



Agronomic Spotlight

Northern Corn Leaf Blight

- Northern corn leaf blight (NCLB) is caused by the fungus *Exserohilum turcicum*.
- This disease can be found in corn growing areas with humid climates and may cause significant yield losses when moderate temperatures (65 to 85° F) and extended periods of dew prevail.
- Yield losses of more than 30% have been reported when lesions are present on upper leaves at silking.
- In addition to grain losses, infected plants may have reduced forage value and be predisposed to stalk rots.

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. Symptoms can progress rapidly after anthesis. On severely infected plants, almost all of 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 as long, chlorotic streaks, which can be mistaken for Stewart's wilt.¹

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 four single dominant genes: *Ht1*, *Ht2*, *Ht3*, and *HtN*. Resistance conferred by *Ht1*, *Ht2*, and *Ht3* is expressed as chlorotic lesions with decreased sporulation. Resistance conferred by *HtN* is expressed as an extended period between initial infection and when spores are produced, and fewer lesions. 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 the corn debris on which the fungus survives to decompose before corn is planted again. Burying residue may help reduce infection levels by

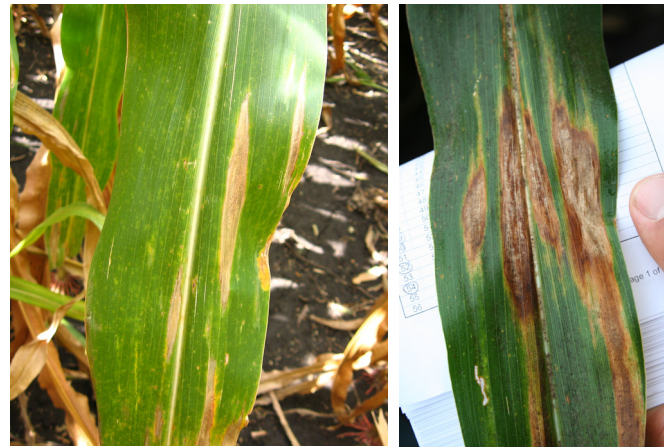


Figure 1. Elliptical or cigar-shaped lesions typical of northern corn leaf blight.

decreasing the amount of primary inoculum available in the spring. In no-till and reduced tillage fields that have a history of NCLB, a two-year rotation away from corn may be necessary.

Thresholds for fungicide use for NCLB do not exist; however, it is especially important to protect the ear leaf and those above it as corn plants enter reproductive stages of growth. 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. Before deciding to apply fungicides, consider costs involved as well as predicted weather conditions.

For additional agronomic information, please contact your local seed representative. Developed in partnership with Technology, Development, & Agronomy by Monsanto.

Sources:

¹ Compendium of Corn Diseases. 1999. APS Press. ² Lipps, P.E. and Mills, D. Northern corn leaf blight. Ohio State University Extension. AC-20-02. <http://ohioline.osu.edu/>. Robertson, A. 2009. Goss's wilt and northern corn leaf blight showing up in Iowa. Iowa State University Extension. <http://www.extension.iastate.edu/>. Wise, K. 2011. Northern corn leaf blight. Purdue University Extension. BP-84-W. <https://www.extension.purdue.edu/>. Web sources verified 05/28/15.

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