



No. 25

Corn Leaf Blights

Extension Bulletin E-832

March 1975

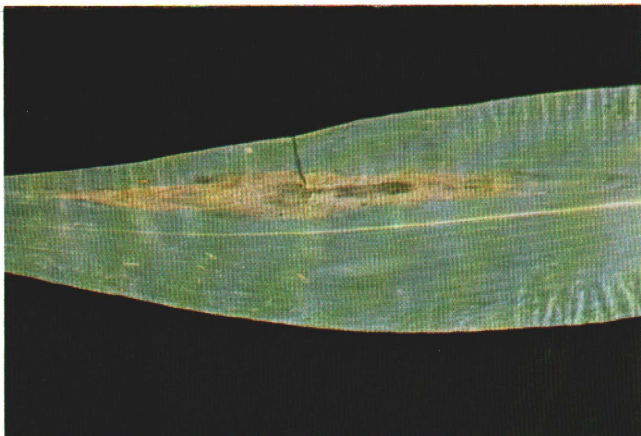
By N. A. Smith,
Department of Botany and Plant Pathology

Leaf blights seldom kill corn plants outright. Many spots or lesions on leaves can reduce the functional leaf surface. This reduces photosynthesis and leads to earlier senescence and an increase in root and stalk rots. Several leaf blights resemble drouth damage and are easily overlooked.

Northern Corn Leaf Blight

Northern Corn Leaf Blight is caused by the fungus *Helminthosporium turcicum*. This fungus overwinters in corn residue and spreads to the new crop in early summer. During mild, damp weather in the summer many spores are produced and are carried by wind currents. The spores germinate on corn leaves and the fungus enters the leaf. It grows and spreads, killing tissue over an area up to two inches wide and six inches long. Several lesions on a single leaf can destroy it. New spores produced on the lesions are the source of new infections as the season progresses.

Control is by planting resistant varieties. Plant breeders have been incorporating resistance into adapted varieties for more than 10 years. Varieties that show Northern Corn Leaf Blight either do not have the proper resistance bred into them or perhaps a new race of the fungus has appeared. A new strain of Northern Corn Leaf Blight has been found in Hawaii.



Northern Corn Leaf Blight. Note Fungus growth with spore production (dark area in center of lesion).



Yellow Leaf Blight. Fungus *Pycnidia* appear as tiny specks within lesion — visible with small magnifying glass.

Yellow Leaf Blight

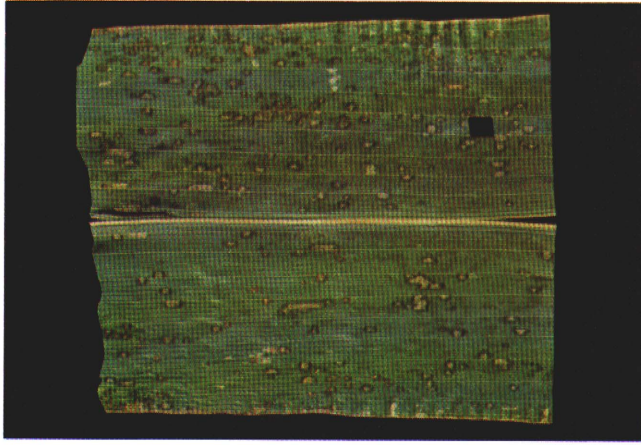
Yellow Leaf Blight is caused by the fungus *Phyllosticta maydis*. This disease appeared suddenly in the late 1960's in several North Central States. Its origin is still unknown. The causal fungus overwinters in corn residues. The disease appears during June, the earliest in clumps of susceptible volunteer corn. New infections can occur throughout the season. Corn with Texas male sterile cytoplasm is especially susceptible.

Individual disease spots appear oval to elliptical, about 1/4- by 1/2-inch in diameter surrounded by a lighter green area. Later, tiny dark specks appear in these lesions; the specks are sometimes arranged in rows. These are fungus fruiting structures which are filled with tiny seed-like spores.

Control is by planting seed with normal cytoplasm. Plant pathologists have found some resistance and corn breeders have now introduced resistant varieties such as Michigan 407-2X and Michigan 575-2X.

Eyespot

Eyespot is caused by the fungus *Kabatiella zeae* which was first noticed in Japan in the 1950's. Ten years later, Eyespot appeared throughout the North Central corn growing region of the United States. In Michigan, Eyespot has been found as far north as Delta County in the Upper Peninsula. The disease builds up slowly during the summer. Leaf damage can be serious if damp weather prevails.



Eyespot. Many circular spots with dark ring and light-colored center.

Eyespot appears as small, round spots about $\frac{1}{8}$ -inch wide. Sometimes a yellowish halo surrounds the tiny spot. The fungus grows within the spot, producing microscopic seed-like spores. These are carried by wind currents and infect other corn plants. The fungus overwinters in corn crop residues. The following summer, spores are carried from such residues, causing disease. A corn-on-corn no-till program favors rapid buildup of disease.

Control measures should include clean plowdown of corn residues to reduce overwintering fungus inoculum. Fungicides have limited use because of cost. Long term control requires development of resistant hybrids. Some resistance is known in certain inbred lines but lines carrying resistance have not been released. Resistance is not related to type of cytoplasm as in the case of Yellow Leaf Blight and Southern Corn Leaf Blight. If Eyespot becomes serious, resistant varieties will be developed. Meanwhile, adapted varieties should be managed to promote vigorous growth.

Stewart's Bacterial Leaf Blight

In 1974, Stewart's Bacterial Leaf Blight was present throughout the southern three tiers of counties in Michigan, where drouth was also a problem. Since leaf blight symptoms resemble drouth injury, the disease has often been overlooked. In the past, leaf blight epidemics have been infrequent and the damage was largely to sweet corn. During 1974, most of the common varieties of field corn were affected.

The causal bacterium overwinters in the corn flea beetle. In the spring, the insect carries the bacterium to the young corn plant and deposits it while feeding. The bacterium rapidly multiplies in conductive tissues of corn leaves. At first, long, pale-green-to-yellowish streaks appear along a vein. These streaks enlarge sideways with irregular margins and the areas



Stewart's Bacterial Leaf Blight. Lesion usually has irregular, wavy margin and extends along leaf vein.

dry out, become brown, and die; the appearance resembles drouth firing.

Control is by growing resistant varieties. Most commercial hybrids in use today appear to have little resistance because a few susceptible inbreds are widely used as parents for many hybrids. Several sweet corn varieties are available with considerable resistance.

Other Corn Leaf Blights

In 1970, Southern Corn Leaf Blight spread from the Gulf of Mexico to Canada, blighting corn with Texas male sterile cytoplasm. Growers switched to normal cytoplasm; therefore, this disease caused by *Helminthosporium maydis* Race T is no longer a problem disease.

Another *Helminthosporium* leaf blight appeared since the outbreak of Southern Corn Leaf Blight. The new disease was widely distributed on many varieties regardless of cytoplasm type. To date, the new disease is not recognized as a problem, perhaps partly because one leaf spot can look pretty much like another unless cultured in the laboratory.

General Control Measures

The growing corn crop should be closely watched for spreading foliar diseases. Early detection may permit the application of a fungicide in time to reduce further losses from disease. Corn residues should be completely plowed under without stalks sticking up. This reduces the overwintering inoculum which is the source of the first infections. Long time control depends on plant breeding for development of genetic resistance to each disease. Good cultural practices should always be followed to improve plant health and increase yields.