MISSISSIPPI STATE UNIVERSITY EXTENSION

Dollar Spot of Warm-Season Turf Grasses

Dollar spot is a common fungal disease in Mississippi that occurs on most grasses. In our warm-season turfs, it is generally most severe on bermudagrass and zoysiagrass.

Dollar spot occurs when temperatures stay between 50 and 95 degrees. High relative humidity or extended periods of leaf wetness, such as from dew, are required for disease development.

The disease is most severe in slow-growing turf. For this reason, dollar spot is most common in the spring or fall, when warm-season turfgrasses are entering or leaving dormancy. It also occurs in cooler summer weather when heavy dews form on stressed, neglected turf. In lawns, such areas are usually under moisture or nutritional stress. Nutritional stress is mainly caused by a lack of nitrogen.

The first symptoms on individual leaves are chlorotic (yellow) areas that become water-soaked and, finally, turn a bleached or straw color. Leaf lesions are bordered by a tan to reddish-brown margin. Figure 1 shows symptomatic bermudagrass leaves. Note the characteristic reddish-brown margins of the lesions and the tan to white center of the lesion. When the lesion gets big enough to cover the width of the leaf, it severs the flow of water and nutrients to the entire leaf part above it, which dies back and fades to a straw color. Examples can be seen if Figure 1, especially the large leaf going from almost frame center towards the upper left of Figure 1.

The dollar spot fungus kills the grass in small, circular areas, producing straw-colored spots, as seen in Figure 2. The size of the spot varies with mowing height of the turf (Figure 2 vs. Figure 3). In closely mowed areas (Figure 2), the spot will be 1 – 2 inches in diameter, about the size of an old silver dollar, hence the disease's name. In lawns that are mowed higher, the spot size may increase to 8 inches in diameter. Individual spots may grow together to form larger areas.

The 3-inch-high zoysiagrass lawn in Figure 3 shows some fairly large patches caused by dollar spot. Several of the patches are merging.

You may see a fungal growth (mycelium) on diseased grass during early morning hours, when there is dew (center left of Figure 2 and Figure 4 close up). This web-like growth is sometimes mistaken for another disease, Pythium rot, leading to wrong application of expensive fungicides.

Figure 1. Bermudagrass leaves symptomatic of the disease dollar spot, caused by the fungus *Clarireedia jacksonii* (formerly *Sclerotinia homoeocarpa*). Note the characteristic reddish-brown margins of the lesions and the tan to white lesion center. When the lesion gets big enough to cover the width of the leaf, it severs the flow of water and nutrients to the entire leaf part above it. This is what caused the large, back leaf, going from almost frame center to the upper left in the image to die. If you look closely at the leaf collar (point where the two leaves split from each other), you can see the fungus has killed the lower tissue on the left side and is now moving to the right side, as evidenced by the tip die-back on the leaf blade going right. You can see the same on some of the other leaf tips. The straw color comes from the sun drying the tissue after it has been killed.

The close-up image of the web-like mycelial growth (Figure 4) shows the dew on the mycelia of the fungus, called *Clarireedia jacksonii* (formerly *Sclerotinia homoeocarpa*), which keeps it from drying out. The infected turfgrass below it has water-soaked tissue (best seen on the lower left of the mycelia) and some yellowing, but mostly it is turning brown. The dew has already dried from the patch

area immediately above the mycelia, so you can easily see the complete set of leaf symptoms. These leaves will turn mostly straw colored after several hours of sun.

The dollar spot fungus overwinters as environmentally tolerant stroma on infected plant parts in the crown and roots of infected grass. It spreads by pieces of diseased plants carried from place to place by mowers, sweepers, and other lawn maintenance equipment. Basic equipment sanitation helps prevent spread.

You can have the disease professionally diagnosed and receive a full report and recommendation by our Plant Disease and Nematode Diagnostic Services. Please visit ***http://extension.msstate.edu/lab*** for submission methods and costs. Results are usually available within three to 3 – 7 days of receiving the sample.

Figure 2. The dollar spot fungus kills the turf in circular areas. The circular area is small in closely mown grass and larger in higher mown grass (Figure 3). The common name for the fungal disease comes from the silver-dollar-sized patches it forms. The straw-color appears after the sun has dried recently killed turf leaves. Note the silvery-white cobweb on the top of the grass to center left. That is mycelia produced by the fungus.

Management

Prevention is the best way to control disease. To prevent dollar spot or other lawn diseases from developing, practice the following disease control procedures.

- Maintain adequate soil moisture and nutrient levels
- The single most effective management tool is nitrogen. Maintaining nitrogen levels when the disease is most prevalent can reduce the severity of dollar spot by letting the grass outgrow the disease.
- Mow and collect the clippings regularly.
- Prevent the buildup of thatch.
- Do not water in the late morning or late afternoon/ evening, because it prolongs the period of leaf wetness, facilitating disease. See Extension ***Information Sheet 1670 The Plant Doctor: Watering and Plant Disease***.
- Controlling dollar spot with conventional fungicides may be difficult because of the development of fungus strains resistant to certain fungicides. To prevent resistant strains of the dollar spot fungus from developing, use several types of fungicides belonging to different chemical (FRAC) groups. There are several fungicide active ingredients (e.g., propiconazole) that are labeled for use but in our hot weather will probably chemically burn the grass or further advance the disease (azoxystrobin). They are not recommended for this reason.

These fungicides are currently labeled for residential use and have an effect on dollar spot and produce no or minor plant burn:

- myclobutanil (FRAC group 3) (some cause minor burns), sold as:
  - Fertilome F-Stop Fungicide Granules

Figure 3. Zoysiagrass mowed at 3-inches. The straw-colored patches were caused by the dollar spot fungus. Note their size in relation to those seen in Figure 2. The client fertilized the lawn soon after this image was taken, and all symptoms of the disease had disappeared in 3 weeks.

- Fertilome F-Stop Lawn and Garden Fungicide RTS
- Monterey Fungi-Max

- fluxapyroxad (FRAC group 7), sold as:
  - Xzemplar. Liquid only formulation. This product is expensive, but only a little is used (0.16-0.26 fl oz/1000 ft sq) is sold in large volumes through turf specialty businesses, co-ops, or landscape/greenhouse businesses that also sell pesticides. A small bottle (11.4 fl oz) is sold online. In January 2022 it was $171 on Amazon.com.

Alternate the use of these two types of fungicides. Myclobutanil belongs to a chemical group that can suppress turf growth and cause some phytotoxicity during hot weather. Do not use myclobutanil when temperatures much exceed 85 degrees.

Preventive applications every 14 – 28 days (depending upon the fungicides you use) are needed when conditions are favorable for dollar spot development. Curative applications will require higher rates and more frequent applications, and they may not work.

Non-conventional fungicides labeled for the disease have come and gone. The only one consistently remaining is a mix of hydrogen peroxide and peroxyacetic acid. The chemistry is somewhat involved, but put simply, the peroxyacetic acid keeps the real active ingredient, hydrogen peroxide, at a desired concentration. The percentage of these active ingredients varies widely among brands, from as little as 5.34% + 1.36% to 27.1% + 2.0% for the hydrogen peroxide + peroxyacetic acid combination. There are many of these products, one of which, ZeroTol, was tested in 2004 on the Mississippi State University turf plots. Spraying the material every 7 days resulted in significant improvement compared to untreated areas. Trials in other states using hydrogen peroxide +peroxyacetic acid have not shown good efficacy. Label rates and application timings vary with the individual labels.

Figure 4. Close-up image of the web-like mycelial growth on the top of leaves. Note the dew on the mycelia of the fungus that keeps it from drying out. The infected turfgrass below it has water-soaked tissue (best seen on the lower left of the mycelia), and some yellowing, but it is mostly turning brown. The dew has already dried from the patch area immediately above the mycelia, so you can easily see the complete set of leaf symptoms.

More information

Maria Tomaso-Peterson. 2006. *A demonstration trial of biofungicides with efficacy for controlling dollar spot in turfgrasses*. Mississippi Agricultural and Forestry Experiment Station Research Report Vol. 23, No. 17. ***https://www.mafes.msstate.edu/publications/publist.asp***

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