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EVALUATION OF IRRIGATION TERMINATION AND VARIETY EFFECTS ON FIBER MICRONAIRE AND YIELD OF IRRIGATED COTTON

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Abstract

Arizona has experienced a trend toward increasing fiber micronaire values in recent years resulting in substantial discounts on fiber value. There is some evidence to suggest that irrigation termination management can impact fiber micronaire. Field studies were conducted in 2000 and 2001 at the Maricopa Agricultural Center (MAC; 1,175 ft. elevation) and at the Yuma Valley Agricultural Center (YVAC; 150 ft. elevation) in 2001 to evaluate the effects of three dates of irrigation termination on the yield of 13 Upland (*Gossypium hirsutum* L) cotton varieties. Planting date was 6 April 2000 and 17 April 2001 at MAC and 21 March 2001 at YVAC. Three dates of irrigation termination (IT1, IT2, and IT3) were imposed based upon crop development into cutout. The earliest irrigation termination date, IT1 (i.e. 24 July 2000 at MAC) was made slightly ahead of an optimum date to provide sufficient soil-water such that bolls set at the end of the first fruiting cycle would not be water stressed and could be fully matured. Thus, the IT1 date was imposed to try to reduce overall micronaire. The second termination (IT2) date provided one additional irrigation over an optimal point for the first cycle fruit set and two irrigations beyond IT1. The final (IT3) date was staged so that soil moisture would be sufficient for the development of bolls set up through the last week of September thus providing full top-crop potential. Lint yield and micronaire results revealed significant differences among the IT treatments in all cases. Micronaire and lint yield values generally increased with later IT dates but varied with year and location. Micronaire values were nearly uniformly held below the discount level (5.0 micronaire) for all varieties (all locations and years). Increases in lint yields with later IT treatments were only significantly greater at MAC in 2001.