

IRRIGATION LEVELS AND YIELDS OF DRIP IRRIGATED COTTON

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Stoneville 506 was dry planted on John Kai's Farm, Avra Valley, AZ. Simultaneously, biwall tape of 14 mm diameter was placed off-centered 2-3 inches below every 40-inch bed. Emitters were located every 12 inches on the tape. Plant density was approximately 31,200 plants/Ac.

First irrigation was on April 30. From April 30 to July 9, the field was irrigated with about 12.9 Ac. in. Three irrigation levels were initiated on July 9 with daily water applications controlled by an Irri-Tol computer system. The irrigation levels were based upon evapotranspiration data from Casa Grande, 1982. The cotton water requirement for Marana was estimated to be 80% of Casa Grande ET or 27.82 inches. In this experiment, the amount of irrigation water delivered was approximately 24.14, 25.94, and 28.54 Ac. in. (or 87%, 93% and 103%) for the low, medium, and high irrigation treatments, respectively. In this treatment order, the treatments received 43.44, 45.24, and 47.84 Ac. in., including precipitation, from the beginning of 1983 until harvest. Fifteen inches of rain fell during the growing season.

The treatments were bulk harvested on December 6-7. The lowest irrigation level produced 2.077 bales of lint/Ac. (480 pounds of lint/bale), 2.084 bales of lint/Ac. for the medium treatment, and 2.069 bales of lint/Ac. for the high irrigation level. Yields and irrigation quantities for each treatment are presented in Figure 1.

Late planting, storm damage, late harvest, and high incidence of boll rot (due to heavy precipitation) reduced all yields, particularly at the highest irrigation level. Gin turnout was approximately 27.5%, without distinction among irrigation treatments. Nitrogen level was not a treatment variable. Approximately 80 lb./Ac. of nitrogen was applied in 65 separate applications of UN32.

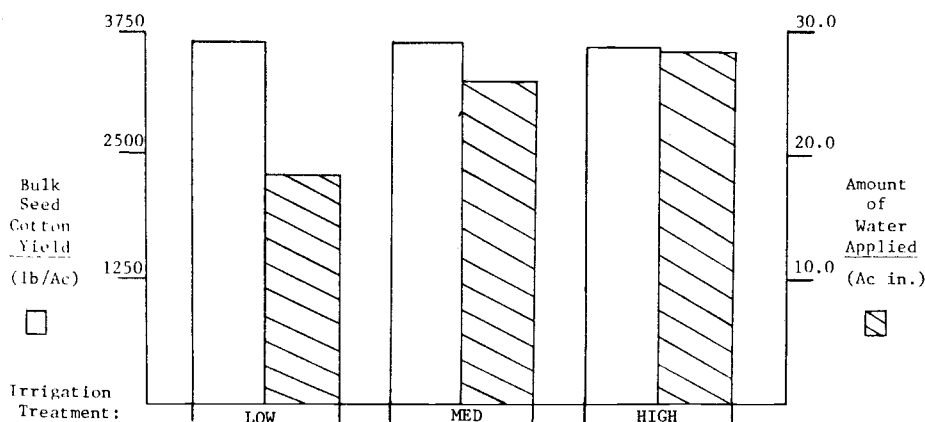


Figure 3. Bulk seed cotton yield (lb/Ac) and irrigation quantities (Ac in. for three STV. 506 drip-irrigated treatments, Kai Farm, Avra Valley, AZ, 1983.