1993 PARKER VALLEY & MOHAVE VALLEY SHORT STAPLE COTTON VARIETY TRIAL

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ABSTRACT

Two short staple cotton variety trials were conducted in the Colorado River Basin. One trial was located in the Parker Valley and one in the Mohave Valley. Ten varieties from various seed companies were entered in each test. Yields varied considerably among varieties and locations. However, these trials among others provides evidence that current variety choices are viable components of Arizona cotton production.

INTRODUCTION

A state-wide, coordinated cotton variety testing program was begun in 1992 and continued in the 1993 season. There were ten field sites across the state, each containing ten varieties. The cotton seed companies had their choice in entering two varieties per location.

MATERIALS AND METHODS

The Parker Valley (P.V.) trial was conducted on Pacific Farms. The P.V. field was planted April 5, 1993 at a rate of approximately 10 pounds of seed/acre. It was arranged in a randomized complete block design with four replications. Each plot consisted of six, 40" rows on a 1260' row length. The P.V. field was harvested September 22, 1993 by picking the four center rows of each plot.

The Mohave Valley (M.V.) trial was conducted on Mohave Farms. The M.V. field was planted April 8, 1993 at a rate of approximately 7 pounds of seed/acre. It was arranged in a randomized complete block design with four replications. Each plot consisted of eight, 40" rows on a 625' row length. The M.V. field was harvested September 14, 1993 by picking the center four rows of each plot.

Both fields were treated under grower conditions, with the variety block receiving no special treatment. Data was compiled on a bi-weekly basis on total nodes, height:node ratio, first fruiting branch, and % fruit retention. At harvest from each trial, samples were taken from each replication and processed through a microgin. These microgin numbers were used to compute lint per acre.

RESULTS AND DISCUSSION

Parker Valley

Statistical analysis for lint yield revealed significant differences among varieties (table 1). The 1993 cotton growing season was characterized with excellent fruiting weather throughout most of the season and moderate-heavy whitefly pressure late season. Most varieties remained at optimum height-to-node ratio levels throughout the season (table 2). Fruit retention percentages throughout the season were slightly lower than would be desired, but remained at average levels (table 3). Yields were slightly higher than average, but are in the range of what can be obtained for these varieties under good management and growing conditions that are experienced most years.

Mohave Valley

Lint yield of DP 5415 was stastically better than all other varieties. There were no significant differences among the remaining varieties (table 4). Lint yields of all varieties were relatively low and are not

characteristic of this farm or valley in general. Most varieties had very low height:node ratios, especially toward the end of the season, which may indicate some type of stress such as salt or soil compaction. Although fruit retention levels were relatively good, many plants simply did not have enough plant structure (fruiting sites) for optimum yield potential.

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Table 1. Lint yield averages from 1993 Parker Valley variety trial. Means followed by the same letter are not significantly different at the 5% level.

Variety	Lint Yield (#/acre)*
SG 501	1525 A
CB 232	1390 AB
ST LA887	1284 BC
HS 44	1175 BC
CB 333	1145 BC
DP 5816	1102 BC
HS 46	1098 BC
ST KC311	1075 C
DP 5415	1069 C
S-1001	1061 C
$SNK_{.05}$	*P = .0003

Coefficient of Variation = 11.46%

Table 2. Height:Node Ratio (A measure of vegetative tendencies) for the Parker Valley trial. The last sample date was taken just prior to harvest.

	DATE					
Variety	6/22	7/9	7/20	8/5	8/17	9/17
LA887	1.92	1.76	1.68	1.83	1.84	1.46
KC311	1.82	1.73	1.95	1.97	1.76	1.71
CB 232	1.74	1.74	1.74	1.72	1.82	1.46
CB 333	1.79	1.72	1.81	1.79	1.78	1.68
DP 5415	1.54	1.65	1.52	1.75	1.90	1.48
DP 5816	1.75	1.69	1.74	1.85	1.88	1.64
HS 46	1.76	1.73	1.85	1.83	1.77	1.50
HS 44	1.77	1.71	1.81	1.71	1.89	1.66
S-1001	1.89	1.74	1.82	1.80	1.95	1.63
SG 501	1.97	1.68	1.79	1.76	1.66	1.72

Table 3. Parker Valley percent fruit retention of all fruiting forms (except final sample date) in positions 1 + 2. *The final sample date represents percent retention of harvestable bolls and was determined by dividing the number of bolls in positions 1 + 2 by the total number of potential fruiting sites.

	DATE					
Variety	6/22	7/9	7/20	8/5	8/17	*9/17
LA887	69.0%	77.5%	56.5%	38.0%	32.5%	14.9%
KC311	64.5	65.5	61.5	44.5	34.0	19.3
CB 232	71.5	65.0	59.5	38.5	35.0	24.4
CB 333	67.5	63.0	63.5	34.5	32.5	21.9
DP 5415	64.0	62.5	60.0	42.5	29.5	18.9
DP 5816	52.0	62.5	59.5	40.0	27.5	18.6
HS 46	55.5	66.5	63.5	36.5	28.0	14.5
HS 44	59.5	64.0	58.5	39.0	29.0	15.9
S-1001	52.5	66.5	62.0	33.0	29.5	12.4
SG 501	80.0	71.0	67.0	38.0	33.5	23.4

Table 4. Lint yield averages from 1993 Mohave Valley variety trial. Means followed by the same letter are not significantly different at the 5% level.

Variety	Lint Yield (#/acre)
DPL 5415	968 A
SG 501	787 B
CB 232	779 B
HS 44	742 B
DP 5690	713 B
HS 46	697 B
S-1001	695 B
LA887	687 B
KC311	636 B
CB 333	605 B

$SNK_{.05}$ P = .0037
Coefficient of Variation = 14.11%

Table 5. Height:Node ratio for the Mohave Valley trial. The last sample date was taken just proir to harvest.

	DATE				
Variety	6/23	7/8	7/21	8/7	9/8
LA887	1.03	1.35	1.17	1.40	1.25
KC311	1.22	1.58	1.52	1.77	1.68
CB 232	1.11	1.11	1.23	1.18	1.08
CB 333	1.13	1.21	1.41	1.57	1.34
DP 5415	1.16	1.28	1.36	1.36	1.04
DP 5690	1.50	1.38	1.61	1.50	1.22
HS 46	1.15	1.35	1.46	1.48	1.58
HS 44	1.19	1.22	1.54	1.42	1.20
S-1001	1.26	1.35	1.56	1.60	1.62
SG 501	1.21	1.28	1.46	1.46	1.34

Table 6. Mohave Valley percent fruit retention of all fruiting forms (*except final sample date) in fruiting positions 1 + 2. *The final sample date represents percent retention of harvestable bolls and was determined by dividing the number of bolls in positions 1 + 2 by the total number of potential fruiting sites.

	DATE				
Variety	6/23	7/8	7/21	8/7	*9/8
LA887	95.5	90.5	67.0	39.5	21.3
KC311	71.0	64.0	67.0	42.0	22.3
CB 232	89.0	84.5	68.0	45.0	31.4
CB 333	77.5	85.5	73.0	47.5	31.7
DP 5415	81.0	81.0	64.0	41.0	20.3
DP 5690	68.5	75.0	64.5	43.0	23.2
HS 46	57.5	69.0	60.0	36.0	20.7
HS 44	73.5	70.5	74.0	38.5	16.2
S-1001	59.5	66.5	63.5	41.5	22.1
SG 501	76.0	90.0	75.5	43.5	30.5