

Further studies of this practice may help define improved methods of managing variable-row cotton for reduced costs and a lower water requirement.

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BROADCAST PLANTED COTTON--1967

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An experiment was conducted in 1967 at the Cotton Research Center (CRC), Phoenix with broadcast planted cotton. Two irrigation treatments, three plant populations and six varieties were used. The irrigation variables included a normal treatment and one stressed 10 days longer than the normal irrigation for one period in July. Three plant populations were included for each variety. Final stands for most varieties were approximately 40, 70, and 125 thousand plants per acre. The varieties used were Acala Imperial, Deltapine Smooth Leaf (DpSL), Deltapine 16, Hopicala, Paymaster 54B and Stoneville 213.

There were a number of significant interactions in the statistical analyses of this experiment. The varieties reacted differently depending on the irrigation and plant population treatment. The stress irrigation treatment for one period in July greatly reduced yields with all varieties. As plant population increased with the stress irrigation, yields of all varieties decreased.

Highest yields were obtained with the normal irrigation and the high plant population. Deltapine 16, Stoneville 213 and DpSL all yielded well with the normal irrigation and the highest plant population producing 3038, 3016 and 2949 pounds seed cotton per acre respectively. Seed cotton yields are shown in the following table:

Calculated seed cotton yields per acre for 2 irrigation treatments, 3 plant populations and 6 varieties at the CRC, 1967

Irrigation	Plant Population Per Acre	Variety					
		Acala Imperial	DpSL	Deltapine 16	Hopicala	Paymaster* 54B	Stoneville 213
		lbs	lbs	lbs	lbs	lbs	lbs
Normal	40,000	2346	2725	2770	2144	1943	2815
Normal	70,000	1988	2859	2859	2077	2077	2748
Normal	125,000	1742	2949	3038	2077	2323	3016
Stress	40,000	1407	2413	2368	1430	1675	2314
Stress	70,000	961	1966	1876	938	1586	2189
Stress	125,000	603	1385	1809	447	1385	2010

\* The actual plant population of Paymaster 54B was less than the other varieties which may explain the reason for the lower yields of this variety.

This test is further evidence that satisfactory yields can be obtained from broadcast planted cotton. In another 1967 experiment with growth regulators, several treatments showed increased yields over the check. Such chemicals could be a further aid for producing broadcast cotton economically. Further tests will be planned to try to refine some of the management practices needed for the production of broadcast planted cotton.

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#### PIMA IRRIGATION - SPACING - VARIETY TESTS

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Two Pima varieties, S-3 (high-altitude) and S-4 (low-altitude), were tested in irrigation tests at Phoenix and Safford. Time of irrigation was determined by soil sampling at Phoenix. The wet treatments were irrigated when approximately 50% of the moisture in the top 3 feet of soil was used. Medium was at 65% and dry was at 80%. Irrigation at Safford was on the human judgment basis. Wet treatments were not as wet as desired at either Phoenix or Safford and probably approximate normal irrigation on many farms. At both locations, irrigation treatments were split into subplots; at Safford there were 4 plant spacings, and at Phoenix, 2 plant spacings and 2 levels of nitrogen. Details of the treatments are given in the accompanying tables. All picking was by machine.

Yield of S-3 at Phoenix (Table 1) was significantly lower than S-4 from comparable treatments. Yield of S-3 was 80% of S-4 as compared to 74% in 1966. Top yield of each variety was from the wet treatment. In general, yields declined as amount of irrigation water was reduced. Treatments receiving alternate-row irrigation generally were lower in yield than every-row irrigation at the same level. However, this difference probably is due to less water being used for alternate-row irrigations rather than the effect of the irrigation method.

Some interesting, though inconsistent, results were obtained from varying dates of first irrigation. Treatment 9 received a light irrigation in alternate rows on May 8, which is generally considered too early for first irrigation, but it exceeded the yield of the wet treatment by 50 pounds of lint per acre. Delay of the first irrigation 13 days beyond normal (trt. 10) resulted in yield reduction, but delay of 31 days to June 26 gave increased yield for S-4 (trt. 11) and reduced yield for S-3 (trt. 8).

The wet treatment gave the best yield for both varieties at Safford (Table 2), with S-4 showing more response from the wet treatment than S-3. The difference between varieties over all treatments was only 10 pounds of lint per acre. The two narrowest spacings gave highest yields at Safford with S-4 favoring unthinned (3") and S-3 favoring the 9-inch spacing. Late planting (May 2) and pink bollworm damage contributed to low yields at Safford.