

GRAY LEAF SPOT IN GEORGIA TURFGRASS: *IDENTIFICATION AND CONTROL*

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Introduction

In the state of Georgia, gray leaf spot (GLS) primarily affects St. Augustinegrass (*Stenotaphrum secundatum*) and is particularly chronic and damaging in the coastal areas of the state. Sporadic incidences in tall fescue (*Festuca arundinacea*) are observed annually in the Piedmont region, mainly affecting heat-stressed turf. In south-central Georgia, gray leaf spot is most active from June through August, although warm springs can bring about the disease earlier in the year.

The Pathogen

The ascomycete fungus *Pyricularia grisea*, also known as *Magnaporthe grisea*, is the causal agent of gray leaf spot. It is an extremely effective pathogen, as it can reproduce both sexually and asexually. The fungus can produce prolific numbers of conidia (asexual spores), thereby causing a devastating loss of turf in relatively short periods of time. Conidia are cone-shaped or bowling-pin-shaped and usually two- to three-celled spores (Figure 1).

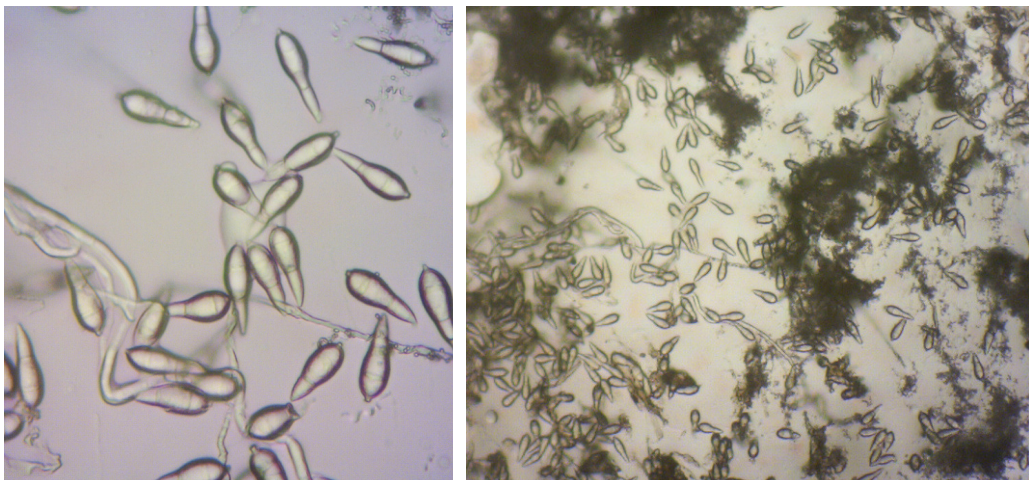


Figure 1. Conidia and hyphae of *Pyricularia grisea* from infected leaves of St. Augustinegrass (Photos by Tucker Price).

Symptoms

In St. Augustinegrass, gray leaf spot first appears as small, brown spots on the leaves and stems. The spots quickly enlarge to approximately one-quarter inch in length and become bluish-gray in color and oval or elongated in shape. The mature lesions are tan to gray and have depressed centers with irregular, purple-to-brown margins (Figure 2). The center of the leaf spot may appear as a gray, velvet-like growth of sporulation (spore formation) after extended periods of wet and warm weather (Figure 2D). A yellow border on the lesions may also appear. Severe outbreaks make the turf appear thin

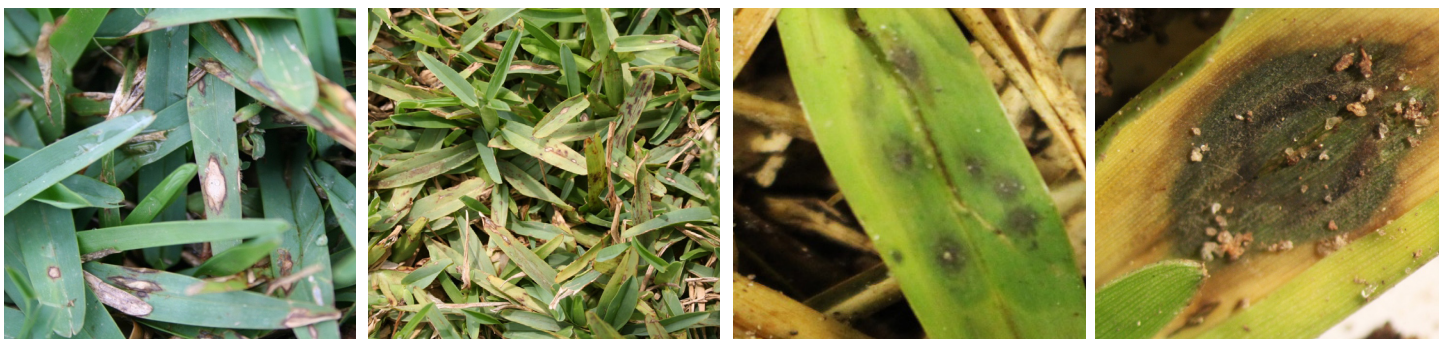


Figure 2A-D. Symptoms of gray leaf spot (GLS) on St. Augustinegrass. In 2D, note the profuse sporulation in the center of the lesion (Photos by A. Martinez and A. Jogi).

Conditions Favoring Gray Leaf Spot

Gray leaf spot is favored by daytime temperatures between 80 to 90 degrees Fahrenheit and nighttime temperatures above 65 degrees F. High nitrogen levels, high moisture, and conditions that stress the turf, such as intermittent drought and soil compaction, also favor the disease. Gray leaf spot is most severe during extended hot, rainy, and humid periods. Shady areas with limited airflow tend to have more severe outbreaks of gray leaf spot.

Management

Genetic

One of the most effective ways to manage gray leaf spot is to establish a turfgrass species that is well adapted to your geographical area, situation, or landscape. In Georgia, gray leaf spot is particularly severe on St. Augustinegrass in coastal areas, so using another warm-season grass is an advisable alternative. Research shows that the St. Augustinegrass varieties 'FX-10,' 'Common,' 'Raleigh,' 'Seville Classic,' and 'Roselawn' have the highest tolerance to the disease. 'Palmetto' and 'Floralawn' have an intermediate resistance to gray leaf spot. Aside from resistance to gray leaf spot, other factors to consider when selecting a cultivar are chinch bug resistance and shade tolerance. Your local Extension agent can provide you with the most up-to-date information concerning turfgrass species and cultivar selection for your area and particular situation. The National Turfgrass Evaluation Program (www.ntep.org) is another excellent resource for information on turfgrass species and turfgrass cultivars.

Cultural

Fertility: Management practices that minimize stress and avoid rapid flushes of lush growth during the rainy season lessen the likelihood that severe gray leaf spot symptoms will develop. For complete and up-to-date information on fertility for warm season grasses, consult your county Extension agent and visit www.georgiaturf.com or the annually updated *UGA Turfgrass Pest Control Recommendations for Professionals* at <http://www.commodities.caes.uga.edu/turfgrass/georgiaturf/Publicat/1640Recommendations.htm>.

Irrigation: If irrigation is used to supplement inadequate rainfall, water infrequently but deeply. Proper irrigation regimens should protect against symptoms of drought stress without increasing disease pressure by extending periods of leaf wetness. Excessive soil moisture and leaf wetness promotes gray leaf spot. Irrigating in the late afternoon or evening should be avoided, as this prolongs periods of leaf wetness.

Mowing: Proper mowing practices are most important for gray leaf spot management in St. Augustinegrass. This grass must be mowed frequently during the summer months to remove excess leaf tissue and keep the canopy open and dry. Mow the turf at the correct height for the designated turfgrass species and remove only one-third of the leaf blade per mowing. Collecting clippings reduces the spread of the disease when gray leaf spot symptoms are evident. Thatch layers should be removed if they are greater than 1 inch in depth. Vertical mowing is best to remove thatch. Topdressing with sand or soil is less effective than vertical mowing, but it helps with thatch removal. Controlling thatch can improve drainage, reduce drought and nutrient stress, and remove sources of gray leaf spot inoculum.

Herbicides: St. Augustinegrass is especially sensitive to some herbicides. If possible, manage weeds using cultural management techniques and minimal amounts of herbicides. The timing of any atrazine application should be chosen carefully, as this herbicide can stress the grass, especially when temperatures may climb above 85 degrees F. Atrazine applications made before or during disease-favorable conditions increase the likelihood of severe gray leaf spot symptom development. Spot-treating trouble areas with the herbicide may also be considered. Herbicides should always be applied according to the label instructions.

Chemical

Homeowners: In established, well-managed home lawns, gray leaf spot can be chronic but is not typically destructive. Disease symptoms may become severe if the turfgrass is stressed or if unusually long periods of warm, wet weather persist. Emphasis should be placed on cultural controls, like proper fertility, irrigation, and mowing, rather than chemical controls. For a complete list of homeowner fungicides, refer to the home and garden edition of the *Georgia Pest Management Handbook* at <http://extension.uga.edu/publications/detail.cfm?number=SB48>.

Professionals: Fungicides are more efficacious when applied as preventative treatments rather than after symptoms are evident. Fungicides in the chemical families of strobilurins, benzimidazoles, demethylation inhibitors (DMI), carboxamides, and nitriles are labeled to control gray leaf spot. These materials should be applied with at least 2 gallons of water per 1000 sq. ft. for a complete coverage of the turfgrass canopy. Strobilurin-resistant populations of the pathogen have been identified in the U.S. Rotations of products with different modes of action and tank-mixing systemic products with contact fungicides reduce the likelihood of fungicide resistance. For a complete and updated list of available fungicides, refer to the commercial edition of the Georgia Pest Management Handbook at <http://extension.uga.edu/publications/detail.cfm?number=SB28> or UGA Turfgrass Pest Control Recommendations for Professionals at http://www.commodities.caes.uga.edu/turfgrass/georgiaturf/Publicat/1640_Recommendations.htm

Summary

In the state of Georgia, gray leaf spot primarily affects St. Augustinegrass (*Stenotaphrum secundatum*), but the disease can also infect tall fescue (*Festuca arundinacea*). Gray leaf spot is particularly chronic and damaging in coastal areas of the state. Warm and humid conditions favor the disease. Gray leaf spot may be more severe in turf stressed by factors such as drought and soil compaction.

Gray leaf spot first appears as small, brown spots on the leaves and stems. The spots quickly enlarge and become bluish-gray in color and oval or elongated in shape. The center of the leaf spot may appear as a gray, velvet-like growth of sporulation. Severe outbreaks make the turf appear thin.

Management strategies:

- Establish a turfgrass species best adapted to your geographical area, situation, or landscape. Genetic control is one of the most effective means for managing gray leaf spot.
- Minimize stress and avoid rapid flushes of lush growth during the rainy season to lessen the likelihood that severe gray leaf spot epidemics will develop.
- Order a soil test and correct fertility problems according to the provided recommendations. Proper plant nutrition and thatch management will lessen the incidence of the disease by reducing plant stress.
- Properly irrigate to prevent drought-stressed turfgrass without increasing disease pressure through extended periods of leaf wetness. Excessive soil moisture and leaf wetness favor the disease. Irrigating in the late afternoon or evening should be avoided, as this prolongs periods of leaf wetness.
- Mow the turf at the correct height for the designated turfgrass species and remove no more than one-third of the leaf blade per mowing.
- Manage weeds using cultural management techniques and minimal amounts of herbicides. St. Augustinegrass is especially sensitive to some herbicides.
- Emphasize cultural control, as few effective fungicides are available for homeowners to manage gray leaf spot.
- For professional turfgrass managers, use fungicides in the chemical families of the strobilurins, benzimidazoles,

demethylation inhibitors (DMI), carboxamides, and nitriles when cultural controls are not adequate.

Further reading

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