

Managing Northern Corn Leaf Blight

Disease Cycle

The northern corn leaf blight (NCLB) fungal pathogen overwinters as conidia (external spores) and mycelia (vegetative part of a fungus) in and on previously infected corn residue. During the warm, moist weather of early summer, new conidia are produced on the old residue. Wind and rain then spread the conidia 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. Disease development is favored by heavy dew, frequent rainfall, high humidity, and moderate temperatures. The infection process occurs when water is present on the leaf surface for 6 to 18 hours and the temperature is between 65° and 80°F.¹

Symptoms and Severity

NCLB lesions are typically gray-green to tan colored, elliptical or cigar-shaped, and one to six inches in

length (Figure 1).² As lesions mature, they turn tan and develop distinct dark areas of fungal sporulation giving the lesions a dirty appearance. Lesions first appear on lower leaves and the disease spreads into the upper canopy as the season progresses. On severely infected plants, almost all leaves could 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 small chlorotic lesions.²

Yield losses of more than 30% have been reported when NCLB lesions are present on upper leaves prior to or at tasseling.^{1,2,3} Under conditions favorable for NCLB, yield losses from infections beginning before and at tasseling can be as high as 50%. Yield losses are minimal when leaf damage is moderate or delayed until six weeks post-silking.²



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

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Management

The primary management strategy to reduce the incidence and severity of NCLB is planting resistant products. Two types of resistance to NCLB exist in corn. Polygenic (multiple gene) resistance is expressed in plants 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 a single dominant gene and can be expressed as chlorotic lesions with decreased sporulation.² Monogenic and polygenic resistance can act together to reduce the severity of NCLB.

Protecting the ear leaf and those above it as corn plants enter reproductive growth stages is especially important. Fields should be scouted prior to tassel emergence, around the V14 growth stage, to determine disease pressure. Economic returns are more likely to be realized when fungicides are applied from tasseling to early silking. 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

Consider costs and predicted weather conditions before deciding to apply fungicides. Delaro[®] 325 SC fungicide is labeled for NCLB and can be sprayed when the disease first appears and for a 7- to 14-day interval where necessary. To learn more about Delaro[®] fungicide, please visit <https://www.cropscience.bayer.us/products/fungicides/delaro> and contact your retailer.

A combination of rotating away from corn for one year followed by tillage is recommended to prevent development of NCLB. Rotating to a non-host crop can reduce disease 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 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.

Sources (web sites verified 4/30/2020)

- ¹ Robertson, A. 2009. Goss's wilt and northern corn leaf blight showing up in Iowa. Iowa State University.
- ² 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/>.
- 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>.

Legal Statements

ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. Performance may vary, from location to location and from year to year, as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible and should consider the impacts of these conditions on the grower's fields.

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