

UPDATE ON THE EFFECT OF IMAZETHAPYR AND IMAZAPYR ON POLLINATION OF IMIDAZOLINONE TOLERANT CORN. James H. Herbek, James R. Martin, and Jonathan D. Green, Extension Professors, Department of Plant and Soil Sciences, University of Kentucky, Princeton, KY 42445.

The ongoing objective of this multi-year research project has been to determine if postemergence applications of the premix imazethapyr at 0.672 oz ai/A plus imazapyr at 0.224 oz ai/A to imidazolinone tolerant (IT) corn hybrids are linked to the ear damage occasionally observed in commercial production fields. Symptoms of abnormal ears ranged from twisted rows to scattered kernels and barren cobs.

Mounting evidence from small plot studies during the last few years indicated that the pollination process of Pioneer 34B28 hybrid was affected when this premix was applied as a broadcast spray beyond the normal recommended time to corn plants in the V8 to V9 growth stage. However, corn ear injury in the treated plots was minimal to non-existent in these trials. It was believed that the close proximity of all plots allowed pollen to drift from plants in non-treated check plots to the silks of plants in nearby treated plots; therefore, overriding any herbicide injury to corn tassels.

In order to limit the risk of pollen contamination in the 2005 study, treated and non-treated plot areas were isolated at least 600 feet from one another. The premix was applied to Pioneer 34B28 corn when plants averaged V8 growth stage at a plant height of 32 inches. This occurred at approximately 6 1/2 weeks after corn emergence. Anther emergence and silk development were monitored daily from June 27 through July 8, 2005. Data were collected from flagged areas of each plot consisting of ten consecutive plants occurring in each of the two center rows of the treated and non-treated plots. These same plants were also evaluated for ear deformity at corn harvest.

Results of the 2005 study indicated the amount of emerged anthers on the main axis of the tassels was less than 1% for the treated plants compared with 100% for the non-treated plants. The average length of ear silks on the treated corn plants was 65% longer than those for the non-treated corn which was an early indication that the herbicide premix might have limited pollination.

Unlike previous studies, ears from the treated plots in 2005 had noticeably fewer kernels than those from the non-treated plots, and resembled the injury occasionally observed in commercially treated fields. The grain yields from the treated areas averaged 14.1 bu/A compared with 167.6 bu/A for the non-treated areas.

Results of this multi year research project indicate that applying the premix of imazethapyr plus imazapyr to Pioneer 34B28 at V8 to V9 growth stage did not cause visible plant injury during or shortly after application, but did limit anther emergence / development. This resulted in poor pollination and low grain yield when very limited viable pollen was available from the tassels of nearby healthy plants.