IRRIGATION SAVINGS FROM SMART IRRIGATION TECHNOLOGIES AND A SMARTPHONE APP ON TURFGRASS

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A plot study comparing a variety of irrigation scheduling technologies was conducted in Gainesville, Florida, from 2015 to 2017. The study objectives were to compare the ability of different irrigation scheduling technologies to: (1) bypass scheduled irrigation cycles; (2) decrease water application depth; and (3) compare water savings, if any. Ten irrigation scheduling treatments were investigated, including three soil moisture sensor-based treatments (SMS), three weather or evapotranspiration-based treatments (ET), and two smartphone app-based treatments (APP). Also included were two time-based irrigation schedules: a without sensor feedback (WOS) [the main comparison treatment] and a non-irrigated treatment. Significant differences in turfgrass quality among treatments (including non-irrigated) were not observed during the testing periods, which tended to be wetter than normal. The SMS treatments saved water by bypassing scheduled irrigation cycles, the ET treatments saved water mainly through lower application depths, while the APP treatments saved water through a combination of bypassing and applying lower irrigation depths. Compared to WOS, the SMS, ET, and APP treatments achieved water savings of 51% to 63%, 28% to 66%, and 51% to 63%, respectively, depending on treatment specifics and testing year. Inclusion of additional practices, such as a split irrigation strategy (half in the morning and half in the evening) and seasonal deficit irrigation, were shown to be advantageous in an area where rainfall is frequent and a substantial contributor to plant water needs. The payback period for the evaluated scheduling technologies ranged between 0 and 12 months. Financial and practical considerations should be included when recommending or acquiring one of these irrigation scheduling technologies.

PRESENTER BIO: Mr. Cárdenas is a research associate at UF with more than 18 years of experience in irrigation water conservation. He has contributed to create standards for the Irrigation Association and the EPA WaterSense program and has participated in different multidisciplinary and multi-state projects. He has published consistently in peer-reviewed journals.