

Early Season Leaf Spots And Blights Of Corn

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There are several leaf spot and leaf blight diseases which can develop on young corn plants: anthracnose, holcus leaf spot and Stewart's bacterial wilt. There have been a few questions about distinguishing between these diseases so a review of their symptoms and disease cycles seems appropriate.

Anthracnose leaf blight, caused by the fungus *Colletotrichum graminicola*, usually occurs early in the season on the lower leaves of young corn plants. Anthracnose lesions tend to be brown, oval to spindle-shaped lesions with yellow to pinkish to reddish-brown borders. Lesions may be 0.2 to 0.6 inch in length. Lesions may merge or coalesce to kill larger areas of leaf tissue. Concentric rings or zones are sometimes apparent within the diseased areas of leaf tissue. Lesions may be concentrated towards the leaf tip (or portion of the leaf that was emerged when rain occurred) giving the leaves a fired appearance that might be mistaken for nutrient deficiency or herbicide injury.

The fungus which causes anthracnose leaf blight produces fruiting bodies in the dead leaf tissue. Dark, hairlike structures called setae are produced in association with the fruiting bodies. It is possible to see the setae on infected plant material in the field if a hand lens is used.

Anthracnose tends to be most common early in the season on the lower leaves of young corn plants. These leaves may be severely affected, yellow and die prematurely. Generally the disease stops at this point because of drier, warmer weather conditions and is not considered a significant problem. Under favorable weather conditions, the fungus may move up the plant causing foliage symptoms on higher leaves. If favorable weather conditions occur midseason (especially wet), anthracnose may actually move up to the ear leaf. The anthracnose fungus can also cause top dieback and stalk rot later in the season. High temperatures and extended periods of wet weather favor anthracnose. Anthracnose leaf blight is more likely to occur if corn is planted following corn.

In a normal year anthracnose leaf blight in Missouri is not serious and would not warrant a fungicide application. It is a little too early in the season to know how severe anthracnose will be or to know if it might spread beyond the very lowest leaves on the plants. Following the weather patterns over the next several weeks and keeping an eye on disease development or lack of development will be important.

Holcus leaf spot is caused by the bacterium *Pseudomonas syringae* pv. *syringae*. Lesions are usually oval to elliptical and range in size from 0.25 to 1.0 inch. Initially they are dark green and water-soaked. Later they become dry and turn light brown with a reddish margin.

The bacteria that cause holcus leaf spot are spread by wind-driven rain or splashing rain, so outbreaks frequently occur several days after a rainstorm or storm with strong wind-driven rains. Since holcus leaf spot is caused by a bacterium, common corn fungicides will have little effect on this disease. Holcus leaf spot might be

confused with herbicide injury such as that caused by paraquat or other contact herbicides. Holcus leaf spot might also be confused with anthracnose leaf blight. Holcus leaf spot lesions tend to be a little more oval to elliptical or even circular in shape while anthracnose tends to be oval to spindle-shaped or even diamond-shaped. Both types of lesions may have darker borders but anthracnose tends to have larger borders, lesions may coalesce to kill larger areas of leaf tissue and discoloration surrounding the lesions may be more extensive. Holcus leaf spot tends to remain as discrete spots on the leaf surface. Finally, the holcus leaf spot pathogen does not produce fruiting bodies or the hairlike setae which the anthracnose pathogen produces in the dead leaf tissue of the lesions. Checking the centers of the lesions with a hand lens for the presence of fruiting bodies or setae will help distinguish which pathogen is present.

On young corn plants the symptoms of **Stewart's bacterial wilt include** linear, pale green to yellow streaks that tend to follow the veins of leaves and originate from feeding marks of the corn flea beetle. Lesions may extend the length of the leaf. Plants may appear stunted or somewhat distorted. If the bacteria become systemic within the plant, the entire plant wilts and may die prematurely. Cavities of a brown, soft rot can develop in the stalk pith.

The variations in weather conditions this spring have put stress on young corn plants. In some fields seedlings have been showing yellowing and/or stunting from cool, wet soils immediately after planting and saturated soils since planting. However, with the more recent warm weather, corn in many parts of the state has really taken off and is now 12 to 18 inches tall. So symptoms of Stewart's bacterial wilt are beginning to develop on these rapidly growing young corn plants.

On field corn the disease tends to be limited to the leaf blight phase of the disease in which foliage symptoms develop but the pathogen does not become systemic within the plant. With the leaf blight phase of Stewart's bacterial wilt, the linear, pale green to yellow lesions develop on the leaves. These lesions tend to parallel the leaf veins and to have wavy, irregular margins. These streaks soon become dry and brown.

The bacterium which causes Stewart's bacterial wilt overwinters in the guts of some species of adult corn flea beetles. Adult beetles feeding on corn seedlings in late spring and early summer can contaminate the feeding wounds with the causal bacterium. Flea beetles can continue to spread the bacterium throughout the season by feeding on infected plants and then healthy plants. The potential for Stewart's bacterial wilt to develop on young corn plants is greater after mild winters when higher levels of the corn flea beetle may be present.

Most field corn hybrids have enough resistance to Stewart's bacterial wilt that additional management is not necessary. Δ

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