

PLANTING - Drill Planting

Between-Row Spacing of Cotton

(L. L. Patterson, G. D. Massey & R. E. Briggs)

Research was initiated in 1961 to find out if satisfactory lint yields could be obtained from a high plant population. If one or two bolls per plant could be set early, the resulting short growing season should considerably reduce the amount of water, fertilizer, and insecticides required to produce a crop. Also, harvesting could be completed early.

The first plantings of close row cotton were made on the U. of A. Campbell Avenue Farm in Tucson. All plantings through 1964 have been made with a grain drill and have been planted on the flat after pre-irrigation. All plots were flood irrigated. All experiments with between row spacing were harvested by hand.

In 1961 the Acala 44 variety was planted with between-row spacings of 6, 12, 18, 24, and 30 inches. The 12- and 18-inch spacings gave the best yields.

A test using Deltapine Smooth Leaf variety was planted at the Cotton Research Center near Phoenix in 1962. After the stand was established, plots were cut out to give the same between row spacings used in 1961. Again, although the test was planted on a gravelly part of the field, the yields were fairly good and again the 12- and 18-inch spacings were superior, with the 18-inch spacing the best.

In 1963 at the Cotton Research Center, four varieties, 1517D, DeKalb 551, Deltapine Smooth Leaf, and Paymaster 54B were planted March 26, April 23, and June 15. The March 26 planting was disked up because of stand failure and the border replanted on May 24 to Acala 44 and Pima S-2. Only the Pima S-2 produced a satisfactory stand for testing in this late planting. Plots were again cut out as they had been in 1962, also, a 36 inch row spacing was added. All four upland varieties yielded best with the 6- and 12-inch spacings on the April 23 planting date. No significant difference among spacings was noted for the May 24 planting of Pima S-2 nor on the June 15 planting of the Upland varieties except for Paymaster 54B which showed the 18- and 24-inch spacings to be best for that variety.

The stands within the drill rows were so variable in 1964 that between row spacings could not be studied. However, the stands of three varieties, Stoneville 7A, Deltapine Smooth Leaf and Lockett 4789 were sufficient to study the effects of different plant population densities which approximated 6" plant spacing from 6" to 36 inches. Five- by twelve-foot plots were laid out and uniformly thinned to give plant populations corresponding to 30,000 (approx. 36" spacing), 36,000 (approx. 30" spacing), 45,000 (approx. 24" spacing), 60,000 (approx. 18" spacing), 90,000 (approx. 12" spacing) and 135,000 (approx. 6" spacing) plants per acre. The yields are shown in the following table.

Yields in pounds of lint per acre basis

Approximate Spacings

Plant Population/A.	36"	30"	24"	18"	12"	6"
	30,000	36,000	45,000	60,000	90,000	135,000
Stoneville 7A	1558	----*	1800	1397	1308	1236
Deltapine Smooth Leaf	1150	1426	1399	1426	1344	1371
Lockett 4789	941	1052	979	1018	1005	----*

* Missing plot

There were no significant differences among treatments for Deltapine Smooth Leaf and Lockett 4789, but the differences among some of the Stoneville 7A spacing treatments were significant.

Some of the problems involved in producing close row planted cotton are--

1. Difficulty in obtaining satisfactory stands using a grain drill.
2. Controlling plant size in order to achieve an early set of one or two bolls per plant. Large plants and the consequent shading in dense stands inhibits boll setting on smaller plants and inhibits early boll set on the other plants.
3. Problem of harvest. A mechanical harvester suitable for close row planted cotton must be developed. A modified finger stripper developed in west Texas may be a partial answer.
4. Weed control. Early weed control during emergence and establishment of a stand is necessary. Pre-emergence application of a suitable herbicide may do the job.

Drilled Cotton Tried Again in Pinal County

(Charles Robertson, Sam Stedman, & Henry Brubaker)

The Pinal County demonstration on the Rex Gladden Farm was repeated with changes in 1964. Cotton was planted with a grain drill in flat borders and on beds with different numbers of rows on a bed.

Variety	No. of rows per bed	Lbs. of Lint	No. of Acres	Lint per Acre
	2	302	.35	863
Deltapine	3	163	.18	906
Smooth Leaf	4	236	.23	1026
	2	200	.23	870
Mississippi	3	138	.12	1150
Deltapine	4	588	.06	967
	2	191	.23	830
Deltapine	3	541	.58	933
45	4	196	.23	852
	2	43	.06	717
PayMaster	3	187	.23	813
	4	33	.06	550