

Commercial vs. small plot herbicide applications. Young, Bryan G., Julie M. Young, and John F. Fietsam. This study was designed to 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. The study was conducted at an off-station location with 1.9% organic matter and pH 6.6. Fertilizer applied was 50 and 200 lb/A P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O, respectively, to an area that had been cropped to corn in 2001. Asgrow brand 'AG 4602 RR' glyphosate-resistant soybean was planted 1.0 inch deep at 75 lb/A into a reduced-till seedbed on May 23. Plots consisted of 8 rows with 15 inch row spacing, 70 ft long arranged in a randomized complete block design with 4 replications. The herbicides were broadcast applied with a CO<sub>2</sub> pressurized sprayer using a variety of tips and spray pressures (see table) in 10 GPA water. Application timing was 6 to 8 inch weeds (6-8"W). Rainfall was adequate and weeds were actively growing at the time of application. Common waterhemp population was 20 per 0.25 m<sup>2</sup> in the nontreated plots, mid-season.

Application information is listed below.

Date	Jun-20-02
Treatment	6-8"W
Air temperature (F)	86
Relative humidity (%)	50
Soil moisture	dry

soybean	
leaf no.	V1-V2
height (inch)	4-6

common waterhemp	
leaf no.	3-20
height (inch)	1-13

In general, nozzle type and the addition of hydroxypropyl guar (HPG) did not affect common waterhemp control from glyphosate applied at 4.5 MPH. However, common waterhemp control was 11 to 22% less when glyphosate 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 common 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 to prevent any reductions in glyphosate efficacy. (Dept. of Plant, Soil and General Agriculture, Southern Illinois University, Carbondale).

Table. Commercial vs. small plot herbicide applications. (Young, Young and Fietsam)

Treatment <sup>a</sup>	Application		Common waterhemp control days after treatment		
	Time	Speed (mph)	14 %	28 %	56 %
Nontreated			0	0	0
Flat fan XR110015 glyphosate	6-8"W	4.5	80	75	69
Drift guard 110015 glyphosate	6-8"W	4.5	85	85	76
Turbo teejet 110015 glyphosate	6-8"W	4.5	79	71	66
Air induction 110015 glyphosate	6-8"W	4.5	79	74	69
Flat fan XR110015 glyphosate +hydroxypropyl guar	6-8"W	4.5	81	74	75
Drift guard 110015 glyphosate +hydroxypropyl guar	6-8"W	4.5	83	81	75
Turbo teejet 110015 glyphosate +hydroxypropyl guar	6-8"W	4.5	88	83	80
Air induction 110015 glyphosate +hydroxypropyl guar	6-8"W	4.5	73	76	70
Flat fan XR11004 glyphosate	6-8"W	12	78	74	69
Drift guard 11004 glyphosate	6-8"W	12	74	63	59
Turbo teejet 11004 glyphosate	6-8"W	12	74	70	60
Air induction 11004 glyphosate	6-8"W	12	69	63	58
Air induction 11003 glyphosate	6-8"W	12	73	68	63
Flat fan XR11004 glyphosate +hydroxypropyl guar	6-8"W	12	85	83	74
Drift guard 11004 glyphosate +hydroxypropyl guar	6-8"W	12	78	73	64
Turbo teejet 11004 glyphosate +hydroxypropyl guar	6-8"W	12	79	78	72
Air induction 11004 glyphosate +hydroxypropyl guar	6-8"W	12	84	74	70
Air induction 11003 glyphosate +hydroxypropyl guar	6-8"W	12	88	84	76
Nontreated			0	0	0
Nontreated			0	0	0
LSD			8	14	12
P			0.01	0.01	0.01

<sup>a</sup>All glyphosate at 0.188 lbae/A. Glyphosate was Roundup UltraMax from Monsanto.

All hydroxypropyl guar at 8.0 oz/100 gal.

All nozzles are from Spraying Systems Co.