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**2010 International Annual Meetings**  
 Oct. 31-Nov. 3 | Long Beach, CA



**Green Revolution 2.0: Food+Energy and Environmental Security**

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231-5 Automation of Irrigation Systems to Control Irrigation Applications and Crop Water Use Efficiency.

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*Tuesday, November 2, 2010: 9:45 AM*  
*Long Beach Convention Center, Room 103B, First Floor*

**Susan O'Shaughnessy, Steven Evett and Paul Colaizzi, USDA-ARS Conservation & Production Research Laboratory, Bushland, TX**

Agricultural irrigation management to slow water withdrawals from non-replenishing quality water resources is a global endeavor and vital to sustaining irrigated agriculture and dependent rural economies. Research in site-specific irrigation management has shown that water use efficiency and crop productivity levels can be controlled through automation of irrigation systems. Studies have shown that thermal based algorithms, derived from remote monitoring of crop canopy temperature and microclimatological data, have proven to be successful triggers in automatic irrigation scheduling. Crop yields from fully irrigated automated control treatments of corn, soybean, cotton, and grain sorghum were similar or exceeded those from scientific irrigation scheduling based on weekly neutron probe readings. The thermal based algorithms include the Time Temperature Threshold method [ARS patent, Biologically-Identified Optimal Temperature Interactive Console (BIOTIC)] and a crop water stress index. Robust automated irrigation scheduling for moving sprinklers was accomplished with wireless network systems that are important for commercialization. Additional benefits from irrigation automation range from improved water use efficiency to decreased management time for producers administering multiple irrigation systems.

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