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Foliar Fungicide: Be Cautious

By Jane Fyksen Crops Editor

The higher crop prices climb, the more interest there is in foliar fungicides. A trio of UW experts warns producers to carefully consider the economics.

Even when corn hovers in the \$7 to \$8 a bushel range and beans \$15 to \$16, a return from applying foliar fungicide isn't guaranteed.

Plant pathologist Paul Esker, soybean specialist Shawn Conley and corn specialist Joe Lauer note that even when corn is approaching \$8, the necessary return (in bushels) to cover the cost is around the breakeven point based on university trials in 2007 with different fungicide products.

With soybeans, the economic cost of wheel track damage also needs to be considered. Sprayer wheel traffic from first flower (R1) through harvest can damage soybean plants and reduce yield. UW research suggests that an adequate soybean stand (more than 100,000 plants per acre) planted in late April though mid-May can compensate for wheel tracks made when a field is sprayed at R1. Yield loss can occur, however, when wheel tracks are made at R1 or later in thin soybean stands (less than 100,000 plants per acre) or late planted soybeans. Regardless of stand, plants couldn't compensate for wheel tracks made at R3 (early pod development) or R5 (early seed development).

The average yield loss per acre is based on sprayer boom width (distance between wheel track passes). In UW trials yield losses averaged 2.5, 1.9, and 1.3 percent when sprayer boom widths measured 60, 90, and 120 foot, respectively. Multiple trips along the same wheel tracks didn't increase yield loss over the first trip.

Given this season's weather, it's no surprise growers are seeing brown spot (Septoria) in soybeans as well as bacterial blight (Pseudomonas), not to mention anthracnose in corn. In soybeans, foliar fungicides won't affect bacterial blight and the best application timing to slow down the severity of brown spot is from bloom (R1) to pod fill (R3). Furthermore, data suggests that brown spot severity must be fairly significant to see a significant yield response and even when there has been control of brown spot, there has not been a significant yield response.

Septoria brown spot symptoms appear as small brown spots on leaves. These spots can eventually coalesce and cause the entire leaf to turn yellow and senesce prematurely. Frogeye leaf spot symptoms appear as

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circular tan to gray spots on the leaves, surrounded by a very pronounced dark purple margin.

As corn heads into tasseling and silking and soybeans flowering, these UW experts say the decision to apply a foliar fungicide hinges on: hybrid susceptibility; in corn, the amount of residue in the field; planting date; yield potential; disease pressure; weather at the time of disease assessment and forecasted weather during reproductive development; fungicide and application costs; and the value of potential grain.

Also, they add, corn this year may be at a range of growth stages, consider delaying applications at R1 (silking) for a few days to enable all the corn plants to get into tasseling and silking. This may help reduce the risk of any physiological damage that was seen in 2007, they say.

Daren Mueller, Iowa State University crops specialist, says "if your mind is already made up to apply fungicides to corn or soybean, then try to follow two simple IPM approaches to select which fields get fungicides."

"Data from both university and industry sources continue to show that the greatest yield responses have come from fields with the most disease pressure. So target fields that are planted to a susceptible hybrid or cultivar and have disease present at the time of application," states Mueller.

Another important consideration - especially for this year - is yield potential. "It doesn't hurt to say it again: Fungicides will not recover lost yield," he warns. "If you want to improve your chances of recouping your cost of fungicides, then target fields that have higher yield potential," stresses Mueller.

According to Carl Bradley with the University of Illinois, a number of foliar diseases can be observed on soybeans in a given year, but not all of these generally cause large yield decreases. Not all can be controlled with a foliar fungicide, either.

"Foliar fungicides can be very effective in controlling both Septoria brown spot and frogeye leaf spot, but the two do not always cause yield losses. Septoria brown spot can cause yield loss only in very wet conditions. Generally, Septoria brown spot will remain in the lower portion of the canopy and not progress to the upper third of the canopy. Under very wet conditions, however, it can progress to the upper canopy and cause yield reductions," Bradley notes.

Results from 2007 University of Illinois soybean fungicide research trials indicated that yield returns with a fungicide averaged 1 bushel per acre. Higher yield returns were related to higher precipitation amounts.

Downy mildew and bacterial blight are also common, but downy mildew is not listed on product labels as a disease controlled with a foliar fungicide, and bacterial blight is caused by a bacterium rather than a fungus.

Downy mildew appears as light yellow "blotches" on the upper leaf surface, with gray "tufts" on the lower leaf surface directly under the yellow blotches. Bacterial blight symptoms appear as angular brown spots on the leaves, with a pronounced yellow "halo" around each spot.

XB Yang, Iowa State University plant pathologist, says with the weather so wet and soybean price so high, it's a "no brainer to conclude that spray fungicides this season can control soybean foliar disease and increase yields."

"We had debates on the use of fungicide in other years, and this year would be the year to see the benefits, unless we are fooled by Mother Nature and the rest of season becomes hot and dry," he relates. "The diseases have already established in many soybean fields and could become worse in the late season... The chance to see yield benefits from a spray so far is much higher than most normal years."

He says the best control with one spray in terms of yield increase for later season foliar diseases is at R3 to R4. However, this year, disease is occurring earlier and a spray at R3 or later may not reproduce results from a normal weather year. Outcomes depend on the weather in July and August.

"If the rainfall is less intensive in the two months, a spraying at R3 may still control the disease well. If the weather in August is like last August's, which had a record rainfall, one spray may not stop the disease, as most fungicides only provide two to three-week protection period," he states. "But we do not recommend two sprays because of damage to soybeans caused by driving in the fields in August."

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