

# Short Staple Variety Trial in Virden, NM, 2002

L.J. Clark and E.R. Norton

## *Abstract*

*Twelve varieties were tested including two new herbicide resistant entries from California, Riata and Nova, two New Mexico Acalas, seven roundup resistant entries from Delta and Pine Land Co., Stoneville, SureGrow and FiberMax, and the new variety developed for the Arizona Cotton Grower's Association, AG 3601. The highest yielding variety in the trial was FM 989 with a yield of 1045 pounds of lint per acre. It was also the highest yielding variety at this location last year. The Acala 1517-99 placed second in yield at 1039 pounds of lint per acre. HVI data are also included in this report.*

## **Introduction**

This is a continuation of the variety studies that have been grown in the Duncan/Virden area over many years. Cotton growers in the area prefer to grow premium quality cotton so the premium can compensate for the lower yields grown in this upper valley of the Gila river. But, in recent years the introduction of herbicide resistant cultivars has been particularly interesting to help clean up many weedy fields. The premium quality New Mexico Acala varieties do not, at this time, have herbicide resistance traits and have struggled to produce high enough yields to compete with the lower quality varieties that are available. The varieties grown in this study are the same as those grown in a similar study in Cochise County this year. The majority of the varieties included have not been tested in the county before. This test is part of the ongoing 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 farm in Virden, NM, using the cooperators' equipment and managed according to their cultural practices. The varieties were planted in two, 36-inch row plots with four replications. The following crop history provides details on how the field was managed:

### Crop History

Previous crop: Cotton

Soil type: Pima sandy loam

Planting date: 29 April 2002

Rate: 15 lbs/ac

Fertilizer: 150 pounds/ac 18-46 pre-plant and 100 pounds/ac urea at planting

Herbicide: Treflan pre-plant, Caparol at lay-by

Insecticide: None

Fungicide: None

Pix/Prep: None

Defoliation: None

Irrigation: Furrow irrigated, 7 times, terminated irrigations at the end of August

Harvest date: 4,5 November

Heat units (86/55EF) to 1<sup>st</sup> frost (5 Nov): 3122 as calculated from data at the Bonita AZMET station.

---

This is a part of the 2003 Arizona Cotton Report, The University of Arizona College of Agriculture and Life Sciences, index at <http://cals.arizona.edu/pubs/crops/az1312>

The plots were picked using the cooperators' equipment and plots from 2 reps were weighed together using a basket scale 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 2002, followed by a fairly normal growing season. The near frost that occurred on the 4<sup>th</sup> of October in Bonita did not have the same devastating effect seen in Cochise county (1), the crop was able to continue to maturity. The number of heat units were less than in 2001 (reference 2), but the yields were higher.

Table 1 contains the yield and other agronomic values from the varieties studied on the Jones farm. FiberMax 989 R, the variety that had the second highest yield and the highest crop value in 2001 (1) produced the highest yield and the second highest crop value in 2002. New Mexico's 1517-99 produced the highest crop value because of its high lint value per pound. Even though 1517-99 produced more income per acre than the FM 989 R, the latter might be the farmer's choice because of the roundup resistant trait contained in the plant. The cost of removing weeds by hand instead of by herbicides is higher than the extra income produced by the lint premium. Percent lint turnout varied by variety with Riata producing the highest turnout and AG 3601 producing the lowest. As was seen in the sister trial in Cochise county (2), the high lint turnout with Riata was accompanied by a low plant population. This should be followed another year to make sure the problem was not in a weak seed batch.

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. The number of nodes did not vary significantly by variety and were slightly higher than last year. The Height to Node Ratios (HNR) were slightly lower than last year but most seemed to be in an acceptable range. One possible exception was AG 3601. The average boll weight was higher than last year. FM 989 R and Nova had the largest bolls.

Table 3 contains HVI values for all varieties tested at this site. The variety with the highest value fiber was 1517-99. Other varieties had fiber that was longer or stronger, but taking into consideration all fiber characteristics, the premiums were higher for 1517-99.

## **References**

1. Clark, L.J. and E.R. Norton. 2002. Short staple variety trial in Virden, NM, 2001. Cotton, A College of Agriculture and Life Sciences Report, The University of Arizona, Tucson, AZ. *Series P-130, pp. 86-90.*
2. Clark, L.J. and E.R. Norton. 2003. Short staple variety trial in Cochise County, 2002. In this publication.

## **Acknowledgment**

Appreciation is expressed to the Jones family for their interest and cooperation in these studies. Seed was provided by New Mexico Crop Improvement and several other seed companies.

**Table 1. Lint yields and other agronomic data from Upland/Acala trial in Virden, NM, 2002.**

Variety	Lint Yield (lbs/ac)	Value <sup>2</sup> (\$/acre)	% Lint Turnout	Plant Height (inches)	Plants per Acre
FM 989 R	1045 a <sup>1</sup>	\$535.04	37.7 abc	33.0 abc	38115 abc
1517-99	1039 ab	\$568.33	34.9 def	34.8 a	40384 abc
ST 4793 R	987 abc	\$487.58	38.1 ab	31.0 abc	42199 ab
DP 451 BR	976 a-d	\$513.86	34.2 ef	28.3 abc	39476 abc
ST 4892 BR	971 bcd	\$476.28	36.1 cde	30.8 abc	37661 abc
SG 215 BR	961 cd	\$474.73	34.9 def	32.3 abc	35393 bc
DP 436 BR	932 cde	\$489.30	34.7 def	27.5 bc	37661 abc
FM 991 R	915 def	\$494.10	35.3 de	32.5 abc	43560 ab
Riata	870 efg	\$454.58	39.3 a	28.8 abc	24956 d
Nova	860 fg	\$453.22	36.6 bcd	30.8 abc	30401 cd
1517-95	833 gh	\$438.16	33.2 fg	34.3 ab	30855 cd
AG 3601	765 h	\$415.40	31.8 g	26.0 c	47190 a
Average	929.4	\$483.38	35.6	30.8	37321
LSD(05)	71.4	--	2	7.2	10405
CV(%)	5.3	--	3.9	16.2	19.4

1. Values, within a column, followed by the same letter are not significantly different at the 95% level of confidence using Duncan's multiple range test.

2. Values in dollars per acre using the lint values per pound found in Table 3.

**Table 2. Plant mapping and boll weight data from Upland/Acala variety trial in Virden, NM, 2002.**

Variety	FFB	Nodes	HNR	Boll Weight
FM 989 R	6.0 ab <sup>1</sup>	19.5 a	1.70 a	6.6 a
1517-99	6.3 ab	21.0 a	1.68 a	5.2 d
ST 4793 R	5.8 ab	21.5 a	1.45 ab	5.8 bc
DP 451 BR	5.8 ab	20.8 a	1.36 ab	5.3 cd
ST 4892 BR	5.3 ab	20.5 a	1.51 a	6.2 ab
SG 215 BR	6.5 a	21.8 a	1.51 a	5.6 cd
DP 436 BR	4.5 b	19.5 a	1.44 ab	5.4 cd
FM 991 R	6.8 a	21.5 a	1.52 a	5.5 cd
Riata	5.8 ab	21.5 a	1.36 ab	6.2 ab
Nova	5.5 ab	20.2 a	1.54 a	6.5 a
1517-95	5.5 ab	21.8 a	1.60 a	5.5 cd
AG 3601	6.5 a	22.3 a	1.14 b	5.5 cd
Average	5.8	21	1.48	5.78
LSD(05)	1.8	2.9	0.36	0.5
CV(%)	21.8	9.7	16.9	6.3

1. Values, within a column, followed by the same letter are not significantly different at the 95% level of confidence using Duncan's multiple range test.

**Table 3. HVI data from Upland/Acala variety trial in Virden, NM, 2002.**

Variety	Color Grade	Leaf Grade	Mike	Length	Staple	Strength	Uniformity	HVI Trash	HVI Color	Color		Lint Value ¢/lb <sup>1</sup>
										RD	+B	
FM 989 R	31	2	44	115	37	28.0	81	2	31-1	81	72	51.20
1517-99	21	2	44	118	38	30.1	84	1	21-2	81	76	54.70
ST 4793 R	21	3	50	111	36	26.4	83	2	21-2	80	84	49.40
DP 451 BR	21	2	18	112	36	26.0	83	2	21-2	82	75	52.65
ST 4892 BR	21	2	52	109	35	27.5	83	2	21-2	80	83	49.05
SG 215 BR	21	2	49	107	34	25.9	84	2	21-1	81	82	49.40
DP 436 BR	21	3	47	114	37	25.6	83	1	21-2	82	73	52.50
FM 991 R	21	2	43	116	37	29.0	83	1	21-1	84	70	54.00
Riata	31	3	47	115	37	30.4	83	3	31-1	79	75	52.25
Nova	31	3	47	117	37	32.3	85	2	31-1	79	77	52.70
1517-95	31	2	45	117	37	30.6	84	1	31-1	80	79	52.60
AG 3601	21	2	45	120	38	30.4	82	2	21-1	81	80	54.30
Average	--	2.3	44.3	114.3	36.6	28.5	83.2	1.8	–	81	77	52.06

1. Estimated lint value per pound using 45¢ per pound as an average upland cotton lint value then applying premiums and discounts listed for the Desert Southwest on the USDA AMS website on March 3<sup>rd</sup>, 2003.