

OPTIMIZING IRRIGATION PRACTICES: THE ROLE OF SOIL MOISTURE SENSORS IN FLORIDA AGRICULTURE

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Soil moisture sensors have been a great resource to measure the soil moisture levels throughout the soil profile, allowing for informed decisions about irrigation needs. In traditional agriculture, irrigation schedules are often determined by a more intuitive "feel" method based on experience, which can sometimes lead to either over- or under-irrigation. Soil moisture data driven based irrigation system can be a great alternative for optimal use of water resources by scheduling the irrigation based on field conditions. To facilitate this transition, a soil moisture sensor network was formed in 2018 in Florida. The goal is to promote and implement best management practices for irrigation. To achieve this, an extension network has been working closely with local growers across the state to advise growers on irrigation scheduling. Currently, approximately 62 soil moisture sensors (SMS) are distributed across 18 Florida Counties covering 300,000 acres in different crop production systems. The network is bringing cultural and behavioral changes in technology implementation as a result of improving irrigation management. In addition, the project demonstrates effective irrigation management strategies by monitoring irrigation water supply, and soil moisture, which will conserve water and enhance crop water and nutrient use efficiencies. For example, on average, the water conservation that was observed/reported by network ranged from 0.5 inches to 1.5-inches per growing season depending on the crop type and climatic conditions. In addition, extensive soil sampling was conducted across 13 diverse locations in South Florida, including sandy soil, muck soil and sandy clay soils to accurately quantify the soil moisture characteristic limits. This data will serve as a reliable source for making well-informed decisions regarding irrigation schedules, ultimately promoting best management practices for irrigation.

PRESENTER BIO: Uday Bhanu Prakash Vaddevolu is a Postdoctoral Research Associate at the Precision Water Management lab within the Department of Agricultural and Biological Engineering at the University of Florida. He is currently working on the Florida Soil Moisture Sensor Network. The primary objective of this project is to promote Best Management Practices (BMPs) for irrigation to enhance water use efficiency.