

INSIDE GRUNDY COUNTY
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Understanding the difference between curative and preventative fungicides can be helpful to growers when deciding which one to use. Daren Mueller and Alison Robertson, ISU Extension Plant Pathologists, recently wrote the following article regarding curative and preventative fungicides.

To fully understand how a fungicide reduces disease development, we need to understand the disease cycle of a foliar pathogen. Foliar pathogens are 'polycyclic' meaning that many disease cycles can occur in a single season. A disease cycle consists of the following steps: infection, colonization, symptoms and spore production. The period from infection until symptoms are first seen is known as latent infection.

For example, in southeast Iowa, gray leaf spot (GLS) lesions start to appear on the lower leaves of the corn plant starting in mid-July. These lesions produce spores that will infect leaves higher up the plant, cause lesions and produce more spores. Under favorable conditions, the first symptoms of GLS occur approximately twelve days after infection. So, in a single growing season, there may be three or four disease cycles of GLS. Fungicides reduce disease development by breaking the disease cycle.

Strobilurin and triazole fungicides are both considered "locally systemic", meaning they are absorbed into plant tissue and do not remain on the outer plant surfaces exposed to the elements. While both fungicide groups are systemic, they break the disease cycle at different points and thus differ in their role in protection of plants from infection.

Strobilurin offers preventative activity which occurs when a fungicide is present on or in the plant before the pathogen arrives or begins to develop. The fungicide acts as a protective barrier and prevents infection from occurring.

Triazoles offer early-infection or curative activity which occurs when the active ingredient of a fungicide present within plant tissue stops early growth of the pathogen (colonization) in the plant tissues. This type of fungicide is usually most effective twenty four to seventy two hours after infection occurs, depending on the fungicide. Most fungicides that prevent early-infection also have preventative activity and thus are most effective when applied before infection occurs.

Therefore, it is important to remember that "curative" fungicides will NOT cure a plant from a disease. They are effective if applied prior to infection or in the first seventy two hours after infection, but they are not effective against more advanced latent infections. Furthermore, preventive fungicides can still be used if disease is present at low levels, since they will prevent new infections from occurring on the remaining leaf tissue with no infection.

Putting this into practical terms, in July, most of the corn and soybean fields in Iowa do not have disease pressure at levels that will cause yield losses. Typically, disease levels do not increase until August. So, when choosing fungicides, the number one factor should be choosing a product that is most effective against diseases that are likely to occur in your field. If disease is present at low levels, protecting the remaining green tissue should suffice for protecting yield.

Remember, it is only the ear leaf and leaves above the ear leaf that contribute to grain fill – these are the leaves that need to be protected. It is also okay to have a few spots on these leaves before a fungicide is applied, since it is unlikely that these lesions will impact yield.

For more information, contact the Grundy office of ISU Extension at 319-824-6979