

Soil Moisture-based Irrigation Control on St. Augustinegrass
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In Florida, landscape irrigation accounts for the majority of the publicly supplied water. High water use can often be attributed to homeowner tendencies to set their irrigation and then forget about it, allowing their systems to run as scheduled regardless of weather conditions. The objectives of this experiment were to evaluate the differences in irrigation water application and turfgrass quality in 'Floritam' St. Augustinegrass (*Secundatum Stenotaphrum*) comparing different soil moisture sensor (SMS) controlled irrigation systems.

This study was performed at the Plant Science Research and Education Unit in Citra, Florida during 2006 and 2007. There were 72 plots divided into 18 treatments of four replications. Testing was performed on two types of soil moisture sensors (SMS) at low, medium, and high watering threshold settings. The soil moisture sensors being tested are the LawnLogic® LL1004 (Alpine Automation, Inc., Aurora, CO.) and the Acclima Digital TDT® RS500 (Acclima Inc., Meridian, ID.). There are two comparison treatments for the project. One treatment is a time based treatment with no rain sensor while the second is non-irrigated. Comparisons of the accuracy of the two soil moisture sensor controllers were made using soil moisture sensor data collected.

Under dry conditions soil moisture sensors were able to produce water savings from 0 to 33%. Under rainier conditions the sensors tested were able to produce water savings from 5 to 47%. These water savings occurred while maintaining turf quality above minimally acceptable standards. Low threshold SMS treatments resulted in high water savings during the dry conditions in 2006, between 40% and 63%, but on more than one occasion led to less than acceptable turf quality levels. The medium threshold setting SMS-based produced good turfgrass quality while reducing irrigation water use compared to 2-WORS, during both years of testing, with water savings ranging from 0-32%.

Keywords turfgrass, soil moisture sensor, residential irrigation, controller

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