

Table 1. Seed cotton yield and postplant water application for five irrigation treatments on Pima S-4 cotton. Average of three tests at Phoenix, Arizona in 1973.

Irrigation Treatment	No. Irrigations	Est. Inches Postplant Irrigation	Seed Cotton Lb./A
Wet	14	43	2531 a
Wet-medium	10	42	2068 b
Medium	8	39	2214 b
Medium-1	7	38	2077 b
Dry	5	34	1568 c
C.V.			13%

THE EFFECT OF IRRIGATION TERMINATION DATE ON
NARROW-ROW COTTON PRODUCTION

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Experiments were conducted at the Cotton Research Center in 1970, 1971, and 1972 to evaluate the effect of irrigation termination date on narrow-row cotton production. In these experiments Stoneville 213 was planted two rows, 12 to 14 inches apart, on 40-inch beds in late March or early April. The experiments were replicated four times. In May various plant populations were imposed by hand thinning. The cotton was managed for short-season production by limiting total nitrogen application to 100 pounds per acre and by applying moisture stresses as needed to hold mature plant height to between 30 and 40 inches.

Lint yields for these experiments is shown in Table 1. The data show that applying the final irrigation in mid-July reduced lint yields by more than 30% compared to yields obtained when an additional irrigation was applied two weeks later. In these experiments, little if any yield increase was obtained by applying an additional irrigation in mid-August over yields obtained when the final irrigation was applied in early August. An additional irrigation in late August increased yields about 10% in the 1972 experiment.

It is interesting to note that when the final irrigation was applied early, the higher plant populations tended to result in higher yields. However, when the growing season was extended, highest lint yields were obtained from the lower plant population. These results suggest that the optimum plant population for narrow-row cotton will depend upon length of growing season.

Table 1. Summary of yields (lb/ac of lint) obtained from three irrigation termination experiments conducted at Phoenix.

Plants/acre	Irrigation Termination Date			
	Mid-July	Early August	Mid-August	Late August
		<u>1970</u>		
30,000	837	1055	1042	----
60,000	911	1012	1065	----
80,000	808	1042	887	----
		<u>1971</u>		
30,000	566	1030	1181	----
60,000	592	1139	1152	----
90,000	690	1130	1103	----
120,000	707	1152	1116	----
		<u>1972</u>		
30,000	----	1457	1425	1691
60,000	----	1650	1568	1682
90,000	----	1502	1526	1576
120,000	----	1480	1384	1585
		<u>Relative average*</u>		
30,000	67.2	100.0	103.8	116.1
60,000	72.0	106.6	106.8	115.4
80,000-90,000	71.8	103.9	98.6	108.2
120,000	68.6	106.7	101.6	108.8

*Yields converted to a percentage of yield obtained for 30,000 plants per acre with an early August irrigation termination and then averaged.

TIME OF FINAL IRRIGATION

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Pink bollworm infestations and economics have brought attention to the possibility of early crop termination. Although trials at 1,200 to 1,400 foot elevations since 1965 have indicated near-maximum yields from final irrigations at various times in late August and early September, different conditions cause these responses. Water-holding capacities of soils, time of boll-setting, plant size, planting patterns and weather are factors which appear to cause major influence on yield results. Seasonal variations often cause growers to make different decisions in timing.

Continuously high maximum temperatures during late June and early July reduced boll-setting in late June and early July in a majority of fields in 1973, and proportionately more cotton was set in August than usual. A field trial on clay loam in late September failed to increase yield, whereas September 18 irrigation on sandy loam produced increased yield.