

# AGRONOMIC ALERT



## Anthracnose Leaf Blight, Top Die-Back and Stalk Rot in Corn

Anthracnose in corn has a leaf blight phase and a stalk rot phase. Top-die back is a significant symptom of the stalk rot phase. The leaf blight is an indicator that the pathogen is present in the field, but does not confirm that the stalk rot phase will be an issue. The stalk rot phase is of greater concern than the leaf blight phase in terms of potential yield loss. The majority of lost yield potential from anthracnose can be attributed to premature plant death that interrupts filling of the grain, and stalk breakage and lodging that causes harvest loss and complications. Early identification of anthracnose can help prioritize fields for harvest, which can help minimize loss at harvest.

### Disease Development

The fungus that causes anthracnose overwinters on corn residue. Spores spread to growing plants by windblown rain and rainsplash. Anthracnose is favored by warm, moist weather. Disease severity can be increased during extended periods of low light intensity (e.g. overcast conditions) and high humidity.

High yield potential and/or other stresses are often associated with stalk rots such as anthracnose. This is because roots and stalks may be forced to remobilize their stored nutrients to provide for the grain which is the primary sink. High yield potential creates a larger sink. Stresses such as foliar diseases, insect damage, drought, and cloudy weather decrease the amount of energy and nutrients the plant can produce for grain fill. Consequently, the plant must pull carbohydrates from other tissues. This cannibalization weakens stalks and roots, which makes them more susceptible to stalk rots.

### Symptoms

**Leaf Blight Phase.** Lesions of the leaf blight phase are oval to spindle-shaped and appear water-soaked (Figure 1). The lesions are often found on the bottom leaves first and can



Figure 1. Symptomology of the leaf blight phase of Anthracnose Leaf Blight.

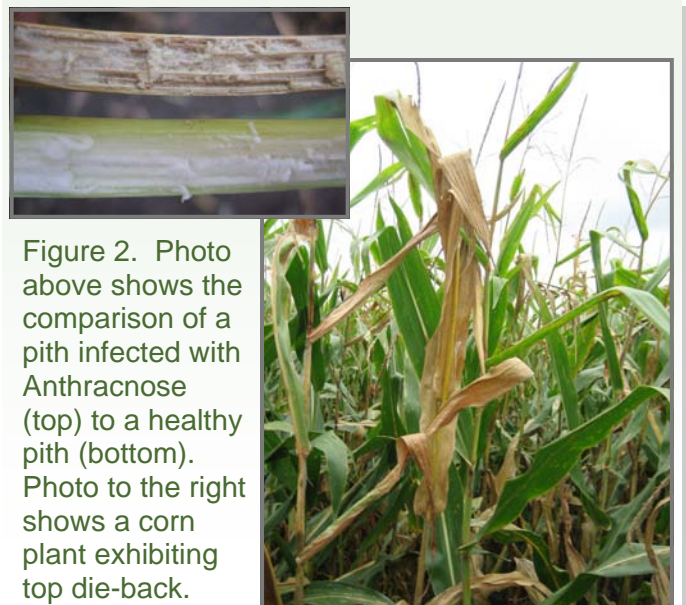


Figure 2. Photo above shows the comparison of a pith infected with Anthracnose (top) to a healthy pith (bottom). Photo to the right shows a corn plant exhibiting top die-back.

progress to the upper leaves. They are tan to brown with yellow to reddish-brown borders. Heavily infected leaves wither and die.

**Top Die-Back.** In fields heavy anthracnose stalk rot pressure, it is common to observe that a portion of the plant above the ear dies prematurely while the lower plant remains green. This symptom is known as Top die-back and it can be observed at any time after tasseling (Figure 2). As the stalk rot phase progresses, the pith and the vascular system get completely rotted reducing the water translocation to the top leaves.

**The stalk rot phase is of greater concern than the leaf blight phase in terms of potential yield loss.**

to pg. 2

## Anthracnose Leaf Blight, Top Die-Back and Stalk Rot in Corn

▶ from previous page

Especially when water availability is reduced in the soil, those top leaves tend to dry down and die as a consequence of reduced water supply.

**Stalk Rot Phase.** Early infection may kill plants before pollination, but onset usually occurs just before plants mature. Usually, the entire plant dies and several nodes are rotted. Late in the season, generally after plants show signs of early death, a shiny black discoloration develops in blotches or streaks on the stalk surface, particularly on lower internodes. Internal stalk tissue may become black and soft, starting at the nodes (Figure 3). Stalks may also have discolored pith while the rind remains green. Lodging typically occurs higher on the stalk than with other stalk rots.

### Management Options Mid Season

Some fungicides are labeled to help control the leaf blight phase of anthracnose. ALWAYS REMEMBER TO READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. It is important to check the fungicide label for control of anthracnose as well as application rate and timing restrictions. Generally fungicides will not control the stalk rot phase of anthracnose, but can help maintain plant health, which can cause the corn to be less susceptible to stalk rot pathogens.

### Management Options Prior to Harvest

Plants severely damaged by the stalk rot phase are unlikely to remain standing until the normal harvest period. Therefore, preparations should be taken to harvest problem fields early. Although high grain drying costs may be a concern when harvesting wet grain, this expense will likely be a better option compared to the loss of yield potential due to increased lodging later in the fall. Scouting fields for potential stalk lodging can be broken down into two methods.

**The Pinch Test.** Examine the lower nodes of ten plants in a row in several places in the field. Squeeze or pinch each stalk a couple of nodes above the ground. If more than 10% of the stalks collapse easily when squeezed, that field may need to be slated for an early harvest.

**The Push Test.** For ten plants in a row, in several locations in the field, push each stalk 45 degrees from upright. If more than 10% of the stalks lodge when pushed, that field may need to be slated for an early harvest.



Figure 3. Symptoms of anthracnose stalk rot include early plant death, shiny black blotches or streaks on the stalk surface, particularly on lower internodes. Additionally, internal stalk tissue may become black and soft, starting at the nodes.

### Management Options for Next Season

**Tillage.** Burying the residue can help decrease inoculum.

**Crop Rotation.** Planting a non-host crop such as soybeans can help reduce inoculum. In fields with a severe anthracnose problem a two-year rotation away from corn might be considered.

**Tolerant Hybrids.** Hybrids are often given ratings for tolerance to the leaf blight phase as well as the stalk rot phase. Tolerance to one phase is not an indicator if the hybrid will have tolerance to the other phase.

**Minimizing Stress and Cannibalization.** Stalk rots can become more prevalent as a corn crop endures additional stress. Stresses such as foliar diseases, insect damage, drought, and others can increase the risk of stalk cannibalization which can increase the risk of stalk rots.

**Fertility.** Stalk rots can be more common and severe in fields with imbalanced and increased fertility. Plants grown in fields with an imbalance between nitrogen and potassium are very susceptible to stalk rots such as anthracnose.

Sources:

*Compendium of Corn Diseases 3rd edition. APS Press*

*Corn stalk rots. Univ. of Illinois Extension. RPD No. 200. December 1995.*

*P. Lipps and D. Mills. Anthracnose leaf blight and stalk rot of corn. Ohio State Univ. Extension. Report no. AC-0022-01.*

Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible. ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. Technology Development by Monsanto and Design(SM) is a servicemark of Monsanto Technology LLC. ©2010 Monsanto Company. 08212010EJP