

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, Nashua, IA, 2003. Owen, Micheal D.K., James F. Lux, and Damian D. Franzenburg. 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 Floyd, Kenyon, Ostrander, and Clyde loam with a pH 6.65 and 5.9% 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 spring field cultivation. Fertilization included 135 lb/A actual N applied as anhydrous ammonia. Crop residue on the soil surface was 12% at planting. "NK hybrid 45-A6Bt" corn was planted 1.75 inches deep on May 21, at 33,674 seeds/A in 30-inch rows. Preemergence (PRE) treatments were applied on May 23 at 20 gpa and 25 psi using flat fan nozzles. Conditions on May 23 were: air temperature 18 C, soil temperature at the 4-inch depth 16 C, 3 mph wind, 20% cloud cover, 67% relative humidity. Weed species number per ft² occurring in the untreated control included: giant foxtail zero to two plants; velvetleaf less than one plant; common waterhemp zero to one plant; common lambsquarters zero to one plant. May rainfall included: 1.25, 0.06, 0.24, 0.7, 0.7, 0.04, 0.19, 0.07, 0.06, 0.27, 0.17, 0.02, and 0.2 inches on May 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 22, 28, and 30, respectively. Total rainfall for May was 3.97 inches. June rainfall included: 0.15, 0.06, 1.76, 0.78, 0.46, 0.06, 0.12, 0.03, 0.33, 1.81, 0.01, 0.09, and 0.04 inches on June 2, 4, 6, 7, 8, 9, 10, 13, 24, 25, 26, 27, and 28, respectively. Total rainfall for June was 5.7 inches. July rainfall included: 2.47 inches and 0.34 inches from July 1 through 15 and 16 through 31, respectively. Total rainfall for July was 2.81 inches. Rainfall total for August was 0.44 inches.

Significant differences between treatments in corn stand on July 29 were not a result of the herbicides, but rather variability in planting rate and seedling emergence. Significant corn injury was observed on June 17 and July 3 from KIH-485 applied at the highest rate of 0.446 lb/A. Several other treatments of KIH-485 and s-metolachlor & CGA-154281 caused injury that was insignificant.

Giant foxtail pressure was light in the experiment area, and all treatments achieved excellent control. Control ranged from 93 to 99% when all evaluation dates were considered. Velvetleaf and common lambsquarters control ranged from poor to fair with lower rates of KIH-485 when observed on June 17, July 3 and 29. The highest KIH-485 application rate of 0.446 lb/A did provide good velvetleaf and common lambsquarters control. S-metolachlor & CGA-154281 did not provide control of velvetleaf at any rate, and only fair common lambsquarters control at the higher rates. When atrazine was tank-mixed with KIH-485, the resulting velvetleaf and common lambsquarters control was excellent on all evaluation dates. The treatment of s-metolachlor & atrazine & CGA-154281 provided good velvetleaf control on June 17, but on subsequent evaluation dates, control was unacceptable. S-metolachlor & atrazine & CGA-154281 afforded excellent common lambsquarters control. Common waterhemp control was good to excellent with KIH-485 and s-metolachlor & CGA-154281 at all application rates and observation dates. Common waterhemp control was excellent overall, with s-metolachlor & atrazine & CGA-154281. (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, Nashua, IA, 2003 (Owen, Lux, and Franzenburg).

Treatment	Rate (lb/A)	Appl. time	Corn ^a stand	Corn injury 6/17/03 ----- (%) -----	SETFA 6/17/03 ----- (%) weed control) -----	ABUTH 6/17/03 ----- (%) weed control) -----	AMATA 6/17/03 ----- (%) weed control) -----	CHEAL 6/17/03 ----- (%) weed control) -----
Untreated	-	-	32	0	98	0	0	0
KIH-485	0.112	PRE	33	0	98	22	95	45
KIH-485	0.187	PRE	34	0	99	40	98	62
KIH-485	0.223	PRE	33	5	99	63	99	78
KIH-485	0.268	PRE	33	5	99	68	99	78
KIH-485	0.446	PRE	33	23	99	90	99	93
S-metolachlor&CGA-154281	0.955	PRE	33	0	99	7	99	32
S-metolachlor&CGA-154281	1.595	PRE	31	0	99	13	98	40
S-metolachlor&CGA-154281	1.91	PRE	34	2	99	10	94	52
S-metolachlor&CGA-154281	3.82	PRE	33	7	99	23	99	68
KIH-485+atrazine	0.179+2.0	PRE	32	2	99	98	99	99
S-metolachlor&atrazine&CGA-154281	1.56&2.01	PRE	33	0	99	87	99	99
LSD (P=0.05)			2	7	2	13	4	21

^a Corn stand per 17.5 row feet on July 29.

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, Nashua, IA, 2003 (Owen, Lux, and Franzenburg).

Treatment	Rate	Appl. time	Corn injury 7/3/03	SETFA 7/3/03	ABUTH 7/3/03	AMATA 7/3/03	CHEAL 7/3/03
	(lb/A)		---- (%) ----	----- (% weed control) -----			
Untreated	-	-	0	0	0	0	0
KIH-485	0.112	PRE	0	96	10	95	18
KIH-485	0.187	PRE	0	98	27	98	40
KIH-485	0.223	PRE	0	99	47	99	62
KIH-485	0.268	PRE	2	98	58	98	55
KIH-485	0.446	PRE	10	98	85	99	85
S-metolachlor&CGA-154281	0.955	PRE	0	95	0	93	13
S-metolachlor&CGA-154281	1.595	PRE	0	98	0	95	23
S-metolachlor&CGA-154281	1.91	PRE	0	96	0	93	27
S-metolachlor&CGA-154281	3.82	PRE	0	99	0	96	40
KIH-485+atrazine	0.179+2.0	PRE	2	99	98	98	99
S-metolachlor&atrazine&CGA-154281	1.56&2.01	PRE	0	99	70	98	99
LSD (P=0.05)			5	5	18	5	19

Table 3. 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, Nashua, IA, 2003 (Owen, Lux, and Franzenburg).

Treatment	Rate	Appl. time	Corn injury 7/29/03	SETFA 7/29/03	ABUTH 7/29/03	AMATA 7/29/03	CHEAL 7/29/03
	(lb/A)		---- (%) ----	----- (% weed control) -----			
Untreated	-	-	0	0	0	0	0
KIH-485	0.112	PRE	0	93	10	95	17
KIH-485	0.187	PRE	0	96	27	98	38
KIH-485	0.223	PRE	0	98	47	99	58
KIH-485	0.268	PRE	2	98	58	96	53
KIH-485	0.446	PRE	0	98	85	99	85
S-metolachlor&CGA-154281	0.955	PRE	0	93	0	93	12
S-metolachlor&CGA-154281	1.595	PRE	0	98	0	95	23
S-metolachlor&CGA-154281	1.91	PRE	0	94	0	92	27
S-metolachlor&CGA-154281	3.82	PRE	0	98	0	96	40
KIH-485+atrazine	0.179+2.0	PRE	2	99	98	98	99
S-metolachlor&atrazine&CGA-154281	1.56&2.01	PRE	0	98	67	98	99
LSD (P=0.05)			2	7	17	4	20