

MSU Weed Science Research Program

Crop tolerance and Palmer amaranth control with GF-3471 (ACM)

Trial ID: C13-15 Study Dir.: Sprague and Powell
 Conducted: Gratiot Co. Investigator: Christy Sprague

Date Planted: May/22/2015 Row Spacing: 30 IN
 Variety: Dekalb 49-72 No. of Reps: 4
 Population: 33,000 seeds/A % OM: 3.1
 Soil Type: Sandy loam pH: 7.0
 Plot Size: 10 X 25 FT Design: RANDOMIZED COMPLETE BLOCK

Tillage: Spring soil finish twice

Crop and Weed Description

Weed	Code	Common Name	Scientific Name
1.	CHEAL	LAMBSQUARTERS, COMMON	CHENOPODIUM ALBUM L.
2.	AMAPA	AMARANTH, PALMER	AMARANTHUS PALMERI S.WATS.
3.	DIGSA	CRABGRASS, LARGE	DIGITARIA SANGUINALIS (L.) SCOP.
Crop	Code	Common Name	
1.	ZEAMX	CORN, FIELD	

Application Description

	A	B
Application Timing:	EPOS	POST
Date Treated:	Jun/17/2015	Jun/24/2015
Time Treated:	5:45 PM	6:00 PM
% Cloud Cover:	100	70
Air Temp., Unit:	72 F	77 F
% Relative Humidity:	76	40
Wind Speed/Unit/Dir:	4 mph S	1 mph W
Soil Temp., Unit:	73 F	73 F
Soil/Leaf Surface M:	2 4	3 5
Soil Moist (1=w 5=d):	2	3

Crop Stage at Each Application

	A	B
Crop Name:	ZEAMX	ZEAMX
Height (In.):	10"	16"
Stage (L):	V4	V5

Weed Stage at Each Application

	A	B
Weed 1 Name:	CHEAL	CHEAL
Height (In.):	1"	4-6"
Stage (L):	6	10-12
Weed 2 Name:	AMAPA	AMAPA
Height (In.):	1"	3-5"
Stage (L):	6	8
Weed 3 Name:	DIGSA	DIGSA
Height (In.):	2"	5"
Stage (L):	3	5

Weed Density (plants/sq. ft.)

	1	2	3
Weed Name:	CHEAL	AMAPA	DIGSA
Density:	7	7	12

Application Equipment

Appl	Sprayer	Speed	Nozzle	Nozzle	Nozzle	Nozzle	Boom			
	Type	MPH	Type	Size	Height	Spacing	Width	GPA	Carrier	PSI
A	Backpack	3.5	AIXR	11003	26"	20"	100"	19	Water	28
B	Backpack	3.5	AIXR	11003	32"	20"	100"	19	Water	28

Comments: Palmer amaranth is glyphosate-resistant.
 Trial was destroyed prior to harvest.

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Weed Code	Crop Code	Rating Data Type	Rating Unit	Rating Date	Trt-Eval Interval	# Subsamples, Dec.	ZEAMX injury percent Jun/24/2015 7 DA-A 0	DIGSA control percent Jun/24/2015 7 DA-A 0	CHEAL control percent Jun/24/2015 7 DA-A 0	AMAPA control percent Jun/24/2015 7 DA-A 0	ZEAMX injury percent Jun/29/2015 5 DA-B 0	
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code					
1	GF-3471	3.29	L	2.75	qt/a	EPOS	A	3	99	99	97	3
1	Durango DMA	4	SL	1	qt/a	EPOS	A					
1	AMS LIQUID		L	2.5	% v/v	EPOS	A					
2	GF-3471	3.29	L	2.75	qt/a	EPOS	A	4	99	99	99	3
2	Atrazine	90	WG	1.1	lb/a	EPOS	A					
2	Durango DMA	4	SL	1	qt/a	EPOS	A					
2	AMS LIQUID		L	2.5	% v/v	EPOS	A					
3	Corvus	2.63	L	5.6	fl oz/a	EPOS	A	19	99	99	99	4
3	Atrazine	90	WG	1.1	lb/a	EPOS	A					
3	Durango DMA	4	SL	1	qt/a	EPOS	A					
3	AMS LIQUID		L	2.5	% v/v	EPOS	A					
4	Keystone NXT	5.6	L	2.5	qt/a	EPOS	A	4	99	99	99	2
4	Durango DMA	4	SL	1	qt/a	EPOS	A					
4	AMS LIQUID		L	2.5	% v/v	EPOS	A					
5	Lumax EZ	3.67	L	3.25	qt/a	EPOS	A	4	99	99	99	2
5	Durango DMA	4	SL	1	qt/a	EPOS	A					
5	AMS LIQUID		L	2.5	% v/v	EPOS	A					
6	Zidua	85	WG	2.5	oz/a	EPOS	A	2	99	99	99	2
6	Atrazine	90	WG	1.1	lb/a	EPOS	A					
6	Durango DMA	4	SL	1	qt/a	EPOS	A					
6	AMS LIQUID		L	2.5	% v/v	EPOS	A					
7	SureStart II	4.16	L	2	pt/a	EPOS	A	2	99	99	58	2
7	Durango DMA	4	SL	1	qt/a	EPOS	A					
7	AMS LIQUID		L	2.5	% v/v	EPOS	A					
8	Durango DMA	4	SL	1	qt/a	EPOS	A	0	99	99	0	2
8	AMS LIQUID		L	2.5	% v/v	EPOS	A					
9	GF-3471	3.29	L	1.5	qt/a	POST	B	0	0	0	0	4
9	Durango DMA	4	SL	1	qt/a	POST	B					
9	AMS LIQUID		L	2.5	% v/v	POST	B					
10	GF-3353***	3.28	L	1.5	qt/a	POST	B					
10	Durango DMA	4	SL	1	qt/a	POST	B					
10	AMS LIQUID		L	2.5	% v/v	POST	B					
11	GF-3471	3.29	L	3	qt/a	POST	B	0	0	0	0	9
11	Durango DMA	4	SL	2	qt/a	POST	B					
11	AMS LIQUID		L	5	% v/v	POST	B					
12	GF-3471	3.29	L	1.5	qt/a	POST	B	0	0	0	0	3
12	Atrazine	90	WG	0.56	lb/a	POST	B					
12	Durango DMA	4	SL	1	qt/a	POST	B					
12	AMS LIQUID		L	2.5	% v/v	POST	B					
13	GF-3471	3.29	L	3	qt/a	POST	B	0	0	0	0	9
13	Atrazine	90	WG	1.1	lb/a	POST	B					
13	Durango DMA	4	SL	2	qt/a	POST	B					
13	AMS LIQUID		L	5	% v/v	POST	B					
14	Halex GT	4.38	L	3.6	pt/a	POST	B	0	0	0	0	3
14	Surfactant		L	0.25	% v/v	POST	B					
14	AMS LIQUID		L	2.5	% v/v	POST	B					

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 Investigator: Christy Sprague

Weed Code									DIGSA	CHEAL	AMAPA	
Crop Code									control	control	control	ZEAMX
Rating Data Type									percent	percent	percent	injury
Rating Unit									percent	percent	percent	percent
Rating Date									Jun/24/2015	Jun/24/2015	Jun/24/2015	Jun/29/2015
Trt-Eval Interval									7 DA-A	7 DA-A	7 DA-A	5 DA-B
# Subsamples, Dec.									0	0	0	0
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code					
15	Lumax EZ	3.67	L	2	qt/a	POST	B	0	0	0	0	3
15	Durango DMA	4	SL	1	qt/a	POST	B					
15	AMS LIQUID		L	2.5	% v/v	POST	B					
16	Durango DMA	4	SL	1	qt/a	POST	B	0	0	0	0	1
16	AMS LIQUID		L	2.5	% v/v	POST	B					
LSD (P=.05)								2.2	0.0	0.0	3.5	2.5
CV								61.16	0.0	0.0	5.63	52.22

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

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Weed Code								DIGSA	CHEAL	AMAPA		DIGSA
Crop Code											ZEAMX	
Rating Data Type								control	control	control	injury	control
Rating Unit								percent	percent	percent	percent	percent
Rating Date								Jun/29/2015	Jun/29/2015	Jun/29/2015	Jul/08/2015	Jul/08/2015
Trt-Eval Interval								5 DA-B	5 DA-B	5 DA-B	14 DA-B	14 DA-B
# Subsamples, Dec.								0	0	0	0	0
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code					
1	GF-3471	3.29	L	2.75	qt/a	EPOS	A	99	99	99	0	99
1	Durango DMA	4	SL	1	qt/a	EPOS	A					
1	AMS LIQUID		L	2.5	% v/v	EPOS	A					
2	GF-3471	3.29	L	2.75	qt/a	EPOS	A	99	99	99	0	99
2	Atrazine	90	WG	1.1	lb/a	EPOS	A					
2	Durango DMA	4	SL	1	qt/a	EPOS	A					
2	AMS LIQUID		L	2.5	% v/v	EPOS	A					
3	Corvus	2.63	L	5.6	fl oz/a	EPOS	A	99	99	99	4	99
3	Atrazine	90	WG	1.1	lb/a	EPOS	A					
3	Durango DMA	4	SL	1	qt/a	EPOS	A					
3	AMS LIQUID		L	2.5	% v/v	EPOS	A					
4	Keystone NXT	5.6	L	2.5	qt/a	EPOS	A	99	99	99	4	99
4	Durango DMA	4	SL	1	qt/a	EPOS	A					
4	AMS LIQUID		L	2.5	% v/v	EPOS	A					
5	Lumax EZ	3.67	L	3.25	qt/a	EPOS	A	99	99	99	0	99
5	Durango DMA	4	SL	1	qt/a	EPOS	A					
5	AMS LIQUID		L	2.5	% v/v	EPOS	A					
6	Zidua	85	WG	2.5	oz/a	EPOS	A	99	99	99	0	99
6	Atrazine	90	WG	1.1	lb/a	EPOS	A					
6	Durango DMA	4	SL	1	qt/a	EPOS	A					
6	AMS LIQUID		L	2.5	% v/v	EPOS	A					
7	SureStart II	4.16	L	2	pt/a	EPOS	A	99	99	79	8	99
7	Durango DMA	4	SL	1	qt/a	EPOS	A					
7	AMS LIQUID		L	2.5	% v/v	EPOS	A					
8	Durango DMA	4	SL	1	qt/a	EPOS	A	99	99	36	0	99
8	AMS LIQUID		L	2.5	% v/v	EPOS	A					
9	GF-3471	3.29	L	1.5	qt/a	POST	B	99	82	19	5	99
9	Durango DMA	4	SL	1	qt/a	POST	B					
9	AMS LIQUID		L	2.5	% v/v	POST	B					
10	GF-3353***	3.28	L	1.5	qt/a	POST	B					
10	Durango DMA	4	SL	1	qt/a	POST	B					
10	AMS LIQUID		L	2.5	% v/v	POST	B					
11	GF-3471	3.29	L	3	qt/a	POST	B	99	78	25	19	99
11	Durango DMA	4	SL	2	qt/a	POST	B					
11	AMS LIQUID		L	5	% v/v	POST	B					
12	GF-3471	3.29	L	1.5	qt/a	POST	B	99	43	60	5	99
12	Atrazine	90	WG	0.56	lb/a	POST	B					
12	Durango DMA	4	SL	1	qt/a	POST	B					
12	AMS LIQUID		L	2.5	% v/v	POST	B					
13	GF-3471	3.29	L	3	qt/a	POST	B	99	55	53	11	99
13	Atrazine	90	WG	1.1	lb/a	POST	B					
13	Durango DMA	4	SL	2	qt/a	POST	B					
13	AMS LIQUID		L	5	% v/v	POST	B					
14	Halex GT	4.38	L	3.6	pt/a	POST	B	99	58	31	5	99
14	Surfactant		L	0.25	% v/v	POST	B					
14	AMS LIQUID		L	2.5	% v/v	POST	B					

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								DIGSA	CHEAL	AMAPA		DIGSA
								control	control	control	ZEAMX	control
								percent	percent	percent	injury	percent
								Jun/29/2015	Jun/29/2015	Jun/29/2015	Jul/08/2015	Jul/08/2015
								5 DA-B	5 DA-B	5 DA-B	14 DA-B	14 DA-B
								0	0	0	0	0
Trt	Treatment	Form	Form	Rate	Grow	Appl						
No.	Name	Conc	Type	Unit	Stg	Code						
15	Lumax EZ	3.67	L	2	qt/a	POST B	99	74	31	8	99	
15	Durango DMA	4	SL	1	qt/a	POST B						
15	AMS LIQUID		L	2.5	% v/v	POST B						
16	Durango DMA	4	SL	1	qt/a	POST B	99	78	0	5	99	
16	AMS LIQUID		L	2.5	% v/v	POST B						
LSD (P=.05)								0.2	12.2	11.1	4.1	0.2
CV								0.13	10.17	12.6	59.74	0.13

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

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Weed Code								CHEAL	AMAPA	ZEAMX	DIGSA	CHEAL
Crop Code												
Rating Data Type								control	control	injury	control	control
Rating Unit								percent	percent	percent	percent	percent
Rating Date								Jul/08/2015	Jul/08/2015	Jul/15/2015	Jul/15/2015	Jul/15/2015
Trt-Eval Interval								14 DA-B	14 DA-B	21 DA-B	21 DA-B	21 DA-B
# Subsamples, Dec.								0	0	0	0	0
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code					
1	GF-3471	3.29	L	2.75	qt/a	EPOS	A	99	99	0	99	99
1	Durango DMA	4	SL	1	qt/a	EPOS	A					
1	AMS LIQUID		L	2.5	% v/v	EPOS	A					
2	GF-3471	3.29	L	2.75	qt/a	EPOS	A	99	99	0	99	99
2	Atrazine	90	WG	1.1	lb/a	EPOS	A					
2	Durango DMA	4	SL	1	qt/a	EPOS	A					
2	AMS LIQUID		L	2.5	% v/v	EPOS	A					
3	Corvus	2.63	L	5.6	fl oz/a	EPOS	A	99	99	0	99	99
3	Atrazine	90	WG	1.1	lb/a	EPOS	A					
3	Durango DMA	4	SL	1	qt/a	EPOS	A					
3	AMS LIQUID		L	2.5	% v/v	EPOS	A					
4	Keystone NXT	5.6	L	2.5	qt/a	EPOS	A	99	99	0	99	99
4	Durango DMA	4	SL	1	qt/a	EPOS	A					
4	AMS LIQUID		L	2.5	% v/v	EPOS	A					
5	Lumax EZ	3.67	L	3.25	qt/a	EPOS	A	99	99	0	99	99
5	Durango DMA	4	SL	1	qt/a	EPOS	A					
5	AMS LIQUID		L	2.5	% v/v	EPOS	A					
6	Zidua	85	WG	2.5	oz/a	EPOS	A	99	99	0	99	99
6	Atrazine	90	WG	1.1	lb/a	EPOS	A					
6	Durango DMA	4	SL	1	qt/a	EPOS	A					
6	AMS LIQUID		L	2.5	% v/v	EPOS	A					
7	SureStart II	4.16	L	2	pt/a	EPOS	A	99	75	7	99	99
7	Durango DMA	4	SL	1	qt/a	EPOS	A					
7	AMS LIQUID		L	2.5	% v/v	EPOS	A					
8	Durango DMA	4	SL	1	qt/a	EPOS	A	99	0	0	94	92
8	AMS LIQUID		L	2.5	% v/v	EPOS	A					
9	GF-3471	3.29	L	1.5	qt/a	POST	B	99	59	1	99	99
9	Durango DMA	4	SL	1	qt/a	POST	B					
9	AMS LIQUID		L	2.5	% v/v	POST	B					
10	GF-3353***	3.28	L	1.5	qt/a	POST	B					
10	Durango DMA	4	SL	1	qt/a	POST	B					
10	AMS LIQUID		L	2.5	% v/v	POST	B					
11	GF-3471	3.29	L	3	qt/a	POST	B	99	58	4	99	99
11	Durango DMA	4	SL	2	qt/a	POST	B					
11	AMS LIQUID		L	5	% v/v	POST	B					
12	GF-3471	3.29	L	1.5	qt/a	POST	B	99	99	1	99	99
12	Atrazine	90	WG	0.56	lb/a	POST	B					
12	Durango DMA	4	SL	1	qt/a	POST	B					
12	AMS LIQUID		L	2.5	% v/v	POST	B					
13	GF-3471	3.29	L	3	qt/a	POST	B	99	99	3	99	99
13	Atrazine	90	WG	1.1	lb/a	POST	B					
13	Durango DMA	4	SL	2	qt/a	POST	B					
13	AMS LIQUID		L	5	% v/v	POST	B					
14	Halex GT	4.38	L	3.6	pt/a	POST	B	99	63	1	99	99
14	Surfactant		L	0.25	% v/v	POST	B					
14	AMS LIQUID		L	2.5	% v/v	POST	B					

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								CHEAL	AMAPA	ZEAMX	DIGSA	CHEAL
								control	control	injury	control	control
								percent	percent	percent	percent	percent
								Jul/08/2015	Jul/08/2015	Jul/15/2015	Jul/15/2015	Jul/15/2015
								14 DA-B	14 DA-B	21 DA-B	21 DA-B	21 DA-B
								0	0	0	0	0
Trt	Treatment	Form	Form	Rate	Grow	Appl						
No.	Name	Conc	Type	Unit	Stg	Code						
15	Lumax EZ	3.67	L	2	qt/a	POST B	99	99	1	99	99	
15	Durango DMA	4	SL	1	qt/a	POST B						
15	AMS LIQUID		L	2.5	% v/v	POST B						
16	Durango DMA	4	SL	1	qt/a	POST B	99	0	0	99	99	
16	AMS LIQUID		L	2.5	% v/v	POST B						
LSD (P=.05)								0.0	12.1	2.4	3.5	3.2
CV								0.0	11.05	144.74	2.49	2.25

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

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Investigator: Christy SpragueWeed Code
Crop Code
Rating Data Type
Rating Unit
Rating Date
Trt-Eval Interval
Subsamples, Dec. AMAPA
control
percent
Jul/15/2015
21 DA-B
0

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code	
1	GF-3471	3.29	L	2.75	qt/a	EPOS	A	99
1	Durango DMA	4	SL	1	qt/a	EPOS	A	
1	AMS LIQUID		L	2.5	% v/v	EPOS	A	
2	GF-3471	3.29	L	2.75	qt/a	EPOS	A	99
2	Atrazine	90	WG	1.1	lb/a	EPOS	A	
2	Durango DMA	4	SL	1	qt/a	EPOS	A	
2	AMS LIQUID		L	2.5	% v/v	EPOS	A	
3	Corvus	2.63	L	5.6	fl oz/a	EPOS	A	99
3	Atrazine	90	WG	1.1	lb/a	EPOS	A	
3	Durango DMA	4	SL	1	qt/a	EPOS	A	
3	AMS LIQUID		L	2.5	% v/v	EPOS	A	
4	Keystone NXT	5.6	L	2.5	qt/a	EPOS	A	99
4	Durango DMA	4	SL	1	qt/a	EPOS	A	
4	AMS LIQUID		L	2.5	% v/v	EPOS	A	
5	Lumax EZ	3.67	L	3.25	qt/a	EPOS	A	99
5	Durango DMA	4	SL	1	qt/a	EPOS	A	
5	AMS LIQUID		L	2.5	% v/v	EPOS	A	
6	Zidua	85	WG	2.5	oz/a	EPOS	A	99
6	Atrazine	90	WG	1.1	lb/a	EPOS	A	
6	Durango DMA	4	SL	1	qt/a	EPOS	A	
6	AMS LIQUID		L	2.5	% v/v	EPOS	A	
7	SureStart II	4.16	L	2	pt/a	EPOS	A	75
7	Durango DMA	4	SL	1	qt/a	EPOS	A	
7	AMS LIQUID		L	2.5	% v/v	EPOS	A	
8	Durango DMA	4	SL	1	qt/a	EPOS	A	0
8	AMS LIQUID		L	2.5	% v/v	EPOS	A	
9	GF-3471	3.29	L	1.5	qt/a	POST	B	64
9	Durango DMA	4	SL	1	qt/a	POST	B	
9	AMS LIQUID		L	2.5	% v/v	POST	B	
10	GF-3353***	3.28	L	1.5	qt/a	POST	B	
10	Durango DMA	4	SL	1	qt/a	POST	B	
10	AMS LIQUID		L	2.5	% v/v	POST	B	
11	GF-3471	3.29	L	3	qt/a	POST	B	75
11	Durango DMA	4	SL	2	qt/a	POST	B	
11	AMS LIQUID		L	5	% v/v	POST	B	
12	GF-3471	3.29	L	1.5	qt/a	POST	B	99
12	Atrazine	90	WG	0.56	lb/a	POST	B	
12	Durango DMA	4	SL	1	qt/a	POST	B	
12	AMS LIQUID		L	2.5	% v/v	POST	B	
13	GF-3471	3.29	L	3	qt/a	POST	B	99
13	Atrazine	90	WG	1.1	lb/a	POST	B	
13	Durango DMA	4	SL	2	qt/a	POST	B	
13	AMS LIQUID		L	5	% v/v	POST	B	
14	Halex GT	4.38	L	3.6	pt/a	POST	B	72
14	Surfactant		L	0.25	% v/v	POST	B	
14	AMS LIQUID		L	2.5	% v/v	POST	B	

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Weed Code	AMAPA
Crop Code	
Rating Data Type	control
Rating Unit	percent
Rating Date	Jul/15/2015
Trt-Eval Interval	21 DA-B
# Subsamples, Dec.	0

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code	
15	Lumax EZ	3.67	L	2	qt/a	POST	B	98
15	Durango DMA	4	SL	1	qt/a	POST	B	
15	AMS LIQUID		L	2.5	% v/v	POST	B	
16	Durango DMA	4	SL	1	qt/a	POST	B	0
16	AMS LIQUID		L	2.5	% v/v	POST	B	
<hr/>								
LSD (P=.05)								7.8
CV								7.0

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