

## **IRRIGATION AND FERTILITY EFFECTS ON THREE TURFGRASS SPECIES**

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### **Introduction**

Common irrigation recommendations for turfgrass are to irrigate deep and infrequently in order to achieve a deep root system that will be better suited to endure prolonged drought conditions. Deep infrequent irrigation is a vague description but generally refers to applying large amounts of irrigation, 0.5 to 1.0 inch or more, in a single irrigation. Irrigating deep and infrequently is not recommended for all turf situations. Turf grown on sandy soils should be irrigated with smaller amounts of water more frequently as deep infrequent irrigations could potentially result in losses of irrigation water through leaching. Also, turf grown on fine textured soils with low infiltration rates should be irrigated with smaller amounts of water more frequently to avoid run-off and puddling on the surface.

The alternative to deep infrequent irrigation is light frequent irrigation. Light frequent irrigation would be described as applying small amounts of water, 0.10 to 0.25 inch, every day or every other day. Common perceptions of light frequent irrigations are that they promote shallow rooting in turfgrass thereby making the turf more susceptible to dry soil conditions. Furthermore, frequent irrigation applications are often implicated in increased weed interference. Despite all the negative effects put forth for light frequent irrigation applications there are some positive effects. Research by Melvin and Vargas (1996) revealed that light frequent irrigation treatments, 1/10 inch every day at 12 p.m., reduced the symptoms associated with Necrotic Ring Spot. Jiang, et al. (1998) also found that a light daily irrigation resulted in higher turfgrass quality, and reduced brown patch incidence when compared to deep infrequent irrigation based upon returning 80% of evapotranspiration weekly. Daily irrigation treatments have also been shown to have a smaller thatch layer than weekly irrigation treatments (Melvin, 1991).

In order to answer the question of deep/infrequent vs. light/frequent irrigation a research study was established at the Hancock Turfgrass Research Center in 1999 to compare the effects of the two irrigation schedules on three turfgrass species.

### **Materials and Methods**

In 1999 irrigation and fertility treatments were initiated on Kentucky bluegrass, tall fescue, and perennial ryegrass. The three irrigation treatments were no irrigation, 1/10 inch applied daily in the early afternoon, and 0.7 inch applied weekly at one irrigation event. Fertility treatments were different amounts of urea and one treatment with corn gluten meal.

## **Results**

Results from 1999 can be found in the 70<sup>th</sup> Annual Michigan Turfgrass Conference Proceedings (Vol. 29). Trends from 1999 indicated that the daily irrigation treatments resulted in higher turfgrass quality and density than the weekly irrigation and no irrigation treatments. Results from 2000 were inconclusive due to the frequent rainfall experienced in East Lansing. Research will be continued in 2001 to determine the effects of irrigation and fertility treatments on turfgrass species.

## **Literature Cited**

Jiang, H., J. Fry, and N. Tisserat. 1998. Assessing irrigation management for its effects on disease and weed levels in perennial ryegrass. *Crop Sci.* 38:440-445.

Melvin, B.P. 1991. Biological and cultural management of summer patch and necrotic ring spot. Ph.D. Dissertation. Michigan State Univ., East Lansing, MI.

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