Short Staple Variety Trial, Greenlee County, 1994

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Abstract

Nine short staple cotton varieties including five New Mexico acalas, four California acalas were tested in the 1994 variety study. The highest yielding variety was 1517-91 with a lint yield of 1009 pounds per acre. The average yield was nearly 200 pounds per acre higher than the previous three years. In addition to lint yields; percent lint, plant heights, height to node ratios and plant populations are shown. A lint yield comparison for 1991, 1993 and 1994 is included in this paper.

Introduction

Interest in premium quality short staple cotton varieties continues in Greenlee county. The ideal variety for this area would consistently produce 2 bales of lint per acre, mature quickly enough that there would be no reduction in price for low micronaire and have length and strength qualities that would justify a 10 to 15 cent premium over the delta-type cotton varieties. In our previous years of variety testing, we have not found that ideal variety, so the quest continues. The backbone of the cotton variety trial is, of course, the New Mexico acalas. Five NM 1517 lines including the experimental, B4442, which was officially released as 1517-95, were included in the trial. Prema, Maxxa and Royale from California Planting Cotton Seed Distributors and Germains GC 702 were also included in this trial.

Methods and Materials

The varieties were planted in two row plots in four replications on the Stan Jones farm in Virden, NM, using their equipment and normal cultural practices. The crop history listed below outlines the important things that took place during the growing season.

Crop History - Jones farm

Previous crop: Grain sorghum
Soil type: Pima sandy loam
Planting date: 19 April 1994 Rate: 17 pounds per acre
Fertilizer: Anhydrous ammonia
Herbicide: Treflan and caparol
Insecticide: None
Pix/Prep: None
Defoliation: None
Irrigation: Furrow
Harvest date: 21 October
Heat units (86/55) to harvest: 3746 at the Safford Agricultural Center adjusted to 3292 for Duncan
Average heat units for Duncan from 19 April to 21 October: 3050 (see reference 1)

Plots were mechanically picked using the cooperator's machines, with each plot being weighed separately using electronic weigh scales under cotton trailers. Sub-samples were taken from each rep to determine lint turnout and

fiber quality.

Results and Discussion

As usual, weather was a major factor in the cotton yields for 1994. The winter of 1993-94 was relatively mild with less rainfall than we have had since 1989. This allowed fields to be well prepared for the planting season. This coupled with a good accumulation of heat units during the growing season, lead to cotton yields that were about 200 pounds per acre higher than the past few years. Heat units from the AZMET station in Safford were converted to Duncan heat units using information found in the publication by Paul Brown (1991). Comparing our calculation of heat units with the average from planting to harvest, indicates that we received about 250 more heat units than normal.

The results of the trial on the Jones farm are found in Table 1. New Mexico 1517-91 produced the highest yield in 1994 with a seedcotton yield of 2792 pounds per acre and lint yield slightly over 2 bales. Maxxa, the highest yielding variety in 1993 was fourth in seedcotton yield, but second in lint yield. Its percent lint turnout was the highest of all the varieties as has been seen in the past (references 2,3 and 4) and was also noted in the Robbs trial in Cochise county this year (5). The newest release from New Mexico, 1517-95 (formerly B4442), came in second in seedcotton and third in lint yields. Table 2 shows lint yields of the varieties tested on the Jones farm in 1991, 1993 and 1994. In this table 1517-95 came in number two, but Maxxa has out yielded it every time they have appeared in the same trial at this location.

HVI data for 1994 are found in Table 4 and for comparison purposes, the HVI data from the 1993 study are included in Table 4. 1517-91 appeared to have longer and stronger fiber than Maxxa, but all of the fibers are very good quality. It is interesting to note that in 1993 the fibers appeared to be longer but in 1994 the fibers were more uniform and stronger.

References

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Acknowledgements

Appreciation is expressed to Stan Jones and John Swapp for their interest and cooperation in this study. Seed was provided by New Mexico Crop Improvement, California Planting Cotton Seed Distributors and Germains. A special thanks is due Delta and Pine Land Co. for their help in ginning the grab samples to provide the percent lint turnout for this field trial.

Table 1. Acala cotton yields and other agronomic values for a variety trial grown on the Stan Jones farm in Virden, New Mexico, 1994.

Variety	Seedcotton YIeld	Percent Lint	Lint Yield	Plant Height	Plants per acre	Nodes	Height to Node Ratio
1517-91	2792 a	36.2 ab	1008.6 a	36.5 abc	16335 ab	19.5 cb	1.87 ab
1517-95	2529 ab	35.4 ab	895.4 ab	38.0 abc	15428 abc	22.5 abc	1.71 bc
1517-88	2517 ab	34.5 b	869.7 ab	38.0 abc	11798 bc	23.0 ab	1.66 bc
Maxxa	2472 ab	37.4 a	924.3 ab	35.0 bc	12705 abc	18.0 d	1.95 a
GC 702	2462 ab	34.3 b	844.8 ab	39.0 ab	12705 abc	20.0 bcd	1.96 a
Prema	2457 ab	33.7 b	826.7 ab	35.5 abc	11798 bc	20.5 bcd	1.74 abc
1517-E2	2457 ab	34.3 b	840.6 ab	37.5 abc	14066 abc	21.5 abc	1.75 abc
1517-SR3	2381 ab	34.2 b	814.5 b	39.5 a	17243 a	24.0 a	1.65 bc
Royale	2133 b	35.8 ab	770.0 b	34.5 c	11344 c	21.5 abc	1.61 c
Average	2466.7	35.07	865.6	37.06	13713.3	21.17	1.77
LSD(05)	381.3	2.51	170.7	3.8	4250.3	3.05	0.22
CV(%)	6.7	3.16	8.55	4.45	13.44	6.25	5.41

Table 2. Lint yield comparisons by variety over 3 years on the Jones farm in Virden, NM.

Variety	Lint Yield 1991[1]	Lint Yield 1993	Lint Yield 1994	Average Lint Yield
1517-91	763 a	741 ab	1009 a	837.7
1517-95 (B4442)	--	738 ab	895 ab	816.5
Maxxa	616 c	832 a	924 ab	779.0
1517-E2	--	678 b	841 ab	759.5
1517-88	686 b	662 b	870 ab	726.3
Prema	700 b	679 b	827 ab	722.0
Royale	623 c	719 b	770 b	704.0
GC 702	--	--	845 ab	845.0
CB 1135	765 a	--	--	765.0
1517-SR3	587 c	--	815 b	701.0
CB 1210	--	543 c	--	543.0
Nazas 87	--	526 c	--	526.0
Average	681	682.5	865.6	727.1
LSD(05)	48.6	105.1	170.7	
CV(%)	10.8	17.1	8.55	
Heat Units	3177	3257	3292	

[1] Lint yields in 1991 were calculated from seed cotton yields using a 35% turnout for all varieties.

Table 3. Fiber characteristics of acala varieties from the 1994 variety trial on the Jones farm in Virden, NM.

Variety	Length	Uniformity	Strength	Elongation	Micronaire	Grade
1517-91	1.19	85.2	34.1	6.1	4.0	31
1517-95	1.18	85.3	34.8	6.3	4.0	31/41
1517-88	1.18	85.3	33.3	5.5	3.8	21
Maxxa	1.15	84.3	33.8	6.1	3.9	21
GC 702	1.18	85.1	33.7	6.4	3.9	21/31
Prema	1.18	85.1	35.4	6.2	4.1	31/41
1517-E2	1.18	85.0	33.9	6.3	4.4	31
1517-SR3	1.19	85.5	34.2	6.2	4.0	21
Royale	1.17	85.0	33.8	6.5	4.1	21
Average	1.178	85.09	34.11	6.18	4.02	
Std Dev	0.012	0.337	0.633	0.286	0.172	

Table 4. Fiber characteristics of acala varieties from the 1993 variety trial on the Jones farm in Virden, NM.

Variety	Length	Uniformity	Strength	Micronaire
1517-91	122.8	84.3	30.5	3.2
B4442 (1517-95)	117.5	83.0	30.6	3.2
1517-88	123.0	83.5	30.3	3.2
Maxxa	122.0	84.0	29.9	3.2
Prema	123.0	84.5	31.9	3.1
1517-E2	121.5	83.0	29.5	3.0
Royale	119.5	83.0	27.9	3.4
CB 1210	117.0	83.0	29.9	3.0
Nazas 87	117.0	81.5	26.8	3.0
Average	120.37	83.31	29.7	3.13
Std Dev	2.63	0.91	1.52	0.118