

## **LARGE BLOCK VARIETY TRIALS AT SOUTHWEST GEORGIA RESEARCH AND EDUCATION CENTER**

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Variety testing is a valuable tool for the entire cotton industry. Field trials permit direct comparisons of the yield potential of varieties and technology in a given environment, but small plot experiments often provide unrealistic fiber quality data because of boll sampling techniques and the use of small, table top gins. Seed cotton processed in gins designed for small samples often lack seed cotton pre-cleaning and lint cleaning, and therefore over estimate fiber quality data such as lint turnout as well as fiber length, strength, and length uniformity.

The development of the UGA Micro Gin facility in Tifton, Georgia, affords the opportunity for research-size samples to be processed in a manner approximating commercial ginning. The facility came on-line in the summer of 2004. Quantity and quality of output through the Micro Gin continues to improve.

### **Materials and Methods**

A large plot variety trial was planted on May 25, 2005, at the SW Georgia Research and Education Center at Plains, Georgia, to compare yield and fiber quality of three varieties. Experimental design was a randomized complete block with 7 replications. Plot size was 12 rows by the length of the field, which varied from about 950 to 1250 ft. Each of the varieties was a Bollgard/Roundup Ready cultivar and was grown with appropriate management practices. Multiple-acre plots allowed the harvest of large amounts of cotton suitable for processing through a commercial gin and standard quality assessment in the USDA cotton classing system. The center 4 rows from plots in replications 2 through 5 were machine harvested on November 11 and weighed with a boll buggy outfitted with scales. Samples (20 to 30 lbs) were collected from these plots for ginning in the UGA Micro Gin and for hand ginning (100 g) on a table top gin. The following week, the remainder of the plot area was machine harvested with seed cotton placed in modules by variety. Samples from the commercial gin (McClesky Cotton Company) were handled in the USDA Classing Office in Macon, GA, while UGA Micro Gin samples were forwarded to the International Textile Center at Texas Tech University for fiber quality analysis.

### **Results and Discussion**

Yield and turnout data are reported in Table 1. Since yields were calculated from module weights there is no replication of module and no direct statistical analysis of yield data from the commercial gin. Four replicates weighed in a boll buggy allow statistical comparisons of yields. Based on module weights, ST 6636 BR was competitive with DP 555 BG/RR. Both provided yields superior to FM 991 BR. Lint

turnout was higher for DP 555 BG/RR than the other two varieties. As expected, turnout was much higher for the table top gin than for the other gins.

Table 1. Yield and gin turnout of three varieties planted in large plots in 2005 at the SW Georgia Research and Education Center at Plains, Georgia.

Variety	Lint yield, lb/A		Lint turnout by Gin, %		
	Module	UGA Micro	Commercial	UGA Micro	Table top
DP 555 BG/RR	1130	1191	38.3	39.0	45.9
ST 6636 BR	1156	1044	36.2	33.3	40.4
FM 991 BR	956	935	35.5	34.1	41.4
LSD (0.10)	--	84	—	1.0	1.3
CV		5.8		2.1	2.1

Varieties replicated 7 times in plots 12 rows by 950 to 1250 ft. Module and commercial gin data taken from all replications; Micro Gin and table top gin data taken from the center 4 rows from replications 2 through 5. For commercial ginning, each variety was harvested and put into a single module by variety. The test was planted May 25, 2005. Subplots for the Micro Gin and table top gin were harvested November 11; the remainder of the cotton was harvested November 14-16.

Fiber length, micronaire, and strength of all three varieties were quite good (Table 2). As is typical of most Fiber Max varieties, strength of FM 991 BR was particularly good. Uniformity data were higher from the UGA Micro Gin and table top gin than from the commercial gin. Uniformity was least for DP 555 BR. Low uniformity remains a troublesome characteristic of this popular variety. For all bales of the three varieties, grade/leaf from the commercial gin were 31-3 or 31-4 (data not shown).

Table 2. Fiber quality of three varieties from large plot field trials processed on a commercial gin, the UGA Micro Gin, and a table top gin, 2005.

Variety	Commercial gin				UGA Micro Gin				Table top gin			
	len, inch	mic	stre, g/tex	unif	len, inch	mic	stre, g/tex	unif	len, inch	mic	stre, g/tex	unif
DP 555 BR	1.12	4.34	29.1	79.9	1.12	4.00	28.8	81.8	1.13	4.25	29.4	81.8
ST 6636 BR	1.10	4.16	30.1	81.3	1.12	3.95	29.5	83.3	1.15	3.95	31.0	84.1
FM 991 BR	1.11	4.19	31.9	81.2	1.12	4.15	30.9	83.2	1.15	4.23	32.2	83.6
LSD (0.10)	0.8	0.09	1.1	0.9	0.02	0.23	0.5	0.2	0.03	0.31	1.8	1.4
CV	2.2	2.2	3.9	1.2	1.2	4.1	1.2	0.2	2.1	5.4	4.2	1.3

Commercial gin data taken from the middle 7 bales of each module. Micro Gin data taken from 20 to 30 lb samples collected from replications 2 through 5.