Purdue University Weed Science

OVERLAPPING RESIDUALS IN BASF SOYBEAN PROGRAMS

Trial ID: 14S-CCP-CTS-06 Location: 12 MILE Trial Year: 2014
Protocol ID: 14S-CCP-CTS-06 Investigator: Dr. Bill Johnson
Project ID: MKD-H-US-2014-SH1 Study Director: Joe Ikley
Sponsor Contact: BASF - Gery Welker

General Trial Information

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

Discipline: H herbicide
Trial Status: F one-year/final
Initiation Date: 5/6/2014
Completion Date: 7/9/2014

Trial Location

City: Twelve Mile **Country:** USA United States
State/Prov.: Indiana
Postal Code: 46988

Contacts

Study Director: Joe Ikley **Title:** Research Associate
Organization: Purdue University
Address: 915 West State Street **Phone No.:** 765-494-0891
City+State/Prov: West Lafayette **Mobile No.:** 410-596-9091
Postal Code: 47907 **E-mail:** jikley@purdue.edu

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: ASGROW 2933
Description: RR
Planting Date: 5/6/2014
Planting Rate, Unit: 140000 S/A **Planting Method:** PLANTD planted
Depth, Unit: 1.5 IN **Planting Equipment:** PP Plot Planter
Row Spacing, Unit: 30 IN **Emergence Date:** 5/10/2014
Soil Temperature, Unit: 60 F
Soil Moisture: DRY dry

Pest Description

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

Site and Design

Treated Plot Width: 10 FT
Treated Plot Length: 30 FT
Treated Plot Area: 300 FT2 **Treatments:** 20
Replications: 4 **Study Design:** RACOBL Randomized Complete Block (RCB)

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Application Description

	A	B	C
Application Date:	5/7/2014	5/29/2014	6/9/2014
Appl. Start Time:	9:00	10:30	12:15
Appl. Stop Time:	11:00 AM	11:00 AM	12:20 PM
Application Method:	SPRAY	SPRAY	SPRAY
Application Timing:	PRE	E POST	M POST
Application Placement:	BROADC	BROADC	BROADC
Applied By:	Legleiter	Legleiter	Ikley
Air Temperature, Unit:	60 F	73.5 F	72 F
% Relative Humidity:	58	80	64
Wind Velocity, Unit:	5 MPH	5 MPH	3 MPH
Wind Direction:	E	ENE	ESE
Dew Presence (Y/N):	N no	N no	N no
Soil Temperature, Unit:	55 F	80 F	74 F
Soil Moisture:	DRY	WET	WET
% Cloud Cover:	70	0	50

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:		12	13
Stage Minimum, Percent:		11	13
Stage Maximum, Percent:		12	14
Height, Unit:		2 IN	6.5 IN
Height Minimum, Maximum:		1.5 2.5	5 8

Pest Stage At Each Application

	A	B	C
Pest 1 Code, Type, Scale:	AMAPA W	AMAPA W	AMAPA W
Stage Majority, Percent:		11	15
Stage Minimum, Percent:		11	12
Stage Maximum, Percent:		12	19
Height, Unit:		1 IN	2.5 IN
Height Minimum, Maximum:		0.5 1.5	1 4
Density, Unit:		0.5 YD2	0.25 YD2

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Application Equipment

	A	B	C
Appl. Equipment:	CO2 Backpack	CO2 Backpack	CO2 Backpack
Equipment Type:	SPRBAC	SPRBAC	SPRBAC
Operation Pressure, Unit:	18 PSI	18 PSI	18 PSI
Nozzle Type:	Flat Fan	Flat Fan	Flat Fan
Nozzle Size:	XR11002	XR11002	XR11002
Nozzle Spacing, Unit:	15 IN	15 IN	15 IN
Nozzles/Row:	6	6	6
Boom Length, Unit:	7.5 FT	7.5 FT	7.5 FT
Boom Height, Unit:	18 IN	18 IN	18 IN
Ground Speed, Unit:	3 MPH	3 MPH	3 MPH
Carrier:	H2O	H2O	H2O
Water Hardness (ppm CaCO3):	150	150	150
Spray Volume, Unit:	15 GAL/AC	15 GAL/AC	15 GAL/AC
Mix Size, Unit:	1.8 Liters	1.8 Liters	1.8 Liters
Propellant:	CO2	CO2	CO2
Tank Mix (Y/N):	N no	N no	N no

Trial Comments

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Project ID: MKD-H-US-2014-SH1 Study Director: Joe Ikley
Sponsor Contact: BASF - Gery Welker

Reps: 4 Plots: 10 by 30 feet
Spray vol: 15 gal/ac Mix size: 1.8 liters (min 1.5642)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Appl Code	Appl Description	Amt Product to Measure	Rep 1	2	3	4
1	OPTILL PRO @ 12 OZ/A									101	306	705	1001
	OPTILL	68	%	WG	2	oz/a	A	PRE	1.797 g/mx				
	OUTLOOK	6	LB/GAL	EC	10	fl oz/a	A	PRE	9.375 ml/mx				
2	OPTILL PRO @ 12 OZ/A									102	507	601	901
	OPTILL	68	%	WG	2	oz/a	A	PRE	1.797 g/mx				
	OUTLOOK	6	LB/GAL	EC	10	fl oz/a	A	PRE	9.375 ml/mx				
	OUTLOOK	6	LB/GAL	EC	10	fl oz/a	B	3 WEEKS AFTER PRE	9.375 ml/mx				
	PRIME OIL - COC	99.47	%	L	1	% v/v	B	3 WEEKS AFTER PRE	18.0 ml/mx				
3	OPTILL PRO @ 12 OZ/A									103	406	707	1003
	OPTILL	68	%	WG	2	oz/a	A	PRE	1.797 g/mx				
	OUTLOOK	6	LB/GAL	EC	10	fl oz/a	A	PRE	9.375 ml/mx				
	OUTLOOK	6	LB/GAL	EC	10	fl oz/a	C	5 WEEKS AFTER PRE	9.375 ml/mx				
	PRIME OIL - COC	99.47	%	L	1	% v/v	C	5 WEEKS AFTER PRE	18.0 ml/mx				
4	OPTILL	68	%	WG	2	oz/a	A	PRE	1.797 g/mx	104	503	605	807
	ZIDUA	85	%	WG	2	oz/a	A	PRE	1.797 g/mx				
5	OPTILL	68	%	WG	2	oz/a	A	PRE	1.797 g/mx	105	403	708	904
	ZIDUA	85	%	WG	2	oz/a	A	PRE	1.797 g/mx				
	OUTLOOK	6	LB/GAL	EC	10	fl oz/a	B	3 WEEKS AFTER PRE	9.375 ml/mx				
	PRIME OIL - COC	99.47	%	L	1	% v/v	B	3 WEEKS AFTER PRE	18.0 ml/mx				
6	VERDICT	5.57	LB/GAL	EC	5	fl oz/a	A	PRE	4.687 ml/mx	106	404	603	805
	PROWL H2O	3.8	LB/GAL	CS	2.5	pt/a	A	PRE	37.5 ml/mx				
7	VERDICT	5.57	LB/GAL	EC	5	fl oz/a	A	PRE	4.687 ml/mx	107	505	703	1006
	PROWL H2O	3.8	LB/GAL	CS	2.5	pt/a	A	PRE	37.5 ml/mx				
	OUTLOOK	6	LB/GAL	EC	10	fl oz/a	B	3 WEEKS AFTER PRE	9.375 ml/mx				
	PRIME OIL - COC	99.47	%	L	1	% v/v	B	3 WEEKS AFTER PRE	18.0 ml/mx				
8	VERDICT	5.57	LB/GAL	EC	5	fl oz/a	A	PRE	4.687 ml/mx	108	402	803	1008
	ZIDUA	85	%	WG	2.5	oz/a	A	PRE	2.247 g/mx				
9	VERDICT	5.57	LB/GAL	EC	5	fl oz/a	A	PRE	4.687 ml/mx	201	401	704	903
	ZIDUA	85	%	WG	2.5	oz/a	A	PRE	2.247 g/mx				
	OUTLOOK	6	LB/GAL	EC	10	fl oz/a	B	3 WEEKS AFTER PRE	9.375 ml/mx				
	PRIME OIL - COC	99.47	%	L	1	% v/v	B	3 WEEKS AFTER PRE	18.0 ml/mx				
10	SONIC	70	%	WG	4.5	oz/a	A	PRE	4.044 g/mx	202	502	604	1004
11	AUTHORITY MTZ	45	%	WG	16	oz/a	A	PRE	14.38 g/mx	203	307	606	808
12	ZIDUA	85	%	WG	2.5	oz/a	A	PRE	2.247 g/mx	204	405	607	1005
	SHARPEN	2.85	LB/GAL	CS	1	fl oz/a	A	PRE	0.9375 ml/mx				
13	ZIDUA	85	%	WG	2.5	oz/a	A	PRE	2.247 g/mx	205	408	608	1002
	SHARPEN	2.85	LB/GAL	CS	1	fl oz/a	A	PRE	0.9375 ml/mx				
	OUTLOOK	6	LB/GAL	EC	10	fl oz/a	B	3 WEEKS AFTER PRE	9.375 ml/mx				
	PRIME OIL - COC	99.47	%	L	1	% v/v	B	3 WEEKS AFTER PRE	18.0 ml/mx				
14	ZIDUA	85	%	WG	2.5	oz/a	A	PRE	2.247 g/mx	206	504	701	908
	SHARPEN	2.85	LB/GAL	CS	1	fl oz/a	A	PRE	0.9375 ml/mx				
	SENCOR	75	%	WG	5	oz/a	A	PRE	4.493 g/mx				
15	ZIDUA	85	%	WG	2.5	oz/a	A	PRE	2.247 g/mx	207	407	602	902
	SHARPEN	2.85	LB/GAL	CS	1	fl oz/a	A	PRE	0.9375 ml/mx				
	SENCOR	75	%	WG	5	oz/a	A	PRE	4.493 g/mx				
	OUTLOOK	6	LB/GAL	EC	10	fl oz/a	B	3 WEEKS AFTER PRE	9.375 ml/mx				
	PRIME OIL - COC	99.47	%	L	1	% v/v	B	3 WEEKS AFTER PRE	18.0 ml/mx				
16	Untreated Check									208	508	804	905
17	VALOR XLT @ 3.5 OZ/A									301	506	706	1007
	VALOR SX	51	%	WG	2.05	oz/a	A	PRE	1.842 g/mx				
	CLASSIC	25	%	WG	1.45	oz/a	A	PRE	1.303 g/mx				
18	FIERCE	76	%	WG	4	oz/a	A	PRE	3.595 g/mx	302	501	801	806

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Reps: 4 Plots: 10 by 30 feet
Spray vol: 15 gal/ac Mix size: 1.8 liters (min 1.5642)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Appl Code	Appl Description	Amt Product to Measure	Rep 1	2	3	4
19	TRIVENCE @ 8 OZ/A									303	305	802	907
	CLASSIC	25	%AW/W	DF	1.25	oz/a	A	PRE	1.123 g/mx				
	SENCOR 75DF	75	%AW/W	DF	4.75	oz/a	A	PRE	4.269 g/mx				
	VALOR	51	%	WG	2	oz/a	A	PRE	1.797 g/mx				
20	BOUNDARY	6.5	LB/GAL	EC	1	qt/a	A	PRE	30.0 ml/mx	304	308	702	906

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 Type	Lot Code
8.987	g	OPTILL	68	WG	
93.750	ml	OUTLOOK	6	EC	
125.986	ml	PRIME OIL - COC	99.47	L	
17.075	g	ZIDUA	85	WG	
18.750	ml	VERDICT	5.57	EC	
74.992	ml	PROWL H2O	3.8	CS	
4.044	g	SONIC	70	WG	
14.379	g	AUTHORITY MTZ	45	WG	
3.750	ml	SHARPEN	2.85	CS	
8.987	g	SENCOR	75	WG	
1.842	g	VALOR SX	51	WG	
1.303	g	CLASSIC	25	WG	
3.595	g	FIERCE	76	WG	
1.123	g	CLASSIC	25	DF	
4.269	g	SENCOR 75DF	75	DF	
1.797	g	VALOR	51	WG	
30.000	ml	BOUNDARY	6.5	EC	

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

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Pest Type						W Weed	W Weed			W Weed
Pest Code						AMAPA	AMAPA			AMAPA
Pest Scientific Name						Amaranthus pal>	Amaranthus pal>			Amaranthus pal>
Pest Name						Palmer amaranth	Palmer amaranth			Palmer amaranth
Crop Code					GLXMA				GLXMA	
BBCH Scale					BSOY				BSOY	
Crop Scientific Name					Glycine max				Glycine max	
Crop Name					Soybean				Soybean	
Part Rated					PLOT C	PLOT P	PLOT P		PLOT C	PLOT P
Rating Date					6/6/2014	6/6/2014	6/13/2014		6/19/2014	6/19/2014
Rating Type					PHYGEN	CONTRO	CONTRO		PHYGEN	CONTRO
Rating Unit					%	%	%		%	%
Days After First/Last Applic.					30 8	30 30	37 4		43 10	43 10
Trt-Eval Interval					30 DA-A	30 DA-A	15 DA-B		21 DA-B	21 DA-B
ARM Action Codes					P	P	P		P	P
Number of Decimals					0	0	0		0	0
Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	Plot	1	2	3	4	5
1	OPTILL PRO @ 12 OZ/A				101	5	100	100	0	100
	OPTILL	2	oz/a	A	306	5	100	100	1*	100
	OUTLOOK	10	fl oz/a	A	705	0	100	70	0	40
					1001	0	100	100	0	100
					Mean =	3	100	93	0	85
2	OPTILL PRO @ 12 OZ/A				102	.	100	100	0	100
	OPTILL	2	oz/a	A	507	.	100	100	0	100
	OUTLOOK	10	fl oz/a	A	601	.	95	100	0	90
	OUTLOOK	10	fl oz/a	B	901	.	100	100	0	100
	PRIME OIL - COC	1	% v/v	B						
					Mean =	.	99	100	0	98
3	OPTILL PRO @ 12 OZ/A				103	5	100	100	0	100
	OPTILL	2	oz/a	A	406	0	70	85	0	95
	OUTLOOK	10	fl oz/a	A	707	0	100	100	0	95
	OUTLOOK	10	fl oz/a	C	1003	0	100	100	0	100
	PRIME OIL - COC	1	% v/v	C						
					Mean =	1	93	96	0	98
4	OPTILL	2	oz/a	A	104	5	100	100	0	100
	ZIDUA	2	oz/a	A	503	0	100	100	0	100
					605	0	100	100	0	95
					807	0	100	100	0	100
					Mean =	1	100	100	0	99
5	OPTILL	2	oz/a	A	105	.	100	100	0	100
	ZIDUA	2	oz/a	A	403	.	100	100	5	100
	OUTLOOK	10	fl oz/a	B	708	.	100	100	0	100
	PRIME OIL - COC	1	% v/v	B	904	.	100	100	0	100
					Mean =	.	100	100	1	100
6	VERDICT	5	fl oz/a	A	106	0	100	95	0	95
	PROWL H2O	2.5	pt/a	A	404	0	100	100	0	100
					603	0	100	100	0	95
					805	10	80	80	0	60
					Mean =	3	95	94	0	88
7	VERDICT	5	fl oz/a	A	107	.	100	100	0	100
	PROWL H2O	2.5	pt/a	A	505	.	100	100	0	100
	OUTLOOK	10	fl oz/a	B	703	.	100	100	5	85
	PRIME OIL - COC	1	% v/v	B	1006	.	100	100	0	100
					Mean =	.	100	100	1	96
8	VERDICT	5	fl oz/a	A	108	0	100	100	0	100
	ZIDUA	2.5	oz/a	A	402	10	100	100	10	100
					803	10	100	100	5	95
					1008	0	100	100	0	100
					Mean =	5	100	100	4	99

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Pest Type					W Weed	W Weed		W Weed
Pest Code					AMAPA	AMAPA		AMAPA
Pest Scientific Name					Amaranthus pal>	Amaranthus pal>		Amaranthus pal>
Pest Name					Palmer amaranth	Palmer amaranth		Palmer amaranth
Crop Code				GLXMA			GLXMA	
BBCH Scale				BSOY			BSOY	
Crop Scientific Name				Glycine max			Glycine max	
Crop Name				Soybean			Soybean	
Part Rated				PLOT C	PLOT P	PLOT P	PLOT C	PLOT P
Rating Date				6/6/2014	6/6/2014	6/13/2014	6/19/2014	6/19/2014
Rating Type				PHYGEN	CONTRO	CONTRO	PHYGEN	CONTRO
Rating Unit				%	%	%	%	%
Days After First/Last Applic.				30 8	30 30	37 4	43 10	43 10
Trt-Eval Interval				30 DA-A	30 DA-A	15 DA-B	21 DA-B	21 DA-B
ARM Action Codes				P	P	P	P	P
Number of Decimals				0	0	0	0	0
Trt No.	Treatment Name	Rate Rate	Rate Unit	Appl Code	Plot	1	2	3	4	5
9	VERDICT	5	fl oz/a	A	201	.	100	100	5	100
	ZIDUA	2.5	oz/a	A	401	.	100	100	5	100
	OUTLOOK	10	fl oz/a	B	704	.	100	100	5	100
	PRIME OIL - COC	1	% v/v	B	903	.	100	100	0	100
					Mean =	.	100	100	4	100
10	SONIC	4.5	oz/a	A	202	0	100	100	5	100
					502	5	100	100	0	100
					604	0	100	100	0	100
					1004	0	100	100	0	100
					Mean =	1	100	100	1	100
11	AUTHORITY MTZ	16	oz/a	A	203	5	100	100	5	100
					307	5	100	100	10	100
					606	5	100	90	0	95
					808	0	100	100	0	100
					Mean =	4	100	98	4	99
12	ZIDUA	2.5	oz/a	A	204	0	100	100	0	100
	SHARPEN	1	fl oz/a	A	405	0	100	100	0	100
					607	5	100	100	0	100
					1005	0	100	100	0	100
					Mean =	1	100	100	0	100
13	ZIDUA	2.5	oz/a	A	205	.	100	100	0	100
	SHARPEN	1	fl oz/a	A	408	.	100	100	0	100
	OUTLOOK	10	fl oz/a	B	608	.	100	100	5	100
	PRIME OIL - COC	1	% v/v	B	1002	.	100	100	0	100
					Mean =	.	100	100	1	100
14	ZIDUA	2.5	oz/a	A	206	5	100	100	5	100
	SHARPEN	1	fl oz/a	A	504	0	100	100	0	100
	SENCOR	5	oz/a	A	701	10	100	100	10	100
					908	10	100	100	0	100
					Mean =	6	100	100	4	100
15	ZIDUA	2.5	oz/a	A	207	0*	100	100	10	100
	SHARPEN	1	fl oz/a	A	407	0*	100	100	0	100
	SENCOR	5	oz/a	A	602	0	100	100	0	100
	OUTLOOK	10	fl oz/a	B	902	0*	100	100	0	100
	PRIME OIL - COC	1	% v/v	B						
					Mean =	0	100	100	3	100
16	Untreated Check				208	0	0	0	0	0
					508	0	0	0	0	0
					804	0	0	0	0	0
					905	0	0	0	0	0
					Mean =	0	0	0	0	0
17	VALOR XLT @ 3.5 OZ/A				301	5	100	100	5	100
	VALOR SX	2.05	oz/a	A	506	5	100	100	0	100
	CLASSIC	1.45	oz/a	A	706	0	100	100	0	85
					1007	0	100	100	0	100
					Mean =	3	100	100	1	96
18	FIERCE	4	oz/a	A	302	0	100	100	0	100
					501	0	100	100	0	100
					801	5	100	100	0	100
					806	0	100	100	0	100
					Mean =	1	100	100	0	100

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Pest Type					W Weed	W Weed		W Weed
Pest Code					AMAPA	AMAPA		AMAPA
Pest Scientific Name					Amaranthus pal>	Amaranthus pal>		Amaranthus pal>
Pest Name					Palmer amaranth	Palmer amaranth		Palmer amaranth
Crop Code				GLXMA			GLXMA	
BBCH Scale				BSOY			BSOY	
Crop Scientific Name				Glycine max			Glycine max	
Crop Name				Soybean			Soybean	
Part Rated				PLOT C	PLOT P	PLOT P	PLOT C	PLOT P
Rating Date				6/6/2014	6/6/2014	6/13/2014	6/19/2014	6/19/2014
Rating Type				PHYGEN	CONTRO	CONTRO	PHYGEN	CONTRO
Rating Unit				%	%	%	%	%
Days After First/Last Applic.				30 8	30 30	37 4	43 10	43 10
Trt-Eval Interval				30 DA-A	30 DA-A	15 DA-B	21 DA-B	21 DA-B
ARM Action Codes				P	P	P	P	P
Number of Decimals				0	0	0	0	0
Trt Treatment No. Name	Rate Rate Unit	Appl Code	Plot	1	2	3	4	5
19 TRIVENCE @ 8 OZ/A			303	0	100	100	0	100
CLASSIC	1.25 oz/a	A	305	0	100	100	5	100
SENCOR 75DF	4.75 oz/a	A	802	5	100	100	0	100
VALOR	2 oz/a	A	907	10	100	100	5	100
			Mean =	4	100	100	3	100
20 BOUNDARY	1 qt/a	A	304	0	100	100	0	95
			308	0	100	100	0	100
			702	0	100	100	5	95
			906	0	100	100	0	100
			Mean =	0	100	100	1	98

Purdue University Weed Science

Pest Type					W Weed	W Weed
Pest Code					AMAPA	AMAPA
Pest Scientific Name					Amaranthus pal>	Amaranthus pal>
Pest Name					Palmer amaranth	Palmer amaranth
Crop Code						
BBCH Scale						
Crop Scientific Name						
Crop Name						
Part Rated					PLOT P	PLOT P
Rating Date					6/23/2014	7/9/2014
Rating Type					CONTRO	CONTRO
Rating Unit					%	%
Days After First/Last Applic.					47 14	63 30
Trt-Eval Interval					14 DA-C	30 DA-C
ARM Action Codes					P	P
Number of Decimals					0	0
Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	Plot	6	7
1	OPTILL PRO @ 12 OZ/A				101	100	95
	OPTILL	2	oz/a	A	306	99	90
	OUTLOOK	10	fl oz/a	A	705	20	0
					1001	85	90
					Mean =	76	69
2	OPTILL PRO @ 12 OZ/A				102	100	100
	OPTILL	2	oz/a	A	507	95	95
	OUTLOOK	10	fl oz/a	A	601	80	85
	OUTLOOK	10	fl oz/a	B	901	95	100
	PRIME OIL - COC	1	% v/v	B			
					Mean =	93	95
3	OPTILL PRO @ 12 OZ/A				103	95	95
	OPTILL	2	oz/a	A	406	85	90
	OUTLOOK	10	fl oz/a	A	707	90	80
	OUTLOOK	10	fl oz/a	C	1003	100	100
	PRIME OIL - COC	1	% v/v	C			
					Mean =	93	91
4	OPTILL	2	oz/a	A	104	100	95
	ZIDUA	2	oz/a	A	503	100	100
					605	95	95
					807	100	95
					Mean =	99	96
5	OPTILL	2	oz/a	A	105	100	100
	ZIDUA	2	oz/a	A	403	100	95
	OUTLOOK	10	fl oz/a	B	708	99	90
	PRIME OIL - COC	1	% v/v	B	904	100	100
					Mean =	100	96
6	VERDICT	5	fl oz/a	A	106	80	85
	PROWL H2O	2.5	pt/a	A	404	90	90
					603	80	80
					805	60	30
					Mean =	78	71
7	VERDICT	5	fl oz/a	A	107	95	90
	PROWL H2O	2.5	pt/a	A	505	100	100
	OUTLOOK	10	fl oz/a	B	703	80	90
	PRIME OIL - COC	1	% v/v	B	1006	100	100
					Mean =	94	95
8	VERDICT	5	fl oz/a	A	108	100	85
	ZIDUA	2.5	oz/a	A	402	100	85
					803	95	95
					1008	99	100
					Mean =	99	91

Purdue University Weed Science

Pest Type				W Weed	W Weed
Pest Code				AMAPA	AMAPA
Pest Scientific Name				Amaranthus pal>	Amaranthus pal>
Pest Name				Palmer amaranth	Palmer amaranth
Crop Code					
BBCH Scale					
Crop Scientific Name					
Crop Name					
Part Rated				PLOT P	PLOT P
Rating Date				6/23/2014	7/9/2014
Rating Type				CONTRO	CONTRO
Rating Unit				%	%
Days After First/Last Applic.				47 14	63 30
Trt-Eval Interval				14 DA-C	30 DA-C
ARM Action Codes				P	P
Number of Decimals				0	0
Trt No.	Treatment Name	Rate Rate	Rate Unit	Appl Code	Plot	6	7
9	VERDICT	5	fl oz/a	A	201	100	95
	ZIDUA	2.5	oz/a	A	401	100	95
	OUTLOOK	10	fl oz/a	B	704	100	95
	PRIME OIL - COC	1	% v/v	B	903	100	100
					Mean =	100	96
10	SONIC	4.5	oz/a	A	202	70	70
					502	100	100
					604	100	99
					1004	100	100
					Mean =	93	92
11	AUTHORITY MTZ	16	oz/a	A	203	85	60
					307	100	95
					606	90	93
					808	70	50
					Mean =	86	75
12	ZIDUA	2.5	oz/a	A	204	95	85
	SHARPEN	1	fl oz/a	A	405	90	90
					607	100	95
					1005	100	100
					Mean =	96	93
13	ZIDUA	2.5	oz/a	A	205	100	90
	SHARPEN	1	fl oz/a	A	408	100	95
	OUTLOOK	10	fl oz/a	B	608	100	95
	PRIME OIL - COC	1	% v/v	B	1002	100	100
					Mean =	100	95
14	ZIDUA	2.5	oz/a	A	206	100	95
	SHARPEN	1	fl oz/a	A	504	100	100
	SENCOR	5	oz/a	A	701	100	95
					908	100	100
					Mean =	100	98
15	ZIDUA	2.5	oz/a	A	207	100	95
	SHARPEN	1	fl oz/a	A	407	100	100
	SENCOR	5	oz/a	A	602	95	95
	OUTLOOK	10	fl oz/a	B	902	100	100
	PRIME OIL - COC	1	% v/v	B			
					Mean =	99	98
16	Untreated Check				208	0	0
					508	0	0
					804	0	0
					905	0	0
					Mean =	0	0
17	VALOR XLT @ 3.5 OZ/A				301	100	100
	VALOR SX	2.05	oz/a	A	506	100	100
	CLASSIC	1.45	oz/a	A	706	85	80
					1007	100	95
					Mean =	96	94
18	FIERCE	4	oz/a	A	302	100	100
					501	100	100
					801	100	90
					806	100	100
					Mean =	100	98

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Pest Type					W Weed	W Weed
Pest Code					AMAPA	AMAPA
Pest Scientific Name					Amaranthus pal>	Amaranthus pal>
Pest Name					Palmer amaranth	Palmer amaranth
Crop Code						
BBCH Scale						
Crop Scientific Name						
Crop Name						
Part Rated					PLOT P	PLOT P
Rating Date					6/23/2014	7/9/2014
Rating Type					CONTRO	CONTRO
Rating Unit					%	%
Days After First/Last Applic.					47 14	63 30
Trt-Eval Interval					14 DA-C	30 DA-C
ARM Action Codes					P	P
Number of Decimals					0	0
Trt No.	Treatment Name	Rate Rate	Rate Unit	Appl Code	Plot	6	7
19	TRIVENCE @ 8 OZ/A				303	100	100
	CLASSIC	1.25	oz/a	A	305	100	100
	SENCOR 75DF	4.75	oz/a	A	802	100	95
	VALOR	2	oz/a	A	907	100	100
					Mean =	100	99
20	BOUNDARY	1	qt/a	A	304	85	85
					308	99	95
					702	90	75
					906	100	95
					Mean =	94	88

Purdue University Weed Science

OVERLAPPING RESIDUALS IN BASF SOYBEAN PROGRAMS

Trial ID: 14S-CCP-CTS-06 Location: 12 MILE Trial Year: 2014
Protocol ID: 14S-CCP-CTS-06 Investigator: Dr. Bill Johnson
Project ID: MKD-H-US-2014-SH1 Study Director: Joe Ikley
Sponsor Contact: BASF - Gery Welker

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)

Purdue University Weed Science

OVERLAPPING RESIDUALS IN BASF SOYBEAN PROGRAMS

Trial ID: 14S-CCP-CTS-06 Location: 12 MILE Trial Year: 2014
Protocol ID: 14S-CCP-CTS-06 Investigator: Dr. Bill Johnson
Project ID: MKD-H-US-2014-SH1 Study Director: Joe Ikley
Sponsor Contact: BASF - Gery Welker

Pest Type						W Weed		W Weed		W Weed
Pest Code						AMAPA		AMAPA		AMAPA
Pest Scientific Name						Amaranthus pal>		Amaranthus pal>		Amaranthus pal>
Pest Name						Palmer amaranth		Palmer amaranth		Palmer amaranth
Crop Code					GLXMA				GLXMA	
BBCH Scale					BSOY				BSOY	
Crop Scientific Name					Glycine max				Glycine max	
Crop Name					Soybean				Soybean	
Part Rated					PLOT C		PLOT P		PLOT C		PLOT P
Rating Date					6/6/2014		6/6/2014		6/13/2014		6/19/2014		6/19/2014
Rating Type					PHYGEN		CONTRO		CONTRO		PHYGEN		CONTRO
Rating Unit					%		%		%		%		%
Days After First/Last Applic.					30 8		30 30		37 4		43 10		43 10
Trt-Eval Interval					30 DA-A		30 DA-A		15 DA-B		21 DA-B		21 DA-B
ARM Action Codes					P		P		P		P		P
Number of Decimals					0		0		0		0		0
Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1		2		3		4		5
1	OPTILL PRO @ 12 OZ/A				3 a		100 a		93 a		0 a		85 a
	OPTILL	2	oz/a	A									
	OUTLOOK	10	fl oz/a	A									
2	OPTILL PRO @ 12 OZ/A						99 a		100 a		0 a		98 a
	OPTILL	2	oz/a	A									
	OUTLOOK	10	fl oz/a	A									
	OUTLOOK	10	fl oz/a	B									
	PRIME OIL - COC	1	% v/v	B									
3	OPTILL PRO @ 12 OZ/A				1 a		93 a		96 a		0 a		98 a
	OPTILL	2	oz/a	A									
	OUTLOOK	10	fl oz/a	A									
	OUTLOOK	10	fl oz/a	C									
	PRIME OIL - COC	1	% v/v	C									
4	OPTILL	2	oz/a	A	1 a		100 a		100 a		0 a		99 a
	ZIDUA	2	oz/a	A									
5	OPTILL	2	oz/a	A			100 a		100 a		1 a		100 a
	ZIDUA	2	oz/a	A									
	OUTLOOK	10	fl oz/a	B									
	PRIME OIL - COC	1	% v/v	B									
6	VERDICT	5	fl oz/a	A	3 a		95 a		94 a		0 a		88 a
	PROWL H2O	2.5	pt/a	A									
7	VERDICT	5	fl oz/a	A			100 a		100 a		1 a		96 a
	PROWL H2O	2.5	pt/a	A									
	OUTLOOK	10	fl oz/a	B									
	PRIME OIL - COC	1	% v/v	B									
8	VERDICT	5	fl oz/a	A	5 a		100 a		100 a		4 a		99 a
	ZIDUA	2.5	oz/a	A									
9	VERDICT	5	fl oz/a	A			100 a		100 a		4 a		100 a
	ZIDUA	2.5	oz/a	A									
	OUTLOOK	10	fl oz/a	B									
	PRIME OIL - COC	1	% v/v	B									
10	SONIC	4.5	oz/a	A	1 a		100 a		100 a		1 a		100 a
11	AUTHORITY MTZ	16	oz/a	A	4 a		100 a		98 a		4 a		99 a
12	ZIDUA	2.5	oz/a	A	1 a		100 a		100 a		0 a		100 a
	SHARPEN	1	fl oz/a	A									

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns:Yates=4; Average=1

Purdue University Weed Science

Pest Type					W Weed	W Weed		W Weed
Pest Code					AMAPA	AMAPA		AMAPA
Pest Scientific Name					Amaranthus pal>	Amaranthus pal>		Amaranthus pal>
Pest Name					Palmer amaranth	Palmer amaranth		Palmer amaranth
Crop Code				GLXMA			GLXMA	
BBCH Scale				BSOY			BSOY	
Crop Scientific Name				Glycine max			Glycine max	
Crop Name				Soybean			Soybean	
Part Rated				PLOT C	PLOT P	PLOT P	PLOT C	PLOT P
Rating Date				6/6/2014	6/6/2014	6/13/2014	6/19/2014	6/19/2014
Rating Type				PHYGEN	CONTRO	CONTRO	PHYGEN	CONTRO
Rating Unit				%	%	%	%	%
Days After First/Last Applic.				30 8	30 30	37 4	43 10	43 10
Trt-Eval Interval				30 DA-A	30 DA-A	15 DA-B	21 DA-B	21 DA-B
ARM Action Codes				P	P	P	P	P
Number of Decimals				0	0	0	0	0
Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1	2	3	4	5
13	ZIDUA	2.5	oz/a	A		100 a	100 a	1 a	100 a
	SHARPEN	1	fl oz/a	A					
	OUTLOOK	10	fl oz/a	B					
	PRIME OIL - COC	1	% v/v	B					
14	ZIDUA	2.5	oz/a	A	6 a	100 a	100 a	4 a	100 a
	SHARPEN	1	fl oz/a	A					
	SENCOR	5	oz/a	A					
15	ZIDUA	2.5	oz/a	A	0 a	100 a	100 a	3 a	100 a
	SHARPEN	1	fl oz/a	A					
	SENCOR	5	oz/a	A					
	OUTLOOK	10	fl oz/a	B					
	PRIME OIL - COC	1	% v/v	B					
16	Untreated Check				0 a	0 b	0 b	0 a	0 b
17	VALOR XLT @ 3.5 OZ/A				3 a	100 a	100 a	1 a	96 a
	VALOR SX	2.05	oz/a	A					
	CLASSIC	1.45	oz/a	A					
18	FIERCE	4	oz/a	A	1 a	100 a	100 a	0 a	100 a
19	TRIVENCE @ 8 OZ/A				4 a	100 a	100 a	3 a	100 a
	CLASSIC	1.25	oz/a	A					
	SENCOR 75DF	4.75	oz/a	A					
	VALOR	2	oz/a	A					
20	BOUNDARY	1	qt/a	A	0 a	100 a	100 a	1 a	98 a
LSD (P=.05)					5.0	5.8	6.4	3.8	11.5
Standard Deviation					3.5	4.1	4.5	2.7	8.1
CV					160.22	4.36	4.79	194.3	8.74
Bartlett's X2					7.688	6.678	3.582	6.775	45.12
P(Bartlett's X2)					0.741	0.035*	0.31	0.817	0.001*
Skewness					1.2081*	-4.0168*	-3.9698*	1.8914*	-3.579*
Kurtosis					0.1997	14.8854*	14.6183*	2.6887*	11.7981*

Purdue University Weed Science

Pest Type				W Weed	W Weed
Pest Code				AMAPA	AMAPA
Pest Scientific Name				Amaranthus pal>	Amaranthus pal>
Pest Name				Palmer amaranth	Palmer amaranth
Crop Code					
BBCH Scale					
Crop Scientific Name					
Crop Name					
Part Rated				PLOT P	PLOT P
Rating Date				6/23/2014	7/9/2014
Rating Type				CONTRO	CONTRO
Rating Unit				%	%
Days After First/Last Applic.				47 14	63 30
Trt-Eval Interval				14 DA-C	30 DA-C
ARM Action Codes				P	P
Number of Decimals				0	0
Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	6	7
1	OPTILL PRO @ 12 OZ/A				76 a	69 a
	OPTILL	2	oz/a	A		
	OUTLOOK	10	fl oz/a	A		
2	OPTILL PRO @ 12 OZ/A				93 a	95 a
	OPTILL	2	oz/a	A		
	OUTLOOK	10	fl oz/a	A		
	OUTLOOK	10	fl oz/a	B		
	PRIME OIL - COC	1	% v/v	B		
3	OPTILL PRO @ 12 OZ/A				93 a	91 a
	OPTILL	2	oz/a	A		
	OUTLOOK	10	fl oz/a	A		
	OUTLOOK	10	fl oz/a	C		
	PRIME OIL - COC	1	% v/v	C		
4	OPTILL	2	oz/a	A	99 a	96 a
	ZIDUA	2	oz/a	A		
5	OPTILL	2	oz/a	A	100 a	96 a
	ZIDUA	2	oz/a	A		
	OUTLOOK	10	fl oz/a	B		
	PRIME OIL - COC	1	% v/v	B		
6	VERDICT	5	fl oz/a	A	78 a	71 a
	PROWL H2O	2.5	pt/a	A		
7	VERDICT	5	fl oz/a	A	94 a	95 a
	PROWL H2O	2.5	pt/a	A		
	OUTLOOK	10	fl oz/a	B		
	PRIME OIL - COC	1	% v/v	B		
8	VERDICT	5	fl oz/a	A	99 a	91 a
	ZIDUA	2.5	oz/a	A		
9	VERDICT	5	fl oz/a	A	100 a	96 a
	ZIDUA	2.5	oz/a	A		
	OUTLOOK	10	fl oz/a	B		
	PRIME OIL - COC	1	% v/v	B		
10	SONIC	4.5	oz/a	A	93 a	92 a
11	AUTHORITY MTZ	16	oz/a	A	86 a	75 a
12	ZIDUA	2.5	oz/a	A	96 a	93 a
	SHARPEN	1	fl oz/a	A		

Purdue University Weed Science

Pest Type				W Weed	W Weed
Pest Code				AMAPA	AMAPA
Pest Scientific Name				Amaranthus pal>	Amaranthus pal>
Pest Name				Palmer amaranth	Palmer amaranth
Crop Code					
BBCH Scale					
Crop Scientific Name					
Crop Name					
Part Rated				PLOT P	PLOT P
Rating Date				6/23/2014	7/9/2014
Rating Type				CONTRO	CONTRO
Rating Unit				%	%
Days After First/Last Applic.				47 14	63 30
Trt-Eval Interval				14 DA-C	30 DA-C
ARM Action Codes				P	P
Number of Decimals				0	0
Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	6	7
13	ZIDUA	2.5	oz/a	A	100 a	95 a
	SHARPEN	1	fl oz/a	A		
	OUTLOOK	10	fl oz/a	B		
	PRIME OIL - COC	1	% v/v	B		
14	ZIDUA	2.5	oz/a	A	100 a	98 a
	SHARPEN	1	fl oz/a	A		
	SENCOR	5	oz/a	A		
15	ZIDUA	2.5	oz/a	A	99 a	98 a
	SHARPEN	1	fl oz/a	A		
	SENCOR	5	oz/a	A		
	OUTLOOK	10	fl oz/a	B		
	PRIME OIL - COC	1	% v/v	B		
16	Untreated Check				0 b	0 b
17	VALOR XLT @ 3.5 OZ/A				96 a	94 a
	VALOR SX	2.05	oz/a	A		
	CLASSIC	1.45	oz/a	A		
18	FIERCE	4	oz/a	A	100 a	98 a
19	TRIVENCE @ 8 OZ/A				100 a	99 a
	CLASSIC	1.25	oz/a	A		
	SENCOR 75DF	4.75	oz/a	A		
	VALOR	2	oz/a	A		
20	BOUNDARY	1	qt/a	A	94 a	88 a
LSD (P=.05)					14.9	20.1
Standard Deviation					10.5	14.2
CV					11.76	16.44
Bartlett's X2					58.927	78.826
P(Bartlett's X2)					0.001*	0.001*
Skewness					-3.101*	-2.7761*
Kurtosis					9.0064*	6.881*

Purdue University Weed Science

OVERLAPPING RESIDUALS IN BASF SOYBEAN PROGRAMS

Trial ID: 14S-CCP-CTS-06 Location: 12 MILE Trial Year: 2014
Protocol ID: 14S-CCP-CTS-06 Investigator: Dr. Bill Johnson
Project ID: MKD-H-US-2014-SH1 Study Director: Joe Ikley
Sponsor Contact: BASF - Gery Welker

Randomized Complete Block (RCB) AOV For GLXMA BSOY Glycine max Soybean PLOT C 6/6/2014 PHYGEN % 30 8 30 DA-A P 0 (Data Column 1)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	56	668.333333			
Replicate	3	5.000000	1.666667	0.138	0.9365
Treatment	14	193.333333	13.809524	1.146	0.3524
Error	39	470.000000	12.051282		

Randomized Complete Block (RCB) AOV For W Weed AMAPA Amaranthus palmeri Palmer amaranth PLOT P 6/6/2014 CONTRO % 30 30 30 DA-A P 0 (Data Column 2)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	79	38737.187500			
Replicate	3	28.437500	9.479167	0.560	0.6438
Treatment	19	37743.437500	1986.496711	117.299	0.0001
Error	57	965.312500	16.935307		

Randomized Complete Block (RCB) AOV For W Weed AMAPA Amaranthus palmeri Palmer amaranth PLOT P 6/13/2014 CONTRO % 37 4 15 DA-B P 0 (Data Column 3)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	79	38770.000000			
Replicate	3	32.500000	10.833333	0.535	0.6604
Treatment	19	37582.500000	1978.026316	97.617	0.0001
Error	57	1155.000000	20.263158		

Randomized Complete Block (RCB) AOV For GLXMA BSOY Glycine max Soybean PLOT C 6/19/2014 PHYGEN % 43 10 21 DA-B P 0 (Data Column 4)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	78	597.576177			
Replicate	3	34.155125	11.385042	1.580	0.2044
Treatment	19	159.868421	8.414127	1.168	0.3168
Error	56	403.552632	7.206297		

Randomized Complete Block (RCB) AOV For W Weed AMAPA Amaranthus palmeri Palmer amaranth PLOT P 6/19/2014 CONTRO % 43 10 21 DA-B P 0 (Data Column 5)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	79	41697.187500			
Replicate	3	503.437500	167.812500	2.557	0.0641
Treatment	19	37453.437500	1971.233553	30.040	0.0001
Error	57	3740.312500	65.619518		

Randomized Complete Block (RCB) AOV For W Weed AMAPA Amaranthus palmeri Palmer amaranth PLOT P 6/23/2014 CONTRO % 47 14 14 DA-C P 0 (Data Column 6)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	79	44638.487500			
Replicate	3	673.037500	224.345833	2.018	0.1216
Treatment	19	37629.237500	1980.486184	17.816	0.0001
Error	57	6336.212500	111.161623		

Randomized Complete Block (RCB) AOV For W Weed AMAPA Amaranthus palmeri Palmer amaranth PLOT P 7/9/2014 CONTRO % 63 30 30 DA-C P 0 (Data Column 7)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	79	49903.200000			
Replicate	3	979.900000	326.633333	1.619	0.1949
Treatment	19	37425.700000	1969.773684	9.765	0.0001
Error	57	11497.600000	201.712281		

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

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