Short Staple Variety Trial in Cochise County, 1999

L.J. Clark

Abstract

The Acala and Upland Variety trials typically grown in Cochise County were combined into one study in 1999 and were planted on the Glenn Schmidt farm, in Kansas Settlement. Twelve varieties were tested including three New Mexico Acalas and one Interspecific Hybrid from Israel. The highest yielding variety in the trial was FM 989 with a yield near 1200 pounds of lint. It was also the highest yielding variety in the Cochise County trial in 1998. PM 1560 BG came in a close second with the Israeli varity (Hazera 151-208) and the two New Mexico varieties (1517-95 and 1517-99) yielding over 1100 pounds of lint.

Introduction

Only one variety trial was conducted in Cochise county this year and the Acala varieties were included along with Upland varieties provided by seed companies for state-wide testing. Five of the varieties tested had not been grown in University tests in the county before. These included an interspecific hybrid from Israel, Hazera 151-208, a new release from the New Mexico Cotton Breeding group, 1517-99, and new entries from Stoneville, Delta Pine and AgriPro; BXN 16, DP 675 and AP 7115, respectively.

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 on each of the farms. The following crop histories provide details on how the fields were managed:

Crop History - Schmidt farm

Previous crop:
Soil type: Comoro/Grabe loam to sandy loam
Planting date: 23 April 1999 Rate: 20 lbs/ac
Fertilizer: 125 pounds/ac 11-52 at planting, 200 pounds/ac urea
Herbicide: Treflan pre-plant
Insecticide: None
Fungicide: None
Pix/Prep: None
Defoliation: None
Irrigation: Furrow irrigated
Harvest date: 10 November
Heat units (86/55°F) to harvest: 3138 as calculated from data at the Bonita AZMET station.

The plots were picked using the cooperator's 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 and approximately 4 pound grab-samples were taken from each plot at harvest and ginned to determine percent lint turnout. Sub-samples were taken for HVI analysis.

Results and Discussion

The weather was cold and unpredictable the first half of April (2). After several days with heat units (HU) above the recommended 10 HU/day , the trial was planted (see Figure 1) and the weather turned cold for another two weeks. May temperatures continued to vacillate and lowered to 33°F on April 30th and the 2nd of May, so cotton growth was slow until the end of the month. As with the previous year, July was the turnaround point when the temperatures stabilized and the crop took off. More than 4 inches of rain was recorded in Bonita in July, which was a large part of the 6.7 inches of rain received during the growing season. Late summer and fall were about normal with cold fronts on the 18th of October and again around the 1st of November, which caused frost in some areas. The weather was then warmer than normal until a killing frost came on the 21st of November.

Table 1 contains the yield and other agronomic values from the varieties studied on the Schmidt farm. Yields were considered very good considering the weather constraints early in the year and were slightly higher than in 1998 (1). FM 989, the Australian variety that topped the trial in 1998, was the highest yielding variety. It is a medium-late season variety and it is interesting that it performed so well at this elevation. PM 1560BG had the second highest yield, it ranked 3rd in yield in 1998. The interspecific hybrid from Israel, Hazera 151-208, had the highest seedcotton yield, but the lower percent lint turnout dropped it to third rank in yield. The new release from New Mexico, 1517-99 placed number five, just below 1517-95. Lint turnouts listed in the table may be slightly higher than seen at commercial gins, but are considered to be indicative of commercial turnout values. Plant populations varied a bit from variety to variety, perhaps being proportional to seedling vigor and inversely related to seed size, but none of the values were considered so low or so high as to cause yield problems. Table 2 continued with agronomic values measured or calculated from plants at the time of harvest. PM 1560BG had fewer nodes and a higher height to node ratio (HNR) than most varieties, but that was not seen in the previous year's study. 1517-91 and 1517-95 had the largest bolls and the Hazera hybrid had the smallest. Many more comparisons can be made by the reader.

Table 3 contains HVI values for all varieties tested at this site. The longest, strongest, most uniform fiber in the trial was found in the Hazera selection. It's micronaire (MIC) value was low, but probably a function of very fine fiber, not immature fiber. The second best fiber came from the new release from New Mexico, 1517-99. It is an improvement over the past two releases from that program. Of the non-acalas, DP 675 and FM 989 had the best fiber characteristics. This coupled with the high yield seen with the FM 989 would make it a good candidate for production in the area.

References

1. Clark, L.J. 1999. Short staple variety trials in Cochise county, 1998. Cotton, A College of Agriculture Report, The University of Arizona, Tucson, AZ. Series P-116, pp. 142-148.

2. Brown, P. Et.al. AZMET weather system. Http://ag.arizona.edu/azmet/

Acknowledgment

Appreciation is expressed to the Schmidt family for their interest and cooperation in these studies. Seed was provided by New Mexico Crop Improvement and seed and financial support were provided by AgriPro, AgrEvo, Delta Pine, Hazera, Paymaster, Stoneville and SureGrow seed companies.

Table 1. Yield and other agronomic data for the acala cotton variety trial conducted on the Schmidt farm in Cochise County, 1999.

Variety	Lint Yield (lbs/acre)	% Lint Turnout	Plant Height (inches)	Plants per Acre
FM 989	1198.3 a[1]	39.2 ab	35.5 ab	63071 ab
PM 1560BG	1191.0 ab	39.5 a	35.3 ab	68970 a
HAZ 151-208	1142.3 abc	35.9 e	33.3 ab	38115 d
1517-95	1137.5 abc	36.7 cde	37.5 ab	48551 bcd
1517-99	1114.3 abc	37.7 bcd	41.8 a	67609 a
BXN 16	1048.6 a-d	38.1 abc	26.8 b	40384 d
1517-91	1029.1 a-d	37.4 cde	37.0 ab	45829 cd
SG 125	1021.1 a-d	37.5 b-e	32.8 ab	56719 abc
SG 404	1005.6 bcd	36.3 de	35.5 ab	36300 d
DP 5409	995.7 cd	38.2 abc	34.5 ab	42199 cd
DP 675	993.0 cd	37.0 cde	38.0 ab	72146 a
AP 7115	901.0 d	37.8 a-d	40.3 a	41745 cd
Average	1064.8	37.6	35.7	51803.1
LSD(05)	189.9	1.77	11.8	14659.2
CV(%)	8.1	2.1	15.1	12.9

1. Values followed by the same letter, within columns are not significantly different at the 5% level of probability.

Table 2. Continuation of Table 1 with data from the Schmidt farm in Cochise County, 1999.

Variety	Nodes	HNR	1st Fruiting Branch	10 Boll Weight
FM 989	20.3 ab[1]	1.76 ab	8.3 a	63.0 ab
PM 1560BG	17.5 c	2.02 a	5.5 a	54.5 cd
HAZ 151-208	19.0 abc	1.74 ab	6.0 a	45.0 e
1517-95	20.5 ab	1.84 ab	8.0 a	64.0 a
1517-99	20.3 ab	2.07 a	7.3 a	53.5 cd
BXN 16	20.3 ab	1.34 b	6.5 a	57.0 abc
1517-91	21.3 a	1.75 ab	7.3 a	64.5 a
SG 125	18.3 bc	1.79 ab	6.0 a	54.5 cd
SG 404	20.0 ab	1.78 ab	6.8 a	61.0 abc
DP 5409	20.8 a	1.67 ab	5.8 a	48.0 de
DP 675	18.3 bc	2.09 a	5.8 a	58.5 abc
AP 7115	19.3 abc	2.09 a	5.8 a	55.5 bcd
Average	19.6	1.82	6.6	56.6
LSD(05)	2.1	0.60	2.5	8.2
CV(%)	4.8	14.9	17.4	6.6

1. Values followed by the same letter, within columns are not significantly different at the 5% level of probability.

Table 3. HVI data for the upland cotton variety trial conducted on the Schmidt farm in Cochise county, 1999.

VARIETY	LEN (IN/ 100)	STR	UNIF	MIC	RD	+B	COLOR GRADE
FM 989	112.0 c[1]	30.1 cd	81.0 bcd	33.5 de	81.5 a	72.0 de	31
PM 1560BG	109.0 cd	27.1 ef	81.5 abc	38.5 ab	80.0 ab	73.5 de	31
HAZ 151-208	125.5 a	34.5 a	83.0 a	32.0 e	71.0 c	96.0 a	31
1517-95	113.0 c	32.2 b	81.5 abc	36.5 a-d	76.5 abc	73.0 de	41
1517-99	118.0 b	32.0 bc	81.0 bcd	33.5 de	76.0 abc	73.0 de	41/42
BXN 16	104.0 e	27.3 ef	79.5 de	35.0 b-e	80.5 ab	71.0 e	31
1517-91	111.5 c	30.2 cd	82.0 ab	35.5 b-e	77.0 abc	74.0 de	31/41
SG 125	110.5 c	25.8 f	80.5 b-e	37.5 a-d	80.0 ab	76.5 cd	31
SG 404	109.5 cd	28.0 e	81.0 bcd	40.5 a	76.5 abc	81.0 bc	31/41
DP 5409	109.5 cd	26.2 e	79.0 e	38.0 abc	74.5 bc	84.5 b	41/42
DP 675	112.5 c	30.0 d	81.5 abc	34.0 cde	79.5 ab	75.0 de	31
AP 7115	105.5 de	26.4 ef	80 cde	35.0 b-e	80.0 ab	74.5 de	21
AVG	111.7	29.1	81.0	35.8	77.6	77.0	--
LSD(05)	4.7	1.9	1.6	4.4	6.0	5.0	--
CV(%)	1.9	3.0	0.9	5.6	3.5	3.0	--

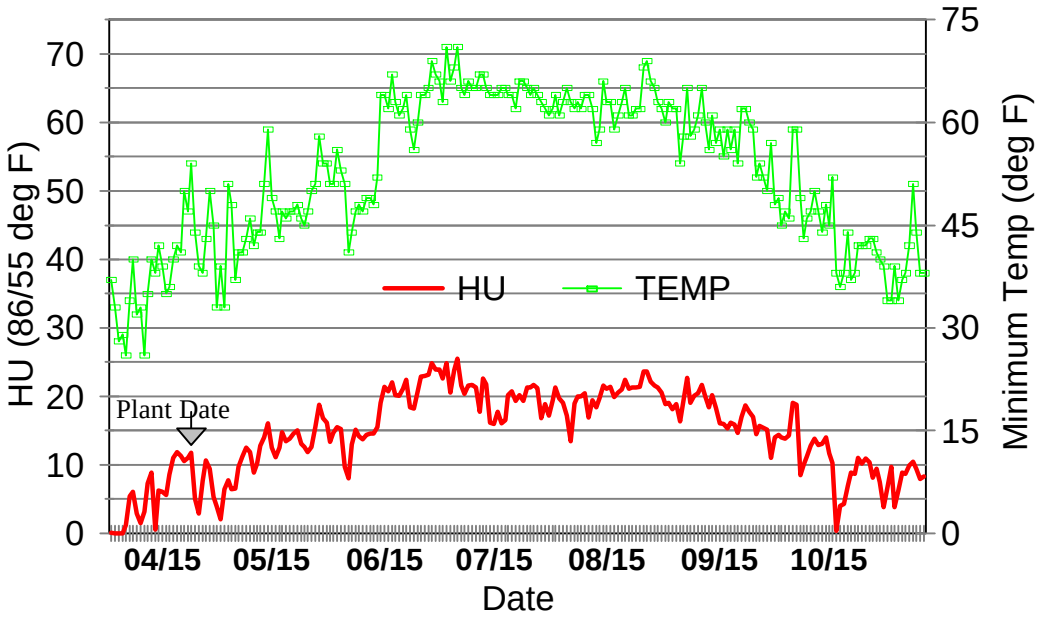

Figure 1. Heat Units (86/55° F) per day and Temperature at Bonita AZMET station in 1999.