

Evaluation of preemergence applications of KIH-485, s-metolachlor & CGA-154281, and s-metolachlor & atrazine & CGA-154281 for crop phytotoxicity and weed control in corn, Ames, IA, 2003. Owen, Micheal D.K., James F. Lux, and Damian D. Franzensburg. The purpose of this study was to evaluate various preemergence applied rates of KIH-485 and s-metolachlor & CGA-154281 for crop phytotoxicity and weed control in corn. The soil was a Canisteo, Nicollet, Clarion and Webster clay loam with a pH 6.8 and 5.3% organic matter. The experimental design was a randomized complete block with three replications and plots were 10 by 25 ft. The 2002 crop was soybean. Tillage included a fall chisel plowing and a spring field cultivation. Fertilization included 127 lb/A actual N applied as urea. Crop residue on the soil surface was 35% at planting. "Garst hybrid 8550" corn was planted 1.5 inches deep on May 19, at 27,700 seeds/A in 30-inch rows. Preemergence (PRE) treatments were applied on May 24 at 20 gpa and 25 psi using flat fan nozzles. Conditions on May 24 were: air temperature 17 C, soil temperature at the 4-inch depth 14 C, 2 mph wind, 40% cloud cover, 52% relative humidity. A postemergence application of dicamba at 8.0 fluid oz/A was applied to the experiment area on June 16 to control broadleaf weeds. Conditions on June 16 were: air temperature 28 C, soil temperature at the 4-inch depth 27 C, 3 mph wind, 20% cloud cover, 46% relative humidity. Corn growth was V4 to V5 and 10 inches tall. Weed species, average size and number per ft² occurring in the untreated control on June 16, and which were evaluated included: giant foxtail one to four leaves, 1 to 5 inches tall, five to fifty plants; common waterhemp numerous leaves, 0.5 to 4 inches tall, zero to ten plants; common lambsquarters numerous leaves, 0.5 to 5 inches tall, zero to fifteen plants. May rainfall included: 1.67, 0.37, 0.99, 0.15, 0.39, and 0.18 inches on May 4, 6, 8, 10, 13, and 14, respectively. Total rainfall for May was 3.75 inches. June rainfall included: 0.36, 0.53, 0.32, 0.23, 0.10, 0.28, and 0.55 inches on June 2, 6, 7, 8, 9, 24, and 25, respectively. Total rainfall for June was 2.37 inches. July rainfall included: 2.38 inches and 1.12 inches from July 1 through 15 and 16 through 31, respectively. Total rainfall for July was 3.5 inches. Rainfall total for August was 0.86 inches.

No significant differences in corn stand between herbicide treatments were noted, and no treatment caused crop injury. KIH-485 and s-metolachlor & CGA-154281 demonstrated rate responsive control of giant foxtail for all observation dates. A combination of extremely heavy giant foxtail pressure and dry conditions contributed to lack of acceptable giant foxtail control by any herbicide as observed on June 10. Significant rainfall later increased herbicide activity on giant foxtail for all treatments as observed on June 17 and July 14. KIH-485 plus atrazine and s-metolachlor & atrazine & CGA-154281 demonstrated excellent common lambsquarters and common waterhemp control. However, neither herbicide provided adequate control of common lambsquarters without the inclusion of atrazine in the treatment. KIH-485 and s-metolachlor & CGA-154281 provided excellent control of common waterhemp on June 10 and 17 at application rates of at least 0.223 and 1.91 lb/A, respectively. (Dept. of Agronomy, Iowa State University, Ames).

Table 1. Evaluation of preemergence applications of KIH-485, s-metolachlor & CGA-154281, and s-metolachlor & atrazine & CGA-154281 for crop phytotoxicity and weed control in corn, Ames, IA, 2003 (Owen, Lux, and Franzenburg).

Treatment	Rate	Appl. time	Corn ^a stand	Corn injury 6/10/03	SETFA 6/10/03	AMATA 6/10/03	CHEAL 6/10/03
	(lb/A)			---- (%) ----	----- (% weed control) -----		
Untreated	-	-	25	0	0	0	0
KIH-485	0.112	PRE	27	0	42	73	38
KIH-485	0.187	PRE	28	0	47	83	42
KIH-485	0.223	PRE	24	0	52	95	50
KIH-485	0.268	PRE	26	0	60	92	43
KIH-485	0.446	PRE	26	0	72	99	67
S-metolachlor&CGA-154281	0.955	PRE	29	0	48	73	43
S-metolachlor&CGA-154281	1.595	PRE	27	0	53	73	43
S-metolachlor&CGA-154281	1.91	PRE	25	0	60	93	48
S-metolachlor&CGA-154281	3.82	PRE	27	0	72	96	57
KIH-485+atrazine	0.179+2.0	PRE	28	0	75	99	99
S-metolachlor&atrazine&CGA-154281	1.56&2.01	PRE	25	0	78	99	99
LSD (P=0.05)			4	0	5	8	12

^a Corn stand per 17.5 row feet on August 6.

Table 2. Evaluation of preemergence applications of KIH-485, s-metolachlor & CGA-154281, and s-metolachlor & atrazine & CGA-154281 for crop phytotoxicity and weed control in corn, Ames, IA, 2003 (Owen, Lux, and Franzenburg).

Treatment	Rate	Appl. time	Corn injury 6/17/03	SETFA 6/17/03	AMATA 6/17/2003	CHEAL 6/17/03	SETFA 7/14/03	SETFA 8/1/03
	(lb/A)		---- (%) ----	----- (% weed control) -----				
Untreated	-	-	0	0	0	0	0	0
KIH-485	0.112	PRE	0	57	75	30	47	45
KIH-485	0.187	PRE	0	65	85	32	68	68
KIH-485	0.223	PRE	0	68	95	48	67	67
KIH-485	0.268	PRE	0	70	92	40	73	73
KIH-485	0.446	PRE	0	85	99	65	88	88
S-metolachlor&CGA-154281	0.955	PRE	0	55	72	35	45	42
S-metolachlor&CGA-154281	1.595	PRE	0	58	73	38	52	47
S-metolachlor&CGA-154281	1.91	PRE	0	73	93	40	62	58
S-metolachlor&CGA-154281	3.82	PRE	0	85	98	45	87	87
KIH-485+atrazine	0.179+2.0	PRE	0	87	99	99	85	87
S-metolachlor&atrazine&CGA-154281	1.56&2.01	PRE	0	88	99	99	82	78
LSD (P=0.05)			0	7	8	13	6	6