



Necrotic Ringspot on Turfgrass *Leptosphaeria korrae*



Figure 1. Close up picture of a typical “frog-eye” symptom. (University of Minnesota Extension Service)

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 (**Fig. 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 (**Fig. 2**).



Figure 2. Overview of a lawn with “frog-eye” symptoms. (Note the healthy green patches of grass surrounded by a ring of dead (brown) grass) (University of Minnesota, Plant Disease Clinic)

Necrotic Ring Spot may occur throughout the growing season, but tends to be worse during the cooler parts of the year (April/May - Sept/Oct). 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 Cornell Cooperative Extension – Suffolk County [for information on having the soil pH tested first](#). For most bluegrass lawns, two to five lbs of nitrogen/1000 sq.ft. is sufficient, but on Long Island only 2 to 3 lbs. of nitrogen is recommended. 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 October) 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 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 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 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, propiconazole, or myclobutanil (limited use on long Island) may be available for control of Necrotic Ring Spot in home lawns. For a list of some products that may help to manage this issue please see our [turf fungicide table](#). Thoroughly water areas with a history of this disease (applying 2 to 3 cm of water) several days before applying the fungicide. Follow label directions. Additional products may be available for use by professional pesticide applicators.

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The New York State Department of Environmental Conservation (NYSDEC) Bureau of Pest Management maintains a web site with a searchable database for pesticide products currently registered in New York State. Individuals who have Internet access can locate currently registered products containing the active ingredients suggested in this diagnostic report at <http://www.dec.ny.gov/nyspad/products?0>. This replaces the no longer updated (as of August 15, 2016) PIMS website (<http://pims.psur.cornell.edu/>).

This publication contains 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.

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