Corn Leaf Diseases

Leaf diseases may exhibit similar symptoms or have multiple diseases present at once, and laboratory culturing or microscope examination may be required for diagnosis.

Stewart's Bacterial Wilt

Symptoms of Stewart's wilt or Stewart's disease are long, green-gray, water-soaked lesions that roughly follow leaf veins with wavy margins. Systematically-infected plants may be stunted and showing signs of wilt, which can lead to plant death during the seedling stage. Cavities may form in the stalk near the soil line.

The leaf blight phase is more common and appears after tasseling. Leaves are streaked with gray-green to yellow-green lesions (Figure 1), noted by the presence of a flea beetle feeding scar toward the base of the streak. Streaks are long and irregular, turning tan as the tissue dies. Flea beetles are the primary vector, and incidence of the disease is relative to the size of the beetle population.[4]

Figure 1. Stewart's wilt on a corn leaf.

Figure 2. Goss's Wilt on a corn leaf.

Goss's Wilt

Seedlings can be systemically infected, which may cause wilting and death. Vascular bundles may be discolored. More common later-season infections of leaves produce dull gray-green to necrotic lesions often with irregular margins (Figure 2). Small, water-soaked "freckles" appear within developing lesions. Bacterial droplets may ooze from infected tissues early in the morning leaving a shellac-like appearance when dried on leaf surfaces. Plant injury, such as hail or wind damage, can increase infection.[5]

Figure 3. Anthracnose on a corn leaf.

Figure 4. Eyespot on a corn leaf.

Anthracnose Leaf Blight

Oval to irregular-shaped water-soaked lesions on the youngest leaves turn tan to brown often with yellow to reddish brown borders (Figure 3). Small, black hair-like structures may sometimes be visible in the middle of lesions.[1] Heavily infected leaves can wither and die. This disease thrives in warm, humid weather. The same fungal pathogen is responsible for both anthracnose leaf blight, top die back, and stalk rot; however, the presence of leaf blight does not indicate that stalk rot will be a problem later in the season. The stalk rot phase is often more damaging than the leaf blight phase.[2]

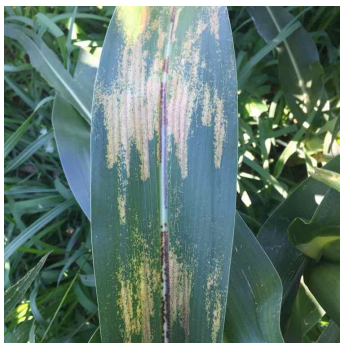

Figure 5. Physoderma brown spot foliar (left) and node breakage (right).

Eyespot

Small (less than 1/4 inch), circular, translucent lesions surrounded by yellow to purple margins that visually produce a halo effect. Lesions occur early or late in the season, on leaf sheaths and husks. The disease is favored by cool, moist weather.[3]

Physoderma Brown Spot and Node Breakage

Small yellow spots appear first at the base of the leaf and over time turn brown in color. As infection progresses, spots can often be found occurring in bands across the leaf. Spots in the mid-rib of the leaf become reddish to

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brown in color and combine to form irregular blotches. Infected stalks may break at a node (Figure 5).[6] This fungus is favored by warm, wet weather.

Northern Corn Leaf Blight

Long (up to 6 inches), elliptical to cigar-shaped, gray-green lesions that eventually become tan-brown are symptomatic of infection by this fungus. Infection begins first on lower leaves and as the season progresses the disease can be found in the upper canopy of the plant. Lesions may form in bands across leaves as a result of an infection in the whorl. The disease is favored by high humidity and moderate temperatures. Under humid conditions, lesions may appear dark, and fuzzy because the fungus is sporulating on dead tissues (Figure 6).[6]

Southern Corn Leaf Blight

Small, elongated (0.25 to 0.75-inch long), parallel-sided lesions that are tan with brownish borders are typical, although symptoms vary considerably on different corn products, often requiring microscopic examination of the fungal structures to confirm diagnoses. Blight primarily attacks leaves, and will overwinter in corn residue. This disease favors high humidity and warm temperatures.[6]

Common Rust

Small, cinnamon-brown, powdery, circular-to-elongated pustules occur on upper and lower leaf surfaces often in bands across leaves. As infections mature, pustules become surrounded by necrotic tissues (Figure 8). Rust pustules rupture the leaf surface (epidermis) and powdery rust spores can be rubbed off. Pustules become dark brown to black late in the growing season. The fungus is favored by moderate to cool temperatures and high humidity. The fungus does not overwinter in the Corn Belt, but arrives each season from crops grown in more southern regions.[6]

Southern Rust

Small, circular, orange-colored pustules occur on upper surfaces, leaf sheaths, and husk leaves. Pustules often are very dense in areas of infected tissues. Pustules break the leaf surface (epidermis) less frequently than common rust. This organism is favored by warm, humid weather. Under severe infection, pustules are common on leaf sheaths and husk leaves.[6]

Gray Leaf Spot

Gray to tan, rectangular lesions on leaves, leaf sheaths, or husks. Spots are opaque and long (up to 2 inches). Lower leaves are affected first, usually not until after silking. Lesions may have a gray, downy appearance on the underside of leaves where the fungus sporulates.[6] The organism thrives in extended periods of warm, overcast days and high humidity. Gray leaf spot has become more prevalent with increased use of reduced tillage and continuous corn.

Figure 6. Northern corn leaf blight on a corn leaf.

Figure 7. Southern corn leaf blight on a corn leaf.

Figure 8. Common rust on a corn leaf.

Figure 9. Southern rust on a corn leaf.

Figure 10. Gray leaf spot on a corn leaf.

Management

Regular and timely scouting is important to help prevent corn disease outbreaks. Since much of the energy from photosynthesis is produced by corn leaves immediately surrounding the primary ear, it is important to protect those leaves from foliar diseases especially under conditions that result in high disease pressure. Fields containing foliar diseases should also be scouted for stalk health as the reduction in photosynthesis can predispose corn plants to stalk lodging. Identification of foliar diseases can help determine the need for changes in management practices such as tillage, crop rotation and the selection of more resistant corn products to help reduce disease occurrence next season.

Sources: [1] Brouder, S.M., Camberato, J.J., Casteel, S.N, et al. 2014. Corn and soybean field guide, 2014 edition. ID-179. Purdue University. [2] Kleczewski, N. 2014. Anthracnose leaf blight and stalk rot of corn. University of Delaware. [3] OMAFRA. Eyespot (*Aurobasidium zeae*). Diseases of field crops. Agronomy Guide to Field Crops. Pub 811. p 364. [4] Jackson, T. and Wright, B. 2012. Nebraska corn at elevated risk of Stewart's wilt and flea beetle damage. University of Nebraska Extension. UNL—Crop Watch. [5] Jackson, T.A., Harveson, R.M., and Vidaver, A.K. 2007. Goss's bacterial wilt and leaf blight of corn. University of Nebraska –Lincoln. G1675. [6] Physoderma brown spot and stalk rot. Integrated Crop Management. Iowa State University.[4] Sweets, L.E. and Wrather, S. 2008. Corn diseases. University of Missouri Extension. Web sources verified 07/21/18. 140706080202