Fungicide Recommendations for Corn and Soybean

KEY POINTS

- Strobilurin and triazole fungicide groups are the primary chemistries used for in-season corn and soybean disease management.
- Factors contributing to the risk of corn and soybean diseases include, but are not limited to, seed product genetics, field cropping history, field disease history, disease-favorable weather, and agronomic practices.

Fungicide Use and Activity

Fungicides used for in-season corn and soybean disease management are primarily in the chemical group of either strobilurin or triazole fungicides. Also, there are many pre-mix products that are available that contain both strobilurins and triazoles. Strobilurin and triazole fungicides are considered “locally systemic” which means they are absorbed into plant tissue. However, there is minimal systemic activity. For example, the fungicide may move slightly outward through a leaf from the point of uptake but does not move downward through the leaf stem, therefore new plant growth after application will not be protected.

Fungicides have preventative and/or curative activity. If a fungicide is on the plant before infection occurs it may act as a protective barrier preventing infection. Curative activity may occur when the fungicide is present within plant tissue and stops early growth of the pathogen in plant tissues. Fungicides with curative activity will not “cure” a plant from disease and are most effective if applied prior to infection or within the first 72 hours after infection.

Effective fungicide performance requires good spray coverage. After application, fungicides degrade from the leaf surface and are generally considered effective for 21 days. Also, foliar-applied fungicides are ineffective in protecting plants from fungal pathogens that primarily enter through plant roots and cause diseases such as seedling diseases and crown rot in corn; also soybean diseases such as phytophthora root rot and sudden death syndrome.

Assessing Disease Risk

Factors contributing to higher risk of disease for corn and soybean fields are similar and include the following: susceptible seed product, continuous corn or continuous soybean systems, history of disease infection in the field, current disease activity in the field, current and projected disease-favorable weather, high plant population/dense crop canopy, high yield potential, irrigation, and no-till or reduced tillage systems. Assessing individual fields for their risk of disease can serve as aid in identifying which fields should be prioritized for scouting.

Corn

High disease risk fields should be scouted prior to tasseling. It is important to scout fields in a continuous corn rotation and/or with greater than 35 percent residue and with a history of foliar disease. Many foliar diseases survive on corn residue and begin producing spores in wet weather. Moderate temperatures and humid weather conditions at vegetative growth stages and during grain fill can increase common rust and northern corn leaf blight in some fields. Warm and humid weather favors gray leaf spot, southern rust, and other fungal diseases that can be managed with fungicides. These diseases may develop to levels that will reduce yields if they substantially infect the ear leaf or leaves above the ear during the weeks of tasseling, pollination, and grainfill.
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The ear leaf and leaves higher on corn plants should be protected from disease because they contribute the most energy supplied during grain fill. On susceptible or moderately susceptible seed products a fungicide application may be warranted if disease lesions are present on the third leaf below the ear or higher on 50 percent of the plants at tasseling. If a fungicide application is warranted, consider a VT (tasseling) to R1 (silking) application timing to maximize fungicide activity.

Fungicide Efficacy for Control of Corn Diseases, Purdue University, provides a list of fungicides, their efficacy against disease, recommended rates, and is available at https://www.extension.purdue.edu/extmedia/BP/BP-160-W.pdf

Fungicide Efficacy for Control of Soybean Foliar Diseases, Purdue University, provides a list of fungicides, their efficacy against disease, recommended rates, and is available at https://www.extension.purdue.edu/extmedia/BP/BP-161-W.pdf

Soybean

Keeping a close watch on fields for disease symptoms and a review of soybean growth stages can help properly time fungicide applications. Anthracnose, brown spot, Cercospora leaf blight, frogeye leaf spot, and soybean rust are diseases that may be managed with a timely fungicide treatment. Fungicide application in soybean differs from corn as there is more leaf development after application.

Application timing is essential for effective disease management. Fungicide applications made prior to the R1 (beginning flower) growth stage, or after the R6 (full seed) growth stage are often not economical. Research indicates a relatively early fungicide application at R2.5 (full flower) growth stage may have yield benefit over fungicide applications at R4 (full pod) growth stage.

Foliar diseases are often not an issue until the R3 (beginning pod) growth stage. If seed products lack disease resistance and conditions that favor disease development are anticipated at R3, a fungicide application may be beneficial. If left unchecked, potential yield loss from diseases may occur due to premature leaf drop reducing the photosynthesizing ability of the crop to produce grain. Weather conditions can also help determine proper fungicide timing in soybean. More than one fungicide application may be needed in environments with high disease pressure.

Additionally, a compatible herbicide or insecticide may be included if labeled for soybean to control weeds and insects that are present.

Timing for white mold or sclerotinia stem rot requires different timing as infection first occurs at R1 or the initiation of flowering. Therefore, an additional application may be necessary at a later growth stage to control other fungal pathogens.

Sources:

Performance may vary, from location to location and from year to year, as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible and should consider the impacts of these conditions on the grower’s fields. ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. 140731064327. 051018DLB