

# Effectively Managing Northern Corn Leaf Blight in 2013

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Sweet corn growers in New York, and elsewhere in the Northeastern USA, now need to include managing northern corn leaf blight (NCLB) in their production program. 2012 was the first year NCLB occurred at a notable level in some areas, including on Long Island. Growers were caught by surprise. Marketability of ears was affected when symptoms developed on husks because it gave them an old appearance, and the quality of the ear was affected. NCLB is expected to occur in 2013 because this disease was common in 2012 and the fungal pathogen can survive over winter in infested crop debris. Additionally it produces spores easily dispersed by wind.

NCLB is not a new disease of corn (it was first reported in NY in 1878), but it had not been observed in some areas for many years. On Long Island it had been at least 20 years. It had been reported before 2012 as increasing in importance on field corn in the northeast and on sweet corn in New England. Increase in disease occurrence likely reflects change in the pathogen such that it is no longer suppressed by resistance genes in field corn varieties. Race 0 is thought to still dominant, but Race 1 has been detected; it overcomes the main major resistance gene, *Ht1*. Greater disease development in field corn results in more inoculum to affect sweet corn. Another factor may be storms that have been occurring during August with patterns that facilitate pathogen movement and disease development. NCLB and southern corn leaf blight are also known as *Helminthosporium* leaf blight, which is important to know because the later name is used on some fungicide labels.

The pathogen produces an abundance of spores that are dispersed by wind. Numerous spores were observed on spots examined microscopically. This likely is how the pathogen moved to areas like Long Island recently, and why the disease was widespread in 2012. A biologically similar pathogen, which causes southern corn leaf blight, moved from the Gulf of Mexico to Canada during one season in the 1970s.

Favorable conditions for the pathogen are moderate temperatures (64 - 81 F) and leaf wetness from rain, dew or fog for at least 6 hours. Conditions during August 2012 evidently were very favorable as that is when symptoms of NCLB were observed commonly in sweet corn plantings on Long Island.

Leaf spots are moderately large and long (1 to 5 inches), elliptical, and grayish green becoming tan with age. Their shape resembles a cigar or boat. Similar to rust, this disease can impact ear quality when it develops on husks. Left unmanaged, NCLB can develop rapidly causing a crop to become completely blighted and appearing as affected by frost.

A primary reason to manage this disease is to minimize symptoms on husks, which can cause them to look old. Additionally, yield can be reduced when NCLB is severe. Grain yield of

processed corn reportedly can sustain losses of up to 50% when the disease is established before silking; minimal losses in yield occur when the disease is delayed until 6 weeks after silking.

Cultural management practices include incorporating debris after harvest and rotating crop land. However, since the pathogen produces spores easily dispersed by wind, these practices may not contribute as much to control of this pathogen as for others that produce larger, heavier spores. The benefits to soil health of reduced tillage in many cases will outweigh the benefits of reducing initial inoculum by plowing in debris. Growing a resistant or less susceptible variety is an effective practice. ex0876 7143 is resistant. Obsession was less severely affected by NCLB than Beyond and ACR7196 in a variety evaluation conducted in FL. More varieties exhibit some resistance in the large variety evaluations conducted each year in IL (see Table). Providence appears to be among the more severely affected varieties based on observations from commercial crops on Long Island in 2012.

To determine when to apply fungicides for NCLB, each week inspect crops thoroughly for symptoms, focusing on older leaves, and check for updates on occurrence of NCLB in local extension newsletters. The potential for NCLB to develop will increase with successive crops. Applying a protectant fungicide (e.g. Bravo or Dithane) might be worthwhile when NCLB has been reported in the area but symptoms are not found in the planting. Using a spray boom with drop nozzles will increase spray coverage on leaves low in the canopy, which is important because NCLB begins to develop there.

There are 2 groups of targeted fungicides effective for NCLB: FRAC Group 11 (which includes Quadris and Headline) and Group 3 (Bumper, Fitness, Proline, Propimax, AmTide Propiconazole, and Tilt). Corn is on a supplemental label for Proline. Targeted fungicides are more rain-fast than protectants and have a longer period of activity. Alternate among these groups and tank mix with a protectant fungicide to manage resistance developing in the pathogen. Starting early in disease development, when very few symptoms are present, is critical to successful control of most fungal diseases, including NCLB. The maximum number of applications that can be made to a crop is 6 for FRAC Group 11 fungicides, with no more than 2 sequential applications, and 2 to 4, depending on the product, for Group 3 fungicides. Other fungicides labeled for NCLB contain active ingredients in both FRAC fungicide groups: Headline AMP, Quilt and Stratego YLD. These are a good choice when only one or two applications are economical, as is often the case with field corn. The pre-harvest interval (PHI) is 0 days for Proline and Stratego YLD, which both contain prothioconazole. Stratego YLD also contains trifloxystrobin. PHI is 7 days for products with the other FRAC Group 11 fungicides. It is 14 days for fungicides with propiconazole as an active ingredient, which includes most of the FRAC Group 3 fungicides currently registered and the combination product Quilt. All these fungicides have a 12-hr REI.

Several fungicide evaluations have been conducted recently in Florida where NCLB has been an important disease in sweet corn for several years. Other foliar diseases also occur there. The protectant fungicides tested exhibited similar efficacy. Control was enhanced by using a spreader sticker. They were not as effective as the targeted fungicides. The FRAC Group 3 fungicides (aka triazoles) were more effective than the FRAC Group 11 fungicides (strobilurins) for NCLB; the opposite was the case for rust. FRAC Group 11 fungicides were very good for

controlling NCLB at high label rates. Among the combination products, Headline AMP was the most effective and Stratego was the least, being similar in efficacy to fungicides with only a FRAC Group 11 active ingredient.

To effectively manage both NCLB and rust, growers should alternate among FRAC Group 3 and 11 fungicides, adjusting the program based on which disease is most important. Stratego is a good choice when an application is needed near harvest because the PHI is 0 days while it is 7 or 14 days for the other fungicides. Apply all targeted fungicides with a broad-spectrum fungicide for resistance management.

*The specific directions on fungicide labels must be adhered to. They supersede these recommendations (above), if there is a conflict. Any reference to commercial products, trade or brand names is for information only; no endorsement is intended. Results from fungicide and variety evaluations conducted in FL were obtained from the investigator, Dr. Richard N. Raid.*