

Herbicide Drift Reduction Methods - Study 1.

01-52-MW130

OBJECTIVE: Evaluate the efficacy associated with glyphosate applications performed using drift reduction type nozzles and drift control spray additives.

SUMMARY: No soybean injury was observed from any treatment. Roundup Ultra Max alone applied with Flat Fan nozzles controlled 99% of giant foxtail at 14 days after treatment (DAT). Adding hydroxypropyl guar (HPG) at 0.5 lb/100 gal to Roundup Ultra Max decreased giant foxtail control by 7% when combined with Turbo Teejet nozzles and by 16% with Air Induction nozzles. By 28 DAT, all treatments controlled 99% of giant foxtail regardless of additive or nozzle type. Roundup Ultra Max applied alone with Flat Fan nozzles controlled 83 and 63% of common waterhemp at 14 and 28 DAT, respectively. Tank mixing RUSA 703 with Roundup Ultra Max increased common waterhemp control, regardless of nozzle type. In contrast, tank mixing HPG at 0.5 lb/100 gal with Roundup Ultra Max tended to decrease common waterhemp control regardless of nozzle type. Similarly, adding 30% polyacrylamide to Roundup Ultra Max decreased common waterhemp control with Air Induction nozzles. The use of drift control nozzles alone did not affect weed control with Roundup Ultra Max.

When Roundup Ultra Max was applied without a drift reducing agent, soybean yield was similar regardless of nozzle type. Soybean yield was reduced when HPG at 0.5 lb was added to Roundup Ultra Max applied with Flat Fan, Drift Guard or Turbo Teejet nozzles. Similarly, adding HPG at 0.5 lb or 30% polyacrylamide at 4 oz to Roundup Ultra Max applied with Air Induction nozzles resulted in lower soybean yields compared to Roundup Ultra Max applied alone with Air Induction nozzles.

HERBICIDE / ADJUVANTS / NOZZLES	WEEDS	CROP
ROUNDUP ULTRA MAX 3.7 SL 30% PA 100 LIQ HPG 77.5 WG RUSA 703 100 DRY AIR INDUCTION NOZZLES DRIFT GUARD NOZZLES FLAT FAN NOZZLES TURBO TEEJET NOZZLES	foxtail, giant waterhemp, common	soybean

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PLANT, SOIL AND GENERAL AGRICULTURE DEPARTMENT

SOUTHERN ILLINOIS UNIVERSITY

Herbicide Drift Reduction Methods - Study 1.

Project Code: 01-52-MW130 Location: Belleville Research Center

Investigator: Bryan Young, Assistant Professor, Southern Illinois University

City State Zip Country: Belleville IL 62221 USA
Trial Status: Final Initiation Date: 4-25-01**Objective:**

Evaluate the efficacy associated with glyphosate applications performed using drift reduction type nozzels and drift control spray additives.

Weed Code	Common Name	Scientific Name
1. SETFA	foxtail, giant	Setaria faberi Herrm.
2. AMATA	waterhemp, common	Amaranthus rudis Sauer

Crop 1:	GLXMA soybean	Variety:	B-T 371CR
Planting Method:	Seeded	Planting Date:	5-10-01
Rate:	75 LB/A	Depth:	1.0 IN
Row Spacing:	30 IN		

Plot Width, Unit:	10 FT	Plot Length, Unit:	25 FT	Reps:	4
Tillage Type:	Reduced-Till	Study Design:	Randomized complete block		
Previous Crop, Year:	ZEAMX, 2000				
Field Prep./Maintenance:	N 0 LB/A, P205 0 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

Application Date:	6-19-01
Time of Day:	11:00
Application Method:	Spray
Application Timing:	6-8"W
Applic. Placement:	BROFOL
Air Temp., Unit:	90 F
% Relative Humidity:	48
Wind Velocity, Unit:	0-5 MPH
Soil Moisture:	BELNOR
% Cloud Cover:	60

CROP STAGE AT EACH APPLICATION

Crop 1 Code, Stage:	GLXMA V4
Height, Unit:	8-10 IN

WEED STAGE AT EACH APPLICATION

Weed 1 Code:	SETFA
Stage(leaves):	3-6
Height(inches):	8-10
Density:	High
Weed 2 Code:	AMATA
Stage(leaves):	2-10
Height(inches):	0-17
Density:	High

APPLICATION EQUIPMENT

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

NOTES: HARVESTED 10-22-01, 2 ROWS X 22 FT.

Nozzel types are flat fan, turbo teejet, air induction and drift guard, see treatment list.

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 Special spray tips required, see treatment list.

Weed Code										GLXMA	SETFA	SETFA	SETFA	AMATA	AMATA	AMATA
Crop Code										Yield	Control	Control	Plants	Control	Control	Plants
Rating Data Type										bu/A	Percent	Percent	1.0 m2	Percent	Percent	1.0 m2
Rating Unit										10-22-01	7-3-01	7-17-01	7-10-01	7-3-01	7-17-01	7-10-01
Rating Date											14 DA-A	28 DA-A	21 DA-A	14 DA-A	28 DA-A	21 DA-A
Trt-Eval Interval																
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code							
1	NONTREATED									18	0	0	46.0	0	0	335.0
2	FLAT FAN NOZZLES									42	99	99	1.0	83	63	120.0
2	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	0.4	PT/A	6-8"W	A							
3	FLAT FAN NOZZLES									41	99	99	0.5	79	61	136.5
3	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	0.4	PT/A	6-8"W	A							
3	30% PA	100	LIQ	2.0	OZ/100 GAL	2	OZ/100 GAL	6-8"W	A							
4	FLAT FAN NOZZLES									37	99	99	0.5	82	60	88.0
4	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	0.4	PT/A	6-8"W	A							
4	30% PA	100	LIQ	4.0	OZ/100 GAL	4	OZ/100 GAL	6-8"W	A							
5	FLAT FAN NOZZLES									40	99	99	3.5	78	53	158.0
5	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	0.4	PT/A	6-8"W	A							
5	HPG	77.5	WG	0.25	LB A/100 GAL	5.16	OZ/100 GAL	6-8"W	A							
6	FLAT FAN NOZZLES									35	97	98	4.5	76	51	164.5
6	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	0.4	PT/A	6-8"W	A							
6	HPG	77.5	WG	0.5	LB A/100 GAL	10.3	OZ/100 GAL	6-8"W	A							
7	FLAT FAN NOZZLES									45	99	99	0.0	94	81	49.5
7	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	0.4	PT/A	6-8"W	A							
7	RUSA 703	100	DRY	9.0	LB/100 GAL	9	LB/100 GAL	6-8"W	A							
8	TURBO TEEJET NOZZLES									39	98	99	3.5	84	66	91.0
8	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	0.4	PT/A	6-8"W	A							
9	TURBO TEEJET NOZZLES									42	98	99	0.0	86	69	71.0
9	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	0.4	PT/A	6-8"W	A							
9	30% PA	100	LIQ	2.0	OZ/100 GAL	2	OZ/100 GAL	6-8"W	A							
10	TURBO TEEJET NOZZLES									37	97	99	2.5	77	50	134.5
10	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	0.4	PT/A	6-8"W	A							
10	30% PA	100	LIQ	4.0	OZ/100 GAL	4	OZ/100 GAL	6-8"W	A							
11	TURBO TEEJET NOZZLES									34	98	99	6.5	83	59	95.5
11	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	0.4	PT/A	6-8"W	A							
11	HPG	77.5	WG	0.25	LB A/100 GAL	5.16	OZ/100 GAL	6-8"W	A							
12	TURBO TEEJET NOZZLES									28	92	94	11.0	75	49	197.5
12	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	0.4	PT/A	6-8"W	A							
12	HPG	77.5	WG	0.5	LB A/100 GAL	10.3	OZ/100 GAL	6-8"W	A							
13	TURBO TEEJET NOZZLES									43	99	98	0.0	93	80	66.0
13	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	0.4	PT/A	6-8"W	A							
13	RUSA 703	100	DRY	9.0	LB/100 GAL	9	LB/100 GAL	6-8"W	A							
14	AIR INDUCTION NOZZLES									37	97	99	0.0	82	58	165.5
14	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	0.4	PT/A	6-8"W	A							
15	AIR INDUCTION NOZZLES									38	98	99	3.5	79	54	170.5
15	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	0.4	PT/A	6-8"W	A							
15	30% PA	100	LIQ	2.0	OZ/100 GAL	2	OZ/100 GAL	6-8"W	A							
16	AIR INDUCTION NOZZLES									31	98	99	2.0	74	53	193.0
16	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	0.4	PT/A	6-8"W	A							
16	30% PA	100	LIQ	4.0	OZ/100 GAL	4	OZ/100 GAL	6-8"W	A							
17	AIR INDUCTION NOZZLES									33	96	94	9.5	77	50	146.0
17	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	0.4	PT/A	6-8"W	A							
17	HPG	77.5	WG	0.25	LB A/100 GAL	5.16	OZ/100 GAL	6-8"W	A							
18	AIR INDUCTION NOZZLES									28	81	96	22.0	71	46	205.0
18	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	0.4	PT/A	6-8"W	A							
18	HPG	77.5	WG	0.5	LB A/100 GAL	10.3	OZ/100 GAL	6-8"W	A							
19	AIR INDUCTION NOZZLES									42	99	99	0.5	93	81	58.0
19	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	0.4	PT/A	6-8"W	A							
19	RUSA 703	100	DRY	9.0	LB/100 GAL	9	LB/100 GAL	6-8"W	A							
20	DRIFT GUARD NOZZLES									43	99	99	0.5	90	70	89.5
20	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	0.4	PT/A	6-8"W	A							

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Trial Comments

1. Protocol: SIU - BGY / ISPOB.
2. DA-A = days after 6-8"W application. 1.0 m² = 1.0 square meter.
3. No crop injury was apparent with any treatment.