

Evaluation of postemergence applied AE F 130360 01 with various adjuvants for crop phytotoxicity and weed control in corn, Ames, IA, 2002. Owen, Micheal D.K., James F. Lux, and Damian D. Franzenburg. The purpose of this study was to assess crop injury and weed control from postemergence applied tank-mixtures of AE F 130360 01 with various adjuvants. The soil was a Canisteo, Clarion, Webster, Hayden-Storden clay loam with a pH 7.05 and 4.0% organic matter. The experimental design was a randomized complete block with three replications and plots were 10 by 25 ft. The 2001 crop was soybean. Tillage included a fall chisel plowing and spring field cultivation. Fertilization included 125 lb/A actual N applied as urea. Crop residue on the soil surface was 12% at planting. "Garst hybrid 8550" corn was planted 1.5 inches deep on May 6, at 27,700 seeds/A in 30-inch rows. Postemergence (POST) treatments were applied on May 31, at 20 gpa and 30 psi using flat fan nozzles. Conditions on May 31 were: air temperature 30 C, soil temperature at the 4-inch depth 24 C, 6 mph wind, 10% cloud cover, 46% relative humidity. Corn growth was V3 and 4 inches tall. Weed species, size and number per ft² in the untreated control included: giant foxtail one to three leaves, 0.25 to 3 inches tall, fifty plants; yellow foxtail one to three leaves, 0.25 to 2 inches tall, zero to ten plants; velvetleaf cotyledon to four leaves, 0.25 to 3 inches tall, zero to five plants; common waterhemp cotyledon to numerous leaves, 0.25 to 3 inches tall, zero to twenty plants; common lambsquarters cotyledon to numerous, 0.25 to 3 inches tall, zero to five plants; Pennsylvania smartweed two to four leaves, 1 to 2.5 inches tall, zero to four plants; common cocklebur cotyledon to four leaves, 1 to 3 inches tall, zero to three plants. May rainfall included: 0.45, 0.01, 0.07, 2.60, 0.12, 0.19, 0.23, 0.09, 0.66 inches on May 1, 2, 5, 11, 15, 16, 23, 24, and 25, respectively. Total rainfall for May was 4.42 inches. June rainfall included: 0.54, 0.83, 1.41, 0.01, and 0.01 inches on June 2, 11, 12, 13, and 20, respectively. Total rainfall for June was 2.8 inches. July rainfall included: 4.8 inches and 0.46 inches from July 1 through 15 and 16 through 31, respectively. Total rainfall for July was 5.26 inches. Rainfall total for August was 4.89 inches.

Corn stand was consistent between herbicide treatments and no significant differences were determined. Serious corn injury ranging 8 to 18% from the treatments was observed on June 8, eight days after application. Significant differences between the AE F 130360/adjuvant treatment combinations were few. On June 18, eighteen days after application, injury symptoms continued to persist from the treatments and ranged from 5 to 11%. Giant foxtail control was excellent when observed on July 8, thirty-eight days after application, and no significant differences were found between the treatments. Significant differences were determined, however, between treatments for control of yellow foxtail. Overall, control was poor to good with the treatments, ranging from 57 to 85%. AE F 130360 01 plus mesotrione plus Liberate plus Choice treatments achieved poor, and significantly less yellow foxtail control than the other treatments.

Broadleaf weed control was variable with the treatments. Generally, AE F 130360 01 plus the various adjuvants and without mesotrione in the treatment, did not provide acceptable control of velvetleaf, common waterhemp, common lambsquarters, and Pennsylvania smartweed when observed on July 8. Common cocklebur control, however, was good to excellent. The differences in broadleaf control were not significant between the treatments. AE F 130360 01 with mesotrione in the treatment plus the various adjuvants, achieved excellent overall broadleaf weed control on July 8. No significant differences between treatments were determined. Corn yields were quite variable between the treatments. Differences were not consistently a result of the observed level of crop injury or weed control of the treatments. All treatments yielded significantly higher than the untreated control. (Dept. of Agronomy, Iowa State University, Ames)

Table 1. Evaluation of postemergence applied AE F 130360 01 with various adjuvants for crop phytotoxicity and weed control in corn, Ames, IA, 2002 (Owen, Lux, Franzenburg).

Treatment	Rate	Appl. time	Corn ^a stand	Corn injury		SETFA 6/18/02	SETLU 6/18/02	ABUTH 6/18/02	AMATA 6/18/02	CHEAL 6/18/02	POLPY 6/18/02	XANST 6/18/02
	(lb/A)			----- (%) -----		----- (%weed control) -----						
Untreated			22	0	0	0	0	0	0	0	0	0
AE F 130360 01+	0.0656+	POST	26	18	7	99	93	95	58	83	80	95
MSO ^b +ammonium sulfate	1.5pt+2.0											
AE F 130360 01+	0.0656+	POST	25	17	5	99	95	93	62	93	82	98
MSO+Choice ^c	1.0%v/v+0.5%v/v											
AE F 130360 01+	0.0656+	POST	26	17	5	99	92	92	58	83	67	95
Vortex ^d	2.0pt											
AE F 130360 01+	0.0656+	POST	26	13	12	99	92	90	70	72	60	95
Phase ^e +Choice	0.5%v/v+0.5%v/v											
AE F 130360 01+	0.0656+	POST	27	10	3	99	85	88	53	47	22	78
Liberate ^f +Choice	0.25%v/v+0.5%v/v											
AE F 130360 01+	0.0656+	POST	25	13	8	99	87	93	55	67	32	89
Liberate+Choice	0.5%v/v+0.5%v/v											
AE F 130360 01+	0.0656+	POST	26	10	8	99	93	99	99	99	99	99
mesotrione+	0.094+											
MSO+Choice	1.0%v/v+0.5%v/v											
AE F 130360 01+	0.0656+	POST	27	10	5	99	92	99	99	99	99	98
mesotrione+	0.094+											
Phase+Choice	0.5%v/v+0.5%v/v											
AE F 130360 01+	0.0656+	POST	28	8	5	99	82	99	99	99	99	99
mesotrione+	0.094+											
Liberate+Choice	0.25%v/v+0.5%v/v											
AE F 130360 01+	0.0656+	POST	26	13	12	99	83	99	99	99	99	99
mesotrione+	0.094+											
Liberate+Choice	0.5%v/v+0.5%v/v											
AE F 130360 01+	0.0656+	POST	27	15	8	99	93	92	73	85	60	96
MSO+28% UAN ^g	1.5pt+2.0qt											
LSD (P=.05)			4	7	7	0	6	6	21	10	18	12

^a Corn stand per 17.5 row feet on July 22.^b MSO = methylated seed oil from Loveland Industries, Inc.^c Choice = adjuvant from Loveland Industries, Inc.^d Vortex = adjuvant from Loveland Industries, Inc.^e Phase = adjuvant from Loveland Industries, Inc.^f Liberate = adjuvant from Loveland Industries, Inc.^g 28% UAN = mixtures of urea and ammonium nitrate.

Table 2. Evaluation of postemergence applied AE F 130360 01 with various adjuvants for crop phytotoxicity and weed control in corn, Ames, IA, 2002 (Owen, Lux, Franzenburg).

Treatment	Rate	Appl.	Corn inj.	SETFA	SETLU	ABUTH	AMATA	CHEAL	POLPY	XANST	Corn
	(lb/A)	time	7/8/02	7/8/02	7/8/02	7/8/02	7/8/02	7/8/02	7/8/02	7/8/02	yield
			--- (%) ---	----- (%weed control) -----							(bu/A)
Untreated			0	0	0	0	0	0	0	0	12
AE F 130360 01+	0.0656+	POST	0	95	80	78	53	78	63	95	148
MSO ^a +ammonium sulfate	1.5pt+2.0										
AE F 130360 01+	0.0656+	POST	0	95	85	78	35	88	78	93	170
MSO+Choice ^b	1.0%v/v+0.5%v/v										
AE F 130360 01+	0.0656+	POST	0	95	83	73	45	80	58	91	162
Vortex ^c	2.0pt										
AE F 130360 01+	0.0656+	POST	0	95	80	70	60	62	55	83	145
Phase ^d +Choice	0.5%v/v+0.5%v/v										
AE F 130360 01+	0.0656+	POST	0	95	82	72	48	42	22	87	168
Liberate ^e +Choice	0.25%v/v+0.5%v/v										
AE F 130360 01+	0.0656+	POST	0	95	82	80	42	60	32	89	128
Liberate+Choice	0.5%v/v+0.5%v/v										
AE F 130360 01+	0.0656+	POST	0	95	82	99	98	99	99	98	171
mesotrione+	0.094+										
MSO+Choice	1.0%v/v+0.5%v/v										
AE F 130360 01+	0.0656+	POST	0	95	78	99	98	99	99	94	155
mesotrione+	0.094+										
Phase+Choice	0.5%v/v+0.5%v/v										
AE F 130360 01+	0.0656+	POST	0	95	57	99	98	99	99	98	177
mesotrione+	0.094+										
Liberate+Choice	0.25%v/v+0.5%v/v										
AE F 130360 01+	0.0656+	POST	0	95	65	99	98	99	99	98	156
mesotrione+	0.094+										
Liberate+Choice	0.5%v/v+0.5%v/v										
AE F 130360 01+	0.0656+	POST	0	95	82	77	52	78	57	91	157
MSO+28% UAN ^f	1.5pt+2.0qt										
LSD (P=.05)			0	0	12	23	25	18	20	14	32

^a MSO = methylated seed oil from Loveland Industries, Inc.^b Choice = adjuvant from Loveland Industries, Inc.^c Vortex = adjuvant from Loveland Industries, Inc.^d Phase = adjuvant from Loveland Industries, Inc.^e Liberate = adjuvant from Loveland Industries, Inc.^f 28% UAN = mixtures of urea and ammonium nitrate.