

THE EFFECT OF NARROW ROWS AND PLANT POPULATION ON SHORT

SEASON COTTON PRODUCTION

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We have conducted several experiments comparing lint production from cotton planted one and two rows per bed at various plant populations. In these experiments Deltapine 16 was planted between late March and early April and had the final irrigation applied between mid and the latter part of August. The total amount of nitrogen applied was less than 100 pounds per acre. Excessive vegetation was reduced by limiting the amount of irrigation water. Plant populations were imposed by hand thinning.

The most detailed set of experiments were conducted at the Cotton Research Center in 1970, 1971, and 1972 where both 30- and 40-inch beds were used. When two rows per bed were planted, they were 5 to 6 inches apart on 30-inch beds and 12 to 14 inches apart on 40-inch beds. The experiments were replicated four times. The results are shown in Table 1. Averages for the three experiments show that the greatest advantage of two rows per bed over single rows occurred at the lowest plant population. Plant population had little effect on yield of single rows but higher populations were associated with lower yields when cotton was planted two rows per bed.

Table 2 summarizes yield data obtained from tests in Yuma, 1970; Phoenix, 1970, 1971, and 1972; and Marana, 1972 with Deltapine 16 planted one or two rows per 40-inch bed. The results of these five experiments suggest that with proper management, yields of short-season cotton can be increased about 8% by using narrow rows. It is likely that when adapted varieties are developed, greater yield increases can be obtained.

Table 1. Summary of yields (lb/ac of lint) obtained from three experiments conducted at Phoenix to test the effect of bed size, rows per bed and plant population.

Plants/acre	bed size					
	30 inches			40 inches		
	<u>1 row</u>	<u>2 rows</u>	<u>% increase (2 rows over 1 row)</u>	<u>1 row</u>	<u>2 rows</u>	<u>% increase (2 rows over 1 row)</u>
	<u>1970</u>					
30,000	942	1051	11.6	980	1089	11.1
60,000	923	995	7.8	947	1036	9.4
80,000	934	1006	7.7	977	1021	4.5
	<u>1971</u>					
30,000	1255	1308	4.2	1332	1476	10.8
60,000	1236	1325	7.2	1265	1318	4.2
90,000	1227	1138	-7.2	1236	1260	1.9
	<u>1972</u>					
30,000	1536	1574	2.5	1442	1606	11.4
60,000	1569	1667	6.2	1569	1720	9.6
90,000	1661	1650	-0.7	1516	1660	9.5
	<u>Average</u>					
30,000	1244	1311	5.4	1251	1390	11.1
60,000	1243	1329	6.9	1260	1358	7.8
80,000-90,000	1274	1265	-0.7	1243	1314	5.7

Table 2. Summary of five experiments on the effect of plant population and rows per 40-inch bed on lint yield of Deltapine 16 cotton.

<u>rows/bed</u>	Plants/acre		
	<u>30,000</u>	<u>60,000</u>	<u>80,000-90,000</u>
one	1077	1071	1061
two	1160	1158	1106
% increase (2 rows over 1 row)	7.7	8.0	4.2