

Winter annual weed control in glyphosate-resistant corn. Krausz, Ronald F. and Bryan G. Young. This study was designed to determine performance of various strategies for control of winter annual weeds in a glyphosate-resistant corn system. The study was conducted on a Weir silt loam with 2% organic matter and pH 5.6 at the Belleville Research Center. Fertilizer applied was 150, 50 and 100 lb/A of N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O, respectively, to an area that had been cropped to soybean in 2004. DKC 60-17 RR field corn was planted 1.5 inch deep at 28000 seed/A into a no-till seedbed on May 8, 2005. Plots consisted of four 30 inch rows, 26 ft long arranged in a randomized complete block design with 3 replications. The herbicides were broadcast applied with a CO<sub>2</sub> pressurized sprayer using 8003 flat fan tips at 40 PSI in 20 GPA water. Monthly rainfall in inches was 2.9, 0.8, 1.6, 4.8 and 3.2 in April, May, June, July and August, respectively. Rainfall in May was sparse; 0.07 inches on the 9<sup>th</sup>, 0.4 inches on the 14<sup>th</sup>, and 0.32 inches on the 20<sup>th</sup>. Weed population per 0.25m<sup>2</sup> in the nontreated plots, mid-season, was 3 each of wild garlic and giant ragweed, and 2 giant foxtail. Applications were made in the fall (FALL), 14 days before planting (14DBP), preemergence (PRE), postemergence if needed (POST-IN-1), and a second postemergence treatment if needed (POST-IN-2). Application information is listed below.

Date	Nov-16-04	Apr-27-05	May-10-05	May-26-05	Jun-08-05
Treatment	FALL	14DBP	PRE	POST-IN-1	POST-IN-2
Air temperature (F)	58	46	70		
Relative humidity (%)	70	70	72		
Soil moisture	ABONOR	ABONOR	NORMAL	NORMAL	BELNOR
field corn					
leaf no.				V3	V6
height (inch)				6	10-12
wild garlic					
leaf no.	3-4		3-4		
height (inch)	6-8		10-16		
henbit					
leaf no.	3-4				
height (inch)	0-1				
common chickweed					
leaf no.	5-6		10+		
height (inch)	0-1		4-6		
smallflower buttercup					
leaf no.	3-4		10+		
height (inch)	0-1		8-12		
giant ragweed					
leaf no.		5-6	5-6	4-6	5-6
height (inch)		1-3	1-4	1-3	4-6
giant foxtail					
leaf no.		2-3	2-3	4-5	5-6
height (inch)		1-2	1-3	1-3	4-6

Fall-applied glyphosate provided 100% control of henbit, common chickweed, and smallflower buttercup by April 1. However, fall-applied glyphosate alone provided no control of giant ragweed and giant foxtail by April 27. The addition of a residual herbicide with glyphosate in the fall increased control of giant ragweed and giant foxtail by 27 to 78%. Winter annual weed competition in the nontreated plots controlled giant ragweed and giant foxtail 83% and 88%, respectively, by April 27. Three glyphosate applications (FALL, 14DBP, and POST-IN-1) were required to obtain 100% control of giant ragweed, giant foxtail, common ragweed, and common waterhemp where no glyphosate was applied preemergence. Two glyphosate applications (preemergence and postemergence) provided 100% control of these weeds where glyphosate was applied preemergence with or without a residual herbicide. (Dept. of Plant, Soil and Agricultural Systems, Southern Illinois University, Carbondale).

Table 1. Winter annual weed control in glyphosate-resistant corn. (Krausz and Young)

Treatment <sup>a</sup>	Application		POST <sup>b</sup> application required on	Corn yield bu/A	Corn injury <sup>c</sup>			Control <sup>d</sup>															
					DA PRE			ALLVI		LAMAM		STEME		RANAB									
	Rate (lb/A)	Time		14	28	56	DA FALL	DA 14DBP	DA FALL	DA 14DBP	DA FALL	DA 14DBP	DA FALL	DA 14DBP	DA FALL	DA 14DBP							
Nontreated				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Glyphosate / glyt	0.75 / 0.75	FALL / PRE	June 8	127	0	0	0	80	100	100	100	80	100	100	100	80	100	100	100	80	100	100	100
Glyt + simazine / glyt	0.75+1.0 / 0.75	FALL / PRE	June 8	150	0	0	0	80	100	100	100	80	100	100	100	80	100	100	100	80	100	100	100
Glyt / glyt	0.75 / 0.75	FALL / 14DBP	May 26	162	0	0	0	80	100	100	100	80	100	100	100	80	100	100	100	80	100	100	100
Glyt + simazine / glyt	0.75+1.0 / 0.75	FALL / 14DBP	May 26	154	0	0	0	80	100	100	100	80	100	100	100	80	100	100	100	80	100	100	100
Glyt	0.75	PRE	June 8	162	0	0	0																
Glyt + simazine	0.75+2.0	PRE	June 8	142	0	0	0																
Glyt + atrazine	0.75+2.0	PRE	June 8	153	0	0	0																
Glyt + s-metolachlor & atra & benoxacor	0.75 + 1.26 & 1.63	PRE	June 8	167	0	0	0																
Glyt + chlorimuron & sulfentrazone	0.75 + 0.0264 & 0.132	FALL	May 26	127	50	40	22	90	100	100	100	90	100	100	100	90	100	100	100	90	100	100	100
LSD				40.2	0	4.7	3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P				0.01	1.0	0.01	0.01	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

<sup>a</sup>All glyphosate was Roundup WeatherMax. All glyphosate applications included AMS at 2.0% w/w. AMS = spray grade ammonium sulfate.

<sup>b</sup>Postemergence application was glyphosate as Roundup WeatherMax 0.75 lbae/A + AMS 2.0%.

<sup>c</sup>Crop injury was height reduction.

<sup>d</sup>DA = Days after application. Zero days after application = At application.

Table 2. Winter annual weed control in glyphosate-resistant corn. (Krausz and Young)

Treatment <sup>a</sup>	Application		POST <sup>b</sup> application required on	Control <sup>c</sup>															
				AMBTR					SETFA					AMBEL			AMATA		
	Rate (lb/A)	Time		DA	14DBP	DA	PRE	DA	14DBP	DA	PRE	DA	PRE	DA	PRE	DA	PRE		
Nontreated				83	83	0	0	0	88	87	0	0	0	0	0	0	0	0	0
Glyphosate / glyt	0.75 / 0.75	FALL / PRE	June 8	0	0	98	88	100	0	0	99	53	100	98	97	100	98	92	100
Glyt + simazine / glyt	0.75+1.0 / 0.75	FALL / PRE	June 8	57	57	98	60	100	78	78	99	43	100	98	100	100	98	53	100
Glyt / glyt	0.75 / 0.75	FALL / 14DBP	May 26	0	90	30	100	97	0	100	0	100	100	30	100	100	58	100	99
Glyt + simazine / glyt	0.75+1.0 / 0.75	FALL / 14DBP	May 26	27	90	90	100	100	60	100	70	100	100	90	100	100	60	100	100
Glyt	0.75	PRE	June 8			97	93	100			97	57	100	99	100	100	100	60	100
Glyt + simazine	0.75+2.0	PRE	June 8			93	88	100			93	17	100	96	97	100	97	77	100
Glyt + atrazine	0.75+2.0	PRE	June 8			100	100	100			100	90	100	100	100	100	100	100	100
Glyt + s-metolachlor & atra & benoxacor	0.75 + 1.26 & 1.63	PRE	June 8			100	96	100			100	94	100	100	99	100	100	100	100
Glyt + chlorimuron & sulfentrazone	0.75 + 0.0264 & 0.132	FALL	May 26	98	95	90	100	100	99	98	73	100	100	95	100	100	53	100	100
LSD				46.3	36.8	29	28.7	3.1	40.7	19.1	15.1	46	0	29.1	4.6	0	47.4	37.1	0.6
P				0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	1.0	0.01	0.01	1.0	0.01	0.01	0.01

<sup>a</sup>All glyphosate was Roundup WeatherMax. All glyphosate applications included AMS at 2.0% w/w. AMS = spray grade ammonium sulfate.

<sup>b</sup>Postemergence application was glyphosate as Roundup WeatherMax 0.75 lbae/A + AMS 2.0%.

<sup>c</sup>DA = Days after application. Zero days after application = At application.

Non-zero ratings in the nontreated plots are a reflection of competition between weeds.