



## Brown Patch on Turfgrass

**Introduction:** *Rhizoctonia* species cause the disease of turfgrass known as Brown Patch. Kentucky bluegrass (*Poa pratensis*) and fine fescues (*Festuca* sp.) may be attacked, but Bentgrasses (*Agrostis* sp.), Ryegrasses (*Lolium* sp.), Annual bluegrass (*Poa annua*) and tall fescues (*Festuca arundinacea*) are most susceptible. *Rhizoctonia solani* is usually the causal agent of infections occurring in June throughout early July. *Rhizoctonia zae* takes *R. solani*'s place as the heat of summer arrives.

**Symptoms:** The pattern of symptoms depends largely on cool vs. warm season grasses, mowing practices, and moisture levels. On cool season grasses the symptoms produced by a *Rhizoctonia* sp. infection may vary depending on the maintenance practices. Under close mowing conditions, cool season grasses that are kept very wet produce small to 50 cm blighted patches that appear quickly during optimum conditions. The patches may contain the diagnostic feature of a purplish-gray border that is referred to as a "smoke-ring". The smoke-ring is commonly missing from the symptomatic region but if present is most often observed during hot-humid weather and is most easily seen when dew is present. Cool season grasses that are cut higher produce small light brown patches up to 15 cm in diameter that may or may not contain that diagnostic smoke-ring symptom. Cool season grasses that are cut high and kept dry may produce patches up to 30 cm in diameter. These patches may produce a symptomatic patch known as a "frog-eye". Frog-eye patches have apparently healthy green grass surrounded by a ring of necrotic grass that appears very flat and sunken into the ground.

Individual leaf lesions may be small, round to irregularly shaped, and tan in color with a distinctive dark brown margin. As the fungus grows, the hyphae produce a characteristic branching pattern of 90° angles that are easily recognized microscopically. The width of the hypha decreases at the junction of a branch giving it a pinched appearance.

**Disease Cycle:** *Rhizoctonia* spp. produce structures referred to as "bulbils" to survive unfavorable conditions such as freezing temperatures or drought. The optimum temperature range for germination of the fungus is from 21°C to 32°C (70°F to 90°F). The pathogen mainly infects leaves and sheaths of the turfgrass plant.

**Management Strategies:** Cultural control recommendations include reducing thatch, removing dew from the leaf blades and providing good drainage conditions. Additionally, fertilizer applications should be monitored to ensure nitrogen levels are adequate but not excessive. Excessive nitrogen can increase disease occurrence and severity. Availability of resistant cultivars varies with locations.

Brown patch can be controlled with fungicides containing thiophanate-methyl and/or chlorothalonil but as the temperature exceeds 32°C (90°F), they become ineffective against *Rhizoctonia zae*. Some other fungicides containing the active ingredients myclobutanil, propiconazole, quintozone, or triadimefon may also be used by homeowners in New York State. Be certain any formulation(s) of pesticide(s) you purchase are registered for the intended use, and follow the label instructions. The label also contains information on how to apply the fungicide as well as any precautions.

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Additional pesticides are available for commercial turf applications. Commercial applications should refer to the appropriate pest management guidelines, or contact their local Cooperative Extension Office for more information on currently registered products.

Reprinted from *Brown Patch On Turfgrass Rizoctonia spp.* The Plant Disease Clinic, Cornell University, Ithaca, NY. Created, KLS, 8/99; Updated, SLJ, 1/07, Updated, SLJ, 5/2011

The Pesticide Management Education Program (PMEP), in cooperation with the New York State Department of Environmental Conservation (NYSDEC), maintains a web site with a searchable database for pesticide products currently registered in New York State. Homeowners who have Internet access can locate currently registered products at <http://pims.psur.cornell.edu/>. Several different queries are available that will produce a summary for the product(s) that the system locates. If the system fails to locate the product in question, then that product is not currently registered in New York State. The database also provides a summary of important information related to every product currently registered. Two data fields “Status” and “Expiration Date” are provided in each summary. Products with a status of “Registered - Discontinued” are currently registered but will probably be discontinued for use, sale, and distribution in New York State after the date noted in the “Expiration Date” field.

**This publication contains pesticide recommendations. Changes in pesticide regulations occur constantly and human errors are still possible. Some materials mentioned may no longer be available, and some uses may no longer be legal. All pesticides distributed, sold or applied in New York State must be registered with the New York State Department of Environmental Conservation (NYSDEC). Questions concerning the legality and/or registration status for pesticide use in New York State should be directed to the appropriate Cornell Cooperative Extension Specialist or your regional NYSDEC office. Read the label before applying any pesticide.**

TK: 8/2007, AW:1/2012