

Drift Reduction Methods.

00-21M-M40

OBJECTIVE: Evaluate various methods for reducing drift such as nozzle size, nozzle type, spray volume, and drift control agents as well as their effect on weed control with glyphosate.

SUMMARY: No soybean injury was observed from any treatment. Roundup Ultra plus AMS controlled 95 to 99% of giant foxtail at 28 days after treatment (DAT) regardless of nozzle type, spray volume (GPA) or nozzle size. Adding 30% polyacrylamide to Roundup Ultra plus AMS did not reduce giant foxtail control with drift guard (DG) or extended range (XR) nozzles. However, giant foxtail control was reduced to only 63% when 30% polyacrylamide was added to Roundup Ultra and applied with air induction (AI) or turbo teejet (TT) nozzles. Similarly, common cocklebur and morningglory species control was reduced with the addition of 30% polyacrylamide to Roundup Ultra applied with AI or TT nozzles. Yellow nutsedge control was reduced by 17% when 30% polyacrylamide was added to Roundup Ultra applied with AI nozzles. Soybean yield ranged from 28 to 42 bu/A. Plots treated with 30% polyacrylamide plus Roundup Ultra applied with TT or AI nozzles yielded 7 to 10 bu/A less than the same treatments applied without 30% polyacrylamide.

HERBICIDE/ADJUVANTS/NOZZELS	WEEDS	CROP
ROUNDUP ULTRA 30% POLYACRYLAMIDE 100 LIQ AMS 100 DRY AI110015-VS DG110015-VS TT110015-VP XR110015VS XR11002VS XR11003VS	COCKLEBUR, COMMON FOXTAIL, GIANT MORNINGGLORY, SPECIES NUTSEDGE, YELLOW	SOYBEAN

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PLANT, SOIL AND GENERAL AGRICULTURE DEPARTMENT

SOUTHERN ILLINOIS UNIVERSITY

Drift Reduction Methods.

Project Code: 00-21M-M40 Location: Belleville Research Center

Investigator: Bryan Young, Assistant Professor, Southern Illinois University

Weed Code	Common Name	Scientific Name
1. SETFA	FOXTAIL, GIANT	SETARIA FABERI HERRM.
2. CYPES	NUTSEDGE, YELLOW	CYPERUS ESCULENTUS L.
3. XANST	COCKLEBUR, COMMON	XANTHIUM STRUMARIUM L. SSP. STRUMARIUM
4. IPOSS	MORNINGGLORY, SPECIES	IPOMOEA SP.

Crop 1:	GLXMA SOYBEAN	Variety:	B-T 369CR
Planting Method:	SEEDED	Planting Date:	May-5-00
Rate:	75 LB/A	Depth:	1.0 IN
Row Spacing:	30 IN		

Plot Width, Unit:	10 FT	Plot Length, Unit:	30 FT	Reps:	3
Tillage Type:	REDUCED-TILL	Study Design:	RCB		
Previous Crop, Year:	ZEAMX, 1999	Fertilizer applied:	N 0 LB/A,	P ₂ O ₅	50 LB/A, K ₂ O 150 LB/A

Soil Name:	EBBERT	% OM:	2.6	pH:	5.7	CEC:	14
Texture:	SILT LOAM	P ₁ :	72 LB/A,	K:	351 LB/A		

APPLICATION DESCRIPTION

Application Date:	Jun-15-00
Time of Day:	7:30
Application Method:	SPRAY
Application Timing:	6-8"W
Applic. Placement:	BROFOL
Air Temp., Unit:	74 F
% Relative Humidity:	70
Wind Velocity, Unit:	0-2 MPH
Soil Moisture:	NORMAL
% Cloud Cover:	0

CROP STAGE AT EACH APPLICATION

Crop 1 Code, Stage:	GLXMA V4
Height, Unit:	10-13 IN

WEED STAGE AT EACH APPLICATION

Weed 1 Code:	SETFA
Stage(leaves):	6-8
Height(inches):	8-10
Density:	HIGH
Weed 2 Code:	CYPES
Stage(leaves):	6-9
Height(inches):	7-8
Density:	MEDIUM
Weed 3 Code:	XANST
Stage(leaves):	6-7
Height(inches):	9-11
Density:	HIGH
Weed 4 Code:	IPOSS
Stage(leaves):	5-7
Height(inches):	3-5
Density:	LOW

APPLICATION EQUIPMENT

Appl. Equipment:	CO, SPRAY
Operating Pressure:	40 PSI
Nozzle Type:	SEE NOTE
Nozzle Size:	SEE NOTE
Boom Length, Unit:	7.33 FT
Spray Volume, Unit:	SEE NOTE

NOTES:

NOZZLE SIZE, NOZZLE TYPE AND SPRAY VOLUME ARE LISTED IN THE TREATMENTS.

Harvested Oct-20-00, (5) 30 inch rows by 27 ft.

TABLE. DRIFT REDUCTION METHODS. PROJECT CODE:00-21M-M40

TREATMENT	FORM.	RATE	UNIT	PROD RATE	APPL TIME	APPL CODE	YIELD	GLXMA		CONTROL, DAYS AFTER 6-8"W							
								INJURY, DAT		SETFA		CYPES		XANST		IPOSS	
								14	28	14	28	14	28	14	28	14	28
							BU/A	%	%	%	%	%	%	%	%	%	%
1 XR110015VS							41	0	0	97	99	68	62	85	71	83	78
1 10 GPA																	
1 ROUNDUP ULTRA	3 SL	0.375	LB AE/A	1.0	PT/A	6-8"W	A										
1 AMS	100 DRY	1.0	% W/W	1.0	%W/W	6-8"W	A										
2 XR11002VS							41	0	0	91	96	77	67	80	73	82	77
2 10 GPA																	
2 ROUNDUP ULTRA	3 SL	0.375	LB AE/A	1.0	PT/A	6-8"W	A										
2 AMS	100 DRY	1.0	% W/W	1.0	%W/W	6-8"W	A										
3 XR11003VS							42	0	0	95	96	78	62	82	74	77	80
3 10 GPA																	
3 ROUNDUP ULTRA	3 SL	0.375	LB AE/A	1.0	PT/A	6-8"W	A										
3 AMS	100 DRY	1.0	% W/W	1.0	%W/W	6-8"W	A										
4 XR11002VS							39	0	0	96	95	68	63	77	73	73	78
4 15 GPA																	
4 ROUNDUP ULTRA	3 SL	0.375	LB AE/A	1.0	PT/A	6-8"W	A										
4 AMS	100 DRY	1.0	% W/W	1.0	%W/W	6-8"W	A										
5 XR11003VS							37	0	0	86	96	73	57	72	69	80	73
5 20 GPA																	
5 ROUNDUP ULTRA	3 SL	0.375	LB AE/A	1.0	PT/A	6-8"W	A										
5 AMS	100 DRY	1.0	% W/W	1.0	%W/W	6-8"W	A										
6 TT110015-VP							35	0	0	96	97	77	53	76	70	78	82
6 10 GPA																	
6 ROUNDUP ULTRA	3 SL	0.375	LB AE/A	1.0	PT/A	6-8"W	A										
6 AMS	100 DRY	1.0	% W/W	1.0	%W/W	6-8"W	A										
7 DG110015-VS							35	0	0	96	99	80	65	88	72	78	85
7 10 GPA																	
7 ROUNDUP ULTRA	3 SL	0.375	LB AE/A	1.0	PT/A	6-8"W	A										
7 AMS	100 DRY	1.0	% W/W	1.0	%W/W	6-8"W	A										
8 AI110015-VS							40	0	0	97	98	77	70	88	73	78	80
8 10 GPA																	
8 ROUNDUP ULTRA	3 SL	0.375	LB AE/A	1.0	PT/A	6-8"W	A										
8 AMS	100 DRY	1.0	% W/W	1.0	%W/W	6-8"W	A										

(CONTINUED)

TABLE. DRIFT REDUCTION METHODS. PROJECT CODE:00-21M-M40 (CONTINUED)

TREATMENT	FORM.	RATE	UNIT	PROD RATE	APPL TIME	APPL CODE	YIELD	GLXMA		CONTROL, DAYS AFTER 6-8"W							
								INJURY, DAT		SETFA		CYPES		XANST		IPOSS	
								14	28	14	28	14	28	14	28	14	28
							BU/A	%	%	%	%	%	%	%	%		
9 XR110015VS							36	0	0	95	95	68	62	83	68	80	77
9 10 GPA																	
9 ROUNDUP ULTRA	3 SL	0.375	LB AE/A	1.0	PT/A	6-8"W	A										
9 AMS	100 DRY	1.0	% W/W	1.0	%W/W	6-8"W	A										
9 30% POLYACRYLAMIDE	100 LIQ	0.0313	% V/V	4.0	OZ/100	6-8"W	A										
10 TT110015-VP							28	0	0	70	63	58	47	65	48	70	58
10 10 GPA																	
10 ROUNDUP ULTRA	3 SL	0.375	LB AE/A	1.0	PT/A	6-8"W	A										
10 AMS	100 DRY	1.0	% W/W	1.0	%W/W	6-8"W	A										
10 30% POLYACRYLAMIDE	100 LIQ	0.0313	% V/V	4.0	OZ/100	6-8"W	A										
11 DG110015-VS							33	0	0	96	96	70	60	80	68	78	73
11 10 GPA																	
11 ROUNDUP ULTRA	3 SL	0.375	LB AE/A	1.0	PT/A	6-8"W	A										
11 AMS	100 DRY	1.0	% W/W	1.0	%W/W	6-8"W	A										
11 30% POLYACRYLAMIDE	100 LIQ	0.0313	% V/V	4.0	OZ/100	6-8"W	A										
12 AI110015-VS							30	0	0	63	63	63	53	63	47	63	60
12 10 GPA																	
12 ROUNDUP ULTRA	3 SL	0.375	LB AE/A	1.0	PT/A	6-8"W	A										
12 AMS	100 DRY	1.0	% W/W	1.0	%W/W	6-8"W	A										
12 30% POLYACRYLAMIDE	100 LIQ	0.0313	% V/V	4.0	OZ/100	6-8"W	A										
LSD							7	0	0	9	14	13	12	8	9	7	16
P							0.01	1.0	1.0	0.01	0.01	0.05	0.03	0.01	0.01	0.01	0.04

1. PROTOCOL: SIU - BGY.
2. SPRAY PATTERN PER NOZZLE IN TREATMENTS 10 AND 12 WERE REDUCED.
3. RATING DATES:
14 DAYS AFTER 6-8"W, AND 28 DAYS AFTER 6-8"W ON JUN-29-00, AND JUL-13-00, RESPECTIVELY.