

Neurotic about Necrotic Ring Spot? Dr. Tom Hsiang  
Dept. Environmental Biology University of Guelph

Necrotic Ring Spot caused by *Leptosphaeria korrae* (= *Ophiosphaerella korrae*)

Necrotic ring spot history

- 1960's - Fusarium blight / Frog-eye disease first observed in Kentucky bluegrass
- 1972 - *Leptosphaeria korrae* first detected and the fungus named in Australia
- 1984 - *L. korrae* detected in Wisconsin (first time in North America)
- 1989 - *L. korrae* detected in B.C. (first time in Canada)
- 1991 - *L. korrae* detected in Ontario

Necrotic ring spot symptoms

- on Kentucky bluegrass (*Poa pratensis*)
- associated with sod and compacted soils
- patches from 10 cm to 1 m across
- (sunken) dead rings with green centre
- dark threads (runner hyphae) on roots

Necrotic ring spot disease cycle

- SPRING: spores or mycelium in the thatch and root zone infect roots under wet conditions, and symptoms appear 12 to 18 months later (long latent period)
- SUMMER: summer heat and dryness stop fungal growth and activity, but dead rings become more prominent with drought stress (if chemical applied at this time, it doesn't do much)

Necrotic ring spot disease cycle

- FALL: cool and moist conditions allow fungus to resume growth and infect more turf roots
- WINTER: fungus survives on roots and lower crowns

Necrotic ring spot control

- encourage deep rooting
- promote growth in spring & fall but reduce summer succulence (organic N?)
- overseed or resod with resistant cultivars
- control thatch to promote vigor

NRS Chemical Control

- treat diseased areas from previous years
- begin applications in spring when soil temperatures at 7.5 cm reach 16C (3", 60F)
- repeat once after 30 days (again if wet/cool)
- drench the treatment into the soil to 2.5 cm
- spiking or coring can help penetration, and soils that are already wet before application can enhance fungicide movement

What do other Turfgrass Pathologists say about control of Necrotic Ring Spot?

- Smith et al. 1989
  - ammonium sulphate or sulphur
  - water and fertilize for recovery
  - some fungicides work, some don't
  - fenarimol or propiconazole in late May
  - triadimefon, iprodione and benomyl failed

■ Smiley, Dernoeden & Clarke, 1993

- judicious irrigation to prevent drought
- slow release nitrogen fertilizers
- overseeding with resistant cv/species
- preventive fungicides in the spring
  - » fenarimol
  - » propiconazole
  - » thiophanate methyl

■ Vargas 1995

- light daily irrigation (0.25 cm = 1/10 inch)
- encourage microbial activity with slow release N applied at 2-3 kg/100m<sup>2</sup> (4-6 lbs/100-ft<sup>2</sup>)
- drench benzimidazoles into soil curatively
- fenarimol or propiconazole preventively
- Kentucky bluegrass cultivars Midnight, Monopoly, Able I, Majestic, American

■ Couch 1995

- promote good plant growth during spring & fall
- fenarimol, thiophanate methyl, cyproconazole and propiconazole preventively in spring & fall

■ Sears, Hsiang & Charbonneau, 1996

- fertilization & light frequent watering for recovery, but avoid summer succulence
- reduce thatch to promote vigor
- use coring to relieve compaction and promote rooting
- some Kentucky bluegrass cultivars show greater disease resistance
- overseed rings with perennial ryegrass

Bluegrass cultivar resistance

■ Most resistant: NE80-88, Princeton 104, Washington, Alpine, Mystic, Joy, Miranda, Aldolph, Bristol and Unique

■ Least resistant: Barsweet, HV-97/Cocktail, Annika, Opal, BA70-131, Amazon, Trampas, BA69-82/Fairfax, J335, Sydsport.

■ for the full report, see [www.uoguelph.ca/~thsiang/pubs/pubs.htm#97c](http://www.uoguelph.ca/~thsiang/pubs/pubs.htm#97c)

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Tom Hsiang can be contacted at [thsiang@uoguelph.ca](mailto:thsiang@uoguelph.ca)