

# UK Specialists Question Fungicide Use For Stress Tolerance

LEXINGTON, KY.

**C**ertain fungicides are highly effective at controlling several diseases in grain crops. But recently, these fungicides have also been marketed for stress tolerance and growth efficiency purposes.

University of Kentucky specialists are hesitant to recommend fungicides for anything other than disease prevention, because they have not seen research-based field data to prove these products provide added benefits to Kentucky's grain crops.

Paul Vincelli, extension professor of plant pathology in the UK College of Agriculture, Don Hershman, also a UK extension professor of plant pathology, and UK Grains Crop Specialist Chad Lee have conducted fungicide studies since 2003 on soybeans and, since 2007, on corn to determine their effectiveness in Kentucky's fields.

"We are not saying these claims are not true; it's just that we have not seen convincing proof that they are," Vincelli said. "Most university research conducted to date does not support these claims."

The specialists said this is an issue producers need to be aware of going into the growing season. One company has received U.S. Environmental Protection Agency approval for a supplemental label allowing fungicide use for purposes in addition to disease control, and other companies may follow suit.

While fungicides are ideal for controlling foliar fungal diseases, historically, Kentucky corn and soybeans are not grown under conditions that favor much disease development.

"If conditions favor disease development, then fungicides are beneficial, but the current evidence does not warrant blanket applications of fungicides," Lee said.

Hershman has conducted 28 studies of modern fungicides on soybean yields. In the studies, fungicides were applied during the early pod (R3) stage, which is the target application time. Yields varied from a loss of 3 bushels per acre to a gain of 26 bushels per acre. Yield increases occurred about 25 percent of the time, but those increases could not be traced back directly to fungicide control of visible diseases.

However, this is not scientific proof that the yield increases were due to fungicides enhancing stress tolerance or generally improving growth efficiency. Hershman said it is more likely the yield increases were the result of the fungicides controlling diseases that were not easily observed or disease complexes which are not fully understood.

Vincelli and Lee have conducted similar studies in corn during the past two growing seasons.

During their studies, the fungicides were applied during the corn's target application stages, between full tassel and brown silk (VT through R1). In their studies, there have been no significant yield increases between treated and untreated plots when there was a low level for disease. Vincelli said many universities conducted studies on corn across the Midwest and beyond, and few showed significant yield increases in fields with little to no disease activity.

Farmers could incur additional economic risk if they decide to apply fungicides for improved growth efficiency or stress tolerance. Lee said if there's not a yield increase, farmers will not recoup the application cost. He added that even with modest yield increases, farmers may not recoup the application cost. In 2007 and 2008 university studies, the cost was recouped in corn only about 38 percent of the time. One industry study showed that soybean farmers were able to recoup their costs about 51 percent of the time.

Unnecessary fungicide applications could have some adverse effects, the specialists said. If fungicides are tank-mixed with other products and applied at the wrong development stage, it can hurt yields. Other effects may include increased environmental risks, increased development of fungicide-resistant diseases, occasional surges in insect and mite populations, and a loss of time and money.

Looks can be deceiving, the specialists emphasized. Treated crops sometimes look greener than those that are not treated. While this "greening effect" is visually pleasing, it can have some negative consequences including slow or delayed harvests and the necessity to dry grain. The UK specialists noted that, in their studies, many times treated corn plots would look greener, but there was no significant yield increase compared to untreated plots. Similarly, treated soybean crops frequently look cleaner than non-treated crops, but this too is often not associated with higher yields.

The specialists caution growers against applying fungicides to crops that have a low risk of disease until more convincing data is available. If producers decide to treat crops with a fungicide application this year, they recommend growers leave untreated strips to determine the fungicide's biological and economical effects. Producers should treat the crops during the proper development stages. Producers should follow label instructions exactly and make sure they have excellent spray coverage on treated crops. Those who have questions or would like more information on fungicides and their uses should contact the local county office of the UK Cooperative Extension Service. Δ