Goss’s bacterial wilt and leaf blight of corn, commonly known as Goss’s wilt, is caused by the bacterium *Clavibacter michiganensis* subsp. *nebraskensis* (Cmn). It was confirmed in Indiana in 2008, and is an annual problem in field corn, popcorn, and sweet corn.

The bacteria overwinter on host debris and infect susceptible hosts when rain or irrigation water splash bacteria on to host tissue. Crop hosts include both corn and sorghum. Several common grass weeds can also host the bacterium including shattercane and four different foxtail species: giant foxtail, yellow foxtail, green foxtail, and bristly foxtail.

Recent research at Purdue University has found that the weedy grasses johnsongrass and large crabgrass, as well as the cover crop annual ryegrass, are also hosts of this bacterium. Notably, no broadleaf weed species have yet to be found as hosts. The common cover crop, cereal rye, is also not a host. Barnyardgrass was previously reported as a host for the bacteria, but was not confirmed as a host in our research. It is important to be able to identify the presence of Goss’s wilt on weedy grasses and cover crops to reduce the amount of the causal bacteria available to infect corn.

This publication describes:

1. How to identify Goss’s wilt on various grass hosts
2. How to manage the disease, given the newly discovered host range
The publication BP-81-W “Goss’s Bacterial Wilt and Leaf Blight” describes the symptoms and conditions that favor disease development on corn. In general, the symptoms of the disease on corn include large, water-soaked lesions toward the leaf margins with characteristic brown-black “freckles” (Figures 1 & 2). Other grass hosts that are infected by the bacteria also develop the characteristic freckles, but they also develop additional host-specific symptoms that are important for correct identification.

**Annual Ryegrass (Lolium multiflorum)**

Symptoms of Goss’s wilt are expressed as red-brown necrotic lesions on the common cover crop annual ryegrass. When the infection becomes severe, dark brown freckles appear along the leaf veins, preceding the advancing lesion (Figure 3).

**Large Crabgrass (Digitaria sanguinalis)**

Large crabgrass exhibits dark green freckles when infected by the bacterium that causes Goss’s wilt. These freckles are typically embedded in a water-soaked lesion. Unlike the lesions on giant foxtail, lesions on large crabgrass are a crimson-red color, or simply appear light green (Figure 4).

**Giant Foxtail (Setaria faberi)**

Infected leaves of giant foxtail appear water-soaked and brown. Dark brown freckles are typically found on the edge of, or within, the leaf (Figure 5). All other susceptible foxtail species (yellow, green, bristly) produce similar symptoms upon infection.

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**Figure 3 (Above):** Various symptoms of Goss’s wilt on annual ryegrass: **A)** red-brown necrotic lesions, **B)** tan necrosis preceding the advancing lesion, and **C)** dark brown freckles along the leaf vein.

**Figure 5 (Right):** Symptoms of Goss’s wilt on giant foxtail: **A)** dark brown freckles preceding advancing lesion, and **B)** freckles within water-soaked leaf tissue.
Johnsongrass  
(Sorghum halepense)

Leaves of johnsongrass that have Goss’s wilt display dark green to brown freckles. These freckles can occasionally be red in color and tend to be present within the lesion. Red lesions can often be seen on the leaves of infected johnsongrass, and lesions remain small and confined. (Figure 6). Symptoms on johnsongrass are similar to those on shattercane.

![Figure 6: Characteristic red-brown freckles within leaf lesions in johnsongrass with Goss’s wilt.](image)

Management:

General management recommendations for Goss’s wilt in corn are outlined in the publication BP-81-W “Goss’s Bacterial Wilt and Leaf Blight”, and include selecting hybrids with resistance to the disease, and using practices to encourage residue decomposition, such as tillage and crop rotation.

Weed management is another important tool for managing Goss’s wilt. If susceptible weeds survive season after season, they provide a home for bacteria and can serve as a source to infect corn. Management practices include:

- Using pre-emergence herbicides to help ensure that weeds do not emerge to become infected. There are many herbicides for grass control in corn and soybeans.
- Applying post-emergence herbicides to help reduce the amount of host debris.

**Note:** Since the bacteria can survive on the dead tissue of previously infected weeds, timely post-emergence treatments (when weeds are small), is necessary to reduce the amount of debris in fields.

- The cover crop annual ryegrass should not be used in fields with a history of Goss’s wilt. Non-host cover crops, such as cereal rye, could be used instead.

Goss’s wilt is often difficult to diagnose on corn, and is more difficult to diagnose on weedy and cover crop species. If you are unsure of the diagnosis, it is important to send samples to a plant diagnostic lab to determine the cause of the symptoms before making management decisions. More information about submitting samples can be found at http://www.ppdl.purdue.edu/.

**Reference to products in this publication is not intended to be an endorsement to the exclusion of others that may be similar. Persons using such products assume responsibility for their use in accordance with current directions of the manufacturer.**

**Find Out More**

Other Field Crop Disease Updates are available from Purdue Botany and Plant Pathology [www.btny.purdue.edu](http://www.btny.purdue.edu)  
Publications on field crop diseases are available from the Purdue Extension Education Store [www.the-education-store.com](http://www.the-education-store.com)

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