 46).

Table 45 Recovery results from method validation of plant matrices using the Analytical Method 00929 (M-256183-01-2)

Matrix		Spiking Level (ppm)	Recoveries Obtained (%)	% Mean Recovery ± SD (CV)
BYI 08330-ketohydroxy-alcohol				
Wheat	grain	0.02	86, 80, 83	83 ± 3 (3.6)
		0.20	95, 87, 86	89 ± 5 (5.5)
	forage	0.02	92, 87, 82, 82, 86	86 ± 4 (4.8)
		0.20	92, 82, 87, 86, 82	86 ± 4 (4.8)
	straw	0.02	83, 86, 83, 89, 79	84 ± 4 (4.5)
		0.20	79, 81, 77, 78, 81	79 ± 2 (2.3)
	flour	0.02	89, 88, 84	87 ± 3 (3.0)
		0.20	85, 89, 87	87 ± 2 (2.3)
		0.02	71, 73, 73	72 ± 1 (1.6)
		0.20	82, 79, 79	80 ± 2 (2.2)

Matrix		Spiking Level (ppm)	Recoveries Obtained (%)	% Mean Recovery ± SD (CV)
Swiss chard	leaves	0.02	82, 78, 79	80 ± 2 (2.6)
		0.20	73, 83, 84	80 ± 6 (7.6)
		0.02	82, 82, 51*, 85, 88, 82, 76, 77, 76, 81	81 ± 4 (4.9)
		0.20	80, 79, 77, 82, 79	79 ± 2 (2.3)
		0.02	74, 75, 76	75 ± 1 (1.3)
		0.20	77, 78, 76	77 ± 1 (1.3)
		0.02	83, 90, 94, 89, 93	90 ± 4 (4.8)
		0.20	82, 82, 85, 84, 85	84 ± 2 (1.8)
		0.02	85, 86, 88	86 ± 2 (1.8)
		0.20	81, 83, 83	82 ± 1 (1.4)
BYI 08330-desmethyl-ketohydroxy				
Wheat	grain	0.02	83, 90, 84	86 ± 4 (4.4)
		0.20	87, 85, 82	85 ± 3 (3.0)
	forage	0.02	84, 81, 80, 83, 82	82 ± 2 (1.9)
		0.20	89, 79, 82, 83, 85	84 ± 4 (4.4)
	straw	0.02	79, 83, 90, 84, 84	84 ± 4 (4.7)
		0.20	81, 80, 80, 79, 81	80 ± 1 (1.0)
	flour	0.02	79, 85, 79	81 ± 3 (4.3)
		0.20	86, 81, 84	84 ± 3 (3.0)
Cotton	undelinted seeds	0.02	86, 87, 79	84 ± 4 (5.2)
		0.20	86, 86, 83	85 ± 2 (2.0)
Swiss chard	leaves	0.02	91, 82, 82	85 ± 5 (6.1)
		0.20	80, 81, 85	82 ± 3 (3.2)
Peanut	oil	0.02	75, 80, 47*, 75, 77, 81, 78, 76, 73, 76	77 ± 3 (3.2)
		0.20	83, 81, 83, 81, 80	82 ± 1 (1.6)
	nutmeat	0.02	78, 84, 81	81 ± 3 (3.7)
		0.20	78, 81, 84	81 ± 3 (3.7)
Sugar beets	molasses	0.02	86, 80, 85, 78, 86	83 ± 4 (4.5)
		0.20	81, 85, 82, 85, 89	84 ± 3 (3.7)
	roots	0.02	84, 87, 84	85 ± 2 (2.0)
		0.20	85, 84, 84	84 ± 1 (0.7)
BYI 08330-desmethyl-di-hydroxy				
Wheat	grain	0.02	94, 94, 91	93 ± 2 (1.9)
		0.20	94, 91, 92	92 ± 2 (1.7)
	forage	0.02	93, 94, 101, 104, 96	98 ± 5 (4.8)
		0.20	94, 91, 93, 91, 91	92 ± 1 (1.5)
	straw	0.02	85, 81, 86, 86, 78	83 ± 4 (4.3)
		0.20	88, 91, 90, 87, 91	89 ± 2 (2.0)
	flour	0.02	99, 100, 90	96 ± 5 (5.7)
		0.20	96, 94, 95	95 ± 1 (1.1)
Cotton	undelinted seeds	0.02	86, 86, 81	84 ± 3 (3.4)
		0.20	92, 90, 88	90 ± 2 (2.2)
Swiss chard	leaves	0.02	97, 83, 88	89 ± 7 (7.9)
		0.20	86, 89, 89	88 ± 2 (2.0)
Peanut	oil	0.02	81, 85, 47*, 83, 94, 95, 87, 91, 91, 89	88 ± 5 (5.5)
		0.20	84, 85, 85, 81, 82	83 ± 2 (2.2)
	nutmeat	0.02	96, 114, 94	101 ± 11 (10.9)
		0.20	89, 92, 90	90 ± 2 (1.7)
Sugar beets	molasses	0.02	103, 91, 87, 95, 91	93 ± 6 (6.5)
		0.20	85, 90, 84, 81, 79	84 ± 4 (5.0)
	roots	0.02	96, 91, 94	94 ± 3 (2.7)
		0.20	88, 91, 91	90 ± 2 (1.9)

Table 46: Extraction efficiency of Method 00929 using radiolabelled samples of Swiss chard and wheat straw from confined rotational crop study

Crops	Swiss Chard (% extracted)		Wheat Straw (% extracted)	
	Method 00929	Confined crop rotation study	Method 00929	Confined crop rotation study
% TRRs extracted	89.2	91.3	90.5	93.7
% of Compounds in the extract				
BYI 08330-desmethyl-di-hydroxy	6.8	7.7	22.2	25.5
BYI 08330-ketohydroxy-alcohol	5.0	5.8	13.8	13.4
BYI 08330-desmethyl-ketohydroxy	22.5	20.7	28.4	30.4

Animals

The ***analytical method 00966*** was developed for the determination of residues of spirotetramat, BYI 08330-enol and BYI 08330-enol-glucuronide (GA) in livestock matrices by HPLC-ESI-MS/MS using isotopically labelled internal standards (M-266199-01-2, Perez R; 2006; M-277359-02-1, Coopersmith H; 2006; Freitag, Th., Wolters, A.; 2006; M-266199-01-2). Spirotetramat, BYI 08330-enol and BYI 08330-enol-GA were extracted from the sample material (fat, liver, kidney, milk, muscle). The corresponding isotopically labelled internal standards were added. The solution was subjected to HPLC-MS/MS with MRM. Two MRM transitions were monitored for each matrix and each analyte for quantitation and confirmation purposes.

The validated LOQ was 0.01 ppm in tissues and 0.005 ppm in milk for each analyte. The LOD for all analytes was estimated to be about 10 times lower than the corresponding LOQ. The detector response was linear over the range of 0.02–20 µg/L ($r^2 > 0.999$).

The (data-gathering) method was validated for each analyte at concentration levels of 0.01 and 0.10 ppm in cattle and poultry muscle, cattle fat, cattle liver and cattle kidney; and 0.005 and 0.050 ppm in milk. Minor modifications were applied to the cleanup step for some matrices. The percent recoveries from all matrices were 68–101% (spirotetramat), 75–101% (BYI 08330-enol), and 69–105% (BYI 08330-enol-GA). Mean recoveries of all analytes from all matrices were within the range of 70–120% with relative standard deviation (RSD) ≤ 9%.

The MRM transitions monitored were as follows:

1st MRM[a]	Spirotetramat	374 to 216 *m/z*
	BYI 08330-enol	302 to 216 *m/z*
	BYI 08330-enol-GA	478 to 302 *m/z*
2nd MRM[b]	Spirotetramat	374 to 302 *m/z*
	BYI 08330-enol	302 to 270 *m/z*
	BYI 08330-enol-GA	478 to 216 *m/z*

[a] These transitions were used for quantitation.

[b] These transitions were used for confirmation.

Spiked sample recovery results are reported in Table 47.

Table 47 Recovery results from method validation of livestock matrices using the data-gathering Analytical Method 00966 (M-277359-02-1; M-266199-01-2)

Matrix	Spiking Level (mg/kg)	Recoveries (%)	Mean Recovery ∀ SD (CV) (%)
Spirotetramat			
Poultry muscle	0.01	89, 93, 92, 94, 95	93 ± 2.3 (2.5)
	0.10	94, 81, 91, 94, 93	91 ± 5.5 (6.1)
Cattle milk	0.005	101, 92, 97, 91, 86	93 ± 5.8 (6.2)
	0.050	90, 92, 91, 85, 88	89± 2.8 (3.1)

Matrix	Spiking Level (mg/kg)	Recoveries (%)	Mean Recovery ∀ SD (CV) (%)
Cattle fat	0.01	68, 77, 72, 74, 69	72 ± 3.7 (5.1)
	0.10	71, 75, 82, 68, 70	73 ± 5.5 (7.6)
Cattle muscle	0.01	90, 96, 89, 92, 90	91 ± 2.8 (3.1)
	0.10	93, 94, 92, 91, 95	93 ±1.6 (1.7)
Cattle liver	0.01	88, 94, 89, 89, 89	90± 2.4 (2.7)
	0.10	90, 96, 94, 94, 91	93 ± 2.5 (2.6)
Cattle kidney	0.01	100, 96, 91, 91, 88	93 ± 4.8 (5.1)
	0.10	91, 97, 94, 94, 89	93 ± 3.1 (3.3)
BYI 08330-enol			
Poultry muscle	0.01	91, 94, 95, 95, 97	94± 2.2 (2.3)
	0.10	101, 90, 94, 102, 97	97 ± 5.0 (5.1)
Cattle milk	0.005	96, 91, 92, 90, 90	92 ± 2.5 (2.7)
	0.050	99, 94, 100, 98, 100	98 ± 2.5 (2.5)
Cattle fat	0.01	75, 92, 81, 92, 80	84 ± 7.7 (9.1)
	0.10	79, 78, 92, 75, 80	81 ± 6.5 (8.1)
Cattle muscle	0.01	94, 100, 92, 94, 95	95 ± 3.0 (3.2)
	0.10	96, 95, 97, 97, 96	96 ± 0.8 (0.9)
Cattle liver	0.01	96, 93, 94, 92, 97	94 ± 2.1 (2.2)
	0.10	95, 94, 95, 96, 94	95 ± 0.8 (0.9)
Cattle kidney	0.01	90, 88, 87, 88, 82	87 ± 3.0 (3.4)
	0.10	90, 96, 97, 94, 93	94 ± 2.7 (2.9)
BYI 08330-enol-GA			
Poultry muscle	0.01	77, 86, 82, 88, 86	84 ± 4.4 (5.2)
	0.10	85, 73, 83, 85, 86	82 ± 5.4 (6.5)
Cattle milk	0.005	105, 97, 98, 94, 99	99 ± 4.0 (4.1)
	0.050	96, 95, 102, 97, 96	97 ± 2.8 (2.9)
Cattle fat	0.01	74, 85, 80, 84, 80	81 ± 4.3 (5.4)
	0.10	75, 69, 87, 75, 76	76 ± 6.5 (8.6)
Cattle muscle	0.01	86, 87, 85, 89, 91	88 ± 2.4 (2.8)
	0.10	88, 91, 89, 86, 91	89 ± 2.1 (2.4)
Cattle liver	0.01	93, 96, 98, 88, 90	93 ± 4.1 (4.4)
	0.10	84, 87, 87, 83, 86	85 ± 1.8 (2.1)
Cattle kidney	0.01	91, 89, 91, 88, 85	89 ± 2.5 (2.8)
	0.10	85, 87, 90, 88, 84	87 ± 2.4 (2.8)

Table 48 Recovery results obtained by an Independent laboratory validation of the Analytical Method 00966 for the determination of spirotetramat residues in livestock matrices (M-277298-01-1)

Matrix	Spiking Level (ppm)	Recoveries Obtained (%)	Mean Recovery ∀ SD (CV) (%)
Spirotetramat			
Beef liver	0.01	93, 85, 93, 91, 90	90 ± 3 (4)
	0.02	93, 92, 93, 89, 96	93 ± 3 (3)
	0.10	86, 90, 94, 96, 95	92 ± 4 (4)
BYI 08330-enol			
Beef liver	0.01	99, 96, 94, 88, 88	93 ± 5 (5)
	0.02	91, 98, 99, 97, 93	96 ± 3 (3)
	0.10	91, 93, 97, 93, 98	94 ± 3 (3)
BYI 08330-enol-GA			
Beef liver	0.01	80, 76, 79, 72, 76	76 ± 3 (4)
	0.02	76, 77, 77, 79, 76	77 ± 2 (1)
	0.10	72, 79, 76, 76, 82	77 ± 5 (4)

An extraction efficiency study was not considered necessary since method 00966 uses the same extraction solvents as those used in the livestock metabolism study (see above).

An enforcement method (***analytical method 00969***) was developed to determine residues of BYI 08330-enol in/on matrices of livestock origin (muscle, kidney, egg and milk) by HPLC-ESI-

MS/MS. BYI 08330-enol was extracted from egg, muscle, milk and kidney (7/3, v/v). (Freitag, Th., Wolters, A.; 2006; M-265407-01-1; M-269571-01-1, Bacher, R., 2006) and analysed by HPLC-MS/MS. As in method 00966, two MRM transitions were monitored for BYI 08330-enol in each matrix, *m/z* 302–216 (quantitation) and *m/z* 302-270 (confirmation). The recoveries from samples of cattle muscle, cattle kidney, and egg spiked at 0.01 and 0.10 ppm; and milk spiked at 0.005 and 0.050 ppm were within the acceptable range of 91–99% with RSD ≤ 6%. See Table 49.

An independent laboratory validation (ILV) of method 00969 using cow's milk, cattle meat, and egg was successful and supports the method's LOQ of 0.01 ppm for BYI 08330-enol in meat and egg, and 0.005 ppm in milk. See Table 50.

Table 49 Recovery results from method validation of livestock matrices using the enforcement Analytical Method 00969 (M265407-01-1)

Matrix	Spiking Level (ppm)	Recoveries Obtained (%)	% Mean Recovery ∀ SD (CV)
BYI 08330-enol			
Cattle muscle	0.01	95, 98, 93, 92, 88	93 ± 4 (4)
	0.10	90, 84, 94, 95, 100	93 ± 6 (6)
Cattle kidney	0.01	88, 95, 92, 91, 90	91 ± 3 (3)
	0.10	94, 95, 94, 95, 94	94 ± 1 (1)
Cattle milk	0.005	99, 99, 96, 99, 103	99 ± 2 (3)
	0.050	97, 97, 94, 95, 97	96 ± 1 (1)
Poultry egg	0.01	95, 88, 94, 91, 91	92 ± 3 (3)
	0.10	90, 94, 94, 94, 94	93 ± 2 (2)

Table 50 Recovery results obtained by an independent laboratory validation of the Analytical Method 00969 for the determination of BYI 08330-Enol in livestock matrices (M-269571-01-1)

Matrix	Spiking Level (ppm)	Recoveries Obtained (%)	% Mean Recovery ± SD (CV)
BYI 08330-enol			
Cattle milk	0.005	93, 98, 94, 103, 103	98 ± 5 (5)
	0.050	99, 99, 99, 100, 93	98 ± 3 (3)
Cattle muscle	0.01	106, 90, 88, 98, 100	97 ± 8 (8)
	0.10	96, 96, 96, 96, 101	97 ± 2 (2)
Poultry egg	0.01	95, 91, 100, 96, 93	95 ± 4 (4)
	0.10	96, 100, 98, 102, 98	99 ± 2 (2)

Multiresidue Methods

Multiresidue methods were tested for spirotetramat. Spirotetramat, BYI 08330-enol, BYI 08330-ketohydroxy, BYI 08330-mono-hydroxy, BYI 08330-enol-glucoside (Glc), and BYI 08330-enol-glucuronide (GA) were screened through multiresidue methods described in the United States Food and Drug Administration (FDA) Pesticide Analytical Manual, Vol. I (PAM I) (M-277248-01-1, Pruitt, W. E., 2006). Spirotetramat and the metabolites were tested for natural fluorescence using procedures outlined in Protocol A of PAM I. BYI 08330-mono-hydroxy was the only compound found to be naturally fluorescent, and no further test with this protocol was performed.

Spirotetramat and the metabolites were subjected to Protocol C, modules DG1, DG5, DG13, DG17 and DG18. Due to the poor sensitivity of the test substances to detection by method described in Protocol C, no further analyses were performed for Protocols D, E, or F. Since the test substances are not acidic, phenols or substituted ureas, analyses were not performed using Protocols B or G.

DFG method S 19 (extended and revised revision) for the determination of residues of BYI08330-enol was likewise found not to be applicable (M-257512-01-1, Klimmek, S.; 2005).

Stability of pesticide residues in stored analytical samples

The Meeting received two reports on the stability of the spirotetramat residue in stored analytical samples of plant commodities (M-289421-01-2, Schoening R, Wolters A, 2006; M-276529-01-2, Schoening R., Wolters A.; 2006).

Samples of tomato (fruit and paste), potato (tuber), lettuce (head), climbing French bean (bean with pod) and almond (nutmeat) were spiked separately with 0.2 ppm of each spirotetramat (BYI 08330), BYI 08330-enol, BYI 08330-ketohydroxy, BYI 08330-mono-hydroxy, BYI 08330-enol-glucoside and stored at -18 °C for approximately 30, 60, 90, 180, 370, 540, and 718 days. Samples were analysed by HPLC-MS/MS method 00857 using internal standards. Adequate method validation data were provided.

Samples spiked with spirotetramat were analysed for all analytes and the total residues were expressed as spirotetramat equivalents. Samples spiked with BYI08330-enol were also analysed for all analytes, with the exception of spirotetramat, and the total residues were expressed as BYI08330-enol equivalents. Samples that were spiked with BYI08330-ketohydroxy or BYI08330-mono-hydroxy or BYI08330-enol-Glc were analysed and reported individually.

A second study was performed to examine the effects of frozen storage on spirotetramat residues in orange juice and prunes. Samples of orange juice and prune fruit were spiked individually with 0.20 ppm of each spirotetramat, BYI 08330-enol, BYI 08330-ketohydroxy, BYI 08330-monohydroxy, BYI 08330-enol-Glc and stored at < -18 °C. Storage stability samples were analysed using method 00857 (LC-MS/MS method) at 0, 30, 90, and 144/147-day intervals.

The results of the two studies are summarized in Table 51 for spirotetramat and in Table 52 for the metabolites.

Table 51 Summary of the stability of residues of spirotetramat (BYI 08330) in plant matrices following storage at –18 °C (M-289421-01-2, M-276529-01-2)

Commodity/Storage Interval	Analyte[a, c]					
	BYI 08330	BYI-08330-enol	BYI-08330-keto-hydroxy calc. as BYI 08330 equ.	BYI-08330-mono-hydroxy calc. as BYI 08330 equ.	BYI-08330-enol-Glc calc. as BYI 08330 equ.	Total Residue BYI 08330 calc. as BYI 08330 equ.
Tomato						
Remaining (%) on Day 0:	99%					
	99%					
	92%					
	97%					
	86%					
Average:	95%					95%
Remaining (%) on Day 32:	97%	1%				
	101%	1%				
	101%	2%				
Average:	100%	2%				102%
Remaining (%) on Day 62:	91%	1%	< LOD[b]	< LOD	< LOD	
	94%	3%	< LOD	< LOD	< LOD	
	67%	1%	< LOD	< LOD	< LOD	
Average:	84%	2%	< LOD	< LOD	< LOD	86%

Commodity/Storage Interval	Analyte[a, c]					
	BYI 08330	BYI-08330-enol	BYI-08330-keto-hydroxy calc. as BYI 08330 equ.	BYI-08330-mono-hydroxy calc. as BYI 08330 equ.	BYI-08330-enol-Glc calc. as BYI 08330 equ.	Total Residue BYI 08330 calc. as BYI 08330 equ.
Remaining (%) on Day 91:	92%	3%	< LOD	< LOD	< LOD	
	90%	3%	< LOD	< LOD	< LOD	
	87%	3%	< LOD	< LOD	< LOD	
Average:	90%	3%	< LOD	< LOD	< LOD	93%
Remaining (%) on Day 180:	90%	4%	< LOD	< LOD	< LOD	
	81%	4%	< LOD	< LOD	< LOD	
	78%	4%	< LOD	< LOD	< LOD	
Average:	83%	4%	< LOD	< LOD	< LOD	87%
Remaining (%) on Day 370:	90%	5%	< LOD	< LOD	< LOD	
	90%	7%	< LOD	< LOD	< LOD	
	67%	6%	< LOD	< LOD	< LOD	
Average:	82%	6%	< LOD	< LOD	< LOD	88%
Remaining (%) on Day 543:	89%	12%	< LOD	< LOD	< LOD	
	83%	10%	< LOD	< LOD	< LOD	
	76%	11%	< LOD	< LOD	< LOD	
Average:	83%	11%	< LOD	< LOD	< LOD	94%
Remaining (%) on Day 718:	77%	17%	< LOD	< LOD	< LOD	
	73%	15%	< LOD	< LOD	< LOD	
	79%	15%	< LOD	< LOD	< LOD	
Average:	76%	16%	< LOD	< LOD	< LOD	92%
Potato tuber						
Remaining (%) on Day 0:	84%					
	73%					
	93%					
	97%					
	96%					
Average:	89%					89%
Remaining (%) on Day 31:	80%	27%				
	62%	20%				
	77%	28%				
Average:	73%	25%				98%
Remaining (%) on Day 62:	57%	22%	< LOD	< LOD	< LOD	
	62%	22%	< LOD	< LOD	< LOD	
	63%	24%	< LOD	< LOD	< LOD	
Average:	61%	23%	< LOD	< LOD	< LOD	84%
Remaining (%) on Day 90:	53%	31%	< LOD	< LOD	1%	
	53%	34%	< LOD	< LOD	< LOD	
	33%	21%	< LOD	< LOD	< LOD	
Average :	46%	28%				74%

Commodity/Storage Interval	Analyte[a, c]					
	BYI 08330	BYI-08330-enol	BYI-08330-keto-hydroxy calc. as BYI 08330 equ.	BYI-08330-mono-hydroxy calc. as BYI 08330 equ.	BYI-08330-enol-Glc calc. as BYI 08330 equ.	Total Residue BYI 08330 calc. as BYI 08330 equ.
Remaining (%) on Day 180:	49%	47%	< LOD	< LOD	< LOD	
	59%	41%	< LOD	< LOD	< LOD	
	49%	50%	< LOD	< LOD	< LOD	
Average:	52%	46%	< LOD	< LOD	< LOD	98%
Remaining (%) on Day 369:	43%	48%	1%	< LOD	< LOD	
	41%	59%	1%	< LOD	< LOD	
	35%	46%	< LOD	< LOD	< LOD	
Average:	40%	51%	1%	< LOD	< LOD	92%
Remaining (%) on Day 543:	20%	46%	1%	< LOD	< LOD	
	21%	38%	< LOD	< LOD	< LOD	
	23%	56%	1%	< LOD	< LOD	
Average:	21%	47%	1%	< LOD	< LOD	69%
Remaining (%) on Day 717:	28%	58%	1%	< LOD	1%	
	27%	60%	1%	< LOD	< LOD	
	31%	51%	1%	< LOD	< LOD	
Average:	29%	56%	1%	< LOD	< LOD	86%
Lettuce, head						
Remaining (%) on Day 0:	81					
	90					
	57					
	107					
	81					
Average:	83					83%
Remaining (%) on Day 29:	96	10				
	94	10				
	72	7				
Average:	87	9				96%
Remaining (%) on Day 62:	82	14	2	< LOD	< LOD	
	82	12	2	< LOD	< LOD	
	84	15	2	< LOD	< LOD	
Average:	83	14	2	< LOD	< LOD	99%
Remaining (%) on Day 90:	67	12	2	1%	< LOD	
	80	15	2	< LOD	< LOD	
	72	22	2	< LOD	< LOD	
Average:	73	17	2	< LOD	< LOD	92%
Remaining (%) on Day 177:	74	26	1	< LOD	< LOD	
	73	25	2	< LOD	< LOD	
	51	27	1	< LOD	< LOD	
Average:	66	26	2	< LOD	< LOD	94%

Commodity/Storage Interval	Analyte[a, c]					
	BYI 08330	BYI-08330-enol	BYI-08330-keto-hydroxy calc. as BYI 08330 equ.	BYI-08330-mono-hydroxy calc. as BYI 08330 equ.	BYI-08330-enol-Glc calc. as BYI 08330 equ.	Total Residue BYI 08330 calc. as BYI 08330 equ.
Remaining (%) on Day 366:	47	48	4	< LOD	< LOD	
	48	47	4	< LOD	< LOD	
	50	37	2	< LOD	< LOD	
Average:	48	44	3	< LOD	< LOD	95%
Remaining (%) on Day 541:	37	51	4	1	< LOD	
	37	55	2	1	< LOD	
	45	48	2	1	< LOD	
Average:	40	51	3	1	< LOD	95%
Remaining (%) on Day 713:	25	63	5	1%	< LOD	
	27	62	2	< LOD	< LOD	
	28	62	2	< LOD	< LOD	
Average:	27	62	3	< LOD	< LOD	92%
Climbing French beans						
Remaining (%) on Day 0:	55% (outlier)					
	92%					
	86%					
	90%					
	90%					
Average:	90%					90%
Remaining (%) on Day 28:	82%	20%				
	75%	15%				
	56%	15%				
Average:	71%	17%				88%
Remaining (%) on Day 60:	63%	22%	1%	< LOD	< LOD	
	54%	31%	< LOD	< LOD	< LOD	
	61%	25%	1%	< LOD	< LOD	
Average:	59%	26%	1%	< LOD	< LOD	86%
Remaining (%) on Day 91:	60%	31%	1%	< LOD	< LOD	
	59%	24%	2%	< LOD	< LOD	
	59%	31%	1%	< LOD	< LOD	
Average:	59%	28%	2%	< LOD	< LOD	89%
Remaining (%) on Day 177:	45%	42%	1%	< LOD	1%	
	46%	47%	2%	< LOD	1%	
	54%	42%	4%	< LOD	1%	
Average:	48%	44%	2%	< LOD	1%	94%
Remaining (%) on Day 367:	53%	78%	8%	< LOD	< LOD	
	32%	51%	5%	< LOD	< LOD	
	35%	50%	5%	< LOD	< LOD	

Commodity/Storage Interval	Analyte[a, c]					
	BYI 08330	BYI-08330-enol	BYI-08330-keto-hydroxy calc. as BYI 08330 equ.	BYI-08330-mono-hydroxy calc. as BYI 08330 equ.	BYI-08330-enol-Glc calc. as BYI 08330 equ.	Total Residue BYI 08330 calc. as BYI 08330 equ.
Average:	40%	59%	6%	< LOD	< LOD	105%
Remaining (%) on Day 542:	27%	56%	7%	1%	< LOD	
	25%	46%	5%	1%	< LOD	
	24%	50%	2%	1%	< LOD	
Average:	25%	50%	5%	1%	< LOD	80%
Remaining (%) on Day 714:	25%	48%	4%	< LOD	< LOD	
	26%	57%	5%	< LOD	< LOD	
	22%	62%	6%	< LOD	< LOD	
Average:	24%	56%	5%	< LOD	< LOD	85%
Almond nutmeat						
Remaining (%) on Day 0:	87%					
	97%					
	85%					
	85%					
	67%					
Average:	84%					84
Remaining (%) on Day 26:	57%	51%				
	49%	58%				
	57%	55%				
Average:	54%	55%				109
Remaining (%) on Day 61:	41%	61%	< LOD	< LOD	< LOD	
	50%	53%	< LOD	< LOD	< LOD	
	48%	52%	< LOD	< LOD	< LOD	
Average:	46%	55%	< LOD	< LOD	< LOD	101
Remaining (%) on Day 90:	41%	61%	< LOD	< LOD	< LOD	
	39%	55%	< LOD	< LOD	< LOD	
	28%	62%	< LOD	< LOD	< LOD	
Average:	36%	59%	< LOD	< LOD	< LOD	95
Remaining (%) on Day 177:	17%	73%	< LOD	< LOD	< LOD	
	28%	64%	< LOD	< LOD	< LOD	
	20%	78%	< LOD	< LOD	< LOD	
Average:	22%	72%	< LOD	< LOD	< LOD	94
Remaining (%) on Day 367:	11%	72%	< LOD	< LOD	< LOD	
	20%	71%	< LOD	< LOD	< LOD	
	15%	76%	< LOD	< LOD	< LOD	
Average:	15%	73%	< LOD	< LOD	< LOD	88
Remaining (%) on Day 541:	10%	74%	< LOD	1%	< LOD	
	8%	87%	< LOD	1%	< LOD	
	19%	68%	< LOD	1%	< LOD	

Commodity/Storage Interval	Analyte[a, c]					
	BYI 08330	BYI-08330-enol	BYI-08330-keto-hydroxy calc. as BYI 08330 equ.	BYI-08330-mono-hydroxy calc. as BYI 08330 equ.	BYI-08330-enol-Glc calc. as BYI 08330 equ.	Total Residue BYI 08330 calc. as BYI 08330 equ.
Average:	12%	76%	< LOD	1%	< LOD	88
Remaining (%) on Day 713:	9%	72%	< LOD	< LOD	< LOD	
	15%	66%	< LOD	< LOD	< LOD	
	9%	69%	< LOD	< LOD	< LOD	
Average:	11%	69%	< LOD	< LOD	< LOD	80
Tomato paste						
Remaining (%) on Day 0:	105%					
	107%					
	106%					
	100%					
	104%					
Average:	104%					104
Remaining (%) on Day 30:	97%	1%				
	101%	3%				
	97%	3%				
Average:	98%	2%				100
Remaining (%) on Day 61:	102%	4%	< LOD	< LOD	< LOD	
	95%	4%	< LOD	< LOD	< LOD	
	93%	4%	< LOD	< LOD	< LOD	
Average:	97%	4%	< LOD	< LOD	< LOD	101
Remaining (%) on Day 93:	92%	4%	< LOD	< LOD	< LOD	
	88%	5%	< LOD	< LOD	< LOD	
	104%	4%	< LOD	< LOD	< LOD	
Average:	95%	4%	< LOD	< LOD	< LOD	99
Remaining (%) on Day 187:	80%	5%	< LOD	< LOD	< LOD	
	74%	4%	< LOD	< LOD	< LOD	
	80%	5%	< LOD	< LOD	< LOD	
Average:	78%	5%	< LOD	< LOD	< LOD	83
Remaining (%) on Day 373:	86%	7%	< LOD	< LOD	< LOD	
	86%	9%	< LOD	< LOD	< LOD	
	64%	10%	< LOD	< LOD	< LOD	
Average:	79%	9%	< LOD	< LOD	< LOD	88
Remaining (%) on Day 545:	84%	10%	< LOD	< LOD	< LOD	
	86%	12%	< LOD	< LOD	< LOD	
	84%	11%	< LOD	< LOD	< LOD	
Average:	85%	11%	< LOD	< LOD	< LOD	96
Remaining (%) on Day 715:	81%	12%	< LOD	< LOD	< LOD	
	77%	15%	< LOD	< LOD	< LOD	
	76%	12%	< LOD	< LOD	< LOD	

Commodity/Storage Interval	Analyte[a, c]					
	BYI 08330	BYI-08330-enol	BYI-08330-keto-hydroxy calc. as BYI 08330 equ.	BYI-08330-mono-hydroxy calc. as BYI 08330 equ.	BYI-08330-enol-Glc calc. as BYI 08330 equ.	Total Residue BYI 08330 calc. as BYI 08330 equ.
Average:	78%	13%	< LOD	< LOD	< LOD	91
Orange juice						
Remaining (%) on day 0	87	0	--	-	1	
	97	1	-	-	1	
	105	1	-	-	1	
	91	0	-	-	0	
	105	1	-	-	1	
Average	97	1	-	--	1	99
Remaining (%) on day 30	56	1	-	-	-	
	77	1	-	-	-	
	83	2	-	-	-	
Average	72	2	-	-	-	74
Remaining (%) on day 92	82	3	-	-	-	
	94	3	-	-	-	
	85	4				
Average	87	3				90
Remaining (%) on Day 144	92	4				
	92	4				
	91	4				
Average	92	4				96
Prunes						
Remaining (%) Day 0	94	0			1	
	92	1			2	
	94	1			1	
	97	1			1	
	99	1			1	
Average	95	1			1	97
Remaining (%) on Day 30	79	1				
	75	1				
	50	1				
Average	68	1				69
Remaining (%) on Day 92	79	2				
	95	2				
	77	2				
Average	84	2				86

Commodity/Storage Interval	Analyte[a, c]					
	BYI 08330	BYI-08330-enol	BYI-08330-keto-hydroxy calc. as BYI 08330 equ.	BYI-08330-mono-hydroxy calc. as BYI 08330 equ.	BYI-08330-enol-Glc calc. as BYI 08330 equ.	Total Residue BYI 08330 calc. as BYI 08330 equ.
Remaining (%) on Day 144	70	2				
	76	2				
	95	2				
Average	80	2				82

[a] Each analyte calculated as BYI 08330 equivalents..

[b] LOD estimated as 1% remaining per analyte, or 0.002 mg/kg

[c] Not corrected for concurrent method recoveries.

Table 52 Summary of the Stability of Spirotetramat Metabolites in Plant Matrices Following Storage at -18 °C

Commodity	Spiking Level (mg/kg)	Storage Interval (days)	n	Average Remaining Residues[a]							
				BYI08330-Enol equivalents[b]		BYI08330-Ketohydroxy		BYI08330-Monohydroxy		BYI08330-Enol glucoside	
				mg/kg	%	mg/kg	%	mg/kg	%	mg/kg	%
Tomato Fruit	0.2	0	5	0.192	96	0.19	95	0.179	90	0.214	107
		32	3	0.217	108	0.189	94	0.152	76	0.18	90
		62	3	0.162	81	0.162	81	0.157	78	0.175	88
		91	3	0.153	76	0.151	76	0.166	83	0.189	94
		180	3	0.167	84	0.191	96	0.176	88	0.189	94
		370	3	0.165	82	0.176	88	0.154	77	0.171	86
		543	3	0.159	80	0.149	74	0.155	78	0.173	86
		718	3	0.158	79	0.173	86	0.166	83	0.171	86
Potato Tuber	0.2	0	5	0.176	88	0.179	90	0.167	84	0.173	86
		31	3	0.208	104	0.158	79	0.158	79	0.188	94
		62	3	0.161	80	0.186	93	0.159	80	0.168	84
		90	3	0.135	68	0.159	80	0.161	80	0.186	93
		180	3	0.155	78	0.181	90	0.163	82	0.188	94
		370	3	0.17	85	0.181	90	0.181	90	0.188	94
		543	3	0.134	67	0.163	82	0.156	78	0.169	85
		717	3	0.148	74	0.175	88	0.148	74	0.153	76
Head lettuce	0.2	0	5	0.172	86	0.18	90	0.168	84	0.204	102
		29	3	0.195	98	0.17	85	0.167	84	0.204	102
		62	3	0.155	78	0.178	89	0.17	85	0.199	100
		90	3	0.171	86	0.185	92	0.18	90	0.212	106
		177	3	0.151	76	0.187	94	0.161	80	0.176	88
		366	3	0.15	75	0.184	92	0.15	75	0.17	85
		541	3	0.164	82	0.183	92	0.17	85	0.183	92
		713	3	0.161	80	0.184	82	0.166	83	0.172	86
Climbing French bean	0.2	0	5	0.166	83	0.156	78	0.163	82	0.173	86
		28	3	0.186	93	0.178	89	0.161	80	0.197	98
		60	3	0.147	74	0.177	89	0.184	92	0.214	107
		91	3	0.144	72	0.177	88	0.174	87	0.211	106
		177	3	0.145	72	0.19	95	0.156	78	0.172	86
		367	3	0.147	74	0.183	92	0.147	85	0.166	83
		542	3	0.143	72	0.164	82	0.184	92	0.162	81

Commodity	Spiking Level (mg/kg)	Storage Interval (days)	n	Average Remaining Residues[a]							
				BYI08330-Enol equivalents[b]		BYI08330-Ketohydroxy		BYI08330-Monohydroxy		BYI08330-Enol glucoside	
				mg/kg	%	mg/kg	%	mg/kg	%	mg/kg	%
		714	3	0.168	84	0.182	91	0.176	88	0.178	89
Almond nutmeat	0.2	0	5	0.206	103	0.165	82	0.174	87	0.184	92
		26	3	0.194	97	0.188	94	0.17	85	0.206	103
		61	3	0.177	88	0.187	94	0.182	91	0.216	108
		90	3	0.179	90	0.182	91	0.175	88	0.208	104
		177	3	0.165	82	0.181	90	0.173	86	0.188	94
		367	3	0.141	70	0.175	88	0.159	80	0.16	80
		541	3	0.162	81	0.17	85	0.169	84	0.159	80
		713	3	0.146	73	0.165	82	0.149	74	0.143	72
Tomato Paste	0.2	0	5	0.2	100	0.196	98	0.202	101	0.213	106
		30	3	0.146	73	0.178	89	0.167	84	0.153	76
		61	3	0.159	80	0.179	90	0.203	102	0.196	98
		93	3	0.167	84	0.188	92	0.195	98	0.182	91
		187	3	0.136	68	0.164	82	0.175	88	0.182	91
		373	3	0.14	70	0.169	84	0.173	86	0.184	92
		542	3	0.139	70	0.193	96	0.16	80	0.151	76
		715	3	0.128	64	0.18	90	0.179	90	0.165	82
Orange juice	0.2	0	5	0.18	90	0.175	99	0.183	92	0.177	88
		30	3	0.189	94	0.182	91	0.15	75	0.141	70
		92	3	0.229	110	0.23	120	0.203	102	0.205	102
		144	3	0.19	95	0.183	92	0.184	92	0.181	90
Prunes	0.2	0	5	0.214	107	0.182	91	0.182	91	0.17	85
		30	3	0.214	107	0.154	77	0.171	86	0.169	84
		92	3	0.215	110	0.186	93	0.168	84	0.119	60
		147	3	0.217	110	0.179	90	0.171	85	0.13	65

[a] Not corrected for concurrent analytical method recovery.

[b] Sum of enol and other metabolites, expressed as the enol.

No storage stability data were received for animal commodities. However, all samples from the livestock feeding studies were analysed within 30 days of collection (see below).

USE PATTERN

Spirotetramat is applied as a foliar spray and currently (09/2008) has registered uses in several plant commodities. The GAPs are summarized by commodity and country in Table 53 and have been assembled from labels or translations of labels provided by the manufacturer.

Table 53 Summary of foliar uses of spirotetramat

Crop	Country	Formulation	Application				PHI Days/ Comment
			kg ai/ha	kg ai/hL	Retreatment interval (days)	No. or max (kg ai/ha/ season)	
Berries (small fruit, vine climbing, except grape and except kiwi)	Canada	150 g/L OD	0.140	0.028 ground airblast	30	0.220	7

Crop	Country	Formulation	Application				PHI Days/ Comment
			kg ai/ha	kg ai/hL	Retreatment interval (days)	No. or max (kg ai/ha/ season)	
Berries (small fruit, vine climbing, except grape and except kiwi)	Canada	240 g/L SC	0.140	0.028 ground airblast	30	0.220	7
Berries (small fruit, vine climbing, except fuzzy kiwi)	US	240 g/L SC	0.140	0.030 ground airblast 0.058 high air velocity 0.175 aerial	30	0.220	7
Brassica leafy vegetables	Canada	150 g/L OD	0.088	0.029	7	0.175	1
Brassica leafy vegetables	Canada	240 g/L SC	0.088	0.029	7	0.175	1
Brassica leafy vegetables	US	240 g/L SC	0.088	0.062 Ground 0.188 Aerial	7	0.179	1
Cabbage, head	Austria	150 g/L OD	0.075	0.015	14	2	3
Citrus	Morocco	150 g/L OD		0.00375			21
Citrus	US	240 g/L SC	0.175	0.030 ground airblast 0.058 high air velocity 0.175 aerial	21	0.358	1
Citrus	Turkey	240 g/L SC		0.0072			14
Cucurbit vegetables	Canada	150 g/L OD	0.088	0.029	7	0.175	1
Cucurbit vegetables	Canada	240 g/L SC	0.088	0.029	7	0.175	1
Cucurbit vegetables	US	240 g/L SC	0.088	0.062 Ground 0.188 Aerial	7	0.175	1
Flowering brassica (see Brassica Leafy Veg also)							
Fruiting vegetables (non-cucurbit)	Austria	150 g L/OD	0.075	0.01 1 m ht 0.005 2 m ht Etc	7	4	3 Glass-house
Fruiting vegetables (non-cucurbit)	Canada	150 g/L OD	0.088	0.029	7	0.175	1
Fruiting vegetables (non-cucurbit)	Canada	240 g/L SC	0.088	0.029	7	0.175	1
Fruiting vegetables (non-cucurbit)	US	240 g/L SC	0.088	0.062 Ground 0.188 Aerial	7	0.179	1
Grapes	Canada	150 g/L OD	0.140	0.028 Ground airblast	30	0.220	7 Excludes table grapes
Grapes	Canada	240 g/L SC	0.140	0.028 Ground airblast	30	0.220	7 Excludes table grapes
Hops	Austria	150 g/L OD	0.15	0.005	none	1	14

Crop	Country	Formulation	Application				PHI Days/ Comment
			kg ai/ha	kg ai/hL	Retreatment interval (days)	No. or max (kg ai/ha/ season)	
Hops	Canada	150 g/L OD	0.105		14	0.220	7
Hops	US	240 g/L SC	0.105		14	0.224	7
Kohlrabi							
Leafy vegetables, non-Brassica	Canada	150 g/L OD	0.088	0.029	7	0.175	3
Leafy vegetables, non-Brassica	Canada	240 g/L SC	0.088	0.029	7	0.175	3
Leafy vegetables, non-Brassica	US	240 g/L SC	0.088	0.062 Ground 0.188 Aerial	7	0.179	3
Lettuce	Austria	150 g/L OD	0.075	0.015	14	2	7 Glass House and field
Pear	Turkey	240 g/L SC		0.0096			21
Pome fruit	Canada	150 g/L OD	0.140	0.028 Ground airblast	14	0.440	7
Pome fruit	Canada	240 g/L SC	0.140	0.028 Ground airblast	14	0.440	7
Pome fruit	US	240 g/L SC	0.16	0.032 Ground airblast 0.053 High air velocity 0.16 Aerial	14	0.45	7
Stone fruit	Canada	150 g/L OD	0.140	0.028	14	0.270	7
Stone fruit	Canada	240 g/L SC	0.140	0.028	14	0.270	7
Stone fruit	US	240 g/L SC	0.16	0.032 Ground airblast 0.053 High air velocity 0.16 Aerial	14	0.27	7
Tree nuts	Canada	150 g/L OD	0.140	0.028	14	0.380	7
Tree nuts	Canada	240 g/L SC	0.140	0.028	14	0.380	7
Tree nuts	US	240 g/L SC	0.16	0.032 Ground airblast 0.053 High air velocity 0.16 Aerial	14	0.38	7
Tuberous and Corm vegetables	Canada	150 g/L OD	0.088	0.028	7	0.175	7
Tuberous and Corm vegetables	Canada	240 g/L SC	0.088	0.028	7	0.175	7
Tuberous and Corm vegetables	US	240 g/L SC	0.088	0.028	7	0.179	7

RESIDUES RESULTING FROM SUPERVISED TRIALS

The results of supervised trials are shown in Tables 55 to 106.Where multiple samples were taken from a single plot, each value is reported. Where results from separate plots were reported, results are listed for each plot. Results have not been corrected for concurrent method recoveries unless indicated. For replicate samples (from the same plot), the highest value was used for maximum residue level estimation. For multiple plots (from the same trial location), results from the plot yielding the highest residue were utilized for maximum residue level estimation. Multiple plots sometimes involved testing of different formulations (OD vs SC) or spray volumes.

Total spirotetramat equivalents, i.e., total BYI08330 equivalents, are the sum of all components converted to BYI08330 equivalents. Where a component is reported as a <'value', the <'value' is added into the calculation of the total equivalents. The following example illustrates:

Residues as BYI08330 Equivalents (mg/kg)						
BYI 08330	BYI 08330 enol	BY I08330 keto-hydroxy	BY I08330 mono-hydroxy	BY I08330 enol-glucoside	Total residue	Parent + Enol
0.15	0.30	< 0.012	< 0.012	< 0.008	0.48	0.45
0.55	0.68	0.012	0.022	0.010	1.3	1.2
< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	< 0.022

The following table summarizes information on residues resulting from supervised trials.

Table 54 Field Trial Tables

Commodity	Group	Table No.
Orange	Citrus fruit	55
Mandarin	Citrus fruit	56
Orange	Citrus fruit	57
Lemon	Citrus fruit	58
Grapefruit	Citrus fruit	59
Apple; pear	Pome fruit	60
Apple; pear	Pome fruit	61
Peach; apricot	Stone fruit	62
Peach	Stone fruit	63
Plum	Stone fruit	64
Plum	Stone fruit	65
Cherry (sweet and sour)	Stone fruit	66
Cherry (sweet and sour)	Stone fruit	67
Strawberry	Berries	68
Strawberry	Berries	69
Grapes	Berries	70
Grapes	Berries	71
Onions	Bulb vegetables	72
Broccoli; cauliflower	Brassica vegetables	73
Broccoli; cauliflower	Brassica vegetables	74
Broccoli	Brassica vegetables	75
Cabbage	Brassica vegetables	76
Cabbage	Brassica vegetables	77
Cabbage	Brassica vegetables	78
Brussels sprouts	Brassica vegetables	79
Brussels sprouts	Brassica vegetables	80
Kohlrabi	Brassica vegetables	81
Melon	Cucurbit flowering vegetables	82

Commodity	Group	Table No.
Melon	Cucurbit flowering vegetables	83
Melons	Cucurbit flowering vegetables	84
Cucumber	Cucurbit flowering vegetables	85
Cucumber	Cucurbit flowering vegetables	86
Cucumber	Cucurbit flowering vegetables	87
Summer squash (zucchini)	Cucurbit flowering vegetables	88
Tomato	Non-cucurbit flowering vegetables	89
Tomato	Non-cucurbit flowering vegetables	90
Tomato	Non-cucurbit flowering vegetables	91
Peppers (sweet)	Non-cucurbit flowering vegetables	92
Peppers (sweet)	Non-cucurbit flowering vegetables	93
Peppers (sweet; chili)	Non-cucurbit flowering vegetables	94
Lettuce	Leafy vegetables	95
Lettuce	Leafy vegetables	96
Spinach	Leafy vegetables	97
Kale; Chinese cabbage	Leafy vegetables	98
Mustard greens	Leafy vegetables	99
French climbing bean (common bean)	Legume vegetables	100
Potato	Root and tuber vegetables	101
Celery	Stalk and stem vegetables	102
Almond	Tree nuts	103
Pecan	Tree nuts	104
Hops	Herbs and dried herb	105
Hops	Herbs and dried herb	106

Citrus

Table 55 Orange trials in Southern Europe (M-263546-01-1, Schöning R.; Helfrich P.; 2005; M-269908-01-1, Schöning R.; Wieland K.)

Country Study No. Trial No. Year	Application						PHI days	Crop Portion analysed	Residues as BYI08330 Equivalents (mg/kg)						
	Form	No	Inter-val days	kg ai/(ha × CH)	kg ai/ha	kg ai/hL			BYI 08330	BYI 08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue	Parent + Enol
Italy RA-2032/04 R 2004 0139 6 Mineo (CT) (Sicilia) 2004	OD 100	2	21	0.096	0.2112	0.00960	0[a] 0 7 14 21 28	Orange fruit	0.01 0.12 0.03 0.02 0.02 < 0.01	0.012 0.012 0.012 0.012 0.012 < 0.012	0.012 0.012 0.012 0.012 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055 0.16 0.074 0.064 0.064 < 0.055	0.022 0.13 0.042 0.032 0.032 < 0.022
							14 21 28	pulp	< 0.01 < 0.01 < 0.01	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008	< 0.055 < 0.055 < 0.055	< 0.022 < 0.022 < 0.022
							14 21 28	peel	0.05 0.03 0.01	0.058 0.037 0.027	0.030 0.026 0.024	< 0.012 < 0.012 < 0.012	0.008 0.008 0.008	0.16 0.11 0.081	0.11 0.067 0.037
Italy RA-2032/04 R 2004 0141 8 Catania (Sicilia) 2004	OD 100	2	21	0.096	0.2300	0.00958	0[1] 0 14 21 28	Orange fruit	< 0.01 0.11 0.02 0.02 0.01	0.012 0.02 0.017 0.014 0.012	0.012 0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055 0.14 0.069 0.085 < 0.055	0.022 0.13 0.037 0.034 0.022
							21 28	pulp	< 0.01 < 0.01	< 0.012 < 0.012	< 0.012 < 0.012	< 0.012 < 0.012	< 0.008 < 0.008	< 0.055 < 0.055	< 0.022 < 0.022
							21	peel	0.02	0.059	0.02	< 0.012	0.008	0.12	0.079

Country Study No. Trial No. Year	Application						PHI days	Crop Portion analysed	Residues as BYI08330 Equivalents (mg/kg)						
	Form	No	Inter-val days	kg ai/(ha × CH)	kg ai/ha	kg ai/hL			BYI 08330	BYI 08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue	Parent + Enol
							28		0.01	0.025	0.012	< 0.012	0.008	0.067	0.035
Portugal RA-2032/04 R 2004 0239 2 Palmela (Ribatejo e Oeste) 2004	OD 100	2	21	0.096	0.2880	0.00960	0[1] 0 7 14 21 27	Orange fruit	< 0.01 0.13 0.13 0.04 0.02 0.01	< 0.012 0.023 0.044 0.041 0.031 0.033	< 0.012 < 0.012 0.014 0.013 0.013 0.013	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 0.008 0.008 0.008	< 0.055 0.18 0.21 0.11 0.084 0.076	< 0.022 0.15 0.17 0.081 0051 0.043
							14 21 27	pulp	< 0.01 < 0.01 < 0.01	0.015 < 0.012 0.015	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008	< 0.055 < 0.055 0.058	0.025 < 0.022 0.025
							14 21 27	peel	0.04 0.02 0.01	0.11 0.049 0.030	0.032 0.026 0.012	< 0.012 < 0.012 < 0.012	0.008 0.008 0.008	0.17 0.12 0.072	0.12 0.069 0.031
Spain RA-2032/04 R 2004 0240 6 Benifaió (Comunidad Valenciana) 2004	OD 100	2	21	0.096	0.2880	0.00960	0[1] 0 15 21 28	Orange fruit	0.07 0.14 0.10 0.08 0.05	0.052 0.062 0.090 0.078 0.064	0.012 0.012 0.015 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.011 0.012 0.016 0.016 0.017	0.16 0.24 0.23 0.20 0.16	0.12 0.15 0.19 0.16 0.11
							21 28	pulp	< 0.01 < 0.01	0.063 0.056	< 0.012 < 0.012	< 0.012 < 0.012	0.008 0.008	0.10 0.098	0.073 0.066
							21 28	peel	0.14 0.14	0.28 0.20	0.035 0.033	< 0.012 < 0.012	0.054 0.052	0.52 0.44	0.42 0.34
Portugal RA-2003/05 R 2005 0046 7 P-2950 Palmela (Ribatejo e Oeste) 2005	OD150	2	21	0.64	0.29	0.0096	0 14 21 28	Orange fruit	0.10 0.01 < 0.01 0.02	0.020 0.015 < 0.012 0.012	0.012 0.012 < 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 0.008	0.15 < 0.055 < 0.055 < 0.055	0.12 0.025 < 0.022 0.032
							14 21 28	pulp	< 0.01 < 0.01 < 0.01	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008	< 0.055 < 0.055 < 0.055	< 0.022 < 0.022 < 0.022
							14 21 28	peel	0.02 0.01 0.01	0.031 0.032 0.029	0.016 0.015 0.012	< 0.012 < 0.012 < 0.012	0.008 0.008 0.008	0.087 0.077 0.071	0.051 0.042 0.039
Italy RA-2003/05 R 2005 0047 5	OD150	2	20	0.64	0.29	0.0096	0 14 21 28	Orange fruit	0.20 0.01 0.02 < 0.01	0.013 0.012 0.012 < 0.012	0.012 < 0.012 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008	0.24 < 0.055 < 0.055 < 0.055	0.23 0.022 0.022 < 0.022
							14 21 28	pulp	< 0.01 < 0.01 < 0.01	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008	< 0.055 < 0.055 < 0.055	< 0.022 < 0.022 < 0.022
Carlentini (Sicilia) 2005							14 21 28	peel	0.03 0.05 0.02	0.044 0.044 0.030	0.016 0.017 0.012	< 0.012 < 0.012 < 0.012	0.008 0.008 0.008	0.15 0.13 0.082	0.074 0.094 0.050
Spain RA-2003/05 R 2005 0048 3 Cullera 2005	OD150	2	21	0.64	0.29	0.0096	0[1] 0 7 14 21 28	Orange fruit	0.02 0.10 0.06 0.05 0.02 0.01	0.036 0.047 0.049 0.039 0.038 0.032	0.012 0.012 0.024 0.013 0.013 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.008 0.008 0.008 0.008 0.008 0.008	0.088 0.18 0.15 0.12 0.091 0.074	0.056 0.15 0.11 0.089 0.058 0.042
							14 21 28	pulp	< 0.01 < 0.01 < 0.01	0.034 0.025 0.022	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	0.008 0.008 0.008	< 0.055 < 0.055 < 0.055	0.044 0.035 0.032
							14	peel	0.21	0.20	0.069	< 0.012	0.023	0.51	0.41

Country Study No. Trial No. Year	Application						PHI days	Crop Portion analysed	Residues as BYI08330 Equivalents (mg/kg)						
	Form	No	Inter-val days	kg ai/(ha × CH)	kg ai/ha	kg ai/hL			BYI 08330	BYI 08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue	Parent + Enol
							21 28		0.04 0.01	0.098 0.072	0.044 0.027	< 0.012 < 0.012	0.016 0.014	0.22 0.14	0.14 0.082
Italy RA-2003/05 R 2005 0049 1 Catania (Sicilia) 2005	OD150	2	20	0.64	0.26	0.0096	0[1] 0 7 14 21 28	Orange fruit	0.04 0.11 0.04 0.03 0.02 0.02	0.012 0.012 0.014 0.015 0.016 0.013	0.013 0.012 0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.049 0.15 0.086 0.077 0.068 0.065	0.016 0.12 0.054 0.045 0.036 0.033
							14 21 28	pulp	< 0.01 < 0.01 < 0.01	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008	< 0.055 < 0.055 < 0.055	< 0.022 < 0.022 < 0.022
							14 21 28	peel	0.06 0.05 0.04	0.090 0.059 0.065	0.042 0.029 0.035	< 0.012 < 0.012 < 0.012	0.008 0.008 0.008	0.22 0.16 0.16	0.15 0.11 0.11

[a] Before final application.

Table 56 Mandarin trials in Southern Europe (M-264450-01-1, Schöning R.; Helfrich P.; 2005; M-270179-01-1, Schöning R.; Wieland K.)

Country Study No. Trial No. Year	Application						PHI days	Portion analysed	Residues as BYI08330 Equivalents (mg/kg)						
	Form	No	Inter-val days	kg ai/(ha × CH)	kg ai/ha	kg ai/hl			BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue	Parent + Enol
Italy RA-2033/04 R 2004 0142 6 Misterbianco (Catania) (Sicilia) 2004	OD 100	2	21	0.096	0.2110	0.0096	0[a] 0 7 14 21 28	Mandarin fruit	0.02 0.21 0.02 0.01 0.02 0.01	0.073 0.13 0.12 0.075 0.076 0.069	0.015 0.023 0.026 0.019 0.023 0.017	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.010 0.012 0.015 0.014 0.015 0.02	0.13 0.39 0.19 0.13 0.15 0.13	0.093 0.34 0.14 0.085 0.096 0.079
							14 21 28	pulp	< 0.01 < 0.01 < 0.01	0.045 0.053 0.035	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	0.008 0.008 0.008	< 0.087 0.095 0.077	0.055 0.063 0.045
							14 21 28	peel	0.03 0.03 0.01	0.24 0.21 0.11	0.086 0.080 0.044	< 0.012 < 0.012 < 0.012	0.048 0.061 0.044	0.42 0.39 0.22	0.27 0.24 0.12
Portugal RA-2033/04 R 2004 0143 4 P-2140-080 Chamusca (Ribatejo e Oeste) 2004	OD 100	2	21	0.096	0.2880	0.0096	15 21 29	Mandarin fruit	0.01 0.01 0.01	0.15 0.14 0.10	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	0.029 0.035 0.032	0.22 0.21 0.17	0.16 0.15 0.11
							15 21 29	Pulp	< 0.01 < 0.01 < 0.01	0.072 0.077 0.062	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	0.008 0.008 0.008	0.11 0.12 0.10	0.082 0.087 0.072
							15 21 29	Peel	0.02 0.02 0.02	0.21 0.2 0.13	0.031 0.026 0.016	< 0.012 < 0.012 < 0.012	0.075 0.081 0.073	0.35 0.34 0.25	0.23 0.22 0.15
Spain RA-2033/04 R 2004 0237 6 E-46400 Cullera (Comunidad Valenciana) 2004	OD 100	2	21	0.096	0.2400	0.0096	0[1] 0 14 21 29	Mandarin fruit	0.03 0.20 0.09 0.06 0.03	0.070 0.12 0.15 0.13 0.12	0.019 0.026 0.035 0.036 0.026	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.020 0.023 0.044 0.047 0.050	0.15 0.38 0.33 0.28 0.24	0.10 0.32 0.24 0.19 0.15
							14 21 29	pulp	< 0.01 < 0.01 < 0.01	0.060 0.054 0.068	0.012 < 0.012 0.012	< 0.012 < 0.012 < 0.012	0.011 0.011 0.015	0.10 0.10 0.12	0.070 0.064 0.078
							14 21 29	peel	0.29 0.16 0.07	0.43 0.34 0.20	0.14 0.12 0.068	< 0.012 < 0.012 < 0.012	0.12 0.12 0.10	0.99 0.75 0.45	0.72 0.50 0.27

Country Study No. Trial No. Year	Application						PHI days	Portion analysed	Residues as BYI08330 Equivalents (mg/kg)						
	Form	No	Inter-val days	kg ai/ (ha × CH)	kg ai/ ha	kg ai/hl			BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue	Parent + Enol
Spain RA-2033/04 R 2004 02384 E-41310 Brenes Sevilla (Andalucia) 2004	OD 100	2	21	0.096	0.2400		0[1] 0 7 15 21 28	Mandarin fruit	0.03 0.19 0.01 0.01 0.01 0.01	0.066 0.098 0.088 0.066 0.069 0.075	0.015 0.016 0.02 0.013 0.012 0.013	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.02 0.016 0.02 0.016 0.021 0.030	0.14 0.33 0.15 0.11 0.12 0.14	0.096 0.29 0.098 0.076 0.079 0.085
							15 21 28	pulp	< 0.01 < 0.01 < 0.01	0.045 0.034 0.022	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	0.008 0.008 0.008	0.087 0.078 0.064	0.055 0.044 0.032
							15 21 28	peel	0.01 0.01 0.01	0.14 0.11 0.071	0.057 0.052 0.038	< 0.012 < 0.012 < 0.012	0.068 0.065 0.055	0.29 0.25 0.19	0.15 0.12 0.081
Portugal RA-2002/05 R 2005 00416 P-2950 Palmela (Ribatejo e Oeste) 2005	OD 150	2	21	0.064	0.288		0 14 21 28	Mandarin fruit	0.18 0.01 0.01 0.01	0.084 0.059 0.045 0.046	0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012	0.008 0.008 0.008 0.008	0.30 0.10 0.087 0.088	0.26 0.069 0.055 0.056
							14 21 28	pulp	< 0.01 < 0.01 < 0.01	0.032 0.029 0.032	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008	0.074 0.062 0.074	0.042 0.030 0.042
							14 21 28	peel	0.02 0.02 0.03	0.14 0.11 0.094	0.026 0.026 0.030	< 0.012 < 0.012 < 0.012	0.019 0.020 0.026	0.22 0.19 0.19	0.16 0.13 0.12
Spain RA-2002/05 R 2005 00424 E-46197 Alfarp (Comunidad Valenciana) 2005	OD 150	2	21	0.064	0.240	0.0096	0 14 21 28	Mandarin fruit	0.11 0.07 0.04 0.06	0.078 0.16 0.12 0.12	0.012 0.013 0.012 0.014	< 0.012 < 0.012 < 0.012 < 0.012	0.008 0.018 0.018 0.025	0.22 0.27 0.20 0.23	0.19 0.23 0.16 0.16
							14 21 28	pulp	0.01 < 0.01 < 0.01	0.098 0.083 0.10	0.012 < 0.012 0.012	< 0.012 < 0.012 < 0.012	0.008 0.008 0.012	0.14 0.12 0.15	0.11 0.093 0.11
							14 21 28	peel	0.23 0.14 0.09	0.57 0.30 0.33	0.067 0.040 0.051	< 0.012 < 0.012 < 0.012	0.064 0.055 0.085	0.94 0.55 0.57	0.80 0.44 0.42
Italy RA-2002/05 R 2005 00432 Vittoria (Sicilia) 2005	OD 150	2	21	0.064	0.192	0.0096	0 14 21 28	Mandarin fruit	0.15 0.10 0.02 0.02	0.022 0.033 0.031 0.034	0.013 0.032 0.015 0.018	< 0.012 < 0.012 < 0.012 < 0.012	< 0.008 0.008 0.008 0.008	0.20 0.18 0.086 0.092	0.17 0.13 0.051 0.054
							14 21 28	pulp	< 0.01 < 0.01 < 0.01	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008	< 0.055 < 0.055 < 0.055	< 0.022 < 0.22 < 0.022
							14 21 28	peel	0.24 0.04 0.04	0.16 0.10 0.087	0.11 0.064 0.046	< 0.012 < 0.012 < 0.012	0.012 0.015 0.016	0.53 0.23 0.20	0.40 0.14 0.13
Spain RA-2002/05 R 2005 00440 Cullera (Comunidad Valenciana) 2005	OD 150	2	21	0.064	0.240	0.0096	0 0 7 14 21 28	Mandarin fruit	0.03 0.23 0.14 0.12 0.03 0.01	0.040 0.086 0.092 0.057 0.073 0.061	0.013 0.019 0.042 0.031 0.028 0.021	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.009 0.010 0.018 0.012 0.020 0.018	0.10 0.36 0.30 0.23 0.16 0.12	0.070 0.32 0.23 0.18 0.10 0.071
							14 21 28	pulp	< 0.01 < 0.01 < 0.01	0.022 0.028 0.025	0.012 0.012 < 0.012	< 0.012 < 0.012 < 0.012	0.008 0.008 0.008	0.064 0.078 0.067	0.023 0.038 0.035
							14 21 28	peel	0.25 0.07 0.03	0.22 0.18 0.13	0.12 0.10 0.077	< 0.012 < 0.012 < 0.012	0.054 0.058 0.053	0.66 0.42 0.30	0.47 0.25 0.16
Italy RA-2002/05 R 2005 00459 Misterbianco	OD 150	2	21	0.064	0.2304	0.0096	0 0 7 14 21	Mandarin fruit	0.02 0.19 0.06 0.04 0.04	0.041 0.072 0.075 0.066 0.069	0.012 0.021 0.036 0.033 0.034	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.008 0.011 0.008 0.014 0.018	0.093 0.31 0.19 0.16 0.17	0.061 0.26 0.14 0.11

Country Study No. Trial No. Year	Application						PHI days	Portion analysed	Residues as BYI08330 Equivalents (mg/kg)						
	Form	No	Inter-val days	kg ai/ (ha × CH)	kg ai/ ha	kg ai/hl			BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue	Parent + Enol
(Catania) (Sicilia) 2005							28		0.03	0.068	0.036	< 0.012	0.022	0.17	0.11 0.098
							14 21 28	pulp	< 0.01 < 0.01 < 0.01	0.016 0.022 0.023	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	< 0.008 0.008 0.008	0.058 0.064 < 0.055	0.026 0.032 0.024
							14 21 28	peel	0.06 0.10 0.06	0.20 0.23 0.16	0.11 0.14 0.096	< 0.012 < 0.012 < 0.012	0.043 0.064 0.065	0.42 0.55 0.39	0.26 0.33 0.22

[a] Before final application.

Table 57 Trials for the Foliar Application of Spirotetramat to Oranges in the USA (M-277116-01-1, Beedle, E.; 2006)

Location/ Trial No./ Year			Application					Portion Analysed	PHI days	Residue as BYI 08330 Equivalents (mg/kg)						
			Form	Method	Rate kg ai/ ha	Interval days	Spray Vol. L/ha			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
Clermont, Florida Region 3	FN161-05D-A	2005	150 OD	Airblast Concentrate Spray	0.177		562									
					0.178	20	566	Orange fruit	0 0 1 1 1 1 1 7 7 10 10 15 15	0.203 0.199 0.127 0.111 0.104 0.095 0.090 0.097 0.095 0.081 0.073 0.081 0.087	0.077 0.069 0.142 0.137 0.148 0.063 0.075 0.075 0.061 0.061 0.059 0.059 0.063	< 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05	< 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05	< 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05	0.43 0.43 **0.42** 0.40 0.40 0.31 0.31 0.32 0.31 0.29 0.28 0.29 0.30	0.28 0.28 **0.27** 0.25 0.25 0.16 0.16 0.17 0.16 0.14 0.13 0.14 0.15
								fruit without peel	1 1 1	< 0.05 < 0.05 < 0.05	< 0.05 < 0.05 < 0.05	< 0.05 < 0.05 < 0.05	< 0.05 < 0.05 < 0.05	< 0.05 < 0.05 < 0.05	< 0.25 < 0.25 < 0.25	< 0.1 < 0.1 < 0.1
								peel	1 1 1	0.241 0.218 0.222	0.351 0.323 0.308	0.106 0.100 0.092	< 0.05 < 0.05 < 0.05	0.057 0.05 0.054	0.80 0.74 0.73	0.59 0.54 0.53
Clermont, Florida Region 3	FN161-05D-B	2005	150 OD	Airblast Dilute Spray	0.18	0	2492									
					0.17	20	2537	Orange fruit	1 1	0.057 0.055	0.078 0.079	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	0.28 0.28	0.14 0.14
Haines City, Florida Region 3	FN162-05H-A	2005	150 OD	Airblast Concentrate Spray	0.182	0	556									
					0.178	21	560	Orange fruit	1 1	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	**< 0.25** < 0.25	**< 0.1** < 0.1
Haines City, Florida Region 3	FN162-05H-B	2005	150 OD	Airblast Dilute Spray	0.176	0	2411									
					0.174	21	2533	Orange fruit	1 1	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.25 < 0.25	< 0.1 < 0.1

Location/ Trial No./ Year			Application					Portion Analysed	PHI days	Residue as BYI 08330 Equivalents (mg/kg)						
			Form	Method	Rate kg ai/ ha	Interval days	Spray Vol. L/ha			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
Haines City, Florida Region 3	FN162-05H-C	2005	240 SC	Airblast Concentrate Spray	0.179	0	547									
					0.181	21	565	Orange fruit	1 1	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.25 < 0.25	< 0.1 < 0.1
Oviedo, Florida Region 3	FN163-05H-A	2005	150 OD	Airblast Concentrate Spray	0.173	0	558									
					0.174	21	559	Orange fruit	1 1	0.182 0.131	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	0.38 0.33	0.23 0.18
Oviedo, Florida Region 3	FN163-05H-B	2005	150 OD	Airblast Dilute Spray	0.174	0	2082	Orange fruit	1 1	0.094 0.109	< 0.05 0.051	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	0.29 0.31	0.14 0.16
					0.178	21	2124									
Oviedo, Florida Region 3	FN163-05H-C	2005	240 SC	Airblast Concentrate Spray	0.174	0	561									
					0.175	21	566	Orange fruit	1 1	0.213 0.163	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	**0.41** 0.36	**0.26** 0.21
Oviedo, Florida Region 3	FN164-05H-A	2005	150 OD	Airblast Concentrate Spray	0.176	0	424									
					0.176	19	424	Orange fruit	1 1	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	**< 0.25** < 0.25	**< 0.1** < 0.1
Oviedo, Florida Region 3	FN164-05H-B	2005	150 OD	Airblast Dilute Spray	0.176	0	2112									
					0.174	19	2092	Orange fruit	1 1	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.25 < 0.25	< 0.1 < 0.1
Oviedo, Florida Region 3	FN165-05H-A	2005	150 OD	Airblast Concentrate Spray	0.177	0	378									
					0.176	19	375	Orange fruit	1 1	0.133 0.151	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	0.33 **0.35**	0.18 **0.20**
Oviedo, Florida Region 3	FN165-05H-B	2005	150 OD	Airblast Dilute Spray	0.176	0	1972									
					0.174	19	1949	Orange fruit	1 1	0.103 0.094	0.072 0.076	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	0.33 0.32	0.18 0.17
Mt Dora, Florida Region 3	FN166-05H-A	2005	150 OD	Airblast Concentrate Spray	0.171	0	633									
					0.179	20	578	Orange fruit	1 1	0.117 0.138	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	0.32 **0.34**	0.17 **0.19**
Mt Dora, Florida Region 3	FN166-05H-B	2005	150 OD	Airblast Dilute Spray	0.178	0	2500									
					0.182	20	2308	Orange fruit	1 1	0.090 0.088	< 0.05 0.052	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	0.29 0.29	0.14 0.14
Vero Beach, Florida Region 3	FN167-05H-A	2005	150 OD	Airblast Concentrate Spray	0.174	0	436									
					0.176	19	529	Orange fruit	1 1	0.207 0.194	< 0.05 < 0.05	0.076 0.077	< 0.05 < 0.05	< 0.05 < 0.05	**0.43** 0.42	**0.26** 0.24
Vero Beach, Florida	FN167-05H-B	2005	150 OD	Airblast Dilute Spray	0.176	0	1906									
					0.174	19	2073	Orange	1	0.119	< 0.05	< 0.05	< 0.05	< 0.05	0.32	0.17

Location/ Trial No./ Year			Application					Portion Analysed	PHI days	Residue as BYI 08330 Equivalents (mg/kg)						
			Form	Method	Rate kg ai/ ha	Interval days	Spray Vol. L/ha			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
Region 3								fruit	1	0.105	< 0.05	< 0.05	< 0.05	< 0.05	0.31	0.15
Vero Beach, Florida Region 3	FN168-05H-A	2005	150 OD	Airblast Concentrate Spray	0.175	0	446									
					0.176	19	530	Orange fruit	1 1	0.175 0.174	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	0.38 0.37	0.22 0.22
Vero Beach, Florida Region 3	FN168-05H-B	2005	150 OD	Airblast Dilute Spray	0.182	0	1973									
					0.178	19	2090	Orange fruit	1 1	0.135 0.156	0.062 0.069	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	0.35 **0.38**	0.20 **0.23**
Raymondville, Texas Region 6	FN169-05H-A	2005	150 OD	Airblast Concentrate Spray	0.178	0	536									
					0.176	19	541	Orange fruit	1 1	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.25 < 0.25	< 0.1 < 0.1
Raymondville, Texas Region 6	FN169-05H-B	2005	150 OD	Airblast Dilute Spray	0.179	0	2686									
					0.178	19	2717	Orange fruit	1 1	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.25 **< 0.25**	< 0.1 **< 0.1**
Fresno, California Region 10	FN170-05H-A	2005	150 OD	Airblast Concentrate Spray	0.176	0	502									
					0.173	21	484	Orange fruit	1 1	0.083 0.119	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	0.28 **0.32**	0.13 **0.17**
Fresno, California Region 10	FN170-05H-B	2005	150 OD	Airblast Dilute Spray	0.176	0	2331									
					0.169	21	2347	Orange fruit	1 1	< 0.05 0.058	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.25 0.26	< 0.1 0.11
Fresno, California Region 10	FN170-05H-C	2005	240 SC	Airblast Concentrate Spray	0.176	0	503									
					0.171	21	476	Orange fruit	1 1	0.105 0.109	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	0.31 0.31	0.16 0.16
Bakersfield, California Region 10	FN171-05H-A	2006	150 OD	Airblast Concentrate Spray	0.174	0	633									
					0.187	21	494	Orange fruit	1 1	0.119 0.136	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	0.32 **0.34**	0.17 **0.19**
Bakersfield, California Region 10	FN171-05H-B	2006	150 OD	Airblast Dilute Spray	0.180	0	3230									
					0.177	21	2273	Orange fruit	1 1	0.098 0.093	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	0.30 0.29	0.15 0.14
Porterville, California Region 10	FN172-05H-A	2005	150 OD	Airblast Concentrate Spray	0.172	0	608									
					0.174	14	607	Orange fruit	1 1	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.25 < 0.25	< 0.1 < 0.1
Porterville, California Region 10	FN172-05H-B	2005	150 OD	Airblast Dilute Spray	0.172	0	2261									
					0.174	14	2259	Orange fruit	1 1	< 0.05 0.053	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.25 **0.25**	< 0.1 **0.10**

Table 58 Trials for the foliar application of spirotetramat to lemons in the USA (M-277116-01-1, Beedle, E.; 2006)

Location/ Trial No./ Year			Application					Portion Analysed	PHI days	Residue (mg/kg)						
			Form	Method	Rate kg ai/ha	Interval days	Spray Vol L/ha			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
Ft. Pierce, Florida Region 3	FN173-05H-A	2005	150 OD	Airblast Concentrate Spray	0.178	0	588									
					0.178	19	566	Lemon fruit	1 1	0.080 0.077	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	**0.28** 0.28	**0.13** 0.13
Ft. Pierce, Florida Region 3	FN173-05H-B	2005	150 OD	Airblast Dilute Spray	0.178	0	2049									
					0.176	19	1954	Lemon fruit	1 1	< 0.05 < 0.05	0.055 0.051	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	0.26 0.25	0.11 0.10
Fresno, California Region 10	FN174-05D-A	2006	150 OD	Airblast Concentrate Spray	0.172	0	481									
					0.173	21	485	Lemon fruit	0[a] 0 1 1 7 7 10 10 14 14	0.144 0.207 0.145 0.108 0.072 0.072 0.082 0.102 0.052 0.057	0.051 0.065 0.067 0.052 0.057 0.128 0.123 0.135 0.175 0.181	< 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05	< 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05	< 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05	0.35 0.42 **0.36** 0.31 0.28 0.35 0.35 0.39 0.38 0.39	0.20 0.27 **0.21** 0.16 0.13 0.20 0.20 0.24 0.23 0.24
Fresno, California Region 10	FN174-05D-B	2006	150 OD	Airblast Dilute Spray	0.173	0	2768									
					0.175	21	2801	Lemon fruit	1 1	< 0.05 < 0.05	0.088 0.095	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	0.29 0.29	0.14 0.14
Porterville, California Region 10	FN175-05H-A	2005	150 OD	Airblast Concentrate Spray	0.172	0	609									
					0.175	14	609	Lemon fruit	1 1	0.178 0.199	0.118 0.116	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	0.45 **0.47**	0.30 **0.32**
Porterville, California Region 10	FN175-05H-B	2005	150 OD	Airblast Dilute Spray	0.175	0	2224)									
					0.175	14	2268	Lemon fruit	1 1	0.118 0.102	0.159 0.115	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	0.43 0.37	0.28 0.22
Porterville, California Region 10	FN175-05H-C	2005	240 SC	Airblast Concentrate Spray	0.174	0	617									
					0.176	14	612	Lemon fruit	1 1	0.105 0.192	< 0.05 0.050	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	0.31 0.39	0.16 0.24
Sanger, California Region 10	FN176-05H-A	2006	150 OD	Airblast Concentrate Spray	0.178	0	5545									
					0.177	18	528	Lemon fruit	1 1	0.084 0.074	0.060 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	0.29 0.27	0.14 0.12
Sanger, California Region 10	FN176-05H-B	2006	150 OD	Airblast Dilute Spray	0.178	0	2393									
					0.176	18	2446	Lemon fruit	1 1	0.056 0.051	0.124 0.103	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	**0.33** 0.30	**0.18** 0.15
Nipomo,	FN17	2005	150	Airblast	0.181	0	652									

Location/ Trial No./ Year			Application					Portion Analysed	PHI days	Residue (mg/kg)						
			Form	Method	Rate kg ai/ha	Interval days	Spray Vol L/ha			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
California Region 10	7-05H-A		OD	Concentrate Spray	0.172	21	632	Lemon fruit	1 1	0.142 0.119	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	**0.34** 0.32	**0.19** 0.17
Nipomo, California Region 10	FN177-05H-B	2005	150 OD	Airblast Dilute Spray	0.168	0	2125									
					0.175	21	2241	Lemon fruit	1 1	0.070 0.057	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	0.27 0.26	0.12 0.11

[a] Before final application.

Table 59 Trials for the Foliar Application of Spirotetramat to Grapefruits in the USA (M-277116-01-1, Beedle, E.; 2006)

Location/ Trial No./ Year			Application					portion analysed	PHI days	Residue (mg/kg)						
			Form.	Method	Rate kg ai/ha	Interval days	Spray vol. L/ha			BYI 08330	BYI 08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue	Parent + Enol
Oviedo, Florida Region 3	FN178-05D-A	2005	150 OD	Airblast	0.177	0	426									
				Concentrate Spray	0.177	19	427	Grape-fruit fruit	0[a] 0 1 1 7 7 10 10 14 14	0.056 0.084 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05	< 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05	< 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05	< 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05	< 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05	0.26 0.28 < 0.25 < 0.25 < 0.25 < 0.25 < 0.25 < 0.25 < 0.25 < 0.25	0.11 0.13 < 0.10 < 0.10 < 0.10 < 0.10 < 0.10 < 0.10 < 0.10 < 0.10
Oviedo, Florida Region 3	FN178-05D-B	2005	150 OD	Airblast	0.177	0	2130									
				Dilute Spray	0.176	19	2123	Grape-fruit fruit	1 1 7 7	< 0.05 < 0.05 < 0.05 < 0.05	0.050 0.063 < 0.05 < 0.05	< 0.05 < 0.05 < 0.05 0.051	< 0.05 < 0.05 < 0.05 < 0.05	< 0.05 < 0.05 < 0.05 < 0.05	< 0.25 **0.26** < 0.25 < 0.25	< 0.10 **0.11** < 0.10 < 0.10
Haines City, Florida Region 3	FN179-05H-A	2005	150 OD	Airblast	0.175	0	464									
				Concentrate Spray	0.181	20	473	Grape-fruit fruit	1 1	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	**< 0.26** < 0.26	**< 0.11** < 0.11
Haines City, Florida Region 3	FN179-05H-B	2005	150 OD	Airblast	0.174	0	2083									
				Dilute Spray	0.176	20	2104	Grape-fruit fruit	1 1	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.25 < 0.25	< 0.10 < 0.10
Haines City, Florida Region 3	FN179-05H-C	2005	240 SC	Airblast	0.175	0	470									
				Concentrate Spray	0.178	20	471	Grape-fruit fruit	1 1	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.25 < 0.25	< 0.10 < 0.10
Vero Beach, Florida Region 3	FN180-05H-A	2005	150 OD	Airblast	0.176	0	441									
				Concentrate Spray	0.178	19	536	Grape-fruit fruit	1 1	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	**< 0.25** < 0.25	**< 0.10** < 0.10
Vero Beach, Florida	FN180-05H-	2005	150 OD	Airblast	0.176	0	1913									
				Dilute	0.175	19	2083	Grape-	1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.10

Location/ Trial No./ Year			Application					portion analysed	PHI days	Residue (mg/kg)						
			Form.	Method	Rate kg ai/ha	Interval days	Spray vol. L/ha			BYI 08330	BYI 08330 enol	BYI0833 0 keto-hydroxy	BYI0833 0 mono-hydroxy	BYI0833 0 enol-glucoside	Total residue	Parent + Enol
Region 3	B			Spray				fruit fruit	1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.10
Raymondville, Texas Region 6	FN181-05H-A	2005	150 OD	Airblast Concentrate Spray	0.178	0	580									
					0.176	19	585	Grapefruit fruit	1 1	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.25 < 0.25	< 0.10 < 0.10
Raymondville, Texas Region 6	FN181-05H-B	2005	150 OD	Airblast Dilute Spray	0.177	0	2896									
					0.178	19	2941	Grapefruit fruit	1 1	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.25 < 0.25	< 0.10 < 0.10
Raymondville, Texas Region 6	FN181-05H-C	2005	240 SC	Airblast Concentrate Spray	0.179	0	581									
					0.177	19	589	Grapefruit fruit	1 1	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	**< 0.25** < 0.25	**< 0.10** < 0.10
Fresno, California Region 10	FN182-05H-A	2006	150 OD	Airblast Concentrate Spray	0.174	0	485									
					0.173	21	484	Grapefruit fruit	1 1	0.151 0.138	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	**0.35** 0.34	**0.20** 0.19
Fresno, California Region 10	FN182-05H-B	2006	150 OD	Airblast Dilute Spray	0.175	0	2797									
					0.175	21	2797	Grapefruit fruit	1 1	0.064 0.063	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	0.26 0.26	0.11 0.11
Nipomo, California Region 10	FN183-05H-A	2005	150 OD	Airblast Concentrate Spray	0.177	0	639									
					0.173	21	637	Grapefruit fruit	1 1	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	**< 0.25** < 0.25	**< 0.10** < 0.10
Nipomo, California Region 10	FN183-05H-B	2005	150 OD	Airblast Dilute Spray	0.171	0	2154									
					0.175	21	2259	Grapefruit fruit	1 1	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.25 < 0.25	< 0.10 < 0.10

[a] Before final application.

Pome Fruit

Table 60 Residues from the Foliar Application of Spirotetramat to Apples and Pears in Europe (M-262625-02-1, Schöning R.; Helfrich P.; 2005/2006; M-269314-01-1, Schöning R.; Eberhardt R ; 2006; M-264454-01-1, Schöning R.; Helfrich P.; 2006; M-264357-01-1, Schöning R.; Helfrich P.; 2006; M-268258-01-1, Schöning R.; Eberhardt R ; 2006; M-264397-01-1, Schöning R.; Helfrich P.; 2006)

Country Trial No. Country Year	Crop	Application							Portion Analysed	PHI days	Residues as BYI0833 Equivalents (mg/kg)						
		Form	No.	Spray interval days	kg as/ha × m CH	kg as/ha	kg as/hL	Vol L/ha × m CH			BYI 08330	BYI 08330 cis-eno	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
NORTH EUROPE																	
RA-2012/05 R 2005 0083 1 0083-05 United Kingdom (Essex)	Apple	OD 150	2	14	0.07 2	0.144	0.0144	500	Apple fruit	0 14 21 29	0.11 0.05 0.03 0.01	0.023 0.031 0.034 0.021	0.012 0.014 0.015 0.019	< 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008	0.16 0.12 0.099 0.070	0.13 0.081 0.064 0.031

Country Trial No. Country Year	Crop	Application							Portion Analysed	PHI days	Residues as BYI0833 Equivalents (mg/kg)						
		For m	No.	Spray interval days	kg as/ha × m CH	kg as/ha	kg as/hL	Vol L/ha × m CH			BYI 08330	BYI 08330 cis-eno	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
2005																	
RA-2012/05 R 2005 0086 6 0086-05 Germany Bernau (Baden-Württemberg) 2005	Apple	OD 150	2	14	0.072	0.1872	0.01440	500	Apple fruit	0[a] 0 7 14 21 28	0.02 0.12 0.10 0.03 0.03 0.02	0.016 0.017 0.022 0.019 0.021 0.012	0.012 0.012 0.015 0.018 0.023 0.017	< 0.012 < 0.012 0.012 0.012 0.012 0.012	< 0.008 < 0.008 < 0.008 < 0.008 0.008 < 0.008	0.068 0.17 0.16 0.097 0.094 0.069	0.036 0.14 0.12 0.049 0.051 0.032
RA-2012/05 R 2005 1018 7 1018-05 Germany Wurzen-Roitzsch (Sachsen) 2005	Apple	OD 150	2	14	0.072	0.2160	0.01440	500	Apple fruit	0 15 22 29	0.14 0.08 0.07 0.06	0.022 0.049 0.052 0.037	0.012 0.012 0.013 0.012	< 0.012 0.012 0.012 0.012	< 0.008 < 0.008 0.008 0.008	0.19 0.16 0.15 0.13	0.16 0.13 0.12 0.097
RA-2012/05 R 2005 0085 8 0085-05 United Kingdom Cambridge Cambridgeshire 2005	Pear	OD 150	2	14	0.072	0.1440	0.01440	500	Pear fruit	0 14 21 28	0.38 0.08 0.05 0.04	0.024 0.012 0.012 0.012	0.012 0.022 0.016 0.012	0.012 0.012 0.012 0.012	< 0.008 < 0.008 < 0.008 < 0.008	0.43 0.13 0.098 0.084	0.40 0.092 0.062 0.052
RA-2012/05 R 2005 0087 4 0087-05 Germany Geisenheim (Hessen) 2005	Pear	OD 150	2	14	0.072	0.1440	0.01440	500	Pear fruit	0[a] 0 7 14 21 28	0.04 0.25 0.22 0.14 0.10 0.06	0.012 0.023 0.013 0.012 0.012 0.012	0.012 0.012 0.013 0.017 0.016 0.014	0.013 0.014 0.020 0.021 0.020 0.021	< 0.008 < 0.008 0.008 0.008 0.008 < 0.008	0.081 0.31 0.27 0.20 0.16 0.12	0.052 0.27 0.23 0.15 0.11 0.072
RA-2012/05 R 2005 0083 1 0083-05 United Kingdom (Essex) 2005	Apple	OD 150	2	14	0.072	0.1440	0.01440	500	Apple fruit	0 14 21 29	0.11 0.05 0.03 0.01	0.023 0.031 0.034 0.021	0.012 0.014 0.015 0.019	< 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008	0.16 0.12 0.11 0.078	0.13 0.081 0.064 0.031
RA-2012/05 R 2005 0086 6 0086-05 Germany Bernau (Baden-Württemberg) 2005	Apple	OD 150	2	14	0.072	0.1872	0.01440	500	Apple fruit	0[a] 0 7 14 21 28	0.02 0.12 0.10 0.03 0.03 0.02	0.016 0.017 0.022 0.019 0.021 0.012	0.012 0.012 0.015 0.018 0.023 0.017	< 0.012 < 0.012 0.012 0.012 0.012 0.012	< 0.008 < 0.008 < 0.008 < 0.008 0.008 < 0.008	0.068 0.17 0.16 0.095 0.094 0.069	0.036 0.14 0.12 0.049 0.051 0.032

Country Trial No. Country Year	Crop	Application							Portion Analysed	PHI days	Residues as BYI0833 Equivalents (mg/kg)						
		Form	No.	Spray interval days	kg as/ha × m CH	kg as/ha	kg as/hL	Vol L/ha × m CH			BYI 08330	BYI 08330 cis-eno	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
RA-2012/05 R 2005 1018 7 1018-05 Germany Wurzen-Roitzsch (Sachsen) 2005	Apple	OD 150	2	14	0.072	0.2160	0.01440	500	Apple fruit	0 15 22 29	0.14 0.08 0.07 0.06	0.022 0.049 0.052 0.037	0.012 0.012 0.013 0.012	< 0.012 0.012 0.012 0.012	< 0.008 < 0.008 0.008 0.008	0.19 0.16 0.16 0.13	0.16 0.13 0.12 0.097
RA-2012/05 R 2005 0085 8 0085-05 United Kingdom Cambridge 2005	Pear	OD 150	2	14	0.072	0.1440	0.01440	500	Pear fruit	0 14 21 28	0.38 0.08 0.05 0.04	0.024 0.012 0.012 0.012	0.012 0.022 0.016 0.012	0.012 0.012 0.012 0.012	< 0.008 < 0.008 < 0.008 < 0.008	0.44 0.13 0.098 0.084	0.40 0.10 0.062 0.052
RA-2012/05 R 2005 0087 4 0087-05 Germany Geisenheim (Hessen) 2005	Pear	OD 150	2	14	0.072	0.1440	0.01440	500	Pear fruit	0[a] 0 7 14 21 28	0.04 0.25 0.22 0.14 0.10 0.06	0.012 0.023 0.013 0.012 0.012 0.012	0.012 0.012 0.013 0.017 0.016 0.014	0.013 0.014 0.020 0.021 0.020 0.021	< 0.008 < 0.008 0.008 0.008 0.008 < 0.008	0.085 0.31 0.27 0.19 0.16 0.12	0.052 0.27 0.23 0.15 0.11 0.072
RA-2138/04 R 2004 0809 9 0809-04 Germany Burscheid (Nordrhein-Westfalen) 2004	Apple	SC 240	2	14	0.072	0.1440	0.0144	500	Apple fruit	0 14 21 28	0.13 0.01 0.02 0.01	< 0.012 0.012 0.012 0.012	< 0.012 < 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 0.008 < 0.008	0.17 0.055 0.064 < 0.055	0.14 0.022 0032 0.022
RA-2138/04 R 2004 0811 0 0811-04 United Kingdom Royston Hertfordshire 2004	Apple	SC 240[b]	2	14	0.072	0.1368	0.0144	500	Apple fruit	0[a] 0 7 13 21 28	0.02 0.23 0.06 0.03 0.02 0.01	< 0.012 0.012 0.012 0.012 0.012 0.012	< 0.012 0.012 0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.064 0.27 0.10 0.074 0.064 0.054	0.032 0.24 0.072 0.042 0.032 0.022
RA-2138/04 R 2004 0810 2 0810-04 Germany Burscheid (Nordrhein-Westfalen) 2004	Pear	SC 240[c]	2	14	0.072	0.1440	0.0144	500	Pear fruit	0 13 21 27	0.18 0.15 0.14 0.14	0.039 0.034 0.033 0.031	0.035 0.033 0.029 0.027	0.053 0.046 0.044 0.043	0.008 0.008 0.008 0.008	0.32 0.27 0.25 0.25	0.22 0.18 0.17 0.17

Country Trial No. Country Year	Crop	Application							Portion Analysed	PHI days	Residues as BYI0833 Equivalents (mg/kg)						
		For m	No.	Spray inter-val days	kg as/ha × m CH	kg as/ha	kg as/hL	Vol L/ha × m CH			BYI 08330	BYI 08330 cis-eno	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
RA-2138/04 R 2004 0812 9 0812-04 France Ecquevilly (Ile-de-France) 2004	Pear	SC 240	2	14	0.072	0.1440	0.0240	300	Pear fruit	0 [a] 0 6 13 21 27	0.03 0.19 0.11 0.06 0.07 0.05	< 0.012 0.012 0.012 0.012 0.012 < 0.012	< 0.012 0.012 0.012 0.012 0.012 0.012	< 0.012 < 0.012 0.012 0.012 0.012 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 0.008	0.074 0.23 0.15 0.10 0.11 0.094	0.042 0.20 0.12 0.072 0.082 0.062
SOUTH EUROPE																	
RA-2137/04 R 2004 0805 6 0805-04 Italy Mirabello (FE) (Emilia - Romagna) 2004	Apple	OD 100	2	14	0.072	0.2160	0.01440	500	Apple fruit	0 14 21 28	0.30 0.06 0.04 0.05	0.019 0.015 0.014 0.013	0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 0.012	< .008 < .008 < .008 < .008	0.35 0.11 0.086 0.095	0.32 0.075 0.054 0.063
RA-2137/04 R 2004 0807 2 0807-04 Spain Vilamacolum (Cataluña) 2004	Apple	OD 100	2	14	0.072	0.2160	0.01440	500	Apple fruit	0 [a] 0 10 14 20 27	0.09 0.23 0.20 0.12 0.10 0.05	0.013 0.016 0.023 0.022 0.015 0.012	0.019 0.020 0.034 0.034 0.041 0.032	0.017 0.016 0.027 0.025 0.028 0.021	< 0.008 0.008 0.008 0.008 0.008 0.008	0.15 0..29 0.29 0.21 0.19 0.12	0.103 0.25 0.22 0.14 0.12 0.062
RA-2137/04 R 2004 0806 4 0806-04 Italy Dodici Morelli (FE) (Emilia - Romagna) 2004	Pear	OD 100	2	14	0.072	0.2160	0.01440	500	Pear fruit	0 14 21 28	0.27 0.10 0.07 0.10	0.033 0.012 0.012 0.012	0.020 0.019 0.013 0.019	< 0.012 < 0.012 < 0.012 < 0.012	< 0 .008 < 0.008 < 0.008 < 0 .008	0.34 0.15 0.12 0.15	0.30 0.11 0.082 0.11
RA-2137/04 R 2004 0808 0 0808-04 France Les Chères (Rhone-Alpes) 2004	Pear	OD 100	2	14	0.072	0.1872	0.02880	250	Pear fruit	0 [a] 0 7 14 21 28	0.12 0.38 0.18 0.15 0.14 0.14	0.030 0.063 0.038 0.033 0.033 0.032	0.026 0.039 0.034 0.031 0.027 0.027	0.032 0.13 0.053 0.045 0.041 0.041	0.008 < 0.008 0.008 0.008 0.008 0.008	0.22 0.62 0.31 0.27 0.25 0.24	0.15 0.44 0.22 0.18 0.17 0.17
RA-2015/05 R 2005 0088 2 0088-05 France Saint-Pardoux (Poitou-Charentes) 2005	Apple	OD 150	2	14	0.072	0.1872	0.01440	500	Apple fruit	0 [a] 0 7 14 21 28	0.03 0.11 0.08 0.04 0.04 0.03	0.012 0.012 0.012 0.013 0.022 0.020	< 0.012 < 0.012 0.012 0.012 0.014 0.023	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.074 0.15 0.12 0.085 0.094 0.082	0.042 0.12 0.092 0.053 0.062 0.050
RA-2015/05 R 2005 0089 0 0089-05 Italy Bologna (Emilia - Romagna) 2005	Apple	OD 150	2	14	0.072	0.1584	0.01440	500	Apple fruit	0 14 21 28	0.11 0.06 0.08 0.02	0.012 0.012 0.012 0.012	0.012 0.012 0.015 0.012	0.012 0.012 0.014 0.012	< 0.008 0.008 0.008 0.008	0.15 0.10 0.13 0.064	0.12 0.072 0.092 0.032

Country Trial No. Country Year	Crop	Application							Portion Analysed	PHI days	Residues as BYI0833 Equivalents (mg/kg)						
		For m	No.	Spray interval days	kg as/ha × m CH	kg as/ha	kg as/hL	Vol L/ha × m CH			BYI 08330	BYI 08330 cis-eno	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
RA-2015/05 R 2005 0090 4 0090-05 France Grenade (Midi-Pyrenees) 2005	Pear	OD 150	2	14	0.072	0.1800	0.01440	500	Pear fruit	0[a] 0 7 14 21 28	0.04 0.14 0.05 0.05 0.02 0.02	0.012 0.022 0.012 0.012 0.012 < 0.012	0.020 0.016 0.029 0.029 0.022 0.018	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.10 0.20 0.11 0.11 0.074 0.070	0.052 0.16 0.062 0.062 0.032 0.032
RA-2015/05 R 2005 0091 2 0091-05 Italy Albaro di Ronco All'adige (Veneto) 2005	Pear	OD 150	2	14	0.072	0.2160	0.01440	500	Pear fruit	0 14 21 28	0.11 0.03 0.02 0.01	).012 < 0.012 < 0.012 < 0.012	0.012 0.014 0.014 < 0.012	< 0.012 < 0.012).012).012	< 0.008 < 0.008 < 0.008 < 0.008	0.15 0.076 0.066 0.055	0.12 0.042 0.032 0.022
RA-2136/04 R 2004 0800 5 0800-04 Italy Mirabello (FE) (Emilia - Romagna) 2004	Apple	SC 240	2	14	0.072	0.2160	0.0144	500	Apple fruit	0 14 21 28	0.35 0.04 0.01 0.01	0.019 0.012 0.012 0.012	0.015 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008	0.40 0.084 0.055 0.055	0.37 0.052 0.022 0.022
RA-2136/04 R 2004 0802 1 0802-04 Spain Vilamacolum (Cataluña) 2004	Apple	SC 240	2	14	0.072	0.2160	0.0144	500	Apple fruit	0[a] 0 10 14 20 27	0.14 0.33 0.25 0.11 0.09 0.05	0.012 0.012 0.012 0.013 0.012 0.012	0.012 0.012 0.017 0.019 0.022 0.014	0.012 0.012 0.012 0.012 0.012 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.18 0.37 0.30 0.16 0.14 0.096	0.15 0.34 0.26 0.12 0.10 0.062
RA-2136/04 R 2004 0801 3 0801-04 Italy Dodicimorelli (FE) (Emilia - Romagna) 2004	Pear	SC 240	2	14	0.072	0.2160	0.0144	500	Pear fruit	0 14 21 28	0.22 0.10 0.08 0.09	0.032 0.012 0.012 0.012	0.012 0.024 0.018 0.018	< 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008	0.28 0.16 0.13 0.14	0.25 0.11 0.092 0.10
RA-2136/04 R 2004 0804 8 0804-04 France, South Les Chères (Rhone-Alpes) 2004	Pear	SC 240[d]	2	14	0.072	0.1872	0.0288	250	Pear fruit	0[a] 0 7 14 21 28	< 0.01).14).02 < 0.01).01 < 0.01	< 0.012).012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012).012).012 < 0.012).012 < 0.012	< 0.012).012).012 < 0.012).012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055).18).064 < 0.055).055 < 0.055	< 0.022).15).032 < 0.022).022 < 0.022

[a] Before final application.

[b] First application was performed without addition of 0.2% RME 500EW (rape oil fatty acid methyl ester) to spray liquid

[c] Both applications were performed without addition of 0.2% RME 500EW (rape oil fatty acid methyl ester) to spray liquid

[d] The applications were performed with addition of 0.14% instead of 0.2% RME 500EW (rape oil fatty acid methyl ester) to spray liquid.

Table 61 Residues on whole fruit from the foliar application of spirotetramat to apples and pears in Canada and the USA (M-277124-01-1**,** Krolski, M.; 2006)

Location/ Trial No./ Year			Application					PHI days	Residues as BYI 08330 Equivalents (mg/kg)						
			Form	Rate kg ai/ha	Inter-val days	Spray Vol L/ha	Total Appl Rate kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
Apple Trials															
North Rose, New York (Region 1)	FN184-05H-A	2005	150 OD	0.156	0	601	0.434								
				0.138	12	592									
				0.140	14	603		7 7 14 14	0.012 0.016 0.032 0.021	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 0.014 0.010	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	0.052 0.056 **0.076** 0.061	0.022 0.026 **0.042** 0.031
	FN184-05H-B		150 OD	0.157	0	2083	0.437								
				0.142	12	2074									
				0.142	14	2085		7 7 14 14	0.021 0.021 0.022 0.022	0.011 0.012 0.013 0.013	0.016 0.020 0.026 0.022	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	0.068 0.073 0.081 0.077	0.032 0.033 0.035 0.035
	FN184-05H-C		240 SC	0.158	0	601	0.43								
				0.137	12	605									
				0.135	14	597		7 7 14 14	0.022 0.023 0.018 0.017	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	0.066 0.063 0.058 0.057	< 0.02 < 0.02 < 0.02 < 0.02
Hereford, Pennsylvania (Region 1)	FN185-05H-A	2005	150 OD	0.160	0	567	0.444								
				0.142	12	568									
				0.142	13	570		7 7 14 14	0.084 0.114 0.078 0.095	0.012 0.017 0.016 0.016	0.016 0.020 0.021 0.022	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	0.13 **0.17** 0.14 0.15	0.096 **0.13** 0.094 0.11
	FN185-05H-B		150 OD	0.158	0	2416	0.438								
				0.139	12	2405									
				0.141	13	2444		7 7 14 14	0.070 0.064 0.040 0.044	0.018 0.019 0.013 0.013	0.026 0.024 0.022 0.023	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	0.13 0.13 0.095 0.10	0.088 0.083 0.053 0.057
Batesville, Virginia (Region 1)	FN186-05H-A	2005	150 OD	0.157	0	745	0.431								
				(0.139	14	611									
				0.135	15	585		7 7 14 14	0.049 0.051 0.034 0.021	0.020 0.021 0.015 < 0.01	0.018 0.033 0.011 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	0.12 **0.13** 0.080 0.061	0.069 **0.072** 0.049 0.031
	FN186-05H-B		150 OD	0.160	0	2853	0.434								
				0.140	14	2299									
				0.134	15	2202		7	0.034	0.012	0.065	< 0.01	< 0.01	0.13	0.046

Location/ Trial No./ Year			Application					PHI days	Residues as BYI 08330 Equivalents (mg/kg)						
			Form	Rate kg ai/ha	Inter-val days	Spray Vol L/ha	Total Appl Rate kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
								7 14 14	0.027 0.020 0.027	< 0.01 < 0.01 0.012	0.082 0.056 0.055	< 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01	0.14 0.11 0.11	0.037 0.030 0.039
Blairsville, Georgia (Region 2)	FN187-05H-A	2005	150 OD	0.155	0	499	0.434								
				0.140	14	604									
				0.139	14	504		7 7 14 14	0.054 0.056 0.022 0.020	0.017 0.016 < 0.01 < 0.01	0.017 0.020 0.016 0.014	0.012 0.012 0.011 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	0.11 **0.11** 0.069 0.064	0.071 **0.072** 0.032 0.030
	FN187-05H-B		150 OD	0.157	0	2186	0.436								
				0.140	14	2212									
				0.139	14	1976		7 7 14 14	0.044 0.039 0.018 0.019	0.023 0.022 0.016 0.017	0.029 0.028 0.029 0.025	0.020 0.022 0.021 0.023	< 0.01 < 0.01 < 0.01 < 0.01	0.13 0.12 0.094 0.094	0.067 0.061 0.034 0.036
Conklin, Michigan (Region 5)	FN188-05H-A	2005	150 OD	0.158	0	579	0.440								
				0.142	12	604									
				0.140	13	606		7 7 14 14	0.041 0.031 0.031 0.023	< 0.01 < 0.01 < 0.01 < 0.01	0.010 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	**0.085** 0.071 0.071 0.073	**0.051** 0.041 0.041 0.033
	FN188-05H-B		150 OD	0.159	0	2354	0.441								
				0.142	12	2430									
				0.140	13	2413		7 7 14 14	0.022 0.025 0.018 0.018	0.011 < 0.01 < 0.01 0.011	< 0.01 < 0.01 0.013 0.017	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	0.063 0.065 0.061 0.066	0.033 0.036 0.029 0.029
	FN188-05H-C		240 SC	0.158	0	578	0.441								
				0.142	12	600									
				0.141	13	609		7 7 14 14	0.031 0.040 0.024 0.026	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	0.071 0.080 0.064 0.066	0.041 0.050 0.034 0.036
Simcoe, Ontario (Region 5)	FN189-05H-A	2005	150 OD	0.161	0	393	0.439								
				0.137	13	374									
				0.140	12	380		7 7 14 14	0.012 0.016 0.016 0.018	0.014 0.014 0.018 0.019	< 0.01 < 0.01 0.011 0.013	< 0.01 < 0.01 < 0.01 0.011	< 0.01 < 0.01 < 0.01 < 0.01	0.056 0.060 0.065 0.071	0.026 0.030 0.034 0.037
	FN189-05H-B		150 OD	0.160	0	2005	0.440								
				0.140	13	1920									
				0.140	12	1930		7 7 14 14	0.014 0.015 0.011 < 0.01	0.022 0.023 0.017 0.019	0.017 0.013 0.012 0.012	0.011 0.012 0.012 0.012	< 0.01 < 0.01 < 0.01 < 0.01	0.074 **0.073** 0.062 0.063	0.036 **0.038** 0.028 0.029

Location/ Trial No./ Year			Application					PHI days	Residues as BYI 08330 Equivalents (mg/kg)						
			Form	Rate kg ai/ha	Inter-val days	Spray Vol L/ha	Total Appl Rate kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
Perry, Utah (Region 9)	FN190-05H-A	2005	150 OD	0.158	0	448	0.441								
				0.143	14	445									
				0.140	14	533		7 7 14 14	0.081 0.088 0.066 0.061	0.039 0.034 0.042 0.039	0.017 0.012 0.020 0.025	0.022 0.017 0.018 0.021	< 0.01 < 0.01 < 0.01 < 0.01	0.17 0.16 0.16 0.16	0.12 0.12 0.11 0.10
	FN190-05H-B		150 OD	0.157	0	2037	0.437								
				0.139	14	2057									
				0.141	14	1908		7 7 14 14	0.108 0.085 0.066 0.059	0.093 0.078 0.096 0.078	0.095 0.068 0.093 0.081	0.069 0.063 0.067 0.062	< 0.01 < 0.01 < 0.01 < 0.01	**0.38** 0.30 0.33 0.29	**0.21** 0.16 0.16 0.14
Fresno, California (Region 10)	FN191-05H-A	2005	150 OD	0.157	0	392	0.438								
				0.139	12	395									
				0.142	14	401		7 7 13 13	0.276 0.316 0.221 0.230	0.010 0.016 < 0.01 < 0.01	< 0.01 0.011 < 0.01 < 0.01	0.014 0.016 0.019 0.012	< 0.01 < 0.01 < 0.01 < 0.01	0.32 **0.37** 0.27 0.27	0.29 **0.33** 0.23 0.24
	FN191-05H-B		150 OD	0.157	0	2026	0.434								
				0.139	12	2052									
				0.138	14	2048		7 7 14 14	0.137 0.136 0.114 0.118	0.017 0.018 < 0.01 < 0.01	0.016 0.020 0.016 0.014	0.030 0.028 0.031 0.030	< 0.01 < 0.01 < 0.01 < 0.01	0.21 0.21 0.18 0.18	0.15 0.15 0.12 0.13
Payette, Idaho (Region 11)	FN192-05D-A	2005	150 OD	0.162	0	480	0.444								
				0.141	14	481									
				0.141	14	465		0 0 7 7 9 9 14 14 21 21	0.206 0.287 0.218 0.236 0.228 0.417 0.103 0.102 0.104 0.078	0.055 0.055 0.053 0.057 0.073 0.075 0.057 0.055 0.056 0.040	0.017 0.023 0.024 0.030 0.039 0.042 0.032 0.026 0.039 0.027	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.30 0.38 0.32 0.34 0.36 **0.55** 0.21 0.20 0.22 0.16	0.26 0.34 0.27 0.29 0.30 **0.49** 0.16 0.16 0.16 0.12
	FN192-05D-B		150 OD	0.163	0	1930	0.443								
				0.140	14	1879									
				0.140	14	1866		7 7 14 14	0.104 0.097 0.052 0.062	0.086 0.086 0.089 0.093	0.044 0.045 0.051 0.055	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	0.25 0.25 0.21 0.23	0.19 0.18 0.14 0.16

Location/ Trial No./ Year			Application					PHI days	Residues as BYI 08330 Equivalents (mg/kg)						
			Form	Rate kg ai/ha	Inter-val days	Spray Vol L/ha	Total Appl Rate kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
Parkdale, Oregon (Region 11)	FN193-05H-A	2005	150 OD	0.157	0	599	0.445								
				0.144	12	607									
				0.144	14	607		7 7 14 14	0.026 0.027 0.015 0.022	0.028 0.028 0.020 0.022	0.019 0.018 0.025 0.024	0.011 < 0.01 < 0.01 0.010	< 0.01 < 0.01 < 0.01 < 0.01	0.094 0.093 0.080 0.088	0.054 0.055 0.035 0.044
	FN193-05H-B		150 OD	0.162	0	2153	0.438								
				0.138	12	2186									
				0.138	14	2178		7 7 14 14	0.029 0.030 0.026 0.024	0.073 0.064 0.055 0.054	0.046 0.042 0.041 0.041	0.025 0.024 0.023 0.021	< 0.01 < 0.01 < 0.01 < 0.01	0.18 0.17 0.16 0.15	0.10 0.094 0.081 0.078
	FN193-05H-C		240 SC	0.158	0	599	0.439								
				0.141	12	608									
				0.140	14	606		7 7 14 14	0.082 0.084 0.064 0.106	0.027 0.026 0.019 0.023	0.014 0.014 0.018 0.025	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	0.17 0.14 0.12 **0.17**	0.11 0.11 0.083 **0.13**
Ephrata, Washington (Region 11)	FN194-05H-A	2005	150 OD	0.159	0	610	0.440								
				0.139	14	607									
				0.142	14	596		7 7 14 14	0.095 0.111 0.095 0.077	0.030 0.031 0.034 0.029	0.016 0.017 0.023 0.020	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	0.16 **0.18** 0.17 0.15	0.12 **0.14** 0.13 0.11
	FN194-05H-B		150 OD	0.161	0	2808	0.442								
				0.141	14	2812									
				0.140	14	2807		7 7 14 14	0.039 0.052 0.026 0.033	0.035 0.037 0.027 0.030	0.022 0.024 0.024 0.022	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	0.12 0.13 0.097 0.10	0.074 0.089 0.053 0.063
Hood River, Oregon (Region 11)	FN195-05H-A	2005	150 OD	0.161	0	512	0.445								
				0.143	13	505									
				0.141	13	483		7 7 14 14	0.057 0.038 0.031 0.029	0.023 0.014 0.023 0.018	0.015 0.011 0.017 0.015	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	**0.11** 0.083 0.089 0.082	**0.077** 0.052 0.052 0.047
	FN195-05H-B		150 OD	0.158	0	3160	0.431								
				0.137	13	3009									
				0.136	13	3106		7 7 14 14	0.022 0.023 0.018 0.017	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	0.062 0.063 0.058 0.057	0.032 0.033 0.028 0.027

Location/ Trial No./ Year			Application					PHI days	Residues as BYI 08330 Equivalents (mg/kg)						
			Form	Rate kg ai/ha	Inter-val days	Spray Vol L/ha	Total Appl Rate kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
PEAR TRIALS															
Orefield, Pennsylvania (Region 1)	FN196-05H-A	2005	150 OD	0.162	0	622	0.445								
				0.138	12	600									
				0.145	14	627		7 7 14 14	0.019 0.022 0.034 0.030	< 0.01 < 0.01 < 0.01 < 0.01	0.024 0.028 0.029 0.036	0.017 0.019 0.017 0.017	< 0.01 < 0.01 < 0.01 < 0.01	0.080 0.089 0.10 0.10	0.029 0.032 0.044 0.040
	FN196-05H-B		150 OD	0.167	0	2975	0.455								
				0.145	12	3005									
				0.143	14	2946		7 7 14 14	0.041 0.037 0.065 0.073	< 0.01 < 0.01 < 0.01 0.011	0.037 0.036 0.040 0.047	0.022 0.022 0.020 0.020	< 0.01 < 0.01 < 0.01 < 0.01	0.12 0.12 0.14 **0.16**	0.051 0.047 0.065 **0.084**
Madera, California (Region 10)	FN197-05D-A	2005	150 OD	0.160	0	470	0.447								
				0.145	14	470									
				0.142	14	473		0 0 7 7 10 10 14 14 21 21	0.177 0.151 0.142 0.088 0.099 0.095 0.060 0.093 0.074 0.101	0.171 0.127 0.148 0.119 0.147 0.167 0.127 0.145 0.097 0.114	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.015 0.012 0.018 0.012 0.020 0.022 0.023 0.023 0.027 0.027	0.38 0.31 0.33 0.24 0.29 0.30 0.23 0.28 0.22 0.26	0.35 0.28 0.29 0.21 0.25 0.26 0.19 0.24 0.17 0.22
	FN197-05D-B		150 OD	0.158	0	2331	0.440								
				0.142	14	2330)									
				0.140	14	2339		7 7 14 14	0.098 0.121 0.084 0.079	0.170 0.195 0.148 0.137	0.012 0.016 0.013 0.013	< 0.01 < 0.01 < 0.01 < 0.01	0.026 0.031 0.031 0.030	0.31 **0.37** 0.29 0.27	0.27 **0.32** 0.23 0.22
Marysville, California (Region 10)	FN198-05H-A	2005	150 OD	0.157	0	599	0.445								
				0.141	14	342									
				0.139	14	338									
	FN198-05H-B		150 OD	0.155	0	2153	0.438	7 7 14 14	0.108 0.164 0.114 0.101	< 0.01 < 0.01 < 0.01 < 0.01	0.015 0.020 0.015 0.014	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	0.15 **0.21** 0.16 0.14	0.12 **0.17** 0.12 0.11
				0.139	14	1954									
				0.139	14	1943		7 7 14 14	0.083 0.098 0.072 0.087	< 0.01 < 0.01 < 0.01 < 0.01	0.016 0.017 0.013 0.015	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	0.13 0.15 0.12 0.13	0.093 0.11 0.082 0.097

Location/ Trial No./ Year			Application					PHI days	Residues as BYI 08330 Equivalents (mg/kg)						
			Form	Rate kg ai/ha	Inter-val days	Spray Vol L/ha	Total Appl Rate kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
	FN198-05H-C		240 SC	0.158	0	599	0.439								
				0.139	14	342									
				0.139	14	338		7 7 14 14	0.097 0.111 0.084 0.095	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	0.14 0.15 0.12 0.14	0.11 0.12 0.094 0.10
Ephrata, Washington (Region 11)	FN199-05H-A	2005	150 OD	0.159	0	467	0.441								
				0.141	12	466									
				0.141	14	467									
	FN199-05H-B		150 OD	0.158	0	235	0.438								
				0.141	12	235									
				0.139	14	233		7 7 14 14	0.100 0.114 0.052 0.082	< 0.01 < 0.01 < 0.01 < 0.01	0.025 0.025 0.014 0.018	0.058 0.059 0.043 0.050	< 0.01 < 0.01 < 0.01 < 0.01	0.20 0.22 0.13 0.17	0.11 0.12 0.062 0.092
	FN199-05H-C		240 SC	0.160	0	466	0.443								
				0.142	12	466									
				0.141	14	464		7 7 14 14	0.213 0.194 0.162 0.141	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	0.016 0.017 0.022 0.011	< 0.01 < 0.01 < 0.01 < 0.01	**0.26** 0.24 0.21 0.18	**0.22** 0.20 0.17 0.15
Parkdale, Oregon (Region 11)	FN200-05H-A	2005	150 OD	0.160	0	541	0.441								
				0.140	12	544									
				0.141	14	509		7 7 14 14	0.146 0.143 0.124 0.124	< 0.01 < 0.01 < 0.01 < 0.01	0.029 0.024 0.016 0.023	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	**0.20** 0.20 0.17 0.18	**0.16** 0.15 0.13 0.13
	FN200-05H-B		150 OD	0.154	0	1952	0.439								
				0.143	12	1929									
				0.142	14	1912		7 7 14 14	0.117 0.127 0.153 0.087	< 0.01 < 0.01 < 0.01 < 0.01	0.064 0.057 0.052 0.050	0.012 0.013 0.016 0.013	< 0.01 < 0.01 < 0.01 < 0.01	0.21 0.22 0.24 0.17	0.13 0.14 0.16 0.097
Hood River, Oregon (Region 11)	FN201-05H-A	2005	150 OD	0.158	0	503	0.435								
				0.140	14	450									
				0.137	12	496		7 7 14 14	0.065 0.056 0.065 0.042	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 0.012 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	**0.10** 0.098 0.10 0.082	**0.075** 0.066 0.075 0.052

Location/ Trial No./ Year			Application					PHI days	Residues as BYI 08330 Equivalents (mg/kg)						
			Form	Rate kg ai/ha	Inter-val days	Spray Vol L/ha	Total Appl Rate kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
	FN201-05H-B		150 OD	0.161	0	2478	0.438								
				0.138	14	2437									
				0.139	12	2828		7 7 14 14	0.022 0.021 0.022 0.014	< 0.01 < 0.01 < 0.01 < 0.01	0.010 < 0.01 < 0.01 < 0.01	0.011 0.015 0.011 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	0.063 0.066 0.063 0.054	0.032 0.031 0.032 0.024

Stone Fruit

Table 62 Residues on whole fruit from the foliar application of spirotetramat to peaches and apricots in Europe (M-259798-01-1, Schöning R.; Wolters A.; 2005; Schöning R.; M-268003-01-1, Eberhardt R.; 2006; M-263878-01-1, Schöning R.; Helfrich P.; 2006; M-268094-01-1, Schöning R.; Eberhardt R.; 2006).

Trial No. Country Year	Crop	Form.	Application						PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
			No.	Spray interval days	kg as./ha × m CH	kg as/ha	kg as/hL	Water rate L/ha × m CH		BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.	Parent + Enol
NORTH EUROPE																
RA-2126/04 R 2004 0785 8 0785-04 France F-36300 Pouligny Saint Pierre (Centre) 2004	Peach	100 OD	2	14	0.072	0.1800	0.01440	500	0 14 21 27	0.51 0.10 0.07 0.07	0.13 0.24 0.15 0.15	0.053 0.041 0.029 0.032	0.036 0.057 0.053 0.053	0.009 0.013 0.012 0.012	0.74 0.45 0.31 0.32	0.64 0.34 0.22 0.22
RA-2126/04 R 2004 0786 6 0786-04 Germany D-65366 Geisenheim (Hessen) 2004	Apricot	100 OD	2	14	0.072	0.1440	0.01440	500	0[a] 0 7 14 21 28	0.07 0.26 0.17 0.12 0.14 0.09	0.074 0.094 0.14 0.12 0.095 0.077	0.019 0.016 0.018 0.013 0.014 0.013	0.012 0.012 0.012 0.012 0.012 0.012	0.15 0.11 0.18 0.21 0.25 0.28	0.33 0.49 0.53 0.48 0.50 0.48	0.14 0.35 0.31 0.24 0.17
RA-2006/05 R 2005 0061 0 0061-05 France F-36300 Pouligny Saint Pierre (Centre) 2005	Peach	OD 150	2	14	0.072	0.1800	0.01440	500	0[a] 0 7 14 21 27	0.12 0.26 0.14 0.10 0.06 0.04	0.080 0.088 0.25 0.24 0.25 0.18	0.032 0.032 0.042 0.033 0.035 0.027	0.012 0.012 0.062 0.074 0.083 0.065	< 0.008 < 0.008 0.008 0.009 0.010 0.009	0.25 0.40 0.50 0.45 0.44 0.32	0.20 0.35 0.39 0.34 0.31 0.22

Trial No. Country Year	Crop	Form.	Application						PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
			No.	Spray interval days	kg as./ha × m CH	kg as/ha	kg as/hL	Water rate L/ha × m CH		BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.	Parent + Enol
RA-2006/05 R 2005 0059 9 0059-05 Germany D-06179 Höhnstedt (Sachsen-Anhalt) 2005	Apricot	OD 150	2	14	0.072	0.1800	0.0144 0	500	0 14 21	0.39 0.07 0.04	0.25 0.37 0.29	0.058 0.044 0.034	0.012 0.012 0.012	0.26 0.37 0.32	0.96 0.88 0.69	0.64 0.44 0.33
RA-2006/05 R 2005 0060 2 0060-05 Germany D-65366 Geisenheim (Hessen) 2005	Apricot	OD 150	2	14	0.072	0.1440	0.0240 0	500	0[a] 0 7 14 21	0.10 0.29 0.15 0.08 0.07	0.085 0.092 0.19 0.21 0.13	0.012 0.012 0.014 0.016 0.018	0.012 0.012 0.012 0.012 0.012	0.082 0.086 0.17 0.24 0.29	0.29 0.49 0.54 0.56 0.53	0.18 0.38 0.34 0.29 0.20
SOUTH EUROPE																
RA-2127/04 R 2004 0787 4 0787-04 Spain E-08784 La Fortesa (Cataluña) 2004	Peach	OD 100	2	14	0.072	0.1800	0.0144 0	500	0 14 22 27	0.48 0.08 0.04 0.02	0.23 0.28 0.19 0.13	0.057 0.037 0.027 0.020	0.030 0.092 0.081 0.087	0.008 0.008 0.008 0.008	0.81 0.49 0.35 0.26	0.71 0.36 0.23 0.15
RA-2127/04 R 2004 0788 2 0788-04 Italy I-40128 Bologna (Emilia - Romagna) 2004	Apricot	OD 100	2	14	0.072	0.1800	0.0144 0	500	0 14 21 28	0.42 0.08 0.07 0.04	0.27 0.23 0.14 0.086	0.041 0.030 0.023 0.020	0.012 0.014 0.016 0.015	0.22 0.37 0.43 0.40	0.97 0.73 0.67 0.57	0.69 0.31 0.21 0.12
RA-2127/04 R 2004 0789 0 0789-04 Italy I-48100 Ravenna (Emilia - Romagna) 2004	Peach	100 OD	2	14	0.072	0.1800	0.0144 0	500	0[a] 0 7 14 21 28	0.08 0.33 0.15 0.05 0.03 0.01	0.048 0.068 0.12 0.10 0.071 0.044	0.044 0.046 0.050 0.034 0.017 0.012	0.023 0.028 0.039 0.040 0.044 0.039	0.008 0.009 0.009 0.008 0.008 0.008	0.20 0.48 0.37 0.24 0.17 0.11	0.13 0.40 0.27 0.15 0.10 0.054
RA-2127/04 R 2004 0790 4 0790-04	Apricot	OD 100	2	14	0.072	0.1296	0.0144 0	500	0[a] 0 7 14 21	0.01 0.16 0.07 0.04 0.02	0.048 0.074 0.093 0.099 0.13	0.012 0.022 0.023 0.015 0.014	< 0.012 < 0.012 < 0.012 < 0.012 0.012	0.036 0.050 0.073 0.077 0.11	0.11 0.30 0.26 0.23 0.28	0.049 0.23 0.16 0.14

Trial No. Country Year	Crop	Form.	Application						PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
			No.	Spray interval days	kg as./ha × m CH	kg as/ha	kg as/hL	Water rate L/ha × m CH		BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.	Parent + Enol
Spain E-46840 Pobla del Duc (Comunidad Valenciana) 2004									28	0.02	0.091	0.012	0.012	0.12	0.25	0.15 0.11
RA-2007/05 R 2005 0062 9 0062-05 Portugal P-2580-555 Mato (Ribatejo e Oeste) 2005	Apricot	OD 150	2	14	0.072	0.1440	0.01440	500	0 14 21 28	0.61 0.21 0.09 0.10	0.40 0.30 0.16 0.11	0.094 0.097 0.085 0.050	0.012 0.012 0.012 0.012	0.12 0.34 0.34 0.33	1.2 0.96 0.68 0.60	1.0 0.51 0.25 0.2
RA-2007/05 R 2005 0063 7 0063-05 Spain E-08784 La Fortesa (Cataluña) 2005	Peach	OD 150	2	14	0.072	0.1607 - 0.1728	0.01440	500	0 13 20 28	0.35 0.19 0.09 0.06	0.062 0.15 0.093 0.071	0.034 0.048 0.016 0.012	0.020 0.097 0.10 0.11	0.008 0.008 0.008 0.008	0.47 0.49 0.31 0.26	0.41 0.34 0.12 0.13
RA-2007/05 R 2005 0064 5 0064-05[1] Greece Souli Korinthias (Peloponnesos) 2005	Apricot	OD 150	2	14	0.072	0.1800	0.01440	500	0 14 21 28	0.25 0.15 0.05 0.05	0.064 0.094 0.063 0.039	0.012 0.012 0.012 0.012	< 0.012 < 0.012 0.012 < 0.012	0.046 0.10 0.099 0.10	0.37 0.36 0.24 0.20	0.31 0.24 0.089
RA-2007/05 R 2005 0065 3 0065-05 France F-84200 Montfavet (Provence-Cote D'azur) 2005	Peach	OD 150	2	14	0.072	0.1800	0.01440	500	0[a] 0 7 14 21 28	0.04 0.22 0.09 0.05 0.03 0.02	0.037 0.061 0.11 0.071 0.047 0.054	0.022 0.022 0.023 0.014 0.012 0.012	0.012 0.012 0.019 0.022 0.018 0.019	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.11 0.32 0.24 0.16 0.10 0.11	0.041 0.28 0.20 0.12 0.077 0.074
RA-2007/05 R 2005 0066 1 0066-05 Italy I-40128 Bologna	Apricot	OD 150	2	14	0.072	0.1800	0.01440	500	0[a] 0 7 14 21 27	0.04 0.12 0.05 0.03 0.02 0.02	0.058 0.079 0.14 0.10 0.061 0.040	0.012 0.014 0.015 0.012 0.012 0.013	< 0.012 0.012 0.012 0.012 0.012 0.012	0.064 0.074 0.099 0.11 0.17 0.16	0.17 0.29 0.31 0.27 0.28 0.24	0.098 0.19 0.19 0.13 0.081 0.060

Trial No. Country Year	Crop	Form.	Application						PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
			No.	Spray interval days	kg as./ha × m CH	kg as/ha	kg as/hL	Water rate L/ha × m CH		BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.	Parent + Enol
(Emilia - Romagna) 2005																

[a] Before final application.

Table 63 Residues on whole fruit from the foliar application of spirotetramat to peaches in the US and Canada (M-277063-01-1**,** Harbin, A. and S. Mackie 2006)

Location/ Trial No./ Year			Form	Application					PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
				Method	Rate (kg ai/ha)	Inter-val days	Spray volume L/ha	Total Rate kg ai/ha		BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.	Parent + Enol calc.
East Williamson New York Region 1	FN146-05H-A	2005	150 OD	Airblast Conc. Spray	0.158	0	615	0.269								
					0.111	13	607		7	0.099	0.163	< 0.01	0.022	< 0.020	0.48	0.26
									7	0.239	0.237	0.012	0.034	0.028	0.55	0.48
									14	0.091	0.158	0.013	0.048	0.038	0.44	0.34
									14	0.078	0.145	< 0.01	0.028	0.027	0.29	0.22
East Williamson New York Region 1	FN146-05H-B	2005	150 OD	Airblast Dilute Spray	0.160	0	2091	0.271								
					0.111	13	2097		7	0.042	0.554	0.028	0.056	0.020	**0.70**	**0.60**
									7	0.047	0.431	0.015	0.053	< 0.020	0.57	0.48
									14	0.064	0.539	0.017	0.032	< 0.020	0.67	0.60
									14	0.024	0.394	0.019	0.086	0.041	0.56	0.42
Chula Georgia Region 2	FN147-05H-A	2005	150 OD	Airblast Conc. Spray	0.159	0	391	0.270								
					0.111	13	518		7	0.019	0.372	0.013	0.086	< 0.020	0.51	0.39
									7	0.014	0.473	< 0.01	0.045	< 0.020	**0.56**	**0.49**
									14	0.018	0.217	< 0.01	0.047	0.024	0.32	0.24
									14	0.043	0.323	0.014	0.059	0.037	0.48	0.37
Chula Georgia Region 2	FN147-05H-B	2005	150 OD	Airblast Dilute Spray	0.159	0	2521	0.269								
					0.110	13	2451		7	0.012	0.320	0.015	0.054	0.021	0.42	0.33
									7	< 0.01	0.261	< 0.01	0.035	< 0.020	0.34	0.27
									14	< 0.01	0.122	< 0.01	0.032	0.025	0.20	0.13
									14	< 0.01	0.212	0.011	0.056	0.030	0.13	0.031
Chula Georgia Region 2	FN147-05H-C	2005	240 SC	Airblast Conc. Spray	0.158	0	390	0.268								
					0.110	13	513		7	0.034	0.210	0.015	0.048	0.032	0.34	0.24
									7	0.021	0.280	< 0.01	0.018	< 0.020	0.34	0.30
									14	0.023	0.384	0.014	0.046	0.022	0.48	0.41
									14	0.027	0.132	< 0.01	0.023	< 0.020	0.21	0.16

Location/ Trial No./ Year			Form	Application					PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
				Method	Rate (kg ai/ha)	Interval days	Spray volume L/ha	Total Rate kg ai/ha		BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.	Parent + Enol calc.
Plains Georgia Region 2	FN148-05H-A	2005	150 OD	Airblast Conc. Spray	0.161	0	558	0.272	7	< 0.01	0.187	< 0.01	0.048	0.047	0.30	0.20
					0.110	14	526		7	0.013	0.184	< 0.01	0.041	0.031	0.28	0.20
									14	< 0.01	0.103	< 0.01	0.056	0.036	0.21	0.11
									14	< 0.01	0.106	< 0.01	0.045	0.027	0.20	0.12
Plains Georgia Region 2	FN148-05H-B	2005	150 OD	Airblast Dilute Spray	0.163	0	2281	0.271	7	< 0.01	0.375	< 0.01	0.065	0.048	**0.51**	**0.38**
					0.108	14	2020		7	0.013	0.362	0.011	0.075	0.066	0.52	0.37
									14	< 0.01	0.230	< 0.01	0.082	0.044	0.58	0.24
									14	< 0.01	0.192	< 0.01	0.080	0.036	0.33	0.20
Goldsboro North Carolina Region 2	FN149-05H-A	2005	150 OD	Airblast Conc. Spray	0.160	0	432	0.271	7	0.029	0.385	0.015	0.083	0.033	0.54	0.41
					0.112	14	558		7	0.022	0.242	0.012	0.053	< 0.020	0.37	0.28
									14	0.011	0.108	< 0.01	0.052	< 0.020	0.30	0.22
									14	< 0.01	0.137	< 0.01	0.057	0.030	0.25	0.15
Goldsboro North Carolina Region 2	FN149-05H-B	2005	150 OD	Airblast Dilute Spray	0.156	0	2883	0.266	7	0.028	0.499	0.022	0.122	0.049	0.72	0.53
					0.110	14	2196		7	0.045	0.507	0.034	0.155	0.080	**0.82**	**0.55**
									14	0.014	0.145	0.013	0.106	0.048	0.32	0.16
									14	0.014	0.186	< 0.01	0.150	0.060	0.42	0.20
Beamsville Ontario Region 5	FN150-05H-A	2005	150 OD	Airblast Conc. Spray	0.159	0	490	0.267	7	0.010	0.327	< 0.01	0.016	0.040	0.41	0.34
					0.108	13	428		7	0.013	0.310	< 0.01	0.027	0.053	0.41	0.32
									14	< 0.01	0.116	< 0.01	< 0.01	0.030	0.18	0.13
									14	< 0.01	0.268	< 0.01	0.028	0.049	0.65	0.28
Beamsville Ontario Region 5	FN150-05H-B	2005	150 OD	Airblast Dilute Spray	0.157	0	2650	0.267	7	< 0.01	0.305	0.016	0.046	0.037	0.42	0.32
					0.109	13	2384		7	< 0.01	0.521	0.025	0.093	0.041	**0.69**	**0.53**
									14	< 0.01	0.277	0.015	0.040	0.039	0.38	0.29
									14	< 0.01	0.086	< 0.01	< 0.01	0.049	0.17	0.096
Waller Texas Region 6	FN151-05H-A	2005	150 OD	Airblast Conc. Spray	0.157	0	567	0.266	7	0.047	0.628	0.017	0.108	0.041	0.84	0.68
					0.109	14	575		7	0.056	0.942	0.022	0.164	0.043	**1.2**	**1.0**
									14	0.026	0.338	0.013	0.152	0.049	0.58	0.36
									14	0.023	0.396	0.015	0.171	0.045	0.65	0.42
Waller Texas Region 6	FN151-05H-B	2005	150 OD	Airblast Dilute Spray	0.156	0	2415	0.265	7	0.056	0.742	0.032	0.160	0.085	1.1	0.80
					0.108	14	2372		7	0.038	0.841	0.025	0.168	0.070	0.97	0.88
									14	0.014	0.487	0.016	0.198	0.055	0.77	0.50
									14	0.019	0.425	0.020	0.214	0.056	0.73	0.44

Location/ Trial No./ Year			For m	Application					PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
				Method	Rate (kg ai/ha)	Inter-val days	Spray volume L/ha	Total Rate kg ai/ha		BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.	Parent + Enol calc.
Waller Texas Region 6	FN151-05H-C	2005	240 SC	Airblast Conc. Spray	0.160	0	574	0.270								
					0.110	14	581		7	0.045	0.421	0.012	0.087	0.028	0.59	0.47
									7	0.049	0.427	0.017	0.092	0.032	0.62	0.48
									14	0.076	0.349	0.012	0.125	0.036	0.60	0.42
									14	0.029	0.552	0.011	0.165	0.031	0.79	0.58
Fresno California Region 10	FN152-05D-A	2005	150 OD	Airblast Conc. Spray	0.157	0	383	0.268								
					0.111	12	372		7	0.024	0.237	< 0.01	0.062	0.048	0.38	0.26
									7	0.034	0.178	< 0.01	0.051	< 0.01	0.28	0.21
									14	0.052	0.184	< 0.01	0.049	0.025	0.32	0.24
									14	0.051	0.248	< 0.01	0.105	0.025	0.44	0.30
Fresno California Region 10	FN152-05D-B	2005	150 OD	Airblast Dilute Spray	0.157	0	1992	0.267								
					0.110	12	2011		7	0.044	0.362	< 0.01	0.053	0.021	0.49	0.41
									7	0.077	0.503	0.010	0.077	0.026	**0.69**	**0.58**
									14	0.043	0.419	< 0.01	0.082	0.019	0.57	0.46
									14	0.048	0.324	< 0.01	0.092	0.025	0.50	0.37
Selma California Region 10	FN153-05H-A	2005	150 OD	Airblast Conc. Spray	0.158	0	488	0.270								
					0.112	14	501		7	0.161	0.280	< 0.01	0.057	0.026	0.53	0.44
									7	0.113	0.229	< 0.01	0.054	< 0.020	0.42	0.34
									14	0.068	0.088	< 0.01	0.034	< 0.020	0.22	0.16
									14	0.164	0.137	< 0.01	0.043	< 0.020	0.37	0.30
Selma California Region 10	FN153-05H-B	2005	150 OD	Airblast Dilute Spray	0.157	0	2807	0.270								
					0.112	14	2866		7	0.052	0.366	< 0.01	0.101	0.028	0.56	0.42
									7	0.069	0.516	0.010	0.131	0.040	0.77	0.58
									14	0.035	0.292	< 0.01	0.119	< 0.020	0.48	0.33
									14	0.047	0.229	< 0.01	0.117	0.021	0.42	0.28
Selma California Region 10	FN153-05H-C	2005	240 SC	Airblast Conc. Spray	0.156	0	488	0.267								
					0.111	14	493		7	0.275	0.178	< 0.01	0.039	0.026	0.53	0.45
									7	0.490	0.233	< 0.01	0.052	0.024	**0.81**	**0.72**
									14	0.092	0.069	< 0.01	0.029	< 0.020	0.22	0.16
									14	0.124	0.088	< 0.01	0.023	< 0.020	0.26	0.21
Live Oak California Region 10	FN154-05H-A	2005	150 OD	Airblast Conc. Spray	0.158	0	466	0.269								
					0.111	14	467		7	0.108	0.194	< 0.01	0.037	< 0.020	0.37	0.30
									7	0.123	0.240	< 0.01	0.044	< 0.020	0.43	0.36
									14	0.076	0.098	< 0.01	0.031	< 0.020	0.23	0.17
									14	0.071	0.108	< 0.01	0.036	< 0.020	0.24	0.18
Live Oak California Region 10	FN154-05H-B	2005	150 OD	Airblast Dilute Spray	0.158	0	1960	0.268								
					0.110	14	1964		7	0.091	0.350	< 0.01	0.038	< 0.020	0.50	0.44
									7	0.093	0.586	< 0.01	0.064	< 0.020	**0.77**	**0.68**
									14	0.096	0.369	0.012	0.073	0.021	0.57	0.46
									14	0.059	0.273	0.011	0.077	0.023	0.44	0.33

Table 64 Residues on whole fruit from the foliar application of spirotetramat to plums in Europe (M-263688-01-1, Schöning R.; Helfrich P.; 2006; M-266052-01-1, Schöning R.; 2006; M-262626-01-1, Schöning R.; Wolters A.; 2006; M-266062-01-1, Schöning R.; 2006)

PLUMS Trial No./ Country/ Year	Form.	Application						PHI (days)	Residues (mg/kg) expressed as BYI08330 equivalents						
		No.	Spray interval (days)	kg as. / (ha x m CH)	kg as. / ha	kg as./hL	Water rate (L/ha x m CH)		BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.	Parent + Enol
North Europe															
RA-2124/04 R 2004 0774 2 0774-04 Germany D-04808 Wurzen-Roitzsch (Sachsen) 2004	OD 100	2	14	0.072	500	0.216	0.0144	0 14 21 28	0.20 0.08 0.05 0.04	0.31 0.45 0.32 0.29	0.027 0.041 0.031 0.038	0.086 0.25 0.25 0.33	0.034 0.11 0.10 0.13	0.66 0.93 0.75 0.84	0.51 0.53 0.37 0.33
RA-2124/04 R 2004 0775 0 0775-04 Germany D-51399 Burscheid (Nordrhein-Westfalen) 2004	OD 100	2	14	0.072	500	0.144	0.0144	0 14 21 28	0.16 0.02 0.01 0.01	0.071 0.061 0.034 0.015	0.012 0.012 0.012 0.012	0.031 0.072 0.078 0.084	0.008 0.020 0.025 0.024	0.28 0.18 0.16 0.15	0.23 0.081 0.044 0.025
RA-2124/04 R 2004 0776 9 0776-04 France F-36300 Pouligny St.Pierre 2004	OD 100	2	14	0.072	500	0.180	0.0144	0[a] 0 7 14 21 28	0.08 0.37 0.16 0.09 0.07 0.06	0.21 0.22 0.31 0.25 0.26 0.26	0.027 0.029 0.029 0.025 0.025 0.028	0.049 0.053 0.058 0.057 0.064 0.084	0.050 0.057 0.078 0.078 0.11 0.15	0.42 0.73 0.63 0.50 0.52 0.58	0.29 0.59 0.47 0.34 0.33 0.32
RA-2124/04 R 2004 0777 7 0777-04 United Kingdom GB-CB4 5HG Cambridge (Cambridgeshire) 2004	OD 100	2	14	0.072	500	0.180	0.0144	0[a] 0 7 14 21 28	0.07 0.25 0.14 0.10 0.09 0.07	0.15 0.15 0.17 0.17 0.13 0.14	0.012 0.012 0.012 0.015 0.014 0.017	0.089 0.085 0.11 0.13 0.15 0.20	0.042 0.042 0.046 0.055 0.064 0.084	0.36 0.54 0.47 0.48 0.45 0.51	0.22 0.40 0.31 0.27 0.22 0.21
RA-2004/05 R 2005 0050 5 0050-05 United Kingdom GB-CB4 5HG Cambridge (Cambridge-shire) 2005	OD 150	2	14	0.072	0.180	0.0144	500	0 14 21 28	0.16 0.07 0.04 0.03	0.092 0.17 0.19 0.14	0.012 0.012 0.012 0.012	0.017 0.037 0.078 0.083	0.008 0.015 0.033 0.034	0.29 0.31 0.35 0.30	0.25 0.24 0.23 0.17
RA-2004/05 R 2005 0051 3 0051-05 France F-36300 Pouligny Saint Pierre (Centre) 2005	OD 150	2	14	0.072	0.144	0.0144	500	0 14 21 28	0.26 0.06 0.04 0.03	0.090 0.099 0.11 0.063	0.012 0.012 0.012 0.012	0.096 0.21 0.23 0.19	0.011 0.019 0.024 0.016	0.47 0.40 0.42 0.31	0.35 0.16 0.15 0.093

PLUMS Trial No./ Country/ Year	Form.	Application						PHI (days)	Residues (mg/kg) expressed as BYI08330 equivalents						
		No.	Spray interval (days)	kg as. / (ha x m CH)	kg as. / ha	kg as./hL	Water rate (L/ha x m CH)		BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.	Parent + Enol
RA-2004/05 R 2005 0052 1 0052-05 Germany D-40789 Monheim (Nordrhein-Westfalen) 2005	OD 150	2	14	0.072	0.216	0.0144	500	[a] 0 7 14 21 28	0.01 0.08 0.05 0.03 0.02 0.02	0.023 0.044 0.095 0.062 0.027 0.043	0.012 0.012 0.017 0.015 0.017 0.012	0.012 0.012 0.062 0.11 0.098 0.10	< 0.008 < 0.008 0.009 0.016 0.016 0.018	0.057 0.15 0.23 0.23 0.18 0.19	0.033 0.12 0.14 0.092 0.047 0.063
RA-2004/05 R 2005 0054 8 0054-05 Germany D-04808 Wurzen -Roitzsch (Sachsen) 2005	OD 150	2	14	0.072	0.216	0.0144	500	[a] 0 7 14 21 28	0.02 0.08 0.06 0.05 0.02 0.03	0.039 0.052 0.082 0.074 0.041 0.043	0.012 0.012 0.012 0.012 0.012 0.012	0.014 0.017 0.019 0.021 0.018 0.022	0.008 0.008 0.010 0.009 0.010 0.012	0.091 0.17 0.18 0.17 0.10 0.12	0.059 0.13 0.14 0.12 0.061 0.073
SOUTH EUROPE															
RA-2125/04 R 2004 0778 5 0778-04 France F-31620 Fronton (Midi-Pyrenees) 2004	100 OD	2	14	0.072	0.216	0.0144	500	0 14 **21** 28	0.15 0.09 0.06 0.05	0.12 0.19 0.16 0.11	0.013 0.021 0.021 0.020	0.073 0.19 0.20 0.22	0.022 0.043 0.044 0.044	0.38 0.53 **0.49** 0.44	0.27 0.28 0.22 0.16
RA-2125/04 R 2004 0779 3 0779-04 Italy I-48100 Ravenna (Emilia-Romagna) 2004	100 OD	2	14	0.072	0.180	0.0144	500	[a] 0 7 14 21 28	0.03 0.21 0.11 0.04 0.03 0.02	0.093 0.096 0.18 0.15 0.09 0.06	0.014 0.018 0.018 0.016 0.013 0.012	0.012 0.012 0.014 0.020 0.023 0.029	0.009 0.009 0.014 0.021 0.023 0.028	0.16 0.34 0.34 0.25 **0.18** 0.15	0.12 0.31 0.29 0.19 0.12 0.08
RA-2005/05 R 2005 0055 6 0055-05 Italy I-41058 Vignola (MO) (Emilia - Romagna) 2005	OD 150	2	14	0.072	0.144	0.0144	500	0 14 21 28	0.34 0.09 0.08 0.03	0.055 0.12 0.088 0.037	0.012 0.012 0.012 0.012	0.054 0.13 0.17 0.15	0.018 0.040 0.045 0.036	0.48 0.39 0.39 0.27	0.40 0.21 0.17 0.067
RA-2005/05 R 2005 0058 0 0058-05 Spain E-46840 Pobla del Duc (Comunidad Valenciana) 2005	OD 150	2	14	0.072	0.144	0.0144	500	[a] 0 7 14 21 28	0.03 0.12 0.11 0.07 0.05 0.03	0.036 0.047 0.063 0.054 0.044 0.025	0.012 0.012 0.012 0.012 0.012 0.012	0.012 0.012 0.012 0.018 0.021 0.021	< 0.008 0.008 0.008 0.008 0.008 0.009	0.094 0.20 0.20 0.16 0.13 0.10	0.066 0.17 0.17 0.12 0.09 0.055

[a] Before final treatment.

Table 65 Residues on whole fruit from the foliar application of spirotetramat to plums in the USA (M-277063-01-1, Harbin, A. and S. Mackie 2006)

PLUMS Location (City, State, NAFTA Region) Trial Number Year			Form	Application					PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
				Method	Rate kg ai/ha	Interval days	Vol. L/ha	Rate kg ai/ha		BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.	Parent + Enol
Conklin Michigan Region 5	FN155-05H-A	2005	150 OD	Air blast Conc. Spray	0.158 0.110	0 14	556 568	0.268	7 7 14 14	< 0.01 < 0.01 0.047 0.076	0.116 0.248 0.260 0.169	< 0.01 < 0.01 < 0.01 < 0.01	0.048 0.057 0.099 0.069	0.019 0.023 0.041 0.029	0.20 0.35 0.46 0.35	0.13 0.26 0.31 0.24
Conklin Michigan Region 5	FN155-05H-B	2005	150 OD	Air blast Dilute Spray	0.158 0.110	0 14	1968 2032	0.268	7 7 14 14	< 0.01 < 0.01 0.030 0.035	0.582 0.349 0.466 0.382	0.021 0.019 0.019 0.017	0.164 0.103 0.193 0.143	0.065 0.042 0.067 0.058	**0.84** 0.52 0.77 0.63	**0.59** 0.36 0.49 0.42
Selma California Region 10	FN156-05D-A	2005	150 OD	Air blast Conc. Spray	0.161 0.107	0 13	500 478	0.268	0 0 7 7 10 10 14 14 21 21	0.017 0.036 0.027 0.038 < 0.01 0.022 < 0.01 < 0.01 0.015 0.014	0.058 0.111 0.290 0.145 0.079 0.294 0.073 0.090 0.047 0.073	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 0.011 0.036 0.015 0.017 0.071 0.021 0.018 0.025 0.040	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.10 0.18 **0.37** 0.22 0.037 0.41 0.12 0.14 0.11 0.15	0.075 0.15 **0.32** 0.18 0.089 0.32 0.083 0.10 0.062 0.087
Selma California Region 10	FN156-05D-B	2005	150 OD	Air blast Dilute Spray	0.156 0.109	0 13	2789 2292	0.265	7 7 14 14	< 0.01 < 0.01 < 0.01 < 0.01	0.211 0.189 0.144 0.092	< 0.01 < 0.01 < 0.01 < 0.01	0.037 0.036 0.067 0.036	< 0.01 < 0.01 < 0.01 < 0.01	0.28 0.26 0.24 0.16	0.22 0.20 0.15 0.10
Orland California Region 10	FN157-05H-A	2005	150 OD	Air blast Conc. Spray	0.159 0.111	0 14	573 571	0.270	7 7 14 14	0.029 0.040 0.037 0.044	0.068 0.090 0.098 0.111	< 0.01 < 0.01 < 0.01 < 0.01	0.076 0.082 0.127 0.185	< 0.01 < 0.01 0.012 0.011	0.19 0.23 0.28 **0.36**	0.097 0.13 0.14 **0.16**
Orland California Region 10	FN157-05H-B	2005	150 OD	Air blast Dilute Spray	0.158 0.109	0 14	2100 2108	0.267	7 7 14 14	0.026 0.029 0.029 0.030	0.046 0.046 0.062 0.076	< 0.01 < 0.01 < 0.01 < 0.01	0.062 0.074 0.120 0.113	< 0.01 < 0.01 < 0.01 < 0.01	0.15 0.17 0.23 0.24	0.072 0.075 0.091 0.11
Orland California Region 10	FN157-05H-C	2005	240 SC	Air blast Concentrate Spray	0.157 0.109	0 14	572 571	0.266	7 7 14 14	0.012 0.016 0.016 0.013	0.011 0.013 0.012 0.019	< 0.01 < 0.01 < 0.01 < 0.01	0.017 0.016 0.022 0.039	< 0.01 < 0.01 < 0.01 < 0.01	0.060 0.065 0.070 0.091	0.023 0.029 0.028 0.032
Sanger California Region 10	FN158-05H-A	2005	150 OD	Air blast Conc. Spray	0.157 0.110	0 14	459 460	0.266	7 7 14 14	< 0.01 < 0.01 < 0.01 < 0.01	0.254 0.197 0.253 0.153	< 0.01 < 0.01 < 0.01 < 0.01	0.057 0.029 0.118 0.072	0.021 0.013 0.073 0.037	0.35 0.26 **0.46** 0.27	0.26 0.21 **0.26** 0.16

PLUMS Location (City, State, NAFTA Region) Trial Number Year			Form	Application					PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
				Method	Rate kg ai/ha	Interval days	Vol. L/ha	Rate kg ai/ha		BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.	Parent + Enol
Sanger California Region 10	FN158-05H-B	2005	150 OD	Air blast Dilute Spray	0.157 0.109	0 14	2115 2078	0.266	7 7 14 14	< 0.01 < 0.01 < 0.01 < 0.01	0.073 0.086 0.057 0.039	< 0.01 < 0.01 < 0.01 < 0.01	0.014 0.015 0.019 0.013	< 0.01 < 0.01 0.010 < 0.01	0.12 0.13 0.11 0.082	0.083 0.096 0.067 0.049
Reedley California Region 10	FN159-05H-A	2005	150 OD	Air blast Conc. Spray	0.165 0.107	0 14	681 539	0.272	 0 0 7 7	 0.010 < 0.01 < 0.01 < 0.01	 0.019 0.023 0.013 < 0.01	 < 0.01 < 0.01 < 0.01 < 0.01	 < 0.01 < 0.01 < 0.01 < 0.01	 < 0.01 < 0.01 < 0.01 < 0.01	 0.059 0.063 0.063 < 0.055	 0.029 0.033 0.023 < 0.020
Reedley California Region 10	FN159-05H-B	2005	150 OD	Air blast Dilute Spray	0.165 0.109	0 14	2082 2253	0.274	 7 7 14 14	 < 0.01 < 0.01 < 0.01 < 0.01	 0.056 0.048 0.036 0.020	 < 0.01 < 0.01 < 0.01 < 0.01	 0.020 0.013 0.031 < 0.01	 < 0.01 < 0.01 < 0.01 < 0.01	 **0.11** 0.091 0.097 0.060	 **0.066** 0.058 0.046 0.030
Forest Grove Oregon Region 12	FN160-05H-A	2005	150 OD	Air blast Conc. Spray	0.159 0.109	0 14	527 446	0.268	 7 7 14 14	 0.028 0.018 0.023 0.032	 0.169 0.081 0.162 0.136	 < 0.01 < 0.01 < 0.01 < 0.01	 0.132 0.067 0.148 0.175	 0.015 < 0.01 0.015 0.016	 0.35 0.19 0.36 0.37	 0.20 0.099 0.18 0.17
Forest Grove Oregon Region 12	FN160-05H-B	2005	150 OD	Air blast Dilute Spray	0.158 0.108	0 14	2288 2466	0.266	7 7 14 14	0.021 0.024 0.021 < 0.01	0.315 0.277 0.311 0.120	< 0.01 < 0.01 0.011 < 0.01	0.200 0.190 0.343 0.146	0.024 0.024 0.041 0.021	**0.57** 0.52 0.73 0.31	**0.34** 0.30 0.33 0.13

Table 66 Residues from the foliar application of spirotetramat to cherries (sweet and sour) in Europe (M-263879-01-1, Schöning R.; Behn, U. ; Wolters A.; 2006; M-267524-01-1, Schöning R.; Raecker T.; 2006; M-260405-01-1, Schöning R.; Wolters A.; 2005; Schöning R.; M-267488-01-1, Eberhardt R.; 2006)

Country Trial No. Country Year	Form.	Application					PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
		No.	Spray interval days	kg as / ha x m CH	kg as / ha	kg as/hL		BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.	Parent + Enol
NORTH EUROPE														
RA-2119/04 R 2004 0718 1 0718-04 France F-36300 Pouligny Saint Pierre (Centre) 2004	OD 100	2	14	0.072	0.1440	0.01440	0[a] 0 14 21 28	0.09 0.43 0.02 0.01 0.01	0.15 0.25 0.32 0.32 0.23	0.18 0.21 0.19 0.11 0.089	0.024 0.026 0.081 0.12 0.13	0.008 0.008 0.018 0.023 0.026	0.45 0.92 0.62 0.57 0.49	0.24 0.68 0.34 0.33 0.24
RA-2119/04 R 2004 0721 1 0721-04 France	OD 100	2	14	0.072	0.1440	0.01440	0[a] 0 7 13 21 27	0.03 0.39 0.03 0.03 0.02 0.01	0.70 0.63 0.79 0.86 0.58 0.39	0.11 0.098 0.087 0.11 0.072 0.055	0.069 0.057 0.093 0.17 0.17 0.11	0.054 0.047 0.057 0.11 0.097 0.065	0.96 1.2 1.1 1.3 0.93 0.63	0.73 1.0 0.82 0.89 0.60 0.40

Country Trial No. Country Year	Form.	Application					PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
		No.	Spray interval days	kg as / ha x m CH	kg as / ha	kg as/hL		BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.	Parent + Enol
F-49800 Brain sur L'Authion (Pays de la Loire) 2004														
RA-2119/04 R 2004 0720 3 0720-04 Germany D-04808 Wurzen - Roitzsch (Sachsen) 2004	OD 100	2	14	0.072	0.1800	0.01440	0[a] 0 14 21 28	0.12 0.56 0.03 0.01 0.01	0.20 0.25 0.25 0.21 0.12	0.10 0.10 0.060 0.033 0.024	0.018 0.017 0.021 0.021 0.022	0.017 0.014 0.013 0.011 0.013	0.45 0.95 0.38 0.28 0.19	0.32 0.81 0.28 0.22 0.13
RA-2119/04 R 2004 0723 8 0723-04 Germany D-51399 Burscheid (Nordrhein-Westfalen) 2004	OD 100	2	14	0.072	0.1440	0.01440	0[a] 0 7 14 21 28	0.01 0.51 0.02 0.01 0.01 < 0.01	0.099 0.17 0.41 0.29 0.21 0.13	0.013 0.014 0.018 0.016 0.012 0.012	0.012 0.012 0.019 0.030 0.040 0.041	0.008 0.008 0.011 0.016 0.023 0.020	0.15 0.71 0.49 0.36 0.29 0.20	0.11 0.68 0.43 0.30 0.22 0.14
RA-2008/05 R 2005 0068 8 0068-05 Germany D-04808 Wurzen - Roitzsch (Sachsen) 2005	OD 150	2	14	0.072	0.2160	0.01440	0 14 21	0.69 0.03 0.02	0.26 0.53 0.36	0.052 0.13 0.13	0.074 0.17 0.23	0.018 0.057 0.086	1.1 0.91 0.83	0.95 0.56 0.38
RA-2008/05 R 2005 0071 8 0071-05 France F-36300 Pouligny Saint Pierre (Centre) 2005	OD 150	2	14	0.072	0.1440	0.01440	0[a] 0 7 14 21 28	0.03 0.28 0.04 0.02 0.01 0.01	0.092 0.27 0.44 0.31 0.23 0.19	0.072 0.090 0.12 0.082 0.068 0.067	0.012 0.012 0.049 0.059 0.091 0.21	0.008 0.008 0.011 0.013 0.018 0.047	0.21 0.66 0.66 0.48 0.42 0.52	0.095 0.55 0.48 0.33 0.24 0.20
RA-2008/05 R 2005 0072 6 0072-05 Germany D-40789 Monheim (Nordrhein-Westfalen) 2005	OD 150	2	14	0.072	0.2160	0.01440	0[a] 0 7 14 21 28	0.02 0.31 0.10 0.02 < 0.01 < 0.01	0.041 0.13 0.30 0.29 0.15 0.093	0.035 0.030 0.046 0.040 0.022 0.015	0.012 0.012 0.033 0.054 0.037 0.038	0.008 0.008 0.024 0.039 0.029 0.028	0.12 0.49 0.50 0.44 0.24 0.17	0.061 0.44 0.40 0.31 0.16 0.10
RA-2100/06 R 2006 0004 6 0004-06 Germany	OD 150	2	14	0.072	0.216	0.01440	0[a] 0 14 21 28	0.04 0.19 0.02 0.02 0.01	0.17 0.28 0.22 0.15 0.097	0.022 0.025 0.024 0.023 0.017	0.022 0.026 0.10 0.15 0.15	0.012 0.017 0.060 0.084 0.082	0.26 0.54 0.44 0.43 0.35	0.21 0.47 0.24 0.17 0.11

Country Trial No. Country Year	Form.	Application					PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
		No.	Spray interval days	kg as / ha x m CH	kg as / ha	kg as/hL		BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.	Parent + Enol
D-40789 Monheim (Nordrhein-Westfalen) 2006														
SOUTH EUROPE														
RA-2118/04 R 2004 0716 5 0716-04 Italy I-70052 Bisceglie (Bari) 2004	OD 100	2	14	0.072	0.1440	0.01440	0 [a] 0 14 21 28	0.18 0.22 0.48 0.38 0.24	0.22 0.23 0.19 0.11 0.085	0.029 0.027 0.067 0.11 0.10	0.008 0.008 0.018 0.019 0.019	0.47 0.73 0.79 0.63 0.45	0.04 0.25 0.04 0.01 < 0.01	0.22 0.47 0.52 0.39 0.25
RA-2118/04 R 2004 0717 3 0717-04 France F-84170 Monteux (Provence-Cote D'azur) 2004	OD 100	2	14	0.072	0.1584-0.1620	0.01440	0 [a] 0 9 14 21 28	0.18 0.28 0.52 0.50 0.50 0.35	0.12 0.12 0.14 0.11 0.11 0.086	0.024 0.022 0.11 0.21 0.32 0.37	0.008 0.008 0.021 0.038 0.065 0.071	0.38 0.86 0.87 0.92 1.0 0.90	0.05 0.43 0.07 0.06 0.05 0.02	0.23 0.71 0.59 0.56 0.55 0.37
RA-2009/05 R 2005 0073 4 0073-05 Italy I-70031 Andria (Puglia) 2005	OD 150	2	14	0.072	0.2160	0.0144	0 14 21 28	0.29 0.02 0.01 0.01	0.77 0.57 0.35 0.26	0.093 0.099 0.055 0.044	0.54 0.39 0.22 0.14	0.11 0.073 0.044 0.027	1.8 1.2 0.67 0.48	1.1 0.59 0.36 0.27
RA-2009/05 R 2005 0074 2 0074-05 Spain E-08690 Santa Coloma de Cervelló (Cataluña) 2005	OD 150	2	14	0.072	0.1944	0.0144	0 [a] 0 7 14 21 28	0.01 0.34 0.12 0.09 0.06 0.05	0.29 0.41 0.47 0.32 0.22 0.10	0.072 0.072 0.076 0.075 0.073 0.076	0.083 0.092 0.20 0.30 0.29 0.33	0.017 0.019 0.042 0.069 0.078 0.095	0.47 0.92 0.91 0.85 0.72 0.65	0.30 0.75 0.59 0.41 0.28 0.15

[a] Before final treatment.

Table 67 Residues in whole fruit from the foliar application of spirotetramat to cherries (sweet and sour) in Canada and the USA (M-277063-01-1, Harbin, A. and S. Mackie 2006)

CHERRY Location (City, State, NAFTA Region)	Trial No.	Year	Form	Application					PHI	Residues (mg/kg) expressed as BYI08330 equivalents						
				Method	Rate kg ai/ha	Interval days	Spray Vol L/ha	Total Rate (kg ai/ha	(days)	BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.	Parent + Enol
Sodus New York Region 1	FN140-05H-A	2005	150 OD	Airblast Conc. Spray	0.159	0	612	0.271								
					0.111	14	615		**7**	0.056	1.026	0.036	0.219	0.271	1.6	1.1
									7	0.075	0.876	0.045	0.301	0.204	1.5	0.95
									14	< 0.01	0.682	0.049	0.275	0.345	1.4	0.69
									14	< 0.01	0.455	0.085	0.487	0.401	1.4	0.46
Sodus New York Region 1	FN140-05H-B	2005	150 OD	Airblast Dilute Spray	0.156	0	2095	0.265								
					0.109	14	2070		**7**	0.017	1.32	0.086	0.402	0.302	**2.1**	**1.3**
									7	< 0.01	1.08	0.051	0.227	0.253	1.6	1.1
									14	< 0.01	0.780	0.055	0.340	0.337	1.5	0.79
									14	< 0.01	0.678	0.074	0.370	0.359	1.5	0.69
Simcoe Ontario Region 5	FN141-05H-A	2005	150 OD	Airblast Conc. Spray	0.159	0	583	0.270								
					0.111	12	557		**7**	0.043	1.28	0.044	0.102	0.092	1.6	1.3
									7	0.060	1.29	0.055	0.115	0.106	**1.6**	**1.4**
									14	0.031	0.861	0.045	0.154	0.120	1.2	0.89
									14	0.015	0.03	0.053	0.174	0.115	0.39	0.045
Simcoe Ontario Region 5	FN141-05H-B	2005	150 OD	Airblast Dilute Spray	0.160	0	2265	0.271								
					0.110	12	2168		**7**	0.015	1.13	0.053	0.117	0.100	1.4	1.1
									7	0.011	1.08	0.060	0.127	0.085	1.4	1.1
									14	< 0.01	0.573	0.053	0.194	0.137	0.97	0.58
									14	0.010	0.659	0.091	0.272	0.211	1.2	0.67
Conklin Michigan Region 5	FN142-05H-A	2005	150 OD	Airblast Conc. Spray	0.159	0	554	0.268								
					0.109	14	548		**7**	0.016	1.38	0.062	0.223	0.231	1.9	1.4
									7	0.022	1.61	0.065	0.218	0.205	**2.1**	**1.6**
									14	0.011	1.38	0.065	0.201	0.275	1.9	1.4
									14	0.027	1.50	0.073	0.265	0.321	2.2	1.5
Conklin Michigan Region 5	FN142-05H-B	2005	150 OD	Airblast Dilute Spray	0.157	0	1967	0.267								
					0.110	14	1973		**7**	0.012	1.22	0.100	0.332	0.368	2.0	1.2
									7	0.012	1.23	0.096	0.356	0.362	2.1	1.2
									14	< 0.01	0.676	0.055	0.236	0.266	1.2	0.69
									14	< 0.01	0.738	0.059	0.231	0.236	1.3	0.75
Marysville California Region 10	FN143-05H-A	2005	150 OD	Airblast Conc. Spray	0.160	0	366	0.270								
					0.110	13	365		**7**	0.078	0.434	0.031	0.011	< 0.01	0.56	0.51
									7	0.089	0.592	0.037	0.022	< 0.01	**0.74**	**0.68**
									14	0.07	0.508	0.04	0.029	< 0.01	0.65	0.58
									14	0.067	0.592	0.04	0.024	< 0.01	0.73	0.66
Marysville California Region 10	FN143-05H-B	2005	150 OD	Airblast Dilute Spray	0.160	0	3662	0.272								
					0.112	13	2262		**7**	0.035	0.529	0.02	< 0.01	< 0.01	0.59	0.56
									7	0.012	0.17	0.02	< 0.01	< 0.01	0.21	0.18
									14	0.016	0.247	0.015	0.023	< 0.01	0.31	0.26
									14	0.058	0.383	0.034	0.023	< 0.01	0.51	0.44

CHERRY Location (City, State, NAFTA Region)	Trial No.	Year	Form	Application					PHI (days)	Residues (mg/kg) expressed as BYI08330 equivalents						
				Method	Rate kg ai/ha	Interval days	Spray Vol L/ha	Total Rate (kg ai/ha		BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.	Parent + Enol
Ephrata Washington Region 11	FN144-05H-A	2005	150 OD	Airblast Conc. Spray	0.158	0	464	0.269								
					0.111	14	465		**7**	0.062	0.868	0.051	0.110	0.038	1.1	0.93
									7	0.035	0.846	0.035	0.090	0.030	1.0	0.88
									14	0.056	0.838	0.051	0.179	0.051	1.2	0.89
									14	0.068	0.818	0.045	0.189	0.056	1.2	0.89
Ephrata Washington Region 11	FN144-05H-B	2005	150 OD	Airblast Dilute Spray	0.158	0	2325	0.269								
					0.111	14	2337		**7**	0.014	1.22	0.052	0.147	0.044	1.5	1.2
									7	0.015	1.29	0.069	0.197	0.063	**1.6**	**1.3**
									14	0.013	0.96	0.052	0.185	0.077	1.3	0.97
									14	0.014	1.08	0.091	0.246	0.098	1.5	1.1
Ephrata Washington Region 11	FN144-05H-C	2005	240 SC	Airblast Conc. Spray	0.160	0	467	0.272								
					0.112	14	465		**7**	0.073	0.487	0.022	0.046	0.018	0.64	0.56
									7	0.061	0.433	0.019	0.044	0.015	0.57	0.49
									14	0.051	0.387	0.014	0.042	0.015	0.51	0.44
									14	0.073	0.576	0.024	0.081	0.026	0.78	0.65
Mosier Oregon Region 11	FN145-05D-A	2005	150 OD	Airblast Conc. Spray	0.157	0	466	0.266								
					0.110	15	407		0	0.992	0.803	0.043	0.073	0.016	1.9	1.8
									0	0.997	0.811	0.044	0.077	0.012	1.9	1.8
									7	0.026	0.832	0.059	0.127	0.018	1.1	0.86
									7	< 0.01	0.251	0.011	0.036	< 0.01	0.32	0.26
									10	< 0.01	0.095	< 0.01	0.03	< 0.01	0.16	0.10
									10	< 0.01	0.052	< 0.01	< 0.01	< 0.01	0.092	0.10
									14	< 0.01	0.055	< 0.01	0.014	< 0.01	0.10	0.065
									14	< 0.01	0.092	< 0.01	0.02	< 0.01	0.14	0.10
									21	< 0.01	0.05	< 0.01	< 0.01	< 0.01	0.062	0.060
									21	< 0.01	0.04	< 0.01	< 0.01	< 0.01	0.057	0.050
Mosier Oregon Region 11	FN145-05D-B	2005	150 OD	Airblast Dilute Spray	0.157	0	2341	0.268								
					0.111	15	2166		**7**	0.018	1.23	0.087	0.200	0.047	1.6	1.2
									7	0.018	1.28	0.065	0.223	0.044	**1.6**	**1.3**
									14	0.010	0.775	0.069	0.262	0.055	1.2	0.78
									14	< 0.01	0.678	0.053	0.222	0.040	1.0	0.78

Berries and Other Small Fruits

Table 68 Residues on whole fruit from the foliar application of spirotetramat to strawberries in glasshouses in Europe (M-263736-01-1, Freitag T.; Eberhardt R.; 2006)

Study No. Trial No. Country Year	Form	Application				PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
		No	Interval Days	kg ai/ha	kg as/hL		BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.	Parent + Enol
RA-2122/04 R 2004 0726 2 0726-04 Germany D-46397 Bocholt (Nordrhein-Westfalen)	100 OD	2	14	0.0960	0.00960	0[1]					0.008	0.17	0.14
						0					0.008	0.23	0.20
						1					0.008	0.26	0.22
						3					0.008	0.23	0.20
						7					0.008	0.28	0.25
						14					0.011	0.22	0.19

Study No. Trial No. Country Year	Form	Application				PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
		No	Interval Days	kg ai/ha	kg as/hL		BYI 08330	BYI083 30 enol	BYI083 30 keto-hydroxy	BYI083 30 mono-hydroxy	BYI083 30 enol-glucoside	Total residue calc.	Parent + Enol
2004													
RA-2122/04 R 2004 0765 3 0765-04 Germany D-46397 Bocholt (Nordrhein-Westfalen) 2004	100 OD	2	14	0.0960	0.00960	0[a] 0 1 3 7 14	0.01 0.04 0.01 0.01 0.01 0.01	0.16 0.22 0.13 0.16 0.15 0.14	0.012 0.012 0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 0.012	0.018 0.022 0.014 0.011 0.010 0.019	0.21 0.30 0.18 0.20 0.19 0.20	0.17 0.26 0.14 0.17 0.16 0.15
RA-2122/04 R 2004 0766 1 0766-04 Germany D-53332 Bornheim - Sechtem (Nordrhein-Westfalen) 2004	100 OD	2	14	0.0960-0.1020	0.01370-0.01530	0[a] 0 1 3 7 14	0.01 0.08 0.06 0.04 0.03 0.02	0.062 0.11 0.15 0.16 0.16 0.071	0.012 0.013 0.014 0.014 0.016 0.014	< 0.012 < 0.012 < 0.012 < 0.012 0.012 0.012	0.008 0.009 0.009 0.013 0.026 0.030	0.10 0.22 0.24 0.23 0.25 0.14	0.072 0.19 0.21 0.20 0.19 0.091
RA-2122/04 R 2004 0768 8 0768-04 France F-82370 Reynies 2004	100 OD	2	14	0.0960	0.00960	0[a] 0 1 3 7 14	0.01 0.04 0.02 0.02 0.01 0.01	0.12 0.14 0.14 0.22 0.28 0.27	0.012 0.012 0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 0.012	0.008 0.008 0.008 0.013 0.014 0.021	0.16 0.21 0.19 0.28 0.33 0.33	0.13 0.18 0.16 0.24 0.29 0.28
RA-2122/04 R 2004 0769 6 0769-04 Germany D-48291 Telgte - Westbevern (Nordrhein-Westfalen) 2004	100 OD	2	14	0.0960	0.00960	0[a] 0 1 3 7	0.03 0.12 0.04 0.03 0.05	0.11 0.16 0.16 0.11 0.21	0.012 0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.008 0.008 0.008 0.008 0.008	0.17 0.31 0.23 0.17 0.29	0.14 0.28 0.20 0.14 0.26
RA-2122/04 R 2004 0771 8 0771-04 Germany D-48291 Telgte - Westbevern (Nordrhein-Westfalen) 2004	100 OD	2	14	0.0960	0.00960	0[a] 0 1 3 7	0.02 0.11 0.06 0.04 0.03	0.075 0.14 0.18 0.16 0.13	0.012 0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.008 0.009 0.009 0.010 0.009	0.13 0.29 0.27 0.23 0.20	0.095 0.25 0.24 0.20 0.16
RA-2122/04 R 2004 0772 6 0772-04 Germany D-49377 Vechta - Langförden (Niedersachsen) 2004	100 OD	2	14	0.0960	0.01600	0[a] 0 1 3 7	0.04 0.13 0.11 0.08 0.08	0.15 0.18 0.21 0.17 0.14	0.012 0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.008 0.008 0.008 0.008 0.008	0.22 0.35 0.35 0.28 0.25	0.19 0.31 0.32 0.25 0.22

Study No. Trial No. Country Year	Form	Application				PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
		No	Interval Days	kg ai/ha	kg as/hL		BYI 08330	BYI083 30 enol	BYI083 30 keto-hydroxy	BYI083 30 mono-hydroxy	BYI083 30 enol-glucosid e	Total residue calc.	Parent + Enol
RA-2122/04 R 2004 0773 4 0773-04 France F-84200 Carpentras (Provence-Cote D'azur) 2004	100 OD	2	14	0.0960	0.016 00	0[a] 0 1 3 7	0.01 0.03 0.02 0.02 0.02	0.18 0.22 0.23 0.25 0.21	0.012 0.013 0.013 0.013 0.013	0.012 0.012 0.012 0.012 0.012	0.008 0.008 0.008 0.008 0.009	0.23 0.29 0.28 0.30 0.26	0.19 0.25 0.25 0.27 0.23

[a] Before final treatment.

Table 69 Residues on whole fruit from the foliar application of spirotetramat to strawberries in fields in Europe (M-262423-01-1, Helfrich P.; 2006; M-262418-02-2, Freitag T.; Helfrich P.; 2006)

Trial No. Country Year	Form.	Application				PHI (days)	Residues (mg/kg) expressed as BYI08330 equivalents						
		No.	Interval	Rate (kg ai/ha)	Rate (kg ai/hl)		BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.	Parent + Enol
NORTH EUROPE													
RA-2120/04 R 2004 0724 6 0724-04 Germany D-46397 Bocholt (Nordrhein-Westfalen) 2004	100 OD	2	14	0.0960	0.00960	0[a] 0 1 3 7 14	0.01 0.01 0.01 0.01 0.01 < 0.01	0.14 0.064 0.084 0.12 0.14 0.060	0.012 0.012 0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.008 0.008 0.008 0.008 0.008 0.008	0.18 0.11 0.12 0.16 0.18 0.10	0.15 0.074 0.094 0.13 0.15 0.061
RA-2120/04 R 2004 0759 9 0759-04 Germany D-48291 Telgte - Westbevern (Nordrhein-Westfalen) 2004	100 OD	2	14	0.0960	0.00960	0[a] 0 1 3 7 14	< 0.01 0.02 0.01 0.01 0.01 < 0.01	0.039 0.033 0.050 0.088 0.12 0.049	0.012 0.012 0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.008 0.008 0.008 0.008 0.008 0.008	0.060 0.078 0.090 0.13 0.16 0.079	0.040 0.053 0.060 0.098 0.013 0.059
RA-2120/04 R 2004 0760 2 0760-04 France F-80700 Cremery (Picardie) 2004	100 OD	2	14	0.0960	0.01600	0[a] 0 1 3 7 14	0.01 0.05 0.02 0.02 0.01 0.01	0.083 0.11 0.16 0.20 0.19 0.14	0.012 0.012 0.012 0.012 0.014 0.019	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 0.012	0.013 0.014 0.016 0.014 0.025 0.033	0.13 0.20 0.22 0.26 0.25 0.21	0.093 0.16 0.18 0.22 0.20 0.15
RA-2120/04 R 2004 0761 0 0761-04 France F-27190 Glisolles (Haute-Normandie) 2004	100 OD	2	14	0.0960	0.01600	0[a] 0 1 3 7 14	< 0.01 0.14 0.08 0.07 0.02 0.01	< 0.012 0.086 0.078 0.11 0.12 0.060	< 0.012 < 0.012 < 0.012 0.012 0.012 0.013	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 0.008 0.008 0.008 0.009 0.012	< 0.055 0.26 0.19 0.20 0.17 0.10	< 0.022 0.23 0.16 0.18 0.14 0.61

Trial No. Country Year	Form.	Application				PHI (days)	Residues (mg/kg) expressed as BYI08330 equivalents						
		No.	Interval	Rate (kg ai/ha)	Rate (kg ai/hl)		BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.	Parent + Enol
SOUTH EUROPE													
RA-2121/04 R 2004 0725 4 0725-04 Italy I-44046 San Martino (FE) (E - Romagna) 2004	100 OD	2	14	0.0960	0.01600	0[a] 0 1 3 7 14	< 0.01 0.04 0.02 0.02 0.01 < 0.01	< 0.012 0.020 0.050 0.080 0.075 0.029	< 0.012 < 0.012 0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 0.012 < 0.012	< 0.008 < 0.008 0.008 0.012 0.034 0.020	< 0.055 0.057 0.10 0.14 0.14 0.083	< 0.022 0.060 0.070 0.10 0.085 0.039
RA-2121/04 R 2004 0762 9 0762-04 Italy I-40026 Imola (Bologna) (Emilia - Romagna) 2004	100 OD	2	14	0.0960	0.01600	0[a] 0 1 3 7 14	< 0.01 0.05 0.02 0.01 < 0.01 0.01	0.037 0.070 0.080 0.11 0.066 0.042	0.012 0.015 0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 0.008 < 0.008 0.008 0.008 0.014	0.079 0.16 0.13 0.15 0.11 0.088	0.038 0.12 0.10 0.12 0.076 0.043
RA-2121/04 R 2004 0763 7 0763-04 Spain E-08396 Sant Cebrià de Vallalta (Cataluña) 2004	100 OD	2	14	0.0960	0.00960-0.01200	0[a] 0 1 3 7	0.01 0.03 0.03 0.02 0.01	0.021 0.060 0.089 0.090 0.069	0.012 0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.008 0.008 0.008 0.009 0.011	0.063 0.12 0.15 0.14 0.11	0.031 0.090 0.12 0.11 0.079
RA-2121/04 R 2004 0764 5 0764-04 France F-69690 Courzieu (Rhone-Alpes) 2004	100 OD	2	14	0.0960	0.01370	0[a] 0 1 3 7 15	0.01 0.10 0.06 0.02 0.01 < 0.01	0.052 0.058 0.049 0.061 0.019 0.012	0.012 0.015 0.015 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.011 0.012 0.008 0.008 0.008 0.008	0.095 0.19 0.14 0.11 0.061 < 0.055	0.062 0.16 0.11 0.081 0.020 0.022

[a] Before final treatment.

Table 70 Residues on whole fruit from the foliar application of spirotetramat to grapes in Southern Europe (M-263864-01-1, Schöning R.; Eberhardt R.; 2006; M-270088-01-1, Ballesteros C.; Gateaud L.; 2006; M-273708-01-1, Ballesteros C.; Gateaud L.; 2006)

Country Trial No. Country Year	Form	Application				PHI (days	Residues (mg/kg) expressed as BYI08330 equivalents						
		No.	Interval (days	kg ai/ha	kg ai/hL		BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.	Parent + Enol
RA-2049/04 R 2004 0196 5 0196-04 Italy I-40128 Bologna (Emilia – Romagna) 2004	OD 100	2	14	0.0960	0.00640	0[a] 0 3 7 14 21 bunch	0.03 0.37 0.14 0.15 0.17 0.12	0.040 0.10 0.11 0.17 0.095 0.059	0.060 0.078 0.047 0.095 0.10 0.074	0.012 0.012 0.012 0.012 0.012 0.012	0.041 0.042 0.031 0.11 0.16 0.16	0.18 0.61 0.34 0.54 0.53 0.43	0.070 0.47 0.25 0.32 0.26 0.18
						7 14 21 berry	0.14 0.12 0.08	0.15 0.092 0.041	0.085 0.072 0.060	0.012 0.012 0.012	0.10 0.18 0.16	0.48 0.48 0.35	0.29 0.21 0.12

Country Trial No. Country Year	Form	Application				PHI (days	Residues (mg/kg) expressed as BYI08330 equivalents						
		No.	Interval (days	kg ai/ha	kg ai/hL		BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.	Parent + Enol
A-2049/04 R 2004 0197 3 0197-04 Italy I-41030 San Prospero (MO) (Emilia – Romagna) 2004	OD 100	2	14	0.0960	0.00640	0[a] 0 7 14 21 bunch	0.14 0.20 0.20 0.03 0.03	0.030 0.042 0.045 0.022 0.022	0.025 0.027 0.045 0.020 0.024	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.020 0.018 0.026 0.019 0.030	0.23 0.29 0.33 0.10 0.12	0.17 0.24 0.24 0.052 0.052
						7 14 21 berry	0.17 0.06 0.03	0.037 0.035 0.022	0.031 0.038 0.020	< 0.012 < 0.012 < 0.012	0.026 0.038 0.030	0.28 0.18 0.11	0.21 0.095 0.052
RA-2049/04 R 2004 0198 1 0198-04 Greece GR-20006 Korinthos (Peloponnesos) 2004	OD 100	2	14	0.0960	0.00640	0[a] 0 3 7 14 21 bunch	0.05 0.17 0.15 0.15 0.08 0.10	0.064 0.092 0.096 0.11 0.11 0.11	0.012 0.015 0.015 0.018 0.012 0.016	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.022 0.023 0.027 0.033 0.043 0.054	0.16 0.31 0.30 0.32 0.25 0.29	0.11 0.20 0.25 0.26 0.19 0.21
						0 0 3 7 14 21 berry	0.05 0.14 0.12 0.16 0.08 0.08	0.066 0.089 0.081 0.11 0.11 0.11	0.012 0.012 0.013 0.018 0.013 0.014	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.023 0.025 0.025 0.037 0.045 0.051	0.16 0.28 0.25 0.34 0.26 0.26	0.12 0.23 0.20 0.27 0.19 0.19
RA-2049/04 R 2004 0201 5 0201-04 Spain E-30550 Cieza (Murcia) 2004	OD 100	2	14	0.0960	0.00640	0[a] 0 3 7 15 21 bunch	0.22 0.32 0.45 0.37 0.20 0.21	0.030 0.035 0.044 0.039 0.021 0.018	0.033 0.022 0.049 0.040 0.024 0.021	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.028 0.017 0.033 0.029 0.027 0.030	0.32 0.41 0.59 0.49 0.28 0.29	0.48 0.36 0.49 0.41 0.22 0.23
						0 0 3 7 15 21 berry	0.22 0.52 0.49 0.30 0.47 0.33	0.031 0.050 0.040 0.027 0.047 0.031	0.032 0.034 0.050 0.025 0.054 0.035	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.028 0.027 0.031 0.022 0.058 0.054	0.32 0.64 0.63 0.38 0.64 0.46	0.25 0.57 0.53 0.33 0.52 0.36
RA-2049/04 R 2004 0202 3 0202-04 France F-31 340 Vacquiers (Midi-Pyrenees) 2004	OD 100	2	14	0.0960	0.06400	0[a] 0 7 14 21	0.07 0.19 0.10 0.11 0.09	0.033 0.041 0.037 0.044 0.040	0.012 0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.023 0.024 0.032 0.063 0.062	0.15 0.28 0.19 0.24 0.21	0.10 0.23 0.14 0.15 0.13
						0 0 7 14 21	0.06 0.18 0.09 0.13 0.09	0.030 0.034 0.032 0.055 0.038	0.012 0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 0.012 < 0.012	0.020 0.024 0.033 0.074 0.063	0.13 0.26 0.17 0.28 0.21	0.09 0.21 0.12 0.18 0.13
RA-2049/04 R 2004 0203 1 0203-04 Greece GR-57011 Anchialos (Northern Greece – Macedonia) 2004	OD 100	2	14	0.0960	0.00640	0[a] 0 7 14 21	0.03 0.14 0.15 0.05 0.05	0.024 0.023 0.057 0.042 0.034	0.012 0.012 0.018 0.012 0.013	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.028 0.027 0.060 0.040 0.043	0.099 0.21 0.30 0.15 0.16	0.054 0.16 0.21 0.092 0.084
						0 0 7 14 21	0.10 0.09 0.11 0.15 0.02	0.043 0.043 0.045 0.022 0.022	0.020 0.017 0.014 0.012 0.012	0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.093 0.082 0.036 0.022 0.031	0.26 0.24 0.21 0.22 0.096	0.14 0.13 0.16 0.17 0.042
RA-2034/05	OD	2	14			0[a] 0	0.09 0.39	0.029 0.038	0.013 < 0.012	< 0.01 < 0.012	0.02 0.011	0.16 0.47	0.12 0.43

Country Trial No. Country Year	Form	Application				PHI (days	Residues (mg/kg) expressed as BYI08330 equivalents						
		No.	Interval (days	kg ai/ha	kg ai/hL		BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.	Parent + Enol
R 2005 0157 9 0157-05 Spain E-46340 Campo Arcis (Requena) (Comunidad Valenciana) 2005	150			0.0960	0.01200	3 7 14 21 bunch	0.32 0.09 0.09 0.07	0.03 0.03 0.03 0.02	< 0.012 0.02 0.02 0.02	< 0.01 < 0.01 < 0.01 < 0.01	0.01 0.02 0.03 0.03	0.40 0.17 0.17 0.15	0.35 0.12 0.12 0.09
						7 14 21 berry	0.11 0.07 0.06	0.03 0.03 0.02	< 0.012 0.02 0.02	< 0.01 < 0.01 < 0.01	0.02 0.03 0.03	0.20 0.17 0.15	0.14 0.10 0.08
RA-2034/05 R 2005 0158 7 0158-05 Italy I-40128 Bologna (Emilia – Romagna) 2005	OD 150	2	14	0.0960	0.00960	0[a] 0 3 7 14 21 bunch	0.14 0.34 0.19 0.11 0.13 0.05	0.06 0.06 0.12 0.22 0.17 0.14	0.03 0.02 0.03 0.028 0.04 0.03	< 0.01 < 0.01 < 0.01 0.014 < 0.012 < 0.012	0.040 0.04 0.04 0.082 0.13 0.15	0.29 0.48 0.39 0.45 0.48 0.40	0.20 0.40 0.31 0.33 0.30 0.19
						7 14 21 berry	0.19 0.16 0.03	0.20 0.21 0.12	0.040 0.04 0.03	0.016 < 0.012 < 0.012	0.11 0.15 0.15	0.55 0.58 0.36	0.39 0.37 0.15
RA-2036/05 R 2005 0161 7 0161-05 France F-86380 Vendeuvre Du Poizou (Poitou-Charentes) 2005	SC 048	2	14	0.0960	0.06000	0 7 14 21 bunch	0.21 0.20 0.17 0.14	< 0.012 0.012 0.015 0.012	< 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 0.011 0.015	0.25 0.26 0.22 0.20	0.22 0.21 0.18 0.15
						7 14 21 berry	0.14 0.16 0.12	< 0.012 < 0.012 0.012	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	0.009 0.008 0.017	0.18 0.20 0.17	0.15 0.17 0.13
RA-2036/05 R 2005 0162 5 0162-05 Italy I-40128 Bologna (Emilia – Romagna) 2005	SC 048	2	14	0.0960	0.00960	0 7 14 21 bunch	0.11 0.08 0.10 0.03	0.027 0.13 0.14 0.099	< 0.012 0.019 0.026 0.018	< 0.012 < 0.012 < 0.012 < 0.012	0.014 0.052 0.084 0.11	0.18 0.30 0.36 0.27	0.14 0.21 0.24 0.13
						7 14 21 berry	0.08 0.07 0.03	0.14 0.15 0.10	0.015 0.021 0.018	< 0.012 < 0.012 < 0.012	0.063 0.095 0.11	0.31 0.35 0.27	0.22 0.22 0.13

[a] Before final treatment.

Table 71 Residues on grape bunches from the foliar application of spirotetramat to grapes in the USA (M-277324-01-1**,** Mosier, D.; 2006)

Location (City, State, and NAFTA Region)	Trial No.	Year	Form	Application			Residues (mg/kg) expressed as BYI08330 equivalents							
				Rate kg ai/ha	Interval days	Spray Volume L/ha	PHI days	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total Residue of BYI 08330 calc.	Parent + Enol
Orefield, Pennsylvania	FN212-05H	2005	150 OD	0.111	0	640	7 7 14 14	0.094 0.091 0.013 < 0.01	0.106 0.120 0.029 0.019	0.013 0.011 < 0.01 < 0.01	0.011 < 0.01 < 0.01 < 0.01	0.095 0.089 0.030 0.023	0.32 **0.32** 0.082 0.072	0.20 **0.21** 0.042 0.029
				0.112	29	654								
Dundee, New York	FN213-05H-	2005	150 OD	0.113	0	474	7	0.126	0.378	0.012	0.036	0.111	0.66	0.50
				0.112	29	470								

Location (City, State, and NAFTA Region)	Trial No.	Year	Form	Application			Residues (mg/kg) expressed as BYI08330 equivalents							
				Rate kg ai/ha	Interval days	Spray Volume L/ha	PHI days	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total Residue of BYI 08330 calc.	Parent + Enol
	A						7 14 14	0.174 0.080 0.133	0.404 0.234 0.331	0.019 < 0.01 0.013	0.046 0.038 0.042	0.144 0.109 0.162	**0.79** 0.47 0.68	**0.58** 0.31 0.46
Dundee, New York	FN213-05H-B	2005	240 SC	0.114	0	473	7 7	0.245 0.157	0.194 0.143	0.016 0.012	0.018 0.018	0.074 0.054	**0.55** 0.38	**0.44** 0.30
				0.113	29	470	14 14	0.077 0.125	0.115 0.141	0.014 0.010	0.014 0.024	0.050 0.092	0.27 0.39	0.19 0.27
Fresno, California	FN214-05D	2005	150 OD	0.109	0	521								
				0.110	28	524	3 3 7 7 10 10 14 14 21 21	0.055 0.074 0.066 0.076 0.073 0.046 0.102 0.103 0.062 0.062	0.072 0.078 0.093 0.107 0.095 0.088 0.163 0.161 0.100 0.116	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.028 0.032 0.037 0.038 0.025 0.021 0.057 0.064 0.058 0.055	0.18 0.19 0.22 0.24 0.21 0.18 0.34 **0.36** 0.24 0.26	0.13 0.15 0.16 0.18 0.17 0.13 0.26 **0.26** 0.16 0.18
Porterville, California	FN215-05H-A	2005	150 OD	0.110	0	634								
				0.110	28	642	7 7 14 14	0.133 0.189 0.136 0.134	0.044 0.048 0.054 0.063	0.020 0.016 0.014 0.016	< 0.01 < 0.01 < 0.01 < 0.01	0.020 0.029 0.025 0.025	0.23 **0.29** 0.24 0.25	0.18 **0.24** 0.19 0.20
Porterville, California	FN215-05H-B	2005	240 SC	0.110	0	632								
				0.110	28	642	7 7 14 14	0.258 0.125 0.118 0.220	0.079 0.026 0.077 0.088	0.027 0.007 0.019 0.022	0.0024 0.0024 0.0024 0.0024	0.042 0.016 0.022 0.025	**0.41** 0.18 0.24 0.34	**0.34** 0.15 0.14 0.31
Sanger, California	FN216-05H	2005	150 OD	0.110	0	570								
				0.111	28	552	7 7 14 14	0.062 0.058 0.029 0.037	0.077 0.076 0.043 0.055	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	0.080 0.108 0.058 0.107	0.24 **0.26** 0.15 0.23	0.14 **0.14** 0.072 0.092
Artois, California	FN217-05H	2005	150 OD	0.110	0	604								
				0.109	29	611	7 7 13 13	0.035 0.041 0.034 0.042	0.018 0.016 0.019 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	0.038 0.032 0.060 0.038	0.11 **0.11** 0.13 0.10	0.053 **0.057** 0.053 0.052
Orcutt, California	FN218-05H	2005	150 OD	0.112	0	636								
				0.110	30	623	7 7 14 14	0.046 0.061 0.064 0.074	0.148 0.258 0.223 0.225	0.013 0.019 0.022 0.018	< 0.01< 0.01 < 0.01 < 0.01	0.0915 0.127 0.170 0.148	0.31 **0.48** 0.54 0.48	0.19 **0.32** 0.29 0.30
Hughson, California	FN219-05H	2005	150 OD	0.110	0	464								
				0.109	29	458	7 7 14 14	0.156 0.203 0.194 0.181	0.174 0.175 0.295 0.197	0.011 0.013 0.028 0.020	< 0.01 < 0.01 < 0.01 < 0.01	0.089 0.099 0.127 0.102	0.44 0.50 **0.65** 0.51	0.33 0.38 **0.49** 0.38
Fresno, California	FN220-05H	2005	150 OD	0.112	0	473								
				0.112	30	470	7 7 14 14	0.114 0.199 0.203 0.087	0.079 0.082 0.113 0.063	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	0.036 0.035 0.059 0.036	0.25 0.34 **0.40** 0.21	0.19 0.28 **0.31** 0.15

Location (City, State, and NAFTA Region)	Trial No.	Year	Form	Application			Residues (mg/kg) expressed as BYI08330 equivalents							
				Rate kg ai/ha	Inter-val days	Spray Volume L/ha	PHI days	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total Residue of BYI 08330 calc.	Parent + Enol
Fresno, California	FN220 A-05H	2005	240 SC	0.112	0	472								
				0.111	30	471	7	0.092	0.136	< 0.01	< 0.01	0.060	**0.32**	**0.23**
							7	0.099	0.084	< 0.01	< 0.01	0.041	0.25	0.18
							14	0.052	0.121	< 0.01	< 0.01	0.052	0.25	0.17
							14	0.068	0.119	< 0.01	< 0.01	0.066	0.27	0.19
Paso Robles, California	FN221 -05H	2005	150 OD	0.110	0	575								
				0.110	30	612	7	0.149	0.116	0.023	< 0.01	0.083	0.38	0.26
							7	0.180	0.151	0.024	< 0.01	0.106	0.47	0.33
							14	0.332	0.243	0.040	< 0.01	0.144	0.77	0.58
							14	0.369	0.256	0.045	< 0.01	0.163	**0.85**	**0.62**
Ephrata, Washington	FN222 -05H	2005	150 OD	0.109	0	460								
				0.109	30	472	7	0.494	0.503	0.206	< 0.01	0.077	**1.3**	**1.0**
							7	0.209	0.344	0.120	< 0.01	0.074	0.75	0.55
							14	0.246	0.347	0.115	< 0.01	0.074	0.79	0.59
							14	0.216	0.369	0.090	< 0.01	0.088	0.77	0.58
Hood River, Oregon	FN223 -05H	2005	150 OD	0.110	0	471								
				0.110	28	509	7	0.142	0.158	0.015	< 0.01	0.053	0.37	0.30
							7	0.128	0.167	0.011	< 0.01	0.048	0.37	0.30
							14	0.130	0.232	0.022	0.012	0.084	**0.48**	**0.36**
							14	0.151	0.155	0.018	< 0.01	0.064	0.40	0.31

Bulb Vegetables

Table 72 Residues on bulb onions from the foliar application of spirotetramat in Europe (M-259115-01-1, Cavaille C.; 2005; M-269474-01-1, Ballesteros C.; Gateaud L.; 2006; M-259663-01-1, Cavaille C.; 2005; M-269869-01-1, Ballesteros C.; Gateaud L.; 2006)

Study No./ Country Year	Form	Application				PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
		No	Spray inter-val days	kg ai/ha	kg ai/hL		BYI 08330	BYI08 330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI0833 0 enol-glucoside	Total residue calc.	Parent + Enol
NORTH EUROPE													
RA-2131/04 R 2004 0854 4 0854-04 Germany Langenfeld (Hof Weitz) 2004	100 OD	4	7	0.0720	0.012	0	0.04	0.16	< 0.012	< 0.012	< 0.008	0.22	0.20
						7	< 0.01	0.16	< 0.012	< 0.012	< 0.008	0.20	0.17
						14	< 0.01	0.051	< 0.012	< 0.012	< 0.008	0.085	0.52
						21	< 0.01	0.060	< 0.012	< 0.012	< 0.008	0.10	0.070
RA-2131/04 R 2004 0855 2 0855-04 France Champien (Picardie) 2004	100 OD	4	7	0.0720	0.018	0	0.03	0.061	< 0.012	< 0.012	< 0.008	0.10	0.091
						7	< 0.01	0.055	< 0.012	< 0.012	< 0.008	0.097	0.056
						14	< 0.01	0.045	< 0.012	< 0.012	< 0.008	0.087	0.046
						21	< 0.01	0.052	< 0.012	< 0.012	< 0.008	0.094	0.062
RA-2131/04 R 2004 0856 0 0856-04 Germany Brüggen (Nordrhein-Westfalen)	100 OD	4	7	0.0720	0.014	0[a]	0.01	0.061	< 0.012	< 0.012	< 0.008	0.10	0.071
						0	0.04	0.063	< 0.012	< 0.012	< 0.008	0.13	0.10
						4	0.02	0.066	< 0.012	< 0.012	< 0.008	0.11	0.086
						7	< 0.01	0.055	< 0.012	< 0.012	< 0.008	0.097	0.065
						14	< 0.01	0.066	< 0.012	< 0.012	< 0.008	0.099	0.067
						21	< 0.01	0.067	< 0.012	< 0.012	< 0.008	0.13	0.077

Study No./ Country Year	Form	Application				PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
		No	Spray interval days	kg ai/ha	kg ai/hL		BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.	Parent + Enol
2004													
RA-2131/04 R 2004 0857 9 0857-04 France Epone (Ile-de-France) 2004	100 OD	4	7	0.0720	0.018	0[a] 0 3 7 14 21	< 0.01 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.047 0.052 0.052 0.071 0.058 0.052	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.089 0.094 0.094 0.11 0.10 0.094	0.057 0.062 0.062 0.081 0.068 0.062
RA-2040/05 R 2005 0212 5 0212-05 United Kingdom Thetford (Suffolk) 2005	150 OD	4	8/6/7	0.0720	0.024	0 8	0.01 < 0.01	0.11 0.12	< 0.012 < 0.012	< 0.012 < 0.012	< 0.008 < 0.008	0.15 0.16	0.12 0.13
RA-2040/05 R 2005 0214 1 0214-05 France Champien (Picardie) 2005	150 OD	4	7	0.0720	0.024	0 7	0.02 0.01	< 0.012 < 0.012	< 0.012 < 0.012	< 0.012 < 0.012	< 0.008 < 0.008	< 0.055 < 0.055	0.032 < 0.022
RA-2040/05 R 2005 0216 8 0216-05 Germany Langenfeld-Reusrath (Nordrhein-Westfalen) 2005	150 OD	4	7	0.0720	0.024	0[a] 0 3 7 14 21	< 0.01 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.042 0.043 0.042 0.042 0.041 0.038	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.084 0.085 0.084 0.084 0.083 < 0.055	0.052 0.053 0.052 0.052 0.052 0.039
RA-2040/05 R 2005 0217 6 0217-05 Germany Bornheim (Nordrhein-Westfalen) 2005	150 OD	4	7	0.0720	0.018	0[1] 0 3 7 15 21	< 0.01 0.04 0.01 < 0.01 < 0.01 < 0.01	0.020 0.038 0.040 0.050 0.040 0.031	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.062 0.11 0.082 0.092 0.082 0.074	0.030 0.078 0.050 0.060 0.050 0.042
SOUTH EUROPE													
RA-2132/04 R 2004 0858 7 0858-04 France Chazay d'Azergues (Rhone-Alpes) 2004	100 OD	4	7	0.0720	0.014	0 7 14 21	< 0.01 < 0.01 < 0.01 < 0.01	0.040 0.021 0.024 0.022	< 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008	0.082 0.063 0.066 0.064	0.050 0.031 0.034 0.032
RA-2132/04 R 2004 0859 5 0859-04 Greece Thiva (Central Greece) 2004	100 OD	4	7	0.0720	0.012	0 7 14 21	< 0.01 < 0.01 < 0.01 < 0.01	0.064 0.081 0.061 0.055	< 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008	0.096 0.12 0.10 0.20	0.074 0.091 0.071 0.065
RA-2132/04 R 2004 0860 9 0860-04 Italy	100 OD	4	7	0.0720	0.018	0[a] 0 3 7 14	0.02 0.02 < 0.01 < 0.01 < 0.01	0.042 0.038 0.050 0.052 0.052	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.094 0.090 0.092 0.087 0.087	0.062 0.058 0.060 0.062 0.062

Study No./ Country Year	Form	Application				PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
		No	Spray interval days	kg ai/ha	kg ai/hL		BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.	Parent + Enol
Bologna (Emilia - Romagna) 2004						21	< 0.01	0.056	< 0.012	< 0.012	< 0.008	0.088	0.066
RA-2132/04 R 2004 0861 7 0861-04 Spain Alginet (Valencia) (Comunidad Valenciana) 2004	100 OD	4	7/8/6	0.0720	0.014	0[a] 0 3 7 14 21	< 0.01 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.090 0.083 0.11 0.13 0.12 0.11	< 0.012 < 0.012 < 0.012 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.13 0.12 0.15 0.17 0.16 0.15	0.10 0.093 0.12 0.14 0.13 0.12
RA-2041/05 R 2005 0225 7 0225-05 Italy Settepolesini (Fe) 44012 (Emilia - Romagna) 2005	150 OD	4	7	0.0720	0.012	0 7	< 0.01 < 0.01	0.030 0.034	< 0.012 < 0.012	< 0.012 < 0.012	< 0.008 < 0.008	0.072 0.076	0.040 0.044
RA-2041/05 R 2005 0226 5 0226-05 Spain Malgrat de Mar (Cataluña) 2005	150 OD	4	9/6/8	0.0720 - 0.0777	0.012 - 0.014	0 7	0.02 0.02	0.032 0.037	< 0.012 0.017	< 0.012 < 0.012	< 0.008 < 0.008	0.084 0.089	0.052 0.057
RA-2041/05 R 2005 0227 3 0227-05 France Saint Jory (Midi-Pyrenees) 2005	150 OD	4	7/6/7	0.0720	0.012	0[a] 0 3 7 14 21	< 0.01 0.01 0.01 < 0.01 < 0.01 < 0.01	0.037 0.051 0.14 0.10 0.050 0.034	< 0.012 0.015 < 0.012 0.013 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.079 0.096 0.18 0.14 0.092 0.076	0.047 0.061 0.15 0.11 0.060 0.044
RA-2041/05 R 2005 0228 1 0228-05 Spain Alginet (Comunidad Valenciana) 2005	150 OD	4	7	0.0720	0.014	0[a] 0 3 7 14 21	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055 < 0.055 < 0.055 < 0.055 < 0.055 < 0.055	< 0.22 < 0.22 < 0.22 < 0.22 < 0.22 < 0.22

[a] Before final treatment.

Brassica

Table 73 Residues on broccoli and cauliflower from the foliar application of spirotetramat to flowerhead brassicas in Europe (M-259580-01-1, Zimmer D.; Freitag T.; 2005; M-259272-01-1, Bardel P.; Freitag T.; 2006; M-258975-01-1, Zimmer D.; Freitag T.; 2005; M-275226-01-1, Freitag T., Wieland K. 2006; M-275233-01-1, Freitag T., Wieland K., 2006)

Study No./ Trial No./ Country/ Year	Crop	Form.	Application				PHI	Residues (mg/kg) expressed as BYI08330 equivalents						
			No.	Spray interval days	kg ai/ha	kg ai/hL	days	BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.	Parent + Enol
NORTH EUROPE														
RA-2022/04 R 2004 0105 1 0105-04 Germany Langenfeld (Weitz) 2004	Broccoli	OD 100	3	7	0.0720	0.02400	0[a] 0 3 7 13	< 0.01 0.08 0.07 0.01 0.01	0.17 0.17 0.20 0.14 0.097	0.21 0.22 0.28 0.20 0.12	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.013 0.013 0.016 0.012 0.008	0.42 0.50 0.58 0.37 0.25	0.18 0.25 0.27 0.15 0.11
RA-2022/04 R 2004 0108 6 0108-04 United Kingdom Rollesby (Norfolk) 2004	Broccoli	OD 100	3	7	0.0720 - 0.0774	0.02396 - 0.02400	0[a] 0 3 7 14 21	0.01 0.24 0.09 < 0.01 < 0.01 < 0.01	0.29 0.48 0.28 0.29 0.18 0.15	0.067 0.14 0.13 0.13 0.10 0.048	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.009 0.008 0.009 0.008 0.008 0.008	0.39 0.88 0.52 0.45 0.31 0.23	0.30 0.72 0.37 0.30 0.19 0.16
RA-2023/04 R 2004 0109 4 0109-04 Germany Langenfeld (Weitz)	Cauliflower	OD 100	3	7	0.0720	0.02400	0[a] 0 3 7 13	< 0.01 0.02 < 0.01 < 0.01 < 0.01	0.074 0.033 0.055 0.019 0.013	0.20 0.24 0.34 0.28 0.14	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.008 0.011 0.010 0.010 0.008	0.30 0.32 0.43 0.32 0.17	0.084 0.053 0.065 0.020 0.014
RA-2023/04 R 2004 0110 8 0110-04 France Criquebeuf sur Seine (Haute-Normandie)	Cauliflower	OD 100	3	7	0.0720	0.02400	0[a] 0 3 7 14 21	< 0.01 0.01 0.02 < 0.01 < 0.01 < 0.01	0.035 0.079 0.077 0.14 0.15 0.12	0.034 0.048 0.046 0.069 0.061 0.076	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.008 0.008 0.008 0.008 0.008 0.008	0.099 0.16 0.17 0.23 0.23 0.22	0.045 0.080 0.097 0.15 0.16 0.13
RA-2062/05 R 2005 0363 6 0363-05 Germany Leichlingen (Nordrhein-Westfalen)	Broccoli	150 OD	3	14	0.0720	0.01440	-14 -11 0[a] 0 3 7 14 21	0.57 0.19 0.01 0.10 0.01 < 0.01 < 0.01 < 0.01	0.25 0.24 0.073 0.26 0.14 0.18 0.089 0.092	0.10 0.18 0.074 0.17 0.13 0.15 0.047 0.038	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 0.019 0.011 0.008 0.021 0.032 0.011 0.011	0.94 0.64 0.18 0.56 0.33 0.39 0.17 0.16	0.82 0.43 0.083 0.36 0.15 0.19 0.099 0.10
RA-2062/05 R 2005 0364 4 0364-05 France F-80200 Ennemain (Picardie)	Broccoli	150 OD	3	14	0.0720	0.01440	-14 -11 0 3 7 14	0.09 0.03 0.11 0.01 0.01 0.01	0.28 0.12 0.078 0.048 0.046 0.033	0.12 0.082 0.047 0.032 0.025 0.022	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 0.018 0.008 < 0.008 < 0.008 0.008	0.49 0.26 0.26 0.10 0.091 0.083	0.37 0.15 0.19 0.058 0.044
RA-2062/05 R 2005 1017 9 1017-05 Germany Meckenbeuren (Baden-Württemberg)	Broccoli	150 OD	2	14	0.0720	0.01200	-14 -11	0.07 0.01	0.15 0.18	0.099 0.098	< 0.012 < 0.012	0.008 0.008	0.34 0.31	0.22 0.19

Study No./ Trial No./ Country/ Year	Crop	Form.	Application				PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
			No.	Spray interval days	kg ai/ha	kg ai/hL		BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.	Parent + Enol
RA-2062/05 R 2005 0365 2 0365-05 Germany Schauernheim (Rheinland-Pfalz)	Cauliflower	150 OD	3	14	0.0720	0.01440	-14 -11 0[a] 0 3 7 14 21	0.01 < 0.01 < 0.01 0.02 0.02 0.02 0.01 < 0.01	0.11 0.15 0.091 0.13 0.14 0.13 0.12 0.086	0.027 0.029 0.023 0.048 0.040 0.031 0.034 0.030	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 0.008 0.008 < 0.008 0.008 0.008	0.16 0.21 0.14 0.22 0.21 0.19 0.18 0.13	0.12 0.16 0.10 0.15 0.16 0.15 0.13 0.096
RA-2062/05 R 2005 1047 0 1047-05 United Kingdom Ipswich (Suffolk)	Cauliflower	150 OD	3	14/21	0.0720	0.01440	-21 -19 0 3 7 13	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.079 0.12 0.23 0.24 0.31 0.25	0.012 0.012 0.036 0.059 0.029 0.039	< 0.012 0.012 < 0.012 < 0.012 < 0.012 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.10 0.16 0.28 0.31 0.35 0.31	0.089 0.13 0.24 0.25 0.32 0.26
SOUTH EUROPE														
RA-2024/04 R 2004 0111 6 0111-04 Italy Zapponeta (FG) (Puglia)	Broccoli	OD 100	3	7	0.0720	0.0090	0[a] 0 3 7 14	0.04 0.13 0.02 0.02 0.01	0.13 0.19 0.20 0.31 0.25	0.069 0.094 0.080 0.089 0.068	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 0.008 < 0.008 0.008 0.008	0.26 0.43 0.32 0.44 0.35	0.17 0.32 0.22 0.33 0.26
RA-2025/04 R 2004 0112 4 0112-04 France Fenouillet (Midi-Pyrenees)	Cauliflower	OD 100	3	7	0.0720	0.01440	0[a] 0 3 7 14 20	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.075 0.095 0.077 0.13 0.13 0.11	0.067 0.078 0.081 0.10 0.074 0.067	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.008 0.008 0.008 0.008 0.008 0.008	0.17 0.20 0.18 0.26 0.22 0.21	0.085 0.10 0.087 0.14 0.14 0.12
RA-2063/05 R 2005 0360 1 0360-05 Italy Manfredonia (Foggia) (Puglia)	Broccoli	150 OD	3	14	0.0720	0.01200	-14 -11 0[a] 0 3 8 14 20	0.08 0.06 0.01 0.11 0.01 0.01 0.01 < 0.01	0.11 0.099 0.11 0.15 0.11 0.12 0.13 0.087	0.037 0.036 0.025 0.043 0.029 0.035 0.036 0.026	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 0.008 0.008 0.008 0.008 0.008 0.008 0.011	0.25 0.23 0.17 0.33 0.18 0.19 0.21 0.14	0.19 0.16 0.12 0.26 0.12 0.13 0.14 0.097
RA-2063/05 R 2005 0362 8 0362-05 Spain Gava (Cataluña)	Cauliflower	150 OD	3	14	0.0720	0.01200	0[a] 0 3 7 -14[b] -11[b]	0.01 0.13 0.01 < 0.01 1.0 0.06	0.039 0.085 0.070 0.084 0.23 0.10	0.012 0.013 0.013 0.014 0.049 0.019	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 0.012	0.008 0.013 0.008 0.010 0.008 0.008	0.081 0.25 0.11 0.13 1.3 0.20	0.049 0.22 0.080 0.094 1.2 0.16

[a] Before final application.

[b] Whole plant without root.

Table 74 Residues on Broccoli Heads and Cauliflower Heads from the Foliar Application of Spirotetramat to Flowerhead Brassicas in the USA (M-277100-01-1, Freeseman, P.; 2006)

Location (City, State, and NAFTA Region)	Trial Number/ Crop	Yr	Application						PHI days	Residues (mg/kg)						
			Form-	Timing	Rate (kg ai/ha	Interval days	Actual Spray Vol L/ha	Total Rate kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
Uvalde, Texas Region 6	FN025-04H-A Broccoli	2004	100 OD	1st sprouts closed; 30% head diameter	0.088	0	140	0.177								
				60% sprouts closed; 60% head diameter	0.088	6	184		1	0.025	0.164	0.160	< 0.01	< 0.01	0.37	0.19
									1	0.030	0.118	0.164	< 0.01	< 0.01	0.33	0.15
									3	0.031	0.278	0.382	< 0.01	0.040	0.74	0.31
									3	0.036	0.272	0.432	< 0.01	0.032	0.78	0.27
									7	< 0.01	0.265	0.523	< 0.01	0.063	**0.87**	**0.28**
									7	< 0.01	0.229	0.459	< 0.01	0.071	0.78	0.24
Uvalde, Texas Region 6	FN025-04H-B Broccoli	2004	240 SC	1st sprouts closed; 30% head diameter	0.088	0	140	0.176	1	0.034	0.121	0.150	< 0.01	< 0.01	0.32	0.16
									1	0.025	0.118	0.127	< 0.01	< 0.01	0.28	0.14
									3	0.024	0.166	0.271	< 0.01	0.019	0.49	0.19
									3	0.015	0.137	0.164	< 0.01	< 0.01	0.33	0.15
									7	0.010	0.229	0.377	< 0.01	0.045	0.67	0.24
									7	< 0.01	0.384	0.398	< 0.01	0.033	**0.84**	**0.39**
				60% sprouts closed; 60% head diameter	0.088	6	183									
Fresno, CA Region 10	FN026-04D Broccoli	2004	100 OD	80% sprouts closed; 80% head diameter	0.088	0	175	0.176								
				Sprouts/ heads tightly closed	0.088	6	173		0	0.123	0.138	0.272	< 0.01	< 0.01	0.55	0.26
									0	0.147	0.108	0.194	< 0.01	< 0.01	0.46	0.40
									1	0.057	0.128	0.201	< 0.01	< 0.01	0.40	0.18
									1	0.056	0.095	0.216	< 0.01	< 0.01	0.38	0.15
									1	0.029	0.061	0.230	< 0.01	< 0.01	0.33	0.09
									3	0.045	0.089	0.241	< 0.01	< 0.01	0.39	0.13
									3	0.065	0.104	0.209	< 0.01	< 0.01	0.40	0.17
									7	0.039	0.131	0.356	< 0.01	0.011	0.54	0.17
									7	0.040	0.171	0.315	< 0.01	0.012	**0.54**	**0.21**
									10	< 0.01	0.124	0.328	< 0.01	0.015	0.48	0.13
									10	< 0.01	0.147	0.286	< 0.01	0.012	0.46	0.16
									1[a]	< 0.01	0.314	0.016	< 0.01	< 0.01	0.34	0.32
									1[b]	< 0.01	0.055	0.211	< 0.01	< 0.01	0.30	0.065
Hickman, CA Region 10	FN027-04H Broccoli	2004	100 OD	70% sprouts closed; 70% head diameter	0.088	0	140	0.173								
				80% sprouts closed; 80% head diameter	0.085	6	136		1	0.022	0.023	0.034	< 0.01	< 0.01	0.099	0.045
									1	0.027	0.033	0.027	< 0.01	< 0.01	0.11	0.060
									3	< 0.01	0.051	0.053	< 0.01	< 0.01	0.13	0.061
									3	< 0.01	0.056	0.050	< 0.01	< 0.01	0.13	0.066
									7	< 0.01	0.085	0.063	< 0.01	< 0.01	**0.17**	**0.095**
									7	< 0.01	0.068	0.068	< 0.01	< 0.01	0.16	0.078

Location (City, State, and NAFTA Region)	Trial Number/ Crop	Yr	Application						PHI days	Residues (mg/kg)						
			Form-	Timing	Rate (kg ai/ha	Interval days	Actual Spray Vol L/ha	Total Rate kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
King City, CA Region 10	FN028-04H-A Cauliflower	2004	100 OD	50% sprouts closed; 50% head diameter	0.088	0	160	0.178								
				80% sprouts closed; 80% head diameter	0.090	6	172		1 1 3 3 7 7	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.093 0.102 0.048 0.059 0.094 0.059	0.201 0.213 0.153 0.131 0.190 0.106	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.32 **0.34** 0.23 0.222 0.31 0.20	0.10 **0.11** 0.058 0.069 0.10 0.069
King City, CA Region 10	FN028-04H-B Cauliflower	2004	240 SC	50% sprouts closed; 50% head diameter	0.088	0	159	0.176								
				80% sprouts closed; 80% head diameter	0.088	6	170		1 1 3 3 7 7	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.045 0.065 0.055 0.066 0.028 0.027	0.135 0.194 0.140 0.130 0.098 0.087	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.21 0.29 0.22 **0.22** 0.15 0.13	0.055 0.075 0.065 **0.076** 0.038 0.037
Glenn, CA Region 10	FN029-04H Cauliflower	2004	100 OD	50% sprouts closed; 50% head diameter	0.086	0	164	0.173								
				80% sprouts closed; 80% head diameter	0.087	7	165		1 1 3 3 7 7	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.214 0.176 0.227 0.227 0.270 0.230	0.207 0.189 0.178 0.213 0.242 0.245	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.45 0.39 0.43 0.46 **0.54** 0.50	0.22 0.19 0.24 0.24 **0.28** 0.24
Corvallis Oregon Region 12	FN030-04H Cauliflower	2004	100 OD	20% of fruits have reached typical size	0.088	0	118	0.177								
				50% of fruits have reached typical size	0.088	7	118		1 1 3 3 7 7	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.063 0.058 0.045 0.056 0.091 0.070	0.318 0.318 0.267 0.219 0.315 0.302	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.010 0.011 0.012 < 0.01 0.020 0.019	0.41 0.41 0.35 0.30 **0.45** 0.41	0.073 0.068 0.055 0.066 **0.10** 0.080

[a] Cooked heads.

[b] Washed heads.

Table 75 Residues on broccoli heads from the foliar application of spirotetramat (240 SC) to broccoli in Australia (M-281551-01-1, Radunz, L.; 2006; M-281543-01-1, Radunz, L.; 2006)

Study No. Trial No. Trial SubID/ Country / Year	Application				PHI days	Residues [each component, not BYI 08330 equivalents](mg/kg)						
	No	Spray interval days	kg ai/ha	kg ai/hL		BYI 08330	BYI 08330 enol	BYI08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.	Parent + Enol (BYI 08330 equivs)
BCS-0089 Q1 AUS-BCS-0089-Q1-B Gatton Australia 2005	3	6-7	0.096	0.019	0[a] 0 2 3 7	< 0.02 < 0.02 < 0.02 < 0.02 < 0.02	0.45 1.75 0.27 0.38 2.73	0.43 0.22 0.90 1.00 0.27	< 0.02 < 0.02 < 0.02 < 0.02 < 0.02	0.06 0.05 0.07 0.10 0.09	1.1 2.5 1.4 1.7 3.8	0.56 2.1 0.34 0.48 3.3
BCS-0089 VC29 AUS-BCS-0089-VC29-B Werribee Australia 2005	3	7	0.092	0.010	0[a] 0 1 3 7	< 0.02 < 0.02 < 0.02 < 0.02 < 0.02	0.07 0.08 0.04 0.07 0.09	0.53 0.79 0.78 0.74 1.05	< 0.02 < 0.02 < 0.02 < 0.02 < 0.02	0.06 0.03 0.03 0.09 0.04	0.76 1.0 1.0 1.0 1.4	0.10 0.12 0.068 0.10 0.13
BCS-0124 B58 AUS-BCS-0124-B58-B Werribee Australia 2006	3	7	0.096	0.011	0[a] 0 3 7 14	< 0.02 0.23 < 0.02 < 0.02 < 0.02	0.02 0.16 < 0.02 < 0.02 < 0.02	0.15 0.25 0.09 0.07 0.04	< 0.02 < 0.02 < 0.02 < 0.02 < 0.02	0.04 0.05 < 0.02 0.03 0.12	0.24 0.76 < 0.11 < 0.11 0.15	0.044 0.42 < 0.044 < 0.044 < 0.044
BCS-0124 B67 AUS-BCS-0124-B67-B Gatton Australia 2006	3	7	0.096	0.013	0[a] 0 3 8 10	0.03 0.15 < 0.02 0.04 < 0.02	0.32 0.80 0.38 0.98 0.68	0.26 0.25 0.13 0.10 0.07	< 0.02 < 0.02 < 0.02 < 0.02 < 0.02	0.02 0.04 0.04 0.13 0.06	0.74 1.5 0.65 1.5 0.98	0.41 1.1 0.61 1.1 0.84

[a] Before final treatment.

Table 76 Residues on Head Cabbage from the Foliar Application of Spirotetramat to Cabbage in Europe (M-260141-01-1, Freitag T.; Wolters A.; 2005; M-260014-01-1, Freitag T.; Behn U.; 2005; M-272557-01-1, Ballesteros; Gateaud L.; 2006; M-272570-01-1, Ballesteros; Gateaud L.; 2006.)

Study No. Trial No. Trial SubID Country Year	Crop	Form.	Application				PHI (days)	Residues (mg/kg) expressed as BYI08330 equivalents						
			No	Spray interval (days)	kg ai. / ha/ application	kg ai. / hL/ application		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.	Parent + Enol
NORTH EUROPE														
RA-2037/04 R 2004 0152 3 0152-04 Germany D-40764 Langenfeld, Kals 2004	Cabbage, white	OD 100	3	7	0.0720	0.01200	0[a] 0 3 7 14	0.01 0.13 0.01 0.01 < 0.01	0.024 0.025 0.032 0.037 0.018	0.024 0.022 0.023 0.030 0.025	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.078 0.10 0.085 0.097 0.065	0.034 0.16 0.042 0.047 0.019
RA-2037/04 R 2004 0156 6	Cabbage, red	OD 100	3	7/8	0.0720	0.01200	0[a] 0	0.01 0.04	0.065 0.062	0.013 0.012	< 0.012 < 0.012	< 0.008 < 0.008	0.11 0.13	0.075 0.10

Study No. Trial No. Trial SubID Country Year	Crop	Form.	Application				PHI (days)	Residues (mg/kg) expressed as BYI08330 equivalents						
			No	Spray interval (days)	kg ai. / ha/ application	kg ai. / hL/ application		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.	Parent + Enol
0156-04 United Kingdom GB-PE22 7HG Frithville/ Boston (Lincolnshire) 2004							3 6 14 20	0.01 0.01 < 0.01 < 0.01	0.060 0.059 0.062 0.059	0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008	0.10 0.10 0.10 0.10	0.070 0.069 0.072 0.069
RA-2037/04 R 2004 0157 4 0157-04 France F-80500 Faverolles (Picardie) 2004	Cabbage, Savoy	OD 100	3	8/6	0.0720	0.01440	0[a] 0 3 7 14 21	< 0.01 0.04 0.01 < 0.01 < 0.01 < 0.01	0.012 0.045 0.017 0.012 0.012 0.012	0.035 0.070 0.044 0.014 0.012 0.013	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 0.008 0.008 < 0.008 < 0.008 < 0.008	0.077 0.18 0.10 0.056 0.055 0.055	0.022 0.085 0.027 0.022 0.022 0.022
RA-2060/05 R 2005 0352 0 0352-05 France F-80480 Dury (Picardie) 2005	Cabbage, red	150 OD	3	14	0.0720	0.01440	-14 -11 0[a] 0 3 7 14 21	< 0.01 0.01 < 0.01 0.02 0.01 < 0.01 < 0.01 < 0.01	0.014 0.019 0.014 0.020 0.025 0.025 0.017 0.024	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.056 0.061 0.056 0.062 0.067 0.067 0.059 0.066	0.024 0.029 0.024 0.040 0.035 0.035 0.028 0.034
RA-2060/05 R 2005 0353 9 0353-05 Germany D-51399 Burscheid (Nordrhein-Westfalen) 2005	Cabbage, red	150 OD	3	14	0.0720	0.01440	-14 -11 0 3 7 14	0.04 < 0.01 0.04 < 0.01 < 0.01 < 0.01	0.10 0.095 0.11 0.092 0.090 0.072	< 0.012 < 0.012 < 0.012 0.014 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.18 0.14 0.18 0.13 0.12 0.11	0.14 0.10 0.15 0.10 0.10 0.082
RA-2060/05 R 2005 0354 7 0354-05 Germany D-42799 Leichlingen (Nordrhein-Westfalen) 2005	Cabbage, white	150 OD	3	14	0.0720	0.01200	-14 -11 0[a] 0 3 7 14 21	< 0.01 < 0.01 < 0.01 0.06 0.01 < 0.01 < 0.01 < 0.01	0.032 0.052 0.040 0.058 0.061 0.062 0.053 0.037	0.044 0.067 0.071 0.087 0.094 0.093 0.099 0.074	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.11 0.15 0.14 0.23 0.19 0.18 0.18 0.14	0.033 0.062 0.050 0.12 0.071 0.072 0.063 0.047
RA-2060/05 R 2005 0355 5 0355-05 Germany D-59457 Werl-Westönnen (Nordrhein-Westfalen) 2005	Cabbage, white	150 OD	3	14	0.0720	0.01440	-14 -11 0 3 8 14	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.036 0.035 0.037 0.024 0.032 0.026	0.021 0.022 0.021 0.014 0.015 0.013	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.087 0.077 0.088 0.068 0.077 0.069	0.046 0.045 0.047 0.034 0.042 0.036
RA-2060/05 R 2005 0356 3 0356-05 Germany D-42799 Leichlingen (Nordrhein-Westfalen)	Cabbage, Savoy	150 OD	3	14	0.0720	0.01200	-14 -11 0[a] 0 3 7 14 21	0.22 0.09 < 0.01 0.11 0.03 < 0.01 < 0.01 < 0.01	0.11 0.12 0.076 0.093 0.11 0.064 0.081 0.055	0.084 0.11 0.066 0.11 0.10 0.084 0.074 0.068	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.43 0.34 0.17 0.33 0.23 0.18 0.18 0.15	0.33 0.21 0.086 0.20 0.14 0.074 0.091 0.065

Study No. Trial No. Trial SubID Country Year	Crop	Form.	Application				PHI (days)	Residues (mg/kg) expressed as BYI08330 equivalents						
			No	Spray interval (days)	kg ai. / ha/ application	kg ai. / hL/ application		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.	Parent + Enol
2005														
RA-2060/05 R 2005 0357 1 0357-05 France F-80200 Ennemain (Picardie) 2005	Cabbage, Savoy	150 OD	3	14	0.0720	0.01440	-14 -11 0 3 7 14	< 0.01 0.01 0.01 < 0.01 < 0.01 < 0.01	< 0.012 0.015 0.024 0.031 0.026 0.027	< 0.012 < 0.012 0.028 0.031 0.021 0.018	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055 0.057 0.082 0.092 0.077 0.075	< 0.022 0.025 0.034 0.041 0.036 0.037
RA-2060/05 R 2005 0359 8 0359-05 Germany D-51399 Burscheid (Nordrhein-Westfalen) 2005	Cabbage, Savoy	150 OD	3	14	0.0720	0.01440	-14 -11 0 3 7 14	0.38 0.24 0.30 < 0.01 < 0.01 < 0.01	0.13 0.12 0.10 0.060 0.060 0.042	0.12 0.098 0.081 0.045 0.061 0.054	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.66 0.49 0.50 0.14 0.16 0.12	0.51 0.36 0.40 0.070 0.070 0.052
SOUTH EUROPE														
RA-2038/04 R 2004 0158 2 0158-04 Spain E-08850 Gavá (Cataluña) 2005	Cabbage, red	OD 100	3	7	0.0720	0.01029 - 0.01200	0[a] 0 3 7 14 23	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.098 0.11 0.15 0.19 0.17 0.14	0.012 0.012 0.012 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.13 0.14 0.18 0.23 0.20 0.17	0.11 0.12 0.16 0.20 0.18 0.15
RA-2038/04 R 2004 0159 0 0159-04 Italy I-70031 Andria (BA) (Puglia) 2004	Cabbage, white	OD 100	3	7	0.0720	0.00900	0[a] 0 3 7 14	0.01 0.07 0.01 < 0.01 < 0.01	0.024 0.039 0.036 0.051 0.065	0.012 0.021 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.066 0.15 0.078 0.093 0.11	0.034 0.11 0.046 0.061 0.075
RA-2061/05 R 2005 0350 4 0350-05 Italy I-70031 Andria (Puglia) 2005	Cabbage, red	150 OD	3	14	0.0720	0.00900	-14 -11 0[a] 0 3 7 14 21	0.04 < 0.01 < 0.01 0.03 < 0.01 < 0.01 < 0.01 < 0.01	0.036 0.025 0.031 0.047 0.046 0.058 0.062 0.071	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.11 0.067 0.073 0.0.97 0.076 0.078 0.082 0.091	0.040 0.035 0.041 0.077 0.056 0.068 0.072 0.081
RA-2061/05 R 2005 0351 2 0351-05 Spain E-08840 Gava (Cataluña) 2005	Cabbage, white	150 OD	3	22/16	0.0720	0.01200-0.01440	-16 -13 0 2 7 14	0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.019 0.022 0.032 0.029 0.032 0.034	0.020 0.018 0.017 0.017 0.014 0.018	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.067 0.070 0.079 0.083 0.076 0.082	0.029 0.032 0.042 0.039 0.042 0.044

[a] Before the final treatment.

Table 77 Residues on cabbage heads from the foliar application of spirotetramat to cabbages in the USA (M-277100-01-1, Freeseman, P.; 2006)

Location (City, State, and NAFTA Region)	Trial No.	Year	Form.	Application					PHI days	Residues as BYI08330 Equivalents (mg/kg)						
				Timing (% of expected head size)	Rate kg ai/ha	Inter-val days	Spray Vol-ume GPA L/ha	Total Rate kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total Resi-due of BYI 08330 calc.	Parent + Enol
Bumpass, VA Region 1	FN031-04H Cabbage	2005	100 OD	50%	0.087	0	120	0.176								
				60%	0.089	6	122		1[a]	0.757	0.129	< 0.01	< 0.01	0.018	**0.92**	**0.89**
									1	0.693	0.099	0.085	< 0.01	< 0.01	0.89	0.79
									3	0.156	0.037	0.079	< 0.01	0.037	0.32	0.19
									3	0.084	0.026	0.064	< 0.01	0.026	0.21	0.11
									7	0.048	0.025	0.057	< 0.01	0.025	0.16	0.073
									7	0.068	0.028	0.054	< 0.01	0.028	0.19	0.16
									1[b]	0.052	0.035	0.063	< 0.01	< 0.01	0.17	0.087
									1	0.034	0.036	0.068	< 0.01	< 0.01	0.16	0.070
									3	< 0.01	0.025	0.074	< 0.01	< 0.01	0.13	0.035
									3	< 0.01	0.030	0.075	< 0.01	< 0.01	0.14	0.040
									7	< 0.01	0.018	0.060	< 0.01	< 0.01	0.11	0.028
									7	< 0.01	0.024	0.066	< 0.01	< 0.01	0.10	0.034
Tifton, Georgia Region 2	FN032-04H-A Cabbage	2004	100 OD	70%	0.088	0	172	0.176								
				100%	0.088	7	172		1[a]	< 0.01	< 0.01	0.017	< 0.01	< 0.01	0.057	0.020
									1	< 0.01	< 0.01	0.014	< 0.01	< 0.01	0.047	0.020
									3	< 0.01	0.013	0.024	< 0.01	< 0.01	**0.067**	**0.023**
									3	< 0.01	0.011	0.022	< 0.01	< 0.01	0.063	0.021
									7	< 0.01	< 0.01	0.023	< 0.01	< 0.01	0.063	0.020
									7	< 0.01	< 0.01	0.020	< 0.01	0.011	0.061	0.020
									1[b]	< 0.01	< 0.01	0.022	< 0.01	< 0.01	0.062	< 0.020
									1	< 0.01	< 0.01	0.026	< 0.01	< 0.01	0.066	< 0.020
									3	< 0.01	< 0.01	0.024	< 0.01	< 0.01	0.064	< 0.020
									3	< 0.01	0.012	0.015	< 0.01	< 0.01	0.057	0.022
									7	< 0.01	< 0.01	0.016	< 0.01	< 0.01	0.056	< 0.020
									7	< 0.01	< 0.01	0.022	< 0.01	< 0.01	0.062	< 0.020
Tifton, Georgia Region 2	FN032-04H-B Cabbage	2004	240 SC	70%	0.088	0	171	0.176								
				100%	0.088	7	173		1[a]	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	**< 0.060**	**< 0.020**
									1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.060	< 0.020
									3	< 0.01	< 0.01	0.016	< 0.01	< 0.01	0.056	< 0.020
									3	< 0.01	< 0.01	0.011	< 0.01	< 0.01	0.051	< 0.020
									7	< 0.01	< 0.01	0.010	< 0.01	< 0.01	0.050	< 0.020
									7	< 0.01	< 0.01	0.010	< 0.01	< 0.01	0.050	< 0.020
									1[b]	< 0.01	< 0.01	0.016	< 0.01	< 0.01	0.056	< 0.020
									1	< 0.01	< 0.01	0.015	< 0.01	< 0.01	0.055	< 0.020
									3	< 0.01	< 0.01	0.012	< 0.01	< 0.01	0.052	< 0.020
									3	< 0.01	< 0.01	0.017	< 0.01	< 0.01	0.057	< 0.020
									7	< 0.01	< 0.01	0.020	< 0.01	< 0.01	0.060	< 0.020
									7	< 0.01	< 0.01	0.014	< 0.01	< 0.01	0.054	< 0.020

Location (City, State, and NAFTA Region)	Trial No.	Year	Form.	Application					PHI days	Residues as BYI08330 Equivalents (mg/kg)						
				Timing (% of expected head size)	Rate kg ai/ha	Interval days	Spray Volume GPA L/ha	Total Rate kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total Residue of BYI 08330 calc.	Parent + Enol
Molino, Florida Region 3	FN033-04H Cabbage	2004	100 OD	100%	0.085	0	134	0.171								
				100%	0.086	6	102		1[a]	0.329	0.170	0.123	< 0.01	< 0.01	**0.64**	**0.50**
									1	0.303	0.157	0.166	< 0.01	< 0.01	0.65	0.46
									3	0.053	0.125	0.174	< 0.01	< 0.01	0.37	0.18
									3	0.045	0.102	0.128	< 0.01	< 0.01	0.34	0.15
									7	0.059	0.151	0.217	< 0.01	0.012	0.45	0.21
									7	0.023	0.159	0.197	< 0.01	0.016	0.40	0.18
									1[b]	< 0.01	0.020	0.050	< 0.01	< 0.01	0.10	0.030
									1	< 0.01	0.029	0.052	< 0.01	< 0.01	0.11	0.039
									3	< 0.01	0.052	0.089	< 0.01	< 0.01	0.17	0.062
									3	< 0.01	0.036	0.066	< 0.01	< 0.01	0.13	0.046
									7	< 0.01	0.055	0.088	< 0.01	< 0.01	0.17	0.065
									7	< 0.01	0.039	0.074	< 0.01	< 0.01	0.14	0.049
Stilwell, Kansas Region 5	FN034-04D Cabbage	2004	100 OD	50%	0.087	0	139	0.178								
				100%	0.090	7	141		0[a]	0.073	0.081	0.107	< 0.01	0.018	0.29	0.15
									0	0.092	0.096	0.096	< 0.01	0.013	0.31	0.19
									1	< 0.01	0.085	0.109	< 0.01	0.017	**0.23**	**0.095**
									1	< 0.01	0.057	0.097	< 0.01	0.015	0.19	0.067
									3	< 0.01	0.061	0.146	< 0.01	0.014	0.24	0.071
									3	< 0.01	0.061	0.111	< 0.01	0.011	0.20	0.071
									7	< 0.01	0.067	0.131	< 0.01	0.021	0.24	0.077
									7	< 0.01	0.044	0.108	< 0.01	0.018	0.19	0.054
									10	< 0.01	0.032	0.073	< 0.01	0.016	0.14	0.042
									10	< 0.01	0.039	0.101	< 0.01	0.026	0.19	0.049
									1[b]	< 0.01	0.026	0.059	< 0.01	0.011	0.12	0.036
									1[c]	< 0.01	0.124	< 0.01	< 0.01	< 0.01	0.16	0.13
East Bernard, Texas Region 6	FN035-04H Cabbage	2004	100 OD	70%	0.087	0	14	0.176								
				80%	0.088	7	136		1[a]	0.182	0.090	0.156	< 0.01	< 0.01	**0.45**	**0.27**
									1	0.123	0.088	0.162	< 0.01	< 0.01	0.39	0.21
									3	0.113	0.102	0.209	< 0.01	0.011	0.44	0.22
									3	0.140	0.093	0.256	< 0.01	0.016	0.52	0.23
									7	< 0.01	0.040	0.096	< 0.01	0.014	0.17	0.050
									7	0.011	0.040	0.127	< 0.01	0.016	0.20	0.051
									1[b]	< 0.01	0.016	0.053	< 0.01	< 0.01	0.099	0.026
									1	< 0.01	0.018	0.042	< 0.01	< 0.01	0.090	0.028
									3	< 0.01	0.029	0.108	< 0.01	< 0.01	0.17	0.039
									3	< 0.01	0.027	0.101	< 0.01	< 0.01	0.16	0.037
									7	< 0.01	0.031	0.158	< 0.01	< 0.01	0.22	0.041
									7	< 0.01	0.050	0.110	< 0.01	< 0.01	0.19	0.060
Fresno, CA Region 10	FN036-04H Cabbage	2004	100 OD	60%	0.087	0	171	0.172								
				70%	0.085	7	166		1[a]	0.059	0.029	0.014	< 0.01	< 0.01	0.12	0.088
									1	0.058	0.028	0.016	< 0.01	< 0.01	0.12	0.086
									3	0.078	0.029	0.015	< 0.01	< 0.01	0.14	0.11
									3	0.115	0.037	0.020	< 0.01	< 0.01	**0.19**	**0.15**
									7	0.052	0.029	0.025	< 0.01	< 0.01	0.13	0.081
									7	0.060	0.031	0.026	< 0.01	< 0.01	0.14	0.091
									1[2]	< 0.01	0.013	0.017	< 0.01	< 0.01	0.060	0.023
									1	< 0.01	0.012	0.010	< 0.01	< 0.01	0.052	0.022
									3	< 0.01	0.024	0.024	< 0.01	< 0.01	0.068	0.034
									3	< 0.01	< 0.01	0.020	< 0.01	< 0.01	0.060	< 0.020
									7	< 0.01	0.012	0.025	< 0.01	< 0.01	0.066	0.021
									7	< 0.01	0.014	0.020	< 0.01	< 0.01	0.064	0.024

[a] Field Cabbage Head.

[b] Cabbage Head After Trimming.

[c] Cooked Cabbage.

Table 78 Residues on cabbage heads after the foliar application of spirotetramat to cabbages in Australia (M-281549-01-1, Radunz, L.; 2006; M-282071-01-1, Radunz, L.; 2006)

Study No. Trial No. Trial SubID Country Year	Crop	Form.	Application				PHI days	Residues [each component, not BYI 08330 equivalents](mg/kg)						
			No.	Spray interval days	kg ai/ha/ appl	kg ai/hL/ appl		BYI 08330	BYI083 30 enol	BYI083 30 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucosid e	Total residue calc. as BYI 08330 equ.	Parent + Enol. As BYI 08330 Equivs.
BCS-0123 C139 AUS-BCS-0123-C139-B Cranbourne Australia 2006	Cabbage	240 SC	3	7	0.092-0.096	0.017	0[a] 0 3 7 14	< 0.02 < 0.02 < 0.02 < 0.02 < 0.02	< 0.02 < 0.02 < 0.02 < 0.02 < 0.02	< 0.02 0.07 < 0.02 < 0.02 < 0.02	< 0.02 < 0.02 < 0.02 < 0.02 < 0.02	< 0.02 < 0.02 < 0.02 < 0.02 < 0.02	< 0.11 < 0.11 < 0.11 < 0.11 < 0.11	< 0.04 < 0.04 < 0.04 < 0.04 < 0.04
BCS-0123 C140 AUS-BCS-0123-C140-B Thulimbah Australia 2006	Cabbage	240 SC	3	7	0.096	0.017	0[a] 0 3 7 14	< 0.02 0.24 0.24 < 0.02 < 0.02	0.04 0.19 0.16 0.08 0.29	0.09 0.28 0.10 0.20 0.10	< 0.02 < 0.02 < 0.02 < 0.02 < 0.02	< 0.02 < 0.02 < 0.02 < 0.02 0.02	0.16 0.80 0.36 0.34 0.50	0.07 0.47 0.43 0.12 0.37
BCS-0123 C141 AUS-BCS-0123-C141-B Gatton Australia 2006	Cabbage	240 SC	3	7	0.096	0.016-0.017	0[a] 0 3 7 15	0.07 0.51 0.10 0.02 < 0.02	0.11 1.37 0.22 0.08 0.05	0.04 0.54 0.13 0.08 0.02	< 0.02 < 0.02 < 0.02 < 0.02 < 0.02	0.11 0.09 0.09 0.03 0.04	0.35 2.9 0.60 0.25 0.12	0.20 2.2 0.36 0.12 0.080
BCS-0088 C90 AUS-BCS-0088-C90-B Port Gawler Australia 2005	Cabbage, Savoy	240 SC	3	7-8	0.096	0.019	0[a] 0 3 7 14	< 0.02 < 0.02 < 0.02 < 0.02 < 0.02	< 0.02 0.06 0.02 0.03 < 0.02	0.18 0.17 0.19 0.23 0.19	< 0.02 < 0.02 < 0.02 < 0.02 < 0.02	< 0.02 < 0.02 < 0.02 0.04 0.04	0.21 0.28 0.25 0.34 0.25	< 0.04 0.092 0.040 0.056 < 0.04
BCS-0088 C89 AUS-BCS-0088-C89-B Forth Australia 2005	Cabbage, red	240 SC	3	7	0.096	0.018	0[a] 0 3 7 14	< 0.02 < 0.02 < 0.02 < 0.02 < 0.02	2.70 0.69 0.78 1.36 1.10	0.21 0.21 0.32 0.13 0.11	< 0.02 < 0.02 < 0.02 < 0.02 < 0.02	0.02 0.02 0.03 0.02 0.02	3.6 1.1 1.4 1.9 1.5	3.3 0.85 0.96 1.6 1.3
BCS-0088 C91 AUS-BCS-0088-C91-B The Summit Australia 2005	Cabbage, red	240 SC	3	7–9	0.096	0.015-0.016	0[a] 0 3 7	< 0.02 < 0.02 < 0.02 < 0.02	< 0.02 0.10 0.04 0.08	0.03 0.07 0.08 0.06	< 0.02 < 0.02 < 0.02 < 0.02	< 0.02 < 0.02 < 0.02 < 0.02	< 0.11 0.20 0.14 0.16	< 0.04 0.14 0.07 0.12

[a] Before final application.

Table 79 Residues from the foliar application of spirotetramat to Brussels sprouts in Europe (M-260437-01-1, Freitag T.; Wolters A.; 2005; Freitag T.; M-273238-01-1, Eberhardt R. ; Wolters A.; 2006)

Study No. Trial No. Country Year	Form.	Application				PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
		No. Appls	Spray interval days	kg ai/ha/ appl	kg ai/hL/ appl		BYI 08330	BYI0833 0 enol	BYI0833 0 keto-hydroxy	BYI0833 0 mono-hydroxy	BYI0833 0 enol-glucoside	Total residue calc.	Parent + Enol
RA-2039/04 R 2004 0160 4 0160-04 Germany D-53773 Hennef (Nordrhein-Westfalen) 2004	OD 100	3	7	0.0720	0.01440	0[a] 0 3 7 14	0.01 0.03 0.01 0.01 0.01	0.022 0.044 0.041 0.051 0.053	0.012 0.016 0.013 0.025 0.014	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.064 0.11 0.084 0.11 0.097	0.032 0.074 0.051 0.061 0.063
RA-2039/04 R 2004 0161 2 0161-04 Germany D-40764 Langenfeld, Hof Weitz 2004	OD 100	3	7	0.0720	0.01440	0[a] 0 3 7 14	< 0.01 0.01 0.01 0.01 0.01	0.012 0.018 0.021 0.035 0.041	0.012 0.013 0.012 0.018 0.017	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.055 0.055 0.055 0.074 0.088	0.013 0.019 0.031 0.036 0.051
RA-2039/04 R 2004 0162 0 0162-04 France F-27340 Criquebeuf sur Seine (Haute-Normandie) 2004	OD 100	3	3/10	0.0720	0.01440	0[a] 0 3 8 14 21	0.01 0.02 0.01 < 0.01 < 0.01 < 0.01	0.023 0.043 0.039 0.069 0.051 0.051	0.023 0.034 0.025 0.032 0.023 0.016	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.076 0.12 0.094 0.13 0.10 0.097	0.033 0.063 0.049 0.079 0.061 0.061
RA-2039/04 R 2004 0163 9 0163-04 France F-62390 Fontaine L'etalon 2004	OD 100	3	7/8	0.0720	0.01440	0 0 3 7 14 21	< 0.01 0.01 0.01 0.01 < 0.01 < 0.01	0.042 0.051 0.075 0.099 0.098 0.13	0.014 0.023 0.032 0.045 0.043 0.058	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.086 0.10 0.14 0.18 0.17 0.22	0.052 0.061 0.085 0.11 0.11 0.14
RA-2066/05 R 2005 0369 5 0369-05 Germany D-59457 Werl-Westönnen (Nordrhein-Westfalen) 2005	150 OD	3	14	0.0720	0.01440	-14 -11 0 3 8 14	0.01 0.01 0.02 0.01 < 0.01 < 0.01	0.032 0.036 0.049 0.029 0.026 0.024	0.029 0.038 0.039 0.030 0.021 0.019	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.008 0.009 0.011 0.008 0.008 0.008	0.091 0.11 0.13 0.089 0.077 0.073	0.042 0.046 0.069 0.039 0.036 0.034
RA-2066/05 R 2005 0370 9 0370-05 France F-27340 Criquebeuf sur Seine (Haute-Normandie) 2005	150 OD	3	14	0.0720	0.01440	-14 -11 0 3 7 14	0.01 0.01 0.01 0.01 < 0.01 0.01	0.043 0.041 0.045 0.035 0.041 0.041	0.027 0.023 0.020 0.020 0.017 0.018	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.008 0.008 0.008 0.008 0.008 0.008	0.10 0.094 0.095 0.085 0.088 0.089	0.053 0.051 0.055 0.045 0.051 0.051
RA-2066/05 R 2005 0371 7 0371-05 Germany	150 OD	3	14	0.0720	0.01440	-14 -11 0[a] 0	0.01 0.01 0.02 < 0.01	0.030 0.033 0.071 0.057	0.020 0.025 0.046 0.023	< 0.012 < 0.012 < 0.012 < 0.012	< 0.008 0.012 0.008 0.008	0.080 0.092 0.16 0.11	0.040 0.043 0.091 0.067

Study No. Trial No. Country Year	Form.	Application				PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
		No. Appls	Spray interval days	kg ai/ha/ appl	kg ai/hL/ appl		BYI 08330	BYI0833 0 enol	BYI0833 0 keto-hydroxy	BYI0833 0 mono-hydroxy	BYI0833 0 enol-glucoside	Total residue calc.	Parent + Enol
D-53332 Bornheim (Nordrhein-Westfalen) 2005						3 7 14 21	0.01 0.01 0.01 0.01	0.057 0.064 0.064 0.060	0.046 0.034 0.039 0.027	< 0.012 < 0.012 < 0.012 < 0.012	0.008 < 0.008 0.008 0.030	0.13 0.13 0.13 0.14	0.067 0.074 0.074 0.070
RA-2066/05 R 2005 0372 5 0372-05 United Kingdom GB-IP17 3BS Saxmundham/ Suffolk IP17 3BS (Suffolk) 2005	150 OD	3	14	0.0720	0.01440	-15 -11 0[a] 0 3 7 14 21	0.02 0.01 0.02 < 0.01 0.01 0.01 0.01 < 0.01	0.032 0.033 0.059 0.044 0.053 0.068 0.062 0.065	0.012 0.012 0.012 0.012 0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.008 0.008 < 0.008 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.084 0.075 0.11 0.086 0.095 0.11 0.10 0.11	0.052 0.043 0.079 0.054 0.063 0.078 0.072 0.075

[a] Before final treatment.

Table 80 Residues from the Foliar Application of Spirotetramat (240 SC) to Brussels sprouts in Australia (M-281547-01-1Radunz, L.; 2006)

Study No. Trial No. Trial SubID Country Year	Application				PHI (days)	Residues [each component, not BYI 08330 equivalents] (mg/kg)						
	No.	Spray interval days	kg ai/ha/ appl	kg ai/hL		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.	Parent + Enol, as BYI 08330 Equivalents
BCS-0087 SA24 AUS-BCS-0087-SA24-B Nairne Australia 2005	3	5-7	0.096	0.013	0[a] 0 1 3 7	< 0.02 < 0.02 < 0.02 < 0.02 < 0.02	< 0.02 0.02 0.04 < 0.02 0.03	0.16 0.20 0.17 0.27 0.21	< 0.02 < 0.02 < 0.02 < 0.02 < 0.02	0.03 0.06 0.04 0.20 0.06	0.25 0.32 0.28 0.48 0.32	< 0.02 < 0.04 0.07 < 0.04 0.06
BCS-0087 SA24 AUS-BCS-0087-SA24-D Nairne Australia 2005	3	5-7	0.0864	0.00480	0[a] 0 1 3 7	< 0.02 < 0.02 < 0.02 < 0.02 < 0.02	0.06 0.03 0.04 0.11 0.02	0.26 0.29 0.33 0.24 0.33	< 0.02 < 0.02 < 0.02 < 0.02 < 0.02	0.36 0.18 0.26 0.16 0.35	0.72 0.53 0.64 0.55 0.69	0.09 0.06 0.07 0.15 0.04
BCS-0087 VC30 AUS-BCS-0087-VC30-B Coldstream Australia 2005	3	6-8	*0.092*	0.010	0[a] 0 1 3 7	< 0.02 0.02 < 0.02 < 0.02 < 0.02	< 0.02 0.03 0.04 0.04 0.02	0.10 0.35 0.39 0.56 0.41	< 0.02 < 0.02 < 0.02 < 0.02 < 0.02	0.03 0.05 0.06 0.15 0.18	0.15 0.52 0.56 0.83 0.65	< 0.04 0.06 0.07 0.07 0.04

[a] Before final treatment.

Table 81 Residues on kohlrabi from the foliar application of spirotetramat to kohlrabi in Europe (M-265036-01-1, Freitag T.; Eberhardt R.; 2006; M-272128-01-1, Freitag T.; Eberhardt R.; 2006

Study No./ Trial No./ Country/ Year	Form	Application				Portion Analy	PHI (days)	Residues (mg/kg) expressed as BYI08330 equivalents						
		No. Appls	Spray Interval days)	kg ai/ha/ appl	kg ai/hL/. appl			BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.	Parent + Enol
RA-2043/04 R 2004 0169 8 0169-04 Germany D-59457 Werl-Westönnen (Nordrhein-Westfalen) 2004	100 OD	3	8/7	0.0720	0.01800	corm	0[a] 0 3 7 14 21	0.01 0.03 0.01 0.01 < 0.01 < 0.01	0.42 0.55 0.52 0.51 0.33 0.13	0.064 0.11 0.12 0.083 0.020 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 0.008 0.008 < 0.008 < 0.008 < 0.008	0.69 0.71 0.67 0.60 0.38 0.17	0.43 0.58 0.53 0.52 0.34 0.14
						leaf	0[a] 0 3 7 14 21	0.04 1.2 0.66 0.06 < 0.01 < 0.01	0.41 2.1 1.2 0.73 0.10 0.023	0.11 0.48 0.29 0.14 0.032 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.021 0.023 0.027 0.028 0.017 0.014	0.59 3.8 2.2 0.97 0.17 0.098	0.45 3.3 1.9 0.79 0.11 0.024
RA-2043/04 R 2004 0170 1 0170-04 Netherlands NL-1681 ND Zwaagdijk-Oost (Noord-Holland) 2004	100 OD	3	8/7	0.0720	0.01200	corm	0[a] 0 3 7 14 21	< 0.01 0.01 0.01 < 0.01 < 0.01 < 0.01	0.37 0.42 0.42 0.49 0.28 0.20	0.032 0.038 0.033 0.034 0.018 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 0.008 0.008 < 0.008	0.43 0.49 0.48 0.55 0.33 0.24	0.38 0.43 0.43 0.50 0.29 0.21
						leaf	0[a] 0 3 7 14 21	0.08 1.5 0.91 0.49 0.05 0.01	0.10 0.62 0.35 0.16 0.041 0.041	0.038 0.21 0.097 0.059 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.033 0.042 0.042 0.056 0.067 0.061	0.26 2.4 1.4 0.78 0.14 0.14	0.18 2.1 1.3 0.65 0.046 0.051
RA-2065/05 R 2005 0373 3 0373-05 Germany D-40764 Langenfeld-Reusrath (Nordrhein-Westfalen) 2005	150 OD	3	15/14	0.0720	0.0120	corm	-14 -11 0[a] 0 3 7 14 21	0.01 0.01 0.01 < 0.01 0.01 0.01 < 0.01 < 0.01	0.096 0.22 0.15 0.13 0.19 0.15 0.094 0.045	0.013 0.017 0.013 0.013 0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.14 0.27 0.19 0.17 0.23 0.19 0.13 0.087	0.11 0.23 0.16 0.14 0.20 0.16 0.10 0.055
						leaf	-14 -11 0[a] 0 3 7 14 21	0.57 0.12 1.1 1.3 0.08 0.10 0.02 0.01	0.87 0.18 0.42 0.22 0.14 0.032 0.012 0.012	0.28 0.062 0.11 0.067 0.044 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.022 0.025 0.022 0.019 0.038 0.040 0.032 0.029	1.8 0.40 1.7 1.7 0.32 0.19 0.088 0.075	1.4 0.30 1.5 1.6 0.22 0.13 0.032 0.022
RA-2065/05 R 2005 0374 1 0374-05 Germany D-51399 Burscheid (Nordrhein-Westfalen) 2005	150 OD	3	14	0.0720	0.0072	corm	-14 -11 0[a] 0 3 7 14	0.03 0.01 0.02 0.01 < 0.01 < 0.01 < 0.01	0.18 0.16 0.13 0.11 0.11 0.088 0.068	0.015 0.014 0.012 0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.008 0.008 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.24 0.20 0.18 0.15 0.15 0.13 0.11	0.21 0.17 0.15 0.12 0.12 0.098 0.078
						leaf	-14 -11 0[a] 0 3 7 14	1.3 0.38 0.77 0.03 0.01 0.01 < 0.01	0.38 0.17 0.24 0.027 0.074 0.045 0.023	0.044 0.025 0.034 0.012 0.014 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.038 0.044 0.054 0.048 0.062 0.057 0.052	1.8 0.63 1.1 0.13 0.17 0.14 0.11	1.7 0.55 1.0 0.057 0.084 0.055 0.033

[1] Before the final application.

Fruiting Vegetables, Cucurbits

Table 82 Residues on melon (whole, pulp, and peel) from the foliar application of spirotetramat (100 OD) to melons in glasshouses in Europe (M-259446-01-1Cavaille C.; 2006)

Country/ Trial No./ Country / Year	Application				Portion Analy	PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
	No.	Spray interval days	kg ai/ha	kg ai/hL			BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total residue calc.	Parent + Enol
RA-2128/04 R 2004 0836 6 0836-04 Italy I-70056 Molfetta (Puglia) 2004	4	7	0.072	0.0090	Whole fruit	0 0 1 3 5 7	0.01 0.02 0.02 0.01 0.02 0.02	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.055 0.065 0.065 0.055 0.065 0.065	0.022 0.032 0.032 0.022 0.032 0.032
					pulp	3 5	< 0.01 < 0.01	< 0.012 < 0.012	< 0.012 < 0.012	< 0.012 < 0.012	< 0.008 < 0.008	< 0.055 < 0.055	< 0.22 < 0.022
					peel	3 5	0.05 0.02	0.019 0.015	< 0.012 < 0.012	< 0.012 < 0.012	< 0.008 < 0.008	0.099 0.067	0.069 0.035
RA-2128/04 R 2004 0837 4 0837-04 Spain E-11540 Sanlucar de Bda (Monte Algaida) (Andalucia) 2004	4	7/7/6	0.072	0.0072	whole fruit	0 0 1 3 6 7	< 0.01 0.02 0.02 < 0.01 < 0.01 < 0.01	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055 0.064 0.064 < 0.055 < 0.055 < 0.055	< 0.022 0.032 0.032 < 0.022 < 0.022 < 0.022
					pulp	3 6	< 0.01 < 0.01	< 0.012 < 0.012	< 0.012 < 0.012	< 0.012 < 0.012	< 0.008 < 0.008	< 0.055 < 0.055	< 0.022 < 0.022
					peel	3 6	0.01 0.02	< 0.012 0.021	< 0.012 0.015	< 0.012 < 0.012	< 0.008 < 0.008	0.055 0.076	0.022 0.041
RA-2128/04 R 2004 0838 2 0838-04 France F-84140 Montfavet (Provence-Cote D'azur) 2004	4	6/7/7	0.072	0.0120	whole fruit	0 0 1 3 5 7	< 0.01 < 0.01 < 0.01 0.01 < 0.01 < 0.01	< 0.012 < 0.012 < 0.012 0.014 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055 < 0.055 < 0.055 0.056 < 0.055 < 0.055	< 0.022 < 0.022 < 0.022 0.024 < 0.022 < 0.022
					pulp	3 5	< 0.01 < 0.01	< 0.012 < 0.012	< 0.012 < 0.012	< 0.012 < 0.012	< 0.008 < 0.008	< 0.055 < 0.055	< 0.022 < 0.022
					peel	3 5	0.02 0.02	0.027 0.024	< 0.012 < 0.012	< 0.012 < 0.012	< 0.008 < 0.008	0.079 0.076	0.047 0.044
RA-2128/04 R 2004 0839 0 0839-04 Portugal P-2560-014 Torres Vedras (Ribatejo e Oeste) 2004	4	7	0.072	0.0072	whole fruit	0 0 1 3 5 7	< 0.01 0.01 0.01 0.01 0.01 0.01	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 0.015 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055 0.055 0.055 0.055 0.055 0.055	< 0.022 0.022 0.022 0.022 0.022 0.022
					pulp	3 5	< 0.01 < 0.01	< 0.012 < 0.012	< 0.012 < 0.012	< 0.012 < 0.012	< 0.008 < 0.008	< 0.055 < 0.055	< 0.022 < 0.022
					peel	3 5	0.04 0.03	0.017 0.012	0.029 0.027	< 0.012 < 0.012	< 0.008 < 0.008	0.11 0.089	0.057 0.042
RA-2128/04 R 2004 0840 4 0840-04 Portugal P-2565 Freiria	4	7	0.072	0.0072	Whole fruit	0 0 1 3 5 7	< 0.01 < 0.01 < 0.01 < 0.01 0.01 0.01	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055 < 0.055 < 0.055 < 0.055 0.055 0.055	< 0.022 < 0.022 < 0.022 < 0.022 0.022 0.022

Country/ Trial No./ Country / Year	Application				Portion Analy	PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
	No.	Spray interval days	kg ai/ha	kg ai/hL			BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total residue calc.	Parent + Enol
(Ribatejo e Oeste) 2004					pulp	3 5	< 0.01 < 0.01	< 0.012 < 0.012	< 0.012 < 0.012	< 0.012 < 0.012	< 0.008 < 0.008	< 0.055 < 0.055	< 0.022 < 0.022
					peel	3 5	< 0.01 0.02	0.012 0.020	< 0.012 < 0.012	< 0.012 < 0.012	< 0.008 < 0.008	0.055 0.055	0.022 0.022
RA-2128/04 R 2004 0841 2 0841-04 Italy I-71043 Manfredonia (Fg) (Puglia) 2004	4	7	0.072	0.0072	whole fruit	0 0 1 3 5 7	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055 < 0.055 < 0.055 < 0.055 < 0.055 < 0.055	< 0.022 < 0.022 < 0.022 < 0.022 < 0.022 < 0.022
					pulp	3 5	< 0.01 < 0.01	< 0.012 < 0.012	< 0.012 < 0.012	< 0.012 < 0.012	< 0.008 < 0.008	< 0.055 < 0.055	< 0.022 < 0.022
					peel	3 5	0.01 0.02	< 0.012 < 0.012	< 0.012 0.013	< 0.012 < 0.012	< 0.008 < 0.008	0.055 0.057	0.022 0.032
RA-2128/04 R 2004 0881 1 0881-04 Spain E-41720 Los Palacios Sevilla (Andalucia) 2004	4	7	0.072	0.0072	whole fruit	0 0 1 3 4 7	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 0.01	0.012 0.017 0.019 0.015 < 0.012 0.019	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055 0.059 < 0.055 < 0.055 < 0.055 < 0.055	< 0.022 0.018 0.020 0.025 < 0.022 < 0.022
					pulp	3 4	< 0.01 < 0.01	< 0.012 < 0.012	< 0.012 < 0.012	< 0.012 < 0.012	< 0.008 < 0.008	< 0.055 < 0.055	< 0.022 < 0.022
					peel	3 4	0.01 0.01	0.022 0.015	< 0.012 < 0.012	< 0.012 < 0.012	< 0.008 < 0.008	0.064 0.057	0.032 0.025
RA-2128/04 R 2004 0883 8 0883-04 France F-31 340 Vacquiers (Midi-Pyrenees) 2004	4	7	0.072	0.0072	Whole fruit	0 0 1 3 5 7	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055 < 0.055 < 0.055 < 0.055 < 0.055 < 0.055	< 0.022 < 0.022 < 0.022 < 0.022 < 0.022 < 0.022
					pulp	3 5	< 0.01 < 0.01	< 0.012 < 0.012	< 0.012 < 0.012	< 0.012 < 0.012	< 0.008 < 0.008	< 0.055 < 0.055	< 0.022 < 0.022
					peel	3 5	0.01 < 0.01	< 0.012 < 0.012	< 0.012 < 0.012	< 0.012 < 0.012	< 0.008 < 0.008	0.055 < 0.055	0.022 < 0.022

Table 83 Residues in melon (whole, pulp and peel) from foliar applications to melons in the field in Europe (M-259449-01-1, Cavaille C.; 2005; M-268388-02-1, Cavaille C.; 2005)

Country Study No. Trial No.	Form.	Application				Portion Analy.	PHI (days)	Residues (mg/kg) expressed as BYI08330 equivalents						
		No. Appl	Inter-val days	kg ai/ha	kg ai/hl			BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total residue calc.	Parent + Enol
RA-2129/04 R 2004 0842 0 0842-04 Italy I-70031 Andria	100 OD	4	7	0.072	0.0096	whole fruit	0[a] 0 1 3 5	0.02 0.05 0.05 0.04 0.04	< 0.012 < 0.012 0.014 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.064 0.094 0.096 0.086 0.084	0.032 0.062 0.064 0.054 0.052 0.042

Country Study No. Trial No.	Form.	Application				Portion Analy.	PHI (days)	Residues (mg/kg) expressed as BYI08330 equivalents						
		No. Appl	Inter- val days	kg ai/ha	kg ai/hl			BYI 08330	BYI 08330 enol	BYI 08330 keto- hydroxy	BYI 08330 mono- hydroxy	BYI 08330 enol- gluco- side	Total residue calc.	Parent + Enol
(Bari) (Puglia) 2004							7	0.03	< 0.012	< 0.012	< 0.012	< 0.008	0.074	
						pulp	3 7	< 0.01 < 0.01	< 0.012 < 0.012	< 0.012 < 0.012	< 0.012 < 0.012	< 0.008 < 0.008	< 0.055 < 0.055	< 0.022 < 0.022
						peel	3 7	0.08 0.10	0.021 0.025	< 0.012 < 0.012	< 0.012 < 0.012	< 0.008 < 0.008	0.13 0.15	0.10 0.12
RA-2129/04 R 2004 0843 9 0843-04 Spain E-08850 Gava (Barcelona) (Cataluña) 2004	100 OD	4	6/7/7	0.072	0.0103	whole fruit	1 3 4 7	< 0.01 < 0.01 < 0.01 < 0.01	< 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008	< 0.055 < 0.055 < 0.055 < 0.055	< 0.022 < 0.022 < 0.022 < 0.022
						pulp	3 7	< 0.01 < 0.01	< 0.012 < 0.012	< 0.012 < 0.012	< 0.012 < 0.012	< 0.008 < 0.008	< 0.055 < 0.055	< 0.022 < 0.022
						peel	3 7	0.02 < 0.01	0.026 < 0.012	< 0.012 < 0.012	< 0.012 < 0.012	< 0.008 < 0.008	0.078 < 0.055	0.046 < 0.022
RA-2129/04 R 2004 0844 7 0844-04 Spain E-46230 Alginet (Comunidad Valenciana) 2004	100 OD	4	7	0.072	0.0096	whole fruit	0[a] 0 1 3 6 7	0.02 0.03 0.02 0.02 0.02 0.01	0.025 0.043 0.027 0.036 0.026 0.021	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.077 0.11 0.079 0.078 0.078 0.063	0.045 0.073 0.047 0.046 0.046 0.031
						pulp	3 7	< 0.01 < 0.01	< 0.012 < 0.012	< 0.012 < 0.012	< 0.012 < 0.012	< 0.008 < 0.008	< 0.055 < 0.055	< 0.022 < 0.022
						peel	3 7	0.06 0.03	0.073 0.041	< 0.012 < 0.012	< 0.012 < 0.012	< 0.008 < 0.008	0.16 0.10	0.13 0.071
RA-2129/04 R 2004 0845 5 0845-04 Greece GR-60100 Aronas (Northern Greece - Macedonia) 2004	100 OD	4	7	0.072	0.0144	whole fruit	0[a] 0 1 3 5 7	< 0.01 0.01 0.02 0.01 < 0.01 < 0.01	< 0.012 0.019 0.020 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055 0.061 0.070 0.055 < 0.055 < 0.055	< 0.022 0.029 0.040 0.022 < 0.022 < 0.022
						pulp	3 7	< 0.01 < 0.01	< 0.012 < 0.012	< 0.012 < 0.012	< 0.012 < 0.012	< 0.008 < 0.008	< 0.055 < 0.055	< 0.022 < 0.022
						peel	3 7	0.01 0.01	< 0.012 < 0.012	< 0.012 < 0.012	< 0.012 0.012	< 0.008 < 0.008	0.055 0.055	0.022 0.022
RA-2042/05 R 2005 0230 3 0230-05 Greece GR-60100 Aronas-Katerini (Northern Greece - Macedonia) 2005	150 OD	4	7	0.072	0.0120	whole fruit	0 3 5 7	0.01 < 0.01 < 0.01 < 0.01	< 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012	0.049 0.037 0.023 0.031	< 0.008 < 0.008 < 0.008 < 0.008	0.091 0.079 0.066 0.074	0.022 < 0.022 < 0.022 < 0.022
						pulp	3 5 7	< 0.01 < 0.01 < 0.01	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	0.033 0.022 0.022	< 0.008 < 0.008 < 0.008	< 0.055 < 0.055 < 0.055	< 0.022 < 0.022 < 0.022
						peel	3 5 7	0.02 0.02 < 0.01	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	0.032 0.028 0.019	< 0.008 < 0.008 < 0.008	0.084 0.070 0.061	0.032 0.022 < 0.022
RA-2042/05 R 2005 0231 1 0231-05	150 OD	4	7	0.067- 0.072	0.0120	Melon fruit	0 3 5 7	< 0.01 < 0.01 < 0.01 < 0.01	0.014 0.014 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008	< 0.055 0.056 < 0.055 < 0.055	< 0.022 0.024 < 0.022 < 0.022

Country Study No. Trial No.	Form.	Application				Portion Analy.	PHI (days)	Residues (mg/kg) expressed as BYI08330 equivalents						
		No. Appl	Inter-val days	kg ai/ha	kg ai/hl			BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total residue calc.	Parent + Enol
Spain E-08850 Gava (Barcelona) (Cataluña) 2005						pulp	3 5 7	< 0.01 < 0.01 < 0.01	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008	< 0.055 < 0.055 < 0.055	< 0.022 < 0.022 < 0.022
						peel	3 5 7	0.03 0.02 0.02	0.041 0.029 0.015	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008	0.10 0.081 0.067	0.071 0.049 0.035
RA-2042/05 R 2005 0233 8 0233-05 Portugal P-2580-102 Aldeia Gavinha (Ribatejo e Oeste) 2005	150 OD	4	7	0.072	0.0090	whole fruit	0[a] 0 1 3 4 7	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.012 0.016 0.021 0.017 0.015 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055 0.058 0.063 0.059 0.057 0.055	< 0.022 0.026 0.031 0.027 0.025 0.022
						pulp	1 3 4 7	< 0.01 < 0.01 < 0.01 < 0.01	< 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008	< 0.055 < 0.055 < 0.055 < 0.055	< 0.022 < 0.022 < 0.022 < 0.022
						peel	1 3 4 7	< 0.01 < 0.01 < 0.01 < 0.01	0.041 0.036 0.031 0.023	< 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008	0.083 0.078 0.073 0.065	0.051 0.046 0.041 0.033
RA-2042/05 R 2005 0234 6 0234-05 Italy I-95040 Licodia Eubea (CT) (Sicilia) 2005	150 OD	4	7	0.072	0.0072-0.0120	whole fruit	0[a] 0 1 3 5 7	< 0.01 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055 0.055 < 0.055 < 0.055 < 0.055 < 0.055	< 0.022 0.22 < 0.022 < 0.022 < 0.022 < 0.022
						pulp	3 5 7	< 0.01 < 0.01 < 0.01	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008	< 0.055 < 0.055 < 0.055	< 0.022 < 0.022 < 0.022
						peel	3 5 7	< 0.01 < 0.01 < 0.01	0.031 0.016 0.015	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008	0.073 0.058 0.057	0.041 0.026 0.025
RA-2042/05 R 2005 0717 8 0717-05 Spain E-46230 Alginet (Comunidad Valenciana) 2005	150 OD	4	10/7/7	0.072	0.0090	whole fruit	0[a] 0 1 3 4 7	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.012 0.013 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055 0.055 < 0.055 < 0.055 < 0.055 < 0.055	< 0.022 0.023 < 0.022 < 0.022 < 0.022 < 0.022
						pulp	3 4 7	< 0.01 < 0.01 < 0.01	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008	< 0.055 < 0.055 < 0.055	< 0.022 < 0.022 < 0.022
						peel	3 4 7	< 0.01 < 0.01 < 0.01	0.018 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008	0.058 < 0.055 < 0.055	0.028 < 0.022 < 0.022

[a] Before final treatment.

Table 84 Residues on melon from the foliar application of spirotetramat to melons in the USA (M-277110-01-1, Duah, F.; 2006)

Location (City, State, and NAFTA Region)	Trial No.	Year	Form.	Application					Portion Analy	PHI days	Residues as Spirotetramat Equivalents (mg/kg)						
				Timing	Rate kg ai/ha	Inter-val days	Spray Vol. L/ha	Total Rate kg ai/ha			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
Molino, Florida Region 6	FN072-04HA	2004	100 OD	4th Fruit on main stem has reached typical size+form	0.086	0	128	0.171									
				3rd Fruit on main stem has reached typical size+form	0.085	5	101		Whole fruit	1 1	< 0.01 < 0.01	0.013 < 0.01	0.014 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	**0.057** < 0.05	**0.023** < 0.020
Springfield Nebraska Region 5	FN073-04D	2004	100 OD	3rd Fruit on main stem has reached typical size+form	0.079	0	133	0.176									
				10% of fruits show typical full ripe colour	0.088	7	135		Whole fruit	0 0 1 1 1 3 3 **7** **7** 10 10	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.05 < 0.05 **< 0.05** < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05	< 0.02 < 0.02 **< 0.02** < 0.02 < 0.02 < 0.02 < 0.02 < 0.02 < 0.02 < 0.02 < 0.02
									fruit without peel	1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.05	< 0.02
Uvalde, Texas Region 6	FN074-04H	2004	100 OD	30% of fruits show typ. fullripe colour typical size+form	0.088	0	142	0.178									
				1st Fruit on main stem has reached	0.090	7	163		Whole fruit	2 2	0.069 0.020	0.035 0.012	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	**0.13** 0.062	**0.10** 0.032
Fresno, California Region 10	FN075-04H-A	2004	100 OD	10% of fruits show typical fullripe colour	0.087	0	167	0.173									
				Fully ripe: fruits have typical ripe colour	0.086	7	167		Whole fruit	1 1	0.028 0.016	0.025 0.018	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	**0.083** 0.064	**0.053** 0.034

Location (City, State, and NAFTA Region)	Trial No.	Year	Form.	Application					Portion Analy	PHI days	Residues as Spirotetramat Equivalents (mg/kg)						
				Timing	Rate kg ai/ha	Interval days	Spray Vol. L/ha	Total Rate kg ai/ha			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
Fresno, California Region 10	FN075-04H-B	2004	240 SC	10% of fruits show typical fullripe colour	0.087	0	168	0.176									
				Fully ripe: fruits have typical ripe colour	0.088	7	173		Whole fruit Whole fruit	1 1	0.015 < 0.01	0.012 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	**0.057** < 0.05	**0.027** < 0.020
El Centro, California Region 10	FN076-04H-A	2005	100 OD	70% of fruits show typical fullripe colour	0.089	0	135	0.179									
				Fully ripe: fruits have typical ripe colour	0.090	6	136		Whole fruit Whole fruit	1 1	< 0.01 0.011	0.016 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	**0.056** 0.055	**0.026** 0.021
El Centro, California Region 10	FN076-04H-B	2005	240 SC	70% of fruits show typical fullripe colour	0.090	0	138	0.179									
				Fully ripe: fruits have typical ripe colour	0.089	6	134		Whole fruit Whole fruit	1 1	0.017 0.077	0.016 0.056	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	0.063 **0.16**	0.033 **0.13**
Orland, California Region 10	FN077-04H	2004	100 OD	80% of fruits show typ. Full ripe colour	0.089	0	169	0.178									
				Fully ripe: fruits have typical ripe colour	0.089	7	169		Whole fruit Whole fruit	1 1	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	**< 0.05** < 0.05	**< 0.02** < 0.02

Table 85 Residues on cucumbers from the foliar application of spirotetramat to cucumbers in glasshouses in Europe (M-259128-01-1, Cavaille C.; 2005) RA

Study No. Trial No. Country Year	Application						PHI (days)	Residues (mg/kg) expressed as BYI08330 equivalents						
	No.	Interval	kg ai/[ha × m]/ appl[1]	kg ai/ ha/appl	kg ai/hL/ appl	Water rate L/[ha × m[a])		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.	Parent + Enol
RA-2030/04 R 2004 0130 2 0130-04 Germany D-42799 Leichlingen (Hollweg) 2004	4	7	0.072	0.1008-0.1440	0.00960	750	0[b] 0 1 3 5 7	< 0.01 0.02 0.02 0.02 < 0.01 < 0.01	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 0.017 0.017 0.023 0.013 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055 0.069 0.069 0.075 0.055 < 0.055	< 0.022 0.032 0.032 0.032 < 0.022 < 0.022

Study No. Trial No. Country Year	Application						PHI (days)	Residues (mg/kg) expressed as BYI08330 equivalents						
	No.	Interval	kg ai/[ha × m]/ appl[1]	kg ai/ ha/appl	kg ai/hL/ appl	Water rate L/[ha × m[a])		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.	Parent + Enol
RA-2030/04 R 2004 0131 0 0131-04 Italy I-97017 Santa Croce Camerina (RG) (Sicilia) 2004	4	7	0.072	0.1440	0.00960	750	0[b] 0 1 3 5 7	< 0.01 0.02 0.03 0.01 < 0.01 < 0.01	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 0.012 0.015 0.017 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055 0.064 0.075 0.059 0.055 < 0.055	< 0.022 0.032 0.042 0.022 < 0.022 < 0.022
RA-2030/04 R 2004 0132 9 0132-04 Spain E-08014 Viladecans (Cataluña) 2004	4	7	0.072	0.1152-0.1440	0.00960	750	0[b] 0 1 3 5 7	< 0.01 0.04 0.03 0.02 < 0.01 < 0.01	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 0.020 0.020 0.018 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055 0.094 0.082 0.070 < 0.055 < 0.055	< 0.022 0.054 0.042 0.032 < 0.022 < 0.022
RA-2030/04 R 2004 0133 7 0133-04 Greece GR-60100 Aronas (Northern Greece - Macedonia) 2004	4	7	0.072	0.0360-0.1296	0.00960	750	0[b] 0 1 3 5 7	< 0.01 0.03 0.05 0.02 0.02 0.01	< 0.012 0.022 0.016 < 0.012 < 0.012 < 0.012	< 0.012 0.022 0.020 0.022 0.015 0.013	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055 0.094 0.106 0.11 0.067 0.055	< 0.022 0.052 0.066 0.032 0.032 0.022
RA-2030/04 R 2004 0134 5 0134-04 Germany D-42799 Leichlingen (Hollweg) 2004	4	7	0.072	0.1152-0.1440	0.00960	750	0[b] 0 1 3 5 7	0.02 0.05 0.05 0.03 0.02 < 0.01	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.019 0.024 0.019 0.015 0.020 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.071 0.106 0.101 0.077 0.072 < 0.055	0.032 0.062 0.062 0.042 0.032 < 0.022
RA-2030/04 R 2004 0135 3 0135-04 Italy I-70056 Molfetta (Bari) (Puglia) 2004	4	7	0.072	0.1440	0.00960	750	0[b] 0 1 3 5 7	< 0.01 0.01 0.01 < 0.01 < 0.01 < 0.01	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 0.026 0.015 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055 < 0.055 0.057 < 0.055 < 0.055 < 0.055	< 0.022 0.022 0.022 < 0.022 < 0.022 < 0.022

Study No. / Trial No. / Country / Year	Application						PHI (days)	Residues (mg/kg) expressed as BYI08330 equivalents						
	No.	Interval	kg ai/[ha × m]/ appl[1]	kg ai/ ha/appl	kg ai/hL/ appl	Water rate L/[ha × m[a])		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.	Parent + Enol
RA-2030/04 R 2004 0136 1 0136-04 Spain E-04740 Roquetas de Mar (Almeria) (Andalucia) 2004	4	7	0.072	0.1224-0.1440	0.00960	750	0[b] 0 1 3 6 7	< 0.01 0.02 < 0.01 < 0.01 < 0.01 < 0.01	< 0.012 0.019 0.012 < 0.012 < 0.012 < 0.012	0.013 0.038 0.039 0.015 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055 0.097 0.081 0.057 < 0.055 < 0.055	< 0.022 0.039 0.022 < 0.022 < 0.022 < 0.022
RA-2030/04 R 2004 0138 8 0138-04 Greece GR-58300 Esovalta (Northern Greece - Macedonia) 2004	4	7	0.072	0.0360-0.1080	0.00960	750	0[b] 0 1 3 5 7	< 0.01 0.04 0.01 < 0.01 < 0.01 < 0.01	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 0.048 0.021 0.013 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055 0.12 0.063 0.055 < 0.055 < 0.055	< 0.022 0.052 0.022 < 0.022 < 0.022 < 0.022

[a] m is height of the leafy surface (typically 0.5 – 2 meter). The application and water rate were adapted to the height of the leafy surface, while keeping a constant spray concentration.

[b] Before final treatment.

Table 86 Residues on cucumbers from the foliar application of spirotetramat to cucumbers in the field in Europe (M-259667-01-1, Cavaille C.; 2005; M-268869-01-1, Ballesteros C.; 2005)

Study No/. / Trial No./ / Country / Year	Form.	Application				PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
		No.	Interval days	kg ai/ha/ appl	kg ai/hL		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total residue calc.	Parent + Enol
RA-2028/04 R 2004 0126 4 0126-04 Spain E-41310 Brenes Sevilla (Andalucia) 2004	100 OD	4	7/6/7	0.0720	0.01200	0[a] 0 1 3 6 7	< 0.01 0.04 0.02 0.02 0.01 0.01	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 0.018 0.015 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055 0.090 0.062 0.064 0.055 0.055	< 0.022 0.052 0.027 0.032 0.022 0.022
RA-2028/04 R 2004 0128 0 0128-04 Spain E-08380 Malgrat de Mar (Cataluña) 2004	100 OD	4	5/6/7	0.0720	0.00720-0.00900	0[a] 0 1 3 6 7	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055 < 0.055 < 0.055 < 0.055 < 0.055 < 0.055	< 0.022 < 0.022 < 0.022 < 0.022 < 0.022 < 0.022
RA-2028/04 R 2004 0129 9 0129-04 Italy I-71030 Zapponeta (Foggia) (Puglia) 2004	100 OD	4	7	0.0720	0.00900	0[a] 0 1 3 5 7	< 0.01 0.02 0.01 < 0.01 < 0.01 < 0.01	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 0.033 0.015 0.013 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055 0.064 0.055 < 0.055 < 0.055 < 0.055	< 0.022 0.032 0.022 < 0.022 < 0.022 < 0.022
RA-2043/05	150 OD	4	7	0.0720	0.00900-	0[a]	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	< 0.022

Study No/. Trial No./ Country Year	Form.	Application				PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
		No.	Interval days	kg ai/ha/ appl	kg ai/hL		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total residue calc.	Parent + Enol
R 2005 0239 7 0239-05 Spain E-46230 Alginet (Comunidad Valenciana) 2005					0.01200	0 1 3 6 7	0.03 0.02 0.02 < 0.01 < 0.01	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.074 0.064 0.062 < 0.055 < 0.055	0.042 0.032 0.032 < 0.022 < 0.022
RA-2043/05 R 2005 0240 0 0240-05 Spain E-08380 Malgrat de Mar (Cataluña) 2005	150 OD	4	8/7/7	0.0720-0.0792	0.00720-0.01035	0 3 5 7	< 0.01 < 0.01 < 0.01 < 0.01	< 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008	< 0.055 < 0.055 < 0.055 < 0.055	< 0.022 < 0.022 < 0.022 < 0.022
RA-2043/05 R 2005 0241 9 0241-05 Italy I-97019 Vittoria (Sicilia) 2005	150 OD	4	7	0.0720	0.00900-0.01200	0 3 5 7	0.01 < 0.01 < 0.01 < 0.01	0.017 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008	0.059 < 0.055 < 0.055 < 0.055	0.027 < 0.022 < 0.022 < 0.022
RA-2043/05 R 2005 0715 1 0715-05 Italy I-71049 Zapponeta (Puglia) 2005	150 OD	4	7	0.0720	0.01035	0[a] 0 1 3 5 7	0.03 0.06 0.07 0.06 0.05 0.03	0.021 0.035 0.025 0.027 0.020 0.019	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.083 0.13 0.13 0.12 0.10 0.081	0.051 0.095 0.095 0.087 0.070 0.049

[a] Before the final application.

Table 87 Residues on cucumbers from the foliar application of spirotetramat to cucumbers in the USA (M-277110-01-1**,** Duah, F.; 2006)

Location (City, State, and NAFTA Region)	Trial No.	Year	Form	Application				PHI days	Residues (mg/kg)						
				Rate kg ai/ha	Inter-val days	Actual Spray Vol. L/ha	Total Rate kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total Residue of BYI 08330 calc.	Parent + Enol
Tifton, Georgia Region 2	FN066-04H-A	2004	100 OD	0.088	0	174	0.176								
				0.088	7	172		1 1	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	**< 0.05** < 0.05	**< 0.02** < 0.02
Tifton, Georgia Region 2	FN066-04H-B	2004	240 SC	0.088	0	173	0.176								
				0.088	7	172		1 1	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	**< 0.05** < 0.05	**< 0.02** < 0.02
Louisa, Virginia Region 2	FN067-04H	2004	100 OD	0.089	0	135	0.178								
				0.089	7	134		1 1	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 0.033	< 0.01 < 0.01	< 0.01 < 0.01	< 0.05 **0.073**	< 0.02 **< 0.02**

Location (City, State, and NAFTA Region)	Trial No.	Year	Form	Application				PHI days	Residues (mg/kg)						
				Rate kg ai/ha	Inter-val days	Actual Spray Vol. L/ha	Total Rate kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total Residue of BYI 08330 calc.	Parent + Enol
Molino, Florida Region 2	FN068-04HA	2004	100 OD	0.088	0	146	0.180								
				0.092	5	153		1 1	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	**< 0.05** < 0.05	**< 0.02** < 0.02
Stilwell, Kansas Region 5	FN069-04D	2004	100 OD	0.084	0	127	0.165								
				0.081	7	122		0 0 1 1 1 6 6 9 9	0.012 0.017 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.052 0.057 **< 0.05** < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05	0.022 0.027 **< 0.020** < 0.020 < 0.020 < 0.020 < 0.020 < 0.020 < 0.020
								1[a]	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.05	< 0.020
								1[b]	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.05	< 0.020
Seymour, Illinois Region 5	FN070-04H-A	2004	100 OD	0.084	0	118	0.172								
				0.088	7	125		1 1	< 0.01 < 0.01	< 0.01 < 0.01	0.017 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	**< 0.05** < 0.05	**< 0.020** < 0.020
Seymour, Illinois Region 5	FN070-04H-B	2004	240 SC	0.085	0	121	0.173								
				0.087	7	124		1 1	< 0.01 < 0.01	< 0.01 < 0.01	0.017 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	**< 0.05** < 0.05	**< 0.020** < 0.020
East Bernard, Texas Region 6	FN071-04H	2004	100 OD	0.087	0	141	0.176								
				0.089	7	142		1 1	0.034 0.029	< 0.01 0.010	0.012 0.014	< 0.01 < 0.01	< 0.01 < 0.01	**0.076** 0.073	**0.044** 0.039

[a] Whole fruit, washed.

[b] Without the peel.

Table 88 Residues on summer squash (zucchini) from the foliar application of spirotetramat to squash in the USA (M-277110-01-1, Duah, F.; 2006)

Location (City, State, and NAFTA Region)	Trial No.	Yr	Form	Application				PHI days	Residues as Spirotetramat Equivalents (mg/kg)						
				kg ai/ha	Inter-val days	kg ai/hl	Total kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total Residue of BYI 08330 calc.	Parent + Enol
Germansville Pennsylvania Region 1	FN078-04H	2004	100 OD	0.093	0	185	0.181								
				0.088	6	178		1 1 3 3 **7** **7**	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.078 0.055 0.025 0.016 < 0.01 < 0.01	0.076 0.076 0.052 0.055 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	**0.18** 0.16 0.11 0.10 < 0.05 < 0.05	**0.088** 0.065 0.035 0.026 < 0.02 < 0.02
Tifton, Georgia Region 2	FN079-04D	2004	100 OD	0.088	0	167	0.176								
				0.088	7	173		0 0 1 1 1 3 3 **7** **7** 10 10	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.015 < 0.01 < 0.01 0.011 < 0.01 0.010 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.055 < 0.05 **< 0.05** < 0.051 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05	< 0.020 < 0.020 **< 0.020** < 0.020 < 0.020 < 0.020 < 0.020 < 0.020 < 0.020 < 0.020 < 0.020
								1[a]	< 0.01	0.021	< 0.01	< 0.01	< 0.01	0.061	0.031
								1[b]	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.05	< 0.02
								1[c]	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.05	< 0.02
Molino, Florida Region 2	FN080-04HA	2004	100 OD	0.088	0	146	0.178								
				0.090	5	150		1 1 3 3 **7** **7**	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.014 0.010 < 0.01 0.011 < 0.01 < 0.01	0.033 0.019 0.017 0.033 0.015 0.011	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.077 **0.059** 0.057 0.074 0.055 0.051	0.024 **0.020** < 0.020 0.021 < 0.020 < 0.020
Springfield, Nebraska Region 5	FN081-04H-A	2004	100 OD	0.088	0	134	0.176								
				0.088	6	134		1 1 3 3 **7** **7**	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.013 0.020 0.013 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.053 **0.060** 0.053 < 0.05 < 0.05 < 0.05	< 0.020 **< 0.020** < 0.020 < 0.020 < 0.020 < 0.020

Location (City, State, and NAFTA Region)	Trial No.	Yr	Form	Application				PHI days	Residues as Spirotetramat Equivalents (mg/kg)						
				kg ai/ha	Inter-val days	kg ai/hl	Total kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total Residue of BYI 08330 calc.	Parent + Enol
Springfield, Nebraska Region 5	FN081-04H-B	2004	240 SC	0.088	0	133	0.175								
				0.088	6	133									
Fresno, California Region 10	FN082-04H	2004	100 OD	0.090	0	168	0.177								
				0.087	7	171		1 1 3 3 **7** **7**	0.062 0.045 0.077 0.042 < 0.01 0.020	0.043 0.034 0.050 0.028 < 0.01 0.015	0.017 < 0.01 0.014 0.013 < 0.01 0.012	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.14 0.11 **0.16** 0.10 < 0.05 0.067	0.10 0.079 **0.13** 0.070 < 0.02 0.035

[a] Cooked.

[b] Without peel.

[c] Washed whole fruit.

Fruiting Vegetables, other than Cucurbits

Table 89 Residues on tomatoes from the foliar application of spirotetramat (OD 100) to tomatoes in glasshouses in Europe (M-263523-01-1, Freitag T.; Helfrich P.; 2005; M-263566-01-1, Freitag T.; Helfrich P.; 2006)

Study No. Trial No. Country Year	Crop	Application						PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
		No.	Spray interval days	kg ai/ha×m[1]	kg ai/ha	kg as/hL	Water rate L/ha × m [a]		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.	Parent + Enol
RA-2139/04 R 2004 08234 0823-04 Italy I-70054 Giovinazzo (Puglia) 2004	Tomato cherry	4	7	0.072	0.1440	0.0090	800	0[b] 0 1 3 5 7	0.12 0.25 0.11 0.09 0.11 0.05	0.20 0.21 0.19 0.18 0.17 0.16	0.065 0.056 0.040 0.039 0.050 0.032	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.080 0.084 0.082 0.096 0.10 0.11	0.48 0.61 0.43 0.42 **0.44** 0.36	0.32 0.46 0.30 0.27 **0.28** 0.21
RA-2139/04 R 2004 08242 0824-04 Italy I-70056 Molfetta (Bari) (Puglia) 2004	Tomato cherry	4	7	0.072	0.1440	0.0090	800	0[b] 0 1 3 5 7	0.12 0.19 0.10 0.04 0.16 0.14	0.16 0.14 0.17 0.17 0.16 0.15	0.019 0.019 0.014 0.012 0.022 0.020	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.065 0.059 0.062 0.061 0.082 0.094	0.38 0.42 0.36 0.30 **0.44** 0.42	0.28 0.33 0.27 0.21 **0.32** 0.29
RA-2139/04 R 2004 08250 0825-04	Tomato cherry	4	7	0.072	0.1440 - 0.1656	0.0090	800	0[b] 0 1 3	0.18 0.39 0.24 0.22	0.22 0.27 0.23 0.25	0.013 0.017 0.016 0.022	< 0.012 < 0.012 < 0.012 < 0.012	0.15 0.17 0.15 0.17	0.58 0.86 0.65 0.67	0.40 0.66 0.47 0.47

Study No. Trial No. Country Year	Crop	Application						PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
		No.	Spray interval days	kg ai/ ha×m[1]	kg ai/ha	kg as/hL	Water rate L/ha × m [a]		BYI 08330	BYI 08330 enol	BYI 08330 keto-hy-droxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.	Parent + Enol
Spain E-18127 Jayena Granada (Andalucia) 2004								4 8	0.25 0.25	0.24 0.21	0.021 0.024	< 0.012 < 0.012	0.18 0.24	**0.70** 0.74	**0.49** 0.46
RA-2139/04 R 2004 08269 0826-04 Spain E-18127 Fornes Granada (Andalucia) 2004	Tomato cherry	4	7	0.072	0.1440 - 0.1584	0.0090	800	0[b] 0 1 3 4 8	0.23 0.27 0.22 0.25 0.16 0.16	0.22 0.21 0.20 0.23 0.23 0.21	0.044 0.037 0.033 0.045 0.036 0.034	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.12 0.11 0.12 0.14 0.14 0.19	0.63 0.64 0.58 **0.68** 0.58 0.61	0.45 0.48 0.42 **0.48** 0.39 0.37
RA-2140/04 R 2004 08277 0827-04 Greece GR-57006 Vasilica (Northern Greece - Macedonia) 2004	Tomato	4	7	0.072	0.1080 - 0.1188	0.0096	750	0[b] 0 1 3 5 8	0.04 0.05 0.04 0.06 0.03 0.03	0.11 0.11 0.19 0.39 0.23 0.18	0.012 0.012 0.012 0.021 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.026 0.019 0.021 0.031 0.028 0.030	0.20 0.20 0.27 **0.51** 0.30 0.27	0.15 0.16 0.23 **0.45** 0.26 0.21
RA-2140/04 R 2004 08285 0828-04 Spain E-41720 Los Palacios Sevilla (Andalucia) 2004	Tomato	4	7	0.072	0.1152	0.0072	1000	0[b] 0 1 3 6 7	0.09 0.10 0.10 0.09 0.04 0.09	0.077 0.078 0.093 0.10 0.081 0.099	0.012 0.012 0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.039 0.040 0.042 0.043 0.048 0.078	0.31 0.32 0.26 0.26 0.19 **0.29**	0.17 0.18 0.19 0.19 0.12 **0.19**
RA-2140/04 R 2004 08293 0829-04 Spain E-08014 Viladecans (Cataluña) 2004	Tomato	4	7	0.072	0.1340 - 0.1440	0.0096 - 0.0096	698 - 750	0[b] 0 1 3 4 7	0.11 0.13 0.14 0.15 0.15 0.14	0.093 0.073 0.075 0.11 0.079 0.11	0.012 0.012 0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.034 0.034 0.034 0.052 0.039 0.062	0.26 0.26 0.28 **0.34** 0.29 0.33	0.20 0.20 0.22 **0.26** 0.23 0.25
RA-2140/04 R 2004 08307 0830-04 Italy I-97019 Vittoria (RG) (Sicilia) 2004	Tomato	4	7	0.072	0.1044 - 0.1440	0.0072 - 0.00960	750 - 1000	0[b] 0 1 3 5 7	0.03 0.06 0.06 0.07 0.03 0.03	0.070 0.073 0.079 0.093 0.084 0.095	0.012 0.012 0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.020 0.021 0.021 0.028 0.035 0.040	0.14 0.18 0.19 **0.22** 0.18 0.19	0.10 0.13 0.14 **0.16** 0.11 0.12

[a] Canopy height in meters.

[b] Before final application.

Table 90 Residues on tomatoes from the foliar application of spirotetramat (100 OD) to tomatoes in Europe (M-263566-01-1**,** Freitag T.; Helfrich P.; 2006)

Study No/. Trial No./ Country/ Year	Application				PHI (days)	Residues (mg/kg) expressed as BYI08330 equivalents						
	No. Appl	Inter-val (days)	kg ai/ha	kg ai/hL		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total residue calc.	Parent + Enol
RA-2130/04 R 2004 0849 8 0849-04 Spain E-08901 L'Hospitalet de Llobregat (Cataluña)	4	9/6/6	0.0720	0.00960	0 3 6 7 13	0.04 0.02 0.04 0.03 0.01	0.045 0.058 0.088 0.092 0.075	0.012 < 0.012 0.012 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.018 0.023 0.036 0.041 0.041	0.13 0.12 0.20 0.20 0.15	0.085 0.078 0.13 0.12 0.085
RA-2130/04 R 2004 0850 1 0850-04 Portugal P-2140-472 Vale de Cavalos (Ribatejo e Oeste)	4	8/6/7	0.0720	0.00960	0 3 5 7 14	0.06 0.04 0.03 0.02 0.01	0.056 0.061 0.057 0.059 0.048	0.012 0.012 0.012 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.018 0.019 0.026 0.026 0.030	0.16 0.14 0.14 0.13 0.10	0.12 0.10 0.087 0.079 0.049
RA-2130/04 R 2004 0852 8 0852-04 Greece GR-32001 Petra (Central Greece)	4	7/8	0.0720	0.00960	0[a] 0 1 3 5 7 14	0.01 0.05 0.04 0.02 0.02 0.02 0.01	0.035 0.057 0.057 0.038 0.045 0.041 0.034	0.012 0.012 0.012 0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.017 0.024 0.024 0.023 0.031 0.026 0.038	0.086 0.16 0.15 0.10 0.12 0.10 0.11	0.045 0.11 0.097 0.058 0.065 0.061 0.044
RA-2130/04 R 2004 0853 6 0853-04 Italy I-71030 Zapponeta (Fg) (Puglia)	4	7	0.0720	0.00960	0[a] 0 1 3 5 7 14	0.01 0.03 0.03 0.03 0.03 0.04 0.04	0.13 0.13 0.12 0.13 0.11 0.065 0.074	0.012 0.012 0.012 0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.012 0.013 0.015 0.025 0.023 0.022 0.042	0.18 0.20 0.19 0.21 0.18 0.15 0.18	0.14 0.16 0.15 0.16 0.14 0.10 0.11

[a] Before final treatment.

Table 91 Residues on Tomatoes from the Foliar Application of Spirotetramat to Tomatoes in the USA (M-277197-01-1, Mackie, S.; 2006)

Location (City, State, and NAFTA Region)	Trial Number	Year	Form.	Application				PHI days	Residues (mg/kg)						
				kg ai/ha	Interval days	Spray vol. L/ha	Total rate kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
Germans-ville PA Region 2	FN045-04H	2004	100 OD	0.090		179	0.179								
				0.089	6	179		1 1 3 3 7 7	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.077 0.078 0.133 0.101 0.072 0.062	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.016 0.012 0.031 0.023 0.021 0.015	0.12 0.12 **0.19** 0.15 0.12 0.11	0.087 0.088 **0.14** 0.11 0.082 0.072
Tifton GA Region 2	FN046-04H-A	2004	100 OD	0.088		172	0.176								
				0.088	7	173		1 1 3 3 7 7	0.025 0.021 < 0.01 < 0.01 < 0.01 < 0.01	0.052 0.042 0.058 0.047 0.056 0.068	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 0.021 0.023	0.11 0.093 0.098 0.087 0.11 **0.12**	0.077 0.063 0.068 0.057 0.066

Location (City, State, and NAFTA Region)	Trial Number	Year	Form.	Application				PHI days	Residues (mg/kg)						
				kg ai/ha	Interval days	Spray vol. L/ha	Total rate kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
															0.078
Tifton GA Region 2	FN046-04H-B	2004	240 SC	0.088		172	0.176								
				0.088	7	166		1	0.011	0.031	< 0.01	< 0.01	< 0.01	0.072	0.042
								1	0.012	0.033	< 0.01	< 0.01	< 0.01	0.075	0.045
								3	< 0.01	0.035	< 0.01	< 0.01	< 0.01	0.075	0.045
								3	< 0.01	0.036	< 0.01	< 0.01	0.011	0.077	0.046
								7	< 0.01	0.036	< 0.01	< 0.01	0.015	**0.081**	**0.046**
								7	< 0.01	0.024	< 0.01	< 0.01	< 0.01	0.064	0.034
Molino FL Region 3	FN047-04HA	2004	100 OD	0.083		124	0.168								
				0.085	5	101		1	< 0.01	0.132	0.010	< 0.01	< 0.01	0.17	0.10
								1	< 0.01	0.165	0.022	< 0.01	< 0.01	0.22	0.18
								3	< 0.01	0.130	0.013	< 0.01	< 0.01	0.17	0.14
								3	< 0.01	0.195	< 0.01	< 0.01	< 0.01	0.23	0.20
								7	< 0.01	0.227	< 0.01	< 0.01	0.011	**0.27**	**0.24**
								7	< 0.01	0.215	0.011	< 0.01	0.013	0.26	0.22
Jennings FL Region 3	FN048-04H	2004	100 OD	0.088		162	0.175								
				0.087	6	145		1	< 0.01	0.037	< 0.01	< 0.01	< 0.01	0.077	0.047
								1	< 0.01	0.032	< 0.01	< 0.01	< 0.01	0.072	0.042
								3	< 0.01	0.034	< 0.01	< 0.01	< 0.01	0.074	0.044
								3	< 0.01	0.032	< 0.01	< 0.01	< 0.01	0.072	0.042
								7	< 0.01	0.086	< 0.01	< 0.01	0.025	**0.14**	**0.096**
								7	< 0.01	0.056	< 0.01	< 0.01	0.018	0.10	0.066
Stilwell KS Region 5	FN049-04DA	2004	100 OD	0.105		148	0.199								
				0.095	6	144		0	0.022	0.027	< 0.01	< 0.01	< 0.01	0.079	0.049
								0	0.039	0.031	< 0.01	< 0.01	< 0.01	0.10	0.070
								1	< 0.01	0.030	< 0.01	< 0.01	< 0.01	**0.070**	**0.040**
								1	< 0.01	0.020	< 0.01	< 0.01	< 0.01	0.060	0.030
								4	< 0.01	0.025	< 0.01	< 0.01	< 0.01	0.065	0.035
								4	< 0.01	0.019	< 0.01	< 0.01	< 0.01	0.059	0.029
								7	< 0.01	0.025	< 0.01	< 0.01	0.013	0.068	0.035
								7	< 0.01	0.017	< 0.01	< 0.01	< 0.01	0.057	0.027
								10	< 0.01	0.017	< 0.01	< 0.01	< 0.01	0.057	0.027
								10	< 0.01	0.012	< 0.01	< 0.01	< 0.01	0.052	0.022
Fresno CA Region 10	FN050-04H-A	2004	100 OD	0.087		169	0.174								
				0.087	7	172		1	0.045	0.086	< 0.01	< 0.01	< 0.01	0.16	0.13
								1	0.034	0.163	< 0.01	< 0.01	< 0.01	0.23	0.20
								3	0.048	0.104	< 0.01	< 0.01	< 0.01	0.18	0.15
								3	0.043	0.129	< 0.01	< 0.01	0.011	0.20	0.17
								7	0.043	0.153	< 0.01	< 0.01	0.017	**0.24**	**0.20**
								7	0.035	0.153	< 0.01	< 0.01	0.018	0.23	0.19
Fresno CA Region 10	FN050-04H-B	2004	240 SC	0.088		172	0.177								
				0.089	7	176		1	0.060	0.064	< 0.01	< 0.01	< 0.01	0.15	0.12
								1	0.045	0.048	< 0.01	< 0.01	< 0.01	0.12	0.093
								3	0.053	0.078	< 0.01	< 0.01	< 0.01	0.16	0.13
								3	0.049	0.093	< 0.01	< 0.01	< 0.01	0.17	0.14
								7	0.022	0.086	< 0.01	< 0.01	< 0.01	0.14	0.11
								7	0.029	0.086	< 0.01	< 0.01	0.011	**0.15**	**0.12**
Glenn CA Region 10	FN051-04H-A	2004	100 OD	0.088		140	0.177								
				0.089	7	141		1	0.077	0.108	< 0.01	< 0.01	0.013	0.22	0.18
								1	0.077	0.102	< 0.01	< 0.01	0.011	0.22	0.18
								3	0.062	0.079	< 0.01	< 0.01	0.013	0.17	0.14
								3	0.064	0.101	< 0.01	< 0.01	0.019	0.20	0.16
								7	0.060	0.161	< 0.01	< 0.01	< 0.01	0.25	0.22
								7	0.072	0.146	< 0.01	< 0.01	< 0.01	**0.25**	**0.22**
Glenn CA Region 10	FN051-04H-B	2004	240 SC	0.087		140	0.177								
				0.089	7	141		1	0.070	0.063	< 0.01	< 0.01	0.011	0.16	0.13
								1	0.088	0.071	< 0.01	< 0.01	< 0.01	0.19	0.16
								3	0.070	0.049	< 0.01	< 0.01	< 0.01	0.15	0.12
								3	0.047	0.035	< 0.01	< 0.01	< 0.01	0.11	0.082
								7	0.110	0.084	< 0.01	< 0.01	< 0.01	0.22	0.19

Location (City, State, and NAFTA Region)	Trial Number	Year	Form.	Application				PHI days	Residues (mg/kg)						
				kg ai/ha	Interval days	Spray vol. L/ha	Total rate kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
								7	0.123	0.082	< 0.01	< 0.01	< 0.01	**0.23**	**0.20**
Paso Robles CA Region 10	FN052-04H	2004	100 OD	0.087		140	0.175								
				0.087	6	138		1	0.014	0.100	< 0.01	< 0.01	< 0.01	0.14	0.11
								1	< 0.01	0.103	< 0.01	< 0.01	< 0.01	0.14	0.11
								4	< 0.01	0.110	< 0.01	< 0.01	< 0.01	0.15	0.12
								4	< 0.01	0.103	< 0.01	< 0.01	< 0.01	0.14	0.11
								7	< 0.01	0.194	< 0.01	< 0.01	< 0.01	0.23	0.20
								7	< 0.01	0.202	< 0.01	< 0.01	< 0.01	**0.24**	**0.21**
Visalia CA Region 10	FN053-04HA	2004	100 OD	0.087		130	0.175								
				0.088	7	135		1	0.051	0.080	< 0.01	< 0.01	< 0.01	0.16	0.13
								1	0.047	0.092	< 0.01	< 0.01	< 0.01	**0.17**	**0.14**
								3	0.018	0.061	< 0.01	< 0.01	< 0.01	0.11	0.079
								3	0.012	0.038	< 0.01	< 0.01	< 0.01	0.080	0.050
								7	< 0.01	0.046	< 0.01	< 0.01	< 0.01	0.059	0.056
								7	< 0.01	0.051	< 0.01	< 0.01	< 0.01	0.091	0.061
Porterville CA Region 10	FN054-04H	2004	100 OD	0.087		176	0.177								
				0.090	7	182		1	0.012	0.071	< 0.01	< 0.01	< 0.01	0.11	0.083
								1	0.010	0.071	< 0.01	< 0.01	< 0.01	0.11	0.081
								3	0.017	0.131	< 0.01	< 0.01	0.015	0.18	0.15
								3	0.017	0.133	< 0.01	< 0.01	0.018	0.19	0.15
								7	< 0.01	0.129	< 0.01	< 0.01	0.014	0.17	0.14
								7	< 0.01	0.158	< 0.01	< 0.01	0.021	**0.21**	**0.17**
Fresno CA Region 10	FN055-04H	2004	100 OD	0.088		117	0.175								
				0.088	7	117		1	0.014	0.087	< 0.01	< 0.01	< 0.01	0.13	0.10
								1	0.025	0.123	< 0.01	< 0.01	0.012	0.18	0.15
								3	< 0.01	0.098	< 0.01	< 0.01	< 0.01	0.14	0.11
								3	< 0.01	0.086	< 0.01	< 0.01	< 0.01	0.13	0.096
								7	0.016	0.146	< 0.01	< 0.01	0.016	0.20	0.16
								7	0.022	0.229	< 0.01	< 0.01	0.035	**0.30**	**0.25**
Madera CA Region 10	FN056-04H	2004	100 OD	0.088		170	0.176								
				0.088	6	168		1	0.014	0.063	< 0.01	< 0.01	< 0.01	0.11	0.077
								1	0.025	0.088	< 0.01	< 0.01	< 0.01	0.14	0.11
								3	0.017	0.058	< 0.01	< 0.01	< 0.01	0.10	0.075
								3	0.013	0.077	< 0.01	< 0.01	< 0.01	0.12	0.090
								7	0.019	0.088	< 0.01	< 0.01	0.018	0.14	0.11
								7	0.029	0.087	0.010	< 0.01	0.016	**0.16**	**0.12**

Table 92 Residues on peppers from the foliar application of spirotetramat (100 OD) to sweet peppers in glasshouses in Europe (M-263426-01-1, Schöning R.; Helfrich P.; 2006; M-259820-01-1**,** Schöning R.; Wolters A.; 2005)

Study No/. Trial No./ Country/ Year	Application							PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
	No.	Inter-val days	kg ai/ ha × m*	kg ai/ha	kg ai/hL	Water rate L/ha × m	Plant height (m) [a]		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total residue calc.	Parent + Enol
RA-2026/04 R 2004 0113 2 0113-04 Netherlands NL-1704 PJ Heerhugowaard (Noord-Holland) 2004	4	7	0.072	0.1224-0.1368	0.0072	1000	1.9	0[b]	0.05	0.35	0.021	< 0.012	0.016	0.43	0.40
								0	0.10	0.38	0.021	< 0.012	0.017	0.53	0.48
								1	0.07	0.40	0.024	< 0.012	0.018	0.52	0.47
								3	0.08	0.41	0.024	< 0.012	0.021	0.55	0.49
								5	0.05	0.39	0.022	< 0.012	0.023	0.50	0.44
								7	0.04	0.46	0.027	< 0.012	0.026	**0.56**	**0.50**
RA-2026/04	4	7	0.072	0.0432-	0.00960	750	0.8	0[b]	0.06	0.39	0.021	< 0.012	0.054	0.53	0.45

Study No/. Trial No./ Country/ Year	Application							PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
	No.	Inter-val days	kg ai/ ha × m*	kg ai/ha	kg ai/hL	Water rate L/ha × m	Plant height (m) [a]		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total residue calc.	Parent + Enol
R 2004 0114 0 0114-04 Germany D-42799 Leichlingen 2004				0.0576				0 1 3 4 7	0.11 0.09 0.07 0.07 0.04	0.36 0.39 0.38 0.40 0.46	0.021 0.021 0.022 0.025 0.021	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.044 0.053 0.048 0.053 0.048	0.54 0.56 0.53 0.55 **0.58**	0.47 0.48 0.45 0.47 **0.50**
RA-2026/04 R 2004 0115 9 0115-04 France F-13690 Graveson (Provence-Cote D'azur) 2004	4	6/7	0.072	0.0504-0.0684	0.00670 - 0.00720	1000	0.93-0.97	0[b] 0 1 3 5 7	0.03 0.07 0.06 0.05 0.04 0.04	0.25 0.29 0.28 0.31 0.32 0.29	0.024 0.041 0.028 0.027 0.029 0.025	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.019 0.022 0.020 0.022 0.025 0.025	0.34 0.44 0.40 0.42 **0.43** 0.39	0.28 0.36 0.34 0.36 **0.36** 0.33
RA-2026/04 R 2004 0116 7 0116-04 Portugal P-2000-618 Póvoa da Isenta (Ribatejo e Oeste) 2004	4	7	0.072	0.0504-0.0720	0.00960	750	0.9-1.0	0[b] 0 1 3 6 7	0.03 0.06 0.03 0.03 0.04 0.02	0.29 0.28 0.25 0.25 0.26 0.25	0.027 0.030 0.026 0.019 0.023 0.019	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.013 0.013 0.014 0.014 0.016 0.018	0.37 0.38 0.34 0.33 **0.35** 0.32	0.32 0.34 0.28 0.28 **0.30** 0.27
RA-2026/04 R 2004 0117 5 0117-04 Italy I-70056 Molfetta (Bari) (Puglia) 2004	4	7	0.098	0.1080	0.00960	1000	1.0-1.1	0[b] 0 1 3 5 7	0.08 0.14 0.08 0.12 0.08 0.13	0.23 0.25 0.25 0.31 0.31 0.34	0.015 0.017 0.015 0.021 0.019 0.025	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.019 0.023 0.020 0.027 0.030 0.039	0.35 0.44 0.37 0.48 0.45 **0.55**	0.31 0.39 0.33 0.43 0.39 **0.47**
RA-2026/04 R 2004 0118 3 0118-04 Germany D-42799 Leichlingen 2004	4	7	0.072	0.0432-0.0576	0.00960	750	0.8	0[b] 0 1 3 4 7	0.05 0.11 0.08 0.07 0.05 0.05	0.32 0.30 0.33 0.26 0.30 0.35	0.018 0.016 0.019 0.015 0.019 0.018	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.052 0.036 0.040 0.039 0.046 0.050	0.45 0.47 0.48 0.39 0.43 **0.48**	0.37 0.41 0.41 0.33 0.35 **0.40**
RA-2026/04 R 2004 0119 1 0119-04 France F-84210 Pernes les Fontaines (Provence-Cote D'azur) 2004	4	7	0.072	0.0504-0.0612	0.00720	1000	0.8-0.9	0[b] 0 1 3 5 7	0.02 0.03 0.03 0.03 0.01 0.02	0.17 0.18 0.19 0.20 0.20 0.18	0.014 0.017 0.017 0.016 0.017 0.015	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.010 0.010 0.010 0.010 0.013 0.013	0.22 0.25 0.26 **0.27** 0.25 0.24	0.19 0.21 0.22 **0.23** 0.21 0.20
RA-2026/04 R 2004 0120 5 0120-04 Spain E-08301 Mataró (Cataluña) 2004	4	7	0.072	0.0936-0.1152	0.00720	1000	1.5-1.7	0[b] 0 1 3 4 7	0.03 0.05 0.06 0.03 0.03 0.03	0.37 0.38 0.42 0.38 0.42 0.43	0.018 0.019 0.020 0.019 0.020 0.020	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.052 0.034 0.029 0.036 0.027 0.044	0.47 0.49 0.54 0.47 0.51 **0.54**	0.40 0.43 0.48 0.41 0.45 **0.46**
RA-2134/04 R 2004 0791 2	4	6/7	0.072	0.0540 –	0.0072	1000	1.0	0[b] 0	0.03 0.06	0.28 0.30	0.029 0.028	< 0.012 < 0.012	0.022 0.023	0.37 0.43	0.31 0.36 0.37

Study No/. Trial No./ Country/ Year	Application							PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
	No.	Inter-val days	kg ai/ ha × m*	kg ai/ha	kg ai/hL	Water rate L/ha × m	Plant height (m) [a]		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total residue calc.	Parent + Enol
0791-04 France F-13690 Graveson (Provence-Cote D'azur) 2004				0.0684				1 3 5 7	0.06 0.06 0.05 0.04	0.31 0.36 0.32 0.29	0.032 0.025 0.028 0.029	< 0.012 < 0.012 < 0.012 < 0.012	0.021 0.026 0.028 0.029	0.44 **0.48** 0.43 0.40	**0.42** 0.37 0.33
RA-2134/04 R 2004 0792 0 0792-04 Germany D-42799 Leichlingen 2004	4	7	0.072	0.0432 – 0.0576	0.0096	750	0.8	0 [b] 0 1 3 4 7	0.09 0.18 0.13 0.12 0.12 0.12	0.21 0.23 0.28 0.26 0.27 0.37	0.013 0.015 0.016 0.016 0.017 0.021	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.026 0.027 0.033 0.038 0.031 0.051	0.35 0.46 0.47 0.45 0.45 **0.57**	0.30 0.31 0.41 0.39 0.39 **0.49**
RA-2134/04 R 2004 0793 9 0793-04 Italy I-70056 Molfetta (Bari) (Puglia) 2004	4	7	0.072	0.1080	0.0096	750	1.5 [c]	0 [b] 0 1 3 5 7	0.08 0.16 0.12 0.10 0.06 0.12	0.10 0.11 0.11 0.13 0.13 0.15	0.012 0.012 0.012 0.012 0.012 0.013	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.008 0.008 0.009 0.009 0.010 0.016	0.21 0.29 0.26 0.26 0.22 **0.31**	0.18 0.27 0.23 0.23 0.19 **0.27**
RA-2134/04 R 2004 0794 7 0794-04 Portugal P-2000-618 Póvoa da Isenta (Ribatejo e Oeste) 2004	4	7	0.072	0.0504 – 0.0720	0.0096	750	1.0	0 [b] 0 1 3 6 7	0.04 0.09 0.05 0.04 0.02 0.03	0.20 0.20 0.21 0.21 0.18 0.19	0.013 0.023 0.015 0.014 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.010 0.012 0.011 0.013 0.013 0.017	0.27 0.33 0.29 **0.29** 0.24 0.26	0.24 0.29 0.26 **0.25** 0.20 0.22

[a] Height of the leafy surface at the last application.

[b] Before final application.

[c] A vertical boom sprayer with 3 nozzles and a working *width of 1.5 m* was used for the 4 applications, while the actual height of the leafy surface amounted to only 1.0 to 1.1 m.

Table 93 Residues on Peppers from the Foliar Application of Spirotetramat to Sweet Peppers in the Field in Europe (M-260011-01-1, Schöning R.; Wolters A.; 2005; M-266615-01-1**,** Schöning R.; M-266682-01-1**,** Wolters A.; 2006; Schöning R.; Wolters A.; 2006)

Study No./ Trial No./ Country / Year	Form.	Application				PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
		No.	Inter-val days	kg ai/ha	kg ai/hL		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total residue calc.	Parent +Enol
RA-2027/04 R 2004 0121 3 0121-04 Spain E-46230 Alginet (Valenciana) 2004	100 OD	4	7/6	0.072	0.0090-0.012	0 [a] 0 1 3 6 7	0.13 0.28 0.20 0.14 0.08 0.10	0.51 0.51 0.55 0.54 0.51 0.48	0.034 0.039 0.057 0.062 0.047 0.053	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.051 0.043 0.050 0.063 0.053 0.066	0.74 0.88 0.86 0.82 0.70 0.71	0.64 0.79 0.75 0.68 0.59 0.58
RA-2027/04 R 2004 0122 1 0122-04	100 OD	4	7	0.0720-0.0789	0.0096	0 [a] 0 1 3	< 0.01 0.01 0.01 0.01	0.19 0.19 0.15 0.21	0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012	0.016 0.014 0.013 0.019	0.23 0.23 0.20 0.26	0.20 0.20 0.16 0.22

Study No./ Trial No./ Country / Year	Form.	Application				PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
		No.	Inter-val days	kg ai/ha	kg ai/hL		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total residue calc.	Parent +Enol
France F-31 330 Le Burgaud (Midi-Pyrenees) 2004						5 7	< 0.01 < 0.01	0.18 0.21	0.012 0.012	< 0.012 < 0.012	0.017 0.022	0.22 0.25	0.19 0.22
RA-2027/04 R 2004 0124 8 0124-04 Italy I-70054 Giovinazzo (Bari) (Puglia) 2004	100 OD	4	7	0.0720	0.0072	0[a] 0 1 3 5 7	< 0.01 0.01 0.01 0.01 < 0.01 < 0.01	0.11 0.12 0.13 0.13 0.16 0.12	0.012 0.012 0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.010 0.009 0.009 0.010 0.012 0.011	0.14 0.16 0.18 0.17 0.21 0.17	0.12 0.13 0.14 0.14 0.17 0.13
RA-2027/04 R 2004 0125 6 0125-04 Portugal P-2120-193 Foros de Salvaterra (Ribatejo e Oeste) 2004	100 OD	4	7	0.0720-00761	0.0096	0[a] 0 1 3 5 7	0.02 0.04 0.04 0.02 0.02 0.02	0.23 0.25 0.24 0.25 0.29 0.29	0.012 0.012 0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.015 0.014 0.013 0.015 0.018 0.019	0.29 0.32 0.31 0.30 0.35 0.35	0.25 0.29 0.28 0.27 0.31 0.31
RA-2039/05 R 2005 0200 1 0200-05 Italy I-70053 Canosa (Bari) (Puglia) 2005	OD 150	4	7	0.0720	0.0090	0 0 1 3 5 7	0.01 0.03 0.04 0.02 0.01 0.01	0.058 0.048 0.049 0.052 0.067 0.092	0.012 0.012 0.012 0.012 0.012 0.013	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.008 0.008 0.008 0.008 0.010 0.012	0.10 0.11 0.12 0.086 0.12 0.14	0.068 0.051 0.053 0.054 0.068 0.093
RA-2039/05 R 2005 0202 8 0202-05 Portugal P-2140-427 Caniceira- Vale de Cavalos (Ribatejo e Oeste) 2005	OD 150	4	7	0.0720	0.0144	0 0 1 3 5 7	0.01 0.03 0.01 0.01 0.01 0.01	0.13 0.15 0.13 0.12 0.13 0.098	0.012 0.012 0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.008 0.008 0.008 0.008 0.008 0.008	0.17 0.21 0.18 0.16 0.17 0.14	0.14 0.18 0.14 0.13 0.14 0.11
RA-2046/05 R 2005 0707 0 0707-05 Italy I-70053 Canosa di Puglia (Bari) (Puglia) 2005	48 SC	4	7	0.0720	0.0090	0 0 1 3 5 7	0.01 0.04 0.03 0.02 0.01 0.01	0.043 0.050 0.044 0.053 0.047 0.069	0.012 0.012 0.012 0.014 0.012 0.013	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.008 0.008 0.008 0.008 0.008 0.009	0.085 0.12 0.11 0.10 0.089 0.11	0.053 0.090 0.074 0.073 0.057 0.079
RA-2046/05 R 2005 0708 9 0708-05 Portugal P-2140-427 Caniceira – Vale de Cavalos (Ribatejo e Oeste) 2005	48 SC	4	7	0.0720	0.0144	0 0 1 3 5 7	0.01 0.04 0.02 0.02 0.02 0.01	0.089 0.11 0.096 0.12 0.11 0.11	0.012 0.012 0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.008 0.008 0.008 0.008 0.008 0.008	0.13 0.18 0.15 0.17 0.16 0.15	0.099 0.15 0.11 0.14 0.13 0.12

[a] Before the final application.

Table 94 Residues on various bell pepper types from the foliar application of spirotetramat to peppers in the USA (M-277197-01-1, Mackie, S.; 2006)

Location	Trial	Yr	Form.	Application					Type	PHI days	Residues (mg/kg)						
				No.	kg ai/ha	Inter-val days	kg ai/hL	Total kg ai/ha			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
Tifton GA Region 2	FN057-04D	2004	100 OD	2	0.088		172	0.176	Bell, sweet								
					0.088	7	173			0	0.011	0.051	0.019	< 0.01	< 0.01	0.10	0.062
										0	0.011	0.059	0.023	< 0.01	< 0.01	0.11	0.070
										1	< 0.01	0.093	0.049	< 0.01	< 0.01	0.17	0.10
										1	< 0.01	0.089	0.037	< 0.01	< 0.01	0.16	0.099
										3	< 0.01	0.077	0.045	< 0.01	< 0.01	0.15	0.087
										3	< 0.01	0.099	0.038	< 0.01	< 0.01	0.17	0.11
										7	< 0.01	0.190	0.060	< 0.01	0.022	**0.29**	**0.20**
										7	< 0.01	0.108	0.053	< 0.01	0.018	0.19	0.12
										10	< 0.01	0.087	0.045	< 0.01	0.023	0.17	0.097
										10	< 0.01	0.191	0.051	< 0.01	0.033	0.30	0.20
Molino FL Region 3	FN058-04H-A	2004	100 OD	2	0.085		136	0.172	Bell, sweet								
					0.087	7	134			1	< 0.01	0.102	0.058	< 0.01	0.011	0.19	0.11
										1	< 0.01	0.148	0.092	< 0.01	0.017	0.28	0.16
										3	0.013	0.286	0.120	< 0.01	0.034	0.45	0.30
										3	0.014	0.492	0.205	< 0.01	0.054	**0.78**	**0.51**
										7	< 0.01	0.361	0.145	< 0.01	0.057	0.58	0.37
										7	< 0.01	0.258	0.137	< 0.01	0.062	0.48	0.27
Molino FL Region 3	FN058-04H-B	2004	240 SC	2	0.087		139	0.176	Bell, sweet								
					0.089	7	133			1	0.093	0.059	< 0.01	< 0.01	0.016	0.19	0.15
										1	0.175	0.124	< 0.01	0.021	0.031	0.36	0.30
										3	0.235	0.099	< 0.01	0.026	0.020	**0.39**	**0.33**
										3	0.208	0.088	< 0.01	0.020	0.032	0.36	0.30
										7	0.247	0.077	< 0.01	0.040	< 0.01	0.38	0.32
										7	0.200	0.096	< 0.01	0.045	< 0.01	0.36	0.30
Springfield NE Region 5	FN059-04H	2004	100 OD	2	0.079		135	0.177	Bell, sweet								
					0.088												
					0.089	7	132			1	< 0.01	0.394	0.139	< 0.01	0.017	0.57	0.40
										1	< 0.01	0.232	0.112	< 0.01	0.016	0.38	0.24
										4	< 0.01	0.276	0.119	< 0.01	0.015	**0.43**	**0.29**
										4	< 0.01	0.269	0.134	< 0.01	0.018	0.44	0.28
										7	< 0.01	0.242	0.083	< 0.01	0.020	0.36	0.25
										7	< 0.01	0.615	0.233	< 0.01	0.051	0.91	0.62
East Bernard TX Region 6	FN060-04HA	2004	100 OD	2	0.089		140	0.177	Bell, sweet								
					0.089	7	141			1	< 0.01	0.204	0.039	< 0.01	< 0.01	0.27	0.21
										1	< 0.01	0.263	0.069	< 0.01	< 0.01	**0.36**	**0.27**
										3	< 0.01	0.204	0.037	< 0.01	< 0.01	0.27	0.21
										3	< 0.01	0.210	0.051	< 0.01	< 0.01	0.29	0.22
										7	< 0.01	0.203	0.065	< 0.01	< 0.01	0.30	0.21
										7	< 0.01	0.247	0.036	< 0.01	< 0.01	0.31	0.26
Fresno CA Region 10	FN061-04H-A	2004	100 OD	2	0.088		172	0.174	Bell, sweet								
					0.085	7	170			1	0.025	0.530	0.096	< 0.01	0.021	0.68	0.56
										1	0.033	0.489	0.075	< 0.01	0.022	0.63	0.52
										3	0.026	0.690	0.078	< 0.01	0.031	0.84	0.72
										3	0.016	0.609	0.116	< 0.01	0.027	0.78	0.62
										7	< 0.01	0.446	0.131	< 0.01	0.033	0.63	0.46
										7	0.014	0.749	0.229	< 0.01	0.068	**1.1**	**0.76**
Fresno CA Region 10	FN061-04H-B	2004	240 SC	2	0.088		171	0.175	Bell, sweet								
					0.087	7	171			1	0.022	0.141	0.031	< 0.01	< 0.01	0.21	0.16
										1	0.019	0.225	0.040	< 0.01	< 0.01	0.30	0.24
										3	0.028	0.375	0.059	< 0.01	0.016	**0.49**	**0.40**
										3	0.025	0.278	0.052	< 0.01	0.013	0.38	0.30
										7	< 0.01	0.304	0.043	< 0.01	0.023	0.39	0.31
																	0.30

Location	Trial	Yr	Form.	Application					Type	PHI days	Residues (mg/kg)						
				No.	kg ai/ha	Inter-val days	kg ai/hL	Total kg ai/ha			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
										7	0.011	0.289	0.056	< 0.01	0.024	0.39	
Hickman CA Region 10	FN062-04H	2004	100 OD	2	0.088		122	0.175	Bell, sweet								
					0.087	7	121			1	0.046	0.208	0.047	< 0.01	< 0.01	0.32	0.25
										1	0.034	0.106	0.042	< 0.01	< 0.01	0.20	0.14
										3	0.028	0.183	0.057	< 0.01	< 0.01	0.29	0.21
										3	0.049	0.374	0.050	< 0.01	0.012	0.50	0.42
										7	0.035	0.271	0.057	< 0.01	0.013	0.39	0.31
										7	0.032	0.413	0.070	< 0.01	0.024	**0.55**	**0.44**
Bumpass VA Region2	FN063-04H	2004	100 OD	2	0.087	7	131	0.174	Cayenne, Chilli								
					0.088		133			1	0.067	0.856	0.139	< 0.01	0.014	1.1	0.92
										1	0.088	1.116	0.143	< 0.01	0.022	1.4	1.2
										3	0.024	0.678	0.145	< 0.01	0.026	0.88	0.70
										3	0.029	0.670	0.129	< 0.01	0.020	0.86	0.70
										7	< 0.01	0.796	0.088	< 0.01	0.039	0.94	0.81
										7	0.011	1.267	0.129	< 0.01	0.054	**1.5**	**1.3**
Molino FL Region 3	FN064-04H-A	2004	100 OD	2	0.088		137	0.176	Cayenne, Chilli								
					0.088	7	133			1	0.052	0.452	0.057	< 0.01	< 0.01	0.58	0.50
										1	0.053	0.402	0.060	< 0.01	< 0.01	0.54	0.46
										3	0.041	0.524	0.074	< 0.01	0.013	0.66	0.56
										3	0.027	0.445	0.059	< 0.01	0.011	0.55	0.47
										7	0.036	0.710	0.138	< 0.01	0.029	**0.92**	**0.75**
										7	0.028	0.421	0.110	< 0.01	0.019	0.59	0.45
Molino FL Region 3	FN064-04H-B	2004	240 SC	2	0.088		138	0.176	Cayenne, chilli								
					0.088	7	133			1	0.059	0.610	0.036	< 0.01	< 0.01	**0.72**	**0.67**
										1	0.041	0.426	0.040	< 0.01	< 0.01	0.53	0.47
										3	0.031	0.175	0.033	< 0.01	< 0.01	0.26	0.21
										3	0.045	0.231	0.056	< 0.01	< 0.01	0.35	0.28
										7	0.031	0.458	0.093	< 0.01	0.019	0.61	0.49
										7	0.026	0.303	0.066	< 0.01	0.013	0.42	0.33
Fresno CA Region 10	FN065-04H	2004	100 OD	2	0.088		170	0.175	Cayenne, chilli								
					0.087	7	170			1	0.027	0.343	0.035	< 0.01	0.012	0.43	0.37
										1	0.038	0.391	0.032	< 0.01	0.010	0.48	0.43
										3	0.048	0.594	0.080	< 0.01	0.026	0.76	0.64
										3	0.051	0.577	0.093	< 0.01	0.036	0.77	0.63
										7	0.025	0.566	0.070	< 0.01	0.040	0.71	0.59
										7	0.021	0.802	0.091	< 0.01	0.044	**0.97**	**0.82**

Leafy Vegetables

Table 95 Residues on lettuce from the foliar application of spirotetramat to lettuce in Europe (M-272108-01-1, Schöning R. ; 2006; M-261625-01-1, Schöning R.; Behn U.; 2005; M-262616-01-1, Schöning R.; Wolters A.; 2005; M-260209-01-1, Schöning R.; Wolters A.; 2005; M-260382-01-1, Schöning R.; Behn U.; 2005)

Study/ Trial No/. Trial SubID/ Country/ Year	Crop, Variety	Form.	Application				PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
			No	Spray interval days	kg ai/ ha	kg ai/ hL		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.	Parent + Enol
GLASSHOUSE														
RA-2054/04 R 2004 0393 3 0393-04 Germany	Lettuce Alexandria, Butterhead variety	100 OD	3	7	0.0720	0.0120	0[a]	0.04	0.096	0.031	< 0.012	0.030	0.21	0.14
							0	0.35	0.35	0.076	< 0.012	0.037	0.81	0.70
							1	0.38	0.27	0.043	< 0.012	0.037	0.74	0.65
							3	0.28	0.25	0.061	< 0.012	0.052	0.65	0.53

Study/ Trial No/. Trial SubID/ Country/ Year	Crop, Variety	Form.	Application				PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
			No	Spray interval days	kg ai/ ha	kg ai/ hL		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.	Parent + Enol
D-40764 Langenfeld (Modemann) 2004							7 13	0.02 0.01	0.091 0.053	0.039 0.013	< 0.012 < 0.012	0.060 0.081	0.22 0.17	0.11 0.063
RA-2054/04 R 2004 0394 1 0394-04 France F-31790 St. Jory 2004	Lettuce Alexandria, Butterhead variety	100 OD	3	7	0.0720	0.0072	0[a] 0 1 3 7 14	0.07 0.49 0.63 0.06 0.02 0.01	0.12 0.69 0.32 0.20 0.080 0.031	0.041 0.16 0.090 0.047 0.025 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.022 0.042 0.027 0.038 0.059 0.067	0.27 1.4 1.1 0.36 0.20 0.13	0.19 1.2 0.95 0.26 0.10 0.041
RA-2054/04 R 2004 0396 8 0396-04 Germany D-42799 Leichlingen (Hollweg) 2004	Lettuce Roderik, Butterhead variety	100 OD	3	7	0.0720	0.0120	0 1 3 6	2.2 1.7 1.5 1.9	0.66 0.50 0.54 0.59	0.079 0.059 0.070 0.079	< 0.012 < 0.012 < 0.012 < 0.012	0.014 0.012 0.017 0.032	3.0 2.3 2.1 2.6	2.9 2.2 2.0 2.5
RA-2054/04 R 2004 0397 6 0397-04 Italy I-00050 Palidoro Fiumicino 2004	Lettuce Kereon, Butterhead variety	100 OD	3	7	0.0720	0.0144	0 1 3 7	1.9 1.7 1.3 1.2	0.35 0.37 0.28 0.21	0.070 0.072 0.046 0.032	< 0.012 < 0.012 < 0.012 < 0.012	0.037 0.042 0.043 0.048	2.4 2.2 1.7 1.5	2.2 2.1 1.6 1.4
RA-2054/04 R 2004 0398 4 0398-04 Italy I-70043 Monopoli (BA) (Puglia) 2004	Lettuce Loose-leaf variety	100 OD	3	7	0.0720	0.0090	0[a] 0 1 3 6 14	1.7 5.9 5.1 3.7 2.6 0.60	0.49 0.73 0.68 0.76 0.53 0.24	0.13 0.14 0.14 0.17 0.15 0.079	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.051 0.056 0.052 0.13 0.15 0.093	2.4 6.9 5.9 4.7 3.5 1.0	2.2 6.6 5.8 4.5 3.1 0.84
RA-2054/04 R 2004 0399 2 0399-04 Spain E-08410 Bigues 2004	Lettuce Batavia, Loose-leaf variety	100 OD	3	7	0.0720 - 0.0774	0.0072 – 0.0090	0[a] 0 1 3 7 14	0.54 1.4 1.2 0.73 0.52 0.39	0.52 0.75 0.71 0.60 0.51 0.22	0.2 0.24 0.22 0.22 0.17 0.081	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.057 0.058 0.071 0.067 0.084 0.074	1.3 2.4 2.2 1.6 1.3 0.78	1.1 2.2 1.9 1.3 1.0 0.61
RA-2054/04 R 2004 0401 8 0401-04 Italy I-70043 Monopoli 2004	Lettuce VersaiRZ, Loose-Leaf variety	100 OD	3	7	0.0720	0.0090	0 1 3 7	2.2 1.1 1.4 1.0	0.55 0.35 0.31 0.27	0.2 0.11 0.093 0.096	< 0.012 < 0.012 < 0.012 < 0.012	0.056 0.037 0.049 0.067	3.0 1.6 1.8 1.4	2.8 1.4 1.7 1.3
RA-2054/04 R 2004 0402 6 0402-04 Spain E-41310 Brenes Sevilla (Andalusia) 2004	Lettuce Solsun (Nun 8801 LT), Loose-leaf variety	100 OD	3	7	0.0720	0.0120	0 1 3 7	2.8 1.9 2.6 1.7	0.25 0.20 0.31 0.20	0.041 0.035 0.052 0.038	< 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 0.008	3.1 2.2 3.0 2.0	3.0 2.1 2.9 1.9

Study/ Trial No/. Trial SubID/ Country/ Year	Crop, Variety	Form.	Application				PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
			No	Spray interval days	kg ai/ ha	kg ai/ hL		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.	Parent + Enol
RA-2170/05 R 2005 1023 3 1023-05 Greece GR-19007 Kato Souli (Attica) 2005	Lettuce Manita, loose-leaf variety	150 OD	2	14	0.0720	0.01440	0[a] 0 1 3 7 14	0.10 1.5 1.6 1.4 0.70 0.58	0.12 0.31 0.37 0.40 0.26 0.28	0.026 0.039 0.057 0.063 0.053 0.053	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.027 0.025 0.033 0.034 0.032 0.046	0.28 1.9 2.1 1.9 **1.0** 0.96	0.22 1.8 2.0 1.8 **0.96** 0.86
RA-2170/05 R 2005 1024 1 1024-05 France F-86380 Ouzilly (Poitou-Charentes) 2005	Lettuce Bastille, loose-leaf variety	150 OD	2	14	0.0720	0.00900	0[a] 0 1 3 7 14	0.11 2.0 2.1 1.6 0.19 0.09	0.038 0.57 0.16 0.18 0.078 0.023	0.063 0.11 0.15 0.17 0.084 0.052	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.015 0.022 0.017 0.018 0.023 0.013	0.23 2.7 2.5 2.0 **0.39** 0.18	0.15 2.6 2.3 1.8 **0.27**
RA-2170/05 R 2005 1026 8 1026-05 Netherlands NL-1852 RH Heiloo (Noord-Holland) 2005	Lettuce Varinka, head variety	150 OD	2	14	0.0720	0.00720	0[a] 0 1 3 7 14	0.45 1.6 1.5 1.4 1.3 0.87	0.18 0.34 0.30 0.29 0.35 0.26	0.063 0.067 0.085 0.082 0.086 0.066	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.71 2.0 1.9 1.8 **1.8** 1.2	0.63 1.9 1.8 1.7 **1.6** 1.1
RA-2170/05 R 2005 1027 6 1027-05 Portugal P-2560 Torres Vedras (Ribatejo e Oeste) 2005	Lettuce Tradition, loose-leaf variety	150 OD	2	14	0.0720	0.01440	0[a] 0 1 3 7 14	< 0.01 1.4 1.6 1.4 0.17 0.02	< 0.01 2 1.0 0.38 0.33 0.12 0.043	< 0.012 0.067 0.11 0.099 0.034 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 0.015 0.020 0.045 0.038 0.024	< 0.055 2.5 2.1 1.9 **0.37** 0.096	< 0.022 2.4 2.0 1.7 **0.29** 0.063
RA-2170/05 R 2005 1028 4 1028-05 France F-31790 St Jory (Midi-Pyrenees) 2005	Lettuce Cabanon, head variety	150 OD	2	15	0.0720	0.00900	0 7	1.8 1.5	0.22 0.23	0.047 0.081	< 0.012 < 0.012	0.008 0.012	2.1 **1.9**	2.0 **1.7**
RA-2170/05 R 2005 1029 2 1029-05 France F-84140 Montfavet (Provence-Cote D'azur) 2005	Lettuce Arcadia, head variety	150 OD	2	14	0.0720	0.00720	0 7	1.5 0.85	0.66 0.41	0.11 0.12	< 0.012 < 0.012	0.015 0.014	2.3 **1.4**	2.2 **1.3**
RA-2170/05 R 2005 1030 6 1030-05 Germany D-40764 Langenfeld (Nordrhein-Westfalen) 2005	Lettuce Alexandria, head variety	150 OD	2	14	0.0720	0.01200	0 7	1.3 0.05	0.30 0.056	0.014 0.031	< 0.012 < 0.012	0.008 0.014	1.6 **0.16**	1.6 **0.11**
RA-2170/05 R 2005 1031 4 1031-05	Lettuce Batavia, loose-leaf	150 OD	2	13	0.0720-0.0764	0.00795 - 0.01200	0 7	1.8 1.6	0.57 0.58	0.12 0.12	< 0.012 < 0.012	0.008 0.015	2.5 **2.4**	2.4 **2.2**

Study/ Trial No/. Trial SubID/ Country/ Year	Crop, Variety	Form.	Application				PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
			No	Spray interval days	kg ai/ ha	kg ai/ hL		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.	Parent + Enol
Spain E-08410 Bigues i Riells (Barcelona) (Cataluña) 2005	variety													
RA-2113/04 R 2004 0685 1 0685-04 Germany D-40764 Langenfeld (Modemann) 2004	Lettuce Alexandria, Butterhead variety	SC 240	3	7	0.072	0.012	0[a] 0 1 3 7 13	0.02 0.42 0.50 0.31 0.03 0.01	0.088 0.38 0.29 0.21 0.10 0.054	0.023 0.093 0.048 0.037 0.028 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.036 0.042 0.051 0.056 0.070 0.084	0.18 0.95 0.90 0.62 0.24 0.17	0.11 0.80 0.79 0.52 0.13 0.064
RA-2113/04 R 2004 0687 8 0687-04 Italy I-70043 Monopoli (BA) (Puglia) 2004	Lettuce Lollo rosso, Loose-leaf variety	SC 240	3	7	0.072	0.009	0[a] 0 1 3 6 14	1.2 4.2 3.2 1.7 0.99 0.21	0.36 0.66 0.49 0.62 0.41 0.23	0.12 0.15 0.12 0.14 0.11 0.069	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.042 0.043 0.042 0.11 0.12 0.11	1.7 5.1 3.8 2.5 1.6 0.63	1.6 4.9 3.7 2.3 1.4 0.44
RA-2113/04 R 2004 0688 6 0688-04 Spain E-41310 Brenes Sevilla (Andalucia) 2004	Lettuce Solsun (Nun 8801 LT), Loose-leaf variety	SC 240	3	7	0.072	0.012	0[a] 0 1 3 7	1.1 1.8 2.2 1.7 1.5	0.15 0.21 0.29 0.2 0.21	0.036 0.032 0.050 0.044 0.044	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008	1.3 2.0 2.6 2.0 1.8	1.2 2.0 2.5 1.9 1.7
RA-2113/04 R 2004 0689 4 0689-04 Germany D-42799 Leichlingen (Hollweg) 2004	Lettuce Roderick, Butterhead variety	SC 240	3	7	0.072	0.012	0[a] 0 1 3 6	1.2 2.1 1.8 1.6 1.5	0.19 0.28 0.25 0.27 0.21	0.064 0.081 0.089 0.080 0.066	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.010 0.012 0.010 0.013 0.019	1.5 2.4 2.2 2.0 1.8	1.4 2.4 2.0 1.9 1.7
FIELD														
RA-2052/04 R 2004 0385 2 0385-04 Netherlands NL-1681 ND Zwaagdijk-Oost (Noord-Holland) 2004	Lettuce Ponchito, Butterhead variety	100 OD	3	8/7	0.0720	0.00900	0[a] 0 1 3 7 14	0.03 0.53 0.46 0.37 0.17 0.03	0.085 0.15 0.2 0.20 0.10 0.026	0.050 0.050 0.057 0.064 0.082 0.019	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.033 0.031 0.040 0.057 0.077 0.063	0.20 0.77 0.75 0.70 0.44 0.14	0.11 0.68 0.66 0.57 0.27 0.056
RA-2052/04 R 2004 0386 0 0386-04 Germany D-40764 Langenfeld (Hof Weitz) 2004	Lettuce Ponchito, Butterhead variety	100 OD	3	7	0.0720	0.01200	0 1 3 6	0.37 0.39 0.05 0.01	0.30 0.24 0.12 0.055	0.090 0.074 0.049 0.021	< 0.012 < 0.012 < 0.012 < 0.012	0.014 0.015 0.024 0.019	0.78 0.74 0.26 0.12	0.67 0.63 0.17 0.065
RA-2052/04 R 2004 0387 9 0387-04	Lettuce Lollo Rosso, Loose-leaf	100 OD	3	7	0.0720	0.01200	0[a] 0 1 3	0.24 1.2 1.2 0.24	0.14 0.64 0.46 0.30	0.15 0.19 0.2 0.14	< 0.012 < 0.012 < 0.012 < 0.012	0.025 0.028 0.034 0.038	0.56 2.1 1.9 0.73	0.38 1.8 1.7 0.54

Study/ Trial No/. Trial SubID/ Country/ Year	Crop, Variety	Form.	Application				PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
			No	Spray interval days	kg ai/ ha	kg ai/ hL		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.	Parent + Enol
Germany D-53332 Bornheim - Sechtem (Nordrhein-Westfalen) 2004	variety						7 14	0.09 0.01	0.13 0.027	0.065 0.02	< 0.012 < 0.012	0.044 0.033	0.34 0.10	0.22 0.037
RA-2052/04 R 2004 0388 7 0388-04 Germany D-40764 Langenfeld (Hof Weitz) 2004	Lettuce Bastille, Loose-leaf variety	100 OD	3	7	0.0720	0.01200	0 1 3 6	0.58 0.13 0.01 0.01	0.45 0.26 0.11 0.068	0.062 0.057 0.059 0.028	< 0.012 < 0.012 < 0.012 < 0.012	0.029 0.028 0.039 0.033	1.1 0.49 0.24 0.15	1.0 0.39 0.021 0.078
RA-2053/04 R 2004 0389 5 0389-04 France F-69480 Lucenay (Rhone-Alpes) 2004	Lettuce 4509, Crisp head variety	OD 100	3	8/6	0.0720	0.01309	0[a] 0 1 3 6 14	0.01 0.01 0.04 0.02 0.01 < 0.01	0.046 0.054 0.13 0.076 0.043 0.013	0.022 0.024 0.034 0.028 0.017 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.011 0.012 0.020 0.024 0.024 0.022	0.10 0.11 0.23 0.15 0.10 0.069	0.056 0.064 0.17 0.96 0.053 0.023
RA-2053/04 R 2004 0390 9 0390-04 Spain E-08410 Vilanova del Vallés (Barcelona) (Cataluña) 2004	Lettuce Iceberg, Crisp head variety	OD 100	3	6/8	0.0720 - 0.0770	0.00720 - 0.01200	0 1 3 7	0.74 0.30 0.20 0.04	0.28 0.31 0.13 0.041	0.067 0.086 0.073 0.020	< 0.012 < 0.012 < 0.012 < 0.012	0.045 0.046 0.053 0.042	1.1 0.75 0.47 0.16	1.0 0.61 0.33 0.081
RA-2053/04 R 2004 0391 7 0391-04 Portugal P-2665-02 Azueira 2004	Lettuce Vision, Loose-leaf variety	OD 100	3	7	0.0720	0.00960	0[a] 0 1 3 7 14	0.03 1.3 0.40 0.33 0.05 0.02	0.071 0.52 0.32 0.19 0.078 0.029	0.025 0.056 0.083 0.085 0.028 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.02 0.020 0.021 0.021 0.020 0.014	0.16 1.9 0.83 0.64 0.19 0.087	0.10 1.8 0.72 0.52 0.13 0.049
RA-2053/04 R 2004 0392 5 0392-04 Italy I-40128 Bologna (Emilia - Romagna) 2004	Lettuce Gentilina, Loose-leaf variety	OD 100	3	7	0.0720	0.01440	0 1 3 7	0.85 0.48 0.26 0.04	0.16 0.21 0.20 0.12	0.039 0.056 0.087 0.035	< 0.012 < 0.012 < 0.012 < 0.012	0.037 0.031 0.050 0.058	1.1 0.78 0.60 0.26	1.0 0.69 0.46 0.16

[a] Before final treatment.

Table 96 Residues on lettuce varieties from the foliar application of spirotetramat to lettuce in the USA (M-277098-01-1**,** Fischer, D.; 2006)

Location	Trial No.	Year	Form.	Application				Portion Analy.	PHI days	Residues (mg/kg)						
				kg ai/ha/ app	Inter-val days	kg ai/hL	Total kg ai/ha			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total Residue of BYI 08330 calc.	Parent + Enol
HEAD LETTUCE																
Bumpass, VARegion 2	FN001-04H	2004	100 OD	0.087	0	161	0.174									
				0.088	8	162		Lettuce head Desert Queen	3 3 7 7	0.311 0.277 0.083 0.057	0.270 0.411 0.172 0.172	0.053 0.096 0.031 0.031	< 0.01 < 0.01 < 0.01 < 0.01	0.025 0.042 0.030 0.027	0.67 **0.84** 0.33 0.30	0.58 **0.69** 0.26 0.23
								Leaf, inner	3 3 7 7	0.094 0.075 0.017 0.014	0.220 0.215 0.122 0.146	0.050 0.068 0.048 0.044	< 0.01 < 0.01 < 0.01 < 0.01	0.011 0.013 0.014 0.013	0.39 0.38 0.21 0.23	0.31 0.29 0.14 0.16
Molino, Florida Region 3	FN002-04H	2005	100 OD	0.087	0	121	0.173									
				0.086	6	118		Lettuce head Summertime	3 3 7 7	0.010 < 0.01 < 0.01 < 0.01	0.143 0.118 0.058 0.030	0.025 0.027 0.022 0.016	< 0.01 < 0.01 < 0.01 < 0.01	0.143 0.115 0.167 0.102	**0.33** 0.28 0.26 0.17	**0.15** 0.13 0.068 0.040
								Leaf, inner	3 3 7 7	< 0.01 < 0.01 < 0.01 < 0.01	0.078 0.063 0.071 0.066	0.014 0.016 0.022 0.018	< 0.01 < 0.01 < 0.01 < 0.01	0.065 0.058 0.099 0.075	0.18 0.16 0.21 0.18	0.088 0.074 0.081 0.076
Molino, Florida Region 3	FN002-04H	2005	240 SC	0.079 (0.088)	0	122	0.180									
				0.092	6	126		Lettuce head Summertime	3 3 7 7	< 0.01 0.026 < 0.01 < 0.01	0.069 0.117 0.019 0.011	0.017 0.026 0.013 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	0.067 0.107 0.084 0.042	0.17 **0.29** 0.14 0.083	0.079 **0.14** 0.029 0.021
								Lettuce, without wrapper leaves	3 3 7 7	< 0.01 < 0.01 < 0.01 < 0.01	0.075 0.099 0.020 0.037	0.014 0.021 0.012 0.010	< 0.01 < 0.01 < 0.01 < 0.01	0.051 0.081 0.071 0.055	0.15 0.21` 0.12 0.12	0.085 0.11 0.030 0.047
Fresno, CA Region 10	FN003-04D	2004	100 OD	0.088	0	189	0.176									
				0.089	6	189		Head Lettuce Van Crisp	0 0 1 1 3 3 **7** **7** 10 10	0.230 0.398 0.334 0.346 0.038 0.066 0.014 0.035 < 0.01 < 0.01	0.153 0.209 0.151 0.207 0.089 0.119 0.057 0.060 0.039 0.043	0.063 0.090 0.098 0.083 0.044 0.041 0.043 0.034 0.028 0.026	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.010 0.011 0.017 0.020 0.016 0.020 0.022 0.021 0.018 0.010	0.47 0.72 0.62 0.67 0.20 **0.26** 0.15 0.16 0.11 0.10	0.38 0.61 0.48 0.55 0.13 **0.18** 0.071 0.095 0.049 0.053
Porterville, CA Region 10	FN004-04H	2004	100 OD	0.088	0	180	0.175									
				0.088	7	180		Lettuce head Bayview	3 3 7 7	0.324 0.326 0.144 0.244	0.271 0.267 0.146 0.219	0.100 0.069 0.078 0.090	< 0.01 < 0.01 < 0.01 < 0.01	0.021 0.018 0.022 0.025	**0.73** 0.69 0.40 0.59	**0.60** 0.59 0.29 0.46
								Leaf, inner	3 3 7 7	0.037 0.058 < 0.01 < 0.01	0.090 0.103 0.055 0.034	0.038 0.049 0.035 0.042	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	0.18 0.24 0.12 0.11	0.13 0.16 0.065 0.044
Porterville,, CA Region 10	FN004-04H	2004	240 SC	0.088	0	180	0.176									
				0.088	7	180		Lettuce head	3 3 7	0.382 0.446 0.110	0.366 0.398 0.188	0.097 0.159 0.073	< 0.01 < 0.01 < 0.01	0.024 0.022 0.025	0.88 **1.0** 0.41	0.75 **0.84** 0.29

Location	Trial No.	Year	Form.	Application				Portion Analy.	PHI days	Residues (mg/kg)						
				kg ai/ha/ app	Inter-val days	kg ai/hL	Total kg ai/ha			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total Residue of BYI 08330 calc.	Parent + Enol
								Bayview	7	0.106	0.124	0.085	< 0.01	0.020	0.34	0.23
								Leaf, inner	3 3 7 7	0.048 0.061 < 0.01 0.020	0.107 0.107 0.037 0.072	0.051 0.053 0.050 0.040	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	0.23 0.24 0.12 0.15	0.16 0.17 0.047 0.092
Glenn, CA Region 10	FN005-04H	2004	100 OD	0.086	0	163	0.173									
				0.087	7	164		Lettuce head Sharpshooter	3 3 7 7	0.365 0.373 0.025 0.012	0.176 0.230 0.135 0.111	0.230 0.178 0.062 0.051	< 0.01 < 0.01 < 0.01 < 0.01	0.032 0.026 0.015 0.010	0.82 **0.82** 0.25 0.20	0.54 **0.60** 0.16 0.12
								Leaf, inner	3 3 7 7	< 0.01 < 0.01 < 0.01 < 0.01	0.045 0.078 0.091 0.127	0.036 0.045 0.046 0.046	< 0.01 < 0.01 < 0.01 0.012	< 0.01 < 0.01 < 0.01 < 0.01	0.11 0.15 0.16 0.21	0.055 0.088 0.10 0.14
Nipomo, CA Region 10	FN006-04H	2004	100 OD	0.089	0	132	0.176									
				0.087	7	130		Lettuce head Tiber	3 3 7 7	0.338 0.282 0.165 0.215	0.327 0.234 0.132 0.170	0.197 0.165 0.138 0.138	< 0.01 < 0.01 < 0.01 < 0.01	0.046 0.034 0.034 0.028	**0.92** 0.73 0.48 0.56	**0.66** 0.52 0.30 0.38
								Leaf, inner	3 3 7 7	< 0.01 < 0.01 < 0.01 < 0.01	0.047 0.054 0.016 0.014	0.043 0.043 0.027 0.023	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	0.12 0.13 0.073 0.067	0.057 0.064 0.026 0.024
LEAF LETTUCE																
Athens, Georgia Region 2	FN007-04H	2005	100 OD	0.089	0	83	0.177									
				0.088	7	96		Lettuce leaf Buttercrunch	3 3 **7** **7**	0.226 0.209 0.046 0.038	0.303 0.286 0.143 0.131	0.063 0.065 0.034 0.036	< 0.01 < 0.01 < 0.01 < 0.01	0.123 0.120 0.134 0.120	**0.73** 0.69 0.37 0.34	**0.53** 0.50 0.19 0.17
Molino, Florida Region 3	FN008-04D	2005	100 OD	0.090	0	120	0.178									
				0.088	6	112		Lettuce leaf Green Leaf	0 0 1 1 3 3 **7** **7** 10 10	1.937 1.971 1.008 0.461 0.027 0.043 < 0.01 < 0.01 < 0.01 < 0.01	1.814 1.591 1.598 1.193 0.569 0.458 0.210 0.197 0.126 0.105	0.264 0.262 0.242 0.171 0.046 0.056 0.028 0.026 0.012 0.011	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.205 0.202 0.501 0.302 0.374 0.429 0.296 0.271 0.060 0.046	4.2 4.0 3.4 2.1 **1.0** 1.0 0.55 0.51 0.21 0.18	3.8 3.6 2.6 1.6 **0.60** 0.50 0.22 0.21 0.14 0.12
Fresno, CA Region 10	FN009-04H	2004	100 OD	0.089	0	171	0.177									
				0.089	6	171		Lettuce leaf Butterhead	3 3 7 7	< 0.01 < 0.01 < 0.01 < 0.01	0.098 0.102 0.045 0.042	0.034 0.040 0.018 0.017	< 0.01 < 0.01 < 0.01 < 0.01	0.036 0.046 0.030 0.036	0.19 **0.21** 0.11 0.12	0.11 **0.11** 0.055 0.052
Fresno, CA Region 10	FN009-04H	2004	240 SC	0.088	0	175	0.181									
				0.093	6	170		Lettuce leaf Butterhead	3 3 7 7	0.015 < 0.01 < 0.01 < 0.01	0.123 0.109 0.040 0.038	0.048 0.045 0.018 0.020	< 0.01 < 0.01 < 0.01 < 0.01	0.031 0.037 0.039 0.046	**0.23** 0.21 0.11 0.12	**0.14** 0.12 0.050 0.048
Visalia,	FN01	200	100	0.088	0	140	0.177									

Location	Trial No.	Year	Form.	Application				Portion Analy.	PHI days	Residues (mg/kg)						
				kg ai/ha/ app	Inter-val days	kg ai/hL	Total kg ai/ha			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total Residue of BYI 08330 calc.	Parent + Enol
CA Region 10	0-04H	4	OD	0.089	7	141		Lettuce leaf	3	0.453	0.502	0.095	< 0.01	0.112	**1.2**	**0.96**
									3	0.306	0.434	0.071	< 0.01	0.096	0.92	0.74
								Darkland	7	0.336	0.257	0.045	< 0.01	0.159	0.81	0.59
									7	0.260	0.231	0.041	< 0.01	0.157	0.70	0.49
Hickman, CA Region 10	FN011-04H	2004	100 OD	0.087	0	121	0.174									
				0.087	7	121		Lettuce leaf	3	0.995	0.510	0.133	< 0.01	0.028	**1.7**	**1.5**
									3	0.874	0.482	0.143	< 0.01	0.022	1.5	1.4
								Outback	7	0.463	0.324	0.121	< 0.01	0.041	0.96	0.79
									7	0.529	0.345	0.100	< 0.01	0.036	1.0	0.87
Arroyo Grande, CA Region 10	FN012-04H	2004	100 OD	0.086	0	139	0.171									
				0.085	7	145		Lettuce leaf	3	0.142	0.502	0.033	< 0.01	0.024	0.71	0.64
									3	0.156	0.509	0.041	< 0.01	0.028	**0.75**	**0.66**
								Red Tide	7	0.060	0.201	0.027	< 0.01	0.027	0.33	0.26
									7	0.042	0.188	0.028	< 0.01	0.023	0.29	0.23

Table 97 Residues on Spinach from Foliar Application of Spirotetramat to Spinach in the USA (M-277098-01-1**,** Fischer, D.; 2006)

Location	Trial No.	Year	Form.	Application				PHI days	Residues (mg/kg)						
				kg ai/ha	Interval (days)	kg ai/hl	Total kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
Germansville, Pennsylvania Region 1	FN019-04H	2004	100 OD	0.091	0	180	0.183								
				0.092	8	184		3	0.216	0.943	0.296	< 0.01	0.086	**1.6**	**1.2**
								3	0.040	0.173	0.055	< 0.01	0.063	0.34	0.21
								6	0.025	0.179	0.080	< 0.01	0.072	0.37	0.20
								6	0.184	0.936	0.285	< 0.01	0.097	1.5	1.1
Molino,Florida Region 2	FN020-04D	2005	100 OD	0.086	0	125	0.176								
				0.089	7	143		0	1.724	1.472	0.313	< 0.01	0.015	3.5	3.2
								0	2.226	2.137	0.565	< 0.01	0.029	5.0	4.4
								1	0.031	0.215	0.099	< 0.01	0.027	0.38	0.25
								1	0.026	0.173	0.088	< 0.01	0.026	0.33	0.20
								3	0.026	0.107	0.058	< 0.01	0.034	**0.24**	**0.13**
								3	0.023	0.083	0.055	< 0.01	0.033	0.21	0.11
								7	0.011	0.012	0.016	< 0.01	0.015	0.064	0.023
								7	0.017	0.012	0.014	< 0.01	0.034	0.087	0.029
								10	< 0.01	< 0.01	< 0.01	< 0.01	0.025	0.065	< 0.02
								10	< 0.01	< 0.01	< 0.01	< 0.01	0.020	0.060	< 0.02
East Bernard, Texas Region 6	FN021-04H	2004	100 OD	0.086	0	138	0.176								
				0.089	7	141		3	0.561	0.815	0.143	< 0.01	< 0.01	**1.5**	**1.4**
								3	0.577	0.707	0.167	< 0.01	0.010	1.5	1.3
								7	0.090	0.146	0.033	< 0.01	0.010	0.29	0.24
								7	0.163	0.167	0.045	< 0.01	0.010	0.40	0.33

Location	Trial No.	Year	Form.	Application				PHI days	Residues (mg/kg)						
				kg ai/ha	Interval (days)	kg ai/hl	Total kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
Jerome, Idaho Region 9	FN022-04H	2004	100 OD	0.087	0	181	0.175								
				0.087	7	177		3 3 **7** **7**	0.852 1.272 0.774 0.617	1.581 1.734 1.151 1.230	0.324 0.325 0.170 0.166	< 0.01 < 0.01 < 0.01 < 0.01	0.014 0.019 0.017 0.019	2.8 **3.4** 2.1 2.0	2.4 **3.0** 1.9 1.8
Visalia, California Region 10	FN023-04H-A	2004	100 OD	0.087	0	138	0.174								
				0.087	7	139		3 3 **7** **7**	0.491 0.470 0.320 0.327	0.613 0.648 0.298 0.262	0.072 0.052 0.032 0.024	< 0.01 < 0.01 < 0.01 < 0.01	0.010 0.015 0.012 0.011	**1.2** 1.2 0.67 0.63	**1.1** 1.1 0.62 0.59
Visalia, California Region 10	FN023-04H-B	2004	240 SC	0.086	0	137	0.174								
				0.088	7	140		3 3 7 7	0.442 0.511 0.287 0.248	0.845 0.953 0.401 0.369	0.088 0.104 0.030 0.021	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	1.4 **1.6** 0.74 0.66	1.3 **1.5** 0.69 0.62
Madera, California Region 10	FN024-04H	2004	100 OD	0.089	0	170	0.175								
				0.086	7	168		3 3 **7** **7**	0.223 0.233 0.036 0.017	0.585 0.587 0.142 0.058	0.162 0.174 0.059 0.022	< 0.01 < 0.01 < 0.01 < 0.01	0.023 0.027 0.029 0.029	1.0 **1.0** 0.28 0.14	0.81 **0.82** 0.18 0.075

Table 98 Residues on curly kale, Chinese cabbage, and Chinese kale from the foliar application of spirotetramat to leafy cabbage in Europe (M-263745-01-1**,** Freitag T.; Eberhardt R.; 2006; M-272573-01-1**,** Ballesteros C.; Gateaud L.; 2006; M-264301-01-1**,** Freitag T.; Eberhardt R.; 2006; M-273243-01-1, Ballesteros C.; Gateaud L.; 2006)

Study No./ Trial No./ Trial SubID/ Country/ Year	Crop	Form.	Application				PHI (days)	Residues (mg/kg) expressed as BYI08330 equivalents						
			No	Spray inter-val days	kg ai/ha	kg ai/hL		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BY I08330 enol-gluco-side	Total residue calc.	Parent + Enol
RA-2040/04 R 2004 0164 7 0164-04 United Kingdom GB-CB2 5EU Cambridge (Cambridgeshire) 2004	Kale, curly	100 OD	3	6	0.0720	0.01440	0 0 3 8 15	0.40 1.2 0.15 0.20 0.07	0.33 0.42 0.22 0.29 0.28	0.12 0.24 0.081 0.11 0.080	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.008 0.008 0.008 0.008 0.012	0.82 2.1 0.47 0.62 0.46	0.73 1.6 0.37 0.49 0.35
RA-2040/04 R 2004 0165 5 0165-04 Germany D-40789 Monheim, Trial Station Laacherhof 2004	Kale, curly	100 OD	3	7	0.0720	0.01440	-1 0 3 7 14 20	0.08 1.0 0.50 0.07 0.05 0.03	0.070 0.23 0.12 0.053 0.050 0.041	0.094 0.18 0.12 0.064 0.048 0.037	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.012 0.014 0.013 0.015 0.020 0.018	0.27 1.5 0.77 0.21 0.18 0.14	0.15 1.2 0.62 0.12 0.10 0.071
RA-2064/05 R 2005 0367 9 0367-05	Kale, curly	150 OD	3	14	0.0720	0.01200	-14 -11 0	1.2 0.90 0.05	0.15 0.079 0.059	0.055 0.072 0.019	< 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008	1.4 1.1 0.15	1.4 0.98 0.11

Study No./ Trial No./ Trial SubID/ Country/ Year	Crop	Form.	Application				PHI (days)	Residues (mg/kg) expressed as BYI08330 equivalents						
			No	Spray inter-val days	kg ai/ha	kg ai/hL		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BY I08330 enol-gluco-side	Total residue calc.	Parent + Enol
Germany D-40789 Monheim (Nordrhein-Westfalen) 2005							0 3 7 14 21	0.87 0.09 0.05 0.03 0.01	0.21 0.092 0.061 0.062 0.038	0.053 0.042 0.033 0.021 0.014	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 0.010 < 0.008	1.1 0.24 0.16 0.13 0.082	1.1 0.18 0.11 0.092 0.048
RA-2064/05 R 2005 0368 7 0368-05 Germany D-51399 Burscheid (Nordrhein-Westfalen) 2005	Kale, curly	150 OD	3	14	0.0720	0.01440	-14 -11 0 3 7 14	1.1 0.91 1.1 0.03 0.02 0.02	0.18 0.18 0.28 0.16 0.21 0.12	0.051 0.072 0.075 0.035 0.051 0.022	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	1.4 1.2 1.4 0.24 0.30 0.18	1.3 1.1 1.4 0.19 0.23 0.14
RA-2041/04 R 2004 0166 3 0166-04 France F-86380 Ouzilly (Poitou-Charentes) 2004	Kale, Chinese	100 OD	3	7	0.0720	0.01200	0 3 7 14	0.38 0.11 0.01 < 0.01	0.37 0.28 0.19 0.15	0.11 0.12 0.056 0.046	< 0.012 < 0.012 < 0.012 < 0.012	0.029 0.034 0.037 0.039	0.90 0.54 0.30 0.24	0.75 0.39 0.20 0.16
RA-2041/04 R 2004 0167 1 0167-04 Spain E-08850 Gava (Cataluña) 2004	Kale, Chinese	100 OD	3	6/8	0.0720-0.0760	0.01200	0 0 4 7 14 20	0.10 0.47 0.08 0.07 < 0.01 < 0.01	0.28 0.50 0.38 0.31 0.38 0.25	0.099 0.18 0.12 0.11 0.16 0.11	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.043 0.054 0.039 0.043 0.028 0.030	0.53 1.2 0.63 0.54 0.57 0.41	0.38 0.97 0.46 0.38 0.39 0.26
RA-2136/05 R 2005 0709 7 0709-05 Spain E-08840 Gava (Cataluña) 2005	Cabbage, Chinese	150 OD	3	14	0.0660-0.0720	0.00480-0.01200	-14 -12 0 2 7 14 21	0.94 0.28 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.72 0.49 0.12 0.19 0.16 0.082 0.060	0.13 0.15 0.047 0.069 0.12 0.068 0.055	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	1.8 0.94 0.19 0.29 0.31 0.18 0.14	1.7 0.77 0.13 0.20 0.17 0.092 0.070
RA-2136/05 R 2005 0710 0 0710-05 Italy I-70031 Andria (BA) (Puglia) 2005	Cabbage, Chinese	150 OD	3	14	0.0720	0.00720	-14 -11 0 0 3 7 14 21	0.05 < 0.01 < 0.01 0.02 < 0.01 < 0.01 < 0.01 < 0.01	0.11 0.16 0.11 0.11 0.13 0.15 0.13 0.13	0.033 0.028 0.021 0.029 0.026 0.032 0.026 0.035	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.21 0.22 0.16 0.18 0.19 0.22 0.18 0.19	0.16 0.17 0.12 0.13 0.14 0.16 0.14 0.14

Table 99 Residues on mustard greens from the foliar application of spirotetramat in the USA (M-277100-01-1, Freeseman, P.; 2006)

Location	Trial No.	Year	Form.	Application					PHI days	Residues as BYI 08330 Equivalents (mg/kg)						
				Timing	kg ai/ha	Inter-val days	kg ai/hL	Total kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucosi de	Total Residue of BYI 08330 calc.	Parent + Enol
Tifton, Georgia Region 2	FN037-04H	2004	100 OD	6th True leaf	0.088	0	164	0.176								

Location	Trial No.	Year	Form.	Application					PHI days	Residues as BYI 08330 Equivalents (mg/kg)						
				Timing	kg ai/ha	Interval days	kg ai/hL	Total kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
	Mustard Greens			unfolded												
				8th True leaf unfolded	0.088	7	173		1 1 3 3 7 7	0.176 0.159 0.049 0.058 < 0.01 < 0.01	1.098 1.091 0.348 0.357 0.091 0.097	0.338 0.354 0.177 0.206 0.051 0.050	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.111 0.076 0.104 0.091 0.096 0.078	**1.7** 1.7 0.68 0.72 0.25 0.24	**1.3** 1.2 0.40 0.42 0.10 0.11
Frenchtown, New Jersey Region 2	FN038-04H Mustard Greens	2004	100 OD	70% of the expected head size reached	0.094	0	188	0.184								
				80% of the expected head size reached	0.090		179		1 1 3 3 7 7	1.743 1.549 0.960 1.126 0.146 0.117	3.216 3.167 2.036 2.447 1.197 1.204	0.503 0.487 0.428 0.539 0.257 0.275	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.018 0.013 0.017 0.031 0.053 0.048	**5.5** 5.2 3.4 4.1 1.7 1.7	**5.0** 4.7 3.0 3.6 1.3 1.3
Oviedo, Florida Region 3	FN039-04H Mustard Greens	2004	100 OD	40% of the expected head size reached	0.087	0	175	0.171								
				70% of the expected head size reached	0.085	7	172		1 1 3 3 7 7	0.683 0.668 0.119 0.175 0.023 0.011	2.295 2.292 1.472 1.428 0.694 0.593	0.692 0.800 0.499 0.515 0.327 0.323	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.262 0.245 0.394 0.300 0.245 0.347	3.9 **4.0** 2.5 2.4 1.3 1.3	3.0 **3.0** 1.6 1.6 0.72 0.60
Leland, Mississippi Region 3	FN040-04DA Mustard Greens	2004	100 OD	80% of the expected head size reached	0.087	0	152	0.175								
				Typ. size, form and firmness of heads reached	0.088	7	140		0 0 1 1 1 3 3 7 7 10 10	0.023 0.011 0.026 < 0.01 1.714 1.917 2.675 2.422 3.331 1.439 1.386	0.081 0.067 0.045 0.048 2.031 1.621 1.524 1.332 2.032 0.977 1.398	0.560 0.706 0.668 0.628 0.616 0.401 0.307 0.094 0.133 0.083 0.092	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.041 0.035 0.067 0.075 0.097 0.127 0.102 0.125 0.092 0.059 0.085	0.72 0.83 0.82 0.78 4.5 4.1 **4.6** 4.0 5.6 2.6 3.0	0.10 0.078 0.071 0.058 3.7 3.5 **4.2** 3.8 5.4 2.4 2.8
									1[a]	< 0.01	0.399	0.014	< 0.01	< 0.01	0.44	0.41
									1[b]	0.246	0.474	0.575	< 0.01	0.070	1.4	0.72

Location	Trial No.	Year	Form.	Application					PHI days	Residues as BYI 08330 Equivalents (mg/kg)						
				Timing	kg ai/ha	Interval days	kg ai/hL	Total kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
Seymour, Illinois Region 5	FN041-04H-A Mustard Greens	2004	100 OD	80% of the expected head size reached	0.086	0	126	0.174								
				Typ. size, form and firmness of heads reached	0.088	6	130		1 1 3 3 7 7	0.058 0.056 0.030 0.041 < 0.01 0.011	0.511 0.553 0.367 0.534 0.196 0.228	0.190 0.189 0.209 0.213 0.117 0.106	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.036 0.039 0.071 0.068 0.059 0.043	0.80 **0.85** 0.69 0.87 0.39 0.40	0.57 **0.61** 0.40 0.58 0.21
Seymour, Illinois Region 5	FN041-04H-B Mustard Greens	2004	240 SC	80% of the expected head size reached	0.087	0	127	0.174								
				Typ. size, form and firmness of heads reached	0.087	6	128		1 1 3 3 7 7	0.042 0.041 0.025 0.023 < 0.01 < 0.01	0.591 0.540 0.458 0.461 0.190 0.212	0.195 0.168 0.186 0.215 0.102 0.106	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.023 0.025 0.041 0.039 0.039 0.039	**0.86** 0.79 0.72 0.75 0.35 0.37	**0.63** 0.58 0.48 0.48 0.21 0.22
East Bernard, Texas Region 6	FN042-04H Mustard Greens	2004	100 OD	9 or more true leaves unfolded	0.088	0	137	0.177								
				9 or more true leaves unfolded	0.089	7	140		1 1 3 3 7 7	0.369 0.428 0.148 0.160 0.150 0.088	0.334 0.210 1.405 1.332 1.200 1.149	0.493 0.534 0.403 0.337 0.144 0.209	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.039 0.041 0.039 0.038 0.030 0.031	1.2 1.2 **2.0** 1.9 1.5 1.5	0.70 0.64 **1.6** 1.5 1.4 1.2
Fresno, CA Region 10	FN043-04H-A Mustard Greens	2004	100 OD	9 or more true leaves unfolded	0.087	0	168	0.175								
				9 or more true leaves unfolded	0.088	5	169		1 1 3 3 7 7	1.160 1.240 0.861 0.731 0.042 0.030	1.405 1.332 1.200 1.149 0.386 0.361	0.758 0.754 0.669 0.558 0.176 0.201	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.045 0.042 0.095 0.072 0.032 0.034	**3.4** 3.4 2.8 2.5 0.65 0.64	**2.6** 2.6 2.1 1.9 0.43 0.39
Fresno, CA Region 10	FN043-04H-B Mustard Greens	2004	240 SC	9 or more true leaves unfolded	0.087	0	168	0.176								
				9 or more true leaves	0.088	5	170		1 1 3 3 7	1.719 1.678 0.741 0.915 0.029	1.565 1.594 0.928 1.138 0.339	1.010 1.140 0.615 0.767 0.191	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.035 0.038 0.039 0.045 0.024	4.3 **4.5** 2.3 2.9 0.59	3.3 **3.3** 1.7 2.0 0.37

Location	Trial No.	Year	Form.	Application					PHI days	Residues as BYI 08330 Equivalents (mg/kg)						
				Timing	kg ai/ha	Interval days	kg ai/hL	Total kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
				unfolded					7	0.026	0.335	0.198	< 0.01	0.021	0.59	0.36
Oxnard, CA Region 10	FN044-04H Mustard Greens	2004	100 OD	50% of the expected head size reached	0.089	0	156	0.178								
				80% of the expected head size reached	0.089	7	152		1 1 3 3 7 7	2.029 1.985 1.750 1.546 0.170 0.148	0.930 1.040 0.891 0.861 0.449 0.518	1.292 1.146 0.840 0.854 0.327 0.325	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.026 0.024 0.031 0.028 0.019 0.020	**4.4** 4.2 3.5 3.3 0.98 1.0	**3.0** 3.0 2.8 2.4 0.62 0.67

[a]Washed; average of three replicate sample preparations and analyses

[b]Washed and cooked, average of three replicate sample preparations and analyses

Legume vegetables

Table 100 Residues on French climbing beans (Succulent Beans with pods) from the foliar application of spirotetramat in glasshouses in Europe (M-263646-01-1, Schöning R.; Wolters A.; 2006)

Study No. Trial No. Country Year	Form.	Application						PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
		No.	Spray interval days	kg ai/(ha × m[1])	kg as/ha	kg ai/hL	Water rate (L/ha × m)[a]		BYI 08330	BYI 08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-gluco-side	Total residue calc.	Parent + Enol
RA-2042/04 R 2004 0172 8 0172-04 Italy I-00050 Palidoro Fiumicino (Roma) (Lazio) 2004	100 OD	4	7	0.072	0.0864-0.1440	0.0144	500	0[b] 0 7 10 14 21	0.03 0.24 0.13 0.06 0.06 0.04	0.17 0.26 0.25 0.11 0.12 0.063	0.19 0.22 0.20 0.12 0.081 0.042	< 0.012 0.012 0.012 0.012 0.012 0.012	0.024 0.030 0.038 0.025 0.030 0.023	0.43 0.78 0.63 0.33 0.32 0.18	0.20 0.50 0.38 0.17 0.18 0.10
RA-2042/04 R 2004 0173 6 0173-04 Italy I-71043 Manfredonia (Fg) (Puglia) 2004	100 OD	4	7	0.072	0.1440	0.0144	500	0[b] 0 7 10 14 21	0.19 0.42 0.52 0.28 0.01 0.01	0.25 0.46 0.34 0.25 0.066 0.036	0.077 0.12 0.089 0.076 0.020 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.021 0.025 0.035 0.029 0.008 0.008	0.55 1.0 0.98 0.66 0.12 0.078	0.44 0.88 0.86 0.53 0.076 0.046
RA-2042/04 R 2004 0174 4 0174-04 Germany D-40764	100 OD	4	7	0.072	0.1440	0.0144	500	0[b] 0 7 10 14 21	0.16 0.20 0.15 0.04 0.13 0.03	0.23 0.22 0.27 0.23 0.29 0.19	0.11 0.13 0.12 0.099 0.099 0.055	< 0.012 < 0.012 0.012 0.012 0.012 0.012	0.018 0.018 0.026 0.021 0.035 0.032	0.53 0.58 0.60 0.42 0.58 0.33	0.39 0.42 0.43 0.27 0.42 0.22

Study No. Trial No. Country Year	Form.	Application						PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
		No.	Spray interval days	kg ai/(ha × m[1])	kg as/ha	kg ai/hL	Water rate (L/ha × m)[a]		BYI 08330	BYI 08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-gluco-side	Total residue calc.	Parent + Enol
Langenfeld (Modemann) 2004															
RA-2042/04 R 2004 01752 0175-04 France F-13870 Rognonas (Provence-Cote D'azur) 2004	100 OD	4	7	0.072	0.1260	0.0144	500	0[b] 0 7 10 14 21	0.10 0.28 0.22 0.35 0.15 0.04	0.088 0.15 0.24 0.28 0.26 0.19	0.16 0.21 0.17 0.10 0.099 0.080	0.012 0.012 0.012 0.012 0.012 0.012	0.024 0.025 0.033 0.040 0.043 0.054	0.40 0.69 0.70 0.78 0.56 0.40	0.19 0.43 0.46 0.63 0.41 0.23
RA-2042/04 R 2004 01760 0176-04 Italy I-00052 Furbara - Cerveteri (RM) (Lazio) 2004	100 OD	4	7	0.072	0.0864-0.1440	0.0144	500	0[b] 0 7 10 14 21	0.01 0.04 0.01 0.01 0.01 < 0.01	0.041 0.054 0.049 0.031 0.015 < 0.012	0.10 0.10 0.11 0.070 0.037 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.009 0.010 0.014 0.012 0.008 < 0.008	0.17 0.22 0.20 0.14 0.082 < 0.055	0.051 0.094 0.050 0.041 0.025 < 0.022
RA-2042/04 R 2004 01779 0177-04 Italy I-70052 Molfetta (Bari) (Puglia) 2004	100 OD	4	7	0.072	0.1440	0.0144	500	0[b] 0 7 10 14 21	0.01 0.08 0.02 0.01 0.01 < 0.01	0.037 0.082 0.068 0.046 0.090 0.026	0.084 0.20 0.14 0.075 0.048 0.023	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	0.009 0.009 0.012 0.009 0.012 0.008	0.15 0.38 0.25 0.15 0.17 0.079	0.047 0.16 0.088 0.056 0.10 0.036
RA-2042/04 R 2004 01787 0178-04 France F-13550 Noves (Provence-Cote D'Azur) 2004	100 OD	4	7	0.072	0.1260	0.0144	500	0[b] 0 7 10 14 21	0.06 0.13 0.08 0.13 0.11 0.13	0.10 0.13 0.22 0.26 0.27 0.29	0.14 0.17 0.16 0.11 0.12 0.12	0.012 0.012 0.012 0.012 0.012 0.017	0.020 0.020 0.027 0.031 0.043 0.067	0.33 0.46 0.50 0.53 0.56 0.62	0.16 0.26 0.30 0.39 0.38 0.42
RA-2042/04 R 2004 01795 0179-04 Germany D-40764 Langenfeld (Kals) 2004	100 OD	4	7	0.072	0.1440	0.0144	500	0[b] 0 7 9 14 21	0.02 0.09 0.06 0.07 0.04 0.02	0.23 0.26 0.40 0.36 0.23 0.15	0.16 0.14 0.11 0.13 0.098 0.061	0.012 < 0.012 0.012 0.012 < 0.012 < 0.012	0.012 0.012 0.023 0.022 0.021 0.015	0.43 0.50 0.60 0.59 0.39 0.24	0.25 0.35 0.46 0.43 0.27 0.17

[a] m is the height of the leafy surface or treated canopy height in meters, 1.2 – 2.0 m for these trials.

[b] Before final treatment.

Root and Tuber Vegetables

Table 101 Residues on potatoes from the foliar application of spirotetramat in the USA (M-277033-01-1, Mosier, D. and A. Harbin; 2006).

Location	Trial No.	Year	Form.	Application				PHI days	Residues as BYI 08330 Equivalents (mg/kg)						
				Interval days	kg ai/ha	Spray vol. L/ha	Total kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cisketo-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
Germansville, Pennsylvania Region 1	FN245-05H	2005	150 OD	0	0.089	176	0.180								
				6	0.091	178		7 7	< 0.01 < 0.01	0.362 0.327	0.035 0.040	< 0.01 < 0.01	< 0.01 < 0.01	**0.43** 0.40	**0.37** 0.34
North Rose, New York Region 1	FN246-05H	2005	150 OD	0	0.086	166	0.175								
				7	0.089	171		6 6	< 0.01 < 0.01	0.135 0.147	0.014 0.015	< 0.01 < 0.01	< 0.01 < 0.01	0.18 **0.19**	0.14 **0.16**
Tifton, Georgia Region 2	FN247-05D	2005	150 OD	0	0.088	169	0.176								
				7	0.088	167		3 3 7 7 10 10 14 14 20 20	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.156 0.226 0.151 0.219 0.150 0.175 0.173 0.149 0.121 0.133	0.028 0.042 0.031 0.036 0.032 0.029 0.026 0.028 0.023 0.023	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 0.012 < 0.01	0.21 0.23 0.21 **0.29** 0.21 0.23 0.23 0.21 0.18 0.19	0.17 0.24 0.16 **0.23** 0.16 0.18 0.18 0.16 0.13 0.14
Molino, Florida Region 2	FN248-05H	2005	150 OD	0	0.090	125	0.178								
				6	0.088	121		7 7	< 0.01 < 0.01	0.285 0.210	0.047 0.027	< 0.01 < 0.01	< 0.01 < 0.01	**0.36** 0.27	**0.30** 0.22
Stilwell, Kansas Region 5	FN249-05H	2005	150 OD	0	0.091	139	0.180								
				15	0.089	138		7 7	< 0.01 < 0.01	0.170 0.146	0.019 0.015	< 0.01 < 0.01	< 0.01 < 0.01	**0.22** 0.19	**0.18** 0.16
Stilwell, Kansas Region 5	FN249-05H	2005	240 SC	0	0.091	139	0.180								
				15	0.089	138		7 7	< 0.01 < 0.01	0.092 0.098	0.014 0.011	< 0.01 < 0.01	< 0.01 < 0.01	0.13 **0.14**	0.10 **0.11**
Seymour, Illinois Region 5	FN250-05H	2005	150 OD	0	0.090	146	0.180								
				5	0.090	146		7 7	< 0.01 < 0.01	0.029 0.025	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	**0.069** 0.065	**0.039** 0.035
Seymour, Illinois Region 5	FN250-05H	2005	240 SC	0	0.090	146	0.179								
				5	0.089	143		7 7	< 0.01 < 0.01	0.031 0.021	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	**0.071** 0.061	**0.041** 0.031
Springfield,	FN251-	2005	150	0	0.089	128	0.177								

Location	Trial No.	Year	Form.	Application				PHI days	Residues as BYI 08330 Equivalents (mg/kg)						
				Inter-val days	kg ai/ha	Spray vol. L/ha	Total kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cisketo-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
Nebraska Region 5	05H		OD	5	0.088	128		6 6	< 0.01 < 0.01	0.357 0.354	0.070 0.059	< 0.01 < 0.01	< 0.01 < 0.01	**0.46** 0.44	**0.37** 0.36
Sabin, Minnesota Region 5	FN252-05H	2005	150 OD	0	0.092	155	0.179								
				5	0.087	159		7 7	< 0.01 < 0.01	0.036 0.034	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	**0.076** 0.074	**0.046** 0.044
Kimberley, Idaho Region 11	FN253-05H	2005	150 OD	0	0.089	170	0.176								
				7	0.087	167		7 7	< 0.01 < 0.01	0.043 0.070	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	0.083 **0.11**	0.053 **0.080**
Porterville, California Region 10	FN254-05H	2005	150 OD	0	0.088	184	0.176								
				7	0.088	186		7 7	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	**< 0.055** < 0.055	**< 0.020** < 0.020
Rupert, Idaho Region 11	FN255-05H	2005	150 OD	0	0.088	150	0.176								
				7	0.088	146		7 7	< 0.01 < 0.01	0.040 0.037	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	**0.080** 0.077	**0.050** 0.047
Rupert, Idaho Region 11	FN255-05H	2005	240 SC	0	0.088	151	0.178								
				7	0.090	149		7 7	< 0.01 < 0.01	0.039 0.043	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	0.079 **0.083**	0.049 **0.053**
Ephrata, Washington Region 11	FN256-05H	2005	150 OD	0	0.087	137	0.175								
				7	0.088	138		7 7	< 0.01 < 0.01	0.039 0.042	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	0.079 **0.082**	0.049 **0.052**
Ephrata, Washington Region 11	FN256-05H	2005	240 SC	0	0.087	138	0.176								
				7	0..089	139		7 7	< 0.01 < 0.01	0.020 0.024	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	0.060 **0.064**	0.030 **0.034**
Jerome, Idaho Region 11	FN257-05D	2005	150 OD	0	0.088	163	0.177								
				6	0.089	169		3 3 6 6 8 8 13 13 20 20	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.056 0.068 0.086 0.077 0.058 0.079 0.040 0.086 0.102 0.089	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 0.011 < 0.01 0.011 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.096 0.11 0.13 0.12 0.098 0.012 0.080 0.13 **0.14** 0.13	0.066 0.078 0.096 0.087 0.068 0.089 0.050 0.096 **0.11** 0.099
Madras, Oregon Region 11	FN258-05H	2005	150 OD	0	0.086	157	0.173								
				6	0.087	160		7 7	< 0.01 < 0.01	0.156 0.096	0.012 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	**0.12** 0.14	**0.17** 0.11

Location	Trial No.	Year	Form.	Application				PHI days	Residues as BYI 08330 Equivalents (mg/kg)						
				Inter-val days	kg ai/ha	Spray vol. L/ha	Total kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cisketo-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
Ephrata, Washington Region 11	FN259-05H	2005	150 OD	0	0.089	134	0.177								
				7	0.088	134		7 7	< 0.01 < 0.01	0.069 0.081	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	0.11 **0.12**	0.079 **0.091**
Payette, Idaho Region 11	FN260-05H	2005	150 OD	0	0.090	191	0.178								
				6	0.088	187		7 7	< 0.01 < 0.01	0.036 0.035	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	**0.076** 0.075	**0.046** 0.045

Stalk and Stem Vegetables

Table 102 Residues on celery stalks from the foliar application of spirotetramat to celery in the USA (M-277098-01-1**,** Fischer, D.; 2006)

Location	Trial No.	Yr	Form.	Application					PHI days	Residues (mg/kg)						
				Timing	kg ai/ha	Inter-val days	kg ai/hL	Total kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
Belle Glade, Florida Region 3	FN01 3-04H	2004	100 OD	vegetative plant parts 50% of final size	0.089	0	95	0.177								
					0.088	6	108		3 3 **7** **7**	0.089 0.252 < 0.01 0.01	0.065 0.133 0.037 0.037	0.062 0.071 0.034 0.031	< 0.01 < 0.01 < 0.01 < 0.01	0.022 0.024 0.031 0.027	0.25 **0.49** 0.12 0.12	0.15 **0.38** 0.047 0.047
Springfield, Nebraska Region 5	FN01 4-04D-A	2004	100 OD	Crop Height: 36 – 46 cm	0.088	0	135	0.176								
				Crop Height 46 – 60 cm	0.088	7	131		0 0 1 1 3 3 3 3 3 **7** **7** 10 10	1.088 0.767 0.695 0.458 0.248 0.222 0.108 0.112 0.119 0.127 0.172 0.042 0.037	0.522 0.390 0.357 0.264 0.214 0.198 0.170 0.125 0.144 0.073 0.089 0.035 0.034	0.185 0.150 0.210 0.155 0.229 0.214 0.184 0.164 0.197 0.152 0.169 0.091 0.079	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	0.075 0.068 0.082 0.071 0.064 0.073 0.101 0.081 0.078 0.107 0.128 0.131 0.155	1.9 1.4 1.3 0.95 **0.76** 0.71 0.57 0.48 0.54 0.46 0.56 0.30 0.31	1.6 1.2 1.0 0.72 **0.46** 0.42 0.28 0.24 0.26 0.20 0.26 0.077 0.071
									3[a] 3 3	< 0.01 < 0.01 < 0.01	0.028 0.028 0.034	0.038 0.041 0.048	< 0.01 < 0.01 < 0.01	0.030 0.043 0.054	0.12 0.12 0.15	0.038 0.038 0.034
									3[b] 3 3	< 0.01 < 0.01 < 0.01	0.033 0.036 0.035	0.061 0.077 0.076	< 0.01 < 0.01 < 0.01	0.041 0.053 0.056	0.16 0.19 0.19	0.043 0.046 0.045

Location	Trial No.	Yr	Form.	Application					PHI days	Residues (mg/kg)						
				Timing	kg ai/ha	Inter-val days	kg ai/hL	Total kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
Springfield, Nebraska Region 5	FN014-04D-B	2004	240 SC	Crop Height: 36 – 46 cm	0.088	0	135	0.176								
				Crop Height: \46 – 60 cm	0.088	7	131		3 3 7 7	0.127 0.189 0.172 0.221	0.125 0.139 0.075 0.096	0.145 0.119 0.128 0.145	< 0.01 < 0.01 < 0.01 < 0.01	0.033 0.033 0.047 0.066	0.45 **0.49** 0.43 0.54	0.25 **0.33** 0.25 0.32
Oceano, California Region 10	FN015-04H-A	2004	100 OD	vegetative plant parts 70% of final size	0.088	0	150	0.179								
				vegetative plant parts have final size	0.091	7	157		3 3 7 7	0.107 0.085 0.099 0.147	0.134 0.126 0.089 0.110	0.093 0.084 0.070 0.080	< 0.01 < 0.01 < 0.01 < 0.01	0.043 0.045 0.053 0.051	0.39 0.35 0.32 **0.40**	0.24 0.21 0.19 **0.26**
Oceano, California Region 10	FN015-04H-B	2004	240 SC	vegetative plant parts 70% of final size	0.088	0	150	0.173								
				vegetative plant parts have final size	0.085	7	145		3 3 7 7	0.164 0.155 0.099 0.189	0.129 0.121 0.090 0.106	0.077 0.085 0.081 0.083	< 0.01 < 0.01 < 0.01 < 0.01	0.028 0.031 0.037 0.040	**0.41** 0.40 0.32 0.43	**0.29** 0.28 0.19 0.30
Hickman, California Region 10	FN016-04H	2004	100 OD	vegetative plant parts 70% of final size	0.089	0	142	0.178								
				vegetative plant parts have final size	0.089	7	142		3 3 7 7	1.401 1.309 0.845 1.078	0.539 0.548 0.322 0.388	0.246 0.224 0.216 0.265	< 0.01 < 0.01 < 0.01 < 0.01	0.049 0.051 0.071 0.082	**2.2** 2.1 1.5 1.8	**1.9** 1.8 1.2 1.5
Fresno, California Region 10	FN017-04H	2004	100 OD	60% fruits have final size/fruit	0.087	0	189	0.175								
				80% fruits have final size/fr.	0.088	5	188		3 3 7 7	0.261 0.276 0.096 0.092	0.158 0.171 0.093 0.087	0.147 0.159 0.129 0.139	< 0.01 < 0.01 < 0.01 < 0.01	0.030 0.035 0.047 0.043	0.61 **0.66** 0.38 0.37	0.42 **0.45** 0.19 0.18

Location	Trial No.	Yr	Form.	Application					PHI days	Residues (mg/kg)						
				Timing	kg ai/ha	Interval days	kg ai/hL	Total kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
Visalia, California Region 10	FN01 8-04H	2004	100 OD	vegetative plant parts 50% of final size	0.088	0	136	0.174								
				vegetative plant parts 70% of final size	0.087	7	136		3 3 7 7	1.948 1.665 1.345 1.395	0.494 0.548 0.349 0.380	0.078 0.092 0.056 0.059	< 0.01 < 0.01 < 0.01 < 0.01	0.103 0.117 0.126 0.162	**2.6** 2.4 1.9 2.0	**2.4** 2.2 1.7 1.8

[a] Stalk trimmed.

[b] Stalk trimmed and washed.

Tree Nuts

Table 103 Residues on hulls and nutmeats from the foliar application of spirotetramat to almonds in the USA (M-277323-01-1**,** Rupprecht, K.; 2006)

Location	Trial No.	Yr	Form.	Application						Part Analy.	PHI days	Residues (mg/kg)						
				Method	Timing	kg ai/ha	Interval days	Spray vol. L/ha	Total rate kg ai/ha			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total Residue of BYI 08330 calc.	Parent + Enol
Fresno CA Region 10	FN202-05D-A	2005	150 OD	Concentrate Spray Airblast	Beginning of fruit colouring	0.158	0	391	0.378									
					Beginning of fruit colouring	0.110	12	397										
					Colouring advanced	0.110	14	396		Nut-meat	0 0 6 6 10 10 13 13 21 21	0.014 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 0.020 0.025 0.019 0.022	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.05 < 0.05 **< 0.05** < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05	0.024 < 0.02 **< 0.02** < 0.02 < 0.02 < 0.02 < 0.02 < 0.02 < 0.02 < 0.02
										Hull	0 0 6 6 10 10 13 13 21 21	1.082 1.394 1.528 3.336 2.737 2.078 1.912 1.480 1.664 2.255	< 0.20 < 0.20 < 0.20 0.579 0.240 < 0.20 < 0.20 < 0.20 < 0.20 0.201	< 0.20 < 0.20 < 0.20 0.429 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20	< 0.20 < 0.20 < 0.20 0.407 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20	< 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20 < 0.20	1.9 2.2 2.3 **5.0** 3.6 2.9 2.7 2.3 2.5 3.0	1.3 1.6 1.7 **3.9** 3.0 2.3 2.1 1.7 1.9 2.4

Location	Trial No.	Yr	Form.	Application						Part Analy.	PHI days	Residues (mg/kg)						
				Method	Timing	kg ai/ha	Interval days	Spray vol. L/ha	Total rate kg ai/ha			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total Residue of BYI 08330 calc.	Parent + Enol
Fresno, CA Region 10	FN202-05D-B	2005	150 OD	Dilute Spray Airblast	Beginning of fruit colouring	0.158	0	2030	0.378									
					Beginning of fruit colouring	0.110	12	2055										
					Colouring advanced	0.110	14	2057		Nut-meat	6 6 13 13	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 0.079 0.067	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 0.024 0.022	< 0.01 < 0.01 0.012 < 0.01	< 0.05 < 0.05 **0.14** 0.12	< 0.02 < 0.02 **0.089** 0.077
										Hull	6 6 13 13	3.075 1.540 3.561 3.173	0.546 < 0.20 0.634 0.538	0.436 < 0.20 0.517 0.440	0.312 < 0.20 0.332 0.474	< 0.20 < 0.20 < 0.20 < 0.20	4.4 2.3 **5.2** 4.8	3.6 1.7 **4.2** 3.7
Kerman, CA Region 10	FN203-05H-A	2005	150 OD	Concentrate Spray Airblast	Fruit about 90% of final size	0.155	0	480	0.369									
					Fruit about 90% of final size	0.107	14	478										
					Fruit about 90% of final size	0.108	14	484		Nut-meat	7 7	0.036 0.026	0.058 0.045	< 0.01 < 0.01	0.016 0.014	0.018 < 0.01	**0.14** 0.10	**0.094** 0.071
										Hull	7 7	2.885 2.950	0.314 0.347	< 0.20 < 0.20	0.492 0.476	< 0.20 < 0.20	4.1 4.4	3.2 3.3
Kerman, CA Region 10	FN203-05H-B	2005	150 OD	Dilute Spray Airblast	Fruit about 90% of final size	0.160	0	2843	0.380									
					Fruit about 90% of final size	0.111	14	2865										
					Fruit about 90% of final size	0.109	14	2796		Nut-meat	7 7	0.032 0.025	0.059 0.047	< 0.01 < 0.01	0.014 0.012	0.012 < 0.01	0.13 0.10	0.091 0.072
										Hull	7 7	1.079 1.923	0.295 0.441	< 0.20 0.230	0.528 0.676	0.281 0.372	2.4 3.6	1.4 2.4
Kerman, CA Region 10	FN203-05H-C	2005	240 SC	Concentrate Spray Airblast	Fruit about 90% of final size	0.155	0	482	0.370									
					Fruit about 90% of final size	0.107	14	478										
					Fruit about 90% of	(0.108	14	484		Nut-meat	7 7	0.028 0.033	0.015 0.020	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	0.063 0.083	0.043 0.053

Location	Trial No.	Yr	Form.	Application						Part Analy.	PHI days	Residues (mg/kg)						
				Method	Timing	kg ai/ha	Interval days	Spray vol. L/ha	Total rate kg ai/ha			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total Residue of BYI 08330 calc.	Parent + Enol
					final size					Hulls	7 7	3.060 4.318	0.238 0.342	< 0.20 < 0.20	< 0.20 < 0.20	< 0.20 < 0.20	3.7 **5.3**	3.1 **4.7**
Glenn, CA Region 10	FN204-05H-A	2005	150 OD	Concentrate Spray Airblast	Fruit about 90% of final size	0.158	0	634	0.378									
					Fruit about 90% of final size	0.110	14	(627										
					Fruit ripe for picking	0.110	17	627		Nut-meat	7 7	0.025 0.024	0.029 0.021	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	**0.084** 0.075	**0.054** 0.045
										Hulls	7 7	0.603 0.461	< 0.20 < 0.20	< 0.20 < 0.20	< 0.20 < 0.20	< 0.20 < 0.20	1.4 1.3	0.80 0.66
Glenn, CA Region 10	FN204-05H-B	2005	150 OD	Dilute Spray Airblast	Fruit about 90% of final size	0.159	0	2295	0.379									
					Fruit about 90% of final size	0.110	14	2305										
					Fruit ripe for picking	0.110	17	2309		Nut-meat	7 7	0.025 0.029	0.028 0.021	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	0.083 0.080	0.053 0.050
										Hulls	7 7	0.614 0.634	< 0.20 < 0.20	< 0.20 < 0.20	< 0.20 < 0.20	< 0.20 < 0.20	1.4 1.5	0.81 0.93
Glenn, CA Region 10	FN204-05H-C	2005	240 SC	Concentrate Spray Airblast	Fruit about 90% of final size	0.161	0	634	0.377									
					Fruit about 90% of final size	0.108	14	627										
					Fruit ripe for picking	0.108	17	626		Nut-meat	7 7	0.028 0.023	0.012 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	0.070 0.063	0.040 0.033
										Hulls	7 7	1.140 1.123	< 0.20 < 0.20	< 0.20 < 0.20	< 0.20 < 0.20	< 0.20 < 0.20	**1.9** 1.9	**1.3** 1.3
Dinuba, CA Region 10	FN205-05H-A	2005	150 OD	Concentrate Spray Airblast	Colouring advanced	0.161	0	453	0.380									
					Colouring advanced	0.109	14	428										
					Fruit ripe for picking	0.110	14	437		Nut-meat	7 7	0.017 0.021	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	0.057 **0.061**	0.027 **0.031**
										Hulls	7 7	1.749 2.827	< 0.20 0.366	< 0.20 < 0.20	< 0.20 < 0.20	< 0.20 < 0.20	2.5 3.8	1.9 3.2

Location	Trial No.	Yr	Form.	Application						Part Analy.	PHI days	Residues (mg/kg)						
				Method	Timing	kg ai/ha	Interval days	Spray vol. L/ha	Total rate kg ai/ha			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total Residue of BYI 08330 calc.	Parent + Enol
Dinuba, CA Region 10	FN205-05H-B	2005	150 OD	Dilute Spray Airblast	Colouring advanced	0.159	0	2013	0.379									
					Colouring advanced	0.109	14	1983										
					Fruit ripe for picking	0.110	14	2039		Nut-meat	7 7	0.017 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	0.057 < 0.05	0.027 < 0.020
										Hulls	7 7	3.639 3.376	0.779 0.753	0.327 0.303	< 0.20 < 0.20	< 0.20 < 0.20	**4.8** 4.8	**4.4** 4.1
Madera, CA Region 10	FN206-05H-A	2005	150 OD	Concentrate Spray Airblast	Fruit about 80% of final size	0.160	0	541	0.384									
					Beginning of fruit colouring	0.112	15	515										
					Fruit ripe for consumption	0.112	14	522		Nut-meat	7 7	0.011 0.012	0.071 0.051	0.017 0.015	0.025 0.024	0.019 0.010	**0.14** 0.11	**0.082** 0.063
										Hulls	7 7	1.759 1.419	< 0.20 < 0.20	< 0.20 < 0.20	< 0.20 < 0.20	< 0.20 < 0.20	**2.6** 2.1	**2.0** 1.6
Madera, CA Region 10	FN206-05H-B	2005	150 OD	Dilute Spray Airblast	Fruit about 80% of final size	0.161	0	2116	0.380									
					Beginning of fruit colouring	0.109	15	2058										
					Fruit ripe for consumption	0.110	14	2232		Nut-meat	7 7	< 0.01 < 0.01	0.035 0.033	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	0.075 0.054	0.045 0.043
										Hulls	7 7	1.197 0.708	0.225 < 0.20	< 0.20 < 0.20	< 0.20 < 0.20	< 0.20 < 0.20	2.0 1.5	1.4 0.91

Table 104 Residues on pecan nutmeats from the foliar application of spirotetramat to pecans in the USA (M-277323-01-1**,** Rupprecht, K.; 2006)

Location	Trial No.	Year	Form.	Application					PHI days	Residues (mg/kg)						
				Method	kg ai/ha	Interval days	Spray vol. L/ha	Total kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol

Location	Trial No.	Year	Form.	Application					PHI days	Residues (mg/kg)						
				Method	kg ai/ha	Inter-val days	Spray vol. L/ha	Total kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
Chula, Georgia Region 2	FN207-05H-A	2005	150 OD	Concentrate Spray Airblast	0.161	0	390	0.384								
					0.111	14	420									
					0.112	13	339		7 7	0.013 0.017	0.012 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	0.055 0.057	0.025 0.027
Chula, Georgia Region 2	FN207-05H-B	2005	150 OD	Dilute Spray Airblast	0.160	0	2138	0.380								
					0.110	14	2192									
					0.110	13	1900		7 7	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	< 0.05 < 0.05	< 0.020 < 0.020
Chula, Georgia Region 2	FN207-05H-C	2005	240 SC	Concentrate Spray Airblast	0.157	0	385	0.382								
					0.111	14	418									
					0.114	13	337		7 7	0.012 0.036	< 0.01 0.012	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	0.052 **0.076**	0.022 **0.048**
Nashville, Georgia Region 2	FN208-05H-A	2005	150 OD	Concentrate Spray Airblast	0.158	0	552	0.379								
					0.111	13	559									
					0.110	14	579		7 7	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	**< 0.05** < 0.05	**< 0.020** < 0.020
Nashville, Georgia Region 2	FN208-05H-B	2005	150 OD	Dilute Spray Airblast	0.160	0	1883	0.381								
					0.111	13	1920									
					0.110	14	1916		7 7	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	< 0.05 < 0.05	< 0.020 < 0.020
Proctor, Arkansas Region 4	FN209-05D-A	2005	150 OD	Concentrate Spray (Airblast)	0.159	0	523	0.379								
					0.110	12	524									

Location	Trial No.	Year	Form.	Application					PHI days	Residues (mg/kg)						
				Method	kg ai/ha	Inter-val days	Spray vol. L/ha	Total kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Parent + Enol
					0.110	12	523		0 0 7 7 10 10 14 14 21 21	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.05 < 0.05 **< 0.05** < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05	< 0.020 < 0.020 **< 0.020** < 0.020 < 0.020 < 0.020 < 0.020 < 0.020 < 0.020 < 0.020
Proctor, Arkansas Region 4	FN209-05D-B	2005	150 OD	Dilute Spray (Airblast)	0.159	0	1989	0.379								
					0.110	12	1988									
					0.110	12	1991		7 7 14 14	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	< 0.05 < 0.05 < 0.05 < 0.05	< 0.020 < 0.020 < 0.020 < 0.020
Wharton Texas Region 6	FN210-05H-A	2005	150 OD	Concentrate Spray (Airblast)	0.160	0	588	0.381								
					0.111	12	606									
					0.110	20	600		7 7	< 0.01 < 0.01	0.035 0.032	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	0.075 0.072	0.045 0.042
Wharton, Texas Region 6	FN210-05H-B	2005	150 OD	Dilute Spray Airblast	0.162	0	1932	0.386								
					0.111	12	2006									
					0.113	20	2029		7 7	< 0.01 < 0.01	0.122 0.113	< 0.01 < 0.01	< 0.01 0.011	< 0.01 < 0.01	**0.16** 0.15	**0.13** 0.12
D'Hanis, Texas Region 8	FN211-05H-A	2005	150 OD	Concentrate Spray Airblast	0.156	0	590	0.373								
					0.110	12	531									
					0.107	12	562		7 7	< 0.01 < 0.01	0.132 0.189	< 0.01 0.017	0.015 0.027	< 0.01 < 0.01	0.18 0.25	0.14 0.20
D'Hanis, Texas Region 8	FN211-05H-B	2005	150 OD	Dilute Spray Airblast	(0.156)	0	2217	0.381								
					0.111	12	2017									
					0.113	12	2498		7 7	< 0.01 < 0.01	0.232 0.237	0.014 0.010	0.031 0.027	< 0.01 < 0.01	0.30 **0.29**	0.24 **0.25**

Herbs and Dried Herbs

Table 105 Residues on hop cones (green and dried) after the foliar application of spirotetramat to hops in Europe (M-265047-01-1, Schöning R.; Helfrich P.; 2006; M-272100-01-1, Schöning R.; 2006)

Study No. Trial No. Trial SubID Country Year	Form.	Application				Portion Analy.	PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
		No	Spray inter-val days	kg ai/ha	kg ai/hL			BYI08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.	Parent + Enol
RA-2036/04 R 2004 0148 5 0148-04 France F-67160 Schleithal 2004	OD 100	2	13	0.1750	0.0072 9 - 0.0079 5	Hop cone, green	0[a] 0 8 14 22	0.40 0.58 0.11 0.17 0.10	< 0.12 0.18 < 0.12 < 0.12 < 0.12	< 0.12 < 0.12 < 0.12 < 0.12 < 0.12	< 0.12 < 0.12 < 0.12 < 0.12 < 0.12	0.14 0.31 0.09 0.13 0.09	0.90 1.3 0.56 0.66 0.55	0.52 0.76 0.23 0.29 0.22
						cone, kiln-dried	8 14 22	0.24 0.63 0.52	0.23 0.18 0.15	0.19 0.30 0.19	< 0.12 < 0.12 < 0.12	0.27 0.41 0.43	1.0 1.6 1.4	0.47 0.81 0.67
RA-2036/04 R 2004 0149 3 0149-04 Germany D-85283 Gebrontshausen 2004	OD 100	2	15	0.1620 - 0.1750	0.0070 0 - 0.0070 2	Hop cone, green	0[a] 0 7 14 22	0.21 1.5 0.25 0.27 0.26	< 0.12 0.67 0.21 < 0.12 < 0.12	< 0.12 0.27 0.23 0.17 0.15	< 0.12 < 0.12 < 0.12 < 0.12 < 0.12	0.14 0.19 0.25 0.21 0.23	0.71 2.8 1.1 0.89 0.88	0.33 2.2 0.46 0.39 0.38
						cone, kiln-dried	7 14 22	1.7 0.56 0.94	0.97 0.25 0.35	1.0 0.39 0.51	< 0.12 < 0.12 < 0.12	1.0 0.50 0.70	4.8 1.8 2.6	2.7 0.81 1.3
RA-2036/04 R 2004 0150 7 0150-04 Germany D-88069 Tettnang 2004	OD 100	2	13	0.1750	0.0070 0	Hop cone, green	0[a] 0 7 14 21 28	0.14 0.98 0.43 0.19 0.25 0.26	0.31 0.88 0.27 < 0.12 0.14 0.20	< 0.12 0.24 0.34 0.14 0.16 0.17	< 0.12 < 0.12 < 0.12 < 0.12 < 0.12 < 0.12	0.21 0.39 0.38 0.26 0.30 0.46	2.2 2.6 1.5 0.83 0.97 1.2	0.45 1.9 0.70 0.31 0.39 0.46
						cone, kiln-dried	7 14 21	2.0 1.1 1.2	1.1 0.75 0.58	1.4 0.75 0.60	< 0.12 < 0.12 < 0.12	1.6 1.3 1.2	6.2 4.0 3.7	3.1 1.8 1.8
RA-2036/04 R 2004 0151 5 0151-04 France F-67210 Obernai 2004	OD 100	2	13	0.1750	0.0079 5	Hop cone, green	0[a] 0 8 15 22 29	0.14 0.97 0.70 0.63 0.53 0.53	< 0.12 0.32 < 0.12 < 0.12 < 0.12 < 0.12	< 0.12 0.20 0.22 0.19 0.13 < 0.12	< 0.12 < 0.12 < 0.12 < 0.12 < 0.12 < 0.12	0.10 0.10 0.15 0.14 0.15 0.15	0.60 1.7 1.3 1.2 1.0 1.0	0.26 1.3 0.82 0.75 0.65 0.65
						cone, kiln-dried	8 15 22	2.3 2.6 2.2	0.28 0.32 0.25	0.62 0.72 0.45	< 0.12 < 0.12 < 0.12	0.36 0.58 0.49	3.7 4.3 3.5	2.6 2.9 2.4
RA-2108/05 R 2005 0550 7 0550-05 Germany D-85382 Gebrotshausen 2005	150 OD	1	---	0.15	0.0068	Hop cone, green	0 7 14 21	0.85 0.28 0.15 0.11	0.24 0.12 < 0.12 < 0.12	< 0.12 < 0.12 < 0.12 < 0.12	< 0.12 < 0.12 < 0.12 < 0.12	< 0.08 0.08 0.08 0.08	1.7 0.72 0.59 0.55	1.1 0.40 0.27 0.23
						cone, kiln-dried	14 21	1.5 0.93	0.19 0.21	< 0.12 < 0.12	< 0.12 < 0.12	0.08 0.08	**2.0** 1.5	**1.7** 1.1
RA-2108/05 R 2005 0551 5 0551-05 France F-67160 Schleithal 2005	150 OD	1	---	0.15	0.0075	Hop cone, green	0 7 13 20	0.94 0.28 0.15 0.10	0.30 0.12 0.12 0.12	< 0.12 < 0.12 < 0.12 < 0.12	< 0.12 < 0.12 < 0.12 < 0.12	< 0.08 0.08 0.08 0.08	1.6 0.72 0.59 0.54	1.2 0.40 0.27 0.22
						cone, kiln-dried	13 20	0.83 0.60	0.23 0.14	0.43 0.21	< 0.12 < 0.12	0.13 0.13	**1.8** 1.2	**1.1** 0.74
RA-2108/05 R 2005 0552 3 0552-05 Germany D 88069	150 OD	1	---	0.15	0.0068	Hop cone, green	0 14 21	0.98 0.32 0.21	0.36 0.12 0.12	< 0.12 0.17 0.12	< 0.12 < 0.12 < 0.12	< 0.08 0.08 0.08	1.7 0.81 0.65	1.3 0.44 0.33
						cone, kiln-	14 21	1.5 1.1	0.32 0.31	0.88 0.52	< 0.12 < 0.12	0.29 0.33	**3.1** 2.4	**1.8** 1.4

Study No. Trial No. Trial SubID Country Year	Form.	Application				Portion Analy.	PHI days	Residues (mg/kg) expressed as BYI08330 equivalents						
		No	Spray inter-val days	kg ai/ha	kg ai/hL			BYI0833 0	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucosid e	Total residue calc.	Parent + Enol
Tettnang 2005						dried								
RA-2108/05 R 2005 0553 1 0553-05 France F-67210 Obernai 2005	150 OD	1	---	0.15	0.0075	Hop cone, green	0 14 21	0.42 < 0.1 < 0.1	0.12 < 0.12 < 0.12	< 0.12 < 0.12 < 0.12	< 0.12 < 0.12 < 0.12	< 0.08 < 0.08 < 0.08	0.86 < 0.55 < 0.55	0.54 < 0.22 < 0.22
						cone, kiln-dried	14 21	0.61 0.47	0.12 0.12	0.18 0.13	< 0.12 < 0.12	0.08 0.08	**1.1** 0.92	**0.73** 0.59

[a] Before final treatment.

Table 106 Residues on dried cones from the foliar application of spirotetramat to hops in the USA (M-277130-01-1**,** Harbin, A.; 2006)

Location (City, State, and NAFTA Region)	Trial No.	Year	Form.	Application				PHI days	Residues as BYI 0833o Equivalents (mg/kg)						
				Rate kg ai/ha	Interval days	Spray volume L/ha	Total kg ai/ha		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucosid e	Total Residue of BYI 08330 calc.	Parent + Enol
Greenleaf, Idaho Region 11	FN229-05H	2005	150 OD	0.110	0	466	0.221								
				0.111	14	471		7 7 14 14	4.242 3.946 2.916 3.131	0.639 0.501 0.494 0.483	0.202 0.156 0.232 0.270	< 0.10 < 0.10 < 0.10 < 0.10	0.637 0.456 0.689 0.792	**5.8** 5.2 4.4 4.8	**4.9** 4.4 3.4 3.6
Woodburn, Oregon Region 11	FN230-05H	2005	150 OD	0.110	0	557	0.218								
				0.108	12	548		8 8 14 14	4.083 3.676 3.634 3.554	0.744 0.705 0.684 0.515	0.220 0.206 0.298 0.196	< 0.10 < 0.10 < 0.10 < 0.10	0.663 0.488 0.652 0.594	**5.8** 5.2 5.4 5.0	**4.8** 4.4 4.3 4.1
Yakima, Washington Region 11	FN231-05H-A	2005	150 OD	0.112	0	472	0.222								
				0.110	14	462		7 7 14 14	1.590 1.430 1.806 1.623	0.236 0.451 0.377 0.344	< 0.10 < 0.10 < 0.10 < 0.10	< 0.10 < 0.10 < 0.10 < 0.10	0.138 0.355 0.395 0.404	2.2 2.4 **2.8** 2.6	1.8 1.9 **2.2** 2.0
Yakima, Washington Region 11	FN231-05H-B	2005	240 SC	0.113	0	470	0.224								
				0.111	14	461		7 7 14 14	2.447 2.800 2.332 2.175	0.327 0.928 0.329 0.271	< 0.10 0.119 < 0.10 0.113	< 0.10 < 0.10 < 0.10 < 0.10	0.175 0.565 0.332 0.284	3.1 **4.5** 3.2 2.9	2.8 **3.7** 2.7 2.4

FATE OF RESIDUES IN STORAGE AND PROCESSING

In storage

No information was provided on the fate of spirotetramat residues under commercial storage conditions.

In processing

The *nature of the residue* under simulated processing conditions was reported for radiolabelled spirotetramat and radiolabelled metabolites BYI08330-enol, BYI08330-enol-glucoside, BYI08330-ketohydroxy and BYI08330-monohydroxy (M-269158-02-1, Koch, Sur; 2005, amended April 2006; M-267011-01-1, Koch, Sur; 2006; M-266907-01-1, Koch, Sur; 2006; M-267024-01-1, Koch, Sur; 2006; M-267165-01-1, Koch, Sur; 2006). Two different concentrations of each analyte (0.2 and 1.0 mg/L) in buffer solution containing <1% acetonitrile were prepared and incubated at three representative sets of hydrolysis conditions:

Pasteurisation:	90 °C at pH 4 for 20 min
Baking, brewing, boiling:	100 °C at pH 5 for 60 min
Sterilisation:	120 °C at pH 6 for 20 min

At test termination material balances in all tests were in the range of 100-112% of the applied radioactivity.

Spirotetramat was resistant to hydrolysis under conditions being representative for pasteurization. Under conditions representative for baking, boiling and brewing 15% of spirotetramat degraded to BYI08330-enol. Under conditions of sterilization the active substance was nearly completely hydrolysed to BYI08330-enol. BYI 08330-enol was detected as the only hydrolysis product.

BYI 08330-enol was resistant to hydrolysis under all test conditions.

BYI 08330-enol-glucoside was resistant to hydrolysis under conditions representative for pasteurisation. Under conditions representative for baking, brewing and boiling ca.10% of the test substance was hydrolysed to BYI 08330-enol. Under conditions of sterilization ca. 40% of the BYI 08330-enol-glucoside was hydrolysed to the enol metabolite.

BYI 08330-ketohydroxy was resistant to hydrolysis under conditions of pasteurisation. Under conditions of baking, brewing and boiling a slight degradation to BYI 08330-MA-amide was found (5%). Under conditions of sterilisation BYI 08330-ketohydroxy was completely hydrolysed to BYI 08330-MA-amide.

BYI 08330-monohydroxy was resistant under all three test conditions.

The Meeting received processing studies for apple, bean with pod, cheery, orange, grape, hops, palm, potato and tomato.

Samples of treated oranges from four locations in Italy, Spain, and Portugal were processed into orange juice and marmalade (M-263630-01-1, Schoening R., Helfrich P.; 2006). The orange trees were treated twice at a 21 day interval with a 100 OD formulation at 2 – 3 l/ha per application. Two of the samples contained total residues below the LOQ. The oranges were processed simulating industrial procedures but using simple procedures. The basis of the juice processing was the squeezing of orange halves by means of an electrical juice squeezer. The steps in preparation of juice consisted on washing, halving, squeezing (peel), sieving/centrifuging (pomace, juice) and pasteurization (juice). The marmalade was produced by cooking the orange pulp and cut orange peel with jam sugar. Results are summarized in Table 107.

Table 107 Simple processing of oranges from foliar treatment with spirotetramat in Europe (M-263630-01-1, Schoening R., Helfrich P.; 2006)

Country	Portion analysed	Residues (mg/kg) expressed as BYI 08330 equivalents						Process Factor
Study No. Trial No.		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.	
Italy RA-2032/04 R 2004 0139/6	Fruit	0.02	0.012	0.012	< 0.012	< 0.008	< 0.055	
Orange juice	Raw juice	0.01	< 0.012	0.012	< 0.012	< 0.008	< 0.055	
	Juice	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
	Pomace, wet	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
	Washings	0.01	< 0.012	0.012	< 0.012	< 0.008	< 0.055	
	Fruit, washed	0.01	0.012	0.012	< 0.012	< 0.008	< 0.055	
	Pomace, dried	0.01	0.014	0.013	< 0.012	< 0.008	< 0.055	
	Peel, dried	0.02	0.16	0.097	< 0.012	< 0.008	0.27	
	Peel, washed	0.02	0.018	0.019	< 0.012	< 0.008	0.057	
Orange marmalade	Peel, washed	0.06	0.030	0.034	< 0.012	< 0.008	0.12	
	Marmalade	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
	Fruit, peeled	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
	Strain rest	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
Italy RA-2032/04 R 2004 0141/8	Fruit	0.02	0.014	0.012	< 0.012	< 0.008	< 0.055	
Orange juice	Raw juice	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
	Juice	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
	Pomace, wet	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
	Washings	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
	Fruit, washed	0.01	0.013	0.012	< 0.012	< 0.008	< 0.055	
	Pomace, dried	< 0.01	0.016	0.012	< 0.012	< 0.008	< 0.055	
	Peel, dried	0.03	0.094	0.042	< 0.012	0.012	0.18	
	Peel, washed	0.01	0.024	0.013	< 0.012	0.008	0.059	
Orange marmalade	Peel, washed	0.02	0.027	0.013	< 0.012	0.008	0.067	
	Marmalade	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
	Fruit, peeled	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
	Strain rest	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
Portugal RA-2032/04 R 2004 0239/2	Fruit	0.04	0.041	0.013	< 0.012	0.008	0.099	
Orange juice	Raw juice	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
	Juice	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
	Pomace, wet	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	< 0.56
	Washings	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
	Fruit, washed	0.02	0.036	0.013	< 0.012	0.008	0.073	
	Pomace, dried	0.01	0.041	0.012	< 0.012	< 0.008	0.062	
	Peel, dried	0.07	0.26	0.083	< 0.012	0.018	0.43	
	Peel, washed	0.03	0.059	0.024	< 0.012	0.008	0.12	
Orange marmalade	Peel, washed	0.04	0.080	0.031	< 0.012	0.008	0.16	
	Marmalade	0.01	0.013	0.012	< 0.012	< 0.008	< 0.055	
	Fruit, peeled	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
	Strain rest	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	< 0.56
Spain RA-2032/04 R 2004 0240/6	Fruit	0.08	0.078	0.012	< 0.012	0.016	0.18	

Country	Portion analysed	Residues (mg/kg) expressed as BYI 08330 equivalents						Process Factor
Study No. Trial No.		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.	
Orange juice								
	Raw juice	0.01	0.030	< 0.012	< 0.012	0.008	< 0.055	
	Juice	0.01	0.026	< 0.012	< 0.012	0.008	< 0.055	
	Pomace, wet	0.01	0.041	< 0.012	< 0.012	0.008	0.059	
	Washings	0.02	0.012	< 0.012	< 0.012	< 0.008	< 0.055	< 0.30
	Fruit, washed	0.04	0.062	0.012	< 0.012	0.017	0.13	
	Pomace, dried	0.01	0.22	0.012	< 0.012	0.019	0.26	
	Peel, dried	0.15	0.36	0.064	< 0.012	0.063	0.64	
	Peel, washed	0.06	0.073	0.016	< 0.012	0.020	0.17	
Orange marmalade								
	Peel, washed	0.14	0.11	0.034	< 0.012	0.046	0.33	
	Marmalade	0.01	0.036	0.012	< 0.012	0.008	0.067	
	Fruit, peeled	0.01	0.064	< 0.012	< 0.012	0.010	0.084	
	Strain rest	0.01	0.054	< 0.012	< 0.012	0.008	0.072	0.37

Another citrus processing study was reported from the USA (M-277028-01-1Lenz, C.; 2006). Two foliar applications of spirotetramat 150 OD (oil-dispersible) were made to oranges at a rate of 0.848 to 0.878 kg ai/ha/application with 19 to 21 days between applications and a pre-harvest interval (PHI) of 1-day. Prior to processing, random sub-samples of the control and treated bulk orange samples were collected for analysis and the remainder of the orange samples were used to generate the required processed commodities of dried pulp, oil and juice. Processing was performed using procedures which simulated commercial processing practices. The resultant orange RAC samples and orange processed commodities were analysed to determine total spirotetramat residue. Difficulties in generating the orange oil processed commodity were encountered during processing which resulted in decreased amounts of orange oil sample available for analysis.

In a separate study, the effect on washing and waxing on the residue concentration was studied with grapefruits (M-276675-01-1, Krolski, M. E.; 2006). A single foliar spray application of spirotetramat 100 OD was made to grapefruit trees 7 days before fruit harvest at a target rate of 352 kg ai/ha. Grapefruit was collected from both the treated plot and the control plot and the samples were washed and waxed following typical commercial citrus processing practices. Triplicate samples from the treated plot and a single sample from the control plot were collected before and after the washing and waxing process.

Results are summarized in Table 108.

Table 108 Residues from the processing of oranges and grapefruit (M-277028-01-1, Lenz, C.; 2006; M-276675-01-1, Krolski, M. E.; 2006)

Country Year	Portion analysed	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total Residue	Average Total Residue	Process Factor
RAFNY016 FN226-05P USA Fresno, California 2005	Orange fruit	0.389 0.373 0.386	0.115 0.106 0.114	0.026 0.027 0.028	< 0.05 < 0.05 < 0.05	< 0.05 < 0.05 < 0.05	0.630 0.606 0.628	0.621	-
	Pulp, dry	< 0.05 < 0.05 < 0.05	0.583 0.573 0.589	0.084 0.079 0.084	< 0.05 < 0.05 < 0.05	0.024 0.019 0.024	0.791 0.771 0.797	0.786	1.3
	oil	8.207 7.052 7.674	0.516 0.538 0.538	0.118 0.124 0.116	< 0.05 < 0.05 < 0.05	< 0.05 < 0.05 < 0.05	8.941 7.841 8.428	8.40	14

Country Year	Portion analysed	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-gluco-side	Total Residue	Average Total Residue	Process Factor
	juice	< 0.05 < 0.05 < 0.05	< 0.05 < 0.05 < 0.05	< 0.05 < 0.05 < 0.05	< 0.05 < 0.05 < 0.05	< 0.05 < 0.05 < 0.05	< 0.25 < 0.25 < 0.25	< 0.25	< 0.40
RAFNY042 FN330-05P FN330-05P USA Fort Pierce, California 2005	Grapefruit (fruit)	< 0.01 < 0.01 < 0.01	0.041 0.049 0.039	< 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01	0.081 0.089 0.079	0.083	0.13
	Grapefruit (whole fruit, washed + waxed)	< 0.01 < 0.01 < 0.01	0.026 0.017 0.019	< 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01	0.066 0.057 0.059	0.061	0.10

Studies were conducted in Europe (Germany, Italy, Spain, United Kingdom) for the processing of apples into juice, sauce and pomace (M-262624-02-1, Schoening R., Helfrich P.; 2005, amended 12.01.2006; M-264335-01-1, Schoening R., Helfrich P.; 2006). Apple trees on plots were treated with a 100 OD formulation twice (14 – 16 day retreatment interval) at a rate of 1.4 or 2.1 L/ha. The growth stages varied from BBCH 77 to 85.

The washing simulated household processing, whereas the apple sauce and juice processing simulated the industrial practice at a laboratory scale. After washing, the apples were cut, blanched, strained, sugared, canned and pasteurized. For juice preparation, the washed apples were crushed, mashed and pressed. The raw juice was enzyme treated, filtered and pasteurized. The results are summarized in Table 109.

Table 109 Processing of apples from foliar treatment with spirotetramat in Europe (M-262624-02-1, Schoening R., Helfrich P.; 2005, amended 12.01.2006; M-264335-01-1, Schoening R., Helfrich P.; 2006)

Country Study No. Trial No.	Crop Portion analysed	Residues (mg/kg) expressed as BYI 08330 equivalents						Process Factor
		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.	
Germany RA-2135/04 R 2004 0795/5	Fruit	0.01	0.012	0.012	0.012	< 0.008	< 0.055	
	Fruit washed	0.02	0.012	0.016	0.012	0.008	0.064	
	Washings	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
	Apple sauce							
	Strain rest (wet pomace)	0.05	0.029	0.025	0.012	0.008	0.13	2.4
	Raw sauce	0.01	0.018	0.017	0.012	0.008	0.066	
	Sauce	0.01	0.016	0.013	0.012	< 0.008	< 0.055	
	Apple juice							
	Raw juice	< 0.01	0.012	0.012	0.012	0.008	< 0.055	
	Juice	< 0.01	0.012	0.012	0.012	0.008	< 0.055	
	Pomace, dried	0.16	0.092	0.077	0.013	0.008	0.35	6.4
United Kingdom RA-2135/04 R 2004 0797/1	Fruit	0.04	0.034	0.021	< 0.012	< 0.008	0.096	
	Fruit, washed	0.02	0.020	0.012	< 0.012	< 0.008	< 0.055	
	Washings	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
	Apple sauce							

Country Study No. Trial No.	Crop Portion analysed	Residues (mg/kg) expressed as BYI 08330 equivalents						Process Factor
		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.	
	strain rest (wet pomace)	0.12	0.055	0.026	< 0.012	< 0.008	0.20	2.1
	raw sauce	0.03	0.044	0.021	< 0.012	< 0.008	0.098	
	sauce	0.02	0.039	0.017	< 0.012	< 0.008	0.075	0.78
	Apple juice							
	raw juice	0.02	0.024	0.016	< 0.012	< 0.008	0.058	
	Juice	0.01	0.019	0.013	< 0.012	< 0.008	< 0.055	< 0.57
	Pomace, dried	0.31	0.22	0.094	0.012	0.008	0.65	6.8
Italy RA-2137/04 R 2004 0805 6	fruit	0.04	0.014	0.012	< 0.012	< 0.008	0.063	
	fruit, washed	0.02	0.012	0.012	< 0.012	< 0.008	< 0.055	
	washings	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
	Apple sauce							
	strain rest (wet pomace)	0.06	0.041	0.012	< 0.012	< 0.008	0.11	1.7
	raw sauce	0.01	0.021	0.012	< 0.012	< 0.008	< 0.055	
	sauce	0.01	0.022	0.012	< 0.012	< 0.008	< 0.055	< 0.87
	Apple juice							
	raw juice	0.02	0.012	0.012	< 0.012	< 0.008	< 0.055	
	juice	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	< 0.87
	pomace, dried	0.12	0.11	0.042	0.012	< 0.008	0.28	4.5
Spain RA-2137/04 R 2004 0807 2	fruit	0.10	0.015	0.041	0.028	0.008	0.20	
	fruit, washed	0.06	0.077	0.032	0.021	0.008	0.20	
	washings	0.02	0.020	0.012	< 0.012	< 0.008	< 0.055	
	Apple sauce							
	strain rest (wet pomace)	0.27	0.34	0.057	0.025	0.008	0.70	3.5
	raw sauce	0.06	0.070	0.038	0.024	0.008	0.20	
	sauce	0.04	0.043	0.032	0.020	< 0.008	0.13	0.65
	Apple juice							
	raw juice	0.03	0.042	0.027	0.022	0.008	0.13	
	juice	0.01	0.012	0.024	0.023	0.008	0.078	0.39
	pomace, dried	0.41	0.50	0.20	0.089	0.008	1.2	6.0

A processing trial was conducted in the USA to measure the magnitude of spirotetramat residues in apples and apple processed commodities following treatment of apples with spirotetramat 150 OD (M-276832-01-1, Mackie, S. 2006). Three airblast applications were made to apple trees starting when the apples were about 60% of final size (BBCH 76), with a 14-day retreatment interval (RTI). The first application was applied at a rate of 0.79 kg ai/ha. The second and third applications were applied at a rate of 0.70 kg ai/ha/application. Prior to processing, random subsamples of the control and treated bulk apple samples were collected for analysis, and the remainder of the apple samples were used to generate the required processed commodities of apple wet pomace and juice.

Processing was performed using procedures which simulated commercial processing practice. Results are summarized in Table 110.

Table 110 Residue Data from Apple Processing Study with Spirotetramat in the USA

Country Year	Portion analysed	BYI 08330 (mg/kg)	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	Average total residue (mg/kg)	Process factor
RAFNY014 FN224-05P USA Ephrata, Washington 2005	Apple	0.589	0.160	0.043	0.013	< 0.01	0.815	0.681	
	fruit	0.366	0.164	0.043	0.013	< 0.01	0.596		
		0.401	0.166	0.044	0.011	< 0.01	0.632		
	whole fruit, washed	0.312	0.068	0.056	< 0.01	< 0.01	0.456	0.388	
		0.193	0.081	0.057	0.012	< 0.01	0.353		
		0.200	0.080	0.055	0.011	< 0.01	0.356		
	fruit without peel	0.013	0.065	0.035	< 0.01	< 0.01	0.133	0.138	
		0.013	0.067	0.037	< 0.01	< 0.01	0.137		
		0.014	0.066	0.044	< 0.01	< 0.01	0.144		
	pomace, wet	0.965	0.208	0.089	0.014	< 0.01	1.286	1.304	1.9
		1.008	0.211	0.084	0.015	< 0.01	1.328		
		0.984	0.215	0.073	0.015	< 0.01	1.297		
	juice	0.092	0.119	0.038	0.011	< 0.01	0.270	0.272	0.40
		0.102	0.115	0.033	0.014	< 0.01	0.274		
		0.093	0.110	0.048	0.011	< 0.01	0.272		
	sauce	< 0.01	0.045	0.015	< 0.01	< 0.01	0.090	0.089	0.13
		< 0.01	0.045	0.014	< 0.01	< 0.01	0.089		
		< 0.01	0.045	0.014	< 0.01	< 0.01	0.089		
	fruit, dried	< 0.01	0.419	0.158	0.046	0.015	0.648	0.682	1.0
		< 0.01	0.437	0.170	0.054	0.016	0.687		
		< 0.01	0.468	0.164	0.051	0.017	0.710		

A study was reported from Europe on the processing of cherries into fruit preserve (M-263882-01-1, Schoening R., Helfrich P.; 2005). Results are summarized in Table 111.

Table 111 Residue data from a cherry processing study with spirotetramat in Germany (M-263882-01-1Schoening R., Helfrich P.; 2005)

Country	Crop		Residues (mg/kg) expressed as BYI 08330 equivalents						Process Factor
Study No. Trial No.	Portion analysed	DALT (days)	BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.	
Germany	Fruit	21	0.01	0.21	0.033	0.021	0.011	0.28	
RA-2119/04	Fruit, washed	21	0.01	0.17	0.036	0.021	0.011	0.25	
R2004 0720/3	Washings	21	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
	fruit, pitted	21	0.01	0.20	0.029	0.029	0.015	0.28	
	Preserve	21	0.01	0.087	0.013	0.012	0.008	0.13	0.46
Germany	Fruit	21	0.01	0.21	0.012	0.040	0.023	0.29	
RA-2119/04	Fruit, washed	21	< 0.01	0.21	0.019	0.041	0.023	0.29	
R2004 0723/8	Washings	21	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
	fruit, pitted	21	< 0.01	0.18	0.012	0.037	0.018	0.25	
	Preserve	21	< 0.01	0.10	0.012	0.019	0.009	0.14	0.48

Country	Crop		Residues (mg/kg) expressed as BYI 08330 equivalents						Process Factor
Study No. Trial No.	Portion analysed	DALT (days)	BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.	
France	Fruit	21	0.01	0.32	0.11	0.12	0.023	0.57	
RA-2119/04	Fruit, washed	21	0.01	0.30	0.13	0.12	0.022	0.59	
R2004 0718/1	Washings	21	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
	Fruit, pitted	21	0.01	0.29	0.077	0.12	0.020	0.51	
	Preserve	21	0.01	0.19	0.044	0.068	0.012	0.33	0.58
France	Fruit	21	0.02	0.58	0.072	0.17	0.097	0.93	
RA-2119/04	Fruit, washed	21	0.01	0.51	0.093	0.14	0.076	0.83	
R2004 0721/1	Washings	21	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
	Fruit, pitted	21	0.01	0.43	0.050	0.11	0.058	0.65	
	Preserve	21	0.01	0.28	0.032	0.068	0.034	0.43	0.46

Grape processing studies were provided to the Meeting from trials conducted in Spain, Italy, Germany and the USA.

Table 112 Residues in the processing of grapes to raisins in Europe (M-271371-02-1, Ballesteros C., Eberhard R.; 2006, amended 21.08.2006 RA)

Country	Crop / Process Fraction	Residues (mg/kg) expressed as BYI 08330 equivalents						Process Factor
Study No. Trial No. Sample	Portion analysed	BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.	
Spain RA-2034/05 R 2005 0157/9	Bunch of grapes	0.09	0.03	0.02	< 0.01	0.02	0.17	
Sample TA	Raisin waste	0.07	0.24	0.087	< 0.012	0.052	0.47	
	Washings	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
	Raisin	< 0.01	0.17	0.020	< 0.012	0.032	0.24	1.4
Sample TB	Raisin waste	0.14	0.26	0.12	< 0.012	0.063	0.60	
	Washings	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
	Raisin	0.02	0.17	0.021	< 0.012	0.045	0.27	1.6 Avg 1.5
Italy RA-2034/05 R 2005 0158/7	Bunch of grapes	0.11	0.22	0.028	0.014	0.082	0.45	
Sample TA	Raisin waste	0.44	0.57	0.21	< 0.012	0.18	1.5	
	Washings	0.02	0.029	< 0.012	< 0.012	0.032	0.10	
	Raisin	0.25	0.86	0.11	0.055	0.34	1.6	3.6
Sample TB	Raisin waste	0.54	0.39	0.27	< 0.012	0.17	1.4	
	Washings	0.02	0.016	< 0.012	< 0.012	0.016	0.076	
	Raisin	0.21	0.69	0.085	0.043	0.33	1.4	3.1 Avg 3.4

Table 113 Residues in the processing of grapes to raisins, juice and jelly in the USA (M-277287-01-1, Mosier, D.; 2006)

Study/ Trial No/. Trial SubID Country / Year	Crop/Processed Commodity Portion analysed	Residues (mg/kg)						Processing Factor
		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	
RAFNY015 FN225-05P USA Fresno, California 2005	Table grape berry	0.587 0.600 0.590	0.494 0.482 0.480	0.018 0.020 0.019	< 0.01 < 0.01 < 0.01	0.182 0.184 0.173	1.284 1.290 1.265	
	berry, washed	0.104 0.100 0.105	0.455 0.476 0.441	0.013 0.013 0.013	< 0.01 < 0.01 < 0.01	0.188 0.193 0.190	0.764 0.786 0.753	
	raisin	0.363 0.340 0.371	2.268 2.271 2.339	0.091 0.097 0.100	0.012 0.012 0.013	0.594 0.584 0.598	3.328 3.305 3.421	2.6
	juice	0.172 0.171 0.167	0.448 0.479 0.465	0.013 0.015 0.014	< 0.01 < 0.01 < 0.01	0.190 0.193 0.192	0.826 0.862 0.841	0.66
	jelly	0.048 0.049 0.047	0.222 0.230 0.219	< 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01	0.069 0.076 0.069	0.345 0.361 0.341	0.27

Table 114 Residues in the processing of grapes to wine in Europe (M-264725-01-1, Schöning R., Wolters, A; 2006; M-263874-02-1, Schöning, R., Eberhard R.; 2006, amended 06.03.2006)

Country	Crop	Residues (mg/kg) expressed as BYI 08330 equivalents						Process Factor
Study No. Trial No.	Portion analysed	BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.	
Germany RA-2048/04 R 2004 0192 2	Bunch of grapes	0.15	0.073	< 0.012	< 0.012	0.024	0.25	
	Pomace	0.25	0.17	0.012	0.012	0.039	0.48	1.9
	Must	0.10	0.064	0.012	< 0.012	0.023	0.20	
	Wine (red)	0.01	0.13	0.012	< 0.012	0.018	0.17	0.68
Germany RA-2048/04 R 2004 0193 0	Bunch of grapes	0.15	0.036	0.012	< 0.012	0.011	0.21	
	Pomace	0.21	0.092	0.021	< 0.012	0.028	0.36	1.7
	Must	0.05	0.021	0.012	< 0.012	0.008	0.091	
	Wine (white)	0.06	0.11	0.012	< 0.012	0.008	0.19	0.76
Italy RA-2049/04 R 2004 0196 5	Bunch of grapes	0.15	0.17	0.095	0.012	0.11	0.54	
	Pomace	0.25	0.3	0.24	0.020	0.12	0.95	1.8
	Must	0.10	0.054	0.077	< 0.012	0.056	0.29	
	Wine (white)	0.03	0.090	0.06	< 0.012	0.048	0.24	0.44
Italy RA-2049/04 R 2004 0197 3	Bunch of grapes	0.20	0.045	0.045	< 0.012	0.026	0.32	
	Pomace	0.44	0.077	0.056	< 0.012	0.024	0.60	1.9
	Must	0.11	0.034	0.031	< 0.012	0.020	0.20	
	Wine (red)	0.04	0.048	0.017	< 0.012	0.013	0.12	0.38

The Meeting received a study on the processing of plums.

Table 115 Residues from the drying of plums in the USA (M-276380-01-1**,** Mackie, S.; 2006)

Study Trial No. Trial SubID	Crop/ Processed Commodity	Residues (mg/kg)						Process Factor
Country Year	Portion analysed	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	
RAFNY018 FN227-05P USA Live Oak, California 2005	Plum fruit	0.110 0.117 0.120	0.215 0.242 0.226	0.031 0.034 0.028	1.257 1.274 1.269	0.176 0.194 0.188	1.788 1.860 1.831	
	whole fruit, washed	0.088 0.054 0.054	0.292 0.305 0.295	0.021 0.024 0.026	1.140 1.123 1.133	0.201 0.203 0.200	1.742 1.709 1.709	
	fruit, dried	0.046 0.043 0.035	0.646 0.687 0.586	0.087 0.080 0.080	2.811 2.994 2.538	0.399 0.429 0.365	3.990 4.232 3.604	2.2

Reports were made available from Europe and the USA on the processing of tomatoes. Preparation of juice in Europe consisted of washing, cutting, blanching, passing/straining, centrifugation and pasteurization. Preparation of preserves consisted of peeling, addition of tomato juice and pasteurization steps. In the USA, tomatoes were sequentially washed, crushed and finished (to pomace and juice). The juice was further concentrated to puree and paste. To produce dried tomatoes, the tomatoes were cut into 1.3 cm slices, dipped in potassium bisulfite solution, and sun-dried on wire racks. Canned tomatoes (preserve) were prepared by submerging the tomatoes in boiling water, peeling manually, placing in cans, topping with hot tomato juice and thermally processing. Results are summarized in Tables 116 and 117.

Table 116 Residues from the processing of tomatoes in Europe (M-263490-01-1**,** Freitag, T., Helfrich, P.; 2006) RA

Country Study No. Trial No. Processing study	Commodity Portion analysed	Residues (mg/kg) expressed as BYI 08330 equivalents						Process (transfer) factor
		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.	
Greece RA-2140/04 R 2004 0827/7	Fruit	0.06	0.39	0.021	< 0.012	0.031	0.51	
Juice	Washings	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
	Fruit washed	0.01	0.29	0.014	< 0.012	0.018	0.34	
	Raw juice	< 0.01	0.29	0.012	< 0.012	0.022	0.35	
	Juice	< 0.01	0.27	0.012	< 0.012	0.018	0.32	0.63
Preserve	Fruit, peeled	< 0.01	0.30	0.012	< 0.012	0.030	0.36	
	Peel washed	0.04	0.30	0.032	< 0.012	0.008	0.39	
	Peeling water	0.01	0.066	0.012	< 0.012	0.008	0.11	
	Preserve	< 0.01	0.31	0.012	< 0.012	0.028	0.37	0.72
Puree	Strain rest	< 0.01	0.62	0.027	< 0.012	0.025	0.69	
	Puree	< 0.01	0.55	0.022	< 0.012	0.019	0.61	1.2
	Raw puree	< 0.01	0.57	0.022	< 0.012	0.022	0.63	
Spain	Fruit	0.09	0.10	0.012	< 0.012	0.043	0.26	

Country Study No. Trial No. Processing study	Commodity Portion analysed	Residues (mg/kg) expressed as BYI 08330 equivalents						Process (transfer) factor
		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.	
RA-2140/04 R 2004 0828/5								
Juice	Washings	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
	Fruit, washed	0.05	0.090	0.012	< 0.012	0.030	0.20	
	Raw juice	0.02	0.098	0.012	< 0.012	0.028	0.17	
	Juice	0.01	0.10	0.012	< 0.012	0.022	0.15	0.58
Preserve	Fruit, peeled	< 0.01	0.058	< 0.012	< 0.012	0.028	0.12	
	Peel washed	0.78	0.17	0.034	< 0.012	0.021	1.0	
	Peeling water	0.02	0.012	< 0.012	< 0.012	0.008	< 0.055	
	Preserve	0.01	0.072	< 0.012	< 0.012	0.021	0.12	0.46
Puree	Strain rest	0.10	0.23	0.012	< 0.012	0.027	0.37	
	Puree	0.01	0.18	0.012	< 0.012	0.026	0.24	0.92
	Raw puree	0.04	0.15	0.012	< 0.012	0.030	0.24	
Spain RA-2140/04 R 2004 0829/3	Fruit	0.15	0.11	0.012	< 0.012	0.052	0.33	
Juice	Washings	0.02	0.021	< 0.012	< 0.012	< 0.008	< 0.055	
	Fruit, washed	0.04	0.091	0.012	< 0.012	0.064	0.22	
	Raw juice	0.01	0.12	0.012	< 0.012	0.033	0.18	
	Juice	< 0.01	0.11	0.012	< 0.012	0.025	0.16	0.48
Preserve	Fruit, peeled	< 0.01	0.050	< 0.012	< 0.012	0.029	0.11	
	peel washed	0.18	0.044	0.012	< 0.012	0.010	0.25	
	Peeling water	0.04	0.012	< 0.012	< 0.012	0.008	0.084	
	Preserve	< 0.01	0.075	< 0.012	< 0.012	0.028	0.13	0.39
Puree	Strain rest	0.02	0.23	0.012	< 0.012	0.029	0.31	
	Puree	< 0.01	0.13	0.012	< 0.012	0.023	0.19	0.58
	Raw puree	0.01	0.12	0.012	< 0.012	0.026	0.18	
Italy RA-2140/04 R 2004 0830/7	Fruit	0.07	0.093	0.012	< 0.012	0.028	0.21	
Juice	Washings	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
	Fruit, washed	0.02	0.063	0.012	< 0.012	0.018	0.12	
	Raw juice	0.01	0.096	0.012	< 0.012	0.022	0.15	
	Juice	< 0.01	0.10	0.012	< 0.012	0.018	0.14	0.67
Preserve	Fruit, peeled	0.01	0.057	< 0.012	< 0.012	0.023	0.10	
	Peel washed	0.22	0.084	0.031	< 0.012	0.008	0.35	
	Preserve	< 0.01	0.092	0.012	< 0.012	0.021	0.15	0.71
	Peeling water	0.01	0.012	< 0.012	< 0.012	< 0.008	< 0.055	
puree	Strain rest	0.02	0.20	0.012	< 0.012	0.018	0.26	
	Puree	< 0.01	0.10	0.012	< 0.012	0.012	0.15	0.71
	Raw puree	0.01	0.14	0.012	< 0.012	0.019	0.19	

Table 117 Residues from the processing of tomatoes in the USA (M-277034-01-1, Mackie, S.; 2006) RA

Study/ Trial No. Trial SubID Country/ Year	Commodity Portion analysed	Residues (mg/kg)						Process (transfer) factor
		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	
RAFNY013 FN083-04P USA Fresno, California 2004	Tomato fruit	0.164 0.183 0.287	0.600 0.642 0.663	< 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01	0.029 0.052 0.038	0.813 0.897 1.01 Av0.91	
	whole fruit, washed	0.073 0.063 0.050	0.498 0.463 0.477	< 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01	< 0.01 0.038 0.038	0.601 0.584 0.585 Av0.59	
	paste	< 0.01 0.014 0.017	8.198 5.600 4.927	< 0.01 0.010 0.021	< 0.01 < 0.01 < 0.01	0.344 0.372 0.463	8.57 6.01 5.44 Av6.7	7.4
	puree	0.058 0.041 0.049	3.854 2.502 2.236	< 0.01 < 0.01 0.011	< 0.01 < 0.01 < 0.01	0.207 0.208 0.217	4.14 2.77 2.52 Av3.1	3.4
	fruit, cooked	< 0.01 0.028 0.022	0.306 0.601 0.523	< 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01	0.030 0.051 0.049	0.366 0.700 0.614 Av0.56	0.62
	juice	< 0.01 < 0.01 < 0.01	0.974 0.662 0.631	< 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01	0.034 0.045 0.040	1.04 0.737 0.701 Av0.83	0.91
	preserve	< 0.01 < 0.01 < 0.01	0.970 0.881 0.999	< 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01	0.038 0.055 0.053	1.04 0.966 1.08 Av1.0	1.1
	fruit, dried	0.440 0.350 0.427	11.685 8.313 7.758	0.128 0.090 0.099	< 0.01 < 0.01 < 0.01	0.857 0.873 1.065	13.1 9.63 9.36 Av10.7	12.

A processing study for a bean with pod (French climbing bean) was provided from Europe (M-263683-01-1, Schöning R., Billian P., Wolters, A.; 2006). Beans from four glasshouse trials were processed according to household preparation procedures for cooking. The findings are summarized in Table 118.

Table 118 Residues on beans with pods after cooking (M-263683-01-1, Schöning R., Billian P., Wolters, A.; 2006)

Country Study No. Trial No.	Commodity Portion analysed	Residues (mg/kg) expressed as BYI 08330 equivalents						Process (transfer) factor
		BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.	
Italy RA-2042/04 R 2004 0172/8	Bean, climbing French Bean with pod	0.06	0.12	0.081	0.012	0.030	0.31	
	Washings	< 0.01	0.023	< 0.012	< 0.012	< 0.008	< 0.055	
	Cooking water	< 0.01	0.061	0.012	< 0.012	0.008	0.10	
	Bean, cooked	< 0.01	0.076	0.012	< 0.012	0.010	0.12	0.39
	Bean with pod, washed	0.04	0.12	0.046	0.012	0.022	0.23	
Italy RA-2042/04 R 2004 0173/6	Bean, climbing French Bean with pod	0.01	0.066	0.020	< 0.012	0.008	0.12	
	Washings	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
	Cooking water	< 0.01	0.029	0.012	< 0.012	0.008	< 0.055	
	Bean, cooked	< 0.01	0.052	0.012	< 0.012	0.008	0.094	0.30
	Bean with pod, washed	0.01	0.019	0.038	< 0.012	0.008	0.076	
Germany RA-2042/04 R 2004 0174/4	Bean, climbing French Bean with pod	0.13	00.29	0.099	0.012	0.035	0.57	
	Washings	0.01	0.044	0.012	< 0.012	< 0.008	0.068	
	Cooking water	< 0.01	0.12	0.014	< 0.012	0.009	0.16	
	Bean, cooked	< 0.01	0.24	0.025	< 0.012	0.015	0.31	0.54
	Bean with pod, washed	0.06	0.24	0.079	0.012	0.027	0.42	
France RA-2042/04 R 2004 0175/2	Bean, climbing French bean with pod	0.15	0.26	0.099	0.012	0.043	0.57	
	Washings	0.01	0.036	0.012	< 0.012	< 0.008	0.78	
	Cooking water	< 0.01	0.15	0.018	0.012	0.012	0.20	
	Bean, cooked	< 0.01	0.25	0.029	0.012	0.020	0.32	
	Bean with pod, washed	0.10	0.23	0.089	0.012	0.037	0.47	0.82

A potato processing study was conducted in the USA (M-276828-01-1, Lenz, C.; 2006). Two foliar applications of BYI-08330 150 OD were made to potatoes at a target rate of 0.44 kg ai/ha with 7 days between applications. This represents a 5-fold exaggeration of the maximum GAP. A single control and treated bulk sample of potatoes were collected at (BBCH 49 maximum tuber size and skin set complete) a 7-day (PHI). Prior to processing, random sub-samples of the control and treated bulk potato samples were collected for analysis, and the remainder of the potato samples were used to generate the required processed commodities of wet peel, chips and granules. In addition, samples of washed potatoes, cooked potatoes and potato tuber without peel were generated. Potato processing was performed using procedures which simulated commercial processing practices. Results are summarized in Table 119.

Table 119 Residues on processed potato products from a USA Study (M-276828-01-1, Lenz, C.; 2006) RA

Study Trial No. Trial SubID Country Year	Commodity Portion analysed	Residues (mg/kg)						Process (transfer) factor
		BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.	
RAFNY020 FN228-05P USA Sabin, Minnesota 2005	Potato tuber	< 0.01 < 0.01 < 0.01	0.023 0.023 0.021	< 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01	0.063 0.063 0.062 Av0.063	
	tuber, washed	< 0.01 < 0.01 < 0.01	0.034 0.034 0.036	< 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01	0.074 0.074 0.076 Av0.074	
	tuber, peeled	< 0.01 < 0.01 < 0.01	0.029 0.032 0.032	< 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01	0.069 0.072 0.072 Av0.071	
	peel	< 0.01 < 0.01 < 0.01	0.021 0.021 0.019	< 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01	0.061 0.061 0.059 Av0.060	0.95
	chips	< 0.01 < 0.01 < 0.01	0.034 0.034 0.038	< 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01	0.074 0.074 0.078 Av0.075	1.2
	flakes	< 0.01 < 0.01 < 0.01	0.175 0.174 0.186	< 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01	0.215 0.214 0.226 Av0.218	3.5
	tuber, cooked	< 0.01 < 0.01 < 0.01	0.039 0.040 0.040	< 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01	0.079 0.080 0.080 Av0.080	1.3

A hops processing study (beer production) was provided to the Meeting (Four hop samples were collected from 4 different trials and processed separately. Method 00857 (above) was used to determine residues of spirotetramat in hop cones, beer, hops draft, brewers yeast and brewer's malt. The total residue of spirotetramat in kiln-dried cones ranged between 1.5 and 4.2 mg/kg. The total residue in beer samples was below the LOQ of 0.055 mg/kg from each of four processing studies. The results of the study are summarized in Table 120.

Table 120 Residues in beer from the use of hops with field-incurred spirotetramat total residues (M-265067-01-1**,** Schöning R., Billian P., Wolters, A.; 2006)

Country/ Study No. Trial No.	Commodity Portion analysed	Residues [mg/kg] in parent equivalents						Process (transfer) factor
		BYI 08330	BYI 08330-enol	BYI 08330-keto-hydroxy	BYI 08330-mono-hydroxy	BYI 08330-enol-Glc	Total Res. of BYI 08330 calc.	
France RA-2036/04 R 2004 0148/5	Cone, kiln-dried	0.63	0.18	0.30	< 0.12	0.41	1.6	
	Beer	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	< 0.034

Country/ Study No. Trial No.	Commodity Portion analysed	Residues [mg/kg] in parent equivalents						Process (transfer) factor
		BYI 08330	BYI 08330-enol	BYI 08330-keto-hydroxy	BYI 08330-mono-hydroxy	BYI 08330-enol-Glc	Total Res. of BYI 08330 calc.	
	Hops draft	< 0.1	< 0.12	< 0.12	< 0.12	< 0.08	< 0.55	
	Brewer's yeast	< 0.01	0.017	0.012	< 0.012	< 0.008	< 0.055	
	Brewer's malt	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055	
Germany RA-2036/04 R 2004 0149/3	Cone, kiln-dried	0.56	0.25	0.39	< 0.12	0.50	1.8	
	Beer	< 0.01	0.016	0.012	< 0.012	0.008	< 0.055	< 0.030
	Hops draft	< 0.1	< 0.12	< 0.12	< 0.12	< 0.08	< 0.55	
	Brewer's yeast	< 0.01	0.076	0.014	< 0.012	0.008	0.12	
Germany RA-2036/04 R 2004 0150/7	Cone, kiln-dried	1.1	0.75	0.75	< 0.12	1.3	4.0	
	Beer	< 0.01	0.016	0.012	< 0.012	0.008	< 0.055	< 0.014
	Hops draft	< 0.1	< 0.12	< 0.12	< 0.12	< 0.08	< 0.55	
	Brewer's yeast	< 0.01	0.062	0.012	< 0.012	0.008	0.010	
France RA-2036/04 R 2004 0151/5	Cone, kiln-dried	2.6	0.32	0.72	< 0.12	0.58	4.3	
	Beer	< 0.01	0.023	0.012	< 0.012	0.008	< 0.055	< 0.013
	Hops draft	< 0.1	< 0.12	< 0.12	< 0.12	< 0.08	< 0.55	
	Brewer's yeast	< 0.01	0.067	0.012	< 0.012	0.008	0.087	

RESIDUES IN ANIMAL COMMODITIES

Farm animal feeding studies

A poultry feeding study was not provided. The manufacturer suggested using the nature of the residue in poultry study (above) conducted for 14 days to estimate the residues expected in poultry commodities.

The magnitude of the residue of spirotetramat has been studied in lactating dairy cows (M-276834-01-1**,** Mackie, S.; 2006). Ten lactating Holstein dairy cows (*Bos taurus*; three cows/treatment group and one control cow) were dosed orally, *via* capsule, for 29 consecutive days with spirotetramat at target dose rates (based on feed dry weight) of either 0 ppm day (control), 3.0 ppm /day, 9.0 ppm/day, or 30 ppm/day.

Milk was collected twice daily during the dosing period. Milk samples from the 30-ppm dose group were analysed for spirotetramat residue on study days 0, 1, 3, 7, 10, 14, 17, 21, 24, 26 and 28. Additionally, a portion of the 26-day milk sample from the 30-ppm dose group was separated into milk fat (cream) and skim milk, and each was analysed. Additional 26-day milk was collected for processing into whey (skim milk) and milk fat (cream).

On Day 29, the animals were sacrificed and liver, kidney, composite muscle, and composite fat were collected for analysis. The tissue and milk samples in this study were analysed within 19 days of collection.

The total spirotetramat residue in tissue and milk samples was quantified by high-performance liquid chromatography-electrospray ionization/tandem mass spectrometry (LC-MS/MS) using isotopically labelled internal standards. The individual analyte residues of spirotetramat (parent)

and the metabolites BYI 08330-enol and BYI 08330-enol-glucuronide were summed to give a total spirotetramat residue in parent equivalents. The demonstrated LOQ was 0.005 mg/kg for each analyte in milk matrices and was 0.01 mg/kg for each analyte in the tissue matrices. The LOD for each compound were in the range of 0.002–0.005 mg/kg for tissues and 0.0007–0.001 mg/kg for milk matrices.

Total spirotetramat residue in the milk samples from the 30-ppm feeding level were below the LOQ (0.005 mg/kg per compound) in all cows throughout the study with the exception of a maximum residue of 0.005 mg/kg (BYI 08330 enol) in one cow on study day 10. Residues of BYI 08330 enol Ga were < LOD (< 0.0009 mg/kg) in all samples; residues of spirotetramat were < LOD (< 0.0007 mg/kg) in all but one milk sample (0.0008 mg/kg, day 24). Residues of parent equivalents did not concentrate in samples of skim milk or milk fat separated from whole milk.

A low tissue burden was observed, with the highest total residues found in kidney at the three dosing levels (0.034 mg/kg, 0.11 mg/kg and 0.45 mg/kg, respectively). At the 3-ppm dosing level, average residues of spirotetramat equivalents (from spirotetramat and BYI 08330 enol) were less than the LOQ (0.01 mg/kg per analyte) in fat, muscle and liver. The *total* average spirotetramat residues were < 0.020 mg/kg (muscle), ≤ 0.020 mg/kg (fat), and ≤ 0.020 mg/kg (liver) at the 9-ppm dosing level. At the 30-ppm dosing level, the *total* average spirotetramat residues in muscle, fat and liver were ≤ 0.020 mg/kg, 0.028 mg/kg, and 0.041 mg/kg, respectively. Findings are summarized in Table 121.

Table 121 Residue Data for BYI 08330 and Metabolites in Tissues (M-276834-01-1**,** Mackie, S.; 2006).

Matrix	Dose (ppm)	Cow ID	BYI 08330 (mg/kg)	BYI 08330 enol (mg/kg)	BYI 08330 enol-GA (mg/kg)	BYI 08330 + enol [a] (mg/kg)
Fat	3	12	< 0.005[b]	< 0.005[b]	< 0.005[b]	< 0.020
		2	< 0.005[b]	< 0.005	< 0.005	< 0.020
		1	< 0.005[b]	< 0.005	< 0.005	< 0.020
	9	6	< 0.005[b]	< 0.005	< 0.005	< 0.020
		8	< 0.005[b]	**0.013**	< 0.005	0.023
		15	< 0.005[b]	< 0.005	< 0.005	< 0.020
	30	10	< 0.005[b]	**0.032**	< 0.005	0.042
		11	< 0.005[b]	< 0.005	< 0.005	< 0.020
		17	< 0.005[b]	**0.011**	< 0.005	0.021
Muscle	3	12	< 0.003[b]	< 0.003[b]	< 0.003[b]	< 0.020
		2	< 0.003[b]	< 0.003	< 0.003	< 0.020
		1	< 0.003[b]	< 0.003[b]	< 0.003[b]	< 0.020
	9	6	< 0.003[b]	< 0.003	< 0.003	< 0.020
		8	< 0.003[b]	0.0042	< 0.003	< 0.020
		15	< 0.003[b]	< 0.003	< 0.003	< 0.020
	30	10	< 0.003[b]	**0.014**	< 0.003	0.024
		11	< 0.003[b]	0.0043	< 0.003	< 0.020
		17	< 0.003[b]	0.0081	< 0.003	< 0.020
Kidney	3	12	< 0.001[b]	**0.019**	< 0.003[b]	0.029
		2	< 0.001[b]	**0.019**	< 0.003[b]	0.029
		1	< 0.001[b]	**0.024**	< 0.003[b]	0.034
	9	6	< 0.001[b]	**0.049**	< 0.003[b]	0.059
		8	< 0.001[b]	**0.10**	0.003	0.11
		15	< 0.001[b]	**0.066**	0.004	0.076
	30	10	< 0.001[b]	**0.41**	**0.030**	0.42
		11	< 0.001[b]	**0.17**	**0.013**	0.18

Matrix	Dose (ppm)	Cow ID	BYI 08330 (mg/kg)	BYI 08330 enol (mg/kg)	BYI 08330 enol-GA (mg/kg)	BYI 08330 + enol [a] (mg/kg)
		17	0.003	**0.19**	0.009	0.20
Liver	3	12	< 0.002[b]	< 0.005[b]	< 0.005[b]	< 0.020
		2	< 0.002[b]	0.006	< 0.005[b]	< 0.020
		1	< 0.002[b]	0.006	< 0.005[b]	< 0.020
	9	6	< 0.002[b]	0.009	< 0.005[b]	< 0.020
		8	< 0.002[b]	**0.014**	< 0.005[b]	0.024
		15	< 0.002[b]	**0.012**	< 0.005[b]	0.022
	30	10	< 0.002[b]	**0.038**	**0.018**	0.048
		11	< 0.002[b]	**0.025**	0.005	0.035
		17	< 0.002[b]	**0.026**	0.006	0.036

[a] Value of each of 2 analytes < LOQ (0.01 mg/kg) assigned LOQ. All individual compound values at or above the LOQ are **bolded.** BYI 08330 enol-Ga was not combined into the total.

[b] Approximate LOD

National Residue Definitions

Some national residue definitions for plant and livestock commodities are summarized as follows:

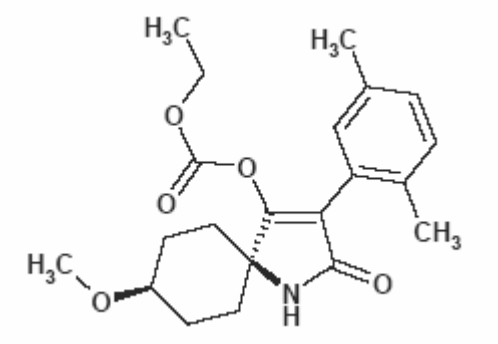
Country	Plant Commodity Residue Definition		Livestock Commodity Residue Definition	
	Enforcement	*Dietary Intake*	*Enforcement*	*Dietary Intake*
Austria Canada USA	Spirotetramat Spirotetramat, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohydroxy, and BYI08330 enol-glucoside, expressed as BYI08330 equivalents.	Spirotetramat Spirotetramat, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohydroxy, and BYI08330 enol-glucoside, expressed as BYI08330 equivalents.	Spirotetramat and the metabolite BYI 08330-enol	Spirotetramat and the metabolites BYI 08330-enol and BYI 08330-enol-GA

APPRAISAL

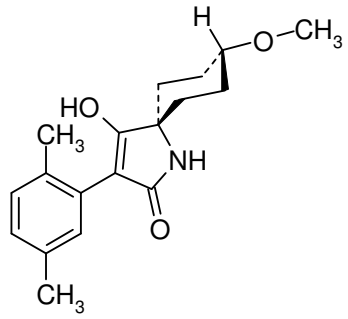
Spirotetramat belongs to the chemical class of ketoenols and acts as a systemic insecticide for the control of a broad spectrum of sucking insects. At the 39th session of the CCPR (ALINORM 07/30/24), it was listed as a candidate for evaluation of new compounds by the 2008 JMPR.

Chemical name

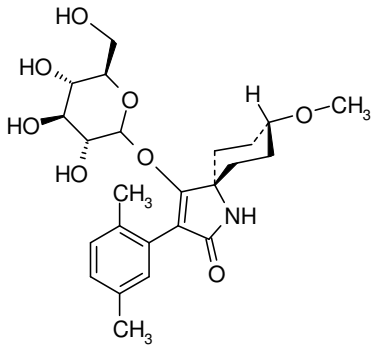
cis-3-(2,5-dimethylphenyl)-8-methoxy-2-oxo-1-azaspiro[4.5]dec-3-en-4-yl ethyl carbonate



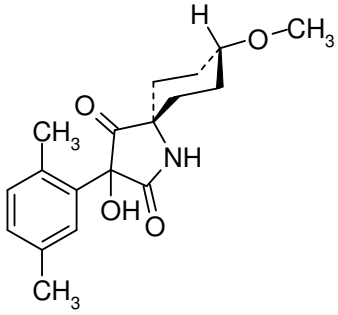
Chemical structures of major metabolites:



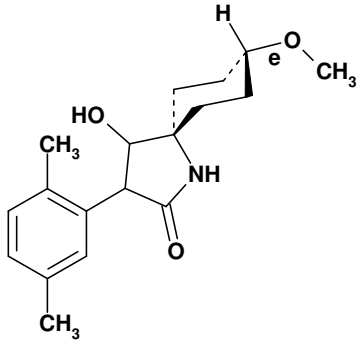
Spirotetramat Enol



Spirotetramat Enol Glucoside (Glc)



Spirotetramat Ketohydroxy



Spirotetramat Monohydroxy

Animal metabolism

The Meeting reviewed studies on the metabolism of [azaspirodecenyl-3-^{14}C]spirotetramat in goats and hens. A lactating goat received 4 daily oral administrations of spirotetramat at a mean dose rate of 2.22 mg/kg bw/day (73.0 ppm in the diet). The urine and faeces contained about 90% of the administered dose of radioactivity. The levels of radioactive residue in milk and tissues were as follows: milk (day 4), 0.008 mg/kg; muscle, 0.011 mg/kg; fat, 0.003 mg/kg; liver 0.050 mg/kg; and kidney 0.184 mg/kg. Spirotetramat was absent in all samples. The major metabolites in all matrices were spirotetramat-enol (34–72% TRR) and spirotetramat-enol GA (glucuronic acid conjugate of 3-(2,5-dimethylphenyl)-4-hydroxy-8-methoxy-1-azaspiro[4.5]dec-3-en-2-one , 14–37% TRR). Minor metabolites were spirotetramat desmethyl enol (3-(2,5-dimethylphenyl)-4,8-dihydroxy-1-azaspiro[4.5]dec-3-en-2-one, 0–8% TRR), spirotetramat ketohydroxy (0–10% TRR) and spirotetramat monohydroxy (0–4% TRR). The degree of identification ranged from 79% TRR in fat to 99% TRR in kidney.

Six laying hens were administered 14 oral doses of [azaspirodecenyl-3-^{14}C]spirotetramat at a daily dose rate of 1.01 mg/kg bw/day (12.86 ppm in the diet). The TRR levels were as follows: eggs (pool day 2–14), 0.015 mg/kg, fat, 0.0038 mg/kg; kidney, 0.039 mg/kg; liver, 0.017 mg/kg; and muscle, 0.0034 mg/kg. The residue level in eggs appears to reach a plateau by day 10. The residue profile was qualitatively similar to that of the goat. Spirotetramat was not found in any matrix. The major metabolites were spirotetramat enol (18–84% TRR) and spirotetramat enol GA (4–15% TRR), with no other metabolites identified. The identifications ranged from 18% TRR (fat, with low TRR) to 84% (egg). About 30% of the TRR in liver was not released after exhaustive extractions.

Spirotetramat was completely metabolized by the rat, with no parent compound found in the excreta. Identified metabolites accounted for ≥ 87% of the administered dose. The major metabolite was spirotetramat-enol, accounting for about 53–87% of the administered dose. The second most abundant metabolite was spirotetramat-desmethyl-enol, at 5–37% of the administered dose. Minor metabolites included spirotetramat-ketohydroxy, spirotetramat-desmethyl-ketohydroxy (3-(2,5-dimethylphenyl)-3,8-dihydroxy-1-azaspiro[4.5]decane-2,4-dione), spirotetramat-enol-GA, and spirotetramat-enol-alcohol (4-hydroxy-3-[5-(hydroxymethyl)-2-methylphenyl]-8-methoxy-1-azaspiro[4.5]dec-3-en-2-one).

The metabolism in ruminants and poultry is adequately defined. The biodegradation of spirotetramat in livestock can be characterized as cleavage of the carbonate ester group to the primary metabolite spirotetramat-enol followed by conjugation of the enol hydroxy group with glucuronic acid to spirotetramat-enol-GA. Oxidation of the azaspirodecenyl moiety to spirotetramat-ketohydroxy and demethylation of the methoxy group to spirotetramat-desmethyl-enol were minor metabolic reactions in ruminants as well as reduction of the azaspirodecenyl moiety to spirotetramat-monohydroxy. This pathway is consistent with the metabolism found in the rat.

Plant metabolism

The metabolism of [azaspirodecenyl-3-^{14}C]spirotetramat on four distinct crop types was reported to the Meeting: apple, cotton, lettuce and potato. The metabolism results were qualitatively similar across the crops studied. The major metabolic reaction involves the hydrolytic cleavage of the carbonate ester parent bond of the parent compound to form spirotetramat-enol. Further reduction of the enol moiety double bond of spirotetramat-enol occurs to form the spirotetramat-mono-hydroxy metabolite. Hydroxylation of spirotetramat enol results in spirotetramat-ketohydroxy. Demethylation of the methoxy group of the cyclohexyl ring results, via a proposed intermediate (spirotetramat-desmethyl-enol), in spirotetramat-desmethyl-ketohydroxy (after the corresponding hydroxylation). Partly, metabolites bearing a hydroxy group were conjugated with glucose.

Spirotetramat occurs at various concentration levels: 51% TRR apple fruit, 56% TRR head lettuce, 0% TRR potato tuber, 0% cotton seed, 49% potato foliage, 32% cotton lint, 47% immature cotton plant. Spirotetramat-enol varied from 2% TRR in apple fruit to 66% TRR in the potato tuber and 40% in cotton seed. Spirotetramat enol glucoside was found only in cotton lint (5% TRR), lettuce (11% TRR), and potato tuber (2% TRR). Spirotetramat monohydroxy was 16% TRR in apple fruit, but insignificant in other commodities. Spirotetramat ketohydroxy was more widely distributed: 6% TRR lettuce, 9% TRR cottonseed and 8% TRR in apple. Other metabolites were consistently below 10% TRR in raw agricultural commodities. More extensive metabolism of spirotetramat was noted in cotton lint.

Environmental fate

Soil

Aerobic degradation in various soil types was rapid, with 90% of the applied spirotetramat degraded within one day of application. Spirotetramat enol and/or spirotetramat ketohydroxy were the major identified degradates. Carbon dioxide was a maximum of 15% of applied radioactivity at 50–86 days after application to the soil. Additional studies with radiolabelled spirotetramat-enol showed that

spirotetramat-enol dissipated in soil and was mineralized, with $^{14}CO_2$ accounting for about 40% of applied radioactivity at day 100.

Anaerobic degradation was equally rapid, with 90% of the applied spirotetramat degraded within one day of application. The major identified degradates were spirotetramat-enol and spirotetramat ketohydroxy. Carbon dioxide was 20% of applied radioactivity at day 50 after application.

Under soil photolysis conditions, the dark control degraded more rapidly than the illuminated soil. It is speculated that the light inhibited bacteria that facilitate the breakdown of spirotetramat.

Water

Spirotetramat is hydrolytically labile under neutral and alkaline conditions at ambient temperature, with half-lives at 25 °C of 9 days and 8 h, respectively. One major degradation product occurred: spirotetramat-enol. Under acidic conditions, degradation was slower (half life 32 days), but spirotetramat-enol was again the degradate.

Under photolysis in sterile buffer at pH 5, 85% of the spirotetramat is degraded within 7 days. The major degradates are a cyclopentyl derivative (35% applied radioactivity), a methyl carbonate derivative (17% applied radioactivity), and a 2-hydroxymethyl derivative (15% applied radioactivity). Under control (dark) conditions, only spirotetramat-enol forms. These degradates are not observed when the photolysis is conducted with sterile natural water.

In water/sediment systems maintained under aerobic conditions, radiolabelled spirotetramat degraded rapidly, with 60% (water fraction) lost within one day. The major degradate was spirotetramat-enol (> 40% of applied radioactivity).

Spirotetramat degrades rapidly in soil and water, with the initial product being spirotetramat-enol.

Rotational crops

The metabolism in rotational crops (spring wheat, Swiss chard and turnips) was investigated following spray application of [azaspirodecenyl-3-^{14}C]spirotetramat onto bare soil (day 0) at an application rate of 406 g ai/ha. Significant TRRs (≥ 0.01 mg/kg) persisted in wheat matrices, Swiss chard, and turnip tops at a 135 day plantback interval. Significant TRRs were found in wheat hay (0.014 mg/kg) and straw (0.036 mg/kg) at a 260 day plantback interval.

At a 31 day plantback interval, parent spirotetramat was not found in any commodity (at maturity). Two of the principle degradates/metabolites were spirotetramat ketohydroxy in wheat forage (31% TRR), Swiss chard (17% TRR) and turnip root (30% TRR) and spirotetramat desmethyl ketohydroxy Glc in wheat forage (32% TRR), hay (18% TRR), and Swiss chard (24% TRR). Spirotetramat-enol was not found, except at 3% TRR in wheat grain.

A field rotational crop study was conducted in three sites applying spirotetramat formulated as 100 g/kg OD (oil dispersion) to a primary crop (leafy, *Brassica*, or fruiting vegetables) at a total rate of 172–180 g ai/ha. After primary crops were removed, rotational crops (mustard greens, turnips and wheat) were planted at a 30-day plant-back interval (PBI). At maturity, samples of mustard greens, turnip (tops and roots), wheat (forage, hay, straw and grain) were collected and analysed for residues of spirotetramat, spirotetramat-ketohydroxy, spirotetramat-desmethyl-ketohydroxy, spirotetramat-desmethyl-di-hydroxy and spirotetramat-ketohydroxy-alcohol. The analytical method included an acid hydrolysis step to release metabolite conjugates, such as glucosides. None of the target compounds were found at the LOQ of 0.01–0.02 mg/kg per component.

Quantifiable residues from the foliar application of spirotetramat are unlikely to occur in succeeding (rotational crops) at a minimum plantback interval of 30 days after the final application of spirotetramat to the primary crop at typical current application rates.

Methods of analysis

The methods used for data collection and proposed for enforcement for plant matrices and livestock commodities are based on HPLC/MS-MS. All methods involve extraction with acetonitrile/water and clean-up with solid phase extraction columns. Analytical method 00857 was developed for the determination of residues of spirotetramat, the metabolites spirotetramat -enol, spirotetramat -ketohydroxy, spirotetramat -mono-hydroxy and spirotetramat enol-Glc in plant matrices by HPLC-MS/MS. The analytical method 00966 was developed for the determination of residues of spirotetramat and the metabolites spirotetramat -enol and spirotetramat -enol-GA in livestock matrices by HPLC-MS/MS. These methods were used as the data-collection methods in the analysis of samples for residues from the various studies submitted to the Meeting. These methods used isotopically labelled internal standards, whereas variants of the methods were developed (and validated) with external standards. Each method has been adequately validated by the manufacturer as well as by independent laboratories Method 00857 was also adequately radiovalidated using samples obtained from metabolism studies.

The limits of quantitation (LOQ) for plant commodities are as follows:

For hops: spirotetramat: 0.1 mg/kg; -enol: 0.12 mg/kg; -ketohydroxy: 0.12 mg/kg; monohydroxy: 0.12 mg/kg; -enol-glucoside: 0.08 mg/kg; total residue calc: 0.55 mg/kg

All other matrices: spirotetramat: 0.01 mg/kg; -enol: 0.012 mg/kg; -ketohydroxy: 0.012 mg/kg; -monohydroxy: 0.012 mg/kg; -enol-glucoside: 0.008 mg/kg; total residue calc.: 0.055 mg/kg.

The limits of quantitation (LOQ) for animal commodities are as follows:

For milk: spirotetramat: 0.005 mg/kg; -enol: 0.005 mg/kg; -enol-glucuronide: 0.005 mg/kg

For tissues and eggs: spirotetramat: 0.01 mg/kg; enol: 0.01 mg/kg; -enol-glucuronide: 0.01 mg/kg.

Multiresidue methods were tested and found not applicable to spirotetramat.

The methods are suitable for data collection and for enforcement of MRLs for plant and animal commodities.

Stability of pesticide residues in stored analytical samples

The stability of spirotetramat in frozen (–18 °C) samples of various commodities was reported. Spirotetramat including its enol metabolite was stable (≥ 80%) remaining for about 2 years in tomato, potato, lettuce, almond nutmeat, climbing French beans and tomato paste. A stability of up to 5 months was demonstrated for orange juice and dried prunes. The Meeting noted that in certain commodities spirotetramat did convert to the enol during storage. For example, in potatoes about 50% of the residue was enol and 50% spirotetramat after 6 months' storage. A similar situation occurs in lettuce at one year and in almonds in 26 days. No other metabolites were found in any commodity accept beans, where up to 8% of the remaining residue was spirotetramat ketohydroxy.

The stability of various metabolites (spirotetramat enol, spirotetramat ketohydroxy, spirotetramat monohydroxy, spirotetramat enol Glc) was reported for the above commodities for the above intervals. All metabolites were stable (≥ 70% remaining) except for spirotetramat enol glucoside on dried prunes, where recovery was only 60% for intervals above 30 days.

Spirotetramat, when determined as the sum of spirotetramat and its enol, is stable on various commodities stored frozen for intervals typical of storage prior to analysis. Considered alone, however, spirotetramat may show significant loss (to spirotetramat enol). Likewise, the metabolites spirotetramat enol, spirotetramat ketohydroxy, spirotetramat monohydroxy, spirotetramat enol Glc (glucuronide) are stable.

Stability of the spirotetramat residue in frozen livestock commodity samples was not demonstrated, but all livestock commodity samples were analysed within 30 days of collection.

Residue definition

The plant metabolism studies indicate that significant portions of spirotetramat are converted to spirotetramat enol, and in some cases there may be no measurable parent (e.g., potato tubers). The analytical methods, all based on HPLC/MS-MS, are capable of determining spirotetramat, and the metabolites enol, ketohydroxy, enol glucoside, and monohydroxy. With the exception of the enol, the metabolites were not distributed through all plant metabolism studies and where present, were typically ≤ 15% TRR each.

In the field trials (see below), spirotetramat and the four metabolites mentioned were always determined.

The Meeting concluded that the residue definition for plant commodities for purposes of enforcement is spirotetramat plus its enol metabolite, expressed as spirotetramat. The Meeting also concluded that for purposes of dietary intake considerations, the residue definition is spirotetramat plus the metabolites enol, ketohydroxy, enol glucoside, and monohydroxy, expressed as spirotetramat.

The ruminant and poultry metabolism studies indicated that spirotetramat was totally converted to the enol metabolite. Significant quantities of the glucuronide conjugate of the enol were also found; other metabolites were minor (goat) or absent (hen). The ruminant feeding study conducted at levels up to 30 ppm for 29 days revealed only the enol metabolite, except for low levels of the enol glucuronide in liver and kidney (0.030 mg/kg maximum).

The Meeting concluded that the residue definition for animal commodities for purposes of enforcement and dietary intake considerations is spirotetramat enol, expressed as spirotetramat.

The log of the octanol/water partition coefficient for spirotetramat is 2.5. The log of the octanol/water partition coefficient for spirotetramat enol varies from 2.0 at pH 5 to –1.3 at pH 9. The spirotetramat enol showed no propensity to concentrate in ruminant or poultry fat. Therefore, the Meeting concluded that spirotetramat/spirotetramat enol are not fat soluble.

Residue for enforcement plant commodities: spirotetramat plus spirotetramat enol, expressed as spirotetramat.

Residue for dietary intake plant commodities: *spirotetramat plus the metabolites enol, ketohydroxy, enol glucoside, and monohydroxy, expressed as spirotetramat*.

Residue for enforcement and dietary intake animal commodities: *spirotetramat enol, expressed as spirotetramat*.

The residue is not fat soluble.

Results of supervised residue trials on crops

The Meeting received supervised trials data for the foliar application of spirotetramat as a suspension concentrate formulation (SC) or oil dispersion (OD) to a variety of fruit, vegetable, nut crops and hops.

Citrus

Field trials were conducted on oranges and mandarins in South Europe. No applicable GAP was available.

Field trials were conducted on oranges, lemons, and grapefruits in the USA. The GAP is 0.18 kg ai/ha/application, 0.36 kg ai/ha/season, 1 day PHI, SC and OD formulations. The ranked order of residues (spirotetramat plus enol, whole orange) from 12 trials on oranges were: < 0.10 (3), 0.10, 0.17, 0.19 (2), 0.20, 0.23, 0.26 (2), 0.27 mg/kg.

The ranked order of residues (spirotetramat plus four metabolites, whole orange) from 12 trials on oranges, median underlined, were: < 0.25 (3), 0.25, 0.32, <u>0.34</u> (2), 0.35, 0.38, 0.41, 0.42, 0.43 mg/kg.

The ranked order of residues (spirotetramat plus enol, whole lemon) from five trials on lemons were: 0.13, 0.18, 0.19, 0.21, 0.32 mg/kg.

The ranked order of residues (spirotetramat plus 4 metabolites, whole lemon) found from five trials were: 0.28, 0.33, 0.34, 0.36, 0.47 mg/kg.

The ranked order of residues (spirotetramat plus enol, whole grapefruit) found from six trials were: < 0.10 (3), < 0.11, 0.11, 0.20 mg/kg.

The ranked orders of residues (spirotetramat plus 4 metabolites, whole grapefruit) from six trials were: < 0.25 (3), < 0.26, 0.26, 0.35 mg/kg.

The residues on the various citrus from US trials were considered to be from similar populations and were combined. The ranked order of residues (parent plus enol) found on citrus were:

The ranked order of residues (spirotetramat plus enol, *n* = 23) on citrus were: 0.10 (7), 0.11 (2), 0.13, 0.17, 0.18, 0.19 (3), 0.20 (2), 0.21, 0.23, 0.26 (2), 0.27, 0.32 mg/kg. The Meeting estimated a maximum residue level maximum residue level of 0.5mg/kg.

The ranked order of residues (spirotetramat plus 4 metabolites, *n* = 23), median underlined, found on whole citrus fruit were: 0.25 (7), 0.26 (2), 0.28, 0.32, <u>0.33,</u> 0.34 (3), 0.35 (2), 0.36, 0.38, 0.41, 0.42, 0.43, 0.47 mg/kg. The Meeting estimated an STMR of 0.33 mg/kg and an HR of 0.47 mg/kg.

Pome fruit

The Meeting received supervised field trial studies for apples and pears in Europe. No relevant GAP was available.

Supervised field trials on apples and pears were reported from Canada and the USA. Twelve apple trials were reported, including one in Canada, and six pear trials were reported, with all trials conducted at the GAP of 0.14 kg ai/ha (Canada) or 0.16 kg ai/ha (US), with a maximum seasonal rate of 0.45 kg ai/ha and a PHI of 7 days. Both OD and SC formulations and high and low spray volumes were tested.

The ranked order of residues (spirotetramat plus enol, *n* = 12) on apples were: 0.038, 0.042, 0.051, 0.072 (2), 0.077, 0.13 (2), 0.14, 0.21, 0.33, 0.49 mg/kg.

The ranked order of residues (spirotetramat plus 4 metabolites, *n* =12) on apples were: 0.073, 0.076, 0.085, 0.11 (2), 0.13, 0.17 (2), 0.18, 0.37, 0.38, 0.55 mg/kg.

The ranked order of residues (spirotetramat plus enol, *n* =6) on pears were: 0.075, 0.084, 0.16, 0.17, 0.22, 0.32 mg/kg.

Residues, in ranked order, of (spirotetramat plus 4 metabolites, *n* = 6) found on pears were: 0.10, 0.16, 0.20, 0.21, 0.26, 0.37 mg/kg.

The Meeting considered that the residue values for apples and for pears are from similar populations and combined them for estimation of pome fruit.

Residues in ranked order of (spirotetramat plus enol, *n* = 18) found on pome fruit were: 0.038, 0.042, 0.051, 0.072 (2), 0.075, 0.077, 0.084, 0.13 (2), 0.14, 0.16, 0.17 (2), 0.21, 0.23, 0.31, 0.33, 0.49 mg/kg. The Meeting estimated a maximum residue level of 0.7 mg/kg for pome fruit.

Residues in ranked order, median underlined, of (spirotetramat plus 4 metabolites, *n* = 18) found on pome fruit were: 0.073, 0.076, 0.085, 0.10, 0.11 (2), 0.13, 0.16, <u>0.17,</u> 0.18, 0.20, 0.21, 0.26, 0.37 (2), 0.38, 0.55 mg/kg. The Meeting estimated an STMR of 0.17 mg/kg and an HR of 0.55 mg/kg for pome fruit.

Stone fruit

The Meeting received Stone Fruit trial data from Europe for apricots, plums and cherries. No relevant GAP was available. The Meeting also received Stone fruit trials from Canada and the USA for

peaches, plums and cherries. The Canada/US GAP were: OD and SC formulations, 0.14 kg ai/ha (Canada) or 0.16 kg ai/ha (USA), 0.27 kg ai/ha/season, with a 7 day PHI.

Nine peach trials at maximum GAP were reported, including one trial from Canada. Both OD and SC formulations and low volume and high volume foliar applications were tested in side-by-side plots at several locations.

Residues in ranked order of (spirotetramat plus enol, *n* = 9) found on peaches were: 0.38, 0.49, 0.53, 0.55, 0.58, 0.60, 0.68, 0.72, 1.0 mg/kg.

Residues in ranked order, median underlined, of (spirotetramat plus 4 metabolites, *n* = 9) found on peaches were: 0.51, 0.56, 0.69 (2), 0.70, 0.77, 0.81, 0.82, 1.2 mg/kg.

The Canada and USA GAPs for plums are the same as for peaches. Six trials were conducted at maximum GAP in the USA, with both low volume and high volume foliar applications in side-by-side plots.

The ranked order of residues (spirotetramat plus enol, *n* = 6) for plums were: 0.066, 0.16, 0.26, 0.32, 0.34, 0.59 mg/kg.

Residues in ranked order, median underlined, of (spirotetramat plus 4 metabolites, *n* = 6) found on plums were: 0.11, 0.36, 0.37, 0.46, 0.57, 0.84 mg/kg.

The Canada and USA GAPs for cherries (sweet and sour) are the same as for peaches. Six trials were conducted at the maximum GAP, including one trial from Canada.

The ranked order of residues (spirotetramat plus enol, *n* = 6) for cherries were: 0.68, 1.3 (3), 1.4, 1.6 mg/kg.

Residues in ranked order, median underlined, of (spirotetramat plus 4 metabolites, *n* = 6) found on cherries were: 0.74, 1.6 (3), 2.1 (2) mg/kg.

The Meeting noted that the residue population for cherries is not from the same population as peaches and plums and therefore did not combine the various stone fruit data sets.

The Meeting decided to use the residue data set with highest residues (cherry, *n* = 6) to estimate a stone fruit group maximum residue level. The Meeting estimated a maximum residue level of 3 mg/kg for stone fruit, an STMR of 1.6 mg/kg and an HR of 2.1 mg/kg.

Small berries and grapes

Supervised trials were reported from Europe for the foliar treatment of strawberries in glasshouses, but no GAP was available.

Supervised trials were reported from Europe (South) for the foliar treatment of grapes, but no GAP was available

Supervised trials for grapes were also reported from the USA. The GAP of the USA and of Canada were: OD or SC, 0.14 kg ai/ha, 0.22 kg ai/ha/season, with a 7 day PHI.

The ranked order of residues (spirotetramat plus enol, *n* = 15) for grapes were: 0.057, 0.14, 0.21, 0.23, 0.24, 0.26, 0.31, 0.32, 0.34, 0.36, 0.44, 0.49, 0.58, 0.62, 1.0 mg/kg.

Residues in ranked order, median underlined, of (spirotetramat plus 4 metabolites *n* = 15) found on grapes were: 0.11, 0.26, 0.29, 0.32 (2), 0.36, 0.40, 0.41, 0.48 (2), 0.55, 0.65, 0.79, 0.85, 1.3 mg/kg.

The Meeting estimated for grapes an STMR of 0.41 mg/kg, an HR of 1.3 mg/kg, and a maximum residue level of 2 mg/kg.

Bulb vegetables

The Meeting received field trial reports for bulb onions in Europe. However, as no GAP information was provided the Meeting was unable to estimate a maximum residue level for Bulb vegetables.

Brassica vegetables

The Meeting received field trial reports for head cabbage in Europe. None of the trials were at the maximum GAP of Austria (OD; 0.075 kg ai/ha, 0.015 kg ai/ha, 2 applications at 14 day interval, PHI 3 days).

The Meeting also received field trial reports for head cabbage in Australia. There was no finalized GAP in Australia.

The Meeting received field trial reports for head cabbage in the USA. The GAPs for brassica vegetables, including cabbage, in Canada and the USA are: SC, OD; 0.088 kg ai/ha/application, 0.175 kg ai/ha per season, 1 day PHI. Six trials were conducted at maximum GAP in the USA.

The ranked order of residues of (spirotetramat plus enol, n = 7) for cabbage was: 0.020, 0.023, 0.095, 0.15, 0.27, 0.50, 0.89 mg/kg.

Residues in ranked order, median underlined, of (spirotetramat plus 4 metabolites n = 7) found on cabbage were: 0.060, 0.067, 0.19, 0.23, 0.45, 0.64, 0.92 mg/kg.

The Meeting estimated for cabbage heads a maximum residue level of 2 mg/kg, an STMR of 0.23 mg/kg, and an HR of 0.92 mg/kg.

The Meeting received field trial reports for broccoli and cauliflower in Europe, but no GAPs were available. The Meeting also received field trial reports for broccoli and Brussels sprouts in Australia, but no GAP was available. The Meeting received field trial reports for kohlrabi in Europe, but no GAPs were available.

The Meeting received field trial reports for cauliflower and broccoli from the USA. The GAPs in Canada and the USA are: OD, SC; 0.088 kg ai/ha/application, 0.175 kg ai/ha per season, 1 day PHI. Four trials on broccoli and four trials on cauliflower were conducted at the maximum GAP.

The ranked order of residues of (spirotetramat plus enol, n = 4) for broccoli were: 0.095, 0.21, 0.28, 0.39 mg/kg.

The ranked order of residues of (spirotetramat plus 4 metabolites n =4) for broccoli were: 0.17, 0.54, 0.84, 0.87 mg/kg.

The ranked order of residues of (spirotetramat plus enol, n = 4) for cauliflower were: 0.076, 0.10, 0.11, 0.28 mg/kg.

The ranked order of residues of (spirotetramat plus 4 metabolites n = 4) for cauliflower were: 0.22, 0.34, 0.45, 0.54 mg/kg.

The Meeting decided to combine the broccoli and cauliflower results for mutual support. The ranked order of residues (spirotetramat plus enol, n = 8) for flowerhead brassica were: 0.076, 0.095, 0.10, 0.11, 0.21, 0.28 (2), 0.39 mg/kg.

Residues in ranked order, median underlined, of (spirotetramat plus 4 metabolites n = 8) for flowerhead brassica were: 0.17, 0.22, 0.34, 0.45, 0.54 (2), 0.84, 0.87 mg/kg.

The Meeting estimated for flowerhead brassica a maximum residue level of 1 mg/kg, an HR of 0.87 mg/kg, and STMR of 0.50 mg/kg.

Fruiting vegetables, Cucurbits

The Meeting received supervised trial data for both glasshouse and field sites for melons in Europe. There was no relevant GAP.

The Meeting also received field trial data for melons in the USA. The GAPs in Canada and the USA for cucurbits are: OD and SC, 0.088 kg ai/ha, 0.175 kg ai/ha/season, 1 day PHI. Eight trials in the USA were conducted at the maximum GAP.

The ranked order of results (spirotetramat plus enol, *n* = 8) for melons were: < 0.02 (2), 0.023, 0.026, 0.027, 0.053, 0.10, 0.13 mg/kg.

The ranked order of results (spirotetramat plus 4 metabolites, *n* = 8) for melons were: < 0.05 (2), 0.056, 0.057 (2), 0.083, 0.13, 0.16 mg/kg.

The Meeting received reports of trials in glasshouses and the fields for cucumbers in Europe. There was no relevant GAP.

The Meeting also received field trial data for cucumbers from the USA. The GAPs in Canada and the USA for cucurbits are: OD and SC, 0.088 kg ai/ha, 0.175 kg ai/ha/season, 1 day PHI. Eight trials were conducted at the maximum GAP.

The ranked order of results (spirotetramat plus enol, *n* = 8) for cucumbers were: < 0.02 (7), 0.044 mg/kg.

The ranked order of results (spirotetramat plus 4 metabolites, *n* = 8) for cucumbers were: < 0.050 (6), 0.073, 0.076 mg/kg.

Field trials were conducted on summer squash (zucchini) in the USA. The GAPs in Canada and the USA for cucurbits are: OD and SC, 0.088 kg ai/ha, 0.175 kg ai/ha/season, 1 day PHI.

The ranked order of results (spirotetramat plus enol, *n* = 5) for summer squash were: < 0.020 (3), 0.088, 0.13 mg/kg.

The ranked order of results (spirotetramat plus 4 metabolites, *n* = 5) for summer squash were: < 0.05, 0.059, 0.060, 0.16, 0.18 mg/kg.

The Meeting considered the data for summer squash, cucumber, and melons not to be from different populations and combined the data to make estimates for the cucurbit vegetable group.

The ranked order of results (spirotetramat plus enol, *n* = 21) for cucurbits were: < 0.020 (12), 0.023, 0.026, 0.027, 0.044, 0.053, 0.088, 0.10, 0.13 (2) mg/kg.

The ranked order of results (spirotetramat + 4 metabolites, *n* = 21) for cucurbits were: < 0.050 (9), 0.056, 0.057 (2), 0.059, 0.060, 0.073, 0.076, 0.083, 0.13, 0.16 (2), 0.18 mg/kg.

For cucurbit vegetables, the Meeting estimated an STMR of 0.057 mg/kg, an HR of 0.18 mg/kg, and a maximum residue level of 0.20 mg/kg.

Fruiting vegetables other than Cucurbits

Supervised trials were conducted on tomatoes in both glasshouses and the field in Europe. The GAP of Austria is for glass house use and specifies: OD; 0.075 kg ai/ha, 0.01 kg ai/ha per 1 metre plant height, 4 applications at 7 day interval, 3 day PHI. Eight trials in glass house were conducted at this GAP.

The ranked order of residue results (spirotetramat plus enol, *n* = 8) for tomato were: 0.16, 0.19, 0.26, 0.28, 0.32, 0.45, 0.48, 0.49 mg/kg.

The ranked order of residue results (spirotetramat plus 4 metabolites, *n* = 8) for tomato were: 0.22, 0.29, 0.34, 0.44 (2), 0.51, 0.68, 0.70 mg/kg.

Additionally, field trials were conducted on tomatoes in the USA. The GAPs for Canada and the USA are OD and SC, 0.088 kg ai/ha, 0.18 kg ai/ha/season, 1 day PHI. Thirteen trials were conducted at maximum GAP. Also, both OD and SC formulations were tested in side-by-side plots at some trial locations.

The ranked order of residue results (spirotetramat plus enol, *n* = 15) for tomato were: 0.040, 0.046, 0.078, 0.096, 0.12 (2), 0.14 (2), 0.17, 0.20 (2), 0.21, 0.22, 0.23, 0.24 mg/kg.

The ranked order of residue results (spirotetramat plus 4 metabolites, *n* = 15) for tomato were: 0.070, 0.081, 0.12, 0.14, 0.15, 0.16, 0.17, 0.19, 0.21, 0.23, 0.24 (2), 0.25, 0.27, 0.30 mg/kg.

Supervised trial data were received for foliar application of spirotetramat to sweet peppers in both glasshouses and the field in Europe. The GAP of Austria is for glass house use and specifies: OD; 0.075 kg ai/ha, 0.01 kg ai/ha per 1 meter plant height, 4 applications at 7 day interval, 3 day PHI.

The ranked order of residue values (spirotetramat plus enol, *n* = 12) for sweet peppers in (EU glass houses) were: 0.23, 0.25, 0.27, 0.30, 0.36, 0.40, 0.42, 0.46, 0.47, 0.49, 0.50 (2) mg/kg.

The ranked order of residue values (spirotetramat plus 4 metabolites, *n* = 12) for sweet peppers were: 0.27, 0.29, 0.31, 0.35, 0.43, 0.48 (2), 0.54, 0.55, 0.56, 0.57, 0.58 mg/kg.

Also, supervised field trial data were received for peppers from the USA. The GAPs in Canada and the USA for fruiting vegetables are: OD and SC, 0.088 kg ai/ha, 0.18 kg ai/ha/season, 1 day PHI.

The ranked order of residue values (spirotetramat plus enol, *n* = 8) for sweet peppers were: 0.20, 0.27, 0.29, 0.33, 0.40, 0.44, 0.51, 0.76 mg/kg.

The ranked order of residue values (spirotetramat plus enol, *n* = 4) for Chilli (non-bell) peppers were: 0.67, 0.75, 0.82, 1.3 mg/kg.

The ranked order of residue values (spirotetramat plus 4 metabolites, *n* = 8) for sweet peppers were: 0.29, 0.36, 0.39, 0.43, 0.49, 0.55, 0.78, 1.1 mg/kg.

Residues in ranked order, median underlined, of (spirotetramat plus 4 metabolites, *n* = 4) found on Chilli (non-bell) peppers were: 0.72, 0.92, 0.97, 1.5 mg/kg.

The Meeting concluded that the US residue values for sweet peppers and for Chilli peppers are not from the same population. The Meeting further concluded that the residue values for tomatoes and for sweet peppers in the US are not from the same population. The Meeting concluded that the EU glasshouse values for peppers and for tomatoes are from similar populations and therefore combined them.

The combined residue values (spirotetramat plus enol, *n* = 20) for fruiting vegetables (non-cucurbit) for glass houses (EU) in ranked order were: 0.16, 0.19, 0.23, 0.25, 0.26, 0.27, 0.28, 0.30, 0.32, 0.36, 0.40, 0.42, 0.45, 0.46, 0.47, 0.48, 0.49 (2), 0.50 (2) mg/kg.

The combined residue values (spirotetramat plus 4 metabolites, *n* = 20) for fruiting vegetables (non-cucurbit) for glass houses (EU) in ranked order were: 0.22, 0.27, 0.29 (2), 0.31, 0.34, 0.35, 0.43, 0.44 (2), 0.48 (2), 0.51, 0.54, 0.55, 0.56, 0.57, 0.58, 0.68, 0.70 mg/kg.

However, the Meeting noted that the highest residue set, excluding the limited data set (*n* = 3) for non-bell peppers, was that for US sweet peppers. Using this set, the Meeting estimated for fruiting vegetables (non-cucurbit) an STMR of 0.43 mg/kg, an HR of 1.1 mg/kg, and a maximum residue level of 1 mg/kg for fruiting vegetables, except Chilli peppers, except mushrooms, except sweet corn.

The Meeting estimated an STMR 0.95 mg/kg, an HR of 1.5 mg/kg, and a maximum residue level of 2 mg/kg for Chilli peppers. The Meeting also estimated a maximum residue level of 15 mg/kg for dried Chilli peppers based on a standard dehydration factor of 7 (General Considerations, 2008 JMPR).

Leafy vegetables (including Brassica leafy)

Lettuce trials from both glasshouses and fields were reported for Europe. Four glasshouse trials were conducted at the maximum GAP of Austria: OD; 0.075 kg ai/ha, 2 applications at 14 day interval, 7 day PHI.

The residue values (spirotetramat plus enol, *n* = 4) in ranked order for head lettuce were: 0.11, 1.3, 1.6, 1.7 mg/kg, and for leaf lettuce (*n* = 4): 0.27, 0.29, 0.96, 2.2mg/kg.

The residue values (spirotetramat plus 4 metabolites, *n* = 4) in ranked order for head lettuce were: 0.16, 1.4, 1.8, 1.9 mg/kg, and for leaf lettuce (*n* = 4): 0.37, 0.39, 1.0, 2.4 mg/kg.

Also, lettuce trials were reported from the USA. The GAPs in Canada and the USA for non-Brassica leafy vegetables were: SC, OD; 0.088 kg ai/ha, 0.175 kg ai/ha/season, 3 day PHI. Six trials were conducted at maximum GAP on head lettuce, and six trials were conducted at maximum GAP on leaf lettuce.

The residue values (spirotetramat plus enol, *n* = 8) in ranked order for head lettuce were: 0.14, 0.15, 0.18, 0.60 (2), 0.66, 0.69, 0.84 mg/kg, and for leaf lettuce (*n* = 7): 0.11, 0.14, 0.53, 0.60, 0.66, 0.96, 1.5 mg/kg.

The residue values (spirotetramat plus 4 metabolites, *n* = 8) in ranked order for head lettuce were: 0.26, 0.29, 0.33, 0.73, 0.82, 0.84, 0.92, 1.0 mg/kg, and for leaf lettuce (*n* = 7): 0.21, 0.23, 0.73, 0.75, 1.0, 1.2, 1.7 mg/kg.

The Meeting received trials for spinach conducted in the USA. Seven trials were conducted at the maximum GAP for leafy vegetables (excluding Brassica).

The residue values for (spirotetramat plus enol, *n* = 7) in ranked order for spinach were: 0.13, 0.82, 1.1, 1.2, 1.4, 1.5, 3.0 mg/kg.

The residue values (spirotetramat plus 4 metabolites, *n* = 7) in ranked order for spinach were: 0.24, 1.0, 1.2, 1.5, 1.6 (2), 3.4 mg/kg.

Residue trials were reported from Europe from several leafy vegetables: curly kale, Chinese cabbage, Chinese kale. However, no GAP was available.

Residue trials were reported from the USA for mustard greens. Ten trials were conducted at the maximum GAP for Brassica vegetables (including leafy), where the application rate is the same as for leafy vegetables, but the PHI is 1 day.

The residue values (spirotetramat plus enol, *n* = 10) in ranked order for mustard greens were: 0.61, 0.63, 1.3, 1.6, 2.6, 3.0 (2), 3.3, 4.2, 5.0 mg/kg.

The residue values (spirotetramat plus 4 metabolites, *n* = 10) in ranked order for mustard greens were: 0.85, 0.86, 1.7, 2.0, 3.4, 4.0, 4.4, 4.5, 4.6, 5.5 mg/kg.

The Meeting decided to combine the residue values for head lettuce and leaf lettuce from the EU (glass house). The residue values (spirotetramat plus enol, *n* = 8) in ranked order for lettuce were: 0.11, 0.27, 0.29, 0.96, 1.3, 1.6, 1.7, 2.2 mg/kg.

The residue values (spirotetramat plus 4 metabolites, *n* = 8) in ranked order for lettuce from the EU were: 0.16, 0.37, 0.39, 1.0, 1.4, 1.8, 1.9, 2.4 mg/kg.

The Meeting decided to combine the residue values for head lettuce and leaf lettuce from the USA. The residue values (spirotetramat plus enol, *n* = 15) in ranked order for lettuce were: 0.11, 0.14 (2), 0.15, 0.18, 0.53, 0.60 (3), 0.66 (2), 0.69, 0.84, 0.96, 1.5 mg/kg.

The residue values (spirotetramat plus 4 metabolites, *n* = 15) in ranked order for lettuce were: 0.21, 0.23, 0.26, 0.29, 0.33, 0.73 (2), 0.75, 0.82, 0.84, 0.92, 1.0 (2), 1.2, 1.7 mg/kg.

The Meeting decided that the trials from the EU and the USA should not be combined because of substantial differences in the GAPs (glass house vs field, 7 day PHI vs 3 day PHI).

Using the trial data for mustard greens, the Meeting estimated for leafy vegetables an HR of 5.5 mg/kg, an STMR of 3.7 m/kg, and a maximum residue level of 7 mg/kg.

Legume vegetables

The Meeting received a study on field trials for French climbing beans conducted in glasshouses in Europe. However, no GAP was available.

Root and tuber vegetables

Trials on potatoes were reported from the USA. The GAPs in Canada and the USA for tuberous and corm vegetables were: OD, SC; 0.088 kg ai/ha, 0.175 kg ai/ha/season, 7 day PHI. Seventeen trials were conducted at the maximum GAP.

The residue values (spirotetramat plus enol, *n* = 20) in ranked order for potato were: 0.020, 0.034, 0.039, 0.041, 0.046 (2), 0.050, 0.052, 0.053, 0.080, 0.091, 0.11 (2), 0.16, 0.17, 0.18, 0.23, 0.30, 0.37 (2) mg/kg.

The residue values (spirotetramat plus 4 metabolites, *n* = 20) in ranked order for potato were: 0.055, 0.064, 0.069, 0.071, 0.076 (2), 0.080, 0.082, 0.083, 0.11, 0.12 (2), 0.14 (2), 0.19, 0.22, 0.29, 0.36, 0.43, 0.46 mg/kg.

The Meeting estimated an STMR of 0.12 mg/kg for potato, an HR of 0.46 mg/kg and a maximum residue level of 0.8 mg/kg.

Stalk and stem vegetables

Supervised field trials for celery were reported from the USA. The GAPs for leafy vegetables, which include celery in the NAFTA classification, were: OD, SC; 0.088 kg ai/ha, 0.75 kg ai/ha/season, 3 day PHI.

Six trials were conducted at the maximum GAP. The residue values (spirotetramat plus enol, *n* = 8) in ranked order for celery were: 0.26, 0.29, 0.33, 0.38, 0.45, 0.46, 1.9, 2.4 mg/kg.

The residue values (spirotetramat plus 4 metabolites, *n* = 8) in ranked order for celery were: 0.40, 0.41, 0.49 (2), 0.66, 0.76, 2.2, 2.6 mg/kg.

The Meeting estimated for celery an STMR of 0.58 mg/kg, an HR of 2.6 mg/kg, and a maximum residue level of 4.

Tree nuts

Supervised field trials were reported from the USA for almonds and pecans. The GAPs in Canada and the USA are: SC, OD; 0.14 kg ai/ha, 0.38 kg ai/ha/season, 7 day PHI.

Six trials on almonds were conducted at the maximum GAP. The residue values (spirotetramat plus enol, *n* = 6) in ranked order for almond nutmeats were: 0.020, 0.031, 0.054, 0.082, 0.089, 0.094 mg/kg.

The residue values (spirotetramat plus 4 metabolites, *n* = 6) in ranked order for almond nutmeats were: 0.050, 0.061, 0.084, 0.14 (3) mg/kg.

Five trials on pecans were conducted at the maximum GAP. The residue values (spirotetramat plus enol, *n* = 5) in ranked order for pecan nutmeats were: 0.020 (2), 0.048, 0.13, 0.25 mg/kg.

The residue values (spirotetramat plus 4 metabolites, *n* = 5) in ranked order for pecan nutmeats were: 0.050 (2), 0.076, 0.16, 0.29 mg/kg. The Meeting combined the residue values for pecan and almond nutmeats. The residue values (spirotetramat plus enol, *n* = 11) in ranked order for tree nut nutmeats were: 0.020 (3), 0.031, 0.048, 0.054, 0.082, 0.089, 0.094, 0.13, 0.25 mg/kg. The residue values (spirotetramat plus 4 metabolites, *n* = 11) in ranked order for tree nut nutmeats were: 0.050 (3), 0.061, 0.076, 0.084, 0.14 (3), 0.16, 0.29 mg/kg.

The Meeting estimated for the tree nuts group an STMR of 0.084 mg/kg, an HR of 0.29 mg/kg and a maximum residue level of 0.5 mg/kg.

Secondary food commodities of plant origin – Dried Herbs

Supervised field trials were received from France and Germany for green hops and dried cones. The GAP of Austria specifies for hops: OD; 0.15 kg ai/ha, 0.005 kg ai/hL, 1 application, 14 day PHI. Four

trials were conducted according to this GAP. The residue values (spirotetramat plus enol, *n* = 4) in ranked order for dried hops cones were: 0.73, 1.1, 1.7, 1.8 mg/kg.

The residue values (spirotetramat plus 4 metabolites, *n* = 4) in ranked order dried hops cones were: 1.1, 1.8, 2.0, 3.1 mg/kg.

Supervised field trials were received from the USA for dried hops cones. The GAPs in Canada and the USA are: OD, SC; 0.105 kg ai/ha, 0.220 kg ai/ha/season, 7 day PHI. Four trials were conducted at maximum GAP.

The residue values (spirotetramat plus enol, *n* =4) in ranked order for dried hops cones were: 2.2, 3.7, 4.8, 4.9 mg/kg. The residue values (spirotetramat plus 4 metabolites, *n* = 4) in ranked order dried hops cones were: 2.8, 4.5, 5.8 (2) mg/kg.

Based on the US trial data, the Meeting estimated for dried hops cones an STMR of 5.2 mg/kg and a maximum residue level of 15 mg/kg.

Almond hulls

Supervised field trials were reported from the USA for almonds. The GAPs in Canada and the USA are: SC, OD; 0.14 kg ai/ha, 0.38 kg ai/ha/season, 7 day PHI. Six trials on almonds were conducted at the maximum GAP. The residue values (spirotetramat plus enol, *n* = 6) in ranked order for almond hulls were: 1.3, 2.0, 3.9, 4.2, 4.4, 4.7 mg/kg. . The residue values (spirotetramat plus 4 metabolites, *n* = 6) in ranked order for almond hulls were: 1.9, 2.6, 4.8, 5.0, 5.2, 5.3 mg/kg.

The Meeting estimated for almond hulls an STMR of 4.9 mg/kg. The Meeting estimated a maximum residue level of 10 mg/kg for almond hulls.

Fate of residues during processing

The Meeting received processing studies for apple, bean with pod, cheery, orange, grape, hops, plum, potato and tomato. Some information was supplied on the fate of radiolabelled spirotetramat under general processing conditions.

The nature of the residue under simulated processing conditions was reported for radiolabelled spirotetramat and radiolabelled metabolites spirotetramat-enol, spirotetramat-enol-glucoside, spirotetramat-ketohydroxy and spirotetramat-monohydroxy.

Spirotetramat was resistant to hydrolysis under conditions being representative for pasteurization. Under conditions representative for baking, boiling and brewing 15% of spirotetramat degraded to spirotetramat-enol. Under conditions of sterilization the active substance was nearly completely hydrolysed to spirotetramat-enol. Spirotetramat-enol was detected as the only hydrolysis product.

Spirotetramat-enol was resistant to hydrolysis under all test conditions.

Spirotetramat-enol-glucoside was resistant to hydrolysis under conditions representative for pasteurisation. Under conditions representative for baking, brewing and boiling ca.10% of the test substance was hydrolysed to spirotetramat-enol. Under conditions of sterilization ca. 40% of the spirotetramat-enol-glucoside was hydrolysed to the enol metabolite.

Spirotetramat-ketohydroxy was resistant to hydrolysis under conditions of pasteurisation. Under conditions of baking, brewing and boiling a slight (5%) degradation occurred; under conditions of sterilisation spirotetramat-ketohydroxy was completely hydrolysed.

Spirotetramat-monohydroxy was resistant under all test conditions.

Spirotetramat is unstable under some processing conditions, yielding the enol metabolite. Likewise, the spirotetramat enol glucoside metabolite may hydrolyse to the enol under some processing conditions. Additionally, the spirotetramat ketohydroxy metabolite is unstable under sterilization conditions. However, this metabolite is generally a very small portion of the residue. The residue definitions recommended for plant commodities will suffice for processed plant commodities.

The processing (or transfer) factors derived from the processing studies and the resulting recommendations for STMR-Ps, HR-Ps, and/or maximum residue levels are summarized in the table below. The factors are the ratio of the total residue in the processed commodity divided by the total residue in the raw agricultural commodity (RAC). Where the apparent factor was > 1, the factor was also calculated based on the ratio of parent plus enol metabolite in the processed fraction to the parent plus enol metabolite in the RAC. These were generally comparable.

Processing (Transfer) Factors from the Processing of Raw Agricultural Commodities (RACs) with Field-Incurred Residues from Foliar Treatment with Spirotetramat

RAC	Processed Commodity	Processing Factor[a]	RAC mrl	Processed Commodity mrl	RAC STMR	Processed Commodity STMR-P	RAC HR	Processed Commodity HR-P
Orange	Juice	< 0.86 < 0.83 < 0.56 < 0.56 < 0.30 < 0.40 MEDIAN 0.56	0.5		0.33	0.18	0.47	
Orange	Marmalade	< 0.83 < 0.83 < 0.56 0.37 MEDIAN 0.56	0.5		0.33	0.19	0.47	
Orange (citrus)	Pulp, dry	1.3	0.5		0.33	0.43	0.47	
Orange (citrus)	Oil	14	0.5		0.33	4.8	0.47	
Apple	Juice	< 0.57 < 0.87 0.39 0.40 MEDIAN 0.48	0.7		0.17	0.082	0.55	
	Sauce	0.78 < 0.87 0.65 0.13 MEDIAN 0.72	0.7		0.17	0.12		
	Pomace, dried	6.8 4.5 6.0 6.8 6.4 1.9 (wet) [calc 4.8	0.7	5	0.17	1.1	0.55	

RAC	Processed Commodity	Processing Factor[a]	RAC mrl	Processed Commodity mrl	RAC STMR	Processed Commodity STMR-P	RAC HR	Processed Commodity HR-P
		dry] MEDIAN 6.2						
Cherry	Preserve (canned)	0.46 0.48 0.58 0.46 MEDIAN 0.47	3		1.6	0.75	2.1	
Grapes	Raisin	1.5 3.1 2.6 MEDIAN 2.6	2	4	0.41	1.1	1.3	3.4
	Juice	0.66	2		0.41	0.27	1.3	
	Jelly	0.27	2		0.41	0.11	1.3	
	Pomace	1.7 1.8 1.9 1.9 MEDIAN 1.8	2	4	0.41	0.74		
	Wine	0.68 0.76 0.44 0.38 MEDIAN 0.56	2		0.41	0.23	1.3	
Plums	Dried plums (“prunes”)	2.2	3	5	1.6	3.5	2.1	4.6
Tomatoes	Juice	0.63 0.58 0.48 0.67 0.91 MEDIAN 0.63	1		0.43	0.27	1.1	
	Preserve (canned)	0.72 0.46 0.39 0.71 1.1 MEDIAN 0.58	1		0.43	0.25	1.1	
	Puree	1.2	1		0.43	0.40	1.1	

RAC	Processed Commodity	Processing Factor[a]	RAC mrl	Processed Commodity mrl	RAC STMR	Processed Commodity STMR-P	RAC HR	Processed Commodity HR-P
		0.92 0.58 0.71 3.4 MEDIAN 0.92						
	Paste	7.4	1		0.43	3.2	1.1	
	Dried	12	1		0.43	5	1.1	
French Climbing Bean	Cooked bean	0.39 0.30 0.54 0.82 MEDIAN 0.46						
Potato	Chips (crisps, not frits)	1.2	0.8		0.12	0.14	0.46	
	Flakes	3.5	0.8		0.12	0.42	0.46	
	Tuber, peeled and cooked	1.3	0.8					
	Peel	0.95	0.8		0.12	0.11	0.46	0.44
Hops	Beer	< 0.034 < 0.030 < 0.014 < 0.013 MEDIAN 0.022	15	N/A	5.2	0.11		

[a] Each value represents a separate study. The factor is the ratio of the total residue in the processed item divided by the total residue in the RAC. The total residue is the parent spirotetramat plus four metabolites, calculated as spirotetramat.

Estimated maximum and mean dietary burdens of farm animals

Dietary burden calculations for beef cattle and dairy cattle are provided below. The calculations were made according to the animal diets from Canada-USA, EU, and Australia in the *Table of OECD Feedstuffs Derived from Field Crop* (Annex 6 of the 2006 JMPR Report).

A poultry feeding study was not provided. However, there are no poultry feed items resulting from the RACs for which the 2008 Meeting made maximum residue level recommendations, and the results of the poultry metabolism (for which the dosing phase was 14 days) could be used to estimate the poultry dietary burden if relevant new RAC commodity MRLs were to occur in the future.

Potential cattle feed items include: almond hulls, apple pomace, citrus pulp, grape pomace, potato culls and pulp and waste and cabbage heads.

Animal dietary burden, spirotetramat total residue, ppm of dry matter diet				
		US-Canada	EU	Australia
Beef cattle	max	1.86	2.91[a]	1.71

	mean	1.04	0.89	1.57[b]
Dairy cattle	max	1.02	2.41[a]	1.53
	mean	0.66	0.42	1.53[b]

[a] Highest maximum beef or dairy cattle dietary burden suitable for maximum residue level estimates for mammalian meat and milk. Values rounded up to 3 ppm.

[b] Highest mean beef or dairy cattle dietary burden suitable for STMR estimates for mammalian meat and milk. Values rounded up to 2 ppm.

Animal commodity maximum residue levels

The Meeting received a report on a feeding study with lactating dairy cows. Ten lactating Holstein dairy cows (*Bos taurus*; three cows/treatment group and one control cow) were dosed orally, *via* capsule, for 29 consecutive days with spirotetramat at target dose rates (based on feed dry weight) of either 0 ppm day (control), 3.0 ppm /day, 9.0 ppm/day, or 30 ppm /day. Analytes determined in milk and tissues were: spirotetramat, spirotetramat enol and spirotetramat enol glucuronide (enol-GA). The demonstrated limit of quantitation (LOQ) was 0.005 mg/kg for each analyte in milk matrices and was 0.010 mg/kg for each analyte in the tissue matrices. The limits of detection (LOD) for each compound were in the range of 0.002–0.005 mg/kg for tissues and 0.0007–0.001 mg/kg for milk matrices.

At the 3 ppm feeding level, each analyte was below the LOD in all tissues except kidney. For kidney, spirotetramat enol was quantified at 0.019–0.024 mg/kg, average 0.021 mg/kg.

At the 9 ppm feeding level, all analytes except spirotetramat enol were absent at the LOD in all tissues. Spirotetramat enol was measured at 0.013 mg/kg in the fat of one of three animals, average 0.008 mg/kg. The metabolite was absent in muscle, but was found at levels of 0.049–0.10 mg/kg in kidney, average 0.094 mg/kg, and at levels of 0.009 (< LOQ)–0.014 mg/kg in liver, average 0.094 mg/kg.

At the 30 ppm feeding level, all analytes were absent in milk at the LOQ (0.005 mg/kg) except for spirotetramat enol at 0.005 mg/kg in one of three cows. Residues of spirotetramat and spirotetramat enol GA were below the LOD in all milk samples, except in one milk sample at 0.0008 mg/kg. Residues of parent equivalents did not concentrate in samples of skim milk or milk fat separated mechanically from whole milk.

At the 30 ppm feeding level, spirotetramat enol was quantifiable in fat (< 0.005–0.032 mg/kg), muscle (0.0043–0.014 mg/kg), kidney (0.17–0.41 mg/kg), and liver (0.025–0.038 mg/kg). Additionally, spirotetramat enol GA was quantifiable in liver (maximum 0.018 mg/kg) and kidney (maximum 0.030 mg/kg).

Dietary burden (ppm) Feeding level ppm]		Cream	Milk	Muscle		Liver		Kidney		Fat	
		Mean	Mean	Highest	Mean	Highest	Mean	Highest	Mean	Highest	Mean
mrl beef cattle	(3) [3.0]			(< 0.003) [< 0.003[c]]		(0.006) [0.006]		(0.024) [0.024]		(< 0.005) [< 0.005[c]]	
mrl, dairy cattle	(3) [3.0/30[b]]		(0.0005) [< 0.005[b]]	(< 0.003) [< 0.003[c]]		(0.006)) [0.006]		(0.024) [0.024]		(< 0.005) [< 0.005[c]]	
STMR beet cattle	(2) [3.0]				(< 0.0.002) [< 0.003[c]]		(0.004) [0.006]		(0.014) [0.021]		(< 0.004) [< 0.005[c]]
STMR dairy cattle	(2.) [3.0/30[b]]		(0.0004) [< 0.005[b]]		(< 0.002) [< 0.003[c]]		(< 0.004) [0.006]		(0.014) [0.021]		(< 0.004) [< 0.005[c]]

[a] Defined as spirotetramat enol and expressed as spirotetramat equivalents. The LOQs of spirotetramat and its enol are 0.005 mg/kg each in milk and 0.01 mg/kg each in the various tissues. The estimated LODs of spirotetramat are 0.005 mg/kg in fat, 0.003 mg/kg in muscle, 0.001 mg/kg in kidney, 0.002 mg/kg in liver, and 0.0007 mg/kg in milk. The estimated LODs of spirotetramat enol are 0.005 mg/kg in fat, 0.003 mg/kg in muscle, 0.003 mg/kg in kidney, 0.005 mg/kg in liver, and 0.001 mg/kg in milk.

[b] 30 ppm feeding study only for the milk samples

[c] Limit of detection.

The Meeting estimated the following STMR values: milk 0 mg/kg; muscle 0 mg/kg; edible offal (based on kidney) 0.014 mg/kg; fat 0 mg/kg.

The Meeting estimated the following HR values: milk 0 mg/kg; muscle 0 mg/kg; edible offal (based on kidney) 0.024 mg/kg; fat 0 mg/kg.

The Meeting estimated the following maximum residue levels: milk 0.005 (*) mg/kg; meat (mammalian except marine) 0.01 (*) mg/kg; edible offal 0.03 mg/kg.

RECOMMENDATIONS

The Meeting estimated the maximum residue levels and STMR values shown below. The maximum residue levels are recommended for use as MRLs.

Definition of the residue Plants and Animals

Definition of the residue (for compliance with MRL) for plant commodities:

Spirotetramat and its enol metabolite, 3-(2,5-dimethylphenyl)-4-hydroxy-8-methoxy-1-azaspiro[4.5]dec-3-en-2-one, expressed as spirotetramat.

Definition of the residue (for estimation of dietary intake) for plant commodities:

Spirotetramat, *enol metabolite* 3-(2,5-dimethylphenyl)-4-hydroxy-8-methoxy-1-azaspiro[4.5]dec-3-en-2-one, *ketohydroxy metabolite* 3-(2,5-dimethylphenyl)-3-hydroxy-8-methoxy-1-azaspiro[4.5]decane-2,4-dione, *monohydroxy metabolite* cis-3-(2,5-dimethylphenyl)-4-hydroxy-8-methoxy-1-azaspiro[4.5]decan -2-one, and *enol glucoside* metabolite glucoside of 3-(2,5-dimethylphenyl)-4-hydroxy-8-methoxy-1-azaspiro[4.5]dec-3-en-2-one, expressed as spirotetramat.

Definition of the residue (for compliance with MRL and estimation of dietary intake) for animal commodities:

Spirotetramat enol metabolite, 3-(2,5-dimethylphenyl)-4-hydroxy-8-methoxy-1-azaspiro[4.5]dec-3-en-2-one , expressed as spirotetramat.

Spirotetramat enol is not fat soluble.

Commodity		MRL, mg/kg		STMR or	HR or
CCN	Name	New	Previous	STMR-P, mg/kg	HR-P, mg/kg
AM 0660	Almond hulls	10		4.9	
AB 0226	Apple pomace (dry)			1.1	
VB 0041	Cabbages, Head	2		0.23	0.92
VS 0624	Celery	4		0.58	2.6
FS 0012	Stone Fruits	3		1.6	2.1
FC 0001	Citrus fruits	0.5		0.33	0.47
AB 0001	Citrus pulp (dry)			0.43	
VC 0011	Fruiting Vegetables, Cucurbits	0.2		0.057	0.18
DF 0269	Dried grapes (=currants, Raisins and Sultanas)	4		1.1	3.4
MO 0105	Edible offal (mammalian)	0.03		0.014	0.024
VB 0042	Flowerhead Brassica	1		0.50	0.87
VO 0050	Fruiting vegetables, other than Cucurbits (except sweet corn,	1		0.43	1.1

Commodity		MRL, mg/kg		STMR or	HR or
CCN	Name	New	Previous	STMR-P, mg/kg	HR-P, mg/kg
	except mushroom, except chilli pepper)				
FB 0269	Grapes	2		0.41	1.3
AB 0269	Grape pomace (dry)	4		0.74	
DH 1100	Hops (dry)	15		5.2	
VL 0053	Leafy Vegetables	7		3.7	5.5
MM 0095	Meat (from mammals other than marine mammals)	0.01 (*)		0 muscle 0 fat	0 muscle 0 fat
ML 0106	Milks	0.005 (*)		0	0
VO 0444	Pepper, chilli (non-bell)	2		0.95	1.5
HS 0444	Pepper, Chilli (Dry)	15		6.6	11
FP 0009	Pome fruits	0.7		0.17	0.55
VR 0589	Potato	0.8		0.12	0.46
DF 0014	Prunes (dried plums)	5		3.5	4.6
TN022	Tree nuts	0.5		0.084	0.29
JF 0226	Apple juice			0.082	
	Beer hops			0.11	
JF 0269	Grape juice			0.27	
	Grape wine			0.23	
	Grape jelly			0.11	
JF 0004	Orange juice			0.18	
	Potato peel			0.11	0.44
	Tomato, dried			5.0	
JF 0448	Tomato juice			0.27	
VW 0448	Tomato paste			3.2	

DIETARY RISK ASSESSMENT

Long-term intake

The evaluation of spirotetramat has resulted in recommendations for MRLs and STMRs for raw and processed commodities. Consumption data were available for 32 food commodities and were used in the dietary intake calculation. The results are shown in Annex 3. The International Estimated Daily Intakes for the 13 GEMS/Food regional diets, based on estimated STMRs were in the range 1–10% of the maximum ADI of 0.05 mg/kg bw (Annex 3).

The Meeting concluded that the long-term intake of residues of spirotetramat from uses that have been considered by the JMPR is unlikely to present a public health concern.

Short-term intake

The International Estimated Short-term Intake (IESTI) for spirotetramat was calculated for the food commodities (and their processing fractions) for which maximum residue levels and HRs were estimated and for which consumption data were available. The results are shown in Annex 4. For the general population the IESTI varied from 0–10% of the ARfD (1.0 mg/kg bw) while for children the IESTI varied from 0–40% of the ARfD.

The Meeting concluded that the short-term intake of residues of spirotetramat from uses that have been considered by the JMPR is unlikely to present a public health concern.

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Code	Authors	Year	Title, Institutions, Report reference
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M-298427-01-1	Anon.	10.02.2007	Ultor SC 150 - Label USA Bayer CropScience LP, RTP, NC, USA
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MEF-04/400	Hellpointner, E.	14.09.2004	Calculation of the chemical lifetime of BYI 08330 in the troposphere Bayer CropScience AG, Monheim, Germany
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MEF-05/249	Ramanarayanan, T.; Roepke, B.	30.08.2006	Degradation of BYI08330 in four soils under aerobic conditions: kinetic evaluation (Amended: 21.09.2006) Bayer CropScience AG, Monheim, Germany
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MEF-05/409	Koch, B.; Sur, R.	11.01.2006	BYI 08330-keto-hydroxy: Aqueous hydrolysis under conditions of processing studies Bayer CropScience AG, Monheim, Germany
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Code	Authors	Year	Title, Institutions, Report reference
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PA03/039	Muehlberger, B.; Lemke, G.	02.04.2004	BYI 08330 (AE 1302943) - Relative density Bayer CropScience GmbH, Frankfurt am Main, Germany
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PA06/025	Bogdoll, B.; Lemke, G.	13.04.2006	Relative density of BYI 08330 - Technical substance Bayer CropScience GmbH, Frankfurt am Main, Germany
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RA-2002/05	Schoening, R.; Wieland, K.	27.04.2006	Determination of the residues of BYI 08330 in/on mandarin after spraying of BYI 08330 (150 OD) in the field in Portugal, Spain and Italy Bayer CropScience AG, Monheim, Germany
RA-2003/05	Schoening, R.; Wieland, K.	25.04.2006	Determination of the residues of BYI 08330 in/on orange after spraying of BYI 08330 (150 OD) in the field in Portugal, Italy and Spain Bayer CropScience AG, Monheim, Germany
RA-2004/05	Schoening, R.	09.02.2006	Determination of the residues of BYI 08330 in/on plum after spraying of BYI 08330 (150 OD) in the field in United Kingdom, Northern France and Germany Bayer CropScience AG, Monheim, Germany
RA-2005/05	Schoening, R.	07.02.2006	Determination of the residues of BYI 08330 in/on plum after spraying of BYI 08330 (150 OD) in the field in Italy and Spain Bayer CropScience AG, Monheim, Germany
RA-2006/05	Schoening, R.; Eberhardt, R.	14.03.2006	Determination of the residues of BYI 08330 in/on apricot and peach after spraying of BYI 08330 (150 OD) in the field in Germany and Northern France Bayer CropScience AG, Monheim, Germany
RA-2007/05	Schoening, R.; Eberhardt, R.	14.03.2006	Determination of the residues of BYI 08330 in/on apricot and peach after spraying of BYI 08330 (150 OD) in the field in Portugal, Spain, Greece, Southern France and Italy Bayer CropScience AG, Monheim, Germany

Code	Authors	Year	Title, Institutions, Report reference
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RA-2009/05	Schoening, R.; Eberhardt, R.	06.03.2006	Determination of the residues of BYI 08330 in/on sweet cherry after spraying of BYI 08330 (150 OD) in the field in Italy and Spain Bayer CropScience AG, Monheim, Germany
RA-2012/05	Schoening, R.; Eberhardt, R.	06.04.2006	Determination of the residues of BYI 08330 in/on apple and pear after spraying of BYI 08330 (150 OD) in the field in United Kingdom and GermanyBayer CropScience AG, Monheim, German
RA-2015/05	Schoening, R.; Eberhardt, R.	16.03.2006	Determination of the residues of BYI 08330 in/on apple and pear after spraying of BYI 08330 (150 OD) in the field in Southern France and Italy Bayer CropScience AG, Monheim, Germany
RA-2022/04	Bardel, P.; Freitag, T.	25.10.2005	Determination of the residues of BYI 08330 in/on broccoli after spraying of BYI 08330 (100 OD) in the field in Germany and United Kingdom Bayer CropScience AG, Monheim, Germany
RA-2023/04	Zimmer, D.; Freitag, T.	26.10.2005	Determination of the residues of BYI 08330 in/on cauliflower after spraying of BYI 08330 (100 OD) in the field in Germany and France Bayer AG, Leverkusen, Germany
RA-2024/04	Bardel, P.; Freitag, T.	21.10.2005	Determination of the residues of BYI 08330 in/on broccoli after spraying of BYI 08330 (100 OD) in the field in Italy Bayer CropScience AG, Monheim, Germany
RA-2025/04	Zimmer, D.; Freitag, T.	18.10.2005	Determination of the residues of BYI 08330 in/on cauliflower after spraying of BYI 08330 (100 OD) in the field in France Bayer CropScience AG, Monheim, Germany
RA-2026/04	Schoening, R.; Wolters, A.	02.11.2005	Determination of the residues of BYI 08330 in/on pepper after spraying of BYI 08330 (100 OD) in the greenhouse in the Netherlands, Germany, Southern France, Portugal, Italy and Spain Bayer CropScience AG, Monheim, Germany
RA-2027/04	Schoening, R.; Wolters, A.	07.11.2005	Determination of the residues of BYI 08330 in/on pepper after spraying of BYI 08330 (100 OD) in the field in Spain, Southern France, Italy and Portugal Bayer CropScience AG, Monheim, Germany
RA-2028/04	Cavaille, C.	02.11.2005	Determination of the residues of BYI 08330 in/on cucumber after spraying of BYI 08330 (100 OD) in the field in Spain and Italy Bayer CropScience AG, Monheim, Germany
RA-2030/04	Cavaille, C.	21.10.2005	Determination of the residues of BYI 08330 in/on cucumber after spraying of BYI 08330 (100 OD) in the greenhouse in Germany, Italy, Spain and Greece Bayer CropScience S.A., Lyon, France
RA-2032/04	Schoening, R.; Helfrich, P.	21.12.2005	Determination of the residues of BYI 08330 in/on orange after spraying of BYI 08330 (100 OD) in the field in Italy, Portugal and Spain Bayer CropScience AG, Monheim, Germany
RA-2033/04	Schoening, R.; Helfrich, P.	19.01.2006	Determination of the residues of BYI 08330 in/on mandarin after spraying of BYI 08330 (100 OD) in the field in Italy, Portugal and Spain Bayer CropScience AG, Monheim, Germany
RA-2034/05	Ballesteros, C.; Gateaud, L.	02.05.2006	Determination of the residues of BYI 08330 in/on grape after spraying of BYI 08330 (150 OD) in the field in Spain and Italy Bayer CropScience S.A., Lyon, France
RA-2036/04	Schoening, R.; Helfrich, P.	27.01.2006	Determination of the residues of BYI 08330 in/on hop after spraying of BYI 08330 (100 OD) in the field in Northern France and Germany Bayer CropScience AG, Monheim, Germany
RA-2036/05	Ballesteros, C.; Gateaud, L.	24.04.2006	Determination of the residues of BYI 08330 in/on grape after low-volume spraying and spraying of BYI 08330 (048 SC) in the field in Southern-France and Italy Bayer CropScience S.A., Lyon, France
RA-2037/04	Freitag, T.; Wolters, A.	02.11.2005	Determination of the residues of BYI 08330 in/on round cabbage, red cabbage and savoy cabbage after spraying of BYI 08330 (100 OD) in the field in Germany, United Kingdom and Northern France Bayer CropScience AG, Monheim, Germany
RA-2038/04	Freitag, T.; Behn, U.	07.11.2005	Determination of the residuesof BYI 08330 in/on red cabbage and round cabbage after spraying of BYI 08330 (100 OD) in the field in Spain and Italy Bayer AG, Leverkusen, Germany

Code	Authors	Year	Title, Institutions, Report reference
RA-2039/04	Freitag, T.; Wolters, A.	10.11.2005	Determination of the residues of BYI 08330 in/on brussels sprouts after spraying of BYI 08330 (100 OD) in the field in Germany and Northern France Bayer CropScience AG, Monheim, Germany
RA-2039/05	Schoening, R.; Wolters, A.	21.02.2006	Determination of the residues of BYI 08330 in/on pepper after spraying of BYI 08330 (150 OD) in the field in Italy and Portugal Bayer CropScience AG, Monheim, Germany
RA-2040/04	Freitag, T.; Eberhardt, R.	11.01.2006	Determination of the residues of BYI 08330 in/on curly kale after spraying of BYI 08330 (100 OD) in the field in United Kingdom and Germany Bayer CropScience AG, Monheim, Germany
RA-2040/05	Ballesteros, C.; Gateaud, L.	14.04.2006	Determination of the residues of BYI 08330 in/on onion after spraying of BYI 08330 (150 OD) in the field in United Kingdom, Northern-France and Germany (Amended: 12.11.2007) Bayer CropScience S.A., Lyon, France
RA-2041/04	Freitag, T.; Eberhardt, R.	17.01.2006	Determination of the residues of BYI 08330 in/on chinese kale after spraying of BYI 08330 (100 OD) in the field in southern France and Spain Bayer CropScience AG, Monheim, Germany
RA-2041/05	Ballesteros, C.; Gateaud, L.	24.04.2006	Determination of the residues of BYI 08330 in/on onion after spraying of BYI 08330 (150 OD) in the field in Italy, Spain and Southern-France (Amended: 12.11.2007) Bayer CropScience S.A., Lyon, France
RA-2042/04	Schoening, R.; Wolters, A.	11.01.2006	Determination of the residues of BYI 08330 in/on climbing french bean after spraying of BYI 08330 (100 OD) in the greenhouse in Italy, Germany and Southern France Bayer CropScience AG, Monheim, Germany
RA-2042/05	Ballesteros, C.	16.03.2006	Determination of the residues of BYI 08330 in/on melon after spraying of BYI 08330 (150 OD) in the field in Greece, Spain, Portugal and Italy (Amended: 09.08.2006) Bayer CropScience S.A., Lyon, France
RA-2043/04	Freitag, T.; Eberhardt, R.	30.01.2006	Determination of the residues of BYI 08330 in/on kohlrabi after spraying of BYI 08330 (100 OD) in the field in Germany and the Netherlands (Amended: 31.01.2006) Bayer CropScience AG, Monheim, Germany
RA-2043/05	Ballesteros, C.	03.04.2006	Determination of the residues of BYI 08330 in/on cucumber after spraying of BYI 08330 (150 OD) in the field in Spain and Italy Bayer CropScience S.A., Lyon, France
RA-2046/05	Schoening, R.; Wolters, A.	21.02.2006	Determination of the residues of BYI 08330 in/on pepper after spraying of BYI 08330 (048 SC) in the field in Italy and Portugal Bayer CropScience AG, Monheim, Germany
RA-2049/04	Schoening, R.; Eberhardt, R.	12.01.2006	Determination of the residues of BYI 08330 in/on grape and table grape after spraying and low-volume spraying of BYI 08330 (100 OD) in the field in Italy, Greece, Spain and Southern France Bayer CropScience AG, Monheim, Germany
RA-2052/04	Schoening, R.; Wolters, A.	03.11.2005	Determination of the Residues of BYI 08330 in/on Lettuce after Spraying of BYI 08330 (100 OD) in the Field in the Netherlands and Germany Bayer CropScience AG, Monheim, Germany
RA-2053/04	Schoening, R.; Behn, U.	08.11.2005	Determination of the residues of BYI 08330 in/on lettuce after spraying of BYI 08330 (100 OD) in the field in Southern France, Spain, Portugal and Italy Bayer CropScience AG, Monheim, Germany
RA-2054/04	Schoening, R.; Wolters, A.	15.12.2005	Determination of the residues of BYI 08330 in/on lettuce after spraying of BYI 08330 (100 OD) in the greenhouse in Germany, Southern France, Italy and Spain Bayer CropScience AG, Monheim, Germany
RA-2060/05	Ballesteros, Gateaud, L.	09.06.2006	Determination of the residues of BYI 08330 in/on red cabbage, round cabbage and Savoy cabbage after spraying of BYI 08330 (150 OD) in the field in Northern-France and Germany Bayer CropScience S.A., Lyon, France
RA-2061/05	Ballesteros, Gateaud, L.	12.06.2006	Determination of the residues of BYI 08330 in/on red cabbage and round cabbage after spraying of BYI 08330 (150 OD) in the field in Italy and Spain Bayer CropScience S.A., Lyon, France
RA-2062/05	Freitag, T.; Wieland, K.	26.07.2006	Determination of the residues of BYI 08330 in/on broccoli and cauliflower after spraying of BYI 08330 (150 OD) in the field in Germany, Northern France and United Kingdom Bayer CropScience AG, Monheim, Germany

Code	Authors	Year	Title, Institutions, Report reference
RA-2063/05	Freitag, T.; Wieland, K.	27.07.2006	Determination of the residues of BYI 08330 in/on broccoli and cauliflower after spraying of BYI 08330 (150 OD) in the field in Italy and Spain Bayer CropScience AG, Monheim, Germany
RA-2064/05	Cavaille, C.	12.06.2006	Amendment no. 1 - Determination of the residues of BYI 08330 in/on curly kale after spraying of BYI 08330 (150 OD) in the field in Germany (Amended: 20.07.2006) Bayer CropScience S.A., Lyon, France
RA-2065/05	Freitag, T.; Eberhardt R.	31.05.2006	Determination of the residues of BYI 08330 in/on kohlrabi after spraying of BYI 08330 (150 OD) in the field in Germany Bayer CropScience AG, Monheim, Germany
RA-2066/05	Freitag, T.; Eberhardt, R.; Wolters, A.	21.06.2006	Determination of the residues of BYI 08330 in/on brussels sprouts after spraying of BYI 08330 (150 OD) in the field in Germany, Northern France and United Kingdom Bayer CropScience AG, Monheim, Germany
RA-2108/05	Schoening, R.	19.05.2006	Determination of the residues of BYI 08330 in/on hop after spraying of BYI 08330 (150 OD) in the field in Germany and Northern France Bayer CropScience AG, Monheim, Germany
RA-2113/04	Schoening, R.; Behn, U.	15.11.2005	Determination of the residues of BYI 08330 in/on lettuce after spraying of BYI 08330 (240 SC) in the greenhosue in Germany, Italy and Spain Bayer CropScience AG, Monheim, Germany
RA-2118/04	Schoening, R.; Wolters, A.	08.11.2005	Determination of the resideus of BYI 08330 in/on sweet cherry after spraying of BYI 08330 (100 OD) in the field in Italy and Southern France Bayer CropScience AG, Monheim, Germany
RA-2119/04	Schoening, R.; Behn, U.; Wolters, A.	12.01.2006	Determination of the residues of BYI 08330 in/on sweet cherry and sour cherry after spraying of BYI 08330 (100 OD) in the field in Northern France and Germany Bayer CropScience AG, Monheim, Germany
RA-2120/04	Freitag, T.; Helfrich, P.	14.12.2005	Determination of the residues of BYI 08330 in/on strawberry after spraying of BYI 08330 (100 OD) in the field in Germany and Northern France (Amended: 12.11.2007) Bayer CropScience AG, Monheim, Germany
RA-2121/04	Freitag, T.; Helfrich, P.	14.12.2005	Determination of the residues of BYI 08330 in/on strawberry after spraying of BYI 08330 (100 OD) in the field in Italy, Spain and Southern France (Amended: 12.11.2007) Bayer CropScience AG, Monheim, Germany
RA-2122/04	Freitag, T.; Eberhardt, R.	11.01.2006	Determination of the residues of BYI 08330 in/on strawberry after spraying of BYI 08330 (100 OD) in the greenhouse in Germany and France (Amended: 12.11.2007) Bayer CropScience AG, Monheim, Germany
RA-2124/04	Schoening, R.; Helfrich, P.	10.01.2006	Determination of the residues of BYI 08330 in/on plum after spraying of BYI 08330 (100 OD) in the field in Germany, Northern France and United Kingdom Bayer CropScience AG, Monheim, Germany
RA-2125/04	Schoening, R.; Wolters, A.	15.12.2005	Determination of the residues of BYI 08330 in/on plum after low-volume spraying and spraying of BYI 08330 (100 OD) in the field in Southern France and ItalyBayer CropScience AG, Monheim, German
RA-2126/04	Schoening, R.; Wolters, A.	02.11.2005	Determination of the residues of BYI 08330 in/on peach and apricot after spraying of BYI 08330 (100 OD) in the field in Northern France and Germany Bayer CropScience AG, Monheim, Germany
RA-2127/04	Schoening, R.; Helfrich, P.	11.01.2006	Determination of the residues of BYI 08330 in/on peach and apricot after spraying of BYI 08330 (100 OD) in the field in Spain and Italy Bayer CropScience AG, Monheim, Germany
RA-2128/04	Cavaille, C.	27.10.2005	Determination of the residues of BYI 08330 in/on melon after spraying of BYI 08330 (100 OD) in the greenhouse in Italy, Spain, Southern France, and Portugal Bayer CropScience S.A., Lyon, France
RA-2129/04	Cavaille, C.	27.10.2005	Determination of the residues of BYI 08330 in/on melon after spraying of BYI 08330 (100 OD) in the field in Italy, Spain and Greece Bayer CropScience S.A., Lyon, France
RA-2130/04	Freitag, T.; Helfrich, P.	10.01.2006	Determination of the residues of BYI 08330 in/on tomato after spraying of BYI 08330 (100 OD) in the field in Spain, Portugal, Greece and Italy Bayer CropScience AG, Monheim, Germany

Code	Authors	Year	Title, Institutions, Report reference
RA-2131/04	Cavaille, C.	21.10.2005	Determination of the residues of BYI 08330 in/on onion after spraying of BYI 08330 (100 OD) in the field in Germany and Northern France (Amended: 12.11.2007) Bayer CropScience S.A., Lyon, France
RA-2132/04	Cavaille, C.	02.11.2005	Determination of the residues of BYI 08330 in/on onion after spraying of BYI 08330 (100 OD) in the field in Southern France, Greece, Italy and Spain (Amended: 12.11.2007) Bayer CropScience S.A., Lyon, France
RA-2134/04	Schoening, R.; Helfrich, P.	09.01.2006	Determination of the residues of BYI 08330 in/on pepper after spraying of BYI 08330 (240 SC) in the greenhouse in Southern France, Germany, Italy and Portugal Bayer CropScience AG, Monheim, Germany
RA-2135/04	Schoening, R.; Helfrich, P.	15.12.2005	Determination of the residues of BYI 08330 in/on apple and pear after spraying and low-volume spraying of BYI 08330 (100 OD) in the field in Germany, United Kingdom and Northern France (Amended: 12.01.2006) Bayer CropScience AG, Monheim, Germany
RA-2136/04	Schoening, R.; Helfrich, P.	19.01.2006	Determination of the residues of BYI 08330 in/on apple and pear after spraying and low-volume spraying of BYI 08330 (240 SC) in the field in Italy, Spain and Southern France Bayer CropScience AG, Monheim, Germany
RA-2136/05	Ballesteros, C.; Gateaud, L.	23.06.2006	Determination of the residues of BYI 08330 in/on Chinese cabbage after spraying of BYI 08330 (150 OD) in the field in Spain and Italy Bayer CropScience S.A., Lyon, France
RA-2137/04	Schoening, R.; Helfrich, P.	18.01.2006	Determination of the residues of BYI 08330 in/on apple and pear after spraying and low-volume spraying of BYI 08330 (100 OD) in the field in Italy, Spain and Southern France Bayer CropScience AG, Monheim, Germany
RA-2138/04	Schoening, R.; Helfrich, P.	18.01.2006	Determination of the residues of BYI 08330 in/on apple and pear after spraying and low-volume spraying of BYI 08330 (240 SC) in the field in Germany, United Kingdom and Northern France
RA-2139/04	Freitag, T.; Helfrich, P.	17.01.2006	Determination of the residues of BYI 08330 in/on cherry tomato after spraying of BYI 08330 (100 OD) in the greenhouse in Italy and Spain Bayer CropScience AG, Monheim, Germany
RA-2140/04	Freitag, T.; Helfrich, P.	20.12.2005	Determination of the residues of BYI 08330 in/on tomato after spraying of BYI 08330 (100 OD) in the greenhouse in Greece, Spain and Italy Bayer CropScience AG, Monheim, Germany
RA-2170/05	Schoening, R.	31.05.2006	Determination of the residues of BYI 08330 in/on lettuce after spraying of BYI 08330 (150 OD) in the greenhouse in Greece, France, Netherlands, Portugal, Germany and Spain Bayer CropScience AG, Monheim, Germany
RA-3032/04	Schoening, R.; Helfrich, P.	21.12.2005	Determination of the residues of BYI 08330 in/on orange fruit and the processed fractions (pulp; peel; raw juice; juice; pomace, wet; washings; fruit, washed; marmalade; peel, washed; fruit, peeled; strain, rest; peel, dried; pomace Bayer CropScience AG, Monheim, Germany
RA-3034/05	Ballesteros, C.; Eberhardt, R.	16.05.2006	Determination of the residues of BYI 08330 in the processed fractions of grape, bunch of grapes for processing (raisin waste; washings; raisin) after spraying of BYI 08330 (150 OD) in the field in Spain and Italy (Amended: 21.08.2006) Bayer CropScience S.A., Lyon, France
RA-3036/04	Schoening, R.; Billian, P.; Helfrich, P.	27.01.2006	Determination of the residues of BYI 08330 in/on hop cone, green, for processing and the processed fractions (cone, kiln-dried; beer; hops draft; brewer's yeast; brewer's malt) after spraying of BYI 08330 (100 OD) in the field in..... Bayer CropScience AG, Monheim, Germany
RA-3042/04	Schoening, R.; Billian, P.; Wolters, A.	11.01.2006	Determination of the residues of BYI 08330 in/on climbing french bean (bean with pod) and the processed fractions (washings; cooking water; bean, cooked; bean with pod, washed) after spraying of BYI 08330 (100 OD) in the greenhouse..... Bayer CropScience AG, Monheim, Germany
RA-3048/04	Schoening, R.; Wolters, A.	26.01.2006	Determination of the residues of BYI 08330 in/on grape (bunch of grapes) and the processed fractions (pomace, grape; must; wine) after spraying of BYI 08330 (100 OD) in the field in Germany Bayer CropScience AG, Monheim, Germany

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RA-3049/04	Schoening, R.; Eberhardt, R.	12.01.2006	Determination of the residues of BYI 08330 in/on grape bunch of grapes and the processed fractions (pomace, grape; must; wine) after spraying of BYI 08330 (100 OD) in the field in Italy (Amended: 06.03.2006) Bayer CropScience AG, Monheim, Germany
RA-3119/04	Schoening, R.; Billian, P.; Behn, U.; Wolters, A.	12.01.2006	Determination of the residues of BYI 08330 in/on sweet cherry fruit and the processed fractions (fruit, washed; washings; fruit, de-pitted; preserve) and sour cherry fruit and the processed fractions (fruit, washed; washings; fruit,..... Bayer CropScience AG, Monheim, Germany
RA-3135/04	Schoening, R.; Helfrich, P.	15.12.2005	Determination of the residues of BYI 08330 in/on apple fruit and the processed fractions (fruit, washed; washings; strain rest; raw sauce; sauce; raw juice; juice; pomace, dried) after spraying of BYI 08330 (100 OD) in the field in..... (Amended: 12.01.2006) Bayer CropScience AG, Monheim, Germany
RA-3137/04	Schoening, R.; Helfrich, P.	18.01.2006	Determination of the residues of BYI 08330 in/on apple fruit and the processed fractions (fruit, washed; washings; strain rest; raw sauce; sauce; raw juice; juice; etc.) after spraying of BYI 08330 (100 OD) in the field in Italy and Spain Bayer CropScience AG, Monheim, Germany
RA-3140/04	Freitag, T.; Helfrich, P.	20.12.2005	Determination of the residues of BYI 08330 in/on tomato fruit and the processed fractions (washings; fruit, peeled; raw juice; juice; strain rest; preserve; puree; fruit, washed; raw puree; peel, washed; peeling water) after spraying..... Bayer CropScience AG, Monheim, Germany
RAFN042	Krolski, M. E.	08.08.2006	BYI08330 100 OD - Reduction of the residue in grapefruit from commercial washing, waxing, and packing procedures. Bayer CropScience LP, Stilwell, KS, USA
RAFNP007	Pruitt, W. E.	05.09.2006	FDA PAM Multiresidue method (MRM) testing for BYI08330 (Spirotetramat) and eight metabolites. EN-CAS Analytical Laboratories, Winston-Salem, NC, USA
RAFNP008	Brookey, F. M.	28.08.2006	Independent laboratory validation of the residue analytical method: "Analytical Method 00857 for the determination of residues of BYI08330 (parent compound and total residue of BYI08330), BYI08330-enol, BYI08330-ketohydroxy, ... Morse Laboratories Inc., Sacramento, CA, USA
RAFNP009	Perez, R.	29.08.2006	Indepedent method validation of Bayer method no.00966 (report no.MR-150/05) BYI08330: Analytical method 00966 for the determination of residues of BYI08330, BYI08330-enol, and BYI08330-enol-GA in/on matrices of animal origin by HPLC-MS/MS ADPEN Laboratories Inc., Jacksonville, FL, USA
RAFNP017	Coopersmith, H.	28.08.2006	Analytical method for the determination of residues of BYI08330, BYI08330-enol, and BYI08330-enol-GA in/on matrices of animal origin by HPLC-MS/MS (modification of analytical method No. 00966) Bayer CropScience LP, Stilwell, KS, USA
RAFNX012	Netzband, D. J.	29.08.2006	In house laboratory validation of an analytical method for the determination of BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy and BYI08330-MA-amide in soil and sediment by LC/MS/MS. Bayer CropScience LP, Stilwell, KS, USA
RAFNX014	Mackie, S. J. W.	24.08.2006	BYI08330 150 OD - Magnitude of the residue lactating cows. Bayer CropScience LP, Stilwell, KS, USA
RAFNX018	Netzband, D. J.	29.08.2006	Stability of BYI08330, BYI08330-enol, BYI08330-ketohydroxy and BYI08330-MA-amide in soil during frozen storage, USA, 2005 (reported through a maximum of 3334 days storage). Bayer CropScience LP, Stilwell, KS, USA
RAFNX039	Duah, F. K.	01.09.2006	Request for the waiver of the requirement for radiovalidation of analytical method for the determination of BYI 08330 in animal matrices. Bayer CropScience LP, Stilwell, KS, USA
RAFNY001	Mackie, S. J. W.; Harbin, A. M.	31.08.2006	BYI08330 150 OD and BYI08330 240 SC - Magnitude of the residue on stone fruit (crop group 12 - including residue reduction samples). Bayer CropScience LP, Stilwell, KS, USA
RAFNY001	Mackie, S. J. W.; Harbin, A. M.	31.08.2006	BYI08330 150 OD and BYI08330 240 SC - Magnitude of the residue on stone fruit (crop group 12 - including residue reduction samples). Bayer CropScience LP, Stilwell, KS, USA

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RAFNY001	Mackie, S. J. W.; Harbin, A. M.	31.08.2006	BYI08330 150 OD and BYI08330 240 SC - Magnitude of the residue on stone fruit (crop group 12 - including residue reduction samples). Bayer CropScience LP, Stilwell, KS, USA
RAFNY002	Fischer, D. R.	31.08.2006	BYI08330 150 OD and BYI08330 240 SC - Magnitude of the residue in/on leafy vegetables. Bayer CropScience LP, Stilwell, KS, USA
RAFNY002	Fischer, D. R.	31.08.2006	BYI08330 150 OD and BYI08330 240 SC - Magnitude of the residue in/on leafy vegetables. Bayer CropScience LP, Stilwell, KS, USA
RAFNY002	Fischer, D. R.	31.08.2006	BYI08330 150 OD and BYI08330 240 SC - Magnitude of the residue in/on leafy vegetables. Bayer CropScience LP, Stilwell, KS, USA
RAFNY003	Freeseman, P. L.	31.08.2006	BYI08330 150 OD and BYI08330 240 SC - Magnitude of the residue in/on brassica leafy vegetables (crop subgroup 5A, head and stern brassica, and 5B, leafy brassica greens) including residue reduction information. Bayer CropScience LP, Stilwell, KS, USA
RAFNY003	Freeseman, P. L.	31.08.2006	BYI08330 150 OD and BYI08330 240 SC - Magnitude of the residue in/on brassica leafy vegetables (crop subgroup 5A, head and stern brassica, and 5B, leafy brassica greens) including residue reduction information. Bayer CropScience LP, Stilwell, KS, USA
RAFNY003	Freeseman, P. L.	31.08.2006	BYI08330 150 OD and BYI08330 240 SC - Magnitude of the residue in/on brassica leafy vegetables (crop subgroup 5A, head and stern brassica, and 5B, leafy brassica greens) including residue reduction information. Bayer CropScience LP, Stilwell, KS, USA
RAFNY006	Mackie, S. J. W.	31.08.2006	BYI08330 150 OD and BYI08330 240 SC - Magnitude of the residue on fruiting vegetables (crop group 8 - tomato, bell pepper, non-bell pepper) (including residue reduction information). Bayer CropScience LP, Stilwell, KS, USA
RAFNY006	Mackie, S. J. W.	31.08.2006	BYI08330 150 OD and BYI08330 240 SC - Magnitude of the residue on fruiting vegetables (crop group 8 - tomato, bell pepper, non-bell pepper) (including residue reduction information). Bayer CropScience LP, Stilwell, KS, USA
RAFNY007	Duah, F. K.	31.08.2006	BYI08330 150 OD and BYI08330 240 SC - Magnitude of the residue in/on curcubit vegetables (crop group 9, including residue reduction information). Bayer CropScience LP, Stilwell, KS, USA
RAFNY007	Duah, F. K.	31.08.2006	BYI08330 150 OD and BYI08330 240 SC - Magnitude of the residue in/on curcubit vegetables (crop group 9, including residue reduction information). Bayer CropScience LP, Stilwell, KS, USA
RAFNY008	Beedle, E. C.	31.08.2006	BYI08330 150 OD and BYI08330 240 SC - Magnitude of the residue on citrus (crop group 10, citrus fruits; includes residue reduction information). Bayer CropScience LP, Stilwell, KS, USA
RAFNY009	Krolski, M. E.	01.09.2006	BYI08330 150 OD and BYI08330 240 SC - Magnitude of the residue on pome fruit (apple and pear). Bayer CropScience LP, Stilwell, KS, USA
RAFNY010	Rupprecht, J. K.	01.09.2006	BYI08330 150 OD and BYI08330 240 SC - Magnitude of the residue on tree nuts (crop group 14) (Amended: 06.09.2006). Bayer CropScience LP, Stilwell, KS, USA
RAFNY011	Mosier, D. G.	06.09.2006	BYI08330 150 OD and BYI08330 240 SC - Magnitude of the residue in/on grapes. Englar Food Laboratories Inc., Moses Lake, WA, USA
RAFNY013	Mackie, S. J. W.	24.08.2006	BYI08330 100 OD - Magnitude of the residue on tomato processed commodities. Bayer CropScience LP, Stilwell, KS, USA
RAFNY014	Mackie, S. J. W.	24.08.2006	BYI08330 150 OD - Magnitude of the residue on apple processed commodities. Bayer CropScience LP, Stilwell, KS, USA
RAFNY015	Mosier, D. G.	06.09.2006	BYI08330 150 OD - Magnitude of the residue in/on grapes processed commodities. Englar Food Laboratories Inc., Moses Lake, WA, USA

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RAFNY016	Lenz, C. A.	29.08.2006	Amended report - BYI08330 150 OD - Magnitude of the residue on citrus processed commodities. Bayer CropScience LP, Stilwell, KS, USA
RAFNY018	Mackie, S. J. W.	03.02.2006	BYI08330 150 OD - Magnitude of the residue on plum processed commodities (Amended: 31.07.2006). Bayer CropScience LP, Stilwell, KS, USA
RAFNY019	Lemke, V. J.	01.09.2006	BYI08330 150 OD and BYI08330 240 SC - Magnitude of the residue in field rotational crops (limited). Bayer CropScience LP, Stilwell, KS, USA
RAFNY020	Lenz, C. A.	24.08.2006	BYI08330 150 OD - Magnitude of the residue on potato processed commodities. Bayer CropScience LP, Stilwell, KS, USA
RAFNY022	Harbin, A. M.	31.08.2006	BYI08330 150 OD and BYI08330 240 SC - Magnitude of the residue on hops. Bayer CropScience LP, Stilwell, KS, USA
RAFNY028	Moiser, D. G.	25.08.2006	BYI08330 150 OD and BYI08330 240 SC - Magnitude of the residue on potato. Bayer CropScience LP, Stilwell, KS, USA