Short Staple Variety Demonstration, Pinal County, 1988-1991

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ABSTRACT

Short staple variety trials were conducted for four years at Prechel Farms near Coolidge Az. Six varieties were included in 1988, twelve in 1989, eight in 1990, and eight in 1991. Results from the statistical analysis showed significant differences among varieties in each of the four tests. Lint yields ranged from 908 to 1313 lbs. lint acre^{-1} in 1988, 2844 to 4827 lbs. seedcotton acre^{-1} in 1989, 695 to 1059 lbs. lint acre^{-1} in 1990, and 1065 to 1286 lbs. lint acre^{-1} in 1991. Those varieties that were medium to short-season maturity types yielded higher than long season maturity types in the 1988 and 1990 seasons. The reverse was true in the 1989 season and results were mixed in 1991.

INTRODUCTION

This is the fourth year that a short staple variety demonstration has been conducted in Pinal County at Prechel Farms. Under favorable, relatively dry weather conditions, these tests are usually dominated by long-season, indeterminate-type cotton varieties. The last four years during which these tests have been conducted, have been uniquely different in terms of the weather conditions experienced, and the results of these four years of tests are expectedly mixed and reveal the way in which cotton varieties respond to these varying conditions.

MATERIALS AND METHODS

The experiment was arranged in a randomized complete block design with one main factor (varieties), and 4 blocks. Plots consisted of eight, 40inch rows, on 1300 ft. runs. The four middle rows, of each six row plot, were picked, and weights were recorded by use of under-wheel trailer scales. The planting dates were 5 May, 23 March, 9 April, and 17 april for 1988, 1989, 1990, and 1991 respectively.

RESULTS AND DISCUSSION

Results of the statistical analyses for lint yield reveal significant differences, among varieties for each year 1988, 1989, 1990, and 1991 (Table 1, 2, 3, and 4). In 1988, cold and wet weather conditions early in the season forced a replanting on 5 May, about a month after the first planting date. The delayed planting favored the short season varieties as we can see in Table 1. The 1989 season was typified by excellent weather conditions (relatively dry) throughout the year, which allowed the long season varieties to reach their full yield potential and out-perform the short and medium season varieties (Table 2). In 1990 high temperatures in late June followed by humid conditions and associated high night temperatures, caused substantial fruit loss due to stress-related abortion, and in addition a tendency for the plants to become excessively vegetative. It is apparent that this situation favored the medium to short season type varieties, possibly because they were able to establish a fruit set earlier in the season before high temperature weather conditions were experienced and also, because of their more determinate nature, they were perhaps less affected by the negative affects of increased vegetative growth tendencies. The 1991 season began with cold and wet weather which delayed planting about 2 weeks and

inhibited some of the early growth and development of the crop. After the crop was established in May weather conditions improved and remained excellent with warm and dry conditions extending into October. Although late planting and early season weather conditions effectively shortened the season, in favor of the medium season varieties, the longer season varieties were able to take advantage of the warm and dry conditions in the fall.

Table 1. Means for cotton lint yields taken from Upland variety test at Prechel Farms, Coolidge, AZ, 1988.

Variety	Maturity Type	Yield Lbs. lint / acre
DES 119	Medium	1313 A*
MN 235	Medium	1308 A
DPL 90	Full	1223 B
DPL 77	Full	1223 B
STV 115	Full	983 C
STV 110	Full	908 C

*Means followed by the same letter are not significantly different ($P \leq 0.05$) according to a Fisher's LSD.

Table 2. Means for seedcotton yields taken from Upland variety test at Prechel Farms, Coolidge, AZ, 1989.

Variety	Maturity Type	Yield seedcotton / acre
STV 110	Full	4827 A*
DPL 90	Full	4812 A
S 1001	Full	4597 AB
DPL 77	Full	4582 AB
KC 311	Medium	4556 AB
DES 119	Medium	4282 BC
S 89	Full	4176 C
STV 115	Full	3994 CD
C 40	Short	3806 DE
MN 235	Medium	3506 EF
S 35	Early	3276 F
S 55	Medium-early	2844 G

*Means followed by the same letter are not significantly different ($P \leq 0.05$) according to a Fisher's LSD.

Table 3. Means for cotton lint yields taken from Upland variety test at Prechel Farms, Coolidge, AZ, 1990.

Variety	Maturity Type	Turnout (%)	Yield Lbs. lint / acre
KC 311	Medium	34	1059 A*
DPL 50	Medium	35	1029 A
DES 119	Medium	32	996 A
DPL 90	Full	33	988 A
S 1001	Full	33	976 A
DPL X5816	Full	33	970 A
STV 110	Full	32	714 B
STV 115	Full	33	695 B

*Means followed by the same letter are not significantly different ($P \leq 0.05$) according to a Duncan multiple comparison procedure.

Table 4. Means for cotton lint yields taken from Upland variety test at Prechel Farms, Coolidge, AZ, 1991.

Variety	Maturity Type	Turnout (%)	Yield Lbs. lint / acre
DPL 5415	Medium	34	1286 A*
KC 311	Medium	35	1266 AB
DPL 5690	Medium-Full	32	1257 AB
DPL 5816	Full	33	1227 ABC
DPL 51	Medium	33	1202 BCD
STV 453	Medium	33	1168 CD
C 40	Short-Medium	32	1152 D
STV 907	Short-Medium	33	1065 E

*Means followed by the same letter are not significantly different ($P \leq 0.05$) according to a Duncan multiple comparison procedure.