

Rhizoctonia Large Patch Disease of Zoysiagrass and Bermudagrass

Stephen Vann
Assistant Professor -
Urban Plant Pathologist

Gene Milus
Professor -
Plant Pathologist

Rick Cartwright
Professor -
Plant Pathologist

Zoysiagrass and bermudagrass are commonly grown warm-season grasses on home lawns, golf course fairways and business landscapes in Arkansas. Also, a considerable amount of zoysiagrass and bermudagrass sod is produced in the state. In general, zoysiagrass is an easily maintained turfgrass, but susceptibility to *Rhizoctonia* large patch disease can cause a serious problem under our conditions. Although bermudagrass is susceptible to large patch, the disease is less frequently observed and less damaging on bermudagrass than on zoysiagrass.

Cause

Rhizoctonia solani AG 2-2 (LP), a fungus.

Symptoms

Rhizoctonia large patch occurs in the fall and spring as circular, discolored patches that expand over time (Figure 1). The disease is favored by cool temperatures and wet conditions and may be especially severe in poorly drained and overfertilized turf. Generally, patches begin to appear in early to mid-October in Arkansas as temperatures cool and zoysiagrass slows growth before going into winter dormancy.

Patches start as circular, discolored areas. At times, the borders of the patches will be orange, which indicates that the disease is active. The orange border consists of newly infected plants where the lower leaves are just starting to die as the fungus invades and kills the leaf sheath below the blades.

The grass and the disease are dormant during the winter, but diseased areas are more sensitive to cold injury. As the grass begins growth in the spring during March or April, the



Figure 1

patches become very visible against a background of healthy green grass, and they may increase in size if conditions are favorable for disease.

The dead-looking centers of the patches will appear thin and sunken and may be invaded by weeds. Patches vary in size and shape, but tend to be circular and may reach 20 feet in diameter. Disease progress slows as temperatures rise during the spring, and the patches gradually become filled in by new growth during the summer. If not controlled, patches will tend to return each fall and spring in the same places.

Disease Cycle

Rhizoctonia large patch disease of zoysiagrass and bermudagrass is caused by a fungus similar to the *Rhizoctonia* fungus that causes brown patch disease of cool-season grasses (bentgrass, tall fescue, etc.) in Arkansas. However, the fungus that attacks zoysiagrass and bermudagrass grows best at cooler temperatures and thus is more active in the fall, winter and spring than the brown patch fungus.

The large patch fungus survives hot weather in infected nodes where leaf sheaths have rotted off, in infested thatch and as specialized

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survival structures called bulbils. The fungus becomes active in the early fall as temperatures cool and zoysiagrass slows growth in preparation for winter dormancy. Infection and disease development probably starts from mid-September to early October in Arkansas, depending on location, and continues for as long as temperatures are consistently above 50°F and conditions are moist. The disease resumes rapid development in the spring when conditions become favorable again, but slows when temperatures consistently reach the mid-80s, usually in May.

The disease progresses outward in all directions from the initial point of infection, killing leaf sheaths and leaves and creating a roughly circular patch. Depending on conditions, some leaves within the patch may survive, and the disease is not known to kill stolons or roots. Once the disease is suppressed by high temperatures, stolons will form new shoots and the patch will start to recover and eventually disappear during the summer. The disease is more severe on zoysiagrass that has been mowed at less than 1-inch height. Because the fungus survives during the summer in thatch and grass, anything that moves this material will scatter the fungus around. Mowing, aerating and sod transplanting all move the fungus to new areas.

Disease Control

Rhizoctonia large patch disease is made worse by close mowing, overwatering and early- or late-season nitrogen applications. Any successful control program will have to address these issues.

Control practices include:

- Improve drainage to avoid soil saturation.
- Do not overwater the grass, especially in the fall or spring.
- Mow as tall as practical.
- Bag and remove clippings from patch areas because they may spread the disease.

- Do not mow when grass is wet.
- Do not core aerate or vertislice during the spring when large patch is active because this spreads the disease. These practices should only be done to reduce thatch and stimulate the turf during the summer months when large patch disease is inactive.
- Do not apply nitrogen fertilizer to zoysiagrass or bermudagrass in early spring. Wait until warm weather has slowed large patch development (usually May).
- Do not use more than 2 pounds per 1,000 square feet actual N per season on zoysiagrass or more than 4 pounds per 1,000 square feet on bermudagrass.
- Use slow-release nitrogen fertilizers during the summer.
- Use a fast-release N source, like urea, as the first N application in May to speed patch regrowth in early summer.
- Discontinue nitrogen applications after August 15.
- For areas with a known large patch problem, apply a fungicide between September 20 and October 10 before patch development.
- For difficult situations, apply a fungicide to suppress spring symptoms again between March 10 and April 10 just as zoysiagrass starts growth.
- Fungicide applications after patches start to develop are much less effective than preventive applications.
- Read and follow all fungicide labels.

There are no effective fungicides packaged and sold for homeowner use. For homeowners with Rhizoctonia large patch in their lawns, try the cultural controls listed above, and if these do not control the disease, then contact a professional lawn service about applying one of the commercial fungicides at the proper times.

Commercial Turf Fungicides

Disease	Product	Active Ingredient	Rate per 1,000 sq ft	Comments
Rhizoctonia large patch (zoysiagrass and bermudagrass)	Heritage 50WG Prostar 70WP Eagle 40WSP Insignia 20WG	azoxystrobin flutolanil myclobutanil pyraclostrobin	0.2-0.4 oz 2-3 oz 1.2 oz 0.9 oz	Apply the highest labeled rate in 2 to 5 gallons water per 1,000 square feet between September 20 and October 10, and if symptoms are severe, again between March 10 and April 10. In very severe instances, an additional application may be made about four weeks after the first fall application.

This information was current as of March 1, 2007, and applies only to Arkansas, and may not be appropriate for other states or locations. The listing of any product in this publication does not imply endorsement of that product or discrimination against any other product by the University of Arkansas Division of Agriculture. Every effort was made to ensure accuracy, but the user of any crop protection product must read and follow the most current label on the product – The Label is the Law. For further assistance, contact the local Cooperative Extension Service office.

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DR. STEPHEN VANN is assistant professor - urban plant pathologist, University of Arkansas Division of Agriculture, Cooperative Extension Service, Little Rock; **DR. GENE MILUS** is professor - plant pathologist, University of Arkansas, Fayetteville; and **DR. RICK CARTWRIGHT** is professor - plant pathologist, University of Arkansas Division of Agriculture, Cooperative Extension Service, Fayetteville.

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