

Northern Corn Leaf Blight

Disease Facts

- Caused by *Exserohilum turcicum* (previously classified as *Helminthosporium turcicum*), a fungus found in humid climates wherever corn is grown.
- Survives in corn debris and builds up over time in high-residue and continuous corn cropping systems.
- Favored by heavy dews, frequent showers, high humidity, and moderate temperatures.
- Spores are spread by rain splash and air currents to the leaves of new crop plants in spring and early summer. Spores may be carried long distances by the wind.
- Infection occurs when free water is present on the leaf surface for 6 to 18 hours and temperatures are 65° to 80° F.
- Infections generally begin on lower leaves and progress up the plant, but infections may begin in the upper plant canopy when spore loads are high.
- New Northern Corn Leaf Blight (NCLB) lesions can produce spores in as little as one week, allowing NCLB to spread much faster than many other corn leaf diseases.



Field showing northern corn leaf blight damage

- Yield losses may be caused by:
 - decreased photosynthesis resulting in limited ear fill
 - harvest losses if secondary stalk rot infection and stalk lodging accompany loss of leaf area.
- If ear development outpaces disease progression, yield losses will be lower.

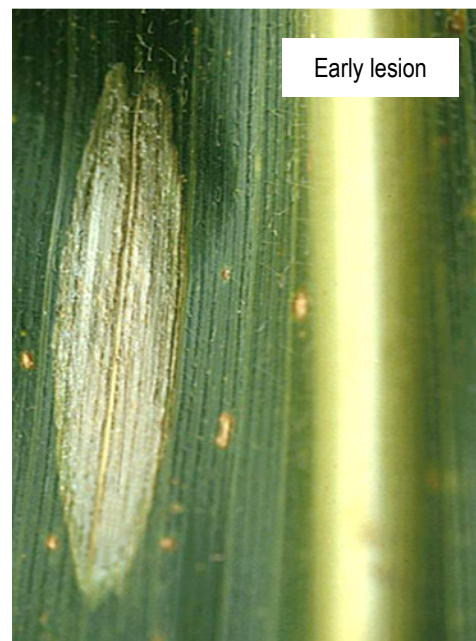
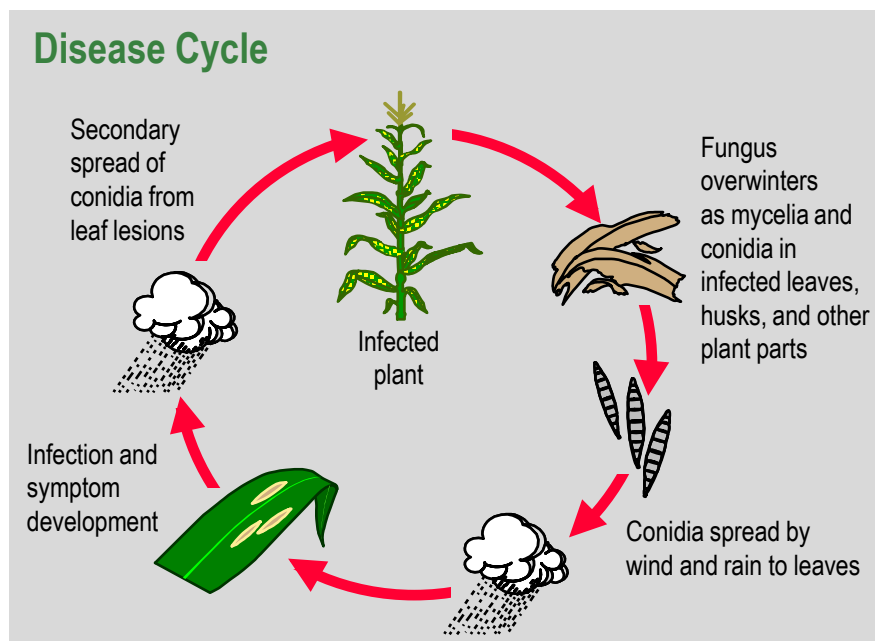
Impact on Crop

- Infections by NCLB can occur at any growth stage, but plants are more susceptible after pollination.
- Yield losses are most severe when NCLB infects corn plants early and progresses to the upper plant leaves by pollination or early ear fill.

Symptoms – Early

- Early lesions are gray-green and elliptical, beginning 1 to 2 weeks after infection.
- In a susceptible reaction, fungal sporulation will begin within a few days.

Disease Cycle



Early lesion

Symptoms – Fully Developed

- Lesions become pale gray to tan as they enlarge to 1 to 6 inches or longer .
- Distinct cigar-shaped lesions unrestricted by leaf veins make NCLB one of the easiest diseases to identify.
- Under moist conditions, lesions produce dark gray spores, usually on the lower leaf surface, giving the lesions a "dirty" appearance.
- As many lesions enlarge and coalesce, entire leaves or leaf areas may be covered.
- Heavy blighting and lesion coalescence give leaves a grey/burned appearance.



Management

- Crop rotation to reduce previous corn residues and disease inoculum.
- Tillage to help break down crop debris and reduce inoculum load.
- Fungicide application to reduce yield loss and improve harvestability.
- Consider hybrid susceptibility, previous crop, tillage, field history, application cost, corn price.



Corn foliar fungicides and efficacy against NCLB. Adapted from Wise, 2014.

Fungicide	Active Ingredients	Chemical Group	NCLB Efficacy
Approach®	picoxystrobin	methoxy-acrylates	very good
Domark®	tetraconazole	triazoles	no data
Headline® AMP	pyraclostrobin + metconazole	Methoxy-carbamates & triazoles	very good
Headline® EC Headline® SC	pyraclostrobin	methoxy-carbamates	very good
Quadris®	azoxystrobin	methoxy-acrylates	good
Quilt® Quilt® Xcel	propiconazole & azoxystrobin	triazoles & methoxy-acrylates	very good
Stratego® YLD	prothioconazole & trifloxystrobin	triazoles & oximino-acetates	very good
Tilt®	propiconazole	triazoles	good

Hybrid Selection

- Pioneer researchers select for resistant parent lines and hybrids in multiple environments where NCLB pressure is consistently high year after year.
- Pioneer hybrids are rated for NCLB resistance and ratings made available to customers.
- Most hybrids are rated from "3" to "6" on Pioneer's 1 to 9 scale, where 9 indicates highly resistant.
- Growers should choose hybrids rated a "5" or "6" for fields at risk of NCLB infection.
- Two types of resistance are available in hybrids:

Multigenic Resistance	Single Gene "Ht" resistance
non-race-specific	race-specific
more stable over time	may be overcome in time
reduces number of lesions on a leaf	delays spore production, limits sporulation

Wise, K. 2014. Fungicide efficacy for control of corn diseases. Purdue Extension Publication BP-160-W. Purdue University, West Lafayette, Indiana. <https://www.extension.purdue.edu/extmedia/BP/BP-160-W.pdf>

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