

# Bob's Blog-7/13/2022

## **Should I Apply Fungicide to My Corn and Beans in 2022**

It is especially important to protect your corn and beans from disease and drought in 2022, due to the high corn and soybean prices. Adding longer lasting fungicides such as Delaro<sup>®</sup> Complete, Veltyma<sup>™</sup>, Trivapro<sup>®</sup>, or Miravis<sup>®</sup> Neo to a disease management program can help growers improve their plant health with overlapping modes of action to control key diseases, including strong suppression activity of Gray Leaf Spot, Northern Corn Leaf Blight, and Tar Spot in corn, and white mold and brown spot in soybeans.

It is important to at least apply fungicides into areas that you think have a higher incidence of disease pressure or a higher likelihood of having wet conditions based on topography. Fungicides are highly recommended on conventional corn and on continuous corn fields, as well as on varieties with susceptibility to fungal diseases which are present, or which have environmental conditions favoring their development.

Dr. Carl Bradley, Plant Pathologist with the University of Kentucky (UK) and colleagues, sought to understand the most cost-effective time to apply fungicide at nine locations in Kentucky. Their findings determined that one application at the silking stage is the most cost-effective and provided the best disease control. They evaluated a single fungicide application of Syngenta's Trivapro (benzovindiflupyr + azoxystrobin + propiconazole) at the six-leaf collar stage (V6), at the silking stage (R1), as well as a sequential application at both stages. They found that treatments at tassel emergence provided the best foliar disease control (gray leaf spot was present in all locations) with an 11-bushel response vs. the untreated check. The net benefit amounted to a little over \$18 per acre, which could be double that with current prices.

As spraying at tasseling isn't always feasible for farmers with a ground sprayer given the height of corn, Bradley and his colleagues factored the cost of aerial application into their economic analysis. The use of high clearance sprayers such as a Hagie<sup>®</sup>, may be cheaper, and it allows spraying corn with more precision and with higher water volumes. They also found that the single application at the silking stage did not differ from the sequential double application. Several other studies have found similar results

Fungicides can also improve stress tolerance due to the reduction of ethylene and oxidative stress. Dr. Marc Nason and Syngenta colleagues demonstrated that strobilurin fungicides can greatly reduce stomatal conductance and, therefore, transpiration (water loss). What does this mean to the Midwest corn grower? Syngenta has been researching the physiological benefits from azoxystrobin, the strobilurin component in several of its fungicides, for 19 years. Recent studies conducted with one of its strobilurin fungicides on corn under various irrigation regimes demonstrated that you can get yield with less water with a fungicide application. In this study, the crop received either 60% or 100% irrigation, with or without the fungicide. Yield was

highest in the fully irrigated plots where there was no drought stress. However, the fungicide improved yields by 8 bu/A and 15 bu/A in the fully irrigated and the 60% irrigated plots, respectively. The Syngenta fungicide delivered more crop per amount of water available by enhancing the corn plant's water use efficiency. Yield in the 60% irrigated plot was equal to the yield from the fully irrigated untreated plot. In addition to water use efficiency, the use of a strobilurin fungicide provides broad spectrum disease control and plant physiological benefits that include delayed senescence (plants stay green longer), enhanced photosynthesis and improved nitrate uptake.

### **Tar Spot Control with Fungicide:**

Go early, before tasseling. "We are not using any additives that could get arrested in development. We're cautious on what we use and how we apply it, then coming back at the blister stage, and maybe a hair later with our second application trying to protect our green area to grain fill," Early noted on a Corteva webinar, adding, "With the first application we've routinely picked up 15 to 20 (bushels) in our heavy tar spot area. Surprisingly, in our second application, we're picking up another 13 to 15 (bushels) regularly, so they're more than paying for themselves. It shows how aggressive the disease is and how important the planning process is."

Make the most of your fungicide and insecticide applications by using adjuvants, low molecular weight fulvic acid, and crop nutrition products. Insecticides need to be applied on contact while the key component of fungicides is to be absorbed into the plant. Only add insecticides to the fungicide tank mix if there is an insect control needed due to adult rootworm beetle or Japanese beetle feeding, European Corn Borer egg masses, or if western bean cutworm beetles or aphids are present at threshold numbers. Pesticides labeled as toxic to bees may not be applied to blooming crops by commercial applicators between the hours of 8AM and 6PM in areas within a one-mile distance from a registered apiary (bee-hive) location.

Some Key benefits from Fungicides

- 1) **Increased photosynthesis.** Fungal diseases can greatly reduce the photosynthetically active leaf area by senescing leaf tissue. Reducing photosynthate will reduce yield and can lead to premature plant death in corn and soybeans and poor grain quality.
- 2) **Improved standability.** Poor cornstalk quality can lead to higher harvest losses and lower harvest efficiency, both of which can increase a grower's costs. Applying a fungicide with disease control and plant health properties can help improve corn standability and harvestability. First, it can reduce stress from diseases and adverse weather conditions that can impact stalk integrity. Second, it can reduce the likelihood of cannibalization, which can degrade stalk quality, and third, it can reduce stalk lodging.
- 3) **Better N Utilization.** Certain fungicides with plant-health benefits can activate the critical enzyme nitrate reductase. This can promote improved nitrogen uptake and assimilation in the

plant, and result in more nitrogen available to support plant growth and increase yield potential. Corn crops treated with the Headline AMP fungicide in on-farm trials were found to achieve higher yields than untreated crops across varying nitrogen rates. With 100 pounds of nitrogen applied, the Headline AMP-treated corn achieved 9.1 bushels more per acre than their untreated counterparts. And that yield improvement more than doubled to 19.4 bushels per acre when 200 pounds of nitrogen was applied.

**3. Improved stress tolerance.** There's no way to prevent environmental stressors like hail, drought, and heat. But by using fungicides that deliver both disease control and plant health benefits, growers can improve the stress tolerance of crops in less-favorable growing conditions to help keep them healthy and strong through harvest. Hot and dry conditions, meanwhile, can cause plants to close their stomata to conserve water. This leads to plants wilting, which decreases their ability to absorb light energy and conduct photosynthesis. Fungicides have been found to open stomata and increase photosynthesis in plants so they can keep energy production moving in dry, hot conditions.

Hail and insects can compromise corn and soybean crops by tearing and reducing viable leaf tissues. This creates open wounds on plants that make them more susceptible to disease penetration. A post-hail fungicide application can protect whatever viable leaf tissue remains from further infections of common diseases, helping the plant maximize photosynthesis.



**FIELD TRIAL:** These photos show untreated corn plants (left) compared to plants with Headline AMP fungicide applied at V8 stage of corn growth at 10 fluid ounces per acre. This was an Illinois on-farm field trial.