January 21, 2000

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Cotton Variety Performance Trials in the Sacramento Valley

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Cotton varieties were tested in three different areas of the Sacramento Valley in 1999. The trials were located in Yolo County in the Zamora area, in Colusa County in the Williams area, and in Butte County near Chico. The varieties which had performed well in previous Sacramento Valley trials were tested in all three locations. Previously untested varieties were only planted in one location.

Yolo County Trial

This trial was in a high yielding field for 1999 as can be seen in the yield results in Table 1. Fiber quality results are shown in Table 4. This trial was planted on April 19th with an 8:00 a.m. soil temperature of 63EF. It was harvested on November 13th.

Colusa County Trial

The yield results for the Colusa County trial are shown in Table 2 and the fiber quality results are in Table 5. This trial had some severe mid-season water stress because irrigation water was needed elsewhere for tomatoes. There was also severe late season mite injury. The trial was planted on April 23rd into warm soils and harvested on October 12th.

Butte County Trial

Yield results are shown in Table 3 and quality results in Table 6 for the Butte County location. This trial was part of a student project at California State University, Chico school farm. The numbered varieties in the trial are experimental varieties being developed by V. T. Walhood and Buel Mouser.

1996 to 1999 Summary

Table 7 is a yield summary of ten locations over four years of cotton variety trials in the Sacramento Valley. Since every variety is not in every trial all years, it is necessary to compare every variety's yield to a variety present in every trial. This is why the average yields over the 1996-99 period are only shown as a percent of Stoneville 474. Calculating pounds of lint per acre yield across locations would produce some very misleading numbers.

The first ten varieties in Table 7 are a combination of the highest yielding varieties and most of the varieties currently planted in the Sacramento Valley. The five varieties: Sure-Grow 747, Phytogen Seed Company 413, Sure-Grow 125R, DeltaPine 5111, and Stoneville 474 are the best tested, highest yielding varieties to choose from for the Sacramento Valley. The high yielding variety Delta Pine 388 isn't in this group. There is only one year's results for this new variety.

Most of the ten cotton varieties in the upper part of Table 7 have been extensively tested in the Sacramento Valley. The two far right columns of Table 7 show the number of trials and the number of years each variety has been tested in the Sacramento Valley. Several of the varieties have been tested in 8 or 9 trials over 4 years.

Sure-Grow 125R was only tested in 2 trials, but it's parent, Sure-Grow 125, was tested in an additional 3 trials. Using both the yield results for Sure-Grow 125R and Sure-Grow 125, show Sure-Grow 125R has been the highest yielding herbicide resistant variety. These two very similar varieties were tested in a total of 5 trials over 3 years.

It's important to consider the effect of the 1998 "El Nino" year on the results summarized in Table 7. Since there were two trials in 1998, the "El Nino" results represent 20% of the results. Since "El Nino" years will occur much less than 20% of the time, how do the results change without the 1998 results? Two varieties results change significantly without the 1998 results. Sure-Grow 404 drops to only 89% of Stoneville 474's yield. DeltaPine 5111 drops to 98% of Stoneville 474's yield.

In Table 7 starting with the 11th variety down, PM 1220 BG/R, there are several varieties which have high yields for one or more years. Most of these occurred during the 1998 "El Nino" year when Stoneville 474 did poorly, thus making these varieties look high yielding for one year. Another problem with the Paymaster (PM) varieties has been their extreme sensitivity to phenoxy herbicide drift and potassium deficiency syndrome.

The cotton lint yields of seventy-four different cotton varieties are shown in Table 7. These trials were done in ten locations over 4 years. As a result of these trials and grower experience with some of these varieties, the higher yielding varieties are shown in the top section of Table 7. Good cotton varieties can be selected for the 2000 crop using these yield and fiber quality results.

Acknowledgments: We want to thank the following people for generously supporting these trials: Bill Vann, Vann Brothers; Eric Tenhunfeld, Wallace Ranches; Dick Jacobs, Lau Ackerman, Brandon Hareld, & Buel Mouser, CSU,Chico; John Gilbert, Adams Grain; Gayle Robbins, Stoneville; Scott Goble, Germains; V.T. Walhood; and Jane Dever, FiberMax.

Table 1. 1999 Yolo County Cotton Variety Trial

Individual Plot Size - 5 - 30" rows - 1,175 feet long, replicated 3 times

Variety	% Stoneville 474	Avg Yield (lbs/A)
DeltaPine 388	106	1500
Sure-Grow 747	105	1498
Sure-Grow 125R	101	1433
Stoneville 474	100	1422
Phytogen 413	96	1361
DeltaPine 5111	95	1353
Sure-Grow 585 R	94	1334
Sure-Grow 404	90	1281
Sure-Grow 125 BG/R	85	1209
Stoneville BXN 47	84	1189
LSD $_{.05}$		143

Table 2. 1999 Colusa County Cotton Variety Trial

Individual Plot Size - 6 - 30" rows - 1,000 feet long, replicated 3 times

Variety	% Stoneville 474	Avg Yield (lbs/A)
Sure-Grow 747	108	1123
Phytogen 413	106	1096
Sure-Grow 125R	105	1088
DeltaPine 5111	100	1043
Stoneville 474	100	1039
Germains 204	99	1033
Phytogen 355	99	1026
Sure-Grow 404	98	1014
FiberMax 832	89	929
AgriPro 6101	80	834
LSD $_{.05}$		73

Table 3. 1999 Butte County Cotton Variety Trial

Individual Plot Size - 8 - 30" rows - 915 feet long, replicated 3 times

Variety	% Stoneville 474	Avg Yield (lbs/A)
DeltaPine 388	112	1511
S 102	104	1395
DeltaPine 5111	102	1367
Sure-Grow 747	102	1366
FiberMax 989	97	1304
S 81	94	1270
MSR 1	93	1252
Stoneville BXN 47	91	1229
GTO Maxxa	89	1203
A 10	82	1104
LSD $_{.05}$		107

Table 4. 1999 Yolo County Fiber Quality Results - Sorted by Strength

	Manual Grading							
Variety	Color	Trash	Leaf	Micronaire	Length	Strength	Uniformity	HVI Trash
DeltaPine 5111	3.0	1.0	3.3	4.5	1.07	27.8	81.7	3.7
DeltaPine 388	3.3	1.0	3.0	4.1	1.09	27.7	82.0	4.0
Sure-Grow 585 R	3.0	1.0	4.0	4.2	1.09	27.4	82.3	4.7
Sure-Grow 404	2.7	1.0	2.3	4.0	1.11	27.4	82.7	2.0
Phytogen 413	3.0	1.0	4.0	4.2	1.12	26.9	83.0	5.3
Stoneville BXN47	2.7	1.0	3.3	3.8	1.09	26.7	81.7	3.3
Stoneville 474	3.0	1.0	3.7	4.0	1.08	26.4	81.7	4.0
Sure-Grow 125 BG/R	3.0	1.0	2.0	4.2	1.08	26.2	81.7	1.7
Sure-Grow 747	2.7	1.0	2.0	4.2	1.10	26.0	82.0	2.0
Sure-Grow 125 R	3.0	1.0	3.0	4.1	1.08	26.0	82.3	3.0
LSD $_{.05}$	NS	NS	0.6	0.3	0.03	1.2	NS	1.7

Table 5. 1999 Colusa County Fiber Quality Results - Sorted by Strength

	Manual Grading							
Variety	**Color**	**Trash**	**Leaf**	**Micronaire**	**Length**	**Strength**	**Uniformity**	**HVI Trash**
GC 204	1.0	1.0	2.0	2.9	1.15	28.6	82.0	1.3
DeltaPine 5111	1.0	1.0	3.0	2.9	1.12	28.0	81.0	2.3
AgriPro 6101	1.0	1.0	2.0	2.5	1.14	27.5	80.0	1.7
Phytogen 355	2.0	1.0	3.0	2.8	1.12	27.4	81.0	3.7
Sure-Grow 404	1.0	1.0	2.0	2.9	1.15	27.2	81.0	1.3
FiberMax 832	1.0	1.0	2.0	2.4	1.12	27.0	81.0	2.0
Sure-Grow 747	1.0	1.0	2.0	3.1	1.12	26.7	81.0	1.3
Phytogen 413	1.3	1.0	3.0	2.7	1.14	26.4	81.0	2.7
Stoneville 474	1.0	1.0	2.0	2.9	1.10	25.1	81.0	2.3
Sure-Grow 125R	1.3	1.0	2.0	2.8	1.08	25.1	82.0	1.3
$LSD_{.05}$	0.4	NS	0.1	0.2	0.03	1.8	NS	0.9

Table 6. 1999 Butte County Fiber Quality Results - Sorted by Strength

	Manual Grading						
Variety	**Color**	**Trash**	**Leaf**	**Micronaire**	**Length**	**Strength**	**Uniformity**
S 102	3.0	1.0	1.0	3.6	1.15	34.0	83.0
S 81	3.0	1.0	1.0	3.5	1.20	32.9	83.0
A 10	2.0	1.0	1.5	3.4	1.20	32.3	83.7
MSR 1	2.0	1.0	1.5	3.7	1.17	31.9	83.9
DeltaPine 5111	2.0	1.0	2.0	4.2	1.11	30.3	84.1
GTO Maxxa	1.5	1.0	1.5	3.4	1.20	29.5	84.1
DeltaPine 388	1.5	1.0	1.5	3.7	1.12	29.0	82.8
FiberMax 989	2.0	1.0	1.0	3.2	1.15	28.6	82.2
Sure-Grow 747	1.5	1.0	1.5	3.7	1.10	26.3	82.7
Stoneville BXN47	2.0	1.0	1.0	3.1	1.13	26.2	82.2
$LSD_{.05}$	0.9	NS	NS	0.4	0.05	2.9	NS