

Glyphosate Surfactant Comparison in Soybean.

02-52-W90

OBJECTIVE: Determine if the efficacy of glyphosate is influenced by surfactant application rate, active ingredient load, or specific product.

SUMMARY: This study was designed to determine if the type or amount of surfactant added to Roundup Custom affects weed control. Roundup Custom without any surfactant controlled 90% of giant foxtail, 60% of waterhemp, and 27% of velvetleaf at 14 DAT (days after treatment). None of the surfactants evaluated increased or decreased weed control compared to Roundup Custom alone except RUSA 100 which decreased waterhemp control by 25% at 28 DAT. Soybean yield was 30 bu/A in plots treated with Roundup Custom alone. The only plots that yielded significantly greater than Roundup Custom alone were those treated with Roundup Custom plus HM 9680 at 0.5% v/v and Roundup Custom plus US-2 at 0.25% v/v.

HERBICIDES/ADJUVANTS

ROUNDUP CUSTOM 4 SL
 ROUNDUP ULTRA MAX 3.7 SL
 A-1 100 LIQ
 D-1 100 LIQ
 D-2 100 LIQ
 HM 9110 100 LIQ
 HM 9121-A 100 LIQ
 HM 9633 100 LIQ
 HM 9680 100 LIQ
 L-1 100 LIQ
 L-2 100 LIQ
 PL-1 100 LIQ
 RUSA 093 100 LIQ
 RUSA 100 100 LIQ
 UC-1 100 LIQ
 US-1 100 LIQ
 US-2 100 LIQ

WEEDS

foxtail, giant
 velvetleaf
 waterhemp, common

CROP

soybean

Bryan Young

PLANT, SOIL AND GENERAL AGRICULTURE DEPARTMENT

SOUTHERN ILLINOIS UNIVERSITY

Glyphosate Surfactant Comparison in Soybean.

Project Code: 02-52-W90 Location: Belleville Research Center

Investigator: Bryan Young, Assistant Professor, Southern Illinois University

City State Zip Country: Belleville IL 62221 USA
 Trial Status: Final Updated: 10-29-02

Objective:

Determine if the efficacy of glyphosate is influenced by surfactant application rate, active ingredient load, or specific product.

Weed Code	Common Name	Scientific Name
1. SETFA	foxtail, giant	Setaria faberi Herrm.
2. AMATA	waterhemp, common	Amaranthus rudis Sauer
3. ABUTH	velvetleaf	Abutilon theophrasti Medicus

Crop 1:	GLXMA soybean	Variety:	Asgrow 4602 RR
Planting Method:	Seeded	Planting Date:	6-4-02
Rate:	75 lb/A	Depth:	1.0 IN
Row Spacing:	30 IN		

Plot Width, Unit:	10 FT	Plot Length, Unit:	25 FT	Reps:	3
Tillage Type:	Reduced-Till	Study Design:	Randomized complete block		
Previous Crop, Year:	GLXMA, 2001				

Field Prep./Maintenance: N 0 LB/A, P205 50 LB/A, K20 150 LB/A

Soil Name:	Weir	% OM:	1.9	pH:	7.1	CEC:	12
Texture:	Silt loam	Fert. Level:	P1: 97 LB/A, K: 282 LB/A				

APPLICATION DESCRIPTION

A

Application Date: 7-2-02
 Time of Day: 12:00
 Application Method: Spray
 Application Timing: 4-6"W
 Applic. Placement: BROFOL
 Air Temp., Unit: 94 F
 % Relative Humidity: 40
 Wind Velocity, Unit: 3-5 MPH
 Dew Presence (Y/N): N
 Soil Moisture: BELNOR
 % Cloud Cover: 10

CROP STAGE AT EACH APPLICATION

A

Crop 1 Code, Stage: GLXMA V3
 Height, Unit: 8-10 IN

WEED STAGE AT EACH APPLICATION

A

Weed 1 Code: SETFA
 Stage(leaves): 5-7
 Height(inches): 8-10
 Density: High

Weed 2 Code: AMATA
 Stage(leaves): 6-8
 Height(inches): 4-6
 Density: Medium

Weed 3 Code: ABUTH
 Stage(leaves): 4-6
 Height(inches): 4-8
 Density: High

APPLICATION EQUIPMENT

A

Appl. Equipment: CO2 sprayer
Operating Pressure: 40 PSI
Nozzle Type: Flat fan
Nozzle Size: DG 110015
Boom Length, Unit: 7.5 FT
Spray Volume, Unit: 10 GPA

NOTES:

Harvested Oct-24-02, (2) 30 inch rows by 22 ft.

Glyphosate Surfactant Comparison in Soybean.

Project Code: 02-52-W90

Location: Belleville Research Center

Weed Code	GLXMA	GLXMA	GLXMA	SETFA	SETFA	AMATA	AMATA	ABUTH	ABUTH
Crop Code	Yield	Injury	Injury	Control	Control	Control	Control	Control	Control
Rating Data Type	bu/A	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Rating Unit	10-24-02	7-16-02	7-30-02	7-16-02	7-30-02	7-16-02	7-30-02	7-16-02	7-30-02
Rating Date	14 DA-A	28 DA-A	14 DA-A	28 DA-A	14 DA-A	28 DA-A	14 DA-A	28 DA-A	14 DA-A
Trt-Eval Interval	14 DA-A	28 DA-A	14 DA-A	28 DA-A	14 DA-A	28 DA-A	14 DA-A	28 DA-A	14 DA-A

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code	GLXMA Yield	GLXMA Injury	GLXMA Injury	SETFA Control	SETFA Control	AMATA Control	AMATA Control	ABUTH Control	ABUTH Control
1	NONTREATED									15	0	0	0	0	0	0	0	0
2	ROUNDUP CUSTOM	4	SL	0.188	LB AE/A	0.376	PT/A	4-6"W	A	30	0	0	90	94	60	72	27	13
3	ROUNDUP CUSTOM	4	SL	0.188	LB AE/A	0.376	PT/A	4-6"W	A	35	0	0	87	92	67	75	28	13
3	US-1	100	LIQ	0.25	% V/V	0.25	%V/V	4-6"W	A									
4	ROUNDUP CUSTOM	4	SL	0.188	LB AE/A	0.376	PT/A	4-6"W	A	30	0	0	93	97	58	60	23	12
4	US-1	100	LIQ	0.5	% V/V	0.5	%V/V	4-6"W	A									
5	ROUNDUP CUSTOM	4	SL	0.188	LB AE/A	0.376	PT/A	4-6"W	A	41	0	0	92	97	68	73	28	17
5	US-2	100	LIQ	0.25	% V/V	0.25	%V/V	4-6"W	A									
6	ROUNDUP CUSTOM	4	SL	0.188	LB AE/A	0.376	PT/A	4-6"W	A	33	0	0	88	96	67	78	32	13
6	US-2	100	LIQ	0.5	% V/V	0.5	%V/V	4-6"W	A									
7	ROUNDUP CUSTOM	4	SL	0.188	LB AE/A	0.376	PT/A	4-6"W	A	24	0	0	90	96	52	68	20	10
7	HM 9633	100	LIQ	0.25	% V/V	0.25	%V/V	4-6"W	A									
8	ROUNDUP CUSTOM	4	SL	0.188	LB AE/A	0.376	PT/A	4-6"W	A	31	0	0	88	93	62	68	27	15
8	HM 9633	100	LIQ	0.5	% V/V	0.5	%V/V	4-6"W	A									
9	ROUNDUP CUSTOM	4	SL	0.188	LB AE/A	0.376	PT/A	4-6"W	A	39	0	0	82	91	57	53	30	18
9	HM 9680	100	LIQ	0.25	% V/V	0.25	%V/V	4-6"W	A									
10	ROUNDUP CUSTOM	4	SL	0.188	LB AE/A	0.376	PT/A	4-6"W	A	43	0	0	95	98	53	62	35	17
10	HM 9680	100	LIQ	0.5	% V/V	0.5	%V/V	4-6"W	A									
11	ROUNDUP CUSTOM	4	SL	0.188	LB AE/A	0.376	PT/A	4-6"W	A	34	0	0	82	90	50	57	28	17
11	D-1	100	LIQ	0.25	% V/V	0.25	%V/V	4-6"W	A									
12	ROUNDUP CUSTOM	4	SL	0.188	LB AE/A	0.376	PT/A	4-6"W	A	33	0	0	85	92	55	60	23	15
12	D-1	100	LIQ	0.5	% V/V	0.5	%V/V	4-6"W	A									
13	ROUNDUP CUSTOM	4	SL	0.188	LB AE/A	0.376	PT/A	4-6"W	A	33	0	0	88	96	50	60	30	15
13	D-2	100	LIQ	0.25	% V/V	0.25	%V/V	4-6"W	A									
14	ROUNDUP CUSTOM	4	SL	0.188	LB AE/A	0.376	PT/A	4-6"W	A	28	0	0	92	96	62	72	22	13
14	D-2	100	LIQ	0.5	% V/V	0.5	%V/V	4-6"W	A									
15	ROUNDUP CUSTOM	4	SL	0.188	LB AE/A	0.376	PT/A	4-6"W	A	25	0	0	92	97	60	77	30	13
15	L-1	100	LIQ	0.5	% V/V	0.5	%V/V	4-6"W	A									

Weed Code									SETFA	SETFA	AMATA	AMATA	ABUTH	ABUTH	
Crop Code									GLXMA	GLXMA	GLXMA				
Rating Data Type									Yield	Injury	Injury	Control	Control	Control	Control
Rating Unit									bu/A	Percent	Percent	Percent	Percent	Percent	Percent
Rating Date									10-24-02	7-16-02	7-30-02	7-16-02	7-30-02	7-16-02	7-30-02
Trt-Eval Interval									14 DA-A	28 DA-A	14 DA-A	28 DA-A	14 DA-A	28 DA-A	

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code									
16	ROUNDUP CUSTOM L-2	4	SL	0.188	LB AE/A	0.376	PT/A	4-6"W	A	29	0	0	85	92	62	67	27	17
17	ROUNDUP CUSTOM UC-1	4	SL	0.188	LB AE/A	0.376	PT/A	4-6"W	A	31	0	0	87	92	58	52	38	18
18	ROUNDUP CUSTOM A-1	4	SL	0.188	LB AE/A	0.376	PT/A	4-6"W	A	36	0	0	87	92	52	58	28	15
19	ROUNDUP CUSTOM PL-1	4	SL	0.188	LB AE/A	0.376	PT/A	4-6"W	A	33	0	0	94	98	57	72	22	13
20	ROUNDUP CUSTOM HM 9121-A	4	SL	0.188	LB AE/A	0.376	PT/A	4-6"W	A	32	0	0	92	97	60	65	30	13
21	ROUNDUP CUSTOM RUSA 100	4	SL	0.188	LB AE/A	0.376	PT/A	4-6"W	A	33	0	0	83	92	45	47	23	10
22	ROUNDUP CUSTOM RUSA 093	4	SL	0.188	LB AE/A	0.376	PT/A	4-6"W	A	35	0	0	85	94	52	50	27	17
23	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	0.406	PT/A	4-6"W	A	29	0	0	80	89	53	58	27	15
24	ROUNDUP CUSTOM HM 9110	4	SL	0.188	LB AE/A	0.376	PT/A	4-6"W	A	28	0	0	88	94	52	60	15	7
LSD (P=.05)										10.3	0.0	0.0	8.7	6.2	18.9	22.9	13.5	6.7
Replicate F										2.093	0.000	0.000	0.698	0.027	1.296	13.266	15.993	17.415
Replicate Prob(F)										0.1349	1.0000	1.0000	0.5026	0.9730	0.2835	0.0001	0.0001	0.0001
Treatment F										2.551	0.000	0.000	36.415	79.174	3.889	3.808	2.427	2.921
Treatment Prob(F)										0.0034	1.0000	1.0000	0.0001	0.0001	0.0001	0.0001	0.0052	0.0010

Glyphosate Surfactant Comparison in Soybean.

Project Code: 02-52-W90

Location: Belleville Research Center

Trial Comments

1. Protocol: SIU (BGY).
2. DA-A = days after 4-6"W application.