

Preemergence applied atrazine & metolachlor, isoxaflutole, s-metolachlor & benaxacor and postemergence atrazine & metolachlor, glyphosate, and dicamba in corn, Nashua, IA, 2005. Owen, Micheal D.K., James F. Lux, and Damian D. Franzenburg. The purpose of this study was to evaluate preemergence applied atrazine & metolachlor alone and in tank-mixture with isoxaflutole, s-metolachlor & benaxacor and postemergence atrazine & metolachlor with glyphosate and dicamba for corn phytotoxicity and weed control. The soil was a Floyd, Kenyon, Clyde loam with a pH 6.75 and 5.5% 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 140 lb/A actual N applied as anhydrous ammonia. Tillage included a spring field cultivation. Crop residue on the soil surface was 15 to 20% at planting. "Dekalb hybrid DKC 50-20" corn was planted 1.5 inches deep on May 17, at 35,077 seeds/A in 30-inch rows. Preemergence (PRE) treatments were applied May 20 at 20 gpa and 30 psi using flat fan nozzles. Conditions on May 20 were: air temperature 16 C, soil temperature at the 4-inch depth 15 C, 3 mph wind, 95% cloud cover, 80% relative humidity. Postemergence (POST) and late-postemergence (LPOST) treatments were applied June 15 and 20 at 20 gpa and 30 psi using flat fan nozzles, respectively. Conditions on June 15 were: air temperature 20 C, soil temperature at the 4-inch depth 19 C, 10 mph wind, 80% cloud cover, 85% relative humidity. Corn growth was V 4 to V 5 and 9 inches tall. Weed species, average size and number per ft² occurring in the untreated control included: giant foxtail, one to four leaves, three tillers, 0.25 to 4 inches tall, zero to one plant; velvetleaf, cotyledon to five leaves, 0.25 to 4 inches, zero to one plant; common waterhemp and common lambsquarters, numerous leaves, 0.5 to 4 inches tall, zero to one plant. Conditions on June 20 were: air temperature 30 C, soil temperature at the 4-inch depth 24 C, 3 mph wind, 30% cloud cover, 70% relative humidity. Corn growth was V 6 and 13 inches tall. Weed species, average size and number per ft² occurring in the untreated control included: giant foxtail, one to four leaves, three tillers, 0.25 to 6 inches tall, less than one plant; velvetleaf, cotyledon to eight leaves, 0.25 to 5 inches, and less than one plant. April rainfall included: 0.62, 0.48, 0.39, 0.48, 0.02, 0.29, 0.05, and 0.01 inches on April 11, 12, 16, 19, 21, 22, 25, and 26, respectively. Total rainfall for April was 2.34 inches. May rainfall included: 0.04, 0.49, 0.53, 0.49, 1.42, 0.07, 0.06, 0.35, 0.65, 0.01, 0.16, 0.06, and 0.01 inches on May 6, 7, 8, 11, 12, 13, 16, 18, 21, 22, 25, 26, and 31, respectively. Total rainfall for May was 4.34 inches. June rainfall included: 0.79, 1.46, 0.08, 0.17, 0.06, 0.22, 2.90, 1.64, 0.54, and 0.08 inches on June 4, 8, 10, 13, 14, 20, 24, 25, 28, and 29, respectively. Total rainfall for June was 7.94 inches. July rainfall included: 0.6 inches and 3.26 inches from July 1 through 15 and 16 through 31, respectively. Total rainfall for July was 3.86 inches. Rainfall total for August was 5.97 inches.

Corn stands were consistent on August 1 and no significant differences were determined between treatments. Preemergence (PRE) treatments demonstrated excellent crop safety. Five percent corn injury was observed from several postemergence (POST) applied treatments on June 20 and June 28, five and thirteen days following application.

Giant foxtail, common waterhemp and common lambsquarters control was good to excellent with the PRE treatments on all observation dates. PRE applied atrazine & metolachlor and s-metolachlor & benaxacor achieved only poor to fair velvetleaf control. Excellent velvetleaf control was observed, however, with PRE applied isoxaflutole plus atrazine & metolachlor. Excellent overall and season-long weed control was achieved by the POST treatments. (Dept. of Agronomy, Iowa State University, Ames).

Table 1. Preemergence applied atrazine & metolachlor, isoxaflutole, s-metolachlor & benoxacor and postemergence atrazine & metolachlor, glyphosate, and dicamba in corn, Nashua, IA, 2005 (Owen, Lux, Franzenburg).

Treatment	Rate (lb/A)	Appl. time	Corn ^a stand	Injury 6/15/05 - (%) -	SETFA 6/15/05 ----- (% weed control)	ABUTH 6/15/05 ----- (% weed control)	AMATA 6/15/05 ----- (% weed control)	CHEAL 6/15/05 ----- (% weed control)	Injury 6/20/05 ----- (%) -----	6/28/05 ----- (% weed control)	SETFA 6/28/05 ----- (% weed control)	ABUTH 6/28/05 ----- (% weed control)	AMATA 6/28/05 ----- (% weed control)	CHEAL 6/28/05 ----- (% weed control)
Untreated	-	-	34	0	0	0	0	0	0	0	0	0	0	0
Atrazine&metolachlor	1.63&1.26	PRE	33	0	99	70	99	99	0	0	95	65	99	99
Atrazine&metolachlor+ isoxaflutole	1.63&1.26+ 0.047	PRE	33	0	99	99	99	99	0	0	99	98	99	99
Atrazine&metolachlor/ glyphosate ^b +AMS ^c	0.85&0.66/ 0.77+17.0	PRE/ LPOST	33	0	93	43	99	99	0	0	98	92	99	99
S-metolachlor&atrazine& benoxacor	1.26&1.63	PRE	33	0	99	72	99	99	0	0	96	63	99	99
Atrazine&metolachlor+ glyphosate+AMS	1.13&0.87+ 0.77+17.0	POST	33	0	0	0	0	0	0	0	99	99	99	99
Atrazine&metolachlor+ glyphosate+AMS	1.63&1.26+ 0.77+17.0	POST	33	0	0	0	0	0	5	5	99	99	99	99
Atrazine&metolachlor+ dicamba+ glyphosate+AMS	1.63&1.26+ 0.125+ 0.77+17.0	POST	33	0	0	0	0	0	5	5	99	99	99	99
LSD (P=.05)			1	0	2	13	0	0	0	0	2	19	0	0

^a Corn stand per 17.5 row feet on August 1.

^b Glyphosate rate in lb ae/A.

^c AMS = ammonium sulfate. Rate in lb/100 gallons.

Table 2. Preemergence applied atrazine & metolachlor, isoxaflutole, s-metolachlor & benoxacor and postemergence atrazine & metolachlor, glyphosate, and dicamba in corn, Nashua, IA, 2005 (Owen, Lux, Franzenburg).

Treatment	Rate (lb/A)	Appl. time	Injury 7/12/05 - (%) -	SETFA 7/12/05	ABUTH 7/12/05	AMATA 7/12/05	CHEAL 7/12/05	SETFA 8/24/05	ABUTH 8/24/05	AMATA 8/24/05	CHEAL 8/24/05
			----- (% weed control) -----								
Untreated	-	-	0	0	0	0	0	0	0	0	0
Atrazine&metolachlor	1.63&1.26	PRE	0	95	60	99	99	93	55	98	99
Atrazine&metolachlor+ isoxaflutole	1.63&1.26+ 0.047	PRE	0	98	98	99	99	98	98	99	99
Atrazine&metolachlor/ glyphosate ^a +AMS ^b	0.85&0.66/ 0.77+17.0	PRE/ LPOST	0	99	93	99	99	99	91	98	99
S-metolachlor&atrazine& benoxacor	1.26&1.63	PRE	0	95	58	99	99	95	52	99	99
Atrazine&metolachlor+ glyphosate+AMS	1.13&0.87+ 0.77+17.0	POST	0	99	98	99	99	99	98	99	99
Atrazine&metolachlor+ glyphosate+AMS	1.63&1.26+ 0.77+17.0	POST	0	99	98	99	99	99	98	99	99
Atrazine&metolachlor+ dicamba+ glyphosate+AMS	1.63&1.26+ 0.125+ 0.77+17.0	POST	0	99	99	99	99	99	99	99	99
LSD (P=.05)			0	1	19	0	0	2	16	2	0

^a Glyphosate rate in lb ae/A.

^b AMS = ammonium sulfate. Rate in lb/100 gallons.