

Weed control in glyphosate-resistant corn. Young, Julie M., Bryan G. Young, Ronald F. Krausz and Joseph L. Matthews. This study was designed to compare efficacy of various weed control programs in glyphosate-resistant corn. The study was conducted on an Ebbert Silt loam with 2.7 % organic matter and pH 6.2 at the Belleville Research Center. Fertilizer applied was 150, 50, and 100 LB/A of N, P₂O₅, and K₂O, respectively, to an area that had been cropped to soybeans in 2003. Dekalb 'DKC 60-17 RR' corn was planted 1.5 inch deep at 28000 seeds per acre into a reduced-till seedbed on May 11, 2004. Plots consisted of four rows with 30 inch row spacing, 30 ft long arranged in a randomized complete block design with 3 replications. The herbicides were broadcast applied with a CO₂ pressurized sprayer using 8003 flat fan tips at 40 PSI and 20 GPA water. Monthly rainfall in inches was 1.3, 8.7, 2.8, 6.6, and 5.2 in April, May, June, July and August, respectively. Weed populations per 0.25 M² in the nontreated plots, mid-season, were: 30 giant foxtail; 1 common cocklebur; less than 1 velvetleaf; less than 1 common ragweed; and 1 morningglory species. Application timings were preemergence (PRE), postemergence 2 to 4 inch weed height (2-4"W-1), 4 inch corn height (4"CN), postemergence following a preemergence treatment 2 to 4 inch weed height (2-4"W-2), 14 days after application 1 with 2 to 4 inch weed heights (14DA2-4"W-1), and at 12 inch corn height (12"CN). Total rainfall for the 7 days following the PRE application was 2.0 inches. Application information is listed below.

Date	5-13-04	6-2-04	6-1-04	6-10-04	6-16-04	6-7-04
Treatment	PRE	2-4"W-1	4"CN	2-4"W-2	14DA2-4"W-1	12"CN
Air temperature (F)	69	66	74	84	82	70
Relative humidity (%)	98	60	64	72	88	98
field corn						
leaf no.		V4	V4	V5	V7	V5
height (inch)		8-10	8-10	12-14	26-27	10-12
giant foxtail						
leaf no.		1-4	1-4		2-3	
height (inch)		1-4	1-4		1-3	
common cocklebur						
leaf no.		4-6	4-6	4-6		4-6
height (inch)		2-4	2-4	2-4		2-4
velvetleaf						
leaf no.					4-5	
height (inch)					2-4	
common ragweed						
leaf no.		4-6	4-6	2-4		
height (inch)		1-2	1-2	2-3		
morningglory, species						
leaf no.		4-5			2-3	
height (inch)		1-2			1-2	

Slight corn injury was observed at 14 days after the postemergence application (DAPO) from flumetsulam & clopyralid (5%) and nicosulfuron & rimsulfuron & atrazine plus mesotrione (8%). However, by 28 DAPO no corn injury was visible from any herbicide treatment. All herbicide treatments controlled at least 96% of giant foxtail, velvetleaf, common ragweed, and morningglory species at 28 DAPO. Control of common cocklebur was at least 95% from all herbicide treatments except s-metolachlor & atrazine & mesotrione applied preemergence (91%). There were few significant differences in corn grain yield between herbicide treatments, most likely due to the high level of weed control observed from all herbicide treatments in this study. (Dept. of Plant, Soil and Agricultural Systems, Southern Illinois University, Carbondale)

Table. Weed control in glyphosate-resistant corn. (Young, Young, Krausz and Matthews)

Treatment ^a	Application		Corn yield bu/A	Corn injury ^b 14 DA POST	Contol ^c														
					SETFA			XANST			ABUTH			AMBEL			IPOSS		
	Rate	Time			14 DAE	28 %	42 %	14 DAE	28 %	42 %	14 DAE	28 %	42 %	14 DAE	28 %	42 %	14 DAE	28 %	42 %
	(lb/A)			%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Nontreated			123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S-metolachlor & atrazine & mesotrione & beco(LEX)	1.3 & 1.3 & 0.166	PRE	162	0	99	99	99	92	91	92	99	99	99	99	99	99	98	96	96
S-meto & atra & benoxacor / meso + atra + COC + 28%N	1.26 & 1.63 / 0.094 + 0.5 + 1.0% + 2.5%	PRE / 2-4"W-2	184	2	99	99	99	92	98	98	99	99	99	99	99	99	99	98	98
Dimethenamid-P & atra / dicamba & diflufenzopyr + NIS + 28%N	0.745 & 1.45 / 0.125 & 0.05 + 0.125% + 2.5%	PRE / 2-4"W-2	163	0	99	99	99	93	99	99	99	99	99	99	99	99	99	99	99
Acetochlor & atra & dcmd / flms & clpy + NIS + 28%N	1.96 & 1.44 / 0.0346 & 0.093 + 0.25% + 2.5%	PRE / 2-4"W-2	185	5	99	99	99	94	99	98	99	99	99	99	99	99	99	98	98
S-meto & atra & benoxacor / nicosulfuron & rimsulfuron & atra + meso + COC + 28%N	0.45 & 0.58 / 0.168 & 0.081 & 0.53 + 0.094 + 1.0% + 2.5%	PRE / 2-4"W-2	176	8	99	99	99	84	99	99	99	99	99	99	99	99	98	98	98
Isoxaflutole + atrazine / foramsulfuron & iodosulfuron + MSO + 28%N	0.07 + 1.0 / 0.028 & 0.00188 + 1.0% + 2.5%	PRE / 2-4"W-2	187	3	96	99	99	89	99	99	99	99	99	99	99	99	99	98	98
Acet & atra & MON 4660 / glyt(WM) + AMS	0.78 & 0.62 / 0.75 + 2.0%	PRE / 2-4"W-2	164	0	99	99	99	93	99	99	99	99	99	99	99	99	99	98	98
Glyt(WM) + AMS / glyt(WM) + AMS	0.75+2.0% / 0.56 + 2.0%	2-4"W-1 / 14DA	204	0		99	99		99	99		99	99		99	99		98	98
S-meto & atra & benoxacor / s-meto & atra & mesotrione & beco(LUM)	0.72 & 0.93 / 1.2 & 0.45 & 0.12	PRE / 4"CN	183	0	99	99	99	97	99	99	99	99	99	99	99	99	99	99	99
S-meto & atra & mesotrione & beco(LUM) / s-meto & atra & mesotrione & beco(LUM)	1.0 & 0.375 & 0.1 / 0.67 & 0.25 & 0.067	PRE / 4"CN	179	0	99	99	99	97	99	99	99	99	99	99	99	99	99	99	99
S-meto & atra & mesotrione & benoxacor(LUM) + atrazine	1.67 & 0.624 & 0.166 + 1.0	PRE	197	0	99	99	99	98	98	98	99	99	99	99	99	99	99	96	96
S-meto & atra & mesotrione & benoxacor(LEX) / primisulfuron & dicamba + NIS + 28%N	1.3 & 1.3 & 0.166 / 0.0253 & 0.123 + 0.25% + 2.0%	PRE / 2-4"W-2	194	2	99	99	99	97	99	99	99	99	99	99	99	99	99	99	99

(continued)

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(continued)

Treatment ^a	Application		Corn yield	Corn injury ^b 14 DA POST	Control ^c													
					SETFA			XANST			ABUTH			AMBEL			IPOSS	
	14	DA POST			14	DA POST		14	DA POST		14	DA POST		14	DA POST			
	DAE	28			42	DAE	28	42	DAE	28	42	DAE	28	42	DAE	28	42	
			bu/A	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
S-meto & atra & benoxacor / primisulfuron & dicamba + NIS + 28%N	1.27 & 1.63 / 0.0253 & 0.123 + 0.25% + 2.0%	PRE / 2-4"W-2	195	0	99	99	99	94	99	99	99	99	99	99	99	99	99	99
S-meto & atra & benoxacor / glyt(TDT) + AMS	1.26 & 1.63 / 0.75 + 2.0%	PRE / 2-4"W-2	205	0	99	99	99	92	99	99	98	99	99	99	99	99	98	98
Acet & atra & dcmd / glyt(GF) + AMS	1.13 & 0.836 / 0.75 + 2.5	PRE / 2-4"W-2	200	0	99	99	99	88	99	99	97	99	99	99	99	99	97	98
Atrazine + simazine / glyt(TDT) + dicamba & diflufenzopyr + atrazine	1.0 + 1.0 / 0.56 + 0.094 & 0.0375 + 1.0	PRE / 12"CN	198	1	96	99	99	95	99	99	99	99	99	99	99	99	99	98
Atrazine + simazine / glyt(TDT) + pendimethalin + atrazine	1.0 + 1.0 / 0.56 + 1.19 + 1.0	PRE / 12"CN	181	0	96	99	99	95	99	99	99	99	99	99	99	99	99	98
Glyt(TDT) + dicamba & diflufenzopyr + atrazine	0.56 + 0.094 & 0.0375 + 1.0	4"CN	177	0		99	99		98	99		99	99		99	99		98
Glyt(TDT) + pendimethalin + atrazine	0.56 + 1.19 + 1.0	4"CN	191	0		98	98		95	98		99	99		99	99		98
Dime-P & atra / glyt(TDT) + dicamba & diflufenzopyr	0.425 & 0.825 / 0.56 + 0.094 & 0.0375	PRE / 12"CN	204	2	98	99	99	95	99	99	99	99	99	99	99	99	99	96
LSD			39	3	2	1	1	7	3	1	1	1	1	0	1	1	2	2
P			0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	1.0	0.01	0.01	0.01	0.01

^a(LEX) = Lexar. (WM) = Roundup WeatherMax. (LUM) = Lumax. (GF) = GF1279. (TDT) = Touchdown Total.

COC = Prime Oil crop oil concentrate, a petroleum based additive with 17% emulsifier from Agrilience.

28%N = 28% urea ammonium nitrate.

NIS = Activator 90, a nonionic surfactant from Loveland Products, Inc.

MSO = Destiny, a methylated soybean oil plus emulsifiers from Agrilience LLC.

^bCorn was evaluated prior to postemergence applications with no observable injury.

Corn was also evaluated at 28 and 42 days after postemergence applications with no observable injury.

^cDAE = Days after emergence. POST = postemergence applications.