

Purdue University Weed Science

OVERLAPPING RESIDUAL PROGRAMS IN CORN

Trial ID: 14S-CCP-CTC-05 Location: 12 MILE Trial Year: 2014
 Protocol ID: 14S-CCP-CTC-05 Investigator: Dr. Bill Johnson
 Project ID: MKD-H-US-2014-CH1 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: 7/21/2014

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: ZEAMX Zea mays Corn
Variety: DKC 62-08
Description: RR/LL

Planting Rate, Unit: 32000 S/A **Planting Date:** 5/6/2014
Depth, Unit: 1.5 IN **Planting Method:** PLANTD planted
Row Spacing, Unit: 30 IN **Planting Equipment:** FPP Finger Pickup Planter
Soil Temperature, Unit: 60 F **Emergence Date:** 5/12/2014
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 FT² **Treatments:** 12
Replications: 4 **Study Design:** RACOB� Randomized Complete Block (RCB)

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Application Description

	A	B
Application Date:	5/7/2014	6/14/2014
Appl. Start Time:	6:30	10:30
Appl. Stop Time:	9:00 AM	11:00 AM
Application Method:	SPRAY	SPRAY
Application Timing:	PRE	POST
Application Placement:	BROADC	BROADC
Applied By:	Ikley	Ikley
Air Temperature, Unit:	50 F	59 F
% Relative Humidity:	58	59
Wind Velocity, Unit:	5 MPH	2 MPH
Wind Direction:	E	SSW
Dew Presence (Y/N):	N no	Y yes
Soil Temperature, Unit:	55 F	64 F
Soil Moisture:	DRY	SLIWET
% Cloud Cover:	70	50

Crop Stage At Each Application

	A	B
Crop 1 Code, BBCH Scale:	ZEAMX BCOR	ZEAMX BCOR
Stage Scale Used:		BBCH
Stage Majority, Percent:		36
Stage Minimum, Percent:		34
Stage Maximum, Percent:		37
Height, Unit:		13 IN
Height Minimum, Maximum:		9 19

Pest Stage At Each Application

	A	B
Pest 1 Code, Type, Scale:	AMAPA W	AMAPA W

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

Trial Comments

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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	Appl Code	Appl Description	Amt to Measure	Rep 1	2	3	4
1	Untreated Check								101	503	701	901
2	ZIDUA	85 %		WG	2 oz/a	A	PRE	1.797 g/mx	102	404	704	905
	SHARPEN	2.85 LB/GAL		CS	2 fl oz/a	A	PRE	1.875 ml/mx				
	ROUNDUP POWERMAX	4.5 LBAE/GAL		SL	32 fl oz/a	B	POST	30.0 ml/mx				
	ARMEZON	2.8 LB/GAL		L	0.5 fl oz/a	B	POST	0.4687 ml/mx				
	AATREX	4 LB/GAL		L	0.5 qt/a	B	POST	15.0 ml/mx				
	OUTLOOK	6 LB/GAL		EC	12 fl oz/a	B	POST	11.25 ml/mx				
	N-PAK AMS	3.4 LBA/GAL		SL	2.5 % v/v	B	POST	45.0 ml/mx				
3	VERDICT	5.57 LB/GAL		EC	14 fl oz/a	A	PRE	13.12 ml/mx	103	502	703	902
	ROUNDUP POWERMAX	4.5 LBAE/GAL		SL	32 fl oz/a	B	POST	30.0 ml/mx				
	ARMEZON	2.8 LB/GAL		L	0.5 fl oz/a	B	POST	0.4687 ml/mx				
	AATREX	4 LB/GAL		L	0.5 qt/a	B	POST	15.0 ml/mx				
	OUTLOOK	6 LB/GAL		EC	12 fl oz/a	B	POST	11.25 ml/mx				
	N-PAK AMS	3.4 LBA/GAL		SL	2.5 % v/v	B	POST	45.0 ml/mx				
4	VERDICT	5.57 LB/GAL		EC	18 fl oz/a	A	PRE	16.87 ml/mx	104	304	702	903
	ROUNDUP POWERMAX	4.5 LBAE/GAL		SL	32 fl oz/a	B	POST	30.0 ml/mx				
	ZIDUA	85 %		WG	2 oz/a	B	POST	1.797 g/mx				
	STATUS	61.1 %		WG	5 oz/a	B	POST	4.493 g/mx				
	N-PAK AMS	3.4 LBA/GAL		SL	2.5 % v/v	B	POST	45.0 ml/mx				
5	VERDICT	5.57 LB/GAL		EC	18 fl oz/a	A	PRE	16.87 ml/mx	105	501	602	1001
	ROUNDUP POWERMAX	4.5 LBAE/GAL		SL	32 fl oz/a	B	POST	30.0 ml/mx				
	PROWL H2O	3.8 LB/GAL		CS	2 pt/a	B	POST	30.0 ml/mx				
	STATUS	61.1 %		WG	5 oz/a	B	POST	4.493 g/mx				
	N-PAK AMS	3.4 LBA/GAL		SL	2.5 % v/v	B	POST	45.0 ml/mx				
6	ZIDUA	85 %		WG	2 oz/a	A	PRE	1.797 g/mx	201	401	705	1002
	SHARPEN	2.85 LB/GAL		CS	2 fl oz/a	A	PRE	1.875 ml/mx				
	AATREX	4 LB/GAL		L	1 qt/a	A	PRE	30.0 ml/mx				
	ROUNDUP POWERMAX	4.5 LBAE/GAL		SL	32 fl oz/a	B	POST	30.0 ml/mx				
	STATUS	61.1 %		WG	5 oz/a	B	POST	4.493 g/mx				
	N-PAK AMS	3.4 LBA/GAL		SL	2.5 % v/v	B	POST	45.0 ml/mx				
7	VERDICT	5.57 LB/GAL		EC	18 fl oz/a	A	PRE	16.87 ml/mx	202	305	603	904
	AATREX	4 LB/GAL		L	1.5 qt/a	A	PRE	45.0 ml/mx				
	ROUNDUP POWERMAX	4.5 LBAE/GAL		SL	32 fl oz/a	B	POST	30.0 ml/mx				
	N-PAK AMS	3.4 LBA/GAL		SL	2.5 % v/v	B	POST	45.0 ml/mx				
8	ANTHEM ATZ	4.505 LB/GAL		SE	2.25 pt/a	A	PRE	33.75 ml/mx	203	403	605	1003
	ROUNDUP POWERMAX	4.5 LBAE/GAL		SL	32 fl oz/a	B	POST	30.0 ml/mx				
	N-PAK AMS	3.4 LBA/GAL		SL	2.5 % v/v	B	POST	45.0 ml/mx				
9	LUMAX EZ	3.674 LB/GAL		L	1.5 qt/a	A	PRE	45.0 ml/mx	204	402	604	803
	HALEX GT	4.389 LBAE/GAL		L	3.6 pt/a	B	POST	53.99 ml/mx				
	PREFERENCE (NIS)	89.5 %		L	0.25 % v/v	B	POST	4.5 ml/mx				
	N-PAK AMS	3.4 LBA/GAL		SL	2.5 % v/v	B	POST	45.0 ml/mx				
10	SURESTART	4.25 LB/GAL		L	2.5 pt/a	A	PRE	37.5 ml/mx	205	504	801	805
	AATREX	4 LB/GAL		L	1.5 qt/a	A	PRE	45.0 ml/mx				
	ROUNDUP POWERMAX	4.5 LBAE/GAL		SL	32 fl oz/a	B	POST	30.0 ml/mx				
	N-PAK AMS	3.4 LBA/GAL		SL	2.5 % v/v	B	POST	45.0 ml/mx				
11	CORVUS	2.63 LB/GAL		SC	4.5 fl oz/a	A	PRE	4.219 ml/mx	301	303	505	802
	AATREX	4 LB/GAL		L	1 qt/a	A	PRE	30.0 ml/mx				
	LAUDIS	3.5 LB/GAL		L	3 fl oz/a	B	POST	2.812 ml/mx				
	AATREX	4 LB/GAL		L	1 pt/a	B	POST	15.0 ml/mx				
	ROUNDUP POWERMAX	4.5 LBAE/GAL		SL	32 fl oz/a	B	POST	30.0 ml/mx				
	N-PAK AMS	3.4 LBA/GAL		SL	2.5 % v/v	B	POST	45.0 ml/mx				
12	Untreated Check								302	405	601	804

Sort Order: Replicate 1

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

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

Amount*	Unit	Treatment Name	Form Conc	Form Type	Lot Code
5.392	g	ZIDUA	85	WG	
3.750	ml	SHARPEN	2.85	CS	
270.000	ml	ROUNDUP POWERMAX	4.5	SL	
0.937	ml	ARMEZON	2.8	L	
194.998	ml	AATREX	4	L	
22.500	ml	OUTLOOK	6	EC	
449.951	ml	N-PAK AMS	3.4	SL	
63.750	ml	VERDICT	5.57	EC	
13.480	g	STATUS	61.1	WG	
29.997	ml	PROWL H2O	3.8	CS	
33.746	ml	ANTHEM ATZ	4.505	SE	
45.000	ml	LUMAX EZ	3.674	L	
53.994	ml	HALEX GT	4.389	L	
4.500	ml	PREFERENCE (NIS)	89.5	L	
37.496	ml	SURESTART	4.25	L	
4.219	ml	CORVUS	2.63	SC	
2.812	ml	LAUDIS	3.5	L	

* '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	ZEAMX			ZEAMX			ZEAMX			
BBCH Scale	BCOR			BCOR			BCOR			
Crop Scientific Name	Zea mays			Zea mays			Zea mays			
Crop Name	Corn			Corn			Corn			
Part Rated	PLOT C		PLOT P	PLOT C		PLOT P	PLOT C		PLOT P	
Rating Date	6/6/2014		6/6/2014	6/19/2014		6/19/2014	6/26/2014		6/26/2014	
Rating Type	PHYGEN		CONTRO	PHYGEN		CONTRO	PHYGEN		CONTRO	
Rating Unit	%		%	%		%	%		%	
Days After First/Last Applic.	30 30		30 30	43 5		43 5	50 12		50 12	
Trt-Eval Interval	43 DA-A		0 DA-B	5 DA-B		5 DA-B	12 DA-B		12 DA-B	
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		
1 Untreated Check		101	0	0	0	0	0	0		
		503	0	0	0	0	0	0		
		701	0	0	0	0	0	0		
		901	0	0	0	0	0	0		
		Mean =	0	0	0	0	0	0		
2 ZIDUA	2 oz/a A	102	0	100	.	100	.	100		
SHARPEN	2 fl oz/a A	404	0	100	.	100	.	100		
ROUNDUP POWERMAX	32 fl oz/a B	704	0	100	.	100	.	100		
ARMEZON	0.5 fl oz/a B	905	0	100	.	100	.	100		
AATREX	0.5 qt/a B									
OUTLOOK	12 fl oz/a B									
N-PAK AMS	2.5 % v/v B									
		Mean =	0	100	.	100	.	100		
3 VERDICT	14 fl oz/a A	103	0	100	0	100	0	100		
ROUNDUP POWERMAX	32 fl oz/a B	502	0	100	0	100	0	100		
ARMEZON	0.5 fl oz/a B	703	0	100	0	100	0	100		
AATREX	0.5 qt/a B	902	0	100	0	100	0	100		
OUTLOOK	12 fl oz/a B									
N-PAK AMS	2.5 % v/v B									
		Mean =	0	100	0	100	0	100		
4 VERDICT	18 fl oz/a A	104	0	100	5	100	3	100		
ROUNDUP POWERMAX	32 fl oz/a B	304	0	100	1*	100	2*	100		
ZIDUA	2 oz/a B	702	0	100	0	100	2*	100		
STATUS	5 oz/a B	903	0	100	0	100	0	100		
N-PAK AMS	2.5 % v/v B									
		Mean =	0	100	1	100	2	100		
5 VERDICT	18 fl oz/a A	105	0	100	10	100	0*	100		
ROUNDUP POWERMAX	32 fl oz/a B	501	0	100	0	100	0	100		
PROWL H2O	2 pt/a B	602	0	100	0	100	0*	100		
STATUS	5 oz/a B	1001	0	100	0	100	0	100		
N-PAK AMS	2.5 % v/v B									
		Mean =	0	100	3	100	0	100		
6 ZIDUA	2 oz/a A	201	0	100	0	100	0	100		
SHARPEN	2 fl oz/a A	401	0	100	0	100	0	100		
AATREX	1 qt/a A	705	0	100	0	100	0	100		
ROUNDUP POWERMAX	32 fl oz/a B	1002	0	100	0	100	0	100		
STATUS	5 oz/a B									
N-PAK AMS	2.5 % v/v B									
		Mean =	0	100	0	100	0	100		
7 VERDICT	18 fl oz/a A	202	10	100	5	100	0	95		
AATREX	1.5 qt/a A	305	5	100	1*	100	0*	100		
ROUNDUP POWERMAX	32 fl oz/a B	603	0	100	0	100	0*	100		
N-PAK AMS	2.5 % v/v B	904	0	100	0	100	0	100		
		Mean =	4	100	1	100	0	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	ZEAMX		ZEAMX		ZEAMX
BBCH Scale	BCOR		BCOR		BCOR
Crop Scientific Name	Zea mays		Zea mays		Zea mays
Crop Name	Corn		Corn		Corn
Part Rated	PLOT C	PLOT P	PLOT C	PLOT P	PLOT C
Rating Date	6/6/2014	6/6/2014	6/19/2014	6/19/2014	6/26/2014
Rating Type	PHYGEN	CONTRO	PHYGEN	CONTRO	PHYGEN
Rating Unit	%	%	%	%	%
Days After First/Last Applic.	30 30	30 30	43 5	43 5	50 12
Trt-Eval Interval	43 DA-A	0 DA-B	5 DA-B	5 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	5	6
8 ANTHEM ATZ	2.25 pt/a	A 203	0	100	5
ROUNDUP POWERMAX	32 fl oz/a	B 403	5	100	0
N-PAK AMS	2.5 % v/v	B 605	0	100	5
		1003	0	100	0
		Mean =	1	100	3
				100	100
9 LUMAX EZ	1.5 qt/a	A 204	0	100	10
HALEX GT	3.6 pt/a	B 402	0	100	0
PREFERENCE (NIS)	0.25 % v/v	B 604	0	100	0
N-PAK AMS	2.5 % v/v	B 803	0	100	0
		Mean =	0	100	3
				99	0
				99	92
				99	98
10 SURESTART	2.5 pt/a	A 205	5	100*	10
AATREX	1.5 qt/a	A 504	5	100	5
ROUNDUP POWERMAX	32 fl oz/a	B 801	0	100	0
N-PAK AMS	2.5 % v/v	B 805	0	100	0
		Mean =	3	100	4
				97	97*
				97	0*
				97	0*
				97	90
				97	95
				97	93
11 CORVUS	4.5 fl oz/a	A 301	0	100	0
AATREX	1 qt/a	A 303	0	100	0*
LAUDIS	3 fl oz/a	B 505	0	100	0
AATREX	1 pt/a	B 802	0	100	0
ROUNDUP POWERMAX	32 fl oz/a	B			100
N-PAK AMS	2.5 % v/v	B			0
		Mean =	0	100	0
				100	0
				100	100
12 Untreated Check		302	0	0	0
		405	0	0	0
		601	0	0	0
		804	0	0	0
		Mean =	0	0	0
				0	0
				0	0

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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	ZEAMX			
BBCH Scale	BCOR			
Crop Scientific Name	Zea mays			
Crop Name	Corn			
Part Rated	PLOT C	PLOT P	PLOT P	PLOT P
Rating Date	7/3/2014	7/3/2014	7/9/2014	7/21/2014
Rating Type	PHYGEN	CONTRO	CONTRO	CONTRO
Rating Unit	%	%	%	%
Days After First/Last Applic.	57 19	57 19	63 25	75 37
Trt-Eval Interval	19 DA-B	19 DA-B	25 DA-B	37 DA-B
ARM Action Codes	P	P	P	P
Number of Decimals	0	0	0	0
Trt Treatment	Rate Appl			
No. Name	Rate Unit Code Plot	7	8	9
1 Untreated Check	101	0	0	0
	503	0	0	0
	701	0	0	0
	901	0	0	0
	Mean =	0	0	0
2 ZIDUA	2 oz/a A 102	0*	100	100
SHARPEN	2 fl oz/a A 404	0*	100	95
ROUNDUP POWERMAX	32 fl oz/a B 704	0	100	100*
ARMEZON	0.5 fl oz/a B 905	0*	100	100
AATREX	0.5 qt/a B			
OUTLOOK	12 fl oz/a B			
N-PAK AMS	2.5 % v/v B			
	Mean =	0	100	99
3 VERDICT	14 fl oz/a A 103	0	100	100
ROUNDUP POWERMAX	32 fl oz/a B 502	0*	100	95
ARMEZON	0.5 fl oz/a B 703	0	100	100*
AATREX	0.5 qt/a B 902	0	100	100
OUTLOOK	12 fl oz/a B			
N-PAK AMS	2.5 % v/v B			
	Mean =	0	100	99
4 VERDICT	18 fl oz/a A 104	0	100	100
ROUNDUP POWERMAX	32 fl oz/a B 304	0*	100	100*
ZIDUA	2 oz/a B 702	0*	100	100*
STATUS	5 oz/a B 903	0	100	100
N-PAK AMS	2.5 % v/v B			
	Mean =	0	100	100
5 VERDICT	18 fl oz/a A 105	0*	100	100
ROUNDUP POWERMAX	32 fl oz/a B 501	0*	100	100
PROWL H2O	2 pt/a B 602	0*	100	100*
STATUS	5 oz/a B 1001	0	100	100
N-PAK AMS	2.5 % v/v B			
	Mean =	0	100	100
6 ZIDUA	2 oz/a A 201	0*	100	95
SHARPEN	2 fl oz/a A 401	0*	100	95
AATREX	1 qt/a A 705	0	100	100
ROUNDUP POWERMAX	32 fl oz/a B 1002	0	100	100
STATUS	5 oz/a B			
N-PAK AMS	2.5 % v/v B			
	Mean =	0	100	98
7 VERDICT	18 fl oz/a A 202	0*	90	95
AATREX	1.5 qt/a A 305	0*	95	85
ROUNDUP POWERMAX	32 fl oz/a B 603	0*	95	90
N-PAK AMS	2.5 % v/v B 904	0	100	100
	Mean =	0	95	93

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Pest Type

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

Pest Code

AMAPA, Amaranthus palmeri, = US

Crop Code

ZEAMX, BCOR, Zea mays, = 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		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	ZEAMX		ZEAMX		ZEAMX			
BBCH Scale	BCOR		BCOR		BCOR			
Crop Scientific Name	Zea mays		Zea mays		Zea mays			
Crop Name	Corn		Corn		Corn			
Part Rated	PLOT C	PLOT P	PLOT C	PLOT P	PLOT C	PLOT P		
Rating Date	6/6/2014	6/6/2014	6/19/2014	6/19/2014	6/26/2014	6/26/2014		
Rating Type	PHYGEN	CONTRO	PHYGEN	CONTRO	PHYGEN	CONTRO		
Rating Unit	%	%	%	%	%	%		
Days After First/Last Applic.	30 30	30 30	43 5	43 5	50 12	50 12		
Trt-Eval Interval	43 DA-A	0 DA-B	5 DA-B	5 DA-B	12 DA-B	12 DA-B		
ARM Action Codes	P	P	P	P	P	P		
Number of Decimals	0	0	0	0	0	0		
Trt Treatment No. Name	Rate Unit	Appl Code	1	2	3	4	5	6
1 Untreated Check			0 a	0 b	0 a	0 c	0 b	0 c
2 ZIDUA	2 oz/a A		0 a	100 a		100 a		100 a
SHARPEN	2 fl oz/a A							
ROUNDUP POWERMAX	32 fl oz/a B							
ARMEZON	0.5 fl oz/a B							
AATREX	0.5 qt/a B							
OUTLOOK	12 fl oz/a B							
N-PAK AMS	2.5 % v/v B							
3 VERDICT	14 fl oz/a A		0 a	100 a	0 a	100 a	0 b	100 a
ROUNDUP POWERMAX	32 fl oz/a B							
ARMEZON	0.5 fl oz/a B							
AATREX	0.5 qt/a B							
OUTLOOK	12 fl oz/a B							
N-PAK AMS	2.5 % v/v B							
4 VERDICT	18 fl oz/a A		0 a	100 a	1 a	100 a	2 a	100 a
ROUNDUP POWERMAX	32 fl oz/a B							
ZIDUA	2 oz/a B							
STATUS	5 oz/a B							
N-PAK AMS	2.5 % v/v B							
5 VERDICT	18 fl oz/a A		0 a	100 a	3 a	100 a	0 b	100 a
ROUNDUP POWERMAX	32 fl oz/a B							
PROWL H2O	2 pt/a B							
STATUS	5 oz/a B							
N-PAK AMS	2.5 % v/v B							
6 ZIDUA	2 oz/a A		0 a	100 a	0 a	100 a	0 b	100 a
SHARPEN	2 fl oz/a A							
AATREX	1 qt/a A							
ROUNDUP POWERMAX	32 fl oz/a B							
STATUS	5 oz/a B							
N-PAK AMS	2.5 % v/v B							
7 VERDICT	18 fl oz/a A		4 a	100 a	1 a	100 a	0 b	99 a
AATREX	1.5 qt/a A							
ROUNDUP POWERMAX	32 fl oz/a B							
N-PAK AMS	2.5 % v/v B							
8 ANTHEM ATZ	2.25 pt/a A		1 a	100 a	3 a	100 a	0 b	100 a
ROUNDUP POWERMAX	32 fl oz/a B							
N-PAK AMS	2.5 % v/v B							
9 LUMAX EZ	1.5 qt/a A		0 a	100 a	3 a	99 a	0 b	98 a
HALEX GT	3.6 pt/a B							
PREFERENCE (NIS)	0.25 % v/v B							
N-PAK AMS	2.5 % v/v B							

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=2,3,4,6,8,9; Average=5,7,10

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	ZEAMX				ZEAMX				ZEAMX	
BBCH Scale	BCOR				BCOR				BCOR	
Crop Scientific Name	Zea mays				Zea mays				Zea mays	
Crop Name	Corn				Corn				Corn	
Part Rated	PLOT C		PLOT P		PLOT C		PLOT P		PLOT C	
Rating Date	6/6/2014		6/6/2014		6/19/2014		6/19/2014		6/26/2014	
Rating Type	PHYGEN		CONTRO		PHYGEN		CONTRO		PHYGEN	
Rating Unit	%		%		%		%		%	
Days After First/Last Applic.	30 30		30 30		43 5		43 5		50 12	
Trt-Eval Interval	43 DA-A		0 DA-B		5 DA-B		5 DA-B		12 DA-B	
ARM Action Codes	P		P		P		P		P	
Number of Decimals	0		0		0		0		0	
Trt No.	Treatment Name	Rate	Appl Code	1	2	3	4	5	6	
10	SURESTART	2.5 pt/a	A	3 a	100 a	4 a	97 b	0 b	93 b	
	AATREX	1.5 qt/a	A							
	ROUNDUP POWERMAX	32 fl oz/a	B							
	N-PAK AMS	2.5 % v/v	B							
11	CORVUS	4.5 fl oz/a	A	0 a	100 a	0 a	100 a	0 b	100 a	
	AATREX	1 qt/a	A							
	LAUDIS	3 fl oz/a	B							
	AATREX	1 pt/a	B							
	ROUNDUP POWERMAX	32 fl oz/a	B							
	N-PAK AMS	2.5 % v/v	B							
12	Untreated Check			0 a	0 b	0 a	0 c	0 b	0 c	
LSD (P=.05)				2.4	0.0	3.5	1.4	0.8	2.3	
Standard Deviation				1.7	0.0	2.4	1.0	0.5	1.6	
CV				269.68	0.0	190.83	1.19	370.81	1.92	
Bartlett's X2				1.442	0.0	1.954	0.05	0.0	0.68	
P(Bartlett's X2)				0.486	.	0.856	0.824	.	0.712	
Skewness				3.3668*	-1.8134*	2.134*	-1.8092*	5.4772*	-1.8007*	
Kurtosis				11.7487*	1.3439	3.492*	1.3356	30.0*	1.3181	

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	ZEAMX			
BBCH Scale	BCOR			
Crop Scientific Name	Zea mays			
Crop Name	Corn			
Part Rated	PLOT C	PLOT P	PLOT P	PLOT P
Rating Date	7/3/2014	7/3/2014	7/9/2014	7/21/2014
Rating Type	PHYGEN	CONTRO	CONTRO	CONTRO
Rating Unit	%	%	%	%
Days After First/Last Applic.	57 19	57 19	63 25	75 37
Trt-Eval Interval	19 DA-B	19 DA-B	25 DA-B	37 DA-B
ARM Action Codes	P	P	P	P
Number of Decimals	0	0	0	0
Trt No.	Treatment Name	Rate	Appl	
		Rate Unit	Code	
1	Untreated Check			
2	ZIDUA	2 oz/a	A	
	SHARPEN	2 fl oz/a	A	
	ROUNDUP POWERMAX	32 fl oz/a	B	
	ARMEZON	0.5 fl oz/a	B	
	AATREX	0.5 qt/a	B	
	OUTLOOK	12 fl oz/a	B	
	N-PAK AMS	2.5 % v/v	B	
3	VERDICT	14 fl oz/a	A	
	ROUNDUP POWERMAX	32 fl oz/a	B	
	ARMEZON	0.5 fl oz/a	B	
	AATREX	0.5 qt/a	B	
	OUTLOOK	12 fl oz/a	B	
	N-PAK AMS	2.5 % v/v	B	
4	VERDICT	18 fl oz/a	A	
	ROUNDUP POWERMAX	32 fl oz/a	B	
	ZIDUA	2 oz/a	B	
	STATUS	5 oz/a	B	
	N-PAK AMS	2.5 % v/v	B	
5	VERDICT	18 fl oz/a	A	
	ROUNDUP POWERMAX	32 fl oz/a	B	
	PROWL H2O	2 pt/a	B	
	STATUS	5 oz/a	B	
	N-PAK AMS	2.5 % v/v	B	
6	ZIDUA	2 oz/a	A	
	SHARPEN	2 fl oz/a	A	
	AATREX	1 qt/a	A	
	ROUNDUP POWERMAX	32 fl oz/a	B	
	STATUS	5 oz/a	B	
	N-PAK AMS	2.5 % v/v	B	
7	VERDICT	18 fl oz/a	A	
	AATREX	1.5 qt/a	A	
	ROUNDUP POWERMAX	32 fl oz/a	B	
	N-PAK AMS	2.5 % v/v	B	
8	ANTHEM ATZ	2.25 pt/a	A	
	ROUNDUP POWERMAX	32 fl oz/a	B	
	N-PAK AMS	2.5 % v/v	B	
9	LUMAX EZ	1.5 qt/a	A	
	HALEX GT	3.6 pt/a	B	
	PREFERENCE (NIS)	0.25 % v/v	B	
	N-PAK AMS	2.5 % v/v	B	

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	ZEAMX			
BBCH Scale	BCOR			
Crop Scientific Name	Zea mays			
Crop Name	Corn			
Part Rated	PLOT C	PLOT P	PLOT P	PLOT P
Rating Date	7/3/2014	7/3/2014	7/9/2014	7/21/2014
Rating Type	PHYGEN	CONTRO	CONTRO	CONTRO
Rating Unit	%	%	%	%
Days After First/Last Applic.	57 19	57 19	63 25	75 37
Trt-Eval Interval	19 DA-B	19 DA-B	25 DA-B	37 DA-B
ARM Action Codes	P	P	P	P
Number of Decimals	0	0	0	0
Trt Treatment	Rate Appl			
No. Name	Rate Unit Code	7	8	9
10 SURESTART	2.5 pt/a A	0 a	93 b	87 c
AATREX	1.5 qt/a A			
ROUNDUP POWERMAX	32 fl oz/a B			
N-PAK AMS	2.5 % v/v B			
11 CORVUS	4.5 fl oz/a A	0 a	100 a	100 a
AATREX	1 qt/a A			
LAUDIS	3 fl oz/a B			
AATREX	1 pt/a B			
ROUNDUP POWERMAX	32 fl oz/a B			
N-PAK AMS	2.5 % v/v B			
12 Untreated Check		0 a	0 c	0 d
LSD (P=.05)		0.0	2.2	4.3
Standard Deviation		0.0	1.5	3.0
CV		0.0	1.82	3.69
Bartlett's X2		0.0	0.745	7.418
P(Bartlett's X2)		.	0.689	0.284
Skewness		.	-1.7968*	-1.7568*
Kurtosis		.	1.3104	1.2255

Purdue University Weed Science

OVERLAPPING RESIDUAL PROGRAMS IN CORN

Trial ID: 14S-CCP-CTC-05 Location: 12 MILE Trial Year: 2014
 Protocol ID: 14S-CCP-CTC-05 Investigator: Dr. Bill Johnson
 Project ID: MKD-H-US-2014-CH1 Study Director: Joe Ikley
 Sponsor Contact: BASF - Gery Welker

Randomized Complete Block (RCB) AOV For ZEAMX BCOR Zea mays Corn PLOT C 6/6/2014 PHYGEN % 30 30 43 DA-A P 0 (Data Column 1)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	47	181.250000			
Replicate	3	18.750000	6.250000	2.200	0.1066
Treatment	11	68.750000	6.250000	2.200	0.0396
Error	33	93.750000	2.840909		

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

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	46	66666.666667			
Replicate	3	0.000000	0.000000	0.000	1.0000
Treatment	11	66666.666667	6060.606061	0.000	1.0000
Error	32	0.000000	0.000000		

Randomized Complete Block (RCB) AOV For ZEAMX BCOR Zea mays Corn PLOT C 6/19/2014 PHYGEN % 43 5 5 DA-B P 0 (Data Column 3)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	40	353.869392			
Replicate	3	118.002797	39.334266	6.608	0.0017
Treatment	10	75.160065	7.516006	1.263	0.2990
Error	27	160.706530	5.952094		

Randomized Complete Block (RCB) AOV For W Weed AMAPA Amaranthus palmeri Palmer amaranth PLOT P 6/19/2014 CONTRO % 43 5 5 DA-B P 0 (Data Column 4)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	46	66138.842975			
Replicate	3	4.373278	1.457759	1.502	0.2328
Treatment	11	66103.409091	6009.400826	6191.149	0.0001
Error	32	31.060606	0.970644		

Randomized Complete Block (RCB) AOV For ZEAMX BCOR Zea mays Corn PLOT C 6/26/2014 PHYGEN % 50 12 12 DA-B P 0 (Data Column 5)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	29	12.681818			
Replicate	3	0.409091	0.136364	0.533	0.6660
Treatment	10	8.181818	0.818182	3.200	0.0188
Error	16	4.090909	0.255682		

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

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	46	65590.559841			
Replicate	3	3.127181	1.042394	0.415	0.7432
Treatment	11	65507.109428	5955.191766	2372.491	0.0001
Error	32	80.323232	2.510101		

Randomized Complete Block (RCB) AOV For ZEAMX BCOR Zea mays Corn PLOT C 7/3/2014 PHYGEN % 57 19 19 DA-B P 0 (Data Column 7)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	22	0.000000000000			
Replicate	3	0.000000000000	0.000000000000	0.000	1.0000
Treatment	11	0.000000000000	0.000000000000	0.000	1.0000
Error	8	0.000000000000	0.000000000000		

Randomized Complete Block (RCB) AOV For W Weed AMAPA Amaranthus palmeri Palmer amaranth PLOT P 7/3/2014 CONTRO % 57 19 19 DA-B P 0 (Data Column 8)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	46	65235.881543			
Replicate	3	14.290634	4.763545	2.118	0.1174
Treatment	11	65149.621212	5922.692837	2633.417	0.0001
Error	32	71.969697	2.249053		

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

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	46	63322.581879			
Replicate	3	108.861341	36.287114	4.102	0.0143
Treatment	11	62930.639731	5720.967248	646.709	0.0001
Error	32	283.080808	8.846275		

Purdue University Weed Science

Randomized Complete Block (RCB) AOV For W Weed AMAPA Amaranthus palmeri Palmer amaranth PLOT P 7/21/2014 CONTRO % 75 37 37

DA-B P 0 (Data Column 10)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	30	64593.750000			
Replicate	3	26.041667	8.680556	2.260	0.1207
Treatment	11	64506.250000	5864.204545	1526.681	0.0001
Error	16	61.458333	3.841146		

Pest Type

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

Pest Code

AMAPA, Amaranthus palmeri, = US

Crop Code

ZEAMX, BCOR, Zea mays, = 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)