2012 Epidemic. Despite its name, Northern corn leaf blight (NCLB) was once thought of as more of a Southern and Western disease. However, you may have noticed that our weather is getting warmer and wetter; conditions that are perfect for NCLB, and it has been on the rise throughout New England for the past 5 years. These conditions not only favor the development of the fungus during the growing season, but warm winters like last year may also help it survive the winter.

One CT farmer along the coast lost a field of sweet corn in 2011 to NCLB after the heavy rains of tropical storms Irene and Lee. Throughout the field the plants died before the ears were fully developed or ready for harvest. The disease successfully overwintered on the crop residue and this year, in a much dryer season, he almost lost that same field again even though he harvested it in mid-season instead of late. So, he didn’t give the disease as much time to build up and snowball in his problem field. However, the husks on the corn he harvested were covered with grey lesions and the corn on his stand looked like very old ears until the next block from another field was harvested. This disease did spread to his later fields across town as the weather got wetter, and even with (late-silk) fungicide applications, he barely harvested the late blocks before lesions covered all the leaves and the husks.

NCLB was in many fields that I scouted throughout the CT River Valley in 2012 and Researchers in MA and VT reported fields that were severely infected. Long Island reported that they usually do not have any NCLB but that they found it in 80% of the sweet corn plantings scouted in late August.

One CT grower in the center of the valley had many NCLB lesions on the waist-high leaves on tasseled corn in mid-August on a new variety that he was trying for the first time. By the end of August the lesions covered the whole plant except for the husk. In mid-August, when we checked the adjacent blocks that had two
resistant sweet corn varieties, they only had an occasional lesion on a leaf or plant every 10-20 feet apart. By late August, even the leaves on the resistant varieties were almost completely covered from top to bottom with NCLB lesions. However, the block with the susceptible variety was shorter than the two adjacent blocks with resistant varieties, and where they were not alongside the susceptible variety there were barely any lesions in the resistant corn. In other words, if there wasn’t a “spore-factory” right beside them, the resistant varieties held up well, but if there was a susceptible planting pumping out spores by the billions, then resistance broke down. **This illustrates the fact that with weather that favors disease development, resistance will not hold if you mix susceptible varieties with your resistant varieties.** Up until now we have been choosing our sweet corn varieties based on which have the best marketable characteristics. From now on, you may need to first make sure that all your varieties are resistant to NCLB, before worrying about how sweet the variety is or how tasty. Otherwise you may be putting your whole crop at risk, not just the susceptible blocks.

**What you need to know about NCLB.** The disease is caused by a fungus, *Exserohilum turcicum*, which overwinters in the crop residue. It therefore follows that reduced-till fields are more at risk than those that are plowed and harrowed. However, Pathologist Kiersten Wise, from Purdue University pointed out that even if you picked up every shred of crop residue, if the weather favors NCLB, you can have a severe outbreak and epidemic because the spores move many miles on the wind.

The fungus requires six or more hours of leaf wetness at 64 to 81 degrees F to infect a leaf. So, fields with frequent fog (i.e. by the coast or river) or that are sheltered from the wind that helps dry foliage are more at risk than dryer fields. Lesions form one or two weeks after infection occurs, and as they become abundant, rob the plant of green tissue capable of photosynthesis and predispose the plants to stalk rots. Leaf lesions are tan or gray, range in size from 1 to 7 inches long, and are elliptical (eye-shaped) or oblong in shape. The lesion size varies with hybrid susceptibility, but they are often about 5 inches long on susceptible varieties. During wet weather tiny, dark spores form on lesions and will move on splashing rain or wind to infect new leaf tissue and husks. Where NCLB commonly occurs annually, the disease is often problematic late in the season when night temperatures begin to fall and dews are heavy, but with wet early season weather, epidemics can start early and become severe by June or July.

**Managing NCLB.** Using varieties with either partial or race-specific resistance is the most important way to manage this disease. Race-specific varieties may not provide protection from all strains of NCLB, but usually restrict lesions to small yellow spots that do not form spores. Partial resistant hybrids offer broader protection against more strains but may produce some small or fully developed lesions and spores. Partial resistance also delays the development of the lesions until later in the silking process which reduces the potential for economic damage to occur. **Do not mix susceptible and resistant varieties in the same field.**

Managing residue is important to help reduce overwintering spores. Out West, Extension recommends rotating away from corn for a single year in fields where conventional tillage is used and rotating away for two years in severely infected fields under reduced tillage. I contacted researchers in other states about the possibility of applying nitrogen or other possible products to help break down the corn residue quicker, but they have had little to no additional residue decomposition when N was applied to the residue four years in a row, and simply recommended rotation and a light harrow in the fall or spring tillage. Flail-chopping corn residue can also encourage rapid decomposition. Fields should be chopped or harrowed immediately after harvest to help reduce infection of later blocks. Since plants are most susceptible just before and after they first tassel, they should be scouted for NCLB at the pre-tassel stage and during early silk. Scout waist-high leaves in the center of the block where air movement is limited and humidity is the highest. Fields at risk due to high infection levels during previous years, or that experience frequent fogs and might be slow drying, or where reduced-tillage is used, may require one or two fungicide applications. Purdue researchers state that “fungicides that are applied at the tasseling to early silk stages have the greatest likelihood of economic return.” They also provided an efficacy chart rating different fungicides: group 3, 11 and pre-mixed products. Some of the products with the best efficacy included: Headline 2.09 (pyraclostrobin 23.6%, group 11), Proline 480 SC (prothioconazole 41%, group 3), Quilt 200 SC
(azoxystrobin 7% + propiconazole 11.7%, groups 11 & 3), and Headline AMP 1.68 SC (pyraclostrobin 13.6% & metconazole 5.1%, groups 11 & 3). These are all systemic fungicides that tend to have problems with resistance developing quickly. Use fungicides only when fields require rescue, do not rely on fungicides to control NCLB or you will lose the tools and your future crops. Use resistant varieties and manage the crop residue.