Northern Corn Leaf Blight

Northern corn leaf blight (NCLB) is caused by the fungus *Exserohilum turcicum* and may cause significant yield losses when moderate temperatures and long periods of dew or rain prevail.

Symptoms

NCLB lesions are typically gray-green and elliptical or cigar-shaped (Figure 1). As lesions mature, they turn tan and develop distinct dark areas of fungal sporulation. Lesions first appear on lower leaves and move upwards as the disease progresses. Lesions can be as large as 3/4 inch wide and 6 inches long.[1] Symptoms can progress rapidly after anthesis. On severely infected plants, almost all the leaves may be infected and leaves can become entirely blighted. Late in the season, plants may look like they have been killed by an early frost. Lesions on products containing resistance genes may appear small and chlorotic.[1]

Figure 1. Elliptical or cigar-shaped lesions typical of northern corn leaf blight.

Disease Cycle

E. turcicum overwinters as conidia and mycelia in and on corn debris. During warm, moist weather in early summer, new conidia are produced on the old residue. Conidia are then spread by wind and rain to the lower leaves of young corn plants. Conidia are produced abundantly in lesions on susceptible plants and are responsible for secondary spread within and between fields. The infection process begins when water is present on the leaf surface for 6 to 18 hours and moderate temperatures exist.[2]

Management

Planting resistant products is the primary management strategy to reduce the incidence and severity of NCLB. Two types of resistance to NCLB exist in corn. Polygenic (multiple gene) resistance is expressed as a reduction in lesion size, lesion number, and sporulation and a longer latent period before conidia are produced. Monogenic (single gene) resistance is controlled by single dominant genes and can be expressed as chlorotic lesions with decreased sporulation.[1] Polygenic and monogenic resistance can act together to reduce the severity of NCLB.

A combination of rotating away from corn for one year followed by tillage is recommended to prevent development of the disease. Rotating to a non-host crop can reduce NCLB levels by allowing corn debris on which the fungus survives to decompose before corn is planted again. Burying residue may help reduce infection levels by decreasing the amount of primary inoculum available in the spring. In no-till and reduced tillage fields with a history of NCLB, a two-year rotation away from corn may be necessary.[1,3]

A general recommendation for corn foliar diseases caused by fungal pathogens is to consider a fungicide application if a fungal disease is present on the third leaf below the ear leaf or higher on 50% of the plants at tasseling and the product is susceptible to the disease.[4] Fields should be scouted around V14 growth stage (prior to tassel emergence) to determine disease pressure. Fungicides applied from tasseling to early silking tend to have the best possibility for economic return.[1,3] Before deciding to apply fungicides, consider costs involved as well as predicted weather conditions.

Sources: [1] Salgado, J.D., Schoenhals, J., and Paul, P.A. 2016. Northern corn leaf blight. Ohio State University Extension. PLPATH-CER-10. http://ohioline.osu.edu/. [2] Robertson, A. 2009. Goss's wilt and northern corn leaf blight showing up in Iowa. [3] Wise, K. 2011. Northern corn leaf blight. Purdue University Extension. BP-84-W. http://www.extension.purdue.edu/. [4] Robertson, A., Abendroth, L., and Elmore, R. 2011. Yield responsiveness of corn to foliar fungicide application in Iowa. Integrated Crop Management. Iowa State University. https://crops.extension.iastate.edu/corn/production/foliarfungicide.html. Web sources verified 06/23/18