Modeling Water Uptake Dynamics of Mature Citrus Trees Grown on a Sandy Soil in the Central Florida Ridge Region. (S06-scholberg171520-Oral)

Authors:

- K.T.Morgan* University of Florida, Lake Alfred
- T.A.Wheaton University of Florida, Lake Alfred
- J.M.S.Scholberg University of Florida, Gainesville
- L.R.Parsons University of Florida, Lake Alfred
- T.A.Obreza University of Florida, Immokalee

Abstract:

Nitrate contamination of groundwater resources in Florida is often linked to citrus production. Typical citrus soils in the central Florida Ridge region have very low water and nutrient holding capacities. The absence of a confining soil layer renders these soils vulnerable to N leaching. Thus, sustainable citrus production in this area will require development of more precise information on crop water use. Spatial and temporal water uptake characteristics were determined for 14 year old Hamlin citrus trees (Citrus sinensis L. Osbeck) grown on a fine sandy soil over a two year period using capacitance sensors. Under Florida conditions, Kc values ranged from 0.7 during the winter to 1.1 during the summer. Initial reductions in citrus water uptake occurred when soil moisture depletion exceeded 15% of plant-available soil water content. Soil water uptake was reduced by 80% when residual soil water was reduced to 45% of plant-available soil water. Information on root length densities and water extraction patterns is currently being integrated in web-based irrigation management tools for improved groundwater protection and irrigation scheduling of Florida citrus.

Corresponding Author Information:

Johan Scholberg University of Florida 304 Newell Hall Gainesville, FL 32611-0500 phone: (352) 392-1811 fax: (352) 392-1840 e-mail: jmscholberg@mail.ifas.ufl.edu

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