

Developing Irrigation Conservation Strategies Using Soil Moisture Sensors and ET

By Jon Sass, University of Minnesota
Dr. Brian Horgan, University of Minnesota
and Van Cline, The Toro Company

During the summer of 2003, experiments were conducted on a sand based putting green using irrigation treatments to assess the performance of soil moisture sensors in an effort to identify irrigation practices which conserve water while maintaining or enhancing bentgrass turf quality. This project is also evaluating FAO 56, the latest world standard in evapotranspiration (ET) estimation, as an aid in accurate irrigation scheduling for highly maintained turf.

Initial results show that the Decagon ECH2O sensors used in the study are extremely sensitive in responding to changes in soil moisture; irrigation and rain events, along with daily drawdown in response to evapotranspirational loss, are very well pronounced, as shown in the accompanying graph.

One surprising result is the near total lack of soil wetting at depths below 4" under a daily irrigation scheme.

The FAO 56 ET estimating code using climate information from the weather station on campus also shows great promise, accurately predicting ET loss and aiding in the scheduling of irrigation volume. Deficit irrigation is also being investigated as a possible tool in turf irrigation water



conservation.

These two technologies, used either independently or together, represent the probable future of irrigation management and can lead to huge savings in water

usage in irrigating turfgrasses while maintaining high turf quality. Research is continuing in 2004.

T3 Bucket Replacement sensor composite

