

2001 Low Desert Upland Cotton Advanced Strains Testing Program.

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Abstract

Upland cotton advanced strains and commercial check comparison varieties were evaluated in replicated field studies at three locations in 2001. The test sites include Yuma, AZ., Maricopa, AZ., and Safford, AZ.. Nine seed companies submitted a maximum of six advanced strains entries per location. Four commercial check varieties were used at Maricopa and Safford-DP5415, NuCOTN33B, SG747, and ST474. Five commercial check varieties were used at Yuma-DP5415, DP33B, SG747, ST474, and DP451BR.

Introduction

Profitable cotton production in the low deserts of Arizona is becoming increasingly challenging due to rapidly rising input costs and stagnant cotton prices. As a result, Arizona producers are extremely interested in exploration of opportunities to increase yields and/or decrease production costs. Variety selection is the first and most important decision a producer makes at season initiation. A major objective of these advanced strains evaluations is to provide independent data to participating seed companies relative to their strains performance under commercial production conditions at different locations. Information from these studies contributes to the database for breeder selection of varieties for possible commercialization based on performance under the low desert environmental conditions.

Materials and Methods

A range of 26 to 19 Upland cotton advanced strains representing nine seed companies were tested in 2001 at three sites in Maricopa, AZ., Safford, AZ., and Yuma, AZ., respectively (both Maricopa and Safford contained 26 strains). Participating seed companies submitted entries of their choice at each respective test site (Table 1).

Plots ranged from two to four rows in width by location dependent on equipment configuration and were 38 to 43 feet long, dependent upon location. Plots were planted using cone planters on March 20, and April 27, 2001 at Yuma,

Maricopa, and Safford respectively (Safford and Maricopa were both planted on the same day). In order to assure an adequate stand, a seeding rate of twenty five pounds per acre was used. After stand establishment was complete, all plots were thinned to a targeted uniform population of 40,000 plants per acre in April and May, 2001.

The experiments were harvested on November, 16, October 24, and September 28, 2001 at Maricopa, Safford, and Yuma, respectively. Seed cotton yields were measured by mechanically harvesting the center two rows of each plot with a modified cotton picker and bagging attachment. Weights were measured using a tri-pod and a hanging electronic scale to weigh the seed cotton from each plot. Prior to mechanical harvest, 50 bolls from non yield rows were hand harvested.

These sub-samples were ginned to determine percent lint. Final lint yields were then calculated on a per acre basis. Each fiber sample from the ginning process was submitted to the USDA Cotton Classing Office in Phoenix, AZ. for grades and HVI fiber quality analysis.

Results

Final lint yields at the Maricopa site ranged from a high of 2020 lbs./A (DPL, DPLX00T02) to a low of 687 lbs./A (Beach Consulting, BC-NAVKAR-9). Final lint yields at the Safford site ranged from a high of 1405 lbs./A (CPCSD, M611) to a low of 515 lbs./A (Beach Consulting, BC-NAVKAR-9). Final lint yields at the Yuma site ranged from a high of 2257 lbs./A (DPL, DPLX00T02) to a low of 1187 lbs./A (UofA, MAC95). Tables 2,3, and 4, summarize the lint yield/A and HVI based fiber quality data for Maricopa, Safford, and Yuma, respectively.

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Table 1. Seed Companies and Varieties Submitted for the Low Desert Upland Cotton Advanced Strains Testing Program 2000.

<u>Aventis Crop Science</u>	<u>Louisiana State University</u>
ASCIEXPO422	LA4328F
ASCIEXPO805	LA95402069
ASCI IF1000	
	<u>Mississippi State University</u>
<u>Beach Consulting, Inc.</u>	8806-3-2-21
BC-NAVKAR-5	8806-3-2-35
BC-NAVKAR-9	DES810
	DES816
	H16-24-19
	H16-14-09
	H16-14-20
<u>CPCSD</u>	
M611	
M623	<u>Texas A&M University</u>
M651	MAR-280K-1-98
M658	MAR-51G-1-99
	TAM96WD81
	<u>University of Arizona</u>
<u>Delta and Pine Land Co.</u>	MAC95
DP655BR	MAC25
DPX99T19BR	
DPLX99M03	
DPLX00T02	<u>University of Arkansas</u>
DP565	9111-57-20
SG96	9111-57-12
	9108-23-05
	9101-97-10
	9108-04-17
	9101-97-09
<u>Germain's Cotton Seeds Inc.</u>	
CG377	<u>Check Varieties</u>
	DP5415
	NuCOTN33B
	DP451BR
	SG747
	ST474

Table 2. Advanced Strains Testing Program, 2001 Maricopa Lint Yield and Fiber Quality Results

Company	Strain	Lint (lbs/A)		Mic	Length (100ths)	Length (32nds)	Strength (GM/Text)	
Deltapine	DPLX00T02	2020	a	4.9	1.20	39	30.8	
Check	SG747	2012	a	5.4	1.12	36	27.6	
Check	ST474	1950	a b	5.5	1.15	37	29.7	
Deltapine	DPX99T19BR	1886	b c	4.9	1.14	37	31.2	
Deltapine	DPLX99M03	1868	b c	4.7	1.11	36	32.9	
U of AR	9108-04-17	1863	b c	5.7	1.09	35	30.8	
Deltapine	DP565	1854	b c	5.0	1.18	38	30.7	
Deltapine	SG96	1820	c	5.3	1.18	38	31.5	
Aventis	ASCIEXPO422	1808	c	5.3	1.16	37	31.8	
U of AR	9111-57-12	1791	c	5.3	1.15	37	28.8	
Check	NuCOTN33B	1785	c	5.2	1.19	38	31.3	
U of AR	9108-23-05	1771	c	5.7	1.09	35	30.3	
CPCSD	M611	1618	d	5.1	1.18	38	34.7	
U of AR	9101-97-10	1610	d	5.2	1.14	37	30.4	
Check	DPL5415	1605	d	5.2	1.18	38	31.5	
MSU	H16-14-09	1604	d	5.2	1.07	35	29.3	
U of AR	9111-57-20	1582	d e	5.1	1.13	36	29.0	
MSU	DES816	1563	d e f	5.1	1.12	36	29.9	
CPCSD	M658	1524	d e f g	4.8	1.19	38	33.4	
MSU	H16-24-19	1504	d e f g h	4.9	1.11	36	31.3	
CPCSD	M623	1463	e f g h	5.0	1.18	38	31.8	
MSU	H16-14-20	1458	f g h	4.7	1.16	37	31.5	
CPCSD	M651	1424	g h i	5.1	1.16	37	32.7	
MSU	DES810	1417	g h i	4.6	1.13	36	31.2	
TAMU	MAR-280K-1-98	1404	h i	5.6	1.06	34	29.2	
TAMU	MAR-51G-1-99	1338	i j	5.0	1.09	35	30.6	
TAMU	TAM96WD81	1264	j k	4.9	1.13	36	29.1	
U of AZ	MAC25	1178	k	5.0	1.20	38	34.0	
Beach	BC-NAVKAR-5	850		l	4.4	1.14	37	31.4
Beach	BC-NAVKAR-9	687		m	4.4	1.20	38	30.8

*Means followed by the same letter are not significantly different at the 0.05 Level of Significance.

Lint lbs./A - Observed Significance Level = 0.0001; C.C. = 6.79; LSD = 120

SAS ANOVA DF = 4,29

Table 3. Advanced Strains Testing Program, 2001 Safford Lint Yield and Fiber Quality Results

Company	Strain	Lint (lbs/A)		Mic	Length (100ths)	Length (32nds)	Strength (GM/Tex)
CPCSD	M611	1405	a*	4.7	1.12	36	32.7
Deltapine	SG96	1330	a b	4.6	1.14	37	30.9
LSU	LA95402069	1316	a b c	4.7	1.12	36	26.9
CPCSD	M651	1298	a b c d	4.6	1.11	36	32.6
Deltapine	DP655BR	1289	a b c d	4.4	1.16	37	31.4
Check	SG747	1278	a b c d	4.8	1.11	36	24.1
Aventis	ASCIEXPO422	1270	a b c d	4.7	1.13	36	31.1
UA	MAC95	1267	a b c d	4.5	1.16	37	32.3
Aventis	IF1000	1264	a b c d e	4.4	1.18	38	31.6
Germain's	GC377	1263	a b c d e	4.8	1.12	36	31.7
CPCSD	M623	1241	a b c d e f	4.4	1.16	37	31.3
CPCSD	M658	1232	a b c d e f	4.7	1.12	36	33.0
Check	DPL5415	1223	a b c d e f	4.6	1.18	38	31.7
Deltapine	DPX99T19BR	1123	b c d e f g	4.8	1.08	35	31.1
LSU	LA4328F	1097	c d e f g	4.5	1.12	36	28.9
Deltapine	DPX99M03	1078	d e f g h	4.3	1.11	36	29.2
Check	NuCOTN33B	1042	e f g h i	4.6	1.16	37	30.0
MSU	H16-14-20	1020	f g h i j	4.6	1.10	36	29.2
MSU	H16-14-09	1018	f g h i j	4.8	1.06	34	26.8
UA	MAC25	968	g h i j k	4.4	1.15	37	33.5
MSU	8806-3-2-35	965	g h i j k	4.8	1.09	35	25.9
Check	ST474	959	g h i j k	4.9	1.09	35	27.1
MSU	H16-24-19	926	g h i j k	4.6	1.09	35	29.3
MSU	8806-3-2-21	925	g h i j k	4.5	1.05	34	26.1
TAMU	MAR-280K-1-98	866	h i j k l	5.0	1.07	34	27.1
MSU	DES810	852	i j k l	4.3	1.08	35	27.4
Deltapine	DPLX00T02	801	j k l	4.5	1.10	36	30.6
TAMU	MAR-516-1-99	772	k l	4.6	1.08	35	29.9
Beach	BC-NAVKAR-5	654	l m	4.1	1.11	36	30.4
Beach	BC-NAVKAR-9	515	m	3.8	1.24	40	31.0

*Means followed by the same letter are not significantly different at the 0.05 Level of Significance.

Lint lbs./A - Observed Significance Level = 0.0001; C.V. = 15.5; LSD = 223

SAS ANOVA DF = 3,29

Table 4. Advanced Strains Testing Program, 2001 Yuma Lint Yield and Fiber Quality Results

Company	Strain	Lint (lbs/A)		Mic	Length (100ths)	Length (32nds)	Strength (GM/Tex)
Deltapine	DPLX00T02	2257	a*	4.5	1.19	38	33.5
Deltapine	DPLX99M03	2113	a b	4.7	1.13	37	33.3
Deltapine	DPX99T19BR	2101	a b	4.9	1.18	38	32.4
Check	SG747	2100	a b	5.3	1.17	37	28.4
Check	DP451BR	2044	a b c	5.0	1.15	37	28.4
U of AR	9108-04-17	2032	a b c	5.6	1.09	35	30.4
U of AR	9111-57-20	2020	a b c	5.2	1.13	36	28.2
U of AR	9111-57-12	1999	b c d	5.0	1.13	37	29.7
Check	ST474	1981	b c d e	5.1	1.16	37	30.5
U of AR	9108-23-05	1948	b c d e f	5.4	1.08	35	30.4
U of AR	9101-97-10	1898	b c d e f	5.4	1.13	36	31.4
MSU	8806-3-2-35	1879	b c d e f	5.2	1.12	36	29.3
Check	NuCOTN33B	1862	b c d e f	4.6	1.19	38	30.9
MSU	8806-3-2-21	1806	c d e f g	5.1	1.11	36	29.3
Deltapine	SG96	1752	d e f g h	4.9	1.18	38	31.7
CPCSD	M623	1739	e f g h	4.4	1.20	38	33.2
Aventis	ASCIEXPO422	1720	f g h	4.9	1.18	38	32.3
Aventis	ASCIEXPO805	1715	f g h	4.6	1.19	38	32.5
Germaine's	GC377	1606	g h i	4.5	1.21	39	32.4
Check	DPL5415	1599	g h i	4.5	1.19	38	32.1
CPCSD	M611	1524	h i	4.3	1.19	38	35.3
CPCSD	M658	1513	h i	4.6	1.24	40	33.0
CPCSD	M651	1408	i j	4.3	1.20	39	33.6
U of AZ	MAC95	1187	j	4.4	1.20	39	33.9

*Means followed by the same letter are not significantly different at the 0.05 Level of Significance
 Lint lbs./A - Observed Significance Level = 0.0001; C.V. = 10.21; LSD = 251
 SAS ANOVA DF = 3,23