Commercial vs. Small Plot Herbicide Applications.

02-Baechle

OBJECTIVE: Determine the influence of application speed and nozzle size on the interaction of drift reduction nozzle and drift control agents on waterhemp control with glyphosate. The results will be representative of commercial vs. small plot research applications.

SUMMARY: This study was conducted to determine if the different application speeds and nozzle types used by researchers conducting small plot studies result in weed control similar to that observed by commercial applicators using faster application speeds and larger orifice nozzles. Because we have observed reductions in waterhemp control with drift reducing nozzles and/or the drift reducing additive HPG in other studies, these nozzle types and HPG were included in this study. In general, nozzle type and the addition of HPG did not affect waterhemp control from Roundup UltraMax applied at 4.5 MPH. However, waterhemp control was 11 to 22% less when Roundup UltraMax was applied at 12 MPH with Drift Guard 11004 nozzles compared to applications at 4.5 MPH with Drift Guard 110015 nozzles. Commercial style (12 MPH, larger nozzle size) applications also resulted in less waterhemp control at 14 days after treatment with Air Induction nozzles compared to the small plot style application. However, using an Air Induction nozzle with a smaller orifice (11003) and a greater spray pressure (77 psi) resulted in no reduction in control. Thus, Air Induction or Venturi style nozzles should be used at greater spray pressures compared to the other nozzle types.

HERBICIDES/ADJUVANTS/NOZZLES	WEEDS	CROP
ROUNDUP ULTRA MAX 3.7 SL	waterhemp, common	soybean
HPG 77.5 WG		
AIR INDUCTION 110015		
AIR INDUCTION 11003		
AIR INDUCTION 11004		
DRIFT GUARD 110015		
DRIFT GUARD 11004		
FLAT FAN XR110015		
FLAT FAN XR11004		
TURBO TEEJET 110015		
TURBO TEEJET 11004		

Bryan Young

PLANT, SOIL AND GENERAL AGRICULTURE DEPARTMENT

SOUTHERN ILLINOIS UNIVERSITY

Commercial vs. Small Plot Herbicide Applications.

Project Code: 02-Baechle Location: Mascoutah, IL

Investigator: Bryan Young, Assistant Professor, Southern Illinois University

City State Zip Country: Mascoutah IL 62224 USA
Trial Status: Final **Updated:** 10-31-02

Objective:
Determine the influence of application speed and nozzle size on the interaction of drift reduction nozzle and drift control agents on waterhemp control with glyphosate. The results will be representative of commercial vs. small plot research applications.

Weed Code	Common Name	Scientific Name
1.	AMATA waterhemp, common	Amaranthus rudis Sauer

Crop 1: GLXMA soybean **Variety:** Asgrow 4602 RR
Planting Method: Seeded **Planting Date:** 5-23-02
Rate: 75 lb/A **Depth:** 1.0 IN
Row Spacing: 30 IN

Plot Width, Unit: 10 FT **Plot Length, Unit:** 70 FT **Reps:** 4
Tillage Type: Reduced-Till **Study Design:** Randomized complete block

Field Prep./Maintenance: N 0 LB/A, P2O5 50 LB/A, K2O 200 LB/A

% OM: 1.9 **pH:** 6.6
Fert. Level: P1: 56 LB/A, K: 180 LB/A

APPLICATION DESCRIPTION

	A
Application Date:	6-20-02
Time of Day:	12:00
Application Method:	Spray
Application Timing:	6-8"W
Applic. Placement:	BROFOL
Air Temp., Unit:	86 F
% Relative Humidity:	50
Soil Moisture:	BELNOR

CROP STAGE AT EACH APPLICATION

	A
Crop 1 Code, Stage:	GLXMA V1-V2
Height, Unit:	4-6 IN

WEED STAGE AT EACH APPLICATION

	A
Weed 1 Code:	AMATA
Stage(leaves):	3-20
Height(inches):	1-13
Density:	High

APPLICATION EQUIPMENT

	A
Appl. Equipment:	See note
Operating Pressure:	See note
Nozzle Type:	See note
Nozzle Size:	See note
Boom Length, Unit:	8.33 FT
Spray Volume, Unit:	10 GPA

NOTES:
Application equipment was an ATV sprayer using CO2.
This study was not harvested.

Commercial vs. Small Plot Herbicide Applications.

Project Code: 02-Baechle Location: Mascoutah, IL

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code	AMATA Control Percent 7-4-02 14 DA-A	AMATA Control Percent 7-18-02 28 DA-A	AMATA Control Percent 8-15-02 56 DA-A
1	NONTREATED									0	0	0
2	SMALL PLOT 4.5 MPH									80	75	69
2	FLAT FAN XR110015											
2	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A			
3	SMALL PLOT 4.5 MPH									85	85	76
3	DRIFT GUARD 110015											
3	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A			
4	SMALL PLOT 4.5 MPH									79	71	66
4	TURBO TEEJET 110015											
4	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A			
5	SMALL PLOT 4.5 MPH									79	74	69
5	AIR INDUCTION 110015											
5	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A			
6	SMALL PLOT 4.5 MPH									81	74	75
6	FLAT FAN XR110015											
6	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A			
6	HPG	77.5	WG	8.0	OZ A/100 GAL	10.3	OZ/100 GAL	6-8"W	A			
7	SMALL PLOT 4.5 MPH									83	81	75
7	DRIFT GUARD 110015											
7	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A			
7	HPG	77.5	WG	8.0	OZ A/100 GAL	10.3	OZ/100 GAL	6-8"W	A			
8	SMALL PLOT 4.5 MPH									88	83	80
8	TURBO TEEJET 110015											
8	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A			
8	HPG	77.5	WG	8.0	OZ A/100 GAL	10.3	OZ/100 GAL	6-8"W	A			
9	SMALL PLOT 4.5 MPH									73	76	70
9	AIR INDUCTION 110015											
9	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A			
9	HPG	77.5	WG	8.0	OZ A/100 GAL	10.3	OZ/100 GAL	6-8"W	A			
10	COMMERCIAL 12 MPH									78	74	69
10	FLAT FAN XR11004											
10	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A			

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code	AMATA Control Percent 7-4-02 14 DA-A	AMATA Control Percent 7-18-02 28 DA-A	AMATA Control Percent 8-15-02 56 DA-A
11	COMMERCIAL 12 MPH									74	63	59
11	DRIFT GUARD 11004											
11	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A			
12	COMMERCIAL 12 MPH									74	70	60
12	TURBO TEEJET 11004											
12	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A			
13	COMMERCIAL 12 MPH									69	63	58
13	AIR INDUCTION 11004											
13	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A			
14	COMMERCIAL 12 MPH									73	68	63
14	AIR INDUCTION 11003											
14	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A			
15	COMMERCIAL 12 MPH									85	83	74
15	FLAT FAN XR11004											
15	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A			
15	HPG	77.5	WG	8.0	OZ A/100 GAL	10.3	OZ/100 GAL	6-8"W	A			
16	COMMERCIAL 12 MPH									78	73	64
16	DRIFT GUARD 11004											
16	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A			
16	HPG	77.5	WG	8.0	OZ A/100 GAL	10.3	OZ/100 GAL	6-8"W	A			
17	COMMERCIAL 12 MPH									79	78	72
17	TURBO TEEJET 11004											
17	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A			
17	HPG	77.5	WG	8.0	OZ A/100 GAL	10.3	OZ/100 GAL	6-8"W	A			
18	COMMERCIAL 12 MPH									84	74	70
18	AIR INDUCTION 11004											
18	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A			
18	HPG	77.5	WG	8.0	OZ A/100 GAL	10.3	OZ/100 GAL	6-8"W	A			
19	COMMERCIAL 12 MPH									88	84	76
19	AIR INDUCTION 11003											
19	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A			
19	HPG	77.5	WG	8.0	OZ A/100 GAL	10.3	OZ/100 GAL	6-8"W	A			
20	NONTREATED									0	0	0
21	NONTREATED									0	0	0
LSD (P=.05)										7.6	13.5	12.1

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code			
Weed Code										AMATA	AMATA	AMATA
Crop Code												
Rating Data Type										Control	Control	Control
Rating Unit										Percent	Percent	Percent
Rating Date										7-4-02	7-18-02	8-15-02
Trt-Eval Interval										14 DA-A	28 DA-A	56 DA-A
Replicate F										3.436	4.396	3.572
Replicate Prob(F)										0.0224	0.0073	0.0191
Treatment F										115.215	33.252	35.498
Treatment Prob(F)										0.0001	0.0001	0.0001

Commercial vs. Small Plot Herbicide Applications.

Project Code: 02-Baechle Location: Mascoutah, IL

Trial Comments

1. Protocol: ISPOB.
2. Ratings: CI and WC 14 and 28 DAT and EOS.
3. DA-A = days after 6-8"W application.