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MESOTRIONE: MESOTRIONE – MAGNITUDE OF THE RESIDUES IN OR ON BERRY, GROUP 13

FINAL REPORT

DATA REQUIREMENT:	OPPTS 860.1000 (Background) OPPTS 860.1500 (Crop Field Trials)
AUTHOR:	Kaijun Lin
STUDY COMPLETION DATE:	December 21, 2005
PERFORMING LABORATORY:	Syngenta Crop Protection, Inc. 410 Swing Road Greensboro, NC 27409 USA
LABORATORY PROJECT ID:	Syngenta Number T010288-04
SPONSOR:	Syngenta Crop Protection, Inc. 410 Swing Road Greensboro, NC 27409 USA

GOOD LABORATORY PRACTICE COMPLIANCE STATEMENT

This study (T010288-04) was conducted in accordance with the applicable EPA Good Laboratory Practice Standards (40 CFR Part 160) with the following exceptions:

(1) Weather data were not collected according to the FIFRA-GLP requirements; NOAA weather data are reported. These data are ancillary and do not affect the integrity of the study.

(2) Tank mix storage stability data were not generated as required in 40 CFR 160.113(a)(3).

(3) Maintenance chemicals and irrigation were not applied under GLP.

12/21/05

Kaijun Lin
Study Director
Dietary Safety Department

Date

for P.F.

12/21/05

Paul Francis
Head of Dietary Metabolism and Residue
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Representative of Submitter/Sponsor

Date

Submitter/Sponsor: Syngenta Crop Protection, Inc.
410 Swing Road
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QUALITY ASSURANCE STATEMENT

Study Title: Mesotrione – Magnitude of the Residues in or on Berry, Group 13

Study Director: Kaijun Lin

Study Number: T010288-04

Pursuant to Good Laboratory Practice Regulations (40 CFR Part 160), this statement verifies that the aforementioned study was inspected and/or audited and the findings reported to Management and to the Study Director by the Quality Assurance Unit on the dates listed below.

Inspection/Audit Type	Inspection/Audit Dates	Reporting Date
Audit Protocol	21 Apr 2004	21 Apr 2004
CRO Inspect Biology	29 Apr 2004	03 May 2004
CRO Inspect Biology	10 May 2004	10 May 2004
CRO Inspect Biology	15 May 2004	17 May 2004
Inspect Biology	16 Jun 2004	12 Jul 2004
CRO Inspect Biology	25 Jun 2004	20 Jul 2004
CRO Inspect Biology	28 Jun 2004	17 Jul 2004
CRO Inspect Biology	16 Jul 2004	16 Jul 2004
CRO Inspect Biology	16 Jul 2004	16 Jul 2004
CRO Inspect Data	30 Jul 2004	30 Jul 2004
CRO Inspect Data	05 Aug 2004	05 Aug 2004
CRO Inspect Data	06 Aug 2004	06 Aug 2004
CRO Inspect Biology	14 Sep 2004	08 Oct 2004
CRO Inspect Data	12 Nov 2004	22 Nov 2004
CRO Inspect Data	12 Mar 2005	28 Mar 2005
Sample Verification	20 Apr 2005	20 Apr 2005
Inspect Analytical	20 Apr 2005	20 Apr 2005
CRO Inspect Biology	29 Apr 2005	03 May 2005
CRO Inspect Biology	24 May 2005	27 May 2005
CRO Inspect Data	01 Jun 2005	01 Jun 2005
Audit Study Data	16 Jun 2005 – 29 Jun 2005	29 Jun 2005
Audit Study Data	07 Nov 2005	07 Nov 2005
Audit Draft Final Report	19 Dec 2005	19 Dec 2005
Audit Final Report	20 Dec 2005	20 Dec 2005

CRO – Contract Research Organization

Prepared by: Melinda AK Piuk Date: 20 December 2005

Melinda A.K. Piuk
Senior Quality Assurance Auditor
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GENERAL INFORMATION

Contributors

The following contributed to this report in the capacities indicated:

Name	Title
Timothy Oakes	Study Director (5/19/04 – 4/15/05)
Kaijun Lin	Study Director (4/15/05 – present)
Mary Cox	Study Coordinator (Field Phase)
Regina Rollins	Study Analyst
Terry Blackburn	Sample Custodian

Study Dates

Study Initiation Date:	04/22/2004
Experimental Start Date:	04/27/2004
Experimental Termination Date:	12/14/2005

Test Substance

AI Name:	Mesotrione
Syngenta Code:	ZA1296
Formulated Product:	Callisto® 4SC

Test System
Blueberry, blackberry and raspberry

Test Facility
Syngenta Crop Protection, Inc.
Dietary Safety Department
410 Swing Road
Post Office Box 18300
Greensboro, NC 27419
(336) 632-6000

Field Trial Test Sites
The following information is a summary of the field test information including field test number, location, Principal Field Investigator (PFI), and other pertinent information.

Field Test Number: 5A-HR-04-5630
Location: Penn Yan, NY

PFI Name	PFI Company	PFI Address	PFI Phone
Harry Humphreys	ACDS Research	100 Willow Ln. P.O. Box 70, Dundee, NY 14837	(315) 694-0303

Field Test Number: SJ-HR-04-5631
Location: Rose Hill, NC

PFI Name	PFI Company	PFI Address	PFI Phone
Paul Garvey	Agricultural Systems Associates	3341 Hwy 58 South,Kinston, NC 28504	(910) 532-6187

Field Test Number: SJ-HR-04-5632
Location: Rose Hill, NC

PFI Name	PFI Company	PFI Address	PFI Phone
Paul Garvey	Agricultural Systems Associates	3341 Hwy 58 South,Kinston, NC 28504	(910) 532-6187

Field Test Number: NL-HR-04-5633
Location: Fremont, MI

PFI Name	PFI Company	PFI Address	PFI Phone
Mark Waldecker	AGSEARCH	1705 Wilson St.,Conklin, MI 49403-9708	(616) 899-2908

Field Test Number: NL-HR-04-5634
Location: Conklin, MI

PFI Name	PFI Company	PFI Address	PFI Phone
Mark Waldecker	AGSEARCH	1705 Wilson St.,Conklin, MI 49403-9708	(616) 899-2908

Field Test Number: WF-HR-04-5635
Location: LaConner, WA

PFI Name	PFI Company	PFI Address	PFI Phone
Ron Britt	Ron Britt & Associates	7200 W Nob Hill Blvd., #18 Yakima, WA 98908	(509) 966-9681

Field Test Number: NL-HR-04-5636
Location: Belding, MI

PFI Name	PFI Company	PFI Address	PFI Phone
Mark Waldecker	AGSEARCH	1705 Wilson St.,Conklin, MI 49403-9708	(616) 899-2908

Field Test Number: WG-HR-04-5637
Location: Corvallis, OR

PFI Name	PFI Company	PFI Address	PFI Phone
Jim Calkins	AgSolutions	5757 NE Hwy 20,Corvallis, OR97330	(541)753-5797

Field Test Number: WG-HR-04-5638
Location: Hillsboro, OR

PFI Name	PFI Company	PFI Address	PFI Phone
Vern Fischer	Columbia Ag Research	5601 Binns Road Hood River, OR 97031	(541)387-3052

Field Test Number: WG-HR-05-6370
Location: Corvallis, OR

PFI Name	PFI Company	PFI Address	PFI Phone
Jim Calkins	AgSolutions	5757 NE Hwy 20,Corvallis, OR 97330	(541)753-5797

Soil Characterization Test Sites
Agvise Laboratories
P.O. Box 510
Northwood, ND 58267

Midwest Laboratories Inc
13611 "B" Street, Omaha, NE 68144-3693

Cascade Analytical
3019 GS Center Road
Wenatchee, WA 98801

Analytical Test Site
Syngenta Crop Protection, Inc.
Dietary Safety Department
410 Swing Road
P.O. Box 18300
Greensboro, NC 27419

Archive Locations
The protocol, raw data, and reports are archived at the Crop Protection Archives, Syngenta Crop Protection, Inc., Greensboro, NC. Facility records generated at the various test sites are archived at the respective test sites' archives. Specimens will be retained at Syngenta Crop Protection, Greensboro, NC, until discard approval is received from the Study Director and sample verification is obtained from the Quality Assurance Unit.

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY

The purpose of the study was to generate residue data for mesotrione in/on blueberry, raspberry and blackberry, the representative of Group 13 crops. This final report summarizes residue data collected from a total of ten berry field trials in five states: New York, North Carolina, Michigan, Washington and Oregon.

In this study, actively growing blueberry, raspberry and blackberry were treated one time with Callisto 4SC, a formulation of mesotrione, by a post directed pre-bloom spray. The treatment rates were 42.5 grams a.i./acrea (g a.i./A) and 85 g a.i/A, respectively, and all treatments were made between 10 – 80 gallons/Acre (GPA). Residue samples were collected at commercial maturity, and decline samples were collected at 7-day before maturity (-7), 4-day before maturity (-4), at maturity, 4 days after maturity (+4). Residues of mesotrione were determined using Syngenta Analytical Method RAM 366/01 with modifications. The limit of quantitation (LOQ) was 0.01 ppm for mesotrione. With the targeted post direct pre-bloom treatment rate of 85 g a.i./A, no residues of mesotrione (<0.01 ppm) were found in blueberry, raspberry or blackberry, the representative of Group 13 crops, in this study. The residues were <0.01 ppm in all samples treated with 42.5 g a.i./A. The residue data are tabulated below:

Matrix	Formulation	Application Rate	Maximum Mesotrione (ppm)
Blueberry	Callisto 4SC	85 g a.i./A	<0.01
		42.5 g a.i./A	<0.01
Raspberry	Callisto 4SC	85 g a.i./A	<0.01
		42.5 g a.i./A	<0.01
Blackberry	Callisto 4SC	85 g a.i./A	<0.01
		42.5 g a.i./A	<0.01

Residues of mesotrione were below 0.01 ppm in all decline samples in this study.

2.0 INTRODUCTION

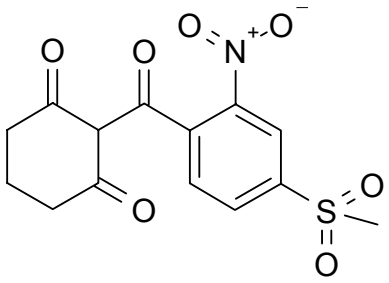
Mesotrione, 2[4-(methylsulfonyl)-2-nitrobenzoyl]-1,3-cyclohexanedione (CAS Name), developed under Syngenta Code Number ZA1296, is a selective herbicide for control of broadleaves and grasses. The chemical structure and names are presented in Section 3.2 Test Substances of this report. Syngenta Crop Protection, Inc. conducted this study to support a label extension of mesotrione on blueberry, raspberry and blackberry, representative commodities of Group 13. The residue data submitted to USEPA were collected in accordance with USEPA Residue Chemistry Guidelines, Crop Field Trials, OPPTS 860.1500. The experimental design, field trial numbers, geographic locations, sample sizes and analysis were selected per the OPPTS 860.1000/1500 requirements. This study was also conducted and reported in accordance with EPA FIFRA Good Laboratory Practice Standard (40 CFR Part 160).

3.0 FIELD PROCEDURES

3.1 Trial Locations

A total of ten field test trials were conducted in New York, North Carolina (2), Michigan (3), Washington and Oregon (3) to establish a tolerance in or on berry group, Group 13, in accordance with EPA Residue Chemistry Test Guidelines OPPTS 860.1000, Background, and OPPTS 860.1500, Crop Field Trials. See Figure 1 for a map of the test trial geographic locations. The detailed information pertaining to the field trial ID numbers, and geographic locations are summarized in Table 1 and in Field Trial Summaries (Appendix 1). Appendix 1 also summarizes the information pertaining to the plot, temperature, rainfall, irrigation, meteorological abnormalities and soil characterization from each of the field trial locations.

3.2 Test Substance

Test Compound Nomenclature	
Compound	
Common Name	Mesotrione
Company Experimental Name	ZA-1296
IUPAC Name	2-(4-Mesyl-2-nitrobenzoyl)cyclohexane-1,3-dione
CAS Name	2[4-(Methylsulfonyl)-2-nitrobenzoyl]-1,3-cyclohexanedione
CAS #	104206-82-8
End Use Product Name:	Callisto® 4SC
Formulation Type:	Suspension concentrate (4 SC)
Nominal A.I. Content:	4 lbs. a.i./gallon
Lot Number:	FL-010515 (A12738A) & FL-010681

3.3 Study Site Information

Trial Site Conditions						
Trial Identification (City, State/Year)	**Soil characteristics**				**Meteorological data**	
	Type	**% OM ***	**pH***	**CEC* meq/g**	**Overall daily/monthly rainfall range**	**Overall F°C range**
5A-HR-04-5630 (Penn Yan, NY, 2004)	Gravelly Loam	3.3	4.9	8.6	2.29 – 6.46	34 – 89
SJ-HR-04-5631 (Rose Hill, NC, 2004)	Sand	4.3	3.7	7.0	0.56 – 7.39	26 - 92
SJ-HR-04-5632 (Rose Hill, NC, 2004)	Sand	1.6	4.0	4.6	0.56 – 7.39	26 - 92
NL-HR-04-5633 (Fremount, MI, 2004)	Loamy sand	3.2	4.5	5.3	1.71 – 9.59	24 -187
NL-HR-04-5634 (Conklin, MI, 2004)	Loam	2.1	4.5	12.8	1.71 – 9.59	24 - 87
WF-HR-04-5635 (LaConner, WA, 2004)	Silt Loam	5.9	5.0	23.3	-0.05 – 4.4	34 -101
NL-HR-04-5636 (Belding, MI, 2004)	Loam	1.7	4.7	9.3	2.04 – 9.29	23 - 90
WG-HR-04-5637 (Corvallis, OR, 2004)	Silty clay loam	2.4	6.5	17.4	1.79	48 - 99
WG-HR-04-5638 (Hillsboro, OR, 2004)	Loam	4.9	5.3	16.6	1.01 – 1.78	36 - 91
WG-HR-05-6370 (Corvallis, OR, 2005)	Silty clay loam	2.4	6.5	17.4	0.47 – 4.34	23 - 73

* These parameters are optional except in cases where their value affects the use pattern for the chemical

The actual temperature readings are within average historic values for the residue study period. The actual rainfall average was within the historical rainfall average. Irrigation was used to supplement rainfall as needed.

3.4 Treatment

Berries were grown under normal agricultural conditions on test plots at each field trial as mentioned in Section 3.1. The control plots were separated sufficiently to exclude any contamination from the treated plots. Berries were treated one time with Callisto 4SC, a formulation of mesotrione by post directed pre-bloom spray. The treatment rates were 42.5 g a.i/A and 85 g a.i/A, respectively, and all treatments were made between 10-80 GPA. The treatment details are summarized below:

Trt ID	**Application Formulation**	**Target App Rate**	**Application Timing/Method**	**No of Trt**	**GPA**	
					Min	**Max**
Trt 1	N/A	Control	NA	NA	NA	NA
Trt 2	Callisto 4SC	42.5 g a.i./A	Post Directed Pre-Bloom Spray	1	10	100
Trt 3	Callisto 4SC	85 g a.i./A	Post Directed Pre-Bloom Spray	1	10	100

The treatment dates for each field trial are summarized in Table 2. See Field Trial Summaries (Appendix 1) for individual field trial treatment details.

3.5 Sampling

In this study, berry samples were harvested at commercial maturity from each of the field trials. Approximately ~3 lbs of samples were collected from 12 separate plants or areas of the treated plot except for the decline plot in which at least one-half lbs of samples were taken from the decline trials (SJ-HR-04-5631; NL-HR-04-5636). Duplicate samples were taken from each treated plot. See Table 2 and Field Trial Summaries (Appendix 1) for individual field trial final application and sampling dates.

3.6 Storage and Transport

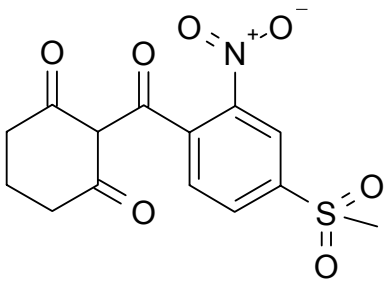
After collection, all berry samples were stored frozen, and shipped frozen to Syngenta Greensboro, NC facility via Agricultural Chemicals Development Service (ACDS). See Field Trial Summaries (Appendix 1) for shipment dates for each sample.

4.0 ANALYTICAL PROCEDURES

4.1 Sample Preparation

The berry samples arrived at Syngenta Greensboro, NC facility between 06/23/04 and 10/05/05. The shipment dates and arrival dates are summarized in Appendix 1. All samples were stored in S-building at lower than –15 °C immediately after receipt. Berry samples were prepared between 2/10/05 and 10/11/05 (See Appendix 1 for details). Caps and/or stems were removed and discarded from berries. Samples were composited with a Hobart foodcutter. Dry ice was used as necessary to keep the sample frozen. After preparation, the samples were placed in double polyethylene bags labeled with field test numbers, project numbers, sample codes, and crop identification and stored in L-Building freezer at lower than –15 °C until analyzed.

4.2 Reference Substances

Compound:	
Common Name:	Mesotrione
Company Experimental Name:	ZA-1296
IUPAC Name:	2-(4-mesyl-2-nitrobenzoyl)cyclohexane-1,3-dione
CAS Name:	2[4-(methylsulfonyl)-2-nitrobenzoyl]-1,3-cyclohexanedione
CAS #:	104206-82-8
Source:	Syngenta Analytical and Production Chemistry
Lot Number:	S04-2841
Purity:	96.2%
Expiration Date:	October, 2007

The standard solutions were freshly prepared as outlined in Analytical Methods RAM 366/01[1]. These standards were used for fortifications of recovery samples, for calibration and quantitation of sample residues. These standard solutions were stored refrigerated when not in use. The quantitation of residues was based on HPLC/MS/MS chromatographic peak area comparison with these calibration standard solutions. Representative LC/MS/MS chromatograms for analysis of mesotrione standard solutions are presented in Figure 2. A typical calibration curve for analysis of residues of mesotrione is shown in Figure 3. The linear regression coefficients for all calibration curves were higher than 0.99 throughout the entire study.

4.3 Sample Analysis

The analytical procedures outlined in Syngenta Analytical Method RAM 366/01 were modified for analysis of residues of mesotrione in berries as follows: A 10-gram subsample was Polytron-homogenized with 50% ACN/H_2O after addition of one gram of sodium chloride. Approximately ~40-mL of the mixture was aliquoted for centrifuge. A 0.1-grams aliquot (1 mL) was diluted with a 2% formic acid, and passed through an Oasis® HLB SPE cartridge for cleanup. Mesotrione residues were eluted off the cartridge with a mixture of MeOH/formic acid (98/2), and evaporated to dryness with N_2. The residues were re-constituted in 90% H_2O/MeOH with a thorough ultrasonication. The sample was injected onto a HPLC/MS/MS system for residue analysis.

The analytical procedures were further modified for analysis of field trials of 5A-HR-04-5630 blueberry (Commercial maturity), WG-HR-05-6370 raspberry (commercial maturity), NL-HR-04-5634 blueberry (commercial maturity), SJ-HR-04-5631 blueberries (decline

samples and commercial maturity, NL-HR-04-5636 raspberry (decline samples only) as follows: A 10-gram subsample was Polytron-homogenized with 50% ACN/H_2O after addition of one gram of sodium chloride. Approximately 40 mL of the mixture was centrifuged and an aliquot was taken from the supernatant and diluted with water. The final volume was adjusted with 90% H_2O/MeOH. The sample was injected onto a HPLC/MS/MS system for residue analysis.

The limit of quantitation (LOQ), as demonstrated by the smallest acceptable recoveries is 10.01 ppm for mesotrione. The limit of detection (LOD), as demonstrated by the smallest amount of analyte injected, was 0.001 ng of mesotrione. The SCIEX API 4000 HPLC/MS/MS system and operating conditions are summarized as follows:

HPLC Pump:	PE LC-200 Micro Pumps for Mobile Phases A & B, respectively
Column:	PLRP-S, 50 X 4.6 mm, 5 μm, Polymer Laboratories, Inc.
Column Temp:	35 °C
Flow Rate:	0.3 mL/Min.
Injection Vol:	50 μL
Run Time:	11 Minutes
Mobile Phase A:	Acetonitrile
Mobile Phase B:	0.2% Formic Acid Aqueous Solution

HPLC Linear Gradient Program:

Time (Min)	Moble Phase A	Mobile Phase B
0.0	50%	50%
8.0	80%	20%
9.0	100%	0%
9.1	50%	50%
11.0	50%	50%

SCIEX API 4000 LC/MS/MS Conditions:

Scan Type:	MRM
Polarity:	Negative Mode
Ion Source:	Turbo Spray
Q1 Resolution:	Unit
Q3 Resolution:	High
Settling Time:	700 mS
MR Pause:	25 mS

Q1 Mass (amu)	Q3 Mass (amu)	Dwell Time (msec)
338.20	290.90	800

CAD:	4.0
Curtain Gas:	15
GS1:	35
GS2:	0
IS:	-4500
TEM:	500
Ihe	Off
DP:	-43
EP:	-10
CE:	-12
CXE:	-10

Data Acquisition: API 4000 Analyst 2 Data acquisition software/Syngenta Gloria System

5.0 RESULTS

5.1 Storage Stability

From sampling to extraction, samples were stored frozen for a maximum of 16.4 months for analysis of mesotrione. Sample storage intervals between sampling and extraction and analysis are shown in Table 2. Residue storage stability data for mesotrione was reported in a Syngenta final reports: Final Report RR97-042B FIN[2], "ZA1296: Stability of AZ1296 and the Metabolite MNBA in Frozen Crops." These data indicated that mesotrione was stable in corn grain, corn forage, corn fodder, soybean seed, and radish root for 40 months. Based on these results, residues of mesotrione are expected to be stable in berries over the storage interval of 16.4 months for this study. In addition, Syngenta has conducted a storage stability study (T004813-05) for mesotrione on berries, asparagus, okra and sugarcane for a 17 month freezer storage interval in support of this study and other studies. The storage stability of mesotrione on berries will report and submitted to the Agency.

Summary of Storage Conditions for Mesotrione

Matrix	Storage Temp. (°C)	Actual Maximum Storage Duration (months)	Interval of Demonstrated Storage Stability (months)
Blueberry	-15ºC	16.4	40
Raspberry	-15ºC	9.7	40
Blackberry	-15ºC	9.2	40

5.2 Method Recovery and Validation Data

In this study, recovery samples were prepared at LOQ (0.01 ppm) and higher levels, and analyzed concurrently with the treated residue samples for demonstration of the method performance. Procedural recoveries ranged from 67- 104% with an average of 87% ± 10.4% (n = 14) for blueberry, 75 – 102% with an average of 91% ± 9.0% (n = 9) for raspberry; and 87% for blackberry. See Table 3 for the detailed fortification levels and procedural recoveries and statistical results.

5.3 Residue Analysis

Table 4 summarizes residues of mesotrione found in berries treated with mesotrione in all ten field trials. At two treatment rates (42.5 g a.i./A and 85 g a.i./A), mesotrione residues were <0.01 ppm at commercial maturity. Analysis of untreated control samples demonstrated that interferences were insignificant at or near the retention times for analysis of mesotrione. Representative HPLC/MS/MS chromatograms from analyses of berries are presented in Figures 4, 5 and 6.

Summary of Residue Data from Crop Field Trials with Mesotrione

Matrix	Total Application Rate (g ai/A)	DAA (days)	Residue Levels (ppm)						
			N	Min	Max	HAFT*	Median	Mean	Std Dev.
Blueberry	85	At Maturity	12	<0.01	<0.01	<0.01	<0.01	<0.01	0
	42.5	At Maturity	12	<0.01	<0.01	<0.01	<0.01	<0.01	0
Raspberry	85	At Maturity	6	<0.01	<0.01	<0.01	<0.01	<0.01	0
	42.5	At Maturity	6	<0.01	<0.01	<0.01	<0.01	<0.01	0
Blackberry	85	At Maturity	2	<0.01	<0.01	<0.01	<0.01	<0.01	0
	42.5	At Maturity	2	<0.01	<0.01	<0.01	<0.01	<0.01	0

HAFT = Highest Average Field Trial; n = total sample numbers
Note: ½ LOQ values were used for data below LOQ in all statistic calculations.

5.4 Decline Study

No residues of mesotrione were found (<0.01 ppm) in any of the decline samples (-7 days, -4 days, 0 days, and +4 days) from the blueberry or raspberry trial (Table 5).

5.5 Circumstances Affecting Study

None.

6.0 CONCLUSIONS

With the targeted post directed pre-bloom application of mesotrione at 85 g a.i./A, the maximum residues found in blueberry, raspberry and blackberry samples, representative of Group 13 crops, were <0.01 ppm for mesotrione at commercial maturity. No residues of mesotrione was found in all samples treated at a rate of 42.5 g a.i./A. Residues of mesotrione were all below 0.01 ppm in decline samples.

7.0 TABLES AND FIGURES

TABLE 1. TRIAL NUMBERS AND EPA REGIONS

EPA Region	Blueberry, Raspberry and Blackberry (Crop Group 13)	
	Submitted	Required
1	1	1
2	2	2
5	2 + 1*	2
12	1 + 2* + 1**	1
Total	10	6 + 3*

* For Group 13, a minimum of 9 trials required, including 6 for blue berry and 3 for raspberry according to OPPTS 860.1500

** One blackberry trial was not required, but conducted in Region 12

Note: Field trials account for 94%, 89% and 73% for total productions of blueberry, raspberry and blackberry, respectively, upon acreage.

TABLE 2. FIELD TEST DATA, SAMPLE DATA, CRITICAL DATES AND FREEZER STORAGE INTERVALS FOR BERRY SAMPLES

Trial No/ Location	Crop/ Variety	Sample No.	Last Treat Dates	Harvest Dates	DAA	Extraction Dates	Analysis Date	Maximum Months Stored Frozen
5A-HR-04-5630	Blueberry	5630-1A	NA	07/31/04	Maturity	12/13/05	12/14/05	16.4
Penn Yan, NY	Blue Ray	5630-3A, 4B, 5A, 6B	05/15/04	07/31/04	Maturity	12/13/05	12/14/05	16.4
SJ-HR-04-5631	Blueberry	5631-1A	NA	05/31/04	-7	04/28/05	04/28/05	10.9
Rose Hill, NC	Reveille	5631-3A, 4B, 5A, 6B	04/29/04	05/31/04	-7	04/28/05	04/28/05	10.9
		5631-7A	NA	06/03/04	-4	04/28/05	04/28/05	10.8
		5631-9A, 10B, 11A, 12B	04/29/04	06/03/04	-4	04/28/05	04/28/05	10.8
		5631-13A	NA	06/07/04	Maturity	04/27/05	04/27/05	10.7
		5631-15A, 16B, 17A, 18B	04/29/04	06/07/04	Maturity	04/27/05	04/27/05	10.7
		5631-19A	NA	06/11/04	4	04/28/05	04/28/05	10.5
		5631-21A, 22B, 23A, 24B	04/29/04	06/11/04	4	04/28/05	04/28/05	10.5
SJ-HR-04-5632	Blueberry	5632-1A	NA	06/02/04	Maturity	03/23/05	03/23/05	9.7
Rose Hill, NC	Reveille	5632-3A, 4B, 5A, 6B	04/29/04	06/02/04	Maturity	03/23/05	03/23/05	9.7
NL-HR-04-5633	Blueberry	5633-1A	NA	07/16/04	Maturity	03/21/05	03/22/05	8.2
Fremont, MI	Blue Crop	5633-3A, 4B, 5A, 6B	05/05/04	07/16/04	Maturity	03/21/05	03/22/05	8.2

TABLE 2. FIELD TEST DATA, SAMPLE DATA, CRITICAL DATES AND FREEZER STORAGE INTERVALS FOR BERRY SAMPLES (CONTINUED)

Trial No/ Location	Crop/ Variety	Sample No.	Last Treat Dates	Harvest Dates	DAA	Extraction Dates	Analysis Date	Maximum Months Stored Frozen
NL-HR-04-5634	Blueberry	5634-1A	NA	07/13/04	Maturity	04/20/05	04/27/05	9.2
Conklin, MI	Blue Ray	5634-3A, 4B, 5A, 6B	05/10/04	07/13/04	Maturity	04/20/05	04/27/05	9.2
WF-HR-04-5635	Blueberry	5635-1A	NA	08/24/04	Maturity	03/23/05	03/23/05	7.0
LaConner, WA	Nelson & Elliots	5635-3A, 4B, 5A, 6B	05/28/04	08/24/04	Maturity	03/23/05	03/23/05	7.0
NL-HR-04-5636	Raspberry	5636-1A	NA	07/09/04	-7	04/29/05	04/29/05	9.7
Belding, MI	K81-6	5636-3A, 4B, 5A, 6B	05/03/04	07/09/04	-7	04/29/05	04/29/05	9.7
		5636-7A	NA	07/12/04	-4	04/29/05	04/29/05	9.6
		5636-9A, 10B, 11A, 12B	05/03/04	07/12/04	-4	04/29/05	04/29/05	9.6
		5636-13A	NA	07/16/04	Maturity	03/17/05	03/22/05	8.0
		5636-15A, 16B, 17A, 18B	05/03/04	07/16/04	Maturity	03/17/05	03/22/05	8.0
		5636-19A	NA	07/20/04	4	04/29/05	04/29/05	9.3
		5636-21A, 22B, 23A, 24B	05/03/04	07/20/04	4	04/29/05	04/29/05	9.3
WG-HR-04-5637	Raspberry	5637-1A	NA	08/16/04	Maturity	04/13/05	04/13/05	7.9
Corvallis, OR	Caroline	5637-3A, 4B, 5A, 6B	06/25/04	08/16/04	Maturity	04/13/05	04/13/05	7.9
WG-HR-04-5638	Blackberry	5638-1A	NA	06/28/04	Maturity	03/21/05	03/22/05	8.7
Hillsboro, OR	Kotata	5638-3A, 4B, 5A, 6B	04/27/04	06/28/04	Maturity	03/21/05	03/22/05	8.7
WG-HR-05-6370	Raspberry	6370-1A	NA	08/15/05	Maturity	11/18/05	11/18/05	3.1
Corvallis, OR	Caroline	6370-3A, 4B, 5A, 6B	05/24/05	08/15/05	Maturity	11/18/05	11/18/05	3.1

TABLE 3. SUMMARY OF CONCURRENT RECOVERIES OF MESOTRIONE FROM ANALYSIS OF BLUE BERRY, RASPBERRY AND BLACKBERRY SAMPLES

Matrix	Field Trial No	Sample Sets to be analyzed with	Syngena Gloria AS No.	Spike Level (ppm)	Recoveries (%)
Blueberry	5AHR-04-5630	3A, 4B, 5A, 6B	05-1119	0.01	83
	5AHR-04-5630	3A, 4B, 5A, 6B	05-1119	1	102
Blueberry	SJHR-04-5631	3A, 4B, 5A, 6B	05-0353	0.01	82
	SJHR-04-5631	3A, 4B, 5A, 6B	05-0353	1	94
Blueberry	SJHR-04-5631	9A, 10B, 11A, 12B	05-0354	0.01	91
Blueberry	SJHR-04-5631	15A, 16B, 17A, 18B	05-0351	0.01	95
	SJHR-04-5631	15A, 16B, 17A, 18B	05-0351	1.00	97
Blueberry	SJHR-04-5631	21A, 22B, 23A, 24B	05-0355	0.01	77
Blueberry	SJHR-04-5632	3A, 4B, 5A, 6B	05-0243	0.01	88
	SJHR-04-5632	3A, 4B, 5A, 6B	05-0243	1	104
Blueberry	NLHR-04-5633	3A, 4B, 5A, 6B	05-0233	0.01	81
Blueberry	NLHR-04-5634	3A, 4B, 5A, 6B	05-0343	0.01	84
	NLHR-04-5634	3A, 4B, 5A, 6B	05-0343	1	67
Blueberry	WFHR-04-5635	3A, 4B, 5A, 6B	05-0242	0.01	78
			Mean Revovery = 87% Standard Deviation = 10.4% Sample Size (n) = 14 Fortification Range: 0.01 – 1 ppm		
Raspberry	NL-HR-04-5636	3A, 4B, 5A, 6B	05-0364	0.01	89
Raspberry	NL-HR-04-5636	9A, 10B, 11A, 12B	05-0365	0.01	85
Raspberry	NL-HR-04-5636	15A, 16B, 17A, 18B	05-0218	0.01	75
Raspberry	NL-HR-04-5636	15A, 16B, 17A, 18B	05-0218	1.00	84
Raspberry	NL-HR-04-5636	21A, 22B, 23A, 24B	05-0366	0.01	97
Raspberry	WGHR-04-5637	3A, 4B, 5A, 6B	05-0288	0.01	102
Raspberry	WGHR-04-5637	3A, 4B, 5A, 6B	05-0288	1	101
Raspberry	WGHR-05-6370	3A, 4B, 5A, 6B	05-1065	0.01	92
Raspberry	WGHR-05-6370	3A, 4B, 5A, 6B	05-1065	1	98
			Mean Revovery = 91% Standard Deviation = 9.0% Sample Size (n) = 9 Fortification Range: 0.01 – 1 ppm		
Blackberry	WGHR-04-5638	3A, 4B, 5A, 6B	05-0234	0.01	87

Note: The limits of quantitation (LOQ) are 0.01 ppm for mesotrione

TABLE 4. RESIDUE DATA FROM BLUEBERRY, RASPBERRY AND BLACKBERRY SAMPLES TREATED WITH MESOTRIONE

Field Trial No Location/Year	EPA Region	Crop/ Variety	Sample Numbers	Matrix	Trtmnt Rate (g a.i./A)	DAA (days)	Mesotrione (ppm)
5A-HR-04-5630	1	Blueberry	5630-1A	Blueberry	NA	NA	<0.01
Penn, Yan, NY		Blue Ray	5630-3A	Blueberry	42.5	Maturity	<0.01
2004			5630-4B	Blueberry	42.5	Maturity	<0.01
			5630-5A	Blueberry	85.0	Maturity	<0.01
			5630-6B	Blueberry	85.0	Maturity	<0.01
SJ-HR-04-5631	2	Blueberry	5631-13A	Blueberry	NA	NA	<0.01
Rose Hill, NC		Reveille	5631-15A	Blueberry	42.5	Maturity	<0.01
2004			5631-16B	Blueberry	42.5	Maturity	<0.01
			5631-17A	Blueberry	85.0	Maturity	<0.01
			5631-18B	Blueberry	85.0	Maturity	<0.01
SJ-HR-04-5632	2	Blueberry	5632-1A	Blueberry	NA	NA	<0.01
Rose Hill, NC		Reveille	5632-3A	Blueberry	42.5	Maturity	<0.01
2004			5632-4B	Blueberry	42.5	Maturity	<0.01
			5632-5A	Blueberry	85.0	Maturity	<0.01
			5632-6B	Blueberry	85.0	Maturity	<0.01
NL-HR-04-5633	5	Blueberry	5633-1A	Blueberry	NA	NA	<0.01
Fremont, MI		Blue Crop	5633-3A	Blueberry	42.5	Maturity	<0.01
2004			5633-4B	Blueberry	42.5	Maturity	<0.01
			5633-5A	Blueberry	85.0	Maturity	<0.01
			5633-6B	Blueberry	85.0	Maturity	<0.01
NL-HR-04-5634	5	Blueberry	5634-1A	Blueberry	NA	NA	<0.01
Conklin, MI		Blue Ray	56340-3A	Blueberry	42.5	Maturity	<0.01
2004			5634-4B	Blueberry	42.5	Maturity	<0.01
			5634-5A	Blueberry	85.0	Maturity	<0.01
			5634-6B	Blueberry	85.0	Maturity	<0.01
WF-HR-04-5635	12	Blueberry	5635-1A	Blueberry	NA	NA	<0.01
LaConner, WA		Nelson &	5635-3A	Blueberry	42.5	Maturity	<0.01
2004		Elliots	5635-4B	Blueberry	42.5	Maturity	<0.01
			5635-5A	Blueberry	85.0	Maturity	<0.01
			5635-6B	Blueberry	85.0	Maturity	<0.01

Note: residues data were not corrected for concurrent recoveries; LOQ = 0.01 ppm for mesotrione.

TABLE 4. RESIDUE DATA FROM BLUEBERRY, RASPBERRY AND BLACKBERRY SAMPLES TREATED WITH MESOTRIONE (CONTINUED)

Field Trial No Location/Year	EPA Region	Crop/ Variety	Sample Numbers	Matrix	Trtmnt Rate (g a.i./A)	DAA (days)	Mesotrione (ppm)
NL-HR-04-5636	5	Raspberry	5636-13A	Raspberry	NA	NA	<0.01
Belding, MI		K81-6	5636-15A	Raspberry	42.5	Maturity	<0.01
2004			5636-16B	Raspberry	42.5	Maturity	<0.01
			5636-17A	Raspberry	85.0	Maturity	<0.01
			5636-18B	Raspberry	85.0	Maturity	<0.01
WG-HR-04-5637	12	Raspberry	5637-1A	Raspberry	NA	NA	<0.01
Corvallis, OR		Caroline	5637-3A	Raspberry	42.5	Maturity	<0.01
2004			5637-4B	Raspberry	42.5	Maturity	<0.01
			5637-5A	Raspberry	85.0	Maturity	<0.01
			5637-6B	Raspberry	85.0	Maturity	<0.01
WG-HR-04-5638	12	Blackberry	5638-1A	Blackberry	NA	NA	<0.01
Hillsboro, OR		Kotata	5638-3A	Blackberry	42.5	Maturity	<0.01
2004			5638-4B	Blackberry	42.5	Maturity	<0.01
			5638-5A	Blackberry	85.0	Maturity	<0.01
			5638-6B	Blackberry	85.0	Maturity	<0.01
WG-HR-05-6370	12	Raspberry	6370-1A	Raspberry	NA	NA	<0.01
Corvallis, OR		Caroline	6370-3A	Raspberry	42.5	Maturity	<0.01
2005			6370-4B	Raspberry	42.5	Maturity	<0.01
			6370-5A	Raspberry	85.0	Maturity	<0.01
			6370-6B	Raspberry	85.0	Maturity	<0.01

Note: residues data were not corrected for concurrent recoveries; LOQ = 0.01 ppm for mesotrione.

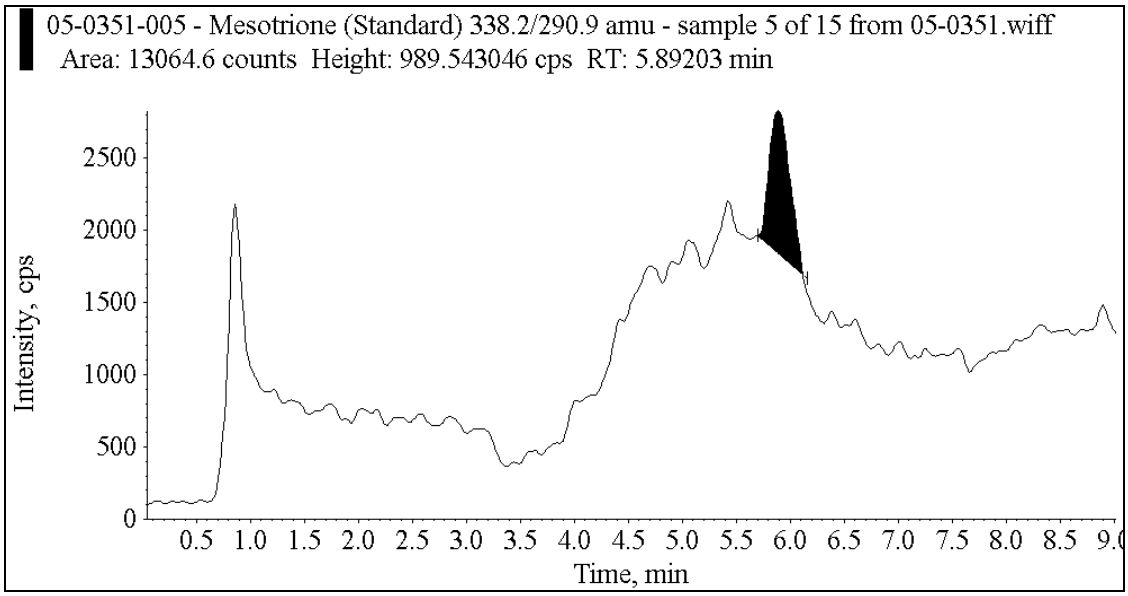
TABLE 5. RESIDUE DATA FROM DECLINE FIELD TRIALS TREATED WITH MESOTRIONE

Field Trial No Location/Year	EPA Region	Crop/ Variety	Sample Numbers	Matrix	Trtmnt Rate (g a.i./A)	DAA (days)	Mesotrione (ppm)
SJ-HR-04-5631	2	Blueberry	5631-3A	Blueberry	42.5	-7 DAYS	<0.01
NC/2004		Reveille	5631-4B	Blueberry	42.5	-7 DAYS	<0.01
			5631-5A	Blueberry	85.0	-7 DAYS	<0.01
			5631-6B	Blueberry	85.0	-7 DAYS	<0.01
			5631-9A	Blueberry	42.5	-4 DAYS	<0.01
			5631-10B	Blueberry	42.5	-4 DAYS	<0.01
			5631-11A	Blueberry	85.0	-4 DAYS	<0.01
			5631-12B	Blueberry	85.0	-4 DAYS	<0.01
			5631-15A	Blueberry	42.5	Maturity	<0.01
			5631-16B	Blueberry	42.5	Maturity	<0.01
			5631-17A	Blueberry	85.0	Maturity	<0.01
			5631-18B	Blueberry	85.0	Maturity	<0.01
			5631-21A	Blueberry	42.5	4 DAYS	<0.01
			5631-22B	Blueberry	42.5	4 DAYS	<0.01
			5631-23A	Blueberry	85.0	4 DAYS	<0.01
			5631-24B	Blueberry	85.0	4 DAYS	<0.01
NL-HR-04-5636	5	Raspberry	5636-3A	Raspberry	42.5	-7 DAYS	<0.01
MI/2004		K81-6	5636-4B	Raspberry	42.5	-7 DAYS	<0.01
			5636-5A	Raspberry	85.0	-7 DAYS	<0.01
			5636-6B	Raspberry	85.0	-7 DAYS	<0.01
			5636-9A	Raspberry	42.5	-4 DAYS	<0.01
			5636-10B	Raspberry	42.5	-4 DAYS	<0.01
			5636-11A	Raspberry	85.0	-4 DAYS	<0.01
			5636-12B	Raspberry	85.0	-4 DAYS	<0.01
			5636-15A	Raspberry	42.5	Maturity	<0.01
			5636-16B	Raspberry	42.5	Maturity	<0.01
			5636-17A	Raspberry	85.0	Maturity	<0.01
			5636-18B	Raspberry	85.0	Maturity	<0.01
			5636-21A	Raspberry	42.5	4 DAYS	<0.01
			5636-22B	Raspberry	42.5	4 DAYS	<0.01
			5636-23A	Raspberry	85.0	4 DAYS	<0.01
			5636-24B	Raspberry	85.0	4 DAYS	<0.01

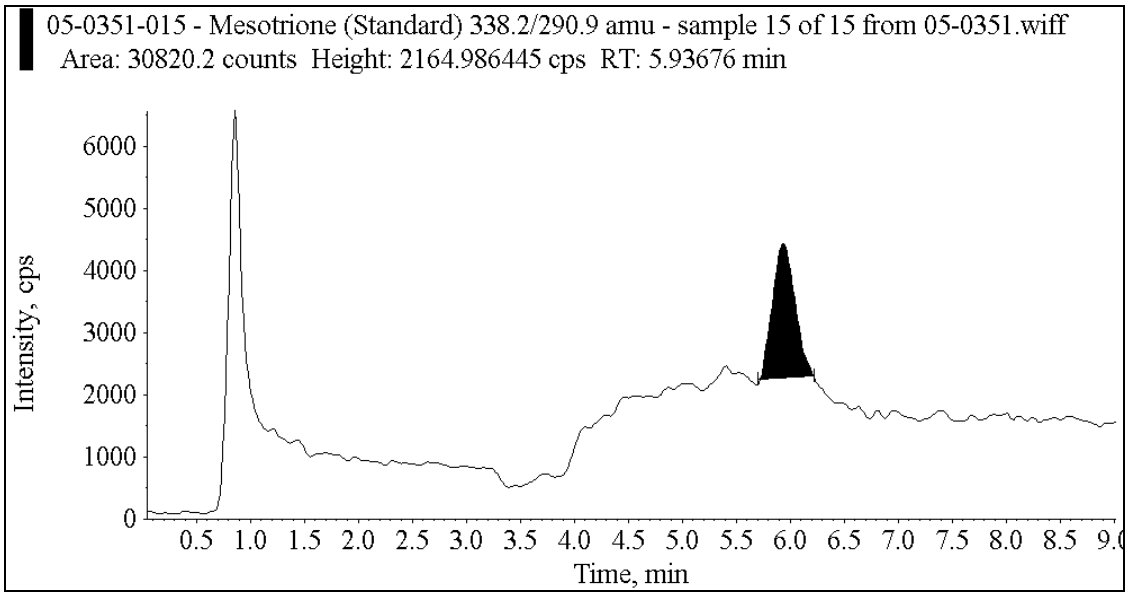
FIGURE 1. MAP - GEOGRAPHICAL REPRESENTATION OF FIELD TRIAL LOCATIONS

Location (◉) Number	Trial No	Location (City, State)	US EPA Region
1	5A-HR-04-5630	Penn Yan, New York	1
2	SJ-HR-04-5631	Rose Hill, North Carolina	2
3	SJ-HR-04-5632	Rose Hill, North Carolina	2
4	NL-HR-04-5633	Fremont, Michigan	5
5	NL-HR-04-5634	Conklin, Michigan	5
6	NL-HR-04-5636	Belding, Michigan	5
7	WF-HR-04-5635	LaConner, Washington	12
8	WG-HR-04-5637	Corvallis, Oregon	12
9	WG-HR-04-5638	Hillsboro, Oregon	12
10	WG-HR-05-6370	Corvallis, Oregon	12

FIGURE 2. REPRESENTATIVE LC/MS/MS CHROMATOGRAMS FROM ANALYSIS OF MESOTRIONE STANDARD SOLUTIONS

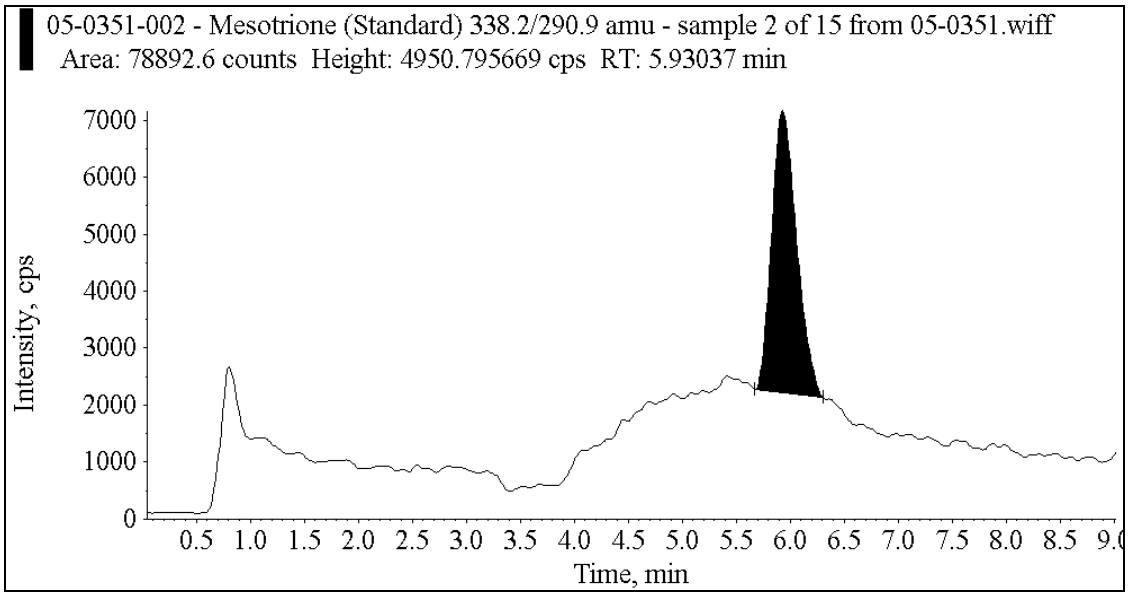


1. Standard solution, 0.02 ng/mL, injection volume = 50 µL, 0.001 ng of mesotrione injected, LC/MS/MS peak area =13064.6, generated from Syngenta Gloria AS05-0351/EWS 05-0280

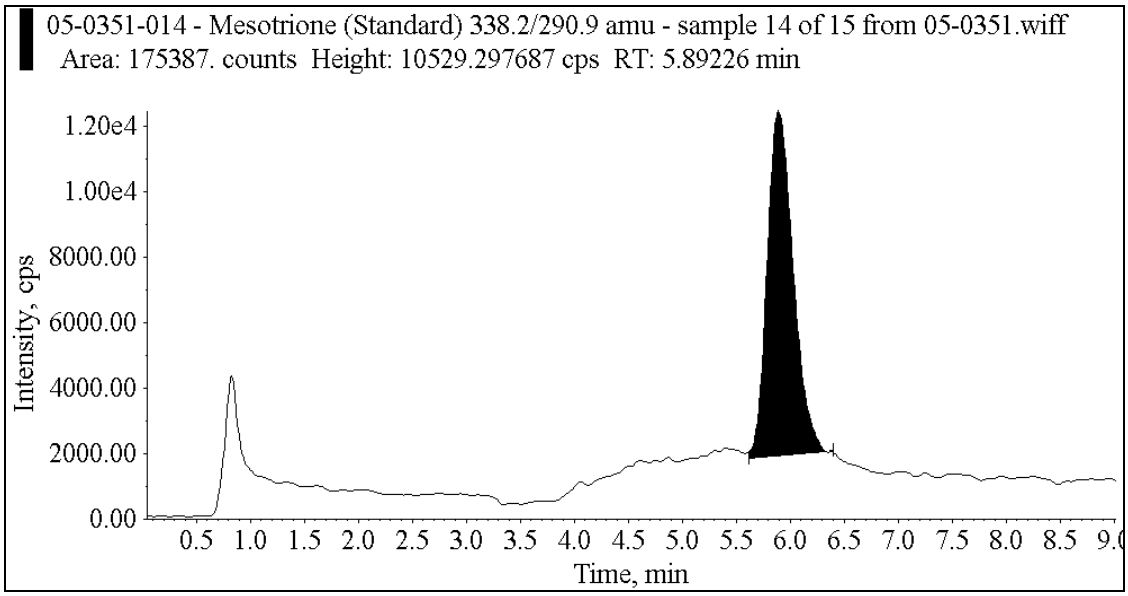


2. Standard solution, 0.05 ng/mL, injection volume = 50 µL, 0.0025 ng of mesotrione injected, LC/MS/MS peak area = 30820.2, generated from Syngenta Gloria AS-05-0351/EWS05-0280

FIGURE 2. REPRESENTATIVE LC/MS/MS CHROMATOGRAMS FROM ANALYSIS OF MESOTRIONE STANDARD SOLUTIONS (CONTINUED)

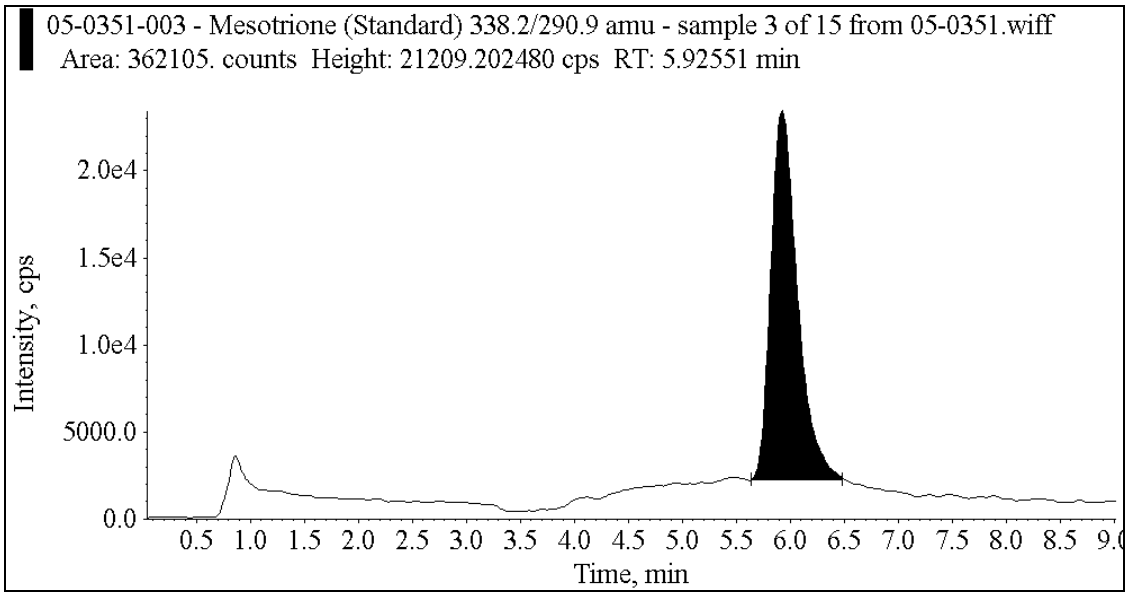


3. Standard solution, 0.1 ng/mL, injection volume = 50 µL, 0.005 ng of mesotrione injected, LC/MS/MS peak area = 78892.6, generated from Syngenta Gloria AS05-0351/ews 05-0280

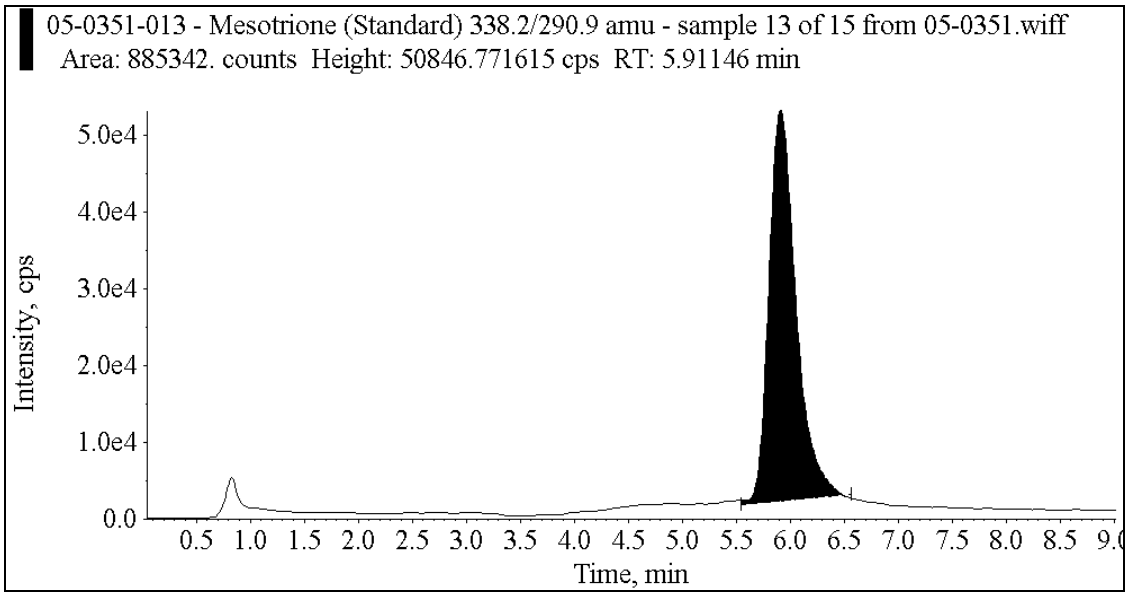


4. Standard solution, 0.2 ng/mL, injection volume = 50 µL, 0.010 ng of mesotrione injected, LC/MS/MS peak area = 175387, generated from Syngenta Gloria AS05-0351/EWS 05-0280

FIGURE 2. REPRESENTATIVE LC/MS/MS CHROMATOGRAMS FROM ANALYSIS OF MESOTRIONE STANDARD SOLUTIONS (CONTINUED)

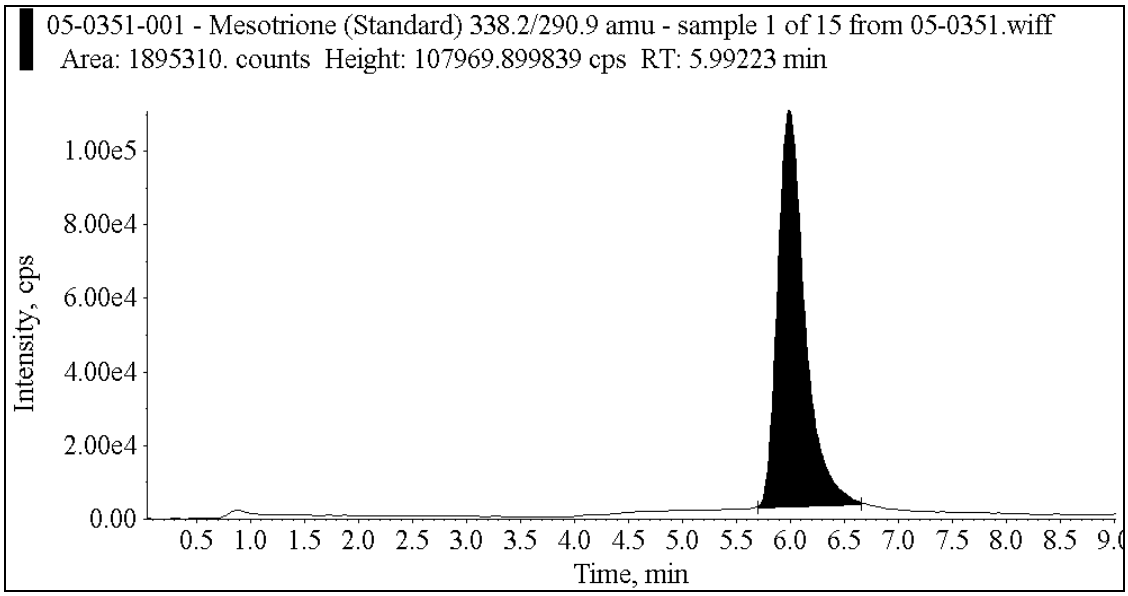


5. Standard solution, 0.4 ng/mL, injection volume = 50 µL, 0.02 ng of mesotrione injected, LC/MS/MS peak area = 362105, generated from Syngenta Gloria AS05-0351/ews 05-0280

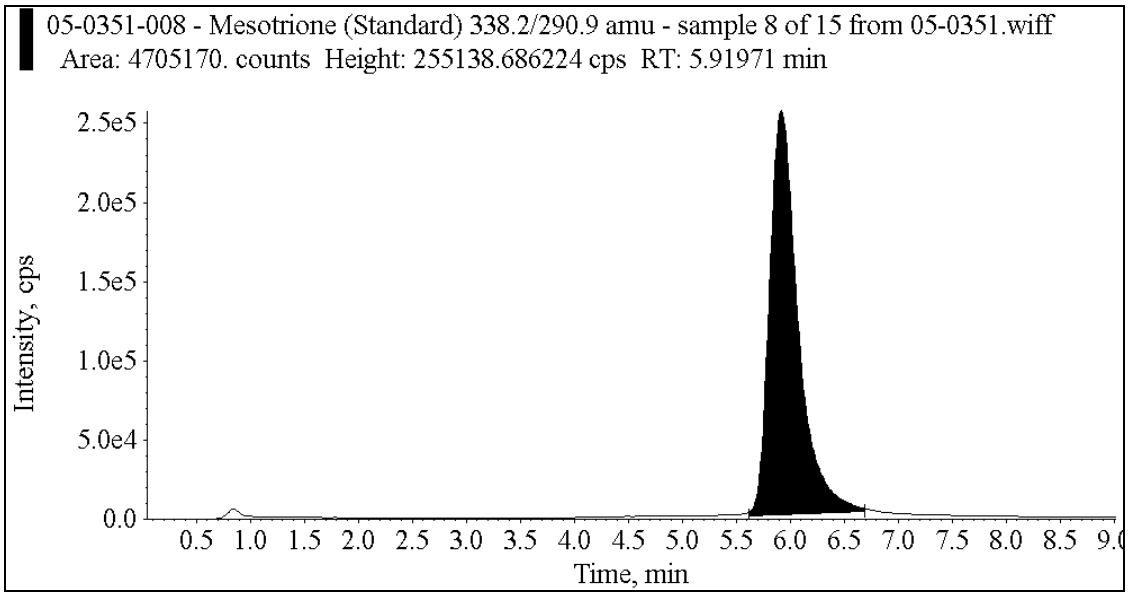


6. Standard solution, 1 ng/mL, injection volume = 50 µL, 0.05 ng of mesotrione injected, LC/MS/MS peak area = 885342, generated from Syngenta Gloria AS05-0351/EWS 05-0280

FIGURE 2. REPRESENTATIVE LC/MS/MS CHROMATOGRAMS FROM ANALYSIS OF MESOTRIONE STANDARD SOLUTIONS (CONTINUED)

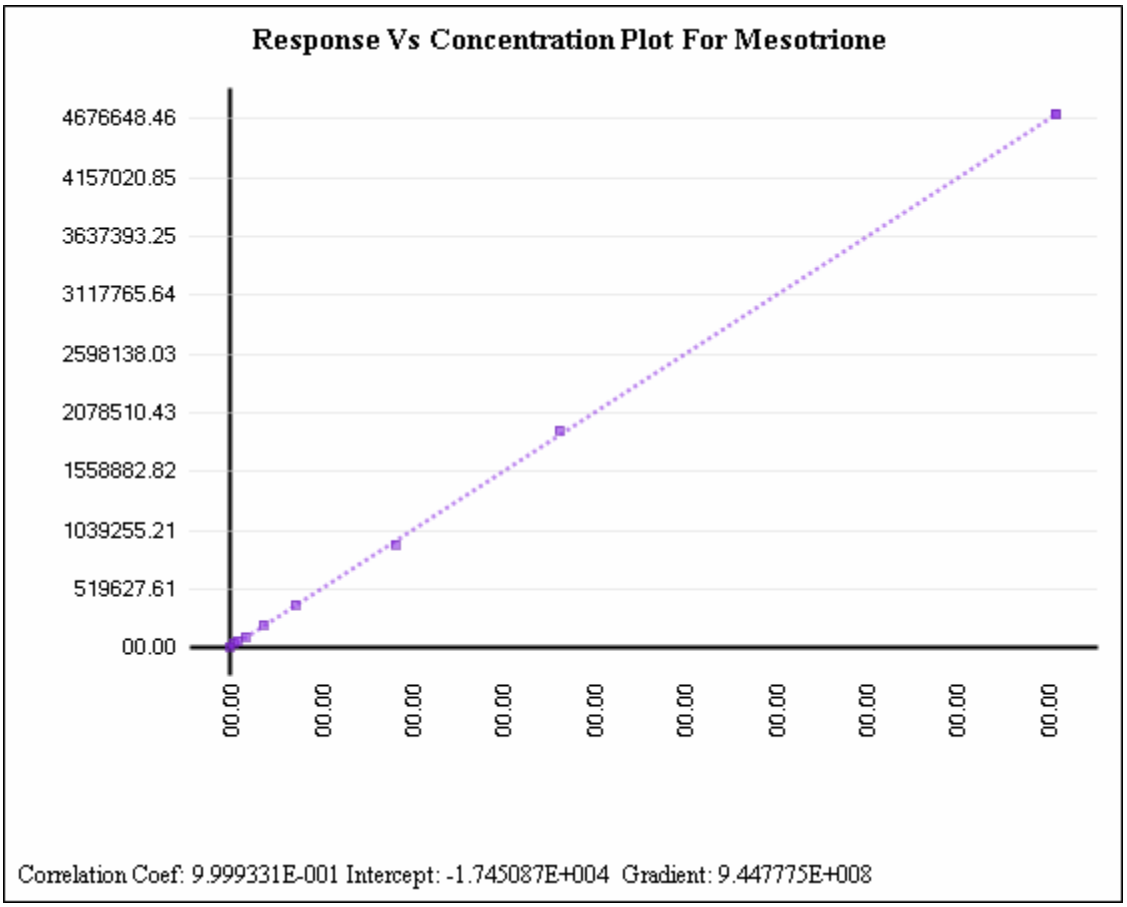


7. Standard solution, 2 ng/mL, injection volume = 50 µL, 0.1 ng of mesotrione injected, LC/MS/MS peak area = 1895310, generated from Syngenta Gloria AS05-0351/ews 05-0280



8. Standard solution, 5 ng/mL, injection volume = 50 µL, 0.25 ng of mesotrione injected, LC/MS/MS peak area = 4705170, generated from Syngenta Gloria AS05-0351/EWS 05-0280

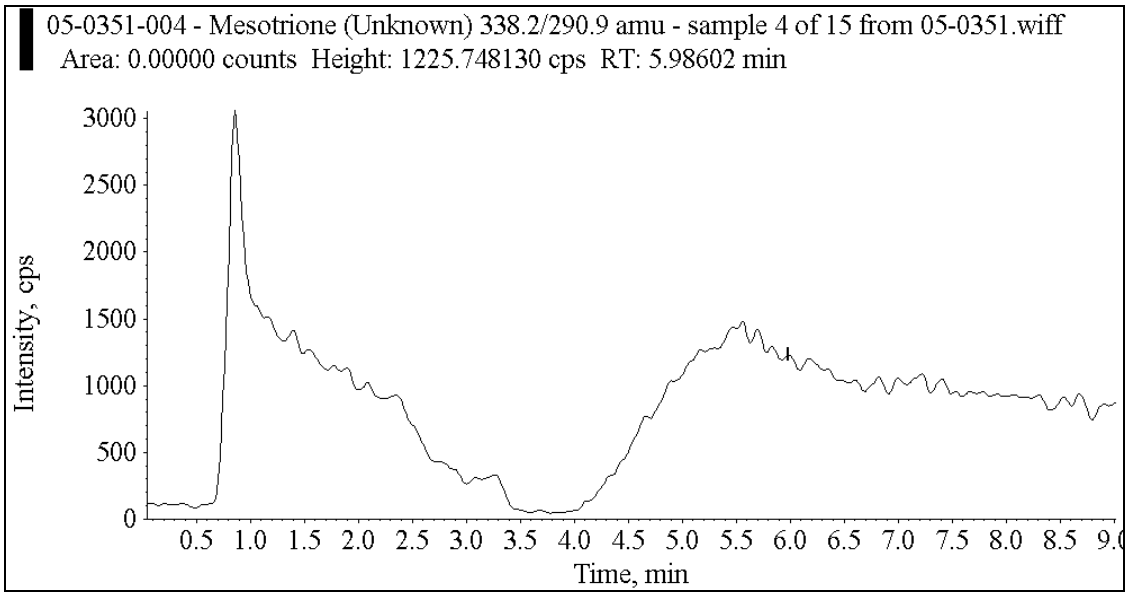
FIGURE 3. REPRESENTATIVE LC/MS/MS CALIBRATION CURVE FOR ANALYSIS OF MESOTRIONE



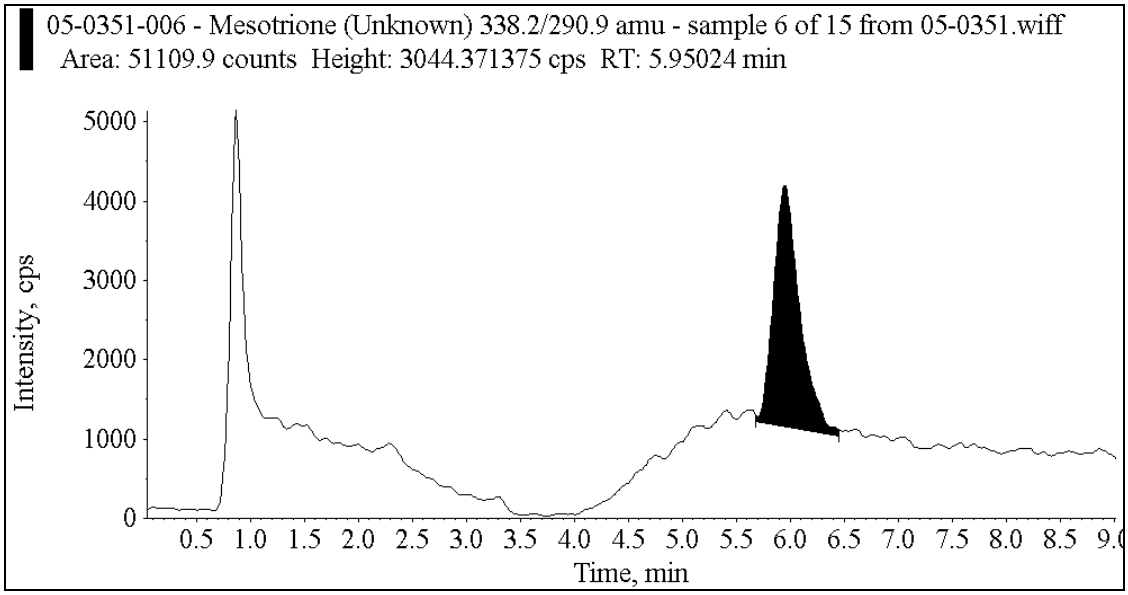
1. Mesotrione standard curve, generated from Gloria AS 05-0351/EWS 05-0280

Standard Concentration (ng/µL)	Injection Vol (µl)	Peak Area
0.00002	50	13064.6
0.00005	50	30820.2
0.0001	50	78892.6
0.0002	50	175387
0.0004	50	362105
0.001	50	885342
0.002	50	1895310
0.005	50	4705170

FIGURE 4. REPRESENTATIVE LC/MS/MS CHROMATOGRAMS FOR ANALYSIS OF RESIDUES OF MESOTRIONE IN FIELD TRIAL SJ-HR-04-5631 BLUEBERRY SAMPLES

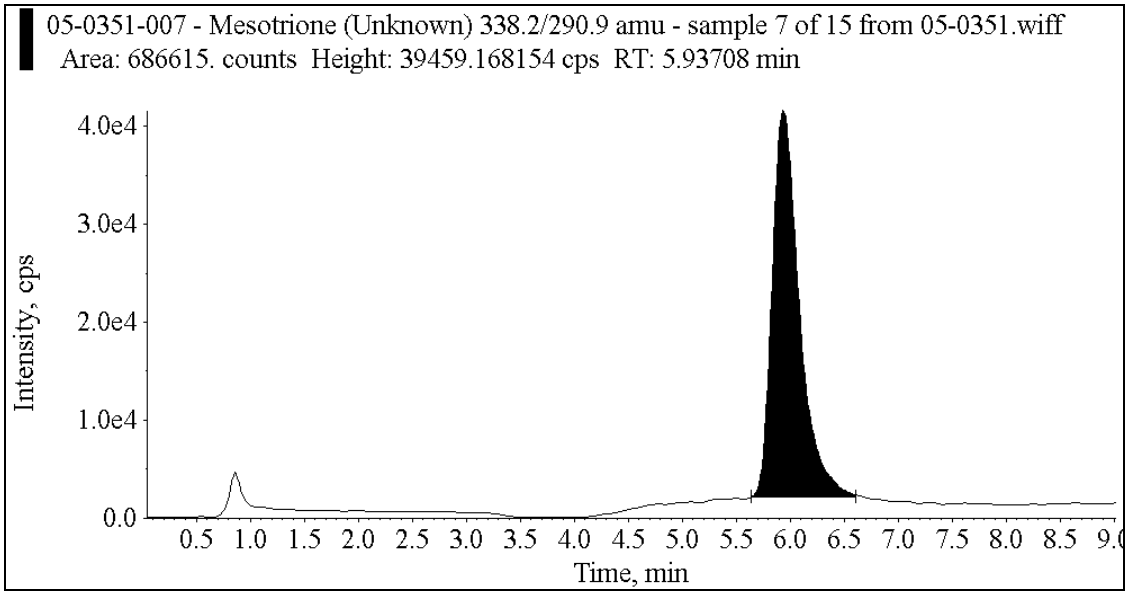


1. Control (SJ-HR-04-5631-13), matrix concentration = 0.00767 g/mL, mesotrione concentration = 0.00002 µg/mL, 50 µL injected, <0.01 ppm of mesotrione residues determined

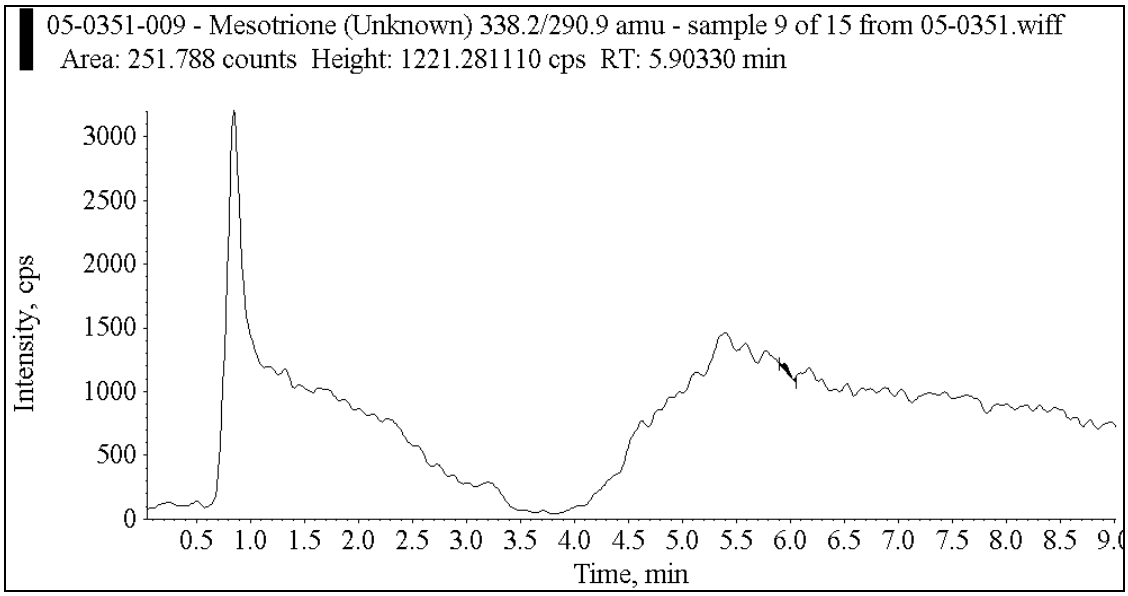


2. Control + 0.01 ppm (SJ-HR-04-5631-13), matrix concentration = 0.00767 g/mL, mesotrione concentration = 0.00007 µg/mL, 50 µL injected, 0.00946 ppm of mesotrione residues determined, 95% recovery

FIGURE 4. REPRESENTATIVE LC/MS/MS CHROMATOGRAMS FOR ANALYSIS OF RESIDUES OF MESOTRIONE IN FIELD TRIAL SJ-HR-04-5631 BLUEBERRY SAMPLES (CONTINUED)

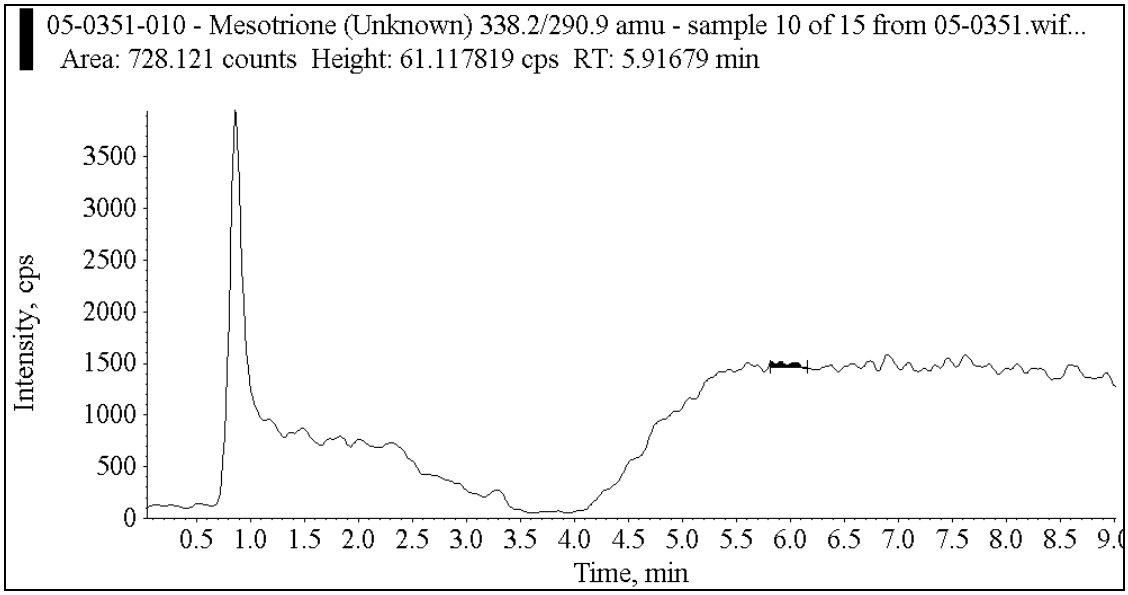


3. Control + 1.0 ppm (SJ-HR-04-5631-13), matrix concentration = 0.00077 g/mL, mesotrione concentration = 0.00075 µg/mL, 50 µL injected, 0.97 ppm of mesotrione residues determined, 97% recovery

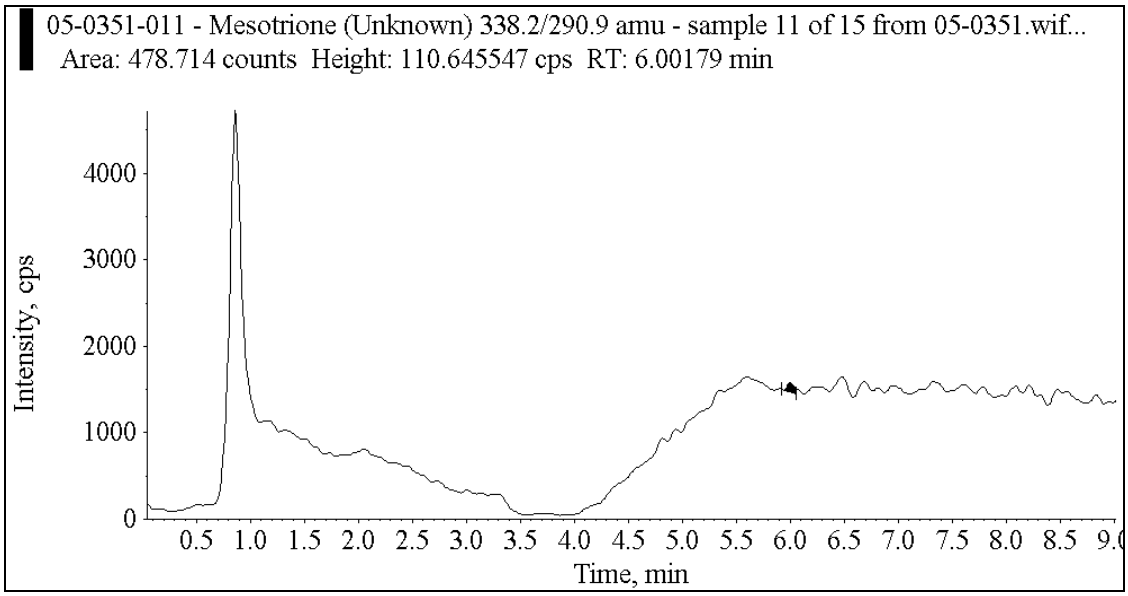


4. Treatment 2 sample (SJ-HR-04-5631-15), matrix concentration = 0.00767 g/mL, mesotrione concentration = 0.00002 µg/mL, 50 µL injected, <0.01 ppm of mesotrione residues determined

FIGURE 4. REPRESENTATIVE LC/MS/MS CHROMATOGRAMS FOR ANALYSIS OF RESIDUES OF MESOTRIONE IN FIELD TRIAL SJ-HR-04-5631 BLUEBERRY SAMPLES (CONTINUED)

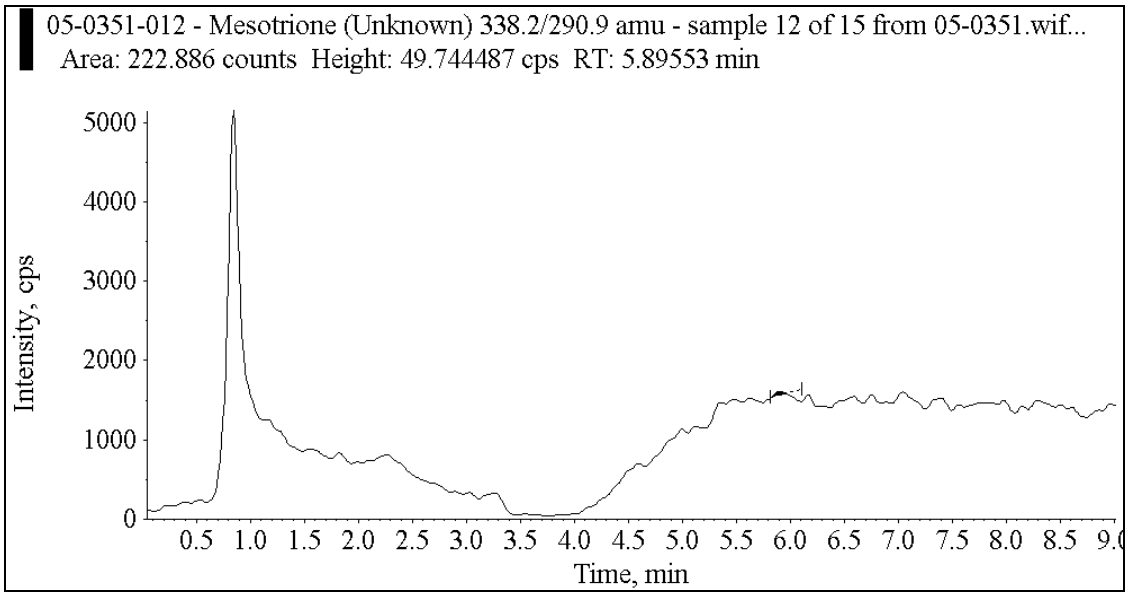


5. Treatment 2 sample (SJ-HR-04-5631-16), matrix concentration = 0.00767 g/mL, mesotrione concentration = 0.00002 µg/mL, 50 µL injected, <0.01 ppm of mesotrione residues determined



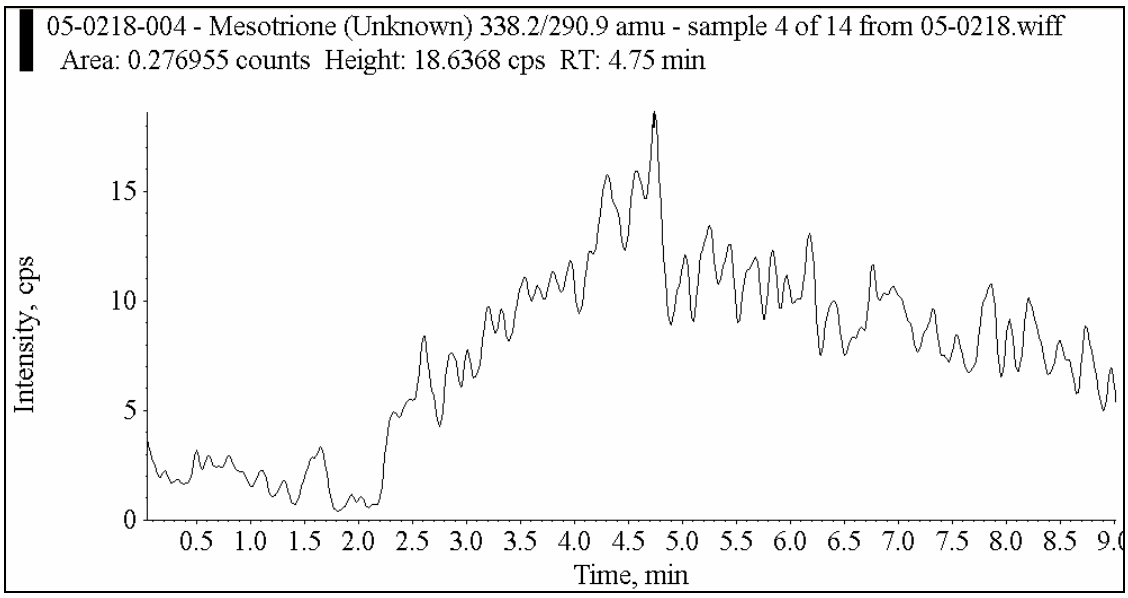
6. Treatment 3 sample (SJ-HR-04-5631-17), matrix concentration = 0.00767 g/mL, mesotrione concentration = 0.00002 µg/mL, 50 µL injected, <0.01 ppm of mesotrione residues determined

FIGURE 4. REPRESENTATIVE LC/MS/MS CHROMATOGRAMS FOR ANALYSIS OF RESIDUES OF MESOTRIONE IN FIELD TRIAL SJ-HR-04-5631 BLUEBERRY SAMPLES (CONTINUED)

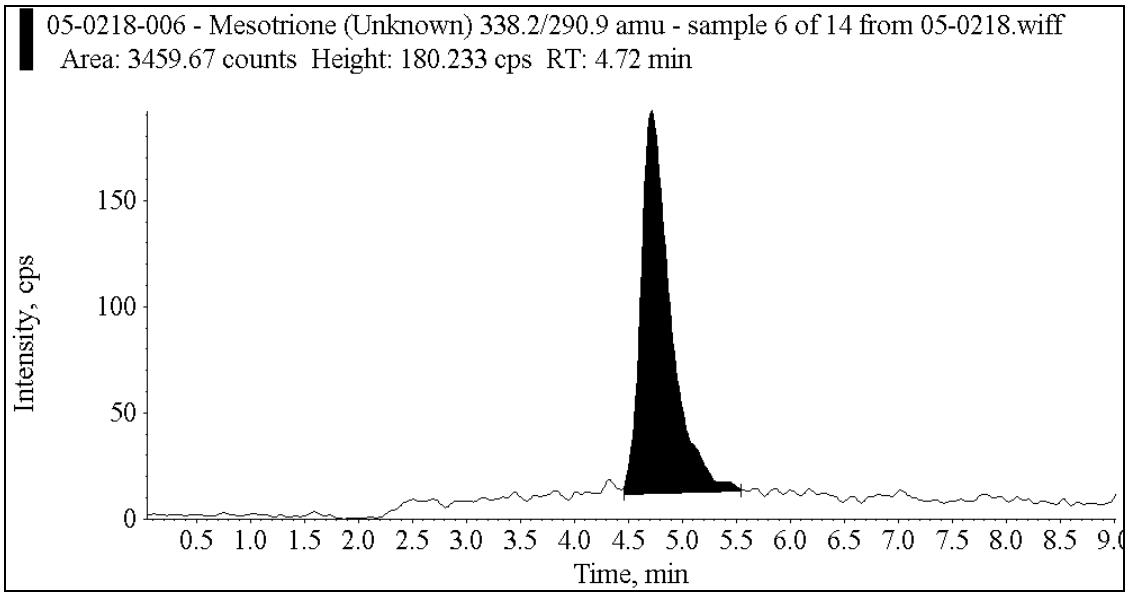


7. Treatment 3 sample (SJ-HR-04-5631-18), matrix concentration = 0.00767 g/mL, mesotrione concentration = 0.00002 µg/mL, 50 µL injected, <0.01 ppm of mesotrione residues determined

FIGURE 5. REPRESENTATIVE LC/MS/MS CHROMATOGRAMS FOR ANALYSIS OF RESIDUES OF MESOTRIONE IN FIELD TRIAL NL-HR-04-5636 RASPBERRY SAMPLES

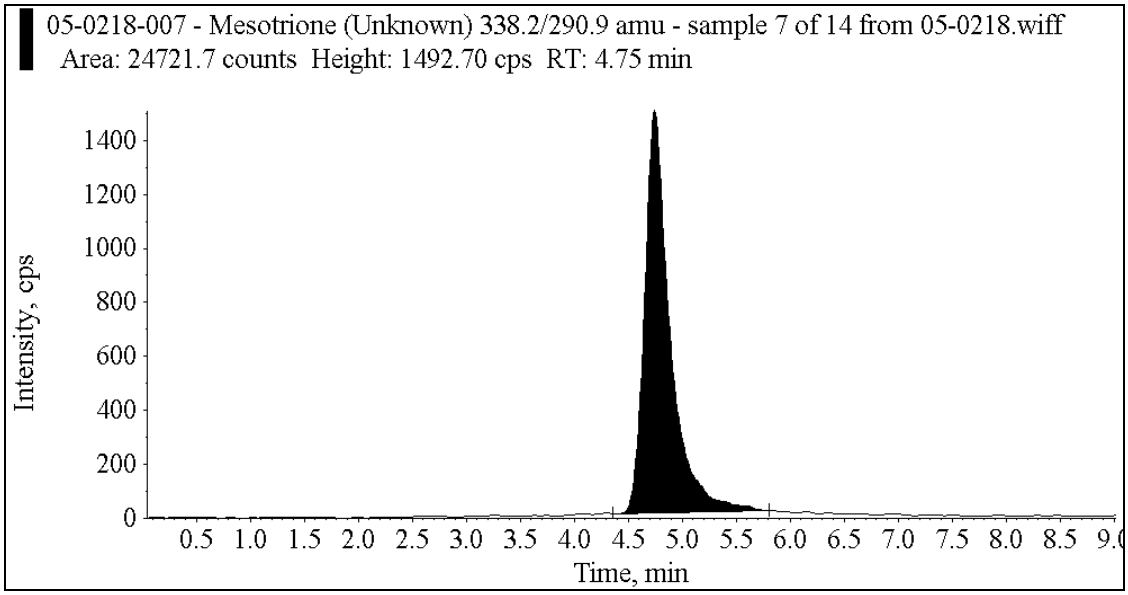


1. Control (NL-HR-04-5636-13), matrix concentration = 0.09208 g/mL, mesotrione concentration = 0.00017 µg/mL, 50 µL injected, <0.01 ppm of mesotrione residues determined

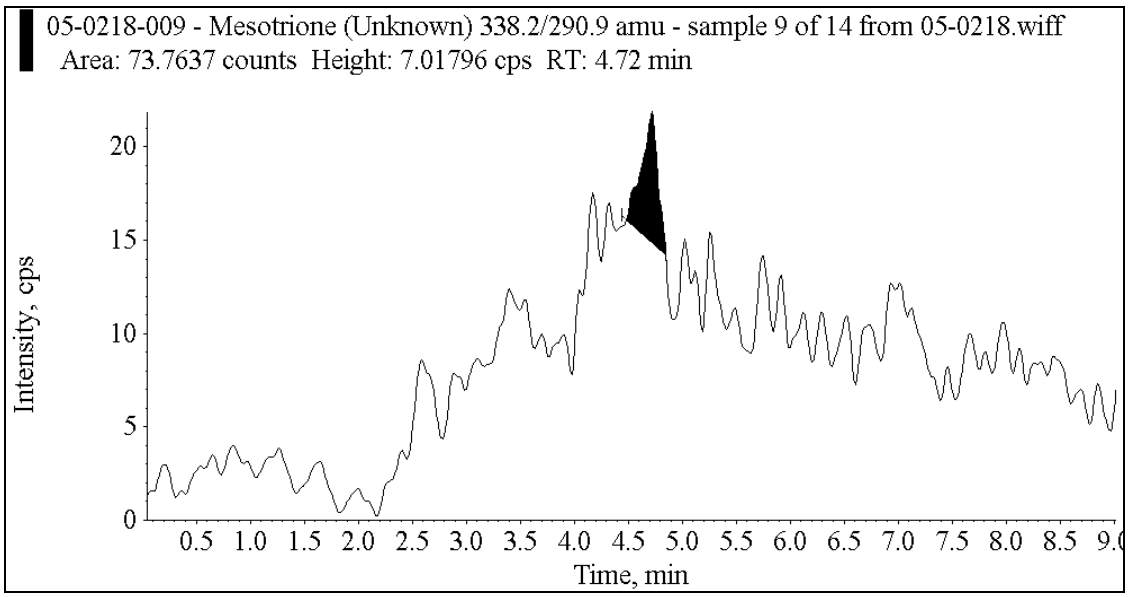


2. Control + 0.01 ppm (NL-HR-04-5636-13), matrix concentration = 0.09208 g/mL, mesotrione concentration = 0.00069 µg/mL, 50 µL injected, 0.00747 ppm of mesotrione residues determined, 75% recovery

FIGURE 5. REPRESENTATIVE LC/MS/MS CHROMATOGRAMS FOR ANALYSIS OF RESIDUES OF MESOTRIONE IN FIELD TRIAL NL-HR-04-5636 RASPBERRY SAMPLES (CONTINUED)

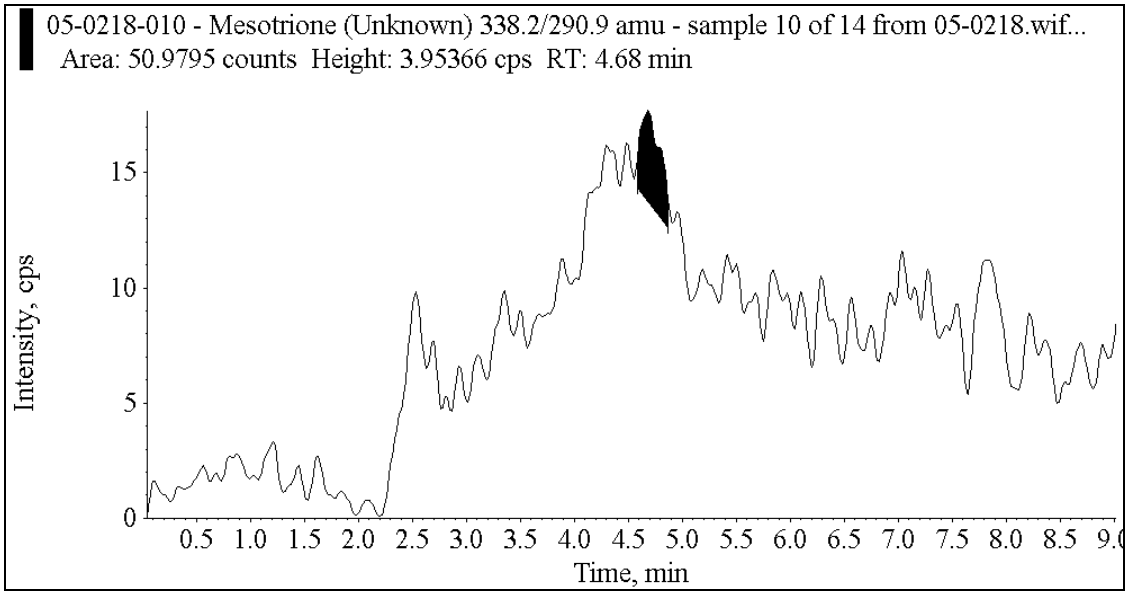


3. Control + 1.0 ppm (NL-HR-04-5636-13), matrix concentration = 0.00460 g/mL, mesotrione concentration = 0.00388 µg/mL, 50 µL injected, 0.84 ppm of mesotrione residues determined, 84% recovery

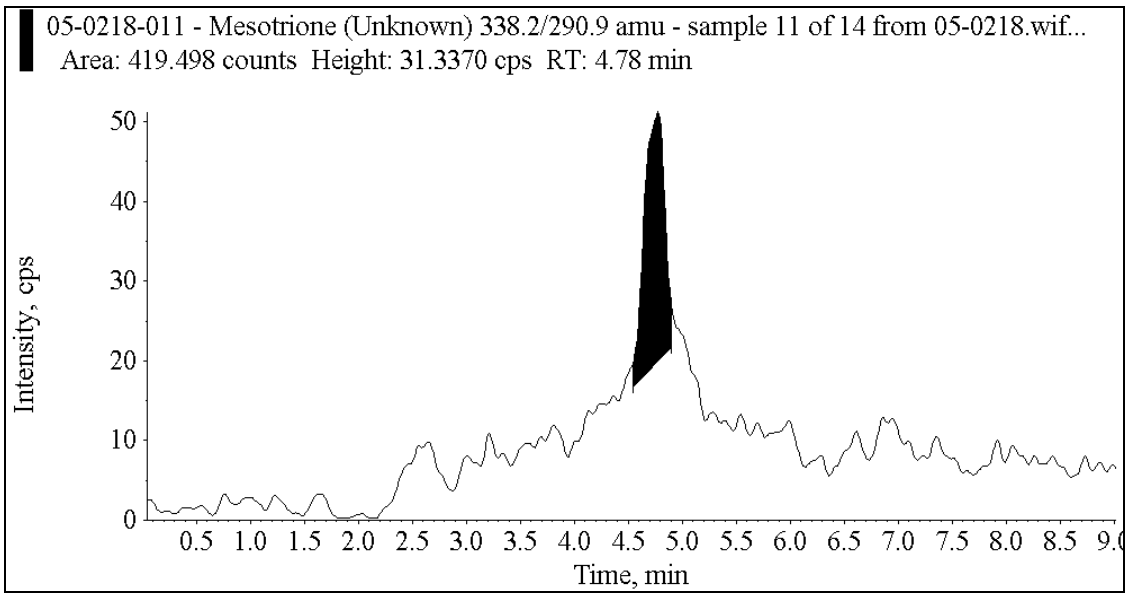


4. Treatment 2 sample (NL-HR-04-5636-15), matrix concentration = 0.09208 g/mL, mesotrione concentration = 0.00018 µg/mL, 50 µL injected, <0.01 ppm of mesotrione residues determined

FIGURE 5. REPRESENTATIVE LC/MS/MS CHROMATOGRAMS FOR ANALYSIS OF RESIDUES OF MESOTRIONE IN FIELD TRIAL NL-HR-04-5636 RASPBERRY SAMPLES (CONTINUED)

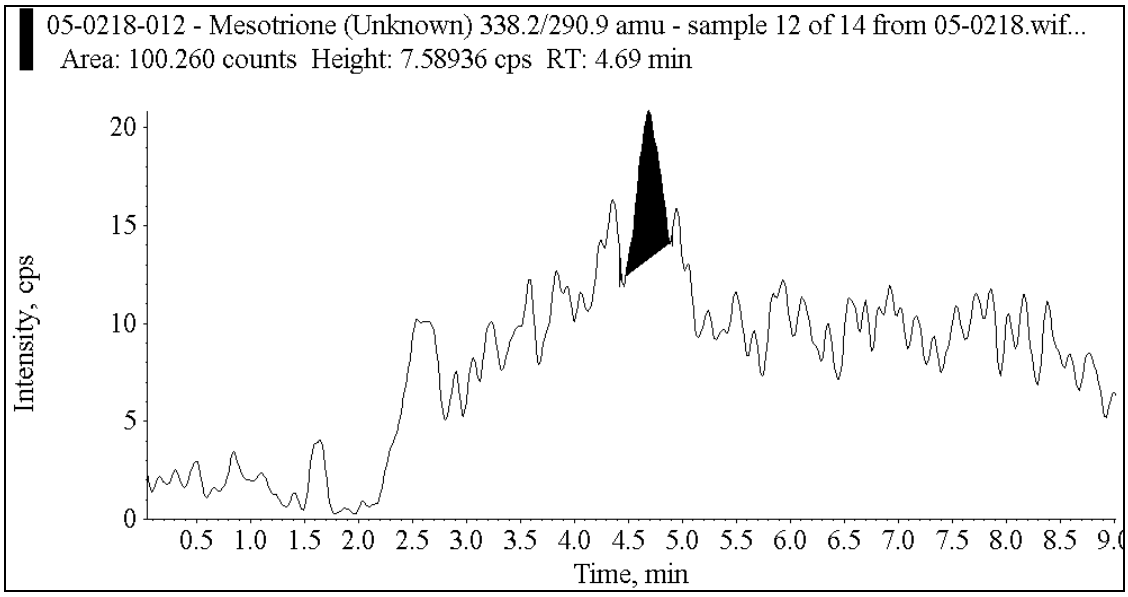


5. Treatment 2 sample (NL-HR-04-5636-16), matrix concentration = 0.09208 g/mL, mesotrione concentration = 0.00018 µg/mL, 50 µL injected, <0.01 ppm of mesotrione residues determined



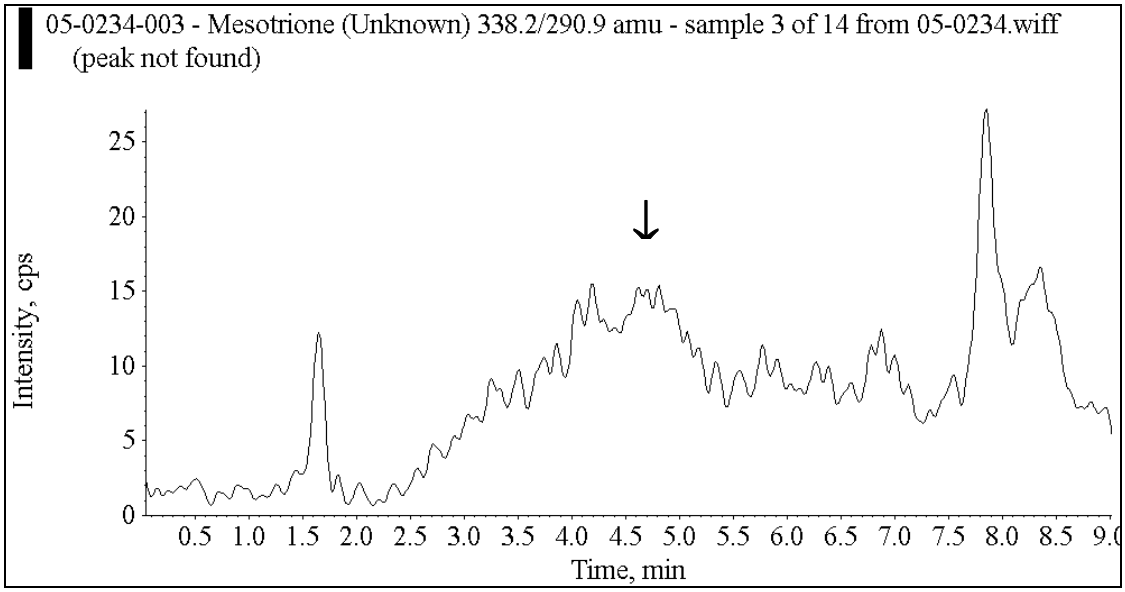
6. Treatment 3 sample (NL-HR-04-5636-17), matrix concentration = 0.09208 g/mL, mesotrione concentration = 0.00023µg/mL, 50 µL injected, <0.01 ppm of mesotrione residues determined

FIGURE 5. REPRESENTATIVE LC/MS/MS CHROMATOGRAMS FOR ANALYSIS OF RESIDUES OF MESOTRIONE IN FIELD TRIAL NL-HR-04-3636 RASPBERRY SAMPLES (CONTINUED)

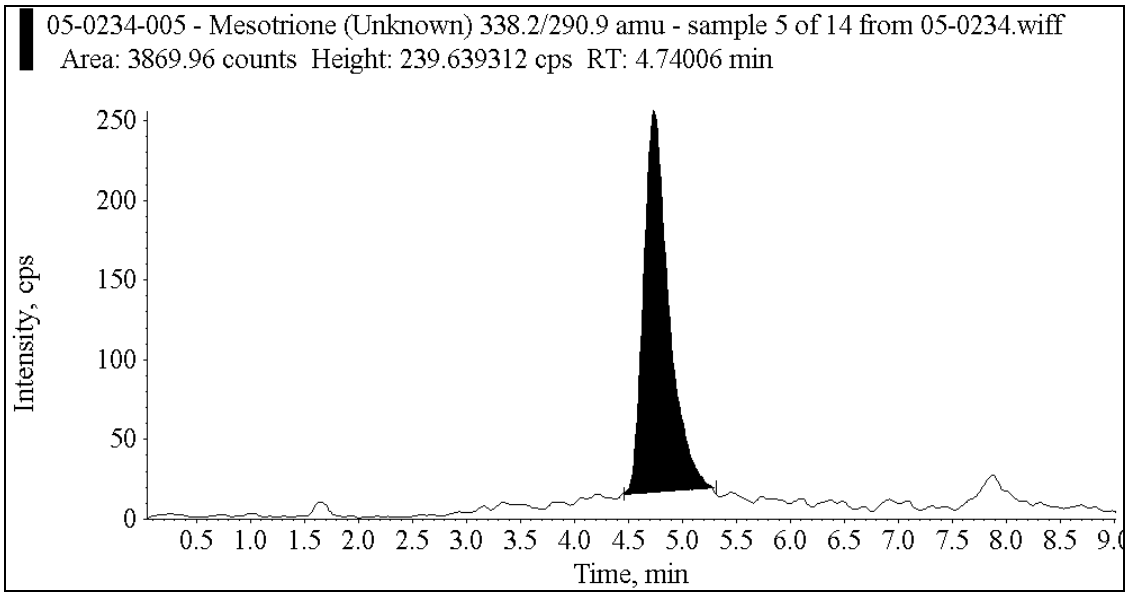


7. Treatment 3 sample (NL-HR-04-3636-18), matrix concentration = 0.09208 g/mL, mesotrione concentration = 0.00018 µg/mL, 50 µL injected, <0.01 ppm of mesotrione residues determined

FIGURE 6. REPRESENTATIVE LC/MS/MS CHROMATOGRAMS FOR ANALYSIS OF RESIDUES OF MESOTRIONE IN FIELD TRIAL WG-HR-04-5638 BLACKBERRY SAMPLES

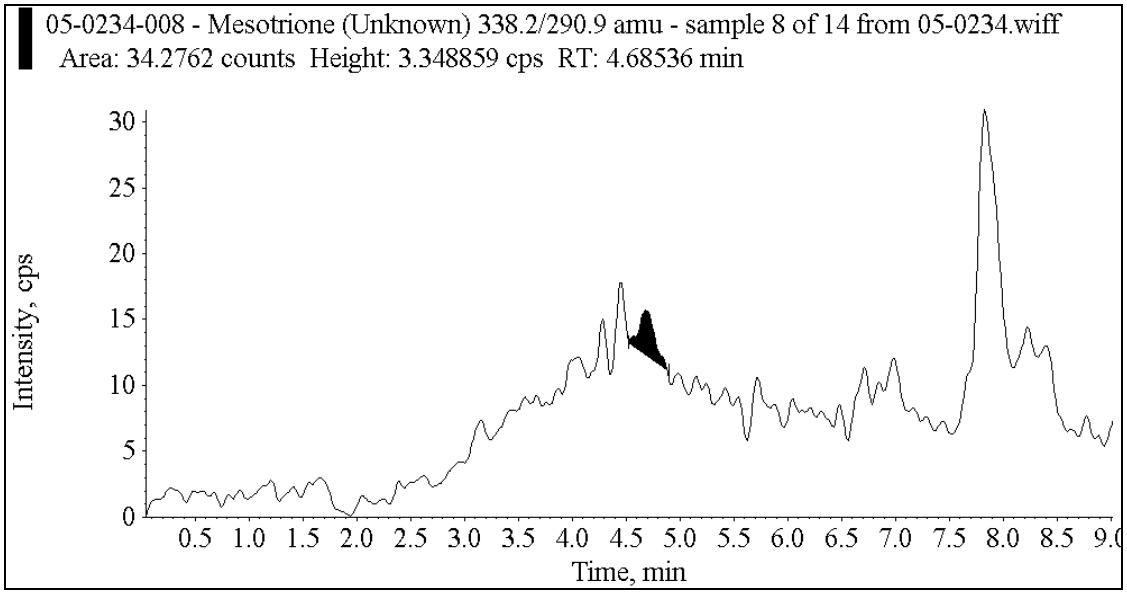


1. Control (WG-HR-04-5638-01), matrix concentration = 0.09208 g/mL, mesotrione concentration = 0.00013 µg/mL, 50 µL injected, <0.01 ppm of mesotrione residues determined

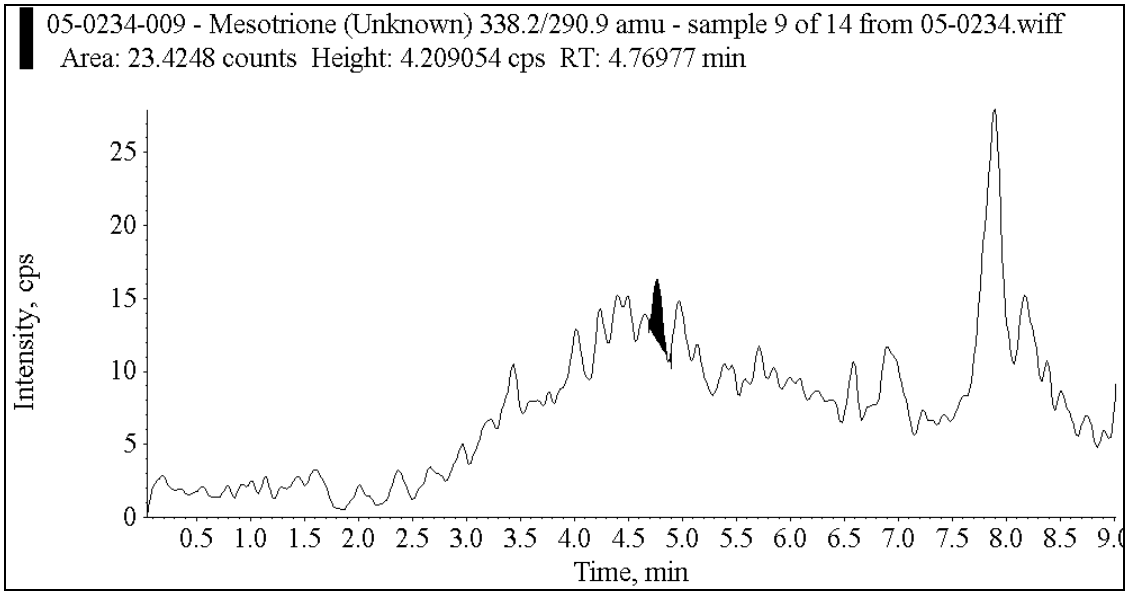


2. Control + 0.01 ppm (WG-HR-04-5638-01), matrix concentration = 0.09208 g/mL, mesotrione concentration = 0.00082 µg/mL, 50 µL injected, 0.0089 ppm of mesotrione residues determined, 89% recovery

FIGURE 6. REPRESENTATIVE LC/MS/MS CHROMATOGRAMS FOR ANALYSIS OF RESIDUES OF MESOTRIONE IN FIELD TRIAL WG-HR-04-5638 BLACKBERRY SAMPLES (CONTINUED)

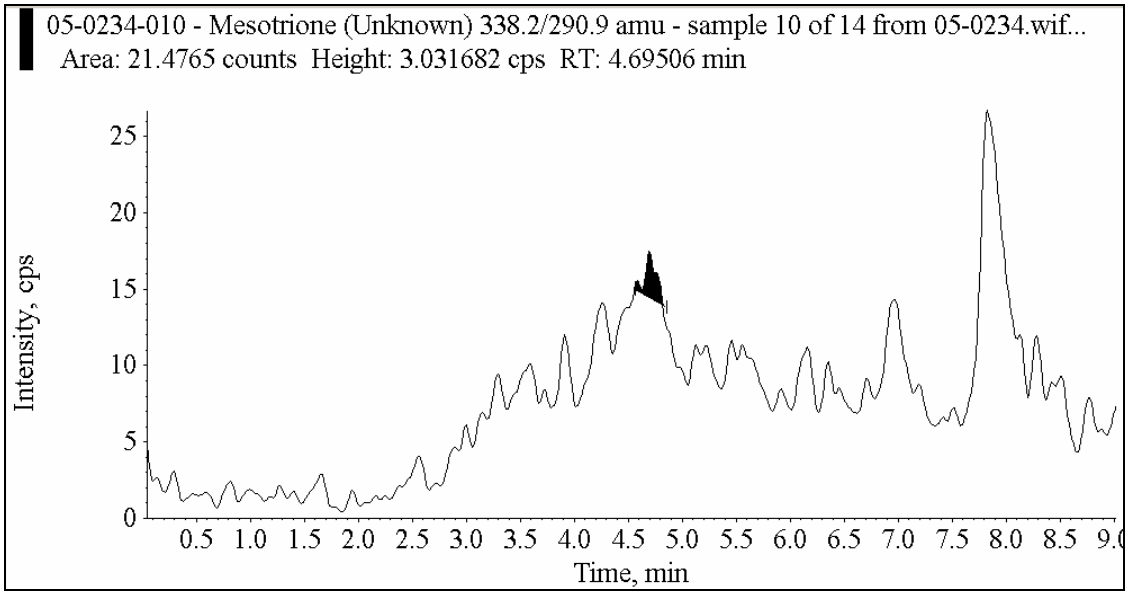


3. Treatment 2 sample (WG-HR-04-5638-03), matrix concentration = 0.09208 g/mL, mesotrione concentration = 0.00014 µg/mL, 50 µL injected, <0.01 ppm of mesotrione residues determined

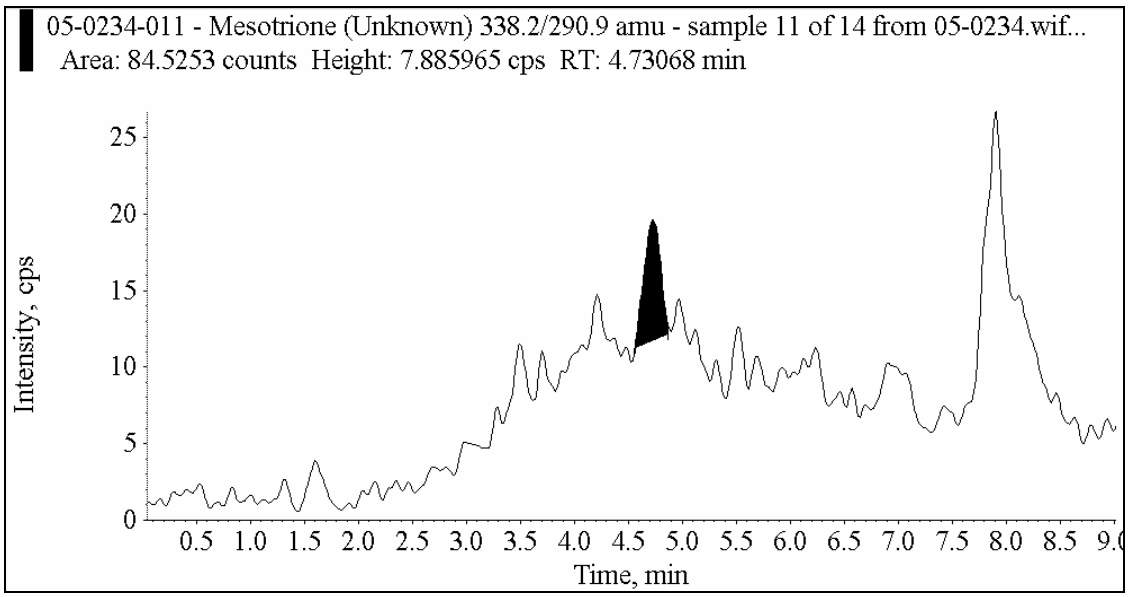


4. Treatment 2 sample (WG-HR-04-5638-04), matrix concentration = 0.09208 g/mL, mesotrione concentration = 0.00014 µg/mL, 50 µL injected, <0.01 ppm of mesotrione residues determined

FIGURE 6. REPRESENTATIVE LC/MS/MS CHROMATOGRAMS FOR ANALYSIS OF RESIDUES OF MESOTRIONE IN FIELD TRIAL WG-HR-04-5638 BLACKBERRY SAMPLES (CONTINUED)



5. Treatment 3 sample (WG-HR-04-5638-05), matrix concentration = 0.09208 g/mL, mesotrione concentration = 0.00014 µg/mL, 50 µL injected, <0.01 ppm of mesotrione residues determined



6. Treatment 3 sample (WG-HR-04-5638-06), matrix concentration = 0.09208 g/mL, mesotrione concentration = 0.00015 µg/mL, 50 µL injected, <0.01 ppm of mesotrione residues determined

8.0 REFERENCES

1. Crook, S.J., Syngenta Crop Protection, Inc., Analytical Method No., RAM366/01, "Residue Analytical Method for the Determination of Residues of Mesotrione and 4-(methylsulfonyl)-2-Nitrobenzoic Acid (MNBA) in Crop Samples." MRID No. 45651803.

2. Wiebe, L.A. and Peyton, C.S., Zeneca Final Report No. RR97-042B FIN, Study No. 1296-95-SS-02, "ZA1296: Stability of ZA1296 and Metabolite MNBA in Frozen Crops." MRID No. 44942401.

9.0 APPENDICES

APPENDIX 1. FIELD TRIAL SUMMARIES

FIELD TRIAL SUMMARY

FIELD TEST NUMBER: 5A-HR-04-5630 PROTOCOL NUMBER: 10288-04 Blueberry

TEST SUBSTANCE

AI Common Name	AI Code Name	Test Substance	Lot/Batch Number
Mesotrione	ZA01296	mesotrione 4SC	FL-010515

TEST SYSTEM

Test System	Crop Variety	Crop Group Classification	Planting Date or Age
Blueberry	Blue Ray	Berry Group 13	25 Years

PFI Name	PFI Company	PFI Address	PFI Phone
Harry Humphries	A.C.D.S Research Inc. (Dundee)	100 Willow Lane P.O. Box 70 Dundee, NY 14837	(315) 694-0303

Trial Location	Trial City	Soil Texture	Soil Characterization Lab	Soil Characterization Lab Addr
New York	Penn Yan	Gravelly Loam	Agvise Laboratories	604 Highway 15 PO Box 510 Northwood, ND 58267

TREATMENT LIST

TRT ID	App No	App Formulation	Actual Rate Amount	App Timing
2	1	mesotrione 4SC	41.1744 g a.i./A	Post directed pre-bloom
3	1	mesotrione 4SC	85.2648 g a.i./A	Post directed pre-bloom

APPLICATIONS

Actual App Date	TRT ID	App No	App Timing	Sprayer Type	Actual GPA	Crop Growth Stage
05/15/2004	2	1	Post directed pre-bloom	Backpack	50.410	59
05/15/2004	3	1	Post directed pre-bloom	Backpack	49.470	59

OTHER TREATMENTS, FERTILIZER, CULTIVATION

Pesticide Appl Date	Product/Active Ingredient
05/17/2004	Captan 50W
05/21/2004	Captan 50W
06/10/2004	Glyphosate
Fertilizer Date Applied	Type of Fertilizer
	None
Preparatory Date	Preparatory Description
	Refer to eFTN "Notes" section.

IRRIGATION

Irrigation Date	Irrigation Method	Water Source	Irrigation Amount (in)
	None		0 in.

SAMPLING

Actual Sample Date	Sample No	TRT ID	Sample Type	Sample Shipped Date	Sample Receipt Date	Sample Prep Date
07/31/2004	001	1	berry	09/25/2004	09/27/2004	04/28/2005
07/31/2004	002	1	berry	09/25/2004	09/27/2004	N/A
07/31/2004	003	2	berry	09/25/2004	09/27/2004	04/28/2005
07/31/2004	004	2	berry	09/25/2004	09/27/2004	04/28/2005
07/31/2004	005	3	berry	09/25/2004	09/27/2004	04/28/2005
07/31/2004	006	3	berry	09/25/2004	09/27/2004	04/28/2005

DEVIATIONS

Trial Deviation Description
A rain event occurred approximately one hour after the applications were completed. The rain event started at approximately 1:15 P.M. The third paragraph under the sub-title "Equipment," on page 7 of the protocol, specifies that the applications preferably should not be made if rainfall is expected within 4 hours after application.

Supplementary Trial Weather Data (This information was provided by NOAA Climatological Data)

Trial Month	Trial Year	Overall T° F Range		Trial Air Average	Departure From Normal	Trial Total Precipitation	Departure From Normal
		Lowest	Highest				
January							
February							
March							
April							
May	2004	34	86	59.8	3.1	5.27	2.24
June	2004	42	89	63.5	-2.2	2.19	-1.56
July	2004	53	86	68.8	-1.6	6.46	3.34
August							
September							
October							
November							
December							

Station: 303184/99999, GENEVA RESEARCH FARM, New York

Analysis Sheet 05-1119 Mean Recovery 92% Calibration Type MultiPoint
Study Number(s) 10288-04 Blueberry Recovery CV 15% Instrument sciex2
Extraction Date 12/13/2005
Analysis Date 12/14/2005 LOQ 0.01
Matrix Blueberry

Inj. #	Group	Sample Type	Peak Area	Standard Conc (ug/ml)	Calculated Conc (ug/ml)	Sample Conc (g/ml)	Uncorrected Residue (ppm)	Procedural Rec Level (ppm)	% Recovery	Reported Residue (ppm)	Sample
1	1	Standard	115670	0.0004							7751/5/23 0.4 ng/ml
2	1	Standard	60877.4	0.0002							7751/5/24 0.2 ng/ml
3	1	Control	0		-0.00001	0.00658	-0.00183			< LOQ	5A-HR-04-5630-001/2
4	1	Standard	5577.74	0.00002							7751/5/27 0.02ng/ml
5	1	Recovery	18441.6		0.00005	0.00658	0.00825	0.01	82.5		5A-HR-04-5630-001/2
6	1	Recovery	190110		0.00067	0.00066	1.02045	1	102.04		5A-HR-04-5630-001/2
7	1	Standard	291015	0.001							7751/5/22 1 ng/ml
8	1	Sample	0		-0.00001	0.00658	-0.00183			< LOQ	5A-HR-04-5630-003/2
9	1	Sample	0		-0.00001	0.00658	-0.00183			< LOQ	5A-HR-04-5630-004/2
10	1	Standard	29269.1	0.0001							7751/5/25 0.1 ng/ml
11	1	Sample	0		-0.00001	0.00658	-0.00183			< LOQ	5A-HR-04-5630-005/2
12	1	Sample	0		-0.00001	0.00658	-0.00183			< LOQ	5A-HR-04-5630-006/2
13	1	Standard	554975	0.002							7751/5/21 2 ng/ml
14	1	Standard	15095.5	0.00005							7751/5/26 0.05ng/ml

FIELD TRIAL SUMMARY

FIELD TEST NUMBER: SJ-HR-04-5631 PROTOCOL NUMBER: 10288-04 Blueberry

TEST SUBSTANCE

AI Common Name	AI Code Name	Test Substance	Lot/Batch Number
Mesotrione	ZA01296	mesotrione 4SC	FL-010515

TEST SYSTEM

Test System	Crop Variety	Crop Group Classification	Planting Date or Age
Blueberry	Reveille	Berry Group 13	3 years

PFI Name	PFI Company	PFI Address	PFI Phone
Paul Garvey	Agricultural System Associates	3341 Hwy 58 South Kinston, NC 28504	(910) 532-6187

Trial Location	Trial City	Soil Texture	Soil Characterization Lab	Soil Characterization Lab Addr
North Carolina	Rose Hill	sand	Agvise Laboratories	604 Highway 15 PO Box 510 Northwood, ND 58267

TREATMENT LIST

TRT ID	App No	App Formulation	Actual Rate Amount	App Timing
2	1	mesotrione 4SC	43.4901 g a.i./A	Post directed pre-bloom
3	1	mesotrione 4SC	87.4236 g a.i./A	Post directed pre-bloom

APPLICATIONS

Actual App Date	TRT ID	App No	App Timing	Sprayer Type	Actual GPA	Crop Growth Stage
04/29/2004	2	1	Post directed pre-bloom	Backpack	27.470	early fruit set (69)
04/29/2004	3	1	Post directed pre-bloom	Backpack	27.610	early fruit set (69)

OTHER TREATMENTS, FERTILIZER, CULTIVATION

Pesticide Appl Date	Product/Active Ingredient
04/05/2004	Fenbuconazole
04/12/2004	Fenbuconazole
04/19/2004	Fenbuconazole
04/26/2004	Fenbuconazole
04/26/2004	Malathion
05/03/2004	Malathion
05/10/2004	Malathion
05/17/2004	Malathion
05/24/2004	Malathion
Fertilizer Date Applied	Type of Fertilizer
03/15/2004	14-18-14
Preparatory Date	Preparatory Description
03/15/2004	hand and mechanical weed control on plant beds
03/31/2004	mechanical tillage between plant beds

IRRIGATION

Irrigation Date	Irrigation Method	Water Source	Irrigation Amount (in)
			none applied

SAMPLING

Actual Sample Date	Sample No	TRT ID	Sample Type	Sample Shipped Date	Sample Receipt Date	Sample Prep Date
05/31/2004	001	1	berry (7-)	06/22/2004	06/23/2004	02/10/2005
05/31/2004	002	1	berry (7-)	06/22/2004	06/23/2004	N/A
05/31/2004	003	2	berry (7-)	06/22/2004	06/23/2004	02/10/2005
05/31/2004	004	2	berry (7-)	06/22/2004	06/23/2004	02/10/2005
05/31/2004	005	3	berry (7-)	06/22/2004	06/23/2004	02/11/2005
05/31/2004	006	3	berry (7-)	06/22/2004	06/23/2004	02/11/2005
06/03/2004	007	1	berry (4-)	06/22/2004	06/23/2004	02/11/2005
06/03/2004	008	1	berry (4-)	06/22/2004	06/23/2004	N/A
06/03/2004	009	2	berry (4-)	06/22/2004	06/23/2004	02/11/2005
06/03/2004	010	2	berry (4-)	06/22/2004	06/23/2004	02/11/2005
06/03/2004	011	3	berry (4-)	06/22/2004	06/23/2004	02/11/2005
06/03/2004	012	3	berry (4-)	06/22/2004	06/23/2004	02/11/2005
06/07/2004	013	1	berry	06/22/2004	06/23/2004	02/11/2005
06/07/2004	014	1	berry	06/22/2004	06/23/2004	N/A
06/07/2004	015	2	berry	06/22/2004	06/23/2004	02/11/2005
06/07/2004	016	2	berry	06/22/2004	06/23/2004	02/11/2005
06/07/2004	017	3	berry	06/22/2004	06/23/2004	02/11/2005
06/07/2004	018	3	berry	06/22/2004	06/23/2004	02/11/2005
06/11/2004	019	1	berry (4+)	06/22/2004	06/23/2004	02/14/2005
06/11/2004	020	1	berry (4+)	06/22/2004	06/23/2004	N/A
06/11/2004	021	2	berry (4+)	06/22/2004	06/23/2004	02/14/2005
06/11/2004	022	2	berry (4+)	06/22/2004	06/23/2004	02/14/2005
06/11/2004	023	3	berry (4+)	06/22/2004	06/23/2004	02/14/2005
06/11/2004	024	3	berry (4+)	06/22/2004	06/23/2004	02/14/2005

DEVIATIONS

Trial Deviation Description
Blueberry application timing was later than pre-bloom.

Supplementary Trial Weather Data (This information was provided by NOAA Climatological Data)

Trial Month	Trial Year	Overall T° F Range		Trial Air Average	Departure From Normal	Trial Total Precipitation	Departure From Normal
		Lowest	Highest				
January							
February							
March	2004	26	79	53.5	0.7	0.56	-3.94
April	2004	30	85	61.4	0.6	5.47	2.31
May	2004	44	92	73.3	4.3	7.39	3.71
June	2004	61	92	76.9	0.9	4.63	0.14
July							
August							
September							
October							
November							
December							

Station: 311881/99999, CLINTON 2 NE, North Carolina

Analysis Sheet 05-0351 Mean Recovery 96% Calibration Type MultiPoint
Study Number(s) 10288-04 Blueberry Recovery CV 2% Instrument sciex2
Extraction Date: 4/27/2005
Analysis Date 4/27/2005 LOQ 0.01
Matrix Blueberry

Inj. #	Group	Sample Type	Peak Area	Standard Conc (ug/ml)	Calculated Conc (ug/ml)	Sample Conc (g/ml)	Uncorrected Residue (ppm)	Procedural Rec Level (ppm)	% Recovery	Reported Residue (ppm)	Sample
1	1	Standard	1895310	0.002							7751/5/21 2 ng/ml
2	1	Standard	78892.6	0.0001							7751/5/25 0.1 ng/ml
3	1	Standard	362105	0.0004							7751/5/23 0.4 ng/ml
4	1	Control	0		0.00002	0.00767	0.00241			< LOQ	SJ-HR-04-5631-013/1
5	1	Standard	13064.6	0.00002							7751/5/27 0.02ng/ml
6	1	Recovery	51109.9		0.00007	0.00767	0.00946	0.01	94.57		SJ-HR-04-5631-013/1
7	1	Recovery	686615		0.00075	0.00077	0.97117	1	97.12		SJ-HR-04-5631-013/1
8	1	Standard	4705170	0.005							5/20/7751
9	1	Sample	251.788		0.00002	0.00767	0.00244			< LOQ	SJ-HR-04-5631-015/1
10	1	Sample	728.121		0.00002	0.00767	0.00251			< LOQ	SJ-HR-04-5631-016/1
11	1	Sample	478.714		0.00002	0.00767	0.00247			< LOQ	SJ-HR-04-5631-017/1
12	1	Sample	222.886		0.00002	0.00767	0.00244			< LOQ	SJ-HR-04-5631-018/1
13	1	Standard	885342	0.001							7751/5/22 1 ng/ml
14	1	Standard	175387	0.0002							7751/5/24 0.2 ng/ml
15	1	Standard	30820.2	0.00005							7751/5/26 0.05ng/ml

Analysis Sheet 05-0353 Mean Recovery 88% Calibration Type MultiPoint
Study Number(s) 10288-04 Blueberry Recovery CV 10% Instrument sciex2
Extraction Date: 4/28/2005
Analysis Date 4/28/2005 LOQ 0.01
Matrix Blueberry

Inj. #	Group	Sample Type	Peak Area	Standard Conc (ug/ml)	Calculated Conc (ug/ml)	Sample Conc (g/ml)	Uncorrected Residue (ppm)	Procedural Rec Level (ppm)	% Recovery	Reported Residue (ppm)	Sample
1	1	Standard	866496	0.001							7751/5/22 1 ng/ml
2	1	Standard	340947	0.0004							7751/5/23 0.4 ng/ml
3	1	Standard	34970.5	0.00005							7751/5/26 0.05ng/ml
4	1	Control	0		0.00001	0.00658	0.00217			< LOQ	SJ-HR-04-5631-001/1
5	1	Standard	4584330	0.005							5/20/7751
6	1	Recovery	36809.4		0.00005	0.00658	0.00822	0.01	82.22		SJ-HR-04-5631-001/1
7	1	Recovery	559596		0.00062	0.00066	0.94243	1	94.24		SJ-HR-04-5631-001/1
8	1	Standard	11075.7	0.00002							7751/5/27 0.02ng/ml
9	1	Sample	322.397		0.00001	0.00658	0.00222			< LOQ	SJ-HR-04-5631-003/1
10	1	Sample	485.284		0.00001	0.00658	0.00225			< LOQ	SJ-HR-04-5631-004/1
11	1	Sample	717.909		0.00002	0.00658	0.00228			< LOQ	SJ-HR-04-5631-005/1
12	1	Sample	603.13		0.00001	0.00658	0.00226			< LOQ	SJ-HR-04-5631-006/1
13	1	Standard	1917330	0.002							7751/5/21 2 ng/ml
14	1	Standard	161953	0.0002							7751/5/24 0.2 ng/ml
15	1	Standard	81194	0.0001							7751/5/25 0.1 ng/ml

Analysis Sheet 05-0354 Mean Recovery 91% Calibration Type MultiPoint
Study Number(s) 10288-04 Blueberry Recovery CV 0% Instrument sciex2
Extraction Date 4/28/2005
Analysis Date 4/28/2005 LOQ 0.01
Matrix Blueberry

Inj. #	Group	Sample Type	Peak Area	Standard Conc (ug/ml)	Calculated Conc (ug/ml)	Sample Conc (g/ml)	Uncorrected Residue (ppm)	Procedural Rec Level (ppm)	% Recovery	Reported Residue (ppm)	Sample
1	1	Standard	312053	0.0004							7751/5/23 0.4 ng/ml
2	1	Standard	1757350	0.002							7751/5/21 2 ng/ml
3	1	Standard	33223	0.00005							7751/5/26 0.05ng/ml
4	1	Control	0		0.00002	0.00658	0.00314			< LOQ	SJ-HR-04-5631-007/1
~~5~~	~~1~~	~~Standard~~	~~4365380~~	~~0.005~~							~~5/20/7751~~
6	1	Recovery	34677.6		0.00006	0.00658	0.00907	0.01	90.67		SJ-HR-04-5631-007/1
7	1	Standard	10155.6	0.00002							7751/5/27 0.02ng/ml
8	1	Sample	692.111		0.00002	0.00658	0.00326			< LOQ	SJ-HR-04-5631-009/1
9	1	Sample	179.729		0.00002	0.00658	0.00317			< LOQ	SJ-HR-04-5631-010/1
10	1	Sample	316.765		0.00002	0.00658	0.00319			< LOQ	SJ-HR-04-5631-011/1
11	1	Sample	494.111		0.00002	0.00658	0.00322			< LOQ	SJ-HR-04-5631-012/1
12	1	Standard	889128	0.001							7751/5/22 1 ng/ml
13	1	Standard	154654	0.0002							7751/5/24 0.2 ng/ml
14	1	Standard	68744.9	0.0001							7751/5/25 0.1 ng/ml

Analysis Sheet 05-0355 Mean Recovery 77% Calibration Type MultiPoint
Study Number(s) 10288-04 Blueberry Recovery CV 0% Instrument sciex2
Extraction Date 4/28/2005
Analysis Date 4/28/2005 LOQ 0.01
Matrix Blueberry

Inj. #	Group	Sample Type	Peak Area	Standard Conc (ug/ml)	Calculated Conc (ug/ml)	Sample Conc (g/ml)	Uncorrected Residue (ppm)	Procedural Rec Level (ppm)	% Recovery	Reported Residue (ppm)	Sample
1	1	Standard	32465.4	0.00005							7751/5/26 0.05ng/ml
~~2~~	~~1~~	~~Standard~~	~~3998160~~	~~0.005~~							~~5/20/7751~~
3	1	Standard	316145	0.0004							7751/5/23 0.4 ng/ml
4	1	Control	0		0.00001	0.00658	0.00091			< LOQ	SJ-HR-04-5631-019/1
5	1	Standard	1604290	0.002							7751/5/21 2 ng/ml
6	1	Recovery	36256.2		0.00005	0.00658	0.0077	0.01	77		SJ-HR-04-5631-019/1
7	1	Standard	72643.2	0.0001							7751/5/25 0.1 ng/ml
8	1	Sample	43.4946		0.00001	0.00658	0.00092			< LOQ	SJ-HR-04-5631-021/1
9	1	Sample	243.607		0.00001	0.00658	0.00096			< LOQ	SJ-HR-04-5631-022/1
10	1	Sample	29.2236		0.00001	0.00658	0.00091			< LOQ	SJ-HR-04-5631-023/1
11	1	Sample	990.036		0.00001	0.00658	0.00109			< LOQ	SJ-HR-04-5631-024/1
12	1	Standard	839415	0.001							7751/5/22 1 ng/ml
13	1	Standard	12296.1	0.00002							7751/5/27 0.02ng/ml
14	1	Standard	149164	0.0002							7751/5/24 0.2 ng/ml

FIELD TRIAL SUMMARY

FIELD TEST NUMBER: SJ-HR-04-5632 PROTOCOL NUMBER: 10288-04 Blueberry

TEST SUBSTANCE

AI Common Name	AI Code Name	Test Substance	Lot/Batch Number
Mesotrione	ZA01296	mesotrione 4SC	FL-010515

TEST SYSTEM

Test System	Crop Variety	Crop Group Classification	Planting Date or Age
Blueberry	Reveille	Berry Group 13	4

PFI Name	PFI Company	PFI Address	PFI Phone
Paul Garvey	Agricultural System Associates	3341 Hwy 58 South Kinston, NC 28504	(910) 532-6187

Trial Location	Trial City	Soil Texture	Soil Characterization Lab	Soil Characterization Lab Addr
North Carolina	Rose Hill	sand	Agvise Laboratories	604 Highway 15 PO Box 510 Northwood, ND 58267

TREATMENT LIST

TRT ID	App No	App Formulation	Actual Rate Amount	App Timing
2	1	mesotrione 4SC	44.2653 g a.i./A	Post directed pre-bloom
3	1	mesotrione 4SC	86.4516 g a.i./A	Post directed pre-bloom

APPLICATIONS

Actual App Date	TRT ID	App No	App Timing	Sprayer Type	Actual GPA	Crop Growth Stage
04/29/2004	2	1	Post directed pre-bloom	Backpack	27.680	early fruit set (69)
04/29/2004	3	1	Post directed pre-bloom	Backpack	27.030	early fruit set (69)

OTHER TREATMENTS, FERTILIZER, CULTIVATION

Pesticide Appl Date	Product/Active Ingredient
04/05/2004	fenbuconazole
04/12/2004	fenbuconazole
04/19/2004	fenbuconazole
04/26/2004	fenbuconazole
04/26/2004	malathion
05/03/2004	malathion
05/10/2004	malathion
05/17/2004	malathion
05/24/2004	malathion
Fertilizer Date Applied	Type of Fertilizer
03/15/2004	14-18-14
Preparatory Date	Preparatory Description
03/15/2004	hand and mechanical weed control on plant beds
03/31/2004	mechanical tillage between plant beds

IRRIGATION

Irrigation Date	Irrigation Method	Water Source	Irrigation Amount (in)
			none applied

SAMPLING

Actual Sample Date	Sample No	TRT ID	Sample Type	Sample Shipped Date	Sample Receipt Date	Sample Prep Date
06/02/2004	001	1	berry	06/22/2004	06/23/2004	02/10/2005
06/02/2004	002	1	berry	06/22/2004	06/23/2004	N/A
06/02/2004	003	2	berry	06/22/2004	06/23/2004	02/10/2005
06/02/2004	004	2	berry	06/22/2004	06/23/2004	02/10/2005
06/02/2004	005	3	berry	06/22/2004	06/23/2004	02/10/2005
06/02/2004	006	3	berry	06/22/2004	06/23/2004	02/10/2005

DEVIATIONS

Trial Deviation Description
Blueberry application timing was later than pre-bloom

Supplementary Trial Weather Data (This information was provided by NOAA Climatological Data)

Trial Month	Trial Year	Overall T° F Range		Trial Air Average	Departure From Normal	Trial Total Precipitation	Departure From Normal
		Lowest	Highest				
January							
February							
March	2004	26	79	53.5	0.7	0.56	-3.94
April	2004	30	85	61.4	0.6	5.47	2.31
May	2004	44	92	73.3	4.3	7.39	3.71
June	2004	61	92	76.9	0.9	4.63	0.14
July							
August							
September							
October							
November							
December							

Station: 311881/99999, CLINTON 2 NE, North Carolina

Analysis Sheet 05-0243 Mean Recovery 96% Calibration Type MultiPoint
Study Number(s) 10288-04 Blueberry Recovery CV 12% Instrument sciex2
Extraction Date 3/23/2005
Analysis Date 3/23/2005 LOQ 0.01
Matrix Blueberry

Inj. #	Group	Sample Type	Peak Area	Standard Conc (ug/ml)	Calculated Conc (ug/ml)	Sample Conc (g/ml)	Uncorrected Residue (ppm)	Procedural Rec Level (ppm)	% Recovery	Reported Residue (ppm)	Sample
1	1	Standard	30300	0.005							5/20/7751
2	1	Standard	9530	0.002							7751/5/21 2 ng/ml
3	1	Control	0		-0.00002	0.09208	-0.00026			< LOQ	SJ-HR-04-5632-001/1
4	1	Standard	894	0.0002							7751/5/24 0.2 ng/ml
5	1	Recovery	4040		0.00081	0.09208	0.00884	0.01	88.44		SJ-HR-04-5632-001/1
6	1	Recovery	11700		0.0024	0.0023	1.04379	1	104.38		SJ-HR-04-5632-001/1
7	1	Standard	494	0.0001							7751/5/25 0.1 ng/ml
8	1	Sample	94.7		0	0.09208	-0.00004			< LOQ	SJ-HR-04-5632-003/1
9	1	Sample	45.5		-0.00001	0.09208	-0.00015			< LOQ	SJ-HR-04-5632-004/1
10	1	Sample	0		-0.00002	0.09208	-0.00026			< LOQ	SJ-HR-04-5632-006/1
11	1	Sample	52.5		-0.00001	0.09208	-0.00014			< LOQ	SJ-HR-04-5632-005/1
~~12~~	~~1~~	~~Standard~~	~~105000~~	~~10~~							~~5/19/7751~~
13	1	Standard	5430	0.001							7751/5/22 1 ng/ml
14	1	Standard	2060	0.0004							7751/5/23 0.4 ng/ml

FIELD TRIAL SUMMARY

FIELD TEST NUMBER: NL-HR-04-5633 PROTOCOL NUMBER: 10288-04 Blueberry

TEST SUBSTANCE

AI Common Name	AI Code Name	Test Substance	Lot/Batch Number
Mesotrione	ZA01296	mesotrione 4SC	FL-010515

TEST SYSTEM

Test System	Crop Variety	Crop Group Classification	Planting Date or Age
Blueberry	Blue Crop	Berry Group 13	28 years old

PFI Name	PFI Company	PFI Address	PFI Phone
Mark Waldecker	AGSEARCH Company	1705 Wilson Street Conklin, MI 49403-9708	(616) 899-2908

Trial Location	Trial City	Soil Texture	Soil Characterization Lab	Soil Characterization Lab Addr
Michigan	Fremont	loamy sand	Midwest Laboratories Inc	13611 "B" Street Omaha, NE 68144-3693

TREATMENT LIST

TRT ID	App No	App Formulation	Actual Rate Amount	App Timing
2	1	mesotrione 4SC	42.7724 g a.i./A	Post directed pre-bloom
3	1	mesotrione 4SC	84.586 g a.i./A	Post directed pre-bloom

APPLICATIONS

Actual App Date	TRT ID	App No	App Timing	Sprayer Type	Actual GPA	Crop Growth Stage
05/05/2004	2	1	Post directed pre-bloom	Backpack	52.640	early pink bud
05/05/2004	3	1	Post directed pre-bloom	Backpack	52.050	early pink bud

OTHER TREATMENTS, FERTILIZER, CULTIVATION

Pesticide Appl Date	Product/Active Ingredient
04/20/2004	Sulforix
05/12/2004	Indar 75WSP
05/19/2004	Indar 75WSP
05/26/2004	Indar 75WSP
06/10/2004	Guthion 50WP
07/09/2004	Captan 80WP
07/09/2004	Malathion 8F
07/20/2004	Captan 80WP
07/20/2004	Malathion 8F
08/07/2004	Malathion 8F
08/21/2004	Malathion 8F
Fertilizer Date Applied	Type of Fertilizer

05/02/2004	46-0-10 + 5% magnesium
Preparatory Date	Preparatory Description
05/03/2004	disk 1X
06/18/2004	drag 1X
07/15/2004	drag 1X

IRRIGATION

Irrigation Date	Irrigation Method	Water Source	Irrigation Amount (in)
			None

SAMPLING

Actual Sample Date	Sample No	Treatment ID	Sample Type	Sample Shipped Date	Sample Receipt Date	Sample Prep Date
07/16/2004	001	1	berry	07/27/2004	08/04/2004	02/11/2005
07/16/2004	002	1	berry	07/27/2004	08/04/2004	N/A
07/16/2004	003	2	berry	07/27/2004	08/04/2004	02/11/2005
07/16/2004	004	2	berry	07/27/2004	08/04/2004	02/11/2005
07/16/2004	005	3	berry	07/27/2004	08/04/2004	02/11/2005
07/16/2004	006	3	berry	07/27/2004	08/04/2004	02/11/2005

DEVIATIONS

Trial Deviation Description
None

Supplementary Trial Weather Data (This information was provided by NOAA Climatological Data)

Trial Month	Trial Year	Overall T° F Range		Trial Air Average	Departure From Normal	Trial Total Precipitation	Departure From Normal
		Lowest	Highest				
January							
February							
March							
April	2004	24	77	47.6	2.7	1.83	-1.08
May	2004	31	82	57.1	1.0	9.59	6.64
June	2004	41	87	63.0	-1.9	4.26	1.68
July	2004	51	87	68.2	-1.7	1.71	-0.61
August							
September							
October							
November							
December							

Station: 205712/14840, MUSKEGON COUNTY ARPT, Michigan

Analysis 05-0233 Mean Recovery 81% Calibration Type MultiPoint
Study Number(s) 10288-04 Blueberry Recovery CV 0% Instrument sciex2
Extraction Date 3/21/2005
Analysis Date 3/22/2005 LOQ 0.01
Matrix Blueberry

Inj. #	Group	Sample Type	Peak Area	Standard Conc (ng/ml)	Calculated Conc (ng/ml)	Sample Conc (g/ml)	Uncorrected Residue (ppm)	Procedural Rec Level (ppm)	% Recovery	Reported Residue (ppm)	Sample
~~1~~	~~1~~	~~Standard~~	~~262541~~	~~20~~							~~5/18/7751~~
2	1	Standard	4428.09	0.001							7751/5/22 1 ng/ml
3	1	Control	1.75594		0.00013	0.09208	0.00143			< LOQ	NL-HR-04-5633-001/1
~~4~~	~~1~~	~~Standard~~	~~75709.5~~	~~10~~							~~5/19/7751~~
5	1	Recovery	4130.1		0.00088	0.09208	0.00814	0.01	81.4		NL-HR-04-5633-001/1
~~6~~	~~1~~	~~Recovery~~	~~2351.86~~		~~0.00056~~	~~0.0046~~	~~0.11988~~	~~1~~	~~11.99~~		~~NL-HR-04-5633-001/1~~
7	1	Standard	899.631	0.0002							7751/5/24 0.2 ng/ml
8	1	Sample	15.5496		0.00013	0.09208	0.00146			< LOQ	NL-HR-04-5633-003/1
9	1	Sample	16.4335		0.00013	0.09208	0.00146			< LOQ	NL-HR-04-5633-004/1
10	1	Sample	11.2892		0.00013	0.09208	0.00145			< LOQ	NL-HR-04-5633-005/1
11	1	Sample	16.4051		0.00013	0.09208	0.00146			< LOQ	NL-HR-04-5633-006/1
12	1	Standard	27172.3	0.005							5/20/7751
13	1	Standard	9458.17	0.002							7751/5/21 2 ng/ml
14	1	Standard	1785.25	0.0004							7751/5/23 0.4 ng/ml

FIELD TRIAL SUMMARY

FIELD TEST NUMBER: NL-HR-04-5634 PROTOCOL NUMBER: 10288-04 Blueberry

TEST SUBSTANCE

AI Common Name	AI Code Name	Test Substance	Lot/Batch Number
Mesotrione	ZA01296	mesotrione 4SC	FL-010515

TEST SYSTEM

Test System	Crop Variety	Crop Group Classification	Planting Date or Age
Blueberry	Blue Ray	Berry Group 13	5/20/1984

PFI Name	PFI Company	PFI Address	PFI Phone
Mark Waldecker	AGSEARCH Company	1705 Wilson Street Conklin, MI 49403-9708	(616) 899-2908

Trial Location	Trial City	Soil Texture	Soil Characterization Lab	Soil Characterization Lab Addr
Michigan	Conklin	loam	Midwest Laboratories Inc	13611 "B" Street Omaha, NE 68144-3693

TREATMENT LIST

TRT ID	App No	App Formulation	Actual Rate Amount	App Timing
2	1	mesotrione 4SC	42.6424 g a.i./A	Post directed pre-bloom
3	1	mesotrione 4SC	85.7723 g a.i./A	Post directed pre-bloom

APPLICATIONS

Actual App Date	TRT ID	App No	App Timing	Sprayer Type	Actual GPA	Crop Growth Stage
05/10/2004	2	1	Post directed pre-bloom	Backpack	52.480	pink bud
05/10/2004	3	1	Post directed pre-bloom	Backpack	52.780	pink bud

OTHER TREATMENTS, FERTILIZER, CULTIVATION

Pesticide Appl Date	Product/Active Ingredient
04/23/2004	Ziram 76DF
05/04/2004	Ziram 76DF
05/10/2004	Asana XL 0.66EC
05/10/2004	Ziram 76DF
05/14/2004	Gramoxone Max 2.5L
05/14/2004	Sinbar 80WP
05/14/2004	Surflan 4S
05/24/2004	Captan 80WP
05/24/2004	Lannate 2.4LV
05/24/2004	Ziram 76DF
06/01/2004	Captan 80WP
06/09/2004	Guthion 50WP
06/19/2004	Ziram 76DF
06/28/2004	Captan 80WP
06/28/2004	Lannate 2.4LV
07/02/2004	Captan 80WP
07/02/2004	Lannate 2.4LV
Fertilizer Date Applied	Type of Fertilizer
05/10/2004	8-25-30
06/02/2004	8-25-30
Preparatory Date	Preparatory Description
06/12/2004	mowed between rows
06/30/2004	mowed between rows
07/21/2004	mowed between rows

IRRIGATION

Irrigation Date	Irrigation Method	Water Source	Irrigation Amount (in)
			None

SAMPLING

Actual Sample Date	Sample No	TRT ID	Sample Type	Sample Shipped Date	Sample Receipt Date	Sample Prep Date
07/13/2004	001	1	berry	07/14/2004	08/04/2004	02/11/2005
07/13/2004	002	1	berry	07/14/2004	08/04/2004	N/A
07/13/2004	003	2	berry	07/14/2004	08/04/2004	02/11/2005
07/13/2004	004	2	berry	07/14/2004	08/04/2004	02/11/2005
07/13/2004	005	3	berry	07/14/2004	08/04/2004	02/11/2005
07/13/2004	006	3	berry	07/14/2004	08/04/2004	02/11/2005

DEVIATIONS

Trial Deviation Description
None

Supplementary Trial Weather Data (This information was provided by NOAA Climatological Data)

Trial Month	Trial Year	Overall T° F Range		Trial Air Average	Departure From Normal	Trial Total Precipitation	Departure From Normal
		Lowest	Highest				
January							
February							
March							
April	2004	24	77	47.6	2.7	1.83	-1.08
May	2004	31	82	57.1	1.0	9.59	6.64
June	2004	41	87	63.0	-1.9	4.26	1.68
July	2004	51	87	68.2	-1.7	1.71	-0.61
August							
September							
October							
November							
December							

Station: 205712/14840, MUSKEGON COUNTY ARPT, Michigan

Analysis Sheet 05-0343 Mean Recovery 76% Calibration Type MultiPoint
Study Number(s) 10288-04 Blueberry Recovery CV 16% Instrument sciex2
Extraction Date 4/20/2005
Analysis Date 4/27/2005 LOQ 0.01
Matrix Blueberry

Inj. #	Group	Sample Type	Peak Area	Standard Conc (ug/ml)	Calculated Conc (ug/ml)	Sample Conc (g/ml)	Uncorrected Residue (ppm)	Procedural Rec Level (ppm)	% Recovery	Reported Residue (ppm)	Sample
1	1	Standard	86323.8	0.0001							7751/5/25 0.1 ng/ml
~~2~~	~~1~~	~~Standard~~	~~1950910~~	~~0.002~~							~~7751/5/21 2 ng/ml~~
3	1	Control	0		0.00001	0.00767	0.00164			< LOQ	NL-HR-04-5634-001/1
4	1	Standard	37933.1	0.00005							7751/5/26 0.05ng/ml
5	1	Recovery	46751.7		0.00006	0.00767	0.00841	0.01	84.07		NL-HR-04-5634-001/1
6	1	Standard	4493890	0.005							5/20/7751
7	1	Recovery	453581		0.00052	0.00077	0.67254	1	67.25		NL-HR-04-5634-001/1
8	1	Standard	346738	0.0004							7751/5/23 0.4 ng/ml
9	1	Sample	1601.1		0.00001	0.00767	0.00188			< LOQ	NL-HR-04-5634-003/1
10	1	Sample	2566.45		0.00002	0.00767	0.00202			< LOQ	NL-HR-04-5634-004/1
11	1	Sample	2463.57		0.00002	0.00767	0.002			< LOQ	NL-HR-04-5634-005/1
12	1	Sample	1333.25		0.00001	0.00767	0.00184			< LOQ	NL-HR-04-5634-006/1
13	1	Standard	154850	0.0002							7751/5/24 0.2 ng/ml
14	1	Standard	10507.3	0.00002							7751/5/27 0.02ng/ml
~~15~~	~~1~~	~~Standard~~	~~890919~~	~~0.001~~							~~7751/5/22 1 ng/ml~~

FIELD TRIAL SUMMARY

FIELD TEST NUMBER: WF-HR-04-5635 PROTOCOL NUMBER: 10288-04 Blueberry

TEST SUBSTANCE

AI Common Name	AI Code Name	Test Substance	Lot/Batch Number
Mesotrione	ZA01296	mesotrione 4SC	FL-0105156

TEST SYSTEM

Test System	Crop Variety	Crop Group Classification	Planting Date or Age
Blueberry	Nelson and Elliots	Berry Group 13	>5 years

PFI Name	PFI Company	PFI Address	PFI Phone
Ron Britt	Ron Britt and Associates	7200 W. Nob Hill Blvd. #18 Yakima, WA 98908	(509) 966-9681

Trial Location	Trial City	Soil Texture	Soil Characterization Lab	Soil Characterization Lab Addr
Washington	LaConner	Silt Loam	Cascade Analytical	3019 GS Center Road Wenatchee, WA 98801

TREATMENT LIST

TRT ID	App No	App Formulation	Actual Rate Amount	App Timing
2	1	mesotrione 4SC	41.9107 g a.i./A	Post directed pre-bloom
3	1	mesotrione 4SC	85.0352 g a.i./A	Post directed pre-bloom

APPLICATIONS

Actual App Date	TRT ID	App No	App Timing	Sprayer Type	Actual GPA	Crop Growth Stage
05/28/2004	2	1	Post directed pre-bloom	Tractor	29.780	fruit present plants still blooming
05/28/2004	3	1	Post directed pre-bloom	Tractor	30.210	fruit present plants still blooming

OTHER TREATMENTS, FERTILIZER, CULTIVATION

Pesticide Appl Date	Product/Active Ingredient
06/04/2004	Gramoxone Max
06/09/2004	Gramoxone Max
06/10/2004	Gramoxone Max
06/22/2004	Asana XL
07/04/2004	Malathion 5
Fertilizer Date Applied	Type of Fertilizer
03/01/2004	8-7-14+7S+4MG+4CA
06/01/2004	19-7-8+12S+4MG
Preparatory Date	Preparatory Description
06/01/2004	Mowing

IRRIGATION

Irrigation Date	Irrigation Method	Water Source	Irrigation Amount (in)
	Drip Tape	Well & PU Dist #1	88296 g/acre

SAMPLING

Actual Sample Date	Sample No	TRT ID	Sample Type	Sample Shipped Date	Sample Receipt Date	Sample Prep Date
08/24/2004	001	1	berry	09/14/2004	09/28/2004	02/10/2005
08/24/2004	002	1	berry	09/14/2004	09/28/2004	N/A
08/24/2004	003	2	berry	09/14/2004	09/28/2004	02/10/2005
08/24/2004	004	2	berry	09/14/2004	09/28/2004	02/10/2005
08/24/2004	005	3	berry	09/14/2004	09/28/2004	02/11/2005
08/24/2004	006	3	berry	09/14/2004	09/28/2004	02/11/2005

DEVIATIONS

Trial Deviation Description
None

Supplementary Trial Weather Data (This information was provided by NOAA Climatological Data)

Trial Month	Trial Year	Overall T° F Range		Trial Air Average	Departure From Normal	Trial Total Precipitation	Departure From Normal
		Lowest	Highest				
January							
February							
March							
April							
May	2004	34	82	57.1	0.9	0.43	-0.08
June	2004	34	98	65.7	2.8	-0.05	0.45
July	2004	44	99	72.8	3.7	44	99
August	2004	46	101	71.8	3.5	1.19	0.83
September							
October							
November							
December							

Station: 459465/24243, YAKIMA AIR TERMINAL, Washington

Analysis Sheet 05-0227 Mean Recovery 75% Calibration Type MultiPoint
Study Number(s) 10288-04 Blueberry Recovery CV 0% Instrument sciex2
Extraction Date 3/23/2005
Analysis Date 3/23/2005 LOQ 0.01
Matrix Blueberry

Inj. #	Group	Sample Type	Peak Area	Standard Conc (ug/ml)	Calculated Conc (ug/ml)	Sample Conc (g/ml)	Uncorrected Residue (ppm)	Procedural Rec Level (ppm)	% Recovery	Reported Residue (ppm)	Sample
1	1	Standard	27423.5	0.005							5/20/7751
2	1	Standard	8695.78	0.002							7751/5/21 2 ng/ml
3	1	Control	0		0.00016	0.09208	0.00177			< LOQ	WF-HR-04-5635-001/1
4	1	Standard	514.423	0.0002							7751/5/24 0.2 ng/ml
5	1	Recovery	2911.12		0.00069	0.09208	0.00748	0.01	74.85		WF-HR-04-5635-001/1
~~6~~	~~1~~	~~Recovery~~	~~99.6833~~		~~0.00018~~	~~0.0023~~	~~0.07876~~	~~1~~	~~7.88~~		~~WF-HR-04-5635-001/1~~
7	1	Standard	389.883	0.0001							7751/5/25 0.1 ng/ml
8	1	Sample	0		0.00016	0.09208	0.00177			< LOQ	WF-HR-04-5635-003/1
9	1	Sample	0		0.00016	0.09208	0.00177			< LOQ	WF-HR-04-5635-004/1
10	1	Sample	22.6773		0.00017	0.09208	0.00182			< LOQ	WF-HR-04-5635-005/1
11	1	Sample	81.5762		0.00018	0.09208	0.00193			< LOQ	WF-HR-04-5635-006/1
12	1	Standard	105190	10							5/19/7751
13	1	Standard	4052.05	0.001							7751/5/22 1 ng/ml
14	1	Standard	1660.49	0.0004							7751/5/23 0.4 ng/ml

FIELD TRIAL SUMMARY

FIELD TEST NUMBER: NL-HR-04-5636 PROTOCOL NUMBER: 10288-04 Raspberry

TEST SUBSTANCE

AI Common Name	AI Code Name	Test Substance	Lot/Batch Number
Mesotrione	ZA01296	mesotrione 4SC	FL-010515

TEST SYSTEM

Test System	Crop Variety	Crop Group Classification	Planting Date or Age
Raspberry	K81-6	Berry Group 13	04/01/1997

PFI Name	PFI Company	PFI Address	PFI Phone
Mark Waldecker	AGSEARCH Company	1705 Wilson Street Conklin, MI 49403-9708	(616) 899-2908

Trial Location	Trial City	Soil Texture	Soil Characterization Lab	Soil Characterization Lab Addr
Michigan	Belding	loam	Midwest Laboratories	13611 "B" Street Omaha, NE 68144-3693

TREATMENT LIST

TRT ID	App No	App Formulation	Actual Rate Amount	App Timing
2	1	mesotrione 4SC	42.8862 g a.i./A	Post directed pre-bloom
3	1	mesotrione 4SC	84.1797 g a.i./A	Post directed pre-bloom

APPLICATIONS

Actual App Date	TRT ID	App No	App Timing	Sprayer Type	Actual GPA	Crop Growth Stage
05/03/2004	2	1	Post directed pre-bloom	Backpack	52.780	pre-bloom, 2-3 leaves present
05/03/2004	3	1	Post directed pre-bloom	Backpack	51.800	pre-bloom, 2-3 leaves present

OTHER TREATMENTS, FERTILIZER, CULTIVATION

Pesticide Appl Date	Product/Active Ingredient
04/01/2004	Simazine 90WDG
04/01/2004	Sinbar 80W
04/05/2004	Lime Sulfur Solution
06/01/2004	Captan 50W
06/01/2004	Guthion 50W
07/02/2004	Rovral 4F
Fertilizer Date Applied	Type of Fertilizer
04/08/2004	26-13-8
Preparatory Date	Preparatory Description
04/01/2004	mowed between rows
04/01/2004	pruned
05/01/2004	mowed between rows
06/01/2004	mowed between rows
07/01/2004	mowed between rows

IRRIGATION

Irrigation Date	Irrigation Method	Water Source	Irrigation Amount (in)
			None

SAMPLING

Actual Sample Date	Sample No	TRT ID	Sample Type	Sample Shipped Date	Sample Receipt Date	Sample Prep Date
07/09/2004	001	1	berry (7-)	07/14/2004	08/04/2004	02/11/2005
07/09/2004	002	1	berry (7-)	07/14/2004	08/04/2004	N/A
07/09/2004	003	2	berry (7-)	07/14/2004	08/04/2004	02/11/2005
07/09/2004	004	2	berry (7-)	07/14/2004	08/04/2004	02/11/2005
07/09/2004	005	3	berry (7-)	07/14/2004	08/04/2004	02/14/2005
07/09/2004	006	3	berry (7-)	07/14/2004	08/04/2004	02/14/2005
07/12/2004	007	1	berry (4-)	07/14/2004	08/04/2004	02/14/2005
07/12/2004	008	1	berry (4-)	07/14/2004	08/04/2004	N/A
07/12/2004	009	2	berry (4-)	07/14/2004	08/04/2004	02/14/2005
07/12/2004	010	2	berry (4-)	07/14/2004	08/04/2004	02/14/2005
07/12/2004	011	3	berry (4-)	07/14/2004	08/04/2004	02/14/2005
07/12/2004	012	3	berry (4-)	07/14/2004	08/04/2004	02/14/2005
07/16/2004	013	1	berry	07/27/2004	08/04/2004	02/14/2005
07/16/2004	014	1	berry	07/27/2004	08/04/2004	N/A
07/16/2004	015	2	berry	07/27/2004	08/04/2004	02/14/2005
07/16/2004	016	2	berry	07/27/2004	08/04/2004	02/14/2005
07/16/2004	017	3	berry	07/27/2004	08/04/2004	02/14/2005
07/16/2004	018	3	berry	07/27/2004	08/04/2004	02/14/2005
07/20/2004	019	1	berry (4+)	07/27/2004	08/04/2004	02/14/2005
07/20/2004	020	1	berry (4+)	07/27/2004	08/04/2004	N/A
07/20/2004	021	2	berry (4+)	07/27/2004	08/04/2004	02/14/2005
07/20/2004	022	2	berry (4+)	07/27/2004	08/04/2004	02/14/2005
07/20/2004	023	3	berry (4+)	07/27/2004	08/04/2004	02/14/2005
07/20/2004	024	3	berry (4+)	07/27/2004	08/04/2004	02/14/2005

DEVIATIONS

Trial Deviation Description
None

Supplementary Trial Weather Data (This information was provided by NOAA Climatological Data)

Trial Month	Trial Year	Overall T° F Range		Trial Air Average	Departure From Normal	Trial Total Precipitation	Departure From Normal
		Lowest	Highest				
January							
February							
March							
April	2004	23	86	49.9	3.6	2.04	-1.44
May	2004	30	85	59.7	1.6	9.29	5.94
June	2004	45	90	66.3	-0.8	3.09	-0.58
July	2004	51	90	70.5	-0.9	2.56	-1.00
August							
September							
October							
November							
December							

Station: 203333/94860, GRAND RAPIDS GERALD R FORD IN, Michigan

Analysis Sheet 05-0365 Mean Recovery 85% Calibration Type MultiPoint
Study Number(s) 10288-04 Raspberry Recovery CV 0% Instrument sciex2
Extraction Date 4/29/2005
Analysis Date 4/29/2005 LOQ 0.01
Matrix Raspberry

Inj. #	Group	Sample Type	Peak Area	Standard Conc (ug/ml)	Calculated Conc (ug/ml)	Sample Conc (g/ml)	Uncorrected Residue (ppm)	Procedural Rec Level (ppm)	% Recovery	Reported Residue (ppm)	Sample
1	1	Standard	34644.5	0.00005							7751/5/26 0.05ng/ml
2	1	Standard	726085	0.001							7751/5/22 1 ng/ml
3	1	Standard	11024.6	0.00002							7751/5/27 0.02ng/ml
4	1	Control	0		0.00001	0.00658	0.00078			< LOQ	NL-HR-04-5636-007/1
5	1	Standard	66862.1	0.0001							7751/5/25 0.1 ng/ml
6	1	Recovery	36260.8		0.00006	0.00658	0.00846	0.01	84.61		NL-HR-04-5636-007/1
7	1	Sample	349.474		0.00001	0.00658	0.00086			< LOQ	NL-HR-04-5636-009/1
8	1	Sample	717.455		0.00001	0.00658	0.00094			< LOQ	NL-HR-04-5636-010/1
9	1	Sample	242.11		0.00001	0.00658	0.00083			< LOQ	NL-HR-04-5636-011/1
10	1	Sample	40.1444		0.00001	0.00658	0.00079			< LOQ	NL-HR-04-5636-012/1
11	1	Standard	1427830	0.002							7751/5/21 2 ng/ml
12	1	Standard	280395	0.0004							7751/5/23 0.4 ng/ml
13	1	Standard	134493	0.0002							7751/5/24 0.2 ng/ml

Analysis Sheet 05-0364 Mean Recovery 89% Calibration Type MultiPoint
Study Number(s) 10288-04 Raspberry Recovery CV 0% Instrument sciex2
Extraction Date 4/29/2005
Analysis Date 4/29/2005 LOQ 0.01
Matrix Raspberry

Inj. #	Group	Sample Type	Peak Area	Standard Conc (ug/ml)	Calculated Conc (ug/ml)	Sample Conc (g/ml)	Uncorrected Residue (ppm)	Procedural Rec Level (ppm)	% Recovery	Reported Residue (ppm)	Sample
1	1	Standard	765608	0.001							7751/5/22 1 ng/ml
2	1	Standard	28461.8	0.00005							7751/5/26 0.05ng/ml
3	1	Standard	133118	0.0002							7751/5/24 0.2 ng/ml
4	1	Control	0		0.00001	0.00658	0.0019			< LOQ	NL-HR-04-5636-001/1
5	1	Standard	11861.6	0.00002							7751/5/27 0.02ng/ml
6	1	Recovery	34821.9		0.00006	0.00658	0.00892	0.01	89.24		NL-HR-04-5636-001/1
7	1	Sample	1327.95		0.00001	0.00658	0.00217			< LOQ	NL-HR-04-5636-003/1
8	1	Sample	957.237		0.00001	0.00658	0.00209			< LOQ	NL-HR-04-5636-004/1
9	1	Sample	529.021		0.00001	0.00658	0.00201			< LOQ	NL-HR-04-5636-005/1
10	1	Sample	812.969		0.00001	0.00658	0.00206			< LOQ	NL-HR-04-5636-006/1
11	1	Standard	280835	0.0004							7751/5/23 0.4 ng/ml
12	1	Standard	65142.6	0.0001							7751/5/25 0.1 ng/ml
13	1	Standard	1489970	0.002							7751/5/21 2 ng/ml

Analysis Sheet 05-0218 Mean Recovery 80% Calibration Type MultiPoint
Study Number(s) 10288-04 Raspberry Recovery CV 8% Instrument sciex2
Extraction Date 3/17/2005
Analysis Date 3/22/2005 LOQ 0.01
Matrix Raspberry

Inj. #	Group	Sample Type	Peak Area	Standard Conc (ug/ml)	Calculated Conc (ug/ml)	Sample Conc (g/ml)	Uncorrected Residue (ppm)	Procedural Rec Level (ppm)	% Recovery	Reported Residue (ppm)	Sample
~~1~~	~~1~~	~~Standard~~	~~236677~~	~~0.02~~							~~5/18/7751~~
2	1	Standard	65566	0.01							5/19/7751
3	1	Standard	1032.76	0.0002							7751/5/24 0.2 ng/ml
4	1	Control	0.27696		0.00017	0.09208	0.00183			< LOQ	NL-HR-04-5636-013/1
5	1	Standard	1727.83	0.0004							7751/5/23 0.4 ng/ml
6	1	Recovery	3459.67		0.00069	0.09208	0.00747	0.01	74.75		NL-HR-04-5636-013/1
7	1	Recovery	24721.7		0.00388	0.0046	0.84285	1	84.29		NL-HR-04-5636-013/1
~~8~~	~~1~~	~~Standard~~	~~231189~~	~~0.005~~							~~5/20/7751~~
9	1	Sample	73.7637		0.00018	0.09208	0.00195			< LOQ	NL-HR-04-5636-015/1
10	1	Sample	50.9795		0.00018	0.09208	0.00192			< LOQ	NL-HR-04-5636-016/1
11	1	Sample	419.498		0.00023	0.09208	0.00252			< LOQ	NL-HR-04-5636-017/1
12	1	Sample	100.26		0.00018	0.09208	0.002			< LOQ	NL-HR-04-5636-018/1
13	1	Standard	4436.77	0.001							7751/5/22 1 ng/ml
~~14~~	~~1~~	~~Standard~~	~~71723~~	~~0.002~~							~~7751/5/21 2 ng/ml~~

Analysis Sheet 05-0366 Mean Recovery 97% Calibration Type MultiPoint
Study Number(s) 10288-04 Raspberry Recovery CV 0% Instrument sciex2
Extraction Date 4/29/2005
Analysis Date 4/29/2005 LOQ 0.01
Matrix Raspberry

Inj. #	Group	Sample Type	Peak Area	Standard Conc (ug/ml)	Calculated Conc (ug/ml)	Sample Conc (g/ml)	Uncorrected Residue (ppm)	Procedural Rec Level (ppm)	% Recovery	Reported Residue (ppm)	Sample
1	1	Standard	1470350	0.002							7751/5/21 2 ng/ml
2	1	Standard	288700	0.0004							7751/5/23 0.4 ng/ml
3	1	Standard	12584.4	0.00002							7751/5/27 0.02ng/ml
4	1	Control	0		0.00002	0.00658	0.00367			< LOQ	NL-HR-04-5636-019/1
5	1	Standard	729377	0.001							7751/5/22 1 ng/ml
6	1	Recovery	29447.1		0.00006	0.00658	0.00969	0.01	96.86		NL-HR-04-5636-019/1
7	1	Sample	224.954		0.00002	0.00658	0.00372			< LOQ	NL-HR-04-5636-021/1
8	1	Sample	218.586		0.00002	0.00658	0.00372			< LOQ	NL-HR-04-5636-022/1
9	1	Sample	63.1015		0.00002	0.00658	0.00368			< LOQ	NL-HR-04-5636-023/1
10	1	Sample	466.059		0.00002	0.00658	0.00377			< LOQ	NL-HR-04-5636-024/1
11	1	Standard	100876	0.0002							7751/5/24 0.2 ng/ml
12	1	Standard	55305.5	0.0001							7751/5/25 0.1 ng/ml
13	1	Standard	23340.4	0.00005							7751/5/26 0.05ng/ml

FIELD TRIAL SUMMARY

FIELD TEST NUMBER: WG-HR-04-5637 PROTOCOL NUMBER: 10288-04 Raspberry

TEST SUBSTANCE

AI Common Name	AI Code Name	Test Substance	Lot/Batch Number
Mesotrione	ZA01296	mesotrione 4SC	FL-010515

TEST SYSTEM

Test System	Crop Variety	Crop Group Classification	Planting Date or Age
Raspberry	Caroline	Berry Group 13	2 years

PFI Name	PFI Company	PFI Address	PFI Phone
Jim Calkins	AgSolutions, Inc.	5757 NE Highway 20 Corvallis, OH 97330	(541) 753-5797

Trial Location	Trial City	Soil Texture	Soil Characterization Lab	Soil Characterization Lab Addr
Oregon	Corvallis	silty clay loam	Agvise Laboratories	604 Highway 15 PO Box 510 Northwood, ND 58267

TREATMENT LIST

TRT ID	App No	App Formulation	Actual Rate Amount	App Timing
2	1	mesotrione 4SC	42.486 g a.i./A	Post directed pre-bloom
3	1	mesotrione 4SC	84.589 g a.i./A	Post directed pre-bloom

APPLICATIONS

Actual App Date	TRT ID	App No	App Timing	Sprayer Type	Actual GPA	Crop Growth Stage
06/25/2004	2	1	Post directed pre-bloom	Tractor	25.090	51
06/25/2004	3	1	Post directed pre-bloom	Tractor	25.000	51

OTHER TREATMENTS, FERTILIZER, CULTIVATION

Pesticide Appl Date	Product/Active Ingredient
08/16/2004	none applied
Fertilizer Date Applied	Type of Fertilizer
05/03/2004	16-16-16
07/01/2004	46-0-0
Preparatory Date	Preparatory Description
02/26/2004	cut & removed last years primocanes
04/29/2004	mowing grass alleyways
06/28/2004	mowing grass alleyways

IRRIGATION

Irrigation Date	Irrigation Method	Water Source	Irrigation Amount (in)
06/14/2004	Overhead	Well	1.5
06/21/2004	Overhead	Well	1
06/28/2004	Overhead	Well	1
07/05/2004	Overhead	Well	1
07/12/2004	Overhead	Well	1
07/19/2004	Overhead	Well	1.5
07/26/2004	Overhead	Well	1.5
08/02/2004	Overhead	Well	1.5

SAMPLING

Actual Sample Date	Sample No	TRT ID	Sample Type	Sample Shipped Date	Sample Receipt Date	Sample Prep Date
08/16/2004	001	1	berry	09/13/2004	09/28/2004	02/14/2005
08/16/2004	002	1	berry	09/13/2004	09/28/2004	N/A
08/16/2004	003	2	berry	09/13/2004	09/28/2004	02/14/2005
08/16/2004	004	2	berry	09/13/2004	09/28/2004	02/14/2005
08/16/2004	005	3	berry	09/13/2004	09/28/2004	02/14/2005
08/16/2004	006	3	berry	09/13/2004	09/28/2004	02/14/2005

DEVIATIONS

Trial Deviation Description
None

Supplementary Trial Weather Data (This information was provided by NOAA Climatological Data)

Trial Month	Trial Year	Overall T° F Range		Trial Air Average	Departure From Normal	Trial Total Precipitation	Departure From Normal
		Lowest	Highest				
January							
February							
March							
April							
May	2004	M	M	M	M	M	M
June	2004	M	M	M	M	M	M
July	2004	M	M	M	M	M	M
August	2004	48	99	69.2	2.2	1.79	1.06
September							
October							
November							
December							

Station: 351862/99999, CORVALLIS STATE UNIV, Oregon

Analysis Sheet 05-0288 Mean Recovery 101% Calibration Type MultiPoint
Study Number(s) 10288-04 Raspberry Recovery CV 0% Instrument sciex2
Extraction Date 4/13/2005
Analysis Date 4/13/2005 LOQ 0.01
Matrix Raspberry

Inj. #	Group	Sample Type	Peak Area	Standard Conc (ug/ml)	Calculated Conc (ug/ml)	Sample Conc (g/ml)	Uncorrected Residue (ppm)	Procedural Rec Level (ppm)	% Recovery	Reported Residue (ppm)	Sample
1	1	Standard	7322510	0.01							5/19/7751
2	1	Standard	290315	0.0004							7751/5/23 0.4 ng/ml
3	1	Standard	69909.9	0.0001							7751/5/25 0.1 ng/ml
4	1	Control	1773.99		-0.00005	0.09208	-0.00052			< LOQ	WG-HR-04-5637-001/1
5	1	Standard	141321	0.0002							7751/5/24 0.2 ng/ml
6	1	Recovery	726412		0.00093	0.09208	0.01015	0.01	101.53		WG-HR-04-5637-001/1
7	1	Recovery	1413190		0.00187	0.00184	1.01325	1	101.33		WG-HR-04-5637-001/1
8	1	Sample	11909.7		-0.00003	0.09208	-0.00037			< LOQ	WG-HR-04-5637-003/1
9	1	Sample	6441.9		-0.00004	0.09208	-0.00045			< LOQ	WG-HR-04-5637-004/1
10	1	Sample	9206.17		-0.00004	0.09208	-0.00041			< LOQ	WG-HR-04-5637-005/1
11	1	Sample	12053.3		-0.00003	0.09208	-0.00037			< LOQ	WG-HR-04-5637-006/1
12	1	Standard	3900610	0.005							5/20/7751
13	1	Standard	1522960	0.002							7751/5/21 2 ng/ml
14	1	Standard	803006	0.001							7751/5/22 1 ng/ml

FIELD TRIAL SUMMARY

FIELD TEST NUMBER: WG-HR-04-5638 PROTOCOL NUMBER: 10288-04 Blackberry

TEST SUBSTANCE

AI Common Name	AI Code Name	Test Substance	Lot/Batch Number
Mesotrione	ZA01296	mesotrione 4SC	FL-010515

TEST SYSTEM

Test System	Crop Variety	Crop Group Classification	Planting Date or Age
Blackberry	Kotata	Berry Group 13	05/01/1998

PFI Name	PFI Company	PFI Address	PFI Phone
Vern Fischer	Columbia Ag Research, Inc.	5601 Binns Road Hood River, OR 97031	(541) 387-3052

Trial Location	Trial City	Soil Texture	Soil Characterization Lab	Soil Characterization Lab Addr
Oregon	Hillsboro	Loam	Agvise Laboratories	604 Highway 15, PO Box 510 Northwood, ND 58267

TREATMENT LIST

TRT ID	App No	App Formulation	Actual Rate Amount	App Timing
2	1	mesotrione 4SC	43.5029 g a.i./A	Post directed pre-bloom
3	1	mesotrione 4SC	88.3371 g a.i./A	Post directed pre-bloom

APPLICATIONS

Actual App Date	TRT ID	App No	App Timing	Sprayer Type	Actual GPA	Crop Growth Stage
04/27/2004	2	1	Post directed pre-bloom	Backpack	23.980	Prebloom
04/27/2004	3	1	Post directed pre-bloom	Backpack	24.370	Prebloom

OTHER TREATMENTS, FERTILIZER, CULTIVATION

Pesticide Appl Date	Product/Active Ingredient
02/22/2004	Lime sulfur
03/28/2004	Goal 2 XL
05/01/2004	Sulfur
05/15/2004	Elite
06/05/2004	Rovral
Fertilizer Date Applied	Type of Fertilizer
04/22/2004	16-16-16
Preparatory Date	Preparatory Description
	None

IRRIGATION

Irrigation Date	Irrigation Method	Water Source	Irrigation Amount (in)
		none applied	

SAMPLING

Actual Sample Date	Sample No	TRT ID	Sample Type	Sample Shipped Date	Sample Receipt Date	Sample Prep Date
06/28/2004	001	1	berry	07/20/2004	08/04/2004	02/14/2005
06/28/2004	002	1	berry	07/20/2004	08/04/2004	N/A
06/28/2004	003	2	berry	07/20/2004	08/04/2004	02/14/2005
06/28/2004	004	2	berry	07/20/2004	08/04/2004	02/14/2005
06/28/2004	005	3	berry	07/20/2004	08/04/2004	02/14/2005
06/28/2004	006	3	berry	07/20/2004	08/04/2004	02/14/2005

DEVIATIONS

Trial Deviation Description
None

Supplementary Trial Weather Data (This information was provided by NOAA Climatological Data)

Trial Month	Trial Year	Overall T° F Range		Trial Air Average	Departure From Normal	Trial Total Precipitation	Departure From Normal
		Lowest	Highest				
January							
February							
March							
April	2004	36	86	56.3	5.1	1.01	-1.63
May	2004	44	82	60.1	3.0	1.78	-0.60
June	2004	47	91	65.5	2.8	1.12	-0.47
July							
August							
September							
October							
November							
December							

Station: 356751/24229, PORTLAND INTERNATIONAL AP, Oregon

Analysis Sheet 05-0234 Mean Recovery 89% Calibration Type MultiPoint
Study Number(s) 10288-04 Blackberry Recovery CV 0% Instrument sciex2
Extraction Date 3/21/2005
Analysis Date 3/22/2005 LOQ 0.01
Matrix Blackberry

Inj. #	Group	Sample Type	Peak Area	Standard Conc (ug/ml)	Calculated Conc (ug/ml)	Sample Conc (g/ml)	Uncorrected Residue (ppm)	Procedural Rec Level (ppm)	% Recovery	Reported Residue (ppm)	Sample
~~1~~	~~1~~	~~Standard~~	~~267835~~	~~0.02~~							~~5/18/7751~~
2	1	Standard	4675.73	0.001							7751/5/22 1 ng/ml
3	1	Control	0		0.00013	0.09208	0.00146			< LOQ	WG-HR-04-5638-001/1
~~4~~	~~1~~	~~Standard~~	~~89478~~	~~0.01~~							~~5/19/7751~~
5	1	Recovery	3869.96		0.00082	0.09208	0.00886	0.01	88.61		WG-HR-04-5638-001/1
~~6~~	~~1~~	~~Recovery~~	~~1770.48~~		~~0.00045~~	~~0.0046~~	~~0.09694~~	~~1~~	~~9.69~~		~~WG-HR-04-5638-001/1~~
7	1	Standard	838.183	0.0002							7751/5/24 0.2 ng/ml
8	1	Sample	34.2762		0.00014	0.09208	0.00153			< LOQ	WG-HR-04-5638-003/1
9	1	Sample	23.4248		0.00014	0.09208	0.00151			< LOQ	WG-HR-04-5638-004/1
10	1	Sample	21.4765		0.00014	0.09208	0.0015			< LOQ	WG-HR-04-5638-005/1
11	1	Sample	84.5253		0.00015	0.09208	0.00162			< LOQ	WG-HR-04-5638-006/1
12	1	Standard	27920.4	0.005							5/20/7751
13	1	Standard	9931.93	0.002							7751/5/21 2 ng/ml
14	1	Standard	1661.78	0.0004							7751/5/23 0.4 ng/ml

FIELD TRIAL SUMMARY

FIELD TEST NUMBER: WG-HR-05-6370 PROTOCOL NUMBER: 10288-04 Raspberry

TEST SUBSTANCE

AI Common Name	AI Code Name	Test Substance	Lot/Batch Number
Mesotrione	ZA01296	mesotrione 4SC	FL-010681

TEST SYSTEM

Test System	Crop Variety	Crop Group Classification	Planting Date or Age
Raspberry	Caroline	Berry, Group 13	3 years

PFI Name	PFI Company	PFI Address	PFI Phone
Jim Calkins	AgSolutions, Inc.	5757 NE Highway 20 Corvallis, OR 97330	(541) 753-5797

Trial Location	Trial City	Soil Texture	Soil Characterization Lab	Soil Characterization Lab Addr
Oregon	Corvallis	Silty clay loam	Agvise Laboratories	604 Highway 15, PO Box 510 Northwood, ND 58267

TREATMENT LIST

TRT ID	App No	App Formulation	Actual Rate Amount	App Timing
2	1	mesotrione 4SC	44.1833 g a.i./A	Post directed pre-bloom
3	1	mesotrione 4SC	85.5996 g a.i./A	Post directed pre-bloom

APPLICATIONS

Actual App Date	TRT ID	App No	App Timing	Sprayer Type	Actual GPA	Crop Growth Stage
05/24/2005	2	1	Post directed pre-bloom	Tractor	60.850	51
05/24/2005	3	1	Post directed pre-bloom	Tractor	61.530	51

OTHER TREATMENTS, FERTILIZER, CULTIVATION

Pesticide Appl Date	Product/Active Ingredient
08/15/2005	none applied
Fertilizer Date Applied	Type of Fertilizer
03/15/2005	40-0-0
06/02/2005	16-16-16
Preparatory Date	Preparatory Description
02/15/2005	Cut and removed old canes
05/05/2005	mowed alleyways
06/03/2005	mowed alleyways
07/05/2005	mowed alleyways

IRRIGATION

Irrigation Date	Irrigation Method	Water Source	Irrigation Amount (in)
06/15/2005	Drip	Well	1
06/23/2005	Drip	Well	1
06/30/2005	Drip	Well	1
07/05/2005	Drip	Well	1
07/10/2005	Drip	Well	1
07/15/2005	Drip	Well	1
07/20/2005	Drip	Well	1
07/25/2005	Drip	Well	1
07/30/2005	Drip	Well	1
08/04/2005	Drip	Well	1
08/09/2005	Drip	Well	1
08/14/2005	Drip	Well	1
08/19/2005	Drip	Well	1
08/24/2005	Drip	Well	1

SAMPLING

Actual Sample Date	Sample No	TRT ID	Sample Type	Sample Shipped Date	Sample Receipt Date	Sample Prep Date
08/15/2005	001	1	berry	09/19/2005	10/05/2005	10/11/2005
08/15/2005	002	1	berry	09/19/2005	10/05/2005	N/A
08/15/2005	003	2	berry	09/19/2005	10/05/2005	10/11/2005
08/15/2005	004	2	berry	09/19/2005	10/05/2005	10/11/2005
08/15/2005	005	3	berry	09/19/2005	10/05/2005	10/11/2005
08/15/2005	006	3	berry	09/19/2005	10/05/2005	10/11/2005

DEVIATIONS

Trial Deviation Description
Protocol requires that original QA auditor sign form 2. Diane said I should have in house QA sign so Mindy Berger signed the form. Diane is our back up QA and is training Mindy.

Supplementary Trial Weather Data (This information was provided by NOAA Climatological Data)

Trial Month	Trial Year	Overall T° F Range		Trial Air Average	Departure From Normal	Trial Total Precipitation	Departure From Normal
		Lowest	Highest				
January							
February	2005	23	64	42.1	-1.1	0.47	-5.24
March	2005	27	73	48.4	1.5	4.34	-0.25
April	2005	M	M	M	M	M	M
May	2005	M	M	M	M	M	M
June	2005	M	M	M	M	M	M
July	2005	M	M	M	M	M	M
August	2005	M	M	M	M	M	M
September							
October							
November							
December							

Station: 351862/99999, CORVALLIS STATE UNIV, Oregon

M Used to indicate data element missing.

Analysis Sheet 05-1065 Mean Recovery 95% Calibration Type MultiPoint
Study Number(s) 10288-04 Raspberry Recovery CV 5% Instrument sciex2
Extraction Date 11/18/2005
Analysis Date 11/18/2005 LOQ 0.01
Matrix Raspberry

Inj. #	Group	Sample Type	Peak Area	Standard Conc (ug/ml)	Calculated Conc (ug/ml)	Sample Conc (g/ml)	Uncorrected Residue (ppm)	Procedural Rec Level (ppm)	% Recovery	Reported Residue (ppm)	Sample
1	1	Standard	85841.9	0.0002							7751/5/24 0.2 ng/ml
2	1	Standard	177118	0.0004							7751/5/23 0.4 ng/ml
3	1	Control	0		0	0.00658	0.00026			< LOQ	WG-HR-05-6370-001/1
4	1	Recovery	24862.4		0.00006	0.00658	0.00916	0.01	91.57		WG-HR-05-6370-001/1
5	1	Recovery	274441		0.00065	0.00066	0.98445	1	98.44		WG-HR-05-6370-001/1
6	1	Standard	858033	0.002							7751/5/21 2 ng/ml
7	1	Sample	0		0	0.00658	0.00026			< LOQ	WG-HR-05-6370-003/1
8	1	Sample	0		0	0.00658	0.00026			< LOQ	WG-HR-05-6370-004/1
9	1	Standard	22180.8	0.00005							7751/5/26 0.05ng/ml
10	1	Sample	0		0	0.00658	0.00026			< LOQ	WG-HR-05-6370-005/1
11	1	Sample	0		0	0.00658	0.00026			< LOQ	WG-HR-05-6370-006/1
12	1	Standard	403040	0.001							7751/5/22 1 ng/ml
13	1	Standard	42432.9	0.0001							7751/5/25 0.1 ng/ml
14	1	Standard	8411.98	0.00002							7751/5/27 0.02ng/ml

APPENDIX 2. STUDY PROFILE

STUDY PROFILE

Mesotrione
(ZA-1296)

Study Type: Crop Field Trials

OPPTS Guideline Number: 860.1500

Mesotrione – Magnitude of the Residues in or on Berry, Group 13

Study Identification: Syngenta Study Number T010288-04

Prepared for:

Health Effects Division
Office of Pesticide Programs
U.S. Environmental Protection Agency

Prepared by:

Syngenta Crop Protection, Inc.
Dietary Safety Department
410 Swing Road
Post Office Box 18300
Greensboro, NC 27419
(336) 632-6000

STUDY PROFILE
Prepared by Syngenta Crop Protection

1.0 BACKGROUND INFORMATION

Mesotrione, also known as ZA1296, 2[4-(methylsulfonyl)-2-nitrobenzoyl]-1,3-cyclo-hexanedione (CAS Name), is a selective herbicide for control of broadleaves and grasses.

Table 1. Test Compound Nomenclature

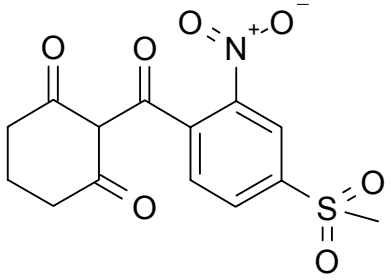
Compound:	
Common Name:	Mesotrione
Company Experimental Name:	ZA-1296
IUPAC Name:	2-(4-Mesyl-2-nitrobenzoyl)cyclohexane-1,3-dione
CAS Name:	2[4-(Methylsulfonyl)-2-nitrobenzoyl]-1,3-cyclohexanedione
CAS Number:	104206-82-8
End Use Product Name:	Callisto® 4SC

Table 2. Physicochemical Properties of the Pure Active Ingredient

Parameter	Value	Reference
Melting point/range	148.7 – 152.5 ºC onset with decomposition	Study #. APP-038
pH	3.42 @24.8 ºC (1% suspension in water)	Study #. APP-038
Density	Relative density 1.46 g/ml @20 ºC; bulk density 0.56 g/ml @23.3 ºC	Study #. APP-038
Water solubility (mg/mL) @20 °C	0.16 in unbuffered water, 2.2 at pH4.8, 15 at pH6.9, 22 at pH 9	Study #. APP-028
Solvent solubility (g/L @ 20°C)	3.6 in MeOH, 16.6 in ethyl acetate, 2.7 in toluene, 82.7 in 1,2-dichloroethane, 96.1 in acetonitrile, 1.4 in xylenes, <0.3 in heptane, 76.4 in acetone	Study #. APP-038
Vapor pressure @ 20°C	<5.7 x 10e-7	Study #. APP-028
Dissociation constant (pK_a)	3.12 @ 20 ºC	Study #. APP-028
Octanol/water partition coefficient Log(K_{OW})	0.11 in unbuffered water, -1.076 in pH5 buffered water, <-1 in pH7 and pH 9 buffered water	Study #. APP-028
UV/visible absorption spectrum	256 nm in MeOH	Study #. APP-028

2.0 EXPERIMENTAL DESIGN

2.1 Study Site Information

Table 3. Trial Site Conditions

Trial Site Conditions						
Trial Identification (City, State/Year)	Soil characteristics				Meteorological data	
	Type	%OM*	pH*	CEC* meq/g	Overall monthly rainfall range	Overall T° **F** range
5A-HR-04-5630 (Penn Yan, NY, 2004)	Gravelly Loam	3.3	4.9	8.6	2.29 – 6.46	34 – 89
SJ-HR-04-5631 (Rose Hill, NC, 2004)	Sand	4.3	3.7	7.0	0.56 – 7.39	26 - 92
SJ-HR-04-5632 (Rose Hill, NC, 2004)	Sand	1.6	4.0	4.6	0.56 – 7.39	26 - 92
NL-HR-04-5633 (Fremount, MI, 2004)	Loamy sand	3.2	4.5	5.3	1.71 – 9.59	24 -187
NL-HR-04-5634 (Conklin, MI, 2004)	Loam	2.1	4.5	12.8	1.71 – 9.59	24 - 87
WF-HR-04-5635 (LaConner, WA, 2004)	Silt Loam	5.9	5.0	23.3	-0.05 – 4.4	34 -101
NL-HR-04-5636 (Belding, MI, 2004)	Loam	1.7	4.7	9.3	2.04 – 9.29	23 - 90
WG-HR-04-5637 (Corvallis, OR, 2004)	Silty clay loam	2.4	6.5	17.4	1.79	48 - 99
WG-HR-04-5638 (Hillsboro, OR, 2004)	Loam	4.9	5.3	16.6	1.01 – 1.78	36 - 91
WG-HR-05-6370 (Corvallis, OR, 2005)	Silty clay loam	2.4	6.5	17.4	0.47 – 4.34	23 - 73

Table 4. Study Use Pattern

Location (City, State/Year)	End Product	Application					Tank Mix Adjuvants
		Method/Timing	Vol, GPA[2]	Rate, (g a.i./A)	RTI[2], days	Total Rate, (g a.i./acre)	
5A-HR-04-5630, Penn, Yan, NY, 2004	Callisto® 4SC	Post Directed Pre-Bloom Spray	50	41	NA	41	NA
		Post Directed Pre-Bloom Spray	49	85	NA	85	NA
SJ-HR-04-5631 Rose Hill, NC, 2004	Callisto® 4SC	Post Directed Pre-Bloom Spray	27	43	NA	43	NA
		Post Directed Pre-Bloom Spray	28	87	NA	87	NA
SJ-HR-04-5632 Rose Hill, NC, 2004	Callisto® 4SC	Post Directed Pre-Bloom Spray	28	44	NA	44	NA
		Post Directed Pre-Bloom Spray	27	86	NA	86	NA
NL-HR-04-5633 Fremont, MI, 2004	Callisto® 4SC	Post Directed Pre-Bloom Spray	53	43	NA	43	NA
		Post Directed Pre-Bloom Spray	52	85	NA	85	NA
NL-HR-04-5634 Conklin, MI, 2004	Callisto® 4SC	Post Directed Pre-Bloom Spray	52	43	NA	43	NA
		Post Directed Pre-Bloom Spray	53	86	NA	86	NA
WF-HR-04-5635 LaConner, WA, 2004	Callisto® 4SC	Post Directed Pre-Bloom Spray	30	42	NA	42	NA
		Post Directed Pre-Bloom Spray	30	85	NA	85	NA
NL-HR-04-5636 Belding, MI, 2004	Callisto® 4SC	Post Directed Pre-Bloom Spray	53	43	NA	43	NA
		Post Directed Pre-Bloom Spray	52	84	NA	84	NA
WG-HR-04-5637 Corvallis, OR	Callisto® 4SC	Post Directed Pre-Bloom Spray	25	42	NA	42	NA
		Post Directed Pre-Bloom Spray	25	85	NA	85	NA
WG-HR-04-5638 Hillsboro, OR	Callisto® 4SC	Post Directed Pre-Bloom Spray	24	44	NA	44	NA
		Post Directed Pre-Bloom Spray	24	88	NA	88	NA
WG-HR-05-6370 Corvallis, OR	Callisto® 4SC	Post Directed Pre-Bloom Spray	61	44	NA	44	NA
		Post Directed Pre-Bloom Spray	62	86	NA	86	NA

[1] Gallons per acre
[2] Treatment Intervals

Table 5. Trial Numbers and Geographical Locations

EPA Region	Blueberry, Raspberry and Blackberry (Crop Group 13)	
	Submitted	Required
1	1	1
2	2	2
5	2 + 1*	2
12	1 + 2* + 1**	1
Total	10	6 + 3*

* For Group 13, a minimum of 9 trials required, including 6 for blue berry and 3 for raspberry according to OPPTS 860.1500

** One blackberry trial was, not required, but conducted in Region 2

Note: Field trials account for 94%, 89% and 73% for total productions of blueberry, raspberry and blackberry, respectively, upon acreage.

2.2 Sample Handling and Preparation

After collection, the samples were frozen and shipped via freezer truck or overnight courier with dry ice to Syngenta Crop Protection, Inc., Greensboro, NC. Upon arrival, samples were stored frozen until prepared for analysis. Freezers were maintained at approximately -15°C with continuous temperature monitoring. Caps and/or stems were removed and discarded from berries. Samples were composited with a Hobart foodcutter. Dry ice was used as necessary to keep the sample frozen.

2.3 Analytical Methodology

The analytical procedures outlined in Syngenta Analytical Method RAM 366/01[1] were modified for analysis of residues of mesotrione in berries as follows: A 10-gram subsample was Polytron-homogenized with 50% ACN/H_2O after addition of one gram of sodium chloride. Approximately ~40-mL of the mixture was aliquoted for centrifuge. A 0.1-grams aliquot (1 mL) was diluted with a 2% formic acid, and passed through an Oasis® HLB SPE cartridge for cleanup. Mesotrione residues were eluted off the cartridge with a mixture of MeOH/formic acid (98/2), and evaporated to dryness with N_2. The residues were re-constituted in 90% H_2O/MeOH with a thorough ultrasonication. The sample was injected onto a HPLC/MS/MS system for residue analysis.

The analytical procedures were further modified for analysis of field trials of 5A-HR-04-5630 blueberry (Commercial maturity), WG-HR-05-6370 raspberry (commercial maturity), NL-HR-04-5634 blueberry (commercial maturity), SJ-HR-04-5631 blueberries (decline samples and commercial maturity, NL-HR-04-5636 raspberry (decline samples only) as

follows: A 10-gram subsample was Polytron-homogenized with 50% ACN/H_2O after addition of one gram of sodium chloride. Approximately 40 mL of the mixture was centrifuged and an aliquot was taken from the supernatant and diluted with water. The final volume was adjusted with 90% H_2O/MeOH. The sample was injected onto a HPLC/MS/MS system for residue analysis.

The limit of quantitation (LOQ), as demonstrated by the smallest acceptable recoveries is 10.01 ppm for mesotrione. The limit of detection (LOD), as demonstrated by the smallest amount of analyte injected, was 0.001 ng of mesotrione.

3.0 RESULTS AND DISCUSSION

Farming practices, environmental conditions, and weather conditions had no effect on the residue results. The field trials in this study account for 94%, 89% and 73% of total production for blueberry, raspberry and blackberry, respectively, in the United States based upon acreage. The field trials submitted represent all the typical commercial growing areas for berry as required by EPA.

Residue storage stability data for mesotrione was reported in Final Report RR97-042B FIN[2] "ZA1296: Stability of ZA1296 and the Metabolite MNBA in Frozen Crops." The data indicated that residues of mesotrione were stable in corn grain, corn forage, corn fodder, soybean seed, and radish root for 40 months. Based on these results, residues of mesotrione are expected to be stable in berries over the storage interval of 16.4 months for this study. See Table 6 for a Summary of Storage Conditions. In addition, Syngenta has conducted a storage stability study (T004813-05) for mesotrione on berries, asparagus, okra and sugarcane for a 17-month freezer storage interval in support of this study and studies on other crop commodities. The storage stability data of mesotrione on berries will be submitted to the Agency when the study is completed by December, 2006.

In this study, recovery samples were prepared at LOQ (0.01 ppm) and higher levels, and analyzed concurrently with the treated residue samples for demonstration of the method performance. Procedural recoveries ranged from 67- 104% with an average of 87% ± 10.4% (n = 14) for blueberry, 75 – 102% with an average of 91% ± 9.0% (n = 9) for raspberry; and 87% (n = 1) for blackberry. See Table 7 for a summary of concurrent recoveries of mesotrione in berry.

With the targeted post direct pre-bloom treatment at 85 g a.i./A, no residues of mesotrione were detected (<0.01 ppm) in any of the berry samples in this study. No residues were found in samples treated with 42.5 g a.i./A. Residue results for mesotrione in berry are shown in Table 8, and a summary of results is shown in Table 9.

Decline berry samples were harvested at the following intervals: 7 days prior to maturity, 4 days prior to maturity, maturity and 4 days after maturity. No residues were found in any of the samples from the blueberry or raspberry trial at any time intervals.

Table 6. Summary of Storage Conditions

Matrix (RAC or Extract)	Storage Temp. (ºC)	Actual Maximum Storage Duration (months)	Interval of Demonstrated Storage Stability (months)
Blueberry	-15	16.4	40
Raspberry	-15	9.7	40
Blackberry	-15	92	40

Table 7. Summary of Concurrent Recoveries of Mesotrione from Berry Commodities

Matrix	Spike level (mg/kg)	Sample size (n)	Recoveries (%)	Mean ± std dev
Blueberry	0.01 – 1	14	82, 94, 91, 95, 97, 77, 88, 104, 81, 84, 67, 78, 83, 102	87% ± 10.4%
Raspberry	0.01 – 1	9	89, 85, 75, 84, 97, 102, 101, 92, 98	91% ± 9.0%
Blackberry	0.01	1	87	NA

Table 8. Residue Data from Berry Field Trials with Mesotrione

Trial ID (City, State/Year)	EPA Region	Crop/Variety	Commodities or Matrix	Total Rate (g a.i./A)	DAA* (days)	Residues (ppm)
5A-HR-04-5630 Penn, Yan, NY/2004	1	Blueberry Blue Ray	Blueberry	42.5	Maturity	<0.01; <0.01
			Blueberry	85	Maturity	<0.01; <0.01
SJ-HR-04-5631 Rose Hill, NC/2004	2	Blueberry Reveille	Blueberry	42.5	Maturity	<0.01; <0.01
			Blueberry	85	Maturity	<0.01; <0.01
SJ-HR-04-5632 Rose Hill, NC/2004	2	Blueberry Reveille	Blueberry	42.5	Maturity	<0.01; <0.01
			Blueberry	85	Maturity	<0.01; <0.01
NL-HR-04-5633 Fremont, MI/2004	5	Blueberry Blue Crop	Blueberry	42.5	Maturity	<0.01; <0.01
			Blueberry	85	Maturity	<0.01; <0.01
NL-HR-04-5634 Conklin, MI/2004	5	Blueberry Blue Ray	Blueberry	42.5	Maturity	<0.01; <0.01
			Blueberry	85	Maturity	<0.01; <0.01
WF-HR-04-5635 LaConner, WA/2004	12	Blueberry Nelson &Elliot	Blueberry	42.5	Maturity	<0.01; <0.01
			Blueberry	85	Maturity	<0.01; <0.01
NL-HR-04-5636 Belding, MI/2004	5	Raspberry K81-6	Raspberry	42.5	Maturity	<0.01; <0.01
			Raspberry	85	Maturity	<0.01; <0.01
WG-HR-04-5637 Corvallis, OR/2004	12	Raspberry Caroline	Raspberry	42.5	Maturity	<0.01; <0.01
			Raspberry	85	Maturity	<0.01; <0.01
WG-HR-04-5638 Hillsboro, OR/2004	12	Blackberry Kotata	Blackberry	42.5	Maturity	<0.01; <0.01
			Blackberry	85	Maturity	<0.01; <0.01
WG-HR-05-6370 Corvallis, OR/2005	12	Raspberry Caroline	Raspberry	42.5	Maturity	<0.01; <0.01
			Raspberry	85	Maturity	<0.01; <0.01

* Days after application

Table 9. Summary of Maximum Residue Data from Berry Field Trials with Mesotrione

Commodity	Total Applic. Rate, (g a.i./A)	DAA (days)	Residue Levels (ppm)						
			n	Min.	Max.	HAFT*	Median (STMdR)	Mean (STMR)	Std. Dev.
Blueberry	85	Maturity	12	<0.01	<0.01	<0.01	<0.01	<0.01	0
	42.5	Maturity	12	<0.01	<0.01	<0.01	<0.01	<0.01	0
Raspberry	85	Maturity	6	<0.01	<0.01	<0.01	<0.01	<0.01	0
	42.5	Maturity	6	<0.01	<0.01	<0.01	<0.01	<0.01	0
Blackberry	85	Maturity	2	<0.01	<0.01	<0.01	<0.01	<0.01	0
	42.5	Maturity	2	<0.01	<0.01	<0.01	<0.01	<0.01	0

* HAFT = Highest Average Field Trial.

4.0 INVESTIGATOR'S CONCLUSIONS

No residues of mesotrione were detected (<0.01 ppm) in any of the blueberry, raspberry or blackberry samples treated at the targeted 1X rate (85 g a.i./A) and harvested at maturity in this study. No residues (<0.01 ppm) were found in samples treated at 42.5 g a.i./A. Residues of mesotrione were also below 0.01 ppm in all decline samples.

5.0 REFERENCES

1. Crook, S.J., Syngenta Crop Protection, Inc., Analytical Method No., RAM366/01, "Residue Analytical Method for the Determination of Residues of Mesotrione and 4-(methylsulfonyl)-2-Nitrobenzoic Acid (MNBA) in Crop Samples." MRID No. 45651803.

2. Wiebe, L.A. and Peyton, C.S., Zeneca Final Report No. RR97-042B FIN, Study No. 1296-95-SS-02, "ZA1296: Stability of ZA1296 and Metabolite MNBA in Frozen Crops." MRID No.44942401.

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