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Weed Management In Horticultural Crops

RESEARCH RESULTS 2014



THE OHIO STATE UNIVERSITY
COLLEGE OF FOOD, AGRICULTURAL, AND ENVIRONMENTAL SCIENCES

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This report contains the results of research on horticultural crop weed management in Ohio for 2014. This report and other resources are available on the Internet at: **www.oardc.ohio-state.edu/weedworkshop**

This bulletin does not constitute endorsement or specific recommendations. Apology is expressed for any inadvertent errors found in this report.

Final copies of commercial advertisement that will contain data from these results are subject to the author's approval before publication.

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LIST OF CROP BAYER CODES USED IN THIS REPORT:

AGRASS* = Annual grasses
LYPES = Tomato
MABSD = Apple
RUBID = Red raspberry
RUBOC = Black raspberry
RUBSG = Brambles (raspberries and blackberries)
VACMY = Blackberry
ZEAMX = Sweet corn
* not official Bayer Code.

LIST OF ABBREVIATIONS AND DEFINITIONS USED IN THIS REPORT:

AVE = Average
BURN = Necrotic tissue
CHLOROSIS = Yellow coloration or bleaching of foliage
CONTROL = Herbicide efficacy
DAT= Days after treatment
DOR = Dormant
DIAM = Diameter
GROWTH = Annual increase in length of shoot
INJURY = Composite assessment of stunting, chlorosis, and other visible effects
MKTB = Marketable fruit
MSP = Mid-spring
NO = Number
OZ = Ounces
POST = Post-emergent application
POSTTP = Post-transplant
PRE = Pre-emergent application
PRETP = Pre-transplant
RACOBL = Randomized Complete Block Design
UNMKTB = Unmarketable fruit; green (tomatoes), diseased or cull
WAT = Weeks after treatment

METHODS OF ASSESSING CROP INJURY, WEED CONTROL, AND DENSITY:

Unless otherwise stated, crop injury and weed control were assessed visually. The 0-100 linear scale was used, in which 0 = no crop injury/no control, and 100 = death of crop/complete weed control.

For weed density: LOW = Scattered, just a few weeds
MEDIUM = 1 weed per 3 feet of row
HIGH = More than 1 weed per 3 feet of row

METEORLOGICAL DATA: Meteorological Data for each research station may be found at www.oardc.ohio-state.edu/newweather/

A LIST OF WEEDS WITH BAYER CODES USED IN THIS REPORT:

BAYER CODE	COMMON NAME	BOTANICAL NAME
ABUTH	velvetleaf	*Abutilon theophrasti* Medicus
ACCVI	Virginia copperleaf	*Acalypha virginica* L.
AGRASS*	foxtail, crabgrass spp.	*Setaria, Digitaria* spp.
AGGRE	quackgrass	*Elytrigia repens* (L.) Nevski
AMABL	prostrate pigweed	*Amaranthus blitoides* S. Wats.
AMARE	redroot pigweed	*Amaranthus retroflexus* L.
AMAXX	pigweed spp.	*Amaranthus* spp.
AMBEL	common ragweed	*Ambrosia artemisiifolia* L.
AMBTR	giant ragweed	*Ambrosia trifida* L.
CAGSE	hedge bindweed	*Calystegia sepium* (L.) R. Br.
CAPBP	shepherd's purse	*Capsella bursa-pastoris* (L.) Medicus
CARHI	hairy bittercress	*Cardamine pratensis* L.
CERVU	mouseear chickweed	*Cerastium vulgatum* L.
CHEAL	common lambsquarters	*Chenopodium album* L.
CIRAR	Canada thistle	*Cirsium arvense* (L.) Scop.
CYAOV	Shagbark hickory	*Carya ovata* (MILL) K.KOCH
CYPES	yellow nutsedge	*Cyperus esculentes* L.
DACGL	orchardgrass	*Dactylis glomerata* L.
DAUCA	wild carrot	*Daucus carota* L.
DIGSA	large crabgrass	*Digitaria sanguinalis* (L.) Scop.
GLEHE	ground ivy	*Glechoma hederacea* L.
MALNE	common mallow	*Malva neglecta* Wallr.
OXAST	yellow woodsorrel	*Oxalis stricta* L.
PANDI	fall panicum	*Panicum dichotomiflorum* Michx.
PLALA	buckhorn plantain	*Plantago lanceolata* L.
PLAMA	broadleaf plantain	*Plantago major* L.
POANN	annual bluegrass	*Poa annua* L.
POLPY	Pennsylvania smartweed	*Polygonum pensylvanicum* L.
POROL	common purslane	*Portulaca oleracea* L.
PRTQU	Virginia creeper	*Parthenocissus quinquifolia* (L.) Planch.
RORIS	marsh yellowcress	*Rorippa islandica* L.

RUBFR	bramble	*Rubus fruticosis* L.
RUMOB	broadleaf dock	*Rumex obtusifolius* L.
SETFA	giant foxtail	*Setaria faberii* L.
SENVU	common groundsel	*Senecio vularis* L.
SOLPT	Eastern black nightshade	*Solanum ptycanthum* Dun.
SOOCA	Canada goldenrod	*Solidago canadensis* L.
STEME	common chickweed	*Stellaria media* (L.) Vill
TAROF	dandelion	*Taraxacum officinale* Weber in Wiggers
TOXRA	poison ivy	*Toxicodendron* radicans (L.) Ktze.
TRFPR	red clover	*Trifolium pratense* L.
TRFRE	white clover	*Trifolium repens* L.

* not official Bayer Code.

HERBICIDE LIST

TRADE NAME	COMMON NAME	FORM	MANUFACTURER
AIM	carfentrazone	2 EC	FMC Corporation
Alion	indaziflan	200 SL	Bayer CropScience
Anthem ATZ	atrizine	4 SC	FMC Corporation
Authority MTZ	sulfentrazone and metribuzin	45 WG	FMC Corporation
Bicyclopyrone	N/A	200 L	Syngenta Crop Protection, Inc.
Dual Magnum	s-metolachlor	7.62 EC	Syngenta Crop Protection, Inc.
Emerion 7000	Ammonium Nonanoate	40 L	Emery Oleochemicals
Gramoxone	paraquat dichloride	2L	Syngenta Crop Protection, Inc.
Karmex	diuron	80 DF	Griffin LLC
MAT-28	N/A	50 SG	DuPont Crop Protection
Matrix	rimsulfuron	25 DF	DuPont Crop Protection
Perspective	aminocyclopyrachlor		DuPont Crop Protection
Prowl H_2O	pendimethalin	3.8 L	BASF Ag Products
Pursuit	Imazethapyr	2L	BASF Corporation
Reflex	fomesafen	2L	Syngenta Crop Protection, Inc.
Rely 280	glufosinate ammonium	200 SL	Bayer CropScience
Roundup PowerMax	glyphosate	4.5 L	Monsanto Company
Sandea	halosulfuron-methyl	75 DF	Gowan Company
Select	clethodim	2 L	Valent U.S.A. Corp. Agr. Products
Sencor	metribuzin	75 DF	Bayer CropScience
Sinbar	terbacil	80 WP	Tessenderlo Kerley, Inc.
Spartan	sulfentrazone	75 DF	FMC Corporation
Stinger	clopyralid	3 L	Dow AgroSciences LLC
Strategy	ethalfluralin+clomozone	2.1 L	Loveland Products, Inc.
Surflan	oryzalin	4L	Dow AgroSciences LLC
Treevix	saflufenacil	70 WG	BASF Ag Products
Weedone LV4	2, 4 -D ester	3.8 EC	NuFarm

ADJUVANT LIST

NAME	ABBREVIATION	DESCRIPTION
Ammonium sulfate	AMS	Spray grade fertilizer
Crop Oil Concentrate	COC	Paraffin base petroleum oil
Induce	NIS	Nonionic surfactant
MSO	MSO	Methylated seed oil
28% N	UAN	Urea ammonia nitrate

The Ohio State University

COMPARISON OF ALION TANKMIXES FOR WEED CONTROL IN RASPBERRIES

Trial ID: HP14USAM3J_1 Location: Wooster, Ohio Trial Year: 2014
Protocol ID: BAYER ALION TM 2014 Investigator: Dr. Douglas J. Doohan
Project ID: HP14USAM3J Study Director: Rick Edwards
Sponsor Contact:

General Trial Information

Study Director: Rick Edwards **Title:** Research Associate
Investigator: Dr. Douglas J. Doohan **Title:** Professor

Discipline: H herbicide

Trial Location

Country: USA United States

Conducted Under GLP: No
Conducted Under GEP: No

Objectives:

To compare Alion plus glyphosate or glufosinate plus glyphosate to a standard treatment for weed control and crop tolerance in raspberries.

Conclusions:

At 18 DAT there was no difference on phytotoxicity on the crop between any treatment. Phytotoxicity occurred in the form of burning of lower primocane leaves. There were no significant differences in the level of weed control between any treatment.
At 75 DAT, phytotoxicity was statistically greater in the plots in treatment 5 (Alion with Matrix, Roundup, Rely 280 and Karmex). There was a 20% mean reduction of vigor in this treatment, compared to 13%, 0 %, and 3% in the treatments 2, 3 and 4, respectively. Weed control efficacy at this time was reduced from the 18 day assessment, with poor control of foxtail. The differences between treatments was not statistically significant, however the control of yellow foxtail was between 18 % in treatment 2, and 70% for treatment 5.
In conclusion, while weed control was effective at 18 days after treatment, effectiveness was diminished by the late summer. There did not seem to be any severe phytotoxicity, although treatment 5 caused burning that caused the primocanes to die back by late summer.

Contacts

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Country: USA United States

Investigator: Dr. Douglas J. Doohan **Title:** Professor
Organization: Ohio Agricultural Research and Development Center
Address: 1680 Madison Avenue
City+State/Prov: Wooster, Ohio
Postal Code: 44691
Country: USA United States

Crop Description

Crop 1: RUBID Rubus idaeus Red raspberry
BBCH Scale: BPER

Pest Description

Pest 1 Type: W **Code:** GLEHE Glechoma hederacea
Common Name: Ground ivy

Pest 2 Type: W **Code:** CIRAR Cirsium arvense
Common Name: Canada thistle

Pest 3 Type: W **Code:** AGRRE Elymus repens
Common Name: Quackgrass

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Site and Design

Treated Plot Width: 5 FT
Treated Plot Length: 20 FT
Treated Plot Area: 100 FT2 **Treatments:** 5
Replications: 4

Site Type: GROVE grove
Experimental Unit: 1 PLOT plot
Tillage Type: NOTILL no-till
Study Design: RACOBL Randomized Complete Block (RCB)

Application Description

	A
Application Date:	5/29/14
Appl. Start Time:	3:30 PM
Appl. Stop Time:	4:30 PM
Application Method:	SPRAY
Application Timing:	MAY
Application Placement:	BROADC
Applied By:	R. Edwards
Air Temperature, Unit:	75.7 F
% Relative Humidity:	63.19
Wind Velocity, Unit:	7.3 MPH
Wind Direction:	NE
Dew Presence (Y/N):	N no
Soil Moisture:	SLIDRY
% Cloud Cover:	5
Next Moisture Occurred On:	6/3/14

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	RUBID BPER
Stage Scale Used:	BBCH
Stage Majority, Percent:	67 80

Pest Stage At Each Application

	A
Pest 1 Code, Type, Scale:	GLEHE W
Stage Majority, Percent:	60 50
Pest 2 Code, Type, Scale:	CIRAR W
Pest 3 Code, Type, Scale:	AGRRE W

Application Equipment

	A
Equipment Type:	BACCAI
Operation Pressure, Unit:	40 PSI
Nozzle Size:	8002
Nozzle Spacing, Unit:	18 IN
Nozzles/Row:	1
Boom Height, Unit:	36 IN
Ground Speed, Unit:	4 MPH
Carrier:	WATER
Spray Volume, Unit:	25 GAL/AC
Mix Size, Unit:	2 liters

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COMPARISON OF ALION TANKMIXES FOR WEED CONTROL IN RASPBERRIES

Trial ID: HP14USAM3J_1 Location: Wooster, Ohio Trial Year: 2014
Protocol ID: BAYER ALION TM 2014 Investigator: Dr. Douglas J. Doohan
Project ID: HP14USAM3J Study Director: Rick Edwards
Sponsor Contact:

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1	2	3	4	5	6	7	8	9	10	11
	Pest Code					CIRAR	CIRAR	GLEHE	GLEHE	AGRRE	AGRRE	FESAR	FESAR	SOOCA	SOOCA
	Crop Code				RUBID										
	Rating Date				6/16/14	6/16/14	6/16/14	6/16/14	6/16/14	6/16/14	6/16/14	6/16/14	6/16/14	6/16/14	6/16/14
	Rating Type				PHYGEN	STARED	VIGRED	STARED	VIGRED	STARED	VIGRED	STARED	VIGRED	STARED	VIGRED
	Rating Unit				%	%	%	%	%	%	%	%	%	%	%
	Trt-Eval Interval				18 DA-A	18 DA-A	18 DA-A	18 DA-A	18 DA-A	18 DA-A	18 DA-A	18 DA-A	18 DA-A	18 DA-A	18 DA-A
1	Untreated Check			A	0	0	0	0	0	0	0	0	0	0	0
2	RELY 280	56	oz/a	A	7 a	74 a	83 a	78 a	78 a	55	86 a	83 a	87 a		
	ROUNDUP WEATHERMAX	1	qt/a	A											
	Ammonium Sulfate	3	lb/gal	A											
3	ALION	5	oz/a	A	4 a	83 a	88 a	73 a	60 a	87 a	90 a	90 a	90 a	90	90
	RELY 280	56	oz/a	A											
	ROUNDUP WEATHERMAX	1	qt/a	A											
	Ammonium Sulfate	3	lb/gal	A											
4	ALION	4	oz/a	A	18 a	88 a	93 a	95 a	97 a	90 a	97 a	85 a	90 a		
	MATRIX	2	oz/a	A											
	RELY 280	56	oz/a	A											
	ROUNDUP WEATHERMAX	1	qt/a	A											
	Ammonium Sulfate	3	lb/gal	A											
5	ALION	4	oz/a	A	12 a	83	98 a	83 a	95 a	90 a	94 a	83 a	85	45	35
	MATRIX	2	oz/a	A											
	ROUNDUP WEATHERMAX	1	qt/a	A											
	RELY 280	56	oz/a	A											
	KARMEX DF	4	lb/a	A											
	Ammonium Sulfate	3	lb/gal	A											
	LSD P=.05				0.4t	15.7	10.7	28.0	43.4t	12.2	12.7t	13.1	14.3	.	.
	Standard Deviation				0.3t	9.1	6.7	15.4	25.1t	6.2	7.3t	7.2	4.7	.	.
	CV				26.47t	11.19	7.41	18.69	36.91t	7.02	9.89t	8.47	5.3	.	.
	Replicate F				2.454	0.092	0.750	0.670	0.200	0.952	1.651	0.840	0.333		
	Replicate Prob(F)				0.1299	0.9615	0.5493	0.6059	0.8927	0.4957	0.2749	0.5275	0.8075		
	Treatment F				3.380	2.345	3.750	1.498	1.245	0.381	2.337	0.867	0.667		
	Treatment Prob(F)				0.0679	0.1769	0.0536	0.3225	0.3733	0.7056	0.1731	0.5164	0.6000		

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)
t=Mean descriptions are reported in transformed data units, and are not de-transformed.
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Untreated treatment(s) 1 excluded from analysis.
Missing data estimates are included in columns:Average=4,5,6,7,8,9,16

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Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	RUBID PHYGEN	CIRAR CONTRO	SETPU CONTRO	ERICA CONTRO	GLEHE CONTRO	17
	Pest Code					CIRAR	SETPU	ERICA	GLEHE	
	Crop Code				RUBID					
	Rating Date				8/12/14	8/12/14	8/12/14	8/12/14	8/12/14	
	Rating Type				PHYGEN	CONTRO	CONTRO	CONTRO	CONTRO	
	Rating Unit				%	%	%	%	%	
	Trt-Eval Interval				75 DA-A	75 DA-A	75 DA-A	75 DA-A	75 DA-A	
					12	13	14	15	16	17
1	Untreated Check			A	0	0	0	0	0	
2	RELY 280	56	oz/a	A	13 b	25 a	18 a		7 a	
	ROUNDUP WEATHERMAX	1	qt/a	A						
	Ammonium Sulfate	3	lb/gal	A						
3	ALION	5	oz/a	A	0 c	45 a	33 a	60	27 a	
	RELY 280	56	oz/a	A						
	ROUNDUP WEATHERMAX	1	qt/a	A						
	Ammonium Sulfate	3	lb/gal	A						
4	ALION	4	oz/a	A	3 c	40 a	35 a	0	43 a	
	MATRIX	2	oz/a	A						
	RELY 280	56	oz/a	A						
	ROUNDUP WEATHERMAX	1	qt/a	A						
	Ammonium Sulfate	3	lb/gal	A						
5	ALION	4	oz/a	A	20 a	60 a	70 a	75	60 a	
	MATRIX	2	oz/a	A						
	ROUNDUP WEATHERMAX	1	qt/a	A						
	RELY 280	56	oz/a	A						
	KARMEX DF	4	lb/a	A						
	Ammonium Sulfate	3	lb/gal	A						
LSD P=.05					4.6	24.7	41.4	.	63.6	.
Standard Deviation					2.9	15.5	25.9	.	35.0	.
CV					32.99	36.37	66.77	.	103.1	.
Replicate F					3.000	2.581	1.407		0.185	
Replicate Prob(F)					0.0877	0.1182	0.3033		0.9023	
Treatment F					41.000	3.488	2.950		1.685	
Treatment Prob(F)					0.0001	0.0633	0.0908		0.2843	

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Trial ID: HP14USAM3J_1 Location: Wooster, Ohio Trial Year: 2014
Protocol ID: BAYER ALION TM 2014 Investigator: Dr. Douglas J. Doohan
Project ID: HP14USAM3J Study Director: Rick Edwards
Sponsor Contact:

Pest Code
CIRAR, Cirsium arvense, = US
GLEHE, Glechoma hederacea, = US
AGRRE, Elymus repens, = US
FESAR, Festuca arundinacea, = US
SOOCA, Solidago canadensis, = US
SETPU, Setaria pumila, = US
ERICA, Conyza canadensis, = US
Crop Code
RUBID, BPER, Rubus idaeus, = US
Rating Type
PHYGEN = phytotoxicity - general / injury
STARED = stand reduction
VIGRED = vigor reduction
CONTRO = control / burndown or knockdown
Rating Unit
% = percent

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2014/Authority MTZ/Potatoes/Pre-Plant/ 2X OVERLAP

Trial ID: SULF.POT.14.JPR.01 Location: FREMONT Trial Year: 2014
Protocol ID: SULF.POT.14.JPR.01 Investigator: Dr. Douglas J. Doohan
Project ID: Study Director: Doug Doohan/Rick Edwards
Sponsor Contact:

General Trial Information

Study Director: Rick Edwards **Title:** Research Associate
Investigator: Dr. Douglas J. Doohan **Title:** Professor

Discipline: H herbicide
Trial Status: F one-year/final **Trial Reliability:** LOW

Trial Location

City: Fremont **Country:** USA United States
State/Prov.: Ohio
Postal Code: 43420 **Climate Zone:** USCOOL US Cool Continental

Conducted Under GLP: No
Conducted Under GEP: No

Objectives:

OBJECTIVES: Observe Authority MTZ DF weed control in Potatoes.

TIMING: A = POBCPR = Pre-emergence application
B = POS = Post-emergence

TARGETS: Barnyardgrass, Common Purslane, Common Ragweed, Common Lambsquarters, Ladysthumb, Orchardgrass, Redroot Pigweed, Yellow Nutsedge

Conclusions:
Application of treatment A was inadvertently made on an active ingredient per acre basis. This resulted in all treatments of Authority MTZ and Spartan Charge being applied at approximately a 2 times normal rate.
At 21 and 52 Days After Treatment (DAT) weed control was excellent in all plots. There was some stunting of the potato plants, in a non-dose response relationship. Yield was not affected by the phyotoxicity observed early in the season.

Contacts

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Postal Code: 44691 **E-mail:** edwards.1260@osu.edu
Country: USA United States

Investigator: Dr. Douglas J. Doohan **Title:** Professor
Organization: Ohio Agricultural Research and Development Center
Address: 1680 Madison Avenue
City+State/Prov: Wooster, Ohio
Postal Code: 44691
Country: USA United States

Crop Description

Crop 1: SOLTU Solanum tuberosum Potato
BBCH Scale: BPOT

Pest Description

Code: POROL Portulaca oleracea
Common Name: Common purslane

Site and Design

Treated Plot Width: 5 FT
Treated Plot Length: 25 FT
Treated Plot Area: 125 FT2 **Treatments:** 6
Replications: 4 **Study Design:** RACOBL Randomized Complete Block (RCB)

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Soil Description

Description Name: Fremont
% Sand: 50 **% OM:** 2.5 **Texture:** FSL fine sandy loam
% Silt: 40 **pH:** 7 **Soil Name:** Kibble
% Clay: 10 **CEC:** 9.3 **Fert. Level:** G good

Application Description

	A	B
Application Date:	5/30/14	7/22/14
Appl. Start Time:	2:00 PM	11:00 AM
Appl. Stop Time:	3:00 PM	11:40 AM
Application Method:	SPRAY	SPRAY
Application Timing:	EARPRE	EARPRE
Application Placement:	BROADC	BROADC
Applied By:	R. Edwards	R. Edwards
Air Temperature, Unit:	74.0 F	82.9 F
% Relative Humidity:	56.5	67.12
Wind Velocity, Unit:	4.5 MPH	4.6 MPH
Wind Direction:	NE	S
Dew Presence (Y/N):	N no	N no
Soil Temperature, Unit:	71 F	71.8 F
Soil Moisture:	DRY	DRY
% Cloud Cover:	10	0
Next Moisture Occurred On:	6/3/14	7/23/14
Time to Next Moisture, Unit:	4 DAY	1 DAY

Crop Stage At Each Application

	A	B
Crop 1 Code, BBCH Scale:	SOLTU BPOT	SOLTU BPOT
Stage Scale Used:	BBCH	BBCH
Stage Majority, Percent:	00 100	69 100
Height, Unit:		14 IN

Pest Stage At Each Application

	A	B
Pest 1 Code, Type, Scale:	POROL	POROL
Height, Unit:	1 IN	6 IN

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Application Equipment

	A	B
Equipment Type:	BACCAI	BACCAI
Operation Pressure, Unit:	30 PSI	30 PSI
Nozzle Size:	8002	8002
Nozzle Spacing, Unit:	18 IN	18 IN
Nozzles/Row:	4	4
Band Width, Unit:	60 IN	60 IN
% Coverage:	100.0	100.0
Boom Height, Unit:	18 IN	18 IN
Ground Speed, Unit:	4 MPH	4 MPH
Carrier:	WATER	WATER
Spray Volume, Unit:	10 gal/ac	10 gal/ac
Mix Size, Unit:	2 liters	2 liters

The Ohio State University

2014/Authority MTZ/Potatoes/Pre-Plant/ 2X OVERLAP

Trial ID: SULF.POT.14.JPR.01 Location: FREMONT Trial Year: 2014
Protocol ID: SULF.POT.14.JPR.01 Investigator: Dr. Douglas J. Doohan
Project ID: Study Director: Doug Doohan/Rick Edwards
Sponsor Contact:

Pest Code					SOLTU	POROL	SETPU	CHEAL	AMACH	SOLTU	POROL	AMACH	DIGSA	CHEAL	SOLTU
Crop Code					PLINRO -										
Part Rated					6/20/14	6/20/14	6/20/14	6/20/14	6/20/14	7/21/14	7/21/14	7/21/14	7/21/14	7/21/14	9/22/14
Rating Date					PHYGEN	Control	Control	Control	Control	PHYGEN	Control	Control	Control	Control	COMPR1
Rating Type					%	%	%	%	%	%					lb/plot
Rating Unit					21 DA-A	21 DA-A	21 DA-A	21 DA-A	21 DA-A	52 DA-A	52 DA-A	52 DA-A	52 DA-A	52 DA-A	115 DA-A
Trt No.	Treatment Name	Rate	Unit	Appl Code	1	2	3	4	5	6	7	8	9	10	11
1	UNTREATED				3	0	0	0	0	0	0			0	18
2	AUTHORITY MTZ	27	oz/a	A	1 a	88 a	88 a	88 a	88 a	1 a	75 a	50 a	45 a	100 a	15 a
	SENCOR	2	oz/a	B											
	MATRIX	1	oz/a	B											
	NIS	0.25	% v/v	B											
3	AUTHORITY MTZ	31	oz/a	A	6 a	100 a	100 a	100 a	100 a	8 a	100 a			100 a	11 a
	SENCOR	2	oz/a	B											
	MATRIX	1	oz/a	B											
	NIS	0.25	% v/v	B											
4	AUTHORITY MTZ	27	oz/a	A	6 a	100 a	100 a	100 a	100 a	1 a	100 a			100 a	16 a
	DUAL II MAGNUM	16	oz/a	A											
	SENCOR	2	oz/a	B											
	MATRIX	1	oz/a	B											
	NIS	0.25	% v/v	B											
5	AUTHORITY MTZ	31	oz ai/a	A	2 a	75 a	100 a	100 a	100 a	0 a	100 a			100 a	16 a
	DUAL II MAGNUM	22	oz ai/a	A											
	SENCOR	2	oz/a	B											
	MATRIX	1	oz/a	B											
	NIS	0.25	% v/v	B											
6	SPARTAN CHARGE	10.3	oz/a	A	2 a	88 a	88 a	88 a	88 a	1 a	73 a	67 a	57 a	100 a	16 a
	DUAL II MAGNUM	22	oz/a	A											
	SENCOR	2	oz/a	B											
	MATRIX	1	oz/a	B											
	NIS	0.25	% v/v	B											
LSD P=.05					0.9t	39.3	21.1	21.1	21.1	0.7t	41.6	299.5	130.5	0.0	6.8
Standard Deviation					0.6t	25.5	13.7	13.7	13.7	0.4t	27.0	28.9	12.6	0.0	4.4
CV					100.61t	28.35	14.41	14.41	14.41	128.43t	30.19	49.49	24.75	0.0	29.49
Replicate F					0.992	0.840	2.667	2.667	2.667	2.650	2.655	6.500	28.921	0.000	6.161
Replicate Prob(F)					0.4297	0.4978	0.0951	0.0951	0.0951	0.0964	0.0960	0.2673	0.1304	1.0000	0.0089
Treatment F					0.698	0.672	1.000	1.000	1.000	2.554	1.137	0.500	1.289	0.000	0.832
Treatment Prob(F)					0.6079	0.6238	0.4449	0.4449	0.4449	0.0933	0.3852	0.6082	0.4596	1.0000	0.5304

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)
t=Mean descriptions are reported in transformed data units, and are not de-transformed.
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Untreated treatment(s) 1 excluded from analysis.
Missing data estimates are included in columns:Average=8,9,13
Excluded replicate 1 in column 10

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Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	12	13
	Pest Code					
	Crop Code				SOLTU	SOLTU
	Part Rated					
	Rating Date				9/22/14	9/22/14
	Rating Type				COMPR2	COMPR3
	Rating Unit				lb/plot	lb/plot
	Trt-Eval Interval				115 DA-A	115 DA-A
1	UNTREATED				4	1
2	AUTHORITY MTZ	27	oz/a	A	4 a	1 a
	SENCOR	2	oz/a	B		
	MATRIX	1	oz/a	B		
	NIS	0.25	% v/v	B		
3	AUTHORITY MTZ	31	oz/a	A	4 a	1 a
	SENCOR	2	oz/a	B		
	MATRIX	1	oz/a	B		
	NIS	0.25	% v/v	B		
4	AUTHORITY MTZ	27	oz/a	A	3 a	1 a
	DUAL II MAGNUM	16	oz/a	A		
	SENCOR	2	oz/a	B		
	MATRIX	1	oz/a	B		
	NIS	0.25	% v/v	B		
5	AUTHORITY MTZ	31	oz ai/a	A	4 a	1 a
	DUAL II MAGNUM	22	oz ai/a	A		
	SENCOR	2	oz/a	B		
	MATRIX	1	oz/a	B		
	NIS	0.25	% v/v	B		
6	SPARTAN CHARGE	10.3	oz/a	A	3 a	1 a
	DUAL II MAGNUM	22	oz/a	A		
	SENCOR	2	oz/a	B		
	MATRIX	1	oz/a	B		
	NIS	0.25	% v/v	B		
	LSD P=.05				1.4	0.4
	Standard Deviation				0.9	0.3
	CV				24.36	34.75
	Replicate F				0.430	0.894
	Replicate Prob(F)				0.7354	0.4747
	Treatment F				0.887	1.232
	Treatment Prob(F)				0.5007	0.3526

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2014/Authority MTZ/Potatoes/Pre-Plant/ 2X OVERLAP

Trial ID:	SULF.POT.14.JPR.01	Location: FREMONT	Trial Year: 2014
Protocol ID:	SULF.POT.14.JPR.01	Investigator:	Dr. Douglas J. Doohan
Project ID:		Study Director:	Doug Doohan/Rick Edwards
		Sponsor Contact:	

Pest Code
POROL, Portulaca oleracea, = US
SETPU, Setaria pumila, = US
CHEAL, Chenopodium album, = US
AMACH, Amaranthus hybridus, = US
DIGSA, Digitaria sanguinalis, = US
Crop Code
SOLTU, BPOT, Solanum tuberosum, = US
Part Rated
PLINRO = plant - in row
Rating Type
PHYGEN = phytotoxicity - general / injury
COMPR1 = commercial product - grade 1
COMPR2 = commercial product - grade 2
COMPR3 = commercial product - grade 3
Rating Unit
% = percent
lb/plot = pounds per plot

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2014/Authority MTZ/Potatoes/Pre-Plant/ 2X OVERLAP

Trial ID:	SULF.POT.14.JPR.01	Location:	FREMONT
Protocol ID:	SULF.POT.14.JPR.01	Investigator:	Dr. Douglas J. Doohan
Project ID:		Study Director:	Doug Doohan/Rick Edwards
		Sponsor Contact:	

Trial Year: 2014

Pest Code
POROL, Portulaca oleracea, = US
SETPU, Setaria pumila, = US
CHEAL, Chenopodium album, = US
AMACH, Amaranthus hybridus, = US
DIGSA, Digitaria sanguinalis, = US

Crop Code
SOLTU, BPOT, Solanum tuberosum, = US

Part Rated
PLINRO = plant - in row

Rating Type
PHYGEN = phytotoxicity - general / injury
COMPR1 = commercial product - grade 1
COMPR2 = commercial product - grade 2
COMPR3 = commercial product - grade 3

Rating Unit
% = percent
lb/plot = pounds per plot

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AUTHORITY MTZ IN TOMATOES: WEED CONTROL AND CROP TOLERANCE, INCLUDING A 2X RATE TO ACCOUNT FOR POTENTIAL OVERLAP

Trial ID: SULF.TOM.14.JPR.01 Location: WOOSTER, OH Trial Year: 2014
Protocol ID: SULF.TOM.14.JPR.01 Investigator: Dr. Douglas J. Doohan
Project ID: Study Director: Rick Edwards
Sponsor Contact:

General Trial Information

Study Director: Rick Edwards **Title:** Research Associate
Investigator: Dr. Douglas J. Doohan **Title:** Professor

Discipline: H herbicide
Trial Status: F one-year/final **Trial Reliability:** GOOD
Initiation Date: 6/18/14 **Planned Completion Date:** 10/31/14
Completion Date: 10/31/14

Trial Location

City: Wooster **Country:** USA United States
State/Prov.: Ohio
Postal Code: 44691

Conducted Under GLP: No
Conducted Under GEP: No

Objectives:

To observe Spartan Charge and Authority MTZ either alone or in tankmixess with Dual II Magnum, applied Pre-transplant in processing tomatoes.
An approximately 2X field rate of Authority MTZ was also applied in order to induce a phytotoxic response which would be expected with an over application of this product. This treatment rate was at 31 oz Authority MTZ per acre.

Conclusions:

There were no differences between any of the treatments of Authority MTZ at 12 oz/a or 14 oz/a, or the Spartan Charge 4.5 oz/a, for phytotoxicity or weed control at 12 DAT. The 2X rate Authority MTZ at 31 oz/a, showed 29% phytotoxicity on 12 DAT, 31% at 30 DA-A and 35% at 11 DA-B. Phytotoxicity was not different between treatments at 42 DA-B. There was a high degree of weed control in all treatments, throughout the trial. Weed control was between 70 - 100% depending on species. There were no differences in yield between any treatments.
All treatments were similar in weed control and crop tolerance, except for the 2X rate (31oz/a) of Authority MTZ. This treatment would mimic what may happen with an overlap of the product due to applicator error. The level of phytotoxicity was between 29 and 35% between the 12 DA-A and 11 DA-B ratings. However by the 42 DA-B rating the plants with this treatment were no different to the other treatments in this trial. There was no effect on yield.

Contacts

Study Director: Rick Edwards **Title:** Research Associate
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Country: USA United States

Investigator: Dr. Douglas J. Doohan **Title:** Professor
Organization: Ohio Agricultural Research and Development Center
Address: 1680 Madison Avenue
City+State/Prov: Wooster, Ohio
Postal Code: 44691
Country: USA United States

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Crop Description

Crop 1: LYPES Solanum lycopersicum Tomato
BBCH Scale: BVSO
Planting Date: 6/9/14
Planting Method: TRAMAC transplanted - machine
Row Spacing, Unit: 5 FT
Spacing Within Row, Unit: 12 IN
Harvest Date: 9/15/14
Harvested Width, Unit: 5 FT
Harvested Length, Unit: 2 Plant

Pest Description

Pest 1 Type: W **Code:** AGRRE Elymus repens
Common Name: Quackgrass

Pest 2 Type: W **Code:** CYPES Cyperus esculentus
Common Name: Yellow nutsedge

Pest 3 Type: W **Code:** AMARE Amaranthus retroflexus
Common Name: Redroot pigweed

Pest 4 Type: W **Code:** CIRAR Cirsium arvense
Common Name: Canada thistle

Site and Design

Treated Plot Width: 5 FT
Site Type: FIELD field
Treated Plot Length: 25 FT
Experimental Unit: 1 PLOT plot
Treated Plot Area: 125 FT2 **Treatments:** 7
Tillage Type: CONTIL conventional-till
Replications: 4
Study Design: RACOBL Randomized Complete Block (RCB)
Untreated Arrangement: INCLUDED single control randomized in each block

Soil Description

Description Name: Wooster Silt Loam
% Sand: 16 **% OM:** 2.8 **Texture:** CSL clay sandy loam
% Silt: 72 **pH:** 6.4
% Clay: 12 **CEC:** 5.6 **Fert. Level:** G good
Soil Drainage: E excellent
Analyzed By:
CLC labs, Westerville, Ohio

Application Description

	A	B
Application Date:	6/18/14	7/25/14
Appl. Start Time:	11:00 AM	1:00 PM
Appl. Stop Time:	1:00 PM	1:30 PM
Application Method:	SPRAY	SPRAY
Application Timing:	PREPLA	POSTTR
Application Placement:	BROADC	BROADC
Air Temperature, Unit:	81.9 F	72 F
% Relative Humidity:	76.4	53
Wind Velocity, Unit:	4.3 MPH	4.3 MPH
Wind Direction:	NW	NW
Dew Presence (Y/N):	N no	N no
Soil Temperature, Unit:	72 F	71 F
Soil Moisture:	SLIDRY	DRY
Next Moisture Occurred On:	6/18/14	7/26/14
Time to Next Moisture, Unit:	6 HR	

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Crop Stage At Each Application

	A	B
Crop 1 Code, BBCH Scale:	LYPES BVSO	LYPES BVSO
Stage Scale Used:	BBCH	BBCH
Stage Majority, Percent:	22 100	52
Height, Unit:	8 IN	15 IN

Pest Stage At Each Application

	A	B
Pest 1 Code, Type, Scale:	AGRRE W	AGRRE W DESC
Stage Majority, Percent:		16 50
Height, Unit:		3 IN
Pest 2 Code, Type, Scale:	CYPES W	CYPES W
Stage Majority, Percent:		16 50
Height, Unit:		5 IN
Pest 3 Code, Type, Scale:	AMARE W	AMARE W
Stage Majority, Percent:		16 50
Height, Unit:		3 IN
Pest 4 Code, Type, Scale:	CIRAR W	CIRAR W
Stage Majority, Percent:		16 50
Height, Unit:		4 IN

Application Equipment

	A	B
Equipment Type:	BACCAI	BACCAI
Operation Pressure, Unit:	30 PSI	30 PSI
Nozzle Size:	8002	8002
Nozzle Spacing, Unit:	18 IN	16 IN
Nozzles/Row:	4	4
Boom Height, Unit:	30 IN	30 IN
Ground Speed, Unit:	3.4 MPH	3.4 MPH
Carrier:	WATER	WATER
Mix Size, Unit:	2 liters	2 liters
Propellant:	COMCO2	COMCO2

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AUTHORITY MTZ IN TOMATOES: WEED CONTROL AND CROP TOLERANCE, INCLUDING A 2X RATE TO ACCOUNT FOR POTENTIAL OVERLAP

Trial ID: SULF.TOM.14.JPR.01 Location: WOOSTER, OH Trial Year: 2014
Protocol ID: SULF.TOM.14.JPR.01 Investigator: Dr. Douglas J. Doohan
Project ID: Study Director: Rick Edwards
Sponsor Contact:

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1	2	3	4	5	6	7	8	9	10	11	12
	Pest Code				LYPES	AGRRE	CYPES	AMARE	CIRAR	POROL		AGRRE	POLPY	AMARE	CYPES	LYPES
	Crop Code															
	Part Rated															
	Rating Date				6/30/14	6/30/14	6/30/14	6/30/14	6/30/14	6/30/14	7/18/14	7/18/14	7/18/14	7/18/14	7/18/14	8/5/14
	Rating Type				PHYGEN	Control	Control	Control	Control	Control	PHYGEN	Control	Control	Control	Control	PHYGEN
	Rating Unit				%	%	%	%	%	%	%	%	%	%	%	%
	Trt-Eval Interval				12 DA-A	12 DA-A	12 DA-A	12 DA-A	12 DA-A	12 DA-A	30 DA-A	30 DA-A	30 DA-A	30 DA-A	30 DA-A	11 DA-B
1	UNTREATED				0	0	0	0	0	0	0	0	0	0	0	0
2	AUTHORITY MTZ	12	oz/a	A	0 b	97 a	97 a	100 a		100	4 b	100 a	100 a	100 a	98 a	0 b
	SENCOR	2	oz/a	B												
	MATRIX	1	oz/a	B												
	NIS	0.25	% v/v	B												
3	AUTHORITY MTZ	14	oz/a	A	2 ab	95 a	99 a	100 a			6 b	99 a	100 a	100 a	100 a	4 b
	SENCOR	2	oz/a	B												
	MATRIX	1	oz/a	B												
	NIS	0.25	% v/v	B												
4	AUTHORITY MTZ	12	oz/a	A	3 ab	91 a	94 a	88 a	90	50	1 b	95 a	100 a	98 a	70	0 b
	DUAL II MAGNUM	16	oz/a	A												
	SENCOR	2	oz/a	B												
	MATRIX	1	oz/a	B												
	NIS	0.25	% v/v	B												
5	AUTHORITY MTZ	14	oz/a	A	6 ab	98 a	95 a	90 a		30	6 b	100 a	100 a	93	100 a	1 b
	DUAL II MAGNUM	1.3	pt/a	A												
	SENCOR	2	oz/a	B												
	MATRIX	1	oz/a	B												
	NIS	0.25	% v/v	B												
6	SPARTAN CHARGE	4.5	oz/a	A	2 ab	88 a	100 a	88 a	50	30	9 b	95 a	98	95 a	95 a	0 b
	DUAL II MAGNUM	1.3	pt/a	A												
	SENCOR	2	oz/a	B												
	MATRIX	1	oz/a	B												
	NIS	0.25	% v/v	B												
7	AUTHORITY MTZ	31	oz/a	A	29 a	100 a	85 a	100 a	50		31 a	99 a	98 a	100 a	98 a	35 a
	DUAL II MAGNUM	16	oz/a	A												
	LSD P=.05				0.7t	23.3t	29.6t	19.5	.	.	11.7t	15.2t	3.4	6.9	8.1	11.1t
	Standard Deviation				0.5t	15.5t	19.7t	12.9	.	.	7.8t	10.1t	2.2	4.5	5.2	7.4t
	Replicate F				2.086	1.056	4.506	4.900			8.250	3.597	1.000	2.250	1.455	1.002
	Replicate Prob(F)				0.1451	0.3969	0.0191	0.0144			0.0018	0.0388	0.4262	0.1349	0.2761	0.4190
	Treatment F				4.059	0.909	0.640	1.000			6.350	1.318	1.000	1.000	0.636	14.599
	Treatment Prob(F)				0.0157	0.5011	0.6731	0.4509			0.0023	0.3089	0.4449	0.4449	0.6464	0.0001

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)
t=Mean descriptions are reported in transformed data units, and are not de-transformed.
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Untreated treatment(s) 1 excluded from analysis.

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Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	CIRAR 8/5/14 Control % 11 DA-B 13	CYPES 8/5/14 Control % 11 DA-B 14	AGRRE 8/5/14 Control % 11 DA-B 15	LYPES 9/5/14 PHYGEN % 42 DA-B 16	LYPES PLALIV - 10/10/14 COUNT PLANT 77 DA-B 17	LYPES FRUMAR - 10/10/14 COUNT 77 DA-B 18	LYPES FRUUNM - 10/10/14 COUNT 77 DA-B 19	LYPES FRUMAR - 10/10/14 WEIGHT 77 DA-B 20	LYPES FRUUNM - 10/10/14 WEIGHT 77 DA-B 21
1	UNTREATED				0	0	0	5	23	49	56	7	4
2	AUTHORITY MTZ	12	oz/a	A	100 a	95 a	96 a	2 a	21	52 a	75 a	7 a	5 a
	SENCOR	2	oz/a	B									
	MATRIX	1	oz/a	B									
	NIS	0.25	% v/v	B									
3	AUTHORITY MTZ	14	oz/a	A	100 a	98 a	97 a	1 a	22 a	45 a	80 a	6 a	6 a
	SENCOR	2	oz/a	B									
	MATRIX	1	oz/a	B									
	NIS	0.25	% v/v	B									
4	AUTHORITY MTZ	12	oz/a	A	95 a	95 a	76 a	1 a	21 b	25 a	98 a	4 a	9 a
	DUAL II MAGNUM	16	oz/a	A									
	SENCOR	2	oz/a	B									
	MATRIX	1	oz/a	B									
	NIS	0.25	% v/v	B									
5	AUTHORITY MTZ	14	oz/a	A	98 a	98 a	96 a	0 a	18 d	41 a	89 a	6 a	8 a
	DUAL II MAGNUM	1.3	pt/a	A									
	SENCOR	2	oz/a	B									
	MATRIX	1	oz/a	B									
	NIS	0.25	% v/v	B									
6	SPARTAN CHARGE	4.5	oz/a	A	95 a	93	96 a	1 a	23 a	46 a	106 a	7 a	10 a
	DUAL II MAGNUM	1.3	pt/a	A									
	SENCOR	2	oz/a	B									
	MATRIX	1	oz/a	B									
	NIS	0.25	% v/v	B									
7	AUTHORITY MTZ	31	oz/a	A	90	100 a	99 a	11 a	19 c	35 a	96 a	5 a	8 a
	DUAL II MAGNUM	16	oz/a	A									
LSD P=.05					7.7	6.4	25.1t	0.8t	0.8	21.3	0.2t	2.8	0.3t
Standard Deviation					5.0	4.2	16.6t	0.6t	0.5	14.2	0.2t	1.8	0.2t
Replicate F					5.000	6.476	2.511	0.413	0.828	1.170	0.337	0.882	0.278
Replicate Prob(F)					0.0178	0.0074	0.0981	0.7459	0.5038	0.3542	0.7988	0.4727	0.8405
Treatment F					1.000	1.000	0.938	1.720	71.897	1.726	0.553	1.885	0.938
Treatment Prob(F)					0.4449	0.4449	0.4848	0.1906	0.0001	0.1894	0.7337	0.1568	0.4846

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AUTHORITY MTZ IN TOMATOES: WEED CONTROL AND CROP TOLERANCE, INCLUDING A 2X RATE TO ACCOUNT FOR POTENTIAL OVERLAP

Trial ID:	SULF.TOM.14.JPR.01	Location:	WOOSTER, OH Trial Year: 2014
Protocol ID:	SULF.TOM.14.JPR.01	Investigator:	Dr. Douglas J. Doohan
Project ID:		Study Director:	Rick Edwards
		Sponsor Contact:	

Pest Code
AGRRE, Elymus repens, = US
CYPES, Cyperus esculentus, = US
AMARE, Amaranthus retroflexus, = US
CIRAR, Cirsium arvense, = US
POROL, Portulaca Oleracea, = US
POLPY, Persicaria pensylvanica, = US
Crop Code
LYPES, BVSO, Solanum lycopersicum, = US
Part Rated
PLALIV = plant - living
FRUMAR = fruit - marketable
FRUUNM = fruit - unmarketable
Rating Type
PHYGEN = phytotoxicity - general / injury
COUNT = count
WEIGHT = weight
Rating Unit
% = percent
PLANT = plant

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Bicyclopyrone evaluation for tolerance in minor crops

Trial ID: HBI961A3-2014US Location: Muck Trial Year: 2014
Protocol ID: HBI961A3-2014US Investigator: Dr. Douglas J. Doohan
Project ID: Study Director: Rick Edwards/ Yin Chen
Sponsor Contact:

General Trial Information

Study Director: Rick Edwards **Title:** Research Associate
Investigator: Dr. Douglas J. Doohan **Title:** Professor

Discipline: H herbicide
Trial Status: F one-year/final **Trial Reliability:** GOOD
Initiation Date: 8/6/14 **Planned Completion Date:** 10/31/14
Completion Date: 10/23/14

Trial Location

City: CELERYVILLE **Country:** USA United States
State/Prov.: OHIO

Latitude of LL Corner °: 41.004897 N
Longitude of LL Corner °: 82.730687 W
Altitude of LL Corner, Unit: 940.00 FT

Conducted Under GLP: No
Conducted Under GEP: No

Objectives:

CROPS: Leek, Dill, Mustard greens,Garden radish, Garden carrot, Direct seeded onion

TARGETS: broadleaf weeds and grasses

OBJECTIVE(S):
Determine which minor crops show acceptable tolerance to bicyclopyrone when applied PRE, POST, and/or Post Directed

ASSESSMENT DETAILS:

PHYGEN - %Phytotoxicity-General

For PRE: Evaluated crop injury (% general phyto) at 16, 29, and 47 DAE, after the PRE application

For POST and POST directed: 8,16 and 29 DAT. PHYGEN (PERCENT GENERAL PHYTO)

Conclusions:
On the day of planting all plots received Dual Magnum at 1.33 l/ha, and the day following treatment "A" was applied as a pre-emergent broadcast application to the appropriate plots. Application of Dual Magnum at 1.33 l/ha pre-emergent crop showed no injury to the control plots throughout the trial. The plots which received Bicyclopyrone at 37.5g ai/ha as a PRE, also showed no damage throughout the trial. Slight damage to the mustard, carrot, radish, and garlic was noted at the 8 DAE evaluation at the 50g ai/ha treatment. At 8 days after the POST treatments, (broadcast) all of the crops at both concentrations were damaged. This damage persisted until the end of the trial, and all crops had very low or no yield. The Post-directed treatments showed some minor damage at the 16 DAT rating. Mustard had more severe damage, although it may be that this was affected by flea beetles feeding. Yields on all of the crops for the Post-directed applications were unaffected.

The Ohio State University

Contacts

Study Director: Rick Edwards **Title:** Research Associate
Organization: Ohio Agricultural Research and Development Center
Address: 1680 Madison Avenue
City+State/Prov: Wooster, Ohio
Postal Code: 44691 **E-mail:** edwards.1260@osu.edu
Country: USA United States

Investigator: Dr. Douglas J. Doohan **Title:** Professor
Organization: Ohio Agricultural Research and Development Center
Address: 1680 Madison Avenue
City+State/Prov: Wooster, Ohio
Postal Code: 44691
Country: USA United States

Crop Description

Crop 1: ALLXS Allium cepa (direct-seeded) Direct seeded onion
Variety: WHITE SPEAR **BBCH Scale:** BVBT
Planting Date: 8/6/14
Harvest Date: 10/3/14

Crop 2: DAUCS Daucus carota subsp. sativus Garden carrot
Variety: SCARLET NANTES **BBCH Scale:** BVRT
Planting Date: 8/6/14
Harvest Date: 10/3/14

Crop 3: RAPSN Raphanus sativus Garden radish
Variety: Niger **BBCH Scale:** BVRT
Planting Date: 8/6/14
Harvest Date: 9/22/14

Crop 4: ALLTU Allium tuberosum Oriental garlic
Variety: New Belt **BBCH Scale:** BPER
Description: Oriental garlic
Planting Date: 8/6/14

Crop 5: AFEGR Anethum graveolens Dill
Variety: Super Dukat **BBCH Scale:** BDIC
Planting Date: 8/6/14
Harvest Date: 10/3/14

Crop 6: SINSS Sinapis sp. Mustard
Variety: Southern Giant **BBCH Scale:** BRAP
Planting Date: 8/6/14
Harvest Date: 9/22/14

Site and Design

Treated Plot Width: 12 FT
Treated Plot Length: 15 FT
Treated Plot Area: 180 FT2 **Treatments:** 7
Replications: 4 **Study Design:** RACOBL Randomized Complete Block (RCB)

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Field Prep./Maintenance:

Date	Description of Activity
07/22/14	Disking
08/04/14	Making Beds
08/06/14	Flag & lay out trial
08/06/14	Planted Trial - Leek, Dill, Collard
08/06/14	Planted Trial - Radish,Carrot,Onion
08/06/14	Insecticide Application (in-furrow) - Diazinon AG500 @ 1.5 qt/A (10 am - 2 pm)
08/06/14	Herbicide Application - Dual Magnum @ 1.33 pt/A (1:30-2 pm)
08/18/14	Irrigation set-up
08/18/14	Irrigated Trial (1 hour @ .5"/hr)
08/21/14	Weeding
08/29/14	Weeding
09/02/14	Irrigated Trial (2 hour @ .5"/hr)
09/04/14	Irrigated Trial (1 hour @ .5"/hr)
09/09/14	Weeding
09/22/14	Harvest & Collect Data - Radish & Mustard

Moisture and Weather Conditions

Overall Moisture Conditions: SLIDRY slightly dry

Application Description

	A	B	C
Application Date:	8/7/14	8/20/14	8/20/14
Appl. Start Time:	10:00	12:00	12:00
Appl. Stop Time:	10:30 AM	12:30 PM	12:30 PM
Application Method:	SPRAY	SPRAY	SPRAY
Application Timing:	PREMCR	POEMW1	POEMW1
Application Placement:	BROADC	BROADC	BROADC
Applied By:	Yin Chen	Yin Chen	Yin Chen
Air Temperature, Unit:	70.4 F	77.1 F	77.1 F
% Relative Humidity:	87.4	83.2	83.2
Wind Velocity, Unit:	6.9 MPH	9.6 MPH	9.6 MPH
Wind Direction:	N	SW	SW
Dew Presence (Y/N):	N no	N no	N no
Soil Temperature, Unit:	73.5 F	76.3 F	76.3 F
Soil Moisture:	NORMAL	NORMAL	NORMAL
% Cloud Cover:	30	50	50
Next Moisture Occurred On:	8/11/14	9/2/14	9/2/14

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Crop Stage At Each Application

	A	B	C
Crop 1 Code, BBCH Scale:	ALLXS BVBT	ALLXS BVBT	ALLXS BVBT
Stage Scale Used:	BBCH	BBCH	BBCH
Stage Majority, Percent:	01 100	12 90	12 90
Height, Unit:		2 IN	2 IN
Crop 2 Code, BBCH Scale:	DAUCS BVRT	DAUCS BVRT	DAUCS BVRT
Stage Scale Used:	BBCH	BBCH	
Height, Unit:		2 IN	2 IN
Crop 3 Code, BBCH Scale:	RAPSN BVRT	RAPSN BVRT	RAPSN BVRT
Stage Scale Used:	BBCH	BBCH	BBCH
Height, Unit:		2 IN	2 IN
Crop 4 Code, BBCH Scale:	ALLTU BPER	ALLTU BPER	ALLTU BPER
Stage Scale Used:	BBCH	BBCH	
Height, Unit:		2 IN	2 IN
Crop 5 Code, BBCH Scale:	AFEGR BDIC	AFEGR BDIC	AFEGR BDIC
Stage Scale Used:	BBCH	BBCH	
Height, Unit:		2 IN	2 IN
Crop 6 Code, BBCH Scale:	SINSS BRAP	SINSS BRAP	SINSS BRAP
Stage Scale Used:	BBCH	BBCH	
Height, Unit:		2 IN	2 IN

Application Equipment

	A	B	C
Equipment Type:	SPRAYE	SPRAYE	SPRAYE
Operation Pressure, Unit:	40 PSI	40 PSI	40 PSI
Nozzle Type:	XR Teejet	XR Teejet	XR Teejet
Nozzle Size:	8003	8003	8003
Nozzle Spacing, Unit:	18 IN	18 IN	18 IN
Nozzles/Row:	4	4	4
Band Width, Unit:	5 FT	5 FT	5 FT
% Coverage:	100.0	100.0	100.0
Ground Speed, Unit:	3.5 MPH	3.5 MPH	3.5 MPH
Spray Volume, Unit:	15 gal/ac	15 gal/ac	15 gal/ac
Mix Size, Unit:	3 liters	3 liters	3 liters

The Ohio State University

Bicyclopyrone evaluation for tolerance in minor crops

Trial ID: HBI961A3-2014US Location: Muck Trial Year: 2014
Protocol ID: HBI961A3-2014US Investigator: Dr. Douglas J. Doohan
Project ID: Study Director: Rick Edwards/ Yin Chen
Sponsor Contact:

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1	2	3	4	5	6	7	8	9	10	11	12	13
Crop Code					ALLXS	DAUCS	RAPSN	ALLTU	AFEGR	SINSS	ALLXS	DAUCS	RAPSN	ALLTU	AFEGR	SINSS	ALLXS
Rating Date					8/28/14	8/28/14	8/28/14	8/28/14	8/28/14	8/28/14	9/5/14	9/5/14	9/5/14	9/5/14	9/5/14	9/5/14	9/18/14
Rating Type					PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN
Rating Unit					%	%	%	%	%	%	%	%	%	%	%	%	%
Trt-Eval Interval					8 DA-B	8 DA-B	8 DA-B	8 DA-B	8 DA-B	8 DA-B	16 DA-B	16 DA-B	16 DA-B	16 DA-B	16 DA-B	16 DA-B	29 DA-B
1	Dual Magnum	1.33	l/ha	A	0 b	0 c	0 b	0 c	0 c	0 c	0 d	0 c	0 c	0 c	0 d	0 e	0 b
2	A16003E	37.5	g ai/ha	A	7 b	7 bc	0 b	3 bc	0 c	10 bc	8 c	11 b	9 bc	10 b	6 cd	5 d	1 b
3	A16003E	50.0	g ai/ha	A	16 b	18 bc	4 b	6 b	3 c	15 bc	14 bc	16 b	29	10 b	14 bc	9 cd	2 b
4	A16003E	37.5	g ai/ha	B	72 a	98 a	55 a	84 a	98 a	95 a	74 a	99 a	69 a	99 a	100 a	100 a	50 a
	NIS	0.25	% v/v	B													
5	A16003E	50.0	g ai/ha	B	66 a	96 a	79 a	87 a	96 a	66 ab	85 a	100 a	78 a	100 a	100 a	100 a	59 a
	NIS	0.25	% v/v	B													
6	A16003E	37.5	g ai/ha	C	4 b	13 bc	2 b	6 b	13 b	21 bc	15 bc	14 b	4 bc	14 b	19 b	15 bc	4 b
	NIS	0.25	% v/v	C													
7	A16003E	50.0	g ai/ha	C	6 b	24 b	9 b	9 b	25 b	50 abc	19 b	20 b	13 b	13 b	21 b	21 b	2 b
	NIS	0.25	% v/v	C													
LSD P=.05					18.6t	19.8t	17.7t	1.2t	10.2t	31.6t	1.1t	9.7	8.9	7.0t	8.5	0.9t	0.6t
Standard Deviation					12.5t	13.3t	11.9t	0.8t	6.9t	21.3t	0.7t	6.6	5.9	4.7t	5.7	0.6t	0.4t
Replicate F					0.851	1.533	0.793	3.109	1.630	1.134	5.329	1.161	0.266	4.653	2.400	0.869	3.092
Replicate Prob(F)					0.4841	0.2402	0.5138	0.0524	0.2177	0.3619	0.0083	0.3519	0.8487	0.0141	0.1016	0.4755	0.0532
Treatment F					12.646	22.765	16.953	79.210	104.104	5.789	74.151	171.470	138.420	226.332	231.618	142.131	11.254
Treatment Prob(F)					0.0001	0.0001	0.0001	0.0001	0.0001	0.0017	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)
t=Mean descriptions are reported in transformed data units, and are not de-transformed.
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Crop Code				DAUCS	RAPSN	ALLTU	AFEGR	SINSS	RAPSN	SINSS	ALLXS	DAUCS	AFEGR	ALLXS	DAUCS	ALLTU
Rating Date				9/18/14	9/18/14	9/18/14	9/18/14	9/18/14	9/22/14	9/22/14	10/3/14	10/3/14	10/3/14	10/3/14	10/3/14	10/3/14
Rating Type				PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN	WEIGHT	WEIGHT	WEIGHT	WEIGHT	WEIGHT	PHYGEN	PHYGEN	PHYGEN
Rating Unit				%	%	%	%	%	lb	lb	lb	lb	lb	%	%	%
Trt-Eval Interval				29 DA-B	29 DA-B	29 DA-B	29 DA-B	29 DA-B	47 DA-A	47 DA-A	58 DA-A	58 DA-A	58 DA-A	58 DA-A	58 DA-A	58 DA-A
Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	14	15	16	17	18	19	20	21	22	23	24	25	26
1	Dual Magnum	1.33	l/ha	A	0 b	0 b	0 e	0 c	20 b	28 a	12 a	2 ab	15 a	12 a	0 b	0 b	0 b
2	A16003E	37.5	g ai/ha	A	1 b	2 b	8 cd	13 bc	8 b	28 a	9 a	3 a	11 a	12 a	2 b	10 b	3 b
3	A16003E	50.0	g ai/ha	A	5 b	0 b	3 de	10 bc	9 b	30 a	7 a	2 ab	9 a	13 a	0 b	0	0
4	A16003E	37.5	g ai/ha	B	99 a	71 a	100 a	100 a	100 a	13 b	0 b	1 bc	0 b	0 b	33 a	98 a	98 a
	NIS	0.25	% v/v	B													
5	A16003E	50.0	g ai/ha	B	100 a	85 a	100 a	100 a	100 a	7 b	0 b	0 c	0 b	0 b	58 a	90 a	98 a
	NIS	0.25	% v/v	B													
6	A16003E	37.5	g ai/ha	C	6 b	1 b	16 bc	18 b	11 b	27 a	9 a	2 ab	8 a	7 a	1 b	3 b	3 b
	NIS	0.25	% v/v	C													
7	A16003E	50.0	g ai/ha	C	7 b	1 b	21 b	19 b	15 b	26 a	9 a	2 ab	7 a	6 a	3 b	8 b	8 b
	NIS	0.25	% v/v	C													
LSD P=.05					16.5t	13.0t	1.2t	11.7	22.9	6.1	4.8	3.2t	4.9t	5.3t	0.7t	14.6	11.2
Standard Deviation					11.1t	8.7t	0.8t	7.8	15.4	4.1	3.2	2.2t	3.3t	3.6t	0.4t	9.7	7.4
Replicate F					0.580	0.500	1.409	1.135	3.511	2.235	4.025	0.625	1.015	0.385	1.221	1.460	0.879
Replicate Prob(F)					0.6359	0.6868	0.2726	0.3614	0.0366	0.1192	0.0236	0.6081	0.4091	0.7651	0.3308	0.2652	0.4738
Treatment F					46.096	43.146	84.463	122.816	31.056	18.906	8.705	5.230	28.043	25.608	10.461	89.991	172.296
Treatment Prob(F)					0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0028	0.0001	0.0001	0.0001	0.0001	0.0001

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Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	27
	Crop Code				AFEGR
	Rating Date				10/3/14
	Rating Type				PHYGEN
	Rating Unit				%
	Trt-Eval Interval				58 DA-A
1	Dual Magnum	1.33	l/ha	A	0
2	A16003E	37.5	g ai/ha	A	5 b
3	A16003E	50.0	g ai/ha	A	0 b
4	A16003E	37.5	g ai/ha	B	100 a
	NIS	0.25	% v/v	B	
5	A16003E	50.0	g ai/ha	B	98 a
	NIS	0.25	% v/v	B	
6	A16003E	37.5	g ai/ha	C	3 b
	NIS	0.25	% v/v	C	
7	A16003E	50.0	g ai/ha	C	10 b
	NIS	0.25	% v/v	C	
	LSD P=.05				10.3
	Standard Deviation				6.8
	Replicate F				1.071
	Replicate Prob(F)				0.3908
	Treatment F				204.571
	Treatment Prob(F)				0.0001

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Bicyclopyrone evaluation for tolerance in minor crops

Trial ID: HBI961A3-2014US Location: Muck Trial Year: 2014
Protocol ID: HBI961A3-2014US Investigator: Dr. Douglas J. Doohan
Project ID: Study Director: Rick Edwards/ Yin Chen
Sponsor Contact:

Crop Code
ALLXS, BVBT, Allium cepa (direct-seeded), = US
DAUCS, BVRT, Daucus carota subsp. sativus, = US
RAPSN, BVRT, Raphanus sativus var. niger, = US
ALLTU, BPER, Allium tuberosum, = US
AFEGR, BDIC, Anethum graveolens, = US
SINSS, BRAP, Sinapis sp., = US
Rating Type
PHYGEN = phytotoxicity - general / injury
WEIGHT = weight
Rating Unit
% = percent
lb = pound

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2013/PASTURE/MULTI-FLORAL ROSE/AIM/TANKMIXES

Trial ID: Location: Trial Year:
Protocol ID: Investigator: Dr. Douglas J. Doohan
Project ID: Study Director:
Sponsor Contact:

General Trial Information

Study Director: Rick Edwards **Title:** Research Associate
Investigator: Dr. Douglas J. Doohan **Title:** Professor

Trial Status: F one-year/final **Trial Reliability:** GOOD

Conducted Under GLP: No
Conducted Under GEP: No

Objectives:
To observe control of Multiflora Rose with AIM and AIM tankmixes applied on a naturally occuring population of Multi-flora Rose at new growth up to flowering.

Conclusions:
There was good control of Multiflora Rose with all treatments throughout this trial. There was no differences in weed control between treatments. Control of Catchweed bedstraw, Virginia creeper and Flowering dogwood had diminished by 68 DAT.

Contacts

Study Director: Rick Edwards **Title:** Research Associate
Organization: Ohio Agricultural Research and Development Center
Address: 1680 Madison Avenue
City+State/Prov: Wooster, Ohio
Postal Code: 44691 **E-mail:** edwards.1260@osu.edu
Country: USA United States

Investigator: Dr. Douglas J. Doohan **Title:** Professor
Organization: Ohio Agricultural Research and Development Center
Address: 1680 Madison Avenue
City+State/Prov: Wooster, Ohio
Postal Code: 44691
Country: USA United States

Pest Description

Pest 1 Type: W **Code:** ROSMU Rosa multiflora
Common Name: Multiflora Rose

Pest 2 Type: W **Code:** LONJA BPER
Common Name: Lonicera japonica

Pest 3 Type: W **Code:** CRWFL Cornus florida
Common Name: dogwood, flowering

Pest 4 Type: W **Code:** PRTQU Parthenocissus quinquefolia
Common Name: Virginia-creeper

Site and Design

Treated Plot Width: 5 FT
Treated Plot Length: 10 FT
Treated Plot Area: 50 FT2 **Treatments:** 4
Replications: 4 **Study Design:** COMRAN Completely Randomized (CRD)

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Application Description

	A
Application Date:	7/2/14
Appl. Start Time:	10:00
Application Method:	SPRAY
Application Timing:	JULY
Application Placement:	BROFOL
Air Temperature, Unit:	80 F
% Relative Humidity:	71.45
Wind Velocity, Unit:	2.6 MPH
Wind Direction:	SW
Dew Presence (Y/N):	N no
Soil Moisture:	DRY
% Cloud Cover:	20
Next Moisture Occurred On:	7/7/14
Time to Next Moisture, Unit:	5 DAY

Pest Stage At Each Application

	A
Pest 1 Code, Type, Scale:	ROSMU W
Stage Majority, Percent:	63 70
Pest 2 Code, Type, Scale:	LONJA W
Stage Majority, Percent:	63 70
Pest 3 Code, Type, Scale:	CRWFL W
Stage Majority, Percent:	81 70
Pest 4 Code, Type, Scale:	PRTQU W
Stage Majority, Percent:	51 70

Application Equipment

	A
Equipment Type:	BACCAI
Operation Pressure, Unit:	30 PSI
Nozzle Size:	8002
Nozzles/Row:	1
% Coverage:	100.0
Spray Volume, Unit:	40
Mix Size, Unit:	0.528

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2013/PASTURE/MULTI-FLORAL ROSE/AIM/TANKMIXES

Trial ID: Location: Trial Year:
Protocol ID: Investigator: Dr. Douglas J. Doohan
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Rate	Rate Unit	1	2	3	4	5	6	7	8	9	10	11	12
	Pest Code			ROSMU	LONJA	CRWFL	GALAP	PRTQU	ROSMU	MORNI	LONJA	GALAP	CRWFL	PRTQU	ROSMU
	Part Rated			PLANT P	PLANT P	PLANT P	PLANT P	PLANT P	PLANT P	PLANT P	PLANT p	- p			
	Rating Date			7/16/14	7/16/14	7/16/14	7/16/14	7/16/14	7/30/14	7/30/14	7/30/14	7/30/14	7/30/14	7/30/14	9/8/14
	Rating Type			CONTROL	CONTROL	CONTROL	CONTROL	CONTROL	CONTROL	CONTROL	CONTROL	CONTROL	CONTROL	CONTROL	CONTROL
	Rating Unit			%	%	%	%	%	%	%	%	%	%	%	%
	Trt-Eval Interval			14 DA-A	14 DA-A	14 DA-A	14 DA-A	14 DA-A	28 DA-A	28 DA-A	28 DA-A	28 DA-A	28 DA-A	28 DA-A	68 DA-A
1	UNTREATED			0	0	0	0	0	0	0	0	0	0	0	0
2	AIM	1.5	oz/a	65 a	20 a		78 a	63 a	50 a	62 a	31 a	81 a	95 a	58 a	52 a
	COC	1	% v/v												
3	ALLY XP	0.25	oz/a	43 a	17 a	63 a	53 a	43 a	73 a	55 a	58 a	34 b	60 a	28 a	87 a
	NIS	0.25	% v/v												
4	AIM	1.5	oz/a	63 a	14 a	90 a	63 a	71 a	76 a	57 a	38 a	63 ab	30 a	63 a	86 a
	ALLY XP	0.25	oz/a												
	NIS	0.25	% v/v												
	LSD P=.05			26.4	0.6t	38.2	25.9	30.3	35.7	52.9	68.0	31.4	60.9	47.4	22.5t
	Standard Deviation			16.5	0.3t	17.0	15.9	18.6	22.3	29.1	41.7	19.6	27.1	26.1	14.0t
	Treatment F			2.235	0.155	4.923	2.362	2.363	1.615	0.057	0.424	5.951	5.773	2.071	3.404
	Treatment Prob(F)			0.1629	0.8602	0.1132	0.1563	0.1561	0.2516	0.9453	0.6681	0.0226	0.0937	0.2212	0.0793

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)
t=Mean descriptions are reported in transformed data units, and are not de-transformed.
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Untreated treatment(s) 1 excluded from analysis.
Missing data estimates are included in columns:Average=2,3,4,5,7,8,10,11,13,14

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Trt No.	Treatment Name	Rate	Rate Unit	13	14	15
	Pest Code			GALAP	PRTQU	CRWFL
	Part Rated					
	Rating Date			9/8/14	9/8/14	9/8/14
	Rating Type			CONTROL	CONTROL	CONTROL
	Rating Unit			%	%	
	Trt-Eval Interval			68 DA-A	68 DA-A	68 DA-A
1	UNTREATED			0	0	0
2	AIM	1.5	oz/a	4 a	30 a	
	COC	1	% v/v			
3	ALLY XP	0.25	oz/a	3 a	20 a	38
	NIS	0.25	% v/v			
4	AIM	1.5	oz/a	1 a	28 a	30
	ALLY XP	0.25	oz/a			
	NIS	0.25	% v/v			
	LSD P=.05			1.1t	26.7	.
	Standard Deviation			0.7t	14.7	.
	Treatment F			0.411	0.504	
	Treatment Prob(F)			0.6783	0.6319	

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2013/PASTURE/MULTI-FLORAL ROSE/AIM/TANKMIXES

Trial ID:		Location:	Trial Year:
Protocol ID:		Investigator:	Dr. Douglas J. Doohan
Project ID:		Study Director:	
		Sponsor Contact:	

Pest Code
ROSMU, Rosa multiflora, = US
CRWFL, Cornus florida, = US
GALAP, Galium aparine, = US
PRTQU, Parthenocissus quinquefolia, = US
Part Rated
PLANT = plant
P = Pest is Part Rated
Rating Unit
% = percent

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Emerion 7000: Weed Control with Plastic Ground Cover

Trial ID: RPP14 Location: Celeryville, OH Trial Year: 2014
Protocol ID: Investigator: Dr. Douglas J. Doohan
Project ID: Study Director: Rick Edwards
Sponsor Contact:

General Trial Information

Study Director: Rick Edwards **Title:** Research Associate
Investigator: Dr. Douglas J. Doohan **Title:** Professor

Discipline: H herbicide
Trial Status: F one-year/final **Trial Reliability:** HIGH
Initiation Date: 5/7/14
Completion Date: 6/6/14

Trial Location

City: Celeryville **Country:** USA United States
State/Prov.: Ohio
Postal Code: 44890

Conducted Under GLP: No
Conducted Under GEP: No

Objectives:

To determine the efficacy of Emerion 7000 (ammonium nonanoate, 40%) for weed control where plastic ground cover is used as the primary weed control practice and compare to currently available commercial products and a non-sprayed control.

This trial will determine the efficacy of a burndown application of Emerion 7000 for controlling weeds prior to transplanting vegetables.

Conclusions:

There were no differences between the treatments 2 day after treatment (DAT) applied at first growth (stage 15). At 12 DAT weed control had decreased markedly throughout all treatments. This was attributed to weeds germinating after the early treatment.

At 4 DAT of the treatment to growth stage 30 those plots all showed control of yellowcress. There was less control of prostrate knotweed and smartweed. The 2.4 % and 4 % Emerion 7000 treatments showed significantly lower control than the other treatments. The 6% Emerion 7000 treatment was similar in control to that of Gramoxone and Rely 280. Plots which only had the early application continued to show poor weed control.

By 9- DAT of the growth stage 30 treatment weed control with Emerion 7000 was lower than the Gramoxone and Rely 280 treatments. At 18 DAT the Emerion 7000 treatments showed no weed control. Other weeds not previously noted had started to grow in an scattered distribution among the plots, including redroot pigweed and shepherd's purse.

The best treatments in this trial were Gramoxone and Rely 280. These plots continued to show good weed control at the end of the trial.

Contacts

Study Director: Rick Edwards **Title:** Research Associate
Organization: Ohio Agricultural Research and Development Center
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City+State/Prov: Wooster, Ohio
Postal Code: 44691 **E-mail:** edwards.1260@osu.edu
Country: USA United States

Investigator: Dr. Douglas J. Doohan **Title:** Professor
Organization: Ohio Agricultural Research and Development Center
Address: 1680 Madison Avenue
City+State/Prov: Wooster, Ohio
Postal Code: 44691
Country: USA United States

Cooperator/Landowner

Cooperator: Richard Danhoff
Organization: Wier Farms
Address 1: 312 Island View Lane
City: Willard
State/Prov: Ohio
Postal Code: 44890

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Pest Description

Pest 1 Type: W **Code:** RORSS Rorippa sp.
Common Name: Yellowcress

Pest 2 Type: W **Code:** STEME Stellaria media
Common Name: Common chickweed

Pest 3 Type: W **Code:** POLAV Polygonum aviculare
Common Name: Prostrate knotweed

Pest 4 Type: W **Code:** AMARE Amaranthus retroflexus
Common Name: Redroot pigweed

Site and Design

Treated Plot Width: 6 FT
Treated Plot Length: 20 FT
Treated Plot Area: 120 FT2 **Treatments:** 12
Replications: 4 **Study Design:** RACOBL Randomized Complete Block (RCB)

Trial Initiation Comments:
Field is owned by a local vegetable grower. The cultural practices are hilled beds covered with plastic. This plastic had been on since 2013. Planted that season with banana peppers.

Application Description

	A	B
Application Date:	5/7/14	5/19/14
Appl. Start Time:	0900	1200
Appl. Stop Time:	10:30 AM	2:00 PM
Application Method:	SPRAY	SPRAY
Application Placement:	BROADC	BROADC
Applied By:	R. Edwards	R. Edwards
Air Temperature, Unit:	54.4 F	65.0 F
% Relative Humidity:	83	39
Wind Velocity, Unit:	4.6 MPH	10 MPH
Wind Direction:	E	SW
Dew Presence (Y/N):	N no	N no
Soil Temperature, Unit:	51.2 F	61 F
Soil Moisture:	VERWET	SLIWET
% Cloud Cover:	90	0
Next Moisture Occurred On:	5/7/14	5/21/14
Time to Next Moisture, Unit:	6 HR	2 DAY

Pest Stage At Each Application

	A	B
Pest 1 Code, Type, Scale:	RORSS W	RORSS W
Stage Majority, Percent:	15 80	30 80
Pest 2 Code, Type, Scale:	STEME W	STEME W
Stage Majority, Percent:	15 80	30 80
Pest 3 Code, Type, Scale:	POLAV W	POLAV W
Stage Majority, Percent:	15 80	30 80
Pest 4 Code, Type, Scale:	AMARE W	AMARE W
Stage Majority, Percent:	15 80	30 50

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Application Equipment

	A	B
Equipment Type:	BACCAI	BACCAI
Operation Pressure, Unit:	40 PSI	40 PSI
Nozzle Type:	TEEJTU	TEEJTU
Nozzle Size:	8003	8003
Nozzle Spacing, Unit:	18 IN	18 IN
Nozzles/Row:	4	4
Band Width, Unit:	60 IN	60 IN
Boom Height, Unit:	20 IN	20 IN
Ground Speed, Unit:	2.5 MPH	2.5 MPH
Carrier:	WATER	WATER
Spray Volume, Unit:	20 gal/ac	20 gal/ac
Mix Size, Unit:	2 liters	2 liters

The Ohio State University

Emerion 7000: Weed Control with Plastic Ground Cover

Trial ID: RPP14 Location: Celeryville, OH Trial Year: 2014
Protocol ID: Investigator: Dr. Douglas J. Doohan
Project ID: Study Director: Rick Edwards
Sponsor Contact:

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1	2	3	4	5	6	7	8	9	10	11	12
	Pest Code				RORSS	STEME	POLAV	RORSS	STEME	RORSS	STEME	POLAV	POLPY	RORSS	POLAV	STEME
	Rating Date				5/9/14	5/9/14	5/9/14	5/19/14	5/19/14	5/23/14	5/23/14	5/23/14	5/23/14	5/28/14	5/28/14	5/28/14
	Rating Type				CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO
	Rating Unit				%	%	%	%	%	%	%	%	%	%	%	%
	Trt-Eval Interval				2 DA-A	2 DA-A	2 DA-A	12 DA-A	12 DA-A	4 DA-B	4 DA-B	4 DA-B	4 DA-B	9 DA-B	9 DA-B	9 DA-B
1	Untreated				0	0	.	0	0	0	0	0	0	0	0	0
2	2.4 % Emerion 7000	2.4	% v/v	A	37 a	23 a	50	3 a	0	0 e	0 e	0	0 e	37 bc	0 c	0 a
3	4% Emerion 7000	4	% v/v	A	43 a	43 a	40	10 a	5 a	0 e	0 e	0	0 e	9 c	0 c	3 a
4	6% Emerion 7000	5	% v/v	A	65 a	60 a	80	10 a	5 a	0 e	0 e	0	0 e	28 bc	0 c	0 a
5	2.4% Emerion 7000	2.4	% v/v	B			.			45 d	25 d	10	30 d	16 c	20 b	1 a
6	4% Emerion 7000	4	% v/v	B			.			75 abc	70 b	70	50 c	33 bc	45 ab	9 a
7	6% Emerion 7000	6	% v/v	B			.			80 ab	90 ab	50	75 b	55 ab	30 b	4 a
8	2.4% Emerion 7000	2.4	% v/v	A B	30 a		.	8 a	8 a	55 cd	48 c		50 c	38 bc	25 b	
9	4% Emerion 7000	4	% v/v	A B	53 a	50 a	30	10	8 a	68 bc	53	60	0 e	38 bc	28 b	40 a
10	6% Emerion 7000	6	% v/v	A B	55 a	46 a	.	10 a	8 a	88 ab	90 ab		80 b	33 bc	59 ab	0 a
11	Gramoxone 2	2	pt/a	B			.			95 a	100 a			64 ab	52 ab	100 a
12	Glufosinate	29	oz ai/a	B			.			95 a	100 a	100	100 a	71 a	100 a	100 a
	LSD P=.05				32.6	39.1	.	8.1	5.1	17.5	17.0	.	0.4t	23.1	0.3t	2.3t
	Standard Deviation				20.9	24.4	.	5.2	3.3	12.1	11.3	.	0.2t	16.0	0.2t	1.2t
	Replicate F				0.300	0.467		0.509	9.077	0.412	0.188		0.148	0.264	0.891	0.062
	Replicate Prob(F)				0.8248	0.7123		0.6840	0.0021	0.7458	0.9027		0.9257	0.8510	0.4822	0.9770
	Treatment F				1.522	1.212		1.243	0.692	39.707	57.792		1638.203	5.568	53.529	1.959
	Treatment Prob(F)				0.2603	0.3702		0.3489	0.6114	0.0001	0.0001		0.0001	0.0001	0.0001	0.2699

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)
t=Mean descriptions are reported in transformed data units, and are not de-transformed.
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Untreated treatment(s) 1 excluded from analysis.
Missing data estimates are included in columns:Average=1,2,4,6,7,9,10,11,12,15,16,17,18,19,20,21
Excluded replicate 2 in column 17

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Pest Code				AMARE	CHEAL	POLPY	RORSS	STEME	CHEAL	POLAV	CAPBP	POROL	AMARE
Rating Date				5/28/14	5/28/14	5/28/14	6/6/14	6/6/14	6/6/14	6/6/14	6/6/14	6/6/14	6/6/14
Rating Type				CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit				%	%	%							
Trt-Eval Interval				9 DA-B	9 DA-B	9 DA-B	18 DA-B	18 DA-B	18 DA-B	18 DA-B	18 DA-B	18 DA-B	18 DA-B
Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	13	14	15	16	17	18	19	20	21	22
1	Untreated				0	0	0	0	0	0	0	0	0	0
2	2.4 % Emerion 7000	2.4	% v/v	A		0	0 b	2 b	0 a	0 a	0 b		0 a	0
3	4% Emerion 7000	4	% v/v	A	0	0	0 b	0 b	0 a	0 a	0 b		0 a	0
4	6% Emerion 7000	5	% v/v	A	0		0 b	4 b	0 a		0 b	2 a	0 a	0
5	2.4% Emerion 7000	2.4	% v/v	B		0	0 b	7 b	0 a	0 a	0 b	0 a	0 a	0
6	4% Emerion 7000	4	% v/v	B	100	70	45 a	6 b	0 a	0 a	17 b	0 a	0 a	
7	6% Emerion 7000	6	% v/v	B			10 ab	2 b	0 a	0 a	0 b	0 a	0 a	0
8	2.4% Emerion 7000	2.4	% v/v	A B		5	6 ab	1 b	0 a		0 b	2 a	0 a	0
9	4% Emerion 7000	4	% v/v	A B			10 ab	9 b	0 a		0 b	4 a	0 a	0
10	6% Emerion 7000	6	% v/v	A B	30			1 b	0 a			0 a	0 a	0
11	Gramoxone 2	2	pt/a	B	100	95	45 a	74 a			70 a	0 a	0 a	0
12	Glufosinate	29	oz ai/a	B	0	100	100 a	94 a			90 a			0
LSD P=.05					.	.	0.8t	19.5t	0.0	0.0	27.4	11.5t	0.0	.
Standard Deviation					.	.	0.5t	13.5t	0.0	0.0	15.8	1.3t	0.0	.
Replicate F							0.171	3.215	0.000	0.000	0.222	0.063	0.000	
Replicate Prob(F)							0.9120	0.0373	1.0000	1.0000	0.8777	0.9715	1.0000	
Treatment F							10.546	13.047	0.000	0.000	18.056	0.214	0.000	
Treatment Prob(F)							0.0048	0.0001	1.0000	1.0000	0.0011	0.9325	1.0000	

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Emerion 7000: Weed Control with Plastic Ground Cover

Trial ID: RPP14 Location: Celeryville, OH Trial Year: 2014
Protocol ID: Investigator: Dr. Douglas J. Doohan
Project ID: Study Director: Rick Edwards
Sponsor Contact:

Pest Code
RORSS, Rorippa sp., = US
STEME, Stellaria media, = US
POLAV, Polygonum aviculare, = US
POLPY, Persicaria pensylvanica, = US
AMARE, Amaranthus retroflexus, = US
CHEAL, Chenopodium album, = US
CAPBP, Capsella bursa-pastoris, = US
POROL, Portulaca oleracea, = US
Rating Type
CONTRO = control / burndown or knockdown
Rating Unit
% = percent

The Ohio State University

2013/2014/SPARTAN CHARGE/EDAMAME SOYBEAN/FALL-SPRING PROGRAMS/OH

Trial ID: 2014FMC01 Location: WOOSTER, OH Trial Year: 2014
Protocol ID: SULF.ESOY.13.JPR.01 Investigator: Dr. Douglas J. Doohan
Study Director: Rick Edwards

General Trial Information

Study Director: Doug Doohan **Title:** Professor
Investigator: Rick Edwards **Title:** Research Associate

Discipline: H herbicide
Trial Status: F one-year/final **Trial Reliability:** LOW
Initiation Date: 12/6/13 **Planned Completion Date:** 12/15/14
Completion Date: 11/27/14

Trial Location

City: Wooster **Country:** USA United States
State/Prov.: Ohio
Postal Code: 44691

Conducted Under GLP: No
Conducted Under GEP: No

Objectives:

OBJECTIVES: Observe Spartan Charge and Authority MTZ DF applied in the fall and sequntially in the spring.

TIMING: A = FALL
B = SPRING = PRE-EMERGENCE
C = EPOST = EARLY POSTEMERGENCE V-2 TO V-4 (2 TO 4 TRIFOLIATES)

TARGETS: Winter annual broadleaves and greasses.

Conclusions:

At 16 DAT PREMCR, there were no differences in the weed control between those plots which had received just a fall treatment of either Spartan Charge or Authority MTZ and those which had a fall treatment as well as a spring treatment including Spartan Charge and Roundup Powermax (RU).
At 31 DAT PREMCR there were differences in weed control and there were concomitant effects in phytotoxicity. Weed control ranged from 85% to 100% for those plots treated in the fall with either Spartan Charge or Authority MTZ along with a subsequent treatment at time of planting. All of those treatments which included a fall and spring treatment showed higher levels of phytotoxicity (10, 19 and 23 % for treatments 7, 5 and 3 respectively) than the fall only applied treatments (0%).
A major problem in this trial was poor germination of the edamame seed. This appeared to be unrelated to treatment, as shown in stand counts. This fact should be taken into consideration when evaluating the phytotoxicity effects in this trial.
To summarize, applications of Spartan Charge and Authority MTZ combined with Roundup in the fall showed a decreased level of weed control compared with a treatment regimen that include an additional application of Spartan Charge in the spring, pre-emergence of the crop. There appears to be some phytotoxicity, in decreased stand vigor, with the fall and spring treatments, although the poor germination in this trial could be a confounding variable.

Contacts

Study Director: Doug Doohan **Title:** Professor
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Postal Code: 44691

Investigator: Rick Edwards **Title:** Research Associate
Organization: OARDC/The Ohio State University
Address: 1680 Madison Ave.
City+State/Prov: Wooster, Ohio
Postal Code: 44691

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Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: BeSweet 292 Edamame V09025 **BBCH Scale:** BSOY
Planting Date: 6/3/14
Planting Rate, Unit: 75 LB/A **Planting Method:** DRILLE drilled
Depth, Unit: 1 IN **Planting Equipment:** SR Drilling Machine
Row Spacing, Unit: 7.5 IN
Planting Density, Unit: 1.6 S/FT

Pest Description

Pest 1 Type: W **Code:** AMBEL Ambrosia artemisiifolia
Common Name: Common ragweed

Pest 2 Type: W **Code:** AGRRE Elymus repens
Common Name: Quackgrass

Pest 3 Type: W **Code:** POAAN Poa annua
Common Name: Annual bluegrass

Pest 4 Type: W **Code:** ERICA Conyza canadensis
Common Name: Canada horseweed

Pest 5 Type: W **Code:** OXASS Oxalis sp.
Common Name: Wood sorrel

Site and Design

Treated Plot Width: 10 FT **Site Type:** FIELD field
Treated Plot Length: 30 FT **Experimental Unit:** 1 PLOT plot
Treated Plot Area: 300 FT2 **Treatments:** 7 **Tillage Type:** NOTILL no-till
Replications: 4 **Study Design:** RACOBL Randomized Complete Block (RCB)
Untreated Arrangement: INCLUDED single control randomized in each block

Application Description

	A	B	C
Application Date:	12/6/13	6/10/14	7/11/14
Appl. Start Time:	0900	0800	1100
Application Method:	SPRAY	SPRAY	SPRAY
Application Timing:	DECEMB	PREMCR	POEMW2
Application Placement:	BROADC	BROADC	BROADC
Applied By:	R. Edwards	R. Edwards	R. Edwards
Air Temperature, Unit:	59.5 F	60.7 F	76.4 F
% Relative Humidity:	89.1	98.4	59
Wind Velocity, Unit:	4.84 MPH	0 MPH	4.4 MPH
Wind Direction:	SW		
Dew Presence (Y/N):	N no	Y yes	N no
Soil Temperature, Unit:	46.2 F	63.5 F	71.6 F
Soil Moisture:	SLIWET	SLIWET	SLIDRY
% Cloud Cover:	100	90	40
Next Moisture Occurred On:	12/6/13	6/13/14	7/14/14

Crop Stage At Each Application

	A	B	C
Crop 1 Code, BBCH Scale:	GLXMA BSOY	GLXMA BSOY	GLXMA BSOY
Stage Scale Used:		BBCH	BBCH
Stage Majority, Percent:		00 100	65 100

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Pest Stage At Each Application

	A	B	C
Pest 1 Code, Type, Scale:	AMBEL W	AMBEL W	AMBEL W
Stage Majority, Percent:		30 50	30 50
Height, Unit:		6 IN	14 IN
Pest 2 Code, Type, Scale:	AGRRE W	AGRRE W	AGRRE W
Stage Majority, Percent:		30 50	55 50
Height, Unit:		6 IN	14 IN
Pest 3 Code, Type, Scale:	POAAN W	POAAN W	POAAN W
Stage Majority, Percent:		30 50	55 50
Height, Unit:		6 IN	14 IN
Pest 4 Code, Type, Scale:	ERICA W	ERICA W	ERICA W
Stage Majority, Percent:		30 50	55 50
Height, Unit:		6 IN	14 IN
Pest 5 Code, Type, Scale:	OXASS W	OXASS W	OXASS W
Stage Majority, Percent:		30 50	55 50
Height, Unit:		6 IN	14 IN

Application Equipment

	A	B	C
Equipment Type:	BACCAI	BACCAI	BACCAI
Operation Pressure, Unit:	30 PSI	30 PSI	30 PSI
Nozzle Size:	8002	8002	8002
Nozzle Spacing, Unit:	18 IN	18 IN	18 IN
Nozzles/Row:	4	4	4
Boom Height, Unit:	30 IN	30 IN	30 IN
Ground Speed, Unit:	4 MPH	4 MPH	4 MPH
Carrier:	WATER	WATER	WATER
Mix Size, Unit:	2 liters	2 liters	2 liters

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2013/2014/SPARTAN CHARGE/EDAMAME SOYBEAN/FALL-SPRING PROGRAMS/OH

Trial ID: 2014FMC01 Location: WOOSTER, OH Trial Year: 2014
Protocol ID: SULF.ESOY.13.JPR.01 Investigator: Dr. Douglas J. Doohan
Study Director: Rick Edwards

Pest Code				AMBEL	AGRRE	POAAN	ERICA	OXASS	POLPY		AMBTR	STEME	SETLU	POLPY
Crop Code				GLXMA						GLXMA				
Rating Date				6/26/14	6/26/14	6/26/14	6/26/14	6/26/14	6/26/14	6/26/14	7/11/14	7/11/14	7/11/14	7/11/14	7/11/14
Rating Type				PHYGEN	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	PHYGEN	CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit				%	%	%	%	%	%	%	%	%	%	%	%
Rating Timing				A1											
Trt-Eval Interval				16 DA-B	16 DA-B	16 DA-B	16 DA-B	16 DA-B	16 DA-B	16 DA-B	31 DA-B	31 DA-B	31 DA-B	31 DA-B	31 DA-B
Trt No.	Treatment Name	Rate	Unit	Appl Code	1	2	3	4	5	6	7	8	9	10	11	12
1	UNTREATED			A	3	0	0	0	0	8	0	0	0	0	0	0
2	SPARTAN CHARGE	7.5	oz/a	A	0 b	56 a	95 a	93 a	77 a	70 a	67 a	0 b	17 b	39 b	28 b	30 b
	ROUNDUP POWERMAX	32	oz/a	A												
	PURSUIT	4	oz/a	C												
	BASAGRAN	24	oz/a	C												
	Crop Oil Concentrat	2	pt/a	C												
3	SPARTAN CHARGE	7.5	oz/a	A	11 a	96 a	100 a	100 a	99 a	100 a	100	23 a	95 a	100 a	85 a	98 a
	ROUNDUP POWERMAX	32	oz/a	A												
	SPARTAN CHARGE	7.5	oz/a	B												
	ROUNDUP POWERMAX	32	oz/a	B												
	PURSUIT	4	oz/a	C												
	BASAGRAN	24	oz/a	C												
	Crop Oil Concentrat	2	pt/a	C												
4	AUTHORITY MTZ	14	oz/a	A	1 ab	42 a	87 a	87 a	84 a	75 a	75 a	0 b	3 b	53 ab	48 ab	38 ab
	ROUNDUP POWERMAX	32	oz/a	A												
	PURSUIT	4	oz/a	C												
	BASAGRAN	24	oz/a	C												
	Crop Oil Concentrat	2	pt/a	C												
5	AUTHORITY MTZ	14	oz/a	A	19 a	93 a	100 a	100 a	95 a	95 a	97 a	19 a	96 a	100 a	100 a	100 a
	ROUNDUP POWERMAX	32	oz/a	A												
	SPARTAN CHARGE	7.5	oz/a	B												
	ROUNDUP POWERMAX	32	oz/a	B												
	PURSUIT	4	oz/a	C												
	BASAGRAN	24	oz/a	C												
	Crop Oil Concentrat	2	pt/a	C												
6	AUTHORITY MTZ	14	oz/a	A	4 ab	24 a	96 a	95 a	93 a	90 a	68 a	0 b	0 b	88 ab	70 ab	17 b
	ROUNDUP POWERMAX	32	oz/a	A												
	2,4-D LV ESTER	24	oz/a	A												
	PURSUIT	4	oz/a	C												
	BASAGRAN	24	oz/a	C												
	Crop Oil Concentrat	2	pt/a	C												
7	AUTHORITY MTZ	14	oz/a	A	17 a	76 a	99 a	95 a	97 a	100 a	80 a	10 ab	99 a	100 a	100 a	100 a
	ROUNDUP POWERMAX	32	oz/a	A												
	2,4-D LV ESTER	24	oz/a	A												
	SPARTAN CHARGE	7.5	oz/a	B												
	ROUNDUP POWERMAX	32	oz/a	B												
	PURSUIT	4	oz/a	C												
	BASAGRAN	24	oz/a	C												
	Crop Oil Concentrat	2	pt/a	C												
LSD P=.05					0.8t	47.6t	18.9t	17.1	27.1t	37.0	41.9	2.2t	25.7t	29.2t	41.4	47.8
Standard Deviation					0.5t	31.6t	12.4t	11.2	18.0t	23.8	26.6	1.5t	17.1t	18.2t	27.3	31.3
Replicate F					4.686	0.608	0.729	0.265	0.455	0.098	4.905	1.292	2.262	0.544	1.897	0.377
Replicate Prob(F)					0.0168	0.6201	0.5528	0.8492	0.7176	0.9595	0.0239	0.3133	0.1231	0.6642	0.1766	0.7712
Treatment F					4.531	1.516	1.728	0.778	0.988	1.176	0.842	7.047	20.034	6.489	4.646	6.392
Treatment Prob(F)					0.0102	0.2434	0.1975	0.5826	0.4574	0.3802	0.5292	0.0014	0.0001	0.0080	0.0104	0.0033

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)
t=Mean descriptions are reported in transformed data units, and are not de-transformed.
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Untreated treatment(s) 1 excluded from analysis.
Missing data estimates are included in columns:Average=3,4,6,7,10,11,12,13,15

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Pest Code				ERICA	DICOT	MONOCOT				
Crop Code							GLXMA	GLXMA	GLXMA	GLXMA
Rating Date				7/11/14	7/26/14	7/26/14	7/26/14	8/29/14	8/29/14	10/28/14
Rating Type				CONTRO	CONTRO	CONTRO	PHYGEN	Plant weigh	Pod weight	STAOBJ
Rating Unit				%	%	%	%	g	g	NUMBER
Rating Timing										
Trt-Eval Interval				31 DA-B	15 DA-C	15 DA-C	15 DA-C	49 DA-C	49 DA-C	109 DA-C
Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	13	14	15	16	17	18	19
1	UNTREATED			A	0	0	0	0	1352	713	240
2	SPARTAN CHARGE	7.5	oz/a	A	30 b	70 b	53 a	3 a	1892 a	948 c	
	ROUNDUP POWERMAX	32	oz/a	A							
	PURSUIT	4	oz/a	C							
	BASAGRAN	24	oz/a	C							
	Crop Oil Concentrat	2	pt/a	C							
3	SPARTAN CHARGE	7.5	oz/a	A	93 a	90 a	58 a	4 a	2724 a	1624 ab	132
	ROUNDUP POWERMAX	32	oz/a	A							
	SPARTAN CHARGE	7.5	oz/a	B							
	ROUNDUP POWERMAX	32	oz/a	B							
	PURSUIT	4	oz/a	C							
	BASAGRAN	24	oz/a	C							
	Crop Oil Concentrat	2	pt/a	C							
4	AUTHORITY MTZ	14	oz/a	A	23 b	53 c	50 a	1 a	1937 a	1117 bc	
	ROUNDUP POWERMAX	32	oz/a	A							
	PURSUIT	4	oz/a	C							
	BASAGRAN	24	oz/a	C							
	Crop Oil Concentrat	2	pt/a	C							
5	AUTHORITY MTZ	14	oz/a	A	95 a	86 ab	42 a	7 a	2876 a	1766 a	
	ROUNDUP POWERMAX	32	oz/a	A							
	SPARTAN CHARGE	7.5	oz/a	B							
	ROUNDUP POWERMAX	32	oz/a	B							
	PURSUIT	4	oz/a	C							
	BASAGRAN	24	oz/a	C							
	Crop Oil Concentrat	2	pt/a	C							
6	AUTHORITY MTZ	14	oz/a	A	17 b	45 c	50 a	1 a	1996 a	1184 abc	160
	ROUNDUP POWERMAX	32	oz/a	A							
	2,4-D LV ESTER	24	oz/a	A							
	PURSUIT	4	oz/a	C							
	BASAGRAN	24	oz/a	C							
	Crop Oil Concentrat	2	pt/a	C							
7	AUTHORITY MTZ	14	oz/a	A	100 a	95 a	85 a	4 a	2482 a	1411 abc	150
	ROUNDUP POWERMAX	32	oz/a	A							
	2,4-D LV ESTER	24	oz/a	A							
	SPARTAN CHARGE	7.5	oz/a	B							
	ROUNDUP POWERMAX	32	oz/a	B							
	PURSUIT	4	oz/a	C							
	BASAGRAN	24	oz/a	C							
	Crop Oil Concentrat	2	pt/a	C							
LSD P=.05					38.2	16.3	55.5	0.7t	704.7	430.2	.
Standard Deviation					25.2	10.8	34.1	0.5t	467.6	285.5	.
Replicate F					0.753	2.522	1.072	5.688	2.333	3.484	
Replicate Prob(F)					0.5387	0.0971	0.4139	0.0083	0.1153	0.0425	
Treatment F					10.166	14.762	0.781	1.296	3.418	4.849	
Treatment Prob(F)					0.0003	0.0001	0.5904	0.3170	0.0293	0.0077	

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2013/2014/SPARTAN CHARGE/EDAMAME SOYBEAN/FALL-SPRING PROGRAMS/OH

Trial ID: 2014FMC01 Location: WOOSTER, OH Trial Year: 2014
Protocol ID: SULF.ESOY.13.JPR.01 Investigator: Dr. Douglas J. Doohan
Study Director: Rick Edwards

Pest Code
AMBEL, Ambrosia artemisiifolia, = US
AGRRE, Elymus repens, = US
POAAN, Poa annua, = US
ERICA, Conyza canadensis, = US
OXASS, Oxalis sp., = US
POLPY, Polygonum pensylvanicum, = US
AMBTR, Ambrosia trifida, = US
STEME, Stellaria media, = US
Crop Code
GLXMA, BSOY, Glycine max, = US
Rating Type
PHYGEN = phytotoxicity - general / injury
CONTRO = control / burndown or knockdown
STAOBJ = stand - objective (based on counts)
Rating Unit
% = percent
g = gram
NUMBER = number
Rating Timing
A1 = 1st Assessment According to Trial Schedule

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2013/2014/SPARTAN CHARGE/TOMATOES/FALL-SPRING PROGRAMS/OH/IN

Trial ID: SULF.TOM.JRP.O2 Location: WOOSTER, OH Trial Year: 2014
Protocol ID: SULF.TOM.JRP.O2 Investigator: Dr. Douglas J. Doohan
Project ID: Study Director: Doug Doohan/Rick Edwards
Sponsor Contact:

General Trial Information

Study Director: Rick Edwards **Title:** Research Associate
Investigator: Dr. Douglas J. Doohan **Title:** Professor

Discipline: H herbicide
Trial Status: F one-year/final **Trial Reliability:** HIGH
Initiation Date: 11/22/13 **Planned Completion Date:** 10/31/14
Completion Date: 10/31/14

Trial Location

City: Wooster **Country:** USA United States
State/Prov.: Ohio
Postal Code: 44691

Conducted Under GLP: No
Conducted Under GEP: No

Objectives:

OBJECTIVES: To observe Spartan Charge and Authority MTZ DF applied in the fall and sequentially in the spring, pre-transplant, in processing tomatoes.

TIMING:
A = FALL
B = SPRING = PRE-TRANSPLANT
C = POSTRPLNT = POST TRANSPLANT

TARGETS: Winter annual broadleaves and grasses.

Conclusions:

Weed control from all of the late fall applications assessed on 5/14/14 (173 DA-A) was similar and ranged from 50 - 100% depending on the species. At 22 DA- B there were no differences in weed control between the treatments. In the plots that received both the fall and pre-transplant treatments (Spartan Charge and Roundup or Authority MTZ and Roundup/RU and 2,4 D LV Ester) there were phytotoxic effects at 22 and 27 DA-B . These effects were exhibited by stunting of the plants as well as chlorosis and necrosis of leaves.
At 45 DAT after treatment B, the phytotoxic effects were no longer significant. Treatment C (Sencor and Matrix, post-transplant, 1-2" weed), which was applied as a broadcast treatment on 7/23/14 and was applied over all plots, excluding control, appeared to show no difference between treatments in weed control or crop damage.
At harvest, all treatments which contained a fall treatment and an early spring pre-transplant treatment, had lower yield in number of red fruit, and in weight of red fruit, than those treatments only receiving the fall application (as well as the post transplant, late summer application).
The accumulative effect of applying Spartan Charge or Authority MTZ at a late fall timing combined with a spring pre-transplant application, combined with Roundup and/or 2,4 D Ester, caused stunted growth resulting in lower marketable yield.

Contacts

Study Director: Rick Edwards **Title:** Research Associate
Organization: Ohio Agricultural Research and Development Center
Address: 1680 Madison Avenue
City+State/Prov: Wooster, Ohio
Postal Code: 44691 **E-mail:** edwards.1260@osu.edu
Country: USA United States

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Investigator: Dr. Douglas J. Doohan **Title:** Professor
Organization: Ohio Agricultural Research and Development Center
Address: 1680 Madison Avenue
City+State/Prov: Wooster, Ohio
Postal Code: 44691
Country: USA United States

Crop Description

Crop 1: LYPES Solanum lycopersicum Tomato
BBCH Scale: BVSO
Planting Date: 6/9/14
Planting Method: TRAMAC transplanted - machine
Row Spacing, Unit: 5 FT
Spacing Within Row, Unit: 12 IN
Harvest Date: 9/15/14
Harvested Width, Unit: 5 FT
Harvested Length, Unit: 2 Plant

Pest Description

Pest 1 Type: W **Code:** TAROF Taraxacum officinale
Common Name: Common dandelion

Pest 2 Type: W **Code:** CIRAR Cirsium arvense
Common Name: Canada thistle

Pest 3 Type: W **Code:** AGRRE Elymus repens
Common Name: Quackgrass

Pest 4 Type: W **Code:** VERFI Veronica filiformis
Common Name: Creeping speedwell

Pest 5 Type: W **Code:** AMARE Amaranthus retroflexus
Common Name: Redroot pigweed

Site and Design

Treated Plot Width: 10 FT **Site Type:** FIELD field
Treated Plot Length: 20 FT **Experimental Unit:** 1 PLOT plot
Treated Plot Area: 200 FT2 **Treatments:** 7 **Tillage Type:** CONTIL conventional-till
Replications: 4 **Study Design:** RACOBL Randomized Complete Block (RCB)
Untreated Arrangement: INCLUDED single control randomized in each block

Soil Description

Description Name: Wooster Silt Loam
% Sand: 16 **% OM:** 2.8 **Texture:** CSL clay sandy loam
% Silt: 72 **pH:** 6.4
% Clay: 12 **CEC:** 5.6 **Fert. Level:** G good
Soil Drainage: E excellent
Analyzed By:
CLC labs, Westerville, Ohio

Application Description

	A	B	C
Application Date:	11/22/13	6/3/14	7/23/14
Appl. Start Time:	10:00 AM	2:00 PM	1:00 PM
Appl. Stop Time:	11:00 AM	3:00 PM	1:45 PM
Application Method:	SPRAY	SPRAY	SPRAY
Application Timing:	NOVEMB	SPRING	POSPOS
Application Placement:	BROADC	BROADC	BROADC
Applied By:	R. Edwards	R. Edwards	R. Edwards
Air Temperature, Unit:	49.9 F	81.9 F	77.6 F
% Relative Humidity:	98.1	64.3	78
Wind Velocity, Unit:	0. MPH	10.8 MPH	8.8 MPH
Wind Direction:	SW	W	WNW
Dew Presence (Y/N):	Y yes	N no	N no
Soil Temperature, Unit:	45.4 F	72.7 F	75.7 F
Soil Moisture:	WET	DRY	DRY
% Cloud Cover:	100	10	10
Next Moisture Occurred On:	11/22/13	6/4/14	7/26/14
Time to Next Moisture, Unit:	40 MIN	1 DAY	3 DAY

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Crop Stage At Each Application

	A	B	C
Crop 1 Code, BBCH Scale:	LYPES BVSO	LYPES BVSO	LYPES BVSO
Stage Scale Used:	BBCH	BBCH	BBCH
Stage Majority, Percent:		23 100	64 80

Pest Stage At Each Application

	A	B	C
Pest 1 Code, Type, Scale:	TAROF W	TAROF W DESC	TAROF W
Stage Majority, Percent:		16 50	61 50
Height, Unit:		1 IN	5 IN
Pest 2 Code, Type, Scale:	CIRAR W	CIRAR W	CIRAR W
Stage Majority, Percent:		16 50	61 50
Height, Unit:		1 IN	5 IN
Pest 3 Code, Type, Scale:	AGRRE W	AGRRE W	AGRRE W
Stage Majority, Percent:		16 50	61 50
Height, Unit:		3 IN	7 IN
Pest 4 Code, Type, Scale:	VERFI W	VERFI W	VERFI W
Stage Majority, Percent:		16 50	61 50
Height, Unit:		1 IN	5 IN
Pest 5 Code, Type, Scale:	AMARE W	AMARE W	AMARE W
Stage Majority, Percent:		16 50	61 50
Height, Unit:		1 IN	5 IN

Application Equipment

	A	B	C
Equipment Type:	BACCAI	BACCAI	BACCAI
Operation Pressure, Unit:	30 PSI	30 PSI	30 PSI
Nozzle Type:	TEEJTU	TEEJTU	TEEJTU
Nozzle Size:	8002	8002	8002
Nozzle Spacing, Unit:	18 IN	18 IN	18 IN
Nozzles/Row:	4	4	4
Band Width, Unit:	60 IN	60 IN	60 IN
Boom Height, Unit:	24 IN	24 IN	24 IN
Ground Speed, Unit:	3.5 MPH	3.5 MPH	3.5 MPH
Carrier:	WATER	WATER	WATER
Spray Volume, Unit:	10 gal/ac	10 gal/ac	10 gal/ac
Mix Size, Unit:	2 Liters	2 liters	2 liters

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2013/2014/SPARTAN CHARGE/TOMATOES/FALL-SPRING PROGRAMS/OH/IN

Trial ID: SULF.TOM.JRP.O2 Location: WOOSTER, OH Trial Year: 2014
Protocol ID: SULF.TOM.JRP.O2 Investigator: Dr. Douglas J. Doohan
Project ID: Study Director: Doug Doohan/Rick Edwards
Sponsor Contact:

Trt No.	Treatment Name	Rate	Unit	Appl Code	1	2	3	4	5	6	7	8	9	10	11	12
	Pest Code				TAROF	CIRAR	AGRRE	VERFI	CIRAR	AMARE	POROL	POLPY	TAROF	AGRRE	CYPES	
	Crop Code				LYPES	LYPES	LYPES	LYPES	LYPES	LYPES	LYPES	LYPES	LYPES	LYPES	LYPES	LYPES
	Part Rated															
	Rating Date				5/14/14	5/14/14	5/14/14	5/14/14	6/25/14	6/25/14	6/25/14	6/25/14	6/25/14	6/25/14	6/25/14	6/25/14
	Rating Type				CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	PHYGEN
	Rating Unit				%	%	%	%	%	%	%	%	%	%	%	%
	Trt-Eval Interval				173 DA-A	173 DA-A	173 DA-A	173 DA-A	22 DA-B	22 DA-B	22 DA-B	22 DA-B	22 DA-B	22 DA-B	22 DA-B	22 DA-B
1	UNTREATED				0	0	0	0	0	0	0	0	0	0	0	0
2	SPARTAN CHARGE	7.5	oz/a	A	55	50 a	64 a	75	97 a	100 a	100 a	100 a	98	93 b	94 a	0 b
	ROUNDUP POWERMAX	32	oz/a	A												
	SENCOR DF	2	oz/a	C												
	MATRIX	1	oz/a	C												
3	SPARTAN CHARGE	7.5	oz/a	A	60 a	63 a	79 a	95 a	97 a	100 a	100 a	100 a	100 a	100 a	99 a	19 a
	ROUNDUP POWERMAX	32	oz/a	A												
	SPARTAN CHARGE	7.5	oz/a	B												
	ROUNDUP POWERMAX	32	oz/a	B												
	SENCOR DF	2	oz/a	C												
	MATRIX	1	oz/a	C												
4	AUTHORITY MTZ	14	oz/a	A	80 a	77 a	91 a	85 a	97 a	100 a	100 a	100 a	100 a	90 b	84 a	1 b
	ROUNDUP POWERMAX	32	oz/a	A												
	SENCOR DF	2	oz/a	C												
	MATRIX	1	oz/a	C												
5	AUTHORITY MTZ	14	oz/a	A	80 a	83 a	93 a	88 a	100 a	100 a	100 a	100 a	100 a	100 a	97 a	26 a
	ROUNDUP POWERMAX	32	oz/a	A												
	AUTHORITY MTZ	14	oz/a	B												
	ROUNDUP POWERMAX	32	oz/a	B												
	SENCOR DF	2	oz/a	C												
	MATRIX	1	oz/a	C												
6	AUTHORITY MTZ	14	oz/a	A	88 a	80 a	86 a	95 a	97 a	100 a	100 a	100 a	100 a	90 b	87 a	1 b
	ROUNDUP POWERMAX	32	oz/a	A												
	2,4-D LV ESTER	24	oz/a	A												
	SENCOR DF	2	oz/a	C												
	MATRIX	1	oz/a	C												
7	AUTHORITY MTZ	14	oz/a	A	88 a	80 a	95 a	90 a	90 a	100	100	100	100 a	100 a	100 a	18 a
	ROUNDUP POWERMAX	32	oz/a	A												
	2,4-D LV ESTER	24	oz/a	A												
	AUTHORITY MTZ	14	oz/a	B												
	ROUNDUP POWERMAX	32	oz/a	B												
	SENCOR DF	2	oz/a	C												
	MATRIX	1	oz/a	C												
	LSD P=.05				19.5	52.5	26.8t	17.3	9.2	0.0	0.0	0.0	0.0	4.3	21.5t	0.7t
	Standard Deviation				12.7	28.8	17.8t	11.3	5.1	0.0	0.0	0.0	0.0	2.4	14.2t	0.4t
	Replicate F				0.870	0.047	0.391	0.145	4.130	0.000	0.000	0.000	0.000	1.000	0.642	4.157
	Replicate Prob(F)				0.4832	0.9546	0.7614	0.9311	0.0492	1.0000	1.0000	1.0000	1.0000	0.4019	0.6006	0.0249
	Treatment F				3.155	0.603	0.973	0.632	1.261	0.000	0.000	0.000	0.000	13.600	1.666	8.650
	Treatment Prob(F)				0.0546	0.6994	0.4653	0.6494	0.3520	1.0000	1.0000	1.0000	1.0000	0.0003	0.2075	0.0005

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)
t=Mean descriptions are reported in transformed data units, and are not de-transformed.
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Untreated treatment(s) 1 excluded from analysis.
Missing data estimates are included in columns:Average=11,16
Excluded replicate 2 in column 2; 3 in 5; 1 in 10; 1 in 21; 3 in 22

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Trt No.	Treatment Name	Rate	Unit	Appl Code	13	14	15	16	17	18	19	20	21	22	23	24
	Pest Code				LYPES	CIRAR	AMARE	POROL	SETPU	CYPES	LYPES	AGRRE	TAROF	CIRAR	LYPES	AGRRE
	Crop Code				LYPES	LYPES	LYPES	LYPES	LYPES	LYPES	LYPES	LYPES	LYPES	LYPES	LYPES	LYPES
	Part Rated															
	Rating Date				6/30/14	6/30/14	6/30/14	6/30/14	6/30/14	6/30/14	7/18/14	7/18/14	7/18/14	7/18/14	8/22/14	8/22/14
	Rating Type				PHYGEN	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	PHYGEN	CONTRO	CONTRO	CONTRO	PHYGEN	CONTRO
	Rating Unit				%	%	%	%	%	%	%	%	%	%	%	%
	Trt-Eval Interval				27 DA-B	27 DA-B	27 DA-B	27 DA-B	27 DA-B	27 DA-B	45 DA-B	45 DA-B	45 DA-B	45 DA-B	30 DA-C	30 DA-C
1	UNTREATED				0	0	0	0	0	0	0	0	0	0	0	0
2	SPARTAN CHARGE	7.5	oz/a	A	0 b	96 a	81 b	75 a	46 b	21 b	1 a	96 a	98 a	98 a	0 a	98 a
	ROUNDUP POWERMAX	32	oz/a	A												
	SENCOR DF	2	oz/a	C												
	MATRIX	1	oz/a	C												
3	SPARTAN CHARGE	7.5	oz/a	A	48 a	93 a	100 a	100 a	100 a	100 a	5 a	98	98 a	98 a	13 a	91 a
	ROUNDUP POWERMAX	32	oz/a	A												
	SPARTAN CHARGE	7.5	oz/a	B												
	ROUNDUP POWERMAX	32	oz/a	B												
	SENCOR DF	2	oz/a	C												
	MATRIX	1	oz/a	C												
4	AUTHORITY MTZ	14	oz/a	A	2 b	99 a	88 b	96 a	53 b	67 ab	1 a	100 a	100 a	100 a	3 a	88 a
	ROUNDUP POWERMAX	32	oz/a	A												
	SENCOR DF	2	oz/a	C												
	MATRIX	1	oz/a	C												
5	AUTHORITY MTZ	14	oz/a	A	40 a	97 a	99 a	100 a	97 ab	99 a	10 a	99 a	98 a	100 a	19 a	98 a
	ROUNDUP POWERMAX	32	oz/a	A												
	AUTHORITY MTZ	14	oz/a	B												
	ROUNDUP POWERMAX	32	oz/a	B												
	SENCOR DF	2	oz/a	C												
	MATRIX	1	oz/a	C												
6	AUTHORITY MTZ	14	oz/a	A	2 b	99 a	85 b	99 a	82 ab	42 b	4 a	99 a	100 a	100 a	0 a	97 a
	ROUNDUP POWERMAX	32	oz/a	A												
	2,4-D LV ESTER	24	oz/a	A												
	SENCOR DF	2	oz/a	C												
	MATRIX	1	oz/a	C												
7	AUTHORITY MTZ	14	oz/a	A	56 a	96 a	100 a	100 a	100 a	99 a	7 a	98 a	97 a	97 a	26 a	95 a
	ROUNDUP POWERMAX	32	oz/a	A												
	2,4-D LV ESTER	24	oz/a	A												
	AUTHORITY MTZ	14	oz/a	B												
	ROUNDUP POWERMAX	32	oz/a	B												
	SENCOR DF	2	oz/a	C												
	MATRIX	1	oz/a	C												
	LSD P=.05				2.8t	15.8t	12.8t	21.8t	29.0t	31.8t	0.7t	5.6	5.7	4.3	20.2t	17.4t
	Standard Deviation				1.9t	10.5t	8.5t	14.3t	19.2t	21.1t	0.5t	3.6	3.1	2.4	13.4t	11.5t
	Replicate F				2.328	2.017	0.278	1.096	3.861	0.481	0.732	0.603	1.000	4.000	1.227	0.630
	Replicate Prob(F)				0.1158	0.1548	0.8403	0.3832	0.0314	0.7005	0.5486	0.6253	0.4019	0.0529	0.3343	0.6069
	Treatment F				11.290	0.690	7.807	2.713	4.873	6.430	2.273	0.619	0.486	1.000	3.887	0.862
	Treatment Prob(F)				0.0001	0.6390	0.0009	0.0646	0.0076	0.0022	0.1000	0.6575	0.7798	0.4651	0.0185	0.5288

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Trt No.	Treatment Name	Rate	Unit	Appl Code	25	26	27	28	29	30	31	32	33
	Pest Code				CIRAR	AMARE	POROL	AGRRE					
	Crop Code				LYPES	LYPES	LYPES	LYPES	LYPES	LYPES	LYPES	LYPES	LYPES
	Part Rated								PLALIV C	FRUMAR C	FRUUNM C	FRUMAR -	FRUUNM -
	Rating Date				8/22/14	8/22/14	8/22/14	8/22/14	9/15/14	9/15/14	9/15/14	9/15/14	9/15/14
	Rating Type				CONTRO	CONTRO	CONTRO	CONTRO	COUNT	COUNT	COUNT	WEIGHT	WEIGHT
	Rating Unit				%	%	%	%	PLANT			LB	LB
	Trt-Eval Interval				30 DA-C	30 DA-C	30 DA-C	30 DA-C	54 DA-C	54 DA-C	54 DA-C	54 DA-C	54 DA-C
1	UNTREATED				0	0	0	0	19	51	35	7	3
2	SPARTAN CHARGE	7.5	oz/a	A	99 a	98 a	93 a	94 a	19 a	94 a	55 a	14 a	5 a
	ROUNDUP POWERMAX	32	oz/a	A									
	SENCOR DF	2	oz/a	C									
	MATRIX	1	oz/a	C									
3	SPARTAN CHARGE	7.5	oz/a	A	89 a	94 a	88 a	88 a	19 a	40 bc	73 a	6 ab	7 a
	ROUNDUP POWERMAX	32	oz/a	A									
	SPARTAN CHARGE	7.5	oz/a	B									
	ROUNDUP POWERMAX	32	oz/a	B									
	SENCOR DF	2	oz/a	C									
	MATRIX	1	oz/a	C									
4	AUTHORITY MTZ	14	oz/a	A	97 a	97 a	89 a	96 a	19 a	80 ab	60 a	12 a	7 a
	ROUNDUP POWERMAX	32	oz/a	A									
	SENCOR DF	2	oz/a	C									
	MATRIX	1	oz/a	C									
5	AUTHORITY MTZ	14	oz/a	A	99 a	97 a	90 a	91 a	16 a	39 bc	61 a	7 ab	6 a
	ROUNDUP POWERMAX	32	oz/a	A									
	AUTHORITY MTZ	14	oz/a	B									
	ROUNDUP POWERMAX	32	oz/a	B									
	SENCOR DF	2	oz/a	C									
	MATRIX	1	oz/a	C									
6	AUTHORITY MTZ	14	oz/a	A	98 a	97 a	93 a	91 a	20 a	83 ab	92 a	12 a	9 a
	ROUNDUP POWERMAX	32	oz/a	A									
	2,4-D LV ESTER	24	oz/a	A									
	SENCOR DF	2	oz/a	C									
	MATRIX	1	oz/a	C									
7	AUTHORITY MTZ	14	oz/a	A	88 a	95 a	70 a	78 a	16 a	33 c	45 a	4 b	6 a
	ROUNDUP POWERMAX	32	oz/a	A									
	2,4-D LV ESTER	24	oz/a	A									
	AUTHORITY MTZ	14	oz/a	B									
	ROUNDUP POWERMAX	32	oz/a	B									
	SENCOR DF	2	oz/a	C									
	MATRIX	1	oz/a	C									
	LSD P=.05				15.2t	16.2t	16.9	16.8t	4.5	34.4	41.6	5.5	4.3
	Standard Deviation				10.1t	10.8t	11.2	11.1t	3.0	22.8	27.6	3.7	2.9
	Replicate F				4.851	1.977	0.140	0.419	4.596	1.622	1.386	1.922	4.314
	Replicate Prob(F)				0.0149	0.1607	0.9342	0.7422	0.0179	0.2263	0.2855	0.1694	0.0221
	Treatment F				2.046	0.232	2.296	1.096	1.566	5.635	1.368	4.934	0.814
	Treatment Prob(F)				0.1299	0.9425	0.0974	0.4025	0.2292	0.0040	0.2909	0.0072	0.5581

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2013/2014/SPARTAN CHARGE/TOMATOES/FALL-SPRING PROGRAMS/OH/IN

Trial ID: SULF.TOM.JRP.O2 Location: WOOSTER, OH Trial Year: 2014
Protocol ID: SULF.TOM.JRP.O2 Investigator: Dr. Douglas J. Doohan
Project ID: Study Director: Doug Doohan/Rick Edwards
Sponsor Contact:

Pest Code
TAROF, Taraxacum officinale, = US
CIRAR, Cirsium arvense, = US
AGRRE, Elymus repens, = US
VERFI, Veronica filiformis, = US
AMARE, Amaranthus retroflexus, = US
POROL, Portulaca oleracea, = US
POLPY, Persicaria pensylvanica, = US
CYPES, Cyperus esculentus, = US
SETPU, Setaria pumila, = US
Crop Code
LYPES, BVSO, Solanum lycopersicum, = US
Part Rated
PLALIV = plant - living
FRUMAR = fruit - marketable
FRUUNM = fruit - unmarketable
C = Crop is Part Rated
Rating Type
CONTRO = control / burndown or knockdown
PHYGEN = phytotoxicity - general / injury
COUNT = count
WEIGHT = weight
Rating Unit
% = percent
PLANT = plant
LB = pound

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SPARTAN CHARGE TANKMIXES IN APPLES 2014

Trial ID: SPARAPPL2014 Location: WOOSTER, OH Trial Year: 2014
Protocol ID: SPARAPPL2014 Investigator: Dr. Douglas J. Doohan
Project ID: Study Director: R. EDWARDS
Sponsor Contact: JOE REED

General Trial Information

Study Director: Rick Edwards **Title:** Research Associate
Investigator: Dr. Douglas J. Doohan **Title:** Professor

Discipline: H herbicide
Trial Status: F one-year/final **Trial Reliability:** GOOD
Initiation Date: 5/7/14 **Planned Completion Date:** 11/1/14
Completion Date: 9/5/14

Trial Location

City: Wooster **Country:** USA United States
State/Prov.: Ohio
Postal Code: 44691

Latitude of LL Corner °: 40.779762 N
Longitude of LL Corner °: 81.923947 W
Altitude of LL Corner, Unit: 1092.00 FT

Conducted Under GLP: No
Conducted Under GEP: No

Objectives:
To observe various sulfentrazone + carfentrazone tankmixes for weed control in apples.

TARGETS: Grasses, Broadleaves such as lambsquarters, marestail, morninigglories, mugwhort, poison ivy and others as well as yellow nutsedge.

PARAMETERS: Use the appropriate weed control rating timimng and note any phytotoxicity.

Conclusions:
There were no differences between any treatment for weed control at 13 DA-A. At 48 DA-A weed control was similar between each treatment, except treatment 1, Spartan Charge/ Sinbar and Roundup Powermax. That treatment had reduced control of Dandelion (73%). At 79 DA-A there were no differences in weed control between treatments. Weed control ranged from 31- 100%, depending on the species. At 30 DA-B weed control continued to be effective, and there were no differences in treatments.

Contacts

Study Director: Rick Edwards **Title:** Research Associate
Organization: Ohio Agricultural Research and Development Center
Address: 1680 Madison Avenue
City+State/Prov: Wooster, Ohio
Postal Code: 44691 **E-mail:** edwards.1260@osu.edu
Country: USA United States

Investigator: Dr. Douglas J. Doohan **Title:** Professor
Organization: Ohio Agricultural Research and Development Center
Address: 1680 Madison Avenue
City+State/Prov: Wooster, Ohio
Postal Code: 44691
Country: USA United States

Crop Description

Crop 1: MABSS Malus sp. Apple
Variety: Golden Delicious **BBCH Scale:** BDIC

Pest Description

Pest 1 Type: W **Code:** TAROF Taraxacum officinale
Common Name: Common dandelion

Pest 2 Type: W **Code:** TRFRE Trifolium repens
Common Name: White clover

Pest 3 Type: W **Code:** PLAMA Plantago major
Common Name: Broadleaf plantain

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Site and Design

Treated Plot Width: 5 FT
Treated Plot Length: 20 FT
Treated Plot Area: 100 FT2 **Treatments:** 5
Replications: 4
Site Type: ORCHAR orchard
Experimental Unit: 1 PLOT plot
Study Design: RACOBL Randomized Complete Block (RCB)

Field Prep./Maintenance:
Trial was maintained by the OARDC Hort and Crop Science Manager as outlined in 2011 OSU Treee Fruit Spray Guide. There was no herbicide sprayed under the apple trees themselves.

Soil Description

Description Name: Wooster Silt Loam
% Sand: 16 **% OM:** 2.8 **Texture:** CSL clay sandy loam
% Silt: 72 **pH:** 6.4
% Clay: 12 **CEC:** 5.6 **Fert. Level:** G good
Soil Drainage: E excellent

Application Description

	A	B
Application Date:	5/7/14	8/5/14
Appl. Start Time:	1430	1200
Appl. Stop Time:	3:30 PM	12:30 PM
Application Method:	SPRAY	SPRAY
Application Timing:	ATBLST	AUGUST
Application Placement:	BRODIR	BRODIR
Applied By:	R. Edwards	R. Edwards
Air Temperature, Unit:	70.0 F	78.8 F
% Relative Humidity:	68.6	64
Wind Velocity, Unit:	5.78 MPH	3.6 MPH
Wind Direction:	ESE	SW
Dew Presence (Y/N):	N no	N no
Soil Temperature, Unit:	57.8 F	73.2 f
Soil Moisture:	GOOD	DRY
% Cloud Cover:	30	0

Crop Stage At Each Application

	A	B
Crop 1 Code, BBCH Scale:	MABSS BDIC	MABSS BDIC
Stage Scale Used:	BBCH	BBCH
Stage Majority, Percent:	59 60	76 90
Stage Minimum, Percent:	24 30	
Stage Maximum, Percent:	62 10	

Pest Stage At Each Application

	A	B
Pest 1 Code, Type, Scale:	TAROF W	TAROF W
Stage Majority, Percent:	55 30	69 50
Height, Unit:	3 IN	7 IN
Pest 2 Code, Type, Scale:	TRFRE W	TRFRE W
Stage Majority, Percent:	61 50	67 50
Height, Unit:	1 IN	2 IN
Pest 3 Code, Type, Scale:	PLAMA W	PLAMA W
Stage Majority, Percent:	40	69 90
Height, Unit:	2 IN	4 IN

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Application Equipment

	A	B
Equipment Type:	BACCAI	BACCAI
Operation Pressure, Unit:	30 PSI	30 PSI
Nozzle Type:	TEEJET XR	TEEJET XR
Nozzle Size:	8003	8003
Nozzle Spacing, Unit:	18 IN	18 IN
Nozzles/Row:	2	2
Band Width, Unit:	3 FT	3 FT
% Coverage:	100.0	100.0
Row Sides Applied:	2	2
Boom Height, Unit:	18 IN	18 IN
Ground Speed, Unit:	3 MPH	3 MPH
Carrier:	WATER	WATER
Spray Volume, Unit:	25 GPA	25 GPA
Mix Size, Unit:	2 Liters	2 Liters
Tank Mix (Y/N):	Y yes	Y yes

The Ohio State University

SPARTAN CHARGE TANKMIXES IN APPLES 2014

Trial ID: SPARAPPL2014 Location: WOOSTER, OH Trial Year: 2014
Protocol ID: SPARAPPL2014 Investigator: Dr. Douglas J. Doohan
Project ID: Study Director: R. EDWARDS
Sponsor Contact: JOE REED

Trt No.	Treatment Name	Rate	Unit	Appl Code	TRFRE MABSS 5/20/14 CONTRO % 13 DA-A 1	POASS MABSS 5/20/14 CONTRO % 13 DA-A 2	PLAMA MABSS 5/20/14 CONTRO % 13 DA-A 3	TAROF MABSS 5/20/14 CONTRO % 13 DA-A 4	OXAST MABSS 5/20/14 CONTRO % 13 DA-A 5	TRFRE MABSS 6/24/14 CONTRO % 48 DA-A 6	POASS MABSS 6/24/14 CONTRO % 48 DA-A 7	PLAMA MABSS 6/24/14 CONTRO % 48 DA-A 8	TAROF MABSS 6/24/14 CONTRO % 48 DA-A 9	ERICA MABSS 6/24/14 CONTRO % 48 DA-A 10	POASS MABSS 7/25/14 CONTRO % 79 DA-A 11	OXAST MABSS 7/25/14 CONTRO % 79 DA-A 12
1	SPARTAN CHARGE	10	oz/a	A	20 a	63	60 a	83 a	50 a	91 a	91 a	85 a	73 b	74 a	60 a	31 a
	SINBAR	16	oz/a	A												
	ROUNDUP POWERMAX	22	oz/a	A												
	AMS	2.5	% v/v	A												
2	SPARTAN CHARGE	10	oz/a	A	80 a	78 a		75 a	85 a	89 a	96 a	100	100	46 a	94 a	92 a
	ALION	5	oz/a	A												
	ROUNDUP POWERMAX	22	oz/a	A												
	AMS	2.5	% v/v	A												
3	SPARTAN CHARGE	6	oz/a	A		80 a	75 a	87 a	10 a	99 a	96 a	93 a	98 a	76 a	74 a	95 a
	KARMEX	3.8	lb/a	A												
	ROUNDUP POWERMAX	22	oz/a	A												
	AMMONIUM SULFATE	2.5	% v/v	A												
	SPARTAN CHARGE	6	oz/a	B												
	MATRIX	1	oz/a	B												
	NIS	0.25	% v/v	B												
4	SPARTAN CHARGE	6	oz/a	A	70 a	80 a		95 a	63 a	93 a	99 a	100 a	100 a	96 a	99 a	93 a
	ALION	5	oz/a	A												
	ROUNDUP POWERMAX	22	oz/a	A												
	AMMONIUM SULFATE	2.5	% v/v	A												
	SPARTAN CHARGE	6	oz/a	B												
	SANDEA	1	oz/a	B												
	NIS	0.25	% v/v	B												
5	Untreated Check				0	0	0	0	0	0	0	0	0	0	0	0
LSD P=.05					120.4	33.0	363.1	43.3	139.8	33.5t	27.7t	25.3	18.5	55.6t	46.2t	37.0t
Standard Deviation					39.6	19.1	35.0	22.0	45.9	20.9t	17.3t	14.6	10.7	34.1t	28.9t	22.7t
Replicate F					0.482	0.634	0.827	0.342	0.394	0.013	0.407	1.078	0.780	0.353	0.046	1.405
Replicate Prob(F)					0.7280	0.6200	0.6139	0.7979	0.7735	0.9977	0.7518	0.4267	0.5465	0.7882	0.9859	0.3105
Treatment F					2.638	0.023	0.276	0.573	1.886	0.304	0.287	1.052	8.122	0.745	1.159	3.341
Treatment Prob(F)					0.2749	0.9774	0.6923	0.6623	0.3649	0.8222	0.8340	0.4059	0.0196	0.5550	0.3776	0.0766

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)
t=Mean descriptions are reported in transformed data units, and are not de-transformed.
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Untreated treatment(s) 5 excluded from analysis.
Missing data estimates are included in columns:Average=1,3,4,5,10,12,19,20,21
Excluded replicate 2 in column 3; 2 in 14

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Pest Code				PLAMA	ERICA	TAROF	DIGSS	PANDI	POLPY	CHEAL	TRFRE	ERICA
Crop Code				MABSS	MABSS	MABSS	MABSS	MABSS	MABSS	MABSS	MABSS	MABSS
Rating Date				7/25/14	7/25/14	7/25/14	9/4/14	9/4/14	9/4/14	9/4/14	9/4/14	9/4/14
Rating Type				CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit				%	%	%	%	%	%	%	%	%
Trt-Eval Interval				79 DA-A	79 DA-A	79 DA-A	30 DA-B	30 DA-B	30 DA-B	30 DA-B	30 DA-B	30 DA-B
Trt No.	Treatment Name	Rate	Rate Unit / Appl Code	13	14	15	16	17	18	19	20	21
1	SPARTAN CHARGE	10	oz/a A	73 a	63 a	55 a	34 a	34 a	85 a	100 a	97 a	86 a
	SINBAR	16	oz/a A									
	ROUNDUP POWERMAX	22	oz/a A									
	AMS	2.5	% v/v A									
2	SPARTAN CHARGE	10	oz/a A	100 a	73 a	100 a	79 a	85 a	97 a	100 a	85	50 a
	ALION	5	oz/a A									
	ROUNDUP POWERMAX	22	oz/a A									
	AMS	2.5	% v/v A									
3	SPARTAN CHARGE	6	oz/a A	73 a	67 a	60 a	94 a	85 a	96 a	100 a	98 a	91 a
	KARMEX	3.8	lb/a A									
	ROUNDUP POWERMAX	22	oz/a A									
	AMMONIUM SULFATE	2.5	% v/v A									
	SPARTAN CHARGE	6	oz/a B									
	MATRIX	1	oz/a B									
	NIS	0.25	% v/v B									
4	SPARTAN CHARGE	6	oz/a A	100 a	90 a	100 a	100 a	93 a	100 a	100 a	95 a	93 a
	ALION	5	oz/a A									
	ROUNDUP POWERMAX	22	oz/a A									
	AMMONIUM SULFATE	2.5	% v/v A									
	SPARTAN CHARGE	6	oz/a B									
	SANDEA	1	oz/a B									
	NIS	0.25	% v/v B									
5	Untreated Check			0	0	0	0	0	0	0	0	0
LSD P=.05				50.7	83.7	32.0t	45.9t	50.4t	42.9t	0.0	13.7	35.9t
Standard Deviation				31.7	41.9	20.0t	28.7t	31.5t	26.8t	0.0	7.5	22.0t
Replicate F				0.573	0.247	0.939	0.041	0.024	0.600	0.000	0.931	0.471
Replicate Prob(F)				0.6466	0.7888	0.4615	0.9881	0.9945	0.6310	1.0000	0.4905	0.7106
Treatment F				1.006	0.241	5.505	2.596	1.187	0.472	0.000	0.114	1.522
Treatment Prob(F)				0.4341	0.8652	0.0200	0.1169	0.3682	0.7092	1.0000	0.8942	0.2818

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SPARTAN CHARGE TANKMIXES IN APPLES 2014

Trial ID: SPARAPPL2014 Location: WOOSTER, OH Trial Year: 2014
Protocol ID: SPARAPPL2014 Investigator: Dr. Douglas J. Doohan
Project ID: Study Director: R. EDWARDS
Sponsor Contact: JOE REED

Pest Code
TRFRE, Trifolium repens, = US
POASS, Poa sp., = US
PLAMA, Plantago major, = US
TAROF, Taraxacum officinale, = US
OXAST, Oxalis stricta, = US
ERICA, Conyza canadensis, = US
DIGSS, Digitaria sp., = US
PANDI, Panicum dichotomiflorum, = US
POLPY, Persicaria pensylvanica, = US
CHEAL, Chenopodium album, = US
Crop Code
MABSS, BDIC, Malus sp., = US
Rating Type
CONTRO = control / burndown or knockdown
Rating Unit
% = percent

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Timothy Grass - Weed Control and Tolerance of MAT-28

Trial ID: USA-13-492 Location: WOOSTER Trial Year: 2013
Protocol ID: Investigator: Dr. Douglas J. Doohan
Project ID: Study Director: Rick Edwards
Sponsor Contact:

General Trial Information

Study Director: Rick Edwards **Title:** Research Associate
Investigator: Dr. Douglas J. Doohan **Title:** Professor

Discipline: H herbicide
Trial Status: E established **Trial Reliability:** GOOD
Initiation Date: 9/10/13 **Planned Completion Date:** 10/3/14
Completion Date: 9/19/14

Trial Location

City: Wooster **Country:** USA United States
State/Prov.: Ohio
Postal Code: 44691

Latitude of LL Corner °: 40.799762 N
Longitude of LL Corner °: 81.9054 W
Altitude of LL Corner, Unit: 1020.00 FT

Conducted Under GLP: No
Conducted Under GEP: No

Objectives:

Determine the level of grass crop tolerance and yield with various rates of tribenuron and thifensulfuron in combination with MAT28 in common cool season grass pasture grasses and native rangeland grasses.

Conclusions:

The objective of this experiment was to determine crop (timothy) tolerance to various rates of tribenuron and trifensulfuron combined with MAT28. The pasture in which this trial was conducted was selected because of the predominant grass being timothy. The field was mowed on August 20, 2013. The treatments were applied on September 10th. Prior to the harvest on October 28, 2013, any broad leaved weeds in each plot were removed by hoeing.
There was no significant effect on crop tolerance in any of the herbicide treatments compared to the control plots in this trial.
A second harvest was conducted on August 15, 2014. At that time, the field was at full maturity. The field had not been mowed since the previous cutting in October of 2013. Therefore the yield generally was of a greater weight, in pounds/acre, than the fall 2013 harvest. There is no affect on yield shown by this data for this second harvest.

Contacts

Study Director: Rick Edwards **Title:** Research Associate
Organization: Ohio Agricultural Research and Development Center
Address: 1680 Madison Avenue
City+State/Prov: Wooster, Ohio
Postal Code: 44691 **E-mail:** edwards.1260@osu.edu
Country: USA United States

Investigator: Dr. Douglas J. Doohan **Title:** Professor
Organization: Ohio Agricultural Research and Development Center
Address: 1680 Madison Avenue
City+State/Prov: Wooster, Ohio
Postal Code: 44691
Country: USA United States

Crop Description

Crop 1: PHLPR Phleum pratense Herdsgrass
BBCH Scale: BGRM
Planting Method: NATPOP natural population
Soil Moisture: DRY dry

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Pest Description

Pest 1 Type: W **Code:** SOOVI Solidago virgaurea
Common Name: Common goldenrod

Pest 2 Type: W **Code:** OVRAL
Common Name: Total weeds
Description: OVERALL CONTROL OF WEEDS

Site and Design

Treated Plot Width: 10 FT **Site Type:** PASTUR pasture
Treated Plot Length: 15 FT **Experimental Unit:** 1 PLOT plot
Treated Plot Area: 150 FT2 **Treatments:** 13 **Tillage Type:** NA
Replications: 3 **Study Design:** RACOBL Randomized Complete Block (RCB)
Untreated Arrangement: INCLUDED single control randomized in each block

Application Description

	A
Application Date:	9/10/13
Appl. Start Time:	12:00
Application Method:	SPRAY
Application Timing:	SEPEMB
Application Placement:	BROADC
Applied By:	R. Edwards
Air Temperature, Unit:	86 F
% Relative Humidity:	71
Wind Velocity, Unit:	8 MPH
Wind Direction:	SW
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	73 F
Soil Moisture:	DRY
% Cloud Cover:	10
Next Moisture Occurred On:	9/12/13

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	PHLPR BGRM
Stage Scale Used:	BBCH
Stage Majority, Percent:	14 50
Height, Unit:	10 IN

Pest Stage At Each Application

	A
Pest 1 Code, Type, Scale:	SOOVI W
Stage Majority, Percent:	14 50
Pest 2 Code, Type, Scale:	OVRAL W

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Application Equipment

	A
Appl. Equipment:	Handheld
Equipment Type:	MANCAI
Operation Pressure, Unit:	40 PSI
Nozzle Type:	TTJ60
Nozzle Size:	11002
Nozzle Spacing, Unit:	18 in
Nozzles/Row:	4
Band Width, Unit:	72 IN
% Coverage:	100.0
Boom Length, Unit:	54 IN
Boom Height, Unit:	18 IN
Ground Speed, Unit:	2.5 MPH
Carrier:	WATER
Spray Volume, Unit:	25 gal/ac
Mix Size, Unit:	2 liters
Propellant:	COMCO2
Tank Mix (Y/N):	Y yes

The Ohio State University

Timothy Grass - Weed Control and Tolerance of MAT-28

Trial ID: USA-13-492 Location: WOOSTER Trial Year: 2013
Protocol ID: Investigator: Dr. Douglas J. Doohan
Project ID: Study Director: Rick Edwards
Sponsor Contact:

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1	2	3	4	5	6	7	8	9	10	11	12	13
	Pest Code				PHLPR	POASS	AGRRE	DACSS	PESGL	SOOSS	TRFRE	PHLPR	POASS	AGRRE	DACSS	PESGL	OVRAL
	Crop Code																
	Part Rated				PLOT C	PLOT C	PLOT C	PLOT C	PLOT C	PLOT P	PLOT P	PLOT C	PLOT C	PLOT C	PLOT C	PLOT C	PLOT P
	Rating Date				9/19/13	9/19/13	9/19/13	9/19/13	9/19/13	9/19/13	9/19/13	10/1/13	10/1/13	10/1/13	10/1/13	10/1/13	10/1/13
	Rating Type				PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN	CONTRO	CONTRO	PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN	CONTRO
	Rating Unit				%	%	%	%	%	%	%	%	%	%	%	%	%
	Trt-Eval Interval				9 DA-A	9 DA-A	9 DA-A	9 DA-A	9 DA-A	9 DA-A	9 DA-A	21 DA-A	21 DA-A	21 DA-A	21 DA-A	21 DA-A	21 DA-A
1	DPX-RRW97	24	fl oz/a	A	0	0	0	0	0	70	20	7	7	3	7	0	75
	NIS	0.25	% v/v	A													
2	DPX-MAT28	1	oz ai/a	A	2 a	0 a	0 a	3 a	5 a	80 a	19 a	0 a	0 a	0 a	0 a	0 a	52 a
	DPX-M6316	0.125	oz ai/a	A													
	NIS	0.25	% v/v	A													
3	DPX-MAT28	1.02	oz ai/a	A	3 a	0 a	0 a	2 a	4 a	80 a	30 a	0 a	0 a	0 a	0 a	10 a	53 a
	DPX-M6316	0.23	oz ai/a	A													
	NIS	0.25	% v/v	A													
4	DPX-MAT28	1	oz ai/a	A	0 a	0 a	0 a	3 a	1 a	80 a	57 a	0 a	0 a	0 a	0 a	0 a	53 a
	DPX-L5300	0.125	oz ai/a	A													
	NIS	0.25	% v/v	A													
5	Perspective	2.5	oz/a	A	3 a	3	0 a	3 a	2 a		40 a	0 a	0 a	0 a	0 a	0 a	70 a
	NIS	0.25	% v/v	A													
6	DPX-RDQ98	2.5	oz/a	A	0 a	0 a	0 a	0 a	1 a	90 a	50 a	0 a	7 a	0 a	0 a	7 a	80 a
	NIS	0.25	% v/v	A													
7	DPX-MAT28	1	oz ai/a	A	0 a	0 a	0 a	0 a	0 a			0 a	0 a	0 a	0 a	0 a	75 a
	NIS	0.25	% v/v	A													
8	DPX-RRW97	58	fl oz/a	A	3 a	0 a	3	3 a	2 a	70 a	34 a	0 a	0 a	0 a	0 a	3 a	90 a
	NIS	0.25	% v/v	A													
9	DPX-MAT28	2.444	oz ai/a	A	0 a	0 a	0 a	3 a	4 a	60 a	19 a	7 a	7 a	7 a	10 a	3 a	40 a
	DPX-M6316	0.306	oz ai/a	A													
	NIS	0.25	% v/v	A													
10	DPX-MAT28	2.449	oz ai/a	A	2 a	0 a	0 a	2 a	4 a	70 a	25 a	3 a	0 a	3 a	3 a	0 a	53 a
	DPX-M6316	0.551	oz ai/a	A													
	NIS	0.25	% v/v	A													
11	DPX-MAT28	2.444	oz ai/a	A	0 a	0 a	0 a	3 a	1 a	65 a	33 a	0 a	0 a	7 a	8 a	10 a	70 a
	DPX-L5300	0.306	oz ai/a	A													
	NIS	0.25	% v/v	A													
12	Milestone	7	fl oz/a	A	0 a	0 a	0 a	0 a	0 a	70 a	20 a	0 a	0 a	0 a	0 a	0 a	35 a
	NIS	0.25	% v/v	A													
13	Untreated Check				0 a	0 a	0 a	0 a	0 a	0 b	0 a	0 a	0 a	0 a	0 a	0 a	0 a
	LSD P=.05				4.8	0.0	0.0	6.7	1.0t	19.1	23.8t	3.9	6.2	6.5	8.4	10.2	46.0
	Standard Deviation				2.8	0.0	0.0	3.9	0.6t	9.1	12.9t	2.3	3.7	3.9	5.0	6.0	26.4
	Replicate F				3.784	0.000	0.000	3.008	1.118	0.211	0.540	1.571	1.453	2.424	2.913	5.615	1.027
	Replicate Prob(F)				0.0387	1.0000	1.0000	0.0700	0.3448	0.8167	0.6006	0.2302	0.2555	0.1119	0.0755	0.0107	0.3821
	Treatment F				0.832	0.000	0.000	0.473	0.780	22.500	2.998	2.429	1.509	1.407	1.571	1.315	2.481
	Treatment Prob(F)				0.6119	1.0000	1.0000	0.9002	0.6562	0.0016	0.0568	0.0368	0.1977	0.2380	0.1768	0.2805	0.0519

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)
t=Mean descriptions are reported in transformed data units, and are not de-transformed.
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Untreated treatment(s) 1 excluded from analysis.
Missing data estimates are included in columns:Average=6,7,13
Excluded replicate 2 in column 14

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Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	14	15	16
	Pest Code				GGGGG	GGGGG	GGGGG
	Crop Code				YIELD C	PLOT -	PLOT -
	Part Rated				10/28/13	10/28/13	8/15/14
	Rating Date						
	Rating Type				YIELD	Yield	Yield
	Rating Unit				kg	Lb/acre	Lb/acre
	Trt-Eval Interval				48 DA-A	339 DA-A	339 DA-A
1	DPX-RRW97	24	fl oz/a	A	0	171	398
	NIS	0.25	% v/v	A			
2	DPX-MAT28	1	oz ai/a	A	0 a	198 a	416 a
	DPX-M6316	0.125	oz ai/a	A			
	NIS	0.25	% v/v	A			
3	DPX-MAT28	1.02	oz ai/a	A	0 a	140 a	490 a
	DPX-M6316	0.23	oz ai/a	A			
	NIS	0.25	% v/v	A			
4	DPX-MAT28	1	oz ai/a	A	0 a	216 a	435 a
	DPX-L5300	0.125	oz ai/a	A			
	NIS	0.25	% v/v	A			
5	Perspective	2.5	oz/a	A	0 a	235 a	479 a
	NIS	0.25	% v/v	A			
6	DPX-RDQ98	2.5	oz/a	A	0 a	219 a	241 a
	NIS	0.25	% v/v	A			
7	DPX-MAT28	1	oz ai/a	A	0 a	282 a	487 a
	NIS	0.25	% v/v	A			
8	DPX-RRW97	58	fl oz/a	A	0 a	249 a	356 a
	NIS	0.25	% v/v	A			
9	DPX-MAT28	2.444	oz ai/a	A	0 a	244 a	436 a
	DPX-M6316	0.306	oz ai/a	A			
	NIS	0.25	% v/v	A			
10	DPX-MAT28	2.449	oz ai/a	A	0 a	214 a	445 a
	DPX-M6316	0.551	oz ai/a	A			
	NIS	0.25	% v/v	A			
11	DPX-MAT28	2.444	oz ai/a	A	0 a	245 a	435 a
	DPX-L5300	0.306	oz ai/a	A			
	NIS	0.25	% v/v	A			
12	Milestone	7	fl oz/a	A	0 a	238 a	375 a
	NIS	0.25	% v/v	A			
13	Untreated Check				0 a	350 a	329 a
	LSD P=.05				0.3	0.3t	229.3
	Standard Deviation				0.1	0.2t	135.4
	Replicate F				1.259	6.320	2.310
	Replicate Prob(F)				0.2857	0.0068	0.1228
	Treatment F				1.001	0.712	0.885
	Treatment Prob(F)				0.4993	0.7150	0.5671

The Ohio State University

Timothy Grass - Weed Control and Tolerance of MAT-28

Trial ID: USA-13-492 Location: WOOSTER Trial Year: 2013
Protocol ID: Investigator: Dr. Douglas J. Doohan
Project ID: Study Director: Rick Edwards
Sponsor Contact:

Pest Code
SOOSS, Solidago sp., = US
TRFRE, Trifolium repens, = US
Crop Code
PHLPR, BGRM, Phleum pratense, = US
POASS, BGRM, Poa sp., = US
GGGGG, BGWE, Gramineae, = US
Part Rated
PLOT = plot
YIELD = yield
C = Crop is Part Rated
P = Pest is Part Rated
Rating Type
PHYGEN = phytotoxicity - general / injury
CONTRO = control / burndown or knockdown
YIELD = yield
Rating Unit
% = percent
kg = kilogram

The Ohio State University

IR-4 Efficacy of Saflufenacilin Caneberry

Trial ID: P11079 Location: HU2 OARDC Trial Year: 2014
Protocol ID: P11079 Investigator: Dr. Douglas J. Doohan
Project ID: Study Director: Dr. Douglas J. Doohan
Sponsor Contact: Dr. Marija Arsenovic

General Trial Information

Study Director: Rick Edwards **Title:** Research Associate
Investigator: Dr. Douglas J. Doohan **Title:** Research Associate

Discipline: H herbicide
Trial Status: M multi-year/interim **Trial Reliability:** GOOD
Initiation Date: 4/9/14

Trial Location

City: Wooster **Country:** USA United States
State/Prov.: Ohio OH
Postal Code: 44691

USAOH 42.3271331 - 38.4034194
-80.5184478 - -84.8203125

Conducted Under GLP: No
Conducted Under GEP: No

Keywords: Saflufenicil, IR4

Objectives:
To evaluate efficacy of a primocane burn and the impact on crop tolerance in raspberries, using a 4X rate of Saflufenacil at four different application methods or timings.

Conclusions:
The first application was made at a dormant stage. At 12 DA-A there were few weeds emerged, and raspberry plants were at about the 2 leaf stage. At 63 DA-A there were increasing numbers of weeds and slight (10%) phytotoxicity (general lack of vigor) in those plots which had treatment “A” compared to the untreated.

The second application was made when the primocane growth was about 8-12” and weeds were at around 10-16” depending on species. At 13 DA-B weed control was between 35- 65% for the plots which had treatment timing “A” and 48- 93% for the treatment “B” timing plots, depending on species. Phytotoxicity was significantly higher in the treatment 3 plots (“B” timing – 33%) than of the treatment 2 plots (“A” timing – 3%).

Treatment 3 at timing “C”, made to the bottom 18” of the primocanes, had good weed control, assessed at 8 DA-C. Control of weeds for the plots which received the “C” application timing ranged from 53-73% depending on species. Weed control in the other plots was between 0- 17%. Phytotoxicity in the plots which received the “C” application timing was 14% (necrosis) compared to 8 and 5 % for treatments “A” and “B” respectively.

At 30 DA-C there were no differences in phytotocicity of any of the three timings. The fouth treatment ("D" timing) was applied at this time. There were no differences in phytotoxicity at 8 DA-D.

The focus of this trial was crop safety of a 4X field rate of Saflufenacil applied to raspberry primocanes at various times throughout the growing season. There was no lasting phytotoxicity to the raspberry canes in this trial. Primocanes as well as most weeds were effectively controlled at each application timing. The trial will be repeated the following season (2015).

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Contacts

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Country: USA United States

Investigator: Dr. Douglas J. Doohan **Title:** Research Associate
Organization: OARDC/The Ohio State University
Address: 1680 Madison Ave.
City+State/Prov: Wooster, Ohio
Postal Code: 44691

Crop Description

Crop 1: RUBID Rubus idaeus Red raspberry
Variety: ENCORE **BBCH Scale:** BPER
Planting Date: 5/15/07
Row Spacing, Unit: 10 FT
Spacing Within Row, Unit: 3 FT

Pest Description

Pest 1 Type: W **Code:** CERVU Cerastium fontanum vulgare
Common Name: Mouse-ear chickweed

Pest 2 Type: W **Code:** AGRRE Elymus repens
Common Name: Quackgrass

Pest 3 Type: W **Code:** CIRAR Cirsium arvense
Common Name: Canada thistle

Pest 4 Type: W
Common Name: OVRAL
Description: OVERALL WEEDS

Site and Design

Treated Plot Width: 5 FT **Site Type:** ORCHAR orchard
Treated Plot Length: 20 FT **Experimental Unit:** 1 PLOT plot
Treated Plot Area: 100 FT2 **Treatments:** 5
Replications: 4 **Study Design:** RACOBL Randomized Complete Block (RCB)

Application Description

	A	B	C	D
Application Date:	4/9/14	6/13/14	8/4/14	9/3/14
Appl. Start Time:	11:45	09:00	9:00 AM	2:00
Appl. Stop Time:	12:00 PM	10:00 AM	10:00 AM	3:00 PM
Application Method:	SPRAY	SPRAY	SPRAY	SPRAY
Application Timing:	DORMAN	JUNE	MIPOWE	SEPEMB
Application Placement:	BROADC	BRODIR	BRODIR	BRODIR
Applied By:	R. Edwards	R. Edwards	R. Edwards	R. Edwards
Air Temperature, Unit:	51 F	69 F	66 F	63 F
% Relative Humidity:	57.4	91.3	98	99
Wind Velocity, Unit:	9.56 MPH	4.2 MPH	0 MPH	0 MPH
Wind Direction:	NW	NE		
Dew Presence (Y/N):	N no	N no		
Soil Temperature, Unit:	46.8 F	64.2 F	73 F	77 F
Soil Moisture:	GOOD	SLIDRY	DRY	SLIDRY
% Cloud Cover:	5			
Next Moisture Occurred On:	4/11/14	6/15/14	8/5/14	9/6/14
Time to Next Moisture, Unit:	2 DAY	2 DAY	1 DAY	3 DAY

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Crop Stage At Each Application

	A	B	C	D
Crop 1 Code, BBCH Scale:	RUBID BPER	RUBID BPER	RUBID BPER	RUBID BPER
Stage Scale Used:	BBCH	BBCH	BBCH	BBCH
Stage Majority, Percent:	00 100	34 90	78 70	95 80

Pest Stage At Each Application

	A	B	C	D
Pest 1 Code, Type, Scale:	CERVU W DESC	CERVU W	CERVU W	CERVU W
Stage Majority, Percent:	00 100	55 100	81 100	89 100
Height, Unit:		10 IN		
Pest 2 Code, Type, Scale:	AGRRE W	AGRRE W	AGRRE W	AGRRE W
Stage Majority, Percent:	00	55	81	89
Height, Unit:		10 IN		
Pest 3 Code, Type, Scale:	CIRAR W	CIRAR W	CIRAR W	CIRAR W
Stage Majority, Percent:	00	55	81	89
Height, Unit:		10 IN		
Pest 4 Code, Type, Scale:	W	W	W	W
Stage Majority, Percent:	00	55	81	89
Height, Unit:		10 IN		

Application Equipment

	A	B	C	D
Equipment Type:	BACCAI	BACCAI	BACCAI	BACCAI
Operation Pressure, Unit:	40 PSI	40 PSI	40 PSI	40 PSI
Nozzle Type:	TEEJTU	TEEJTU	TEEJTU	TEEJTU
Nozzle Size:	8002	8002	8002	8002
Nozzle Spacing, Unit:	18 IN	18 IN	18 IN	18 IN
Nozzles/Row:	2	1	1	1
Row Sides Applied:		2	2	2
Carrier:	WATER	WATER	WATER	WATER
Spray Volume, Unit:	25 gal/ac	25 gal/ac	25 gal/ac	25 gal/ac
Mix Size, Unit:	2 liters	2 liters	2 liters	2 liters

Date	By	Notes
8/12/14		Weed control assessments were taken by evaluating the middle of the row, inside the canes, and outside of the row.

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IR-4 Efficacy of Saflufenacilin Caneberry

Trial ID: P11079 Location: HU2 OARDC Trial Year: 2014
Protocol ID: P11079 Investigator: Dr. Douglas J. Doohan
Project ID: Study Director: Dr. Douglas J. Doohan
Sponsor Contact: Dr. Marija Arsenovic

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1	2	3	4	5	6	7	8	9	10	11
	Pest Code				CERVU	AGRRE				CIRAR	TRFRE	AGRRE		CIRAR	ERICA
	Crop Code							RUBID	RUBID				RUBID		
	Rating Date				4/21/14	4/21/14	6/11/14	6/11/14	6/26/14	6/26/14	6/26/14	6/26/14	8/12/14	8/12/14	8/12/14
	Rating Type				CONTRO	CONTRO	DENSTY	PHYGEN	PHYGEN	CONTRO	CONTRO	CONTRO	PHYGEN	CONTRO	CONTRO
	Rating Unit				%	%	%	%	%	%	%	%	%	%	%
	Trt-Eval Interval				12 DA-A	12 DA-A	63 DA-A	63 DA-A	13 DA-B	13 DA-B	13 DA-B	13 DA-B	8 DA-C	8 DA-C	8 DA-C
	Number of Decimals				0	0	0	0	0	0	0	0	0	0	0
1	Handweeded Check				100	100	0	0	0	100	100	100	0	100	100
2	Saflufenacil 4X	0.178	lb ai/a	A			23	10	3 b	26 a	65 a	35 a	8 a	17 b	0
	MSO	1	% v/v	A											
	Ammonium Sulfate	8	lb/100 gal	A											
3	Saflufenacil 4X	0.178	lb ai/a	B					33 a	77 a	93 a	48 a	5 a	0 b	0
	MSO	1	% v/v	B											
	Ammonium Sulfate	8	lb/100 gal	B											
4	Saflufenacil 4X	0.178	lb ai/a	C									14 a	73 a	67
	MSO	1	% v/v	C											
	Ammonium Sulfate	8	lb/100 gal	C											
5	Saflufenacil 4X	0.178	lb ai/a	D											
	MSO	1	% v/v	D											
	Ammonium Sulfate	8	lb/100 gal	D											
	LSD P=.05				.	.	.	.	3.3t	58.4t	45.6t	39.8	13.9	40.3	.
	Standard Deviation				.	.	.	.	1.5t	26.0t	15.0t	17.7	8.0	17.8	.
	Replicate F								1.000	1.205	7.047	14.760	1.839	0.737	
	Replicate Prob(F)								0.5000	0.4409	0.1268	0.0266	0.2407	0.5340	
	Treatment F								13.565	2.789	4.055	1.000	1.258	14.000	
	Treatment Prob(F)								0.0347	0.1935	0.1816	0.3910	0.3497	0.0156	

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)
t=Mean descriptions are reported in transformed data units, and are not de-transformed.
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Untreated treatment(s) 1 excluded from analysis.
Missing data estimates are included in columns:Average=7,14
Excluded replicate 1 in column 1; 1 in 2; 2 in 10

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Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	12	13	14	15
	Pest Code				DIGSS	TRFRE		
	Crop Code						RUBID	RUBID
	Rating Date				8/12/14	8/12/14	9/3/14	9/11/14
	Rating Type				CONTRO	CONTRO	PHYGEN	PHYGEN
	Rating Unit				%	%	%	%
	Trt-Eval Interval				8 DA-C	8 DA-C	30 DA-C	8 DA-D
	Number of Decimals				0	0	0	0
1	Handweeded Check				100	100	0	0
2	Saflufenacil 4X	0.178	lb ai/a	A	0 a	0 a	9 a	11 a
	MSO	1	% v/v	A				
	Ammonium Sulfate	8	lb/100 gal	A				
3	Saflufenacil 4X	0.178	lb ai/a	B	0 a	0 a	12 a	10 a
	MSO	1	% v/v	B				
	Ammonium Sulfate	8	lb/100 gal	B				
4	Saflufenacil 4X	0.178	lb ai/a	C	53	57	9 a	10 a
	MSO	1	% v/v	C				
	Ammonium Sulfate	8	lb/100 gal	C				
5	Saflufenacil 4X	0.178	lb ai/a	D			10 a	13 a
	MSO	1	% v/v	D				
	Ammonium Sulfate	8	lb/100 gal	D				
	LSD P=.05				0.0	0.0	2.4t	15.3
	Standard Deviation				0.0	0.0	1.4t	9.6
	Replicate F				0.000	0.000	0.572	0.788
	Replicate Prob(F)				1.0000	1.0000	0.6540	0.5302
	Treatment F				0.000	0.000	0.116	0.062
	Treatment Prob(F)				1.0000	1.0000	0.9473	0.9784

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Protocol ID:	P11079	Investigator:	Dr. Douglas J. Doohan
Project ID:		Study Director:	Dr. Douglas J. Doohan
		Sponsor Contact:	Dr. Marija Arsenovic

Pest Code
CERVU, Cerastium fontanum vulgare, = US
AGRRE, Elymus repens, = US
, Cirsium arvense, = US
CIRAR, Cirsium arvense, = US
TRFRE, Trifolium repens, = US
ERICA, Conyza canadensis, = US
DIGSS, Digitaria sp., = US
Crop Code
RUBID, BPER, Rubus idaeus, = US
Rating Type
CONTRO = control / burndown or knockdown
DENSTY = density
PHYGEN = phytotoxicity - general / injury
Rating Unit
% = percent