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The Importance Of Proper Turf Irrigation

Irrigation practices are a vital component of the overall golf course turf management program. There are numerous important factors which comprise turf irrigation practices, but in Florida one of the most critical irrigation factors is the quantity of water applied. Florida turf is subjected to numerous deficiencies because our sand soils have low water and nutrient holding capacities. These problems can be enhanced or reduced through irrigation practices.

Studies recently concluded at the Ft. Lauderdale Research and Education Center have examined the effects of irrigation on bermudagrass growth and nitrogen leaching. One of the studies evaluated the overall turf quality as influenced by irrigation during a four year period. One set of plots received daily irrigation and the other set of plots received irrigation on an 'as-needed basis' which was determined by tensiometers buried in the soil. Within each of the irrigation plots were sub-plots of dry granular applied ammonium nitrate or sulfur-coated urea. The plots were maintained under conditions similar to those on Florida golf course fairways. The turf plots were periodically rated for color on a 1 to 9 scale, with 9=best and 6=minimally acceptable.

The overall effect of water received by the plots can be seen in Table 1. During the wet season (June-October), rainfall combined with irrigation methods produced turf with significantly different appearances. The best turf resulted when irrigation was only applied as needed by the tensiometers. Daily irrigation and rainfall during the wet season resulted in excessive amounts of water being applied to the turf and caused poor turf due to fertilizer leaching. By limiting the water to only what the plant needs for growth, leaching can be minimized. In the dry season (November-May), both methods for scheduling irrigation worked equally well. This indicated neither method was supplying excessive amounts of water to the turf, since color ratings for both treatments were above the minimally acceptable level. The tensiometer treatment over the four year period saved between 42 and 95 percent of the water applied by conventional daily irrigation, depending on the rainfall frequencies and amounts.

The irrigation method can also influence the performance of nitrogen sources as shown in Table 2. During the wet season no difference in turf color was noted between the water soluble (ammonium nitrate) and the slow-release (sulfur-coated urea) nitrogen sources. The main effect as indicated in Table 1 was the difference in water applied to the plots in the wet season. During the dry season there were performance differences between the nitrogen sources. The best turf was produced with sulfur-coated urea and daily irrigation. The other treatments produced turf with similar appearance. However if one considered the cost of water and fertilizer, the plots that received irrigation on an as needed basis and the water soluble nitrogen source probably were just as acceptable as the other treatments.

The general conclusion that can be drawn from this study is that we can grow turf with less water than many people think. By exploiting rainfall as much as possible, we can reduce the amount of irrigation that is applied to turf. Also by more carefully managing the irrigation, we can reduce nitrogen leaching and get better results from the cheaper, water soluble sources of nitrogen.

Table 1. Effects of irrigation method on turf color ratings during different seasons of the year.

Irrigation Method	Color Rating	
	Wet Season	Dry Season
Daily	6.7 a	7.1 a
Tensiometer	7.7 b	7.0 a

Values followed by the same letter are not significantly different.

Table 2. Effects of irrigation method and nitrogen source on the color rating of bermudagrass turf during the seasons.

Irrigation Method	Nitrogen Source	Color Rating	
		Wet Season	Dry Season
Daily	Sulfur-Coated Urea	6.8 a	7.4 a
Daily	Ammonium Nitrate	6.5 a	6.9 b
Tensiometer	Sulfur-Coated Urea	7.6 a	7.0 b
Tensiometer	Ammonium Nitrate	7.8 a	7.0 b

Values followed by the same letter are not significantly different. ■