

# Short Staple Variety Trial in Cochise County, 2000

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## *Abstract*

*Twelve varieties were tested including three New Mexico Acalas and one Acala from Buttonwillow Research in California, three roundup Ready varieties, a buctril resistant variety, a Bollgard variety and three other varieties. The highest yielding variety in the trial was 1517-99, with FiberMax 989, 1517-95 and SureGrow 521RR following 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 again this year and the Acala varieties were included along with Upland varieties provided by 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 these 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 planted of each variety. The following crop histories provide details on how the fields were managed:

### Crop History - Schmidt farm

Previous crop: Cotton

Soil type: Comoro/Grabe loam to sandy loam

Planting date: 14 April 2000

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: 1 December

Heat units (86/55EF) to 1<sup>st</sup> frost (1 Nov): 3357 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 electronic weigh scales under cotton trailers. 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 above normal for cotton stand establishment in 2000 with April temperatures being above normal and May temperatures being the hottest on record. June had a warm average temperature but with a couple of unseasonably cool days, which occurred during rainfall events. The rainfall in June seemed like an early start to the monsoon season, but then nothing followed. July was very dry. August produced slightly over average rainfall and then September was dry. Less than normal rainfall was received during the monsoon season. The temperatures for July through September were close to normal. October, which is normally dry for harvest, produced record rainfall (4.7") and was abnormally cold. Figure 1 shows the temperature and heat unit measurements throughout the growing season at the Bonita AZMET station. The number of heat units were the more than in 1999, and came earlier in the year (reference 2).

Table 1 contains the yield and other agronomic values from the varieties studied on the Schmidt farm. Yields were reduced greatly compared to the previous year (1), this being a combination of heat stress, cotton rust and rains during the harvest season. The newest Acala variety from the New Mexico cotton breeding program, 1517-99, produced the highest yield, which was statistically higher than all the other varieties. FiberMax 989, the leader of the past two year's trials (3,4) and 1517-95 were ranked next in lint yield. SureGrow 521RR was the highest yielding variety with herbicide resistance in its genetic makeup. BW 9801, the variety with the lowest yield, was at a disadvantage in the study. Due to a problem with the planter, its plots had one weak row. So, it likely has a higher yield potential than shown here. Percent lint turnout varied from 33 to 37% with FiberMax 989 producing the highest turnout. The average plant height was almost 3 inches shorter than last year, reflecting some of the struggles during the year. There were significant differences between plant populations by varieties, but it was considered that all varieties had adequate population to produce acceptable yields, with the exception of the weak row on BW 9801.

Table 2 continued with agronomic values measured or calculated from plants at the time of harvest. The number of nodes per plant were higher than the previous year and the HNR lower. FM 989 had the highest number of nodes and DP 425RR had the lowest. Boll weights were also considerably lower than last year, averaging 4.7 grams per boll against 5.7. 1517-99 and the Acala from California, BW 9605, had the highest boll weights at 5.5 grams per boll. SG 521RR had the lightest bolls.

Table 3 contains HVI values for all varieties tested at this site. The fiber lengths of all were disappointing with only the 1517 varieties reaching or exceeding 1.1 inches. Last year the average fiber length was 1.12 inches. The average strength was slightly higher than the previous year indicating that stress affects length more than strength. The California Acala, BW 9605, had the strongest fiber at 35.3 grams per tex

## **References**

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2. Brown, P. Et.al. AZMET weather system. [Http://ag.arizona.edu/azmet/](http://ag.arizona.edu/azmet/)
3. Clark, L.J. 2000. Short staple variety trial in Cochise County, 1999. Cotton, A College of Agriculture and Life Sciences Report, The University of Arizona, Tucson, AZ. Series P-121, pp. 116-120.
4. Clark, L.J. 1999. Short staple variety trial in Cochise County, 1998. Cotton, A College of Agriculture and Life Sciences Report, The University of Arizona, Tucson, AZ. Series P-116, pp. 142-1484.

## **Acknowledgment**

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**Table 1. Lint yield and other agronomic values from Upland/Acala variety trial in Kansas Settlement, AZ, 2000.**

Variety	Lint Yield	% Lint	Plant Height	Plants per Acre
1517-99	1486.6 a	36.2 ab	32.3 a-d	56719 a
FiberMax 989	1256.9 b	37.2 a	33.5 a-d	49913 ab
1517-95	1161.4 bc	34.3 ab	35.8 abc	45829 b
SG 521RR	1110.7 bcd	34.7 ab	31.5 bcd	60349 a
BW 9802	1081.9 cd	34.7 ab	29.3 c-d	50820 ab
PM 1560 BG	1041.6 cd	36.5 ab	29.0 d	59441 a
BW 9605	1017.5 cd	36.7 ab	34.0 a-d	42653 bc
BXN 47	1003.5 cd	35.6 ab	38.3 a	34485 c
DP 425RR	972.3 d	33.7 b	29.8 bcd	52181 ab
1517-91	960.6 d	34.3 ab	36.0 ab	33578 c
DP 420RR	944.5 d	34.8 ab	33.8 a-d	49459 ab
BW 9801	769.3 e	33.8 b	33.3 a-d	33124 c
Average	1067.2	35.2	33.0	47379
LSD(05)	158.5	2.75	5.86	9885.8
CV(%)	6.73	3.55	8.06	9.48

**Table 2. Plant mapping data and boll weights from Upland/Acala variety trial in Kansas Settlement, AZ, 2000.**

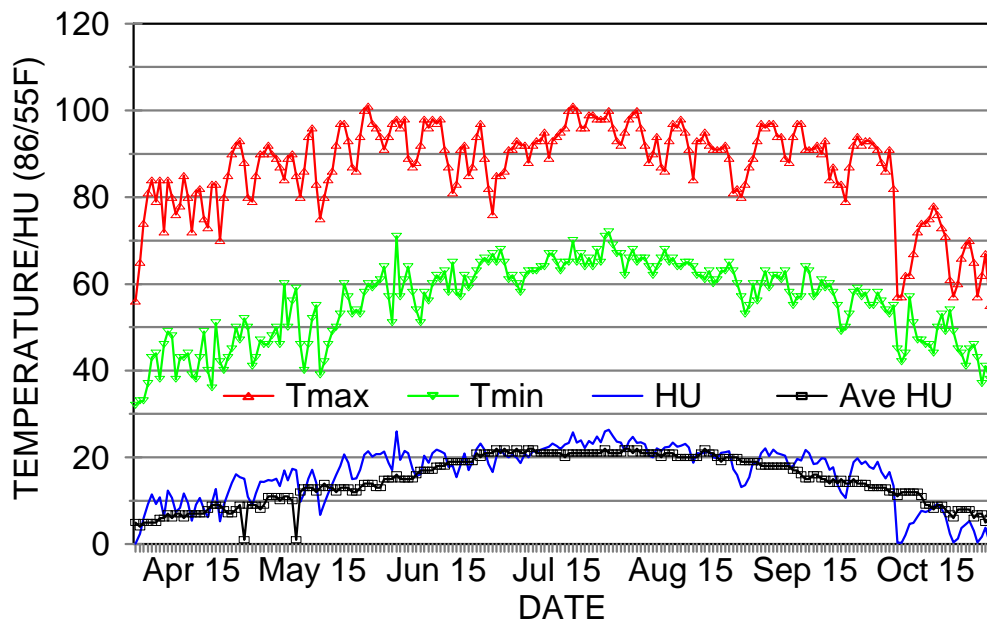
Variety	Nodes	HNR	Boll Weight
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1517-99	21.5 ab	1.52 a	5.5 a
FiberMax 989	25.8 a	1.31 a	4.5 bc
1517-95	23.0 ab	1.56 a	5.0 ab
SG 521RR	22.0 ab	1.52 a	4.2 c
BW 9802	24.0 ab	1.23 a	4.5 bc
PM 1560 BG	22.0 ab	1.32 a	4.5 bc
BW 9605	22.5 ab	1.52 a	5.5 a
BXN 47	24.3 ab	1.59 a	4.3 c
DP 425RR	20.8 b	1.43 a	4.5 bc
1517-91	25.5 a	1.43 a	5.4 a
DP 420RR	24.3 ab	1.41 a	4.7 bc
BW 9801	22.0 ab	1.52 a	4.4 bc
Average	23.1	1.44	4.7
LSD(05)	3.96	0.037	0.5
CV(%)	7.79	11.7	5.1

**Table 3. HVI data from Upland/Acala variety trial in Kansas Settlement, AZ, 2000.**

Variety	Grade	Mike	Length	Strength	Uniformity	RD	+b
1517-99	51	4.2	1.12	32.4	83	74	63

FM 989	41	4.3	1.07	29	82	76	71
1517-95	41	4.2	1.10	33.2	83	73	71
SG 521RR	41	3.9	1.00	27.1	82	75	78
BW 9802	41	4.6	1.05	30.8	83	74	74
PM 1560BG	41	4.3	1.06	27.2	81	74	69
BW 9605	41	4.2	1.08	35.3	84	75	68
BXN 47	41	4.7	1.01	27.3	81	74	70
DP 425RR	41	4.2	1.03	26.2	81	74	67
1517-91	51	3.9	1.11	29.4	83	73	59
DP 420RR	41	4.3	1.04	26.4	80	75	69
BW 9801	41	4.7	1.06	28.2	83	74	68
Average	43	4.3	1.06	29.4	82	74	69



**Figure 1. Heat Units (86/55E F) per day and**

**Temperature at Bonita AZMET station in 2000.**