

US EPA ARCHIVE DOCUMENT



S-Metolachlor/PC Code: 108800/Syngenta Crop Protection, Inc./Company Code: 100
 DACO 7.4.1/OPPTS 860.1500/OECD IIA 6.3.1, 6.3.2, 6.3.3 and IIIA 8.3.1, 8.3.2, 8.3.3
 Crop Field Trial - Fruiting Vegetables Crop Group

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This DER was originally prepared under contract by Dynamac Corporation (1910 Sedwick Rd., Building 100, Suite B; Durham, NC 27713; submitted 8/9/2004). The DER has been reviewed by the HED and revised to reflect current OPP policies.

STUDY REPORT:

46046501 Oakes, T. (2003) S-Metolachlor- Magnitude of the Residues In or On Representative Commodities of Crop Group 8: Fruiting Vegetables. Lab Project Number: 667-02. Unpublished study prepared by Syngenta Crop Protection, Inc. 398 p.

EXECUTIVE SUMMARY:

In a total of 50 tests conducted at 21 field locations in 2002, S-Metolachlor was applied as single application at 1.62-1.79 lb ai/A to bell peppers (15 tests), hot peppers (8 tests), and tomatoes (27 tests). Three different treatment regimes were used with 2 or 3 different types of applications being used in side-by-side tests at each trial site on each crop. The different applications included either a preplant incorporated (PPI) application prior to transplanting (Type I), or a broadcast foliar application at the 8- to 10-leaf stage (Type II) or prior to fruit set (Type III). The number and geographic representation of the pepper and tomato field trials are in accordance with those specified in OPPTS Series 860 Guidelines, Section 1500.

Mature tomato, bell and hot pepper samples were collected 73-130 days after treatment (DAT) and 89-149 DAT following a PPI application, 39-89 DAT and 54-103 DAT following a Type II application, and 40-64 DAT and 69-80 DAT following a Type III application. To examine residue decline following a Type III application, additional bell peppers were collected from two locations at 39-40, 46-53, and 60-68 DAT, and additional tomatoes were collected from three locations at 36-54, 43-60, 50-61, 57-68, and 64-75 DAT. Samples were stored frozen from collection to analysis for up to 10 months, an interval supported by available stability data.

The LC/MS/MS method (Syngenta #1848-01, modified) used to determine the combined S-metolachlor residues (SYN506357 and SYN508500) in/on peppers and tomatoes is adequate for data collection. The analytes SYN508500 and SYN506357 are the S-enantiomers of the currently regulated metabolites CGA-49751 and CGA-37913, which are mixtures of both R- and S-isomers. For this method, samples are initially acid refluxed and residues are partitioned into dichloromethane (DCM). Residues of the two analytes are cleaned up using an alumina column and analyzed using HPLC with a reverse phase chiral column and tandem mass spectrometer



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detection (LC/MS/MS). The LOQ is 0.05 ppm for SYN508500 and 0.03 ppm for SYN506357, each expressed in parent equivalents. The method limit of detection was not reported.

The combined residues of SYN506357 and SYN508500 were <0.08 ppm (<LOQ) in/on all bell pepper (n=60), hot pepper (n=32), and tomato (n=106) samples from all tests. Residue decline could not be determined because residues were <0.08 ppm (<LOQ) in/on all samples from all sampling intervals.

STUDY/WAIVER ACCEPTABILITY/DEFICIENCIES/CLARIFICATIONS:

Under the conditions and parameters used in the study, the fruiting vegetable field trial residue data are classified as scientifically acceptable. The acceptability of this study for regulatory purposes is addressed in the forthcoming U.S. EPA Residue Chemistry Summary Document (DP Barcode D304120).

COMPLIANCE:

Signed and dated GLP, quality assurance, and data confidentiality statements were provided. No deviations from regulatory requirements were noted that would impact the study results or their interpretation.

A. BACKGROUND INFORMATION

S-Metolachlor is a selective chloroacetanilide herbicide that is applied to a wide variety of crops as a preplant, preplant-incorporated (PPI), preemergence, or postemergence-directed application, primarily for the control of grass weeds. S-Metolachlor products currently registered to Syngenta include emulsifiable concentrate (EC), granular (G), flowable concentrate (FIC) and ready-to-use (RTU) formulations. Tolerances for residues of metolachlor in or on plant commodities are currently expressed in terms of the combined residues (free and bound) of the herbicide metolachlor and its metabolites, determined as the derivatives CGA-37913 and CGA-49751, each expressed as the parent compound. Separate tolerances for residues of S-metolachlor in/on plant and animal commodities were recently established and reassessed in conjunction with the Metolachlor and S-Metolachlor Revised TRED (D292881, S. Kinard, 8/15/03). Tolerances for S-metolachlor are also expressed as the combined residues of CGA-37913 and CGA-49751 (each expressed in parent equivalents), and range from 0.1 ppm in/on a variety of plant commodities to 20 ppm in/on peanut hay [40 CFR §180.368(a)(2)]. IR-4 has submitted a petition proposing the use for S-metolachlor (Dual Magnum[®], 7.6 lb/gal EC) on fruiting vegetables along with a crop group tolerance. Separate tolerances for S-metolachlor currently exist at 0.1 ppm for tomato and bell pepper under §180.368(a)(2), and separate tolerances exist at 0.1 ppm on chilli pepper and cubanelle pepper and at 0.5 ppm on tabasco pepper under §180.368(c)(2).



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TABLE A.1. Test Compound Nomenclature

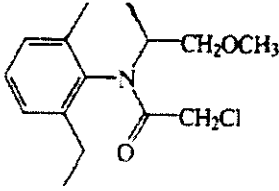
TABLE A.1. Test Compound Nomenclature	
Compound S-metolachlor	Chemical Structure 
Common name	S-Metolachlor
Company experimental name	CGA-77102
IUPAC name	2-Chloro-N-(2-ethyl-6-methylphenyl)-N-{S(2-methoxy-1-methylethyl)}acetamide
CAS name	Chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)acetamide (E)-N{(6-chloro-3-pyridyl)methyl}-N'-cyano-N-methylacetamide
CAS #	87392-12-9
End-use product/(EP)	Emulsifiable concentrate (EC) containing 7.64 lb ai/gallon. According to the product label for Dual II MAGNUM [®] (EPA Registration No. 100-818), the product contains 82.4% a.i.

TABLE A.2. Physicochemical Properties of the Technical Grade Test Compound

Parameter	Value	Reference
Melting point/range	N/A	Registration Division: Physical and Chemical Characteristics (D225258)
pH	7.8 at 25°C (1% aqueous dispersion)	
Density	1.117 g/cm ³ at 20°C	
Water solubility (25°C)	0.48 g/L	
Solvent solubility (mg/L at 25°C)	Miscible with methanol, acetone, toluene, n-octanol, n-hexane, ethyl acetate, dichloromethane	
Vapor pressure at 25°C	2.8 x 10 ⁻⁵ mm Hg	
Dissociation constant (pK _a)	No dissociation constant in pH range 2-12	
Octanol/water partition coefficient Log(K _{ow})	3.0 at 25°C	
UV/visible absorption spectrum	Not Provided	



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B. EXPERIMENTAL DESIGN

B.1. Study Site Information

TABLE B.1.1 Trial Site Conditions .						
Trial Identification (City, State, Year)	Soil characteristics				Meteorological data	
	Type	%OM	pH	CEC	Monthly mean rainfall range (inches) ¹	Monthly mean temperature range (°C)
Bell Pepper						
Rose Hill, NC, 2002	Loamy Sand	NR = Not reported			2.19-8.09	18.7-27.1
Raymondville, TX, 2002	Sandy Loam	NR			0.13-1.45	19.9-28.3
Arroyo Grande, CA, 2002	Sandy Clay Loam	NR			0.00-4.42	16.1-20.0
Vero Beach, FL, 2002	Sand	NR			1.21-5.50	17.2-18.1
Visalia, CA, 2002	Loam	NR			0.00-0.23	17.0-27.9
Conklin, MI, 2002	Sandy Loam	NR			1.57-4.32	10.7-23.6
Hot Pepper						
Rincon, NM, 2002	Loam	NR			0.02-1.83	18.8-27.3
Ojai, CA, 2002	Sandy Loam	NR			0.00-0.13	17.1-23.6
Raymondville, TX, 2002	Sandy Loam	NR			0.13-1.45	19.9-28.3
Tomato						
Merced, CA, 2002	Clay Loam	NR			0.00-1.36	6.9-26.7
Woodland, CA, 2002	Clay Loam	NR			0.00-0.65	15.5-24.6
Hickman, CA, 2002	Sandy Loam	NR			0.00-0.08	19.8-26.2
New Holland, OH, 2002	Loam	NR			1.35-5.18	12.0-25.2
Live Oak, CA, 2002	Clay Loam	NR			0.00-1.23	24.3-27.0
Elko, SC, 2002	Sandy Loam	NR			2.08-3.78	20.4-28.7
Brawley, CA, 2002	Clay	NR			0.00	21.4-33.0
Germansville, PA, 2002	Loam	NR			1.14-4.65	14.1-24.3
Vero Beach, FL, 2002	Sand	NR			0.35-16.27	20.7-23.8
Visalia, CA, 2002	Sandy Loam	NR			0.00-0.22	20.2-27.9
Glenn, CA, 2002	Silty Clay Loam	NR			0.00-1.03	19.2-25.4
Bradenton, FL, 2002	Sand	NR			0.28-1.31	21.1-26.3

¹ Monthly mean rainfall from planting to last sampling.

Monthly mean rainfall and temperature data for the study period were provided from each field test site. Average historical values for the residue study period were not reported, however, the average departure from normal was reported and deviations were not significant. Rainfall was supplemented with irrigation as needed.



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TABLE B.1.2. Study Use Pattern on Fruiting Vegetables						
Location (City, State), Year	Application					
	EP ¹	Method ² ; Timing ³	Volume (gal/A)	Single Rate (lb a.i./A) ⁴	No. of Appl.	Tank Mix Adjuvants
Bell Pepper						
Rose Hill, NC, 2002	7.6 lb/gal EC	PPI	2	1.72	1	None
		Broadcast foliar; 8 leaf stage	2	1.79	1	None
		Broadcast foliar; 10-12 leaf stage	2	1.73	1	None
Raymondville, TX, 2002	7.6 lb/gal EC	Broadcast foliar; 8 leaf stage	21	1.73	1	None
		Broadcast foliar; prior to fruit set	20	1.69	1	None
Arroyo Grande, CA, 2002	7.6 lb/gal EC	PPI	22	1.70	1	None
		Broadcast foliar; prior to fruit set	20	1.70	1	None
Vero Beach, FL, 2002	7.6 lb/gal EC	PPI	18	1.67	1	None
		Broadcast foliar; 8 leaf stage	18	1.68	1	None
		Broadcast foliar; prior to fruit set	18	1.68	1	None
Visalia, CA, 2002	7.6 lb/gal EC	Broadcast foliar; 8 leaf stage	21	1.69	1	None
		Broadcast foliar; prior to fruit set	20	1.66	1	None
Conklin, MI, 2002	7.6 lb/gal EC	PPI	23	1.71	1	None
		Broadcast foliar; 8 leaf stage	22	1.65	1	None
		Broadcast foliar; prior to fruit set	20	1.66	1	None
Hot Pepper						
Rincon, NM, 2002	7.6 lb/gal EC	PPI	18	1.70	1	None
		Broadcast foliar; 8 leaf stage	20	1.69	1	None
		Broadcast foliar; prior to fruit set	20	1.69	1	None
Ojai, CA, 2002	7.6 lb/gal EC	PPI	26	1.72	1	None
		Broadcast foliar; 8 leaf stage	25	1.69	1	None
		Broadcast foliar; prior to fruit set	24	1.63	1	None
Raymondville, TX, 2002	7.6 lb/gal EC	Broadcast foliar; 8 leaf stage.	21	1.75	1	None
		Broadcast foliar; prior to fruit set	20	1.68	1	None

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TABLE B.1.2. Study Use Pattern on Fruiting Vegetables						
Location (City, State), Year	Application					
	EP ¹	Method ² ; Timing ³	Volume (gal/A)	Single Rate (lb a.i./A) ⁴	No. of Appl.	Tank Mix Adjuvants
Tomato						
Merced, CA, 2002	7.6 lb/gal EC	Broadcast foliar; 8 leaf stage	20	1.69	1	None
		Broadcast foliar; prior to fruit set	20	1.67	1	None
Woodland, CA, 2002	7.6 lb/gal EC	Broadcast foliar; 8 leaf stage	20	1.71	1	None
		Broadcast foliar; prior to fruit set	20	1.70	1	None
Hickman, CA, 2002	7.6 lb/gal EC	PPI	20	1.64	1	None
		Broadcast foliar; 8 leaf stage.	21	1.73	1	None
New Holland, OH, 2002	7.6 lb/gal EC	PPI	2	1.70	1	None
		Broadcast foliar; 8 leaf stage	2	1.71	1	None
		Broadcast foliar; prior to fruit set	2	1.68	1	None
Live Oak, CA, 2002	7.6 lb/gal EC	PPI	15	1.65	1	None
		Broadcast foliar; prior to fruit set	15	1.69	1	None
Elko, SC, 2002	7.6 lb/gal EC	PPI	2	1.68	1	None
		Broadcast foliar; 8 leaf stage	2	1.68	1	None
		Broadcast foliar; prior to fruit set	2	1.70	1	None
Brawley, CA, 2002	7.6 lb/gal EC	Broadcast foliar; 8 leaf stage	25	1.66	1	None
		Broadcast foliar; prior to fruit set	26	1.73	1	None
Germansville, PA, 2002	7.6 lb/gal EC	PPI	29	1.75	1	None
		Broadcast foliar; 8 leaf stage	29	1.75	1	None
		Broadcast foliar; prior to fruit set	20	1.71	1	None
Vero Beach, FL, 2002	7.6 lb/gal EC	PPI	23	1.62	1	None
		Broadcast foliar; prior to fruit set	23	1.62	1	None
Visalia, CA, 2002	7.6 lb/gal EC	PPI	20	1.69	1	None
		Broadcast foliar; prior to fruit set	19	1.68	1	None
Glenn, CA, 2002	7.6 lb/gal EC	PPI	20	1.68	1	None
		Broadcast foliar; prior to fruit set	20	1.68	1	None
Bradenton, FL, 2002	7.6 lb/gal EC	Broadcast foliar; 8 leaf stage	29	1.70	1	None
		Broadcast foliar; prior to fruit set	30	1.74	1	None

¹ EP = End-use Product.

² All applications were made using ground equipment.

³ PPI= preplant incorporated; application was made prior to transplant.

⁴ The single target rate was 1.60 lb a.i./A (1x maximum proposed rate).



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NAFTA Growing Region ¹	Bell Pepper			Hot Pepper (Non-Bell)			Tomato		
	Submitted ²	Requested ³		Submitted ²	Requested ³		Submitted ²	Requested ³	
		Canada	US		Canada	US		Canada	US
1	--	NA	--	--	NA	Region Not Specified	3	NA	1
2	3	NA	1	--	NA		3	NA	1
3	3	NA	1	--	NA		4	NA	2
4	--	NA	--	--	NA		--	NA	--
5	3	NA	1	--	NA		3	NA	1
6	2	NA	1	2	NA		--	NA	--
7	--	NA	--	--	NA		--	NA	--
8	--	NA	--	3	NA		--	NA	--
9	--	NA	--	--	NA		--	NA	--
10	4	NA	2	3	NA		14	NA	7
11	--	NA	--	--	NA		--	NA	--
12	--	NA	--	--	NA		--	NA	--
Total	15	NA	6	8	NA	3	27	NA	12

¹ Regions 13-21 and 1A, 5A, 5B, and 7A were not included as the proposed use is for the US only.

² At each field trial location, side-by-side tests were conducted using preplant incorporated and/or broadcast foliar applications.

³ The number of requested field trials is reduced by 25% because the crops are representative commodities used to obtain a crop group tolerance.

NA = not applicable.

B.2. Sample Handling and Preparation

Three different treatment regimes were used for the fruiting vegetable field trials: a single PPI application made prior to transplanting (Type I), a single broadcast foliar application made at the 8- to 10-leaf stage (Type II), or a single broadcast foliar spray made prior to fruit set (Type III). Mature tomato, bell and hot pepper fruit samples were collected 73-130 DAT and 89-149 DAT from Type I tests, 39-89 DAT and 54-103 DAT from Type II tests, and 40-64 DAT and 69-80 DAT from Type III tests. To examine residue decline, additional bell pepper samples were collected from two locations at 39-40, 46-53, and 60-68 DAT (Type III), and additional tomato samples were collected from three locations at 36-54, 43-60, 50-61, 57-68, and 64-75 DAT (Type III). A single control and duplicate treated samples were collected from each test, shipped frozen to the analytical laboratory, ADPEN Laboratories, Jacksonville, FL, and stored frozen (ca. -10°C) prior to analysis. Samples were stored frozen from collection to analysis for up to 10 months.



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B.3. Analytical Methodology

The analytical method, "Analytical Method for the Enantioselective Determination of Residues of S-Metolachlor as Metabolites SYN506357 and SYN508500 in Agricultural Commodities By Chiral High Performance Liquid Chromatography with Mass Spectrometric Detection" (Syngenta #1848-01), was used to determine the combined residues of the S-Metolachlor hydrolysis products, SYN506357 and SYN508500 (each expressed in parent equivalents), in/on peppers and tomatoes. Method 1848-01 is similar to the adequate methods ENC-5/99, AG-338, and AG-612, except that chiral chromatography and LC/MS/MS were used. In addition, rather than determining the mixed R/S-enantiomer hydrolytic products CGA-37913 and CGA-49751, this method determines their equivalent S-enantiomers SYN506357 and SYN508500. A brief description of the method follows.

Samples are initially refluxed in 6 N HCl for 16 hours. An aqueous aliquot is cooled, filtered, and made basic. Residues are then partitioned into DCM and cleaned up using an alumina column. The initial DCM column eluant is concentrated and residues of SYN 506357 are diluted with a water/acetonitrile for LC/MS/MS analysis. For analysis of SYN 508500 residues, the alumina column is further eluted with water/acetone, and residues of SYN 506357 are concentrated and redissolved in water/propanol/methanol for analysis. The residues of both hydrolytic products are determined using a reverse phase chiral HPLC column with tandem mass spectrometer detection (LC/MS/MS). The LOQ is 0.05 ppm for SYN508500 and 0.03 ppm for SYN506357, each expressed in parent equivalents. The method limit of detection was not reported.

C. RESULTS AND DISCUSSION

The number and geographic representation of the pepper and tomato field trials are in accordance with those specified in OPPTS Series 860 Guidelines, Section 1500.

In a total of 50 tests conducted at 21 field locations in 2002, S-Metolachlor (EC) was applied as single application at 1.62-1.79 lb ai/A to bell peppers (15 tests), hot peppers (8 tests), and tomatoes (27 tests). Each field trial location included two or three types of tests using different treatment regimes, with S-metolachlor being applied as either a PPI application prior to transplanting (Type I) or as a broadcast foliar application at the 8- to 10-leaf stage (Type II) or prior to fruit set (Type III). Mature tomato, bell and hot pepper fruit samples were collected 73-100 DAT and 89-149 DAT from Type I tests, 39-89 DAT and 54-103 DAT from Type II tests, and 40-64 DAT and 69-80 DAT from Type III tests tests. To examine residues decline following a Type III application, additional bell pepper samples were collected from two locations at 39-40, 45-53, and 60-68 DAT, and additional tomato samples were collected from three locations at 36-37, 43-60, 50-61, 57-68, and 64-75 DAT.



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Pepper and tomato samples were stored frozen from collection to analysis for up to 10 months (Table C.2). No new storage stability data were submitted with this study. However, adequate storage stability data are available indicating that CGA-37913 and CGA-49751 are stable during frozen storage for up to 2 years in various crops (CBRS No. 8317, B. Cropp-Kohlligian, 4/16/92). As the analytes SYN508500 and SYN506357 are the S-enantiomers of CGA-49751 and CGA-37913, these data are adequate to support the current tomato and peppers field trials. The reviewers noted that following extraction, sample extracts were held in storage for 0-90 days prior to sample analysis. The Agency typically required storage stability data for sample extracts held over 30 days. However, storage stability data for the sample extracts are not required for this study because the sample extracts from the fortified samples used for concurrent method recovery data had adequate recoveries of each analyte (see Table C.1) and these sample extracts were stored under the same conditions and intervals as the treated sample extracts.

The LC/MS/MS method (Syngenta #1848-01, modified) used to determine combined S-metolachlor residues (SYN506357 and SYN508500) in/on peppers and tomatoes is adequate for data collection. Average concurrent method recoveries for SYN508500 were 77-83%, with standard deviations of 12-15%, from pepper and tomato samples fortified with SYN508500 at 0.05 or 1.5 ppm (Table C.1). Average concurrent method recoveries for SYN506357 were 95-103%, with standard deviations of 11-19%, from pepper and tomato samples fortified with SYN506357 at 0.03 or 0.90 ppm. Apparent residues of combined S-Metolachlor (SYN506357 and SYN508500) were <LOQ in/on all control samples. The LOQ is 0.05 ppm for SYN508500 and 0.03 ppm for SYN506357, each expressed in parent equivalents. The method limit of detection was not reported. Adequate sample calculations and chromatograms were provided.

Combined S-Metolachlor (SYN506357 and SYN508500) residues were <0.08 ppm (<LOQ) in/on all pepper and tomato samples from all tests (Tables C.3.1 and C.3.2). Average combined S-Metolachlor (SYN506357 and SYN508500) residues in/on peppers and tomato were calculated to be 0.04 ppm ($\frac{1}{2}$ the LOQ) (Table C.4). As residues were <0.08 ppm (<LOQ) in/on all samples from all sampling intervals, residue decline could not be determined.

Common cultural practices were used to maintain plants, and the weather conditions and the maintenance chemicals and fertilizer used in the study did not have a notable impact on the residue data.



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Analyte	Matrix	Spiking Level (mg/kg)	Sample size	Recoveries (%)	Mean Recovery \pm SD
SYN508500	Bell Pepper	0.050	20	63-107 (4) ¹	83 \pm 14
	Hot Pepper	0.050	6	62-96 (1) ¹	77 \pm 12
	Tomato	0.050	37	62-114 (14) ¹	78 \pm 15
		1.5	1	74	
SYN506357	Bell Pepper	0.030	20	73-129 (5) ¹	103 \pm 19
	Hot Pepper	0.030	6	78-110	96 \pm 11
	Tomato	0.030	37	68-130 (5) ¹	95 \pm 18
		0.90	1	127	

¹ The number of recoveries outside the 70-120% range is in parentheses.

Matrix	Storage Temp. (°C)	Actual Storage Duration (months) ¹	Limit of Demonstrated Storage Stability (months) ²
Bell Pepper	ca. -10	4.4-8.6	24
Hot Pepper		4.7-8.8	
Tomato		5.4-9.5	

¹ Extracts were stored frozen for 1-90 days prior to analysis, but storage stability data for residues in sample extracts are not required because concurrently analyzed fortified samples had adequate recoveries, indicating the residues were stable in frozen extracts.

² Storage stability data are available indicating that CGA-37913 and CGA-49751 (SYN508500 and SYN506357 are the s-configured enantiomers of CGA-49751 and CGA-37913, respectively) are stable under frozen conditions for up to 2 years (CBRS No. 8317, B. Cropp-Kohlligian, 4/16/92).



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TABLE C.3.1. Residue Data from Pepper Field Trials with S-Metolachlor (7.6 lb/gal EC).									
Trial ID (City, State, Year)	EPA Region	Variety	Matrix	Application Type ¹	Rate (lb ai/A)	PHI (days) ²	Residues (ppm) ³		
							SYN508500	SYN506357	Combined
Bell Peppers									
Rose Hill, NC, 2002	2	Jupiter	Fruit	I	1.72	82	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						97	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				II	1.79	63	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						78	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				III	1.73	55	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						70	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
Raymondville, TX, 2002	6	Capistrano	Fruit	II	1.73	73	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						88	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				III	1.69	60	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						75	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
Arroyo Grande, CA, 2002	10	Jupiter	Fruit	I	1.70	110	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						125	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				III	1.70	59	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						74	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
Vero Beach, FL, 2002	3	Camelot X32	Fruit	I	1.67	84	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						99	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				II	1.68	67	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						82	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				III	1.68	39	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						46	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						53	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						60	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						68	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						75	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
Visalia, CA, 2002	10	Jupiter	Fruit	II	1.69	89	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						103	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				III	1.66	40	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						46	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						53	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						60	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						67	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						74	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
Conklin, MI, 2002	5	X32 Camelot	Fruit	I	1.71	86	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						103	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				II	1.65	65	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						82	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				III	1.66	58	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						75	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08



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 DACO 7.4.1/OPPTS 860.1500/OECD IIA 6.3.1, 6.3.2, 6.3.3 and IIIA 8.3.1, 8.3.2, 8.3.3
 Crop Field Trial - Fruiting Vegetables Crop Group

TABLE C.3.1. Residue Data from Pepper Field Trials with S-Metolachlor (7.6 lb/gal EC).									
Trial ID (City, State, Year)	EPA Region	Variety	Matrix	Application Type ¹	Rate (lb ai/A)	PHI (days) ²	Residues (ppm) ³		
							SYN508500	SYN506357	Combined
Hot Peppers									
Rincon, NM, 2002	8	Big Jim	Fruit	I	1.70	109	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						124	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				II	1.69	88	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						103	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				III	1.69	60	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						75	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
Ojai, CA, 2002	10	Anaheim TMR 23	Fruit	I	1.72	102	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						117	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				II	1.69	84	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						99	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				III	1.63	60	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						75	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
Raymondville, TX, 2002	6	TAM mild	Fruit	II	1.75	73	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						88	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				III	1.68	60	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						75	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08

¹ The application types are: (I) preplant incorporation, (II) broadcast foliar at the 8-leaf stage, and (III) broadcast foliar prior to fruit set.

² The proposed PHI is 60 days.

³ Residues are expressed as S-Metolachlor equivalents. The LOQ is 0.05 ppm for SYN508500 and 0.03 ppm for SYN506357. Combined residues were calculated by adding SYN508500 and SYN506357 residues.



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 DACO 7.4.1/OPPTS 860.1500/OECD IIA 6.3.1, 6.3.2, 6.3.3 and IIIA 8.3.1, 8.3.2, 8.3.3
 Crop Field Trial - Fruiting Vegetables Crop Group

TABLE C.3.2. Residue Data from Tomato Field Trials with S-Metolachlor (7.6 lb/gal EC).									
Trial ID (City, State, Year)	EPA Region	Variety	Matrix	Application Type ¹	Rate (lb ai/A)	PHI (days) ²	Residues (ppm) ³		
							SYN508500	SYN506357	Combined
Meced. CA, 2002	10	3155	Fruit	II	1.69	83	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						99	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				III	1.67	64	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						80	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
Woodland, CA, 2002	10	Qualiti 21	Fruit	II	1.71	39	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						54	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				III	1.70	54	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						60	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						61	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						68	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						75	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						82	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
Hickman, CA, 2002	10	Qualiti 21	Fruit	I	1.64	76	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						92	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				III	1.73	59	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						75	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
New Holland, OH, 2002	5	TR 12	Fruit	I	1.70	99	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						111	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				II	1.71	67	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						79	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				III	1.68	59	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						71	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
Live Oak, CA, 2002	10	H-9665	Fruit	I	1.65	130	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						149	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				III	1.69	56	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						75	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
Elko, SC, 2002	2	Celebrity	Fruit	I	1.68	78	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						89	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				II	1.68	78	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						89	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				III	1.70	64	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						75	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
Brawley, CA, 2002	10	APT410	Fruit	II	1.66	76	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						89	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				III	1.73	56	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						69	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08



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 Crop Field Trial - Fruiting Vegetables Crop Group

TABLE C.3.2. Residue Data from Tomato Field Trials with S-Metolachlor (7.6 lb/gal EC).

Trial ID (City, State, Year)	EPA Region	Variety	Matrix	Application Type ¹	Rate (lb ai/A)	PHI (days) ²	Residues (ppm) ³		
							SYN508500	SYN506357	Combined
Germansville, PA, 2002	1	Mountain Spring	Fruit	I	1.75	88	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						103	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				II	1.75	84	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						99	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				III	1.71	60	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						75	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
Vero Beach, FL, 2002	3	FL-47	Fruit	I	1.62	90	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						104	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				III	1.62	36	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						43	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						50	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						57	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						64	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						71	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
Visalia, CA, 2002	10	Rio Grande	Fruit	I	1.69	89	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						103	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				III	1.68	40	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						46	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						53	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						60	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						67	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						74	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
Glenn, CA, 2002	10	H8892	Fruit	I	1.68	105	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						120	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				III	1.68	60	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						75	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
Bradenton, FL, 2002	3	FL-47	Fruit	II	1.70	49	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
						59	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08
				III	1.74	40	<0.05, <0.05	<0.03, <0.03	<0.08, <0.08

¹ Application types are: (I) preplant incorporation, (II) broadcast foliar at the 8-leaf stage, and (III) broadcast foliar prior to fruit set.

² The proposed PHI is 60 days.

³ Residues are expressed as S-Metolachlor equivalents. The LOQ is 0.05 ppm for SYN508500 and 0.03 ppm for SYN506357. Combined residues were calculated by adding SYN508500 and SYN506357 residues.



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 DACO 7.4.1/OPPTS 860.1500/OECD IIA 6.3.1, 6.3.2, 6.3.3 and IIIA 8.3.1, 8.3.2, 8.3.3
 Crop Field Trial - Fruiting Vegetables Crop Group

TABLE C.4. Summary of Total Residue Data for Peppers and Tomatoes from Crop Field Trials using S-Metolachlor (7.6 lb/gal EC)¹

Commodity	Total Rate (lb a.i./A)	PHI (days)	Combined SYN508500 and SYN506357 Residue Levels (ppm) ²						
			n	Min.	Max.	HAFT ³	Median (STMdR ⁴)	Mean (STMR ⁵)	Std. Dev.
Bell Pepper	1.65-1.79	39-125	60	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Hot Pepper	1.63-1.75	60-124	32	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Tomato	1.62-1.75	36-120	106	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08

¹ Three different application regimes were used; either a preplant incorporated or foliar applications. The data for each type of application were pooled as residues were identical.

² Residues are expressed as S-Metolachlor equivalents. The LOQ is 0.05 ppm for SYN508500, 0.03 ppm for SYN506357, and 0.08 ppm for combined residues.

³ HAFT = Highest Average Field Trial.

⁴ STMdR = Supervised Trial Median Residue.

⁵ STMR = Supervised Trial Mean Residue. Residues <LOQ were estimated to be ½ LOQ (0.04 ppm), for calculation of Mean and Std Dev.

D. CONCLUSION

The bell pepper, hot pepper, and tomato field trial data are adequate and support the use of S-metolachlor (EC) as either a single preplant incorporated or post-emergent foliar application prior to fruit set to fruiting vegetables at ~1.70 lb ai/A. The data support a 60-day PHI.

E. REFERENCES

MRIDs: 41506501 and 41425502, Soybean Hull Chromatograms and Storage Stability Data Submissions in Response to the Metolachlor Final Reregistration Standard and Tolerance Reassessment (FRSTR) follow-up (6/14/89). CBRS No.: 8317, B. Cropp-Kohlligian, (4/16/92).

MRIDs: 44378401, 44908701, and 45544701, PP#s: 7F04897, 9E06055, 7E04916, 2E06374, 4E04420, 8E05029, and 8E05030. Revised Metolachlor and S-Metolachlor Residue Chemistry Chapter for the Tolerance Reassessment Eligibility Decision (TRED) and Registration for Use on Asparagus, Carrots, Cotton, Horseradish, Green Onions, Peppers, Rhubarb, Sugar Beet, Sunflower, and Swiss Chard., D255484, S. Kinard, 8/15/03.

F. DOCUMENT TRACKING

Registration Number: 1E6326

DP Barcode: D296904

PC Code: 108800