

BIOLOGICAL CONTROL OF NECROTIC RING SPOT OF KENTUCKY BLUEGRASS

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Necrotic ring spot (NRS), is an extremely devastating disease of Kentucky bluegrass (*Poa pratensis*) in Michigan. NRS is caused by the root infecting fungus *Leptosphaeria korrae*. This pathogen resides in the soil and thatch. When conditions are favorable (wet-dry cycles) the organism is able to attack the plant root system.

NRS is active in the spring and fall causing frog-eye type patches with red to yellow blades of grass at the advancing border of the ring. During hot dry weather the affected blades wilt and turn straw colored. Rings may range in size from 7 centimeters to 1 meter in diameter.

Since 1987 an irrigation/organic soil amendment study has been underway at the Hancock Turfgrass Research Center on "Bristol" and "Victa" Kentucky bluegrass cultivars for the purpose of biological management of NRS.

Irrigation Study

Soil moisture has a significant influence on disease activity. The effect of inadequate irrigation on NRS is evident in several of the test blocks at the research center. The irrigation study is composed of nine 40' x 40' blocks of Kentucky bluegrass, the irrigation treatments are performed in triplicate. The treatments are as follows:

1. Daily light irrigation, 0.1 inch per day applied at noon.
2. 80% O.P.E., 80% of the water lost from an open evaporation pan is applied to the turf on Mondays and Thursdays, (example; 1 inch lost from Monday through Friday = 0.8 inch applied at night).
3. Rain only, no supplemental irrigation.

Organic Soil Amendment Study

Management of NRS through added nutrition and introduction of favorable microbes provided by soil amendments is being examined under each irrigation regime. The following soil amendments are applied monthly to triplicate 6' x 6' test plot in each irrigation regime:

	<u>RATE</u>
1. Lawn Restore (9-4-4)	1#N/M
2. Biogroundskeeper	6oz/M
3. Biogroundskeeper + G.P. (27-2-3)	6oz/M 1#N/M
4. Biogroundskeeper + 9-4-4	6oz/M 1#N/M
5. Sustane (5-2-4)	1#N/M
6. Nitroform (38-0-0)	1#N/M
7. 9-4-4, urea	1#N/M
8. Bio-agronomics	1#N/M
9. IBDU (18-3-24)	1#N/M
10. FB-3, (experimental)	1#N/M
11. Control	no treatment

Methods

During the season the number of ring spots and percent disease in each test plot is monitored. Through statistical analysis we will be able to determine the effect of irrigation and soil amendment treatments on NRS.

In addition to disease monitoring, enumeration of total populations of bacteria, fungi and actinomycetes in selected test plots has been performed. Irrigation and/or soil amendments stimulate certain microbial populations which can hinder disease progress through suppression of *L. korrae*.

Besides having an effect on disease development and microbial populations the treatments play an important role in thatch management. Since thatch has been associated with NRS the thickness and texture of thatch is monitored in each test plot. Several soil amendments when combined with irrigation treatments have demonstrated the ability to reduce thatch.

Conclusion

Daily irrigation combined with soil amendments have the ability to manage NRS, stimulate bacterial populations and decompose thatch. Final results will be presented at the Annual Michigan Turfgrass Conference and Proceedings in January, 1990.