

## PIMA COTTON IRRIGATION - SPACING - VARIETY TESTS

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### Irrigation - variety - plant population test, ASU farm, Tempe

Two varieties of Pima cotton, 'Pima S-4', and the experimental line 'P-21' were grown in five irrigation treatments. There were four plant populations for each variety. P-21 had low seedling vigor in this and the other tests where it was used. As a result, stands of it were thin and seedlings got off to a slow start. Irrigation treatments were wet (irrigate every seven days during mid-summer), medium (irrigate every 14 days), dry (irrigate every 21 days), medium with 5th irrigation skipped, and medium with 6th irrigation skipped. Plant populations were unthinned (about three inches between plants) and thinned to spacing of 6, 12, and 18 inches between plants.

Yield data for the test are given in Table 1. Highest yields were obtained from the wet irrigation treatment and lowest from the dry treatment. These results are consistent with the five year average yield. However, in 1969, the wet treatment yield was significantly lower than the medium irrigation treatment. The three medium irrigation treatments had essentially the same yield. Thus, skipping one irrigation during August, when on a 14-day irrigation schedule, did not cause a yield reduction. It should be pointed out that the soil profile was thoroughly wetted before the 28-day skip.

The varieties did not differ appreciably in final yield. P-21 produced more in the first pick and S-4 produced more in the second pick. Wide plant spacing had more advantage in 1970 than in previous years. The six-inch spacing treatment usually has given highest yield with unthinned and 12-inch spacing only slightly lower in yield.

### Irrigation - variety - plant population test, Safford

This test was similar to the test at Tempe. It differed mainly by having only the three basic irrigation treatments and having an extra variety. It also differed in that it had slow start with weak seedlings and poor stands. As a result of the poor stands, slow start and early freeze, the yields were quite low. The dry irrigation treatment (Table 2) outproduced the wet and medium treatments for all varieties. This is not consistent with previous results at Safford. There were only minor differences between varieties. The unthinned treatments produced the most lint, which is consistent with previous results.

### Plant population test, Marana

This test and two varieties, 'Pima S-3' and 'Pima S-4', and the same four plant populations as the Tempe and Safford tests. Low yields (Table 3) are the result of a hot summer and an early freeze. No difference was found among the four plant populations. Pima S-4 produced better than Pima S-3. This would be expected in a hot year.

Table 1. Pima cotton irrigation - variety - plant population test, ASU farm, Tempe, 1970

Treatment Irrigation	No. of irriga- tions	Estimated in. water applied <sup>1/</sup>	Lint yield in lbs./A			5-year mean
			1st pick 10-26	2nd pick 11-18	total	
Wet	12	57	529 a <sup>2/</sup>	247 a	777 a	793
Medium	7	45	472 ab	221 a	693 b	732
Dry	5	39	417 b	210 a	627 c	694
Medium, missed 5th	6	41	484 ab	210 a	694 b	--
Medium, missed 6th	6	41	473 ab	224 a	697 b	--
<u>Varieties</u>						
S-4			435 b	258 a	694 a	758
P-21			515 a	186 b	702 a	--
<u>Plant spacing</u>						
Unthinned			427 c	218 a	645 c	735 <sup>3/</sup>
6"			505 ab	227 a	732 ab	776
12"			521 a	228 a	748 a	769
18"			448 bc	217 a	665 bc	717
Mean			475	222	698	715
Test C.V.			18%	33%	17%	

<sup>1/</sup> Estimated water used does not include a preplant irrigation of about 12 surface inches. May and June irrigations were excessive to get water across the field.

<sup>2/</sup> Lint yield within a group of means are not significantly different at the 5% level if followed by the same letter.

<sup>3/</sup> Plant spacing data are the mean of 4 years.

Pima cotton skip-row test, Marana

Benefits from skip-row were much less in 1970 than in the previous two years this test was conducted (Table 4). Also, there was no significant difference between varieties in response to skip-row. In the previous two years, Pima S-3 benefited more from skip-row than did Pima S-4. The early freeze, and perhaps the hot summer, were thought to be responsible for the reduced skip-row effect.

Table 2. Lint yield per acre in Pima cotton irrigation - variety - plant population test, Safford, 1970.

Irrigation treatment	No. irrigations	Est. inches water applied	Lint yield in lbs./A	
			1970	5-year mean
Wet	10	40	296 b	571
Medium	8	32	324 b	561
Dry	6	24	402 a	558
rainfall 4.5				
<u>Variety</u>				
S-3			327 a	558
S-4			359 a	569
P-21			336 a	--
<u>Plant spacing</u> <u>Mean actual spacing</u>				
Unthinned		7"	382 a	629
6"		10"	333 b	597
12"		12"	345 b	550
18"		16"	302 c	474
Mean			341	563
C.V.			14%	

<sup>1/</sup> Lint yields within a group of means are not significantly different at the 5% level if followed by the same letter.

Table 3. Pima cotton plant population test, Marana, 1970.

<u>Plant spacing</u>	<u>Lint yield in lbs./A</u>
Unthinned	431 a <sup>1/</sup>
6"	394 a
12"	437 a
18"	411 a
<u>Variety</u>	
S-3	391 b
S-4	446 a
Test mean	418
C.V.	14%

<sup>1/</sup> Lint yields within a group of means are not significantly different at the 5% level if followed by the same letter.

Table 4. Yield of Pima cotton grown in skip-row patterns at Marana, Arizona, 1970.

Yield rows	Treatment		Lint yield on crop area basis				Lint yield on total-area basis		
	Rows skipped	Row pair	Lbs./A		% of no-skip yield		% of no skip		
			by rows	by field	1970	3-year mean	Lbs./A	1970	3-year mean
1	1		530 a <sup>1/</sup>	530 ab	118	140	265 b	59	70
2	1		468 ab	468 ab	104	118	312 b	70	79
2	2		508 ab	508 ab	113	127	254 b	57	64
4	2	1,4	493 ab	457 ab	102	111	305 b	68	74
		2,3	420 b						
6	2	1,6	467 ab	448 ab	100	109	336 b	75	82
		2,5	431 ab						
(No skip yield)	3,4		448 ab	(448 a)			(448 a)		

Variety

S-3	391 b
S-4	494 a
P-21	515 a
Test mean	467
C.V.	20%

<sup>1/</sup> Lint yields within a group of means are not significantly different at the 5% level if followed by the same letter.