

2002 Low Desert Upland Cotton Advanced Strains Testing Program

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Abstract

Upland cotton advanced strains, commercial check comparison varieties, and national standard comparison varieties were evaluated in replicated field studies at three locations in 2002. The test sites include Safford, AZ, Maricopa, AZ., and Yuma, AZ. Six seed companies submitted a maximum of five advanced strains entries per location. Three commercial check varieties were used at each site for comparison purposes and included SG747, DP33B, and ST474. Four National Standard varieties were used at the Safford and Maricopa sites for comparison purposes and included Acala 1517-99, Atlas, DP458BR, and ST4892BR.

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 14 to 17 Upland cotton advanced strains representing six seed companies were tested in 2002 at three sites in Safford, AZ., Maricopa, AZ., and Yuma, AZ.. Participating seed companies submitted entries of their choice at each respective test site (Table 1).

Plots were four rows in width, and were 40 to 41 feet long. Plots were planted using cone planters on April 17, April 3, and March 27, 2002 at Safford, Maricopa, and Yuma 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 and May, 2002.

The experiments were harvested on November 13, November 1, and October 10, 2002 at Safford, Maricopa, 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 an 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 Safford site ranged from a high of 1995 lbs./A (Delta and Pine, DP555BR) to a low of 902 lbs./A (National Standard, Altex, Atlas). Final lint yields at the Maricopa site ranged from a high of 1773 lbs./A (National Standard, Delta and Pine, DP458BR) to a low of 1028 lbs./A (National Standard, NMSU, Acala 1517-99). Final lint yields at the Yuma site ranged from a high of 1671 lbs./A (CPCSD, M958) to a low of 971lbs./A (ACGA, AGX5750). Tables 2,3, and 4, summarize the lint yield/A and HVI based fiber quality data for Safford, Maricopa, and Yuma respectively.

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Table 1. Seed Companies and Varieties Submitted for the Low Desert Upland Cotton Advanced Strains Testing Program, 2002

	SAFFORD	MARICOPA	YUMA
<u>COMPANY/ ENTRIES</u>			
DELTA & PINE	DPLX00513BR	DPLX00513BR	DPLX00513BR
	DPLX01T96	DPLX01T96	DPLX01T96
	DP555BR	DP555BR	DP555BR
	DP545BR	DP545BR	DP545BR
	DP493	DP493	DP493
STONEVILLE	-	STX8M045	STX8M045
CPCSD	M611	M611	M611
	M946	M946	M946
	M958	M958	M958
	M968	M968	M968
	M1011	M1011	M1011
O&A SEED CO.	OA 85	OA 85	-
	OA 87	OA 87	-
	OA 90	OA 89	-
	OA 91	OA 90	-
	OA 92	OA 93	-
SY SIMON	SCX 7	SCX 7	-
AZ COTTON			
GROWERS	-	-	AGX400
	-	-	AGX895
	-	-	AGX5750
<u>NATIONAL</u>			
<u>STANDARDS</u>			
NM STATE	ACALA 1517-99	ACALA 1517-99	-
ALTEX	ATLAS	ATLAS	-
DELTA & PINE	DP458BR	DP458BR	-
STONEVILLE	ST4892BR	ST4892BR	-
<u>CHECKS</u>			
DELTA & PINE	SG747	SG747	SG747
	NuCOTN33B	NuCOTN33B	NuCOTN33B
STONEVILLE	ST474	ST474	ST474

Table 2. Low Desert Upland Cotton Advanced Strains, Lint Yield and Fiber Quality, Safford 2002

COMPANY	STRAIN	LINT (lbs./A)			MIC	LENGTH (100ths)	LENGTH (32nds)	STRENGTH (GM/Tex)						
Delta and Pine	DP555BR	1995	a		4.6	1.10	36	28.2						
Delta and Pine	DP493	1914	a	b	4.8	1.13	37	30.3						
National Standard	DP458BR	1796	a	b	c	4.8	1.11	36	28.3					
Delta and Pine	DPLX01T96	1690		b	c	d	4.8	1.15	37	26.7				
Delta and Pine	DP545BR	1673		b	c	d	e	4.7	1.13	37	27.8			
Check	ST474	1622			c	d	e	5.2	1.09	35	27.5			
Cy Salmons National Standard	SCX 7	1611			c	d	e	4.7	1.17	37	31.7			
Standard	ST4892BR	1583			c	d	e	5.5	1.10	35	28.3			
CPCSD	M611	1565			c	d	e	f	4.9	1.14	37	31.2		
O&A Seed Co.	OA 85	1563			c	d	e	f	5.4	1.11	36	27.3		
CPCSD	M946	1555			c	d	e	f	4.8	1.12	36	29.0		
CPCSD	M958	1512				d	e	f	g	5.5	1.10	36	25.1	
CPCSD	M1011	1501				d	e	f	g	5.0	1.22	39	29.6	
O&A Seed Co.	OA 90	1470				d	e	f	g	5.3	1.10	36	27.8	
Check	DP33B	1467				d	e	f	g	4.9	1.14	37	28.6	
O&A Seed Co.	OA 87	1467				d	e	f	g	5.4	1.05	34	25.5	
O&A Seed Co.	OA 91	1435					e	f	g	5.3	1.10	35	27.3	
CPCSD	M968	1433					e	f	g	4.6	1.17	38	28.0	
Check	SG747	1337						f	g	5.2	1.11	36	25.5	
	DPLX00513B													
Delta and Pine	R	1333					f	g	h	4.6	1.11	36	27.7	
O&A Seed Co.	OA 92	1307						g	h	5.1	1.08	35	25.1	
National Standard	1517-99	1092							h	i	4.6	1.23	40	34.2
National Standard	ATLAS	902								i	5.0	1.11	36	30.2

*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. = 11.79; LSD = 241.8

Table 3. Low Desert Upland Cotton Advanced Strains, Lint Yield and Fiber Quality, Maricopa 2002

COMPANY	STRAIN	LINT (lbs./A)				MIC	LENGTH (100ths)	LENGTH (32nds)	STRENGTH (GM/Tex)						
National															
Standard	DP458BR	1773	a			5.6	1.11	36	29.5						
Delta and Pine	DP545BR	1758	a			5.3	1.09	35	27.6						
Delta and Pine	DP555BR	1742	a			5.1	1.10	35	27.6						
CPCSD	M611	1742	a			5.4	1.11	36	31.9						
Check	SG747	1697	a	b		5.6	1.10	36	28.2						
O&A Seed Co.	OA 89	1674	a	b	c	5.4	1.07	35	28.7						
Check	DP33B	1616		b	c	d	5.3	1.10	35	29.0					
Delta and Pine	DPLX01T96	1603		b	c	d	5.0	1.09	35	28.8					
Check	ST474	1565			c	d	e	5.5	1.08	35	28.8				
O&A Seed Co.	OA 93	1553				d	e	5.0	1.08	35	30.4				
CPCSD	M958	1552				d	e	5.5	1.11	36	37.2				
Delta and Pine	DP493	1542				d	e	5.5	1.10	36	29.8				
CPCSD	M968	1541				d	e	5.1	1.10	36	27.9				
O&A Seed Co.	OA 90	1536				d	e	5.7	1.08	35	27.6				
National															
Standard	ST4892BR	1469					e	f	5.5	1.06	34	27.7			
O&A Seed Co.	OA 87	1467					e	f	5.5	1.05	34	27.1			
Cy Salmons	SCX 7	1394						f	5.3	1.13	37	31.6			
O&A Seed Co.	OA 85	1381						f	g	5.2	1.10	36	29.7		
Stoneville	STX8M045	1366						f	g	5.0	1.11	36	28.5		
	DPLX00513B														
Delta and Pine	R	1271							g	h	4.7	1.07	35	27.7	
CPCSD	M1011	1246								h	i	5.2	1.12	36	29.8
CPCSD	M946	1232								h	i	4.9	1.07	35	30.5
National															
Standard	ATLAS	1151									i	5.2	1.10	35	30.4
National															
Standard	1517-99	1028									j	4.4	1.19	38	33.3

*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. = 6.03; LSD = 115.3

Table 4. Low Desert Upland Cotton Advanced Strains, Lint Yield and Fiber Quality, Yuma 2002

COMPANY	STRAIN	LINT (lbs./A)		MIC	LENGTH (100ths)	STAPLE (32nds)	STRENGTH (GM/Tex)
CPCSD	M958	1671	a	5.7	1.03	33	25.90
AZ Cotton Growers	AGX400	1647	a b	5.3	1.01	33	24.80
Delta and Pine	DP545BR	1596	a b c	5.3	1.04	33	27.00
CPCSD	M611	1552	a b c d	5.4	1.04	34	28.15
Check	DP33B	1483	a b c d	5.4	1.05	35	27.35
Delta and Pine	DP493	1453	a b c d e	5.3	1.06	34	29.85
Delta and Pine	DP555BR	1448	a b c d e	5.0	1.02	33	25.70
Check	ST474	1363	a b c d e f	5.4	1.03	33	26.80
Delta and Pine	DPLX01T96	1307	a b c d e f	5.0	1.07	34	26.50
CPCSD	M968	1278	a b c d e f	4.8	1.06	34	27.00
Delta and Pine	DPLX00513BR	1220	b c d e f	4.8	1.02	33	25.95
AZ Cotton Growers	AGX895	1214	b c d e f	4.7	1.02	33	27.15
CPCSD	M946	1163	c d e f	5.2	1.05	34	29.15
Stoneville	STX8M045	1104	d e f	5.2	1.02	33	28.25
Check	SG747	1011	e f	5.4	1.01	33	25.50
CPCSD	M1011	975	f	5.0	1.07	34	28.55
AZ Cotton Growers	AGX5750	971	f	5.5	1.1	35	30.65

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

Lint lbs./A Observed Significance Level = .0052; C.V. = 17.7; LSD = 448.4