



## Brown Patch on Turfgrass: *Rhizoctonia* spp.

### Introduction

*Rhizoctonia* spp. cause the disease of turfgrass known as Brown Patch. Kentucky bluegrass (*Poa pratensis*) and fine fescues (*Festuca* spp.) may be attacked, but Bentgrasses (*Agrostis* spp.), Ryegrasses (*Lolium* spp.), 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 zeae* takes *R. solani*'s place as the heat of summer arrives.

### Symptoms and Signs

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.

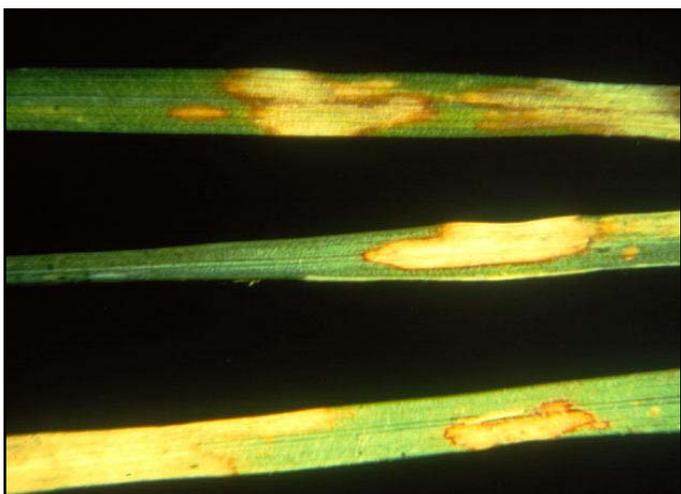


Figure 1: Leaf lesions caused by *Rhizoctonia* sp. (provided by Dr. Eric B. Nelson, Cornell University)

Under close mowing conditions, cool season grasses that are kept very wet produce very small up 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 a 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 the 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 develop a symptom known as a "frog eye". Frog eye patches have apparently healthy green grass that is surrounded by a ring of necrotic grass that appears very flat and sunken into the ground.



Figure 2: Microscopic view of *Rhizoctonia* sp. mycelium. (provided by Dr. Eric B. Nelson, Cornell University)

Individual leaf lesions may be small, round to irregularly shaped, and tan in color with a distinctive dark brown margin (Fig. 1). As the fungus grows, the hyphae produce a characteristic branching pattern at 90° angles that can be recognized microscopically. The width of the hypha also decreases at the junction of a branch giving it a pinched appearance (Fig. 2).

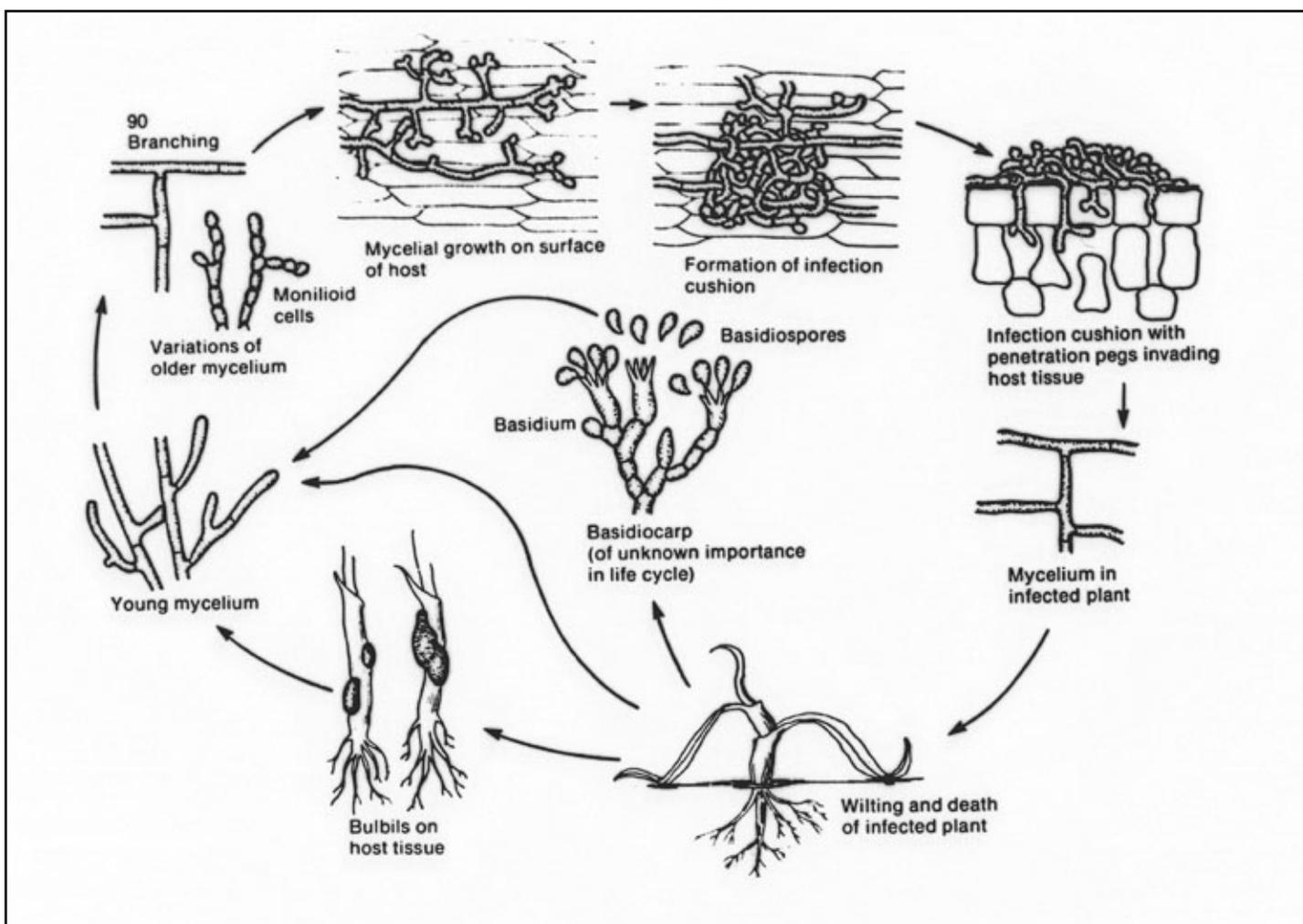
## Disease Cycle

*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.

Although several fungicides may be used to aid in management of this disease, there may be limited options for homeowners making their own lawn applications. For a list of specific products, please refer to our [turf fungicide table](#). Be certain any formulation of pesticide you purchase is registered for the intended use, and follow the label instructions.



Brown Patch disease cycle.

(image from The Compendium of Turfgrass Diseases, APS Press)

The label also contains information on how to apply the fungicide as well as any precautions.

Additional pesticides may be available for commercial turf applications. Brown patch can be controlled with fungicides but please note that as the temperature exceeds 32°C (90°F), some products may become ineffective against *Rhizoctonia zeae*. Commercial applicators should refer to the appropriate pest management guidelines, or contact their local Cooperative Extension Office for more information on currently registered products.

**Reference:**

*Compendium of Turfgrass Diseases*, Third Edition, 2005. R.W. Smiley, P.H. Dernoeden and B.B. Clarke. APS Press.

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**READ THE LABEL BEFORE APPLYING ANY PESTICIDE!** Changes in pesticide regulations occur constantly. All pesticides distributed, sold, and/or applied in New York State must be registered with the New York State Department of Environmental Conservation (DEC). 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 DEC office.

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