Weed management in glyphosate-resistant corn. Young, Bryan G., Hank J. Mager, and Ronald F. Krausz. This study was designed to compare weed management programs in glyphosate-resistant corn to conventional herbicide programs. The study was conducted on a Clarksdale silt loam with 1.7% organic matter and pH 5.8 at the Belleville Research Center. Fertilizer applied was 150, 50 and 150 lb/A N, P_2O_5 and K_2O, respectively, to an area that had been cropped to soybean in 2001. DeKalb brand 'DKC 64-10 RR' glyphosate-resistant field corn was planted 1.5 inch deep at 28 000 seed/A into a reduced-till seedbed on May 27. Plots consisted of four rows with 30 inch row spacing, 27 ft long arranged in a randomized complete block design with 3 replications. The herbicides were broadcast applied with a CO_2 pressurized sprayer using 8002 flat fan tips at 40 PSI in 20 GPA water. Application timings were preemergence (PRE), 2 to 4 inch weeds (2-4"W-1 when POST only or 2-4"W-2 when PRE/POST), 4 to 6 inch weeds (4-6"W-1 when POST only or 4-6"W-2 when PRE/POST), and 2 to 4 inch weed regrowth following a POST application (2-4"RG). Monthly rainfall in inches was 4.9, 6.6, 1.7, 3.7 and 3.6 in April, May, June, July and August, respectively. Weed population per 0.25 m^2 in the nontreated plots, mid-season, was 23 common cocklebur, >100 giant foxtail, 2 morningglory species, 1 velvetleaf, 1 yellow nutsedge and 25 common waterhemp.

Application information is listed below.

Date	May-28-02	Jun-10-02	Jun-17-02	Jun-14-02	Jun-18-02	Jun-24-02
Treatment	PRE	2-4"W-1	4-6"W-1	2-4"W-2	4-6"W-2	2-4"RG
Air temperature (F)	68	86	69	78	70	88
Relative humidity (%)	98	98	50	36	58	50
Soil moisture	normal	normal	normal	normal	normal	dry
field corn						
leaf no.		V2-V3	V5	V4	V5	V5-V6
height (inch)		6-8	12-15	10-12	12-15	22-24
common cocklebur						
leaf no.		3-6	6-8	8-10	6-10	2-4
height (inch)		2-4	3-6	6-8	8-10	1-4
giant foxtail						
leaf no.		2-4	3-6	6-8	6-8	3-6
height (inch)		2-4	3-5	6-10	5-10	1-3
morningglory species						
leaf no.			2-6	4-8	0-5	0-5
height (inch)			3-6	6-8	1-6	1-4
velvetleaf						
leaf no.			3-5	5-7	4-6	2-5
height (inch)			2-4	4-8	4-10	2-5
yellow nutsedge						
leaf no.		3-5	5-7	8-9	5-10	7-10
height (inch)		2-4	2-8	6-12	3-10	6-10
common waterhemp						
leaf no.		2-4				
height (inch)		1-3				

No crop injury was observed with any treatment 14 days after postemergence applications (DAPO). Control of common cocklebur and giant foxtail at 28 DAPO was excellent (>98%) in treatments containing glyphosate and from the conventional herbicide programs s-metolachlor & atrazine followed by dicamba & SAN 1269H and dimethenamid & atrazine followed by rimsulfuron & nicosulfuron & atrazine. Control of morningglory species was greater than 96% in treatments that included a preemergence and postemergence application. Velvetleaf and common waterhemp control 28 DAPO was 99% from all treatments except s-metolachlor & atrazine alone. Yellow nutsedge control tended to be greatest from treatments that included a preemergence herbicide. Corn yield ranged from 109 to 167 bu/A in herbicide treated plots. Treatments that included both preemergence and postemergence herbicide applications tended to result in the highest corn yields. (Dept. of Plant, Soil and General Agriculture, Southern Illinois University, Carbondale).

Table. Weed management in glyphosate-resistant corn. (Young, Mager and Krausz)

Treatment[a]	Application Rate	Time	Corn yield	Corn injury[b] 7 DA PRE	Corn injury[b] DA post 14	Corn injury[b] DA post 28	Control, days after postemergence application: XANST 14	XANST 28	SETFA 14	SETFA 28	IPOSS[c] 14	IPOSS[c] 28	ABUTH 14	ABUTH 28	CYPES 14	CYPES 28	AMATA 14	AMATA 28
	(lb/A)		bu/A	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Nontreated			27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
glyphosate(UM) /glyphosate(UM)	0.75 /0.56	2-4"W-1 /2-4"RG	167	0	0	0	63	99	78	99	53	50	93	99	25	63	50	99
Acetochlor&atrazine /glyphosate(UM)	1.52&0.75 /0.75	PRE /4-6"W-2	159	0	0	0	96	99	99	99	90	96	99	99	78	95	99	99
Acetochlor&atrazine +glyphosate(UM)	1.52&0.75 +0.75	2-4"W-1	166	0	0	0	99	99	98	98	99	98	99	99	85	87	99	99
S-metolachlor&CGA-154281 /dicamba&atrazine+NIS	1.3 /0.48&0.92+0.125%	PRE /2-4"W-2	136	13	0	0	99	99	82	80	99	99	99	99	99	99	99	99
S-metolachlor&atrazine&CGA-154281	0.96&1.24	PRE	109	0		0		53		50		70		77		93		90
S-metolachlor&atrazine&CGA-154281 /primisulfuron&CGA-152005 +NIS+28%N	0.96&1.24 /0.0263&0.0088 +0.25%+2.5%	PRE /4-6"W-2	149	0	0	0	99	99	70	83	94	98	99	99	86	83	99	99
S-metolachlor&atrazine&CGA-154281 /dicamba&San 1269H+NIS+28%N	0.96&1.24 /0.186&0.075+0.25%+1.125%	PRE /2-4"W-2	150	5	0	0	99	99	85	93	99	99	99	99	96	90	98	99
S-metolachlor&atrazine&CGA-154281 /glyphosate(TD)	0.5&0.65 /0.75	PRE /4-6"W-2	160	0	0	0	99	99	99	99	94	99	99	99	82	96	99	99
Acetochlor&atrazine /glyphosate(GP)	0.78&0.52 /0.75	PRE /4-6"W-2	164	0	0	0	99	99	99	99	96	99	99	99	80	90	99	99
Dimethenamid&atrazine /rimsulfuron&nicosulfuron&atrazine +COC+28%N	0.76&0.88 /0.0117&0.0117&0.76 +2.0pt+8.0pt	PRE /2-4"W-2	162	0	0	0	99	99	92	95	99	99	99	99	67	95	99	99
Dicamba&San 1269H&nicosulfuron +NIS+28%N	0.124&0.048&0.028 +0.25%+8.0pt	2-4"W-1	137	0	0	0	95	85	96	99	80	70	99	99	72	83	99	99
S-metolachlor&atrazine&CGA-154281 /mesotrione+atrazine+COC+28%N	0.96&1.24 /0.094+0.25+1.0%+2.5%	PRE /2-4"W-2	159	0	0	0	96	87	82	87	99	99	99	99	99	99	99	99
Dimethenamid&atrazine /nicosulfuron&rimsulfuron+dicamba +COC+28%N	0.76&0.88 /0.023&0.0117+0.125 +1.0%+2.5%	PRE /2-4"W-2	155	0	0	0	93	77	97	99	99	99	99	99	57	85	99	99
Glyphosate(WM) /glyphosate(WM)	0.75 /0.56	2-4"W-1 /2-4"RG	156	0	0	0	70	99	91	99	48	57	92	99	50	53	78	99
Acetochlor&atrazine /glyphosate(WM)	1.52&0.75 /0.75	PRE /4-6"W-2	159	0	0	0	99	99	99	99	99	99	99	99	88	94	99	99
Acetochlor&atrazine /glyphosate(GP)+AMS	1.2&0.8 /0.75+1.5%	PRE /4-6"W-2	163	0	0	0	99	99	99	99	99	99	99	99	82	98	99	99
Glyphosate(GP)+AMS	0.75+1.5%	4-6"W-1	141	0	0	0	99	99	99	99	77	99	99	99	87	99	99	99
Glyphosate(GP)+flumetsulam &clopyralid+NIS+AMS	0.75+0.035 &0.093+0.25%+1.5%	4-6"W-1	149	0	0	0	99	99	99	99	93	99	99	99	85	99	99	99
Nontreated			58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LSD			27	1	0	0	6	7	7	5	10	5	2	2	15	9	9	0.2
P			0.01	0.01	1.0	1.0	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

(continued)

Table. Weed management in glyphosate-resistant corn. (Young, Mager and Krausz)
(continued)

[a]Glyphosate(UM) was Roundup UltraMax from Monsanto.
Glyphosate(TD) was Touchdown from Syngenta.
Glyphosate(GP) was Glyphomax Plus from Dow.
Glyphosate(WM) was Roundup WeatherMax from Monsanto.
[b]Ratings at 14 days after 2-4"W-1, 4-6"W-1, 2-4"W-2, and 4-6"W-2 applications were on 6-25-02, 7-1-02, 6-28-02, and 7-2-02, respectively.
Ratings at 28 days after 2-4"W-1, 4-6"W-1, 2-4"W-2, and 4-6"W-2 applications were on 7-8-02, 7-15-02, 7-11-02, and 7-16-02, respectively.
Ratings for treatments that included a 2-4"RG application were made 14 days after the 2-4"W-1 application on 6-25-02 and 14 days after the 2-4"RG application on 7-16-02.
Canopy closure was on 7-16-02, there were no changes in weed control ratings after the 28 days after postemergence ratings.
[c]IPOSS = morningglory species including pitted and ivyleaf morninglory.