

The Crop Advisor

Eastern Iowa Crop Report

August 11 2010

Amie Bandy CCA, Oxford, Iowa 319-530-0529

Iowa update:

Today is Wednesday August 11th. Our Year has been a challenging one. In a year when it has not been unusual to get 8 inches of rain in an afternoon or 30 inches of rain in a month I would have to say this has been a challenging year yet to become more so. In our corn I have seen a whole lot of tip back due to ill timed rain events during pollination. This leached a lot of needed potassium and Nitrogen that would have completed the upper portion of the ear. 2 inches of grain loss in some hybrids is not an unusual finding.

Some Quick Observations;

There is currently a lot of visual nutrient deficiencies being seen as well as a lot of tissue analysis coming back where the fields appear to have enough nutrients yet where the tissue analysis suggest that we are severely lacking in many of the needed nutrients to produce grain fill.

Disease has now begun to run rampant in my part of the world. Northern Corn Leaf blight has begun to make some fields melt if they are susceptible hybrids and the grower chose to not spray fungicide. With the added nutrient deficiencies that we are seeing this year the melt down has actually started a month earlier than last year. Last year the first field that I saw actually begin to melt from Northern Corn Leaf Blight happened at the end of August. This year my first field to melt was a highly susceptible hybrid that began the down ward spiral a week ago. This field was not side dressed and was showing visible nitrogen deficiencies at the time.

The next significant challenge each of us in my area will face is with Goss's Wilt. What is Goss's Wilt? Well Goss's Wilt is a Bacterial disease of the corn plant that can make a corn plant wilt in days. The Plants currently appear to be dying in about a week once the Ear leaf is affected. A couple of weeks ago there appeared to be some lesions on the husks that many of us could not identify. Some thought it was Northern but as we have continued to watch this disease progress we have found out that it is Goss's Wilt.

Many may ask as I did will our fungicide application keep this from running rampant in our fields. The answer is no. Goss's Wilt is not a fungus but a bacterium. None of our current fungicides have the ability to stop Goss's Wilt. The only thing that may help is a product that is a Natural Bactericide and Fungicide. They have seen this product work in Nebraska and it appears to be taking 10 days to check the disease.

Are there other diseases currently present? Yes. Every disease that the corn plant can have at this point is visible. Grey Leaf Spot, Southern Corn Rust, Northern Corn Leaf Blight, Stewarts Wilt, Goss's wilt, Eye Spot and Anthracnose. I currently have not found a field that is lacking in infection of some kind.

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Soybeans;

Soybeans have begun to pod fill. This means that the last trifoliolate has begun to emerge. Why is this significant? Because as that last trifoliolate emerges that soybean plant like the corn plant once it begins to kernel fill is now no longer protecting the leaves. As that last trifoliolate emerges we are no seeing large fields of beans starting to fall due to sudden death syndrome.

The beans being affected by Sudden Death were inoculated early in the season when the seeds or seedling set in cool wet conditions. So, the inoculums have been there for a while yet the disease does not show up until that plant wants to pod fill or when the last trifoliolate emerges. Some of our earliest planted beans are now at that point of pod fill and those are currently showing the disease the worst.

Soil Conditions;

Wet and Saturated in most of the area.

Insects;

I have seen very few aphids in the beans at this time. I have begun to see some aphids and stink bugs in the corn but currently not at treatable levels. I have noticed some Western Bean cutworms feeding as well as some Ear Worm.

At this point I have no insects that are currently at treatable levels. Earlier in the season we did treat for the "loopers" or clover worm larvae that were feeding on the beans but currently I have not seen anything that currently needs our attention. The Bean Leaf Beetle may come in but at this point They are not at levels that need to be addressed in the fields that I have been in.

Goss's Wilt and Northern Corn Leaf Blight Showing Up in Iowa

By Alison Robertson, Department of Plant Pathology

Goss's wilt

This past week I have received several more reports of Goss's wilt. Reports of the disease come from south of Highway 3, North of I-80 and east of I-35. For the most part, it seems that the disease is occurring in random fields; however this past week I visited a 200 acre field in Boone County in which many of the plants were infected. Many of the plants had extensive leaf blight occurring on the top two to three leaves of the canopy (Figure 1). Most of the lesions occurred around holes made by hail.

Goss's wilt lesions are large, have wavy margins and are brown, yellow, gray in color. They may be elliptical or V-shaped and usually extend down a leaf vein (Figure 2). The tissue neighboring the lesion is water soaked. It is common for the bacteria that cause this disease to ooze out onto the leaf surface, so the lesions often have a shiny appearance. Most characteristic though, are the dark green "freckles" that occur within the lesion (Figure 3). In the Plant Disease and Insect Clinic, we check for "streaming" to diagnose a bacterial disease. I did this in a glass of water in my office (Figure 4).

Goss's wilt disease can progress rapidly under the right conditions (warm 80 degree F and wet) resulting in extensive leaf blight and death of the canopy.

Since this is a bacterial disease, a fungicide application will not control the disease. The pathogen is able to survive in infested surface crop residue for 10 months. The recommended management practices include rotation to a non-host crop, any type of tillage that buries the infested residue and helps with decomposition, and tolerant hybrids.

An [excellent review of this disease](#) is available from University of Nebraska, Lincoln.



Figure1.
Leaf blight symptoms of Goss's wilt



Figure2.
Characteristic lesions of Goss's wilt



Figure 3.
Characteristic freckling seen on Goss's wilt lesion



Figure 4.
Oozing caused by Goss's wilt

Northern Corn Leaf Blight

Northern corn leaf blight (NCLB) is also making an appearance. This disease could be mistaken for Goss's wilt because it also causes large elliptical lesions on corn leaves. Since Northern corn leaf blight is caused by a fungal pathogen, *Exserohilum (Helminthosporium) turcicum*, a fungicide could be used to manage this disease.

Northern corn leaf blight lesions are elliptical or cigar-shaped, gray-green to tan in color, with a distinct margin between the infected and healthy tissue (Figure 5). Under high humidity they look "dirty" due to large numbers of spores produced on the surface of the lesion (Figure 6).

Infection is favored by cool (65-80 degree F), wet conditions. Free water needs to be present on the leaf surface for 6-18 hours for infection to occur. Lesions develop within 7-12 days.

Yield losses of over 30 percent have been reported if the disease is present on the upper leaves of the plant at the silking. Losses are minimal if disease development is delayed until dent stage. Like other foliar pathogens, Northern corn leaf blight predisposes corn to stalk rot.

Hybrids with resistance to NCLB are available so check with your seed dealer. Rotation to soybean or alfalfa can be beneficial as well since the pathogen survives in infested crop debris. What about now? A fungicide application may be an option; however, there are no tried and tested thresholds available. Thus far I have heard of only one field in which several lesions were present on the ear leaf. Before making the call on a fungicide application, be sure to scout to determine disease pressure in the field. Then consider hybrid susceptibility to disease, current and predicted weather conditions, previous cropping history and economics (cost of fungicide plus application, price of grain, drying costs, standability).



Figure 5.
**Cigar-shaped lesions of northern
corn leaf blight (Credit G. Coates)**



Figure 6.
**Sporulation on the surface of a
northern corn leaf blight lesions**

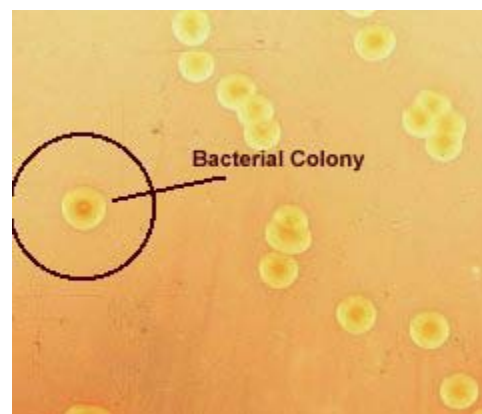
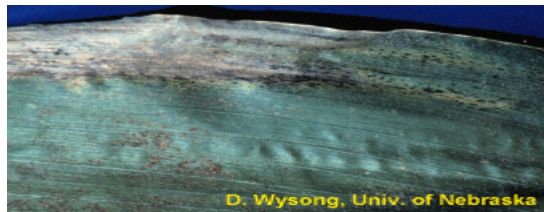
Alison Robertson is an assistant professor of plant pathology with research and extension responsibilities in field crop diseases. Robertson may be reached at (515) 294-6708 or by email at alisonr@iastate.edu.

Goss' Bacterial Wilt (*Corynebacterium nebraskense*) will infect corn leaves at any stage of plant growth. The blighted area will be dark green to black in color, water-soaked, with angular wavy edges. Spots have a greasy appearance. As spots enlarge, they coalesce forming large lesions that turn brown. Droplets of bacterial exudate may appear on the surface of diseased tissue. The droplets dry, leaving a crystalline substance that glistens in the sunlight.

Disease inoculum overwinters in infected corn leaves, stalks, cobs and ears on or near soil surface. The bacterium survives well in irrigation water. Bacteria penetrate well into leaves through the stomata. Infection is aided by injury to plants from hail wounds, sand blasting, severe rainstorms, and wind. Disease is spread by splashing water and wind blowing infected residue.

Goss' Wilt occurring in seedlings can be lethal and lead to plant death. While severe to seedlings, infection rarely occurs until later in the season, causing the leaf wilt phase. Losses of 50% have occurred in susceptible hybrids. Planting resistant hybrids, practicing crop rotation, and burial of infected residue all contribute to preventing Goss' Wilt in corn

Goss' bacterial wilt and blight (leaf freckles and wilt)

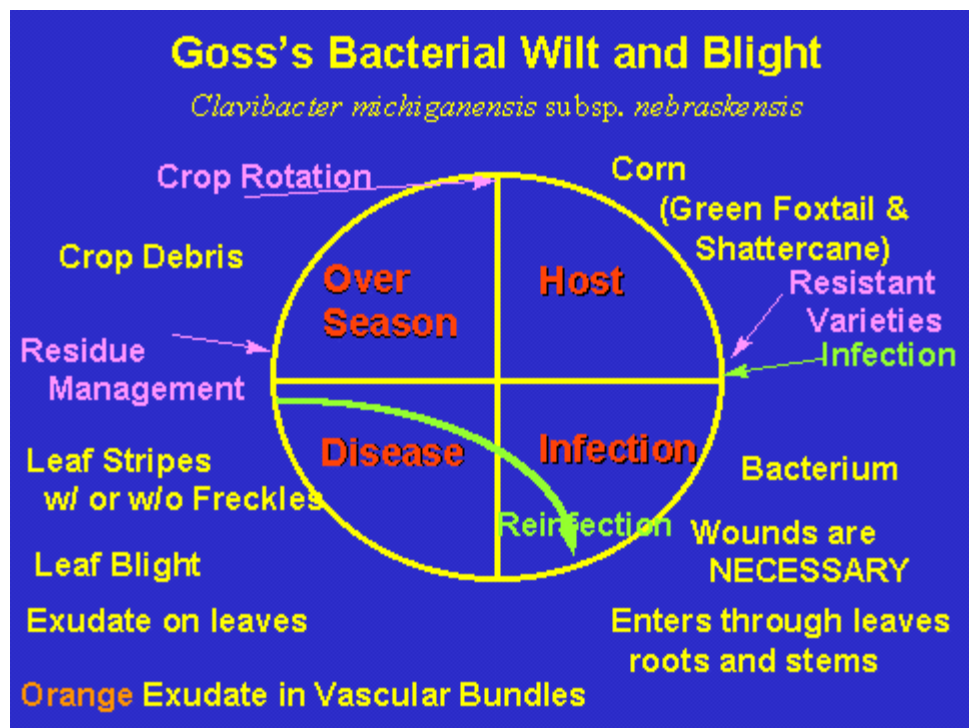


(Additional images)

Goss' bacterial wilt and blight (leaf freckles and wilt)

This disease is caused by the bacterium *Clavibacter michiganense* subsp. *nebraskensis* (Vidaver & Mandel) Davis *et al.* Several strains of the pathogen are known to exist. Goss' wilt is a true Nebraska native. It was first discovered on corn in two south central Nebraska counties in 1969. Since then it has been identified across the entire U.S. Corn Belt. Hosts of the bacterium include corn, green foxtail, barnyard grass and shattercane. Artificial inoculation has also been successful on grain sorghum, eastern gamagrass, Sudangrass, sugarcane and teosente.

C. michiganense subsp. *nebraskensis* over seasons on crop debris and in and on corn kernels. The bacterium can also survive in irrigation water during the growing season. Infection occurs directly through host tissue or through wounds caused by sandblasting, hail, heavy rain or wind. Leaves, stems and roots serve as infection sites. Plants may become infected at any stage of development.



Symptoms

A variety of symptoms are produced on corn. Streaks of water soaked tissue develops parallel to the veins. They are yellow to grayish green and wavy with irregular margins. Stripes may be reddish on some hybrid and may be confused with symptoms of Stewart's wilt. These lesions are caused by a toxin produced by the bacterium. The most characteristic of the disease is leaf freckling which commonly develop in streak lesions. Small dark green to black water soaked spots (freckles) develop along the veins. The spots appear greasy. A sticky exudate also forms in the streak. The exudate eventually dries leaving a glistening residue on the leaves. Leaf lesions also enlarge and coalesce, blighting large areas of tissue.

A vascular wilt is also associated with Goss' wilt. Plants systemically infected typically have a dry or water soaked brown rot in the lower stalk and roots. The vascular system is discolored and an orange bacterial exudate is present in vessels. Systemically infected plants wilt and die. They commonly stunted. The plants may exhibit the leaf blight symptoms or they may simply show symptoms of drought stress.

Plant Health Management

Resistant Hybrids

Resistant material is available for field corn and sweet corn but little is available for popcorn.

Residue Management

Destruction of crop residue will lower the amount of inoculum available. However, this practice is not practical in a conservation tillage operation. Rotation to a non host crop such as soybeans, dry beans or alfalfa also reduces the amount of corn residue and is a more viable option in most situations.