

MSU Weed Science Research Program

Programs for control of glyphosate-resistant Palmer amaranth in corn

Trial ID: C15-13 Study Dir.: Kohrt, Sprague, Powell  
 Conducted: Barry Co. Investigator: Christy Sprague

**Date Planted:** May/16/2013 **Row Spacing:** 30 IN  
**Variety:** DKC 49-94 **No. of Reps:** 4  
**Population:** 27,500 seeds/A **% OM:** 2.2  
**Soil Type:** Sandy loam **pH:** 6.9  
**Plot Size:** 10 X 30 FT **Design:** RANDOMIZED COMPLETE BLOCK

**Tillage:** Spring soil finish

**Crop and Weed Description**

<b>Weed</b>	<b>Code</b>	<b>Common Name</b>	<b>Scientific Name</b>
1.	AMAPA	AMARANTH, PALMER	AMARANTHUS PALMERI S.WATS.
<b>Crop</b>	<b>Code</b>	<b>Common Name</b>	
1.	ZEAMX	CORN, FIELD	

**Application Description**

	A	B	C
<b>Application Timing:</b>	PRE	EPOST	POST
<b>Date Treated:</b>	May/18/2013	Jun/06/2013	Jun/21/2013
<b>Time Treated:</b>	11:00 AM	4:30 PM	11:00 AM
<b>% Cloud Cover:</b>	5	100	30
<b>Air Temp., Unit:</b>	73 F	63 F	83 F
<b>% Relative Humidity:</b>	40	61	48
<b>Wind Speed/Unit/Dir:</b>	1 mph NE	2 mph NE	9 mph S
<b>Soil Temp., Unit:</b>	71 F	69 F	74 F
<b>Soil/Leaf Surface M:</b>	5 -	2 4	4 4
<b>Soil Moist (1=w 5=d):</b>	4	2	3

**Crop Stage at Each Application**

	A	B	C
<b>Crop Name:</b>	ZEAMX	ZEAMX	ZEAMX
<b>Height (In.):</b>	-	4"	21"
<b>Stage (L):</b>	-	V4	V7

**Weed Stage at Each Application**

	A	B	C
<b>Weed 1 Name:</b>	AMAPA	AMAPA	AMAPA
<b>Height (In.):</b>	-	1"	2"
<b>Stage (L):</b>	-	4	8

**Weed Density (plants/sq. ft.)**

1  
**Weed Name:** AMAPA  
**Density:** 45

**Application Equipment**

Appl	Sprayer	Speed	Nozzle	Nozzle	Nozzle	Nozzle	Boom			
	Type	MPH	Type	Size	Height	Spacing	Width	GPA	Carrier	PSI
A	Backpack	3.5	AI XR	11003	18"	20"	100"	19	water	30
B	Backpack	3.5	AI XR	11003	28"	20"	100"	19	water	30
C	Backpack	3.5	AI XR	11003	40"	20"	100"	19	water	30

**Comments:** This population of Palmer amaranth was resistant to glyphosate and ALS-inhibiting herbicides.

MSU Weed Science Research Program

Programs for control of glyphosate-resistant Palmer amaranth in corn

Trial ID: C15-13 Study Dir.: Kohrt, Sprague, Powell  
 Conducted: Barry Co. Investigator: Christy Sprague

Weed Code	AMAPA	AMAPA	AMAPA	AMAPA	AMAPA
Crop Code					
Rating Data Type	control	control	control	control	control
Rating Unit	percent	percent	percent	percent	percent
Rating Date	Jun/06/2013	Jun/13/2013	Jun/22/2013	Jun/28/2013	Jul/09/2013
Trt-Eval Interval	19 DA-A	7 DA-B	16 DA-B	7 DA-C	18 DA-C
# Subsamples, Dec.	0	0	0	0	0

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code	97	92	73	45	31
1	Bicep II Magnum	5.5	L	2.1	qt/a	PRE	A	97	92	73	45	31
	Roundup PowerMax	4.5	L	22	fl oz/a	POST	C					
	AMS		WG	17	lb/100 gal	POST	C					
2	Bicep II Magnum	5.5	L	2.1	qt/a	PRE	A	97	92	70	96	94
	Liberty	2.34	L	29	fl oz/a	POST	C					
	AMS		WG	17	lb/100 gal	POST	C					
3	Zidua	85	WG	2.5	oz/a	EPOST	B		99	98	97	96
	Armezon	2.8	L	0.75	fl oz/a	EPOST	B					
	AAtrex	4	L	1.5	qt/a	EPOST	B					
	Roundup PowerMax	4.5	L	22	fl oz/a	EPOST	B					
	MSO		L	1	% v/v	EPOST	B					
	AMS		WG	17	lb/100 gal	EPOST	B					
4	Halex GT	4.38	L	3.6	pt/a	EPOST	B		99	98	95	90
	AAtrex	4	L	1	qt/a	EPOST	B					
	COC		L	1	% v/v	EPOST	B					
	AMS		WG	17	lb/100 gal	EPOST	B					
5	Capreno	3.45	L	3	fl oz/a	EPOST	B		99	97	94	80
	AAtrex	4	L	1	qt/a	EPOST	B					
	Roundup PowerMax	4.5	L	22	fl oz/a	EPOST	B					
	COC		L	1	% v/v	EPOST	B					
	AMS		WG	17	lb/100 gal	EPOST	B					
6	Harness Xtra	5.6	L	2	qt/a	PRE	A	96	88	40	97	95
	Armezon	2.8	L	0.75	fl oz/a	POST	C					
	AAtrex	4	L	1	pt/a	POST	C					
	Roundup PowerMax	4.5	L	22	fl oz/a	POST	C					
	MSO		L	1	% v/v	POST	C					
	AMS		WG	17	lb/100 gal	POST	C					
7	Bicep II Magnum	5.5	L	2.1	qt/a	PRE	A	96	91	68	83	80
	Halex GT	4.38	L	3.6	pt/a	POST	C					
	surfactant		L	0.25	% v/v	POST	C					
	AMS		WG	17	lb/100 gal	POST	C					
8	Bicep II Magnum	5.5	L	2.1	qt/a	PRE	A	96	91	66	98	96
	Laudis	3.5	L	2	fl oz/a	POST	C					
	Liberty	2.34	L	29	fl oz/a	POST	C					
	AMS		WG	17	lb/100 gal	POST	C					
9	Harness	7	L	1.6	pt/a	PRE	A	92	72	23	95	84
	Liberty	2.34	L	29	fl oz/a	POST	C					
	AMS		WG	17	lb/100 gal	POST	C					
10	Balance Flexx	2	L	4	fl oz/a	PRE	A	89	74	38	97	96
	AAtrex	4	L	1	qt/a	PRE	A					
	Warrant	3	L	3	pt/a	POST	C					
	Liberty	2.34	L	29	fl oz/a	POST	C					
	AMS		WG	17	lb/100 gal	POST	C					
11	Verdict	5.57	L	15	fl oz/a	PRE	A	89	79	40	68	71
	Status	56	WG	5	oz/a	POST	C					
	Roundup PowerMax	4.5	L	22	fl oz/a	POST	C					
	AMS		WG	17	lb/100 gal	POST	C					

MSU Weed Science Research Program

Weed Code						AMAPA	AMAPA	AMAPA	AMAPA	AMAPA		
Crop Code												
Rating Data Type						control	control	control	control	control		
Rating Unit						percent	percent	percent	percent	percent		
Rating Date						Jun/06/2013	Jun/13/2013	Jun/22/2013	Jun/28/2013	Jul/09/2013		
Trt-Eval Interval						19 DA-A	7 DA-B	16 DA-B	7 DA-C	18 DA-C		
# Subsamples, Dec.						0	0	0	0	0		
Trt	Treatment	Form	Form	Rate	Grow	Appl						
No.	Name	Conc	Type	Rate	Unit	Stg	Code					
12	Verdict	5.57	L	15	fl oz/a	PRE	A	92	64	28	69	78
	Laudis	3.5	L	2	fl oz/a	POST	C					
	Status	56	WG	5	oz/a	POST	C					
	Roundup PowerMax	4.5	L	22	fl oz/a	POST	C					
	AMS		WG	17	lb/100 gal	POST	C					
13	Verdict	5.57	L	15	fl oz/a	PRE	A	83	51	13	97	96
	Laudis	3.5	L	2	fl oz/a	POST	C					
	Status	56	WG	5	oz/a	POST	C					
	Liberty	2.34	L	29	fl oz/a	POST	C					
	AMS		WG	17	lb/100 gal	POST	C					
14	Untreated							0	0	0	0	0
15	Liberty	2.34	L	29	fl oz/a	EPOS	B		97	92	96	92
	AMS		WG	17	lb/100 gal	EPOS	B					
	Liberty	2.34	L	29	fl oz/a	POST	C					
	AMS		WG	17	lb/100 gal	POST	C					
16	Bicep II Magnum	5.5	L	2.1	qt/a	PRE	A	97	93	73	99	98
	Callisto Xtra	3.7	L	24	fl oz/a	POST	C					
	COC		L	1	% v/v	POST	C					
	AMS		WG	17	lb/100 gal	POST	C					
LSD (P=.05)								4.7	16.1	17.7	4.9	8.0
CV								3.85	14.07	21.58	4.19	7.03

Means followed by same letter do not significantly differ (P=.05, LSD)

MSU Weed Science Research Program

Weed Code	AMAPA	AMAPA
Crop Code		
Rating Data Type	control	control
Rating Unit	percent	percent
Rating Date	Jul/18/2013	Oct/07/2013
Trt-Eval Interval	27 DA-C	108 DA-C
# Subsamples, Dec.	0	0

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code		
1	Bicep II Magnum	5.5	L	2.1	qt/a	PRE	A	23	3
	Roundup PowerMax	4.5	L	22	fl oz/a	POST	C		
	AMS		WG	17	lb/100 gal	POST	C		
2	Bicep II Magnum	5.5	L	2.1	qt/a	PRE	A	95	84
	Liberty	2.34	L	29	fl oz/a	POST	C		
	AMS		WG	17	lb/100 gal	POST	C		
3	Zidua	85	WG	2.5	oz/a	EPOST	B	96	88
	Armezon	2.8	L	0.75	fl oz/a	EPOST	B		
	AAtrex	4	L	1.5	qt/a	EPOST	B		
	Roundup PowerMax	4.5	L	22	fl oz/a	EPOST	B		
	MSO		L	1	% v/v	EPOST	B		
	AMS		WG	17	lb/100 gal	EPOST	B		
4	Halex GT	4.38	L	3.6	pt/a	EPOST	B	88	80
	AAtrex	4	L	1	qt/a	EPOST	B		
	COC		L	1	% v/v	EPOST	B		
	AMS		WG	17	lb/100 gal	EPOST	B		
5	Capreno	3.45	L	3	fl oz/a	EPOST	B	82	65
	AAtrex	4	L	1	qt/a	EPOST	B		
	Roundup PowerMax	4.5	L	22	fl oz/a	EPOST	B		
	COC		L	1	% v/v	EPOST	B		
	AMS		WG	17	lb/100 gal	EPOST	B		
6	Harness Xtra	5.6	L	2	qt/a	PRE	A	97	87
	Armezon	2.8	L	0.75	fl oz/a	POST	C		
	AAtrex	4	L	1	pt/a	POST	C		
	Roundup PowerMax	4.5	L	22	fl oz/a	POST	C		
	MSO		L	1	% v/v	POST	C		
	AMS		WG	17	lb/100 gal	POST	C		
7	Bicep II Magnum	5.5	L	2.1	qt/a	PRE	A	84	76
	Halex GT	4.38	L	3.6	pt/a	POST	C		
	surfactant		L	0.25	% v/v	POST	C		
	AMS		WG	17	lb/100 gal	POST	C		
8	Bicep II Magnum	5.5	L	2.1	qt/a	PRE	A	96	82
	Laudis	3.5	L	2	fl oz/a	POST	C		
	Liberty	2.34	L	29	fl oz/a	POST	C		
	AMS		WG	17	lb/100 gal	POST	C		
9	Harness	7	L	1.6	pt/a	PRE	A	82	75
	Liberty	2.34	L	29	fl oz/a	POST	C		
	AMS		WG	17	lb/100 gal	POST	C		
10	Balance Flexx	2	L	4	fl oz/a	PRE	A	97	89
	AAtrex	4	L	1	qt/a	PRE	A		
	Warrant	3	L	3	pt/a	POST	C		
	Liberty	2.34	L	29	fl oz/a	POST	C		
	AMS		WG	17	lb/100 gal	POST	C		
11	Verdict	5.57	L	15	fl oz/a	PRE	A	81	83
	Status	56	WG	5	oz/a	POST	C		
	Roundup PowerMax	4.5	L	22	fl oz/a	POST	C		
	AMS		WG	17	lb/100 gal	POST	C		
12	Verdict	5.57	L	15	fl oz/a	PRE	A	92	86
	Laudis	3.5	L	2	fl oz/a	POST	C		
	Status	56	WG	5	oz/a	POST	C		
	Roundup PowerMax	4.5	L	22	fl oz/a	POST	C		
	AMS		WG	17	lb/100 gal	POST	C		

MSU Weed Science Research Program

Weed Code	AMAPA	AMAPA
Crop Code		
Rating Data Type	control	control
Rating Unit	percent	percent
Rating Date	Jul/18/2013	Oct/07/2013
Trt-Eval Interval	27 DA-C	108 DA-C
# Subsamples, Dec.	0	0

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code		
13	Verdict	5.57	L	15	fl oz/a	PRE	A	96	86
	Laudis	3.5	L	2	fl oz/a	POST	C		
	Status	56	WG	5	oz/a	POST	C		
	Liberty	2.34	L	29	fl oz/a	POST	C		
	AMS		WG	17	lb/100 gal	POST	C		
14	Untreated							0	0
15	Liberty	2.34	L	29	fl oz/a	EPOS	B	94	83
	AMS		WG	17	lb/100 gal	EPOS	B		
	Liberty	2.34	L	29	fl oz/a	POST	C		
	AMS		WG	17	lb/100 gal	POST	C		
16	Bicep II Magnum	5.5	L	2.1	qt/a	PRE	A	99	94
	Callisto Xtra	3.7	L	24	fl oz/a	POST	C		
	COC		L	1	% v/v	POST	C		
	AMS		WG	17	lb/100 gal	POST	C		
LSD (P=.05)								8.9	10.7
CV								7.69	10.36

Means followed by same letter do not significantly differ (P=.05, LSD)