

Authority Anthem Overlap System.

Trial ID: 14-DSO-FMC-AuthAnthOver Location: De Soto, IL Trial Year: 2014
Investigator: Ronald F. Krausz

Trial Status: F one-year/final Initiation Date: 5-6-14 Completion Date: 10-30-14	Trial Location City: De Soto Country: USA State/Prov.: Illinois IL Postal Code: 62924
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Objectives: Evaluate 1-pass, and 2-pass programs for control of glyphosate-resistant waterhemp with Authority and Anthem combinations.
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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: 5-6-14 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: RACOB L 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>2013</td> </tr> </tbody> </table>		No.	Previous Crop	Year	1.	GLXMA	2013
No.	Previous Crop	Year					
1.	GLXMA	2013					

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No.	Maintenance Product Name				
1.	N 0 LB/A, P2O5 0 LB/A, K2O 0 LB/A				

% 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
Element	Quantity	Unit								
P1	94	lb/A								
K	468	lb/A								
Additional Measured Elements										

Overall Moisture Conditions: NORMAL Closest Weather Station: SOUTHERN IL AIRPORT (93810)	Moisture and Weather Conditions Distance, Unit: 1.5 MI
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No.	Date	Amount	Unit	Type	Type Description	Interval	Unit	Min Temp	Max Temp	Temp Unit
1.	4-15-14					7	DAY	31	77	F
2.	4-22-14					7	DAY	41	77	F
3.	4-24-14	1.13	IN	RAIN	rain	2	DAY			
4.	4-27-14	2.02	IN	RAIN	rain	2	DAY			
5.	4-29-14					7	DAY	39	84	F
6.	5-6-14					7	DAY	54	83	F
7.	5-8-14	1.25	IN	RAIN	rain	2	DAY			
8.	5-11-14	0.34	IN	RAIN	rain	1	DAY			
9.	5-13-14	2.53	IN	RAIN	rain	3	DAY			
10.	5-13-14					7	DAY	39	80	F
11.	5-20-14					7	DAY	46	85	F
12.	5-22-14	0.06	IN	RAIN	rain	1	DAY			
13.	5-25-14	0.07	IN	RAIN	rain	2	DAY			
14.	5-27-14					7	DAY	62	88	F
15.	5-30-14	0.09	IN	RAIN	rain	1	DAY			
16.	6-1-14	0.66	IN	RAIN	rain	2	DAY			
17.	6-3-14					7	DAY	64	88	F
18.	6-4-14	0.91	IN	RAIN	rain	1	DAY			
19.	6-7-14	0.32	IN	RAIN	rain	1	DAY			
20.	6-9-14	0.71	IN	RAIN	rain	2	DAY			
21.	6-10-14					7	DAY	51	91	F
22.	6-12-14	0.06	IN	RAIN	rain	1	DAY			
23.	6-17-14					7	DAY	69	93	F
24.	6-24-14	1.69	IN	RAIN	rain	1	DAY			
25.	6-24-14					7	DAY	67	92	F
26.	6-29-14	0.08	IN	RAIN	rain	1	DAY			
27.	7-1-14	0.81	IN	RAIN	rain	1	DAY			
28.	7-1-14					7	DAY	55	90	F
29.	7-8-14	0.15	IN	RAIN	rain	1	DAY			
30.	7-13-14	0.71	IN	RAIN	rain	2	DAY			
31.	7-15-14					7	DAY	54	85	F
32.	7-22-14					7	DAY	56	91	F
33.	7-23-14	0.16	IN	RAIN	rain	1	DAY			
34.	7-29-14					7	DAY	55	87	F
35.	8-5-14	0.13	IN	RAIN	rain	1	DAY			
36.	8-5-14					7	DAY	63	89	F
37.	8-7-14	1.95	IN	RAIN	rain	3	DAY			
38.	8-11-14	0.19	IN	RAIN	rain	1	DAY			
39.	8-12-14					7	DAY	56	84	F
40.	8-16-14	0.77	IN	RAIN	rain	2	DAY			
41.	8-19-14					7	DAY	66	93	F
42.	8-26-14					7	DAY	68	94	F
43.	8-28-14	0.02	IN	RAIN	rain	1	DAY			
44.	8-30-14	0.49	IN	RAIN	rain	1	DAY			
45.	9-2-14					7	DAY	50	93	F
46.	9-9-14					7	DAY	43	85	F
47.	9-10-14	1.96	IN	RAIN	rain	2	DAY			
48.	9-16-14					7	DAY	43	85	F
49.	9-21-14	0.07	IN	RAIN	rain	1	DAY			
50.	9-23-14					7	DAY	42	86	F
51.	9-30-14					7	DAY	35	86	F
52.	10-2-14	0.52	IN	RAIN	rain	2	DAY			
53.	10-6-14	0.08	IN	RAIN	rain	2	DAY			
54.	10-7-14					7	DAY	45	81	F
55.	10-9-14	0.66	IN	RAIN	rain	4	DAY			
56.	10-13-14	0.98	IN	RAIN	rain	3	DAY			
57.	10-14-14					7	DAY	35	76	F
58.	10-21-14					7	DAY	33	81	F
59.	10-28-14	0.55	IN	RAIN	rain	1	DAY			
60.	10-28-14					7	DAY	22	70	F
61.	11-4-14	0.84	IN	RAIN	rain	1	DAY			
62.	11-4-14					7	DAY	24	69	F

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Application Description

	A	B
Application Date:	5-6-14	5-31-14
Appl. Start Time:	11:30	12:45
Appl. Stop Time:	12:00	13:00
Application Method:	Spray	Spray
Application Timing:	PRE	V2-V3
Application Placement:	BROSOI	BROFOL
Applied By:	LXF	RJW
Air Temperature, Unit:	88 F	87 F
% Relative Humidity:	46	52
Wind Velocity, Unit:	2 MPH	6 MPH
Wind Direction:	W	E
Dew Presence (Y/N):	N	N
Soil Temperature, Unit:	73 F	77 F
Soil Moisture:	NORMAL	NORMAL
% Cloud Cover:	10	50
Next Moisture Occurred On:	5-8-14	6-1-14
Time to Next Moisture, Unit:	2 DAY	23 HR

Crop Stage At Each Application

	A	B
Crop 1 Code, BBCH Scale:	GLXMA	GLXMA
Stage Scale Used:	DESC	DESC
Stage Majority, Percent:	NA	V2
Stage Minimum, Percent:		V2
Stage Maximum, Percent:		V2
Height, Unit:		5 IN
Height Minimum, Maximum:		4 5

Pest Stage At Each Application

	A	B
Pest 1 Code, Type, Scale:	AMATA W	AMATA W
Stage Majority, Percent:	NA	6
Stage Minimum, Percent:		4
Stage Maximum, Percent:		10
Height, Unit:		1 IN
Height Minimum, Maximum:		1 3
Density, Unit:		10 FT2

Application Equipment

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

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Pest Code Crop Code Rating Date Rating Type Rating Unit Rating Timing							GLXMA 10-30-14 Moisture Percen	GLXMA 10-30-14 Test wt lb/bu	GLXMA 10-30-14 Yield bu/A	GLXMA 5-26-14 Injury Percent 20 DA-A	GLXMA 6-7-14 Injury Percent 32 DA-A	GLXMA 6-11-14 Injury Percen 11 DA-B	GLXMA 6-21-14 Injury Percen		
Trt-Eval Interval										14 DAE	7 DA-B	30 DAE	21 DA-B		
Trt No.	Treatment Name	Form Conc	Form Type	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code							
1	AUTHORITY FIRST DF ANTHEM	70 WG 2.15 SE		0.28 lb ai/a 0.101 lb ai/a	6.4 oz/a 6 fl oz/a		PRE PRE	A A	14.1 a	56.9 a	40 a-d	13 a	0 d	0 e	4 cd
2	FIERCE	76 WG		0.178 lb ai/a	3.75 oz/a		PRE	A	14.6 a	56.5 a	27 e	7 b	0 d	0 e	0 e
3	OPTILL PRO (CO-PACK) OPTILL OUTLOOK	68 WG 6 EC		0.085 lb ai/a 0.47 lb ai/a	2 oz/a 10 fl oz/a		PRE PRE PRE	A A A	14.0 a	56.9 a	31 cde	9 ab	0 d	0 e	0 e
4	AUTHORITY FIRST DF ANTHEM ROUNDUP POWERMAX AMS	70 WG 2.15 SE 4.5 SL 100 SG		0.28 lb ai/a 0.101 lb ai/a 1.13 lb ae/a 1.28 lb ai/a	6.4 oz/a 6 fl oz/a 32 fl oz/a 8.5 lb/100 gal		PRE V2-V3 V2-V3 V2-V3	A B B B	13.8 a	57.1 a	44 ab	12 a	28 b	23 b	7 bc
5	AUTHORITY MAXX ANTHEM ROUNDUP POWERMAX AMS	66 WG 2.15 SE 4.5 SL 100 SG		0.248 lb ai/a 0.101 lb ai/a 1.13 lb ae/a 1.28 lb ai/a	6 oz/a 6 fl oz/a 32 fl oz/a 8.5 lb/100 gal		PRE V2-V3 V2-V3 V2-V3	A B B B	13.8 a	57.1 a	52 a	12 a	40 a	35 a	12 a
6	OPTILL ZIDUA ROUNDUP POWERMAX AMS	68 WG 85 WG 4.5 SL 100 SG		0.085 lb ai/a 0.08 lb ai/a 1.13 lb ae/a 1.28 lb ai/a	2 oz/a 1.5 oz/a 32 fl oz/a 8.5 lb/100 gal		PRE V2-V3 V2-V3 V2-V3	A B B B	14.0 a	57.0 a	43 abc	3 c	3 cd	3 de	4 cd
7	OUTLOOK ROUNDUP POWERMAX AMS	6 EC 4.5 SL 100 SG		0.56 lb ai/a 1.13 lb ae/a 1.28 lb ai/a	12 fl oz/a 32 fl oz/a 8.5 lb/100 gal		PRE V2-V3 V2-V3	A B B	14.0 a	57.0 a	38 b-e	1 c	7 c	7 d	2 de
8	ANTHEM ROUNDUP POWERMAX AMS	2.15 SE 4.5 SL 100 SG		0.134 lb ai/a 1.13 lb ae/a 1.28 lb ai/a	8 fl oz/a 32 fl oz/a 8.5 lb/100 gal		V2-V3 V2-V3 V2-V3	B B B	13.9 a	57.0 a	39 b-e	0 c	24 b	19 c	5 cd
9	ANTHEM FLEXSTAR ROUNDUP POWERMAX AMS	2.15 SE 1.88 EC 4.5 SL 100 SG		0.101 lb ai/a 0.147 lb ai/a 1.13 lb ae/a 1.28 lb ai/a	6 fl oz/a 10 fl oz/a 32 fl oz/a 8.5 lb/100 gal		V2-V3 V2-V3 V2-V3 V2-V3	B B B B	14.0 a	56.9 a	37 b-e	0 c	41 a	35 a	8 b
10	NONTREATED								14.3 a	56.6 a	29 de	0 c	0 d	0 e	0 e
LSD (P=.05)							0.86	0.63	12.4	3.4	5.0	4.1	3.2		
Standard Deviation							0.60	0.43	8.6	2.3	3.4	2.8	2.2		
CV							4.23	0.76	22.56	39.98	23.95	23.15	55.84		
Replicate F							1.435	1.605	1.894	0.906	2.258	2.484	0.313		
Replicate Prob(F)							0.2545	0.2113	0.1544	0.4523	0.1054	0.0831	0.8161		
Treatment F							0.673	0.869	3.072	22.186	101.801	107.800	11.978		
Treatment Prob(F)							0.7257	0.5630	0.0114	0.0001	0.0001	0.0001	0.0001		

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.
Missing data estimates are included in columns: Average=10,13,14,15

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Pest Code Crop Code Rating Date Rating Type Rating Unit Rating Timing Trt-Eval Interval							AMATA-HR	AMATA-HR	AMATA-HR	AMATA-HR	AMATA-HR	AMATA-HR
							5-30-14 Control Percent -1 DA-B 24 DA-A	6-5-14 Control Percent 5 DA-B 30 DA-A	6-30-14 Control Percent 30 DA-B	7-5-14 Control Percent 60 DA-A	7-30-14 Control Percent 60 DA-B	8-4-14 Control Percent 90 DA-A
Trt No.	Treatment Name	Form Conc	Form Type	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code				
1	AUTHORITY FIRST DF ANTHEM	70 WG 2.15 SE		0.28 lb ai/a 0.101 lb ai/a	6.4 oz/a 6 fl oz/a		PRE PRE	A A	98 a	94 ab	51 b	8 c
2	FIERCE	76 WG		0.178 lb ai/a	3.75 oz/a		PRE	A	87 a	73 cd	0 e	0 d
3	OPTILL PRO (CO-PACK) OPTILL OUTLOOK	68 WG 6 EC		0.085 lb ai/a 0.47 lb ai/a	2 oz/a 10 fl oz/a		PRE PRE PRE	A A A	65 b	17 e	3 de	0 d
4	AUTHORITY FIRST DF ANTHEM ROUNDUP POWERMAX AMS	70 WG 2.15 SE 4.5 SL 100 SG		0.28 lb ai/a 0.101 lb ai/a 1.13 lb ae/a 1.28 lb ai/a	6.4 oz/a 6 fl oz/a 32 fl oz/a 8.5 lb/100 gal		PRE V2-V3 V2-V3 V2-V3	A B B B	90 a	98 a	92 a	80 a
5	AUTHORITY MAXX ANTHEM ROUNDUP POWERMAX AMS	66 WG 2.15 SE 4.5 SL 100 SG		0.248 lb ai/a 0.101 lb ai/a 1.13 lb ae/a 1.28 lb ai/a	6 oz/a 6 fl oz/a 32 fl oz/a 8.5 lb/100 gal		PRE V2-V3 V2-V3 V2-V3	A B B B	91 a	98 a	92 a	81 a
6	OPTILL ZIDUA ROUNDUP POWERMAX AMS	68 WG 85 WG 4.5 SL 100 SG		0.085 lb ai/a 0.08 lb ai/a 1.13 lb ae/a 1.28 lb ai/a	2 oz/a 1.5 oz/a 32 fl oz/a 8.5 lb/100 gal		PRE V2-V3 V2-V3 V2-V3	A B B B	40 c	75 cd	16 cd	0 d
7	OUTLOOK ROUNDUP POWERMAX AMS	6 EC 4.5 SL 100 SG		0.56 lb ai/a 1.13 lb ae/a 1.28 lb ai/a	12 fl oz/a 32 fl oz/a 8.5 lb/100 gal		PRE V2-V3 V2-V3	A B B	44 c	73 d	19 c	0 d
8	ANTHEM ROUNDUP POWERMAX AMS	2.15 SE 4.5 SL 100 SG		0.134 lb ai/a 1.13 lb ae/a 1.28 lb ai/a	8 fl oz/a 32 fl oz/a 8.5 lb/100 gal		V2-V3 V2-V3 V2-V3	B B B	0 d	85 bc	56 b	0 d
9	ANTHEM FLEXSTAR ROUNDUP POWERMAX AMS	2.15 SE 1.88 EC 4.5 SL 100 SG		0.101 lb ai/a 0.147 lb ai/a 1.13 lb ae/a 1.28 lb ai/a	6 fl oz/a 10 fl oz/a 32 fl oz/a 8.5 lb/100 gal		V2-V3 V2-V3 V2-V3 V2-V3	B B B B	0 d	95 ab	66 b	15 b
10	NONTREATED								0 d	0 f	0 e	0 d
LSD (P=.05)							15.3	12.0	16.0	5.5	6.5	6.5
Standard Deviation							10.6	8.3	11.0	3.8	4.5	4.5
CV							20.56	11.67	28.01	20.65	26.16	26.16
Replicate F							2.604	0.638	1.195	1.754	1.277	1.277
Replicate Prob(F)							0.0724	0.5971	0.3302	0.1798	0.3022	0.3022
Treatment F							58.698	70.081	44.008	305.807	204.433	204.433
Treatment Prob(F)							0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

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Trial Comments

1. Protocol: FMC (Auth Anthem Overlap).
2. Ratings: CI 14 and 30 DAE (crop emergence) rate PREs prior to POST.
CI 7 and 21 DA-B.
WC 30, 60, and 90 DA-A, and WC 30 and 60 DA-B.
3. Yield if possible.
4. Photos.
5. AMATA-HR = Herbicide-resistant waterhemp (glyphosate).
6. Following the PRE application, rainfall was 4.12 inch within the next 9 days.
Following the V2-V3 application, rainfall was 2.6 inch within the next 11 days.
7. Soybean crop emerged by 5-12-14 however some plots had poor emergence
and a crop injury rating was not possible for all plots on 5-26-14 (missing data).
8. Harvested 10-30-14, (2) 30 inch rows by 27 ft.