

Purdue University Weed Science

Comparison of Early POST vs. PRE followed by POST Corn programs on Glyphosate-Resistant Palmer amaranth

Trial ID: 14S-CCP-CTC-11 Location: 12 MILE Trial Year: 2014
 Protocol ID: 14S-CCP-CTC-11 Investigator: Dr. Bill Johnson
 Project ID: Study Director: Joe Ikley
 Sponsor Contact: DuPont/AMVAC

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: 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 L Randomized Complete Block (RCB)

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Application Description

	A	B	C
Application Date:	5/7/2014	6/6/2014	6/16/2014
Appl. Start Time:	6:30	13:00	13:30
Appl. Stop Time:	9:00 AM	2:00 PM	2:00 PM
Application Method:	SPRAY	SPRAY	SPRAY
Application Timing:	PRE	E POST	L POST
Application Placement:	BROADC	BROADC	BROADC
Applied By:	Ikley	Devkota	Ikley
Air Temperature, Unit:	50 F	77 F	81 F
% Relative Humidity:	58	36	65
Wind Velocity, Unit:	5 MPH	2 MPH	3 MPH
Wind Direction:	E	E	S
Dew Presence (Y/N):	N no	N no	N no
Soil Temperature, Unit:	55 F	80 F	72 F
Soil Moisture:	DRY	SLIWET	SLIWET
% Cloud Cover:	70	15	80

Crop Stage At Each Application

	A	B	C
Crop 1 Code, BBCH Scale:	ZEAMX BCOR	ZEAMX BCOR	ZEAMX BCOR
Stage Scale Used:		BBCH	BBCH
Stage Majority, Percent:		34	36
Stage Minimum, Percent:		33	35
Stage Maximum, Percent:		35	36
Height, Unit:		9 IN	16.5 IN
Height Minimum, Maximum:		6 12	13 20

Pest Stage At Each Application

	A	B	C
Pest 1 Code, Type, Scale:	AMAPA W	AMAPA W	AMAPA W
Stage Majority, Percent:		19	00
Stage Minimum, Percent:		14	
Stage Maximum, Percent:		19	
Height, Unit:		2 IN	
Height Minimum, Maximum:		1 3	
Density, Unit:		10 YD2	0 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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Comparison of Early POST vs. PRE followed by POST Corn programs on Glyphosate-Resistant Palmer amaranth

Trial ID: 14S-CCP-CTC-11 Location: 12 MILE Trial Year: 2014
 Protocol ID: 14S-CCP-CTC-11 Investigator: Dr. Bill Johnson
 Project ID: Study Director: Joe Ikley
 Sponsor Contact: DuPont/AMVAC

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	Other Rate	Other Unit	Appl Code	Appl Description	Amt to Measure	Rep 1	Rep 2	Rep 3	Rep 4
1	Untreated Check											101	304	602	803
2	INSTIGATE @ 6 OZ/A											102	303	605	902
	RESOLVE	25 %		DF	1 oz/a		0.25 oz ai/a		A	PRE	0.8987 g/mx				
	MESOTRIONE	50 %		WG	5 oz/a		2.5 oz ai/a		A	PRE	4.493 g/mx				
	CINCH ATZ	5.5 LB/GAL		L	3 pt/a				A	PRE	45.0 ml/mx				
	REALM Q @ 4 OZ/A														
	RESOLVE	25 %		DF	1.2 oz/a		0.3 oz ai/a		C	POST	1.078 g/mx				
	MESOTRIONE	50 %		WG	2.5 oz/a		1.25 oz ai/a		C	POST	2.247 g/mx				
	ISOXADIFEN-ETHYL	50 %		WG	0.3 oz/a		0.15 oz ai/a		C	POST	0.2696 g/mx				
	ABUNDIT EXTRA	3 LBAE/GAL		SL	32 fl oz/a				C	POST	30.0 ml/mx				
	N-PAK - AMS	3.4 LBA/GAL		SL	2.5 % v/v				C	POST	45.0 ml/mx				
3	INSTIGATE @ 6 OZ/A											103	403	702	905
	RESOLVE	25 %		DF	1 oz/a		0.25 oz ai/a		A	PRE	0.8987 g/mx				
	MESOTRIONE	50 %		WG	5 oz/a		2.5 oz ai/a		A	PRE	4.493 g/mx				
	AATREX	4 LB/GAL		L	1 qt/a				A	PRE	30.0 ml/mx				
	AATREX	4 LB/GAL		L	1 qt/a				C	POST	30.0 ml/mx				
	ABUNDIT EXTRA	3 LBAE/GAL		SL	32 fl oz/a				C	POST	30.0 ml/mx				
	N-PAK - AMS	3.4 LBA/GAL		SL	2.5 % v/v				C	POST	45.0 ml/mx				
4	PREQUEL @ 1.66 OZ/A											104	504	705	804
	RESOLVE	25 %		DF	1 oz/a				A	PRE	0.8987 g/mx				
	ISOXAFLUTOLE	75 %		SG	0.67 oz/a				A	PRE	0.6021 g/mx				
	AATREX	4 LB/GAL		L	1 qt/a				A	PRE	30.0 ml/mx				
	REALM Q @ 4 OZ/A														
	RESOLVE	25 %		DF	1.2 oz/a		0.3 oz ai/a		C	POST	1.078 g/mx				
	MESOTRIONE	50 %		WG	2.5 oz/a		1.25 oz ai/a		C	POST	2.247 g/mx				
	ISOXADIFEN-ETHYL	50 %		WG	0.3 oz/a		0.15 oz ai/a		C	POST	0.2696 g/mx				
	ABUNDIT EXTRA	3 LBAE/GAL		SL	32 fl oz/a				C	POST	30.0 ml/mx				
	AATREX	4 LB/GAL		L	1 qt/a				C	POST	30.0 ml/mx				
	N-PAK - AMS	3.4 LBA/GAL		SL	2.5 % v/v				C	POST	45.0 ml/mx				
5	CINCH ATZ	5.5 LB/GAL		L	3 pt/a				A	PRE	45.0 ml/mx	105	405	603	903
	REALM Q @ 4 OZ/A														
	RESOLVE	25 %		DF	1.2 oz/a		0.3 oz ai/a		C	POST	1.078 g/mx				
	MESOTRIONE	50 %		WG	2.5 oz/a		1.25 oz ai/a		C	POST	2.247 g/mx				
	ISOXADIFEN-ETHYL	50 %		WG	0.3 oz/a		0.15 oz ai/a		C	POST	0.2696 g/mx				
	ABUNDIT EXTRA	3 LBAE/GAL		SL	32 fl oz/a				C	POST	30.0 ml/mx				
	AATREX	4 LB/GAL		L	1 qt/a				C	POST	30.0 ml/mx				
	N-PAK - AMS	3.4 LBA/GAL		SL	2.5 % v/v				C	POST	45.0 ml/mx				
6	PREQUEL @ 1.66 OZ/A											201	305	704	904
	RESOLVE	25 %		DF	1 oz/a				A	PRE	0.8987 g/mx				
	ISOXAFLUTOLE	75 %		SG	0.67 oz/a				A	PRE	0.6021 g/mx				
	AATREX	4 LB/GAL		L	1 qt/a				A	PRE	30.0 ml/mx				
	ABUNDIT EXTRA	3 LBAE/GAL		SL	32 fl oz/a				C	POST	30.0 ml/mx				
	AATREX	4 LB/GAL		L	1 qt/a				C	POST	30.0 ml/mx				
	N-PAK - AMS	3.4 LBA/GAL		SL	2.5 % v/v				C	POST	45.0 ml/mx				
7	ROUNDUP POWERMAX	4.5 LBAE/GAL		SL	1 qt/a				B	2-4" AMAPA	30.0 ml/mx	202	501	701	901
	N-PAK - AMS	3.4 LBA/GAL		SL	2.5 % v/v				B	2-4" AMAPA	45.0 ml/mx				
8	IMPACT	2.8 LB/GAL		L	0.75 fl oz/a				B	2-4" AMAPA	0.7031 ml/mx	203	404	601	1003
	ROUNDUP POWERMAX	4.5 LBAE/GAL		SL	1 qt/a				B	2-4" AMAPA	30.0 ml/mx				
	AATREX	4 LB/GAL		L	1 qt/a				B	2-4" AMAPA	30.0 ml/mx				
	MSO ULTRA	100 %		L	1 % v/v				B	2-4" AMAPA	18.0 ml/mx				
	N-PAK - AMS	3.4 LBA/GAL		SL	2.5 % v/v				B	2-4" AMAPA	45.0 ml/mx				
9	IMPACT	2.8 LB/GAL		L	0.75 fl oz/a				B	2-4" AMAPA	0.7031 ml/mx	204	401	505	1001
	ROUNDUP POWERMAX	4.5 LBAE/GAL		SL	1 qt/a				B	2-4" AMAPA	30.0 ml/mx				
	STATUS	61.1 %		WG	5 oz/a				B	2-4" AMAPA	4.493 g/mx				
	AATREX	4 LB/GAL		L	1 qt/a				B	2-4" AMAPA	30.0 ml/mx				
	MSO ULTRA	100 %		L	1 % v/v				B	2-4" AMAPA	18.0 ml/mx				
	N-PAK - AMS	3.4 LBA/GAL		SL	2.5 % v/v				B	2-4" AMAPA	45.0 ml/mx				

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 Reps: 4
 Spray vol: 15 gal/ac

 Plots: 10 by 30 feet
 Mix size: 1.8 liters (min 1.5642)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Other Rate	Other Rate Unit	Appl Code	Appl Description	Amt Product to Measure	Rep 1	2	3	4
10	HARNESS XTRA	5.6 LB/GAL		SC	3.2 pt/a				B	2-4" AMAPA	47.99 ml/mx	205	503	801	805
	IMPACT	2.8 LB/GAL		L	0.75 fl oz/a				B	2-4" AMAPA	0.7031 ml/mx				
	ROUNDUP POWERMAX	4.5 LBAE/GAL		SL	1 qt/a				B	2-4" AMAPA	30.0 ml/mx				
	MSO ULTRA	100 %		L	1 % v/v				B	2-4" AMAPA	18.0 ml/mx				
	N-PAK - AMS	3.4 LBA/GAL		SL	2.5 % v/v				B	2-4" AMAPA	45.0 ml/mx				
11	HALEX GT	4.389 LBAE/GAL		L	3.6 pt/a				B	2-4" AMAPA	53.99 ml/mx	301	502	604	1002
	AATREX	4 LB/GAL		L	1 pt/a				B	2-4" AMAPA	15.0 ml/mx				
	ACTIVATOR 90 - NIS	90 %		L	0.25 % v/v				B	2-4" AMAPA	4.5 ml/mx				
	N-PAK - AMS	3.4 LBA/GAL		SL	2.5 % v/v				B	2-4" AMAPA	45.0 ml/mx				
12	Untreated Check											302	402	703	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 Type	Lot Code
6.830	g	RESOLVE	25	DF	
15.727	g	MESOTRIONE	50	WG	
89.990	ml	CINCH ATZ	5.5	L	
0.809	g	ISOXADIFEN-ETHYL	50	WG	
150.000	ml	ABUNDIT EXTRA	3	SL	
449.951	ml	N-PAK - AMS	3.4	SL	
284.998	ml	AATREX	4	L	
1.204	g	ISOXAFLUTOLE	75	SG	
120.000	ml	ROUNDUP POWERMAX	4.5	SL	
2.109	ml	IMPACT	2.8	L	
53.994	ml	MSO ULTRA	100	L	
4.493	g	STATUS	61.1	WG	
47.995	ml	HARNESS XTRA	5.6	SC	
53.994	ml	HALEX GT	4.389	L	
4.500	ml	ACTIVATOR 90 - NIS	90	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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Comparison of Early POST vs. PRE followed by POST Corn programs on Glyphosate-Reistant Palmer amaranth

Trial ID: 14S-CCP-CTC-11 Location: 12 MILE Trial Year: 2014
 Protocol ID: 14S-CCP-CTC-11 Investigator: Dr. Bill Johnson
 Project ID: Study Director: Joe Ikley
 Sponsor Contact: DuPont/AMVAC

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			6/13/2014	6/13/2014			6/23/2014	
Rating Type	PHYGEN			PHYGEN			PHYGEN			
Rating Unit	%			%			%			
Days After First/Last Applic.	30 30	30 30			37 7	37 7			47 7	
Trt-Eval Interval	0 DA-B	0 DA-B			7 DA-B	7 DA-B			7 DA-C	
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	
		304	0*	0	0	0	0	0	0	
		602	0	0	0	0	0	0	0	
		803	0	0	0	0	0	0	0	
		Mean =	0	0	0	0	0	0	0	
2 INSTIGATE @ 6 OZ/A		102	.	100	2*	100	5*	100	100	
RESOLVE	1 oz/a A	303	0*	100	2*	95*	5*	98*	98*	
MESOTRIONE	5 oz/a A	605	0	90	0	90	0	95	95	
CINCH ATZ	3 pt/a A	902	0	100	3	95*	10	98*	98*	
REALM Q @ 4 OZ/A										
RESOLVE	1.2 oz/a C									
MESOTRIONE	2.5 oz/a C									
ISOXADIFEN-ETHYL	0.3 oz/a C									
ABUNDIT EXTRA	32 fl oz/a C									
N-PAK - AMS	2.5 % v/v C									
		Mean =	0	98	2	95	5	98	98	
3 INSTIGATE @ 6 OZ/A		103	.	100	0*	100	0*	100	100	
RESOLVE	1 oz/a A	403	10	100	0*	100	0*	100	100	
MESOTRIONE	5 oz/a A	702	0	100	0	100	0	100	100	
AATREX	1 qt/a A	905	0	100	0	100*	0	100*	100*	
AATREX	1 qt/a C									
ABUNDIT EXTRA	32 fl oz/a C									
N-PAK - AMS	2.5 % v/v C									
		Mean =	3	100	0	100	0	100	100	
4 PREQUEL @ 1.66 OZ/A		104	.	100	2*	100	5*	100	100	
RESOLVE	1 oz/a A	504	0	100*	0	85	5	100	100	
ISOXAFLUTOLE	0.67 oz/a A	705	5	100	0	95	0	100	100	
AATREX	1 qt/a A	804	5	100	5	100	10	100	100	
REALM Q @ 4 OZ/A										
RESOLVE	1.2 oz/a C									
MESOTRIONE	2.5 oz/a C									
ISOXADIFEN-ETHYL	0.3 oz/a C									
ABUNDIT EXTRA	32 fl oz/a C									
AATREX	1 qt/a C									
N-PAK - AMS	2.5 % v/v C									
		Mean =	3	100	2	95	5	100	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	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	6/13/2014	6/13/2014	6/23/2014	6/23/2014		
Rating Type	PHYGEN	CONTRO	PHYGEN	CONTRO	PHYGEN	CONTRO		
Rating Unit	%	%	%	%	%	%		
Days After First/Last Applic.	30 30	30 30	37 7	37 7	47 7	47 14		
Trt-Eval Interval	0 DA-B	0 DA-B	7 DA-B	7 DA-B	7 DA-C	7 DA-C		
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
5 CINCH ATZ	3 pt/a	A 105	.	100	0*	95	3*	100
REALM Q @ 4 OZ/A		405	0	100	0	90	5	100
RESOLVE	1.2 oz/a	C 603	0	60	0*	60	3*	100
MESOTRIONE	2.5 oz/a	C 903	0	100	0	82*	0	100*
ISOXADIFEN-ETHYL	0.3 oz/a	C						
ABUNDIT EXTRA	32 fl oz/a	C						
AATREX	1 qt/a	C						
N-PAK - AMS	2.5 % v/v	C						
Mean =			0	90	0	82	3	100
6 PREQUEL @ 1.66 OZ/A		201	.	100	3*	95	0*	100
RESOLVE	1 oz/a	A 305	5*	100	3*	95	0*	90
ISOXAFLOTOL	0.67 oz/a	A 704	0	75	0	85	0	100
AATREX	1 qt/a	A 904	10	100	5	92*	0	97*
ABUNDIT EXTRA	32 fl oz/a	C						
AATREX	1 qt/a	C						
N-PAK - AMS	2.5 % v/v	C						
Mean =			5	94	3	92	0	97
7 ROUNDUP POWERMAX	1 qt/a	B 202	.	.	0*	30	0*	0
N-PAK - AMS	2.5 % v/v	B 501	.	.	0	0	0	0
		701	.	.	0	0	0	0
		901	.	.	0	10*	0	0
Mean =			.	.	0	10	0	0
8 IMPACT	0.75 fl oz/a	B 203	.	.	0*	100*	0*	100*
ROUNDUP POWERMAX	1 qt/a	B 404	.	.	0	100	0	100
AATREX	1 qt/a	B 601	.	.	0*	100	0*	100
MSO ULTRA	1 % v/v	B 1003	.	.	0	100*	0	100*
N-PAK - AMS	2.5 % v/v	B						
Mean =			.	.	0	100	0	100
9 IMPACT	0.75 fl oz/a	B 204	.	.	0*	100	0*	100
ROUNDUP POWERMAX	1 qt/a	B 401	.	.	0*	100*	0*	100*
STATUS	5 oz/a	B 505	.	.	0	100	0	100
AATREX	1 qt/a	B 1001	.	.	0	100*	0	100*
MSO ULTRA	1 % v/v	B						
N-PAK - AMS	2.5 % v/v	B						
Mean =			.	.	0	100	0	100
10 HARNESS XTRA	3.2 pt/a	B 205	.	.	5*	100*	0*	100*
IMPACT	0.75 fl oz/a	B 503	.	.	5	100	0	100
ROUNDUP POWERMAX	1 qt/a	B 801	.	.	5	100	0	100
MSO ULTRA	1 % v/v	B 805	.	.	5	100	0	100
N-PAK - AMS	2.5 % v/v	B						
Mean =			.	.	5	100	0	100
11 HALEX GT	3.6 pt/a	B 301	.	.	0*	100*	0*	100*
AATREX	1 pt/a	B 502	.	.	0	100	0	100
ACTIVATOR 90 - NIS	0.25 % v/v	B 604	.	.	0	100	0	100
N-PAK - AMS	2.5 % v/v	B 1002	.	.	0	100*	0	100*
Mean =			.	.	0	100	0	100
12 Untreated Check		302	.	0	0	0	0	0
		402	0	0	0	0	0	0
		703	0	0	0	0	0	0
		802	0	0	0	0	0	0
Mean =			0	0	0	0	0	0

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		
BBCH Scale	BCOR		
Crop Scientific Name	Zea mays		
Crop Name	Corn		
Part Rated	PLOT C	PLOT P	PLOT P
Rating Date	7/3/2014	7/3/2014	7/9/2014
Rating Type	PHYGEN	CONTRO	CONTRO
Rating Unit	%	%	%
Days After First/Last Applic.	57 17	57 17	63 23
Trt-Eval Interval	17 DA-C	17 DA-C	23 DA-C
ARM Action Codes	P	P	P
Number of Decimals	0	0	0
Trt Treatment	Rate	Appl	
No. Name	Rate Unit	Code Plot	
1 Untreated Check		101	0
		304	0
		602	0
		803	0
		Mean =	0
2 INSTIGATE @ 6 OZ/A		102	0*
RESOLVE	1 oz/a A	303	0*
MESOTRIONE	5 oz/a A	605	0
CINCH ATZ	3 pt/a A	902	0
REALM Q @ 4 OZ/A			
RESOLVE	1.2 oz/a C		
MESOTRIONE	2.5 oz/a C		
ISOXADIFEN-ETHYL	0.3 oz/a C		
ABUNDIT EXTRA	32 fl oz/a C		
N-PAK - AMS	2.5 % v/v C		
		Mean =	0
3 INSTIGATE @ 6 OZ/A		103	0*
RESOLVE	1 oz/a A	403	0*
MESOTRIONE	5 oz/a A	702	0
AATREX	1 qt/a A	905	0
AATREX	1 qt/a C		
ABUNDIT EXTRA	32 fl oz/a C		
N-PAK - AMS	2.5 % v/v C		
		Mean =	0
4 PREQUEL @ 1.66 OZ/A		104	2*
RESOLVE	1 oz/a A	504	0
ISOXAFLUTOLE	0.67 oz/a A	705	0
AATREX	1 qt/a A	804	5
REALM Q @ 4 OZ/A			
RESOLVE	1.2 oz/a C		
MESOTRIONE	2.5 oz/a C		
ISOXADIFEN-ETHYL	0.3 oz/a C		
ABUNDIT EXTRA	32 fl oz/a C		
AATREX	1 qt/a C		
N-PAK - AMS	2.5 % v/v C		
		Mean =	2
			100
			100

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		
BBCH Scale	BCOR		
Crop Scientific Name	Zea mays		
Crop Name	Corn		
Part Rated	PLOT C	PLOT P	PLOT P
Rating Date	7/3/2014	7/3/2014	7/9/2014
Rating Type	PHYGEN	CONTRO	CONTRO
Rating Unit	%	%	%
Days After First/Last Applic.	57 17	57 17	63 23
Trt-Eval Interval	17 DA-C	17 DA-C	23 DA-C
ARM Action Codes	P	P	P
Number of Decimals	0	0	0
Trt Treatment	Rate	Appl	
No. Name	Rate Unit	Code Plot	
			7 8 9
5 CINCH ATZ	3 pt/a	A 105	0*
REALM Q @ 4 OZ/A		405	0
RESOLVE	1.2 oz/a	C 603	0*
MESOTRIONE	2.5 oz/a	C 903	0
ISOXADIFEN-ETHYL	0.3 oz/a	C	0
ABUNDIT EXTRA	32 fl oz/a	C	0
AATREX	1 qt/a	C	0
N-PAK - AMS	2.5 % v/v	C	0
Mean =			0 100 100
6 PREQUEL @ 1.66 OZ/A		201	0*
RESOLVE	1 oz/a	A 305	0*
ISOXAFLUTOLE	0.67 oz/a	A 704	0
AATREX	1 qt/a	A 904	0
ABUNDIT EXTRA	32 fl oz/a	C	0
AATREX	1 qt/a	C	0
N-PAK - AMS	2.5 % v/v	C	0
Mean =			0 89 85
7 ROUNDUP POWERMAX	1 qt/a	B 202	0*
N-PAK - AMS	2.5 % v/v	B 501	0
		701	0
		901	0
Mean =			0 2* 4* 1
8 IMPACT	0.75 fl oz/a	B 203	0*
ROUNDUP POWERMAX	1 qt/a	B 404	0
AATREX	1 qt/a	B 601	0*
MSO ULTRA	1 % v/v	B 1003	0
N-PAK - AMS	2.5 % v/v	B	0
Mean =			0 80 85 100 95 100
9 IMPACT	0.75 fl oz/a	B 204	0*
ROUNDUP POWERMAX	1 qt/a	B 401	0*
STATUS	5 oz/a	B 505	0
AATREX	1 qt/a	B 1001	0
MSO ULTRA	1 % v/v	B	0
N-PAK - AMS	2.5 % v/v	B	0
Mean =			0 100 80 100 100
10 HARNESS XTRA	3.2 pt/a	B 205	0*
IMPACT	0.75 fl oz/a	B 503	0
ROUNDUP POWERMAX	1 qt/a	B 801	0
MSO ULTRA	1 % v/v	B 805	0
N-PAK - AMS	2.5 % v/v	B	0
Mean =			0 100 100 100 100
11 HALEX GT	3.6 pt/a	B 301	0*
AATREX	1 pt/a	B 502	0
ACTIVATOR 90 - NIS	0.25 % v/v	B 604	0
N-PAK - AMS	2.5 % v/v	B 1002	0
Mean =			0 100* 99* 100 100 100 100
12 Untreated Check		302	0
		402	0
		703	0
		802	0
Mean =			0 0 0 0

Purdue University Weed Science

Comparison of Early POST vs. PRE followed by POST Corn programs on Glyphosate-Resistant Palmer amaranth

Trial ID: 14S-CCP-CTC-11 Location: 12 MILE Trial Year: 2014
Protocol ID: 14S-CCP-CTC-11 Investigator: Dr. Bill Johnson
Project ID: Study Director: Joe Ikley
Sponsor Contact: DuPont/AMVAC

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)

Purdue University Weed Science

Comparison of Early POST vs. PRE followed by POST Corn programs on Glyphosate-Resistant Palmer amaranth

Trial ID: 14S-CCP-CTC-11 Location: 12 MILE Trial Year: 2014
 Protocol ID: 14S-CCP-CTC-11 Investigator: Dr. Bill Johnson
 Project ID: Study Director: Joe Ikley
 Sponsor Contact: DuPont/AMVAC

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	6/13/2014	6/13/2014	6/23/2014	6/23/2014		
Rating Type	PHYGEN	CONTRO	PHYGEN	CONTRO	PHYGEN	CONTRO		
Rating Unit	%	%	%	%	%	%		
Days After First/Last Applic.	30 30	30 30	37 7	37 7	47 7	47 14		
Trt-Eval Interval	0 DA-B	0 DA-B	7 DA-B	7 DA-B	7 DA-C	7 DA-C		
ARM Action Codes	P	P	P	P	P	P		
Number of Decimals	0	0	0	0	0	0		
Trt Treatment No. Name	Rate	Appl						
	Rate Unit	Code	1	2	3	4	5	6
1 Untreated Check			0 a	0 b	0 b	0 b	0 a	0 b
2 INSTIGATE @ 6 OZ/A			0 a	98 a	2 b	95 a	5 a	98 a
RESOLVE	1 oz/a	A						
MESOTRIONE	5 oz/a	A						
CINCH ATZ	3 pt/a	A						
REALM Q @ 4 OZ/A								
RESOLVE	1.2 oz/a	C						
MESOTRIONE	2.5 oz/a	C						
ISOXADIFEN-ETHYL	0.3 oz/a	C						
ABUNDIT EXTRA	32 fl oz/a	C						
N-PAK - AMS	2.5 % v/v	C						
3 INSTIGATE @ 6 OZ/A			3 a	100 a	0 b	100 a	0 a	100 a
RESOLVE	1 oz/a	A						
MESOTRIONE	5 oz/a	A						
AATREX	1 qt/a	A						
AATREX	1 qt/a	C						
ABUNDIT EXTRA	32 fl oz/a	C						
N-PAK - AMS	2.5 % v/v	C						
4 PREQUEL @ 1.66 OZ/A			3 a	100 a	2 b	95 a	5 a	100 a
RESOLVE	1 oz/a	A						
ISOXAFLUTOLE	0.67 oz/a	A						
AATREX	1 qt/a	A						
REALM Q @ 4 OZ/A								
RESOLVE	1.2 oz/a	C						
MESOTRIONE	2.5 oz/a	C						
ISOXADIFEN-ETHYL	0.3 oz/a	C						
ABUNDIT EXTRA	32 fl oz/a	C						
AATREX	1 qt/a	C						
N-PAK - AMS	2.5 % v/v	C						
5 CINCH ATZ	3 pt/a	A	0 a	90 a	0 b	82 a	3 a	100 a
REALM Q @ 4 OZ/A								
RESOLVE	1.2 oz/a	C						
MESOTRIONE	2.5 oz/a	C						
ISOXADIFEN-ETHYL	0.3 oz/a	C						
ABUNDIT EXTRA	32 fl oz/a	C						
AATREX	1 qt/a	C						
N-PAK - AMS	2.5 % v/v	C						

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=2,8,9; Average=1,3,4,5,6,7

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		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	6/13/2014	6/13/2014	6/23/2014	6/23/2014						
Rating Type	PHYGEN	CONTRO	PHYGEN	CONTRO	PHYGEN	CONTRO						
Rating Unit	%	%	%	%	%	%						
Days After First/Last Applic.	30 30	30 30	37 7	37 7	47 7	47 14						
Trt-Eval Interval	0 DA-B	0 DA-B	7 DA-B	7 DA-B	7 DA-C	7 DA-C						
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			
6	PREQUEL @ 1.66 OZ/A			5 a	94 a	3 b	92 a	0 a	97 a			
	RESOLVE	1 oz/a	A									
	ISOXAFLUTOLE	0.67 oz/a	A									
	AATREX	1 qt/a	A									
	ABUNDIT EXTRA	32 fl oz/a	C									
	AATREX	1 qt/a	C									
	N-PAK - AMS	2.5 % v/v	C									
7	ROUNDUP POWERMAX	1 qt/a	B			0 b	10 b	0 a	0 b			
	N-PAK - AMS	2.5 % v/v	B									
8	IMPACT	0.75 fl oz/a	B			0 b	100 a	0 a	100 a			
	ROUNDUP POWERMAX	1 qt/a	B									
	AATREX	1 qt/a	B									
	MSO ULTRA	1 % v/v	B									
	N-PAK - AMS	2.5 % v/v	B									
9	IMPACT	0.75 fl oz/a	B			0 b	100 a	0 a	100 a			
	ROUNDUP POWERMAX	1 qt/a	B									
	STATUS	5 oz/a	B									
	AATREX	1 qt/a	B									
	MSO ULTRA	1 % v/v	B									
	N-PAK - AMS	2.5 % v/v	B									
10	HARNESX XTRA	3.2 pt/a	B			5 a	100 a	0 a	100 a			
	IMPACT	0.75 fl oz/a	B									
	ROUNDUP POWERMAX	1 qt/a	B									
	MSO ULTRA	1 % v/v	B									
	N-PAK - AMS	2.5 % v/v	B									
11	HALEX GT	3.6 pt/a	B			0 b	100 a	0 a	100 a			
	AATREX	1 pt/a	B									
	ACTIVATOR 90 - NIS	0.25 % v/v	B									
	N-PAK - AMS	2.5 % v/v	B									
12	Untreated Check			0 a	0 b	0 b	0 b	0 a	0 b			
LSD (P=.05)		6.9		12.2		1.9		11.6		3.6		2.7
Standard Deviation		3.7		8.2		1.3		7.9		2.4		1.9
CV		222.54		11.92		144.17		10.81		231.62		2.49
Bartlett's X2		1.192		4.503		0.236		4.476		0.443		0.271
P(Bartlett's X2)		0.551		0.105		0.889		0.345		0.801		0.603
Skewness		1.9133*		-0.841		1.7284*		-0.7944		2.8745*		-0.7336
Kurtosis		2.4438*		-1.3004		1.1544		-1.3432		7.4304*		-1.5449*

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					
Rating Date					
Rating Type					
Rating Unit					
Days After First/Last Applic.					
Trt-Eval Interval					
ARM Action Codes					
Number of Decimals					
Trt No.	Treatment Name	Rate	Appl Code	7	8
		Rate Unit			
1	Untreated Check			0 a	0 b
2	INSTIGATE @ 6 OZ/A			0 a	98 a
	RESOLVE	1 oz/a	A		
	MESOTRIONE	5 oz/a	A		
	CINCH ATZ	3 pt/a	A		
	REALM Q @ 4 OZ/A				
	RESOLVE	1.2 oz/a	C		
	MESOTRIONE	2.5 oz/a	C		
	ISOXADIFEN-ETHYL	0.3 oz/a	C		
	ABUNDIT EXTRA	32 fl oz/a	C		
	N-PAK - AMS	2.5 % v/v	C		
3	INSTIGATE @ 6 OZ/A			0 a	100 a
	RESOLVE	1 oz/a	A		
	MESOTRIONE	5 oz/a	A		
	AATREX	1 qt/a	A		
	AATREX	1 qt/a	C		
	ABUNDIT EXTRA	32 fl oz/a	C		
	N-PAK - AMS	2.5 % v/v	C		
4	PREQUEL @ 1.66 OZ/A			2 a	100 a
	RESOLVE	1 oz/a	A		
	ISOXAFLOTOLE	0.67 oz/a	A		
	AATREX	1 qt/a	A		
	REALM Q @ 4 OZ/A				
	RESOLVE	1.2 oz/a	C		
	MESOTRIONE	2.5 oz/a	C		
	ISOXADIFEN-ETHYL	0.3 oz/a	C		
	ABUNDIT EXTRA	32 fl oz/a	C		
	AATREX	1 qt/a	C		
	N-PAK - AMS	2.5 % v/v	C		
5	CINCH ATZ	3 pt/a	A	0 a	100 a
	REALM Q @ 4 OZ/A				
	RESOLVE	1.2 oz/a	C		
	MESOTRIONE	2.5 oz/a	C		
	ISOXADIFEN-ETHYL	0.3 oz/a	C		
	ABUNDIT EXTRA	32 fl oz/a	C		
	AATREX	1 qt/a	C		
	N-PAK - AMS	2.5 % v/v	C		

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		
BBCH Scale	BCOR		
Crop Scientific Name	Zea mays		
Crop Name	Corn		
Part Rated	PLOT C	PLOT P	PLOT P
Rating Date	7/3/2014	7/3/2014	7/9/2014
Rating Type	PHYGEN	CONTRO	CONTRO
Rating Unit	%	%	%
Days After First/Last Applic.	57 17	57 17	63 23
Trt-Eval Interval	17 DA-C	17 DA-C	23 DA-C
ARM Action Codes	P	P	P
Number of Decimals	0	0	0
Trt Treatment	Rate	Appl	
No. Name	Rate Unit	Code	
			7 8 9
6 PREQUEL @ 1.66 OZ/A			0 a 89 a 85 b
RESOLVE	1 oz/a	A	
ISOXAFLUTOLE	0.67 oz/a	A	
AATREX	1 qt/a	A	
ABUNDIT EXTRA	32 fl oz/a	C	
AATREX	1 qt/a	C	
N-PAK - AMS	2.5 % v/v	C	
7 ROUNDUP POWERMAX	1 qt/a	B	0 a 1 b 1 c
N-PAK - AMS	2.5 % v/v	B	
8 IMPACT	0.75 fl oz/a	B	0 a 95 a 95 a
ROUNDUP POWERMAX	1 qt/a	B	
AATREX	1 qt/a	B	
MSO ULTRA	1 % v/v	B	
N-PAK - AMS	2.5 % v/v	B	
9 IMPACT	0.75 fl oz/a	B	0 a 100 a 93 ab
ROUNDUP POWERMAX	1 qt/a	B	
STATUS	5 oz/a	B	
AATREX	1 qt/a	B	
MSO ULTRA	1 % v/v	B	
N-PAK - AMS	2.5 % v/v	B	
10 HARNESS XTRA	3.2 pt/a	B	0 a 100 a 98 a
IMPACT	0.75 fl oz/a	B	
ROUNDUP POWERMAX	1 qt/a	B	
MSO ULTRA	1 % v/v	B	
N-PAK - AMS	2.5 % v/v	B	
11 HALEX GT	3.6 pt/a	B	0 a 100 a 100 a
AATREX	1 pt/a	B	
ACTIVATOR 90 - NIS	0.25 % v/v	B	
N-PAK - AMS	2.5 % v/v	B	
12 Untreated Check			0 a 0 b 0 c
LSD (P=.05)	1.4	7.9	7.9
Standard Deviation	0.9	5.4	5.5
CV	682.56	7.4	7.59
Bartlett's X2	0.0	3.935	6.203
P(Bartlett's X2)	.	0.14	0.287
Skewness	5.6569*	-1.1774*	-1.1552*
Kurtosis	32.0*	-0.582	-0.601

Purdue University Weed Science

Comparison of Early POST vs. PRE followed by POST Corn programs on Glyphosate-Resistant Palmer amaranth

Trial ID: 14S-CCP-CTC-11 Location: 12 MILE Trial Year: 2014
 Protocol ID: 14S-CCP-CTC-11 Investigator: Dr. Bill Johnson
 Project ID: Study Director: Joe Ikley
 Sponsor Contact: DuPont/AMVAC

Randomized Complete Block (RCB) AOV For ZEAMX BCOR Zea mays Corn PLOT C 6/6/2014 PHYGEN % 30 30 0 DA-B P 0 (Data Column 1)					
Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	17	216.666667			
Replicate	2	9.523810	4.761905	0.346	0.7164
Treatment	6	83.333333	13.888889	1.010	0.4749
Error	9	123.809524	13.756614		

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	26	54981.250000			
Replicate	3	602.678571	200.892857	2.993	0.0600
Treatment	6	53237.500000	8872.916667	132.191	0.0001
Error	17	1141.071429	67.121849		

Randomized Complete Block (RCB) AOV For ZEAMX BCOR Zea mays Corn PLOT C 6/13/2014 PHYGEN % 37 7 7 DA-B P 0 (Data Column 3)					
Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	30	140.851852			
Replicate	3	7.388889	2.462963	1.500	0.2527
Treatment	11	107.185185	9.744108	5.933	0.0008
Error	16	26.277778	1.642361		

Randomized Complete Block (RCB) AOV For W Weed AMAPA Amaranthus palmeri Palmer amaranth PLOT P 6/13/2014 CONTRO % 37 7 7 DA-B P 0 (Data Column 4)					
Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	34	80235.185185			
Replicate	3	345.833333	115.277778	1.863	0.1684
Treatment	11	78651.851852	7150.168350	115.558	0.0001
Error	20	1237.500000	61.875000		

Randomized Complete Block (RCB) AOV For ZEAMX BCOR Zea mays Corn PLOT C 6/23/2014 PHYGEN % 47 7 7 DA-C P 0 (Data Column 5)					
Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	31	285.416667			
Replicate	3	13.541667	4.513889	0.775	0.5237
Treatment	11	172.916667	15.719697	2.700	0.0322
Error	17	98.958333	5.821078		

Randomized Complete Block (RCB) AOV For W Weed AMAPA Amaranthus palmeri Palmer amaranth PLOT P 6/23/2014 CONTRO % 47 14 7 DA-C P 0 (Data Column 6)					
Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	35	88970.601852			
Replicate	3	6.597222	2.199074	0.636	0.5999
Treatment	11	88891.435185	8081.039562	2338.475	0.0001
Error	21	72.569444	3.455688		

Randomized Complete Block (RCB) AOV For ZEAMX BCOR Zea mays Corn PLOT C 7/3/2014 PHYGEN % 57 17 17 DA-C P 0 (Data Column 7)					
Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	31	26.851852			
Replicate	3	1.388889	0.462963	0.515	0.6774
Treatment	11	10.185185	0.925926	1.030	0.4629
Error	17	15.277778	0.898693		

Randomized Complete Block (RCB) AOV For W Weed AMAPA Amaranthus palmeri Palmer amaranth PLOT P 7/3/2014 CONTRO % 57 17 17 DA-C P 0 (Data Column 8)					
Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	44	87442.416998			
Replicate	3	54.611771	18.203924	0.616	0.6101
Treatment	11	86500.974870	7863.724988	266.017	0.0001
Error	30	886.830357	29.561012		

Randomized Complete Block (RCB) AOV For W Weed AMAPA Amaranthus palmeri Palmer amaranth PLOT P 7/9/2014 CONTRO % 63 23 23 DA-C P 0 (Data Column 9)					
Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	44	84314.940218			
Replicate	3	216.689274	72.229758	2.411	0.0864
Treatment	11	83199.367016	7563.578820	252.432	0.0001
Error	30	898.883929	29.962798		

Purdue University Weed Science

Comparison of Early POST vs. PRE followed by POST Corn programs on Glyphosate-Resistant Palmer amaranth

Trial ID: 14S-CCP-CTC-11 Location: 12 MILE Trial Year: 2014
Protocol ID: 14S-CCP-CTC-11 Investigator: Dr. Bill Johnson
Project ID: Study Director: Joe Ikley
Sponsor Contact: DuPont/AMVAC

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)