

# Benefits of Soil Moisture Sensors



## TODAY'S SPEAKERS

- **Bill Christiansen** – Alliance for Water Efficiency
- **Stephanie Tanner** – EPA WaterSense
- **Dr. Michael Dukes** – The University of Florida
- **Evelyn Reyes** – San Gabriel Valley (California) Municipal Water District

**ORIGINAL DATE:**  
**MARCH 11, 2021**

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## WEBINAR SUMMARY

In the introduction, Mr. Christiansen provided an update on the Alliance for Water Efficiency's (AWE's) Learning Landscapes Lessons. AWE has developed a collection of lessons aligned with Next Generation Science Standards for grades 3 through 8, including new lessons to be added in 2021. The Learning Landscapes Grant Program will be used to build new or improve existing outdoor educational spaces like school gardens, educational landscapes on public/government property, botanical gardens, or other community locations. The lessons are posted on the AWE website (<https://www.home-water-works.org/teachers>).

Following that, Ms. Tanner went over the newest addition to WaterSense labeled products, the Soil Moisture-Based Irrigation Controller. Also referred to as Soil Moisture Sensors (SMSs), these products save water by inhibiting an irrigation event if moisture in the soil is determined to be adequate, so plants don't need water. WaterSense worked with the ASABE S633 committee to develop a test method that tests sensor precision based on soil type, salinity, and water level. The scope includes products that enable or disable an irrigation event based on a soil moisture sensor mechanism, for residential or commercial applications, wired and wireless technologies, and stand-alone controllers and add-on or plug-in devices. WaterSense estimates savings of 30 percent or 15,000 gallons of water annually in an average residential landscape.

### WaterSense Materials at <https://www.epa.gov/watersense>

- [Find It, Flag It, Fix It: A Checklist for Your Landscape](#)
- [Brochure: It's Time to Start a Sprinkler Spruce Up!](#)
- [Case Study: Albuquerque Apartments Realize Savings with Rebate and Retrofits](#)

## FEATURED SPEAKER: DR. MICHAEL DUKES

The SMS consists of the sensor device that is buried in the soil and the interface device that connects to the controller or timer. The timer is in control of the irrigation schedule and the information from the sensor device is relayed to the interface device to allow or bypass an irrigation cycle. The sensor device should be installed in an area of the landscape that would require the most frequent irrigation and be buried in the active portion of the root zone, approximately 3 inches deep for turfgrass, but that can depend on the type of plant material. Sensors must be calibrated after installation in the soil by saturating the soil with water and allowing the device to run in calibration mode.

## Case Studies

Dr. Duker presented on several research projects completed by The University of Florida. Studies included tests that compared the use of different SMS weekly schedules to plots that did not include a sensor and how their performance impacted the quality of turfgrass plots. Those results were also compared to plots that were under a lower irrigation threshold.

In a study in Pinellas County Homes, they compared landscapes with SMS, a rain sensor, and education materials and found that the SMS group saved the most water. Afterwards a similar study was performed with the use of reclaimed irrigation water where the SMS controllers also reduced irrigation.

### Do Smart Controllers save water?

Plot based studies often don't reflect the same results as out in the field, with reported water savings of 42 to 68 percent. By performing home research studies, water savings were closer to 23 to 31 percent. A summary publication is available through the American Society of Agricultural and Biological Engineers at <https://elibrary.asabe.org/abstract.asp?aid=51812>.

## FEATURED SPEAKER: EVELYN REYES

San Gabriel Valley Municipal Water District provides 7 different rebates for indoor and outdoor products. They established a rebate for SMS because in 2018 California established legislation for water conservation and drought planning. The Water District developed a rebate to encourage the use of SMSs in irrigation. Rebate guidelines are for residential customers only, sites at least 500 square feet, and the total rebate amount should not exceed the cost of the device.

### Lessons learned

Because SMSs are a fairly new technology, the district did not have as much participation as expected, customers need a compatible irrigation system, and installation is not as easy.

## SPEAKER QUESTIONS AND ANSWERS

### Q: Do both ET controllers and SMS offer the same water savings?

A: Dr. Duker answered that the savings could be dependent on the application. In a rainier climate, the SMS may be better equipped to handle the schedule, but with additional technology in WBIC the products offer similar potential.

### Q: Did you find a reluctance by contractors to participate in the rebate?

A: Ms. Reyes answered that they did not experience any reluctance from contractors.

### Q: How often is it necessary to calibrate the sensors?

A: Dr. Duker answered that they only calibrated the sensors once and did not need to recalibrate throughout the study. But in other areas of the country it may be necessary to calibrate during the spring after the system has been frozen.

### Q: What is being done to inform the typical gardener of the new technology?

A: Ms. Tanner answered that the WaterSense program has PCO programs that certify irrigation professionals that are updated with the knowledge of the newest technologies, the Your Better Yard campaign focuses on ideas for adding these products to your landscape, and product mini-reports with more of the technical information about these products.