

DOLLAR SPOT

OF TURFGRASSES IN GEORGIA:

Identification and Control



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Introduction

Dollar spot is an ever-present turfgrass disease that affects all warm and cool season grasses in the state of Georgia. The disease is a major concern on creeping bentgrass golf greens. The disease also affects bermudagrass and zoysia greens and fairways. Dollar spot damages landscapes and home lawns as well as athletic fields and sod farms. Nationwide, more money is spent on the chemical control of dollar spot than any other turfgrass disease. In Georgia, the disease is most prevalent during spring and fall.



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The Pathogen

The dollar spot fungus is classified as *Sclerotinia homoeocarpa*. As this taxonomic classification is currently under revision, the fungus may be reclassified as *Lanzia*, *Moellerodiscus*, or *Rutstroemia*. When the environment is conducive for disease, mycelium (the branching, vegetative part of the fungus) grows from infected plants and infects nearby plants. Movement of mycelium or infected leaf debris by equipment, people, animals, water, or wind helps spread the disease. The fungus does not produce spores (Figure 1).

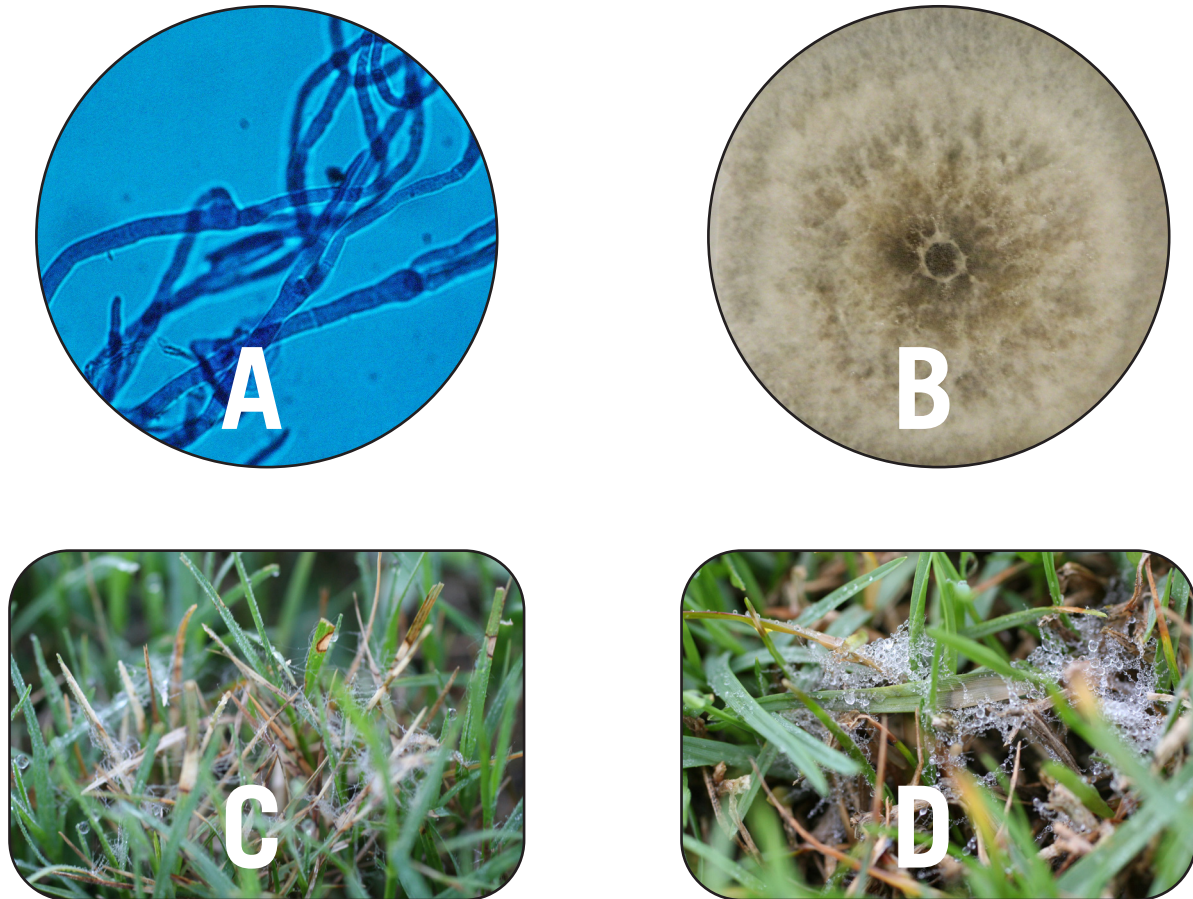


Figure 1. A) *Sclerotinia homoeocarpa* hyphae, B) *S. homoeocarpa* in culture, C) *S. homoeocarpa* mycelium on bermudagrass, and D) *S. homoeocarpa* mycelium on seashore paspalum (Photos A. Martinez).

Symptoms

Affected grasses display white to straw-colored lesions that progress across leaf blades and/or downward from the leaf tip. A brown border usually surrounds each lesion (Figure 2). Infected leaves become blighted, turning white to straw-colored as lesions expand and coalesce. As the disease spreads to more leaves, white to straw-colored, circular, sunken patches appear that range from less than ½-inch to more than 4 inches in diameter (Figure 3). The patches are similar in diameter to a silver dollar, hence the name “dollar spot.” Individual dollar spots may be less distinct on higher mowed turfgrasses (Figure 4). Turfgrass areas affected by dollar spot often become thinned and invaded by weed species. Extensive patches diminish turf quality by disturbing the aesthetic value and reducing the playability of turf surfaces.



Figure 2. Lesions of dollar spot on zoysiagrass and bermudagrass (Photos A. Martinez).



Figure 3. Typical dollar spot symptoms (Photos A. Martinez).

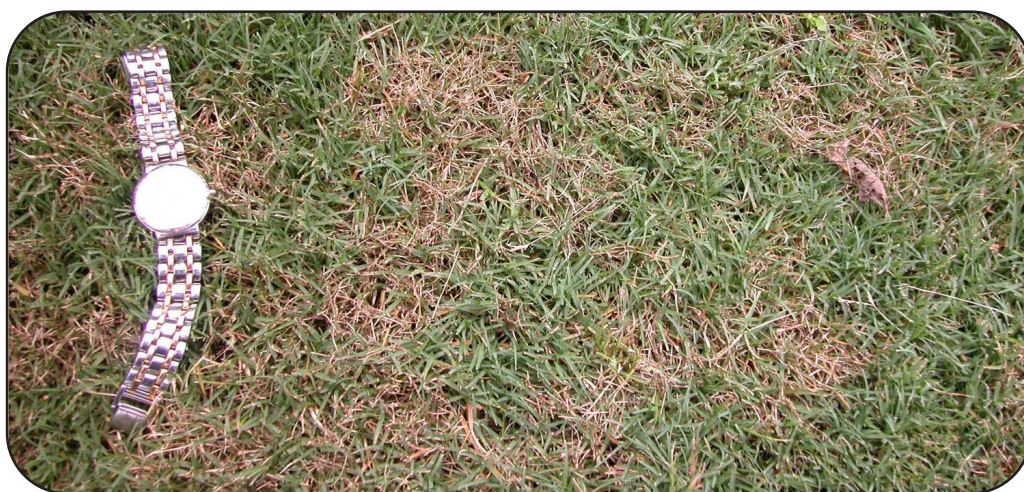


Figure 4. Less conspicuous symptoms of dollar spot on bermudagrass due to higher mowing height (Photo A. Martinez).

Conditions Favoring Dollar Spot

The dollar spot pathogen survives from one season to the next in infected plant tissues. The disease is most prevalent during spring and fall. In Georgia, dollar spot infections develop rapidly at temperatures between 60 and 75 degrees Fahrenheit. These temperatures, combined with long periods of leaf wetness from dew, rain, or irrigation, favor growth of the fungus and infection of leaf blades and sheaths. To cause infection, the dollar spot fungus can penetrate intact leaves directly or enter through cut leaf tips and stomata (Figure 5). *S. homoeocarpa* secretes enzymes and toxins that result in tissue death (Figure 6). Low soil moisture and drought stress enhance the severity of the disease. Turfgrasses grown under poor fertility, especially low nitrogen fertility, exhibit more dollar spot than grasses maintained at optimum fertility. Stressed, senescent foliage provides a good food source for the fungus and can increase the spread of *S. homoeocarpa* to healthy plant tissues.



Figure 5. Early infection of dollar spot on seashore paspalum. The fungus was grown on infested grain in the laboratory (Photo A. Martinez).



Figure 6. Necrotic tissue caused by dollar spot infection on seashore paspalum (Photo A. Martinez).

Disease Control

Dollar spot is an ever-present, endemic, and severe disease of warm and cool season grasses in Georgia, and an integrated disease management approach is most effective.

Genetic Control

In Georgia, creeping bentgrass (*Agrostis palustris*) is particularly susceptible to dollar spot. Cultivars of creeping bentgrass vary in their susceptibility to the disease, but none are highly resistant. One popular variety, Pennncross, is extremely susceptible to dollar spot (Figure 7). Information on the level of susceptibility of specific turfgrass species and cultivars can be obtained from the National Turfgrass Evaluation Program, www.ntep.org. In Georgia, dollar spot is particularly severe on bermudagrass (*Cynodon dactylon*) and seashore paspalum (*Paspalum vaginatum*). One of the most effective means of managing dollar spot is establishing a turfgrass species best adapted to your geographical area as well as your specific location, situation, and landscape.

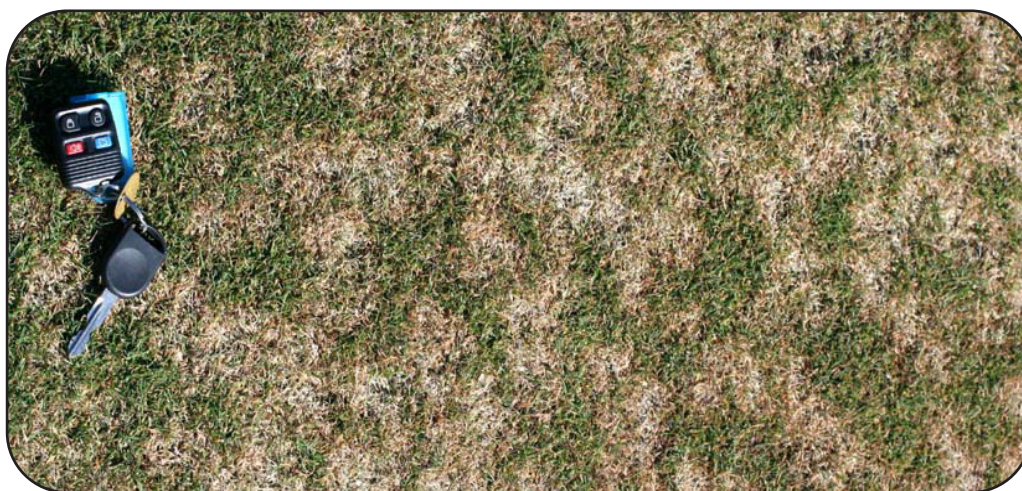


Figure 7. Heavily infected bentgrass c.v. Pennncross (Photo A. Martinez).

Cultural Control

Monitoring fertility is an important first step to controlling dollar spot. Light and frequent nitrogen applications are recommended for disease management and maintenance of turfgrass growth. Care must be taken to prevent over-fertilization with nitrogen, which may promote other diseases such as Pythium blight and Rhizoctonia large or brown patch. For complete and up-to-date information on fertility for warm season grasses, consult your local county agent, see the yearly updated UGA Turfgrass Pest Control Recommendations for Professionals, and/or visit www.georgiaturf.com.

Excessive moisture on turfgrass foliage will promote dollar spot epidemics. Irrigating in the late afternoon or evening should be avoided, as this prolongs periods of leaf wetness. Removing morning dew by either light irrigation or poling — knocking off the dew with a hose or bamboo pole — will help to lower the chance of disease. These methods also help to remove the guttation fluids that exude from the grass blades during wet conditions, which provide the dollar spot fungus with nutrients for growth. If feasible, prune or remove trees and shrubs to promote air movement and accelerate drying of the turfgrass canopy. For proper irrigation information, check http://www.commodities.caes.uga.edu/turfgrass/georgiaturf/CultPrac/1310_Calendar.htm

Thatch layers should be removed if they are greater than 1 inch in depth. Vertical mowing and topdressing with sand or soil can remove thatch. Controlling thatch can improve drainage, reduce drought and nutrient stress, and remove sources of dollar spot inoculum.

Drought-stressed turf is particularly susceptible to dollar spot infection. Compacted soil stresses the plants and slows turfgrass growth and recovery from disease, so routine cultivation is recommended. Excessively low mowing heights also stress turfgrass and favor dollar spot.

For complete and up-to-date information on fertility for warm or cool season grasses consult your local county agent, visit www.georgiaturf.com and/or the yearly updated UGA Turfgrass Pest Control Recommendations for Professionals.

Chemical Control

General public: Few effective fungicides are available for the general public to use for dollar spot management, so the general public should emphasize cultural and genetic control. For a complete list of fungicides available for dollar spot, visit <http://extension.uga.edu/publications/detail.cfm?number=SB48>

Commercially-licensed professionals: A variety of fungicides are available to professional turfgrass managers for dollar spot control (Figure 8) including fungicides containing benzimidazoles, demethylation inhibitors (DMI), carboximides, dicarboximides, dithiocarbamates, nitriles and dinitro-aniline. Several biological fungicides are now labeled for dollar spot control. For a complete and updated list of fungicides available for dollar spot, visit <http://extension.uga.edu/publications/detail.cfm?number=SB28> or http://www.commodities.caes.uga.edu/turfgrass/georgiaturf/Publicat/1640_Recommendations.htm.

Fungicides should be applied when environmental conditions are favorable for disease development. Label rates of fungicides should be applied at either a 7- to 10-day or 14- to 21-day interval. To limit the possibility of fungicide resistance, alternate the use of fungicides from different chemical classes



Figure 8. Chemical control of dollar spot. Image at left depicts the onset of a fungicide trial. The trial was artificially inoculated with dollar spot grown on a sterile mix of wheat-oats-barley seeds in the laboratory. Seed inoculum was then spread across the trial. Image at right depicts the effect of a fungicide application, with fungicide-treated grass on the right (Photos A. Martinez).

Summary

Dollar spot is an ever-present turfgrass disease that affects all warm and cool season grasses in the state of Georgia. Dollar spot fungus is classified as *Sclerotinia homoeocarpa*, but its taxonomy is under review. Affected grasses display white to straw-colored lesions. Blighted leaves are formed in aggregates that appear as circular, sunken patches, measuring from less than ½-inch to more than 4 inches in diameter. The disease is most prevalent during spring and fall. In Georgia, dollar spot infections develop rapidly at temperatures between 60 and 75 degrees Fahrenheit. These temperatures, combined with long periods of leaf wetness from dew, rain, or irrigation, favor growth of the fungus.

Management strategies include:

- Establishing a turfgrass species best adapted to your geographical area and specific location.
- Monitoring fertility through light and frequent nitrogen applications, which are recommended for disease management and maintenance of turfgrass growth.
- Irrigating before sunrise, or otherwise avoiding irrigating in the late afternoon or evening, as this prolongs periods of leaf wetness.
- Removing morning dew by either light irrigation or poling to help lower disease incidence.
- Removing thatch layers if they are greater than 1 inch in depth.
- Watering regularly, as drought-stressed turf is particularly susceptible to dollar spot infection.
- Emphasizing cultural and genetic control, as few effective fungicides are available for the general public to use for dollar spot management.
- Applying the variety of fungicides available to professional turfgrass managers.
- Using the several biological fungicides that are now labeled for dollar spot control.

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