Sensors allow for efficient irrigation, give growers more control over plant growth

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As water use and runoff regulations become more stringent and concerns about dwindling water supplies become more of an issue, finding ways to increase the efficiency of water use for horticultural operations is crucial. A new study contains answers that can help horticultural growers address regulatory and cost concerns. Amanda Bayer, lead author of the research study, explained that most often horticultural best management practices (BMPs) are used to conserve water, but that BMPs do not account for water requirements of plants. "Soil moisture sensors can be used along with an automated irrigation system to irrigate when substrate volumetric water content drops below a set threshold, allowing for precise irrigation control and improved water conservation compared with traditional irrigation practices," Bayer said. Bayer and colleagues Imran Mahbub, Matthew Chappell, John Ruter, and Marc van Iersel from the Department of Horticulture at the University of Georgia published their research findings in the August 2013 issue of *HortScience*.

"We designed a project to quantify the growth of *Hibiscus acetosella* 'Panama Red' in response to various soil water content thresholds," explained Bayer. The team performed the experiments in a greenhouse and on outdoor nursery pads using soil moisture sensors to maintain soil water content above specific thresholds. Greenhouse studies were conducted at the University of Georgia in Athens, while the nursery studies took place at the University of Georgia Horticulture Farm in Watkinsville and at the University of Georgia Tifton Campus. Bayer explained that the studies were conducted in two different U.S.

Department of Agriculture hardiness zones (Tifton 8b, Watkinsville 8a) to compare plant responses under different environmental conditions.

"We found that plant growth increased with increasing water content threshold in both greenhouse and nursery settings," the authors said. The experimental results revealed that the effect of substrate volumetric water content threshold on dry weight, plant height, and compactness shows the potential for commercial nurseries to utilize sensor-controlled irrigation systems to control plant growth, and potentially to reduce the need for pruning. Bayer added that, along with reduced water use and growth control, more efficient soil moisture sensor-controlled irrigation could greatly reduce leaching, allowing for reductions in fertilizer applications.

More information: hortsci.ashspublications.org/c … nt/48/8/980.abstract

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