Large Scale LEPA Irrigated Cotton Variety Test (Field 5F)

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Objective: Determine lint yield response to cotton varieties irrigated by LEPA at three irrigation levels for improved irrigation water use efficiency.

Methodology: Four high yielding cotton varieties were planted under a LEPA pivot in circular rows. Irrigation levels were at three levels, base irrigation (BI), 80%BI, and 120%BI. Plot sizes were 4-rows by 60^0 of the pivot arc and treatments were replicated 4 times. Planting occurred on May 7 on conventionally tilled seedbeds. Nitrogen was applied prior to and during irrigation events. A growth regulator (2 applications x 8 oz of Pential/application) was applied at appropriate times in all plots except those of the PM2200BR variety. Seasonal irrigations totaled 6.66, 8.06, and 9.42 inches for the 80%BI, 100%BI, and 120%BI treatments respectively. Cotton was harvested with a 4-row John Deere 4550 stripper. Yields were determined by weighing bur cotton from the entire plot using a calibrated, weighing boll buggy and estimating lint yields using the turnout of smaller stripper harvested samples from each plot. Fiber analysis was conducted at the International Textile Center and cotton loan values were determined on fiber quality.

Fig.1. View of cotton variety by irrigation level experiment at the Helms Farm, 2004. Irrigation was with LEPA.

Results: Proper selection of cotton variety made a big difference in the value returned for each unit of seasonal irrigation applied in 2004. Fig.2 shows lint yield, loan values, and gross lint values of treatments. FM989BR and SV4892BR produced significantly higher yields across the range of seasonal irrigation levels than did the other varieties. All cultivars increase lint yield with larger irrigation quantities, however, the fiber quality, and, therefore, the loan values of SV4892BR and PM2280BR decreased as a function of increase irrigation quantity. Cotton variety selection is critical in achieving the highest value for our water resources. This test will be repeated next year.

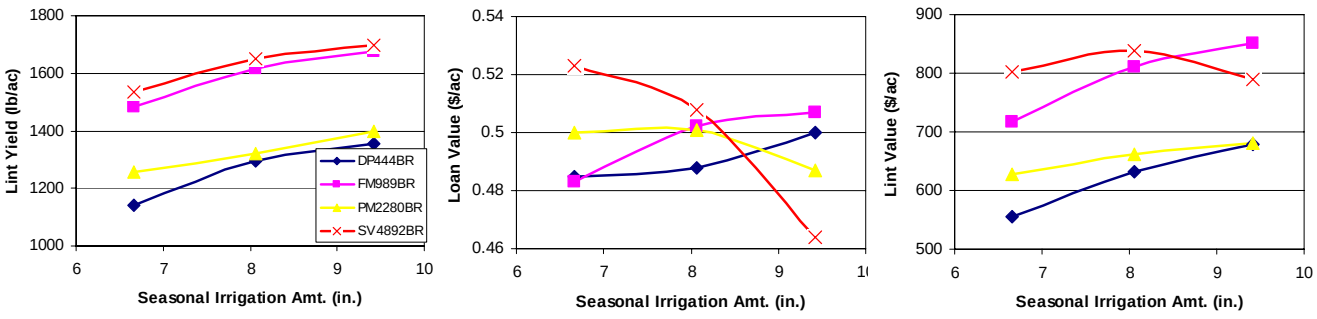

Fig. 2. Cotton lint yield, loan value, and gross lint value of 4 varieties irrigated at 3 levels with LEPA at the Helms Research Farm, 2004.