



## Summer Patch: *Magnaporthe poae*

### Introduction

Kentucky bluegrass (*Poa pratensis*), annual bluegrass (*Poa annua*), and fescues (*Festuca* sp.) can be affected during the summer by an interaction of environmental factors and a root and/or crown rot caused by the fungus *Magnaporthe poae*. This disease is known as Summer Patch. Bentgrasses (*Agrostis* sp.) may also become infected but show few symptoms and may continue to perform where other grasses decline.

Summer Patch occurs between June and September. This disease, in combination with another disease now known as Necrotic Ring Spot were once grouped together into a disease complex known as Fusarium Blight. The high level of difficulty involved in clinical evaluations of *Leptosphaeria korrae*, *Magnaporthe poae*, and related fungi, and the extreme ease of isolation of decomposer fungi such as *Fusarium* species, originally led to the mis-naming. Eventually, these organisms and their symptoms were separated out into the diseases now known as [Necrotic Ring Spot](#) and Summer Patch. The latter will be described in greater detail here.

### Symptoms and Signs

It can be difficult to diagnose this disease by symptoms alone in the early stages. Symptoms begins as scattered small round patches of thin, wilted or slow growing turf. Initially, these patches may be only 3-8 cm in diameter, but they may enlarge to about 30 cm in diameter (about 12 inches) and range from gray-green to light tan or straw-colored (Fig. 1).

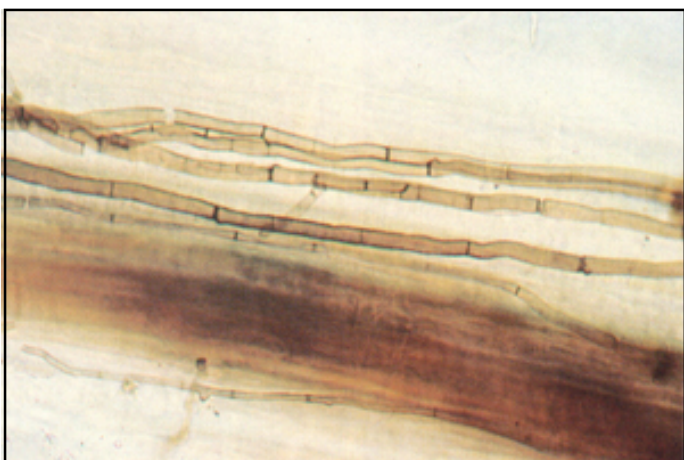


Figure 1: Symptoms of a Summer Patch infection (provided by Dr. Eric B. Nelson, Cornell University)

In rarer circumstances, they may get to be twice that size. As patches enlarge, they may coalesce, and form crescents of yellow or tan turf. Where turf within the center of a patch begins to recover, necrotic rings may become evident. As Necrotic Ring Spot may exhibit similar symptoms, microscopic examination is often necessary to determine the cause of the problem. The roots, crowns and stolons of infected plants may appear to be dark brown as the dark mycelium of the fungus (Fig. 2) invades the tissue. As the disease progresses, the cortex may begin to rot, and plants may die.

Summer Patch blighted areas often occur on lawn sites that receive direct sun and are on south-facing slopes, or near sidewalks, driveways, buildings, or other "hot spots" or otherwise stressed areas in the yard or on golf courses. In the cool weather of autumn, the grass may begin to grow into these dead areas again. The disease, however, is likely to reappear in previously affected areas the following

summer, and to increase in intensity. Summer patch usually occurs during the hotter periods (June, July, August) of the year. Summer patch is less of a problem during cool summers with adequate rainfall.



**Figure 2: Dark Hyphae strand running through a root.**  
(provided by APS Press)

## Disease Cycle

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The fungus, *Magnaporthe poae*, survives unfavorable conditions as mycelium in infected plant tissue or plant debris. The optimum temperature for fungal growth is 28°C. Infection takes place in late spring when soil temperatures reach 19-20°C. Spread during the growing season occurs as the fungus grows between roots. Symptoms may not be evident until the temperature increases very drastically during wet weather. The pathogen may also be spread by movement of infected plant material and on mechanical equipment.

## Management Strategies

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The primary stresses that influence disease development include excesses of thatch, fertilizer, and turf canopy temperature, as well as incorrect timing of fertilizer applications, low mowing height, and pH extremes. Each of these stresses can be reduced through appropriate cultural practices described below.

Disease severity may worsen at a higher pH, so try to maintain the pH of the soil and rhizosphere at 5.5 to 6.0. Use an acidifying fertilizer where the pH

is above 6.0, and try to avoid the use of products that may raise the pH.

For most bluegrass lawns, two to five lbs of nitrogen/1000 sq. ft. is sufficient. Apply this in a fertilizer balanced by phosphorus and potassium. Do not apply even small amounts of fertilizer during the June-August stress period because this will tend to stimulate the disease. Therefore, fertilize only in autumn (September through November) and in late spring (May).

Deep watering is essential for proper root growth. Water the soil under disease-prone areas to a depth of 15 to 20 cm every 7-10 days during the dry periods of the summer. Soaker hoses are very useful for supplementary watering on steeper slopes where other sprinklers are inefficient. The harmful effects of excessive temperature can be reduced by a light sprinkling of the surface at mid-day.

Proneness to disease in turf is increased as the cutting height is decreased. Cut lawns at 5 to 10 cm height, and often enough so that less than 1/3 of the leaf blade is removed during each mowing.

Thatch (the layer of organic matter between the mineral soil and the green grass) should be no more than 1.5 cm (1/2 inches) in thickness. Thatch can be removed by vertical slicing machines and/or aeration during the spring and early fall. Over a longer period thatch will be reduced by using the cultural practices discussed above.

Kentucky bluegrass cultivars such as *Adelphi*, *America*, *Aspen*, *Columbia*, *Eclipse*, *Glade*, *Midnight*, *Nassau*, *Parade*, *Ram I*, *Sydsport*, *Touchdown*, *Vantage*, *Windsor*, and *Victa* are less susceptible to summer patch than others. Blend seed of resistant cultivars with that of one or more otherwise desirable cultivars. Blending 10-15% (by weight) of perennial ryegrass seed into bluegrass seed will prevent this disease from occurring. Ryegrass can also be seeded into existing lawns.

Chemical treatment is efficient only when the previously mentioned cultural practices are first used. Furthermore, applications must be made before the crown rot develops sufficiently to cause visual symptoms of the disease.

For homeowners in New York, a list of some products that may help to manage this issue may be found in our [turf fungicide table](#). Be certain any formulation of pesticide you purchase is 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.

Additional pesticides may be 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.

Thoroughly water (applying 2 to 3 cm of water) areas with a history of this disease several days before applying a fungicide. To determine the best time to treat, monitor soil temperature to a depth of 2 inches, and make the first application when the soil temperature reaches 55°F. or about 13°C.

In upstate New York, the first application may be made in early to mid-June with a second application two to three weeks later. In southeastern New York or on Long Island, applications may need to be made a few to several weeks earlier, depending on the soil temperature. Additional applications may be required for certain fungicides. Always adhere to the rates and procedures recommended on the fungicide package label.

## 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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