

Purdue Weed Science

Programs for Control of Glyphosate-Resistant Palmer amaranth in Dicamba-Tolerant Soybean

Trial ID: 16S-MED-SOY-10 Location: Medaryville Trial Year: 2016
 Protocol ID: 16S-MED-SOY-10 Investigator: Dr. Bill Johnson
 Project ID: Study Director: Joe Ikley
 Sponsor Contact: Purdue

General Trial Information

Study Director: Joe Ikley **Title:** Research Associate
Investigator: Dr. Bill Johnson **Title:** Professor

Conducted Under GLP: No
Conducted Under GEP: No

Contacts

Study Director: Joe Ikley **Title:** Research Associate
Organization: Purdue University
Address: 915 West State Street **Phone No.:** 765-494-0891
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Investigator: Dr. Bill Johnson **Title:** Professor
Organization: Purdue University
Address: 915 West State Street **Phone No.:** 765-494-4656
City+State/Prov: West Lafayette **Mobile No.:** 765-404-9801
Postal Code: 47907 **E-mail:** wgj@purdue.edu

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: AG 30X6
Description: XTEND
Planting Rate, Unit: 1400000 S/A
Depth, Unit: 1.5 IN
Row Spacing, Unit: 30 IN
Soil Temperature, Unit: 55 F
Soil Moisture: NORMAL normal, adequate
Planting Date: May-19-2016
Planting Method: PLANTD planted
Planting Equipment: PP Plot Planter
Emergence Date: May-27-2016

Pest Description

Pest 1 Type: W **Code:** AMAPA *Amaranthus palmeri*
Common Name: Carelessweed

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:** 12 **Tillage Type:** NOTILL no-till
Replications: 4 **Study Design:** RACOB� Randomized Complete Block (RCB)

Field Prep./Maintenance:

Gramoxone Max Applied at 3.5 pt/A on 5/18/16

Soil Description

Description Name: MEDARYVILLE
% Sand: 84.5 **% OM:** 5.6 **Texture:** LS loamy sand
% Silt: 12.8 **pH:** 6.7
% Clay: 2.7 **CEC:** 13.6 **Fert. Level:** G good
Soil Drainage: G good

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Application Description

	A	B	C	D	E
Application Date:	May-19-2016	Jun-9-2016	Jun-13-2016	Jun-27-2016	Jun-19-2016
Appl. Start Time:	12:00 PM	9:00 AM	1:45 PM	7:15 AM	1:45 PM
Appl. Stop Time:	12:30 PM	9:30 AM	2:15 PM	8:15 AM	2:00 PM
Application Method:	SPRAY	SPRAY	SPRAY	SPRAY	SPRAY
Application Timing:	PRE	E POST	M POST	L POST	M POST
Application Placement:	BROADC	BROADC	BROADC	BROADC	BROADC
Applied By:	PD	MZ	JI	JI	JI
Air Temperature, Unit:	67 F	66 F	84 F	68 F	88 F
% Relative Humidity:	25	50	25	90	35
Wind Velocity, Unit:	2 MPH	5 MPH	1 MPH	1 MPH	5 MPH
Wind Direction:	NE	E	SSE	WSW	SSW
Dew Presence (Y/N):	N no	N no	N no	Y yes	N no
Soil Temperature, Unit:	60 F	64 F	75 F	70 F	80 F
Soil Moisture:	NORMAL	NORMAL	DRY	DRY	DRY
% Cloud Cover:	10	50	0	30	50

Crop Stage At Each Application

	A	B	C	D	E
Crop 1 Code, BBCH Scale:	GLXMA BSOY	GLXMA BSOY	GLXMA BSOY	GLXMA BSOY	GLXMA BSOY
Stage Scale Used:		BBCH	BBCH	BBCH	BBCH
Stage Majority, Percent:		12	14	16	14
Stage Minimum, Percent:		12	13	16	14
Stage Maximum, Percent:		13	14	17	15
Height, Unit:		3.5 IN	5 IN	11 IN	7 IN
Height Minimum, Maximum:		2 5	4 6	8 14	6 8

Pest Stage At Each Application

	A	B	C	D	E
Pest 1 Code, Type, Scale:	AMAPA W	AMAPA W	AMAPA W	AMAPA W	AMAPA W
Stage Majority, Percent:		33G	33G	34G	34G
Stage Minimum, Percent:		31G	31G	32G	32G
Stage Maximum, Percent:		36G	36G	63	36G
Height, Unit:		4 IN	5 IN	3.5 IN	3 IN
Height Minimum, Maximum:		2 6	1 9	2 5	1 5
Density, Unit:		150 YD2	150 YD2	50 YD2	100 YD2

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Application Equipment

	A	B	C	D	E
Appl. Equipment:	CO2 BACKPACK	CO2 BACKPACK	CO2 BACKPACK	CO2 BACKPACK	CO2 BACKPACK
Equipment Type:	BACSPR	BACSPR	BACSPR	BACSPR	BACSPR
Operation Pressure, Unit:	18 PSI	18 PSI	18 PSI	18 PSI	18 PSI
Nozzle Type:	FLAT FAN	TTI	TTI	TTI	TTI
Nozzle Size:	XR 11002	110015	110015	110015	110015
Nozzle Spacing, Unit:	15 IN	15 IN	15 IN	15 IN	15 IN
Nozzles/Row:	8	8	8	8	8
Boom Length, Unit:	10 FT	10 FT	10 FT	10 FT	10 FT
Boom Height, Unit:	17 IN	17 IN	17 IN	17 IN	17 IN
Ground Speed, Unit:	3 MPH	3 MPH	3 MPH	3 MPH	3 MPH
Carrier:	MEIGS	MEIGS	MEIGS	MEIGS	MEIGS
Spray Volume, Unit:	15 gal/ac	15 gal/ac	15 gal/ac	15 gal/ac	15 gal/ac
Mix Size, Unit:	1.8 liters	1.8 liters	1.8 liters	1.8 liters	1.8 liters
Propellant:	CO2	CO2	CO2	CO2	CO2

Trial Comments

Reps: 4 Plots: 10 by 30 feet
 Spray vol: 15 GAL/AC Mix Size: 1.8 liters (1.5642 liters calculated mix size)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Appl Code	Amt Product to Measure	Rep			
								1	2	3	4
1	Untreated Check							101	401	606	703
2	ROUNDUP POWERMAX	4.5 LBAE/GAL	SL		32 fl oz/a	B	30.0 ml/mx	102	306	501	702
	ENGENIA	5 LB/GAL	SL		12.8 fl oz/a	B	12.0 ml/mx				
	ROUNDUP POWERMAX	4.5 LBAE/GAL	SL		32 fl oz/a	E	30.0 ml/mx				
	ENGENIA	5 LB/GAL	SL		12.8 fl oz/a	E	12.0 ml/mx				
3	ZIDUA	85 %		WDG	2 oz/a	A	1.797 g/mx	103	304	602	801
	ROUNDUP POWERMAX	4.5 LBAE/GAL	SL		32 fl oz/a	B	30.0 ml/mx				
	ENGENIA	5 LB/GAL	SL		12.8 fl oz/a	B	12.0 ml/mx				
	DUAL II MAGNUM	7.64 LB/GAL	L		16 fl oz/a	B	15.0 ml/mx				
4	ZIDUA	85 %		WDG	2 oz/a	A	1.797 g/mx	104	406	605	805
	ROUNDUP POWERMAX	4.5 LBAE/GAL	SL		32 fl oz/a	C	30.0 ml/mx				
	ENGENIA	5 LB/GAL	SL		12.8 fl oz/a	C	12.0 ml/mx				
	ROUNDUP POWERMAX	4.5 LBAE/GAL	SL		32 fl oz/a	D	30.0 ml/mx				
	ENGENIA	5 LB/GAL	SL		12.8 fl oz/a	D	12.0 ml/mx				
5	VALOR XLT	40.3 %		WG	3.5 oz/a	A	3.145 g/mx	105	301	504	704
	ROUNDUP POWERMAX	4.5 LBAE/GAL	SL		32 fl oz/a	B	30.0 ml/mx				
	ENGENIA	5 LB/GAL	SL		12.8 fl oz/a	B	12.0 ml/mx				
	ZIDUA	85 %		WDG	2 oz/a	B	1.797 g/mx				
6	VALOR XLT	40.3 %		WG	3.5 oz/a	A	3.145 g/mx	106	402	604	803
	ROUNDUP POWERMAX	4.5 LBAE/GAL	SL		32 fl oz/a	C	30.0 ml/mx				
	ENGENIA	5 LB/GAL	SL		12.8 fl oz/a	C	12.0 ml/mx				
	ROUNDUP POWERMAX	4.5 LBAE/GAL	SL		32 fl oz/a	D	30.0 ml/mx				
	ENGENIA	5 LB/GAL	SL		12.8 fl oz/a	D	12.0 ml/mx				
7	AUTHORITY XL	70 %		DF	4 oz/a	A	3.595 g/mx	201	405	503	804
	ROUNDUP POWERMAX	4.5 LBAE/GAL	SL		32 fl oz/a	B	30.0 ml/mx				
	ENGENIA	5 LB/GAL	SL		12.8 fl oz/a	B	12.0 ml/mx				
	ZIDUA	85 %		WDG	2 oz/a	B	1.797 g/mx				

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 Project ID: Study Director: Joe Ikley
 Sponsor Contact: Purdue

Reps: 4 Plots: 10 by 30 feet
 Spray vol: 15 GAL/AC Mix Size: 1.8 liters (1.5642 liters calculated mix size)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Appl Code	Amt Product to Measure	Rep 1	Rep 2	Rep 3	Rep 4
8	AUTHORITY XL	70 %		DF	4 oz/a	A	3.595 g/mx	202	305	502	701
	ROUNDUP POWERMAX	4.5 LBAE/GAL	SL		32 fl oz/a	C	30.0 ml/mx				
	ENGENIA	5 LB/GAL	SL		12.8 fl oz/a	C	12.0 ml/mx				
	ROUNDUP POWERMAX	4.5 LBAE/GAL	SL		32 fl oz/a	D	30.0 ml/mx				
	ENGENIA	5 LB/GAL	SL		12.8 fl oz/a	D	12.0 ml/mx				
9	TRIVENCE @ 8 OZ/A							203	403	506	706
	CLASSIC	25 %		WG	1.25 oz/a	A	1.123 g/mx				
	SENCOR	75 %		WG	4.75 oz/a	A	4.269 g/mx				
	VALOR SX	51 %		WG	2 oz/a	A	1.797 g/mx				
	ROUNDUP POWERMAX	4.5 LBAE/GAL	SL		32 fl oz/a	C	30.0 ml/mx				
	ENGENIA	5 LB/GAL	SL		12.8 fl oz/a	C	12.0 ml/mx				
	ROUNDUP POWERMAX	4.5 LBAE/GAL	SL		32 fl oz/a	D	30.0 ml/mx				
ENGENIA	5 LB/GAL	SL		12.8 fl oz/a	D	12.0 ml/mx					
10	AUTHORITY MTZ	45 %		WG	16 oz/a	A	14.38 g/mx	204	404	505	806
	ROUNDUP POWERMAX	4.5 LBAE/GAL	SL		32 fl oz/a	C	30.0 ml/mx				
	ENGENIA	5 LB/GAL	SL		12.8 fl oz/a	C	12.0 ml/mx				
	ROUNDUP POWERMAX	4.5 LBAE/GAL	SL		32 fl oz/a	D	30.0 ml/mx				
	ENGENIA	5 LB/GAL	SL		12.8 fl oz/a	D	12.0 ml/mx				
11	FIERCE XLT	62.41 %		WG	4 oz/a	A	3.595 g/mx	205	302	603	705
	ROUNDUP POWERMAX	4.5 LBAE/GAL	SL		32 fl oz/a	C	30.0 ml/mx				
	ENGENIA	5 LB/GAL	SL		12.8 fl oz/a	C	12.0 ml/mx				
	ROUNDUP POWERMAX	4.5 LBAE/GAL	SL		32 fl oz/a	D	30.0 ml/mx				
	ENGENIA	5 LB/GAL	SL		12.8 fl oz/a	D	12.0 ml/mx				
12	Untreated Check							206	303	601	802

Sort Order: Replicate 1

Product quantities required for listed treatments and applications of trials included in this table:

Amount*	Unit	Treatment Name	Form Conc	Form Unit	Form Type	Lot Code
637.499	ml	ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	
255.000	ml	ENGENIA	5	LB/GAL	SL	
8.987	g	ZIDUA	85	%	WDG	
18.750	ml	DUAL II MAGNUM	7.64	LB/GAL	L	
7.864	g	VALOR XLT	40.3	%	WG	
8.987	g	AUTHORITY XL	70	%	DF	
1.404	g	CLASSIC	25	%	WG	
5.336	g	SENCOR	75	%	WG	
2.247	g	VALOR SX	51	%	WG	
17.974	g	AUTHORITY MTZ	45	%	WG	
4.493	g	FIERCE XLT	62.41	%	WG	

* 'Per area' calculations based on spray volume= 15 GAL/AC, mix size= 1.8 liters (mix size basis).

* Product amount calculations increased 25 % for overage adjustment.

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Pest Type			W Weed AMAPA Carelessweed		W Weed AMAPA Carelessweed		W Weed AMAPA Carelessweed	
Pest Code								
Pest Name								
Crop Code	GLXMA			GLXMA		GLXMA		
Crop Name	Soybean			Soybean		Soybean		
Part Rated	PLOT C		PLOT P	PLOT C		PLOT P		
Rating Date	Jun-2-2016		Jun-2-2016	Jun-9-2016		Jun-9-2016	Jun-13-2016	
Rating Type	PHYGEN		CONTRO	PHYGEN		CONTRO	PHYGEN	
Rating Unit	%		%	%		%	%	
Number of Subsamples	1		1	1		1	1	
Days After First/Last Applic.	14 14		14 14	21 21		21 21	25 4	
Trt-Eval Interval	14 DA-A		14 DA-A	0 DA-B		0 DA-B	0 DA-C	
Days After Emergence	6 DE-1		6 DE-1	13 DE-1		13 DE-1	17 DE-1	
ARM Action Codes	P		P	P		P	P	
Number of Decimals	0		0	0		0	0	
Trt Treatment	Rate	Appl						
No. Name	Rate Unit	Code Plot	1	2	3	4	5	6
1 Untreated Check		101	0	0	0	0	0	0
		401	0	0	0	0	0	0
		606	0	0	0	0	0	0
		703	0	0	0	0	0	0
		Mean =	0	0	0	0	0	0
2 ROUNDUP POWERMAX	32 fl oz/a B	102	0	0	0	0	0	70
GENENIA	12.8 fl oz/a B	306	0	0	0	0	0	60
ROUNDUP POWERMAX	32 fl oz/a E	501	0	0	0	0	0	70
GENENIA	12.8 fl oz/a E	702	0	0	0	0	0	70
		Mean =	0	0	0	0	0	68
3 ZIDUA	2 oz/a A	103	0	90	0	80	0	85
ROUNDUP POWERMAX	32 fl oz/a B	304	0	97	0	90	5	100
GENENIA	12.8 fl oz/a B	602	0	90	0	90	5	95
DUAL II MAGNUM	16 fl oz/a B	801	0	90	0	80	5	90
		Mean =	0	92	0	85	4	93
4 ZIDUA	2 oz/a A	104	0	80	0	80	0	70
ROUNDUP POWERMAX	32 fl oz/a C	406	0	97	0	95	0	95
GENENIA	12.8 fl oz/a C	605	0	95	0	90	0	75
ROUNDUP POWERMAX	32 fl oz/a D	805	0	95	0	85	0	60
GENENIA	12.8 fl oz/a D							
		Mean =	0	92	0	88	0	75
5 VALOR XLT	3.5 oz/a A	105	0	50	0	0	5	75
ROUNDUP POWERMAX	32 fl oz/a B	301	0	50	0	50	5	90
GENENIA	12.8 fl oz/a B	504	0	50	0	50	5	70
ZIDUA	2 oz/a B	704	0	40	0	0	5	85
		Mean =	0	48	0	25	5	80
6 VALOR XLT	3.5 oz/a A	106	0	70	0	50	0	30
ROUNDUP POWERMAX	32 fl oz/a C	402	0	80	0	60	0	55
GENENIA	12.8 fl oz/a C	604	0	60	0	50	0	40
ROUNDUP POWERMAX	32 fl oz/a D	803	0	50	0	40	0	25
GENENIA	12.8 fl oz/a D							
		Mean =	0	65	0	50	0	38
7 AUTHORITY XL	4 oz/a A	201	0	80	0	65	0	90
ROUNDUP POWERMAX	32 fl oz/a B	405	0	95	0	80	0	90
GENENIA	12.8 fl oz/a B	503	0	80	0	60	0	90
ZIDUA	2 oz/a B	804	0	70	0	50	0	65
		Mean =	0	81	0	64	0	84
8 AUTHORITY XL	4 oz/a A	202	0	90	0	70	0	70
ROUNDUP POWERMAX	32 fl oz/a C	305	0	80	0	60	0	50
GENENIA	12.8 fl oz/a C	502	0	50	0	60	0	60
ROUNDUP POWERMAX	32 fl oz/a D	701	0	70	0	60	0	30
GENENIA	12.8 fl oz/a D							
		Mean =	0	73	0	63	0	53

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Pest Type		W Weed AMAPA Carelessweed		W Weed AMAPA Carelessweed		W Weed AMAPA Carelessweed		
Pest Code								
Pest Name								
Crop Code	GLXMA			GLXMA		GLXMA		
Crop Name	Soybean			Soybean		Soybean		
Part Rated	PLOT C	PLOT P		PLOT C	PLOT P	PLOT C	PLOT P	
Rating Date	Jun-2-2016	Jun-2-2016		Jun-9-2016	Jun-9-2016	Jun-13-2016	Jun-13-2016	
Rating Type	PHYGEN	CONTRO		PHYGEN	CONTRO	PHYGEN	CONTRO	
Rating Unit	%	%		%	%	%	%	
Number of Subsamples	1	1		1	1	1	1	
Days After First/Last Applic.	14 14	14 14		21 21	21 21	25 4	25 4	
Trt-Eval Interval	14 DA-A	14 DA-A		0 DA-B	0 DA-B	0 DA-C	0 DA-C	
Days After Emergence	6 DE-1	6 DE-1		13 DE-1	13 DE-1	17 DE-1	17 DE-1	
ARM Action Codes	P	P		P	P	P	P	
Number of Decimals	0	0		0	0	0	0	
Trt Treatment	Rate	Appl						
No. Name	Rate Unit	Code Plot	1	2	3	4	5	6
9 TRIVENCE @ 8 OZ/A		203	0	95	0	80	0	75
CLASSIC	1.25 oz/a	A 403	0	95	0	80	0	80
SENCOR	4.75 oz/a	A 506	0	95	0	80	0	70
VALOR SX	2 oz/a	A 706	0	85	0	60	0	30
ROUNDUP POWERMAX	32 fl oz/a	C						
ENGENIA	12.8 fl oz/a	C						
ROUNDUP POWERMAX	32 fl oz/a	D						
ENGENIA	12.8 fl oz/a	D						
	Mean =		0	93	0	75	0	64
10 AUTHORITY MTZ	16 oz/a	A 204	0	97	0	90	0	90
ROUNDUP POWERMAX	32 fl oz/a	C 404	0	100	0	90	0	80
ENGENIA	12.8 fl oz/a	C 505	0	90	0	80	0	65
ROUNDUP POWERMAX	32 fl oz/a	D 806	0	95	0	85	0	70
ENGENIA	12.8 fl oz/a	D						
	Mean =		0	96	0	86	0	76
11 FIERCE XLT	4 oz/a	A 205	0	97	0	97	0	95
ROUNDUP POWERMAX	32 fl oz/a	C 302	0	100	0	90	0	85
ENGENIA	12.8 fl oz/a	C 603	0	85	0	80	0	80
ROUNDUP POWERMAX	32 fl oz/a	D 705	0	80	0	60	0	40
ENGENIA	12.8 fl oz/a	D						
	Mean =		0	91	0	82	0	75
12 Untreated Check		206	0	0	0	0	0	0
		303	0	0	0	0	0	0
		601	0	0	0	0	0	0
		802	0	0	0	0	0	0
	Mean =		0	0	0	0	0	0

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Pest Type		W Weed		W Weed	W Weed	W Weed		
Pest Code		AMAPA		AMAPA	AMAPA	AMAPA		
Pest Name		Carelessweed		Carelessweed	Carelessweed	Carelessweed		
Crop Code	GLXMA		GLXMA					
Crop Name	Soybean		Soybean					
Part Rated	PLOT C	PLOT P	PLOT C	PLOT P	PLOT P	PLOT P		
Rating Date	Jun-19-2016	Jun-19-2016	Jun-27-2016	Jun-27-2016	Jul-12-2016	Jul-25-2016		
Rating Type	PHYGEN	CONTRO	PHYGEN	CONTRO	CONTRO	CONTRO		
Rating Unit	%	%	%	%	%	%		
Number of Subsamples	1	1	1	1	1	1		
Days After First/Last Applic.	31 6	31 6	39 8	39 8	54 15	67 28		
Trt-Eval Interval	0 DA-E	0 DA-E	0 DA-D	0 DA-D	17 DA-D	28 DA-D		
Days After Emergence	23 DE-1	23 DE-1	31 DE-1	31 DE-1	46 DE-1	59 DE-1		
ARM Action Codes	P	P	P	P	P	P		
Number of Decimals	0	0	0	0	0	0		
Trt Treatment	Rate	Appl						
No. Name	Rate Unit	Code Plot	7	8	9	10	11	12
1 Untreated Check		101	0	0	0	0	0	0
		401	0	0	0	0	0	0
		606	0	0	0	0	0	0
		703	0	0	0	0	0	0
		Mean =	0	0	0	0	0	0
2 ROUNDUP POWERMAX	32 fl oz/a B	102	0	70	0	80	90	90
GENGENIA	12.8 fl oz/a B	306	0	85	0	100	100	99
ROUNDUP POWERMAX	32 fl oz/a E	501	0	90	0	95	98	100
GENGENIA	12.8 fl oz/a E	702	0	60	0	90	85	90
		Mean =	0	76	0	91	93	95
3 ZIDUA	2 oz/a A	103	0	80	0	80	65	50
ROUNDUP POWERMAX	32 fl oz/a B	304	0	100	0	95	90	85
GENGENIA	12.8 fl oz/a B	602	0	95	0	100	95	85
DUAL II MAGNUM	16 fl oz/a B	801	0	90	0	80	60	50
		Mean =	0	91	0	89	78	68
4 ZIDUA	2 oz/a A	104	0	90	0	95	98	97
ROUNDUP POWERMAX	32 fl oz/a C	406	0	95	0	100	100	100
GENGENIA	12.8 fl oz/a C	605	0	90	0	90	98	100
ROUNDUP POWERMAX	32 fl oz/a D	805	0	90	0	90	95	98
GENGENIA	12.8 fl oz/a D							
		Mean =	0	91	0	94	98	99
5 VALOR XLT	3.5 oz/a A	105	0	95	0	95	80	85
ROUNDUP POWERMAX	32 fl oz/a B	301	0	95	0	99	95	90
GENGENIA	12.8 fl oz/a B	504	0	85	0	90	85	80
ZIDUA	2 oz/a B	704	0	90	0	80	70	80
		Mean =	0	91	0	91	83	84
6 VALOR XLT	3.5 oz/a A	106	0	80	0	90	100	100
ROUNDUP POWERMAX	32 fl oz/a C	402	0	85	0	100	100	100
GENGENIA	12.8 fl oz/a C	604	0	95	0	90	100	100
ROUNDUP POWERMAX	32 fl oz/a D	803	0	70	0	60	90	95
GENGENIA	12.8 fl oz/a D							
		Mean =	0	83	0	85	98	99
7 AUTHORITY XL	4 oz/a A	201	5	95	0	97	90	95
ROUNDUP POWERMAX	32 fl oz/a B	405	0	95	0	100	90	95
GENGENIA	12.8 fl oz/a B	503	0	90	0	95	90	85
ZIDUA	2 oz/a B	804	0	80	0	80	75	60
		Mean =	1	90	0	93	86	84
8 AUTHORITY XL	4 oz/a A	202	0	95	0	100	100	100
ROUNDUP POWERMAX	32 fl oz/a C	305	0	95	0	100	100	100
GENGENIA	12.8 fl oz/a C	502	5	90	0	100	100	100
ROUNDUP POWERMAX	32 fl oz/a D	701	0	75	0	70	98	100
GENGENIA	12.8 fl oz/a D							
		Mean =	1	89	0	93	100	100

Purdue Weed Science

Programs for Control of Glyphosate-Resistant Palmer amaranth in Dicamba-Tolerant Soybean

Trial ID: 16S-MED-SOY-10 Location: Medaryville Trial Year: 2016
 Protocol ID: 16S-MED-SOY-10 Investigator: Dr. Bill Johnson
 Project ID: Study Director: Joe Ikley
 Sponsor Contact: Purdue

Pest Type		W Weed		W Weed	W Weed	W Weed		
Pest Code		AMAPA		AMAPA	AMAPA	AMAPA		
Pest Name		Carelessweed		Carelessweed	Carelessweed	Carelessweed		
Crop Code	GLXMA		GLXMA					
Crop Name	Soybean		Soybean					
Part Rated	PLOT C	PLOT P	PLOT C	PLOT P	PLOT P	PLOT P		
Rating Date	Jun-19-2016	Jun-19-2016	Jun-27-2016	Jun-27-2016	Jul-12-2016	Jul-25-2016		
Rating Type	PHYGEN	CONTRO	PHYGEN	CONTRO	CONTRO	CONTRO		
Rating Unit	%	%	%	%	%	%		
Number of Subsamples	1	1	1	1	1	1		
Days After First/Last Applic.	31 6	31 6	39 8	39 8	54 15	67 28		
Trt-Eval Interval	0 DA-E	0 DA-E	0 DA-D	0 DA-D	17 DA-D	28 DA-D		
Days After Emergence	23 DE-1	23 DE-1	31 DE-1	31 DE-1	46 DE-1	59 DE-1		
ARM Action Codes	P	P	P	P	P	P		
Number of Decimals	0	0	0	0	0	0		
Trt Treatment	Rate	Appl						
No. Name	Rate Unit	Code Plot	7	8	9	10	11	12
9 TRIVENCE @ 8 OZ/A		203	0	95	0	99	100	99
CLASSIC	1.25 oz/a	A 403	0	95	0	95	100	99
SENCOR	4.75 oz/a	A 506	0	90	0	95	100	100
VALOR SX	2 oz/a	A 706	0	90	0	95	100	100
ROUNDUP POWERMAX	32 fl oz/a	C						
ENGENIA	12.8 fl oz/a	C						
ROUNDUP POWERMAX	32 fl oz/a	D						
ENGENIA	12.8 fl oz/a	D						
	Mean =		0	93	0	96	100	100
10 AUTHORITY MTZ	16 oz/a	A 204	0	99	0	100	100	100
ROUNDUP POWERMAX	32 fl oz/a	C 404	0	97	0	100	100	100
ENGENIA	12.8 fl oz/a	C 505	0	95	0	90	100	100
ROUNDUP POWERMAX	32 fl oz/a	D 806	0	95	0	90	98	98
ENGENIA	12.8 fl oz/a	D						
	Mean =		0	97	0	95	100	100
11 FIERCE XLT	4 oz/a	A 205	0	99	0	100	100	100
ROUNDUP POWERMAX	32 fl oz/a	C 302	0	95	0	100	100	100
ENGENIA	12.8 fl oz/a	C 603	0	95	0	100	100	100
ROUNDUP POWERMAX	32 fl oz/a	D 705	0	95	0	100	100	100
ENGENIA	12.8 fl oz/a	D						
	Mean =		0	96	0	100	100	100
12 Untreated Check		206	0	0	0	0	0	0
		303	0	0	0	0	0	0
		601	0	0	0	0	0	0
		802	0	0	0	0	0	0
	Mean =		0	0	0	0	0	0

Purdue Weed Science

Programs for Control of Glyphosate-Resistant Palmer amaranth in Dicamba-Tolerant Soybean

Trial ID: 16S-MED-SOY-10 Location: Medaryville Trial Year: 2016
 Protocol ID: 16S-MED-SOY-10 Investigator: Dr. Bill Johnson
 Project ID: Study Director: Joe Ikley
 Sponsor Contact: Purdue

Pest Type
 W, Weed, G-BYRW7, G-WedStg = Weed or volunteer crop
Pest Code
 AMAPA, Amaranthus palmeri, = US
Crop Code
 GLXMA, BSOY, Glycine max, = US
Part Rated
 PLOT = plot
 C = Crop is Part Rated
 P = Pest is Part Rated
Rating Type
 PHYGEN = phytotoxicity - general / injury
 CONTRO = control / burndown or knockdown
Rating Unit
 % = percent
ARM Action Codes
 P = Rating scale of 0 to 100 (e.g. % control or injury)

Pest Type	Pest Code	W Weed AMAPA Carelessweed	W Weed AMAPA Carelessweed	W Weed AMAPA Carelessweed	W Weed AMAPA Carelessweed	W Weed AMAPA Carelessweed			
Crop Code	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA			
Crop Name	Soybean	Soybean	Soybean	Soybean	Soybean	Soybean			
Part Rated	PLOT C	PLOT P	PLOT C	PLOT P	PLOT C	PLOT P			
Rating Date	Jun-2-2016	Jun-2-2016	Jun-9-2016	Jun-9-2016	Jun-13-2016	Jun-13-2016			
Rating Type	PHYGEN	CONTRO	PHYGEN	CONTRO	PHYGEN	CONTRO			
Rating Unit	%	%	%	%	%	%			
Number of Subsamples	1	1	1	1	1	1			
Days After First/Last Applic.	14 14	14 14	21 21	21 21	25 4	25 4			
Trt-Eval Interval	14 DA-A	14 DA-A	0 DA-B	0 DA-B	0 DA-C	0 DA-C			
Days After Emergence	6 DE-1	6 DE-1	13 DE-1	13 DE-1	17 DE-1	17 DE-1			
ARM Action Codes	P	P	P	P	P	P			
Number of Decimals	0	0	0	0	0	0			
Trt No.	Treatment Name	Rate	Appl Code	1	2	3	4	5	6
1	Untreated Check			0 -	0 f	0 -	0 e	0 c	0 f
2	ROUNDUP POWERMAX ENGENIA ROUNDUP POWERMAX ENGENIA	32 fl oz/a B 12.8 fl oz/a B 32 fl oz/a E 12.8 fl oz/a E		0 -	0 f	0 -	0 e	0 c	68 bcd
3	ZIDUA ROUNDUP POWERMAX ENGENIA DUAL II MAGNUM	2 oz/a A 32 fl oz/a B 12.8 fl oz/a B 16 fl oz/a B		0 -	92 a	0 -	85 a	4 b	93 a
4	ZIDUA ROUNDUP POWERMAX ENGENIA ROUNDUP POWERMAX ENGENIA	2 oz/a A 32 fl oz/a C 12.8 fl oz/a C 32 fl oz/a D 12.8 fl oz/a D		0 -	92 a	0 -	88 a	0 c	75 bc
5	VALOR XLT ROUNDUP POWERMAX ENGENIA ZIDUA	3.5 oz/a A 32 fl oz/a B 12.8 fl oz/a B 2 oz/a B		0 -	48 e	0 -	25 d	5 a	80 abc
6	VALOR XLT ROUNDUP POWERMAX ENGENIA ROUNDUP POWERMAX ENGENIA	3.5 oz/a A 32 fl oz/a C 12.8 fl oz/a C 32 fl oz/a D 12.8 fl oz/a D		0 -	65 d	0 -	50 c	0 c	38 e
7	AUTHORITY XL ROUNDUP POWERMAX ENGENIA ZIDUA	4 oz/a A 32 fl oz/a B 12.8 fl oz/a B 2 oz/a B		0 -	81 bc	0 -	64 bc	0 c	84 ab

Purdue Weed Science

Programs for Control of Glyphosate-Resistant Palmer amaranth in Dicamba-Tolerant Soybean

Trial ID: 16S-MED-SOY-10 Location: Medaryville Trial Year: 2016
 Protocol ID: 16S-MED-SOY-10 Investigator: Dr. Bill Johnson
 Project ID: Study Director: Joe Ikley
 Sponsor Contact: Purdue

Pest Type		W Weed		W Weed		W Weed		
Pest Code		AMAPA		AMAPA		AMAPA		
Pest Name		Carelessweed		Carelessweed		Carelessweed		
Crop Code	GLXMA		GLXMA		GLXMA			
Crop Name	Soybean		Soybean		Soybean			
Part Rated	PLOT C	PLOT P	PLOT C	PLOT P	PLOT C	PLOT P		
Rating Date	Jun-2-2016	Jun-2-2016	Jun-9-2016	Jun-9-2016	Jun-13-2016	Jun-13-2016		
Rating Type	PHYGEN	CONTRO	PHYGEN	CONTRO	PHYGEN	CONTRO		
Rating Unit	%	%	%	%	%	%		
Number of Subsamples	1	1	1	1	1	1		
Days After First/Last Applic.	14 14	14 14	21 21	21 21	25 4	25 4		
Trt-Eval Interval	14 DA-A	14 DA-A	0 DA-B	0 DA-B	0 DA-C	0 DA-C		
Days After Emergence	6 DE-1	6 DE-1	13 DE-1	13 DE-1	17 DE-1	17 DE-1		
ARM Action Codes	P	P	P	P	P	P		
Number of Decimals	0	0	0	0	0	0		
Trt Treatment	Rate	Appl						
No. Name	Rate Unit	Code	1	2	3	4	5	6
8 AUTHORITY XL	4 oz/a	A	0 -	73 cd	0 -	63 bc	0 c	53 de
ROUNDUP POWERMAX	32 fl oz/a	C						
ENGENIA	12.8 fl oz/a	C						
ROUNDUP POWERMAX	32 fl oz/a	D						
ENGENIA	12.8 fl oz/a	D						
9 TRIVENCE @ 8 OZ/A			0 -	93 a	0 -	75 ab	0 c	64 cd
CLASSIC	1.25 oz/a	A						
SENCOR	4.75 oz/a	A						
VALOR SX	2 oz/a	A						
ROUNDUP POWERMAX	32 fl oz/a	C						
ENGENIA	12.8 fl oz/a	C						
ROUNDUP POWERMAX	32 fl oz/a	D						
ENGENIA	12.8 fl oz/a	D						
10 AUTHORITY MTZ	16 oz/a	A	0 -	96 a	0 -	86 a	0 c	76 abc
ROUNDUP POWERMAX	32 fl oz/a	C						
ENGENIA	12.8 fl oz/a	C						
ROUNDUP POWERMAX	32 fl oz/a	D						
ENGENIA	12.8 fl oz/a	D						
11 FIERCE XLT	4 oz/a	A	0 -	91 ab	0 -	82 a	0 c	75 bc
ROUNDUP POWERMAX	32 fl oz/a	C						
ENGENIA	12.8 fl oz/a	C						
ROUNDUP POWERMAX	32 fl oz/a	D						
ENGENIA	12.8 fl oz/a	D						
12 Untreated Check			0 -	0 f	0 -	0 e	0 c	0 f
LSD P=.05				10.2		14.3	1.0	16.4
Standard Deviation	0.0			7.1	0.0	10.0	0.7	11.4
CV	0.0			11.72	0.0	19.39	98.97	19.49
Bartlett's X2	0.0			12.326	0.0	18.14	0.0	10.827
P(Bartlett's X2)				0.137		0.02*		0.288
Skewness				-0.7378*		-0.5161	2.0723*	-0.813*
Kurtosis				-1.1208		-1.351*	2.3924*	-0.6362
Replicate F	0.000			4.776	0.000	4.489	1.000	5.976
Replicate Prob(F)	1.0000			0.0071	1.0000	0.0095	0.4051	0.0023
Treatment F	0.000			121.146	0.000	51.359	22.818	29.340
Treatment Prob(F)	1.0000			0.0001	1.0000	0.0001	0.0001	0.0001

Purdue Weed Science

Programs for Control of Glyphosate-Resistant Palmer amaranth in Dicamba-Tolerant Soybean

Trial ID: 16S-MED-SOY-10 Location: Medaryville Trial Year: 2016
 Protocol ID: 16S-MED-SOY-10 Investigator: Dr. Bill Johnson
 Project ID: Study Director: Joe Ikley
 Sponsor Contact: Purdue

Pest Type			W Weed			W Weed			W Weed			W Weed
Pest Code			AMAPA			AMAPA			AMAPA			AMAPA
Pest Name			Carelessweed			Carelessweed			Carelessweed			Carelessweed
Crop Code	GLXMA				GLXMA							
Crop Name	Soybean				Soybean							
Part Rated	PLOT C		PLOT P		PLOT C		PLOT P		PLOT P		PLOT P	
Rating Date	Jun-19-2016		Jun-19-2016		Jun-27-2016		Jun-27-2016		Jul-12-2016		Jul-25-2016	
Rating Type	PHYGEN		CONTRO		PHYGEN		CONTRO		CONTRO		CONTRO	
Rating Unit	%		%		%		%		%		%	
Number of Subsamples	1		1		1		1		1		1	
Days After First/Last Applic.	31 6		31 6		39 8		39 8		54 15		67 28	
Trt-Eval Interval	0 DA-E		0 DA-E		0 DA-D		0 DA-D		17 DA-D		28 DA-D	
Days After Emergence	23 DE-1		23 DE-1		31 DE-1		31 DE-1		46 DE-1		59 DE-1	
ARM Action Codes	P		P		P		P		P		P	
Number of Decimals	0		0		0		0		0		0	
Trt Treatment	Rate	Appl										
No. Name	Rate Unit	Code	7	8	9	10	11	12				
1 Untreated Check			0 -	0 d	0 -	0 d	0 e	0 d				
2 ROUNDUP POWERMAX	32 fl oz/a B		0 -	76 c	0 -	91 abc	93 ab	95 a				
ENGENIA	12.8 fl oz/a B											
ROUNDUP POWERMAX	32 fl oz/a E											
ENGENIA	12.8 fl oz/a E											
3 ZIDUA	2 oz/a A		0 -	91 a	0 -	89 bc	78 d	68 c				
ROUNDUP POWERMAX	32 fl oz/a B											
ENGENIA	12.8 fl oz/a B											
DUAL II MAGNUM	16 fl oz/a B											
4 ZIDUA	2 oz/a A		0 -	91 a	0 -	94 abc	98 a	99 a				
ROUNDUP POWERMAX	32 fl oz/a C											
ENGENIA	12.8 fl oz/a C											
ROUNDUP POWERMAX	32 fl oz/a D											
ENGENIA	12.8 fl oz/a D											
5 VALOR XLT	3.5 oz/a A		0 -	91 a	0 -	91 abc	83 cd	84 b				
ROUNDUP POWERMAX	32 fl oz/a B											
ENGENIA	12.8 fl oz/a B											
ZIDUA	2 oz/a B											
6 VALOR XLT	3.5 oz/a A		0 -	83 bc	0 -	85 c	98 a	99 a				
ROUNDUP POWERMAX	32 fl oz/a C											
ENGENIA	12.8 fl oz/a C											
ROUNDUP POWERMAX	32 fl oz/a D											
ENGENIA	12.8 fl oz/a D											
7 AUTHORITY XL	4 oz/a A		1 -	90 ab	0 -	93 abc	86 bc	84 b				
ROUNDUP POWERMAX	32 fl oz/a B											
ENGENIA	12.8 fl oz/a B											
ZIDUA	2 oz/a B											

Purdue Weed Science

Programs for Control of Glyphosate-Resistant Palmer amaranth in Dicamba-Tolerant Soybean

Trial ID: 16S-MED-SOY-10 Location: Medaryville Trial Year: 2016
 Protocol ID: 16S-MED-SOY-10 Investigator: Dr. Bill Johnson
 Project ID: Study Director: Joe Ikley
 Sponsor Contact: Purdue

Pest Type		W Weed		W Weed	W Weed	W Weed		
Pest Code		AMAPA		AMAPA	AMAPA	AMAPA		
Pest Name		Carelessweed		Carelessweed	Carelessweed	Carelessweed		
Crop Code	GLXMA		GLXMA					
Crop Name	Soybean		Soybean					
Part Rated	PLOT C	PLOT P	PLOT C	PLOT P	PLOT P	PLOT P		
Rating Date	Jun-19-2016	Jun-19-2016	Jun-27-2016	Jun-27-2016	Jul-12-2016	Jul-25-2016		
Rating Type	PHYGEN	CONTRO	PHYGEN	CONTRO	CONTRO	CONTRO		
Rating Unit	%	%	%	%	%	%		
Number of Subsamples	1	1	1	1	1	1		
Days After First/Last Applic.	31 6	31 6	39 8	39 8	54 15	67 28		
Trt-Eval Interval	0 DA-E	0 DA-E	0 DA-D	0 DA-D	17 DA-D	28 DA-D		
Days After Emergence	23 DE-1	23 DE-1	31 DE-1	31 DE-1	46 DE-1	59 DE-1		
ARM Action Codes	P	P	P	P	P	P		
Number of Decimals	0	0	0	0	0	0		
Trt Treatment	Rate	Appl						
No. Name	Rate Unit	Code	7	8	9	10	11	12
8 AUTHORITY XL	4 oz/a	A	1 -	89 ab	0 -	93 abc	100 a	100 a
ROUNDUP POWERMAX	32 fl oz/a	C						
ENGENIA	12.8 fl oz/a	C						
ROUNDUP POWERMAX	32 fl oz/a	D						
ENGENIA	12.8 fl oz/a	D						
9 TRIVENCE @ 8 OZ/A			0 -	93 a	0 -	96 ab	100 a	100 a
CLASSIC	1.25 oz/a	A						
SENCOR	4.75 oz/a	A						
VALOR SX	2 oz/a	A						
ROUNDUP POWERMAX	32 fl oz/a	C						
ENGENIA	12.8 fl oz/a	C						
ROUNDUP POWERMAX	32 fl oz/a	D						
ENGENIA	12.8 fl oz/a	D						
10 AUTHORITY MTZ	16 oz/a	A	0 -	97 a	0 -	95 abc	100 a	100 a
ROUNDUP POWERMAX	32 fl oz/a	C						
ENGENIA	12.8 fl oz/a	C						
ROUNDUP POWERMAX	32 fl oz/a	D						
ENGENIA	12.8 fl oz/a	D						
11 FIERCE XLT	4 oz/a	A	0 -	96 a	0 -	100 a	100 a	100 a
ROUNDUP POWERMAX	32 fl oz/a	C						
ENGENIA	12.8 fl oz/a	C						
ROUNDUP POWERMAX	32 fl oz/a	D						
ENGENIA	12.8 fl oz/a	D						
12 Untreated Check			0 -	0 d	0 -	0 d	0 e	0 d
LSD P=.05	1.5	8.6				10.2	8.3	10.6
Standard Deviation	1.0	6.0		0.0		7.1	5.8	7.3
CV	497.27	8.03		0.0		9.23	7.4	9.51
Bartlett's X2	0.0	21.373		0.0		13.509	30.44	46.292
P(Bartlett's X2)	.	0.011*		.		0.095	0.001*	0.001*
Skewness	4.7366*	-1.6523*		.		-1.6464*	-1.6124*	-1.5197*
Kurtosis	21.3233*	1.0333		.		1.0177	0.9205	0.6384
Replicate F	0.647	4.456		0.000		6.960	5.698	2.818
Replicate Prob(F)	0.5904	0.0098		1.0000		0.0009	0.0029	0.0541
Treatment F	0.882	138.822		0.000		103.579	166.345	103.777
Treatment Prob(F)	0.5658	0.0001		1.0000		0.0001	0.0001	0.0001

Purdue Weed Science

Programs for Control of Glyphosate-Resistant Palmer amaranth in Dicamba-Tolerant Soybean

Trial ID: 16S-MED-SOY-10 Location: Medaryville Trial Year: 2016
Protocol ID: 16S-MED-SOY-10 Investigator: Dr. Bill Johnson
Project ID: Study Director: Joe Ikley
 Sponsor Contact: Purdue

Pest Type

W, Weed, G-BYRW7, G-WedStg = Weed or volunteer crop

Pest Code

AMAPA, Amaranthus palmeri, = US

Crop Code

GLXMA, BSOY, Glycine max, = US

Part Rated

PLOT = plot

C = Crop is Part Rated

P = Pest is Part Rated

Rating Type

PHYGEN = phytotoxicity - general / injury

CONTRO = control / burndown or knockdown

Rating Unit

% = percent

ARM Action Codes

P = Rating scale of 0 to 100 (e.g. % control or injury)