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 and summer annual weeds in a glyphosate-resistant no-till corn system. The study was conducted on a Weir silt loam with 1.5% organic matter and pH 6.0 at the Belleville Research Center. Fertilizer applied in 2003 was150, 50 and 200 lb/A N, P_2O_5 and K_2O, respectively, to an area that had been cropped to soybean in 2002. DeKalb 'DKC 60-17' glyphosate-resistant field corn was planted 1.5 inch deep at 28000 seed/A into a no-till seedbed on May 24. Plots consisted of four rows with 30 inch row spacing, 25 ft long arranged in a randomized complete block design with three replications. Application timings were; following harvest of previous crop (FALL), 14 days before planting (14DBP), and preemergence (PRE). The herbicides were broadcast applied with a CO_2 pressurized sprayer using 8003 flat fan tips at 40 PSI in 20 GPA water. Monthly rainfall in inches was 3.4, 5.3, 1.1, 0.9, 0.4, 2.0, 2.7, 2.8, 4.8, 8.3, 1.9 and 4.2 in September, October, November, December, January, February, March, April, May, June, July and August, respectively. Weed population per 0.25 m^2 in the nontreated plots at mid-season was 3 giant ragweed, 6 common ragweed, 1 giant foxtail and 1 common cocklebur.

Application information is listed below.

Date	11-20-02	4-26-03	5-24-03
Treatment	FALL	14DBP	PRE
Air temperature (F)	46	50	66
Relative humidity (%)	66	70	52
Soil moisture	normal	wet	normal
henbit			
leaf no.	10+		
height (inch)	0-1		
common chickweed			
leaf no.	10+		
height (inch)	0-1		
wild garlic			
leaf no.	3-4	3-4	
height (inch)	4-8	6-8	
giant ragweed			
leaf no.		2-6	5-6
height (inch)		1-4	4-10
common ragweed			
leaf no.		2-3	5-6
height (inch)		1-2	4-10
giant foxtail			
leaf no.		1-2	5-6
height (inch)		0-1	2-6
common cocklebur			
leaf no.			5-6
height (inch)			2-4

Fall-applied glyphosate provided 100% control of henbit and common chickweed by April 1. However, fall-applied glyphosate alone provided no control of giant ragweed and common ragweed by April 26. The addition of a residual herbicide with glyphosate in the fall increased control of giant ragweed and common ragweed by 58 to 97%. Winter annual weed competition in the nontreated plots controlled giant ragweed and common ragweed 57% and 63%, respectively, by April 26. Four glyphosate applications (fall, 14 DBP, two postemergence) were required to obtain 98% control of giant ragweed, common ragweed, common cocklebur, giant foxtail, and common waterhemp 68 DAP where no glyphosate was applied preemergence. Two glyphosate applications (preemergence and postemergence) provided 93% or greater control of these weeds where glyphosate was applied preemergence with or without a residual herbicide. Chlorimuron plus sulfentrazone applied in the fall did not affect corn grain yield. (Dept. of Plant, Soil and General Agriculture, Southern Illinois University, Carbondale).

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

					Control[c]																
					LAMAM				STEME				ALLVI				AMBTR[d]				
	Application		POST[b] application(s)	Corn	Days after FALL		Days after 14DBP		Days after FALL		Days after 14DBP		Days after FALL		Days after 14DBP		Days after 14DBP		Days after PRE		
Treatment[a]	Rate	Time	required	yield	22	132	0	14	22	132	0	14	22	132	0	14	0	14	13	28	68
	(lb/A)		DAP	bu/A	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Nontreated				0	0	0	0	0	0	0	0	0	0	0	0	0	57	57	0	0	0
Glyt /glyt	0.75 /0.75	FALL /PRE	31	139	0	100	100	100	0	100	100	100	0	99	100	100	0	0	90	90	90
Glyt+simazine /glyt	0.75+1.0 /0.75	FALL /PRE	31	173	0	100	100	100	0	100	100	100	0	99	100	100	58	58	100	87	90
Glyt /glyt	0.75 /0.75	FALL /14DBP	16 and 40	171	0	100	100	100	0	100	100	100	0	99	100	100	0	100	0	90	98
Glyt+simazine /glyt	0.75+1.0 /0.75	FALL /14DBP	16 and 40	188	0	100	100	100	0	100	100	100	0	99	100	100	78	100	63	93	98
Glyt	0.75	PRE	31	178															94	30	93
Glyt+simazine	0.75+2.0	PRE	31	189															90	99	95
Glyt+atrazine	0.75+2.0	PRE	31	185															92	100	93
Glyt +s-metolachlor &atrazine &CGA-154281	0.75 +1.26 &1.63	PRE	31	190															100	97	91
Glyt +chlorimuron &sulfentrazone	0.75 +0.0265 &0.132	FALL	16 and 40	186	0	100	100	100	0	100	100	100	0	100	100	100	90	88	83	100	98
LSD				36	0	0	0	0	0	0	0	0	0	1	0	0	40	40	30	29	5
P				0.01	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.01	1.0	1.0	0.01	0.01	0.01	0.01	0.01

[a]All glyphosate was Roundup WeatherMax from Monsanto Co. All glyphosate applications included AMS at 2% w/w. AMS = spray grade ammonium sulfate.
[b]Roundup WeatherMax 0.75 lbae/A + AMS 2% w/w applied 7.5 ft wide. DAP = days after planting.
[c]Rating dates:
22 and 132 days after the FALL application was on Dec-12-02 and Apr-1-03, respectively.
0 and 14 days after the 14DBP application was on Apr-26-03 and May-10-03, respectively.
13, 28, and 68 days after the PRE application was on Jun-6-03, Jun-21-03, and Jul-31-03, respectively.
[d]Weed control in nontreated plots was due to competition among weeds.

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

				Control[c]																
				AMBEL[d]					XANST			SETFA			AMATA		Corn injury		
	Application		POST[b]	Days after 14DBP		Days after PRE			days after PRE			days after PRE			days after PRE		days after PRE		
Treatment[a]	Rate	Time	application(s) required	0	14	13	28	68	13	28	68	13	28	68	28	68	13	28	68
	(lb/A)		DAP	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Nontreated				63	62	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Glyt /glyt	0.75 /0.75	FALL /PRE	31	0	0	100	0	98	97	0	98	97	0	90	0	88	0	0	0
Glyt+simazine /glyt	0.75+1.0 /0.75	FALL /PRE	31	87	87	100	30	98	97	0	95	100	0	92	0	90	0	0	0
Glyt /glyt	0.75 /0.75	FALL /14DBP	16 and 40	0	100	0	90	98	0	77	98	0	100	98	97	98	0	0	0
Glyt+simazine /glyt	0.75+1.0 /0.75	FALL /14DBP	16 and 40	90	100	90	97	98	30	75	98	93	97	98	93	98	0	0	0
Glyt	0.75	PRE	31			100	30	98	95	25	98	100	30	94	0	98	0	0	0
Glyt+simazine	0.75+2.0	PRE	31			100	100	98	98	93	98	100	96	93	87	98	0	0	0
Glyt+atrazine	0.75+2.0	PRE	31			100	100	98	100	96	98	100	93	90	93	98	0	0	0
Glyt +s-metolachlor &atrazine &CGA-154281	0.75 +1.26 &1.63	PRE	31			100	97	98	100	90	95	100	93	90	100	98	0	0	0
Glyt +chlorimuron &sulfentrazone	0.75 +0.0265 &0.132	FALL	16 and 40	97	97	97	100	98	87	78	98	100	100	98	97	98	0	12	0
LSD				40	38	3	41	0	28	24	4	5	28	4	6	2	0	6	0
P				0.01	0.01	0.01	0.01	1.0	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	1.0	0.01	1.0

[a]All glyphosate was Roundup WeatherMax from Monsanto Co. All glyphosate applications included AMS at 2% w/w. AMS = spray grade ammonium sulfate.
[b]Roundup WeatherMax 0.75 lbae/A + AMS 2% w/w applied 7.5 ft wide. DAP = days after planting.
[c]Rating dates:
0 and 14 days after the 14DBP application was on Apr-26-03 and May-10-03, respectively.
13, 28, and 68 days after the PRE application was on Jun-6-03, Jun-21-03, and Jul-31-03, respectively.
[d]Weed control in nontreated plots was due to competition among weeds.