

## COTTON IRRIGATION MANAGEMENT

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The objective of this experiment was to determine the effects of different minimum soil moisture levels on the yield of upland cotton.

### Procedure:

Deltapine 16 and Imperial Acala were planted April 2, 1969 in a split plot randomized block design with nine replications. Main plots were irrigation treatments and subplots were varieties. The irrigation variables were based upon the percent of available water used from the topsoil which has a field capacity of 30.75% and wilting point of 19.70%. The irrigation treatments were: (1) Irrigation when 30-40% of the available water had been used, (2) 45-55% used, (3) 60-70% used, (4) 75-85% used, and (5) 90-100% used, as shown in Table 1.

### Results:

The pink bollworm was well controlled throughout the summer, but an infestation of cabbage loopers and leaf perforators almost completely defoliated the plants toward the end of the season. This probably reduced the bottom crop yield and was thought to be the reason for the top crop failing to develop. Effects of the irrigation treatments on yield of seed cotton as shown in Table 2 indicate that irrigating cotton too often (Treatments 1 and 2) is as detrimental to yield as not irrigating it enough (Treatments 4 and 5).

Table 1. Dates of water application in cotton irrigation management study. Yuma, Arizona. 1969.

30-40% of available water used	Soil moisture level reached before irrigation				90-100% of available water used
	45-55% of available water used	60-70% of available water used	75-85% of available water used		
I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	I <sub>4</sub>	I <sub>5</sub>	
May 16	May 21	May 23	May 25		
May 28	June 2			June 4	
June 6	June 11	June 6	June 11		
June 16	June 23	June 23			
June 27			June 30	June 30	
July 7	July 3	July 7	July 7		
July 14	July 12				
July 23	July 21	July 19		July 21	
Aug. 6	Aug. 2	Aug. 2	Aug. 2		
Aug. 18	Aug. 11	Aug. 11	Aug. 18	Aug. 18	
Aug. 25	Aug. 22	Aug. 25			
Sept. 5	Sept. 3	Sept. 5	Sept. 3	Sept. 5	

Table 2. Effect of irrigation treatment on yield of seed cotton. Yuma, Arizona. 1969<sup>1/</sup>

Treatment No.	Number of Irrigations <sup>2/</sup>	Percent of available water used	Imperial Acala	Deltapine 16	Average
			lb. per acre	lb. per acre	lb. per acre
1	12	30-40	2947 b <sup>3/</sup>	3313 c	3130 c
2	11	45-55	3165 ab	3659 b	3412 b
3	9	60-70	3328 a	4008 a	3668 a
4	7	75-85	3047 b	3623 b	3335 bc
5	5	90-100	<u>3032</u> b	<u>3596</u> b	3314 bc
Ave.			3104 <sup>4/</sup>	3640 <sup>4/</sup>	

<sup>1/</sup>Yields were reduced by a heavy infestation of cabbage loopers which defoliated the plants too early.

<sup>2/</sup>Post emergence irrigations.

<sup>3/</sup>Within each column, entries opposite the same letter are not significantly different at the 05 level.

<sup>4/</sup>Difference between variety mean yields is highly significant.