
Is there a need to spray hail-damaged corn with a foliar fungicide?

With a hail event comes the inevitable question as to whether foliar fungicide sprays are warranted due to the fear that hail injury to tissue could increase the incidence of stalk rots, leaf spots, rusts, and smuts.

Most diseases that could be facilitated entry by wounds are not managed or controlled by foliar fungicides. This can include bacterial wilt and blights such as Goss's wilt. Goss's wilt was found for the first time in Texas in 2009 in the Dalhart area but was most likely seedborne. Fungal diseases such as gray leaf spot and southern rust do not rely on injury sites as they can readily penetrate tissue on their own. Fungi depend on moisture so an increase in fungal activity following a hail event might be more related to rain and humidity.

For stalk rots, the fungal pathogen invades the base of a corn stalk. The pathogen survives in stalks and roots left from the previous growing season. It is around silking when the fungus starts to spread from roots to stalk. Only **occasionally** can infection occur aboveground due to injury by corn borers, hail, and mechanical injury.

The fact that a stalk rot pathogen is present does not mean that stalk rot will occur. There are several factors that predispose corn to stalk rots. Early maturation and carbohydrate reduction in the stalks can predispose stalks to colonization by fungi that cause stalk rots. Stalk feeding insects and foliar blights can render a plant more susceptible to stalk rots.

The same hybrid may respond differently from field to field based on factors such as soil condition, cultural practices, drought resistance, insect pressure, hybrid susceptibility to stalk rots (ie. anthracnose), crop rotation, planting date, and others. For many of these "stress factors" that can predispose a plant to disease, seed companies will have a list of hybrids and ratings for traits ranging from drought tolerance to stalk rots.

In studies conducted in Illinois on gray leaf spot by Carl Bradley (*Plant Disease*, January 2010) the effect of foliar fungicides on simulated hail-damaged corn was put to the test. **Foliar fungicides (azoxystrobin, pyraclostrobin) did not significantly improve yield in either damaged or undamaged plots in comparison with the nontreated controls.**

There has been very little research on hail damage and common smut of corn. Studies conducted in Ohio on sweet corn in 1999 and 2000 found that **no foliar fungicide was effective in managing common smut.** Other factors such as plant resistance, plowing corn residue in the fall, soil fertility, and mechanical and insect injury play a more prominent role.

In summary, there are many other factors, ranging from genetic to cultural practices, that can predispose corn to stalk and foliar diseases. Data is scarce to back any claims of fungicide efficacy on hail-damaged corn. By spraying a fungicide, not only are several potential fungal pathogens targeted but also beneficial or biocontrol fungi that can keep pathogens and insects in check. Sprays may be detrimental to yield as studies reported by Nafziger (2007) with a strobilurin found that in 2 out of 3 years, 8% to 10% loss occurred when corn was sprayed at the 14-leaf stage only. If using an adjuvant, please be aware that some companies recommend that their strobilurin be used with an adjuvant only after corn reaches the VT stage.

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