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DISEASE FACTS

- Goss's wilt is caused by a bacterial pathogen, *Clavibacter michiganensis* subsp. *nebraskensis*, that overwinters in residue of corn and several other grasses.
- Historically, damage to corn by Goss's wilt had been confined mostly to the Great Plains states.
- In recent years, significant crop damage has also been reported in central Corn Belt states (Figure 1).
- Disease severity can range from minor injury to devastating damage resulting in grain yield losses approaching 50% (Harveson, 2011).

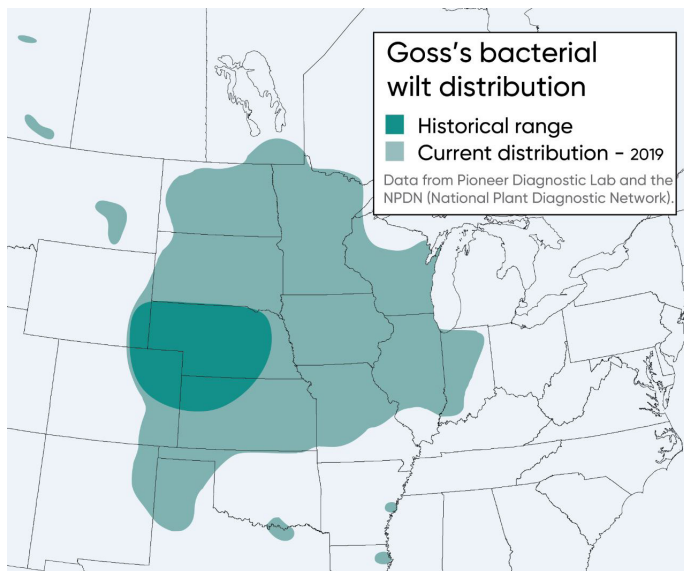


Figure 1. Historical and current distribution of Goss's wilt in North America.

CONDITIONS FAVORING DISEASE DEVELOPMENT

- Bacteria enter through wounds in plant tissue that can be a result of wind, sandblasting, hail, and other abiotic factors. Insects are not known to be a vector of this disease.
- Plants may be infected at any stage of development.
- Wet weather and high humidity encourage infection. Leaf wetness is required for infection to occur and the bacteria spread most readily in humid weather.
- Alternate hosts of *Clavibacter michiganensis* subsp. *Nebraskensis* include green foxtail, barnyardgrass, shattercane, etc.
- There are two phases of the disease:
 - Systemic wilt
 - Foliar blight (later in season)



Field showing severe symptoms of Goss's wilt: loss of most green leaf area and premature death of some plants.

IDENTIFICATION AND SYMPTOMOLOGY

Systemic Wilt Phase

- Although it is less common than the foliar phase, it can cause large losses in susceptible hybrids.
- Symptoms of systemic wilt are caused by bacteria inhabiting and plugging the plant vascular system of the stalk.
- As a result, plants can exhibit symptoms that are often confused with drought stress. Plants will wilt and may die prematurely.
- Vascular bundles may have orange coloration that eventually turns brown to black after further disease development.
- A slimy stalk rot can be observed in seedlings with less developed vascular systems.

Vascular bundle discoloration due to hindrance of vascular system by *Clavibacter michiganensis* subsp. *Nebraskensis*.

Photo courtesy of T. Jackson, University of Nebraska, Lincoln.



Foliar Blight

- Long tan lesions with water soaked margins appear on the edges of leaf blades. The orientation of lesions follow the leaf veins, but is not restricted by them.
- Black flecks or freckles appear within the lesions. Unlike fungal pathogens, these freckles cannot be rubbed off.
- Early in the morning, an ooze or exudate may be visible. When this dries, it creates a shiny sheen.
- Foliar lesions may progress to foliar blighting, killing large amounts of the canopy and predisposing plants to stalk rots.
- Goss's wilt can be easily confused with other foliar diseases, like Stewart's Wilt, or abiotic stresses.



Goss's Wilt vs. Stewart's Wilt

- For Stewart's wilt, the presence of the vector (the flea beetle) accompanies the disease.
- The black fleckles that are characteristic of Goss's wilt are not found with Stewart's wilt.



MANAGEMENT CONSIDERATIONS

Genetic resistance

- Useful levels of resistance to Goss's wilt have been identified in certain parent lines and hybrids. Resistant hybrids are the primary means for minimizing yield losses to Goss's wilt.
- Corn hybrids are rated for resistance relative to known susceptible and resistant hybrids using a 1 to 9 rating system (1 = susceptible, 9 = highly resistant).
- Your local sales professional can assist in identifying hybrids with Goss's wilt resistance and other traits needed for optimum production potential on your fields.

Cultural Practices

- *Clavibacter michiganensis* subsp. *nebraskensis* overwinters in corn debris, so production practices such as tillage and crop rotation, that reduce the amount of corn residue on the surface will reduce bacteria populations
- Control of grassy weeds like green foxtail, barnyard-grass, and shattercane prevent the bacteria from persisting in alternate hosts.

Prevention

- Harvest and till affected fields last and clean equipment to avoid spreading the bacteria to uninfected locations.



Fungicides are NOT Effective

- *Clavibacter michiganensis* subsp. *Nebraskensis* is a bacteria and not a fungus. This means that fungicides will not be effective at controlling this disease.

REFERENCE

Harveson, R. M. 2011. A Historical Perspective of Goss' Wilt in Nebraska. Retrieved from University of Nebraska-Lincoln Plant Pathology Department: <https://plantpathology.unl.edu/historical-perspective-goss%E2%80%9999-wilt-nebraska>

The foregoing is provided for informational use only. Please contact your sales professional for information and suggestions specific to your operation. Product performance is variable and depends on many factors such as moisture and heat stress, soil type, management practices and environmental stress as well as disease and pest pressures. Individual results may vary. Vol. 11 No. 34 August 2019