

GRAY LEAF SPOT IN CORN

Gray leaf spot (GLS) is caused by the fungus *Cercospora zeae-maydis*. It occurs almost every growing season and is considered to be the most serious disease of corn in the Corn Belt, year in and year out.

Symptoms¹

Gray leaf spot lesions are yellow at first and then turn tan to brown and can be confused with other foliar diseases such as anthracnose leaf blight, eyespot, or common rust. An in-field diagnostic technique is to hold the leaf up to light and look for a faint watery halo surrounding the lesion. The lesions begin to turn light tan to brown in about two weeks and have a distinct rectangular shape, occurring within the veins of the leaf. Lesions may become up to 3 to 4 inches long but will maintain the rectangular shape and be about 1/16 to 1/8-inch wide as dictated by the distance between the veins (Figure 1).

As the lesions expand, large areas of leaf tissue can be destroyed (Figure 2). The light-brown color changes to a silver-gray color as environmental conditions (warm and humid) allow for the production of fungal conidia (spore-forming structures). The color (yellow to orange) of the lesions and where the lesions develop (stalk and leaf sheath) can be impacted by the particular corn hybrid. Hot and dry conditions restrict the growth of the lesions and give them a yellowish color without defined borders.

Disease Cycle^{1,2}

Gray leaf spot overwinters in and on corn debris left above and on the soil surface. As temperatures warm and humidity increases, spores are produced on the residue (Figure 3). The spores can be wind-blown or water-splashed onto the lower leaves. Infection usually occurs in June, but rapid spread of the disease usually begins to occur in late July and August, when warmer and more humid conditions are more common. As with most foliar diseases, the earlier the infection occurs, the more time for secondary spread in the field, which leads to an increased probability of economic yield loss.

Environmental conditions that allow expansion of GLS are temperatures between 77 and 86° F and high humidity and moisture. In addition to conducive environmental conditions, the susceptibility level of the corn product will also dictate lesion expansion.



Figure 1. Gray leaf spot infection on corn.

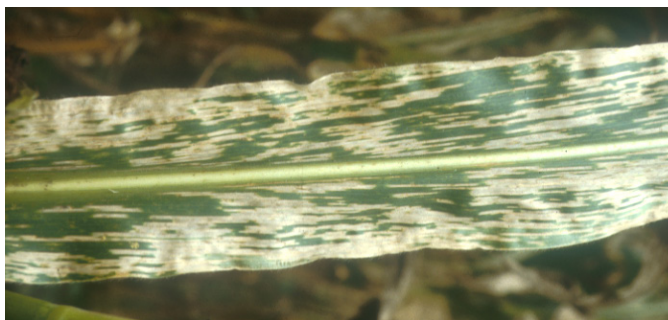


Figure 2. Severe infection of gray leaf spot on corn.

Hot and dry conditions can stall the development of the disease, but it will continue once favorable conditions return. Areas with greatest risk are fields that are planted to a susceptible corn product and are located in areas where dew forms on the plant that keeps the leaf surface moist for extended periods of time.

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Disease Impact²

When conditions are conducive to disease and if a corn product is susceptible, yield can be meaningfully reduced. While a clear relationship between the amount of leaf injury and yield loss does not exist, an estimate has been developed at Ohio State University (Table 1).

Table 1. Estimated potential yield loss based on percentage of leaf infection by gray leaf spot.

Percentage Ear Leaf Area Affected by Early Dent Stage (R5)	Approximate Yield Loss
5% or less	0-2%
6-25%	2-10%
25-75%	5-20%
75-100% (leaf death)	15-50%

Adapted from Wise, K. 2006. Gray leaf spot. Purdue University Extension. <https://www.extension.purdue.edu/extmedia/BP/BP-56-W.pdf>

In addition to possible yield loss and as with most foliar diseases, a reduction in photosynthetic capacity increases the likelihood of late-season stalk lodging and infection by stalk rot diseases.

Management

Use of preventative management tactics, such as using a corn product that has a low level of susceptibility to GLS, crop rotation, and practices that remove corn residue or tillage to promote decomposition, can help reduce the impact in high-risk fields. Consult with your seed provider on corn products that have a low level of susceptibility and provide the other agronomic benefits that are needed. A crop rotation longer than a single year out of corn production may be necessary to reduce inoculum levels, as the spores can survive for longer than a year on corn residue.

In fields where there is concern about GLS, scouting around V14 should give an idea of the severity of the field infection. If weather conditions are conducive for disease expansion an in-season fungicide application may be needed to suppress the disease. In most cases, fungicides should be applied at or after tasseling. For example, a fungicide has been shown to be most effective for northern corn leaf blight and GLS when applied prior to tasseling to two weeks after tasseling.³ Fungicide products containing a strobilurin and strobilurin/triazole premix are most effective at preventing yield loss when applied in response to GLS disease presence.²

For example, Delaro[®] 325 SC fungicide is labeled for Gray leaf spot and can be sprayed at the critical time period where necessary. To learn more about Delaro[®] fungicide, please visit <https://www.cropscience.bayer.us/products/fungicides/delaro> and contact your retailer. Follow all individual product label instructions for proper application timing, application volume, application equipment, and environmental and harvest interval precautions.

Sources

¹Salgado, J., Schoenhals, J., and Paul, P. 2016. Gray leaf spot of corn. Ohio State University Extension. <https://ohioline.osu.edu/factsheet/plpath-cer-05>

²Wise, K. 2006. Gray leaf spot. Purdue University Extension. <https://www.extension.purdue.edu/extmedia/BP/BP-56-W.pdf>

³Smith, D. 2018. Late season corn foliar disease update and hail damaged corn. University of Wisconsin Extension. <https://ipcm.wisc.edu/blog/2018/08/late-season-corn-foliar-disease-update-and-hail-damaged-corn/>

Legal Statements

ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. Performance may vary, from location to location and from year to year, as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible and should consider the impacts of these conditions on the grower's fields. ©2020 Bayer Group. All rights reserved. 5006_S15