Atrazine-free corn programs. Young, Bryan G., R. F. Krausz, H. J. Mager, and J. L. Matthews. This study was designed to identify effective herbicide programs for use in atrazine protected watersheds. The study was conducted on a Stoy silt loam with 2.1% organic matter and pH 5.7 at the Belleville Research Center. Fertilizer applied in 2003 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 2002. DeKalb 'DKC 60-17' glyphosate-resistant field corn was planted 1.5 inch deep at 28000 seed/A into a reduced-till seedbed on May 23. 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 preemergence (PRE) and 2 to 4 inch weed height (2-4"W). 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 2.8, 4.8, 8.3, 1.9 and 4.2 in April, May, June, July and August, respectively. Weed population per 0.25 m^2 in the nontreated plots, mid-season, was 15 giant foxtail, 4 common cocklebur, 6 common waterhemp, 1 velvetleaf and <1 morningglory species.

Application information is listed below.

Date	5-24-03	6-20-03
Treatment	PRE	2-4"W
Air temperature (F)	68	76
Relative humidity (%)	52	50
field corn		
leaf no.		V4
height (inch)		8-10
giant foxtail		
leaf no.		3-4
height (inch)		2-4
common cocklebur		
leaf no.		4-8
height (inch)		2-6
common waterhemp		
leaf no.		4-8
height (inch)		1-5
velvetleaf		
leaf no.		2-4
height (inch)		1-3
morningglory species		
leaf no.		0-3
height (inch)		1-2

No corn injury was observed from any herbicide treatment. All herbicide treatments provided good to excellent control of giant foxtail, common waterhemp, morningglory species, and velvetleaf at 21 days after the postemergence applications (DAPO). Control of common cocklebur at 21 DAPO was at least 88% from all herbicide treatments except acetochlor plus isoxaflutole (68%) and s-metolachlor&mesotrione (75%). There were no significant differences in corn yield between herbicide treatments. This research suggests that there are numerous herbicide programs available which will provide effective weed control in corn without the use of atrazine. (Dept. of Plant, Soil and General Agriculture, Southern Illinois University, Carbondale).

Table. Atrazine-free corn programs. (Young, Krausz, Mager and Matthews)

						Control														
				Corn injury		SETFA			XANST			AMATA			ABUTH			IPOSS		
	Application		Corn	At	21 da	At	Days after POST		At	Days after POST		At	Days after POST		At	Days after POST		At	Days after POST	
Treatment[a]	Rate	Time	yield	POST[b]	POST	POST	21	56	POST	21	56	POST	21	56	POST	21	56	POST	21	56
	(lb/A)		bu/A	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Nontreated			18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acetochlor /halosulfuron&dicamba +NIS	2.0 /0.0313&0.138 +0.25%	PRE /2-4"W	117	0	0	99	95	95	37	99	99	99	99	99	60	96	98	90	96	99
Acetochlor /glyphosate(WM)+AMS	2.0 /0.75+2.0%	PRE /2-4"W	112	0	0	99	99	99	30	94	93	99	99	99	65	97	99	95	96	98
S-metolachlor&CGA-154281(CH) /nicosulfuron&rimsulfuron +COC+28%N	1.4 /0.0233&0.0117 +1.0%+4.0	PRE /2-4"W	132	0	0	99	99	99	52	88	92	99	99	99	84	97	98	95	95	98
S-metolachlor&mesotrione&CGA-154281 /primisulfuron&dicamba +NIS+28%N	2.0&0.2 /0.0253&0.123 +0.25%+2.0%	PRE /2-4"W	116	0	0	99	99	99	92	97	98	99	99	99	99	99	99	98	98	98
Acetochlor+isoxaflutole	2.0+0.07	PRE	102	0	0	99	99	99	82	68	67	99	99	99	99	99	99	95	92	93
Acetochlor+flumetsulam&clopyralid	2.0+0.058&0.156	PRE	109	0	0	99	96	95	97	95	96	99	95	98	99	99	98	97	93	96
Dimethenamid-P /dicamba&diflufenzopyr +NIS+28%N	0.85 /0.125&0.05 +0.25%+1.25%	PRE /2-4"W	128	0	0	99	98	99	57	91	95	99	99	99	95	97	99	96	97	98
S-metolachlor&CGA-154281(DU) /mesotrione +COC+28%N	1.4 /0.094 +1.0%+2.5%	PRE /2-4"W	114	0	0	99	99	99	28	96	96	99	99	99	75	99	99	95	99	98
S-metolachlor&CGA-154281(DU) /glyphosate(TT)+mesotrione +AMS	1.4 /0.75+0.094 +2.0%	PRE /2-4"W	116	0	0	99	99	99	40	96	95	99	99	99	85	99	99	93	97	98
S-metolachlor&mesotrione &CGA-154281	2.0&0.2	PRE	114	0	0	99	99	99	89	75	78	99	98	99	99	99	99	98	98	98
LSD			35	0	0	0	4	3	25	17	14	0	2	1	24	2	2	6	4	4
P			0.01	1.0	1.0	1.0	0.01	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

[a]NIS = Activator 90, a nonionic surfactant from Loveland Industries, Inc.
Glyphosate(WM) was Roundup WeatherMax from Monsanto Co.
AMS = spray grade ammonium sulfate.
S-metolachlor&CGA-154281(CH) was Cinch from E.I. du Pont de Nemours and Company.
COC = Prime Oil crop oil concentrate, a petroleum based additive with 17% emulsifier from Agriliance, LLC.
28%N = 28% urea ammonium nitrate.
S-metolachlor&CGA-154281(DU) was Dual II Magnum from Syngenta Crop Protection, Inc.
Glyphosate(TT) was Touchdown Total from Syngenta Crop Protection, Inc.
[b]Rating dates:
At POST was on Jun-18-03.
21 and 56 days after POST was on Jul-11-03 and Aug-15-03, respectively.