

Cotton Variety Trials

Joel C. Faircloth, Cotton/Peanut Specialist, Tidewater AREC

2006 Variety Yield Results

The 2006 cotton variety trials in Virginia and many other states exemplify why variety selection decisions should be based on multiple years, locations, and sources of data. In Virginia, the season started exceptionally well early on followed by a widespread drought beginning around peak bloom and lasting well past the last effective bloom date. Rain was frequent throughout the harvest season, resulting in 30% of the cotton not being harvested until early-mid December. Although highly variable, the results of the 2006 variety trial are a reflection of the abnormal season (harvested November 30). Abnormal years such as 2006 provide data that often exposes strengths and weaknesses in varieties. Late-season and/or stormproof varieties (hold seedcotton “tight in the bur”) tended to perform better in this year’s trial due to the length of time the lint was exposed to weathering and the ability of the plant to tolerate weathering. Provided results from abnormal years are not utilized solely to make selection decisions, they enhance the value of a 2-3 year dataset and serve to reduce a producer’s risk.

The Official Cotton Variety Performance trial included 58 varieties at the Tidewater (Suffolk) Agricultural Research and Extension Center (TAREC). Fifty-two transgenic varieties (34 Bollgard (16 Roundup Ready Flex, 16 Roundup Ready, 2 Liberty Link), 10 Roundup Ready Flex, 8 Roundup Ready, and 1 Liberty Link), two conventional varieties, and three new experimental varieties were evaluated in 2006.

The Virginia Cotton Variety Performance County Strip Trials are conducted annually to provide an unbiased comparison of commercially available varieties, utilizing uniform cultural practices within each location. Variety performance in these trials was evaluated using standard production practices for non-transgenic varieties. Lint yield was obtained at all locations.

Trials in various locations in the production area make it possible to evaluate variety performance under the wide range of soil and climatic conditions existing in Virginia. The test at TAREC was conducted on Eunola loamy fine sand soil. The additional strip trials were conducted at five locations and data pooled and analyzed to evaluate ten transgenic varieties. The strip trial locations and cooperators are listed in Table 5.

The variety trial was planted on May 10 and harvested on November 30.

Summary of Yield and Performance

Table 1 summarizes the performance of all the entries. Table 2 presents the two-year averages for all varieties and Table 3 presents the three-year averages. Table 4 and 5 present the specifics and results of the county strip trials.

In 2006, yields at the TAREC location ranged from 1308 to 921 lb lint/A. This year, accumulated heat units were less than in 2004 and 2005, being closer to the long term average. This resulted in a trial demonstrating the importance of early maturity in many cases.

Variety Selection

There are numerous factors to consider when selecting varieties including yield, maturity, herbicide and/ or insect tolerance traits, quality, and stability. Data from this research are used to identify promising varieties based primarily on yield. This information accurately reflects the performance of varieties evaluated in University Variety Trials at the Tidewater Agricultural Research and Extension Center in Suffolk, Virginia and in county strip trials. Despite the small region in southeastern Virginia where cotton is produced, performance may vary on individual farms due to soil type, environment, and other factors. Producers should select varieties based on their performance at the location most representative of their farm. This should include examination of NCSU University Variety Trials conducted in Lewiston, North Carolina.

HVI Classing – The fiber properties were determined using the High Volume Instrumentation (HVI) classing system. Producers should consider these fiber properties along with yield when selecting varieties for 2007.

The HVI system includes measurements for fiber strength, micronaire, length, and uniformity. Fiber strength is expressed as grams per tex. Strength values between 25.5 through 29.4 will not receive a premium or discount. Values below 25.5 will be discounted, and values above 29.4 will carry a premium on the loan chart. The length (UHM) represents the average length of the longest one-half of the fibers measured. Discounts for length are determined on a sliding scale and dependent on color and leaf grade. The uniformity index is determined by dividing the average staple length of all the fibers by the UHM. Uniformity index is becoming increasingly important as we are increasing the percentage of cotton exported. Values below 79.5 are discounted while values above 79.5 are given a premium on the loan chart. Micronaire is a measurement of the lint surface area and thus an indirect measure of fineness and maturity. Measurements above 4.9 or below 3.5 will result in a discount and measurements between 3.7 and 4.2 will result in a premium based on the loan chart.

2007 Virginia Cotton Production Guide

Table 1. Performance of ALL cotton varieties, 2006.

Seed Company	Variety	Lint				MIC.	STR.		
		Yield, lb/A	Lint %	Vigor	LEN. (in.)		(g/ tex)	UNI. (%)	
DeltaPine	DP 455 BG/RR	1308.0	45.2	2.9	4.0	1.16	31.2	82.7	
DeltaPine	DP 555 BG/RR	1292.0	45.0	3.0	4.1	1.14	28.9	83.3	
Bayer CropScience	FM 958 LL	1289.8	42.8	3.2	4.3	1.21	33.4	84.7	
PhytoGen	PHY 310 R	1282.8	44.3	3.0	4.2	1.12	29.8	84.4	
PhytoGen	PHY 370 WR	1272.5	43.8	3.0	4.3	1.12	29.5	83.9	
Bayer CropScience	FM 960 BR	1267.3	43.0	2.9	4.4	1.14	33.9	83.7	
DeltaPine	DP 434 RR	1256.3	43.9	2.9	4.0	1.21	27.8	84.2	
DeltaPine	DP 449 BG/RR	1249.2	42.6	3.1	4.2	1.14	31.7	83.8	
DeltaPine	DP 444 BG/RR	1246.9	44.0	3.0	3.7	1.15	29.3	84.8	
DeltaPine	DP 488 BG/RR	1242.6	40.7	2.7	4.1	1.19	30.7	84.2	
DeltaPine	DP 515 BG/RR	1238.3	43.5	2.9	4.4	1.14	29.5	83.8	
Bayer CropScience	FMX0742LL	1233.7	43.1	3.0	3.9	1.18	32.2	84.8	
DeltaPine	DP 494 RR	1224.9	44.0	2.9	4.2	1.17	31.9	83.9	
DeltaPine	DP 110 RF	1210.7	42.9	3.0	4.2	1.17	34.0	84.5	
DeltaPine	DP 167 RF	1206.1	41.8	3.0	4.2	1.22	30.6	84.9	
DeltaPine	DP 432 RR	1204.4	41.5	3.1	4.2	1.17	30.8	84.1	
Stoneville	ST 4575 BR	1199.2	43.8	3.0	4.1	1.15	30.3	83.8	
Stoneville	ST 6622 RF	1196.9	41.8	2.8	4.0	1.19	31.9	85.1	
PhytoGen	PHY 470 WR	1186.2	41.5	3.1	4.4	1.14	29.7	84.0	
DeltaPine	DP 143 B2RF	1186.0	41.0	3.0	3.9	1.24	29.7	83.8	
DeltaPine	DP 121 RF	1179.2	43.8	2.9	4.4	1.16	29.9	84.0	
Stoneville	ST 4554 B2RF	1171.1	42.5	2.9	4.3	1.16	29.7	83.8	
Stoneville	ST 5242 BR	1164.1	43.9	2.9	4.2	1.13	28.9	84.3	
Stoneville	ST 5599 BR	1164.1	42.3	3.0	4.1	1.15	32.5	83.8	
PhytoGen	PHY 480 WR	1153.2	41.0	3.0	4.4	1.16	29.4	84.7	
PhytoGen	PHY 425 RF	1153.0	41.0	3.1	4.4	1.17	30.2	84.8	
DeltaPine	DP 164 B2RF	1147.4	41.9	3.0	4.3	1.20	30.1	83.4	
PhytoGen	PHY 485 WRF	1145.9	42.3	3.0	4.5	1.15	29.7	85.2	
Stoneville	ST 4892 BR	1143.4	42.7	3.0	4.3	1.14	31.4	84.3	
DeltaPine	DP 454 BG/RR	1141.7	44.6	3.1	3.8	1.13	29.7	83.7	
PhytoGen	PHY 72	1132.1	42.7	3.0	4.1	1.23	33.2	84.9	
Bayer CropScience	FM 989 BR	1131.9	41.8	2.9	4.0	1.16	31.9	83.3	
DeltaPine	DP 445 BG/RR	1116.1	43.9	3.0	4.3	1.17	30.5	84.7	
Bayer CropScience	FM 955 LLB2	1113.2	40.7	3.0	4.2	1.21	30.2	84.7	

Table 1. Performance of ALL cotton varieties, 2006. (cont.)

Seed Company	Variety	Lint				STR.			
		Yield, lb/A	Lint %	Vigor	MIC.	LEN. (in.)	(g/ tex)	UNI. (%)	
Stoneville	ST 6611 B2RF	1109.7	40.1	2.9	4.0	1.18	32.5	84.3	
Bayer CropScience	FMX0643B2F	1098.6	43.3	2.9	3.9	1.19	32.0	84.6	
DeltaPine	DPLX06W650F	1083.8	42.2	3.0	4.1	1.19	29.7	84.0	
Cropland Genetics	CG 3020 B2RF	1082.8	40.1	3.0	3.8	1.15	27.4	84.5	
DeltaPine	DP 117 B2RF	1082.3	41.8	3.0	3.5	1.17	34.4	84.3	
Bayer CropScience	FM 9063 B2F	1081.1	41.2	3.2	4.1	1.22	32.7	84.5	
DeltaPine	DP 451 B/RR	1053.3	39.5	3.0	4.1	1.16	28.3	84.3	
United Agri Products	DYNA-GRO 2100 B2RF	1053.0	40.5	3.0	3.9	1.14	28.8	84.0	
Stoneville	ST 5327 B2RF	1040.2	43.8	2.9	4.3	1.16	32.0	84.1	
DeltaPine	DP 393	1035.9	42.9	2.9	4.6	1.17	31.3	84.3	
Stoneville	ST 4357 B2RF	1023.8	42.2	2.8	4.1	1.20	28.3	84.1	
Bayer CropScience	FM 988 LLB2	1013.4	40.6	3.0	4.0	1.19	31.3	83.5	
Cropland Genetics	CG 4020 B2RF	1012.6	41.6	3.0	4.1	1.19	28.2	84.7	
Stoneville	ST 5283 RF	1002.3	43.9	2.9	4.0	1.17	31.5	84.8	
DeltaPine	PM 2167 RR	999.4	40.8	2.9	4.6	1.07	30.6	81.7	
Stoneville	ST 4700 B2RF	996.1	40.2	3.0	3.9	1.18	29.3	84.1	
DeltaPine	DP 147 RF	992.7	42.2	2.9	4.1	1.23	31.3	84.5	
Bayer CropScience	FM 960 B2R	991.6	43.3	3.0	4.0	1.19	33.4	84.3	
Stoneville	ST 4427 B2RF	990.3	40.5	2.8	3.9	1.19	29.7	85.0	
Stoneville	ST 4664 RF	988.6	42.5	2.9	3.9	1.17	31.3	83.6	
Cropland Genetics	CG 3520 B2RF	982.3	41.2	3.0	4.0	1.18	27.9	84.2	
Stoneville	ST 6565 B2RF	980.7	39.5	2.9	3.9	1.20	30.9	84.3	
Bayer CropScience	FM 9060 F	971.9	43.0	3.0	4.3	1.23	30.7	84.2	
United Agri Products	DYNA-GRO 2242 B2RF	921.8	40.6	2.9	4.0	1.18	28.0	84.1	
	Mean	1128.2	42.3	3.0	4.1	1.17	30.6	84.2	

2007 Virginia Cotton Production Guide

Table 2. Two-year average of performance of all cotton varieties.

Seed Company	Variety	Lint				STR.		
		Yield, lb/A	Lint %	Vigor	MIC.	LEN. (in.)	(g/ tex)	UNI. (%)
DeltaPine	DP 434 RR	1455.2	43.6	3.3	4.0	1.21	27.9	83.8
PhytoGen	PHY 370 WR	1455.1	43.4	3.2	4.2	1.12	29.5	83.1
DeltaPine	DP 444 BG/RR	1454.3	44.0	3.3	3.8	1.16	29.1	84.3
PhytoGen	PHY 310 R	1447.1	43.8	3.1	4.3	1.12	29.3	83.9
DeltaPine	DP 432 RR	1399.4	41.9	3.5	4.2	1.15	29.3	83.8
DeltaPine	DP 454 BG/RR	1397.7	44.8	3.4	3.6	1.13	29.9	83.4
DeltaPine	DP 494 RR	1390.2	43.5	3.4	4.1	1.19	31.8	83.6
DeltaPine	DP 455 BG/RR	1390.1	44.4	3.3	3.9	1.16	31.0	82.3
Stoneville	ST 4575 BR	1385.5	43.8	3.1	4.1	1.15	29.1	83.4
DeltaPine	DP 449 BG/RR	1383.5	42.1	3.7	4.1	1.15	31.6	83.8
Bayer CropScience	FM 958 LL	1367.6	42.5	3.5	4.2	1.19	32.2	83.9
Stoneville	ST 5599 BR	1367.1	42.8	3.1	4.1	1.14	31.1	83.2
DeltaPine	DP 110 RF	1362.5	42.9	3.3	4.1	1.16	32.8	84.0
DeltaPine	DP 445 BG/RR	1357.9	43.5	3.1	4.3	1.17	30.2	84.3
DeltaPine	DP 167 RF	1346.4	41.7	3.4	4.0	1.23	30.7	84.4
DeltaPine	DP 555 BG/RR	1344.0	45.0	3.5	4.1	1.14	29.3	82.8
DeltaPine	DP 488 BG/RR	1343.3	40.9	3.0	3.9	1.20	30.7	83.7
DeltaPine	DP 393	1337.5	43.1	3.1	4.5	1.18	30.9	84.3
Stoneville	ST 4892 BR	1320.9	43.4	3.1	4.4	1.12	29.9	83.6
Bayer CropScience	FM 989 BR	1319.1	41.2	3.3	3.9	1.16	31.5	83.5
Stoneville	ST 4554 B2RF	1318.7	42.9	3.2	4.3	1.16	28.8	83.3
DeltaPine	DP 143 B2RF	1316.3	40.9	3.2	3.8	1.24	29.5	83.3
PhytoGen	PHY 480 WR	1307.2	40.6	3.2	4.2	1.17	29.3	84.3
PhytoGen	PHY 425 RF	1304.0	41.1	3.2	4.4	1.16	30.0	84.3
Bayer CropScience	FM 960 BR	1301.1	41.7	3.2	4.1	1.13	32.9	83.3
Stoneville	ST 5242 BR	1300.3	43.1	3.1	4.2	1.12	28.0	84.1
PhytoGen	PHY 485 WRF	1295.1	42.4	3.1	4.4	1.14	30.2	84.1
Stoneville	ST 4664 RF	1292.2	43.0	3.0	4.1	1.16	30.1	83.4
DeltaPine	DP 117 B2RF	1289.4	42.2	3.6	3.8	1.18	33.2	83.8
United Agri Products	DYNA-GRO 2100 B2RF	1262.0	40.5	2.9	3.9	1.15	28.4	83.7
Stoneville	ST 4357 B2RF	1259.4	41.6	2.9	3.9	1.21	28.1	83.9
Croplan Genetics	CG 3020 B2RF	1258.4	40.0	2.9	3.9	1.15	27.2	84.1
DeltaPine	DP 164 B2RF	1255.9	41.9	3.1	3.9	1.21	30.8	83.3

Table 2. Two-year average of performance of all cotton varieties. (cont.)

Seed Company	Variety	Lint		Vigor	MIC.	LEN. (in.)	STR.	
		Yield, lb/A	Lint %				(g/ tex)	UNI. (%)
PhytoGen	PHY 470 WR	1249.7	41.6	3.3	4.3	1.13	29.1	83.4
DeltaPine	DP 147 RF	1243.9	41.9	3.3	3.8	1.23	30.5	84.0
Croplan Genetics	CG 3520 B2RF	1226.7	40.7	3.0	4.0	1.19	27.9	83.8
PhytoGen	PHY 72	1216.3	42.0	3.4	4.0	1.23	33.1	84.3
Bayer CropScience	FM 960 B2R	1120.7	41.8	3.3	4.1	1.19	32.7	83.6
DeltaPine	PM 2167 RR	1038.6	40.5	3.1	4.5	1.05	28.8	81.9
	Mean	1320.0	42.4	3.2	4.1	1.16	30.2	83.7

2007 Virginia Cotton Production Guide

Table 3. Three-year average of performance of all cotton varieties.

Seed Company	Variety	Lint				STR.		
		Yield, lb/A	Lint %	Vigor	MIC.	LEN. (in.)	(g/ tex)	UNI. (%)
DeltaPine	DP 434 RR	1419.0	43.4	3.3	4.1	1.20	28.0	83.5
DeltaPine	DP 455 BG/RR	1352.4	44.3	3.4	4.0	1.14	30.9	82.4
DeltaPine	DP 444 BG/RR	1351.0	43.8	3.5	4.0	1.14	29.4	83.8
Bayer CropScience	FM 958 LL	1306.9	42.2	3.6	4.3	1.18	32.4	83.7
Stoneville	ST 4892 BR	1289.7	43.3	3.1	4.6	1.10	29.5	83.5
Bayer CropScience	FM 989 BR	1283.5	41.3	3.3	4.1	1.15	31.7	83.2
DeltaPine	DP 432 RR	1282.7	41.8	3.4	4.4	1.13	29.3	83.7
DeltaPine	DP 488 BG/RR	1259.5	41.8	3.0	4.2	1.18	31.1	83.7
DeltaPine	DP 393	1256.6	42.7	3.3	4.6	1.17	30.9	84.1
Stoneville	ST 4575 BR	1247.1	43.2	3.1	4.3	1.12	30.2	83.2
DeltaPine	DP 494 RR	1241.2	43.5	3.4	4.3	1.17	32.1	83.4
Stoneville	ST 5242 BR	1240.7	42.7	3.2	4.4	1.10	27.8	84.0
DeltaPine	DP 445 BG/RR	1238.1	43.4	3.1	4.4	1.15	30.1	83.8
DeltaPine	DP 449 BG/RR	1230.4	41.8	3.2	4.3	1.13	31.1	83.6
DeltaPine	DP 555 BG/RR	1211.2	45.0	3.7	4.3	1.13	29.3	82.5
Stoneville	ST 5599 BR	1209.2	42.4	3.0	4.2	1.13	31.3	83.1
Bayer CropScience	FM 960 BR	1189.5	41.0	3.4	4.3	1.12	32.7	83.0
Bayer CropScience	FM 960 B2R	1070.4	41.4	3.3	4.2	1.17	32.2	83.3
	Mean	1259.9	42.7	3.3	4.3	1.14	30.6	83.4

Table 4. Location, cooperator, and agent at all variety strip trials, 2006.

Location	Cooperator	Agent
City of Suffolk	Mike Griffin	Rex Cotton
Isle of Wight	John Allen	Glenn Rountree
Dinwiddie	Lance Everett	Mike Parrish
Sussex	Bob Rogers	Kelvin Wells
New Kent	Jon Black	Paul Davis

Table 5. Combined yield, fiber quality, and performance of county variety strip trials (5 locations), 2006.

Seed Company	Variety	Lint Yield, lb/A	Lint, %	MIC.	LEN. (in.)	STR. (g/tex)	UNI. (%)
DeltaPine	DP 445 BG/RR	1246.1	45.6	4.2	1.12	30.5	83.5
PhytoGen	PHY 370 WR	1241.3	45.4	4.6	1.08	30.1	82.8
DeltaPine	DP 454 BG/RR	1211.1	46.8	3.9	1.09	30.3	82.3
Stoneville	ST 4575 BR	1202.7	45.1	4.4	1.10	29.6	83.1
Stoneville	DP 455 BG/RR	1183.9	46.5	4.0	1.13	31.4	82.2
DeltaPine	DP 444 BG/RR	1173.5	46.7	3.9	1.12	29.5	83.7
PhytoGen	PHY 485 WRF	1140.2	44.3	4.3	1.11	31.1	83.1
Bayer CropScience	FM 989 BR	1116.3	43.6	4.1	1.14	33.1	82.5
Stoneville	ST 4554 B2RF	1110.3	43.8	4.5	1.12	30.3	83.1
DeltaPine	DP 117 B2RF	1070.2	44.1	4.0	1.14	33.4	82.9
	Mean	1169.6	45.2	4.2	1.12	30.9	82.9