

# Effects of 3 Irrigation Termination Dates On A Full Season Type Of Upland Cotton In Mohave Valley, Arizona

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## Abstract

*A single field experiment was conducted in 1990 on a grower/cooperator field to evaluate the response of a full season maturity type of Upland Cotton (DPL 90) to three dates of irrigation termination. The crop was planted 26 and 27 of March, managed uniformly in all respects until August 1 when earliest irrigation termination was imposed. The dates for the second and final irrigation termination treatments were 15 August and 15 September. Each irrigation termination treatments were given an additional 8 acre inches of water (approximate). Harvest results revealed no significant differences in lint yield on the first two dates but the last date yielded 110 pounds more. All plots received a 2 inch rain 18 August.*

## Introduction

Interest in this study was generated from the need to evaluate the yield differences among several dates of irrigation termination. In an effort to save dollars from less water costs and insecticide applications the consideration of irrigation termination is important for reaching optimum returns with regard to minimizing late season inputs. Records show consistently that high infestation and crop damage from pink bollworm occurs in late August, and early September. A weak point in the life cycle of the pink bollworm can be taken advantage of through exercising complete crop termination prior to diapause of the pink bollworm larvae in the fall. Therefore, an evaluation of optimal points for applying the last irrigation is important in terms of efficient crop management and insect pest control for insects such as pink bollworm and whitefly.

## Materials And Methods

Deltapine 90 cotton was planted on March 26 and 27 on V & K Wakimoto Farms in Mohave Valley, Arizona. The experimental area was managed in a uniform manner until irrigation termination treatments were imposed (Table 1). Plots consisted of blocks of 12.82 acres, 6.8 acres, and 14.25 acres on 40 inch rows. Plots were picked two times, and individually weighed and ginned.

## Results

Yield results for the experiment are shown in Table 2, show no significant differences in yield between treatments 1 and 2, but we find a difference of approximately 110 pounds between treatment 3 and treatments 1 and 2.

As the plant mapping results indicate (Table 3), substantial fruit loss was encountered between the 12 July and 15 August sample dates. This pattern was characteristic of many Arizona cotton producing areas in Arizona in 1990, due largely to high humidity and high night temperatures. The loss of fruit over this period of crop development provided for a greater potential for late season compensation in the form of a top crop

development. As a result, it is not surprising to find the yield increase realized from the additional irrigations provided to treatment 3 over treatments 1 and 2.

Results from this single 1990 experiment need to be augmented with additional work of this nature in Mohave Valley. Crop conditions and developmental patterns vary considerably from year to year, which requires a long term evaluation of management practices such as irrigation termination and late season management. The full combination of agronomic yield potential, insect pest populations and their impact, and economic returns must be incorporated into final decisions relative to crop termination management.

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Table 1. Dates of Final (Terminal) Irrigation:

Treatment No	Date of Final Irrigation
1	1 August
2	15 August
3	15 September

DPL 90 Planted March 26, 27

Table 2.. Lint Yields

Treatment No	Lint Yield lbs./acre
1	1486
2	1480
3	1596

Table 3. Plant mapping results (fruit retention levels) from two dates of sampling.

<u>Sampling Date</u>	<u>Node No.</u>	<u>Treatment No.</u>		
		<u>1</u>	<u>2</u>	<u>3</u>
		---% Retention---		
12 July	1	65	66	69
	2	57	60	71
	1 & 2	61	63	70
15 August	1	52	46	40
	2	43	46	43
	1 & 2	48	46	41