

## Impact of Glyphosate Failure on Soybean.

Project Code: 04-2B-W90      Location: Belleville Research Center  
 Investigator: Bryan Young

Investigator: Bryan Young, Associate Professor, Southern Illinois University

City State Zip Country:      Belleville      IL 62221 USA  
 Trial Status: Final      Updated:      10-28-04

## Objective:

Determine the impact of a failed glyphosate application and limited weed removal on soybean yield.

Weed Code	Common Name	Scientific Name
1. SETFA	foxtail, giant	Setaria faberi Herrm.
2. AMBEL	ragweed, common	Ambrosia artemisiifolia L.
3. AMATA	waterhemp, common	Amaranthus rudis Sauer
4. CYPES	nutsedge, yellow	Cyperus esculentus L.
5. IPOSS	morningglory, species	Ipomoea sp.
6. ABUTH	velvetleaf	Abutilon theophrasti Medicus

Crop 1:            GLXMA soybean            Variety:            AG 4403 RR  
 Planting Method: Seeded            Planting Date: 6-7-04  
 Rate:            75 lb/A            Depth:            1.0 IN  
 Row Spacing:      30 IN

Plot Width, Unit: 10 FT            Plot Length, Unit: 28 FT      Reps: 3  
 Tillage Type:      Reduced-Till            Study Design: Randomized complete block  
 Previous Crop, Year: TRAZW, 2003

Field Prep./Maintenance: N 0 LB/A, P205 50 LB/A, K20 100 LB/A

Soil Name: Weir            % OM: 1.6      pH: 6.1      CEC: 8  
 Texture: Silt loam            Fert. Level: P1: 91 LB/A, K: 410 LB/A

## APPLICATION DESCRIPTION

	A	B	C	D	E
Application Date:	6-7-04	7-9-04	7-14-04	7-23-04	7-28-04
Time of Day:	15:00	16:00	9:00	9:00	10:00
Application Method:	Spray	Spray	Spray	Spray	Spray
Application Timing:	PRE	4-8"W	10-14"W	2WA4-8"W	2WA10-14"W
Applic. Placement:	BROSOI	BROFOL	BROFOL	BROFOL	BROFOL
Air Temp., Unit:	86 F	89 F	76 F	74 F	68 F
% Relative Humidity:	70	60	98	98	75
Wind Velocity, Unit:	5 MPH	3 MPH	3 MPH	2 MPH	0 MPH
Soil Moisture:	ABONOR	ABONOR	NORMAL	ABONOR	ABONOR

## CROP STAGE AT EACH APPLICATION

	A	B	C	D	E
Crop 1 Code, Stage:	GLXMA NA	GLXMA V4	GLXMA V4-V5	GLXMA R2	GLXMA R3
Height, Unit:	NA NA	8-10 IN	14-16 IN	16-18 IN	21-23 IN

## WEED STAGE AT EACH APPLICATION

	A	B	C	D	E
Weed 1 Code:	SETFA	SETFA	SETFA	SETFA	SETFA
Stage (leaves):		4-7	5-8		8-12
Height (inches):		5-10	15-17		8-20
Density:		High	High		High
Weed 2 Code:	AMBEL	AMBEL	AMBEL	AMBEL	AMBEL
Stage (leaves):		4-8	8-10		6-8
Height (inches):		4-6	10-16		12-14
Density:		Medium	Medium		Medium
Weed 3 Code:	AMATA	AMATA	AMATA	AMATA	AMATA
Stage (leaves):		6-10	6-10	10-12	
Height (inches):		1-5	6-10	10-12	
Density:		Medium	Medium	Low	
Weed 4 Code:	CYPES	CYPES	CYPES	CYPES	CYPES
Stage (leaves):		6-10	5-8	5-7	
Height (inches):		8-12	12-14	6-7	
Density:		High	Medium	Medium	

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Weed 5 Code:	IPOSS	IPOSS	IPOSS	IPOSS	IPOSS
Stage (leaves):		3-8	8-10	3-5	12-14
Height (inches):		3-6	18-24	3-4	20-24
Density:		Medium	Medium	Medium	Low
Weed 6 Code:	ABUTH	ABUTH	ABUTH	ABUTH	ABUTH
Stage (leaves):		3-5	4-5	3-4	5-7
Height (inches):		3-5	8-14	6-7	18-20
Density:		Low	Low	Low	Low

## APPLICATION EQUIPMENT

	A	B	C	D	E
Appl. Equipment:	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer
Operating Pressure:	40 PSI	40 PSI	40 PSI	40 PSI	40 PSI
Nozzle Type:	Flat fan	Flat fan	Flat fan	Flat fan	Flat fan
Nozzle Size:	TT 110015	TT 110015	TT 110015	TT 110015	TT 110015
Boom Length, Unit:	7.5 FT	7.5 FT	7.5 FT	7.5 FT	7.5 FT
Spray Volume, Unit:	10 GPA	10 GPA	10 GPA	10 GPA	10 GPA

## NOTES:

Harvested 10-16-04, (2) 30 inch rows x 25 ft.

Southern Illinois University

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Weed Code										SETFA	SETFA	SETFA	AMBEL	AMBEL	AMBEL	AMATA	AMATA	AMATA	
Crop Code										GLXMA	GLXMA	GLXMA	GLXMA						
Rating Data Type										Yield	Injury	Injury	Injury	Control	Control	Control	Control	Control	
Rating Unit										bu/A	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	
Rating Date										10-16-04									
Trt-Eval Interval											0 DAT	14 DAT	28 DAT	0 DAT	14 DAT	28 DAT	0 DAT	14 DAT	28 DAT

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code	GLXMA Yield bu/A 10-16-04	GLXMA Injury Percent 0 DAT	GLXMA Injury Percent 14 DAT	GLXMA Injury Percent 28 DAT	SETFA Control Percent 0 DAT	SETFA Control Percent 14 DAT	SETFA Control Percent 28 DAT	AMBEL Control Percent 0 DAT	AMBEL Control Percent 14 DAT	AMBEL Control Percent 28 DAT	AMATA Control Percent 0 DAT	AMATA Control Percent 14 DAT	AMATA Control Percent 28 DAT
1	NONTREATED									16	0	0	0	0	0	0	0	0	0	0	0	0
2	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	PRE	A	53	0	0	0	99	99	99	99	99	99	99	99	99
2	FIRSTRATE	84	WG	0.0157	LB A/A	0.3	OZ/A	PRE	A													
2	WEED FREE																					
3	ROUNDUP W-MAX	4.5	SL	0.77	LB AE/A	22	FL OZ/A	4-8"W	B	65	0	0	0	99	99	99	99	99	99	98	99	97
4	ROUNDUP W-MAX	4.5	SL	0.77	LB AE/A	22	FL OZ/A	4-8"W	B	63	0	0	0	99	99	99	99	99	99	99	99	99
4	ROUNDUP W-MAX	4.5	SL	1.55	LB AE/A	44	FL OZ/A	2WA4-8"W	D													
5	ROUNDUP W-MAX	4.5	SL	0.387	LB AE/A	11	FL OZ/A	4-8"W	B	59	0	0	0	99	99	99	97	99	99	95	98	98
5	ROUNDUP W-MAX	4.5	SL	1.55	LB AE/A	44	FL OZ/A	2WA4-8"W	D													
6	ROUNDUP W-MAX	4.5	SL	0.193	LB AE/A	5.5	FL OZ/A	4-8"W	B	63	0	0	0	99	99	99	88	96	99	73	95	98
6	ROUNDUP W-MAX	4.5	SL	1.55	LB AE/A	44	FL OZ/A	2WA4-8"W	D													
7	ROUNDUP W-MAX	4.5	SL	0.097	LB AE/A	2.75	FL OZ/A	4-8"W	B	58	0	0	0	85	99	99	57	95	99	43	91	96
7	ROUNDUP W-MAX	4.5	SL	1.55	LB AE/A	44	FL OZ/A	2WA4-8"W	D													
8	ROUNDUP W-MAX	4.5	SL	0.048	LB AE/A	1.37	FL OZ/A	4-8"W	B	58	0	0	3	70	99	99	52	97	99	28	93	97
8	ROUNDUP W-MAX	4.5	SL	1.55	LB AE/A	44	FL OZ/A	2WA4-8"W	D													
9	ROUNDUP W-MAX	4.5	SL	1.55	LB AE/A	44	FL OZ/A	2WA4-8"W	D	56	0	0	2	0	99	99	0	95	99	0	92	96
10	ROUNDUP W-MAX	4.5	SL	1.12	LB AE/A	32	FL OZ/A	10-14"W	C	54	0	0	0	99	99	99	99	99	99	98	99	98
11	ROUNDUP W-MAX	4.5	SL	0.77	LB AE/A	22	FL OZ/A	10-14"W	C	59	0	0	0	99	99	99	99	99	99	98	99	98
12	ROUNDUP W-MAX	4.5	SL	1.12	LB AE/A	32	FL OZ/A	10-14"W	C	58	0	0	2	99	99	99	99	99	99	99	99	98
12	ROUNDUP W-MAX	4.5	SL	1.55	LB AE/A	44	FL OZ/A	2WA10-14"W	E													
13	ROUNDUP W-MAX	4.5	SL	0.77	LB AE/A	22	FL OZ/A	10-14"W	C	58	0	0	0	99	99	99	99	99	99	99	99	98
13	ROUNDUP W-MAX	4.5	SL	1.55	LB AE/A	44	FL OZ/A	2WA10-14"W	E													
14	ROUNDUP W-MAX	4.5	SL	0.387	LB AE/A	11	FL OZ/A	10-14"W	C	54	0	0	2	98	99	99	99	99	99	97	99	98
14	ROUNDUP W-MAX	4.5	SL	1.55	LB AE/A	44	FL OZ/A	2WA10-14"W	E													
15	ROUNDUP W-MAX	4.5	SL	0.193	LB AE/A	5.5	FL OZ/A	10-14"W	C	57	0	0	3	70	99	99	50	99	98		99	97
15	ROUNDUP W-MAX	4.5	SL	1.55	LB AE/A	44	FL OZ/A	2WA10-14"W	E													
16	ROUNDUP W-MAX	4.5	SL	0.097	LB AE/A	2.75	FL OZ/A	10-14"W	C	57	0	0	6	22	99	99	38	99	99		99	98
16	ROUNDUP W-MAX	4.5	SL	1.55	LB AE/A	44	FL OZ/A	2WA10-14"W	E													
17	ROUNDUP W-MAX	4.5	SL	0.048	LB AE/A	1.37	FL OZ/A	10-14"W	C	55	0	0	4	10	99	99	25	99	99		99	99
17	ROUNDUP W-MAX	4.5	SL	1.55	LB AE/A	44	FL OZ/A	2WA10-14"W	E													
18	ROUNDUP W-MAX	4.5	SL	1.55	LB AE/A	44	FL OZ/A	2WA10-14"W	E	48	0	0	7	0	99	99	0	99	99	0	99	99
LSD (P=.05)										8.2	0.0	0.0	3.0	4.1	0.0	0.0	3.6	2.6	0.5	4.9	3.8	3.2
Replicate F										0.690	0.000	0.000	1.555	1.228	0.000	0.000	1.716	3.784	0.586	1.229	4.566	0.066
Replicate Prob(F)										0.5085	1.0000	1.0000	0.2259	0.3055	1.0000	1.0000	0.1950	0.0332	0.5620	0.3085	0.0178	0.9360
Treatment F										13.624	0.000	0.000	4.607	857.136	0.000	0.000	975.351	650.813	17216.689	607.250	303.611	440.213
Treatment Prob(F)										0.0001	1.0000	1.0000	0.0001	0.0001	1.0000	1.0000	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

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									CYPES	CYPES	CYPES	IPOSS	IPOSS	IPOSS	ABUTH	ABUTH	ABUTH	
									Control	Control	Control	Control	Control	Control	Control	Control	Control	
									Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	
									0 DAT	14 DAT	28 DAT	0 DAT	14 DAT	28 DAT	0 DAT	14 DAT	28 DAT	
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code									
1	NONTREATED									0	0	0	0	0	0	0	0	0
2	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	PRE	A	99	99	99	99	99	99	99	99	99
2	FIRSTRATE	84	WG	0.0157	LB A/A	0.3	OZ/A	PRE	A									
2	WEED FREE																	
3	ROUNDUP W-MAX	4.5	SL	0.77	LB AE/A	22	FL OZ/A	4-8"W	B	75	73	91	84	85	90	79	78	88
4	ROUNDUP W-MAX	4.5	SL	0.77	LB AE/A	22	FL OZ/A	4-8"W	B	72	90	91	83	90	90	78	98	94
4	ROUNDUP W-MAX	4.5	SL	1.55	LB AE/A	44	FL OZ/A	2WA4-8"W	D									
5	ROUNDUP W-MAX	4.5	SL	0.387	LB AE/A	11	FL OZ/A	4-8"W	B	63	90	91	70	90	92	68	97	94
5	ROUNDUP W-MAX	4.5	SL	1.55	LB AE/A	44	FL OZ/A	2WA4-8"W	D									
6	ROUNDUP W-MAX	4.5	SL	0.193	LB AE/A	5.5	FL OZ/A	4-8"W	B	37	87	89	50	90	93	37	97	92
6	ROUNDUP W-MAX	4.5	SL	1.55	LB AE/A	44	FL OZ/A	2WA4-8"W	D									
7	ROUNDUP W-MAX	4.5	SL	0.097	LB AE/A	2.75	FL OZ/A	4-8"W	B	17	87	88	33	80	90	3	91	91
7	ROUNDUP W-MAX	4.5	SL	1.55	LB AE/A	44	FL OZ/A	2WA4-8"W	D									
8	ROUNDUP W-MAX	4.5	SL	0.048	LB AE/A	1.37	FL OZ/A	4-8"W	B	0	77	85	13	87	88	0	93	92
8	ROUNDUP W-MAX	4.5	SL	1.55	LB AE/A	44	FL OZ/A	2WA4-8"W	D									
9	ROUNDUP W-MAX	4.5	SL	1.55	LB AE/A	44	FL OZ/A	2WA4-8"W	D	0	83	91	0	73	83	0	85	91
10	ROUNDUP W-MAX	4.5	SL	1.12	LB AE/A	32	FL OZ/A	10-14"W	C	72	93	86		93	87	72	90	83
11	ROUNDUP W-MAX	4.5	SL	0.77	LB AE/A	22	FL OZ/A	10-14"W	C	53	95	87		95	87	55	92	85
12	ROUNDUP W-MAX	4.5	SL	1.12	LB AE/A	32	FL OZ/A	10-14"W	C	68	94	90		95	88	70	99	93
12	ROUNDUP W-MAX	4.5	SL	1.55	LB AE/A	44	FL OZ/A	2WA10-14"W	E									
13	ROUNDUP W-MAX	4.5	SL	0.77	LB AE/A	22	FL OZ/A	10-14"W	C	63	95	91		96	92	63	99	94
13	ROUNDUP W-MAX	4.5	SL	1.55	LB AE/A	44	FL OZ/A	2WA10-14"W	E									
14	ROUNDUP W-MAX	4.5	SL	0.387	LB AE/A	11	FL OZ/A	10-14"W	C	57	92	88		96	87	45	98	92
14	ROUNDUP W-MAX	4.5	SL	1.55	LB AE/A	44	FL OZ/A	2WA10-14"W	E									
15	ROUNDUP W-MAX	4.5	SL	0.193	LB AE/A	5.5	FL OZ/A	10-14"W	C	18	89	85		92	87	18	98	92
15	ROUNDUP W-MAX	4.5	SL	1.55	LB AE/A	44	FL OZ/A	2WA10-14"W	E									
16	ROUNDUP W-MAX	4.5	SL	0.097	LB AE/A	2.75	FL OZ/A	10-14"W	C	13	88	84		91	88	13	98	93
16	ROUNDUP W-MAX	4.5	SL	1.55	LB AE/A	44	FL OZ/A	2WA10-14"W	E									
17	ROUNDUP W-MAX	4.5	SL	0.048	LB AE/A	1.37	FL OZ/A	10-14"W	C	3	88	87		86	87	7	96	89
17	ROUNDUP W-MAX	4.5	SL	1.55	LB AE/A	44	FL OZ/A	2WA10-14"W	E									
18	ROUNDUP W-MAX	4.5	SL	1.55	LB AE/A	44	FL OZ/A	2WA10-14"W	E	0	85	85	0	82	86	0	91	90
LSD (P=.05)									9.7	7.8	6.0	10.4	8.3	5.2	7.0	5.9	4.9	
Replicate F									1.151	5.049	1.816	0.082	4.063	3.807	2.807	0.656	6.033	
Replicate Prob(F)									0.3285	0.0122	0.1781	0.9212	0.0265	0.0322	0.0744	0.5257	0.0057	
Treatment F									96.746	65.090	105.569	124.199	58.218	140.042	199.351	127.554	162.495	
Treatment Prob(F)									0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	

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Trial Comments

1. Protocol: SIU-BGY.
2. Ratings: CI and WC prior to 2WA4-8"W and 2WA10-14"W and 14 and 28 DA 2WA4-8"W and 2WA10-14"W.
3. Yield.
4. Weed-free plots can be sprayed with glyphosate as needed.
5. DAT = Days after either 2WA4-8"W or 2WA10-14"W applications. 0 DAT = prior to either 2WA4-8"W or 2WA10-14"W applications.
6. Ratings prior to the 2WA4-8"W or 2WA10-14"W applications were on 7-19-04 and 7-27-04, respectively.  
For AMATA and IPOSS at 0 DAT, dense grass and yellow nutsedge made it impossible to rate AMATA and IPOSS in some plots.  
Ratings at 14 days after the 2WA4-8"W or 2WA10-14"W applications were on 8-6-04 and 8-11-04, respectively.  
Ratings at 28 days after the 2WA4-8"W or 2WA10-14"W applications were on 8-20-04 and 8-25-04, respectively.
7. Harvested 10-16-04, (2) 30 inch rows x 25 ft.