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Soil Sensors for Irrigation

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Does your lawn feel like a wet sponge in the middle of the day? Is dollarweed popping up all over the place? If you said yes to either of these questions, you are watering too much. The University of Florida recommends irrigating lawns twice a week from March to October and one to two times every 10 to 14 days from November to February applying one-half to three-fourths inch each time when there is no rainfall during the week. Irrigations should be reduced when there has been rain. If these recommendations make your head spin or you forget to turn off the irrigation system after a rainstorm, consider installing a sensor that monitors the soil moisture.

Soil moisture sensors constantly check soil moisture levels and prevent the irrigation system from operating when there is adequate water. According to a study conducted by researchers at the University of Florida's Department of Agricultural and Biological Engineering, the sensors reduced irrigation water usage by more than half. The research showed that irrigation systems equipped with soil moisture sensors used 56 percent less water than systems that only had rain sensors and timers set at twice a week. Seventy percent less water was used by irrigation systems outfitted with the soil moisture sensors than systems that were on a twice-weekly watering schedule and did not have a water saving device. This reduction saves you money in the long run. The sensors tested in the UF study ranged in price from \$75 to \$350 and could pay for themselves within one year in areas where water cost is high. Your irrigation professional can help you determine which soil moisture sensor will work best for you.

Tensiometers are one type of soil moisture sensor that consists of a water filled tube with a porous cup at the bottom. Water moves between the cup and the soil until equilibrium is reached. As the water flows out of the cup, a partial vacuum is created that results in a reading on a gauge. As the soil

dries, the gauge reading increases. Conversely, as the soil moisture increases, the gauge reading decreases. This sensor is easily managed and gives you the flexibility to manually monitor soil moisture or to automatically control your irrigation system (with modifications) when the soil moisture level drops below a predetermined value. An irrigation professional should be contacted if you would like to modify your irrigation system.

If you decide that tensiometers are right for you, there are a few things to remember:

- Keep air out of the instrument. This will result in inaccurate readings. System maintenance should be conducted periodically to remove air that may enter with normal water flow.
- The porous cup must be placed in the root zone. This will give you the most accurate reading of your turfgrass' water needs.
- When installing the tensiometer, do not force it into the soil. Core a hole, insert the instrument, and then firmly pack soil around it. Make sure that the porous cup is in the root zone.
- After set-up, wait several hours before reading the instrument gauge. The instrument needs time to reach equilibrium.
- Tensiometers are delicate and need to be protected from impact by equipment or animals. Never leave the instrument filled with water during freezing conditions.

If you would like to learn more about soil moisture sensors, please contact your local County Extension Service for more information.

References:

Smajstrla, A.G. and Harrison, D.S., (2004) "Tensiometers for soil moisture measurement and irrigation scheduling," University of Florida/ IFAS Fact Sheet CIR487.

UF News Release, "Soil moisture monitors help sprinkler systems save water, money, says UF expert," July 21, 2005.