Mohave County - Variety Demonstration - Jim McDougal

John Vanderslice - Cooperator

Variety	Pounds Seed Cotton per Acre
Stoneville 7-A	7,358
Vanderslice Deltapine	7,020
DeKalb 6562	6,600
Dixie King	6,516
Deltapine Smooth Leaf	6,396
DeKalb 551	6,240
Deltapine 45	6,216
Deltapine 5540	6,180
Acala 4447	6,120

Cochise County - Variety Demonstration - Carmy G. Page

O. L. Hilburn, Bowie, Cooperator

Variety	Pounds Seed Cotton per Acre
Stoneville 7-A	6,749
1517 - D	6,684
1517 - C	6,574
Coker Carotina Queen	6,483
Deltapine Smooth Leaf	6,405
DeKalb 551	6,308
1517 - BR	6,250
4447	6,184
Deltapine 7139	6,115
Del Cerro III	5,771
Del Cerro I	5,733
Deltapine 5540	5,345

Summary:

One new variety that received much attention was Deltapine 5540. This variety was developed for production on land infested with Verticillium wilt. Deltapine 5540 has done well on wilt land in several tests, particularly in Pima County. In the Pinal County test, however, it yielded much lower than three other varieties. Acala 4447 has also yielded well in tests. Generally, the standard varieties in an area have yielded well in comparison with other varieties and no outstanding advantages can be claimed by any new varieties.

Cotton Variety Management

(Ernest B. Jackson)

The ability of Deltapine Smooth Leaf cotton to tolerate levels of moisture and nitrogen fertility which appear to be excessive for the Acalas has raised the question: "Is there an optimum system of management for any given cotton

variety which is different than that for any other variety, or type?" Conceivably, this could be true.

To test this hypothesis, an experiment is being conducted on the University of Arizona Branch Experiment Station at Yuma in which six varieties of Upland cotton are compared under four irrigation and two fertility treatments. The results from 1963 and 1964 are summarized in this report.

Experimental Procedure: The six varieties were grown in plots arranged in a randomized block, split-split plot design. The experiment was replicated six times in 1963 and eight times in 1964. The main plots were irrigation treatments, split plots were fertility treatments and split-split plots were varieties. The smallest plot units were four rows 35 feet long with the center two rows harvested for yield.

Irrigation Treatment No. 1 consisted of an irrigation every 7 days, beginning approximately one month after planting. Treatments 2 and 3 were begun on successive weeks with irrigations spaced 14 and 21 days respectively. Treatment 4 was begun one week after Treatment 3 with successive irrigations every 38 days initially and then whenever the plants began wilting in the afternoon. This amounted to five irrigations each year, spaced approximately 28 days apart. All irrigations were metered onto the plots, but since there were difficulties with the meter in 1963, only the measurements for 1964 are shown in this report.

The fertility treatments were "high" and "low" nitrogen. In 1963 the "low" treatment received 100 pounds of nitrogen per acre when the plants began showing nitrogen stress in midsummer. In 1964, the "low" treatment received no applied nitrogen. The "high" nitrogen treatment each year consisted of 200 pounds of nitrogen per acre sidedressed before the first irrigation.

The cotton varieties were: Acala 44-10, Deltapine Smooth Leaf, DeKalb 220, Stoneville 7-A, California Strain A, and Arizona Experimental 221.

Results: The average yields of seed cotton for the two years are shown in Table 1. They indicate that: (1) Varieties respond similarly to irrigation management. Under the "low" nitrogen the highest yields were all from the 14 day irrigation schedule, while under the "high" nitrogen they were equally divided between the 14 day and 21 day schedules. Yields from excessive and limited water were approximately equal under both nitrogen levels. (2) Varieties have similar nitrogen requirements. When the nitrogen fertility began to run out during the summer of 1963, all varieties began to show signs of nitrogen stress, and all responded similarly to nitrogen application. (3) In general, the varieties responded similarly to the conditions of this experiment. This indicates that they have similar requirements for moisture and fertility.

An interesting result of this experiment is shown in Table 2. Apparently there is one level of moisture for maximum production of cotton, and another for the most efficient use of water.

These results seem to indicate that there are management principles which have rather wide application so far as varieties are concerned, but which would require modification to conform to local conditions of climate and soil.

Table 1. Seed-cotton yields of six varieties of Upland cotton under different levels of moisture and fertility, grown on the Yuma Branch Experiment Station in 1963 and 1964[1/].

Variety	Irrigation Schedule: 7 Days (19 Irrigs.)	14 Days (10 Irrigs.)	21 Days (7 Irrigs.)	28 Days (5 Irrigs.)	Average
	Lbs/Acre				
Low Nitrogen Fertility (100 Lbs. N in 1963 and none in 1964)					
Acala 44-10	4376	4835	4131	3923	4316
DPSL	4458	5319	5299	4771	4962
DeKalb 220	4904	5400	5113	4451	4967
Stoneville 7-A	4822	5676	5389	4641	5132
Calif. Strain A	4504	5219	4815	4395	4733
Ariz. Exp. 221	4132	4830	4714	4464	4535
Average	4533	5213	4910	4441	4774
High Nitrogen Fertility (200 Lbs. applied Nitrogen per year)					
Acala 44-10	4141	4743	4670	4000	4388
DPSL	5312	5630	5736	4764	5360
DeKalb 220	5125	5460	5462	4790	5209
Stoneville 7-A	5470	5537	5420	4908	5334
Calif. Strain A	4661	5407	5320	4530	4980
Ariz. Exp. 221	3488	4887	5114	4241	4433
Average	4700	5277	5287	4539	4951

[1] Data are averages of six replications in 1963 and eight replications in 1964.

Soil is a silty clay loam underlain with fine sand at depths varying from 24 to 48 inches.

Table 2. Composited yields of seed cotton from six varieties showing the relative efficiency of water use under different irrigation and fertility treatments. Yuma Branch Experiment Station. 1964.

Irrigation Treatment		Average Yield of Seed Cotton[1]		Average Yield of Seed Cotton Per Inch of Applied Water	
Interval Between Irrigations	Water Applied[2]	No Applied Nitrogen	200 Pounds Applied N	No Applied Nitrogen	200 Pounds Applied N
	Acre Inches	Lbs/A	Lbs/A	Lbs/A	Lbs/A
7 Days (19 Irrigations)	56.49	4369	4707	77	83
14 Days (10 Irrigations)	40.65	4894	5099	120	125
21 Days (7 Irrigations)	35.60	4584	5014	129	141
28 Days[3] (5 Irrigations)	25.52	4351	4465	170	175

[1] Each yield figure is an average of eight replications of six varieties (48 plots).

[2] "Water Applied" does not include the preplant irrigation, which was not measured.

[3] Cotton planted April 5, irrigated May 21, July 2, July 30, August 27 and September 21.

The soil in the experimental area is a silty clay loam underlain with fine sand at depths varying from 24 to 48 inches.

New Strains

(Werner Fisher and Lee Stith)

A major objective of the cotton breeding program of the University of Arizona for the past several years has been the development of a high quality, wilt tolerant variety of cotton. Hundreds of crosses have been made and many strains have been tested, including those developed in other areas. One such strain, Hopicala, (tested under strain No. 4447), developed at the New Mexico Experiment Station, appears to offer considerable promise for production in Arizona. Cooperative tests for the past three years at locations ranging from Shafter, California to Ysleta, Texas have shown Hopicala to be a consistently good producer. It appears to be best adapted to areas of higher elevation but has also produced good yields in such areas as Brawley and Yuma. The following tables show the yield of