

Preplant incorporated EPTC & acetochlor applied alone and followed by postemergence applied glyphosate in corn, Ames, IA, 2005. Owen, Micheal D.K., James F. Lux, and Damian D. Franzenburg. The purpose of this study was to evaluate preplant incorporated EPTC & acetochlor and s-metolachlor & atrazine & benoxacor applied alone and followed by postemergence glyphosate for crop phytotoxicity, weed control and corn yield. The soil was a Clarion, Webster, Nicollet clay loam with a pH 7.3 and 6.6% organic matter. The experimental design was a randomized complete block with three replications and plots were 10 by 25 ft. The 2004 crop was soybean. Fertilization included 125 lb/A actual N applied as urea. Preplant (PPI) treatments were applied on May 4 at 20 gpa and 30 psi using flat fan nozzles. Following application treatments were incorporated two passes with a field cultivator operating 2 to 3 inches deep. Crop residue on the soil surface was 15 to 20% at planting. Conditions on May 4 were: air temperature 17 C, soil temperature at the 4-inch depth 12 C, 8 mph wind, 40% cloud cover, 23% relative humidity. "Dekalb hybrid DKC 53-34" corn was planted 1.5 inches deep on May 5, at 30,200 seeds/A in 30-inch rows. Postemergence (POST) treatments were applied June 9 at 20 gpa and 30 psi using flat fan nozzles. Conditions on June 9 were: air temperature 27 C, soil temperature at the 4-inch depth 22 C, 5 mph wind, 100% cloud cover, 63% relative humidity. Corn growth was V 5 to V 6 and 12 inches tall. Weed species, average size and number per ft² occurring in the untreated control included: giant foxtail, one to four leaves, 0.25 to 3 inches tall, less than one plant; velvetleaf, cotyledon to five leaves, 0.25 to 5 inches, less than one plant; common waterhemp, two to numerous leaves, 0.5 to 2 inches tall, less than one plant; common lambsquarters, four to numerous leaves, 0.5 to 5 inches, less than one plant; common cocklebur, two to eight leaves, 1 to 6 inches tall, less than one plant. April rainfall included: 1.65, 0.07, 0.1, 0.15, 0.16, and 0.2 inches on April 11, 12, 16, 20, 21, and 22, respectively. Total rainfall for April was 2.32 inches. May rainfall included: 0.66, 0.41, 0.19, 0.33, and 0.25 inches on May 12, 18, 21, 25, and 29, respectively. Total rainfall for May was 1.83 inches. June rainfall included: 0.94, 0.5, 0.33, 0.33, 0.32, 0.2, 0.29, 0.43, 0.51, 0.89, and 0.25 inches on June 4, 8, 10, 11, 12, 20, 24, 25, 26, 27, and 29, respectively. Total rainfall for June was 4.98 inches. July rainfall included: 0 inches and 3.28 inches from July 1 through 15 and 16 through 31, respectively. Total rainfall for July was 3.28 inches. Rainfall total for August was 2.86 inches.

No significant differences in corn stand were determined between treatments. PPI applied EPTC & acetochlor resulted in 2 to 5% corn injury when observed on May 31, twenty-seven days after application. Giant foxtail, common waterhemp and common lambsquarters control was good to excellent with all treatments on all observation dates. Reduced rates of EPTC & acetochlor and s-metolachlor & atrazine & benoxacor gave unacceptable velvetleaf and common cocklebur control on June 9, prior to sequential postemergence (POST) applications of glyphosate. Control of these species improved to excellent following the POST applications. Remaining EPTC & acetochlor treatments demonstrated a rate response for velvetleaf and common cocklebur control. Control of these species was unacceptable with the lowest rate of EPTC & acetochlor, while the highest rate provided fair to good control. No significant differences in corn yield between herbicide treatments were determined. All treatment yields, however, were significantly higher than the untreated control. (Dept. of Agronomy, Iowa State University, Ames).

Table 1. Preplant incorporated EPTC & acetochlor applied alone and followed by postemergence applied glyphosate in corn, Ames, IA, 2005 (Owen, Lux, and Franzenburg).

Treatment	Rate (lb/A)	Appl. time	Corn ^a stand	Injury 5/31/05 6/9/05	SETFA 6/9/05	ABUTH 6/9/05	AMATA 6/9/05	CHEAL 6/9/05	XANST 6/9/05	Injury 6/16/05	SETFA 6/24/05	ABUTH 6/24/05	AMATA 6/24/05	CHEAL 6/24/05	XANST 6/24/05
				----- (%) -----	----- (% weed control) -----					--- (%) ---	----- (% weed control) -----				
Untreated	-		29	0	0	0	0	0	0	0	0	0	0	0	0
EPTC&acetochlor	3.5&0.88	PPI	30	3	0	98	88	98	95	53	0	96	88	98	53
EPTC&acetochlor	4.2&1.05	PPI	30	5	5	98	93	99	95	80	0	98	92	99	80
EPTC&acetochlor/ glyphosate ^b +AMS ^c	2.1&0.53/ 0.77+17.0	PPI/ POST	30	2	0	95	72	99	90	45	0	99	99	99	99
S-metolachlor& atrazine&benoxacor/ glyphosate+AMS	0.78& 1.0/ 0.77+17.0	PPI/ POST	30	0	0	93	48	95	93	47	0	99	99	99	99
LSD (P=0.05)			1	4	0	5	7	2	6	23	0	3	3	2	11

^a Corn stand per 17.5 row feet on September 29.^b Glyphosate rate in lb ae/A.^c AMS = ammonium sulfate. Rate in lb/100 gallons.

Table 2. Preplant incorporated EPTC & acetochlor applied alone and followed by postemergence applied glyphosate in corn, Ames, IA, 2005 (Owen, Lux, and Franzenburg).

Treatment	Rate (lb/A)	Appl. time	SETFA 7/11/05	ABUTH 7/11/05	AMATA 7/11/05	CHEAL 7/11/05	XANST 7/11/05	SETFA 8/4/05	ABUTH 8/4/05	AMATA 8/4/05	CHEAL 8/4/05	XANST 8/4/05	Corn yield
			----- (% weed control) -----										- (bu/A) -
Untreated	-		0	0	0	0	0	0	0	0	0	0	104
EPTC&acetochlor	3.5&0.88	PPI	96	82	98	88	48	96	78	98	87	48	214
EPTC&acetochlor	4.2&1.05	PPI	96	88	99	88	75	96	88	99	88	73	204
EPTC&acetochlor/ glyphosate ^a +AMS ^b	2.1&0.53/ 0.77+17.0	PPI/ POST	98	95	98	92	98	98	95	98	92	98	215
S-metolachlor& atrazine&benoxacor/ glyphosate+AMS	0.78& 1.0/ 0.77+17.0	PPI/ POST	98	96	96	95	98	98	95	96	95	98	223
LSD (P=0.05)			3	9	3	5	15	3	11	3	6	16	21

^a Glyphosate rate in lb ae/A.^b AMS = ammonium sulfate. Rate in lb/100 gallons.