WATER USE IN YOUNG CITRUS TREES ON METALIZED UV REFLECTIVE MULCH COMPARED TO BARE GROUND

***Hossein Ghoveisi*[1], *Davie M Kadyampakeni*[1], *Jawwad A Qureshi*[2]**

[1]Soil and Water Sciences, Citrus Research and Education Center, University of Florida, Lake Alfred, FL, USA

[2]Department of Entomology, Southwest Florida Research and Education Center, University of Florida, Immokalee, FL, USA

Accurate estimation of plant water use could improve irrigation management and lead to a better understanding of plant-water interactions. Metalized polyethylene mulch as a ground cover (M) combined with irrigation management can improve water and fertilizer use efficiency than bare ground (NM) and achieve accelerated growth and yield. Thus, a study was undertaken to (i) compare daily water use using the stem heat balance method on ≤2-yr-old citrus trees using three irrigation methods (Regulated Deficit Drip Irrigation (RDI), Conventional Drip Irrigation (CD) and microsprinkler irrigation (MS)) on two Florida sandy soils (Spodosols on the Flatwoods site and Entisols on the Ridge site); and (ii) determine soil moisture content as well as total available soil water (TASW) in the irrigated zones. The sap flow data suggest that RDI system resulted in higher water use than both CD and MS systems. The hourly sap flow was 120%, 99% and 163% greater in M-RDI than M-CD, NM-CD and NM-MS respectively. The soil moisture data showed that the reflective mulch treatment had higher average soil moisture content at all layers (8 cm, 15 cm and, 45 cm). For instance, the highest difference is at 15 cm soil depth at the Ridge site (37%) followed by 45 cm (30%) and 8 cm (25%) soil depths at the Flatwoods site, respectively. The TASW results were between 100 to 136% for both mulch and bare ground treatments. All irrigation systems showed water contents close to field capacity at both sites, indicating that water was nonlimiting in each irrigation system despite having different irrigation schedules. The higher water uptake using intensive irrigation systems is ascribed to frequent irrigation and improved water distribution in the irrigated zone.

PRESENTER BIO: Dr. Ghoveisi is a postdoctoral research associate at University of Florida. He has studied water/pollutant movement in soil/sediments with various irrigation practices. Ghoveisi is interested in modeling of dispersion-adsorption processes into the soil and sediment. His focus is to improve water use efficiency in citrus production systems and water quality.