

THE INFLUENCE OF APPLICATION TIMING ON CROP SAFETY OF POSTEMERGENCE CORN HERBICIDES. Thad Haes, Richard Smelser, Wayne Fithian, Kevin Barber, Nick Schnieder, Chad Kalaher, and Brent Tharp, Golden Harvest, Waterloo, NE 68069.

Research has been conducted since 1983 to determine herbicide tolerance of Golden Harvest brand hybrids to various postemergence herbicides. Trials have been conducted at 7 to 9 locations throughout the Corn Belt in a randomized complete block design (strip-plot arrangement) with three or four replications per location. Up to 24 herbicide treatments and/or herbicide treatment timings and up to 35 hybrids were evaluated at each site year. Herbicides were tested at their highest commonly used labeled rate and at two crop timings. Crop timings were 5 inch (V2 growth stage) and 12 inch (V5-V6 growth stage) crop height. Plots were maintained weed free to eliminate the effect of weed control efficacy differences among herbicides on crop yields. Weeds were controlled by treating the entire plot area with a chloroacetamide applied preemergence and by hand weeding if necessary. Grain moisture and yield were collected using a small-plot combine. Linear regression was used to evaluate overall crop safety differences of the two application timings across yield environments. The 5 inch timing mean was regressed against the 12 inch timing mean of each herbicide treatment. Treatment means represent the average yield of all hybrids tested in each individual site year at that timing.

Crop safety differences existed across modes of action, among products within a mode of action, and across yield environments when comparing yield of 5 inch application timing to 12 inch application timing. Yield of five inch applications were consistently higher for mesotrione (Callisto), clopyralid + flumetsulam (Hornet WDG), nicosulfuron + diflufenzopyr + dicamba (Celebrity Plus), and nicosulfuron + rimsulfuron + clopyralid + flumetsulam (Accent Gold WDG) when compared to 12 inch applications. For diflufenzopyr + dicamba (Distinct) and nicosulfuron + rimsulfuron + atrazine (Basis Gold), data indicated application timing influenced crop safety differently by yield environment. In highest yielding environments (above 180 bushels per acre), the 5 inch application timing was consistently greater in crop safety when compared to the 12 inch application timing. Distinct and Basis Gold showed good crop safety at both application timings in yield environments below 160 bushels per acre. In mid-level yield environments (160 to 180 bushels per acre), Distinct and Basis Gold showed increased variability compared to higher and lower yield environments, negating any potential influence of application timing on crop safety.

Application timing did not consistently influence crop safety for nicosulfuron + rimsulfuron (Steadfast), indicating that environment was the major factor influencing the performance of Steadfast, regardless of application timing and yield level. Study showed that no herbicide treatments were consistently higher yielding for the 12 inch application timing when compared to the 5 inch application timing.