



## Necrotic Ring Spot on Turfgrass *Leptosphaeria korrae*

**Introduction:** Kentucky bluegrass (*Poa pratensis*), annual bluegrass (*Poa annua*), fescues (*Festuca* sp.), and bentgrasses (*Agrostis* sp.) can be affected during the summer by an interaction of environmental factors and a root and/or crown rot caused by the fungus *Leptosphaeria korrae*. 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* spp., caused this disease and Summer Patch to be grouped together into a disease complex previously known as Fusarium Blight. Eventually, the agents involved were better distinguished and separated into the diseases now known as Summer Patch, caused by *Magnaporthe poae* and Necrotic Ring Spot, caused by *Leptosphaeria korrae*. The latter disease is described in greater detail here.

**Symptoms:** Symptoms are usually first noticed in late spring and early autumn but can be observed throughout the growing season. It can be difficult to diagnose this disease by symptoms alone during the early stages. The disease begins as scattered light green patches 5 to 10 cm in diameter. These patches may then grow as large as 1 meter in diameter, and turn dull-tan to reddish-brown. The most diagnostic of these larger patches in the lawn may exhibit a "frog-eye" pattern (Figure 1).



Figure 1

In frog-eyes an apparently healthy green patch of grass is partially or completely surrounded by a ring of dead grass. Distinct streaks, crescents, and circular patterns are found in the affected lawn area (Figure 2).



Figure 2

Necrotic Ring Spot may occur throughout the growing season, but tends to be worse during the cooler parts of the year (April/May—September/October). If Necrotic Ring Spot continues through the summer months, it may cause a rot where the crown and roots become blackened and dark mycelium may be viewed on infected parts. Leaf lesions are often, but not always, associated with this disease. If present, they are variable in size, shape, and color. They usually extend across the blade and are yellowish, dull-tan, or reddish-brown. Many other fungal diseases can also cause leaf lesions. Microscopic examination is often necessary to determine the cause of the problem.

**Disease Cycle:** The fungus, *Leptosphaeria korrae*, survives unfavorable conditions as dormant mycelium or sclerotia in infected plants and plant debris. The fungus infects plants and produces symptoms in early spring. Symptoms fade as the fungus become dormant as summer heat increases, but they reappear as the fungus becomes active again in early autumn. The pathogen may be spread through infected turf and mechanical equipment.

**Control Strategies:** 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 low soil pH. Each of these stresses can be reduced through appropriate culture as described below. Correct excess soil acidity by applying limestone to maintain a pH above 6.2. Contact your local Cornell Cooperative Extension for information on having soil tested for pH. Do not apply even small amounts of fertilizer during the June-August stress period because this will tend to stimulate the disease.

Deep watering is essential for proper root growth. Water the soil under disease-prone areas to a depth of 15 to 20 cm (6 to 8 inches) every 7-10 days during dry periods in the summer. Soaker hoses are very useful for supplemental watering of 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 6 to 9 cm (2.5 to 3.5 inches) height and do so often enough 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 2 cm (0.75 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 Necrotic Ring Spot than others. Blend seed of a resistant cultivar 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 were first used. Furthermore, applications must be made before the crown rot develops sufficiently to cause visual symptoms of the disease. In New York State, some fungicides containing the active ingredients azoxystrobin (Heritage), thiophanate-methyl, triadimefon or myclobutanil may be available for control of Necrotic Ring Spot in home lawns. Thoroughly water areas with a history of this disease applying 2 to 3 cm (0.75 to 1 inch) of water several days before applying the fungicide. Follow label directions.

*Reprinted from Necrotic Ringspot on Turfgrass Leptosphaeria korrae, The Plant Disease Diagnostic Clinic, Cornell University, Ithaca, NY. Updated, SLJ, 1/07. Slight revision, TK, 2/07.*

**DISCLAIMER:** *Please note that neither Cornell Cooperative Extension of Oneida County nor any representative thereof makes any representation of any warranty, express or implied, of any particular result or application of the information provided by us or regarding any product. If a product is involved, it is the sole responsibility of the User to read and follow all product labeling instructions and to check with the manufacturer or supplier for the most recent information. Nothing contained in this information should be interpreted as an express or implied endorsement of any particular product or criticism of unnamed products. With respect to any information on pest management, the User is responsible for obtaining the most up-to-date pest management information. The information we provide is no substitute for pesticide labeling. The User is solely responsible for reading and following the manufacturer's labeling and instructions. (October 2009)*

*This publication may contain pesticide recommendations. Changes in pesticide regulations occur constantly, some materials mentioned may no longer be available, and some uses may no longer be legal. 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. **READ THE LABEL BEFORE APPLYING ANY PESTICIDE.***