Short Staple Variety Trial in Virden, NM, 2001

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Abstract

Twelve varieties were tested including three New Mexico (NM) 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 989R, the Roundup Ready version of FM 989, which was the highest yielding variety in the trial for two of the past three years. The highest yielding variety in the trial was SureGrow 215BR, the stacked (Bt/Roundup Ready version of SG 125), with a yield near 925 pounds of lint per acre. FM 989R and DP 436BR followed SG 215BR in yield with yields not significantly different from the leader. Yields were slightly lower than seen in the previous year's study (1). Plant mapping data and fiber quality (HVI) data are also included in this report along with lint value estimates and crop value per acre.

Introduction

Variety tests over the past two years have broadened out beyond the Acala varieties that were traditionally tested in this location. At grower's requests Roundup Ready Upland varieties have been tested to determine the best adapted varieties for the area. In this study half of the varieties tested have the Roundup Ready gene implanted in them. This study is a sister trial to the varietal evaluation in Cochise County this year. This test is part of the on going research to evaluate the best cultivars of all the economical crops to aid farmers in the area with their variety choices.

Materials and Methods

This variety trial was planted on the Jones/Swapp farm in Virden, NM, using the cooperator's equipment and managed according to their cultural practices. The varieties were planted in two row 36-inch row spacing plots on the Jones/Swapp 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

Previous crop: Grain sorghum
Soil type: Pima sandy loam
Planting date: 5 May 2001 Rate: 18 lbs/ac
Fertilizer: 200 pounds/ac 11-52 at planting, 250 pounds/ac urea side dressed
Herbicide: Prowl pre-plant
Insecticide: None
Pix/Prep: None
Defoliation: None
Irrigation: Furrow irrigated
Harvest date: 7 December
Heat units (86/55EF) from planting to 1st frost (24 Nov): 3303 as calculated from data at the Bonita AZMET station.

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The plots were picked using the cooperator's equipment and plots from 2 reps were weighed together using a weighing boll buggy beside the module builder. Ten boll samples were taken from each plot prior to harvest to determine boll weights and these were ginned to determine percent lint turnout. These ginned hand samples were sent 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. This study was planted just after that low and the temperatures increased after that date. The fall was exceptionally warm with the first killing frost on November 24 much later than normal. This allowed most varieties to mature to all bolls set prior to harvest time. The fall was very dry, aiding in the harvest.

Table 1 contains the yield and other agronomic values from the varieties studied on the Jones/Swapp farm. SureGrow 215BR developed from the SG 125 line produced the highest yield, but did not produce the highest value per acre. FiberMax 989R, the number two variety, produced the highest income per acre. The top five varieties in the study all had the Roundup Ready genetics that the local cotton growers had requested. Four of them also had the Bt gene, which was not needed in the area because of reduced insect pressure. The percent lint turnout is an important part of the yield component and values are seen to vary considerably by variety. SG 215BR, FM 989R and BW 9605 were the outstanding varieties. Plant heights and populations varied statistically as well, but neither variable was considered to have affected lint yields.

Table 2 has plant mapping values and boll weight data from the varieties in the study. The first column has First Fruiting Branches (FFB) listed. Variability between varieties was not significantly different and all were in the acceptable range. Typically the more determinant varieties will fruit at lower nodes than the less determinant varieties. The number of nodes varied a little bit and were very nearly the same as the previous year's values (1). The Height to Node Ratios (HNR), however, were slightly lower than last year. The HNR values were considered to be in an acceptable range. The average boll weight was lower than the values in the previous year's study, but still higher than in the sister study in Cochise County (2). As was found in the previous study, BW 9605, an Acala from California, had the largest bolls.

Table 3 contains HVI values for all varieties tested at this site plus a column on premiums and/or discounts applied to lint of these characteristics by the CCC loan schedule. The NM Acalas produced the longest fiber, with the two ButtonWillow Research varieties and FM 989R following. These same varieties tended to have the strongest fiber. Premiums listed in the last column were calculated from the values listed in the table plus the grade values, which are not listed in the table.

As was suggested in the previous study, FM 989(R) still seems to be a good variety to grow in this higher valley of the Gila River. One factor that can change the economics of the varieties is the premium offered for NM 1517 Acalas. This premium would have to be nearly 12¢/pound to bring the 1517-99 values equal to that produced by FM 989R.

References

1. Clark, L.J. 2001. Short staple variety trial in Virden, NM, 2000. Cotton, A College of Agriculture and Life Sciences Report, The University of Arizona, Tucson, AZ. Series P-125, pp. 104-108.

2. Clark, L.J. 2002. Short staple variety trials in Cochise county, 2001. Cotton, A College of Agriculture and Life Sciences Report, The University of Arizona, Tucson, AZ. *In this publication.*

Acknowledgment

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Table 1. Lint yields and other agronomic data from Upland/Acala trial in Virden, NM, 2001.

Variety	Lint Yield[1] (pounds/acre)	Value[2] ($/acre)	% Lint	Plant Height (inches)	Plants per Acre
SG 215BR	924.6 a	$439	36.5 a	32.3 abc	39930 bc
FM 989R	919.7 ab	$510	36.2 a	31.5 abc	25864 d
DP 436BR	857.4 abc	$440	33.3 d	30.5 abc	36754 bc
DP 451BR	851.0 bcd	$461	34.1 cd	31.3 abc	26318 d
DP 422BR	826.6 cde	$391	34.0 cd	31.8 abc	37208 bc
1517-99	824.4 cde	$413	34.3 cd	34.5 a	38115 bc
BR 303	815.0 cde	$395	33.8 cd	30.8 abc	53996 a
BR 9802	788.0 cde	$401	34.7 bcd	29.5 bc	35393 bcd
SB 521RR	780.7 de	$400	35.8 ab	31.8 abc	41745 b
NM B7514	765.2 ef	$393	35.2 abc	33.3 ab	43560 b
BW 9605	704.1 fg	$416	36.2 a	28.8 c	31308 cd
1517-95	634.0 g	$338	34.1 cd	31.3 abc	35393 bcd
Average	807.5	$416	34.8	31.4	37132
LSD(05)	71.13	--	1.45	4.29	9742.5
CV(%)	6.12	--	2.89	9.49	18.24

1. Values followed by the same letter are not significantly different at the 95% level of confidence using standard statistical methods.
2. Calculated values of lint in dollars per acre based on CCC loan schedule discounts and premiums, assuming a base value of 50.40 ¢ per pound.

Table 2. Plant mapping and boll weight data from Upland/Acala variety trial in Virden, NM, 2001.

Variety	FFB[1]	Nodes	HNR	Boll Weight (Grams/boll)
SG 215BR	7.50 a	19.3 bcd	1.68 abc	5.82 ab
FM 989R	6.50 ab	19.8 bc	1.59 bc	5.81 abc
DP 436BR	6.25 ab	18.3 bcd	1.68 abc	5.22 c-f
DP 451BR	4.50 b	18.0 cd	1.76 abc	5.30 b-e
DP 422BR	7.50 a	19.5 bc	1.63 abc	5.76 abc
1517-99	6.75 ab	18.3 bcd	1.90 a	5.82 ab
BR 303	8.00 a	18.0 cd	1.71 abc	4.70 f
BR 9802	6.00 ab	17.0 d	1.74 abc	5.15 def
SB 521RR	7.75 a	17.0 d	1.88 ab	5.10 ef
NM B7514	5.75 ab	22.3 a	1.52 c	5.70 a-d
BW 9605	6.25 ab	17.0 d	1.70 abc	6.11 a
1517-95	7.50 a	20.5 ab	1.53 c	5.36 b-e
Average	6.69	18.7	1.69	5.49
LSD(05)	2.69	2.49	0.29	0.59
CV(%)	28.0	9.23	12.0	7.46

1. Values followed by the same letter are not significantly different at the 95% level of confidence using standard statistical methods.

Table 3. HVI data from Upland/Acala variety trial in Virden, NM, 2001.

Variety	Staple[1]	Mike	Length	Strength	Uniformity	Premium[2]
SG 215BR	33.0 e	4.80 ab	1.03 f	25.1 g	83.0 ab	-293
FM 989R	35.5 c	4.35 efg	1.11 bc	28.3 ef	80.5 f	320
DP 436BR	35.5 c	4.70 bcd	1.10 bcd	25.0 gh	82.0 cd	200
DP 451BR	35.5 c	4.70 bcd	1.10 bcd	25.6 g	81.0 ef	235
DP 422BR	34.5 d	4.55 cde	1.09 cde	27.4 f	82.5 bc	-40
1517-99	37.5 ab	4.30 fg	1.17 a	30.9 bc	83.5 a	275
BR 303	36.0 c	4.65 bcd	1.12 b	30.1 cd	81.0 ef	338
BR 9802	34.5 d	5.00 a	1.08 de	29.2 de	83.5 a	53
SB 521RR	34.0 d	4.75 bc	1.06 e	24.1 h	82.0 cd	43
NM B7514	38.0 a	4.50 def	1.18 a	31.5 ab	81.5 de	308
BW 9605	36.0 c	4.20 g	1.12 b	32.0 a	82.0 cd	323
1517-95	37.0 b	4.70 bcd	1.16 a	31.6 ab	82.0 cd	323
Average	35.6	4.60	1.10	28.4	82.0	--

1. Values followed by the same letter are not significantly different at the 95% level of confidence using standard statistical methods.
2. Average premium or discount applied to the lint based on CCC loan schedule.