

# Purdue University Weed Science

## AUXIN + COBRA TANK-MIX COMBINATIONS ON GLYPHOSATE-RESISTANT PALMER AMARANTH

Trial ID: 14S-CCP-CTS-07      Location: 12 MILE      Trial Year: 2014  
 Protocol ID: 14S-CCP-CTS-07      Investigator: Dr. Bill Johnson  
 Project ID: 64.06/64.09      Study Director: Joe Ikley  
    Sponsor Contact: Valent - Eric Ott

### 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 Rate, Unit:** 140000 S/A      **Planting Date:** 5/6/2014  
**Depth, Unit:** 1.5 IN      **Planting Method:** PLANTD planted  
**Row Spacing, Unit:** 30 IN      **Planting Equipment:** PP Plot Planter  
**Soil Temperature, Unit:** 60 F      **Emergence Date:** 5/10/2014  
**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 FT<sup>2</sup>      **Treatments:** 10  
**Replications:** 4      **Study Design:** RACOB L Randomized Complete Block (RCB)

## Purdue University Weed Science

Application Description			
	A	B	C
<b>Application Date:</b>	5/7/2014	6/14/2014	6/19/2014
<b>Appl. Start Time:</b>	9:00	09:30	09:15
<b>Appl. Stop Time:</b>	11:00 AM	11:00 AM	9:45 AM
<b>Application Method:</b>	SPRAY	SPRAY	SPRAY
<b>Application Timing:</b>	PRE	2-4" WEEDS	2-4" WEEDS
<b>Application Placement:</b>	BROADC	BROADC	BROADC
<b>Applied By:</b>	Legleiter	Ikley	Ikley
<b>Air Temperature, Unit:</b>	60 F	59 F	73 F
<b>% Relative Humidity:</b>	58	59	100
<b>Wind Velocity, Unit:</b>	5 MPH	2 MPH	2 MPH
<b>Wind Direction:</b>	E	SSW	N
<b>Dew Presence (Y/N):</b>	N no	Y yes	Y yes
<b>Soil Temperature, Unit:</b>	55 F	64 F	74 F
<b>Soil Moisture:</b>	DRY	SLIWET	WET
<b>% Cloud Cover:</b>	70	50	70

Crop Stage At Each Application			
	A	B	C
<b>Crop 1 Code, BBCH Scale:</b>	GLXMA BSOY	GLXMA BSOY	GLXMA BSOY
<b>Stage Scale Used:</b>		BBCH	BBCH
<b>Stage Majority, Percent:</b>		15	16
<b>Stage Minimum, Percent:</b>		15	15
<b>Stage Maximum, Percent:</b>		16	16
<b>Height, Unit:</b>		6.5 IN	8 IN
<b>Height Minimum, Maximum:</b>		4 9	7 9

Pest Stage At Each Application			
	A	B	C
<b>Pest 1 Code, Type, Scale:</b>	AMAPA W	AMAPA W	AMAPA W
<b>Stage Majority, Percent:</b>		38G	14
<b>Stage Minimum, Percent:</b>		37G	11
<b>Stage Maximum, Percent:</b>		39G	17
<b>Height, Unit:</b>		5 IN	1.25 IN
<b>Height Minimum, Maximum:</b>		3 7	0.5 2
<b>Density, Unit:</b>		40 YD2	10 YD2

## Purdue University Weed Science

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

### Trial Comments

Application "C" under application tabs was POST spray following PRE.

Application "B" is POST only with no PRE.

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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
1	Untreated Check									101	502	702	1004
2	ROUNDUP POWERMAX CLARITY NIS	4.5 LBAE/GAL 4 LBAE/GAL 100 %	GAL L SL	SL L SL	32 fl oz/a 1 pt/a 0.25 % v/v	oz/a pt/a % v/v	B B B	2" AMAPA 2" AMAPA 2" AMAPA	30.0 ml/mx 15.0 ml/mx 4.5 ml/mx	102	303	703	904
3	FIERCE ROUNDUP POWERMAX CLARITY NIS	76 % 4.5 LBAE/GAL 4 LBAE/GAL 100 %	% GAL L SL	WG SL L SL	3 oz/a 32 fl oz/a 1 pt/a 0.25 % v/v	oz/a oz/a pt/a % v/v	A B B B	PRE 2" AMAPA 2" AMAPA 2" AMAPA	2.696 g/mx 30.0 ml/mx 15.0 ml/mx 4.5 ml/mx	103	304	601	803
4	ROUNDUP POWERMAX CLARITY COBRA COC	4.5 LBAE/GAL 4 LBAE/GAL 2 LB/GAL 100 %	GAL L GAL SL	SL L EC SL	32 fl oz/a 1 pt/a 12.5 fl oz/a 1 pt/a	oz/a pt/a oz/a pt/a	B B B B	2" AMAPA 2" AMAPA 2" AMAPA 2" AMAPA	30.0 ml/mx 15.0 ml/mx 11.72 ml/mx 15.0 ml/mx	104	504	801	1002
5	FIERCE ROUNDUP POWERMAX CLARITY COBRA COC	76 % 4.5 LBAE/GAL 4 LBAE/GAL 2 LB/GAL 100 %	% GAL L GAL SL	WG SL L EC SL	3 oz/a 32 fl oz/a 1 pt/a 12.5 fl oz/a 1 pt/a	oz/a oz/a pt/a oz/a pt/a	A B B B B	PRE 2" AMAPA 2" AMAPA 2" AMAPA 2" AMAPA	2.696 g/mx 30.0 ml/mx 15.0 ml/mx 11.72 ml/mx 15.0 ml/mx	201	402	704	1003
6	Untreated Check									202	403	802	901
7	ROUNDUP POWERMAX 2,4-D CHOLINE SALT NIS	4.5 LBAE/GAL 3.8 LBAE/GAL 100 %	GAL GAL SL	SL SL SL	32 fl oz/a 1.5 pt/a 0.25 % v/v	oz/a pt/a % v/v	B B B	2" AMAPA 2" AMAPA 2" AMAPA	30.0 ml/mx 22.5 ml/mx 4.5 ml/mx	203	503	604	903
8	FIERCE ROUNDUP POWERMAX 2,4-D CHOLINE SALT NIS	76 % 4.5 LBAE/GAL 3.8 LBAE/GAL 100 %	% GAL GAL SL	WG SL SL SL	3 oz/a 32 fl oz/a 1.5 pt/a 0.25 % v/v	oz/a oz/a pt/a % v/v	A B B B	PRE 2" AMAPA 2" AMAPA 2" AMAPA	2.696 g/mx 30.0 ml/mx 22.5 ml/mx 4.5 ml/mx	204	501	701	804
9	ROUNDUP POWERMAX 2,4-D CHOLINE SALT COBRA COC	4.5 LBAE/GAL 3.8 LBAE/GAL 2 LB/GAL 100 %	GAL GAL GAL SL	SL SL EC SL	32 fl oz/a 1.5 pt/a 12.5 fl oz/a 1 pt/a	oz/a pt/a oz/a pt/a	B B B B	2" AMAPA 2" AMAPA 2" AMAPA 2" AMAPA	30.0 ml/mx 22.5 ml/mx 11.72 ml/mx 15.0 ml/mx	301	404	603	902
10	FIERCE ROUNDUP POWERMAX 2,4-D CHOLINE SALT COBRA COC	76 % 4.5 LBAE/GAL 3.8 LBAE/GAL 2 LB/GAL 100 %	% GAL GAL GAL SL	WG SL SL EC SL	3 oz/a 32 fl oz/a 1.5 pt/a 12.5 fl oz/a 1 pt/a	oz/a oz/a pt/a oz/a pt/a	A B B B B	PRE 2" AMAPA 2" AMAPA 2" AMAPA 2" AMAPA	2.696 g/mx 30.0 ml/mx 22.5 ml/mx 11.72 ml/mx 15.0 ml/mx	302	401	602	1001

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
240.000	ml	ROUNDUP POWERMAX	4.5	SL	
59.993	ml	CLARITY	4	L	
17.998	ml	NIS	100	SL	
10.784	g	FIERCE	76	WG	
46.875	ml	COBRA	2	EC	
59.993	ml	COC	100	SL	
89.990	ml	2,4-D CHOLINE SALT	3.8	SL	

\* '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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 Protocol ID: 14S-CCP-CTS-07      Investigator: Dr. Bill Johnson  
 Project ID: 64.06/64.09      Study Director: Joe Ikley  
 Sponsor Contact: Valent - Eric Ott

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	PLOT P
Rating Date	6/6/2014	6/6/2014	6/13/2014	6/13/2014	6/26/2014
Rating Type	PHYGEN	CONTRO	PHYGEN	CONTRO	CONTRO
Rating Unit	%	%	%	%	%
Days After First/Last Applic.	30 8	30 30	37 37	37 37	50 7
Trt-Eval Interval	30 DA-A	30 DA-A	-1 DA-B	-1 DA-B	12 DA-B
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
1 Untreated Check	101 0	0	0	0	0
	502 0	0	0	0	0
	702 0	0	0	0	0
	1004 0	0	0	0	0
	Mean = 0	0	0	0	0
2 ROUNDUP POWERMAX	32 fl oz/a B 102 0	0	0	0	18*
CLARITY	1 pt/a B 303 0	0	0	0	30
NIS	0.25 % v/v B 703 0	0	0	0	15
	904 0	0	0	0	10
	Mean = 0	0	0	0	18
3 FIERCE	3 oz/a A 103 0	0	100	0	100
ROUNDUP POWERMAX	32 fl oz/a B 304 0	0	100	0	100
CLARITY	1 pt/a B 601 0	0	100	0	100
NIS	0.25 % v/v B 803 0	0	100	0	100
	Mean = 0	0	100	0	100
4 ROUNDUP POWERMAX	32 fl oz/a B 104 0	0	0	0	77*
CLARITY	1 pt/a B 504 0	0	0	0	70
COBRA	12.5 fl oz/a B 801 0	0	0	0	70
COC	1 pt/a B 1002 0	0	0	0	90
	Mean = 0	0	0	0	77
5 FIERCE	3 oz/a A 201 0	0	100	0	100
ROUNDUP POWERMAX	32 fl oz/a B 402 0	0	90	0	100
CLARITY	1 pt/a B 704 0	0	100	0	100
COBRA	12.5 fl oz/a B 1003 0	0	100	0	100
COC	1 pt/a B				
	Mean = 0	0	98	0	98
6 Untreated Check	202 0	0	0	0	0
	403 0	0	0	0	0
	802 0	0	0	0	0
	901 0	0	0	0	0
	Mean = 0	0	0	0	0
7 ROUNDUP POWERMAX	32 fl oz/a B 203 0	0	0	0	13*
2,4-D CHOLINE SALT	1.5 pt/a B 503 0	0	0	0	20
NIS	0.25 % v/v B 604 0	0	0	0	0
	903 0	0	0	0	20
	Mean = 0	0	0	0	13
8 FIERCE	3 oz/a A 204 0	0	100	10	100
ROUNDUP POWERMAX	32 fl oz/a B 501 0	0	100	0	100
2,4-D CHOLINE SALT	1.5 pt/a B 701 0	0	100	0	100
NIS	0.25 % v/v B 804 0	0	100	0	100
	Mean = 0	0	100	3	100

# 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 C	PLOT P	PLOT P
Rating Date	6/6/2014	6/6/2014	6/13/2014	6/13/2014	6/26/2014
Rating Type	PHYGEN	CONTRO	PHYGEN	CONTRO	CONTRO
Rating Unit	%	%	%	%	%
Days After First/Last Applic.	30 8	30 30	37 37	37 37	50 7
Trt-Eval Interval	30 DA-A	30 DA-A	-1 DA-B	-1 DA-B	12 DA-B
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
9 ROUNDUP POWERMAX	32 fl oz/a	B 301	0	0	0
2,4-D CHOLINE SALT	1.5 pt/a	B 404	0	0	0
COBRA	12.5 fl oz/a	B 603	0	0	0
COC	1 pt/a	B 902	0	0	0
		Mean =	0	0	0
10 FIERCE	3 oz/a	A 302	0	100	0
ROUNDUP POWERMAX	32 fl oz/a	B 401	0	95	0
2,4-D CHOLINE SALT	1.5 pt/a	B 602	0	100	0
COBRA	12.5 fl oz/a	B 1001	0	100	0
COC	1 pt/a	B			
		Mean =	0	99	0
					100

# Purdue University Weed Science

Pest Type				W Weed
Pest Code				AMAPA
Pest Scientific Name				Amaranthus pal>
Pest Name				Palmer amaranth
Crop Code				
BBCH Scale				
Crop Scientific Name				
Crop Name				
Part Rated				PLOT P
Rating Date				7/9/2014
Rating Type				CONTRO
Rating Unit				%
Days After First/Last Applic.				63 20
Trt-Eval Interval				25 DA-B
ARM Action Codes				P
Number of Decimals				0
Trt Treatment	Rate	Appl		
No. Name	Rate Unit	Code Plot	6	
1 Untreated Check		101	0	
		502	0	
		702	0	
		1004	0	
		Mean =	0	
2 ROUNDUP POWERMAX	32 fl oz/a B	102	90	
CLARITY	1 pt/a B	303	85	
NIS	0.25 % v/v B	703	50	
		904	75	
		Mean =	75	
3 FIERCE	3 oz/a A	103	90	
ROUNDUP POWERMAX	32 fl oz/a B	304	100	
CLARITY	1 pt/a B	601	100	
NIS	0.25 % v/v B	803	100	
		Mean =	98	
4 ROUNDUP POWERMAX	32 fl oz/a B	104	95	
CLARITY	1 pt/a B	504	80	
COBRA	12.5 fl oz/a B	801	85	
COC	1 pt/a B	1002	95	
		Mean =	89	
5 FIERCE	3 oz/a A	201	100	
ROUNDUP POWERMAX	32 fl oz/a B	402	100	
CLARITY	1 pt/a B	704	95	
COBRA	12.5 fl oz/a B	1003	100	
COC	1 pt/a B			
		Mean =	99	
6 Untreated Check		202	0	
		403	0	
		802	0	
		901	0	
		Mean =	0	
7 ROUNDUP POWERMAX	32 fl oz/a B	203	95	
2,4-D CHOLINE SALT	1.5 pt/a B	503	70	
NIS	0.25 % v/v B	604	30	
		903	60	
		Mean =	64	
8 FIERCE	3 oz/a A	204	99	
ROUNDUP POWERMAX	32 fl oz/a B	501	100	
2,4-D CHOLINE SALT	1.5 pt/a B	701	100	
NIS	0.25 % v/v B	804	100	
		Mean =	100	

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Pest Type				W Weed	
Pest Code				AMAPA	
Pest Scientific Name				Amaranthus pal>	
Pest Name				Palmer amaranth	
Crop Code					
BBCH Scale					
Crop Scientific Name					
Crop Name					
Part Rated				PLOT P	
Rating Date				7/9/2014	
Rating Type				CONTRO	
Rating Unit				%	
Days After First/Last Applic.				63 20	
Trt-Eval Interval				25 DA-B	
ARM Action Codes				P	
Number of Decimals				0	
Trt Treatment	Rate	Appl			
No. Name	Rate Unit	Code	Plot		6
9 ROUNDUP POWERMAX	32 fl oz/a	B	301		80
2,4-D CHOLINE SALT	1.5 pt/a	B	404		60
COBRA	12.5 fl oz/a	B	603		35
COC	1 pt/a	B	902		90
			Mean =		66
10 FIERCE	3 oz/a	A	302		100
ROUNDUP POWERMAX	32 fl oz/a	B	401		100
2,4-D CHOLINE SALT	1.5 pt/a	B	602		100
COBRA	12.5 fl oz/a	B	1001		100
COC	1 pt/a	B			
			Mean =		100



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### 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)

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Pest Type		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	PLOT P
Rating Date	6/6/2014	6/6/2014	6/13/2014	6/13/2014	6/26/2014
Rating Type	PHYGEN	CONTRO	PHYGEN	CONTRO	CONTRO
Rating Unit	%	%	%	%	%
Days After First/Last Applic.	30 8	30 30	37 37	37 37	50 7
Trt-Eval Interval	30 DA-A	30 DA-A	-1 DA-B	-1 DA-B	12 DA-B
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	1	2	3
1 Untreated Check			0 a	0 b	0 a
2 ROUNDUP POWERMAX	32 fl oz/a B		0 a	0 b	0 a
CLARITY	1 pt/a B				
NIS	0.25 % v/v B				18 d
3 FIERCE	3 oz/a A		0 a	100 a	0 a
ROUNDUP POWERMAX	32 fl oz/a B				100 a
CLARITY	1 pt/a B				
NIS	0.25 % v/v B				
4 ROUNDUP POWERMAX	32 fl oz/a B		0 a	0 b	0 a
CLARITY	1 pt/a B				
COBRA	12.5 fl oz/a B				
COC	1 pt/a B				77 b
5 FIERCE	3 oz/a A		0 a	98 a	0 a
ROUNDUP POWERMAX	32 fl oz/a B				98 a
CLARITY	1 pt/a B				
COBRA	12.5 fl oz/a B				
COC	1 pt/a B				100 a
6 Untreated Check			0 a	0 b	0 a
7 ROUNDUP POWERMAX	32 fl oz/a B		0 a	0 b	0 a
2,4-D CHOLINE SALT	1.5 pt/a B				
NIS	0.25 % v/v B				13 d
8 FIERCE	3 oz/a A		0 a	100 a	3 a
ROUNDUP POWERMAX	32 fl oz/a B				100 a
2,4-D CHOLINE SALT	1.5 pt/a B				
NIS	0.25 % v/v B				
9 ROUNDUP POWERMAX	32 fl oz/a B		0 a	0 b	0 a
2,4-D CHOLINE SALT	1.5 pt/a B				
COBRA	12.5 fl oz/a B				
COC	1 pt/a B				57 c
10 FIERCE	3 oz/a A		0 a	99 a	0 a
ROUNDUP POWERMAX	32 fl oz/a B				99 a
2,4-D CHOLINE SALT	1.5 pt/a B				
COBRA	12.5 fl oz/a B				
COC	1 pt/a B				100 a
LSD (P=.05)	0.0	2.4	2.3	2.4	9.5
Standard Deviation	0.0	1.7	1.6	1.7	6.5
CV	0.0	4.26	632.46	4.26	11.5
Bartlett's X2	0.0	1.317	0.0	1.317	0.328
P(Bartlett's X2)	.	0.251	.	0.251	0.955
Skewness	.	0.4279	6.3246*	0.4279	-0.3172
Kurtosis	.	-1.9106*	40.0*	-1.9106*	-1.7791*

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=5

# Purdue University Weed Science

Pest Type	W Weed			
Pest Code	AMAPA			
Pest Scientific Name	Amaranthus pal>			
Pest Name	Palmer amaranth			
Crop Code				
BBCH Scale				
Crop Scientific Name				
Crop Name				
Part Rated	PLOT P			
Rating Date	7/9/2014			
Rating Type	CONTRO			
Rating Unit	%			
Days After First/Last Applic.	63 20			
Trt-Eval Interval	25 DA-B			
ARM Action Codes	P			
Number of Decimals	0			
Trt No.	Treatment Name	Rate	Appl	
		Rate Unit	Code	6
1	Untreated Check			0 c
2	ROUNDUP POWERMAX CLARITY NIS	32 fl oz/a B 1 pt/a B 0.25 % v/v B		75 ab
3	FIERCE ROUNDUP POWERMAX CLARITY NIS	3 oz/a A 32 fl oz/a B 1 pt/a B 0.25 % v/v B		98 a
4	ROUNDUP POWERMAX CLARITY COBRA COC	32 fl oz/a B 1 pt/a B 12.5 fl oz/a B 1 pt/a B		89 a
5	FIERCE ROUNDUP POWERMAX CLARITY COBRA COC	3 oz/a A 32 fl oz/a B 1 pt/a B 12.5 fl oz/a B 1 pt/a B		99 a
6	Untreated Check			0 c
7	ROUNDUP POWERMAX 2,4-D CHOLINE SALT NIS	32 fl oz/a B 1.5 pt/a B 0.25 % v/v B		64 b
8	FIERCE ROUNDUP POWERMAX 2,4-D CHOLINE SALT NIS	3 oz/a A 32 fl oz/a B 1.5 pt/a B 0.25 % v/v B		100 a
9	ROUNDUP POWERMAX 2,4-D CHOLINE SALT COBRA COC	32 fl oz/a B 1.5 pt/a B 12.5 fl oz/a B 1 pt/a B		66 b
10	FIERCE ROUNDUP POWERMAX 2,4-D CHOLINE SALT COBRA COC	3 oz/a A 32 fl oz/a B 1.5 pt/a B 12.5 fl oz/a B 1 pt/a B		100 a
LSD (P=.05)				17.2
Standard Deviation				11.9
CV				17.22
Bartlett's X2				33.733
P(Bartlett's X2)				0.001*
Skewness				-0.9997*
Kurtosis				-0.6715

# Purdue University Weed Science

## AUXIN + COBRA TANK-MIX COMBINATIONS ON GLYPHOSATE-RESISTANT PALMER AMARANTH

Trial ID: 14S-CCP-CTS-07      Location: 12 MILE      Trial Year: 2014  
 Protocol ID: 14S-CCP-CTS-07      Investigator: Dr. Bill Johnson  
 Project ID: 64.06/64.09      Study Director: Joe Ikley  
    Sponsor Contact: Valent - Eric Ott

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	39	0.000000000000			
Replicate	3	0.000000000000	0.000000000000	0.000	1.0000
Treatment	9	0.000000000000	0.000000000000	0.000	1.0000
Error	27	0.000000000000	0.000000000000		

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	39	94319.375000			
Replicate	3	16.875000	5.625000	1.976	0.1414
Treatment	9	94225.625000	10469.513889	3677.098	0.0001
Error	27	76.875000	2.847222		

Randomized Complete Block (RCB) AOV For GLXMA BSOY Glycine max Soybean PLOT C 6/13/2014 PHYGEN % 37 37 -1 DA-B P 0 (Data Column 3)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	39	97.500000			
Replicate	3	7.500000	2.500000	1.000	0.4079
Treatment	9	22.500000	2.500000	1.000	0.4635
Error	27	67.500000	2.500000		

Randomized Complete Block (RCB) AOV For W Weed AMAPA Amaranthus palmeri Palmer amaranth PLOT P 6/13/2014 CONTRO % 37 37 -1 DA-B P 0 (Data Column 4)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	39	94319.375000			
Replicate	3	16.875000	5.625000	1.976	0.1414
Treatment	9	94225.625000	10469.513889	3677.098	0.0001
Error	27	76.875000	2.847222		

Randomized Complete Block (RCB) AOV For W Weed AMAPA Amaranthus palmeri Palmer amaranth PLOT P 6/26/2014 CONTRO % 50 7 12 DA-B P 0 (Data Column 5)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	35	71938.615384			
Replicate	3	245.000021	81.666674	1.933	0.1524
Treatment	9	70721.948628	7857.994292	186.004	0.0001
Error	23	971.666734	42.246380		

Randomized Complete Block (RCB) AOV For W Weed AMAPA Amaranthus palmeri Palmer amaranth PLOT P 7/9/2014 CONTRO % 63 20 25 DA-B P 0 (Data Column 6)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	39	59498.975000			
Replicate	3	1343.075000	447.691667	3.175	0.0402
Treatment	9	54348.225000	6038.691667	42.820	0.0001
Error	27	3807.675000	141.025000		

### 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)