

III - PLANTING

A. ROW SPACING

Effect of Row Spacing on Cotton Yield

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Research has been conducted in Arizona since 1961 on close row spacing of cotton (see Series P1, Cotton Report, February 1965). In 1965, an experiment involving cotton planted with a grain drill was initiated on soil low in nitrogen and with the irrigation frequencies managed to produce short plants. In past years, close-row spaced cotton grown with high soil nitrogen and water levels had such lush growth that many plants produced no bolls while others produced bolls only in the top portion of the plant and were late maturing.

Deltapine Smooth Leaf, and Arizona 6010 an experimental strain, were planted in rows 7 inches apart. The seed was planted in dry soil and sprinkler irrigated to establish a stand. This method proved successful in getting a stand of cotton. After stand establishment, two sets of replicated plots were made with both varieties. In one set, plots 9 x 50 feet were designed to determine how these varieties respond to 7 inches between-row spacings on large plots. The other set of plots were smaller in size and had five between-row spacings (7, 14, 21, 28 and 35 inches) imposed on each variety. Plants were thinned to 2 plants per foot within the rows.

Flood or border irrigation was used after the stand was established. Five post-emergence applications of water were made. These were applied when approximately 75 percent of the available water was used from the top 3 feet of soil. A pre-plant application of 3/4 pound of treflan per acre was applied before planting for weed control. This chemical plus the shading of the plants gave adequate weed control all season.

During the growing season it was noted that the wider the spacing, the lower and the earlier boll set was initiated on the plant. Experimental 6010 plots varied from 28 to 35 inches in height, while Deltapine Smooth Leaf ranged from 26 to 39 inches in height depending on row spacing. Plant height increased as row spacing decreased. On the basis of the large plots, the variety Deltapine Smooth Leaf yielded 1142 pounds of lint per acre, while Experimental 6010 yielded 1104 pounds per acre. There was no significant yield differences between varieties in these experiments.

Table 1. Lint yield in pounds per acre from 5 between-row spacings and 2 varieties, Deltapine Smooth Leaf and Experimental 6010.

Variety	Between-row spacings in inches			
	7	14	21	28
	- - - - - lbs - - - - -			
DpSL	1286	1254	1283	1054
Exp. 6010	1348	1280	992	1067
Average over spacings	1317	1267	1138	1061

Table 1 shows the responses of the two varieties to between-row spacings in terms of lint yields per acre. A significant difference between spacings was found for the varieties with the average response from both varieties indicating that the narrowest row spacing yielded the highest amount of lint per acre, while response to the widest between-row spacing was lowest in yield.

Deltapine Smooth Leaf showed no yield difference between the 7-inch and 21-inch rows spacings, but wider row spacing caused a reduced yield. Experimental 6010 showed a definite advantage at the narrowest row spacing with yields decreasing as the space between rows was widened.

This year's results indicate, as in the past, that it is difficult to gain the high yield that is theoretically possible from a high plant population. It does indicate that in certain instances where soil fertility and water may limit production, closer row spacing may give an increase in yield. If the problems of obtaining a good stand with a grain drill and narrow-row harvesting can be overcome, cotton production costs may also be lowered.

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B. MULCHES

Synthetic Mulching Experiment

M. D. Cannon and K. R. Frost

The third year of synthetic mulch testing included three dates of planting and three mulching treatments. Dates of planting were March 20, March 27, and April 20. Unseasonal rains delayed the first date of planting.