

AGRONOMY

RESPONSE OF COTTON VARIETIES TO IRRIGATION EVAPOTRANSPIRATION REPLACEMENT

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With increasing concerns about declining levels of the aquifer in the Mississippi Delta, there is much interest in improving water management techniques to improve overall water use efficiency. An experiment was conducted in Stoneville, MS to provide insight into the actual crop demand for supplemental irrigation in cotton. Irrigations in cotton were scheduled using FAO-56, a standard that takes into consideration crop water demands based on growth stage and climatic data to alleviate drought stress. The experiment was conducted as a split-split-plot arrangement in a randomized complete block design. The main-plot factor was irrigation based on five evapotranspiration levels. The sub-plot factor was variety and included five commercial

varieties commonly planted in Mississippi. The sub-sub-plot factor was PGR use and included an untreated control or a split application of PGR at pin-head square and first bloom. The PGR treatment showed no significant yield response across all varieties. Each variety was unique in its response to varying levels of supplemental irrigations. For example, one variety reached maximum yield potential at 50% Et replacement. Whereas another variety would increase yield as

the amount of water increased. When all varieties were pooled together maximum yield potential was achieved at 25% Et replacement (Figure 1). This research suggests that each cotton variety may need to be pre-commercially screened for maximum yield potential based on Et replacement.

DEPENDING ON VARIETY, SUPPLEMENTAL IRRIGATION AMOUNTS COULD VARY GREATLY IN ORDER TO ACHIEVE MAXIMUM YIELD POTENTIAL.

