

Preemergence s-metolachlor & benoxacor, MAN-282, MANA-283, and s-metolachlor & atrazine & benoxacor applied alone and followed by postemergence applications of glyphosate in corn, Ames, IA, 2004. Owen, Micheal D.K., James F. Lux, and Damian D. Franzenburg. The purpose of this study was to evaluate corn phytotoxicity and weed control with MANA-282 and MANA-283 applied preemergence alone and followed by postemergence applied glyphosate. Treatments were compared to standards including s-metolachlor & benoxacor and s-metolachlor & atrazine & benoxacor. The soil was a Clarion, Webster, Canisteo clay loam with a pH 7.1 and 4.2% organic matter. The experimental design was a randomized complete block with three replications and plots were 10 by 25 ft. The 2003 crop was soybean. Fertilization included 124 lb/A actual N applied as urea. Crop residue on the soil surface was 57% at planting. "Dekalb hybrid DKC53-34" corn was planted 1.5 inches deep on May 17, at 30,200 seeds/A in 30-inch rows. Preemergence (PRE) and postemergence (POST) treatments were applied on May 17 and June 15, respectively, at 20 gpa and 30 psi using flat fan nozzles. Conditions on May 17 were: air temperature 18 C, soil temperature at the 4-inch depth 18 C, 5 mph wind, 10% cloud cover, 78% relative humidity. Conditions on June 15 were: air temperature 22 C, soil temperature at the 4-inch depth 24 C, 3 mph wind, 100% cloud cover, 82% relative humidity. Weed species, average size, and number per ft² in the areas to be treated included: giant foxtail one to four leaves, two tillers, 0.5 to 3 inches tall, zero to on plant; velvetleaf cotyledon to eight leaves, 0.5 to 6 inches tall, zero to two plants; common waterhemp numerous leaves, 0.5 to 3 inches tall, zero to one plant; common lambsquarters numerous leaves, 0.5 to 3 inches tall, zero to one plant; Pennsylvania smartweed two to six leaves, 1 to 3 inches tall, zero to one plant. May rainfall included: 0.41, 0.03, 0.16, 0.43, 0.12, 0.44, 3.18, 0.21, 1.19, 0.12, 0.45, 0.35, and 0.03 inches on May 8, 9, 12, 13, 14, 17, 22, 23, 24, 28, 29, 30, and 31, respectively. Total rainfall for May was 7.12 inches. June rainfall included: 0.01, 0.25, 0.27, 0.41, 0.33, 0.7, 0.92, 0.21, 0.05, and 0.01 inches on June 6, 10, 11, 12, 14, 16, 21, 24, 27, and 28, respectively. Total rainfall for June was 3.16 inches. July rainfall included: 1.51 inches and 0.18 inches from July 1 through 15 and 16 through 31, respectively. Total rainfall for July was 1.69 inches. Rainfall total for August was 4.54 inches.

No corn injury was observed from the treatments on any of the observation dates. Giant foxtail control was excellent with the treatments when observed on June 7, twenty-one days after application. Few significant differences were determined between the treatments. Velvetleaf control on June 7 ranged from poor to good. Control was best with the highest rates of MANA-283 and s-metolachlor & atrazine & benoxacor. Good to excellent common waterhemp and common lambsquarters control was observed on June 7 with the treatments. Poor to excellent Pennsylvania smartweed control was observed on June 7. The highest rates of s-metolachlor & benoxacor and MANA-282 gave the best control as well as all MANA-283 and s-metolachlor & atrazine & benoxacor treatments.

Giant foxtail control generally continued to be good to excellent when observed on July 2, forty-nine days after PRE applications and seventeen days after POST applications. The POST application of glyphosate following PRE applications improved velvetleaf control to excellent on July 2. Common waterhemp, common lambsquarters and Pennsylvania smartweed control were all excellent on July 2 with treatments that included POST applications of glyphosate. Control of these weeds with PRE only treatments of s-metolachlor & benoxacor and MANA-282 demonstrated a rate response. However, control was considered acceptable overall.

Control of giant foxtail, velvetleaf, common waterhemp, common lambsquarters and Pennsylvania smartweed on July 21 and August 30 reflected the trends established on earlier observation dates. In general, treatments that included a POST application of glyphosate provided excellent overall control. On July 21 and August 30, several s-metolachlor & benoxacor and MAN-282 treatments, however, no longer provided adequate common lambsquarters and Pennsylvania smartweed control. (Dept. of Agronomy, Iowa State University, Ames).

Table 1. Preemergence s-metolachlor & benoxacor, MANA-282, MANA-283, and s-metolachlor & atrazine & benoxacor applied alone and followed by postemergence applications of glyphosate in corn, Ames, IA, 2004 (Owen, Lux, and Franzenburg).

Treatment	Rate (lb/A)	Appl. time	Injury 6/7/04 - (%)	SETFA 6/7/04 -----	ABUTH 6/7/04 -----	AMATA 6/7/04 -----	CHEAL 6/7/04 -----	POLPY 6/7/04 -----	Injury 7/2/04 - (%) -	SETFA 7/2/04 -----	ABUTH 7/2/04 -----	AMATA 7/2/04 -----	CHEAL 7/2/04 -----	POLPY 7/2/04 -----
				(% weed control)					(% weed control)					
Untreated	-	-	0	0	0	0	0	0	0	0	0	0	0	0
S-metolachlor&benoxacor	0.955	PRE	0	95	15	95	92	58	0	90	13	87	83	48
S-metolachlor&benoxacor	1.91	PRE	0	98	17	96	96	85	0	93	13	93	92	70
MANA-282	0.985	PRE	0	95	10	95	93	50	0	90	10	88	82	52
MANA-282	1.97	PRE	0	96	12	96	95	88	0	92	3	92	88	80
MANA-282	2.96	PRE	0	98	13	99	96	98	0	95	8	93	90	90
MANA-282/ glyphosate ^a +AMS ^b	0.985/ 0.77+17.0	PRE/ POST	0	93	8	93	93	50	0	99	99	99	99	91
MANA-282/ glyphosate+AMS	1.97/ 0.77+17.0	PRE/ POST	0	96	8	95	93	80	0	99	99	99	99	93
MANA-282/ glyphosate+AMS	2.96/ 0.77+17.0	PRE/ POST	0	99	22	96	96	95	0	99	99	99	99	96
S-metolachlor&benoxacor/ glyphosate+AMS	0.955/ 0.77+17.0	PRE/ POST	0	96	8	92	90	52	0	99	99	99	99	92
S-metolachlor&benoxacor/ glyphosate+AMS	1.91/ 0.77+17.0	PRE/ POST	0	99	12	96	95	87	0	99	99	99	99	98
MANA-283	1.06&0.88	PRE	0	96	62	96	98	95	0	85	57	92	95	85
MANA-283	1.58&1.32	PRE	0	98	70	99	99	96	0	93	63	95	95	93
MANA-283	1.95&1.63	PRE	0	98	72	99	99	98	0	93	62	95	96	96
MANA-283/ glyphosate+AMS	1.06&0.88/ 0.77+17.0	PRE/ POST	0	95	58	96	99	96	0	99	99	99	99	99
MANA-283/ glyphosate+AMS	1.58&1.32/ 0.77+17.0	PRE/ POST	0	98	75	98	99	99	0	99	99	98	99	98
MANA-283/ glyphosate+AMS	1.95&1.63/ 0.77+17.0	PRE/ POST	0	96	83	99	99	99	0	99	99	99	99	99
S-metolachlor&atrazine&benoxacor/ glyphosate+AMS	0.78&1.0/ 0.77+17.0	PRE/ POST	0	95	63	96	99	99	0	99	99	99	99	99
S-metolachlor&atrazine&benoxacor/ glyphosate+AMS	1.17&1.51/ 0.77+17.0	PRE/ POST	0	98	75	99	99	99	0	99	99	99	99	99
S-metolachlor&atrazine&benoxacor/ glyphosate+AMS	1.56&2.0/ 0.77+17.0	PRE/ POST	0	99	85	99	99	99	0	99	99	99	99	99
LSD (P=0.05)			0	3	16	3	3	10	0	3	10	3	8	13

^a Glyphosate rate in lb ae/A.

^b AMS = Ammonium sulfate. Rate in lb/100 gal.

Table 2. Preemergence s-metolachlor & benoxacor, MANA-282, MANA-283, and s-metolachlor & atrazine & benoxacor applied alone and followed by postemergence applications of glyphosate in corn, Ames, IA, 2004 (Owen, Lux, and Franzenburg).

Treatment	Rate (lb/A)	Appl. time	Injury 7/21/04 - (%) -	SETFA 7/21/04	ABUTH 7/21/04	AMATA 7/21/04	CHEAL 7/21/04	POLPY 7/21/04	SETFA 8/30/04	ABUTH 8/30/04	AMATA 8/30/04	CHEAL 8/30/04	POLPY 8/30/04
			----- (% weed control) -----										
Untreated	-	-	0	0	0	0	0	0	0	0	0	0	0
S-metolachlor&benoxacor	0.955	PRE	0	88	8	83	68	47	90	10	80	63	47
S-metolachlor&benoxacor	1.91	PRE	0	93	5	90	82	68	93	5	90	78	68
MANA-282	0.985	PRE	0	90	7	85	80	52	92	7	83	75	50
MANA-282	1.97	PRE	0	92	3	85	77	77	92	5	85	75	73
MANA-282	2.96	PRE	0	93	5	92	87	87	93	5	88	82	85
MANA-282/ glyphosate ^a +AMS ^b	0.985/ 0.77+17.0	PRE/ POST	0	99	99	99	99	96	99	99	99	98	98
MANA-282/ glyphosate+AMS	1.97/ 0.77+17.0	PRE/ POST	0	99	99	99	99	98	99	99	99	99	99
MANA-282/ glyphosate+AMS	2.96/ 0.77+17.0	PRE/ POST	0	99	99	99	99	99	99	99	99	99	99
S-metolachlor&benoxacor/ glyphosate+AMS	0.955/ 0.77+17.0	PRE/ POST	0	98	99	99	99	99	98	99	99	98	99
S-metolachlor&benoxacor/ glyphosate+AMS	1.91/ 0.77+17.0	PRE/ POST	0	99	99	99	99	99	99	99	99	98	99
MANA-283	1.06&0.88	PRE	0	85	57	90	93	82	85	57	90	90	80
MANA-283	1.58&1.32	PRE	0	92	63	95	95	93	92	63	95	93	92
MANA-283	1.95&1.63	PRE	0	92	62	93	96	95	92	58	93	93	95
MANA-283/ glyphosate+AMS	1.06&0.88/ 0.77+17.0	PRE/ POST	0	99	99	99	99	99	99	99	99	98	99
MANA-283/ glyphosate+AMS	1.58&1.32/ 0.77+17.0	PRE/ POST	0	99	99	99	99	99	99	99	99	99	99
MANA-283/ glyphosate+AMS	1.95&1.63/ 0.77+17.0	PRE/ POST	0	99	99	99	99	99	98	99	99	99	99
S-metolachlor&atrazine&benoxacor/ glyphosate+AMS	0.78&1.0/ 0.77+17.0	PRE/ POST	0	99	99	99	99	99	99	99	99	99	99
S-metolachlor&atrazine&benoxacor/ glyphosate+AMS	1.17&1.51/ 0.77+17.0	PRE/ POST	0	99	99	99	99	99	99	99	99	99	99
S-metolachlor&atrazine&benoxacor/ glyphosate+AMS	1.56&2.0/ 0.77+17.0	PRE/ POST	0	99	99	99	99	99	99	99	99	99	99
LSD (P=0.05)			0	3	9	4	10	13	4	9	5	11	13

^a Glyphosate rate in lb ae/A.

^b AMS = Ammonium sulfate. Rate in lb/100 gal.