



Extension FactSheet

Plant Pathology, 2021 Coffey Road, Columbus, OH 43210-1087

Gray Leaf Spot on Corn

Patrick E. Lipps and Dennis R. Mills
The Ohio State University

Gray leaf spot of corn, caused by the fungus *Cercospora zea-maydis*, has been known in the United States since 1924 when it was first reported in Illinois. Until the 1970's, the disease was a minor pathogen with the exception of occasional outbreaks. With the increased use of reduced and no-tillage practices, gray leaf spot has become a very significant problem primarily in the more humid corn growing areas of the east and Midwest. The disease was first reported in Ohio in 1978 in parts of Pickaway, Ross, Pike, and Scioto counties in river bottom fields. Today, gray leaf spot can be found in all Ohio counties. Reports of severe disease infestations are mostly from low lying areas and river bottoms where periods of leaf wetness and high relative humidity are long enough to favor the development and spread of the disease.

Potential yield losses from gray leaf spot generally range between 5 to 40 bushels/acre. Losses as high as

90-100% have been reported. This loss of leaf area results in a loss in sugar production, which translates into less grain. Extreme leaf damage leads to premature death of plants. Premature death lowers the value of the corn as silage and makes the corn more susceptible to stalk rot.

Symptoms

The early lesion produced on the corn leaves by *Cercospora zea-maydis* are yellow to tan in color and look similar to those produced by other diseases except they have a faint watery halo which can be seen when held up to the light. After about two weeks the lesions appear tan to brown in color and rectangular in shape, bordered by the veins of the leaf. When fully expanded, individual lesions may be 3 to 4 inches long and 1/16 to 1/8 inch wide, depending on the distance between veins; however, if several infections occur near each other on the same leaf a broader lesion will result. The light brown color continues until environmental conditions are right for the formation of conidia, at which time the lesions take on a silvery-gray cast. Hybrids vary in the coloration of lesions produced, with some having orange to yellow lesions. On some hybrids, lesions may be on the leaf sheath and stalk.

Disease Cycle

The fungus causing gray leaf spot overwinters in and on corn debris left above and on the soil surface. In late spring, in response to warm temperatures and high humidity, conidia (spores) begin to develop on residues. These are blown by wind onto the lower



Gray leaf spot—coalesced gray lesions on maturing leaf.



Gray leaf spot.

leaves of the present season's corn plants. Usually, the initial infections occur in mid-June to late June but the disease does not begin to spread rapidly until late July and August. The earlier the infection occurs, the more time there is available for secondary spread and leaf damage, resulting in greater yield losses. Infection requires leaf surfaces to be wet for 11 to 13 hours and relative humidity in the leaf canopy to be at or above 90% for an uninterrupted period of 12 to 13 hours. Under such conditions the fungus matures and develops conidia, which are blown to the upper leaves of the plant where they germinate and start new lesions. These conditions are often found in river bottoms and weedy fields. Cool moist air flows into these fields causing condensation on the leaf surfaces and maintains high

humidity longer in the canopy. In weedy fields the weeds help to hold humidity and prevent the drying of leaf surfaces by blocking air movement through the canopy.

Control

1. Hybrids are available with moderate resistance to gray leaf spot. Ask your seed supplier for hybrids with improved gray leaf spot resistance.
2. Crop rotation and clean plowing are effective in reducing the level of surviving fungus in fields. A two-year crop rotation away from corn is effective if reduced tillage must be maintained for conservation purposes or a one-year rotation with clean plowing is recommended in fields that have had a problem with the disease.
3. Fungicides are available to help manage gray leaf spot. Fungicides are recommended for use on susceptible hybrids planted in fields with a history of gray leaf spot. It is important to apply fungicides early in the season before significant leaf damage has occurred. Thus, scouting fields should be conducted at the V-10 to V-14 growth stage. Check fungicide labels for appropriate timing of fungicide application.
4. Control weeds. This will help to increase airflow and dry the canopy faster, thereby reducing the environment favorable for infection.

Additional information on gray leaf spot in corn is in Ohio State University Extension Bulletin 802, *Corn Disease Control in Ohio*, available from your local Extension office or The Ohio State University web site Ohioline at: <http://ohioline.ag.ohio-state.edu>

All educational programs conducted by Ohio State University Extension are available to clientele on a nondiscriminatory basis without regard to race, color, creed, religion, sexual orientation, national origin, gender, age, disability or Vietnam-era veteran status.

Keith L. Smith, Associate Vice President for Ag. Adm. and Director, OSU Extension

TDD No. 800-589-8292 (Ohio only) or 614-292-1868

1/01-klw