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Calibration and Use of the UGA EASY Evaporation Pan for Low Frequency Sprinkler Irrigation of Cotton in a Clay Soil

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A new irrigation scheduling tool called the UGA EASY Pan (Evaporation-based Accumulator for Sprinkler-enhanced Yield) allows remote observation of evaporation that can be correlated with crop water use. The pan was developed at the University of Georgia and was evaluated in Mississippi for low frequency irrigation of cotton in clay soils. To establish a baseline trigger level for irrigation, granular matrix soil water sensors were placed at three depths and four stations in a 3-ha field planted in a Sharkey series clay soil. Stoneville BXN 47 was planted for the 2002 and 2003 seasons and Stoneville 4892 BR was planted for 2004. Pan use and temporal adjustment criteria were developed during the 2003 season and further evaluated using data from 2004 and the previous year (2002). Irrigation was initiated based on field manager recommendations without assistance from scheduling aids so that pan readings could be associated with the field manager's irrigation decisions. Recommendations were made for temporal adjustment of the pan taking into account increased evapotranspiration based on sensor data analyzed post-season. To account for increased crop water demand in 2003 and 2004, a recommendation was made for a second adjustment approximately 97 days after planting (DAP) or 28 days after white bloom. This additional adjustment was also verified to be suitable to signal irrigation 112 DAP (43 days after white bloom) in 2003 that coincided with a trigger signal from sensor readings. Based on subsequent analysis of sensor readings as a baseline reference, one irrigation could have been delayed and another eliminated for 2003 (a 25% water savings), and the first irrigation could have been eliminated for 2004 (a 33% water savings) if pan recommendations had been followed to schedule irrigation.