

KIH-485 in corn. Zollinger, Richard K. and Jerry L. Ries. Experiments were conducted to evaluate corn response and weed control of an experimental soil applied herbicide and to compare activity with other soil-applied herbicides and herbicide combinations. At Valley City, Croplan '184 RR' corn was planted on May 20, 2003. PRE treatments were applied May 21 at 11:30 am with 57 F air, 54 F soil at a four inch depth, 45% relative humidity, 100% clouds, 10 to 15 mph S wind, dry soil surface, moist subsoil, and no dew present. POST treatments were applied on July 2 at 2:30 pm with 90 F air, 93 F soil surface, 48% relative humidity, 0% clouds, 8 to 13 mph SE wind, dry soil surface, moist subsoil, excellent crop vigor, and no dew present to V6 to V7 corn. Weed species present were: 3 to 6 inch (1 to 15/ft²) foxtail species (50% yellow and 50% green).

At Carrington, ND, Dekalb 'DKC32-59' corn was planted on May 13, 2003. PRE treatments were applied on May 15 at 11:30 am with 65 F air, 51 F subsoil at a four inch depth, 44% relative humidity, 0% clouds, 10 mph SW wind, damp soil surface, and moist subsoil. POST treatments were applied June 19 at 12:00 pm with 76 F air, 87 F soil surface, 25% relative humidity, 0% clouds, 7 to 12 mph S wind, dry soil surface, moist subsoil, good crop vigor, and no dew present to V4 to V5 corn. Weed species present were: 1 to 4 inch (50 to 80/ft²) green and yellow foxtail; 6 to 12 inch (1 to 2/ft²) wild mustard; 1 to 3 inch (10 to 20/ft²) prostrate pigweed; 1 to 3 inch (1 to 5/ft²) redroot pigweed; 1 to 3 inch (1 to 5/ft²) common lambsquarters; 2 to 6 inch (5 to 10/ft²) kochia; 2 to 4 inch (1 to 2/ft²) wild buckwheat.

At Casselton, Dekalb 'DKC32-59' corn was planted on June 2, 2003. PRE treatments were applied immediately after planting at 12:45 pm with 70 F air, 61 F subsoil at a four inch depth, 47% relative humidity, 100% clouds, 2 to 3 mph S wind, dry soil surface, moist subsoil, and no dew present. POST treatments were applied on July 2 at 11:30 a.m. with 85 F air, 93 F soil surface, 60% relative humidity, 10% clouds, 5 to 10 mph S wind, dry soil surface, moist subsoil, good crop vigor, and no dew present to V6 to V8 corn. Weed species present were: 2 to 8 inch (5 to 20/ft²) common cocklebur.

PRE treatments were applied to the center 6.7 feet of the 10 by 40 foot plots with a bicycle-wheel-type plot sprayer delivering 17 gpa at 40 psi through 8002 flat fan nozzles. POST treatments were applied to the center 6.7 feet of the 10 by 40 foot plots with a backpack-type plot sprayer delivering 8.5 gpa at 40 psi through 8001 flat fan nozzles. The experiment had a randomized complete block design with three replicates per treatment.

KIH-485 has been reported to have weed control properties similar to dinitroanilines and chloroacetamides. The objectives were to evaluate KIH-485 in course (Valley City), medium (Carrington), and fine textured (Casselton) soils and to compare weed control with s-metolachlor at a respective rate range based on soil type. At Valley City, which had a course textured soil and minimal rainfall within the first 3 weeks after application, KIH-485 gave weed control similar to s-metolachlor at respective rates except KIH-485 gave greater wild buckwheat control. Both herbicides gave greater than 91% foxtail control at the two highest rates. Corn injury was not visible with any treatment.

At Carrington, which had a medium textured soil and adequate rainfall after application, green and yellow foxtail were present in a 50:50 ratio and pigweed species were redroot pigweed and prostrate pigweed in a 50:50 ratio. On July 4 (30 DAT), KIH-485 and s-metolachlor gave similar foxtail and pigweed control at all respective rates except KIH-485 at the lowest rate of 0.112 lb/A gave less weed control. KIH-485 gave greater control of common lambsquarters, kochia, and wild buckwheat than s-metolachlor and control was 88% to 99% except at the lowest rate. Ample rainfall activated the herbicides after application. All PRE treatments containing atrazine and PRE/POST treatments gave 96% to 99% weed control. Corn injury was not visible with any treatment.

Casselton had a fine textured soil with organic matter greater than 7%, herbicides were activated by adequate rainfall after application. KIH-485 gave less foxtail control than s-metolachlor at respective rates except control was similar at the highest rates. KIH-485 gave wild mustard, redroot pigweed, and common lambsquarters control similar to s-metolachlor at respective rates. Neither herbicide controlled common cocklebur. All PRE treatments containing atrazine and PRE/POST treatments gave 99% weed control, except for common cocklebur. Corn injury was not visible with any treatment. (Dept. of Plant Sciences, North Dakota State University, Fargo).

Table 1. KIH-485 in corn, Valley City (Zollinger and Ries).

Treatment ¹	Rate (lb/A)	June 11			June 25				July 9			
		SETSS (%)	AMABL (%)	POLCO (%)	SETSS (%)	AMABL (%)	POLCO (%)	SOLPT (%)	SETSS (%)	AMABL (%)	POLCO (%)	SOLPT (%)
<u>PRE</u>												
KIH-485	0.11	82	95	0	72	95	0	93	75	95	50	99
KIH-485	0.15	88	99	30	85	95	60	95	91	96	60	99
KIH-485	0.22	88	99	20	85	96	60	97	92	96	67	99
KIH-485	0.27	95	99	35	93	96	70	95	94	99	75	99
s-Metolachlor&CGA-154281	0.96	72	99	33	72	94	50	96	82	98	48	99
s-Metolachlor&CGA-154281	1.27	82	99	20	83	85	50	87	83	95	48	94
s-Metolachlor&CGA-154281	1.91	87	99	30	93	98	57	96	91	96	52	95
s-Metolachlor&CGA-154281	3.82	95	99	20	96	99	50	99	96	96	57	99
KIH-485+atrazine	0.12+0.74	90	95	97	83	78	50	80	90	72	47	82
s-Metolachlor&atrazine	0.9&0.75	87	96	95	83	70	53	87	78	70	68	80
Acetochlor	1.6	92	99	43	85	93	20	95	72	94	0	94
Dimethenamid-P	0.8	85	95	10	88	95	23	95	92	96	23	94
s-Meto&atra& mesotrione&CGA-154281	1.34&0.5& 0.13	93	99	60	93	99	99	99	90	99	99	99
s-Meto&atra& mesotrione&CGA-154281	1.68&0.63& 0.17	96	99	99	93	99	99	99	89	99	99	99
<u>PRE/POST</u>												
Dimethenamid-P/ dicamba&diflufenzopyr+ Basic Blend	0.8/ 0.13&0.05	88	99	0	88	99	50	95	91	95	45	96
s-Metolachlor&CGA-154281/ mesotrione+PO+28-0-0	1.27/ 0.09	87	99	30	83	93	70	99	87	96	72	99
Untreated		0	0	0	0	0	0	0	0	0	0	0
LSD (0.05)		6	3	13	4	7	4	5	7	5	12	3

¹KIH-485 = a proprietary herbicide from Kumiai America; Acetochlor = Surpass 6.4EC; Basic Blend = Quad 7 at 1% v/v; PO = petroleum oil = Herbimax at 1% v/v; 28-0-0 = urea ammonia nitrate at 2.5% v/v.

Table 2. KIH-485 in corn, Carrington (Zollinger and Ries).

Treatment ¹	Rate (lb/A)	June 20					July 4				
		SETSS (%)	AMASS (%)	CHEAL (%)	KCHSC (%)	POLCO (%)	SETSS (%)	AMASS (%)	CHEAL (%)	KCHSC (%)	POLCO (%)
<u>PRE</u>											
KIH-485	0.11	53	60	83	0	0	47	37	30	30	30
KIH-485	0.19	98	99	99	95	92	96	99	99	95	88
KIH-485	0.22	99	99	99	98	98	99	98	99	99	96
KIH-485	0.45	99	99	99	99	99	99	99	98	99	99
s-Metolachlor&CGA-154281	0.96	80	86	63	7	7	78	73	40	20	0
s-Metolachlor&CGA-154281	1.6	93	93	68	23	23	95	99	40	20	0
s-Metolachlor&CGA-154281	1.91	95	99	95	43	53	95	98	83	40	30
s-Metolachlor&CGA-154281	3.82	99	98	99	57	68	99	90	88	50	50
KIH-485+atrazine	0.15+1.02	99	99	99	99	99	97	99	99	99	99
s-Metolachlor&atrazine	1.25&1	99	99	99	99	99	98	99	99	99	99
Acetochlor	2	98	99	99	47	47	95	99	99	17	10
Dimethenamid-P	0.89	96	99	93	30	30	99	99	99	53	27
s-Meto&atra&mesotrione&CGA-154281	1.68&0.63&0.17	99	99	99	99	99	99	99	99	99	99
s-Meto&atra&mesotrione&CGA-154281	2&0.75&0.2	99	99	99	99	99	99	99	99	99	99
<u>PRE/POST</u>											
Dimethenamid-P/ dicamba&diflufenzopyr+Basic Blend	0.89/ 0.13&0.05	96	99	99	30	30	99	99	99	99	99
s-Metolachlor&CGA-154281/ mesotrione+PO+28-0-0	1.6/ 0.09	93	99	63	37	37	99	99	99	96	99
Untreated		0	0	0	0	0	0	0	0	0	0
LSD (0.05)		5	6	7	9	9	3	6	8	14	8

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Table 3. KIH-485 in corn, Casselton (Zollinger and Ries).

Treatment ¹	Rate (lb/A)	June 23					July 7					July 21				
		SETLU (%)	SINAR (%)	AMARE (%)	CHEAL (%)	XANST (%)	SETLU (%)	SINAR (%)	AMARE (%)	CHEAL (%)	XANST (%)	SETLU (%)	SINAR (%)	AMARE (%)	CHEAL (%)	XANST (%)
<u>PRE</u>																
KIH-485	0.11	27	0	88	67	0	40	30	73	63	0	40	30	73	63	0
KIH-485	0.19	40	0	98	93	0	53	40	90	83	0	53	40	90	83	0
KIH-485	0.22	50	0	98	68	0	63	53	99	82	0	63	53	99	82	0
KIH-485	0.27	80	87	99	93	30	92	99	99	99	13	92	99	99	99	13
s-Metolachlor&CGA-154281	0.96	80	0	73	57	0	82	0	73	67	0	82	0	73	67	0
s-Metolachlor&CGA-154281	1.6	90	50	80	70	0	93	40	90	82	0	93	40	90	82	0
s-Metolachlor&CGA-154281	1.91	96	47	92	73	0	99	53	93	88	0	99	53	93	88	0
s-Metolachlor&CGA-154281	3.82	95	72	99	85	0	96	60	96	93	0	96	60	96	93	0
KIH-485+atrazine	0.18+1.49	99	99	98	99	72	99	99	99	99	82	99	99	99	99	72
s-Metolachlor&atrazine	1.8&1.5	99	99	99	99	47	99	99	99	99	72	99	99	99	99	72
Acetochlor	2.4	99	77	99	99	7	93	70	99	99	20	93	70	99	99	20
Dimethenamid-P	1	98	47	99	99	0	99	53	99	99	0	99	53	99	99	0
s-Meto&atra& mesotrione&CGA-154281	1.68&0.63& 0.17	99	99	99	99	63	99	99	99	99	63	99	99	99	99	63
s-Meto&atra& mesotrione&CGA-154281	2&0.75& 0.2	99	99	99	99	63	99	99	99	99	88	99	99	99	99	88
<u>PRE/POST</u>																
Dimethenamid-P/ dicamba&diflufenzopyr+ Basic Blend	1/ 0.13&0.05	96	50	99	99	0	99	99	99	99	99	99	99	99	99	99
s-Metolachlor&CGA-154281/ mesotrione+PO+28-0-0	1.9/ 0.09	50	0	70	57	0	99	99	99	99	70	99	99	99	99	70
Untreated		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LSD (0.05)		4	3	4	12	6	4	4	3	5	5	4	4	3	5	5

¹KIH-485 = a proprietary herbicide from Kumiai America; Acetochlor = Surpass 6.4EC; Basic Blend = Quad 7 at 1% v/v; PO = petroleum oil = Herbimax at 1% v/v; 28-0-0 = urea ammonia nitrate at 2.5% v/v.