

## Soybean Response to Glyphosate Tank-Mixtures: Weed Control.

Trial ID: 11-DSO-ISApstTM Location: De Soto, IL

Investigator: Bryan Young, Professor, Southern Illinois University, bgyoung@siu.edu  
 City State Zip Country: De Soto IL 62924 USA  
 Trial Status: FINAL Initiation Date: 5-20-11

Objectives: Evaluate soybean response and glyphosate-resistant waterhemp control from glyphosate tank-mixtures.

Crop 1: GLXMA Soybean Variety: AG 4005 Description: RR  
 Planting Method: SEEDED Planting Date: 5-20-11  
 Rate, Unit: 75 LB/A Depth, Unit: 1.0 IN  
 Row Spacing, Unit: 30 IN

Pest 1 Type: W Code: AMATA Amaranthus rudis Sauer waterhemp, common  
 Pest Description: glyphosate-resistant waterhemp

Plot Width, Unit: 10 FT Site Type: FIELD  
 Plot Length, Unit: 30 FT Tillage Type: NO-TILL  
 Replications: 3 Study Design: Randomized Complete Block

Prior Crops, Year  
 1. ZEAMD 2010

Field Prep./Maintenance: N 0 LB/A, P205 0 LB/A, K20 0 LB/A

% Sand: 15.4 % OM: 2.4 Texture: SILT LOAM  
 % Silt: 64.7 pH: 6.1 Soil Name: OKAW  
 % Clay: 19.9 CEC: 10.5 Fert. Level: P1 53 LB/A, K 352 LB/A

## Application Description

A

Application Date: 6-16-11  
 Time of Day: 8:00  
 Application Method: Spray  
 Application Timing: V2-V3  
 Application Placement: BROFOL  
 Applied By: MJA  
 Air Temperature, Unit: 86 F  
 % Relative Humidity: 54  
 Wind Velocity, Unit: 1 MPH  
 Wind Direction: S  
 Dew Presence (Y/N): N  
 Soil Temperature, Unit: 72 F  
 Soil Moisture: NORMAL  
 % Cloud Cover: 5

16-6-11  
 Crop stage at application: V2-V3  
 Height Min, Max (inch): 4 8

## Pest Stage At Each Application

Application Date: 6-16-11  
 Weed Code: AMATA  
 Stage Majority (leaves): 6  
 Stage Min, Max: coty 17  
 Height Majority: 4 IN  
 Height Min, Max: 1 8  
 Density, Unit: 20 FT2

## Application Equipment

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

Southern Illinois University

Soybean Response to Glyphosate Tank-Mixtures: Weed Control.

Trial ID: 11-DSO-ISApostTM Location: De Soto, IL

Pest Code	Crop Code	Rating Date	Rating Data Type	Rating Unit	Rating Timing	Trt-Eval Interval	GLXMA 6-20-11 Injury Percent	GLXMA 6-23-11 Injury Percent	GLXMA 6-30-11 Injury Percent	GLXMA 7-14-11 Injury Percent	GLXMA 6-20-11 Stunt Percent	GLXMA 6-23-11 Stunt Percent	GLXMA 6-30-11 Stunt Percent	GLXMA 7-14-11 Stunt Percent
							4 DA-A	7 DA-A	14 DA-A	28 DA-A	4 DA-A	7 DA-A	14 DA-A	28 DA-A

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code	0 h	0 g	0 e	0 a	0 c	2 a	0 e	0 a
1	ROUNDUP P-MAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	V2-3	A	0 h	0 g	0 e	0 a	0 c	2 a	0 e	0 a
1	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A								
2	ROUNDUP P-MAX	4.5	SL	1.55	lb ae/a	44	fl oz/a	V2-3	A	0 h	0 g	0 e	0 a	0 c	2 a	0 e	0 a
2	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A								
3	COBRA	2	EC	0.094	lb ai/a	6	fl oz/a	V2-3	A	16 bc	16 c	4 cde	0 a	6 a	3 a	4 cde	0 a
3	ROUNDUP P-MAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	V2-3	A								
3	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A								
4	COBRA	2	EC	0.094	lb ai/a	6	fl oz/a	V2-3	A	17 b	19 b	4 bcd	0 a	6 a	2 a	4 bcd	0 a
4	ROUNDUP P-MAX	4.5	SL	1.55	lb ae/a	44	fl oz/a	V2-3	A								
4	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A								
5	COBRA	2	EC	0.188	lb ai/a	12	fl oz/a	V2-3	A	21 a	23 a	8 a	0 a	6 a	3 a	8 a	0 a
5	ROUNDUP P-MAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	V2-3	A								
5	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A								
6	COBRA	2	EC	0.188	lb ai/a	12	fl oz/a	V2-3	A	21 a	23 a	8 ab	0 a	5 b	2 a	8 ab	0 a
6	ROUNDUP P-MAX	4.5	SL	1.55	lb ae/a	44	fl oz/a	V2-3	A								
6	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A								
7	FLEXSTAR	1.88	EC	0.235	lb ai/a	1	pt/a	V2-3	A	10 fg	10 ef	2 de	0 a	0 c	2 a	2 de	0 a
7	ROUNDUP P-MAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	V2-3	A								
7	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A								
8	FLEXSTAR	1.88	EC	0.235	lb ai/a	1	pt/a	V2-3	A	12 def	11 ef	0 e	0 a	0 c	1 a	0 e	0 a
8	ROUNDUP P-MAX	4.5	SL	1.55	lb ae/a	44	fl oz/a	V2-3	A								
8	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A								
9	FLEXSTAR	1.88	EC	0.375	lb ai/a	1.6	pt/a	V2-3	A	13 de	11 de	0 e	0 a	0 c	0 a	0 e	0 a
9	ROUNDUP P-MAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	V2-3	A								
9	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A								
10	FLEXSTAR	1.88	EC	0.375	lb ai/a	1.6	pt/a	V2-3	A	13 de	15 c	6 abc	0 a	0 c	2 a	6 abc	0 a
10	ROUNDUP P-MAX	4.5	SL	1.55	lb ae/a	44	fl oz/a	V2-3	A								
10	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A								
11	CADET	0.91	EC	0.00427	lb ai/a	0.6	fl oz/a	V2-3	A	8 g	10 ef	2 cde	0 a	0 c	1 a	2 cde	0 a
11	ROUNDUP P-MAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	V2-3	A								
11	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A								
12	CADET	0.91	EC	0.00427	lb ai/a	0.6	fl oz/a	V2-3	A	8 g	8 f	2 cde	0 a	0 c	0 a	2 cde	0 a
12	ROUNDUP P-MAX	4.5	SL	1.55	lb ae/a	44	fl oz/a	V2-3	A								
12	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A								
13	CADET	0.91	EC	0.0064	lb ai/a	0.9	fl oz/a	V2-3	A	11 ef	11 de	1 de	0 a	0 c	3 a	1 de	0 a
13	ROUNDUP P-MAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	V2-3	A								
13	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A								
14	CADET	0.91	EC	0.0064	lb ai/a	0.9	fl oz/a	V2-3	A	14 cd	14 cd	5 a-d	0 a	0 c	2 a	5 a-d	0 a
14	ROUNDUP P-MAX	4.5	SL	1.55	lb ae/a	44	fl oz/a	V2-3	A								
14	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A								
15	NONTREATED									0 h	0 g	0 e	0 a	0 c	3 a	0 e	0 a
LSD (P=.05)										2.3	2.9	3.7	0.0	0.7	4.5	3.7	0.0
Replicate F										0.489	0.211	0.608	0.000	2.800	0.057	0.608	0.000
Replicate Prob(F)										0.6186	0.8114	0.5514	1.0000	0.0779	0.9446	0.5514	1.0000
Treatment F										71.656	57.497	4.993	0.000	108.880	0.403	4.993	0.000
Treatment Prob(F)										0.0001	0.0001	0.0001	1.0000	0.0001	0.9616	0.0001	1.0000

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

Soybean Response to Glyphosate Tank-Mixtures: Weed Control.

Trial ID: 11-DSO-ISApostTM Location: De Soto, IL

Pest Code																	
Crop Code																	
Rating Date																	
Rating Data Type																	
Rating Unit		GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA								
Rating Timing		6-20-11	6-23-11	6-30-11	7-14-11	6-20-11	6-23-11	6-30-11	7-14-11								
Trt-Eval Interval		Chlorosis	Chlorosis	Chlorosis	Chlorosis	Necrosis	Necrosis	Necrosis	Necrosis								
		Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent								
		4 DA-A	7 DA-A	14 DA-A	28 DA-A	4 DA-A	7 DA-A	14 DA-A	28 DA-A								
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code								
1	ROUNDUP P-MAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	V2-3	A	0 a	0 d	0 a	0 a	0 f	0 f	0 a	0 a
1	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A								
2	ROUNDUP P-MAX	4.5	SL	1.55	lb ae/a	44	fl oz/a	V2-3	A	0 a	0 d	0 a	0 a	0 f	0 f	0 a	0 a
2	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A								
3	COBRA	2	EC	0.094	lb ai/a	6	fl oz/a	V2-3	A	0 a	2 bc	0 a	0 a	10 de	10 bc	0 a	0 a
3	ROUNDUP P-MAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	V2-3	A								
3	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A								
4	COBRA	2	EC	0.094	lb ai/a	6	fl oz/a	V2-3	A	0 a	3 ab	0 a	0 a	11 d	12 b	0 a	0 a
4	ROUNDUP P-MAX	4.5	SL	1.55	lb ae/a	44	fl oz/a	V2-3	A								
4	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A								
5	COBRA	2	EC	0.188	lb ai/a	12	fl oz/a	V2-3	A	0 a	3 ab	0 a	0 a	15 ab	15 a	0 a	0 a
5	ROUNDUP P-MAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	V2-3	A								
5	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A								
6	COBRA	2	EC	0.188	lb ai/a	12	fl oz/a	V2-3	A	0 a	4 a	0 a	0 a	16 a	14 a	0 a	0 a
6	ROUNDUP P-MAX	4.5	SL	1.55	lb ae/a	44	fl oz/a	V2-3	A								
6	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A								
7	FLEXSTAR	1.88	EC	0.235	lb ai/a	1	pt/a	V2-3	A	0 a	3 ab	0 a	0 a	10 de	7 e	0 a	0 a
7	ROUNDUP P-MAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	V2-3	A								
7	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A								
8	FLEXSTAR	1.88	EC	0.235	lb ai/a	1	pt/a	V2-3	A	0 a	4 a	0 a	0 a	12 cd	7 de	0 a	0 a
8	ROUNDUP P-MAX	4.5	SL	1.55	lb ae/a	44	fl oz/a	V2-3	A								
8	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A								
9	FLEXSTAR	1.88	EC	0.375	lb ai/a	1.6	pt/a	V2-3	A	0 a	3 ab	0 a	0 a	13 bc	7 de	0 a	0 a
9	ROUNDUP P-MAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	V2-3	A								
9	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A								
10	FLEXSTAR	1.88	EC	0.375	lb ai/a	1.6	pt/a	V2-3	A	0 a	2 bc	0 a	0 a	13 bc	9 bcd	0 a	0 a
10	ROUNDUP P-MAX	4.5	SL	1.55	lb ae/a	44	fl oz/a	V2-3	A								
10	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A								
11	CADET	0.91	EC	0.00427	lb ai/a	0.6	fl oz/a	V2-3	A	0 a	3 ab	0 a	0 a	8 e	7 de	0 a	0 a
11	ROUNDUP P-MAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	V2-3	A								
11	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A								
12	CADET	0.91	EC	0.00427	lb ai/a	0.6	fl oz/a	V2-3	A	0 a	1 c	0 a	0 a	8 e	7 e	0 a	0 a
12	ROUNDUP P-MAX	4.5	SL	1.55	lb ae/a	44	fl oz/a	V2-3	A								
12	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A								
13	CADET	0.91	EC	0.0064	lb ai/a	0.9	fl oz/a	V2-3	A	0 a	3 ab	0 a	0 a	11 d	9 cde	0 a	0 a
13	ROUNDUP P-MAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	V2-3	A								
13	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A								
14	CADET	0.91	EC	0.0064	lb ai/a	0.9	fl oz/a	V2-3	A	0 a	4 a	0 a	0 a	14 abc	8 cde	0 a	0 a
14	ROUNDUP P-MAX	4.5	SL	1.55	lb ae/a	44	fl oz/a	V2-3	A								
14	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A								
15	NONTREATED									0 a	0 d	0 a	0 a	0 f	0 f	0 a	0 a
LSD (P=.05)										0.0	1.2	0.0	0.0	2.1	2.4	0.0	0.0
Replicate F										0.000	0.554	0.000	0.000	0.041	0.297	0.000	0.000
Replicate Prob(F)										1.0000	0.5806	1.0000	1.0000	0.9602	0.7457	1.0000	1.0000
Treatment F										0.000	10.277	0.000	0.000	51.977	30.882	0.000	0.000
Treatment Prob(F)										1.0000	0.0001	1.0000	1.0000	0.0001	0.0001	1.0000	1.0000

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

Soybean Response to Glyphosate Tank-Mixtures: Weed Control.

Trial ID: 11-DSO-ISApostTM Location: De Soto, IL

Pest Code		AMATA-HR											
Crop Code		AMATA-HR											
Rating Date		6-23-11	6-30-11	7-14-11	8-11-11								
Rating Data Type		Control	Control	Control	Control								
Rating Unit		Percent	Percent	Percent	Percent								
Rating Timing													
Trt-Eval Interval		7 DA-A	14 DA-A	28 DA-A	56 DA-A								
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code				
1	ROUNDUP P-MAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	V2-3	A	75 e	75 f	72 de	68 ef
1	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A				
2	ROUNDUP P-MAX	4.5	SL	1.55	lb ae/a	44	fl oz/a	V2-3	A	84 d	80 ef	78 cd	75 def
2	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A				
3	COBRA	2	EC	0.094	lb ai/a	6	fl oz/a	V2-3	A	97 ab	93 a-d	84 c	82 cde
3	ROUNDUP P-MAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	V2-3	A				
3	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A				
4	COBRA	2	EC	0.094	lb ai/a	6	fl oz/a	V2-3	A	98 ab	95 abc	83 c	80 cde
4	ROUNDUP P-MAX	4.5	SL	1.55	lb ae/a	44	fl oz/a	V2-3	A				
4	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A				
5	COBRA	2	EC	0.188	lb ai/a	12	fl oz/a	V2-3	A	98 a	96 ab	85 c	83 a-d
5	ROUNDUP P-MAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	V2-3	A				
5	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A				
6	COBRA	2	EC	0.188	lb ai/a	12	fl oz/a	V2-3	A	99 a	97 a	87 bc	83 bcd
6	ROUNDUP P-MAX	4.5	SL	1.55	lb ae/a	44	fl oz/a	V2-3	A				
6	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A				
7	FLEXSTAR	1.88	EC	0.235	lb ai/a	1	pt/a	V2-3	A	97 ab	93 a-d	87 bc	80 cde
7	ROUNDUP P-MAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	V2-3	A				
7	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A				
8	FLEXSTAR	1.88	EC	0.235	lb ai/a	1	pt/a	V2-3	A	98 ab	97 a	96 ab	94 abc
8	ROUNDUP P-MAX	4.5	SL	1.55	lb ae/a	44	fl oz/a	V2-3	A				
8	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A				
9	FLEXSTAR	1.88	EC	0.375	lb ai/a	1.6	pt/a	V2-3	A	98 a	98 a	97 a	97 a
9	ROUNDUP P-MAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	V2-3	A				
9	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A				
10	FLEXSTAR	1.88	EC	0.375	lb ai/a	1.6	pt/a	V2-3	A	99 a	98 a	96 a	96 ab
10	ROUNDUP P-MAX	4.5	SL	1.55	lb ae/a	44	fl oz/a	V2-3	A				
10	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A				
11	CADET	0.91	EC	0.00427	lb ai/a	0.6	fl oz/a	V2-3	A	87 d	75 f	68 e	63 f
11	ROUNDUP P-MAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	V2-3	A				
11	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A				
12	CADET	0.91	EC	0.00427	lb ai/a	0.6	fl oz/a	V2-3	A	91 c	87 de	80 cd	74 def
12	ROUNDUP P-MAX	4.5	SL	1.55	lb ae/a	44	fl oz/a	V2-3	A				
12	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A				
13	CADET	0.91	EC	0.0064	lb ai/a	0.9	fl oz/a	V2-3	A	91 c	88 cd	73 de	65 f
13	ROUNDUP P-MAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	V2-3	A				
13	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A				
14	CADET	0.91	EC	0.0064	lb ai/a	0.9	fl oz/a	V2-3	A	95 b	89 bcd	80 cd	72 def
14	ROUNDUP P-MAX	4.5	SL	1.55	lb ae/a	44	fl oz/a	V2-3	A				
14	N-PAK AMS	100	SL	5	% v/v	5	% v/v	V2-3	A				
15	NONTREATED									0 f	0 g	0 f	0 g
LSD (P=.05)										3.4	7.4	9.3	13.7
Replicate F										0.711	1.917	2.418	0.403
Replicate Prob(F)										0.4999	0.1658	0.1074	0.6720
Treatment F										466.472	92.746	51.970	23.495
Treatment Prob(F)										0.0001	0.0001	0.0001	0.0001

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

Soybean Response to Glyphosate Tank-Mixtures: Weed Control.

Trial ID: 11-DSO-ISApstTM      Location: De Soto, IL

Trial Comments

1. Protocol: ISA.
2. Ratings: CI (overall, stunting, chlorosis, necrosis) at 4, 7, 14, 28, and 56 DAT.  
WC at 7, 14, 28, and 56 DAT.
3. Blanket application of Roundup WeatherMax (22 floz/A) + 2,4-D LV4 (1 pt/A) + NPAK AMS (2.5 %v/v) was applied to all plots on 4-2-11.  
Blanket burndown application of Gramoxone Inteon (3.5 pt/A) plus COC (1% v/v) was applied to all plots on 5-20-11.
4. AMATA-HR = Herbicide-resistant waterhemp (glyphosate).