

RESPONSE OF SPECIALTY CORN TO CONVENTIONAL HERBICIDES. Damian D. Franzenburg, Micheal D.K. Owen, Dean Grossnickle and James F. Lux, Agricultural Specialists and Professor, Department of Agronomy, Iowa State University, Ames, IA 50011.

Experiments were conducted near Ames, IA in 2006 and 2007 to determine the effect of several PRE and POST applied herbicides on crop injury for specialty corn varieties. The experimental design was a split plot with three replications. Corn varieties were the whole plots and herbicides were the split plots. Corn varieties in 2006 included 'Asgrow RX 776W' (white), 'Asgrow RX 818W' (white), 'Dekalb DKC 60-20' (waxy), 'Pfister SK 2540-19' (high oil) and 'Zimmerman 1851W' (white). Herbicide treatments in 2006 included PRE S-metolachlor & atrazine & CGA-154281 plus POST mesotrione, PRE dimethenamid-P & atrazine plus POST diflufenzopyr & dicamba, and PRE Isoxaflutole plus POST foramsulfuron. A control treated with S-metolachlor & CGA-154281 was also included. Corn varieties in 2007 included the addition of 'Northrup King NK 1713' (white) but did not include 'Asgrow RX 776W' and 'Pfister SK 2540-19'. Herbicide treatments in 2007 were the same as 2006 with the exception of the substitution of diflufenzopyr & dicamba & isoxadifen-ethyl for diflufenzopyr & dicamba. A control with PRE S-metolachlor & CGA-154281 was included again in 2007. Split plots were 3 by 7.6 m and experiments were planted with 76 cm row spacing on soybean ground prepared by spring field cultivation. All herbicides were applied at labeled rates appropriate for V4 dent corn. Corn stand and percent visual crop injury for PRE treatments was evaluated in 2006 at 15 and 20 Days after PRE application (DAA). No injury from PRE treatments was apparent in 2007, and corn stands were not taken. Percent visual corn injury from POST treatments was evaluated for both years at 1, 2, 3 and 4 weeks after application (WAA).

Crop stand differences in 2006 were due only to variety differences, and no PRE herbicide treatments caused corn injury. Crop injury from POST treatments in 2006 revealed significant main effect differences for herbicides at each observation date and main effect differences for corn varieties at 1, 3 and 4 WAA. There was significant variety by herbicide interaction at all observation dates. Injury resulting from mesotrione and diflufenzopyr & dicamba varied significantly for different varieties at all observation dates. Injury ranged from 2 to 15% at 1 WAA and 0 to 12% by 4 WAA. Foramsulfuron, conversely, demonstrated injury that ranged from 18 to 23% at 1 WAA and from 5 to 12% at 4 WAA. Mesotrione injury was characterized by chlorotic upper leaves. Foramsulfuron and diflufenzopyr & dicamba injury appeared as shortening of upper internodes and chlorosis. All POST herbicides demonstrated the greatest reduction in herbicide injury from 1 to 2 WAA. However, mesotrione injury to 'Dekalb DKC 60-20' was persistent with injury that decreased from only 13 to 12% from 1 to 4 WAA, respectively. Mesotrione injury decreased from 7 to 0% across the other varieties.

No corn injury due to PRE treatments was observed in 2007. POST applications caused significant corn injury. Herbicide, as a main effect, was significant at all observation dates. The main effect of corn variety was significant at only 2 WAA. Variety by herbicide interaction occurred at 1, 2 and 3 WAA. Foramsulfuron demonstrated the highest injury across varieties at 1 and 2 WAA. Diflufenzopyr & dicamba & isoxadifen-ethyl consistently caused only 5% injury at 1 WAA and only 2% injury for 'Zimmerman 1851W' for 2, 3 and 4 WAA. Mesotrione injury fluctuated, depending on corn variety, from 7 to 23% at 1 WAA to 7 to 17% at 2 WAA. As in 2006, 'Dekalb DKC 60-20' responded uniquely to mesotrione in 2007 with higher injury relative to the other corn varieties.