

Potential of Primitive Accessions for

Cotton Improvement



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ABSTRACT

Cotton, *Gossypium hirsutum* L., is an economically important crop that is grown for its fiber and seed. The improvement of yield, yield components, and fiber quality are needed to ensure its economic viability. The collection of primitive accessions of cotton offers a wealth of genetic variability for trait improvement; however, since most of these accessions are photoperiodic they are not readily useable in breeding programs. Day-neutral lines have been developed for many accessions. The study reported here involved crossing 114 day-neutral derived lines as male parents with 2 commercial cultivars, Stoneville 474 and Sure-Grow 747. Parents and F₂-bulks were grown in field plots during 2001 and 2002, and yield, yield components, and fiber traits were determined. The yield for most of the F₂-bulks was not superior to that of the high-yielding cultivars. All primitive-derived lines had low lint percentage that must be considered when they are used as sources to develop improved cultivars. Most of the F₂-bulks had finer and stronger fiber than the cultivars. These day-neutral derived accessions are a new source of genetic diversity that offers the potential to improve fiber traits among cultivars.

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INTRODUCTION

A narrow genetic base could result in crop cultivars being highly vulnerable to stress environments, and it could also limit genetic gain or trait improvement. Therefore, it is important to extend the genetic diversity of crops with new and unrelated sources of germplasm. Upland cotton (*Gossypium hirsutum* L.) is one of the most important cultivated crops in the world. Currently, it is believed that most cultivars of upland cotton were developed from limited germplasm sources. Bowman et al. (1996) reported that the average coefficients of parentage among 260 cultivars released between 1970 and 1990 was 0.07. This estimate would suggest substantial diversity; however, upon examining pedigrees, 236 cases of reselection were found in the development of the 260 cultivars (Bowman et al., 1997; Calhoun et al., 1997). This high percentage of reselection could indicate a narrow genetic base of modern cultivars. Thus, for continued improvements of yield and fiber quality, as well as stress tolerance, in upland cotton cultivars, there is a need to enlarge its genetic diversity.

Research has shown that primitive accessions of cotton have useful genetic variability (Percival, 1987; McCarty and Jenkins, 1992, 2001; McCarty et al., 1995, 1998a, 1998b, 2003). Percival and Kohel (1990) reviewed the collection, distribution, and evaluation of *Gossypium* germplasm. However, one undesirable character in many accessions is their flowering response to photoperiod. Their use in upland cotton breeding programs has been limited due to their short-day flowering habit. A backcross-breeding program has been used to introduce day-neutral genes into the primitive accessions (McCarty et al., 1979; McCarty and Jenkins, 1992, 1993, 2001, 2002).

McCarty et al. (1995, 1998a, 1998b) evaluated F5, BC1F5, BC2F5, BC3F5, and BC4F5 progenies for 16 day-neutral germplasm accessions for several agronomic

and fiber traits and found useful genetic variability for yield and fiber traits. The relationship of yield and fiber traits in day-neutral lines has been studied in the forms of F2- or F3-bulks. McCarty et al. (2000, 2003) reported that fiber strength for exotic parents exceeded that of commercial cultivars. More than 50 out of 70 F2- or F3-bulks had higher fiber strength than the commercial cultivar Deltapine 50. Few F2-bulks had higher fiber strength than the mean of exotic parents. They also found that the fiber strength was improved in most bulk populations. In addition to additive and dominance genetic effects, additive-by-additive epistatic effects were also detected (McCarty et al., 2004a, b).

Agricultural field experiments, including breeding trials, often use the randomized complete block (RCB) design. Within each block of an RCB experiment, plots should have similar character response potential. However, this is unlikely for experiments with large numbers of treatments (genotypes or entries). Generally, field conditions become more difficult to control when evaluating a large number of diverse materials in a large field. In an attempt to improve data analyses, experimental designs are often modified or extended.

In this study, 2-year data consisting of 2 commercial cultivars (as female parents), 114 day-neutral lines (as male parents), and their 228 F2-bulks were evaluated. Realizing that the experimental test field was probably not completely uniform, we divided 342 genotypes into 19 groups, each with the same 2 commercial cultivars (total of 20 entries per group). An extension of the RCB design was used with associated model for analyzing yield, yield components, and fiber traits. The purpose of this study was to investigate the genetic potential of these derived primitive accessions for use in future breeding programs.

MATERIALS AND METHODS

Plant Materials and Experimental Design

Day-neutral parents used in this study were developed by crossing the photoperiodic primitive accession as male to the day-neutral commercial cultivar Deltapine 61. In the F2 generation, following the cross, day-neutral plants were selected. Equal numbers of bolls were harvested from the day-neutral plants and bulked for seed increase. The selections were advanced to the F4 or later generation by bulk increase. Ninety-four male parents were selected to represent a range of flowering plants that had previously been selected in day-neutral segregating F2 populations. These 94 had been advanced to the F4 generation. Approximately 25% of the 94 males were chosen from each of 4 categories of F2 flowering plants (0-25%, 26-50%, 51-75%, and 76-100% flowering). An additional 20 males that had been advanced to the F7 or F8 generation were selected based on agronomic performance from field trials. After crossing and prior to harvest, the male parents were visually compared with the commercial cultivars within the same block.

Two commercial cultivars, Stoneville 474 (ST474) and Sure-Grow 747 (SG747), were used as female parents and crossed with each of 114 day-neutral derived lines as male parents (Table 1). The conventional cultivars used in this study have high yield potential and are adapted to the Midsouth production region. Crosses and subsequent evaluations were conducted at the Plant Science Research Center at Mississippi State University (33.4 N, 88.8 W). The crosses were made in 2000, and seed were sent to the winter nursery in Tecoman, Colima, Mexico, to produce the F2 generation seed. Seeds from the male parents were bulk harvested for use in future tests. Plants from the 228 F2-bulks and the 116 parents (114 males and 2 females) were grown each year in 2001 and 2002. The total F2-

bulks and male parents were grouped into 19 field experiments. Each field experiment consisted of 6 male parents, 12 F2-bulks, and the 2 female cultivars for a total of 20 entries per experiment. The experimental design in each group was a randomized complete block with 6 replications. Plot size each year was a single row 12 meters in length with row spacing of 0.97 meter. The planting was a 2-planted/1-skip row pattern. The stand density consisted of single plants spaced approximately 10 centimeters apart. The soil type was a Leeper silty clay loam. Harvest date in 2001 was October 23-24, and the 2002 test was not harvested until January 13-14, 2003, due to a tropical storm and rainy periods that existed throughout the fall and prevented machinery from entering the field.

A 25-boll, hand-harvested sample was collected from the middle part of the plants for each plot prior to machine harvest. These samples were weighed to determine boll size and ginned on a laboratory 10-saw gin to determine lint percentages and to provide lint samples for fiber analyses. Fiber micronaire (MIC) value, percent elongation (E1), fiber strength (T1), 2.5% span length (SL2.5), and 50% span length (SL50) were determined by STAR-LAB, Inc., of Knoxville, Tennessee. Micronaire is a measure of airflow through a specimen of fibers, which gives an indirect measure of fineness and is expressed in standard micronaire units. Fiber elongation, as a percentage and strength, expressed as kilonewtons per meter in kilograms of force (kNm/kg), were measured with the 3.2-millimeter-gauge stelometer. Span length was measured on a digital fibrograph and expressed in millimeters. The plots were harvested with a machine picker, and the seed cotton was weighed.

Data Analyses

Data were subjected to ANOVA using proc GLM in SAS version 8.0 (SAS Institute, 1999). For data analyses, the 2 years were considered as environmental effects. The linear model was as follows:

$$y_{hijk} = \mu + E_h + F_{i(h)} + B_{k(hi)} + G_j + GE_{hj} + e_{hijk} \quad (1)$$

where, y_{hijk} is the observed value; μ is the grand mean; E_h is the environmental (year) effects; $F_{i(h)}$ is the field experiment position (systematic) effect within each environment; $B_{k(hi)}$ is the block effect within environment and field position; G_j is the genotypic effect; GE_{hj} is genotype-by-environment interaction effect; and e_{hijk} is the random error. All effects except field position and block effects were considered fixed. G_j in model (1) can be extended as follows: $G = T + H(T)$, where T is the generation effect

(effects of male, female, and F2), and $H(T)$ is the genotypic effect within each generation. Similarly, GE_{hj} can be extended as follows: $GE = TE + HE(T)$, where TE is the generation-by-environment interaction effects, and $HE(T)$ is the genotype-by-environment interaction effect within each generation. On the other hand, G_j can be partitioned into effects subject to female effects, male effects, and female-by-male interaction effects. GE_{hj} can be partitioned in the same way due to genotype-by-environment interaction effects. Additional data analyses were conducted by experiments using ANOVA, and LSD0.05 values were calculated for comparison of the genotypic means across the 2 years.

Table 1. Descriptions for 114 primitive-derived male parents.¹

Male #	Pedigree	Race ²	Collection location ³		Flower (%) ⁴	Visual rating ⁵	Exp # ⁶
1	T-3 F4	<i>latifolium</i>	Mexico	Guerrero	100	80	Exp.1
2	T-108 F4	<i>latifolium</i>	Mexico	Oaxaca	89	50	Exp.1
3	T-160 F4	<i>latifolium</i>	Mexico	Oaxaca	100	70	Exp.1
4	T-373 F4	<i>mariegalante</i>	Mexico	Morelos	100	95	Exp.1
5	T-832 F4	<i>mariegalante</i>	Trinidad	Monos Is.	99	75	Exp.1
6	T-400 F4	-	USA	Arizona	99	60	Exp.1
7	T-408 F4	-	USA	Arizona	100	50	Exp.2
8	T-606 F4	-	Mexico	-	83	80	Exp.2
9	T-610 F4	-	Mexico	-	76	40	Exp.2
10	T-616 F4	-	Mexico	-	89	50	Exp.2
11	T-681 F4	-	Guatemala	Jutiapa	100	80	Exp.2
12	T-758 F4	-	Mexico	Veracruz	99	70	Exp.2
13	T-1455 F4	-	Mexico	Tamaulipas	99	30	Exp.3
14	T-1534 F4	-	France(fwi)	Martinique Is.	100	30	Exp.3
15	T-1600 F4	-	Haiti	-	96	25	Exp.3
16	T-1630 F4	-	France(fwi)	Guadeloupe Is.	96	70	Exp.3
17	T-1757 F4	-	France(fwi)	Guadeloupe Is.	100	60	Exp.3
18	T-1801 F4	-	France(fwi)	Martinique Is.	95	80	Exp.3
19	T-1975 F4	-	Mexico	Quintana Roo	80	80	Exp.4
20	T-2283 F4	-	USA	Puerto Rico	76	70	Exp.4
21	T-2299 F4	-	USA	Puerto Rico	80	70	Exp.4
22	T-6 F4	<i>latifolium</i>	Mexico	Puebla	74	50	Exp.4
23	T-46 F4	<i>latifolium</i>	Mexico	Chiapas	65	50	Exp.4
24	T-503 F4	<i>latifolium</i>	Mexico	-	71	90	Exp.4
25	T-1092 F4	<i>latifolium</i>	Guatemala	-	63	90	Exp.5
26	T-1094 F4	<i>latifolium</i>	Guatemala	-	65	40	Exp.5
27	T-29 F4	<i>punctatum</i>	Mexico	Chiapas	60	40	Exp.5
28	T-879 F4	<i>mariegalante</i>	USA	Puerto Rico	54	90	Exp.5
29	T-901 F4	<i>mariegalante</i>	Cuba	-	71	100	Exp.5
30	T-18 F4	<i>richmondi</i>	Mexico	Chiapas	60	40	Exp.5
31	T-621 F4	-	Mexico	-	57	40	Exp.6
32	T-743 F4	-	Guatemala	-	51	90	Exp.6
33	T-1135 F4	-	Mexico	-	62	90	Exp.6
34	T-1334 F4	-	Mexico	San Luis Potosi	57	95	Exp.6
35	T-1336 F4	-	Mexico	San Luis Potosi	64	90	Exp.6
36	T-1410 F4	-	Brazil	Pariaba	59	80	Exp.6
37	T-1413 F4	-	Brazil	Pariaba	51	80	Exp.7
38	T-1419 F4	-	Brazil	Bahia	63	90	Exp.7
39	T-1463 F4	-	Mali	-	66	90	Exp.7
40	T-1522 F4	-	Australia	W. Australia	54	95	Exp.7
41	T-34 F4	<i>latifolium</i>	Mexico	Chiapas	33	95	Exp.7
42	T-179 F4	<i>latifolium</i>	Guatemala	Zacapa	26	90	Exp.7
43	T-466 F4	<i>latifolium</i>	Mexico	Chiapas	31	85	Exp.8
44	T-230 F4	<i>punctatum</i>	Guatemala	Zacapa	27	30	Exp.8
45	T-1105 F4	<i>punctatum</i>	Mexico	Chiapas	27	80	Exp.8
46	T-879 F4	<i>mariegalante</i>	USA	Puerto Rico	36	75	Exp.8
47	T-126 F4	<i>morrilli</i>	Mexico	Oaxaca	26	80	Exp.8
48	T-147 F4	<i>morrilli</i>	Mexico	Oaxaca	28	80	Exp.8
49	T-255 F4	<i>morrilli</i>	Mexico	Oaxaca	41	80	Exp.9
50	T-260 F4	<i>morrilli</i>	Mexico	Oaxaca	33	70	Exp.9
51	T-278 F4	<i>morrilli</i>	Mexico	Oaxaca	30	40	Exp.9
52	T-279 F4	<i>morrilli</i>	Mexico	Oaxaca	34	60	Exp.9
53	T-467 F4	-	Mexico	Chiapas	42	40	Exp.9
54	T-1152 F4	-	Mexico	-	30	50	Exp.9
55	T-1285 F4	-	India	Goa	40	90	Exp.10
56	T-1964 F4	-	Mexico	Guerrero	36	60	Exp.10
57	T-202 F4	<i>latifolium</i>	Guatemala	Chiquimula	5	40	Exp.10
58	T-249 F4	<i>latifolium</i>	Guatemala	Chiquimula	11	40	Exp.10

Continued

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²Race, classification below species level, - indicates unknown.

³Collection location is the country and state where primitive accession was collected.

⁴Flower percent is the percent of plants that flowered in the F2 generation following a cross to the day-neutral cultivar Deltapine 61. ‡ = Male line selected for crossing based on agronomic performance from field trial data.

⁵The visual score was made just prior to harvest when bolls were open. The lines were scored relative to Stoneville 474 and Sure-Grow 747, which were in adjacent field rows. A score of 100 meant the line had the same appearance as the two cultivars.

⁶Field experiment number in which the male parent was included in 2001 and 2002.

Table 1 (continued). Descriptions for 114 primitive-derived male parents.¹

Male #	Pedigree	Race ²	Collection location ³	Flower (%) ⁴	Visual rating ⁵	Exp # ⁶
59	T-490 F4	<i>latifolium</i>	Mexico Yucatan	20	40	Exp.10
60	T-493 F4	<i>latifolium</i>	Mexico Yucatan	13	40	Exp.10
61	T-28 F4	<i>latifolium</i>	Mexico Chiapas	4	30	Exp.11
62	T-114 F4	<i>punctatum</i>	Guatemala Zacapa	17	30	Exp.11
63	T-473 F4	<i>punctatum</i>	Guatemala Peten	10	30	Exp.11
64	T-491 F4	<i>punctatum</i>	Mexico Yucatan	10	25	Exp.11
65	T-1103 F4	<i>punctatum</i>	Mexico Chiapas	14	40	Exp.11
66	T-1610 F4	<i>punctatum</i>	France(fwi) Guadeloupe Is.	13	50	Exp.11
67	T-406 F4	-	USA Arizona	94	60	Exp.12
68	T-1309 F4	-	U.S.S.R. Uzbekistan	65	80	Exp.12
69	T-1332 F4	-	Mexico San Luis Potosi	74	80	Exp.12
70	T-1870 F4	-	St. Lucia Is.	70	90	Exp.12
71	T-8 F4	<i>latifolium</i>	Mexico Pueblo	46	80	Exp.12
72	T-115 F4	<i>punctatum</i>	Guatemala Zacapa	35	85	Exp.12
73	T-1613 F4	<i>mariegalante</i>	France(fwi) Guadeloupe Is.	33	90	Exp.13
74	T-19 F4	<i>richmondi</i>	Mexico Chiapas	41	80	Exp.13
75	T-1976 F4	-	Mexico Quintana Roo	32	30	Exp.13
76	T-485 F4	<i>latifolium</i>	Mexico Yucatan	20	30	Exp.13
77	T-380 F4	<i>mariegalante</i>	El Salvador -	14	70	Exp.13
78	T-1612 F4	<i>mariegalante</i>	France(fwi) Guadeloupe Is.	8	60	Exp.13
79	T-1618 F4	<i>mariegalante</i>	France(fwi) Guadeloupe Is.	5	50	Exp.14
80	T-9 F4	<i>palmeri</i>	Mexico Oaxaca	13	70	Exp.14
81	T-51 F4	<i>palmeri</i>	Mexico Chiapas	24	30	Exp.14
82	T-303 F4	<i>palmeri</i>	Mexico Oaxaca	2	90	Exp.14
83	T-12 F4	<i>richmondi</i>	Mexico Oaxaca	24	90	Exp.14
84	T-463 F4	<i>richmondi</i>	Mexico Oaxaca	19	70	Exp.14
85	T-11 F4	<i>morrilli</i>	Mexico Oaxaca	10	30	Exp.15
86	T-280 F4	<i>morrilli</i>	Mexico Oaxaca	7	50	Exp.15
87	T-282 F4	<i>morrilli</i>	Mexico Oaxaca	8	30	Exp.15
88	T-286 F4	<i>morrilli</i>	Mexico Oaxaca	17	30	Exp.15
89	T-298 F4	<i>morrilli</i>	Mexico Oaxaca	16	30	Exp.15
90	T-1046 F4	<i>yucatanense</i>	Mexico Yucatan	24	60	Exp.15
91	T-1236 F4	<i>yucatanense</i>	Mexico Yucatan	7	30	Exp.16
92	T-1972 F4	-	Mexico Quintana Roo	12	40	Exp.16
93	T-1973 F4	-	Mexico Quintana Roo	14	80	Exp.16
94	T-1986 F4	-	Mexico Yucatan	25	90	Exp.16
95	T-1212 F8	-	Brazil Pernambuco	‡	80	Exp.16
96	T-1304 F8	-	India Madras	‡	90	Exp.16
97	T-1305 F8	-	Afghanistan Kunduz	‡	90	Exp.17
98	T-1326 F8	-	Ivory Coast -	‡	80	Exp.17
99	T-2315 F7	-	Australia -	‡	90	Exp.17
100	T-2318 F8	-	U.S.S.R. -	‡	90	Exp.17
101	T-2319 F8	-	U.S.S.R. -	‡	95	Exp.17
102	T-2321 F8	-	Mexico -	‡	90	Exp.17
103	T-2322 F8	-	Mexico -	‡	85	Exp.18
104	T-2355 F8	-	Paraguay -	‡	90	Exp.18
105	T-2356 F7	-	Paraguay -	‡	90	Exp.18
106	T-2358 F8	-	Paraguay -	‡	90	Exp.18
107	T-2360 F8	-	Paraguay -	‡	90	Exp.18
108	T-2361 F8	-	Paraguay -	‡	80	Exp.18
109	T-2364 F8	-	Paraguay -	‡	60	Exp.19
110	T-2368 F7	-	Paraguay -	‡	90	Exp.19
111	T-2371 F8	-	Paraguay -	‡	90	Exp.19
112	T-2373 F7	-	Paraguay -	‡	80	Exp.19
113	T-2374 F7	-	Paraguay -	‡	80	Exp.19
114	T-497 F7	<i>latifolium</i>	Mexico Campeche	‡	90	Exp.19

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⁵The visual score was made just prior to harvest when bolls were open. The lines were scored relative to Stoneville 474 and Sure-Grow 747, which were in adjacent field rows. A score of 100 meant the line had the same appearance as the two cultivars.

⁶Field experiment number in which the male parent was included in 2001 and 2002.

RESULTS AND DISCUSSION

The 114 day-neutral derived lines represent a broad group of photoperiodic accessions (Table 1). One-half of the photoperiodic accessions have been classified to race and are as follows: 19 *latifolium*, 9 *marie-galante*, 11 *morrilli*, 3 *palmeri*, 9 *punctatum*, 4 *richmondi*, and 2 *yucatanense*. Accessions were collected from the following countries: 59 from Mexico; 16 from Caribbean Islands; 11 from Guatemala; 10 from Paraguay; 4 from Brazil; 3 from the former USSR; 3 from Arizona, USA; 2 from Australia; 2 from India; and 1 each from Afghanistan, Ivory Coast and Mali. The percent of day-neutral plants recovered in the F2 generation varied among accessions (Table 1). There was a wide range in visual ratings for the day-neutral derived lines indicating diversity; however, such visual ratings are not often reflected in agronomic performance.

All traits were significantly affected by environment (year) (Table 2). Variation from mega environments (years) made the larger contribution to the total variation than those from field experiment position errors and block effects for seed cotton yield, lint yield, 2.5% fiber span length, and elongation (Table 2). Both seed cotton yield and lint yield were sensitive to the field position errors in a large field, indicating that separating a large number of entries into several experiments with common check(s) is necessary for controlling field position errors. The means among generations, T, (female parents, day-neutral male parents, and F2-bulks) contributed more genetic variation to the total variation than genotypes within each generation, G(T), for all traits (Table 2). This finding suggests that,

on average, the means for the female parents, the day-neutral male parents, and the F2-bulks significantly differed with respect to these yield and fiber traits. Generation expression was significantly dependent on specific year, T×Y, conditions for all traits except 50% span length, elongation, and fiber strength. Interaction effects were examined and relative to main effects were small except for yield. Least significant differences (LSD) were very similar for different experiments for all traits (Tables 6-24), indicating that the field conditions within each of 19 experiments were uniform.

On average, F2-bulks and male parents did not differ significantly for seed cotton yield; however, they were significantly higher than female parent cultivars for seed cotton yield (Table 3). No significant difference was detected between F2-bulks and female parents for 50% or 2.5% span length; however, both F2 and female parents were significantly lower than male parents for length (Table 3). Generation means, on average, were significantly different from each other for all other traits. Female parents were significantly greater than F2-bulks, which were significantly greater than male parents, for lint yield, lint percentage, micronaire and elongation. Female parents were significantly greater than male parents, which were significantly greater than F2-bulks, for boll weight. Male parents were significantly greater than F2-bulks, which were significantly greater than female parents, for fiber strength (Table 3). Male parents showed larger genetic diversity than female parents for all traits, while F2-bulks expressed a larger range than female and male parents for all traits

Table 2. ANOVA mean squares for yield, yield components, and fiber traits.¹

Source ²	Df	Yield and yield components				Fiber traits				
		YLD (10 ⁶)	LYLD (10 ⁶)	BW	LP	MIC	SL50	SL2.5	E1	T1
Y	1	735.34**	181.32**	0.76**	1421.75**	0.54**	0.84**	610.13**	169.07**	1618.67**
F(Y)	36	12.94**	16.77**	0.43**	1.99**	0.19**	0.41**	0.55**	1.29**	214.03**
B(Y×F)	190	3.86**	0.56**	0.15**	1.34**	0.15**	0.25**	0.67**	2.35**	343.26**
G(total)	343	5.57**	1.11**	1.10**	51.24**	0.33**	0.21**	2.03**	2.85**	602.98**
T	2	26.07**	27.22**	4.42**	6394.26**	9.52**	1.08**	10.04**	72.29**	27839.62**
G(T)	341	5.45**	0.96**	1.08**	14.04**	0.28**	0.20**	1.98**	2.45**	443.23**
G×Y(total)	343	3.13**	0.49**	0.18**	1.90**	0.06**	0.13	0.33*	0.45	87.12
T×Y	2	57.50**	7.09**	4.94**	45.48**	0.63**	0.35	1.82**	0.35	167.82
G×Y(T)	341	2.81**	0.45**	0.15**	1.64**	0.06**	0.13	0.32*	0.45	86.65
Error	3646	1.82	0.27	0.06	0.64	0.04	0.12	0.28	0.42	81.63

¹YLD = seed cotton yield; LYLD = lint yield; BW = boll weight; LP = lint percentage; MIC = micronaire; SL50 and SL2.5 = fiber span length 50% and 2.5%; E1 = fiber elongation; and T1 = fiber strength. *, **, Significant at 0.05 and 0.01 significance levels, respectively.

²Y = year; F = field experiment position; B = block; G = genotype; T = generation (male, female, F2).

Table 3. Comparison of yield, yield components, and fiber traits between parents and F2-bulks.¹

Parameter	Generation	YLD	LYLD	BW	LP	MIC	SL50	SL2.5	E1	T1
		<i>lb/A</i>	<i>lb/A</i>	<i>g</i>	<i>%</i>		<i>mm</i>	<i>mm</i>	<i>%</i>	<i>kNm/kg</i>
Mean	F2	2793	1062	5.24	37.97	4.90	14.20	28.97	7.61	193.69
Mean	Male	2786	1015	5.30	36.37	4.83	14.25	29.09	7.41	196.92
Mean	Female	2678	1138	5.37	42.48	5.06	14.21	28.94	8.05	184.23
Mean	LSD (0.05)	39	15	0.02	0.07	0.02	0.03	0.05	0.06	0.83
MIN	F2	1870	673	4.16	34.60	4.40	13.54	27.20	6.42	179.25
MAX	F2	3591	1416	6.41	41.38	5.56	14.61	30.33	9.63	217.21
SD	F2	300	125	0.41	1.30	0.19	0.16	0.47	0.50	6.76
MIN	Male	2255	759	4.45	33.64	4.45	13.91	27.73	6.54	184.28
MAX	Male	3453	1293	6.21	39.11	5.29	14.83	30.10	8.29	210.83
SD	Male	279	115	0.42	1.09	0.14	0.16	0.40	0.38	4.83
MIN	Female	2523	1066	5.25	42.25	5.03	14.16	28.78	7.54	178.95
MAX	Female	2834	1210	5.50	42.71	5.09	14.26	29.09	8.56	189.50
SD	Female	220	102	0.18	0.32	0.04	0.07	0.22	0.72	7.46

¹Traits: YLD = seed cotton yield; LYLD = lint yield; BW = boll weight; LP = lint percentage; MIC = micronaire; SL50 and SL2.5 = fiber span length 50% and 2.5%; E1 = fiber elongation; and T1 = fiber strength.

(Table 3). These findings indicated that dominant and/or epistatic effects could be associated with these yield, yield components, and fiber traits.

On average, F2-bulks between the 2 female parents, Stoneville 474 and Sure-Grow 747, were significantly different for all traits but lint percentage, micronaire, and 50% span length (Table 4). Generally, F2-bulks with Sure-Grow 747 as a parent were greater than those with Stoneville 474 as a parent for boll weight, seed cotton yield, lint cotton yield, 2.5% span length, and elongation but not for fiber strength (Table 4). This finding suggests that Sure-Grow 747 was a better general combiner for achieving larger bolls, higher cotton yield, longer 2.5% fiber span length, and higher percent elongation, while Stoneville 474 was a better general combiner for achieving stronger fibers.

Yield, yield components, and fiber data averaged across the female parents, Stoneville 474 and Sure-Grow 747, for F2 from the 114 males are shown in Table 5. On average, 29 out of 114 male parents produced bolls larger than 5.5 grams in their F2-bulks. Twenty-one male parents produced F2-bulks with a lint

percentage of 39 or higher. Approximately 25% of the F2 from male parents (27) produced seed cotton yields greater than 3,000 pounds per acre when averaged across the 2 female parents (Table 5), while only 12 exceeded 1,200 pounds per acre of lint. The micronaire value for all F2-bulks, averaged across the females, exceeded 4.5 units. Twenty-seven F2-bulks exceeded 5.0 units, and their fiber would receive a discount at the market place due to high micronaire. One-half of the male parents produced F2-bulks with 2.5% span length greater than 29 millimeters. Fiber strength for 15 male parents F2-bulks, averaged over the 2 female parents, exceeded 200 kNm/kg (Table 5). Fiber quality parameters were in the acceptable range for all traits except micronaire. Micronaire is highly influenced by the environment. Meredith (2003) summarized data from 36 years of variety tests and reported that 63% of the variation for micronaire and its component maturity were due to environmental effects. Parents need to be chosen wisely to reduce the probability of hybrids producing high micronaire (greater than 5.0) in all environments.

Table 4. Mean comparison of yield, yield components, and fiber traits of F2-bulks between two female groups.¹

	YLD	LYLD	BW	LP	MIC	SL50	SL2.5	E1	T1
	<i>lb/A</i>	<i>lb/A</i>	<i>g</i>	<i>%</i>		<i>mm</i>	<i>mm</i>	<i>%</i>	<i>kNm/kg</i>
Stoneville 474	2758	1049	5.21	37.97	4.90	14.19	28.92	7.31	196.60
Sure-Grow 747	2828	1075	5.26	37.96	4.91	14.21	29.01	7.90	190.78
LSD (0.05)	32	12	0.02	NS	NS	NS	0.04	0.05	0.72

¹Traits: YLD = seed cotton yield; LYLD = lint yield; BW = boll weight; LP = lint percentage; MIC = micronaire; SL50 and SL2.5 = fiber span length 50% and 2.5%; E1 = fiber elongation; and T1 = fiber strength.

Table 5. Mean comparison of F2-bulks among males.¹

Male #	YLD	LYLD	BW	LP	MIC	SL50	SL2.5	E1	T1
	<i>lb/A</i>	<i>lb/A</i>	<i>g</i>	<i>%</i>		<i>mm</i>	<i>mm</i>	<i>%</i>	<i>kNm/kg</i>
1	3113	1154	5.26	37.08	5.05	14.29	28.71	7.59	200.08
2	3198	1199	5.66	37.50	5.07	14.13	28.47	7.80	199.21
3	2987	1122	5.12	37.55	4.64	14.17	29.15	8.02	187.88
4	3162	1197	5.55	37.90	5.10	14.23	29.15	7.74	193.48
5	2908	1125	5.03	38.69	5.03	14.01	28.23	7.67	195.40
6	2941	1084	4.80	36.90	4.93	14.16	28.72	8.34	190.40
7	2475	883	4.91	35.59	4.78	14.23	28.69	7.91	198.98
8	2880	1050	4.92	36.39	4.83	14.11	28.92	7.86	200.56
9	2468	942	5.20	38.27	4.92	14.08	28.92	7.48	186.13
10	2632	998	5.86	37.97	4.98	14.32	29.10	8.07	197.17
11	2783	1075	5.34	38.69	4.94	14.29	29.22	7.71	199.23
12	2511	938	4.85	37.38	4.90	14.08	28.88	7.56	197.46
13	2506	926	4.68	36.91	4.53	14.18	29.40	7.25	193.88
14	2829	1056	5.05	37.32	4.70	14.28	29.31	7.24	203.42
15	2771	1091	5.26	39.38	4.84	14.13	29.06	7.78	187.52
16	2898	1123	5.34	38.76	4.82	14.35	29.40	7.04	194.08
17	2575	965	4.93	37.47	4.66	14.11	29.21	7.44	191.79
18	2804	1079	4.97	38.49	4.70	14.12	28.74	7.53	185.06
19	2835	1086	4.97	38.32	5.20	14.13	28.55	6.85	204.65
20	2694	1003	4.85	37.26	4.79	13.92	28.44	7.63	193.58
21	2839	1067	5.05	37.57	4.70	14.20	29.77	7.41	195.32
22	2625	1020	5.16	38.89	5.15	13.78	27.87	7.43	188.85
23	2428	967	6.02	39.82	4.84	13.83	28.58	6.98	185.00
24	2856	1138	5.62	39.88	4.73	14.19	29.55	7.49	187.92
25	2660	1066	5.40	40.13	4.90	14.17	29.24	8.45	190.92
26	2273	850	5.29	37.38	4.74	14.03	28.49	7.76	195.38
27	2747	999	5.24	36.33	5.03	14.19	29.35	7.89	197.48
28	2360	899	4.97	38.13	4.79	14.03	28.84	7.32	191.38
29	2715	1096	5.38	40.36	4.91	14.20	29.37	8.49	188.54
30	2619	1021	5.29	38.95	4.88	14.22	29.01	7.59	198.31
31	2722	1073	5.02	39.47	4.70	14.16	29.33	7.77	190.54
32	2516	921	4.99	36.53	4.95	14.39	29.11	7.49	203.06
33	2630	963	4.92	36.62	4.69	14.46	30.11	7.27	207.33
34	2544	987	4.53	38.74	4.86	14.11	28.53	8.03	187.85
35	2259	843	4.18	37.19	4.65	14.22	29.08	7.74	204.73
36	2683	1039	4.95	38.81	4.95	14.08	28.96	8.14	191.04
37	3009	1144	5.09	38.02	4.95	14.13	29.20	7.82	186.00
38	2099	768	4.60	36.50	4.81	14.16	28.93	8.48	196.00
39	2826	1071	5.01	37.83	4.62	14.20	29.11	7.80	190.33
40	2855	1167	5.21	40.79	5.04	14.08	28.84	7.76	183.08
41	2869	1092	5.17	38.03	5.03	14.02	28.50	8.17	183.06
42	3018	1116	5.38	36.90	4.79	14.10	28.82	7.68	191.85
43	2780	1027	5.20	36.98	4.84	14.25	29.04	7.49	190.88
44	2408	912	5.10	37.81	4.83	14.16	28.91	8.35	186.35
45	2755	1043	5.35	37.81	4.77	14.16	28.78	7.83	191.52
46	2504	935	4.87	37.32	4.87	14.20	28.55	7.43	198.50
47	2784	1070	5.69	38.38	5.37	14.00	27.87	7.28	186.75
48	2984	1124	4.95	37.68	4.82	14.25	28.82	7.39	191.90
49	2758	1029	5.01	37.26	4.96	14.01	28.54	7.77	193.90
50	3014	1144	5.11	37.93	4.88	14.05	28.44	7.55	194.65
51	2787	1051	4.97	37.73	4.80	13.95	28.49	7.57	192.13
52	2708	1006	5.04	37.13	4.73	14.06	28.80	7.51	200.00
53	2841	1081	5.43	38.04	4.95	14.27	28.91	7.22	201.81
54	2762	1044	4.98	37.77	5.00	14.05	28.93	7.54	193.81
55	2827	1155	5.52	40.75	4.98	14.19	29.16	7.54	190.90
56	2742	1043	4.85	37.97	4.97	14.04	28.84	7.30	190.79
57	2483	944	5.20	37.97	4.89	14.26	28.91	7.68	190.13
58	2674	1050	5.21	39.21	4.94	14.02	28.59	7.33	188.17
59	3019	1172	5.14	38.76	5.20	14.08	28.42	7.29	193.23
60	2313	905	4.70	38.99	5.15	14.02	28.52	7.70	190.08
61	2576	933	5.52	36.12	5.00	14.22	28.52	7.25	200.67
62	2467	916	5.22	37.07	4.76	14.26	29.23	7.80	200.63
63	2627	962	5.12	36.53	4.98	14.15	28.74	8.01	194.67

Continued

¹Traits: YLD = seed cotton yield; LYLD = lint yield; BW = boll weight; LP = lint percentage; MIC = micronaire; SL50 and SL2.5 = fiber span length 50% and 2.5%; E1 = fiber elongation; and T1 = fiber strength.

Table 5 (continued). Mean comparison of F2-bulks among males.¹

Male #	YLD	LYLD	BW	LP	MIC	SL50	SL2.5	E1	T1
	<i>lb/A</i>	<i>lb/A</i>	<i>g</i>	<i>%</i>		<i>mm</i>	<i>mm</i>	<i>%</i>	<i>kNm/kg</i>
64	2544	950	5.08	37.27	4.97	14.16	28.90	7.96	194.65
65	2676	986	5.41	36.78	4.82	14.21	28.98	7.72	190.19
66	2594	1005	5.21	38.66	4.77	14.12	29.02	7.56	184.48
67	2813	1069	5.06	37.94	4.90	14.30	28.68	8.36	191.79
68	3077	1159	4.73	37.54	4.67	14.13	29.18	7.84	193.67
69	2482	931	4.32	37.41	4.83	14.18	29.35	7.20	193.96
70	2670	995	4.63	37.06	4.79	14.32	29.25	7.58	200.04
71	2724	1000	5.46	36.71	5.34	14.07	28.15	7.22	198.65
72	2563	974	4.88	37.97	4.78	14.27	29.18	7.77	195.52
73	2863	1154	5.86	40.26	4.89	14.43	29.77	7.04	194.29
74	2841	1034	5.49	36.34	5.06	14.46	29.38	7.16	204.65
75	2545	991	4.85	38.89	4.90	14.08	28.33	7.58	191.71
76	2668	1024	5.06	38.29	4.98	14.21	28.48	7.38	188.40
77	2681	960	4.82	35.80	4.92	14.27	28.38	7.61	199.56
78	2627	1001	4.88	38.09	4.79	14.35	29.65	7.57	193.67
79	2462	918	5.35	37.26	4.87	14.36	29.55	6.69	196.15
80	2605	1037	5.16	39.75	4.83	14.21	29.03	7.45	187.13
81	2384	875	4.83	36.66	4.90	14.14	28.43	6.88	197.02
82	2558	921	5.32	35.99	4.80	14.40	29.23	7.40	199.92
83	2747	1064	5.39	38.71	4.90	14.31	29.31	7.30	190.60
84	2283	845	5.27	36.99	4.87	14.25	29.25	6.86	194.63
85	2845	1041	4.94	36.55	4.81	14.30	28.63	8.19	193.81
86	2728	1048	5.10	38.39	4.88	14.21	28.83	7.51	191.79
87	3012	1131	4.80	37.54	4.88	14.20	28.65	7.67	202.25
88	2828	1059	5.00	37.31	4.53	14.39	29.22	7.85	193.44
89	2655	956	5.09	35.95	4.85	14.22	28.89	7.35	194.23
90	2898	1071	4.85	36.83	4.70	14.13	28.28	7.48	199.29
91	3155	1144	5.79	36.25	4.62	14.22	29.72	7.45	193.69
92	3242	1186	5.09	36.52	4.93	14.24	29.00	7.64	196.92
93	3093	1158	5.15	37.45	5.05	14.20	28.85	8.07	199.73
94	3032	1097	5.20	36.13	4.93	14.23	29.46	7.71	191.00
95	3123	1169	5.54	37.32	4.95	14.25	28.92	7.69	192.75
96	2750	1036	6.04	37.60	4.83	14.13	29.07	7.65	187.02
97	3071	1200	5.66	39.09	5.06	14.54	28.88	7.66	191.50
98	3335	1298	5.81	38.89	5.05	14.40	29.05	7.74	194.29
99	3253	1282	5.39	39.37	5.05	14.30	28.89	7.19	189.67
100	3314	1287	5.88	38.84	4.97	14.41	29.36	7.38	199.91
101	3275	1272	5.74	38.85	5.00	14.50	29.37	7.50	195.13
102	3460	1347	5.83	38.97	4.80	14.46	29.63	7.36	189.75
103	2893	1137	5.99	39.27	4.96	14.28	29.15	7.70	190.85
104	2758	1080	5.67	39.15	5.04	14.38	29.44	7.48	191.27
105	3018	1160	5.94	38.44	5.26	14.29	29.19	7.33	191.65
106	2989	1168	5.85	39.06	4.90	14.45	29.79	7.72	197.02
107	3129	1201	5.92	38.33	4.95	14.16	28.90	7.30	188.31
108	3228	1265	6.04	39.16	5.09	14.50	29.83	7.85	191.02
109	3227	1225	5.62	37.84	4.97	14.22	29.23	7.68	192.56
110	2712	1073	5.73	39.54	5.08	14.25	29.10	7.44	202.10
111	3466	1360	5.76	39.18	4.96	14.30	29.45	7.68	189.71
112	3388	1335	6.04	39.31	5.15	14.20	29.09	7.84	189.48
113	2984	1180	5.64	39.54	5.13	14.14	28.57	7.90	192.65
114	3195	1247	5.61	39.14	5.24	13.98	28.19	7.57	191.79
LSD 0.05	224	93	0.14	0.44	0.12	0.21	0.31	0.41	5.43

¹Traits: YLD = seed cotton yield; LYLD = lint yield; BW = boll weight; LP = lint percentage; MIC = micronaire; SL50 and SL2.5 = fiber span length 50% and 2.5%; E1 = fiber elongation; and T1 = fiber strength.

The results for each of the 19 experiments averaged over the 2 years are shown in Tables 6-24. As expected, the 2 female cultivar parents yielded more seed cotton than most of the primitive-derived male parents. Only 7 of the F2-bulks from 114 male parents produced more cotton than the female parent Stoneville 474 (Table 25). Even though very few yielded significantly more than Stoneville 474, the majority did not yield significantly lower than the 2 female cultivars. When lint yields were examined, we found that most male parents yielded significantly lower than the female cultivars. This was expected since all male parents and F2-bulks had lint percentages that were significantly lower than the cultivars. A low lint percentage seems to be associated with most of the primitive accessions of cotton. Forty-one and 12 out of 114 male parents produced larger bolls than Stoneville 474 and Sure-Grow 747, respectively; however, 33 and 58 had smaller bolls than these 2 cultivars.

The fiber properties varied depending on the trait. Only 1 male parent had a micronaire value that was sig-

nificantly higher than the cultivars. Eighty and 63 out of 114 males had micronaire values significantly lower than Stoneville 474 and Sure-Grow 747, respectively. Most of the male parents had fiber length that was equal to or longer than the female cultivars. A larger proportion (54 and 111) produced fibers that were stronger than Stoneville 474 and Sure-Grow 747 (Tables 6-25).

Seventeen and 92 out of 228 F2-bulks yielded significantly more seed cotton than Stoneville 474 and Sure-Grow 747, respectively (Tables 6-24 and 26). None of the F2-bulks yielded more lint cotton than Stoneville 474. The F2-bulks were not able to overcome the lower lint percentage that resulted from crossing low-lint-percent males with high-lint-percent females. All 228 F2-bulks had lint percentages that were significantly lower than Stoneville 474 and Sure-Grow 747. Sixty-one and 18 F2-bulks had larger bolls than the 2 female cultivars (Table 26); however, 69 and 122 F2-bulks had significantly smaller bolls than the cultivars.

Table 6. Genotype means for yield, yield components, and fiber traits for Experiment 1 averaged over 2001 and 2002.¹

Genotype	YLD	LYLD	BW	LP	MIC	SL50	SL2.5	E1	T1
	<i>lb/A</i>	<i>lb/A</i>	<i>g</i>	<i>%</i>		<i>mm</i>	<i>mm</i>	<i>%</i>	<i>kNm/kg</i>
[ST474xT-3 F4]F2	3085	1152	5.34	37.31	5.15	14.22	28.55	7.33	205.04
[SG747xT-3 F4]F2	3140	1156	5.18	36.84	4.96	14.36	28.87	7.85	195.13
[ST474xT-108F4]F2	3195	1188	5.79	37.19	5.02	14.15	28.64	7.38	206.96
[SG747xT-108F4]F2	3200	1210	5.53	37.81	5.13	14.12	28.30	8.23	191.46
[ST474xT-160F4]F2	3070	1143	5.02	37.25	4.75	14.19	28.96	7.25	194.08
[SG747xT-160F4]F2	2905	1100	5.23	37.85	4.53	14.15	29.34	8.79	181.67
[ST474xT-373F4]F2	2992	1143	5.55	38.23	5.13	14.17	28.91	7.02	195.83
[SG747xT-373F4]F2	3331	1251	5.55	37.58	5.07	14.30	29.38	8.46	191.13
[ST474xT-832F4]F2	2658	1031	4.95	38.77	5.03	14.01	28.30	7.67	196.67
[SG747xT-832F4]F2	3157	1219	5.11	38.62	5.03	14.01	28.15	7.67	194.13
[ST474xT-400F4]F2	2951	1102	4.95	37.42	4.78	14.14	29.04	8.40	186.63
[SG747xT-400F4]F2	2931	1066	4.65	36.37	5.08	14.17	28.41	8.29	194.17
T- 3 F6	3066	1091	5.59	35.61	5.05	14.29	28.71	7.35	200.33
T- 108 F6	2941	1051	5.80	35.74	4.98	14.20	28.36	7.52	198.38
T- 160 F6	3125	1112	5.18	35.59	5.01	14.31	28.53	8.15	190.13
T- 373 F6	3178	1116	5.56	35.13	4.96	14.27	29.19	7.06	200.92
T- 832 F6	2846	1032	4.84	36.29	4.84	14.02	28.15	7.94	196.67
T- 400 F6	2876	1019	4.87	35.40	4.77	14.29	28.87	8.21	196.04
Stoneville 474	2852	1209	5.10	42.41	5.09	14.17	28.74	7.52	195.50
Sure-Grow 747	2870	1209	5.55	42.15	5.03	14.28	29.08	8.90	182.00
LSD (0.05)	328	123	0.20	0.67	0.16	0.29	0.44	0.57	9.28

¹Traits: YLD = seed cotton yield; LYLD = lint yield; BW = boll weight; LP = lint percentage; MIC = micronaire; SL50 and SL2.5 = fiber span length 50% and 2.5%; E1 = fiber elongation; and T1 = fiber strength.

Table 7. Genotype means for yield, yield components, and fiber traits for Experiment 2 averaged over 2001 and 2002.¹

Genotype	YLD	LYLD	BW	LP	MIC	SL50	SL2.5	E1	T1
	<i>lb/A</i>	<i>lb/A</i>	<i>g</i>	<i>%</i>		<i>mm</i>	<i>mm</i>	<i>%</i>	<i>kNm/kg</i>
[ST474xT-408F4]F2	2408	836	4.72	34.60	4.59	14.27	28.88	7.40	203.63
[SG747xT-408F4]F2	2542	930	5.09	36.58	4.96	14.20	28.50	8.42	194.33
[ST474xT-606F4]F2	2858	1057	4.95	36.84	4.72	14.07	29.31	7.50	197.96
[SG747xT-606F4]F2	2901	1043	4.90	35.94	4.95	14.15	28.54	8.23	203.17
[ST474xT-610F4]F2	2370	888	5.25	37.60	4.92	14.06	28.83	7.04	181.75
[SG747xT-610F4]F2	2567	997	5.15	38.94	4.93	14.10	29.02	7.92	190.50
[ST474xT-616F4]F2	2441	917	5.64	37.68	4.83	14.28	29.19	7.56	205.79
[SG747xT-616F4]F2	2822	1080	6.08	38.26	5.12	14.37	29.01	8.58	188.54
[ST474xT-681F4]F2	2673	1046	5.31	39.19	4.88	14.13	29.14	7.48	201.50
[SG747xT-681F4]F2	2892	1103	5.37	38.19	5.00	14.45	29.30	7.94	196.96
[ST474xT-758F4]F2	2386	884	4.76	37.08	4.73	14.00	28.88	7.04	199.13
[SG747xT-758F4]F2	2637	992	4.94	37.67	5.08	14.15	28.87	8.08	195.79
T-408 F6	3040	1066	5.47	35.12	5.03	14.19	28.69	7.69	197.79
T-606 F6	2796	960	5.22	34.39	4.74	14.35	29.23	7.65	210.83
T-610 F6	2289	808	5.32	35.28	4.89	14.15	28.72	7.08	194.29
T-616 F6	2597	943	6.09	36.32	4.85	14.14	28.84	7.48	203.33
T-681 F6	2844	1073	5.38	37.79	4.98	14.29	29.04	7.23	201.92
T-758 F6	2558	876	4.81	34.35	4.68	14.11	28.97	7.63	203.79
Stoneville 474	2678	1147	5.10	42.85	5.10	14.16	28.71	7.52	195.08
Sure-Grow 747	2392	1004	5.46	42.04	4.97	14.09	28.96	8.92	179.54
LSD (0.05)	364	135	0.21	0.64	0.16	0.26	0.38	0.60	8.17

¹Traits: YLD = seed cotton yield; LYLD = lint yield; BW = boll weight; LP = lint percentage; MIC = micronaire; SL50 and SL2.5 = fiber span length 50% and 2.5%; E1 = fiber elongation; and T1 = fiber strength.

Table 8. Genotype means for yield, yield components, and fiber traits for Experiment 3 averaged over 2001 and 2002.¹

Genotype	YLD	LYLD	BW	LP	MIC	SL50	SL2.5	E1	T1
	<i>lb/A</i>	<i>lb/A</i>	<i>g</i>	<i>%</i>		<i>mm</i>	<i>mm</i>	<i>%</i>	<i>kNm/kg</i>
[ST474xT-1455F4]F2	2343	867	4.68	36.99	4.56	14.03	29.08	7.13	193.42
[SG747xT-1455F4]F2	2668	985	4.68	36.83	4.49	14.32	29.72	7.38	194.33
[ST474xT-1534F4]F2	2870	1072	5.07	37.37	4.60	14.34	29.36	6.92	206.08
[SG747xT-1534F4]F2	2788	1039	5.03	37.27	4.79	14.21	29.25	7.56	200.75
[ST474xT-1600F4]F2	2685	1054	5.33	39.27	4.83	14.17	28.83	7.42	193.50
[SG747xT-1600F4]F2	2856	1128	5.19	39.48	4.84	14.09	29.30	8.15	181.54
[ST474xT-1630F4]F2	2670	1037	5.28	38.83	4.73	14.29	29.24	6.96	196.71
[SG747xT-1630F4]F2	3125	1209	5.40	38.69	4.91	14.42	29.55	7.13	191.46
[ST474xT-1757F4]F2	2578	979	4.75	37.99	4.78	14.11	29.10	7.06	195.54
[SG747xT-1757F4]F2	2573	951	5.12	36.95	4.53	14.12	29.32	7.81	188.04
[ST474xT-1801F4]F2	2715	1041	4.79	38.35	4.58	14.07	28.72	7.21	186.92
[SG747xT-1801F4]F2	2894	1118	5.15	38.63	4.81	14.17	28.77	7.85	183.21
T-1455 F6	2655	949	4.76	35.76	4.60	14.38	29.42	7.73	199.58
T-1534 F6	2701	972	5.33	35.96	4.60	14.35	29.46	6.90	209.92
T-1600 F6	2797	1080	5.14	38.59	4.88	14.28	29.63	7.71	192.83
T-1630 F6	2683	973	5.36	36.32	4.48	14.26	29.63	6.58	200.17
T-1757 F6	2662	968	5.09	36.36	4.50	14.46	30.10	6.54	195.92
T-1801 F6	2785	1025	4.76	36.82	4.54	14.18	29.31	7.81	194.79
Stoneville 474	2742	1174	5.03	42.89	4.98	14.15	28.94	7.63	187.13
Sure-Grow 747	2643	1114	5.32	42.26	4.96	14.22	29.19	8.58	179.92
LSD (0.05)	257	98	0.23	0.68	0.15	0.27	0.42	0.57	7.63

¹Traits: YLD = seed cotton yield; LYLD = lint yield; BW = boll weight; LP = lint percentage; MIC = micronaire; SL50 and SL2.5 = fiber span length 50% and 2.5%; E1 = fiber elongation; and T1 = fiber strength.

Table 9. Genotype means for yield, yield components, and fiber traits for Experiment 4 averaged over 2001 and 2002.¹

Genotype	YLD	LYLD	BW	LP	MIC	SL50	SL2.5	E1	T1
	<i>lb/A</i>	<i>lb/A</i>	<i>g</i>	<i>%</i>		<i>mm</i>	<i>mm</i>	<i>%</i>	<i>kNm/kg</i>
[ST474xT-1975F4]F2	2952	1124	4.94	38.10	5.16	14.15	28.70	6.50	203.21
[SG747xT-1975F4]F2	2719	1048	5.01	38.55	5.24	14.11	28.41	7.21	206.08
[ST474xT-2283F4]F2	2626	9826	4.91	37.44	4.91	13.89	28.43	7.27	198.42
[SG747xT-2283F4]F2	2762	1025	4.79	37.08	4.67	13.95	28.46	7.98	188.75
[ST474xT-2299F4]F2	2905	1123	5.18	38.71	4.78	14.26	29.63	7.15	198.50
[SG747xT-2299F4]F2	2774	1011	4.92	36.44	4.63	14.15	29.91	7.68	192.14
[ST474xT-6 F4]F2	2587	1013	5.11	39.24	5.28	13.54	27.20	6.79	193.92
[SG747xT-6 F4]F2	2663	1027	5.22	38.54	5.02	14.02	28.54	8.06	183.79
[ST474xT-46 F4]F2	2277	902	5.80	39.62	4.76	13.82	28.62	6.58	187.63
[SG747xT-46 F4]F2	2578	1032	6.24	40.02	4.92	13.84	28.53	7.38	182.38
[ST474xT-503F4]F2	2900	1121	5.66	38.68	4.60	14.17	29.51	7.13	195.17
[SG747xT-503F4]F2	2812	1155	5.59	41.08	4.85	14.20	29.59	7.85	180.67
T-1975 F6	2763	1049	4.90	38.04	4.89	14.18	28.89	7.31	194.83
T-2283 F6	2410	857	4.93	35.62	4.59	14.15	29.23	6.85	202.63
T-2299 F6	2564	901	5.07	35.20	4.45	14.18	29.72	7.65	199.75
T-6 F6	2315	866	5.26	37.40	4.79	14.02	28.59	6.92	205.17
T-46 F6	2598	980	6.15	37.74	4.86	14.14	29.08	6.77	199.33
T-503 F6	2918	1109	5.35	38.02	4.68	14.04	29.08	7.38	186.46
Stoneville 474	2614	1128	5.08	43.17	5.10	14.11	28.87	7.29	189.92
Sure-Grow 747	2315	983	5.31	42.68	4.91	14.14	28.94	8.85	181.29
LSD (0.05)	285	110	0.21	0.61	0.19	0.27	0.42	0.47	6.45

¹Traits: YLD = seed cotton yield; LYLD = lint yield; BW = boll weight; LP = lint percentage; MIC = micronaire; SL50 and SL2.5 = fiber span length 50% and 2.5%; E1 = fiber elongation; and T1 = fiber strength.

Table 10. Genotype means for yield, yield components, and fiber traits for Experiment 5 averaged over 2001 and 2002.¹

Genotype	YLD	LYLD	BW	LP	MIC	SL50	SL2.5	E1	T1
	<i>lb/A</i>	<i>lb/A</i>	<i>g</i>	<i>%</i>		<i>mm</i>	<i>mm</i>	<i>%</i>	<i>kNm/kg</i>
[ST474xT-1092F4]F2	2662	1067	5.30	40.17	4.83	14.11	29.22	8.25	190.88
[SG747xT-1092F4]F2	2658	1066	5.51	40.09	4.97	14.22	29.25	8.65	190.96
[ST474xT-1094F4]F2	2187	816	5.27	37.32	4.73	14.24	28.72	7.04	200.67
[SG747xT-1094F4]F2	2359	883	5.31	37.43	4.74	13.83	28.25	8.48	190.08
[ST474xT-29 F4]F2	2557	918	5.17	35.89	5.09	14.26	29.19	7.56	199.50
[SG747xT-29 F4]F2	2937	1080	5.31	36.77	4.96	14.12	29.51	8.21	195.46
[ST474xT-879F4]F2	2240	864	5.02	38.56	4.64	13.95	28.53	7.19	188.00
[SG747xT-879F4]F2	2480	935	4.92	37.71	4.94	14.11	29.15	7.46	194.75
[ST474xT-901F4]F2	2633	1073	5.34	40.77	4.92	14.22	29.19	7.90	188.00
[SG747xT-901F4]F2	2796	1119	5.43	39.94	4.90	14.18	29.55	9.08	189.08
[ST474xT-18 F4]F2	2730	1080	5.27	39.55	5.03	14.09	28.56	7.48	195.29
[SG747xT-18 F4]F2	2508	963	5.31	38.35	4.73	14.36	29.46	7.71	201.33
T-1092 F6	2652	961	5.22	36.23	4.86	14.14	29.15	8.29	195.25
T-1094 F6	2499	859	5.34	34.30	4.70	14.08	28.65	7.83	192.88
T-29 F6	2728	962	5.25	35.34	4.88	14.14	29.13	7.69	195.17
T-879 F6	2255	759	4.48	33.64	4.59	14.07	29.13	7.54	197.50
T-901F6	2833	1096	5.46	38.77	4.95	14.27	29.59	8.04	192.00
T-18 F6	3214	1216	5.40	37.85	4.86	14.29	29.04	7.33	204.25
Stoneville 474	2689	1132	5.27	42.08	5.02	14.18	28.91	8.06	186.54
Sure-Grow 747	2405	1016	5.23	42.31	4.94	14.11	28.91	8.69	182.75
LSD (0.05)	325	126	0.21	0.61	0.19	0.28	0.39	0.68	8.57

¹Traits: YLD = seed cotton yield; LYLD = lint yield; BW = boll weight; LP = lint percentage; MIC = micronaire; SL50 and SL2.5 = fiber span length 50% and 2.5%; E1 = fiber elongation; and T1 = fiber strength.

Table 11. Genotype means for yield, yield components, and fiber traits for Experiment 6 averaged over 2001 and 2002.¹

Genotype	YLD	LYLD	BW	LP	MIC	SL50	SL2.5	E1	T1
	<i>lb/A</i>	<i>lb/A</i>	<i>g</i>	<i>%</i>		<i>mm</i>	<i>mm</i>	<i>%</i>	<i>kNm/kg</i>
[ST474xT-621F4]F2	2696	1070	4.85	39.74	4.76	14.26	29.21	7.65	195.25
[SG747xT-621F4]F2	2747	1077	5.19	39.19	4.65	14.06	29.44	7.90	185.83
[ST474xT-743F4]F2	2434	879	4.83	36.05	4.83	14.32	28.96	7.50	205.54
[SG747xT-743F4]F2	2599	963	5.14	37.02	5.07	14.47	29.26	7.48	200.58
[ST474xT-1135F4]F2	2534	925	4.99	36.50	4.68	14.59	30.33	6.83	217.21
[SG747xT-1135F4]F2	2726	1002	4.84	36.74	4.71	14.33	29.89	7.71	197.46
[ST474xT-1334F4]F2	2894	1128	4.68	39.03	4.85	14.14	28.89	7.98	190.25
[SG747xT-1334F4]F2	2194	846	4.38	38.45	4.87	14.08	28.17	8.08	185.46
[ST474xT-1336F4]F2	2361	908	4.19	38.40	4.89	14.16	28.60	7.23	204.58
[SG747xT-1336F4]F2	2157	778	4.17	35.97	4.40	14.29	29.57	8.26	204.88
[ST474xT-1410F4]F2	2548	1020	4.84	40.02	4.98	14.02	28.76	7.46	192.63
[SG747xT-1410F4]F2	2819	1058	5.05	37.59	4.92	14.13	29.17	8.81	189.46
T-621 F6	2821	1057	5.02	37.51	4.64	14.09	28.87	7.10	200.88
T-743 F6	2537	888	5.12	35.06	4.88	14.14	28.78	7.29	202.75
T-1135 F6	2753	969	5.02	35.26	4.73	14.29	29.85	7.08	206.75
T-1334 F6	2749	972	4.64	35.38	4.82	13.91	28.74	7.52	191.33
T-1336 F6	2596	937	4.45	36.10	4.80	14.24	29.17	7.31	194.96
T-1410 F6	2994	1111	4.94	37.11	4.97	14.06	28.79	7.60	201.29
Stoneville 474	2453	1053	4.99	43.01	4.94	14.06	28.66	7.19	185.08
Sure-Grow 747	2292	976	5.24	42.69	4.97	14.12	28.96	8.58	178.46
LSD (0.05)	302	115	0.21	0.59	0.20	0.29	0.46	0.64	7.60

¹Traits: YLD = seed cotton yield; LYLD = lint yield; BW = boll weight; LP = lint percentage; MIC = micronaire; SL50 and SL2.5 = fiber span length 50% and 2.5%; E1 = fiber elongation; and T1 = fiber strength.

Table 12. Genotype means for yield, yield components, and fiber traits for Experiment 7 averaged over 2001 and 2002.¹

Genotype	YLD	LYLD	BW	LP	MIC	SL50	SL2.5	E1	T1
	<i>lb/A</i>	<i>lb/A</i>	<i>g</i>	<i>%</i>		<i>mm</i>	<i>mm</i>	<i>%</i>	<i>kNm/kg</i>
[ST474xT-1413F4]F2	2887	1123	5.20	38.87	4.93	14.16	29.51	7.35	192.58
[SG747xT-1413F4]F2	3132	1166	4.98	37.18	4.97	14.11	28.90	8.29	179.42
[ST474xT-1419F4]F2	2328	863	4.65	37.01	4.79	13.99	28.62	7.33	198.71
[SG747xT-1419F4]F2	1870	673	4.56	36.00	4.83	14.33	29.25	9.63	193.29
[ST474xT-1463F4]F2	2829	1064	4.97	37.56	4.60	14.29	29.39	7.54	197.54
[SG747xT-1463F4]F2	2824	10794	5.05	38.09	4.64	14.12	28.83	8.06	183.13
[ST474xT-1522F4]F2	2905	1178	5.22	40.51	5.04	14.07	28.87	7.40	183.21
[SG747xT-1522F4]F2	2805	1155	5.19	41.06	5.03	14.10	28.82	8.13	182.96
[ST474xT-34 F4]F2	2820	1086	5.17	38.50	4.93	13.94	28.48	7.75	185.92
[SG747xT-34 F4]F2	2919	1097	5.17	37.55	5.12	14.10	28.51	8.58	180.21
[ST474xT-179F4]F2	3153	1181	5.17	37.39	4.93	14.02	28.44	7.71	191.63
[SG747xT-179F4]F2	2884	1051	5.59	36.40	4.64	14.17	29.21	7.65	192.08
T-1413 F6	2857	1054	5.28	36.84	4.64	14.25	29.27	7.85	190.13
T-1419 F6	2716	991	4.87	36.43	4.94	14.28	29.25	7.79	188.04
T-1463 F6	2852	1019	5.03	35.62	4.78	14.20	29.30	7.50	197.33
T-1522 F6	2903	1136	5.54	39.11	4.90	14.25	29.02	7.71	188.58
T-34 F6	2777	1005	5.01	36.05	4.84	14.07	28.74	7.71	186.79
T-179 F6	3189	1169	5.14	36.57	4.87	13.84	28.39	7.58	193.50
Stoneville 474	2850	1229	5.21	43.13	5.02	13.95	28.51	7.92	187.08
Sure-Grow 747	2485	1060	5.36	42.57	4.93	14.12	28.96	8.79	176.46
LSD (0.05)	313	121	0.21	0.58	0.20	0.29	0.41	0.55	6.70

¹Traits: YLD = seed cotton yield; LYLD = lint yield; BW = boll weight; LP = lint percentage; MIC = micronaire; SL50 and SL2.5 = fiber span length 50% and 2.5%; E1 = fiber elongation; and T1 = fiber strength.

Table 13. Genotype means for yield, yield components, and fiber traits for Experiment 8 averaged over 2001 and 2002.¹

Genotype	YLD	LYLD	BW	LP	MIC	SL50	SL2.5	E1	T1
	<i>lb/A</i>	<i>lb/A</i>	<i>g</i>	<i>%</i>		<i>mm</i>	<i>mm</i>	<i>%</i>	<i>kNm/kg</i>
[ST474xT-466F4]F2	2607	983	5.15	37.71	4.85	14.26	29.17	7.13	191.75
[SG747xT-466F4]F2	2953	1072	5.25	36.25	4.83	14.25	28.91	7.85	190.00
[ST474xT-230F4]F2	2156	805	4.93	37.33	4.66	14.17	29.08	8.23	189.92
[SG747xT-230F4]F2	2660	1018	5.26	38.30	5.01	14.14	28.74	8.48	182.79
[ST474xT-1105F]F2	2802	1029	5.31	36.70	4.64	14.22	29.08	7.10	193.63
[SG747xT-1105F]F2	2708	1056	5.39	38.92	4.89	14.09	28.48	8.56	189.42
[ST474xT-879F4]F2	2342	869	4.57	37.13	4.90	14.20	28.49	6.98	200.38
[SG747xT-879F4]F2	2667	1001	5.17	37.51	4.83	14.20	28.62	7.88	196.63
[ST474xT-126F4]F2	2716	1039	5.52	38.21	5.26	14.09	28.24	7.23	190.46
[SG747xT-126F4]F2	2852	1101	5.85	38.55	5.48	13.91	27.50	7.33	183.04
[ST474xT-147F4]F2	2832	1095	5.04	38.65	4.71	14.22	28.85	7.46	195.08
[SG747xT-147F4]F2	3136	1153	4.86	36.72	4.93	14.27	28.79	7.31	188.71
T-466 F6	2480	881	4.93	35.38	4.71	14.27	29.00	7.38	198.17
T-230 F6	2543	940	5.12	36.91	4.87	14.14	28.96	7.56	198.54
T-1105 F6	2682	972	5.35	36.09	4.69	14.03	28.97	7.52	191.21
T-879 F6	2400	857	5.06	35.67	4.68	14.21	29.13	7.31	195.54
T-126 F6	2559	960	5.38	37.46	5.29	13.96	27.73	6.65	189.63
T-147 F6	2868	1031	4.99	35.92	4.58	14.12	29.01	6.79	191.83
Stoneville 474	2578	1084	5.16	41.98	5.00	14.08	28.67	7.33	182.83
Sure-Grow 747	2321	989	5.40	42.63	4.96	14.10	28.91	8.33	175.21
LSD (0.05)	284	107	0.18	0.76	0.19	0.29	0.41	0.66	9.08

¹Traits: YLD = seed cotton yield; LYLD = lint yield; BW = boll weight; LP = lint percentage; MIC = micronaire; SL50 and SL2.5 = fiber span length 50% and 2.5%; E1 = fiber elongation; and T1 = fiber strength.

Table 14. Genotype means for yield, yield components, and fiber traits for Experiment 9 averaged over 2001 and 2002.¹

Genotype	YLD	LYLD	BW	LP	MIC	SL50	SL2.5	E1	T1
	<i>lb/A</i>	<i>lb/A</i>	<i>g</i>	<i>%</i>		<i>mm</i>	<i>mm</i>	<i>%</i>	<i>kNm/kg</i>
[ST474xT-255F4]F2	2721	1028	4.95	37.78	5.00	13.85	28.19	7.58	195.63
[SG747xT-255F4]F2	2795	1029	5.06	36.73	4.93	14.16	28.89	7.96	192.17
[ST474xT-260F4]F2	3003	1147	5.13	38.27	4.95	14.06	28.72	7.52	194.13
[SG747xT-260F4]F2	3025	1141	5.09	37.60	4.80	14.04	28.16	7.58	195.17
[ST474xT-278F4]F2	2940	1103	4.77	37.51	4.83	14.00	28.21	7.48	200.17
[SG747xT-278F4]F2	2634	1000	5.16	37.95	4.76	13.91	28.77	7.67	184.08
[ST474xT-279F4]F2	2557	946	4.91	37.01	4.69	14.22	28.86	7.29	198.71
[SG747xT-279F4]F2	2860	1067	5.17	37.26	4.76	13.90	28.74	7.73	201.29
[ST474xT-467F4]F2	2758	1049	5.40	38.06	5.01	14.24	28.96	6.71	209.79
[SG747xT-467F4]F2	2925	1113	5.46	38.02	4.89	14.30	28.87	7.73	193.83
[ST474xT-1152F]F2	2690	1014	5.06	37.69	5.01	14.10	29.05	7.25	198.83
[SG747xT-1152F]F2	2834	1074	4.90	37.85	5.00	14.01	28.81	7.83	188.79
T-255 F6	2567	915	4.91	35.60	4.78	14.26	28.83	7.81	200.92
T-260 F6	2616	930	4.84	35.45	4.68	13.95	28.66	7.81	198.42
T-278 F6	2738	1009	5.21	36.67	4.71	14.26	29.33	7.96	196.46
T-279 F6	2693	974	4.91	36.06	4.64	14.25	29.12	6.77	207.63
T-467 F6	2794	967	5.38	34.46	4.91	14.36	29.30	7.02	204.00
T-1152 F6	2653	945	4.86	35.54	4.82	14.35	29.08	7.40	202.96
Stoneville 474	2668	1130	5.12	42.34	4.98	14.02	28.72	7.58	187.96
Sure-Grow 747	2376	1004	5.37	42.16	4.97	14.24	29.00	8.35	179.46
LSD (0.05)	293	111	0.20	0.57	0.17	0.29	0.37	0.53	9.11

¹Traits: YLD = seed cotton yield; LYLD = lint yield; BW = boll weight; LP = lint percentage; MIC = micronaire; SL50 and SL2.5 = fiber span length 50% and 2.5%; E1 = fiber elongation; and T1 = fiber strength.

Table 15. Genotype means for yield, yield components, and fiber traits for Experiment 10 averaged over 2001 and 2002.¹

Genotype	YLD	LYLD	BW	LP	MIC	SL50	SL2.5	E1	T1
	<i>lb/A</i>	<i>lb/A</i>	<i>g</i>	<i>%</i>		<i>mm</i>	<i>mm</i>	<i>%</i>	<i>kNm/kg</i>
[ST474xT-1285F4]F2	2770	1115	5.42	40.12	4.98	14.28	29.28	7.23	193.88
[SG747xT-1285F4]F2	2884	1195	5.62	41.38	4.98	14.10	29.04	7.85	187.92
[ST474xT-1964F4]F2	2634	998	4.87	37.84	4.97	14.04	28.94	7.29	191.38
[SG747xT-1964F4]F2	2850	1088	4.82	38.10	4.97	14.04	28.74	7.31	190.21
[ST474xT-202F4]F2	2370	879	5.11	37.10	5.01	14.20	28.41	7.48	190.54
[SG747xT-202F4]F2	2597	1009	5.28	38.83	4.77	14.31	29.42	7.88	189.71
[ST474xT-249F4]F2	2756	1083	5.28	39.26	5.04	13.91	28.44	7.00	187.17
[SG747xT-249F4]F2	2593	1017	5.14	39.16	4.83	14.14	28.74	7.67	189.17
[ST474xT-490F4]F2	2995	1175	5.38	39.12	5.12	14.03	28.49	7.31	189.38
[SG747xT-490F4]F2	3043	1168	4.91	38.40	5.28	14.12	28.35	7.27	197.08
[ST474xT-493F4]F2	2487	973	4.86	39.02	5.04	14.08	28.66	7.19	195.46
[SG747xT-493F4]F2	2140	837	4.54	38.96	5.27	13.97	28.39	8.21	184.71
T-1285 F6	2740	1064	5.73	38.78	4.93	14.37	29.59	7.15	197.00
T-1964 F6	2624	979	4.95	37.21	5.01	14.42	29.25	6.90	193.67
T-202 F6	2696	1006	5.46	37.21	4.95	14.01	28.64	7.31	192.58
T-249 F6	2521	909	5.06	35.90	4.91	14.47	28.95	7.33	198.17
T-490 F6	2505	930	4.61	37.04	4.89	14.12	28.81	6.88	194.46
T-493 F6	2782	1026	4.83	36.82	4.97	14.10	28.81	7.35	201.42
Stoneville 474	2624	1117	5.29	42.56	5.08	14.16	28.65	7.00	193.17
Sure-Grow 747	2586	1103	5.39	42.59	5.03	14.30	28.96	8.13	177.67
LSD (0.05)	351	137	0.20	0.60	0.19	0.31	0.47	0.65	6.98

¹Traits: YLD = seed cotton yield; LYLD = lint yield; BW = boll weight; LP = lint percentage; MIC = micronaire; SL50 and SL2.5 = fiber span length 50% and 2.5%; E1 = fiber elongation; and T1 = fiber strength.

Table 16. Genotype means for yield, yield components, and fiber traits for Experiment 11 averaged over 2001 and 2002.¹

Genotype	YLD	LYLD	BW	LP	MIC	SL50	SL2.5	E1	T1
	<i>lb/A</i>	<i>lb/A</i>	<i>g</i>	<i>%</i>		<i>mm</i>	<i>mm</i>	<i>%</i>	<i>kNm/kg</i>
[ST474xT-28 F4]F2	2497	888	5.62	35.45	5.09	14.20	28.53	6.81	209.54
[SG747xT-28 F4]F2	2655	979	5.42	36.80	4.92	14.25	28.51	7.69	191.79
[ST474xT-114F4]F2	2469	924	5.50	37.32	4.75	14.45	29.51	7.42	204.83
[SG747xT-114F4]F2	2464	908	4.94	36.83	4.77	14.08	28.96	8.19	196.42
[ST474xT-473F4]F2	2559	961	5.13	37.39	5.04	14.08	28.48	8.00	195.54
[SG747xT-473F4]F2	2695	963	5.10	35.67	4.92	14.22	29.00	8.02	193.79
[ST474xT-491F4]F2	2513	942	5.12	37.43	4.90	14.25	29.04	7.75	198.08
[SG747xT-491F4]F2	2575	959	5.04	37.12	5.04	14.08	28.76	8.17	191.21
[ST474xT-1103F4]F2	2717	965	5.22	35.46	4.88	14.35	28.98	7.52	194.29
[SG747xT-1103F4]F2	2635	1006	5.60	38.09	4.76	14.07	28.99	7.92	186.08
[ST474xT-1610F4]F2	2549	993	5.04	38.92	4.83	14.04	29.04	7.58	185.00
[SG747xT-1610F4]F2	2640	1016	5.38	38.39	4.72	14.20	29.00	7.54	183.96
T-28 F6	2557	868	5.37	33.78	4.89	14.39	29.00	7.33	195.58
T-114 F6	2763	999	5.18	36.06	4.83	14.01	29.04	7.48	193.96
T-473 F6	2372	846	4.87	35.61	4.87	14.28	29.04	7.45	194.83
T-491 F6	2312	829	5.08	35.76	4.71	14.83	27.85	7.99	184.28
T-1103 F6	2599	898	5.39	34.49	4.88	14.13	28.69	7.25	191.25
T-1610 F6	2715	991	5.58	36.48	4.88	14.10	29.10	7.19	188.79
Stoneville 474	2727	1166	5.31	42.70	5.06	14.12	28.64	7.48	183.63
Sure-Grow 747	2365	997	5.53	42.13	5.04	14.21	29.08	8.85	176.54
LSD (0.05)	302	115	0.22	0.62	0.16	0.29	0.40	0.55	9.02

¹Traits: YLD = seed cotton yield; LYLD = lint yield; BW = boll weight; LP = lint percentage; MIC = micronaire; SL50 and SL2.5 = fiber span length 50% and 2.5%; E1 = fiber elongation; and T1 = fiber strength.

Table 17. Genotype means for yield, yield components, and fiber traits for Experiment 12 averaged over 2001 and 2002.¹

Genotype	YLD	LYLD	BW	LP	MIC	SL50	SL2.5	E1	T1
	<i>lb/A</i>	<i>lb/A</i>	<i>g</i>	<i>%</i>		<i>mm</i>	<i>mm</i>	<i>%</i>	<i>kNm/kg</i>
[ST474xT-406F4]F2	2788	1047	5.01	37.49	5.03	14.16	28.28	8.02	200.92
[SG747xT-406F4]F2	2838	1090	5.11	38.40	4.78	14.44	29.08	8.71	182.67
[ST474xT-1309F4]F2	3216	1237	4.94	38.45	4.74	14.01	29.15	7.52	196.00
[SG747xT-1309F4]F2	2938	1080	4.52	36.63	4.60	14.25	29.21	8.17	191.33
[ST474xT-1332F4]F2	2473	927	4.48	37.42	5.02	14.21	29.34	7.02	202.13
[SG747xT-1332F4]F2	2491	934	4.16	37.40	4.65	14.15	29.36	7.38	185.80
[ST474xT-1870F4]F2	2770	1038	4.63	37.44	4.86	14.42	28.83	7.42	208.00
[SG747xT-1870F4]F2	2569	943	4.64	36.68	4.72	14.22	29.68	7.75	192.08
[ST474xT-8F4]F2	2531	941	5.64	37.14	5.12	14.10	28.15	7.35	196.17
[SG747xT-8F4]F2	2918	1059	5.27	36.29	5.56	14.03	28.15	7.08	201.13
[ST474xT-115F4]F2	2499	936	4.85	37.47	4.71	14.24	29.27	7.63	197.38
[SG747xT-115F4]F2	2628	1011	4.92	38.48	4.84	14.30	29.08	7.92	193.67
T-406 F6	2624	919	5.12	35.02	4.71	14.28	28.94	8.21	194.75
T-1309 F6	2732	1002	4.74	36.31	4.69	14.36	29.55	8.20	188.08
T-1332 F6	2713	979	4.59	36.03	4.80	14.18	29.19	7.77	198.83
T-1870 F6	3051	1094	5.01	35.80	4.78	14.32	29.27	7.21	201.08
T-8 F6	2838	1045	5.52	36.78	4.84	14.32	28.87	7.44	196.42
T-115 F6	2521	932	4.95	36.90	4.73	14.48	29.21	7.56	199.79
Stoneville 474	2793	1206	5.27	43.14	5.08	14.20	28.91	7.56	189.33
Sure-Grow 747	2675	1131	5.28	42.20	5.01	14.36	29.30	8.75	179.08
LSD (0.05)	338	128	0.21	0.55	0.17	0.26	0.40	0.47	6.97

¹Traits: YLD = seed cotton yield; LYLD = lint yield; BW = boll weight; LP = lint percentage; MIC = micronaire; SL50 and SL2.5 = fiber span length 50% and 2.5%; E1 = fiber elongation; and T1 = fiber strength.

Table 18. Genotype means for yield, yield components, and fiber traits for Experiment 13 averaged over 2001 and 2002.¹

Genotype	YLD	LYLD	BW	LP	MIC	SL50	SL2.5	E1	T1
	<i>lb/A</i>	<i>lb/A</i>	<i>g</i>	<i>%</i>		<i>mm</i>	<i>mm</i>	<i>%</i>	<i>kNm/kg</i>
[ST474xT-1613F4]F2	2854	1131	5.74	39.59	4.89	14.50	29.76	6.92	199.08
[SG747xT-1613F4]F2	2872	1178	5.99	40.92	4.88	14.35	29.78	7.17	189.50
[ST474xT-19 F4]F2	2875	1054	5.45	36.61	5.02	14.44	29.21	6.77	204.71
[SG747xT-19 F4]F2	2806	1015	5.53	36.08	5.11	14.49	29.55	7.54	204.58
[ST474xT-1976F]F2	2519	943	4.88	37.38	4.58	14.15	28.62	7.29	197.50
[SG747xT-1976F]F2	2572	1039	4.81	40.41	5.22	14.01	28.05	7.88	185.92
[ST474xT-485F4]F2	2627	1018	5.10	38.56	4.87	14.21	28.28	7.06	194.17
[SG747xT-485F4]F2	2708	1030	5.03	38.02	5.08	14.21	28.68	7.69	182.63
[ST474xT-380F4]F2	2716	943	4.66	34.71	5.04	14.31	28.34	7.58	206.50
[SG747xT-380F4]F2	2646	977	4.98	36.89	4.79	14.22	28.43	7.65	192.63
[ST474xT-1612F4]F2	2527	969	4.83	38.33	4.68	14.42	29.93	7.08	189.25
[SG747xT-1612F4]F2	2728	1032	4.94	37.85	4.89	14.29	29.38	8.06	198.08
T-1613 F6	2816	1082	5.77	38.40	4.81	14.64	30.06	7.15	200.67
T-19 F6	2729	928	5.17	33.93	4.76	14.36	29.13	6.96	196.92
T-1976 F6	2647	965	4.85	36.43	4.77	14.53	29.38	7.23	198.33
T-485 F6	2293	840	5.21	36.56	4.76	14.27	28.96	7.48	197.88
T-380 F6	2551	928	4.89	36.37	4.92	14.35	28.98	7.13	200.08
T-1612 F6	2821	1023	5.16	36.28	4.71	14.39	29.76	7.23	194.42
Stoneville 474	2887	1236	5.30	42.83	5.07	14.35	28.83	7.19	189.42
Sure-Grow 747	2432	1014	5.67	41.71	5.06	14.31	29.30	7.83	179.88
LSD (0.05)	338	128	0.22	0.67	0.18	0.28	0.50	0.61	7.63

¹Traits: YLD = seed cotton yield; LYLD = lint yield; BW = boll weight; LP = lint percentage; MIC = micronaire; SL50 and SL2.5 = fiber span length 50% and 2.5%; E1 = fiber elongation; and T1 = fiber strength.

Table 19. Genotype means for yield, yield components, and fiber traits for Experiment 14 averaged over 2001 and 2002.¹

Genotype	YLD	LYLD	BW	LP	MIC	SL50	SL2.5	E1	T1
	<i>lb/A</i>	<i>lb/A</i>	<i>g</i>	<i>%</i>		<i>mm</i>	<i>mm</i>	<i>%</i>	<i>kNm/kg</i>
[ST474xT-1618F4]F2	2446	938	5.44	38.37	5.07	14.47	29.46	6.42	202.42
[SG747xT-1618F4]F2	2478	897	5.27	36.16	4.67	14.26	29.63	6.96	189.88
[ST474xT-9 F4]F2	2456	950	5.03	38.67	4.73	14.29	29.17	7.44	189.42
[SG747xT-9 F4]F2	2754	1125	5.30	40.83	4.93	14.14	28.89	7.46	184.83
[ST474xT-51 F4]F2	2237	814	4.80	36.38	4.90	14.14	28.70	6.46	205.29
[SG747xT-51 F4]F2	2532	935	4.86	36.93	4.90	14.14	28.15	7.29	188.75
[ST474xT-303F4]F2	2563	914	5.43	35.68	4.83	14.39	29.08	7.27	199.33
[SG747xT-303F4]F2	2554	928	5.22	36.30	4.77	14.42	29.38	7.52	200.50
[ST474xT-12 F4]F2	2720	1042	5.36	38.26	4.79	14.33	29.25	7.19	192.33
[SG747xT-12 F4]F2	2774	1086	5.43	39.15	5.00	14.29	29.36	7.42	188.88
[ST474xT-463F4]F2	2275	831	4.94	36.53	4.90	14.14	29.17	6.65	200.88
[SG747xT-463F4]F2	2292	859	5.60	37.46	4.83	14.36	29.34	7.08	188.38
T-1618 F6	2641	963	5.28	36.48	4.81	14.28	29.42	6.56	203.79
T-9 F6	2684	989	5.22	36.81	4.82	14.36	29.08	7.40	199.83
T-51 F6	2340	850	4.78	36.27	4.62	14.25	28.65	7.25	196.75
T-303 F6	2574	889	5.29	34.44	4.66	14.45	29.51	7.06	202.17
T-12 F6	2741	1019	5.47	37.11	4.83	14.39	29.63	7.19	193.96
T-463 F6	2190	793	5.51	36.22	4.76	14.32	29.56	6.85	195.75
Stoneville 474	2777	1196	5.26	43.09	5.13	14.33	28.96	7.21	189.75
Sure-Grow 747	2093	890	5.59	42.52	5.04	14.47	29.30	8.17	179.83
LSD (0.05)	373	144	0.20	0.65	0.18	0.29	0.47	0.61	7.90

¹Traits: YLD = seed cotton yield; LYLD = lint yield; BW = boll weight; LP = lint percentage; MIC = micronaire; SL50 and SL2.5 = fiber span length 50% and 2.5%; E1 = fiber elongation; and T1 = fiber strength.

Table 20. Genotype means for yield, yield components, and fiber traits for Experiment 15 averaged over 2001 and 2002.¹

Genotype	YLD	LYLD	BW	LP	MIC	SL50	SL2.5	E1	T1
	<i>lb/A</i>	<i>lb/A</i>	<i>g</i>	<i>%</i>		<i>mm</i>	<i>mm</i>	<i>%</i>	<i>kNm/kg</i>
[ST474xT-11 F4]F2	2779	1016	5.01	36.51	4.77	14.36	28.64	7.69	201.13
[SG747xT-11 F4]F2	2912	1066	4.86	36.60	4.85	14.24	28.62	8.69	186.50
[ST474xT-280F4]F2	2930	1113	5.25	37.96	4.88	14.19	28.77	7.00	195.75
[SG747xT-280F4]F2	2526	982	4.96	38.83	4.87	14.22	28.89	8.02	187.83
[ST474xT-282F4]F2	2796	1083	4.60	38.63	4.81	14.17	28.58	7.60	203.38
[SG747xT-282F4]F2	3228	1179	5.00	36.45	4.95	14.22	28.72	7.73	201.13
[ST474xT-286F4]F2	2672	998	5.07	37.33	4.43	14.39	29.25	7.58	199.04
[SG747xT-286F4]F2	2985	1121	4.94	37.28	4.63	14.38	29.19	8.13	187.83
[ST474xT-298F4]F2	2637	928	5.00	35.14	4.89	14.15	28.79	6.83	198.63
[SG747xT-298F4]F2	2673	985	5.18	36.76	4.82	14.30	29.00	7.88	189.83
[ST474xT-1046F4]F2	2913	1055	4.69	36.03	4.74	14.02	28.19	7.25	206.08
[SG747xT-1046F4]F2	2883	1086	5.00	37.64	4.66	14.25	28.36	7.71	192.50
T-11 F6	3016	1072	5.28	35.33	4.71	14.26	28.64	7.96	194.42
T-280 F6	2465	921	5.20	37.29	4.80	14.38	29.13	7.50	195.88
T-282 F6	2718	972	4.73	35.65	4.69	14.25	29.33	8.15	196.88
T-286 F6	2519	906	4.94	35.86	4.65	14.38	29.34	7.98	199.08
T-298 F6	2648	952	5.12	35.87	4.93	14.18	28.53	7.42	194.29
T-1046 F6	2714	986	5.43	36.27	4.88	14.36	29.08	7.69	192.71
Stoneville 474	3088	1310	5.53	42.38	5.15	14.27	28.95	8.08	187.92
Sure-Grow 747	2639	1112	5.68	42.13	5.07	14.42	28.98	8.52	175.58
LSD (0.05)	380	144	0.20	0.58	0.19	0.29	0.46	0.61	7.91

¹Traits: YLD = seed cotton yield; LYLD = lint yield; BW = boll weight; LP = lint percentage; MIC = micronaire; SL50 and SL2.5 = fiber span length 50% and 2.5%; E1 = fiber elongation; and T1 = fiber strength.

Table 21. Genotype means for yield, yield components, and fiber traits for Experiment 16 averaged over 2001 and 2002.¹

Genotype	YLD	LYLD	BW	LP	MIC	SL50	SL2.5	E1	T1
	<i>lb/A</i>	<i>lb/A</i>	<i>g</i>	<i>%</i>		<i>mm</i>	<i>mm</i>	<i>%</i>	<i>kNm/kg</i>
[ST474xT-1236F4]F2	2986	1086	5.57	36.37	4.75	14.14	29.63	7.40	193.79
[SG747xT-1236F4]F2	3325	1203	6.01	36.13	4.49	14.30	29.80	7.50	193.58
[ST474xT-1972F4]F2	3011	1115	5.08	36.88	4.88	14.17	28.71	7.46	197.58
[SG747xT-1972F4]F2	3473	1258	5.11	36.15	4.98	14.31	29.30	7.81	196.25
[ST474xT-1973F4]F2	3163	1141	5.32	36.06	5.01	14.31	29.00	7.44	201.92
[SG747xT-1973F4]F2	3024	1175	4.98	38.83	5.08	14.10	28.70	8.71	197.54
[ST474xT-1986F4]F2	2904	1040	5.16	35.79	4.97	14.33	29.63	7.31	197.50
[SG747xT-1986F4]F2	3159	1155	5.24	36.47	4.90	14.14	29.30	8.10	184.50
[ST474xT-1212F8]F2	3382	1278	5.75	37.74	5.00	14.34	28.96	7.21	195.63
[SG747xT-1212F8]F2	2865	1059	5.33	36.90	4.90	14.15	28.89	8.17	189.88
[ST474xT-1304F8]F2	2736	1003	6.12	36.55	4.80	14.15	29.23	7.21	194.79
[SG747xT-1304F8]F2	2763	1070	5.97	38.65	4.85	14.11	28.91	8.08	179.25
T-1236 F6	3193	1178	5.51	36.74	4.78	14.14	29.13	7.69	192.29
T-1972 F6	2727	994	5.31	36.38	4.78	14.17	29.04	7.58	198.63
T-1973 F6	3242	1192	5.45	36.74	5.00	14.17	28.51	7.73	199.25
T-1986 F6	3224	1192	5.46	36.98	4.89	14.30	29.13	7.44	199.04
T-1212 F10	3284	1177	5.82	35.69	4.88	14.13	28.72	7.73	194.71
T-1304 F10	3127	1147	5.90	36.71	4.85	14.13	29.08	7.27	194.63
Stoneville 474	3343	1403	5.51	41.88	5.02	13.98	28.74	7.65	189.46
Sure-Grow 747	2782	1162	5.81	41.79	5.15	14.28	29.34	8.71	177.25
LSD (0.05)	430	163	0.20	0.71	0.16	0.28	0.44	0.58	8.92

¹Traits: YLD = seed cotton yield; LYLD = lint yield; BW = boll weight; LP = lint percentage; MIC = micronaire; SL50 and SL2.5 = fiber span length 50% and 2.5%; E1 = fiber elongation; and T1 = fiber strength.

Table 22. Genotype means for yield, yield components, and fiber traits for Experiment 17 averaged over 2001 and 2002.¹

Genotype	YLD	LYLD	BW	LP	MIC	SL50	SL2.5	E1	T1
	<i>lb/A</i>	<i>lb/A</i>	<i>g</i>	<i>%</i>		<i>mm</i>	<i>mm</i>	<i>%</i>	<i>kNm/kg</i>
[ST474xT-1305F8]F2	3131	1190	5.76	38.00	5.10	14.61	28.83	7.40	196.50
[SG747xT-1305F8]F2	3011	1210	5.57	40.17	5.02	14.47	28.94	7.92	186.50
[ST474xT-1326F8]F2	3318	1294	6.10	39.01	4.92	14.54	29.49	7.73	193.54
[SG747xT-1326F8]F2	3352	1302	5.53	38.77	5.19	14.27	28.62	7.75	195.04
[ST474xT-2315F7]F2	3224	1270	5.21	39.42	5.08	14.33	28.95	7.29	187.46
[SG747xT-2315F7]F2	3281	1293	5.57	39.32	5.03	14.27	28.83	7.08	191.88
[ST474xT-2318F8]F2	3345	1302	5.97	38.91	5.13	14.35	29.06	7.19	207.63
[SG747xT-2318F8]F2	3282	1272	5.79	38.77	4.81	14.46	29.67	7.57	192.20
[ST474xT-2319F8]F2	3354	1301	5.81	38.79	5.08	14.57	29.34	7.46	200.63
[SG747xT-2319F8]F2	3196	1244	5.68	38.90	4.92	14.44	29.40	7.54	189.63
[ST474xT-2321F8]F2	3329	1340	5.78	40.24	4.84	14.42	29.36	6.96	190.42
[SG747xT-2321F8]F2	3591	1354	5.88	37.70	4.76	14.50	29.91	7.77	189.08
T-1305 F10	3426	1287	5.93	37.56	4.92	14.30	28.89	7.48	194.33
T-1326 F10	3050	1128	5.95	37.01	4.98	14.46	29.22	7.56	198.67
T-2315 F9	3109	1146	5.83	36.91	4.98	14.51	29.42	7.33	197.58
T-2318 F10	3251	1183	6.06	36.41	4.80	14.70	29.74	7.35	199.46
T-2319 F10	3263	1214	5.63	37.20	5.01	14.48	29.30	7.27	202.96
T-2321 F10	3287	1236	5.62	37.62	4.81	14.43	29.36	7.31	195.38
Stoneville 474	3238	1397	5.36	43.22	5.37	14.19	28.79	7.48	193.79
Sure-Grow 747	2840	1201	5.65	42.30	5.15	14.52	29.19	8.33	177.21
LSD (0.05)	427	166	0.23	0.62	0.17	0.33	0.44	0.44	7.52

¹Traits: YLD = seed cotton yield; LYLD = lint yield; BW = boll weight; LP = lint percentage; MIC = micronaire; SL50 and SL2.5 = fiber span length 50% and 2.5%; E1 = fiber elongation; and T1 = fiber strength.

Table 23. Genotype means for yield, yield components, and fiber traits for Experiment 18 averaged over 2001 and 2002.¹

Genotype	YLD	LYLD	BW	LP	MIC	SL50	SL2.5	E1	T1
	<i>lb/A</i>	<i>lb/A</i>	<i>g</i>	<i>%</i>		<i>mm</i>	<i>mm</i>	<i>%</i>	<i>kNm/kg</i>
[ST474xT-2322F8]F2	2812	1115	5.96	39.64	4.94	14.24	28.97	7.17	193.67
[SG747xT-2322F8]F2	2973	1158	6.03	38.91	4.98	14.33	29.34	8.23	188.04
[ST474xT-2355F8]F2	2883	1123	5.51	38.95	5.11	14.38	29.25	7.23	193.50
[SG747xT-2355F8]F2	2634	1038	5.83	39.36	4.98	14.38	29.63	7.73	189.04
[ST474xT-2356F7]F2	3013	1170	5.92	38.85	5.38	14.29	28.96	6.92	195.50
[SG747xT-2356F7]F2	3024	1151	5.97	38.04	5.14	14.30	29.42	7.75	187.79
[ST474xT-2358F8]F2	3089	1214	5.94	39.28	4.78	14.46	29.77	7.63	196.71
[SG747xT-2358F8]F2	2889	1122	5.77	38.84	5.01	14.44	29.80	7.81	197.33
[ST474xT-2360F8]F2	3071	1167	5.93	37.98	4.78	14.09	28.85	7.27	186.46
[SG747xT-2360F8]F2	3188	1235	5.91	38.69	5.13	14.22	28.95	7.33	190.17
[ST474xT-2361F8]F2	2983	1159	5.67	38.84	5.03	14.44	29.81	7.44	197.46
[SG747xT-2361F8]F2	3473	1371	6.41	39.48	5.14	14.56	29.85	8.27	184.58
T-2322 F10	2638	991	6.20	37.55	5.07	14.61	29.88	7.08	198.13
T-2355 F10	3320	1227	6.13	36.92	4.94	14.49	29.89	7.17	197.46
T-2356 F9	3340	1218	6.01	36.49	5.03	14.22	29.68	7.25	190.13
T-2358 F10	3453	1293	5.94	37.48	4.91	14.35	29.59	7.29	192.71
T-2360 F10	2891	1087	5.93	37.55	5.04	14.29	29.15	7.13	191.42
T-2361 F10	3061	1135	5.98	37.07	5.01	14.21	29.30	7.60	200.83
Stoneville 474	2970	1272	5.47	42.82	5.27	14.42	28.94	7.73	190.83
Sure-Grow 747	2761	1156	5.82	41.83	5.13	14.32	29.34	8.98	179.50
LSD (0.05)	420	164	0.22	0.81	0.17	0.29	0.51	0.60	7.27

¹Traits: YLD = seed cotton yield; LYLD = lint yield; BW = boll weight; LP = lint percentage; MIC = micronaire; SL50 and SL2.5 = fiber span length 50% and 2.5%; E1 = fiber elongation; and T1 = fiber strength.

Table 24. Genotype means for yield, yield components, and fiber traits for Experiment 19 averaged over 2001 and 2002.¹

Genotype	YLD	LYLD	BW	LP	MIC	SL50	SL2.5	E1	T1
	<i>lb/A</i>	<i>lb/A</i>	<i>g</i>	<i>%</i>		<i>mm</i>	<i>mm</i>	<i>%</i>	<i>kNm/kg</i>
[ST474xT-2364F8]F2	3454	1325	5.58	38.31	5.03	14.19	28.83	7.21	192.79
[SG747xT-2364F8]F2	3000	1125	5.66	37.37	4.90	14.25	29.63	8.15	192.33
[ST474xT-2368F7]F2	2764	1120	5.90	40.51	5.11	14.22	29.25	6.92	208.42
[SG747xT-2368F7]F2	2659	1027	5.55	38.57	5.06	14.27	28.96	7.96	195.79
[ST474xT-2371F8]F2	3561	1416	5.67	39.76	5.15	14.24	29.10	7.29	190.29
[SG747xT-2371F8]F2	3371	1303	5.86	38.61	4.78	14.37	29.80	8.06	189.13
[ST474xT-2373F7]F2	3366	1286	5.68	38.17	5.20	14.02	28.89	7.56	191.42
[SG747xT-2373F7]F2	3409	1384	6.39	40.45	5.09	14.38	29.30	8.13	187.54
[ST474xT-2374F7]F2	2764	1103	5.52	39.88	5.08	14.01	28.36	7.25	197.63
[SG747xT-2374F7]F2	3203	1257	5.77	39.20	5.18	14.28	28.78	8.54	187.67
[ST474xT-497 F7]F2	2917	1181	5.41	40.51	5.43	13.80	27.61	7.38	191.13
[SG747xT-497 F7]F2	3473	1314	5.81	37.78	5.06	14.16	28.77	7.77	192.46
T-2364 F10	3179	1195	5.68	37.56	4.88	14.16	28.94	7.15	193.79
T-2368 F9	3047	1152	5.98	37.80	4.91	14.45	29.44	7.00	201.38
T-2371 F10	2985	1099	6.02	36.75	4.95	14.19	29.07	7.21	196.50
T-2373 F9	3037	1130	6.21	37.17	4.80	14.10	29.24	7.54	193.92
T-2374 F9	2804	1058	5.76	37.62	5.11	14.11	28.91	7.19	199.75
T-497 F9	3371	1256	5.86	37.07	5.03	14.14	28.84	7.29	196.42
Stoneville 474	3273	1407	5.34	42.95	5.25	14.08	28.74	7.94	196.04
Sure-Grow 747	2663	1125	5.84	42.11	5.24	14.27	29.08	8.33	182.50
LSD (0.05)	493	193	0.22	0.62	0.17	0.29	0.49	0.53	7.44

¹Traits: YLD = seed cotton yield; LYLD = lint yield; BW = boll weight; LP = lint percentage; MIC = micronaire; SL50 and SL2.5 = fiber span length 50% and 2.5%; E1 = fiber elongation; and T1 = fiber strength.

Table 25. Numbers of male parents significantly higher or lower than female parents.

Exp	Cultivar	Sign	YLD	LYLD	BW	LP	MIC	SL50	SL2.5	E1	T1
1	ST474	Higher	0	0	3	0	0	0	1	2	0
		Lower	0	3	2	6	2	0	1	0	0
	SG747	Higher	0	0	1	0	0	0	0	0	5
		Lower	0	3	3	6	2	0	3	6	0
2	ST474	Higher	0	0	4	0	0	0	1	0	3
		Lower	1	4	1	6	4	0	0	0	0
	SG747	Higher	3	0	1	0	0	0	0	0	6
		Lower	0	1	2	6	2	0	0	6	0
3	ST474	Higher	0	0	2	0	0	1	5	0	5
		Lower	0	5	2	6	5	0	0	3	0
	SG747	Higher	0	0	0	0	0	0	3	0	6
		Lower	0	4	2	6	5	0	0	6	0
4	ST474	Higher	1	0	2	0	0	0	1	0	4
		Lower	1	4	0	6	6	0	0	1	0
	SG747	Higher	2	1	1	0	0	0	1	0	5
		Lower	0	2	3	6	3	0	0	6	0
5	ST474	Higher	1	0	0	0	0	0	1	0	4
		Lower	1	4	1	6	2	0	0	1	0
	SG747	Higher	2	1	1	0	0	0	1	0	6
		Lower	0	2	1	6	2	0	0	4	0
6	ST474	Higher	2	0	0	0	0	0	2	0	5
		Lower	0	2	2	6	2	0	0	0	0
	SG747	Higher	5	1	0	0	0	0	1	0	6
		Lower	0	0	5	6	2	0	0	6	0
7	ST474	Higher	1	0	1	0	0	3	4	0	1
		Lower	0	4	1	6	2	0	0	0	0
	SG747	Higher	4	0	0	0	0	0	0	0	6
		Lower	0	0	4	6	1	0	1	6	0
8	ST474	Higher	1	0	2	0	1	0	1	0	3
		Lower	0	5	1	6	4	0	1	1	0
	SG747	Higher	2	0	0	0	1	0	0	0	6
		Lower	0	2	4	6	4	0	1	6	0
9	ST474	Higher	0	0	1	0	0	2	3	0	5
		Lower	0	6	4	6	4	0	0	2	0
	SG747	Higher	3	0	0	0	0	0	0	0	6
		Lower	0	0	4	6	4	0	0	5	0
10	ST474	Higher	0	0	1	0	0	0	2	0	1
		Lower	0	3	4	6	0	0	0	0	0
	SG747	Higher	0	0	1	0	0	0	1	0	6
		Lower	0	2	4	6	0	0	0	6	0
11	ST474	Higher	0	0	1	0	0	1	3	0	3
		Lower	2	6	2	6	6	0	1	0	0
	SG747	Higher	2	0	0	0	0	1	0	0	5
		Lower	0	3	3	6	3	0	1	6	0
12	ST474	Higher	0	0	1	0	0	1	1	2	4
		Lower	0	5	4	6	6	0	0	0	0
	SG747	Higher	1	0	1	0	0	0	0	0	6
		Lower	0	4	4	6	5	0	1	6	0
13	ST474	Higher	0	0	1	0	0	1	3	0	4
		Lower	1	6	2	6	5	0	0	0	0
	SG747	Higher	2	0	0	0	0	1	1	0	6
		Lower	0	1	5	6	5	0	0	3	0
14	ST474	Higher	0	0	2	0	0	0	3	0	3
		Lower	2	6	1	6	6	0	0	1	0
	SG747	Higher	4	0	0	0	0	0	0	0	6
		Lower	0	0	4	6	6	0	1	6	0
15	ST474	Higher	0	0	0	0	0	0	0	0	3
		Lower	3	6	5	6	6	0	0	1	0
	SG747	Higher	0	0	0	0	0	0	0	0	6
		Lower	0	3	6	6	4	0	0	3	0
16	ST474	Higher	0	0	2	0	0	1	0	0	3
		Lower	1	6	1	6	3	0	0	0	0
	SG747	Higher	3	0	0	0	0	0	0	0	6
		Lower	0	1	4	6	5	0	2	6	0
17	ST474	Higher	0	0	6	0	0	1	4	0	1
		Lower	0	4	0	6	6	0	0	0	0
	SG747	Higher	2	0	3	0	0	0	1	0	6
		Lower	0	0	0	6	3	0	0	6	0

Continued

Table 25 (continued). Numbers of male parents significantly higher or lower than female parents.

Exp	Cultivar	Sign	YLD	LYLD	BW	LP	MIC	SL50	SL2.5	E1	T1
18	ST474	Higher	1	0	6	0	0	0	4	0	2
		Lower	0	2	0	6	6	0	0	1	0
	SG747	Higher	3	0	2	0	0	0	2	0	6
		Lower	0	1	0	6	2	0	0	6	0
19	ST474	Higher	0	0	6	0	0	1	2	0	0
		Lower	0	5	0	6	5	0	0	5	0
	SG747	Higher	2	0	1	0	0	0	0	0	6
		Lower	0	0	0	6	5	0	0	6	0
Total	ST474	Higher	7	0	41	0	1	12	41	4	54
		Lower	12	86	33	114	80	0	3	16	0
	SG747	Higher	40	3	12	0	1	2	11	0	111
		Lower	0	29	58	114	63	0	10	105	0

Table 26. Numbers of F2-bulks significantly higher or lower than female parents.

Exp	Cultivar	Sign	YLD	LYLD	BW	LP	MIC	SL50	SL2.5	E1	T1
1	ST474	Higher	3	0	5	0	0	0	2	5	2
		Lower	0	2	1	12	3	0	1	0	1
	SG747	Higher	2	0	1	0	0	0	0	0	9
		Lower	0	2	8	12	3	0	5	9	0
2	ST474	Higher	0	0	3	0	0	1	4	3	2
		Lower	0	7	2	12	7	0	0	0	1
	SG747	Higher	4	0	1	0	0	2	0	0	11
		Lower	0	1	7	12	3	0	2	10	0
3	ST474	Higher	1	0	3	0	0	0	2	0	4
		Lower	1	9	4	12	9	0	0	2	0
	SG747	Higher	1	0	0	0	0	0	1	0	9
		Lower	1	4	6	12	8	0	1	11	0
4	ST474	Higher	3	0	4	0	0	0	4	3	4
		Lower	1	4	1	12	6	2	3	3	2
	SG747	Higher	9	4	4	0	3	0	4	0	8
		Lower	0	0	5	12	3	3	4	12	0
5	ST474	Higher	0	0	1	0	0	0	3	1	5
		Lower	3	6	2	12	4	1	1	2	0
	SG747	Higher	3	0	1	0	0	0	3	0	6
		Lower	0	3	1	12	4	0	1	7	0
6	ST474	Higher	2	0	0	0	0	2	7	5	7
		Lower	0	5	4	12	4	0	1	0	0
	SG747	Higher	6	1	0	0	0	2	4	0	10
		Lower	0	2	9	12	5	0	1	8	0
7	ST474	Higher	0	0	1	0	0	2	4	2	2
		Lower	2	7	4	12	4	0	0	2	2
	SG747	Higher	10	0	1	0	0	0	2	1	8
		Lower	1	2	5	12	3	0	3	9	0
8	ST474	Higher	2	0	3	0	2	0	1	3	4
		Lower	1	2	3	12	3	0	2	0	0
	SG747	Higher	10	2	1	0	2	0	0	0	10
		Lower	0	2	6	12	3	0	4	7	0
9	ST474	Higher	2	0	2	0	0	0	0	0	5
		Lower	0	3	3	12	4	0	3	1	0
	SG747	Higher	10	2	0	0	0	0	0	0	11
		Lower	0	0	9	12	3	3	3	10	0
10	ST474	Higher	2	0	1	0	1	0	2	4	0
		Lower	1	3	5	12	2	0	0	0	1
	SG747	Higher	2	0	1	0	2	0	0	0	12
		Lower	1	2	7	12	2	2	4	7	0
11	ST474	Higher	0	0	2	0	0	1	3	2	7
		Lower	0	12	3	12	6	0	0	1	0
	SG747	Higher	2	0	0	0	0	0	1	0	10
		Lower	0	0	7	12	5	0	3	12	0

Continued

Table 26 (continued). Numbers of F2-bulks significantly higher or lower than female parents.

Exp	Cultivar	Sign	YLD	LYLD	BW	LP	MIC	SL50	SL2.5	E1	T1
12	ST474	Higher	1	0	1	0	1	0	3	2	5
		Lower	0	9	9	12	8	0	3	2	0
	SG747	Higher	1	0	1	0	1	0	0	0	10
		Lower	0	5	9	12	6	2	4	11	0
13	ST474	Higher	0	0	3	0	0	0	5	2	6
		Lower	2	10	7	12	7	1	2	0	0
	SG747	Higher	4	1	1	0	0	0	1	0	10
		Lower	0	0	9	12	4	1	6	5	0
14	ST474	Higher	0	0	1	0	0	0	2	0	5
		Lower	3	10	4	12	10	0	1	2	0
	SG747	Higher	7	3	0	0	0	0	0	0	11
		Lower	0	0	8	12	6	4	2	12	0
15	ST474	Higher	0	0	0	0	0	0	0	0	6
		Lower	4	11	12	12	12	0	2	3	0
	SG747	Higher	1	0	0	0	0	0	0	0	12
		Lower	0	1	12	12	9	1	2	9	0
16	ST474	Higher	0	0	4	0	0	5	6	1	1
		Lower	4	10	5	12	4	0	0	0	1
	SG747	Higher	3	0	2	0	0	0	1	0	10
		Lower	0	0	8	12	9	0	3	10	0
17	ST474	Higher	0	0	8	0	0	3	6	0	1
		Lower	0	2	0	12	12	0	0	1	0
	SG747	Higher	8	0	2	0	0	0	2	0	12
		Lower	0	0	1	12	5	0	1	11	0
18	ST474	Higher	1	0	10	0	0	0	5	0	0
		Lower	0	1	0	12	7	1	0	1	0
	SG747	Higher	2	1	1	0	1	0	0	0	10
		Lower	0	0	1	12	3	0	0	12	0
19	ST474	Higher	0	0	9	0	1	1	4	1	1
		Lower	3	5	0	12	5	0	1	5	2
	SG747	Higher	7	3	1	0	1	0	2	0	9
		Lower	0	0	4	12	5	1	2	7	0
Total	ST474	Higher	17	0	61	0	5	15	63	34	67
		Lower	25	118	69	228	117	5	20	25	10
	SG747	Higher	92	17	18	0	10	4	21	1	188
		Lower	3	24	122	228	89	17	51	179	0

SUMMARY AND CONCLUSIONS

The cotton yield for most of the F2-bulks was not significantly higher than the commercial cultivars Stoneville 474 and Sure-Grow 747. Both of these cultivars produce fiber micronaire values in the high end of the acceptable range under most environments. In some growing environments, the micronaire values may exceed the acceptable range and be discounted. Most F2-bulks had micronaire values significantly lower than the cultivars. Also F2-bulks produced fibers that were stronger than the cultivars.

Since most male parents had lower micronaire values than female cultivars, a large proportion of resulting F2-bulks produced fiber with lower values than the commercial parents. Very few F2-bulks had

micronaire values that were higher than the female cultivars. Many of the F2-bulks had fiber length that was equal to or longer than the cultivars. Sixty-seven and 188 out of 228 F2-bulks had fibers that were stronger than Stoneville 474 and Sure-Grow 747, respectively. None of the F2-bulks produced fibers that were weaker than Sure-Grow 747, and only 10 F2-bulks were lower than Stoneville 474 (Tables 6-24 and 26).

The day-neutral derived lines are a new source of genetic diversity that can be used in cotton breeding programs. They offer the potential to improve important fiber traits; however, their low lint percentages must be considered when they are used as sources for cultivar improvement.

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