



Best Management Practices for New York State Golf Courses

Deep and Infrequent Versus Light and Frequent Irrigation

Several studies have compared deep and infrequent irrigation (DI) to light and frequent (LF) schedules. DI was applied at signs of wilting and the soil was wetted to a depth of 9.5 inches. LF treatments watered daily to replace the ET lost and generally wetted the top 1.5-3.0 inches of soil. Both treatments were syringed as required to cool turf on hot days. The turf treated using DI had increased root and leaf carbohydrates, larger and deeper root masses, reduced thatch, and better overall quality throughout the season ((Fu, J., and Dernoeden, P. H. 2008; Fu, J., and Dernoeden, P. H. 2009a; Fu, J., and Dernoeden, P. H. 2009b). This particular study only considered physiological factors and did not assess the risks of leaching. Soils should not be wetted much below the root zone because this practice increases the risks of pushing nutrient and pesticide residues closer to groundwater.

Other studies have demonstrated that turf pre-conditioned with deficit irrigation for a period of 7 to 14 days withstands periods of drought and has a quicker recovery. Pre-conditioning improves stomatal conductance, transpiration rates, and photosynthetic capacity in subsequent periods of stress. However, letting soils dry completely has a negative effect on plants. Creeping bentgrass, Perennial ryegrass, and tall fescue can be pre-conditioned replacing 60-80% of the water deficit. Kentucky bluegrass has much higher sensitivity to drought stress and should only be watered at 100% of deficit. Cool season turfgrass should not be watered below 40% of deficit. Even though Kentucky bluegrass has the greatest sensitivity to deficits, it has the highest resiliency to recover.