

Glyphosate-Resistant Waterhemp, Palmer, or Marestalk Control

Southern Illinois University

Comparison of Fierce First versus Authority First on Glyphosate-Resistant Waterhemp.

Trial ID: 15-DSO-Valent-MD6404 Location: De Soto, IL Trial Year: 2015
Investigator: Ronald F. Krausz

Trial Status: F one-year/final Initiation Date: 5-28-15 Completion Date: 10-12-15	Trial Location
City: De Soto Country: USA State/Prov.: Illinois IL Postal Code: 62924	

Objectives:
Compare Fierce First to Authority First for preemergence control of glyphosate-resistant common waterhemp.

Study Director: Ronald F. Krausz Organization: Belleville Research Center - Southern Illinois Univ Carbondale Address: 2036 Charles Lane City+State/Prov: Belleville, IL Postal Code: 62221 Country: USA	Contacts Title: Researcher/Farm Manager Phone No.: 618-566-4761 E-mail: rkrausz@siu.edu
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Crop 1: GLXMA Glycine max Soybean Variety: AG3832 BBCH Scale: BSOY Description: RR2Y	Crop Description
Planting Rate, Unit: 140000 S/A Depth, Unit: 1 IN Row Spacing, Unit: 30 IN	Planting Date: 5-28-15 Planting Method: SEEDED

Pest 1 Type: W Code: AMATA Amaranthus rudis Sauer Common Name: waterhemp, common Description: glyphosate-resistant waterhemp	Pest Description
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Treated Plot Width: 6.67 FT Total Plot Width: 10 FT Treated Plot Length: 30 FT Total Plot Length: 30 FT	Site and Design Site Type: FIELD Experimental Unit: 1 PLOT Tillage Type: NOTILL no-till Study Design: RACOBL Randomized Complete Block (RCB)						
Replications: 4 Untreated Arrangement: INCLUDED single control randomized in each block							
<table border="1"> <thead> <tr> <th>No.</th> <th>Previous Crop</th> <th>Year</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>GLXMA</td> <td>2014</td> </tr> </tbody> </table>	No.	Previous Crop	Year	1.	GLXMA	2014	
No.	Previous Crop	Year					
1.	GLXMA	2014					

Maintenance				
<table border="1"> <thead> <tr> <th>No.</th> <th>Maintenance Product Name</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>N 0 LB/A, P2O5 0 LB/A, K2O 0 LB/A</td> </tr> </tbody> </table>	No.	Maintenance Product Name	1.	N 0 LB/A, P2O5 0 LB/A, K2O 0 LB/A
No.	Maintenance Product Name			
1.	N 0 LB/A, P2O5 0 LB/A, K2O 0 LB/A			

Description Name: DSO_west_2011 % Sand: 15.4 % OM: 2.15 Texture: SIL silt loam % Silt: 64.7 pH: 6.9 Soil Name: Okaw % Clay: 19.9 CEC: 12.4	Soil Description									
<table border="1"> <thead> <tr> <th>Element</th> <th>Quantity</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td>P1</td> <td>94</td> <td>lb/A</td> </tr> <tr> <td>K</td> <td>468</td> <td>lb/A</td> </tr> </tbody> </table>	Element	Quantity	Unit	P1	94	lb/A	K	468	lb/A	Additional Measured Elements
Element	Quantity	Unit								
P1	94	lb/A								
K	468	lb/A								

Overall Moisture Conditions: ABONOR Closest Weather Station: SOUTHERN IL AIRPORT (93810) Distance, Unit: 1.5 MI	Moisture and Weather Conditions																																																							
<table border="1"> <thead> <tr> <th>No.</th> <th>Date</th> <th>Amount</th> <th>Unit</th> <th>Type</th> <th>Type Description</th> <th>Interval</th> <th>Unit</th> <th>Min Temp</th> <th>Max Temp</th> <th>Temp Unit</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>4-1-15</td> <td></td> <td></td> <td></td> <td></td> <td>7</td> <td>DAY</td> <td>33</td> <td>76</td> <td>F</td> </tr> <tr> <td>2.</td> <td>4-2-15</td> <td>2.72</td> <td>IN</td> <td>RAIN</td> <td>rain</td> <td>2</td> <td>DAY</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3.</td> <td>4-6-15</td> <td>1.65</td> <td>IN</td> <td>RAIN</td> <td>rain</td> <td>4</td> <td>DAY</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4.</td> <td>4-8-15</td> <td></td> <td></td> <td></td> <td></td> <td>7</td> <td>DAY</td> <td>43</td> <td>78</td> <td>F</td> </tr> </tbody> </table>	No.	Date	Amount	Unit	Type	Type Description	Interval	Unit	Min Temp	Max Temp	Temp Unit	1.	4-1-15					7	DAY	33	76	F	2.	4-2-15	2.72	IN	RAIN	rain	2	DAY				3.	4-6-15	1.65	IN	RAIN	rain	4	DAY				4.	4-8-15					7	DAY	43	78	F	
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1.	4-1-15					7	DAY	33	76	F																																														
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5.	4-13-15	0.15	IN	RAIN	rain	4	DAY			
6.	4-15-15					7	DAY	42	79	F
7.	4-19-15	0.89	IN	RAIN	rain	3	DAY			
8.	4-22-15					7	DAY	36	77	F
9.	4-25-15	0.26	IN	RAIN	rain	1	DAY			
10.	4-29-15					7	DAY	36	84	F
11.	5-6-15					7	DAY	49	85	F
12.	5-7-15	1.59	IN	RAIN	rain	5	DAY			
13.	5-13-15					7	DAY	45	83	F
14.	5-14-15	0.49	IN	RAIN	rain	5	DAY			
15.	5-20-15					7	DAY	44	85	F
16.	5-20-15	0.46	IN	RAIN	rain	1	DAY			
17.	5-24-15	0.46	IN	RAIN	rain	1	DAY			
18.	5-25-15	0.05	IN	RAIN	rain	1	DAY			
19.	5-27-15					7	DAY	55	84	F
20.	5-27-15	0.13	IN	RAIN	rain	1	DAY			
21.	5-29-15	0.07	IN	RAIN	rain	1	DAY			
22.	5-30-15	0.62	IN	RAIN	rain	1	DAY			
23.	6-3-15					7	DAY	53	89	F
24.	6-5-15	0.1	IN	RAIN	rain	1	DAY			
25.	6-8-15	1.13	IN	RAIN	rain	1	DAY			
26.	6-10-15					7	DAY	64	91	F
27.	6-13-15	0.39	IN	RAIN	rain	2	DAY			
28.	6-16-15	1.78	IN	RAIN	rain	2	DAY			
29.	6-19-15	3.17	IN	RAIN	rain	1	DAY			
30.	6-24-15					7	DAY	61	91	F
31.	6-25-15	0.18	IN	RAIN	rain	2	DAY			
32.	6-28-15	0.15	IN	RAIN	rain	1	DAY			
33.	7-1-15					7	DAY	65	85	F
34.	7-1-15	0.49	IN	RAIN	rain	1	DAY			
35.	7-2-15	0.86	IN	RAIN	rain	1	DAY			
36.	7-7-15	1.6	IN	RAIN	rain	1	DAY			
37.	7-8-15					7	DAY	64	93	F
38.	7-8-15	0.54	IN	RAIN	rain	1	DAY			
39.	7-9-15	0.27	IN	RAIN	rain	1	DAY			
40.	7-10-15	0.49	IN	RAIN	rain	1	DAY			
41.	7-15-15					7	DAY	68	92	F
42.	7-19-15	0.38	IN	RAIN	rain	1	DAY			
43.	7-20-15	0.25	IN	RAIN	rain	1	DAY			
44.	7-22-15					7	DAY	64	85	F
45.	7-26-15	1.63	IN	RAIN	rain	4	DAY			
46.	7-29-15					7	DAY	66	92	F
47.	8-5-15					7	DAY	63	87	F
48.	8-5-15	0.74	IN	RAIN	rain	2	DAY			
49.	8-9-15	0.62	IN	RAIN	rain	2	DAY			
50.	8-12-15					7	DAY	62	87	F
51.	8-18-15	1.1	IN	RAIN	rain	2	DAY			
52.	8-19-15					7	DAY	52	82	F
53.	8-22-15	0.12	IN	RAIN	rain	1	DAY			
54.	8-26-15					7	DAY	51	87	F
55.	8-29-15	0.09	IN	RAIN	rain	1	DAY			
56.	9-2-15					7	DAY	66	92	F
57.	9-8-15	1.82	IN	RAIN	rain	2	DAY			
58.	9-9-15					7	DAY	45	83	F
59.	9-11-15	0.17	IN	RAIN	rain	2	DAY			
60.	9-16-15					7	DAY	48	88	F
61.	9-19-15	0.04	IN	RAIN	rain	1	DAY			

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62.	9-23-15					7	DAY	50	85	F
63.	9-27-15	0.05	IN	RAIN	rain	2	DAY			
64.	9-29-15	0.95	IN	RAIN	rain	1	DAY			

Application Description

	A
Application Date:	5-29-15
Appl. Start Time:	9:15
Appl. Stop Time:	9:30
Application Method:	Spray
Application Timing:	PRE
Application Placement:	BROSOI
Applied By:	EAE
Air Temperature, Unit:	80 F
% Relative Humidity:	73
Wind Velocity, Unit:	3 MPH
Wind Direction:	S
Dew Presence (Y/N):	N
Soil Temperature, Unit:	68 F
Soil Moisture:	NORMAL
% Cloud Cover:	75
Next Moisture Occurred On:	5-29-15
Time to Next Moisture, Unit:	12 HR

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	GLXMA
Stage Scale Used:	DESC
Stage Majority, Percent:	NA

Pest Stage At Each Application

	A
Pest 1 Code, Type, Scale:	AMATA W
Stage Majority, Percent:	NA

Application Equipment

	A
Appl. Equipment:	CO2 sprayer
Equipment Type:	BACSPR
Operation Pressure, Unit:	30 PSI
Nozzle Type:	XR
Nozzle Size:	8002
Boom Length, Unit:	6.67 FT
Spray Volume, Unit:	15 GPA

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Pest Code								GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	
Crop Code								10-12-15	6-12-15	6-26-15	7-10-15	7-24-15	
Rating Date								Yield	Injury	Injury	Injury	Injury	
Rating Type								bu/A	Percent	Percent	Percent	Percent	
Rating Unit													
Rating Timing													
Trt-Eval Interval									14 DA-A	28 DA-A	42 DA-A	56 DA-A	
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Other Rate	Other Rate	Growth Unit Stage	Appl Code					
1	NONTREATED								35 b	0	0	0	0
2	AUTHORITY FIRST DF	70 WG		0.14 lb ai/a	3.2 oz/a		PRE A		47 a	3 b	1 b	0 a	0 a
3	AUTHORITY FIRST DF	70 WG		0.282 lb ai/a	6.45 oz/a		PRE A		44 a	8 a	6 a	0 a	0 a
4	FIERCE GANGSTER FR	76 WG		0.143 lb ai/a	3 oz/a		PRE A		44 a	0 b	0 b	0 a	0 a
		84 WG		0.0158 lb ai/a	0.3 oz/a		PRE A						
5	FIERCE GANGSTER FR	76 WG		0.214 lb ai/a	4.5 oz/a		PRE A		47 a	0 b	0 b	0 a	0 a
		84 WG		0.0236 lb ai/a	0.45 oz/a		PRE A						
6	ENVIVE	41.3 WG		0.0774 lb ai/a	3 oz/a		PRE A		44 a	0 b	0 b	0 a	0 a
LSD P=.05								6.7	2.8	3.5	.	.	
Standard Deviation								4.5	1.8	2.3	0.0	0.0	
CV								10.23	91.29	152.15	0.0	0.0	
Replicate F								6.143	1.000	1.600	0.000	0.000	
Replicate Prob(F)								0.0062	0.4262	0.2411	1.0000	1.0000	
Treatment F								3.923	12.750	5.640	0.000	0.000	
Treatment Prob(F)								0.0179	0.0003	0.0086	1.0000	1.0000	

Means followed by same letter do not significantly differ (P=.05, LSD)
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
 Could not calculate LSD (% mean diff) for columns 13,15 because error mean square = 0.

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Pest Code								AMATA-HR	AMATA-HR	AMATA-HR	
Crop Code								6-26-15	7-10-15	7-24-15	
Rating Date								Control	Control	Control	
Rating Type								Percent	Percent	Percent	
Rating Unit								28 DA-A	42 DA-A	56 DA-A	
Rating Timing											
Trt-Eval Interval											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Other Rate	Other Rate	Growth Unit Stage	Appl Code			
1	NONTREATED								0	0	0
2	AUTHORITY FIRST DF	70 WG		0.14 lb ai/a	3.2 oz/a		PRE	A	83 a	36 b	8 c
3	AUTHORITY FIRST DF	70 WG		0.282 lb ai/a	6.45 oz/a		PRE	A	96 a	78 a	63 a
4	FIERCE GANGSTER FR	76 WG		0.143 lb ai/a	3 oz/a		PRE	A	89 a	31 b	34 b
		84 WG		0.0158 lb ai/a	0.3 oz/a		PRE	A			
5	FIERCE GANGSTER FR	76 WG		0.214 lb ai/a	4.5 oz/a		PRE	A	92 a	55 ab	48 b
		84 WG		0.0236 lb ai/a	0.45 oz/a		PRE	A			
6	ENVIVE	41.3 WG		0.0774 lb ai/a	3 oz/a		PRE	A	51 b	3 c	0 c
LSD P=.05								15.6	26.2	14.3	
Standard Deviation								10.1	17.0	9.3	
CV								12.3	42.06	30.63	
Replicate F								0.668	0.350	2.578	
Replicate Prob(F)								0.5877	0.7897	0.1023	
Treatment F								12.628	10.775	32.417	
Treatment Prob(F)								0.0003	0.0006	0.0001	

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Trial Comments

1. Protocol: Valent (VUSA2015FIERCEMD6404).
2. Ratings:
CI 14, 28, 42, and 56 DA-A.
WC 28, 42, and 56 DA-A.
Photos at all ratings.
3. Yield not requested.
4. Blanket burndown (start clean) with Gramoxone (3 pt/A).
Blanket glyphosate application after 56 DA-A rating if desired, not applied.
5. Gramoxone (3 pt/A) was applied on to all plots on 4-12-15, 5-15-15, and 5-29-15.
6. On 6-12-15 at 14 DA-A crop injury rating, some deer feeding was observed in plot 403.
7. AMATA-HR = Herbicide-resistant waterhemp (glyphosate).
8. Rainfall following the PRE application was 0.69 inch over 2 days beginning 12 hours later.
9. Crop injury was stunting.
10. Harvested 10-12-15, (2) 30 inch rows by 27 ft.