

New and re-emerging diseases of corn

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Introduction

There are over 80 diseases described on corn worldwide (Munkvold and White, 2016). Approximately half of these diseases have been described in Iowa. Some diseases, such as gray leaf spot, northern corn leaf blight and anthracnose stalk rot have been prevalent for decades. Some diseases, such as Physoderma brown spot and Goss's wilt, have re-emerged within the past few years. And then we have new diseases being reported such as tar spot and bacterial leaf streak.

Bacterial leaf streak

In 2016, bacterial leaf streak (BLS) in corn was identified in Iowa and in several other states. Bacterial leaf streak is a disease caused by the bacterium, *Xanthomonas vasicola* pv. *vasculorum*.

Bacterial leaf streak is characterized by narrow leaf lesions with wavy-edges, ranging from less than an inch to several inches in length. The lesions may be yellow, tan, brown or orange and occur between the veins of the corn leaf anywhere on the leaf blade or close to the midrib. Lesions are more noticeable when backlit because of bright yellow halos that extend from the ends of the lesion. There are numerous diseases and disorders that may be mistaken for bacterial leaf streak (Robertson et al. 2016).

Little is known about the epidemiology of bacterial leaf streak and the impact it may have on grain yield and quality.

Tar spot

Tar spot was first reported in the United States in 2015 in Indiana, and was also confirmed later that same season in Illinois. In 2016, the disease has again been found in Indiana and Illinois, with additional conformations in Michigan and Florida.

Tar spot is recognized as small, raised, black spots that occur scattered across the leaf surface. These spots are fruiting structures, known as ascomata, of the fungus that causes tar spot, *Phyllachora maydis*. Tar spot may be confused with common rust or southern rust late in the season when the rust pathogens switch from producing red uredinia to black telia.

It is unlikely that tar spot will cause any yield loss in eastern Iowa where it was detected. Severity of the disease was very low and was detected late in grain fill. However, the fact that the disease is present in the U.S. for a second year suggests that we may see it again in the future.

Tar spot rarely causes economic damage in Mexico and Central America, where it is more common. However, when tar spot is associated with another fungus, *Monographella maydis*, yield losses can occur. This disease complex is known as the tar spot complex; however, *M. maydis* has not been detected in the U.S.

Physoderma brown spot and node rot

Within the past decade, the prevalence of Physoderma brown spot, caused by *Physoderma maydis*, in Iowa has increased. Reports of node rot caused by the same pathogen have also become more common (Robertson et al. 2015).

Symptoms of *Physoderma* brown spot are very characteristic. Infected leaves have numerous very small (approximately one-fourth inch diameter) round or oval spots that are yellowish to brown and usually occur in broad bands across the leaf and dark purplish to black oval spots on the midrib of the leaf. Infected nodes are rotted and snap easily when gently pushed, for example while walking across rows. Brown spot symptoms often are not visible on the leaves of plants affected with node rot.

P. maydis survives in soil and crop residue as sporangia – microscopic, thick-walled, ball-shaped resting structures. Early in the growing season sporangia are splashed into the whorls of developing plants. Sporangia need to be submerged in water for at least 36 hours to germinate and cause infection. Consequently, infection is more common when frequent and heavy precipitation occurs around the V5-V8 growth stages and the whorls of plants remain filled with water for a few days.

It is unclear what yield loss can occur with *Physoderma* brown spot. Node rot can result in standability issues and consequently reduced yields. Although many fungicides are labeled for management of *Physoderma* brown spot and node rot, it is unclear how effective they are at reducing disease.

References

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