Early County Cotton Variety Trial

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Introduction

Cotton is Early County's number one Agricultural commodity in both acres planted with 40,500 and farm gate value at $29,000,000.00 or 35% of total farm gate value. Producers are always looking ways to make a profit so variety selection is very important to them. Variety selection is one of the most important decisions a producer has to make. He must take into consideration not only yield but fiber quality as well, as both of these factors are used in determining value per acre. Since varieties are changing and producers need good local data these trials were put in and used to evaluate varieties for both yield and fiber quality.

Materials and Methods

Each variety evaluated in 2005 (planted 5-25) and 2006 (planted 5-26) consisted of 4 replications (plots) six rows wide by the length of the field. The two trials were ripped and bedded and planted by hill dropping two seed every ten inches. Fertilizer was applied according to UGA fertility recommendations. In 2005 a total of 100 units of Nitrogen was applied and in 2006 a total of 90 units of Nitrogen was applied. In both years each plot was treated identical with respect to weed and insect control. Each plot was machine picked with a John Deere six row cotton picker (in 2005 picked 11-14, in 2006 picked 11-21) and the seedcotton weighed. Samples were taken from the four reps to be ginned at the UGA microgin in Tifton and the lint weighed to determine the lint turn-out (lbs of lint per pound of seedcotton). This turn-out (%) was then applied to the seedcotton weight from each plot to determine the lint yield per acre for each of the 4 reps (plots) per variety. The yield reported for each variety was the average of the 4 reps.

From the ginned fiber for each variety, 3 samples were taken. Samples were sent to the Texas Tech International Textile Center for HVI classing. Each sample was graded for Color-Leaf, Staple, Strength, Micronaire, and Uniformity. The Loan Value (price per pound of lint) was determined for each of the 3 samples. The Early County base warehouse loan rate of 52.7 cents per pound was used and adjusted for Staple, Strength, Micronaire, and Uniformity. Although Color and Leaf grades were determined for each sample, a Color-Leaf grade of 31-3 was assumed for all samples for all varieties (assuming that Color and Leaf are predominately a function of weather and management compared to variety genetics and other characteristics).

The Loan Value per pound for each of the 3 samples was then averaged. This average price was multiplied by each of the 4 yield replications to result in 4 measures of Loan

Value Per Acre for each variety. The Loan Value Per Acre reported for each variety was the average of the 4 priceXyield calculations.

Results- Yield, Fiber Quality, and Value Per Acre

Numerically, the highest yielding variety in both 2005 and 2006 was DP555BR (Table 1). Statistically, however, there was no difference among the highest 5 yielding varieties each year. In 2005, a yield difference of 228 pounds per acre separated the highest and lowest yielding varieties. The average yield of all 11 varieties in the test was 968 pounds per acre.

In 2006, there were 21 varieties in the test. The yield difference between the highest and lowest yielding varieties was 833 pounds per acre. The average yield of all 21 varieties was 1,238 pounds per acre.

In 2005, the highest quality fiber as measured by the Loan Value per pound, was DP488BR followed closely by FM991B2R, FM960B2R, and DP543B2R (Table 2). The lowest fiber quality (Loan Value per pound) was DP555BR which was 2.55 cents per pound less than the highest quality fiber and statistically different. Varieties with the highest Loan Value tended to be those with longer Staple and higher Strength.

Although DP555BR was the lowest in fiber quality, due to high yield it gave the highest Value Per Acre. FM991BR, among the highest in fiber quality, was the lowest in Value Per Acre due to low yield. Statistically, there was no difference in Loan Value Per Acre among the top 5 varieties.

In 2006, the difference in fiber quality as measured by the Loan Value per pound was only 0.95 cents per pound (Table 3). Statistically, there was no difference in Loan Value (price per pound) among many of the varieties. Numerically, the highest quality fiber was DP117B2RF and lowest was DP555BR. The highest Value Per Acre, however, was DP555BR followed by ST5599BR and PHY485WRF. Value Per Acre varied from a high of $907.71 per acre for DP555BR to a low of $441.77 per acre for DG2100B2RF. The difference in Value Per Acre was due more to yield than fiber quality. Statistically, there was no difference in Value Per Acre among the top 7 varieties.

It was not the purpose of these tests to evaluate production systems (seed technology type). Yield and Value Per Acre were compared but costs of production and net return by technology type were not determined. Table 4, however, provides a summary of yield and per acre Loan Value by technology type for both 2005 and 2006. The summary shows the average Value Per Acre over all varieties within a technology type. Even within a technology type, yield per acre can vary widely by variety. The results suggest, as other studies have shown, that comparative profitability of various technologies is a function of yield as well as costs. The choice of variety within a system is as important as the choice of system—i.e. there may be differences in costs of production but such differences could be minor compared to yield differences.

Table 1. Early County Variety Trials
2005 and 2006 Yield and Gin Turn-Out by Variety

2005			2006		
Variety	**Lint Turn-Out (%)**	**Yield (Lbs Per Acre)**	**Variety**	**Lint Turn-Out (%)**	**Yield (Lbs Per Acre)**
DP555BR	40.4	***1,103***	DP555BR	39.3	***1,616***
DP488BR	38.9	***1,034***	ST5599BR	37.5	***1,567***
DP543B2R	36.7	***1,029***	PHY485WRF	38.6	***1,509***
DP449BR	36.2	***988***	DP454BR	38.6	***1,451***
PHY470W	36.0	***986***	DP164B2RF	36.1	***1,406***
FM960B2R	36.9	968	ST4554B2RF	37.5	1,379
FM960BR	36.5	955	DP488BR	35.9	1,336
DP455BR	39.4	928	ST6565B2RF	33.2	1,316
DP424B2R	33.6	904	FM991BR	36.3	1,314
FM991B2R	34.3	882	DP515BR	37.6	1,292
FM991BR	35.3	875	FM1880B2F	35.5	1,281
			DG2520B2RF	35.6	1,223
			DP143B2RF	35.5	1,126
			CG3020B2RF	35.1	1,120
			DP117B2RF	37.8	1.098
			DP455BR	39.1	1,090
			PHY480WR	36.1	1,071
			ST4357B2RF	36.8	1,023
			CG4020B2RF	35.1	1,003
			CG3520B2RF	35.8	1,000
			DG2100B2RF	34.3	783
LSD (p=.10)		*122*	*LSD (p=.10)*		*226*

Yields within the LSD lbs. of each other are not "statistically different" (90% confident that the yields are statistically the same). The top 5 yielding varieties in 2005 (in bold) were not statistically different. The top 5 yielding varieties in 2006 were not statistically different.

Table 2. 2005 Yield, Loan Value (Price) Per Pound, and Value Per Acre By Variety

Variety	Yield (Lbs Per Acre)	Loan Value (Cents Per Lb)	Value Per Acre
DP555BR	1,103	55.63	***$613.60***
DP488BR	1,034	58.18	***$601.58***
DP543B2R	1,029	57.68	***$593.53***
PHY470W	986	57.58	***$567.74***
FM960B2R	968	57.78	***$559.31***
DP449BR	988	56.00	***$553.28***
FM960BR	955	56.30	$537.67
DP455BR	928	57.02	$529.15
FM991B2R	882	58.10	$512.44
DP424B2R	904	55.88	$505.16
FM991BR	875	57.67	$504.61
LSD (p=.10)	*122*	*1.63*	*$69.21*

Loan Values Per Acre within the LSD of each other are not "statistically different" (90% confident that the Loan Values are statistically the same). The top 6 varieties in Value Per Acre (in bold) were not statistically different.

Table 3. 2006 Yield, Loan Value (Price) Per Pound, and Value Per Acre By Variety

Variety	Yield (Lbs Per Acre)	Loan Value (Cents Per Lb)	Value Per Acre
DP555BR	1,616	56.17	***$907.71***
ST5599BR	1,567	56.67	***$888.02***
PHY485WRF	1,509	56.53	***$853.04***
DP454BR	1,451	56.32	***$817.20***
DP164B2RF	1,406	56.55	***$795.09***
ST4554B2RF	1,379	56.55	***$779.82***
DP488BR	1,336	56.80	***$758.85***
FM991BR	1,314	56.82	$746.61
ST6565B2RF	1,316	56.63	$745.25
DP515BR	1,292	56.77	$733.47
FM1880B2F	1,281	56.75	$726.97
DG2520B2RF	1,223	56.55	$691.61
DP143B2RF	1,126	56.72	$638.67
CG3020B2RF	1,120	56.25	$630.00
DP117B2RF	1,098	57.12	$627.18
DP455BR	1,090	56.83	$619.45
PHY480WR	1,071	56.87	$609.08
ST4357B2RF	1,023	56.32	$576.15
CG4020B2RF	1,003	56.55	$567.20
CG3520B2RF	1,000	56.32	$563.20
DG2100B2RF	783	56.42	$441.77
LSD (p=.10)	*226*	*00.28*	*$154.37*

Loan Values Per Acre within the LSD of each other are not "statistically different" (90% confident that the Loan Values are statistically the same). The top 7 varieties in Value Per Acre (in bold) were not statistically different.

Table 4. Early County Variety Trial, Comparison By Technology Type

2005				2006			
Type	**No. Varieties**	**Avg Yield**	**Avg Loan Value/Ac**	**Type**	**No. Varieties**	**Avg Yield**	**Avg Loan Value/Ac**
BR	6	981	$556.65	BR	7	1,381	$781.62
B2R	4	946	$542.61	B2RF	12	1,147	$648.58
W	1	986	$567.74	WR	1	1,071	$609.08
				WRF	1	1,509	$853.04