

Short Staple Variety Trials in Cochise County, 1998

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Abstract

Variety trials were grown at two locations and with two different sets of short staple varieties. One trial on the Robbs farm, north of Kansas Settlement, tested two acala varieties and the most promising advanced strain from New Mexico, two short seasoned varieties from SureGrow and one Australia variety. The other trial on the Glenn Schmidt farm, in Kansas Settlement, tested seventeen upland varieties as part of the statewide testing program. The highest yielding variety in the Robbs trial was SG 404 with SG 125 coming in second. In the Schmidt trial, FM 989, an Australian variety that has performed well in Safford, had the highest yield, just over 2 bales per acre.

Introduction

Two variety trials were conducted in Cochise county this year. One trial was designed to compare the predominant acala variety with other potential varieties in the area and to be a sister trial to the one in Greenlee county (reference 1). The other trial was made up of varieties from eight seed companies as a part of the statewide variety testing program. Nine of the varieties tested had not been grown in University tests in the county before.

Materials and Methods

The statewide variety trial was planted on the Glenn Schmidt farm east of Kansas Settlement and the acala trial was planted on the Robbs farm north and east of Kansas Settlement. Both trials were planted using the cooperators equipment and managed according to their cultural practices. The varieties were planted in two row, 40 inch row spacing plots on the Robbs farm with a 4X1 skip pattern and two row 38 inch row spacing plots on the Schmidt farm. There were four replicates planted on each of the farms. The following crop histories provide details on how the fields were managed:

Crop History - Robbs farm

Previous crop: Oats

Soil type: Karro-Elfrida sandy loam

Planting date: 23 April 1998 Rate: 22 lbs/ac

Fertilizer: 20 gal/ac of UN32 in July

Herbicide: Treflan pre-plant

Insecticide: Thimet applied in the seed bed

Fungicide: None

Pix/Prep: None

Defoliation: None

Irrigation: Furrow irrigated, watered up + 4-5 irrigations

HAIL damage ~ 5 August

Harvest date: 3 November

Heat units (86/55°F) to harvest: 3078 as calculated from data at the Bonita AZMET station (3).

Crop History - Schmidt farm

Previous crop:

Soil type: Comoro/Grabe loam to sandy loam

Planting date: 21 April 1998

Rate: 20 lbs/ac

Fertilizer: 125 pounds/ac 11-52 at planting, 200 pounds/ac urea

Herbicide: Treflan pre-plant

Insecticide: None

Fungicide: None

Pix/Prep: None

Defoliation: None

Irrigation: Furrow irrigated

Harvest date: 3,4 November

Heat units (86/55°F) to harvest: 3095 as calculated from data at the Bonita AZMET station.

On both farms the plots were picked using the cooperators equipment and plots from 2 reps were weighed together using electronic weigh scales under cotton trailers. Ten boll samples were taken from each plot prior to harvest to determine boll weights and approximately 4 pound grab-samples were taken from each plot at harvest and ginned to determine percent lint turnout. Sub-samples were taken for HVI analysis.

Results and Discussion

The weather was cold and unpredictable most of April, delaying most cotton planting until the end of the month. Heat units above 10 per day (the minimum recommended for planting cotton) were only recorded two days during the month of April. May temperatures continued to vacillate and lowered to 32°F on the 15th of May, so cotton growth was slow until the end of the month. July was the turnaround point when the temperatures finally exceeded the normal and some rain was received. More than 3 inches of rain was recorded in Bonita in July, which was the bulk of the rains received during the growing season. Less than half an inch of rain was recorded in August, unfortunately some hail was reported in the county during this time. Late summer and fall were about normal with a 33°F being recorded on the 28th of October (the average first frost date for Willcox), the weather warmed up a bit and light frosts were recorded the 3rd through 6th of November and a killing frost was received on the 10th of November.

Table 1 shows the yield and agronomic data for the varieties planted on the Robbs farm north of Kansas Settlement. Yields were suppressed to less than half of the yields seen in 1997(1) because of the hail storm in early August. SureGrow 404, the highest yielding variety in the Curry trial in Cochise County in 1997, was the highest yielding variety in this trial. IF 1001, which yielded highest in this study in 1997 came in fourth place in this study. Plant height, HNR (height to node ratio), total number of nodes and boll weights were all lower than last year. This is attributed to the hail storm. Plant populations were better than last year, indicating good stand establishment. Some stringing-out occurred before harvest. A value of zero indicated that the locks held tightly in the boll with a scale up to 6 which indicated that the locks were strung out badly and some loss on the ground had occurred. This factor may have influenced the low lint yield of NM B8073, the advanced strain from New Mexico.

Table 2 contains the HVI data from the varieties grown on the Robbs farm. NM B8073 had the longest and strongest fiber and the micronaire value would indicate that it has very fine fiber. This low micronaire data might be a problem in some years. Lint quality was lower at this site than seen in the study on the Jones/Swapp farm in Virden (2) probably due to the lateness of the hail damage.

Table 3 contains the yield and other agronomic values from the varieties studied on the Schmidt farm. Yields were considered very good considering the weather constraints early in the year. FM 989 (formerly known as IF 1003) was the highest yielding variety. It is a medium-late season variety and it is interesting that it performed so well at this elevation. It had the highest plant population, the highest first fruiting branch, the least number of fruiting branches and the lowest height to node ratio. All but the first of this list are considered detrimental to the cause of high yielding varieties. From Table 4 one notes that its lint is long and strong, but again it has a drawback, the low micronaire value. It is hard to argue against success, this variety should be evaluated again to see if it can consistently yield as it did this

year at this elevation. New Mexico 1517-95 also did well in the study. Its yield was acceptable and the agronomic values looked good. Its fiber length was the best of the study. Many comparisons and contrasts can be made throughout the variety list and the reader is encouraged to make these analyses. There were several new varieties that showed very good fiber quality, among them were: GC 9033 with the strongest fiber, and FM 832 (the okra-leafed variety) and AP 6101 which exhibited a good combination of long, strong and fine fiber.

References

1. Clark, L.J. 1998. Short staple variety trials in Cochise county, 1997. Cotton, A College of Agriculture Report, The University of Arizona, Tucson, AZ. Series P-112, pp. 128-133.
2. Clark, L.J. 1998. Short staple variety trial, Greenlee county, 1998. In this volume.
3. Brown, P. Et.al. AZMET weather system. [Http://ag.arizona.edu/azmet/](http://ag.arizona.edu/azmet/)

Acknowledgment

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Table 1a. Yield and other agronomic data for the acala cotton variety trial conducted on the Robbs farm in Cochise County, 1998.

Variety	Lint Yield	% Lint Turnout	Plant Height	PI/Ac
SG 404	382 a	34.3 d	20.0 a	49012 b
SG 125	370 ab	37.5 ab	20.0 a	71067 a
1517-91	347 bc	36.0 c	21.3 a	62898 ab
IF 1001	346 c	38.4 a	20.0 a	67799 a
1517-95	343 c	35.8 c	19.0 a	69842 a
NM B8073	327 c	37.4 b	22.3 a	74743 a
Average	352.6	36.5	20.4	65893.4
LSD(05)	22.5	0.9	7.1	17883.3
CV(%)	2.5	1.0	13.5	10.6

1. Values followed by the same letter, within columns are not significantly different at the 5% level of probability.

Table 1b. Continuation of Table 1a with data from the Robbs farm in Cochise County, 1998.

Variety	Nodes	HNR	1st Frt Branch	Total Frt Br	Boll Weight	Stringing Out
SG 404	16.4 a	1.21 a	7.5 a	5.5 a	4.35 a	0 c
SG 125	17.4 a	1.17 a	7.5 a	5.5 a	4.75 a	1 bc
1517-91	17.2 a	1.24 a	8.7 a	6.1 a	4.65 a	4 ab
IF 1001	18.4 a	1.09 a	10.0 a	6.2 a	4.70 a	0 c
1517-95	15.6 a	1.22 a	7.6 a	5.4 a	4.70 a	3 abc
NM B8073	15.7 a	1.42 a	8.2 a	5.0 a	4.60 a	6 a
Average	16.8	1.22	8.2	5.6	4.63	2.3
LSD(05)	3.6	0.35	4.2	4.2	0.62	3.0
CV(%)	8.3	11.1	20.0	29.1	5.2	50.7

1. Values followed by the same letter, within columns are not significantly different at the 5% level of probability.

Table 2. HVI data for the acala cotton variety trial conducted on the Robbs farm in Cochise county, 1998.

Var	Color Grade	Leaf Grade	Mic	Length (in/100)	Strength (g/tex)	Unif	% Trash	RD	+B
SG 404	41	6.0	43.0	107.5	25.7	82.0	8.0	74.0	87.0
SG 125	31	4.5	42.5	108.5	25.3	80.5	4.0	77.5	86.0
1517-91	31	5.5	41.0	114.5	30.3	81.5	9.0	75.0	83.0
IF 1001	31	5.0	40.0	107.5	27.2	81.5	5.0	78.5	75.5
1517-95	31/41	6.5	39.5	114.0	29.9	81.5	9.0	74.5	82.5
NM B8073	31/41	6.5	38.5	119.0	32.0	82.0	9.5	74.5	80.5
AVG	--	5.7	40.8	111.8	28.4	81.5	7.4	75.7	82.4

Table 3a. Yield and other agronomic data for the acala cotton variety trial conducted on the Schmidt farm in Cochise County, 1998.

Variety	Lint Yield (lbs/acre)	% Lint Turnout	Plant Height (inches)	Plants per Acre
FM 989	1045.9 a	37.2 abc	28.5 a-d	77386 a
1517-95	941.8 b	35.0 cde	32.5 ab	52451 bc
PM 1560 BG	924.6 bc	36.9 a-d	29.5 a-d	46432 cd
DP 5409	919.2 bc	36.9 a-d	29.5 a-d	51591 bc
STV 373	903.2 bc	34.7 de	27.0 a-d	53311 bc
GC 9033	901.5 bc	36.0 bcd	33.5 a	65349 ab
SG 404	895.2 bc	35.7 b-e	23.0 d	51591 bc
SG 501	890.0 bcd	38.7 a	27.0 a-d	49871 c
FM 832	883.8 b-e	36.8 a-d	26.5 a-d	52451 bc
SG 125	877.3 b-e	35.9 bcd	26.0 bcd	56750 bc
1517-91	858.6 b-f	36.0 bcd	28.0 a-d	33534 d
STV 474	856.3 b-f	37.5 ab	31.0 abc	54170 bc
DP 50	847.4 c-g	33.4 e	25.0 cd	49871 c
GC 120	801.0 d-g	35.7 b-e	28.5 a-d	49871 c
PSC 569	794.5 efg	37.6 ab	32.0 abc	49011 c
AP 6101	776.7 fg	35.5 b-e	30.0 a-d	49011 c
AP 4103	766.2 g	35.2 b-e	30.0 a-d	55890 bc
Average	875.4	36.2	28.7	52855.1
LSD(05)	80.0	2.1	6.4	13034.2
CV(%)	4.3	2.8	10.5	11.6

1. Values followed by the same letter, within columns are not significantly different at the 5% level of probability.

Table 3b. Continuation of Table 3a with data from the Schmidt farm in Cochise County, 1998.

Variety	Nodes	HNR	1st Fruiting Branch	# of Fruiting Branches
FM 989	23.5 a	1.22 ab	11.5 a	7.0 a
1517-95	18.5 c	1.78 a	6.0 b	9.5 a
PM 1560 BG	21.5 abc	1.37 ab	9.0 ab	9.0 a
DP 5409	21.0 abc	1.43 ab	9.0 ab	8.0 a
STV 373	22.0 abc	1.27 ab	8.5 ab	8.5 a
GC 9033	22.5 abc	1.49 ab	8.5 ab	8.0 a
SG 404	20.5 abc	1.13 b	5.5 b	8.0 a
SG 501	20.0 abc	1.36 ab	7.0 ab	7.5 a
FM 832	19.5 abc	1.36 ab	7.0 ab	8.0 a
SG 125	20.5 abc	1.27 ab	7.5 ab	8.5 a
1517-91	19.0 bc	1.48 ab	7.5 ab	7.5 a
STV 474	20.0 abc	1.55 ab	8.0 ab	10.0 a
DP 50	20.0 abc	1.29 ab	7.0 ab	8.5 a
GC 120	19.5 abc	1.46 ab	7.0 ab	8.5 a
PSC 569	23.0 ab	1.40 ab	9.5 ab	8.0 a
AP 6101	20.0 abc	1.50 ab	7.5 ab	8.5 a
AP 4103	20.0 abc	1.52 ab	9.0 ab	7.5 a
Average	20.7	1.40	7.9	8.3
LSD(05)	4.5	0.50	4.2	4.4
CV(%)	10.2	16.7	25.2	24.9

1. Values followed by the same letter, within columns are not significantly different at the 5% level of probability.

Table 4. HVI data for the upland cotton variety trial conducted on the Schmidt farm in Cochise county, 1998.

VARIETY	COLOR GRADE	LF GRAD E	MIC	LEN (IN/100)	STR	UNIF	TRASH	RD	+B
FM 989	21/31	3.5	33.0	117.0	31.7	81.5	3.5	80.5	76.0
1517-95	31/41	6.5	38.0	119.5	29.1	83.0	6.0	76.5	75.0
PM 1560 BG	31	4.5	36.0	110.0	27.2	81.0	5.5	78.5	79.0
DP 5409	31/41	4.5	35.0	115.0	28.3	78.5	6.0	78.5	76.0
STV 373	31	5.0	34.0	112.5	25.7	81.0	4.5	78.5	79.5
GC 9033	31	5.5	34.5	116.5	31.8	81.5	5.0	79.5	74.0
SG 404	31	6.5	41.5	115.0	29.0	83.5	6.0	77.5	76.0
SG 501	21/31	4.0	37.0	115.5	31.4	82.5	4.0	78.5	83.0
FM 832	31	4.0	34.5	118.0	28.9	81.5	4.0	78.0	76.0
SG 125	31/41	6.0	34.5	115.0	26.8	82.0	4.0	78.5	82.5
1517-91	31	4.0	35.0	117.0	30.2	83.0	4.0	78.0	80.5
STV 474	31	5.5	34.5	110.0	26.6	81.0	6.0	76.5	85.5
DP 50	31	4.0	35.0	114.0	26.0	81.5	5.5	79.0	75.5
GC 120	21/31	4.5	33.0	109.0	27.5	82.5	3.5	79.5	80.5
PSC 569	31/32	4.5	37.5	113.5	29.7	82.0	3.0	79.0	81.5
AP 6101	31	5.0	36.0	118.5	30.3	81.5	5.5	77.5	78.0
AP 4103	31	6.0	36.0	115.0	28.4	81.0	5.5	78.5	76.0
AVG		4.9	35.6	114.8	28.7	81.7	4.8	78.4	78.5