

Short Staple Variety Trial in Cochise County, 2001

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Abstract

Twelve varieties were tested including three New Mexico Acalas and one Acala from Buttonwillow Research in California, six Roundup Ready varieties, five of which also contained the Bt gene, along with a couple of other varieties were planted including FiberMax 989, which has been the highest yielding variety in the trial for two of the past three years. The highest yielding variety in the trial was FiberMax 989R, the Roundup Ready version of FM 989, with a yield over 950 pounds of lint per acre. 1517-95 and SureGrow 521RR followed in yield. Yields were considerably lower than seen in the previous year's study (1). Several Roundup Ready varieties were included in this study. Plant mapping data and HVI data are also included in this report.

Introduction

Only one variety trial was conducted in Cochise county this year and the Acala varieties were included along with Upland varieties produced by several seed companies for state-wide testing. Seven of the varieties tested had not been grown in University tests in the county before and three of the varieties contained the Roundup Ready gene. This study continues to provide varietal information on cotton varieties that are best suited to the high deserts of southeastern Arizona.

Materials and Methods

This variety trial was planted on the Glenn Schmidt farm east of Kansas Settlement using the cooperators equipment and managed according to their cultural practices. The varieties were planted in two row 38-inch row spacing plots on the Schmidt farm. There were four replicates of each variety. The following crop history provides details on how the test plot was managed:

Crop History - Schmidt farm

Previous crop: Cotton

Soil type: Comoro/Grabe loam to sandy loam

Planting date: 24 April 2001 Rate: 20 lbs/ac

Fertilizer: 200 pounds/ac 11-52 at planting, 250 pounds/ac urea

Herbicide: Prowl pre-plant

Insecticide: None

Fungicide: None

Pix/Prep: None

Defoliation: None

Irrigation: Furrow irrigated

Harvest date: 11 November

Heat units (86/55EF) planting to harvest (11 Nov): 3363 as calculated from data at the Bonita AZMET station.

The plots were picked using the cooperators' equipment and plots from 2 reps were weighed together using an electronic weigh wagon. Ten boll samples were taken from each plot prior to harvest to determine boll weights. These samples were ginned to determine percent lint turnout and the lint was sent to the classing office for HVI analysis.

Results and Discussion

Weather conditions were slightly below normal for cotton stand establishment in 2001 with several low temperature spikes in April and even a drop to 35EF on the 5th of May. Fortunately the weather was fairly good for nine days following planting and a good stand was achieved. The growing season was fairly normal with heat units close to the average up to September. The end of September and the end of October were warmer than normal but with a cold front moving through between the two. November, then, was exceptionally warm allowing the top bolls to mature before the killing frost on the 24th of November. Figure 1 shows the temperature and heat unit measurements throughout the growing season at the Bonita AZMET station. The number of accumulated heat units was very similar to the 2000 cotton growing season, but about 300 above the average from 1987 to 1999 (reference 2).

Table 1 contains the yield and other agronomic values from the varieties evaluated on the Schmidt farm. Yields were better than the previous year (1) but still not as good as the 1999 season (3). FiberMax 989R, the Roundup Ready version of FM 989 was the highest yielding variety with a yield over 950 pounds of lint per acre. FM 989 was the highest yielding variety in two of the three previous years studies (3,4). Following the yield column in the table is a column listing dollar values per acre by variety. These values are calculated using CCC loan schedule of discounts and premiums, assuming a base value of 50.40 cents per pound. With these values 1517-99 is brought to the number two position of varieties tested, slightly above NM7514 which was second in yield. The difference in crop values between FM 989R and 1517-99 is \$53/acre, this difference would be erased if the premium for 1517 cotton were 6.5¢/lb over and above the other premiums given. Some years this is attained. Modest differences were seen in plant heights and plant populations between varieties, but these differences were considered of small impact compared to the yield and value differences.

Table 2 continued with agronomic values measured or calculated from plants at the time of harvest. The number of nodes per plant were lower and the HNR higher than the previous year. These values were very similar to the 1999 test results. Boll weights were also considerably higher than last year, averaging 5.1 grams per boll against 4.7. BW 9605, had the highest boll weights at 5.95 grams per boll, similar to what was seen in 2000.

Table 3 contains fiber quality (HVI) values for all varieties tested at this site. The fiber lengths were an improvement over last year's and very similar to the year before, but strength was slightly lower than the previous two years. NM 1517-99 had the best overall fiber as indicated by the premium value with California Acala, BW 9605, following closely behind.

References

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Acknowledgment

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Table 1. Lint yield and other agronomic values from Upland/Acala variety trial in Kansas Settlement, AZ, 2001.

Variety	Lint Yield ¹	Value ²	% Lint	Plant Height	Plants per Acre
FM 989R	952.5 a	\$517.53	36.2 a	30.8 c	50366 cde
NM B7514	859.3 b	\$461.69	34.4 a-d	38.8 a	60349 bc
SG215BR	821.0 bc	\$393.56	34.2 bcd	34.5 abc	52635 cde
SG 521RR	819.9 bc	\$417.91	35.5 ab	34.0 abc	56265 bcd
1517-99	816.5 bcd	\$464.69	34.2 bcd	35.0 abc	52181 cde
DP 422BR	770.5 c-e	\$370.25	35.7 ab	36.5 ab	45375 de
BR 9802	761.8 de	\$381.87	33.9 bcd	31.5 c	66701 ab
1517-95	742.5 ef	\$418.57	32.7 cde	34.5 abc	60803 bc
BR 303	704.4 fg	\$375.27	33.0 cde	37.5 a	76684 a
DP 436BR	683.3 g	\$343.25	32.6 de	32.3 bc	60349 bc
BW 9605	671.4 g	\$380.07	34.5 abc	34.0 abc	51274 cde
DP 451BR	575.0 h	\$277.27	31.7 e	34.8 abc	41291 e
Average	764.9	--	34.0	34.5	56189
LSD(05)	54.79	--	1.88	4.89	12831
CV(%)	4.98	--	3.85	9.83	15.87

1. Values followed by the same letter are not separable statistically at the 95% level of confidence.

2. Value of lint per acre based on CCC loan schedule of discounts and premiums, assuming a base value of 50.40 cents per pound.

Table 2. Plant mapping data and boll weights from Upland/Acala variety trial in Kansas Settlement, AZ, 2001.

Variety	Nodes ¹	HNR	FFB	Boll Weight
FM 989R	19.0 bcd	1.62 de	8.00 b	5.33 bc
NM B7514	20.8 ab	1.88 abc	9.25 ab	5.15 b-e
SG215BR	20.8 ab	1.67 cde	8.5 ab	4.85 ef
SG 521RR	17.8 d	1.92 ab	8.25 ab	5.23 bcd
1517-99	19.8 abc	1.77 a-e	9.00 ab	4.80 ef
DP 422BR	19.8 abc	1.85 a-d	8.00 b	5.40 b
BR 9802	19.8 abc	1.60 e	10.0 a	4.98 c-f
1517-95	20.3 ab	1.72 b-e	9.50 ab	5.33 bc
BR 303	19.0 bcd	1.97 a	8.25 ab	4.90 def
DP 436BR	18.0 cd	1.79 a-e	6.00 c	4.73 f
BW 9605	19.5 a-d	1.75 a-e	8.50 ab	5.95 a
DP 451BR	21.0 a	1.67 cde	8.25 ab	4.73 f
Average	19.6	1.76	8.46	5.12
LSD(05)	1.90	0.25	1.88	0.37
CV(%)	6.75	9.69	15.5	5.09

1. Values followed by the same letter are not separable statistically at the 95% level of confidence.

Table 3. HVI data from Upland/Acala variety trial in Kansas Settlement, AZ, 2001.

Variety	Length ¹	Mike	Strength	Uniformity	Premium/ Discount ² (pts)
FM 989R	1.11 bcd	3.70 c-f	28.5 bc	81.0 b	358
NM B7514	1.15 ab	3.80 b-e	30.5 a	81.5 ab	378
SG215BR	1.05 f	3.70 c-f	25.9 d	81.0 b	-168
SG 521RR	1.07 ef	3.90 bcd	26.1 d	82.5 a	198
1517-99	1.14 abc	36.0 ef	31.0 a	81.5 ab	400
DP 422BR	1.06 ef	4.00 ab	24.8 d	81.0 b	-30
BR 9802	1.06 ef	4.25 a	28.2 c	82.5 a	8
1517-95	1.12 bcd	3.50 f	30.9 a	82.5 a	323
BR 303	1.17 a	3.95 bc	29.6 ab	80.5 bc	370
DP 436BR	1.10 cde	3.80 b-e	26.1 d	81.5 ab	103
BW 9605	1.12 bcd	3.80 b-e	30.8 a	82.5 a	390
DP 451BR	1.10 def	3.65 def	25.8 d	79.5 c	188
Average	1.10	3.80	28.2	81.5	—

1. Values followed by the same letter are not separable statistically at the 95% level of confidence.
2. Average premium of discount applied to the lint based on CCC loan schedule.

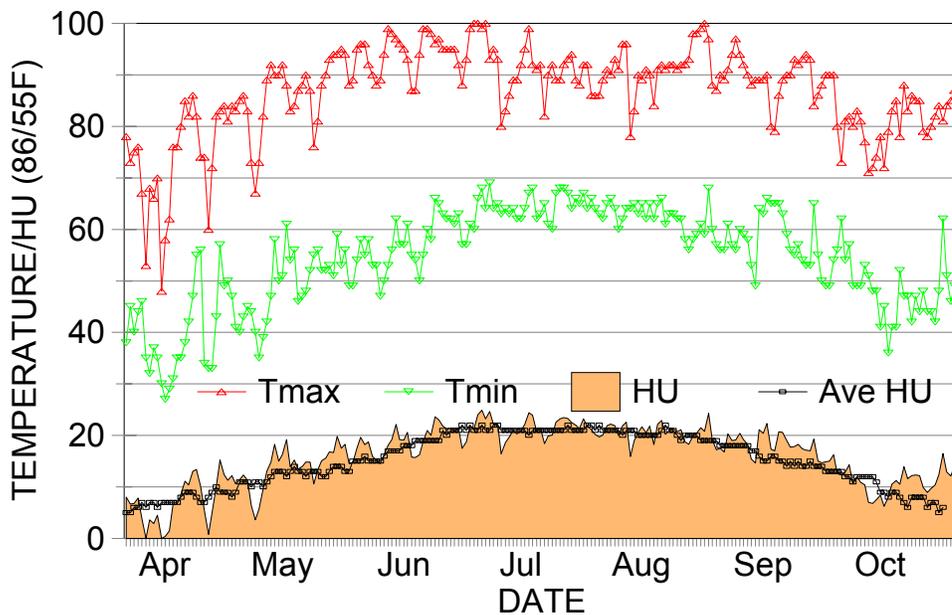


Figure 1. Heat Units (86/55E F) per day and Temperature at Bonita AZMET station in 2001.