

**SCHEDULING IRRIGATION USING PREDAWN LEAF WATER POTENTIAL INCREASES WATER USE EFFICIENCY IN COTTON****Daryl R Chastain****John L Snider****Guy D Collins****University of Georgia****Tifton, GA****Jared Whitaker****University of Georgia****Statesboro, GA****Calvin D Perry****University of Georgia****Camilla, GA****Seth A Byrd****Tifton, GA****Abstract**

Traditionally, the timing and amount of water applied to a crop has been scheduled based on balancing water lost to transpiration with rainfall amounts. Although this method consistently results in high crop yields, there is the potential to decrease irrigation amounts, while maintaining high yield, using plant-based indicators of water deficit to trigger irrigation. Direct indicators of plant water status, such as leaf water potential have been used to schedule irrigation in some tree crops; however research on cotton is sparse. To this end, cotton grown in Southern Georgia over two years was irrigated according to the University of Georgia's checkbook recommendation, as well as by three distinct irrigation thresholds based on  $\Psi_{PD}$  (-0.5, -0.7, -0.9 MPa). Our results suggest that: 1) using  $\Psi_{PD}$  as a means of scheduling irrigation decreased water usage 7 to 9% (-0.5 MPa threshold) to 21 to 31% (-0.9 MPa threshold) relative to the Checkbook for the 2013 and 2014 growing season, respectively. 2) current irrigation practices may potentially be modified to allow for greater water savings, without incurring yield losses.