



# Extension FactSheet

Plant Pathology, 2021 Coffey Road, Columbus, OH 43210-1087

## Anthracnose Leaf Blight and Stalk Rot of Corn

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Anthracnose has become one of Ohio's most important corn diseases. This disease was first detected in Ohio in 1961, causing stalk rot in research plots at Wooster. Later reports of the disease were mainly concerned with the leaf blight phase and little damage was attributed to the stalk rot phase except in a few localized areas. Since 1972, the evidence of anthracnose has increased greatly. Anthracnose stalk rot has been severe in the state since 1979 when stalk rot was observed in more than 50% of the fields surveyed and the range of infected plants in those fields was 10 to 90%; some fields had 50 to 80% of the stalks lodged. Yield losses occur from premature plant death that interrupts filling of the grain, and stalk breakage and lodging causing ears lost in the field. It can be safely stated that anthracnose occurs in all corn growing areas of the state and that losses in certain years could be as high as 10 to 20%.

### Symptoms

Anthracnose of corn may appear as a leaf blight, stalk-rot, top-kill of the stalk, and kernel rot. However, most damage results from the stalk rot and leaf blight phases. The anthracnose fungus can attack corn plants at any stage of development. Lesions can be found on leaves of very young plants soon after emergence when the fungus has overwintered in the field. Leaf lesions are generally brown, oval to spindle shaped, about 1/4 inch wide by 1/2 inch long. Usually, a yellow or yellow-orange area surrounds the disease portion of the leaf. The actual size and shape of the leaf lesions varies greatly among different hybrids making diagnosis in the field very difficult. The fungus can usually be seen on the leaf surface with the aid of a hand lens. Spore masses within characteristic fruiting bodies are easily identified based on the presence of small, black spines (setae) arising from the leaf surface. Spines can usually



Anthracnose leaf blight.

be detected within fruiting bodies near the midrib of heavily diseased leaves or within older lesions on lightly diseased leaves.

Symptoms of the stalk rot phase are easy to recognize and usually are not confused with other stalk rot diseases. Late in the season shiny black, linear streaks and blotches appear on the surface of the lower stalk above the brace roots. Occasionally, the entire stalk becomes blackened. The internal stalk tissue or pith becomes discolored, turning dark gray to brown and shredded. Severely diseased stalks are weakened and are likely to lodge before harvest. Anthracnose may develop in the upper stalk above the ear, resulting in top dieback. These blighted tops may top-lodge above the ear.

### Disease Cycle

Anthracnose of corn is caused by the fungus, *Colletotrichum graminicola*. This fungus has many strains, some of which cause various diseases of rye, wheat, barley, forage and weed grasses as well as corn. The strains appear to have a restricted host range so that



Anthracnose leaf blight on lower leaves early in season.



Anthracnose stalk rot.

only isolates from closely related grasses will cause disease when cross inoculated. For instance, isolates from johnsongrass, sudangrass, and sorghum will attack corn, but are not as pathogenic on corn as those originally isolated from corn. Isolates from small grains do not attack corn.

The overwinter survival of *C. graminicola* is dependent on corn residues being left on the soil surface. Deep plowing of infested residue for one growing season would eliminate the pathogen from the residues. In spring, conidia (spores) are produced with acervuli (fruiting bodies) on residues left overwinter on the soil surface. Conidia are rain splashed onto the surface of the leaves of young plants and cause primary infections. Leaf blight has been observed on the lower leaves of young corn plants in early June with little or no further disease spread until after tasseling. The disease is favored by warm, moist weather and disease severity is increased during protracted periods of low light intensity and high humidity. Therefore, severe leaf damage can result after long periods of heavy overcast, rainy weather. If weather conditions are favorable during late July and August the leaf blight may spread to the upper leaves. Yield reductions can be expected when significant leaf death occurs before six weeks after tasseling. Top dieback or top lodging can occur at any time after tasseling and premature death of the entire plant is an indication of stalk rot. The

black stalk symptoms begin to appear soon after plants show signs of early death.

### Control

1. Hybrid selection is the first step in disease control. Hybrids available vary widely in their level of susceptibility to anthracnose. Hybrids with some resistance to the leaf blight phase may not be resistant to the stalk rot phase of anthracnose. Also, hybrids with resistance to other stalk rot fungi (i.e., *Gibberella* and *Diplodia*) are not necessarily resistant to anthracnose stalk rot. Growers should carefully select hybrids with the proper leaf blight and stalk rot resistance, with good standability, and high yield potential.
2. Since the anthracnose fungus survives in corn residues, especially on the soil surface, the disease may be more serious under reduced tillage systems and in continuous corn. A tillage system that chops and completely buries the residues coupled with a one-year rotation away from corn will eliminate the local source of inoculum. A two-year rotation away from corn may be necessary under no-tillage or reduced tillage systems.
3. Avoid excessive plant stress by using a balanced soil fertility program based on soil tests. Plant at populations suggested for the particular hybrid, and control insects such as the European corn borer and corn rootworm.

Additional information on Anthracnose leaf blight and stalk rot is in Ohio State University Extension Bulletin 802, *Corn Disease Control in Ohio*, available from your local Extension office or The Ohio State University web site Ohioline at: <http://ohioline.ag.ohio-state.edu>

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