Researchers say foliar fungicides may not be the answer for hail-damaged corn

March 30 2010

University of Illinois researchers may have debunked the myth that foliar fungicides can improve corn's tolerance to hail damage.

In 2009, the U.S. Environmental Protection Agency granted a supplemental label registration for use of Headline fungicide on registered crops for disease control and plant health. This label stated that the fungicide can provide a benefit of "better tolerance to hail" in corn.

"When these recommendations began to surface, I was not aware of any data from properly designed research studies to back them up, so we decided to test this theory," said Carl Bradley, U of I Extension plant pathologist.

Researchers simulated hail damage to corn before tassels emerged with a gasoline-powered string mower causing injury to leaves and defoliation. Once the tassels completely emerged, foliar fungicides were applied to corn.

Understandably, yield was significantly reduced in the simulated hail-damaged areas versus non-damaged control areas both years. However, foliar fungicides did not significantly improve yield in either the damaged or non-damaged plots compared with the non-treated controls.

"To make a recommendation to spray a hail-damaged field, one would expect to see a differential reaction where the fungicide improves the

damaged corn," Bradley said. "However, we didn't see that in either of the years the trial was conducted. Our research showed there was no difference in yield."

Prior to 2007, application of foliar fungicides to hybrid corn in the Midwest was uncommon. In 2007, estimates of approximately 10 to 14 million acres out of an approximate total of 76 million acres of corn in the Midwest were sprayed with a foliar fungicide.

Bradley said this dramatic increase was brought on by many different factors.

"With corn market prices reaching unprecedented levels in 2007, the yield response needed to pay for a fungicide application was lowered, making this practice more enticing to corn growers," Bradley said. "Agrichemical companies marketed and promoted fungicide applications for yield enhancement due to improved growth efficiency and stress tolerance in addition to disease control."

The possibility of yield enhancement without regard to disease pressure was enough of a reason for some corn growers to use a foliar fungicide on their 2007 corn crop, he added.

"Growers should consider factors other than hail damage when making fungicide application decisions for corn," Bradley said. "You need to consider disease risk and scouting observations."

More research is needed on the effect of foliar fungicides on hail-damaged corn, as it is possible fungicides could affect other variables not measured in this study such as mycotoxin levels in harvested grain and stalk rot, Bradley said.

More information: This study was published in the January 2010 issue

of the journal Plant Disease.

Provided by University of Illinois at Urbana-Champaign