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# EVALUATION OF CROP MANAGEMENT FACTORS, VARIETY, AND ENVIRONMENTAL 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. Approximately 250 cases in 2000 and 150 cases in 2001 were identified in cotton production areas in Arizona ranging from the lower Colorado River Valley to near 2,000 ft. elevation with grower cooperators in the 2000 season. Field records were developed for each field by use of the University of Arizona Cotton Monitoring System (UA-CMS) for points such as variety, planting date, fertility management, irrigation schedules, irrigation termination, defoliation, etc. Routine plant measurements were conducted to monitor crop growth and development and to identify fruiting patterns and retention through the season. As the crop has approached cutout and the lower bolls began to open, open boll samples have been collected from the lowest four, first position bolls (theoretically the bolls with the highest micronaire potential on the plant) from 10 plants, ginned, and the fiber analyzed for micronaire (low 4). From that point forward, total boll counts per unit area and percent open boll measurements are being made on 14-day intervals until the crop is defoliated. Following defoliation, final plant maps were performed. Relationships among low 4 samples micronaire, irrigation termination (IT), defoliation, and final crop micronaire were analyzed. The statistical analyses associated with approximately 40 total variables that were employed included: correlation, regression, principle component analysis, and Comparative and Regression Tree (CART) analysis. Results revealed the following factors as having a significant relationship to final micronaire: variety, location, green boll count at cut-out, heat units accumulated after planting to irrigation termination, and position of the first fruiting branch.