

# **Tennessee Cotton Variety Test Results in 2003**

**Edited by  
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PB 1742  
February 2003

Department of Plant Sciences  
Agricultural Extension Service  
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The University of Tennessee  
Knoxville, Tennessee

This report is also available online at:  
<http://www.UTcrops.com>

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## INTRODUCTION

The purpose of the University of Tennessee cotton variety testing program is to provide an unbiased evaluation of new varieties for Tennessee commercial production. Experimental strains are also tested, and major cultivars are grown in county variety demonstrations. Results are intended to help cotton producers identify varieties that are well adapted to Tennessee, that produce high quality fiber, and that are relatively stable in yield performance. Results are also used by the seed industry, crop consultants, and the UT agricultural extension service to assess varietal adaptation to Tennessee field environments.

Four chapters in this report cover the major components of the 2003 cotton variety testing program of the University of Tennessee. Chapter I presents yield and fiber quality data from Official Variety Trials (OVTs) of 30 commercial cultivars tested at four Tennessee locations. Chapter II presents yield, fiber quality data and detailed information on the growth, development, and other agronomic traits of 35 new and transgenic varieties from an Early Evaluation study conducted at Jackson. Chapter III presents the results from 19 standard test demonstrations of cotton varieties in 14 counties in West and Middle Tennessee. Chapter IV presents an entomological evaluation of *Bt* cotton varieties. A glossary is also included at the end of this report to define technical terms and abbreviations used.

### GENERAL PROCEDURES

Seed of commercial cultivars was provided by the respective companies from commercial seed lots. Smaller quantities of seed of experimental strains were furnished by the respective entrants. Seed sources are listed on the next page. Planting seed was two-way treated with fungicides by the entrants.

For small plot testing, varieties were assigned to plots arranged in a randomized complete block design. Fertilizer and lime were applied according to soil test results and UT recommendations for cotton. Seedbeds were prepared with conventional tillage methods at the Memphis Agricenter and the West Tennessee Experiment Station, while no-tillage methods were used at the Milan Experiment Station and Ames Plantation.

Seed were planted on raised beds at the Memphis Agricenter, and in flat seedbeds at the other locations. Varieties were planted in 2- or 4-row plots with row widths of 38 inches at Jackson and Memphis and 40 inches at Milan and Ames Plantation. A systemic insecticide and fungicide were applied in-furrow while planting. Conventional UT-recommended weed- and pest-control measures were uniformly applied to all plots. A defoliant and boll opener was applied to terminate each experiment following UT recommendations. Plots in all OVTs were picked once with a spindle picker modified to harvest seedcotton from individual plots. Seedcotton harvested from each plot was weighed at picking. Subsamples of seedcotton were collected from each plot at first harvest, weighed, air-dried, and bulked by varietal entry. Gin turnout was determined for each entry using a 20-saw gin equipped with a stick machine, incline cleaners and two lint cleaners at the West Tennessee Experiment Station. No heat was applied during ginning. Lint yields were calculated using seedcotton weights, gin turnouts, and harvested areas. A subsample of lint of each entry was analyzed by HVI procedures at the USDA Cotton Classing Office in Memphis TN.

County Standard Test demonstrations conducted in 2003 included both early and medium/full-season transgenic varieties. County standard tests of early-season transgenic varieties were planted in 19 locations with each location containing 12 varieties (7 Bollgard/Roundup Ready (BR) and 5 Roundup Ready (RR)). County standard tests of medium/full-season transgenic varieties were planted in 12 locations with each location containing 6 varieties (5 Bollgard/Roundup Ready (BR) and 1 Roundup Ready (RR)). Each variety was planted only once at each location and was maintained using the individual grower's production practices. Varieties were defoliated for a once-over harvest and harvested once using spindle pickers. Seedcotton weights were determined using wheel scales and a boll buggy equipped with load cells. Seedcotton samples were ginned and classed similarly to small-plot samples, as described above. County standard test data were analyzed using Proc GLM with locations as replications.

## **ACKNOWLEDGMENTS**

The authors appreciate the technical and financial support provided by the seed companies listed below. Their contributions to the University of Tennessee gift fund for cotton research helped cover some costs of conducting this research in 2003: Bayer Crop Science; Beltwide Cotton Genetics; Delta and Pine Land Co.; PhytoGen Seed Co.; Stoneville Pedigreed Seed Co.; Syngenta Seeds, Inc.

We gratefully acknowledge donations of agricultural chemicals used in conducting this research from Bayer CropScience, BASF Corp., Dow AgroSciences, DuPont, FMC Corp., Griffin Corp., Syngenta Crop Protection, Inc., Crompton-Uniroyal Chemical Co., and Valent USA Corp.

We appreciate logistical support and cooperation provided by the following Branch Station administrators:

- Dr. Rick Carlisle, Superintendent, Ames Plantation
- Dr. Blake A. Brown, Superintendent, Milan Experiment Station
- Dr. Robert M. Hayes, Superintendent, West Tennessee Experiment Station

We thank Mr. Bill Harris, farm manager at the Agricenter International in Memphis, for his collaboration in conducting an OVT at that location in 2003.

Early evaluation of new and transgenic cotton varieties was supported in part by Cotton Incorporated State Support Project No. 00-775TN and 03-339TN.

Research at Ames Plantation was partially funded by the Hobart Ames Foundation under terms of the will of the late Julia Colony Ames.

We appreciate the cooperation of county extension agents and producers who conducted the county variety demonstrations in 2003. We also appreciate the technical cooperation of the USDA-AMS Cotton Division Classing Office in Memphis, which provided the fiber quality data reported herein.

Special thanks to all who helped pick and gin cotton for these experiments.

## **SEED SOURCES**

Seeds for the 2003 University of Tennessee cotton variety tests and demonstrations were provided by:

- Bayer CropScience, 311 Poplar View Lane West, Collierville TN 38017
- Beltwide Cotton Genetics, 574 Green Tree Cove, Suite 101, Collierville TN 38017
- Delta and Pine Land Co., P.O. Box 157, Scott MS 38772
- Phytogen Seed Co., P.O. Box 27, Leland MS 38756
- Seed Source, Inc., P. O. Box 28, Stoneville MS 38776
- Stoneville Pedigreed Seed Co., 6625 Lenox Park Drive, Suite 117, Memphis TN 38115
- Syngenta Seeds, Inc., 356 Hosek Road, Victoria TX 77905

## Chapter I. OFFICIAL VARIETY TRIALS

C. Craig and T.D. Bush, West Tennessee Experiment Station,  
M. C. Smith, Ames Plantation,  
J. S. Williams, Milan Experiment Station,  
The University of Tennessee

Replicated small-plot tests of promising commercial cultivars were conducted at four locations in 2003. Official Variety Trials (OVTs) at Milan and Ames Plantation were planted in 40-inch rows with no tillage, while the OVTs at Jackson and Memphis were planted in 38-inch rows with conventional tillage. Supplemental irrigation was applied by furrow irrigation at Memphis, but no irrigation was applied to OVTs at Milan, Ames or Jackson in 2003. All the 2003 OVTs had 30 entries. Of these, 23 were transgenic, including one *Bt* variety, seven Roundup-Ready entries, and 12 cultivars with both *Bt* and RR genes. One entry contained the Bollgard II and Roundup-Ready genes. One entry had BXN and *Bt* genes. An entry named TN 1669 BR was entered and is a commercial seed blend of PM 1218 BG/RR and DP 451 B/RR. This entry was entered for comparison purposes only and is not a University of Tennessee recommended practice. Conventional pest- and weed management was uniformly applied to conventional and transgenic varieties at each location.

Three OVTs were successfully planted between 30 April and 13 May 2003 despite wet conditions, but the Milan OVT was replanted on 28 May. Adequate stands were obtained at all locations. Conditions improved, however, with moderate mid and late season temperatures and adequate late-season rainfall. Insect pest pressure was manageably low overall. A few bollworms and budworms were found in July and August, but damage was light. Warm conditions in September and October favored maturation of late-set bolls, and sparse rainfall added to the number of harvest opportunities during the late season. No killing freeze occurred before final harvest at any location.

**Tables 1-1 through 1-4** present yield, gin turnout, fiber quality and loan value data from each of the four OVT locations. Lint yields were very high, with averages ranging from 1093 lbs/acre at Milan to 1518 lbs/acre at the West Tennessee Experiment Station. As in previous years, the highest yielding

group at each location included both transgenic and non-transgenic varieties. Relatively late-maturing varieties figured among the highest yielding group at all locations, due in part to adequate heat-unit accumulation and lack of killing freeze.

**Table 1-5** presents mean yields, earliness and gin turnouts for 30 entries across the four OVTs for 2003. Across locations, the two top-yielding entries did not differ significantly in total yield. This group included a newly released transgenic variety, ST 5599BR; and another newly released transgenic, DP 555 BG/RR. This group was closely followed in yield by another group including a newly released transgenic, FM 960 BR, an older transgenic ST 4892BR, and a consistent conventional variety FM 966. There was no significant difference in average yields of the transgenics relative to the conventional entries, nor did earliness affect total yield rank. The most planted varieties in Tennessee, PM 1218 BG/RR and DP 451 B/RR ranked 15<sup>th</sup> and 16<sup>th</sup> in yield, respectively. Fiber quality was generally good for all locations. No high micronaire discounts were observed at any location in 2003 but DP 444 BG/RR and ST 3990BR had micronaire values in the low discount range at Ames and Jackson. Overall fiber length was very good reflecting the good growing conditions of 2003. One variety, DP 491, had fiber lengths in excess of 1.20 inches at all 4 locations in 2003. Fiber strength and uniformity were at or above the discount range for all varieties at all locations in 2003. Leaf grades of 5 were found for the hairy leaf varieties ST 4793R, ST 4646B2R, PSC 355 and BXN 49B at Jackson. A discount leaf grade was also observed for PM 1199 RR and DP 491 at the same location. Loan values reflected the overall good of the fiber quality in 2003 with few loan values falling below the base of 51.75. Those values that fell beneath the base range were often discounted for poor leaf grades and low micronaire.

**Table 1-6** contains yield, gin turnout, fiber quality and loan value data for 18 varieties tested in all

four OVTs in 2002 and 2003. The three top-yielding varieties did not differ significantly in total yield. This group includes two transgenic cultivars, ST 5599 BR and DP 555 BG/RR and one conventional cultivar, FM 966. These varieties have shown broad adaptation in previous variety testing in the mid-South but they have benefited from extremely favorable fall conditions in Tennessee in recent years. The “top-ten” yielding entries on this list includes the most popular cultivars in Tennessee, with PM 1218 BG/RR and DP 451 B/RR planted on the most cotton acres in Tennessee in 2003.

**Table 1-7** presents node above cracked boll (NACB) data averaged across all four OVT locations in 2003. NACB measurements were taken to determine the relative maturities of each

of the 30 varieties from four Tennessee OVT locations. The value represents the number of nodes from the highest first position cracked boll to the uppermost harvestable boll taken at approximately 50% open boll. Fewer nodes above cracked boll is an indicator of early maturity. However, maturities may vary from year to year and from location to location. The early maturing varieties, DP 444 BG/RR, PM 1218 BG/RR and PM 1199 RR have NACB values of 3.3 or less while later maturing varieties like DP 491 and DP 555 BG/RR have NACB values of 4.7 and 6.0, respectively. FM 960 BR has a NACB of 3.2 but is not necessarily early-maturing. The compact growth habit of this variety may cause this method to fail in terms of estimating maturity.

**Table 1-1.** Lint yield, gin turnout and fiber quality of 30 cotton varieties in the 2003 OVT at the **Memphis Agricenter, Memphis, TN.**

Yield Rank	Variety	Lint Yield	Gin Turnout	Mike	Fiber Length	Fiber Strength	Uni-formity	HVI Color	Leaf Grade	Net Loan Value <sup>‡</sup>
		lb/A	%		in.	g/tex	%			¢/lb.
1	ST 5599BR	1537	38.7	47	1.12	29.3	82	31-3	4	54.35
2	DP 555 BG/RR	1477	37.9	43	1.14	30.8	83	31-1	3	56.65
3	FM 960 BR	1422	37.3	45	1.10	34.0	83	31-2	4	55.05
4	FM 966	1416	37.1	45	1.13	32.8	84	31-1	3	56.70
5	DP 493	1392	37.8	45	1.15	33.0	83	31-2	4	55.50
6	FM 958 B	1378	37.3	43	1.11	33.7	84	31-1	4	55.45
7	ST 4892BR	1349	37.9	44	1.11	30.7	83	41-1	4	54.45
8	DP 444 BG/RR	1313	39.5	38	1.12	30.0	83	31-1	3	56.40
9	BXN 49B	1311	36.0	41	1.13	28.8	83	31-1	3	56.05
10	TN 1669 BR <sup>†</sup>	1300	39.4	45	1.11	29.4	84	31-1	3	55.95
11	ST 5303R	1258	36.9	40	1.10	31.9	83	31-2	4	55.10
12	DP 491	1247	37.5	43	1.22	32.3	83	31-2	4	55.35
13	PM 1218 BG/RR	1236	38.7	48	1.07	28.4	82	31-3	3	53.80
14	ST 3990BR	1231	36.3	39	1.07	28.9	82	31-1	4	53.10
15	DP 451 B/RR	1214	33.3	42	1.14	29.3	82	31-1	3	56.00
16	ST 4793R	1212	34.9	41	1.11	30.6	82	31-3	4	55.15
17	FM 989 BR	1210	36.1	41	1.11	31.2	82	31-1	3	56.40
18	ST 4646B2R	1209	34.8	40	1.14	29.5	83	41-3	4	54.45
19	PSC 355	1198	35.8	49	1.12	31.5	83	31-3	4	55.20
20	SG 215 BG/RR	1193	34.6	41	1.07	27.1	82	31-1	3	54.00
21	FM 958	1184	37.1	47	1.15	31.6	83	31-2	3	56.65
22	BCG 295	1164	37.0	43	1.17	30.2	83	31-1	4	55.10
23	PM 1199 RR	1131	38.4	45	1.12	30.6	83	31-1	4	55.20
24	DP 449 BR	1105	34.1	38	1.13	32.5	83	21-2	3	57.25
25	BCG 28 R	1086	36.1	47	1.14	29.8	82	31-1	3	56.15
26	SG 521 R	1071	34.0	41	1.10	29.3	83	31-4	4	54.50
27	SG 105	1058	34.3	42	1.16	31.6	84	31-2	4	55.65
28	DP 436 RR	1057	32.7	40	1.13	27.8	82	31-1	3	55.80
29	BCG 24 R	1036	37.0	41	1.09	28.1	82	31-1	3	55.45
30	SG 501 BR	1028	33.3	42	1.11	30.6	84	21-2	3	57.20
	Mean:	1234	36.4	43	1.12	30.5	82.8	31-1	3.5	55.47
	CV (%)	6.6								
	LSD (0.05)	114								

Planted May 23, 2003; Harvested October 30, 2003; Conventional-till, bedded Falaya silt loam; 1 irrigation in 2003

<sup>†</sup>TN 1669 BR is a 50/50 blend of PM 1218 BG/RR and DP 451 B/RR.

<sup>‡</sup> Base price of 51.75 cents/lb lint adjusted for color, leaf, staple, micronaire, strength, and uniformity. Calculated by the 2003 Cotton Loan Valuation Program, based on the national CCC loan schedule for 2003.

Tennessee Agricultural Experiment Station data of Craig et al. (2003)

**Table 1-2.** Lint yield, gin turnout and fiber quality of 30 cotton varieties in the 2003 OVT at the **Ames Plantation, Grand Junction, TN.**

Yield Rank	Variety	Lint Yield	Gin Turnout	Mike	Fiber Length	Fiber Strength	Uni-formity	HVI Color	Leaf Grade	Net Loan Value <sup>‡</sup>
		lb/A	%		in.	g/tex	%			¢/lb.
1	ST 5599BR	1721	40.0	40	1.15	32.3	82	31-2	4	55.30
2	DP 493	1626	40.4	41	1.15	32.7	82	21-2	4	55.70
3	DP 555 BG/RR	1583	39.7	41	1.13	31.7	81	21-1	3	56.85
4	BXN 49B	1536	37.9	36	1.14	29.8	82	21-2	4	55.10
5	ST 4892BR	1514	38.8	40	1.11	31.4	83	21-1	4	55.65
6	ST 4793R	1499	39.3	41	1.09	30.7	82	21-2	4	55.00
7	FM 960 BR	1483	36.2	37	1.13	34.4	83	31-1	4	55.55
8	ST 3990BR	1462	37.1	33	1.06	30.0	81	31-1	4	51.45
9	PM 1218 BG/RR	1459	39.0	38	1.10	30.1	82	31-1	3	55.80
10	FM 958 B	1420	38.0	35	1.13	34.1	82	21-1	4	55.35
11	FM 966	1415	36.9	40	1.17	33.0	83	21-2	4	55.95
12	FM 958	1412	38.6	41	1.17	33.6	83	31-1	3	57.00
13	DP 491	1379	38.2	41	1.21	33.4	81	31-1	4	55.45
14	PSC 355	1377	37.3	46	1.13	32.4	83	31-1	4	55.20
15	DP 449 BR	1363	37.4	38	1.14	32.6	83	21-1	3	57.40
16	BCG 24 R	1352	39.8	39	1.13	30.7	82	31-1	4	55.15
17	PM 1199 RR	1348	37.9	39	1.12	31.2	83	31-1	4	55.40
18	BCG 28 R	1328	38.6	44	1.14	29.8	83	31-1	3	56.40
19	FM 989 BR	1323	36.6	36	1.14	32.0	82	31-1	3	56.40
20	ST 4646B2R	1317	35.5	39	1.09	29.6	81	31-1	4	54.60
21	DP 451 B/RR	1308	34.5	38	1.13	28.4	82	21-1	3	56.25
22	SG 521 R	1303	37.5	41	1.07	28.5	82	31-1	4	53.10
23	ST 5303R	1303	37.4	38	1.10	31.8	83	41-1	3	54.95
24	TN 1669 BR <sup>†</sup>	1288	36.2	38	1.13	28.9	81	21-2	3	56.25
25	SG 215 BG/RR	1287	36.6	38	1.08	27.2	82	21-2	3	55.75
26	SG 501 BR	1279	37.0	42	1.10	30.2	83	21-1	3	56.35
27	DP 444 BG/RR	1279	39.8	33	1.12	29.1	82	21-2	4	52.80
28	SG 105	1265	35.9	41	1.16	30.7	84	21-2	4	55.90
29	DP 436 RR	1225	34.6	40	1.14	28.3	82	21-2	3	56.40
30	BCG 295	1208	35.8	34	1.18	32.9	82	21-2	4	53.70
	Mean:	1389	37.6	39	1.13	31.1	82.2	31-1	3.6	55.41
	CV (%)	10.8								
	LSD (0.05)	210								

Planted April 30, 2003; Harvested October 7, 2003; No-tilled, Lexington silt loam; non-irrigated

<sup>†</sup>TN 1669 BR is a 50/50 blend of PM 1218 BG/RR and DP 451 B/RR.

<sup>‡</sup> Base price of 51.75 cents/lb lint adjusted for color, leaf, staple, micronaire, strength, and uniformity. Calculated by the 2003 Cotton Loan Valuation Program, based on the national CCC loan schedule for 2003.

Tennessee Agricultural Experiment Station data of Craig et al. (2003)

**Table 1-3.** Lint yield, gin turnout and fiber quality of 30 cotton varieties in the 2003 OVT at the **Milan Experiment Station, Milan, TN.**

Yield Rank	Variety	Lint Yield	Gin Turnout	Mike	Fiber Length	Fiber Strength	Uni-formity	HVI Color	Leaf Grade	Net Loan Value <sup>‡</sup>
		lb/A	%		in.	g/tex	%			¢/lb.
1	ST 5599BR	1348	39.5	44	1.12	31.0	83	21-2	4	55.45
2	ST 4892BR	1329	37.9	40	1.14	29.9	85	31-1	4	55.50
3	FM 960 BR	1296	37.6	40	1.13	32.5	83	21-1	3	57.25
4	TN 1669 BR <sup>†</sup>	1273	38.2	43	1.13	28.7	83	21-1	3	56.30
5	FM 958 B	1245	38.4	38	1.13	31.4	84	21-1	3	57.20
6	DP 444 BG/RR	1225	38.1	38	1.14	29.6	84	21-1	4	55.65
7	BXN 49B	1200	35.2	37	1.17	29.6	84	21-2	4	55.65
8	ST 3990BR	1196	37.3	37	1.08	29.0	83	21-2	3	56.00
9	PM 1218 BG/RR	1171	39.0	47	1.07	28.3	83	21-1	3	54.30
10	DP 555 BG/RR	1147	36.2	38	1.13	27.3	82	21-1	3	56.25
11	ST 4646B2R	1144	36.1	38	1.11	31.1	84	21-1	4	55.75
12	PSC 355	1143	35.4	45	1.14	29.1	84	31-1	4	54.85
13	PM 1199 RR	1109	37.3	44	1.14	31.7	85	21-2	4	55.80
14	FM 989 BR	1105	38.8	39	1.13	31.8	82	21-1	3	56.85
15	SG 501 BR	1090	36.5	43	1.12	29.9	84	21-1	3	56.75
16	DP 449 BR	1068	35.4	39	1.13	30.8	84	21-1	3	57.20
17	DP 451 B/RR	1057	33.6	39	1.17	28.9	83	21-1	3	56.65
18	FM 966	1055	38.2	40	1.16	34.5	84	21-1	3	57.50
19	ST 4793R	1049	36.9	41	1.11	30.0	84	21-1	4	55.50
20	SG 105	1040	35.3	42	1.19	30.8	84	21-1	4	55.90
21	ST 5303R	1036	36.5	41	1.12	32.7	84	21-1	3	57.35
22	SG 215 BG/RR	1001	35.5	41	1.07	26.3	83	21-1	3	54.50
23	DP 493	993	38.4	43	1.15	31.1	83	21-2	4	55.60
24	BCG 295	990	36.0	37	1.18	31.4	83	21-2	3	57.25
25	DP 436 RR	968	33.6	40	1.16	29.6	83	11-1	3	57.00
26	SG 521 R	955	36.0	40	1.14	28.8	84	21-1	4	55.30
27	BCG 28 R	947	36.5	44	1.14	29.2	83	21-1	4	55.00
28	FM 958	946	36.5	43	1.15	32.8	83	31-1	4	55.50
29	DP 491	845	35.8	38	1.22	33.2	83	21-2	4	55.95
30	BCG 24 R	811	36.9	42	1.11	29.4	84	21-1	3	56.60
	Mean:	1093	36.8	41	1.14	30.3	83.5	21-1	3.5	56.08
	CV (%)	8.4								
	LSD (0.05)	129								

Planted May 28, 2003; Harvested November 3, 2003; Conventional-till, Collins silt loam; non-irrigated

<sup>†</sup>TN 1669 BR is a 50/50 blend of PM 1218 BG/RR and DP 451 B/RR.

<sup>‡</sup> Base price of 51.75 cents/lb lint adjusted for color, leaf, staple, micronaire, strength, and uniformity. Calculated by the 2003 Cotton Loan Valuation Program, based on the national CCC loan schedule for 2003.

Tennessee Agricultural Experiment Station data of Craig et al. (2003)

**Table 1-4.** Lint yield, gin turnout and fiber quality of 30 cotton varieties in the 2003 OVT at the **West Tennessee Experiment Station, Jackson, TN.**

Yield Rank	Variety	Lint Yield	Gin Turnout	Mike	Fiber Length	Fiber Strength	Uni-formity	HVI Color	Leaf Grade	Net Loan Value <sup>‡</sup>
		lb/A	%		in.	g/tex	%			¢/lb.
1	DP 555 BG/RR	1853	42.2	40	1.12	30.2	82	21-1	3	56.60
2	FM 966	1789	41.1	33	1.17	34.0	82	31-2	4	53.45
3	DP 493	1770	41.4	42	1.14	32.6	82	21-2	4	55.70
4	ST 5599BR	1749	39.5	42	1.13	31.2	82	31-1	4	55.15
5	FM 958	1704	40.2	41	1.19	32.1	84	11-2	4	55.90
6	ST 4793R	1665	38.7	39	1.10	29.2	82	31-1	5	51.40
7	FM 958 B	1663	39.4	36	1.14	33.3	83	31-1	4	55.50
8	PSC 355	1655	39.6	42	1.14	31.2	84	41-1	5	51.45
9	SG 501 BR	1605	38.6	39	1.11	31.4	83	31-1	4	55.40
10	FM 960 BR	1602	38.2	34	1.15	34.8	82	21-2	4	53.70
11	DP 491	1554	41.2	40	1.21	32.2	81	31-2	5	52.30
12	DP 451 B/RR	1539	35.7	39	1.14	29.6	83	31-1	4	55.30
13	DP 444 BG/RR	1526	40.7	33	1.13	29.8	81	31-1	4	52.90
14	BCG 28 R	1506	39.4	43	1.16	30.3	83	31-2	4	55.10
15	BXN 49B	1470	38.1	35	1.14	29.7	81	31-2	5	51.85
16	ST 4892BR	1463	39.0	37	1.10	28.8	82	31-2	4	54.25
17	SG 215 BG/RR	1449	37.6	39	1.09	29.6	82	31-1	3	55.80
18	ST 5303R	1447	38.3	38	1.10	32.9	82	11-2	3	56.50
19	ST 4646B2R	1445	37.0	34	1.11	30.2	81	31-2	5	49.90
20	DP 449 BR	1427	37.7	36	1.15	32.3	83	21-2	4	55.60
21	FM 989 BR	1404	36.3	35	1.15	32.7	82	31-1	4	55.25
22	BCG 295	1396	38.1	34	1.19	33.1	82	21-2	4	53.70
23	TN 1669 BR <sup>†</sup>	1388	38.1	39	1.14	29.4	81	31-1	4	54.70
24	PM 1199 RR	1386	39.2	36	1.14	30.7	83	31-2	5	52.35
25	SG 521 R	1386	37.9	37	1.08	29.2	82	31-1	4	54.25
26	ST 3990BR	1383	37.9	33	1.08	29.9	82	31-1	4	52.60
27	SG 105	1363	37.6	37	1.17	31.6	83	31-1	4	55.55
28	BCG 24 R	1343	37.4	36	1.08	29.4	82	31-1	4	54.05
29	DP 436 RR	1323	34.9	37	1.17	29.7	82	21-2	4	55.30
30	PM 1218 BG/RR	1287	40.7	37	1.10	29.0	82	31-1	4	54.25

Mean: 1518 38.7 37 1.13 31.0 82.2 31-1 4.1 54.19

CV (%) 8.2

LSD (0.05) 175

Planted May 13, 2003; Harvested October 16, 2003; Conventional-till, Grenada silt loam; non-irrigated

<sup>†</sup>TN 1669 BR is a 50/50 blend of PM 1218 BG/RR and DP 451 B/RR.

<sup>‡</sup> Base price of 51.75 cents/lb lint adjusted for color, leaf, staple, micronaire, strength, and uniformity. Calculated by the 2003 Cotton Loan Valuation Program, based on the national CCC loan schedule for 2003.

Tennessee Agricultural Experiment Station data of Craig et al. (2003)

**Table 1-5.** Lint yield, gin turnout and fiber quality of 30 cotton varieties from OVT's conducted at four locations in West Tennessee, 2003.

Yield Rank	Variety	Lint Yield	Gin Turnout	Mike	Fiber Length	Fiber Strength	Uni-formity	HVI Color	Leaf Grade	Net Loan Value <sup>‡</sup>
		lb/A	%		in.	g/tex	%			¢/lb.
1	ST 5599BR	1588	39.4	43	1.13	31.0	82.3	31-1	4.0	55.06
2	DP 555 BG/RR	1515	39.0	41	1.13	30.0	82.0	21-1	3.0	56.59
3	FM 960 BR	1451	37.3	39	1.13	33.9	82.8	21-2	3.8	55.39
4	DP 493	1445	39.5	43	1.15	32.4	82.5	31-1	4.0	55.63
5	FM 958 B	1426	38.3	38	1.13	33.1	83.3	21-2	3.8	55.88
6	FM 966	1419	38.3	40	1.16	33.6	83.3	21-2	3.5	55.90
7	ST 4892BR	1414	38.4	40	1.12	30.2	83.3	31-1	4.0	54.96
8	BXN 49B	1379	36.8	37	1.15	29.5	82.5	31-1	4.0	54.66
9	ST 4793R	1357	37.5	41	1.10	30.1	82.5	31-1	4.3	54.26
10	PSC 355	1343	37.0	46	1.13	31.1	83.5	31-1	4.3	54.18
11	DP 444 BG/RR	1336	39.5	36	1.13	29.6	82.5	31-1	3.8	54.44
12	ST 3990BR	1318	37.2	36	1.07	29.5	82.0	31-1	3.8	53.29
13	TN 1669 BR <sup>†</sup>	1312	38.0	41	1.13	29.1	82.3	21-2	3.3	55.80
14	FM 958	1312	38.1	43	1.17	32.5	83.3	31-1	3.5	56.26
15	PM 1218 BG/RR	1288	39.4	43	1.09	29.0	82.3	31-1	3.3	54.54
16	DP 451 B/RR	1280	34.3	40	1.15	29.1	82.5	21-1	3.3	56.05
17	ST 4646B2R	1279	35.9	38	1.11	30.1	82.3	31-1	4.3	53.68
18	ST 5303R	1261	37.3	39	1.11	32.3	83.0	31-1	3.3	55.98
19	FM 989 BR	1261	36.9	38	1.13	31.9	82.0	31-1	3.3	56.23
20	DP 491	1256	38.2	41	1.22	32.8	82.0	31-1	4.3	54.76
21	SG 501 BR	1251	36.3	42	1.11	30.5	83.5	21-1	3.3	56.43
22	PM 1199 RR	1244	38.2	41	1.13	31.1	83.5	31-1	4.3	54.69
23	DP 449 BR	1241	36.2	38	1.14	32.1	83.3	21-1	3.3	56.86
24	SG 215 BG/RR	1233	36.1	40	1.08	27.6	82.3	21-2	3.0	55.01
25	BCG 28 R	1217	37.7	45	1.15	29.8	82.8	31-1	3.5	55.66
26	BCG 295	1189	36.7	37	1.18	31.9	82.5	21-2	3.8	54.94
27	SG 105	1182	35.8	41	1.17	31.2	83.8	21-2	4.0	55.75
28	SG 521 R	1179	36.4	40	1.10	29.0	82.8	31-1	4.0	54.29
29	DP 436 RR	1143	33.9	39	1.15	28.9	82.3	21-1	3.3	56.13
30	BCG 24 R	1136	37.8	40	1.10	29.4	82.5	31-1	3.5	55.31
	Mean:	1308	37.4	40	1.13	30.7	83	21-1	3.7	55.29
	CV (%)	11.6	2.4	4.5	1.2	2.8	0.7		10.1	1.9
	LSD (0.05)	106	0.63	2.5	0.02	1.2	0.8		0.5	1.45

<sup>†</sup>TN 1669 BR is a 50/50 blend of PM 1218 BG/RR and DP 451 B/RR.

<sup>‡</sup> Base price of 51.75 cents/lb lint adjusted for color, leaf, staple, micronaire, strength, and uniformity. Calculated by the 2003 Cotton Loan Valuation Program, based on the national CCC loan schedule for 2003.

Tennessee Agricultural Experiment Station data of Craig et al. (2003)

**Table 1-6.** Lint yield, gin turnout and fiber quality of 18 cotton varieties tested at 4 locations over two years (2002-2003).

Yield Rank	Variety	Lint Yield	Gin Turnout	Mike	Fiber Length	Fiber Strength	Uni-formity	HVI Color	Leaf Grade	Net Loan Value <sup>†</sup>
		lb/A	%		in.	g/tex	%			¢/lb.
1	ST 5599BR	1449	38.6	45	1.13	31.8	82	31-3	4.0	53.30
2	DP 555 BG/RR	1374	38.8	43	1.14	31.4	82	31-1	3.3	55.43
3	FM 966	1319	37.6	43	1.14	35.5	83	31-1	3.6	55.42
4	ST 4892BR	1302	37.7	42	1.12	31.2	84	31-3	4.0	53.71
5	PSC 355	1293	36.9	47	1.13	32.0	84	31-4	4.4	51.96
6	FM 958 B	1293	37.5	39	1.13	33.8	83	31-1	3.9	55.26
7	BXN 49B	1269	36.4	39	1.14	30.2	83	31-2	4.1	53.36
8	ST 4793R	1247	37.2	43	1.10	30.9	83	31-3	4.3	53.08
9	PM 1218 BG/RR	1219	38.7	45	1.09	30.1	83	31-1	3.6	53.88
10	DP 451 B/RR	1204	34.1	41	1.14	30.0	83	31-1	3.5	55.26
11	FM 958	1171	37.2	44	1.17	33.6	83	31-1	3.5	55.75
12	SG 501 BR	1169	35.8	44	1.11	31.0	83	31-1	3.5	55.14
13	SG 215 BG/RR	1149	35.7	42	1.08	28.2	83	31-1	3.1	54.52
14	PM 1199 RR	1143	37.4	43	1.13	31.4	84	31-2	4.0	54.42
15	FM 989 BR	1142	36.3	39	1.13	33.4	82	31-1	3.4	55.59
16	SG 521 R	1099	35.7	41	1.10	29.3	83	31-2	4.0	53.56
17	SG 105	1097	35.4	42	1.16	32.0	84	31-1	3.8	54.93
18	DP 436 RR	1081	33.7	41	1.15	29.6	83	31-1	3.4	55.38
	Mean:	1223	36.7	42	1.13	31.4	83	31-1	3.7	54.44
	CV (%)	11.7	3.0	6.0	1.7	3.1	0.7		11.0	2.60
	LSD (0.05)	142	1.1	2.5	0.02	0.9	0.6		0.4	1.38

† Base price of 51.75 cents/lb lint adjusted for color, leaf, staple, micronaire, strength, and uniformity. Calculated by the 2003 Cotton Loan Valuation Program, based on the national CCC loan schedule for 2003. Tennessee Agricultural Experiment Station data of Gwathmey et al. and Craig et al. (2002-2003)

**Table 1-7.** Nodes above cracked boll (NACB) measurements averaged across 4 OVT locations in 2003.

<b>Variety</b>	<b>Avg. NACB (4 Locations)</b>
ST 3990BR	2.9
BCG 295	3.0
PM 1199 RR	3.1
DP 444 BG/RR	3.2
FM 960 BR	3.2 <sup>†</sup>
FM 966	3.2
PM 1218 BR	3.3
ST 5303 R	3.5
BCG 28 R	3.6
FM 989 BR	3.6
SG 215 BR	3.6
ST 4892BR	3.7
FM 958	3.7
FM 958 B	3.7
ST 4646B2R	3.7
TN 1669 BR	3.7
PSC 355	3.8
DP 436 RR	3.8
SG 521 R	3.8
BCG 24 R	3.9
DP 451 BR	4.1
BXN 49B	4.2
SG 501 BR	4.2
SG 105	4.3
ST 4793R	4.3
DP 449 BR	4.5
DP 493	4.6
ST 5599BR	4.6
DP 491	4.7
DP 555 BG/RR	6.0

<sup>†</sup> Experience suggests that FM 960 BR is a medium maturing variety. Compact growth habits may contribute to a low NACB value at 50% open boll.

## Chapter II. EARLY EVALUATION OF NEW VARIETIES

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Objectives of this research are to evaluate the growth, development and agronomic traits of newly introduced transgenic varieties and strains, relative to several popular cultivars grown in Tennessee. Thirty-five commercial cultivars and experimental strains from seven seed companies were evaluated in 2003, including 24 transgenic varieties and 11 conventional varieties or strains. The transgenic group included 11 Roundup-Ready (R or RR) varieties, 8 stacked-gene (BR or BG/RR) varieties, 3 “double stacked” (B2R or BGII/RR) varieties that carried a second *Bt* gene, and two Liberty Link (LL) varieties. Four popular cultivars were included as checks. All planting seed had been two-way treated with fungicides by the respective seed companies.

The site was an irrigated, no-tilled Dexter loam at the West Tennessee Experiment Station. Entries were assigned to 2-row plots arranged in a RCB design with four replications. Row spacing was 38 inches and net row length was 30 ft. A systemic insecticide and fungicide were applied in-furrow while planting on May 12, 2003. Conventional UT-recommended weed- and pest-control measures were uniformly applied to all plots. Irrigation totaled 0.75 inch between 60 and 67 DAP. Pix Plus (24 oz/ac) was applied at 88 and 95 DAP to control plant growth. Application of mepiquat chloride was delayed relative to label recommendations to allow varieties to express their growth habits more fully in this test.

At 29 DAP, plant stands were counted and seedling vigor was evaluated on a scale of 1 to 5 (1 = most vigor). At 73 DAP, data on plant height, first fruiting branch, white flower position, and terminal were collected to calculate the number of fruiting branches, nodes above white flower (NAWF), and height-to-node ratio (HNR). At 121 DAP, data on plant height, fruiting branch number, lowest and highest harvestable bolls, and first-position boll number were collected to calculate the vertical fruiting zone and boll retention. At 119-121 DAP, incidence of boll rot, cavitation, premature leaf senescence, leaf spot and other abnormalities

were rated or counted in each plot. Plots were rated again at 170 DAP for green bolls left on plants, cotton dropped on the ground or strung out by picking. There was insufficient expression of bronze wilt, Verticillium wilt, lodging of plants, or regrowth of leaves to rate these disorders in the 2003 test.

At 136 and 141 DAP, defoliants were applied without a boll opener, in order for entries to express earliness as percent of total yield picked at first harvest. All plots were spindle picked at 150 and 162 DAP. Seedcotton harvested from each plot was weighed at picking, and samples collected at first harvest were weighed and air-dried. The gin turnout of each entry was determined using a 20-saw gin equipped with a stick machine, two incline cleaners and two lint cleaners at the West Tennessee Experiment Station. No heat was applied during ginning. Lint yields were calculated using seedcotton weights, gin turnouts, and harvested areas. A subsample of lint of each entry was analyzed by HVI procedures at the USDA-AMS Cotton Classing Office in Memphis TN.

### Results and Discussion

As in 2002, the 2003 growing season started with unseasonably cool and wet weather after planting on May 12. Conditions improved as the season progressed, however, with moderately high mid-season temperatures and above average late-season rainfall. Insect pest pressure was fairly low overall. Just 2,100 DD60s accumulated between planting and second harvest. With no killing freeze, all but the latest set bolls matured and were picked. A few green bolls were left after harvest on plants of some later maturing varieties (Table 2).

**Table 2-1** presents plant stand, seedling vigor, and mid-season plant mapping data. All entries produced adequate stands, ranging from 2.5 to 4.1 plants/ft row. Stand differences were not statistically significant. Cool, wet weather after planting limited seedling vigor, and may have affected how well the plants grew off as weather

improved. On a scale of 1-5 with 1 best, seedling vigor ranged from 2.0 for DPLX 00W12 and Syngenta DX 24722, to 3.2 for PHY 410 RR. Plant size at bloom was associated with seedling vigor, such as in DP 444 BG/RR and ST 5242 BR which showed strong seedling vigor. Internodes were typically compact in the FiberMax entries. By early bloom, entries differed significantly in such earliness predictors as node of first fruiting branch and NAWF. First fruiting branch ranged from node 5.1 for PM 1218 BG/RR, up to node 7.1 for ST 4646 B2R. Earliness was also associated with few NAWF at 73 DAP, which ranged from 5.4 NAWF for DP 432 RR and DPLX 02X71R, up to 7.7 NAWF for DP 555 BG/RR.

**Table 2-2** presents late-season plant mapping data for the 35 entries. By 121 DAP, average plant height was approximately equal to row width. DP 555 BG/RR and DPLX 01Z34 had the most fruiting branches, and they were among the tallest plants at late season. Several varieties produced more vegetative growth during boll filling than others, and they were classified as relatively indeterminate in growth habit. The indeterminate varieties DP 449 BG/RR, DP 468 BGII/RR, and DP 555 BG/RR, increased in plant height by more than 50% during boll development. By contrast, varieties with a more determinate growth habit, such as DP 444 BG/RR, SS 0212, and ST 5242 BR, increased in plant height by less than 40% during this time. Continued vegetative growth during reproductive development increased the vertical fruiting zone and thus extended the boll set of indeterminate varieties. Thus, first harvest percent was lower when last bolls were set higher on the plant, as in DP 468 BGII/RR and DP 555 BG/RR.

**Table 2-2** also contains notes from plot observations of boll rot, cavitation, dropped cotton, forked stems, green bolls, premature senescence, leaf spot, and other disorders. These notes are reported here if they were observed in at least three of four replications during "blind" plot evaluation. Not all plants in these plots had the noted condition. None of these problems appeared to be sufficiently severe to have a major impact on yields in this study.

**Table 2-3** shows that total yields ranged from 1231 to 1566 lb lint/acre in 2003, about 10% higher yields than from a similar trial conducted on the site in 2002. The highest yielding entry was the experimental DPLX 02X71 R, but nine other entries had statistically equivalent total yields. This top-yielding group included five relatively new

cultivars, DP 444 BG/RR, ST 5242 BR, ST 4646 B2R, DP 432 RR, and FM 966 LL.. The top yielding group did not include any of the four check cultivars. First-position boll retention of the top-10 yielding entries averaged 51%, while lower yielding entries averaged 47% retention. Six early maturing entries produced more than 85% of their yield by first harvest, including BCG X524 R, DP 444 BG/RR, PM 1199 RR, SS 0211, DX 24101 and DX 2429. Only two in this early-maturing group were also among the top-10 yielding entries. Because of late-season heat units, percent first harvest was not highly correlated with total yield in 2003.

**Table 2-4** presents HVI fiber properties for the 35 entries in this study. Most entries produced lint that was unlikely to incur price discounts, and several varieties had highly satisfactory fiber profiles. Micronaire values of all entries were in the base or premium range. Fiber length exceeded 1.13 in. for 18 entries, and UHM lengths of all entries were above the short-staple discount threshold (1.04 in.) established by the USDA.. Fiber strength exceeded 33 g/tex for five entries, and strength of all entries were above the low-strength discount threshold of 26.5 g/tex. Color grades ranged from 21 to 41, but trash content was greater than 1% for 10 entries, which might result in leaf grade discounts. High trash content was associated with leaf pubescence of several entries including DP 494 RR, PHY 410 RR, ST 4793 R, and DX 2429.

Results suggest that several new varieties and experimental strains may have markedly improved fiber quality profiles, together with high yield potential. These improvements may come at the price of later maturity, however, posing management challenges to Tennessee producers. Relatively mild late-season weather in 2002 and 2003 may lead producers to think erroneously that some newly released late-maturing cultivars are well adapted to Tennessee. Information generated in this study provides some useful insights into the maturity, growth habit, and other traits of newly released cultivars.

#### **Acknowledgments**

This research was supported in part by Cotton Incorporated State Support Projects 00-775TN and 03-339TN, and by gifts from participating seed companies.

**Table 2-1.** Plant stand, seedling vigor, and mid-season mapping data from the 2003 Early Evaluation of new varieties at Jackson TN, listed alphabetically.

Variety	Plant Stand	Seedling Vigor 1 = Best	Plant Height	First Fruiting Branch	Terminal	Nodes Above W. Flower	Height: Node Ratio
	10-Jun plants/ft.	10-Jun scale 1-5	24-Jul in.	24-Jul node	24-Jul node	24-Jul nodes	24-Jul in./node
BCG 28 R	3.0	2.8	24.1	5.6	14.0	6.9	1.7
BCG X290 R	4.1	2.5	26.2	5.6	12.9	6.1	2.0
BCG X524 R	4.0	2.5	24.4	5.6	13.7	5.8	1.8
Deltapine DP 424 BGII/RR	3.1	2.4	26.1	5.4	13.1	6.3	2.0
Deltapine DP 432 RR	3.8	2.2	27.6	5.9	12.9	5.4	2.2
Deltapine DP 444 BG/RR	3.8	2.1	29.3	5.4	12.6	5.9	2.3
Deltapine DP 449 BG/RR	3.6	2.8	25.7	6.4	14.1	6.9	1.8
Deltapine DP 468 BGII/RR	3.4	2.6	23.3	5.6	13.6	6.5	1.7
Deltapine DP 494 RR	3.4	3.1	26.4	6.4	14.4	7.2	1.8
Deltapine DP 555 BG/RR	3.7	2.9	25.6	6.7	15.3	7.7	1.7
DPLX 00W12	3.5	2.0	27.6	5.3	12.5	6.2	2.2
DPLX 01W99 R-074	4.0	2.6	28.6	5.9	13.3	6.6	2.2
DPLX 01Z34	2.8	2.6	29.1	6.3	14.9	7.4	2.0
DPLX 02X38 R	3.5	2.7	27.4	6.1	13.4	6.8	2.1
DPLX 02X71 R	3.2	2.6	25.9	6.3	13.0	5.4	2.0
DPLX 03X176 BR	3.4	2.7	24.9	5.8	13.9	6.7	1.8
FiberMax FM 958 LL	3.5	2.4	22.6	6.8	13.7	6.3	1.7
FiberMax FM 960 BR	3.5	2.6	23.6	6.2	13.6	6.6	1.7
FiberMax FM 966	2.9	2.6	24.7	6.6	14.1	6.7	1.8
FiberMax FM 966 LL	4.0	2.3	24.4	5.6	14.0	6.8	1.7
Paymaster PM 1199 RR	3.5	2.9	24.0	5.2	13.4	6.3	1.8
Paymaster PM 1218 BG/RR	3.0	2.7	28.0	5.1	13.9	6.7	2.0
Phytogen PHY 410 RR	2.5	3.2	27.5	6.2	13.8	6.8	2.0
Seed Source SS 0211	3.4	2.6	25.3	5.7	13.4	6.3	1.9
Seed Source SS 0212	3.4	2.3	28.9	5.4	13.6	6.5	2.1
Seed Source SS 0221	3.2	2.7	25.2	6.5	14.7	7.1	1.7
Stoneville ST 3990 BR	2.8	2.3	27.1	6.3	13.4	6.2	2.0
Stoneville ST 4646 B2R	3.9	2.5	27.7	7.1	14.0	6.4	2.0
Stoneville ST 4793 R	3.2	2.4	29.3	6.8	14.6	7.1	2.0
Stoneville ST 5242 BR	3.2	2.1	28.5	6.0	12.5	5.6	2.3
Syngenta DX 24101	3.1	2.3	26.1	5.2	13.9	6.5	1.9
Syngenta DX 2429	3.4	2.5	28.8	5.3	13.6	6.4	2.1
Syngenta DX 24722	3.4	2.0	26.4	6.0	13.4	5.8	2.0
Syngenta DX 25123	2.7	2.6	27.7	5.8	14.4	7.4	1.9
Syngenta DX 99358	3.5	2.2	24.3	5.7	12.8	5.9	1.9
Mean:	3.4	2.5	26.4	5.9	13.7	6.5	1.9
CV (%):	19.1	13.6	6.3	6.1	3.7	9.2	6.2
LSD (0.05%):	n.s.	0.5	2.3	0.5	0.7	0.8	0.2

Tennessee Agricultural Experiment Station data of Gwathmey and Michaud (2003).

**Table 2-2.** Late-season plant map data and plot notes from the 2003 Early Evaluation of new varieties at Jackson TN, listed alphabetically.

Variety	Fruiting Branches	Plant Height	Lowest Harv'able P1 Boll †	Highest Harv'able P1 Boll †	Vertical Fruiting Zone	Boll Retention at P1 †	Plot Notes ‡
	10-Sep	10-Sep	10-Sep	10-Sep	10-Sep	10-Sep	
	no.	in.	fr. br. no.	fr. br. no.	nodes	%	
BCG 28 R	14.6	35.7	1.1	9.5	9.4	49.9	d
BCG X290 R	13.0	36.6	1.1	7.3	7.2	44.9	
BCG X524 R	13.8	35.8	1.1	8.4	8.3	47.8	d, r
Deltapine DP 424 BGII/RR	13.2	37.7	1.2	8.5	8.3	52.6	
Deltapine DP 432 RR	12.8	38.0	1.2	8.0	7.8	52.2	r
Deltapine DP 444 BG/RR	12.3	39.8	1.3	8.0	7.8	53.7	f
Deltapine DP 449 BG/RR	14.2	39.0	1.6	8.9	8.3	44.3	g
Deltapine DP 468 BGII/RR	14.5	36.4	1.4	9.8	9.3	53.3	
Deltapine DP 494 RR	13.6	38.3	1.4	7.8	7.4	45.2	c, h, t
Deltapine DP 555 BG/RR	15.2	40.7	1.4	9.5	9.1	46.4	g
DPLX 00W12	12.4	37.3	1.4	8.2	7.8	51.8	h
DPLX 01W99 R-074	12.6	39.8	1.2	7.6	7.4	46.9	
DPLX 01Z34	15.2	41.1	1.8	9.3	8.6	43.6	r
DPLX 02X38 R	13.3	40.4	1.3	8.9	8.7	49.8	g, t
DPLX 02X71 R	13.2	38.1	1.2	8.5	8.3	52.3	
DPLX 03X176 BR	13.5	34.8	1.1	8.1	8.0	50.2	
FiberMax FM 958 LL	13.0	33.9	1.4	7.4	7.0	44.3	p
FiberMax FM 960 BR	12.5	34.3	1.1	7.3	7.2	50.0	b
FiberMax FM 966	13.3	35.6	1.4	8.5	8.1	47.0	b, s
FiberMax FM 966 LL	12.9	34.8	1.1	7.8	7.7	47.0	
Paymaster PM 1199 RR	13.6	35.8	1.3	8.8	8.5	48.4	
Paymaster PM 1218 BG/RR	14.0	39.0	1.3	9.0	8.6	52.7	d
Phytogen PHY 410 RR	13.8	40.4	1.2	8.3	8.1	46.9	h, c
Seed Source SS 0211	12.8	35.1	1.2	7.4	7.2	46.1	
Seed Source SS 0212	13.0	37.6	1.0	8.7	8.7	53.7	d
Seed Source SS 0221	14.5	36.0	1.3	8.3	8.0	45.8	c
Stoneville ST 3990 BR	12.8	38.5	1.4	7.9	7.5	49.7	
Stoneville ST 4646 B2R	13.2	41.1	1.2	7.9	7.7	49.4	g
Stoneville ST 4793 R	13.8	42.3	1.4	8.4	8.0	44.4	h
Stoneville ST 5242 BR	11.6	38.8	1.5	7.2	6.7	51.0	d, s
Syngenta DX 24101	14.5	36.6	1.2	8.4	8.2	42.7	s
Syngenta DX 2429	13.3	38.7	1.1	7.9	7.8	46.3	h
Syngenta DX 24722	13.9	37.1	1.1	8.8	8.7	50.3	b
Syngenta DX 25123	14.5	40.3	1.1	8.8	8.7	50.7	g, r
Syngenta DX 99358	12.9	35.7	1.3	7.9	7.6	42.0	p, s
Mean:	13.5	37.7	1.3	8.3	8.0	48.4	
CV (%):	5.0	5.2	18.6	7.5	8.5	8.7	
LSD (0.05%):	0.9	2.7	0.3	0.9	1.0	5.9	

† P1 = first-position bolls only. ‡ Plot notes: b = large bracts; c = cavitation scars; d = cotton dropped on ground; f = forked main stems; g = green bolls left on plant; h = hairy leaves; p = premature leaf senescence; r = boll rot; s = late-season leaf spot complex; t = cotton strung out by picking.

**Table 2-3.** Lint yield, earliness, and gin turnout of cotton varieties in the 2003 Early Evaluation trial at Jackson TN, listed by yield rank.

Yield Rank	Variety	Check	Lint Yield, Total lb/A	Lint Yield, 1st Hvst. lb/A	First Harvest %	Gin Turnout %
1	DPLX 02X71 R		1566	1238	79.1	38.6
2	Deltapine DP 444 BG/RR		1557	1341	86.3	39.8
3	DPLX 00W12		1550	1300	84.2	38.7
4	Stoneville ST 5242 BR †		1545	1279	82.6	39.3
5	Seed Source SS 0212		1512	1192	79.1	41.0
6	Stoneville ST 4646 B2R ‡		1464	1066	72.9	38.6
7	BCG 28 R		1453	1187	81.9	38.6
8	Seed Source SS 0211		1441	1222	85.2	38.6
9	Deltapine DP 432 RR ¶		1437	1212	84.6	37.5
10	FiberMax FM 966 LL		1423	1134	79.8	37.0
11	Syngenta DX 2429		1420	1236	87.2	36.9
12	FiberMax FM 960 BR		1404	1134	81.1	39.2
13	DPLX 01Z34		1374	1029	74.4	39.4
14	DPLX 02X38 R		1371	945	69.4	38.4
15	Syngenta DX 99358		1367	1094	80.1	36.0
16	Syngenta DX 25123		1361	868	63.7	39.3
17	Syngenta DX 24722		1356	1012	74.7	37.1
18	Paymaster PM 1218 BG/RR	✓	1354	1129	82.8	38.1
19	Phytogen PHY 410 R		1351	1127	83.4	37.7
20	Deltapine DP 494 RR §		1348	1030	76.5	38.6
21	Syngenta DX 24101		1346	1165	86.7	est. 35.7
22	BCG X290 R		1344	1080	80.4	38.4
23	DPLX 03X176 BR		1337	1114	83.8	38.0
24	FiberMax FM 958 LL		1332	1081	81.1	37.1
25	DPLX 01W99 R-074		1328	1075	80.8	38.1
26	Stoneville ST 4793 R	✓	1314	1011	77.1	36.4
27	FiberMax FM 966	✓	1312	1025	77.1	37.6
29	Deltapine DP 555 BG/RR		1306	889	68.2	38.7
28	Paymaster PM 1199 RR	✓	1306	1161	88.8	37.2
30	Deltapine DP 424 BGII/RR		1305	993	75.7	35.0
31	Stoneville ST 3990 BR #		1300	1037	79.3	35.7
32	Deltapine DP 449 BG/RR		1279	907	70.8	35.9
33	BCG X524 R		1255	1077	85.9	34.8
34	Seed Source SS 0221		1237	970	78.5	35.5
35	Deltapine DP 468 BGII/RR		1231	910	74.2	33.6
Mean:			1377	1094	79.3	37.6
CV (%):			7.4	9.8	8.2	
LSD (0.05):			143	150	9.1	

Irrigated, no-tilled Dexter loam soil. Trial managers: Michaud and Sharp.

Planted 12 May 2003. Defoliant applied 25 Sept and 30 Sept 2003. Harvested 9 Oct and 21 Oct 2003.

† tested as STX 0203 BR. ‡ tested as STX 0202 B2R. # tested as STX 0204 BR.

¶ tested as DPLX 01X99 R. § tested as DPLX 03X177 R.

Tennessee Agricultural Experiment Station data of Gwathmey and Michaud (2003).

**Table 2-4.** HVI fiber properties of 35 cotton varieties tested in the 2003 Early Evaluation trial at Jackson TN, listed alphabetically.

Variety	Check	Micro- naire	Fiber Length in.	Fiber Strength g/tex	Uni- formity %	HVI Trash %	HVI Color	Color Rd %	Color +b
BCG 28 R		49	1.14	28.3	82	0.8	31-1	79	7.9
BCG X290 R		42	1.09	33.0	83	1.0	31-1	79	7.8
BCG X524 R		36	1.12	28.4	81	0.6	21-2	82	7.5
Deltapine DP 424 BGII/RR		38	1.15	30.3	82	0.7	31-1	80	7.3
Deltapine DP 432 RR †		40	1.11	28.9	82	1.2	31-2	77	7.8
Deltapine DP 444 BG/RR		36	1.13	29.4	83	0.8	31-2	79	7.4
Deltapine DP 449 BG/RR		40	1.13	32.5	82	0.8	31-1	80	7.1
Deltapine DP 468 BGII/RR		40	1.15	30.9	82	1.2	31-1	81	7.1
Deltapine DP 494 RR §		45	1.15	32.9	83	1.2	31-1	79	8.0
Deltapine DP 555 BG/RR		46	1.12	29.8	81	0.8	31-1	81	7.4
DPLX 00W12		44	1.18	32.0	83	0.3	21-2	79	8.5
DPLX 01W99 R-074		41	1.17	29.5	82	0.9	31-1	81	7.1
DPLX 01Z3 4		42	1.13	31.4	82	1.8	41-1	77	7.4
DPLX 02X38 R		42	1.11	29.5	82	0.8	31-1	80	7.6
DPLX 02X71 R		39	1.15	30.6	83	0.7	31-1	80	7.9
DPLX 03X176 BR		41	1.20	33.5	83	1.0	31-1	79	7.6
FiberMax FM 958 LL		41	1.17	33.1	83	0.8	31-1	81	7.2
FiberMax FM 960 BR		39	1.14	34.0	81	0.9	31-1	80	7.5
FiberMax FM 966	✓	41	1.16	34.4	83	0.9	31-2	79	7.4
FiberMax FM 966 LL		44	1.12	30.1	83	0.5	21-2	81	7.7
Paymaster PM 1199 RR	✓	46	1.14	30.3	84	0.6	31-1	80	7.7
Paymaster PM 1218 BG/RR	✓	46	1.07	28.8	82	0.6	31-1	79	8.0
Phytogen PHY 410 RR		41	1.13	32.3	83	2.0	31-2	77	8.0
Seed Source SS 0211		42	1.16	29.6	83	1.1	31-2	78	7.6
Seed Source SS 0212		42	1.11	29.9	82	0.9	31-2	80	6.9
Seed Source SS 0221		37	1.14	31.7	82	0.4	31-1	81	7.1
Stoneville ST 3990 BR #		38	1.08	29.3	83	1.3	31-2	78	7.6
Stoneville ST 4646 B2R ‡		40	1.13	29.3	81	1.7	31-2	77	7.7
Stoneville ST 4793 R	✓	42	1.09	29.8	81	1.5	41-1	76	7.9
Stoneville ST 5242 BR †		40	1.10	30.3	82	1.0	31-2	79	7.2
Syngenta DX 24101		40	1.16	33.8	84	0.6	31-1	81	6.9
Syngenta DX 2429		44	1.12	32.6	83	1.4	41-1	75	8.0
Syngenta DX 24722		41	1.13	32.3	81	0.7	31-2	78	7.5
Syngenta DX 25123		42	1.15	29.7	82	0.8	31-1	79	7.8
Syngenta DX 99358		38	1.10	29.9	79	0.9	31-1	79	7.5
Mean:		41	1.13	30.9	82	0.9	31-1	79	7.6

HVI data from the USDA Cotton Classing Office in Memphis TN, based on lint samples from the WTES gin.

† tested as STX 0203 BR. ‡ tested as STX 0202 B2R. # tested as STX 0204 BR.

¶ tested as DPLX 01X99 R. § tested as DPLX 03X177 R.

Tennessee Agricultural Experiment Station data of Gwathmey and Michaud (2003).

## Chapter III. COUNTY STANDARD TEST DEMONSTRATIONS

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County standard tests of early and medium/full-season transgenic cotton varieties were conducted in West Tennessee in 2003. County standard tests of early-season transgenic varieties were planted in 19 locations with each location containing 12 varieties (7 Bollgard/Roundup Ready (BR) and 5 Roundup Ready (RR)). County standard tests of medium/full-season transgenic varieties were planted in 12 locations with each location containing 6 varieties (5 Bollgard/Roundup Ready (BR) and 1 Roundup Ready (RR)) with ST 4892BR added as a medium-season check. Each variety was planted only once at each location and was maintained using the individual grower's production practices. Soil type, tillage practice, previous crop, fertilizer practices as well as planting and harvesting date have been reported for each location. Varieties were defoliated for a once over harvest and harvested once using spindle pickers except for UNR tests in Fayette County (Tables 3-7 and 3-9) which were harvested with a finger-type stripper. Seedcotton weights were determined using wheel scales and a modified boll buggy equipped with load cells. Gin turnout was determined from a seven to ten pound seedcotton sample taken from each variety on the day of picking. These samples were weighed at picking, air dried and ginned at the West Tennessee Experiment Station on a 20-saw gin equipped with a stick machine, two incline cleaners and two lint cleaners. Lint yields were calculated using seedcotton weights, gin turnouts and harvested areas. A sub-sample of lint from each variety was analyzed by HVI procedures at the USDA-AMS Cotton Classing Office in Memphis, TN. Data were subjected to ANOVA using Proc GLM (SAS v8) using locations as replications. Mean separation procedures were conducted using Fisher's Protected LSD ( $p=0.05$ ). Economic data was generated using a cotton loan valuation

program furnished by Cotton Incorporated, based on the national CCC loan schedule for 2003.

**Tables 3-1 through 3-31** present data from each county location on yield, gin turnout, fiber quality, loan value and crop value by variety. These tables are sequenced in alphabetical order by county.

**Table 3-32** summarizes the yield, gin turnouts, fiber quality and economic analysis for the 2003 early-season, county standard tests. DP 444 BG/RR was both the highest yielding and most profitable early-season transgenic variety when averaged across locations. Although varieties at individual locations may have been in the discount range for micronaire, no varieties had overall micronaire values in the high or low discount range. All early-season varieties had fiber lengths, strengths and uniformities of at least base value. Lower loan values are representative of discounts from micronaire values, color and leaf grade, while higher loan values reflect small strength and uniformity premiums.

**Table 3-33** summarizes yield, gin turnouts, fiber quality and economic analysis for the 2003 medium/full-season, county standard tests. The medium-season check, ST 4892BR was the highest yielding variety by 21 lbs. of lint per acre but only grossed two dollars more than its closest competitor. As a rule, medium/full-season varieties avoided discounts for micronaire and no varieties had overall micronaire values in the high or low discount range. All medium/full-season varieties had fiber lengths, strengths and uniformities of at least base value. Lower loan values are representative of discounts from micronaire values, color and leaf grade, while higher loan values reflect small strength and uniformity premiums.

Table 3-1. Results of the early-season, transgenic cotton variety test, **Chester County**, 2003.

Yield Rank	Variety	Lint Yield		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net Loan	Crop
		lb./A	%							Value	Value
1	FM 960 BR	1633	37.9	38	1.14	33.7	82	21-2	4	55.70	909.40
2	SG 215 BR	1577	37.0	41	1.05	27.5	83	21-2	3	54.50	859.24
3	DP 444 BR	1562	38.0	36	1.11	29.1	83	31-1	5	51.60	805.94
4	DP 451 BR	1473	35.0	41	1.07	29.9	83	21-1	3	54.85	807.86
5	ST 4892 BR	1419	38.2	42	1.05	29.6	82	41-1	5	50.00	709.43
6	SG 501 BR	1418	37.3	43	1.05	27.9	82	31-1	4	52.90	750.31
7	ST 4793 R	1409	38.8	44	1.06	28.0	82	31-1	4	52.90	745.37
8	SG 521 R	1408	38.1	41	1.07	28.7	82	31-1	4	53.10	747.38
9	BCG 28 R	1390	38.1	45	1.09	28.9	82	31-1	4	54.05	751.40
10	PM 1199 RR	1376	37.7	43	1.09	29.7	83	31-2	4	54.65	751.89
11	PM 1218 BR	1335	39.3	44	1.04	27.7	82	31-1	3	50.80	678.28
12	DP 436 RR	1228	35.0	42	1.11	27.3	82	11-1	3	56.25	690.98
Mean		1436	37.5	42	1.08	29.0	82		3.8	53.44	767.29

Agent: Tommy Patterson

Producer: Tim and Tommy Colbert

Planting Date: 5/2/03

Harvest Date: 10/13/03

Soil Type: Deanburg silt loam

Tillage: No-Till

Previous Crop: Cotton

Fertilizer: 90-60-80

Row Spacing: 38" solid

Table 3-2. Results of the early-season, transgenic cotton variety test, **Crockett County**, 2003.

Yield Rank	Variety	Lint Yield		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net Loan	Crop
		lb./A	%							Value	Value
1	ST 4892 BR	1129	40.6	46	1.10	29.5	84	42-1	4	50.75	572.82
2	SG 501 BR	1007	40.4	45	1.07	32.0	83	31-2	4	53.75	541.41
3	SG 215 BR	1004	38.3	45	1.10	28.9	83	42-1	4	50.30	505.03
4	PM 1199 RR	935	41.3	49	1.08	28.0	84	41-3	4	53.75	502.72
5	DP 444 BR	874	43.0	43	1.13	30.4	83	41-1	4	54.20	473.59
6	BCG 28 R	873	41.2	44	1.10	30.1	83	31-2	4	54.65	477.04
7	DP 451 BR	805	40.1	45	1.10	27.3	82	31-1	4	54.05	435.10
8	FM 960 BR	795	40.0	39	1.10	28.9	83	31-2	4	54.50	433.33
9	DP 436 RR	764	36.4	46	1.11	27.9	83	31-1	3	55.85	426.55
10	PM 1218 BR	718	40.8	48	1.08	27.8	82	31-1	4	54.05	388.30
<b>SG 521 R†</b>		.	.	.	.	.	.	.	.	.	.
<b>ST 4793 R</b>		.	.	.	.	.	.	.	.	.	.
Mean		890	40	45	1.10	29.1	83		3.9	53.59	475.59

Agent: Richard Buntin

Producer: Dwayne Dove

Planting Date: 4/30/03

Harvest Date: 9/24/03

Soil Type: Adler silt loam

Tillage: No-Till

Previous Crop: Cotton

Fertilizer: 30-60-110 at planting, 60-0-0 sidedress

Row Spacing: 38" solid

†SG 521 R and ST 4793 R were planted but lost prior to harvest.

Table 3-3. Results of the early-season, transgenic cotton variety test, **Dyer County**, 2003.

Yield Rank	Variety	Lint		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net	Crop Value
		Yield	GTO %							Loan Value	
		lb./A	%			g/tex	%			¢/lb.	\$/A
1	FM 960 BR	1406	40.0	37	1.10	30.5	81	21-2	4	55.00	773.40
2	DP 444 BR	1399	41.0	32	1.12	29.3	82	31-1	4	50.60	707.68
3	ST 4892 BR	1355	39.3	38	1.11	29.5	83	31-1	4	55.15	747.24
4	DP 451 BR	1314	37.1	45	1.12	24.7	82	21-2	4	53.70	705.36
5	PM 1218 BR	1241	39.6	41	1.09	29.2	82	31-1	4	54.25	673.37
6	SG 215 BR	1235	37.6	36	1.06	28.3	82	21-1	3	54.05	667.59
7	SG 501 BR	1192	37.4	42	1.09	29.0	83	21-1	4	54.65	651.43
8	PM 1199 RR	1176	37.8	37	1.13	31.9	83	31-2	4	55.40	651.67
9	BCG 28 R	1159	37.9	39	1.12	29.3	82	31-1	4	54.55	631.99
10	DP 436 RR	1110	34.9	37	1.12	28.6	82	21-2	4	54.80	608.55
11	ST 4793 R	1051	36.2	37	1.10	29.9	83	21-2	4	55.00	577.99
12	SG 521 R	1049	38.7	37	1.09	28.2	83	31-1	4	54.50	571.51
Mean		1224	38.1	38	1.10	29.0	82	3.9		54.30	663.98

Agent: Tim Campbell

Producer: Glen and Thomas Davis

Planting Date: 5/23/03

Harvest Date: 11/3/03

Soil Type: Falaya/Waverly/Dekoven silt loam

Tillage: No-Till

Previous Crop: Cotton

Fertilizer: 100-30-84-0.8(B)-15(S) at planting

Row Spacing: 38" solid

Table 3-4. Results of the full-season, transgenic cotton variety test, **Dyer County**, 2003.

Yield Rank	Variety	Lint		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net	Crop Value
		Yield	GTO %							Loan Value	
		lb./A	%			g/tex	%			¢/lb.	\$/A
1	ST 5599 BR	1368	40.1	39	1.11	27.8	82	31-1	4	54.55	746.13
2	ST 4892 BR	1332	38.7	37	1.12	28.8	83	21-2	5	52.15	694.39
3	ST 5303 R	1315	38.1	35	1.10	31.9	84	21-1	3	56.50	742.91
4	FM 989 BR	1276	37.4	34	1.12	31.6	81	31-1	4	53.15	677.96
5	DP 555 BR	1218	38.7	33	1.13	28.8	81	21-2	4	52.80	643.32
6	FM 991 BR	1214	36.1	36	1.14	32.7	82	31-1	4	55.25	670.81
Mean		1287	38.2	36	1.12	30.3	82	4.0		54.07	695.92

Agent: Tim Campbell

Producer: Glen and Thomas Davis

Planting Date: 5/23/03

Harvest Date: 11/3/03

Soil Type: Falaya/Waverly/Dekoven silt loam

Tillage: No-Till

Previous Crop: Cotton

Fertilizer: 100-30-84-0.8(B)-15(S) at planting

Row Spacing: 38" solid

Table 3-5. Results of the early-season, transgenic cotton variety test, **Fayette County**, 2003.

Yield Rank	Variety	Lint		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net	Crop Value
		Yield	GTO							Loan Value	
		lb./A	%		in.	g/tex	%			¢/lb.	\$/A
1	FM 960 BR	995	41.4	36	1.10	31.6	82	31-2	4	54.65	544.02
2	PM 1218 BR	970	39.9	42	1.04	27.9	83	31-1	3	51.25	497.11
3	SG 215 BR	947	40.9	43	1.03	26.0	82	31-1	3	50.80	481.31
4	PM 1199 RR	918	40.5	43	1.07	28.8	83	41-1	4	52.25	479.77
5	DP 451 BR	915	38.7	40	1.08	27.2	82	31-2	4	54.25	496.65
6	DP 444 BR	906	43.6	36	1.07	29.9	83	41-1	4	52.60	476.48
7	SG 521 R	875	40.3	42	1.05	28.1	82	31-2	4	53.10	464.37
8	SG 501 BR	870	40.7	46	1.03	27.8	83	31-2	3	51.05	444.23
9	ST 4892 BR	849	39.3	42	1.07	28.6	82	31-2	4	53.10	450.84
10	BCG 28 R	834	42.0	46	1.08	28.4	82	41-1	4	53.40	445.37
11	DP 436 RR	811	36.9	42	1.09	27.8	82	31-2	4	54.25	440.19
12	ST 4793 R	755	41.9	43	1.06	30.1	82	41-1	4	52.35	395.24
Mean		887	40.5	42	1.06	28.5	82		3.8	52.75	467.96

Agent: Jamie Jenkins

Producer: Harris Armour III

Planting Date: 5/2/03

Harvest Date: 10/29/03

Soil Type: Falaya fine sandy loam

Tillage: No-Till

Previous Crop: Corn

Fertilizer: 50-30-60 at planting, 30-0-0 sidedress

Row Spacing: 38" solid

Table 3-6. Results of the full-season, transgenic cotton variety test, **Fayette County**, 2003.

Yield Rank	Variety	Lint		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net	Crop Value
		Yield	GTO							Loan Value	
		lb./A	%		in.	g/tex	%			¢/lb.	\$/A
1	ST 5599 BR	1190	40.1	42	1.08	29.9	81	31-1	3	55.80	664.04
2	FM 989 BR	963	38.4	39	1.12	34.1	83	31-1	3	56.80	546.89
3	ST 4892 BR	815	39.7	46	1.11	31.7	83	31-1	3	56.45	459.81
4	ST 5303 R	809	39.1	44	1.12	29.8	82	31-1	3	55.95	452.62
5	FM 991 BR	636	37.5	43	1.13	27.1	83	31-1	3	55.85	354.97
6	DP 555 BR	571	39.3	44	1.11	30.3	81	31-2	3	55.95	319.57
Mean		831	39.0	43	1.11	30.5	82		3.0	56.13	466.32

Agent: Craig Massey

Producer: Rhea Farms

Planting Date: 5/1/03

Harvest Date: 9/30/03

Soil Type: Waverly/Collins silt loam

Tillage: No-Till

Previous Crop: Cotton

Fertilizer: 80-30-90 at planting

Row Spacing: 38" solid

Table 3-7. Results of the ultra narrow row, early-season, transgenic cotton variety test, **Fayette County**, 2003.

Yield Rank	Variety	Lint		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net	Crop Value
		Yield	GTO %							Loan Value <sup>†</sup>	
		lb./A	%		in.	g/tex	%			¢/lb.	\$/A
1	ST 4892 BR	1372	35.9	44	1.08	29.2	83	41-1	6	48.40	663.91
2	SG 215 BR	1207	35.0	46	1.06	26.0	83	31-1	4	53.15	641.68
3	DP 436 RR	1123	33.3	44	1.10	25.7	82	31-2	4	54.05	607.18
4	FM 960 BR	1069	36.0	43	1.07	30.1	84	21-2	3	54.75	585.47
5	PM 1218 BR	998	36.9	48	1.06	27.6	82	31-3	4	51.45	513.44
6	SG 501 BR	931	35.9	48	1.09	28.6	83	41-1	5	50.45	469.55
7	SG 521 R	913	36.2	46	1.04	26.4	83	42-1	4	48.50	443.00
8	PM 1199 RR	889	34.7	46	1.07	28.6	83	31-4	5	50.40	448.16
9	DP 444 BR	822	37.7	41	1.08	29.5	83	31-2	4	53.40	438.98
10	DP 451 BR	806	33.4	45	1.09	28.0	83	31-2	4	52.85	425.78
11	ST 4793 R	766	37.5	45	1.06	28.1	82	32-2	5	48.60	372.46
12	BCG 28 R	603	36.8	45	1.11	27.9	82	31-3	4	52.90	318.92
Mean		958	35.8	45	1.08	28.0	83		4.3	51.58	494.04

Agent: Craig Massey

Producer: McNabb Farms

Planting Date: 4/29/03

Harvest Date: 9/26/03

Soil Type: Memphis silt loam

Tillage: Conventional till

Previous Crop: Cotton

Fertilizer: 80-50-90 at planting

Row Spacing: 10" UNR

†Loan values for UNR cotton reflect any bark discounts.

Table 3-8. Results of the wide-row, early-season, transgenic cotton variety test, **Fayette County**, 2003.

Yield Rank	Variety	Lint		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net	Crop Value
		Yield	GTO %							Loan Value	
		lb./A	%		in.	g/tex	%			¢/lb.	\$/A
1	ST 4793 R	1272	39.5	40	1.09	29.8	83	31-1	5	52.00	661.37
2	SG 521 R	1224	41.4	40	1.12	28.6	82	31-2	5	51.55	631.17
3	ST 4892 BR	1191	39.5	41	1.12	30.3	83	41-1	6	49.00	583.81
4	SG 215 BR	1189	37.9	37	1.10	28.8	82	31-1	4	54.25	644.78
5	DP 444 BR	1176	40.1	36	1.13	29.4	83	31-1	6	49.45	581.67
6	FM 960 BR	1169	38.3	35	1.15	34.9	82	31-1	5	52.25	610.62
7	SG 501 BR	1131	37.2	42	1.10	30.9	84	41-1	4	54.55	616.78
8	DP 451 BR	1122	36.6	40	1.15	29.8	83	31-2	6	50.05	561.72
9	PM 1199 RR	1081	39.4	40	1.11	30.0	83	31-2	4	55.15	596.37
10	DP 436 RR	1063	35.9	39	1.14	28.3	82	31-2	4	54.70	581.36
11	PM 1218 BR	1030	40.9	41	1.09	30.0	82	31-2	4	54.60	562.31
12	BCG 28 R	1025	40.4	45	1.12	29.7	83	31-2	4	54.95	563.16
Mean		1139	38.9	40	1.12	30.0	83		4.8	52.71	599.59

Agent: Craig Massey

Producer: McNabb Farms

Planting Date: 4/29/03

Harvest Date: 9/26/03

Soil Type: Memphis silt loam

Tillage: Conventional till

Previous Crop: Cotton

Fertilizer: 80-50-90 at planting

Row Spacing: 40" solid

Table 3-9. Results of the ultra narrow row, full-season, transgenic cotton variety test, **Fayette County, 2003.**

Yield Rank	Variety	Lint		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net	Crop Value
		Yield	GTO							Loan Value <sup>†</sup>	
		lb./A	%		in.	g/tex	%			¢/lb.	\$/A
1	ST 4892 BR	1372	35.9	44	1.08	29.2	83	41-1	6	48.40	663.91
2	ST 5599 BR	1158	37.3	43	1.11	30.3	82	41-1	5	49.15	568.96
3	FM 989 BR	1118	35.5	42	1.10	30.4	82	31-1	4	54.60	610.20
4	ST 5303 R	814	35.9	43	1.08	32.8	83	31-1	4	55.05	448.29
5	FM 991 BR	809	32.7	46	1.13	31.4	82	31-1	4	53.50	432.97
6	DP 555 BR	657	38.6	41	1.11	29.6	81	41-1	4	52.70	346.47
Mean		988	36.0	43	1.10	30.6	82		4.5	52.23	511.80

Agent: Craig Massey

Producer: McNabb Farms

Planting Date: 4/29/03

Harvest Date: 9/26/03

Soil Type: Memphis silt loam

Tillage: Conventional till

Previous Crop: Cotton

Fertilizer: 80-50-90 at planting

Row Spacing: 10" UNR

†Loan values for UNR cotton reflect any bark discounts.

Table 3-10. Results of the full-season transgenic cotton variety test, **Fayette County, 2003.**

Yield Rank	Variety	Lint		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net	Crop Value
		Yield	GTO							Loan Value <sup>†</sup>	
		lb./A	%		in.	g/tex	%			¢/lb.	\$/A
1	FM 989 BR	1353	38.8	38	1.15	30.9	82	41-1	4	54.45	736.72
2	ST 4892 BR	1191	39.5	41	1.12	30.3	83	41-1	6	49.00	583.59
3	FM 991 BR	1184	38.2	40	1.14	31.9	83	41-1	5	51.35	607.90
4	ST 5599 BR	1152	45.4	40	1.13	31.3	81	31-2	5	52.15	600.74
5	DP 555 BR	1065	41.2	38	1.11	29.5	82	31-2	4	54.90	584.42
6	ST 5303 R	1006	38.8	40	1.10	33.2	84	31-1	4	55.35	556.76
Mean		1158	40.3	40	1.13	31.2	83		4.7	52.87	611.69

Agent: Craig Massey

Producer: McNabb Farms

Planting Date: 4/29/03

Harvest Date: 9/26/03

Soil Type: Memphis silt loam

Tillage: Conventional till

Previous Crop: Cotton

Fertilizer: 80-50-90 at planting

Row Spacing: 40" solid

Table 3-11. Results of the early-season, transgenic cotton variety test, **Gibson County, 2003.**

Yield Rank	Variety	Lint		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net	Crop Value
		Yield	GTO %							Loan Value	
		lb./A	%			g/tex	%			¢/lb.	\$/A
1	PM 1218 BR	945	41.4	44	1.05	29.5	84	31-1	3	54.50	514.90
2	DP 444 BR	892	40.7	36	1.10	29.0	83	31-1	4	54.30	484.43
3	ST 4892 BR	876	39.6	36	1.10	28.6	83	31-1	5	51.45	450.53
4	SG 501 BR	875	39.1	39	1.11	31.2	84	21-1	3	57.20	500.25
5	FM 960 BR	866	40.3	34	1.12	32.6	82	21-1	4	53.55	463.73
6	PM 1199 RR	864	41.1	43	1.09	30.2	85	31-1	4	54.85	474.06
7	DP 451 BR	854	37.6	37	1.14	29.4	83	21-2	4	55.20	471.64
8	DP 436 RR	807	36.9	38	1.13	30.2	83	31-1	4	55.15	445.13
9	SG 521 R	787	39.9	38	1.09	28.8	83	31-1	4	54.50	429.02
10	BCG 28 R	765	39.4	41	1.11	29.2	83	31-1	4	54.80	419.05
11	SG 215 BR	753	38.2	36	1.09	28.6	83	21-1	4	54.45	410.03
12	ST 4793 R	711	38.3	34	1.10	30.4	83	31-1	5	50.00	355.68
Mean		833	39.4	38	1.10	29.8	83	4.0		54.16	451.54

Agent: Philip Shelby

Producer: Tracey Griggs

Planting Date: 5/27/03

Harvest Date: 10/30/03

Soil Type: Grenada silt loam

Tillage: Conventional till

Previous Crop: Soybeans

Fertilizer: 95-69-90 at planting

Row Spacing: 38" solid

Table 3-12. Results of the full-season, transgenic cotton variety test, **Gibson County, 2003.**

Yield Rank	Variety	Lint		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net	Crop Value
		Yield	GTO %							Loan Value	
		lb./A	%			g/tex	%			¢/lb.	\$/A
1	ST 5303 R	1109	39.5	46	1.10	33.2	84	31-1	3	56.35	624.97
2	FM 991 BR	1052	35.3	41	1.16	35.0	82	31-1	3	56.75	596.75
3	ST 5599 BR	1046	40.2	41	1.10	33.3	82	21-2	4	55.15	576.62
4	ST 4892 BR	1045	40.4	43	1.11	30.8	82	31-2	4	54.95	574.26
5	FM 989 BR	1018	36.2	38	1.15	33.8	83	31-2	4	55.70	566.83
6	DP 555 BR	973	40.1	43	1.10	29.4	82	31-1	3	55.25	537.51
Mean		1040	38.6	42	1.12	32.6	83	3.5		55.69	579.49

Agent: Philip Shelby

Producer: Rege Luckey and Sons

Planting Date: 4/28/03

Harvest Date: 10/15/03

Soil Type: Routon silt loam

Tillage: No-till

Previous Crop: Cotton

Fertilizer: 107-69-90 at planting

Row Spacing: 38" solid

Table 3-13. Results of the early-season, transgenic cotton variety test, **Giles County**, 2003.

Yield Rank	Variety	Lint		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net	Crop Value	
		Yield	GTO %							Loan Value		
		lb./A	%			g/tex	%			¢/lb.	\$/A	
1	DP 444 BR	1430	41.3	32	1.07	26.3	81	21-1	4	49.25	704.28	
2	BCG 28 R	1270	40.1	40	1.10	28.5	83	21-1	3	56.00	711.45	
3	SG 521 R	1181	41.0	32	1.08	28.4	82	21-2	4	50.45	595.81	
4	SG 501 BR	1160	39.9	40	1.07	28.5	83	11-1	3	54.50	632.37	
5	DP 451 BR	1150	37.5	32	1.11	27.8	82	21-1	3	52.30	601.45	
6	PM 1218 BR	1136	39.7	47	1.03	28.7	81	21-2	3	51.00	579.47	
7	FM 960 BR	1098	39.0	30	1.08	30.2	81	31-1	4	50.65	555.99	
8	PM 1199 RR	1062	41.9	45	1.04	27.2	82	31-1	4	50.30	534.35	
9	DP 436 RR	1026	36.0	31	1.11	26.6	80	21-1	3	52.30	536.43	
10	SG 215 BR	1025	39.4	35	1.10	28.1	81	41-1	5	50.20	514.55	
11	ST 4793 R	996	38.5	37	1.07	29.0	82	31-1	4	53.10	528.69	
12	ST 4892 BR	902	41.8	48	1.03	28.5	82	21-2	3	51.00	460.16	
Mean		1120	39.7	37	1.07	28.2	82			3.6	51.75	579.58

Agent: Kevin Rose

Producer: Paul Allen

Planting Date: 5/25/03

Harvest Date: 11/8/03

Soil Type: Maury/Armour silt loam

Tillage: No-Till

Previous Crop: Cotton

Fertilizer: 80-0-120-1(B) at planting

Row Spacing: 38" solid

Table 3-14. Results of the early-season, transgenic cotton variety test, **Hardeman County**, 2003.

Yield Rank	Variety	Lint		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net	Crop Value	
		Yield	GTO %							Loan Value		
		lb./A	%			g/tex	%			¢/lb.	\$/A	
1	BCG 28 R	1328	39.1	40	1.13	28.3	81	31-1	4	54.55	724.40	
2	PM 1199 RR	1247	39.9	41	1.12	30.6	84	41-1	5	51.40	640.84	
3	DP 444 BR	1220	39.7	35	1.12	30.2	83	41-1	4	54.20	661.14	
4	ST 4793 R	1198	40.4	40	1.07	28.6	83	41-1	5	49.90	597.68	
5	FM 960 BR	1186	40.0	38	1.09	31.3	81	31-2	4	54.85	650.69	
6	SG 501 BR	1186	37.9	41	1.06	28.9	83	31-2	3	54.25	643.18	
7	PM 1218 BR	1169	40.0	43	1.06	28.0	82	41-3	4	52.00	607.64	
8	SG 521 R	1137	39.6	40	1.08	27.1	83	41-1	4	53.85	612.44	
9	DP 436 RR	1122	37.4	37	1.14	27.5	82	31-1	4	54.70	613.67	
10	ST 4892 BR	1095	37.8	39	1.09	29.0	82	41-3	5	50.40	551.73	
11	SG 215 BR	1014	37.0	36	1.07	25.2	83	31-4	4	52.25	529.63	
12	DP 451 BR	997	39.2	37	1.11	27.7	82	31-2	4	54.55	543.62	
Mean		1158	39.0	39	1.10	28.5	82			4.2	53.08	614.72

Agent: Bob Vickers

Producer: Gem and George Mitchell

Planting Date: 5/23/03

Harvest Date: 10/24/03

Soil Type: Lexington silt loam

Tillage: No-Till

Previous Crop: Cotton

Fertilizer: 40-60-80 at planting, 55-0-0 sidedress

Row Spacing: 38" solid

Table 3-15. Results of the full-season, transgenic cotton variety test, **Hardeman County**, 2003.

Yield Rank	Variety	Lint		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net	Crop Value
		Yield	GTO %							Loan Value	
		lb./A	%			g/tex	%			¢/lb.	\$/A
1	DP 555 BR	1211	41.4	38	1.10	27.9	82	31-1	4	54.25	656.94
2	ST 4892 BR	1095	37.8	39	1.09	29.0	82	41-3	5	50.40	551.73
3	ST 5599 BR	956	41.1	44	1.10	29.9	82	52-1	4	47.60	454.99
4	FM 989 BR	929	36.0	33	1.12	30.4	81	31-2	4	52.90	491.28
5	ST 5303 R	812	38.2	35	1.10	31.7	84	31-1	4	55.00	446.34
6	FM 991 BR	811	36.6	35	1.13	32.2	83	31-1	4	55.20	447.84
Mean		969	38.5	37	1.11	30.2	82	4.2		52.56	508.19

Agent: Bob Vickers

Producer: Gem and George Mitchell

Planting Date: 5/23/03

Harvest Date: 10/24/03

Soil Type: Lexington silt loam

Tillage: No-Till

Previous Crop: Cotton

Fertilizer: 40-60-80 at planting, 55-0-0 sidedress

Row Spacing: 38" solid

Table 3-16. Results of the early-season, transgenic cotton variety test, **Haywood County**, 2003.

Yield Rank	Variety	Lint		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net	Crop Value
		Yield	GTO %							Loan Value	
		lb./A	%			g/tex	%			¢/lb.	\$/A
1	DP 444 BR	1011	41.7	36	1.10	29.7	82	21-2	4	54.55	551.67
2	ST 4892 BR	946	40.5	35	1.10	29.9	82	31-1	5	51.55	487.92
3	BCG 28 R	886	40.7	43	1.09	29.9	82	41-3	4	53.75	476.47
4	PM 1218 BR	883	39.3	45	1.06	28.4	83	31-3	4	53.15	469.52
5	DP 436 RR	836	37.1	39	1.13	28.3	82	21-2	4	54.80	458.07
6	PM 1199 RR	829	38.9	39	1.11	31.3	84	31-1	4	55.50	459.89
7	FM 960 BR	827	40.3	34	1.12	34.4	83	31-1	4	53.55	442.74
8	SG 215 BR	784	37.8	37	1.04	26.5	83	21-3	3	51.45	403.59
9	ST 4793 R	777	38.7	40	1.08	31.3	82	41-1	5	51.00	396.41
10	SG 501 BR	759	35.6	37	1.08	29.7	84	11-2	4	55.10	418.02
11	SG 521 R	740	39.8	38	1.07	28.7	82	31-1	4	53.10	393.16
12	DP 451 BR	717	35.6	30	1.15	28.9	81	31-1	4	50.75	363.83
Mean		833	38.8	38	1.09	29.8	83	4.1		53.19	443.44

Agent: Tracey Sullivan

Producer: Taylor Sullivan

Planting Date: 5/27/03

Harvest Date: 10/23/03

Soil Type: Memphis silt loam

Tillage: Conventional till

Previous Crop: Cotton

Fertilizer: 80-50-90-1(B) at planting

Row Spacing: 38" solid

Table 3-17. Results of the early-season, transgenic cotton variety test, **Lake County**, 2003.

Yield Rank	Variety	Lint Yield		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade <sup>‡</sup>	Net	Crop Value
		GTO <sup>†</sup>	%							Loan Value	
		lb./A	%		in.	g/tex	%			¢/lb.	\$/A
1	DP 444 BR	1157	39.8	31	1.15	28.6	84	41-4	4	50.25	581.49
2	FM 960 BR	1002	37.8	31	1.15	31.8	82	41-2	4	50.50	505.95
3	SG 501 BR	956	37.1	34	1.11	27.1	84	41-1	4	52.15	498.40
4	SG 215 BR	946	36.8	35	1.07	29.3	82	41-1	4	52.00	491.88
5	PM 1218 BR	922	38.0	37	1.10	29.7	83	41-3	4	54.20	499.58
6	DP 451 BR	921	35.1	32	1.14	27.1	83	41-1	4	50.15	461.81
7	PM 1199 RR	904	37.9	33	1.16	30.5	84	41-1	4	52.80	477.30
8	SG 521 R	893	36.1	29	1.11	28.0	83	41-1	4	47.20	421.55
9	ST 4892 BR	859	36.9	31	1.13	28.4	83	41-4	4	50.10	430.20
10	DP 436 RR	799	34.6	33	1.17	28.0	83	41-2	4	52.10	416.28
11	ST 4793 R	777	37.5	30	1.13	30.0	83	41-3	4	50.45	392.24
12	BCG 28 R	771	36.4	31	1.17	29.6	83	41-2	4	50.50	389.46
Mean		909	37.0	32	1.13	29.0	83		4.0	51.03	463.85
Agent: Greg Allen				Harvest Date: 11/21/03				Fertilizer: 92-0-60-12(S)-			
Producer: Lindamood				Soil Type: Worthen silt loam				0.5(B)-3(ZN)			
Planting Company				Tillage: Conventional				Row Spacing: 38" solid			
Planting Date: 5/29/03				Previous Crop: Cotton							

<sup>†</sup>Samples were ginned on a 10 saw Continental laboratory gin.

<sup>‡</sup>All fiber samples were assigned a leaf grade of 4 for loan value calculations due to no lint cleaning during ginning.

Table 3-18. Results of the early-season, transgenic cotton variety test, **Lauderdale County**, 2003.

Yield Rank	Variety	Lint Yield		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net	Crop Value
		GTO	%							Loan Value	
		lb./A	%		in.	g/tex	%			¢/lb.	\$/A
1	PM 1199 RR	1170	38.4	42	1.13	31.7	83	41-1	4	54.65	639.41
2	DP 444 BR	1154	40.5	36	1.13	30.6	84	31-2	5	52.30	603.54
3	PM 1218 BR	1154	39.2	42	1.09	27.9	82	31-2	4	54.25	625.77
4	ST 4793 R	1149	40.3	43	1.10	30.8	84	41-1	5	51.15	587.71
5	FM 960 BR	1123	38.4	36	1.16	30.2	82	31-2	4	54.85	615.97
6	BCG 28 R	1098	38.8	43	1.14	29.7	83	31-2	4	55.10	605.00
7	DP 451 BR	1098	35.5	43	1.14	28.1	83	41-1	3	54.40	597.31
8	ST 4892 BR	1083	39.2	43	1.11	29.9	83	31-2	6	49.80	539.33
9	DP 436 RR	1076	35.3	39	1.15	27.7	83	31-2	4	54.95	591.26
10	SG 521 R	1060	38.8	41	1.09	28.4	82	31-2	4	54.25	575.05
11	SG 215 BR	1011	38.0	42	1.09	26.9	83	31-1	3	55.70	563.13
	SG 501 BR	.	.	.	.	.	.	.	.	.	.
Mean		1107	38.4	41	1.12	29.3	83		4.2	53.76	594.86
Agent: Jerry Parker				Soil Type: Robinsonville fine				Fertilizer: 30-0-70-0.5(B)-			
Producer: Leslie Crook				sandy loam				15(S) at planting, 60-0-0			
Planting Date: 4/29/03				Tillage: Conventional till				sidedress			
Harvest Date: 9/26/03				Previous Crop: Soybeans				Row Spacing: 38" solid			

Table 3-19. Results of the full-season, transgenic cotton variety test, **Lauderdale County**, 2003.

Yield Rank	Variety	Lint		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net	Crop Value
		Yield	GTO %							Loan Value	
		lb./A	%		in.	g/tex	%			¢/lb.	\$/A
1	DP 555 BR	1395	42.2	43	1.11	28.8	81	31-1	3	55.60	775.62
2	FM 989 BR	1313	37.2	38	1.17	32.8	80	41-1	3	55.10	723.46
3	FM 991 BR	1248	35.8	.	.	.	.	.	.	.	.
4	ST 5303 R	1226	38.5	41	1.10	32.8	83	31-1	3	56.45	692.08
5	ST 4892 BR	1140	35.5	.	.	.	.	.	.	.	.
	ST 5599 BR	.	.	.	.	.	.	.	.	.	.
Mean		1296	38.5	41	1.13	31.5	81		3.0	55.72	730.39

Agent: Jerry Parker

Producer: Leslie Crook

Planting Date: 4/29/03

Harvest Date: 9/26/03

Soil Type: Robinsonville fine sandy loam

Tillage: Conventional till

Previous Crop: Soybeans

Fertilizer: 30-0-70-0.5(B)-15(S) at planting, 60-0-0 sidedress

Row Spacing: 38" solid

*Fiber samples classing of FM 991 BR and ST 4892 BR were lost during classing.*

*ST 5599 BR was lost after planting due to flooding.*

Table 3-20. Results of the early-season, transgenic cotton variety test, **Lincoln County**, 2003.

Yield Rank	Variety	Lint		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net	Crop Value
		Yield	GTO %							Loan Value	
		lb./A	%		in.	g/tex	%			¢/lb.	\$/A
1	DP 444 BR	1335	40.7	35	1.12	30.2	83	21-2	4	55.20	736.90
2	ST 4793 R	1284	39.8	42	1.10	27.4	83	31-2	4	54.50	699.99
3	PM 1218 BR	1111	40.0	42	1.10	25.0	84	21-2	4	53.85	598.02
4	DP 436 RR	1048	36.0	39	1.13	27.8	83	31-1	4	54.80	574.27
5	FM 960 BR	945	39.0	35	1.09	28.8	83	31-1	5	51.45	486.44
6	ST 4892 BR	879	36.7	41	1.12	27.4	83	31-2	8	47.75	419.92
7	PM 1199 RR	797	37.9	39	1.12	30.1	82	31-1	4	54.90	437.34
8	SG 501 BR	756	36.1	40	1.10	29.5	84	31-1	4	54.95	415.22
9	DP 451 BR	713	34.2	36	1.16	28.3	83	31-1	4	54.75	390.34
<b>10</b>	<b>SG 521 R<sup>†</sup></b>	<b>634</b>	<b>35.2</b>	<b>36</b>	<b>1.12</b>	<b>27.1</b>	<b>83</b>	<b>31-1</b>	<b>5</b>	<b>51.60</b>	<b>327.01</b>
<b>11</b>	<b>SG 215 BR</b>	<b>624</b>	<b>34.1</b>	<b>34</b>	<b>1.06</b>	<b>30.0</b>	<b>83</b>	<b>21-1</b>	<b>4</b>	<b>51.80</b>	<b>323.30</b>
Mean		921	37.2	38	1.11	28.3	83		4.5	53.23	491.70

Agent: David Qualls

Producer: JBH Farms

Planting Date: 5/15/03

Harvest Date: 11/12/03

Soil Type: Taft silt loam

Tillage: No-Till

Previous Crop: Cotton

Fertilizer: 30-60-100 at planting, 70-0-0 sidedress

Row Spacing: 38" solid

*†SG 521 R and SG 215 BR were replanted on 5/29/03 and harvested before 100% open boll.*

*Lint yields of SG 501 BR and PM 1199 may have been affected by poor plant stands.*

*BCG 28 R was not entered due to seed availability at time of planting.*

Table 3-21. Results of the early-season, transgenic cotton variety test, **Madison County**, 2003.

Yield Rank	Variety	Lint		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net	Crop Value
		Yield	GTO %							Loan Value	
		lb./A	%			g/tex	%			¢/lb.	\$/A
1	DP 444 BR	1214	42.3	39	1.10	30.7	83	31-2	4	55.10	669.05
2	ST 4793 R	1205	41.1	42	1.10	29.2	84	31-1	5	51.75	623.60
3	PM 1218 BR	1147	40.7	46	1.09	28.6	83	31-1	4	54.30	622.82
4	PM 1199 RR	1129	40.6	44	1.12	29.3	83	41-1	5	50.50	569.99
5	FM 960 BR	1119	40.9	39	1.12	30.3	82	31-1	4	54.90	614.49
6	BCG 28 R	1115	40.2	44	1.10	29.4	82	31-2	4	54.05	602.81
7	ST 4892 BR	1091	39.5	38	1.10	29.5	84	31-1	5	52.10	568.56
8	SG 215 BR	1067	38.9	41	1.08	27.8	83	31-1	3	55.70	594.47
9	SG 501 BR	1063	39.0	43	1.09	29.2	84	31-1	4	54.40	578.31
10	SG 521 R	1048	40.1	41	1.09	28.7	83	31-2	4	54.50	571.20
11	DP 451 BR	1021	36.9	42	1.12	28.0	82	41-1	4	53.80	549.21
12	DP 436 RR	936	35.2	39	1.13	27.8	83	31-2	4	54.80	513.10
Mean		1096	39.6	42	1.10	29.0	83	4.2		53.83	589.80

Agent: Bill Wyatt

Producer: Couch Farms

Planting Date: 5/24/03

Harvest Date: 11/4/03

Soil Type: Lexington/Grenada silt loam

Tillage: No-Till

Previous Crop: Cotton

Fertilizer: 40-60-90 at planting, 50-0-0 sidedress

Row Spacing: 38" solid

Table 3-22. Results of the full-season, transgenic cotton variety test, **Madison County**, 2003.

Yield Rank	Variety	Lint		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net	Crop Value
		Yield	GTO %							Loan Value	
		lb./A	%			g/tex	%			¢/lb.	\$/A
1	ST 4892 BR	1297	42.4	43	1.13	31.0	84	31-2	4	55.30	717.09
2	FM 991 BR	1201	40.2	39	1.09	28.8	83	31-1	4	54.50	654.67
3	DP 555 BR	1200	42.9	43	1.14	30.5	82	31-1	3	56.40	676.56
4	ST 5599 BR	1175	41.5	41	1.14	31.6	82	31-2	4	55.30	649.85
5	FM 989 BR	1110	39.4	35	1.14	32.5	82	31-2	4	55.25	613.52
6	ST 5303 R	1099	39.2	41	1.12	32.6	83	31-1	3	56.80	624.44
Mean		1180	40.9	40	1.13	31.2	83	3.7		55.59	656.02

Agent: Bill Wyatt

Producer: Mark Smith

Planting Date: 5/14/03

Harvest Date: 10/21/03

Soil Type: Grenada silt loam

Tillage: No-Till

Previous Crop: Cotton

Fertilizer: 70-50-90-1(B)-0.5(Zn)-5(S)

Row Spacing: 38" solid

Table 3-23. Results of the early-season, transgenic cotton variety test, **Milan Experiment Station, 2003.**

Yield Rank	Variety	Lint		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net	Crop Value
		Yield	GTO %							Loan Value	
		lb./A	%			g/tex	%			¢/lb.	\$/A
1	DP 444 BR	1474	37.2	34	1.12	29.9	82	21-2	4	53.15	783.27
2	FM 960 BR	1423	36.6	33	1.10	30.2	81	31-1	4	52.60	748.36
3	ST 4892 BR	1326	35.8	38	1.12	29.6	83	31-1	5	52.15	691.36
4	SG 501 BR	1278	36.4	38	1.11	28.9	81	21-1	4	54.80	700.25
5	SG 215 BR	1274	33.3	36	1.10	27.2	83	21-1	4	54.45	693.85
6	DP 451 BR	1250	32.9	35	1.10	26.9	83	21-2	4	54.45	680.39
7	PM 1199 RR	1247	35.6	39	1.14	29.7	82	31-1	4	55.05	686.64
8	ST 4793 R	1206	36.0	39	1.08	28.4	82	31-2	5	51.40	620.03
9	BCG 28 R	1159	34.4	39	1.10	27.8	82	31-1	4	54.25	628.65
10	DP 436 RR	1027	32.0	35	1.12	28.7	82	21-1	3	56.05	575.77
11	SG 521 R	998	34.2	37	1.09	26.8	83	31-1	4	54.50	543.80
12	PM 1218 BR	959	35.9	43	1.09	27.8	83	11-1	3	55.80	535.01
Mean		1218	35.0	37	1.11	28.5	82	4.0		54.05	657.28

Superintendent: Blake Brown

Managers: Don Gibson, Jimmy McClure, Jason Williams

Planting Date: 5/12/03

Harvest Date: 11/11/03

Soil Type: Loring silt loam

Tillage: No-Till, irrigated

Previous Crop: Corn

Fertilizer: 11-30-60 at planting, 80-0-0 sidedress

Row Spacing: 40" solid

Table 3-24. Results of the full-season, transgenic cotton variety test, **Milan Experiment Station, 2003.**

Yield Rank	Variety	Lint		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net	Crop Value
		Yield	GTO %							Loan Value	
		lb./A	%			g/tex	%			¢/lb.	\$/A
1	ST 5599 BR	1362	36.5	37	1.12	30.1	81	31-2	5	51.90	706.76
2	FM 989 BR	1358	35.9	35	1.10	30.0	81	31-1	4	54.40	738.73
3	ST 4892 BR	1326	35.8	38	1.12	29.6	83	31-1	5	52.15	691.36
4	DP 555 BR	1177	37.0	33	1.11	26.8	81	31-2	5	49.55	583.20
5	FM 991 BR	1045	33.8	38	1.12	31.0	83	31-1	3	56.65	592.25
6	ST 5303 R	983	35.1	36	1.10	30.9	83	21-2	3	56.40	554.17
Mean		1208	35.7	36	1.11	29.7	82	4.2		53.51	644.41

Superintendent: Blake Brown

Managers: Don Gibson, Jimmy McClure, Jason Williams

Planting Date: 5/12/03

Harvest Date: 11/11/03

Soil Type: Loring silt loam

Tillage: No-Till, irrigated

Previous Crop: Corn

Fertilizer: 11-30-60 at planting, 80-0-0 sidedress

Row Spacing: 40" solid

Table 3-25. Results of the early-season, transgenic cotton variety test, **Obion County**, 2003.

Yield Rank	Variety	Lint		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net	Crop Value
		Yield	GTO %							Loan Value	
		lb./A	%			g/tex	%			¢/lb.	\$/A
1	DP 444 BR	1338	39.9	28	1.15	28.5	83	31-1	4	48.10	643.57
2	PM 1218 BR	1247	37.9	32	1.10	30.4	83	21-1	3	52.40	653.45
3	DP 451 BR	1144	33.2	28	1.16	28.3	82	31-1	4	47.85	547.37
4	SG 215 BR	1108	33.3	26	1.11	25.6	84	31-1	6	39.65	439.36
5	ST 4892 BR	1108	33.8	29	1.13	29.2	84	31-1	6	42.90	475.28
6	ST 4793 R	1022	35.0	33	1.12	29.2	83	41-1	5	48.70	497.54
7	PM 1199 RR	1020	37.1	33	1.13	30.1	83	31-2	4	53.15	542.16
8	FM 960 BR	919	33.5	27	1.15	30.9	82	31-1	6	43.20	396.82
9	BCG 28 R	893	34.7	31	1.15	30.2	83	41-1	5	47.15	421.14
10	SG 501 BR	889	30.1	27	1.14	28.9	83	41-1	4	47.25	420.16
11	SG 521 R	853	32.3	28	1.13	27.8	83	31-2	4	47.95	409.22
12	DP 436 RR	793	27.1	28	1.16	28.1	82	11-2	4	48.10	381.24
Mean		1028	34.0	29	1.14	28.9	83	4.6		47.20	485.61

Agent: Tim Smith

Producer: Rance Barnes

Planting Date: 5/30/03

Harvest Date: 11/14/03

Soil Type: Falaya silt loam

Tillage: Conventional tillage

Previous Crop: Corn

Fertilizer: 40-40-100-1(B)-10(S) at planting, 50-0-0 sidedress

Row Spacing: 30" solid

Table 3-26. Results of the early-season, transgenic cotton variety test, **Shelby County**, 2003.

Yield Rank	Variety	Lint		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net	Crop Value
		Yield	GTO %							Loan Value	
		lb./A	%			g/tex	%			¢/lb.	\$/A
1	FM 960 BR	1475	41.3	41	1.09	30.0	81	21-1	4	54.75	807.36
2	SG 215 BR	1328	39.4	41	1.08	28.9	83	21-4	3	56.00	743.54
3	DP 444 BR	1235	39.1	34	1.13	30.5	83	31-1	4	53.40	659.73
4	ST 4892 BR	1200	37.1	36	1.12	32.1	82	42-1	5	48.80	585.50
5	SG 521 R	1141	38.9	41	1.08	29.1	83	31-3	4	54.50	621.58
6	PM 1218 BR	1131	38.9	40	1.08	29.9	83	31-1	3	56.05	633.84
7	DP 451 BR	1094	35.2	39	1.14	29.8	83	21-2	3	57.00	623.81
8	SG 501 BR	1079	36.9	41	1.11	31.7	83	21-2	3	57.10	615.99
9	DP 436 RR	1069	36.7	42	1.14	30.6	82	31-2	4	55.30	591.18
10	ST 4793 R	1067	39.1	42	1.11	32.2	82	31-3	4	55.15	588.56
11	PM 1199 RR	1000	35.7	39	1.14	31.1	83	31-4	4	55.55	555.60
12	BCG 28 R	972	36.9	42	1.16	31.2	82	31-3	4	55.30	537.28
Mean		1149	37.9	40	1.12	30.6	83	3.8		54.91	630.33

Agent: Jeff Via and Michelle Rankin

Producer: Sneed Brothers' Farms

Planting Date: 4/28/03

Harvest Date: 9/19/03

Soil Type: Memphis silt loam

Tillage: Conventional tillage

Previous Crop: Cotton

Fertilizer: 0-40-80 at planting, 87-0-0 sidedress

Row Spacing: 30" solid

Table 3-27. Results of the full-season, transgenic cotton variety test, **Shelby County**, 2003.

Yield Rank	Variety	Lint		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net	Crop Value
		Yield	GTO %							Loan Value	
		lb./A	%			g/tex	%			¢/lb.	\$/A
1	ST 5599 BR	1114	38.2	38	1.11	32.9	81	21-2	4	55.55	619.10
2	ST 4892 BR	1040	37.7	38	1.12	30.6	81	31-3	4	55.15	573.58
3	DP 555 BR	1005	39.8	41	1.13	31.4	82	21-1	4	55.40	556.68
4	ST 5303 R	934	38.9	40	1.11	33.3	83	11-2	3	57.25	534.67
5	FM 989 BR	926	33.7	31	1.15	32.4	82	31-1	4	51.35	475.75
6	FM 991 BR	882	37.8	41	1.15	33.8	82	21-2	4	55.70	491.11
Mean		984	37.7	38	1.13	32.4	82	3.8		55.07	541.81

Agent: Jeff Via and Michelle Rankin

Tillage: Conventional tillage

Producer: Sneed Brothers' Farms

Previous Crop: Cotton

Planting Date: 4/28/03

Fertilizer: 0-40-80 at planting, 87-0-0 sidedress at planting

Harvest Date: 9/19/03

Soil Type: Memphis silt loam

Row Spacing: 38" solid

Table 3-28. Results of the early-season, transgenic cotton variety test, **Tipton County**, 2003.

Yield Rank	Variety	Lint		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net	Crop Value
		Yield	GTO %							Loan Value	
		lb./A	%			g/tex	%			¢/lb.	\$/A
1	DP 444 BR	1316	41.1	39	1.15	30.4	83	31-2	4	55.30	727.80
2	SG 501 BR	1267	40.5	47	1.10	30.6	84	31-1	3	56.20	711.97
3	ST 4892 BR	1244	39.6	43	1.12	30.5	83	41-1	5	51.10	635.65
4	FM 960 BR	1242	40.1	40	1.16	33.3	82	31-1	4	55.45	688.50
5	PM 1218 BR	1170	39.8	50	1.10	29.1	85	31-2	4	50.85	594.98
6	DP 451 BR	1166	36.8	41	1.15	29.1	84	31-2	4	55.05	641.88
7	PM 1199 RR	1108	41.0	46	1.12	30.2	84	31-2	4	55.05	609.84
8	SG 215 BR	1106	36.4	42	1.11	27.0	83	31-1	3	56.05	619.72
9	DP 436 RR	1037	36.1	41	1.17	29.1	84	31-2	4	55.05	571.06
10	BCG 28 R	1025	39.2	44	1.15	29.5	83	31-1	4	55.10	564.79
11	ST 4793 R	1017	40.1	43	1.13	29.9	84	31-2	5	52.05	529.60
12	SG 521 R	964	36.7	38	1.12	27.7	84	41-1	7	46.70	450.20
Mean		1138	39.0	43	1.13	29.7	84	4.3		53.66	612.16

Agent: Michelle Rankin

Tillage: Conventional tillage

Producer: Troy Hopkins and Sons

Previous Crop: Cotton

Planting Date: 5/24/03

Fertilizer: 80-20-120-1(B)-8(S)-2(Zn) at planting

Harvest Date: 10/24/03

Soil Type: Dubbs silt loam

Row Spacing: 38" solid

Table 3-29. Results of the full-season, transgenic cotton variety test, **Tipton County**, 2003.

Yield Rank	Variety	Lint Yield		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net	Crop Value
		lb./A	%							Loan Value	
1	ST 5599 BR	1139	42.1	48	1.11	30.4	83	31-1	4	54.95	625.62
2	ST 4892 BR	1104	41.6	51	1.10	30.1	83	41-1	4	50.35	555.96
3	DP 555 BR	1043	41.1	45	1.12	30.1	82	31-2	4	54.70	570.49
4	FM 989 BR	955	39.7	46	1.12	32.6	82	31-2	4	55.10	526.28
5	FM 991 BR	871	38.6	48	1.14	34.2	84	41-1	4	54.75	476.74
6	ST 5303 R	813	40.2	48	1.11	32.8	84	31-2	4	55.45	450.59
Mean		987	40.6	48	1.12	31.7	83		4.0	54.22	534.28

Agent: Michelle Rankin

Producer: Templeton Farms

Planting Date: 5/13/03

Harvest Date: 10/24/03

Soil Type: Memphis silt loam

Tillage: Conventional tillage

Previous Crop: Cotton

Fertilizer: 40-30-120 at planting

Row Spacing: 38" solid

Table 3-30. Results of the early-season, transgenic cotton variety test, **WTES**, 2003.

Yield Rank	Variety	Lint Yield		Mic.	Length	Strength	Uni-formity	HVI Color	Leaf Grade	Net	Crop Value
		lb./A	%							Loan Value	
1	DP 444 BR	1561	40.0	31	1.16	29.7	83	31-1	5	48.35	754.82
2	ST 4793 R	1394	38.8	33	1.09	30.3	83	31-2	5	50.00	697.15
3	SG 215 BR	1346	37.6	31	1.11	29.0	83	21-2	4	51.10	687.62
4	SG 501 BR	1337	37.6	36	1.12	32.0	83	31-2	4	55.20	737.95
5	DP 451 BR	1288	35.5	31	1.16	31.1	83	31-1	4	51.60	664.71
6	FM 960 BR	1239	36.7	29	1.18	32.7	83	31-2	5	45.85	567.94
7	ST 4892 BR	1212	36.7	32	1.09	29.4	83	41-2	8	42.65	516.95
8	SG 521 R	1188	37.8	35	1.12	29.5	82	41-1	5	50.60	601.36
9	DP 436 RR	994	34.7	33	1.18	30.5	83	31-2	4	53.55	532.09
10	PM 1199 RR	989	37.8	40	1.13	29.6	82	41-1	4	54.15	535.60
11	BCG 28 R	966	38.6	39	1.12	28.1	82	31-1	5	51.55	498.08
12	PM 1218 BR	961	38.9	34	1.08	28.4	82	41-1	6	46.35	445.42
Mean		1206	37.6	34	1.13	30.0	83		4.9	50.08	603.31

Superintendent: Bob Hayes

Manager: Tracy Bush

Planting Date: 4/30/03

Harvest Date: 9/29/03

Soil Type: Lexington silt loam

Tillage: No-till

Previous Crop: Soybeans

Fertilizer: 80-30-120

Row Spacing: 38" solid

Table 3-31. Results of the full-season, transgenic cotton variety test, **WTES**, 2003.

Yield Rank	Variety	Lint		GTO Mic.	Length in.	Strength g/tex	Uni-formity %	HVI Color	Leaf Grade	Net	Crop Value \$/A
		Yield lb./A	%							Loan Value ¢/lb.	
1	ST 4892 BR	1415	39.1	39	1.11	30.2	83	31-2	5	52.15	737.80
2	DP 555 BR	1400	40.2	38	1.13	29.8	80	31-2	4	54.90	768.78
3	FM 991 BR	1253	36.4	35	1.18	34.7	82	31-1	4	55.25	692.03
4	ST 5303 R	1142	37.1	36	1.13	33.1	83	21-2	3	57.05	651.68
5	ST 5599 BR	1098	38.6	36	1.14	31.0	82	31-1	4	55.10	605.16
6	FM 989 BR	1096	37.0	33	1.14	32.1	82	31-1	4	53.30	584.22
Mean		1234	38.1	36	1.14	31.8	82		4.0	54.63	673.28

Superintendent: Bob Hayes  
 Manager: Tracy Bush  
 Planting Date: 4/30/03  
 Harvest Date: 10/8/03  
 Soil Type: Lexington silt loam

Tillage: No-till  
 Previous Crop: Soybeans  
 Fertilizer: 80-30-120  
 Row Spacing: 38" solid

Table 3-32. Results from the early-season, transgenic cotton demonstrations averaged across 19 locations, 2003.

Yield Rank	Variety	Locations no.	Lint		GTO Mic.	Length in.	Strength g/tex	Uni-formity %	HVI Color	Leaf Grade	Net	Crop Value \$/A
			Yield lb/A	%							Loan Value ¢/lb.	
1	DP 444 BR	19	1215	40.4	35	1.12	29.6	82.9	31-1	4.3	52.58	638.85
2	FM 960 BR	19	1133	38.8	35	1.12	31.5	82.1	31-1	4.2	52.71	597.20
3	ST 4892 BR	19	1112	38.3	39	1.10	29.4	82.8	31-2	5.3	49.71	552.78
4	SG 215 BR	19	1081	37.2	38	1.08	27.7	82.8	31-1	3.8	52.54	567.96
5	PM 1218 BR	19	1065	39.3	43	1.07	28.5	82.8	31-1	3.7	52.91	563.49
6	SG 501 BR	18	1064	37.5	40	1.09	29.7	83.3	31-1	3.7	54.06	575.20
7	ST 4793 R	18	1059	38.8	39	1.09	29.6	82.8	31-2	4.7	51.39	544.22
8	DP 451 BR	19	1045	36.1	37	1.13	28.5	82.6	31-1	3.9	53.32	557.19
9	PM 1199 RR	19	1039	38.7	41	1.11	29.8	83.3	31-2	4.2	53.63	557.22
10	BCG 28 R	18	1007	38.6	41	1.12	29.2	82.4	31-1	4.1	53.71	540.86
11	SG 521 R	18	1005	38.1	38	1.09	28.2	82.7	31-2	4.3	51.91	521.70
12	DP 436 RR	19	983	35.1	38	1.13	28.3	82.4	31-1	3.8	54.31	533.87
Mean			1067	38.1	38.7	1.10	29.2	82.7	---	4.2	52.73	562.54
CV (%)			11.3	3.1	5.8	1.5	3.6	0.77	---	14.7	3.5	12.1
LSD (0.05)			78.0	0.75	1.5	0.01	0.7	0.4	---	0.4	1.2	44.00

Table 3-33. Results from the full-season, transgenic cotton demonstrations averaged across 12 locations, 2003.

Yield Rank	Variety	Locations	Lint				Strength	Uni-formity	HVI Color	Leaf Grade	Net	
			Yield	GTO	Mic.	Length					Loan Value	Crop Value
		no.	lb/A	%	in.	g/tex	%			¢/lb.	\$/A	
1	ST 4892 BR	12 (11) <sup>†</sup>	1181	38.7	42	1.11	30.3	82.6	31-2	4.5	52.66	621.85
2	ST 5599 BR	11	1160	40.1	41	1.11	30.8	81.7	31-2	4.2	53.38	619.06
3	FM 989 BR	12	1118	37.1	37	1.13	32.2	81.9	31-1	3.8	54.55	609.80
4	DP 555 BR	12	1076	40.2	41	1.11	29.5	81.5	31-1	3.7	54.57	587.31
5	FM 991 BR	12 (11)	1017	36.6	41	1.14	32.3	82.6	31-1	3.7	55.11	560.53
6	ST 5303 R	12	1005	38.2	41	1.11	32.5	83.3	31-1	3.3	56.12	564.07
		Mean	1093	38.5	40.5	1.12	31.3	82.3	---	3.9	54.40	593.77
		CV (%)	12.0	3.2	5.1	1.4	4.4	0.83	---	11.6	3.0	11.90
		LSD (0.05)	108	1.0	1.7	0.01	1.2	0.6	---	0.38	1.35	59.20

<sup>†</sup>Number in parentheses denotes the number of fiber samples used in multiple location analysis.

## Chapter IV. AN ENTOMOLOGICAL EVALUATION OF BT COTTONS

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Ten cotton varieties containing a *Bt* (*Bacillus thuringiensis*) gene for resistance to selected caterpillars (Bollgard cottons) were tested at three locations in West Tennessee for efficacy and yield potential. One of the ten contained a second *Bt* gene (a Bollgard II cotton) which is intended to broaden the resistance to insects. The trials also included a single non-*Bt* check to determine the bollworm/tobacco budworm population. Trials were located at the Milan Experiment Station in Gibson County, the West Tennessee Experiment Station in Jackson and at the Ames Plantation near Grand Junction. At the Ames Plantation, the trial included two additional Stoneville lines with single and double *Bt* genes. The test at Milan was planted with no tillage on 28 May, at Jackson with tillage on 14 May and at the Ames Plantation with no tillage on 28 May. Plots were two rows x 30 ft and were replicated five times.

If bollworm/tobacco budworm populations reached threshold levels in the non-*Bt* check varieties, both *Bt* and non-*Bt* varieties were to receive insecticide treatment. A single application of Karate was applied at Milan when populations reached threshold level on 25 July. No caterpillar sprays were applied at the other two locations.

**Table 4-1** presents yield, earliness and gin turnout of the Milan test. Total lint yields ranged from 1211 to 859 lb/A and the differences were statistically significant. The top four Bollgard varieties yielded more than the conventional check. Lint yields at first harvest and percent first harvest did not differ significantly. The highest earliness value was from DP 444 BR. The new Bollgard II variety, DP 424 BIIR, was intermediate in the test. Gin turnout values ranged from 41.2 to 33.4%.

**Table 4-2** presents yield, earliness and gin turnout

of the Jackson test. ST 5599 BR produced higher total lint yields than all other varieties except ST 4892 BR and FM 960 BR. First harvest lint yields were highest in ST 5599 BR, FM 960 BR, DP 444 BR and ST 4892 BR which did not differ significantly from each other. Maturity value differences were highly significant with the earliest variety being DP 444 BR which was earlier than all others except PM 1218 BG/RR. The Bollgard II variety was ranked 8<sup>th</sup> in the trial. Gin turnout values ranged from 40.7 to 34.2%.

**Table 4-3** presents yield, earliness and gin turnout of the Ames Plantation test. FM 960 BR produced more total lint than all other varieties except ST 5599 BR, DP 444 BR and ST 4892 BR. First harvest lint was also high among these varieties as well as the Bollgard II, DP 424 BIIR, and ST 3990 BR. The Bollgard II cottons finished 5<sup>th</sup> and 12<sup>th</sup> in total yield. The highest earliness value was in DP 444 BR, but only different from five other entries in the trial. Gin turnout values ranged from 37.1 to 30.9%.

Results to date do not indicate strong value in planting the Bollgard II varieties or lines until adapted varieties become available. DP 424 BIIR finished 5<sup>th</sup> at two locations, but was 146 and 201 lb/A lower in yield than the best variety. However, bollworm pressure was light at all locations and very few other target species (fall and beet armyworm and loopers) were observed. The Bollgard varieties containing the single *Bt* gene are highly effective against the tobacco budworm and under the current pest situation appear to be the more productive option. The Bollgard varieties have significant value against pyrethroid-resistant tobacco budworms but sometimes support damaging populations of bollworm.

**Table 4-1.** Lint yield, earliness and gin turnout of 11 cotton varieties in the Bt cotton efficacy trial at Milan TN, listed by yield rank.

Yield Rank	Variety	Lint Yield,	Lint Yield,	First Harvest	Gin Turnout
		Total	1 <sup>st</sup> Harv.		
		1b/A	1b/A	%	%
1	Stoneville ST 4892 BR	1211	894	73.9	40.0
2	Stoneville ST 5599 BR	1150	874	75.9	40.7
3	FiberMax FM 989 BR	1116	801	73.6	38.8
4	Paymaster PM 1218 BG/RR	1093	904	77.9	41.2
5	Deltapine DP 424 BIIR	1010	793	75.1	34.6
6	Deltapine DP 451 BR	1009	666	71.2	33.4
7	Deltapine DP 444 BR	1003	785	78.3	40.5
8	FiberMax FM 960 BR	997	731	71.3	39.0
9	Sure-Grow SG 215 BR	992	729	67.9	36.4
10	Sure-Grow SG 501 BR	986	734	73.5	36.4
11	Deltapine DP 436 R (Non-Bt)	859	667	71.5	35.3
Mean		1039	780	73.6	37.8
CV(%)		14.5	19.9	8.6	
LSD(0.05)		194.2	198.7	8.1	

Planted 28 May 03. Defoliant applied 20 Oct. Harvested 3 Nov and 2 Dec. Trial managers: Don Gibson and Darol Copley. Tennessee Agricultural Experiment Station data of Lentz et al. (2003)

**Table 4-2.** Lint yield, earliness and gin turnout of 11 cotton varieties in the Bt cotton efficacy trial at Jackson TN, listed by yield rank.

Yield Rank	Variety	Lint Yield,	Lint Yield,	First Harvest	Gin Turnout
		Total	1 <sup>st</sup> Harv.		
		1b/A	1b/A	%	%
1	Stoneville ST 5599 BR	1591	1298	81.6	39.5
2	FiberMax FM 960 BR	1526	1266	83.0	40.3
3	Stoneville ST 4892 BR	1483	1175	79.2	39.8
4	Deltapine DP 444 BR	1396	1244	89.3	40.7
5	Sure-Grow SG 215 BR	1380	1112	80.5	38.5
6	Sure-Grow SG 501 BR	1358	1128	83.0	38.7
7	Paymaster PM 1218 BG/RR	1355	1152	85.6	39.7
8	Deltapine DP 424 BIIR	1324	1059	79.5	35.8
9	Deltapine DP 451 BR	1312	1081	82.6	36.4
10	FiberMax FM 989 BR	1282	1027	80.2	39.0
11	Deltapine DP 436 R (Non-Bt)	1045	812	77.8	34.2
Mean		1368	1123	82.0	38.4
CV(%)		7.5	9.2	4.6	
LSD(0.05)		131.8	131.8	4.8	

Planted 14 May 03. Defoliant applied 6 Oct. Harvested 20 Oct and 30 Oct. Trial managers: Nancy Van Tol and Dana Pekarchick. Tennessee Agricultural Experiment Station data of Lentz et al. (2003)

**Table 4-3.** Lint yield, earliness and gin turnout of 13 cotton varieties in the Bt cotton efficacy trial at Ames Plantation TN, listed by yield rank.

Yield Rank	Variety	Lint Yield, Total	Lint Yield, 1 <sup>st</sup> Harv.	First Harvest	Gin Turnout
		1b/A	1b/A	%	%
1	FiberMax FM 960 BR	1049	866	82.6	36.1
2	Stoneville ST 5599 BR	1001	852	85.5	37.1
3	Deltapine DP 444 BR	984	864	88.0	37.1
4	Stoneville ST 4892 BR	976	798	81.8	35.4
5	Deltapine DP 424 BIIR	903	766	85.0	32.5
6	FiberMax FM 989 BR	894	697	78.0	36.2
7	Paymaster PM 1218 BG/RR	889	738	83.4	36.0
8	Stoneville ST 3990 BR	875	757	86.2	35.1
9	Deltapine DP 451 BR	871	734	84.3	32.7
10	Sure-Grow SG 501 BR	840	704	83.6	33.9
11	Sure-Grow SG 215 BR	802	671	83.7	33.6
12	Stoneville ST 4646 B2R	798	649	81.2	33.2
13	Deltapine DP 436 R (Non-Bt)	783	620	79.2	30.9
	Mean	897	747	83.3	34.6
	CV(%)	10.8	11.0	3.8	
	LSD(0.05)	124.2	104.8	4.0	

Planted 28 May 03. Defoliant applied 30 Oct. Harvested 5 Nov and 1 Dec. Trial manager: Marshall Smith. Tennessee Agricultural Experiment Station data of Lentz et al. (2003)

## GLOSSARY OF TERMS

**Bronze wilt:** A disorder of cotton plants in which upper canopy leaves turn a bronze color, have a higher leaf temperature, and wilt more than normal under drought stress. Plants with this disorder may redden and shed more fruit than others, and some may die prematurely. The cause of bronze wilt is not yet proven, but it occurs more often in some varieties than others.

**Bt cotton:** A variety containing genes from the bacterium, *Bacillus thuringiensis*, that confer resistance to certain lepidopterous insect pests such as tobacco budworm. Sometimes abbreviated **B** or **BG** in a variety name.

**BXN:** A designation in a variety name that indicates resistance to bromoxynil herbicide.

**CCC:** Commodity Credit Corporation, an entity administered by the Farm Services Agency of the USDA.

**Color:** See **HVI Color Grade**.

**Conventional tillage:** Systems in which the entire surface layer of soil is mixed or inverted by plowing, power tilling, or multiple disking before planting. Conventional tillage systems may also involve inter-row cultivation after planting.

**CV:** Coefficient of variation. It is a statistical estimate of experimental variability, calculated as the standard deviation divided by the mean, and expressed as a percentage. A relatively low CV indicates greater experimental precision.

**DAP:** Days after planting.

**Earliness:** A measure of how rapidly a cotton crop reaches maturity. Relative earliness of varieties is measured by the percentage of total cotton yield that is picked at first harvest. Earliness is under genetic control but is strongly influenced by crop management.

**Gin turnout:** Weight of lint as a percent of seedcotton weight, which is composed of lint, seed, trash, and excess moisture.

**Heat Units:** A measure of thermal time used in describing crop growth and development. Also abbreviated as **GDD** (growing degree days) or **DD60s** (degree-days above a threshold of 60 F).

**HVI:** High Volume Instrument measurement of fiber length, strength, Micronaire, length uniformity, trash, and color.

**HVI Color Grade:** Cotton color grade is a function of white reflectance (Rd) and yellowness (+b) of the lint sample. The HVI color code identifies the quadrant of the Nickerson-Hunter cotton colorimeter diagram in which Rd and +b values intersect (USDA, 1999). Color may be affected by moisture and temperature after boll opening, during harvest, ginning or storage.

**HNR:** Height-to-node ratio of the main stem, a measure of vegetative vigor.

**Leaf Grade:** The classer's leaf grade is a visual estimate of the amount of cotton plant leaf particles in a sample of lint. There are seven leaf grades represented by physical standards, plus a below grade designation. See **Trash**.

**Length:** Average fiber length of the longer one-half of the fibers sampled, in hundredths of an inch. Fiber length is under strong genetic control, but may be reduced by environmental stress, nutrient deficiency, or fiber breakage. Staple expresses fiber length in 32nds of an inch.

**Lint yield:** Weight of lint harvested per unit ground area.

**LSD:** Least significant difference. It is a statistical estimate of the smallest difference between two means that are significantly different at a fixed *P*-value (usually 0.05).

**Micronaire:** A measure of fiber fineness or maturity. An airflow instrument measures the air permeability of a given mass of cotton lint compressed to a fixed volume. Low "mike" values indicate finer or less mature fibers. Mike is strongly influenced by boll load, leaf retention and environmental conditions (especially moisture supply) during boll maturation. Abbreviated **Mike** or **Mic**.

Market Value	HVI Micronaire
Low discount range	34 and below
Base range	35 – 36
Premium range	37 – 42
Base range	43 – 49
High discount range	50 and above

Source: USDA (1999)

**NAWF:** Nodes above white flower. A measure of the number of main-stem nodes above the uppermost white flower at first position, indicating relative crop maturity. An average NAWF count of 5 is used as a reference point of physiological cutout or last effective boll population.

**No-till:** A system in which a crop is planted directly into a seedbed not tilled since the previous crop, and only the immediate seed zone is disturbed during planting. Other surface residues are not moved, and weed control is accomplished primarily with herbicides.

**OVT:** Official variety trial. A replicated small-plot test conducted at several locations to evaluate the adaptation of the most promising commercial cultivars for Tennessee.

**P-value:** Observed significance level in an analysis of variance. It estimates the probability of error in concluding that differences truly exist among treatments (varieties).

**RCB:** Randomized complete block. An experimental design in which all treatments (varieties) are randomly assigned to plots in separate blocks (replications) in the field.

**Rd and +b:** Measures of white reflectance (%) and of yellow pigmentation (Hunter's scale), respectively, in a sample of lint. Lower Rd values indicate grayer samples, while higher +b values indicate yellower samples. Field weathering can decrease reflectance, while excess moisture in storage can cause yellowing.

**Roundup Ready<sup>®</sup>:** A variety containing genes that confer resistance to glyphosate herbicide. Usually abbreviated **R** or **RR** in a variety name.

**Seedcotton:** Lint plus seed, trash and excess moisture.

**Strength:** Force required to break a bundle of fibers one tex unit in size. A tex is the weight in grams of 1,000 meters of fiber. HVI clamp jaw spacing is  $\frac{1}{8}$  inch. Fiber strength is under strong genetic control, but may be reduced by nutrient deficiency or stress.

Strength category	HVI Strength (grams per tex)
Very strong	31 and above
Strong	29 – 30
Intermediate	26 – 28
Weak	24 – 25
Very weak	23 and below

Source: USDA (1999)

**Transgenic variety:** A variety containing genes from dissimilar species or other foreign sources that confer desirable traits such as insect or herbicide resistance.

**Trash:** Percentage of the sample surface area covered by non-lint materials, as determined by a video scanner. Typical sources of trash include leaf fragments and bark. HVI trash measurement is correlated to a hand classer's leaf grade:

Classer's leaf grade	HVI Trash Measurement	
	4-year avg <sup>1</sup> %	1996 crop <sup>2</sup> reading
1	0.12	01
2	0.20	02
3	0.33	03
4	0.50	05
5	0.68	06
6	0.92	08
7	1.21	10
8	--	13

Sources: <sup>1</sup> (USDA, 1999). <sup>2</sup> (USDA, 1997).

**Uniformity:** Length uniformity is the ratio between the mean length and the upper-half mean length of the fibers, expressed as a percentage. Also referred to as the length uniformity index.

Uniformity group	Length uniformity index
Very high	86 and above
High	83 – 85
Intermediate	80 – 82
Low	77 – 79
Very low	76 and below

Source: USDA (1999)

**Verticillium Wilt:** A disease of cotton and numerous other plant species in which the *Verticillium dahliae* fungus causes plugging of the water-conducting tissues and produces toxic substances which result in mottling of leaves, wilting, defoliation, and possibly death of infected plants. Second growth frequently occurs in plants that are defoliated but not killed.

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