

# Short Staple Variety Trial, Graham County, 2000

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## *Abstract*

*One replicated on-farm short staple variety trial was planted in Graham County in 2000. Ten varieties were evaluated on the Larson farm in Thatcher. Several new varieties were planted in these studies, including 5 transgenic varieties, 3 varieties from Buttonwillow Research in California, and the newest acala from New Mexico. The Australian variety, FiberMax 989, produced the highest yield with 895 pounds of lint per acre. Paymaster 1560 BRR and DPL 655BRR followed close behind and were not separable statistically from the leader. Yield and other agronomic data are reported by variety along with HVI values from the lint.*

## *Introduction*

*This cotton variety trial, similar to the previous year's studies, is part of state-wide variety evaluation done in conjunction with Dr. Hal Moser and several seed companies. Even more important, however, this trial is part of the on-going variety trials conducted in the county for the benefit of local cotton growers.*

## *Materials and Methods*

The demonstration was grown with the cooperation of Jeff Larson, at an elevation close to 3000 feet using his equipment and normal cultural practices. The varieties were planted in 4-row plots with four replications. Agronomic measurements were made on a sub-set of plants prior to harvest. Plots were mechanically picked using the cooperators' machines, with each plot being weighed separately using electronic weigh scales under cotton trailers. Hand picked samples were taken to determine boll size, these samples were then ginned to determine lint turnout and fiber quality

### Crop History - Larson farm

Previous crop: Cotton

Soil type: Comoro/Grabe loam complex

Planting date: 20 April 2000

Rate: 20 pounds per acre

Fertilizer: UN32 sidedressed

Insecticide: None

Irrigation: Furrow, 6 times

Plant growth regulators: None

Defoliation: None

Harvest dates: 1st Pick: 7-8 December

2nd Pick: Not taken

Heat units (86/55) to 1st frost: 3836

## Results and Discussion

The spring of 2000 was warmer than normal and stands were relatively easy to establish. A detailed description of the weather is included in reference 1. There were two outstanding climatic events that affected cotton production in 2000. The first was the lack of moisture in the Gila River watershed during the winter, this made irrigation water very scarce throughout the growing season. The site for this trial was very sandy at the top end and crop growth was stunted because of inadequate water. The second was the rainfall that occurred at harvest time. Nearly four and a half inches of rain fell in the time when the weather is normally dry and the crop ready for harvest. This rainfall had some detrimental effects on both yield and fiber quality.

Table 1 shows the yield and other agronomic data from the Thatcher trial. Yields were midway between the yields seen in the Graham County study in 1999 (2). The variety with Australian background, FiberMax 989, produced the highest yield and it was followed closely by Paymaster 1560BR and DP 655BR. These three varieties were the only ones to produce more than 800 pounds of lint per acre. The acala varieties, 1517-99 and BR 9605, were at the bottom of the yield spectrum. Percent lint turnout was very consistent between varieties and no difference were seen. Plant heights were short, indicative of inadequate water during the growing season. Plant populations were in the normal range.

Table 2 contains plant mapping values and boll weights by variety. The number of nodes was very consistent between varieties and no differences were seen. Height to node ratios (HNR) values were very low, corresponding with the lower limit or below on the guidelines by Silvertooth, et.al. (3). This again is an indication that the plant growth was stunted by insufficient water. First fruiting branches varied a bit, but were in the acceptable range. BR 9802 had the lowest value and New Mexico's acala, 1517-99 had the highest value. Boll weights varied little and no significant differences were seen.

Table 3 provides HVI data for all the varieties tested in the study. Only one sample of each variety was submitted to the classing office for analysis, hence, no statistical inferences can be made between values. Grades were low, which were likely caused by a combination of the late rains and the lack of a lint cleaner on the gin. Micronaire values were much higher than normal. The average was about a full point higher than seen in last year's trials. The average length was about the same as seen in the Claridge trial (2) last year, but the strength was higher. DP 655BR, PM 1560BG and the acala from California, BR 9605, had the best quality of fiber. Uniformity, RD and +b were pretty uniform across the varieties, the only exception being the +b value for DPL 655BR.

## References

1. Clark, L.J. and E.W. Carpenter. 2001. Acala cotton variety trial, Safford Agricultural Center, 2000. Cotton, A College of Agriculture and Life Sciences Report, The University of Arizona, Tucson, AZ. *In this volume*.
2. Clark, L.J. and E.W. Carpenter. 2000. Short staple variety trials, Graham County, 1999. Cotton, A College of Agriculture Report, The University of Arizona, Tucson, AZ. Series P-121, pp. 107-115.
3. Silvertooth, J.C., E.R. Norton and P.W. Brown. 1996. Cotton growth and development patterns. Cotton, A College of Agriculture Report, The University of Arizona, Tucson, AZ. Series P-103, pp. 75-97.

## Acknowledgment

Appreciation is expressed to the Jeff Larson for his interest and cooperation in these studies. Seed was provided by New Mexico Crop Improvement and seed and financial support were provided by AgrEvo, Buttonwillow, Delta Pine, Paymaster and SureGrow seed companies.

**Table 1. Lint yield and other agronomic data from Upland variety trial in Thatcher, AZ, 2000.**

Variety	Lint Yield	% Lint	Plant Height	Plants per Acre
FiberMax 989	894.9 a	36.7 a	27.6 bc	64433 a
Paymaster 1560BG	843.6 ab	36.3 a	28.8 ab	57173 ab
DP 655BRR	802.1 ab	36.6 a	28.3 ab	53996 abc
DP 5690RR	748.8 bc	36.8 a	29.5 ab	59214 ab
SG 501BR	714.2 bcd	35.4 a	28.4 ab	60349 ab
BR 9802	709.1 bcd	36.0 a	25.5 c	65567 a
SureGrow 125BR	656.7 cd	35.2 a	30.5 ab	57853 ab
BR 9801	645.1 cd	36.7 a	31.1 a	50593 bc
1517-99	604.8 d	35.4 a	29.5 ab	56492 ab
BR 9605	469.6 e	36.9 a	29.4 ab	43106 c
Average	708.9	36.2	28.9	56878
LSD(05)	127.8	2.09	2.53	11734
CV(%)	12.4	3.99	6.04	14.22

**Table 2. Plant mapping and boll weights from Upland variety trial in Thatcher, AZ, 2000.**

Variety	Nodes	HNR	1st Fruiting Branch	Boll Weight
FiberMax 989	23.0 a	1.21 a	6.75 ab	5.83 a
Paymaster 1560BG	23.6 a	1.22 a	6.38 ab	6.20 a
DP 655BRR	22.9 a	1.23 a	6.38 ab	6.25 a
DP 5690RR	24.3 a	1.22 a	6.88 ab	6.25 a
SG 501BR	24.3 a	1.18 ab	6.88 ab	6.53 a
BR 9802	23.6 a	1.08 b	5.88 b	6.13 a
SureGrow 125BR	24.1 a	1.27 a	7.00 a	5.70 a
BR 9801	25.4 a	1.23 a	6.25 ab	6.33 a
1517-99	24.4 a	1.22 a	7.25 a	6.10 a
BR 9605	25.6 a	1.15 ab	6.75 ab	6.25 a
Average	24.1	1.2	6.64	6.16
LSD(05)	2.72	0.11	0.97	0.78
CV(%)	7.78	6.04	10.1	8.7

**Table 3. HVI data from Upland variety trial in Thatcher, AZ, 2000.**

Variety	Grade	Mike	Length	Strength	Uniformity	RD	+b
FM 989	41	5.3	1.11	26.4	84	75	74
PM 1560BG	41	5.2	1.17	32	82	73	73
DP 655BR	51	4.8	1.18	31.2	83	73	68
DP 5690RR	41	5.3	1.14	29.7	82	74	72
SG 501BR	41	5.2	1.11	31.1	84	74	71
BR 9802	41	4.9	1.15	33.3	83	73	72
SG 125BR	51	5.0	1.13	31.8	83	72	73
BR 9801	41	4.9	1.14	28.3	83	74	72
1517-99	41	5.6	1.12	27.3	84	74	76
BR 9605	41	5.5	1.17	31.7	84	75	76
Average	--	5.17	1.14	30.28	83.2	73.7	72.7