

## Mid-Season Corn Disease Development

Healthy corn fields with the most promising yield potential at tasseling stage are not exempt from leaf, ear, and stalk diseases. Storms, overwintering inoculum, and temperatures influence what can infect corn between the seedling stage and grain fill. Crop management decisions are based on the identification and possible resolution of mid-season corn issues listed in the table below.

### Gray Leaf Spot



Figure 1. Gray leaf spot lesions.

#### WHAT YOU SEE

Small necrotic spots with halos turn into rectangular blocks running parallel to leaf veins.

#### WHEN TO SCOUT

Typically, two weeks prior to pollination and two weeks after. GLS has a 2-week incubation period after infection.

#### CAUSE

Fungus

#### HOW YOU CAN MANAGE

**In-season:** Fungicide application VT-R1 or earlier if lesions appear early in the season.<sup>1</sup>

**Next season:** Selection of corn products with good (or improved) GLS ratings is important in fields with a history of GLS pressure. Crop rotation.

### Northern Corn Leaf Blight (NCLB)



Figure 2. Northern corn leaf blight.

#### WHAT YOU SEE

Cigar-shaped tan-gray lesions. May turn darker during sporulation after periods of high moisture.

#### WHEN TO SCOUT

Typically, two weeks prior to pollination and two weeks after

#### CAUSE

Fungus

#### HOW YOU CAN MANAGE

**In-season:** Fungicide application VT-R1.<sup>2</sup>

**Next season:** Selection of corn products with excellent NCLB ratings is important in fields with a history of the disease. Crop rotation

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## Fusarium



Figure 3. *Fusarium* crown rot.  
Photo courtesy R.L. Croissant,  
Bugwood.org

### WHAT YOU SEE

Corn with stunted growth and leaf yellowing or purpling in areas of stress, not fully recovered or killed from seedling disease, mild to moderate crown deterioration (tan to brown coloration).

### WHEN TO SCOUT

Infection occurs at the seedling stage during stressful conditions. May not show symptoms until later in the season after a dry period.

Any stress at grain fill will compromise stalk and crown health, allowing the pathogen to infect.

### CAUSE

Fungus (several species of *Fusarium*)

### HOW YOU CAN MANAGE

**In-season:** Cultivation to mound soil around base of plants to support nodal development.<sup>3</sup>

**Next season:** A seed treatment to prevent seedling diseases.

## Southern Rust



Figure 4. Southern rust of corn.

### WHAT YOU SEE

Lesions develop after storms move up from the south with wet and humid weather. Circular to oval circles with light green/yellow halos. Orange to red pustules develop on leaf surfaces.

### WHEN TO SCOUT

Typically, two weeks prior to pollination and throughout grain fill. Pustule formation can occur earlier under ideal conditions, especially in late-planted corn.

Infection before flowering causes the most risk of yield loss.

### CAUSE

Fungus

### HOW YOU CAN MANAGE

**In-season:** Apply foliar fungicides soon after the first few pustules are observed. Multiple sprays may be needed in severely infected fields, but fungicide should not be applied on corn within two weeks of black layer. Fungicide should contain dual modes of action, including a strobilurin (Trifloxystrobin) and triazole (Prothioconazole).

**Next season:** Selection of corn products with excellent tolerance to Southern rust is important in areas at high risk for severe disease outbreaks. Early planting dates to minimize the window in July where storms can carry the fungus from the south and temperatures are high and humid.<sup>4</sup>

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## Bacterial Leaf Streak



Figure 5. Bacterial leaf streak.

### WHAT YOU SEE

Translucent, water-soaked streaks between veins, progress to longer yellowish/necrotic streaks and may coalesce.

### WHEN TO SCOUT

Any stage of corn growth, observed as early as mid-June.<sup>5</sup>

### CAUSE

Bacteria

### HOW YOU CAN MANAGE

**In-season:** Sanitize equipment between fields.

**Next season:** Tillage will help bury residue. Check for possible differences between corn products. Control weedy field edges as the pathogen is known to infect other grass species.

## Goss's Wilt



Figure 6. Goss's wilt.

### WHAT YOU SEE

Water-soaked lesions with wavy margins, freckles inside lesions, 'ooze' or shiny appearance.

### WHEN TO SCOUT

Often spreads after silking but can be earlier with temperatures greater than 80°F and storms causing foliar wounds and splashing.<sup>6</sup>

### CAUSE

Bacteria

### HOW YOU CAN MANAGE

**In-season:** None

**Next season:** Selection of corn products with improved ratings for Goss's wilt is crucial for fields with a known history of the disease, rotation away from corn, grassy weed control, tillage to bury corn residue.

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## Stewart's Wilt



Figure 7. Stewart's wilt, early phase.

### WHAT YOU SEE

Flea beetle (vector) feeding appears as scratches and scrapes on leaves. Early phase of blight appears as bleached leaf streaks running the length of the leaf. Internal tissues can be discolored and ooze bacteria from the cut surface.

### WHEN TO SCOUT

Symptoms can be found at all stages; however, the second phase of blight does not usually kill plants.<sup>7</sup>

### CAUSE

Bacteria vectored by flea beetles.

### HOW YOU CAN MANAGE

**In-season:** Scout soon after emergence and look for bleached leaf streaks and flea beetles. Foliar insecticides can be applied when there are greater than 6 beetles per 100 plants (susceptible corn products) or 25% of plants have severe feeding damage with 2 beetles/plant (tolerant corn products).<sup>8</sup>

**Next season:** Treated seed or in-furrow insecticides can protect young corn plants from flea beetles.

## Sources (verified 7/12/19)

<sup>1</sup> Jardine, D. 2016. Deciding whether to spray for gray leaf spot. No-till Farmer.

<https://www.no-tillfarmer.com/articles/5862-deciding-whether-to-spray-for-gray-leaf-spot>

<sup>2</sup> Wise, K. 2016. Northern corn leaf blight. Purdue University Extension.

<sup>3</sup> Munkvold, G.P. 2002. Crown rot symptoms common in corn. Iowa State University. Integrated Crop Management News. 7-1-2002.

<sup>4</sup> Paul, P. 2017. Managing corn rust with fungicides. Agronomic Crops Network. Ohio State University Extension.

<https://agcrops.osu.edu/newsletter/corn-newsletter/2017-24/managing-corn-rust-fungicides>.

<sup>5</sup> Jackson-Ziems, T., Korus, K., Adesemoye, T., and Van Meter, J. 2016. Bacterial leaf streak of corn confirmed in Nebraska, other Corn Belt states. University of Nebraska-Lincoln.

<sup>6</sup> Robertson, A. 2009. Goss's wilt and northern corn leaf blight showing up in Iowa. Iowa State University.

<https://crops.extension.iastate.edu/cropnews/2009/07/gosss-wilt-and-northern-corn-leaf-blight-showing-iowa>.

<sup>7</sup> Stack, J. and Jackson, T. Stewart's wilt. University of Nebraska.

<sup>8</sup> Phillips, B. and Goldy, R. 2017. Stewart's wilt in sweet corn 2017. Michigan State University.

[https://www.canr.msu.edu/news/stewarts\\_wilt\\_in\\_sweet\\_corn](https://www.canr.msu.edu/news/stewarts_wilt_in_sweet_corn).

## 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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