

2003 Low Desert Upland Cotton Advanced Strains Testing Program

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Abstract

Upland cotton advanced strains and commercial check varieties were evaluated in replicated field studies at three locations in 2003. The test sites include Safford, AZ, Maricopa, AZ, and Yuma, AZ. Seven seed companies submitted a maximum of ten advanced strains entries per location. Three commercial check varieties were used at the Safford and Yuma sites, and included ST4892BR, DP449BR, and DP565. Two commercial check varieties were used at the Maricopa site and included ST4892BR and DP449BR. Data collected included vigor and relative maturity ratings, yield, and fiber quality. The research is conducted in order to develop public unbiased performance data of genetic materials that have moved to the advanced stages of testing and are being considered for commercial release. The data has historically been used to add to seed company databases and assist with commercial release decisions.

Introduction

Profitable cotton production in the low deserts of Arizona is becoming increasingly challenging due to rapidly rising input costs and cotton prices that do not parallel the production cost increases. Arizona producers are extremely interested in exploration of opportunities to increase yields and/or decrease production costs. The extremely hot and dry environmental conditions in Arizona are unlike those anywhere across the United States cotton belt. Variety selection is the most important decision a producer makes at season initiation. Arizona needs varieties that are medium to full maturity in order to take advantage of the long growing season, must have a high level of heat tolerance, and must offer consistent high yield potential and produce premium or at least non-discount fiber quality characteristics.

Objectives of the Arizona Upland Cotton Advanced Strains Testing Program are the following:

1. Develop unbiased public data to augment seed breeding company databases relative to yield and fiber quality characteristics of genetic materials in advanced testing stages that are being considered for commercial release.
2. Test advanced strains materials of competing seed companies at common locations in order to

develop valid yield and fiber quality comparisons against commonly produced checks varieties.

3. Identify advanced strains which appear to have superior performance characteristics under Arizona environmental conditions and have commercial promise for Arizona producers.

4. Develop and distribute yield and fiber quality reports to participating seed companies and Arizona producers.

Materials and Methods

A range of 32 to 45 upland cotton advanced strains representing seven seed companies were tested in 2003 at three sites in Safford, AZ, Maricopa, AZ, and Yuma, AZ. Participating seed companies submitted entries of their choice at each respective test site.

Plots were four rows in width, and were 40 feet long. Plots were planted using cone planters on April 28, April 9, and March 10, 2003, at the Safford, Maricopa, and Yuma sites respectively. 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, May, and Early June.

In-season evaluations were made with respect to early vigor and relative maturity ratings based upon measurement of node above top white flower at 2500 heat units after planting (86/55 degrees F), and final plant height. The experiments were harvested on September 6, November 6, and November 20 at the Yuma, Maricopa, and Safford sites respectively. Due to highly erratic and poor stands, the Safford experimental data was eliminated. 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 an electronic scale to weight the seed cotton from each plot. Prior to mechanical harvest, 50 bolls from non yields 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.

Acknowledgments

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Table 1. Entry List by Location

Company	Yuma	Maricopa	Safford
Delta and Pine	DP 493	DP493	DP493
Delta and Pine	DP 444BR	DP 424BIIR	DP 424BIIR
Delta and Pine	DP 424BIIR	DP 468BIIR	DP 468BIIR
Delta and Pine	DP 468BIIR	DPLX 01X99R	DPLX 01X99R
Delta and Pine		DPLX 00W12	DPLX 00W12
CPCSD	CS 31	CS 31	CS 31
CPCSD	CS 32	CS 32	CS 32
CPCSD	CS 33	CS 33	CS 33
CPCSD	CS 34	CS 34	CS 34
CPCSD	CS 35	CS 35	CS 35
CPCSD	CS 36	CS 36	CS 36
Az Cotton Growers	AGX 980	AGX 980	AGX 980
Az Cotton Growers	AGX 3642	AGX 3642	AGX 3642
Az Cotton Growers	AGX 3695	AGX 3695	AGX 3695
Az Cotton Growers	AGX 4001	AGX 4001	AGX 4001
Az Cotton Growers	AGX 4030	ACGA 162	ACGA 133
Az Cotton Growers	ACGA 498	ACGA 423	ACGA 162
Az Cotton Growers	ACGA 723	ACGA 443	ACGA 423
Az Cotton Growers	ACGA 165	ACGA 498	ACGA 498
Az Cotton Growers	ACGA 645	ACGA 687	ACGA 687
Az Cotton Growers	ACGA 411		
Stoneville	ST 5222B2	ST 5222B2	STX 0204BR
Stoneville	ST 4563B2	ST 4563B2	
Stoneville	STX 0202BIIR	STX 0202BIIR	
Stoneville	STX 0203BR	STX 0203BR	
Stoneville	STX 0204BR	STX 0204BR	
O&A Seed Co.	OA 89	OA 89	OA 89
O&A Seed Co.	OA 94	OA 94	OA 94
O&A Seed Co.	OA 95	OA 95	OA 95
O&A Seed Co.	OA 98	OA 98	OA 98
O&A Seed Co.	OA 99	OA 99	OA 99
Fiber Max	FM 958B	FM 958B	FM 958B
Fiber Max	FM 960BR	FM 960BR	FM 960BR
Fiber Max	FM 991BR	FM 991BR	FM 991BR
Fiber Max	FM 991R	FM 991R	FM 991R
Fiber Max	FM 989BR	FM 989BR	FM 989BR
Fiber Max	FM 989R	FM 989R	FM 989R
Phytogen		PH 99M-544	
Phytogen		PH 99M-548	
Phytogen		PH 99M-1495	
Phytogen		PH 98M-2983	
Phytogen		PH 98M-3716	
Phytogen		PHM-3239	
Phytogen		PH 00M-925	
Phytogen		PH 00M-967	
Phytogen		PH 00M-969	
Phytogen		PH 01M-113	
Check	ST4892BR	ST4892BR	ST 4892BR
Check	DP 449BR	DP449BR	DP 449BR
Check	DP 565		DP 565

Table 2. Vigor Ratings, Maricopa, AZ., 2003.

Company	Strain	Vigor Rating*
Stoneville	ST 5222B2	3**
Stoneville	STX 0204BR	3
Az Cotton Growers	AGX 3642	3
Stoneville	STX 0202BIIR	3
Delta and Pine	DP 468BIIR	4
CPCSD	CS 35	4
Az Cotton Growers	AGX 4001	4
Az Cotton Growers	ACGA 687	4
Fiber Max	FM 960BR	4
Fiber Max	FM 991R	4
Check	ST 4892BR	4
Check	DP 449BR	4
Az Cotton Growers	AGX 980	4
Az Cotton Growers	AGX 3695	4
Az Cotton Growers	ACGA 423	4
Az Cotton Growers	ACGA 498	4
Fiber Max	FM 989R	4
Phytogen	PH 99M-548	4
Delta and Pine	DP493	4
CPCSD	CS 31	4
CPCSD	CS 36	4
Az Cotton Growers	ACGA 162	4
Stoneville	ST 4563B2	4
O & A Seed Co.	OA 94	4
O & A Seed Co.	OA 99	4
Fiber Max	FM 958B	4
Fiber Max	FM 989BR	4
Phytogen	PH 98M-2983	4
Phytogen	PH 01M-113	4
Delta and Pine	DP 424BIIR	4
CPCSD	CS 32	4
CPCSD	CS 33	4
CPCSD	CS 34	4
Az Cotton Growers	ACGA 443	4
O & A Seed Co.	OA 95	4
O & A Seed Co.	OA 98	4
Fiber Max	FM 991BR	4
Phytogen	PHM-3239	4
Phytogen	PH 00M-925	4
Phytogen	PH 00M-967	4
Stoneville	STX 0203BR	5
O & A Seed Co.	OA 89	5
Phytogen	PH 99M-544	5
Phytogen	PH 99M-1495	5
Phytogen	PH 98M-3716	5
Phytogen	PH 00M-969	5
Delta and Pine	DPLX 01X99R	5
Delta and Pine	DPLX 00W12	5

* Vigor Rating is an average of 4 reps

** 1=Very Poor Vigor, 5=Very High Vigor

Table 3. Maturity Ratings, NAWF* @ 2500 HUAP, Maricopa, AZ., 2003.**

Company	Strain	NAWF*
Stoneville	STX 0203BR	5
Delta and Pine	DPLX 01X99R	5
Stoneville	STX 0204BR	5
FiberMax	FM 989BR	5
Phytogen	PH 99M-544	5
Phytogen	PH 98M-3716	5
Delta and Pine	DPLX 00W12	5
O&A Seed Co.	OA 99	5
O&A Seed Co.	OA 95	5
Delta and Pine	DP 424BIIR	5
Stoneville	STX 0202BIIR	5
Stoneville	ST 5222B2	5
Phytogen	PH 98M-2983	5
Phytogen	PH 99M-548	5
FiberMax	FM 958B	5
Phytogen	PH 00M-925	5
CPCSD	CS 35	5
FiberMax	FM 960BR	5
CPCSD	CS 33	5
Az Cotton Growers	AGX 4001	5
Az Cotton Growers	AGX 980	6
Stoneville	ST 4563B2	6
CPCSD	CS 36	6
CPCSD	CS 32	6
CPCSD	CS 34	6
Phytogen	PH 00M-969	6
Check	ST 4892BR	6
O&A Seed Co.	OA 94	6
FiberMax	FM 989R	6
Az Cotton Growers	AGX 3642	6
Check	DP 449BR	6
Az Cotton Growers	ACGA 687	6
Phytogen	PH 00M-967	6
Az Cotton Growers	AGX 3695	6
Az Cotton Growers	ACGA 443	6
CPCSD	CS 31	6
Delta and Pine	DP 468BIIR	6
O&A Seed Co.	OA 98	6
Phytogen	PH 99M-1495	6
Az Cotton Growers	ACGA 423	6
Az Cotton Growers	ACGA 498	6
FiberMax	FM 991R	6
O&A Seed Co.	OA 89	6
Phytogen	PHM-3239	6
Phytogen	PH 01M-113	7
FiberMax	FM 991BR	7
Delta and Pine	DP 493	7
Az Cotton Growers	ACGA 162	7

*NAWF = Nodes above top white flower

**HUAP = Heat units after planting (86/55°)

Table 4. Maturity Ratings, NAWF* @ 2500 HUAP, Yuma, AZ., 2003.**

Company	Strain	NAWF*
Stoneville	STX 0203BR	4
Fiber Max	FM 958B	4
Az Cotton Growers	AGX 4030	5
Delta and Pine	DP 444BR	5
CPCSD	CS 31	5
CPCSD	CS 33	5
CPCSD	CS 34	5
Stoneville	ST 5222B2	5
Stoneville	STX 0204BR	5
O & A Seed Co	OA 94	5
O & A Seed Co	OA 99	5
Delta and Pine	DP 424BR	6
CPCSD	CS 32	6
CPCSD	CS 35	6
CPCSD	CS 36	6
Az Cotton Growers	AGX 980	6
Az Cotton Growers	AGX 3642	6
Az Cotton Growers	AGX 4001	6
Az Cotton Growers	ACGA 723	6
Az Cotton Growers	ACGA 165	6
Az Cotton Growers	ACGA 645	6
Az Cotton Growers	ACGA 411	6
Stoneville	ST 4563B2	6
Stoneville	STX 0202BIIR	6
O & A Seed Co	OA 89	6
O & A Seed Co	OA 95	6
O & A Seed Co	OA 98	6
Fiber Max	FM 960BR	6
Fiber Max	FM 991BR	6
Fiber Max	FM 991R	6
Fiber Max	FM 989BR	6
Fiber Max	FM 989R	6
Check	ST 4892BR	6
Check	DP 565	6
Delta and Pine	DP 493	7
Delta and Pine	DP 468BIIR	7
Az Cotton Growers	AGX 3695	7
Az Cotton Growers	ACGA 498	7
Check	DP 449BR	7

*NAWF = Nodes above top white flower

**HUAP = Heat units after planting (86/55°)

Table 5. Yield and Fiber Quality, Yuma, AZ., 2003.

Company	Strain	Sdctn. (lbs./A)	Lint %	Lint (lbs./A)		Mic	Length (100ths)	Length (32nds)	Strength (GM/Tex)
O & A Seed Co.	OA 94	5268	42.3	2228	a*	5.3	1.08	35	28.5
ACG**	ACGA 723	5131	40.0	2052	a b	5.0	1.11	36	30.3
Stoneville	ST 4563B2	4694	40.5	1901	a b c	4.6	1.10	35	28.1
Delta and Pine	DP 424BIIR	4823	38.4	1852	b c d	4.8	1.11	36	28.6
Stoneville	STX 0203BR	4488	40.0	1795	b c d e	4.6	1.09	35	29.4
Delta and Pine	DP 444BR	4336	41.1	1782	b c d e f	4.6	1.11	35	30.1
Check	DP 565	4478	39.5	1769	b c d e f	4.6	1.20	38	31.7
O & A Seed Co.	OA 89	4501	39.2	1764	b c d e f	5.1	1.10	35	29.6
ACG**	ACGA 645	4308	40.6	1749	b c d e f	5.0	1.17	38	32.2
Stoneville	ST 5222B2	4616	37.6	1736	b c d e f g	5.1	1.14	36	33.6
Delta and Pine	DP 493	3973	43.4	1724	b c d e f g	5.2	1.13	36	31.4
ACG**	AGX 4030	4524	38.0	1719	b c d e f g	4.8	1.10	35	29.3
Fiber Max	FM 989R	4239	40.2	1704	b c d e f g h	4.8	1.13	36	30.2
CPCSD	CS 33	4519	37.7	1704	b c d e f g h	4.2	1.18	38	32.7
Check	ST 4892BR	4010	42.4	1700	b c d e f g h	5.3	1.09	35	28.8
O & A Seed Co.	OA 98	4331	39.1	1694	b c d e f g h	4.8	1.14	36	32.4
ACG**	AGX 3642	4281	39.5	1691	b c d e f g h	4.5	1.11	36	29.8
ACG**	ACGA 165	4451	37.6	1673	c d e f g h	5.1	1.17	38	33.0
Stoneville	STX 0202BIIR	4203	39.7	1668	c d e f g h	4.9	1.10	35	29.0
Fiber Max	FM 989BR	4221	39.5	1667	c d e f g h	4.6	1.14	36	32.6
CPCSD	CS 31	4074	40.7	1658	c d e f g h i	4.7	1.11	36	31.4
Fiber Max	FM 960BR	4143	39.2	1624	c d e f g h i	4.7	1.09	35	33.2
Fiber Max	FM 958B	4157	39.0	1621	c d e f g h i	4.5	1.11	35	30.0
CPCSD	CS 36	4202	38.2	1605	c d e f g h i j	4.7	1.18	37	31.0
CPCSD	CS 32	4092	38.2	1563	c d e f g h i j	5.2	1.11	36	29.9
Stoneville	STX 0204BR	4083	38.2	1560	c d e f g h i j	4.4	1.04	33	27.9
CPCSD	CS 35	3964	39.3	1558	c d e f g h i j	4.3	1.14	37	30.1
Delta and Pine	DP 468BIIR	4377	35.3	1545	c d e f g h i j	4.6	1.18	38	31.1
CPCSD	CS 34	3808	40.1	1527	d e f g h i j	4.8	1.13	36	31.9
ACG**	AGX 4001	4148	36.8	1526	d e f g h i j	4.8	1.16	37	28.3
ACG**	ACGA 411	3872	37.9	1467	e f g h i j	4.7	1.19	38	32.6
O & A Seed Co.	OA 99	3975	36.9	1467	e f g h i j	5.1	1.10	35	27.1
ACG**	AGX 3695	3739	39.0	1458	e f g h i j	4.9	1.16	37	32.3
O & A Seed Co.	OA 95	3941	36.5	1438	e f g h i j	4.8	1.12	36	28.4
ACG**	AGX 980	3872	36.5	1413	f g h i j	4.5	1.21	39	33.1
Fiber Max	FM 991BR	3569	38.5	1374	g h i j	5.0	1.15	37	34.1
Check	DP 449BR	3450	38.9	1342	h i j	4.4	1.17	37	32.5
Fiber Max	FM 991R	3385	38.2	1293	i j	4.4	1.18	38	34.5
ACG**	ACGA 498	3560	34.9	1242	j	4.3	1.21	39	32.5

* 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. = 14.35; LSD = 329.15

**ACG - Arizona Cotton Growers Assoc.

Table 6. Advanced Strains Lint Yields Compared to Checks, Yuma, AZ., 2003.

Company	Strain	Lint (lbs./A)	% Check Avg.	% Check DP 449BR	% Check ST 4892BR	% Check DP 565
O & A Seed Co.	OA 94	2228	138.9	166.0	131.1	125.9
Az. Cotton Growers	ACGA 723	2052	127.9	152.9	120.7	116.0
Stoneville	ST 4563B2	1901	118.5	141.7	111.8	107.5
Delta and Pine	DP 424BIIR	1852	115.5	138.0	108.9	104.7
Stoneville	STX 0203BR	1795	111.9	133.8	105.6	101.5
Delta and Pine	DP 444BR	1782	111.1	132.8	104.8	100.7
Check	DP 565	1769	110.3	131.8	104.1	100.0
O & A Seed Co.	OA 89	1764	110.0	131.4	103.8	99.7
Az. Cotton Growers	ACGA 645	1749	109.0	130.3	102.9	98.9
Stoneville	ST 5222B2	1736	108.2	129.4	102.1	98.1
Delta and Pine	DP 493	1724	107.5	128.5	101.4	97.5
Az. Cotton Growers	AGX 4030	1719	107.2	128.1	101.1	97.2
Fiber Max	FM 989R	1704	106.2	127.0	100.2	96.3
CPCSD	CS 33	1704	106.2	127.0	100.2	96.3
Check	ST 4892BR	1700	106.0	126.7	100.0	96.1
O & A Seed Co.	OA 98	1694	105.6	126.2	99.6	95.8
Az. Cotton Growers	AGX 3642	1691	105.4	126.0	99.5	95.6
Az. Cotton Growers	ACGA 165	1673	104.3	124.7	98.4	94.6
Stoneville	STX 0202BIIR	1668	104.0	124.3	98.1	94.3
Fiber Max	FM 989BR	1667	103.9	124.2	98.1	94.2
CPCSD	CS 31	1658	103.4	123.5	97.5	93.7
Fiber Max	FM 960BR	1624	101.2	121.0	95.5	91.8
Fiber Max	FM 958B	1621	101.1	120.8	95.4	91.6
CPCSD	CS 36	1605	100.1	119.6	94.4	90.7
CPCSD	CS 32	1563	97.4	116.5	91.9	88.4
Stoneville	STX 0204BR	1560	97.3	116.2	91.8	88.2
CPCSD	CS 35	1558	97.1	116.1	91.6	88.1
Delta and Pine	DP 468BIIR	1545	96.3	115.1	90.9	87.3
CPCSD	CS 34	1527	95.2	113.8	89.8	86.3
Az. Cotton Growers	AGX 4001	1526	95.1	113.7	89.8	86.3
Az. Cotton Growers	ACGA 411	1467	91.5	109.3	86.3	82.9
O & A Seed Co.	OA 99	1467	91.5	109.3	86.3	82.9
Az. Cotton Growers	AGX 3695	1458	90.9	108.6	85.8	82.4
O & A Seed Co.	OA 95	1438	89.7	107.2	84.6	81.3
Az. Cotton Growers	AGX 980	1413	88.1	105.3	83.1	79.9
Fiber Max	FM 991BR	1374	85.7	102.4	80.8	77.7
Check	DP 449BR	1342	83.7	100.0	78.9	75.9
Fiber Max	FM 991R	1293	80.6	96.3	76.1	73.1
Az. Cotton Growers	ACGA 498	1242	77.4	92.5	73.1	70.2

Table 7. Yield and Fiber Quality, Maricopa, AZ., 2003.

Compnay	Strain	Sdctn. (lbs./A)	Lint %	Lint (lbs./A)		Mic	Length (100ths)	Length (32nds)	Strength (GM/Tex)
Check	DP 449BR	5588	37.7	2107	a*	5.1	1.16	37	32.3
Phytogen	PHM-3239	5204	40.4	2103	a b	5.2	1.13	36	30.2
Phytogen	PH 98M-2983	5150	40.8	2101	a b	5.2	1.10	35	29.3
Delta and Pine	DPLX 00W12	5283	39.7	2098	a b	5.1	1.12	36	30.1
Phytogen	PH 99M-548	5337	39.2	2093	a b c	5.2	1.10	36	30.7
O&A Seed Co.	OA 94	5179	40.4	2092	a b c	5.5	1.10	35	29.3
Check	ST 4892BR	5388	38.8	2091	a b c	5.6	1.10	35	30.2
Delta and Pine	DPLX 01X99R	5138	39.6	2034	a b c d	5.4	1.11	36	31.0
Stoneville	ST 4563B2	5275	38.5	2031	a b c d	5.0	1.11	36	28.5
ACG**	ACGA 443	5346	37.6	2010	a b c d e	5.1	1.22	39	31.9
O&A Seed Co.	OA 98	5375	37.3	2005	a b c d e	5.2	1.14	37	32.5
CPCSD	CS 35	5088	39.1	1990	a b c d e f	4.9	1.14	37	31.2
ACG**	AGX 3695	5338	36.9	1970	a b c d e f	5.4	1.14	37	30.8
O&A Seed Co.	OA 95	5700	34.5	1967	a b c d e f	5.1	1.13	36	28.4
Phytogen	PH 99M-544	5150	38.0	1957	a b c d e f	5.1	1.15	37	33.7
ACG**	ACGA 162	5133	37.8	1941	a b c d e f	5.3	1.15	37	32.7
ACG**	ACGA 423	5392	35.6	1920	a b c d e f g h i	5.2	1.18	37	33.2
Phytogen	PH 98M-3716	5017	38.1	1911	b c d e f g h i	4.9	1.16	37	31.7
ACG**	ACGA 687	4967	38.3	1902	c d e f g h i j	4.9	1.17	37	32.2
Stoneville	STX 0202BIIR	5387	35.3	1902	c d e f g h i j	5.2	1.13	36	29.4
Phytogen	PH 00M-967	4883	38.9	1900	c d e f g h i j	5.5	1.10	35	31.4
ACG**	ACGA 498	5508	34.4	1895	d e f g h i j	5.1	1.19	38	32.4
ACG**	AGX 3642	4804	39.2	1883	d e f g h i j	4.7	1.12	36	29.8
Fiber Max	FM 958B	5113	36.7	1877	d e f g h i j	4.9	1.11	36	33.5
Phytogen	PH 01M-113	4867	38.5	1874	d e f g h i j k	4.9	1.14	37	32.8
ACG**	AGX 980	5325	35.0	1864	d e f g h i j k	4.9	1.18	38	32.2
Delta and Pine	DP 468BIIR	5354	34.8	1863	d e f g h i j k	5.2	1.18	37	32.5
Phytogen	PH 99M-1495	5021	37.0	1858	d e f g h i j k	5.2	1.15	37	31.3
Delta and Pine	DP 493	4579	40.2	1841	d e f g h i j k l	4.8	1.13	36	32.0
O&A Seed Co.	OA 99	5271	34.7	1829	e f g h i j k l	5.4	1.11	36	28.2
Phytogen	PH 00M-969	4737	38.6	1829	e f g h i j k l	5.3	1.11	36	30.3
Stoneville	STX 0204BR	5129	35.5	1821	e f g h i j k l	4.8	1.07	34	29.1
Delta and Pine	DP 424BIIR	5233	34.7	1816	e f g h i j k l	5.2	1.09	35	27.9
ACG**	AGX 4001	5067	35.7	1809	f g h i j k l	5.4	1.15	37	30.5
O&A Seed Co.	OA 89	4813	37.0	1781	g h i j k l m	5.3	1.11	36	30.0
Stoneville	STX 0203BR	4808	37.0	1779	g h i j k l m	4.8	1.11	35	28.7
Stoneville	ST 5222B2	5142	34.4	1769	h i j k l m	5.4	1.15	37	33.5
CPCSD	CS 33	5008	35.2	1763	h i j k l m	4.5	1.16	36	31.5
Fiber Max	FM 960BR	4713	37.0	1744	i j k l m	5.0	1.12	36	34.2
Phytogen	PH 00M-925	4583	37.9	1737	i j k l m	5.2	1.13	36	33.2
CPCSD	CS 36	4679	37.1	1736	i j k l m	5.0	1.14	36	31.3
CPCSD	CS 34	4592	37.6	1726	i j k l m	4.9	1.13	36	33.8
CPCSD	CS 32	5000	34.3	1715	j k l m	5.3	1.11	36	29.4
Fiber Max	FM 989R	4309	39.0	1681	k l n n	5.0	1.12	36	33.3
Fiber Max	FM 991R	4450	37.3	1660	l n n	5.0	1.15	37	31.2
CPCSD	CS 31	4221	37.9	1600	n n o	4.9	1.12	36	30.9
Fiber Max	FM 989BR	4229	35.9	1519	n o	5.3	1.10	36	32.3
Fiber Max	FM 991BR	4100	34.9	1431	o	5.3	1.16	37	33.8

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

Lint lbs./A - Observed Significance Level = 0.001; C.V. = 7.52; LSD = 195.25

Table 8. Advanced Strains Lint Yields Compared to Checks, Maricopa, AZ., 2003.

Company	Strain	Lint (lbs./A)	% Check Avg.	% Check DP 449BR	% Check ST 4892BR
Check	DP 449BR	2107	100.4	100.0	100.8
Phytogen	PHM-3239	2103	100.2	99.8	100.6
Phytogen	PH 98M-2983	2101	100.1	99.7	100.5
Delta and Pine	DPLX 00W12	2098	100.0	99.6	100.3
Phytogen	PH 99M-548	2093	99.7	99.3	100.1
O&A Seed Co.	OA 94	2092	99.7	99.3	100.0
Check	ST 4892BR	2091	99.6	99.2	100.0
Delta and Pine	DPLX 01X99R	2034	96.9	96.5	97.3
Stoneville	ST 4563B2	2031	96.8	96.4	97.1
Az Cotton Growers	ACGA 443	2010	95.8	95.4	96.1
O&A Seed Co.	OA 98	2005	95.5	95.2	95.9
CPCSD	CS 35	1990	94.8	94.4	95.2
Az Cotton Growers	AGX 3695	1970	93.9	93.5	94.2
O&A Seed Co.	OA 95	1967	93.7	93.4	94.1
Phytogen	PH 99M-544	1957	93.2	92.9	93.6
Az Cotton Growers	ACGA 162	1941	92.5	92.1	92.8
Az Cotton Growers	ACGA 423	1920	91.5	91.1	91.8
Phytogen	PH 98M-3716	1911	91.0	90.7	91.4
Az Cotton Growers	ACGA 687	1902	90.6	90.3	91.0
Stoneville	STX 0202BIIR	1902	90.6	90.3	91.0
Phytogen	PH 00M-967	1900	90.5	90.2	90.9
Az Cotton Growers	ACGA 498	1895	90.3	89.9	90.6
Az Cotton Growers	AGX 3642	1883	89.7	89.4	90.1
Fiber Max	FM 958B	1877	89.4	89.1	89.8
Phytogen	PH 01M-113	1874	89.3	88.9	89.6
Az Cotton Growers	AGX 980	1864	88.8	88.5	89.1
Delta and Pine	DP 468BIIR	1863	88.8	88.4	89.1
Fiber Max	FM 99M-1495	1858	88.5	88.2	88.9
Delta and Pine	DP 493	1841	87.7	87.4	88.0
O&A Seed Co.	OA 99	1829	87.1	86.8	87.5
Phytogen	PH 00M-969	1829	87.1	86.8	87.5
Stoneville	STX 0204BR	1821	86.8	86.4	87.1
Delta and Pine	DP 424BIIR	1816	86.5	86.2	86.8
Az Cotton Growers	AGX 4001	1809	86.2	85.9	86.5
O&A Seed Co.	OA 89	1781	84.8	84.5	85.2
Stoneville	STX 0203BR	1779	84.8	84.4	85.1
Stoneville	ST 5222B2	1769	84.3	84.0	84.6
CPCSD	CS 33	1763	84.0	83.7	84.3
Fiber Max	FM 960BR	1744	83.1	82.8	83.4
Phytogen	PH 00M-925	1737	82.8	82.4	83.1
CPCSD	CS 36	1736	82.7	82.4	83.0
CPCSD	CS 34	1726	82.2	81.9	82.5
CPCSD	CS 32	1715	81.7	81.4	82.0
Fiber Max	FM 989R	1681	80.1	79.8	80.4
Fiber Max	FM 991R	1660	79.1	78.8	79.4
CPCSD	CS 31	1600	76.2	75.9	76.5
Fiber Max	FM 989BR	1519	72.4	72.1	72.6
Fiber Max	FM 991BR	1431	68.2	67.9	68.4

Table 9. Final Plant Heights, Yuma, AZ., 2003

Company	Strain	Height (In Cm.)	
O & A Seed Co.	OA 95	207	a*
Check	DP 449BR	204	a b
Delta and Pine	DP 493	199	a b c
Fiber Max	FM 991R	197	a b c d
CPCSD	CS 36	192	a b c d e
Fiber Max	FM 991BR	192	a b c d e
O & A Seed Co.	OA 98	185	a b c d e f
Fiber Max	FM 960BR	184	a b c d e f g
Az Cotton Growers	AGX 3695	183	a b c d e f g
Az Cotton Growers	ACGA 498	183	a b c d e f g
Delta and Pine	DP 468BIIR	183	a b c d e f g h
Check	DP 565	180	a b c d e f g h
Stoneville	STX 0202BIIR	180	a b c d e f g h
CPCSD	CS 31	177	a b c d e f g h i
Az Cotton Growers	AGX 4001	173	a b c d e f g h i
Az Cotton Growers	ACGA 411	173	a b c d e f g h i
Az Cotton Growers	ACGA 723	172	a b c d e f g h i
CPCSD	CS 32	172	a b c d e f g h i
Az Cotton Growers	AGX 980	169	a b c d e f g h i
Az Cotton Growers	ACGA 645	169	a b c d e f g h i
O & A Seed Co.	OA 89	168	a b c d e f g h i
Az Cotton Growers	AGX 3642	165	a b c d e f g h i
Stoneville	STX 0203BR	165	a b c d e f g h i
Fiber Max	FM 989BR	164	a b c d e f g h i
CPCSD	CS 33	162	b c d e f g h i
Fiber Max	FM 989R	159	c d e f g h i
CPCSD	CS 34	158	c d e f g h i
Stoneville	ST 5222B2	158	c d e f g h i
Delta and Pine	DP 444BR	157	c d e f g h i
Delta and Pine	DP 424BIIR	154	d e f g h i
Stoneville	ST 4563B2	153	e f g h i
CPCSD	CS 35	153	e f g h i
Check	ST 4892BR	152	e f g h i
Az Cotton Growers	ACGA 165	151	e f g h i
O & A Seed Co.	OA 94	148	f g h i
Stoneville	STX 0204BR	147	f g h i
Az Cotton Growers	AGX 4030	142	g h i
O & A Seed Co.	OA 99	140	h i
Fiber Max	FM 958BR	137	i

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

Table 10. Final Plant Heights, Maricopa, AZ., 2003

Company	Strain	Height (in Cm.)	
Fiber Max	FM 991BR	167	a*
CPCSD	CS 34	154	a b
Fiber Max	FM 991R	151	b c
CPCSD	CS 36	150	b c d
Az Cotton Growers	ACGA 498	144	b c d e
O&A Seed Co.	OA 89	144	b c d e
Phytogen	PH 00M-967	143	b c d e f
Az Cotton Growers	ACGA 162	143	b c d e f
CPCSD	CS 31	142	b c d e f
Stoneville	ST 5222B2	142	b c d e f
Delta and Pine	DP 493	142	b c d e f
Delta and Pine	DP 468BIIR	140	c d e f g
O&A Seed Co.	OA 98	140	c d e f g
O&A Seed Co.	OA 95	137	c d e f g
Phytogen	PH 01M-113	136	d e f g
Stoneville	ST 4563B2	136	d e f g
Az Cotton Growers	ACGA 423	136	d e f g
Delta and Pine	DPLX 00W12	135	e f g h
Phytogen	PH 99M-1495	135	e f g h
Phytogen	PH 00M-969	135	e f g h
CPCSD	CS 33	134	e f g h i
CPCSD	CS 35	134	e f g h i
CPCSD	CS 32	133	e f g h i j
Fiber Max	FM 960BR	132	e f g h i j
Stoneville	STX 0202BIIR	132	e f g h i j
Phytogen	PHM-3239	132	e f g h i j
Delta and Pine	DPLX 01X99R	130	e f g h i j
Phytogen	PH 99M-544	130	e f g h i j
Phytogen	PH 98M-3716	129	f g h i j
O&A Seed Co.	OA 94	129	f g h i j
Check	ST 4892BR	129	f g h i j
Phytogen	PH 98M-2983	129	f g h i j
Fiber Max	FM 958B	129	f g h i j
Delta and Pine	DP 424BIIR	127	g h i j
Stoneville	STX 0204BR	127	g h i j k
Az Cotton Growers	AGX 4001	127	g h i j k
Phytogen	PH 99M-548	127	g h i j k
Az Cotton Growers	ACGA 443	127	g h i j k
Check	DP 449BR	126	g h i j k
Fiber Max	FM 989BR	124	h i j k
Fiber Max	FM 989R	124	h i j k
Stoneville	STX 0203BR	123	h i j k
Az Cotton Growers	ACGA 687	123	h i j k
Phytogen	PH 00M-925	123	h i j k
O&A Seed Co.	OA 99	123	h i j k
Az Cotton Growers	AGX 3695	120	i j k
Az Cotton Growers	AGX 3642	119	j k
Az Cotton Growers	AGX 980	114	k

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