

EFFECTS OF PLANTING DATE ON COTTON LINT YIELD

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Summary

This report averages results of numerous date-of-planting tests in Arizona through regression analysis. Optimum planting date (average) for Upland cotton in Yuma County was March 20; Upland cotton in Maricopa and Pinal Counties was April 5; and Pima cotton in Maricopa County was March 19. Earlier or later plantings, on an average, resulted in reduced lint yields.

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Numerous studies have been conducted in Arizona on the effect of planting date on cotton lint yield. This report summarizes lint yield data from many of these date-of-planting tests for the lower elevations of Arizona. The comparisons are: (1) Delta type Upland cotton in Yuma County; (2) Delta type Upland cotton in Maricopa and Pinal Counties; and (3) Pima cotton in Maricopa County.

Data for these comparisons was obtained primarily from the University of Arizona annual cotton reports. The research was conducted on both experiment stations and commercial farms. The following people were authors in one or more of these reports: J. L. Abbott, H. F. Arle, L. A. Bariola, M. D. Cannon, C. R. Farr, J. Hazlitt, T. J. Henneberry, E. B. Jackson, P. Kirkpatrick, D. L. Kittock, S. Stedman, B. B. Taylor, and P. A. Tilt.

Yuma County data for Delta type Upland cotton was accumulated for seven seasons during the 1965 through 1972 period. Data were averaged by quadratic regression. Estimated effect of different planting dates on lint yield, from regression analysis, is given in Table 1. The regression analysis indicated the maximum Upland cotton lint yield on an average was produced by planting on March 20 in Yuma County with decreasing lint yields from earlier or later planting.

Data for Delta type of Upland cotton in Maricopa and Pinal Counties was obtained from 11 reports representing nine years between 1961 and 1980. Estimated planting date effect from regression analysis on lint yield is given in Table 1. The highest lint yield, on an average, was obtained by planting on April 5 with earlier or later planting reducing lint yield.

Pima cotton data is from three tests in 1976, 1977 and 1979 in Maricopa County. The data indicate that highest yields were associated with earliest planting for Pima cotton (Table 1).

The effect of planting dates on lint yield varied considerably from test to test. Major factors in this variability are differences among years in spring temperatures, in management practices among farms, in annual late fall weather, and among varieties. Further, plantings other than those at normal planting dates tend to be managed in the same manner as the normal planting date. This management pattern would be expected to be less favorable for cotton planted at abnormal times.

Even though the date of planting results fluctuate to a considerable extent around the mean, as determined by the regression analysis, the data should still be useful. These means (Table 1) represent the current best estimates of effects of planting date on lint yield.

Table 1. Cotton lint yield as percentage of maximum possible lint yield as derived from regression analyses of several tests for different planting dates in the lower elevations of Arizona.

Planting Date	Upland cotton		Pima cotton
	Yuma County	Maricopa-Pinal Cos.	Maricopa County
Percentage of maximum possible yield			
March 2	90.8		
9	96.7		
16	99.6	96.7	
19	--	--	100
20	100.	--	--
23	99.7	98.6	98.8
30	97.4	99.7	96.1
April 5	--	100.	--
6	93.0	99.9	92.8
13	86.7	99.4	88.8
20	79.0	97.9	84.1
27	70.2	95.5	78.8
May 4	60.5	92.3	72.8
11	50.3	88.2	66.1
18	39.9	83.3	58.8
25	29.7	77.5	50.8
June 1	19.9	70.8	
8	11.0	63.3	
15	3.1	54.9	

Cotton Planting Date and Planting Rate

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Summary

DPL 41 and Pima S-5 cotton were planted at seeding rates of 10, 20, and 30 pounds per acre on 5 April, 21 April, and 10 May on the Safford Experimental Farm in 1982. Pima S-5 produced about 55% as much lint/acre as DPL 41. Both varieties had the highest lint yield when planted on 21 April with a planting rate of 20 pounds of seed/acre.

Planting rates and planting dates of upland and pima cotton in Graham County differ widely among growers. Additionally, seeding rates for early and late plantings vary among growers.

In 1982 we conducted a planting rate and planting date study on upland and pima cotton at the Safford Experimental Farm. This was the second year of a proposed three year study on the subject.

Seed of DPL 41 and Pima S-5 were planted at three rates: 10, 20, and 30 pounds per acre on three dates: 5 April, 21 April, and 10 May. Individual plots were four rows wide by 36 feet long. There were five replications. The center two rows of each plot were used for yield determination, stand counts, and plant height measurements. All plantings were preirrigated prior to planting. Harvest was on 7 December.