Replicated Irrigated Cotton Variety Demonstration,
Dimmitt, TX - 2006

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Summary: Significant differences were observed for some yield and economic parameters measured (Table 1). Lint turnout ranged from a low of 28.8% to a high of 33.7% for FiberMax 960B2R and Deltapine 113B2RF, respectively. Lint yields varied from a low of 790 lb/acre for Stoneville NexGen 1553R and a high of 988 lb/acre for Beltwide Cotton Genetics (BCG) 3255B2F. Lint loan values ranged from a low of $0.5542/lb (Deltapine 113B2RF) to a high of $0.5795/lb (All-Tex Patriot RR). When subtracting ginning and seed/technology costs from the total value (lint value + seed value), the net value/acre among varieties ranged from a high of $537.94 (BCG 3255B2F) to a low of $406.99 (Stoneville NexGen 3273B2RF), a difference of $130.96. Significant differences were observed among varieties for all lint quality parameters measured (Table 2). These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection.

Objective: The objective of this project was to compare yields, gin turnout, fiber quality, and economics of cotton varieties under furrow-irrigated production systems.

Materials and Methods:

Varieties:	All-Tex Patriot RR, Beltwide Cotton Genetics 3255B2F, Beltwide Cotton Genetics 4021B2F, Beltwide Cotton Genetics 50R, Deltapine 113B2RF, FiberMax 960B2R, Stoneville NexGen 1553R, Stoneville NexGen 2448R, Stoneville NexGen 3273B2RF, and Stoneville NexGen 3969R
Experimental design:	Randomized complete block with 3 replications
Seeding rate:	4.4 seed per row-ft in 40-inch row spacing (John Deere 1700 Max Emerge)
Plot size:	4 rows by variable length of field (2652 ft long)

Planting date:	11-May
Weed management:	Trifluralin was applied with liquid fertilize at a rate of 1.0 pt/acre with 1.25 pt/acre Prowl on 15-March. Roundup Weather Max with ammonium sulfate (17 lbs/100 gallons of spray mix) was applied over-the-top prior to 5th true leaf. Two post-direct applications of Direx were conducted during the growing season. This location was cultivated once.
Rainfall and Irrigation:	In addition to rainfall, this location was pre-watered twice and row watered (every-other-row) three times during the growing season.
Insecticides:	Temik was applied in-furrow at planting at 3.0 lbs/acre. No other insecticides were applied at this site.
Fertilizer management:	250 lbs/acre of 28-0-0-5 liquid fertilizer were applied pre-plant on 15-March. Also, 10 tons/acre manure was applied at this location.
Plant growth regulators:	No plant growth regulators were utilized at this location.
Harvest aids:	Boll'd (ethephon) at 2.8 pt/acre plus ET at 2.3 oz/acre with COC at 1.0 qt/100 gallons spray solution was applied on 11-October.
Harvest:	Plots were harvested on 28-October using a commercial John Deere 7460 stripper harvester with field cleaner. Harvested material was transferred into a weigh wagon with integral electronic scales to determine individual plot weights. Plot yields were adjusted to lb/acre.
Gin turnout:	Grab samples were taken by plot and ginned at the Texas A&M University Agricultural Research and Extension Center at Lubbock to determine gin turnouts.
Fiber analysis:	Lint samples were submitted to the International Textile Center at Texas Tech University for HVI analysis, and Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.
Ginning cost and seed values:	Ginning costs were based on $2.45 per cwt. of bur cotton and seed value/acre was based on $125/ton of seed. Ginning costs did not include checkoff.
Seed and technology cost:	Seed and technology costs were calculated using the appropriate seeding rate (seed/row-ft) for the row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet with Monsanto Cap Cost Thresholds. available at: http://www.plainscotton.org/Seed/seedindex.html

Results and Discussion:

Significant differences were observed for most parameters measured (Tables 1 and 2). Lint turnout ranged from a low of 28.8% to a high of 33.7% for FiberMax 960B2R and Deltapine 113B2RF, respectively. Lint yields varied from a low of 790 lb/acre for Stoneville NexGen 1553R and a high of 988 lb/acre for BCG 3255B2F. Lint loan values ranged from a low of $0.5542/lb (Deltapine 113B2RF) to a high of $0.5795/lb (All-Tex Patriot RR). No significant differences were observed among varieties for total value ($/acre); however, after subtracting ginning and seed/technology costs, the net value/acre among varieties ranged from a high of $537.94 (BCG 3255B2F) to a low of $406.99 (Stoneville NexGen 3273B2RF), a difference of $130.96. Six varieties were within the statistical upper tier for net value ($/acre). Among those, two were Bollgard II with Roundup Ready Flex technology types and four were Roundup Ready only. Micronaire values ranged from a low of 3.7 for Stoneville NexGen 3969R to a high of 4.6 for Stoneville NexGen 2448R. Staple length averaged 36.6 across all varieties with a low of 35.4 for BCG 50R and Stoneville NexGen 2448R and a high of 38.0 for FiberMax 960B2R. Uniformity was highest for Stoneville NexGen 2448R (84.0%) and lowest for Stoneville NexGen 3273B2RF (82.1%). A test average strength of 28.5 g/tex was observed with a high of 31.8 g/tex (Deltapine 113B2RF) and a low of 25.0 g/tex (BCG 4021B2F). Average percent elongation values ranged from a high of 7.3 to a low of 5.0 for Stoneville NexGen 1553R and FiberMax 960BR, respectively. The highest average leaf grade (4.0) was observed for Deltapine 113B2RF and the lowest (2.3) for BCG 50R. Test averages for reflectance (Rd) and yellowness (+b) were 78.7 and 8.3, respectively. Color grades were mostly 21's and 31's at this location. These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection. It should be noted that no inclement weather was encountered at this location prior to harvest. Additional multi-site and multi-year applied research is needed to evaluate varieties and technology across a series of environments.

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Table 1. Harvest results from the irrigated replicated transgenic cotton variety demonstration, Bryan and Rex Reinart, Dimmitt, TX, 2006.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Seed/technology cost	Net value	
	%	%	lb/acre	lb/acre	lb/acre	$/lb	$/acre	$/acre	$/acre	$/acre	$/acre	$/acre	
Beltwide Cotton Genetics 3255B2F	31.5	52.4	3133	988	1643	0.5785	571.67	102.68	674.35	76.75	59.65	537.94	a
Beltwide Cotton Genetics 50R	30.8	53.4	2877	887	1536	0.5777	513.21	95.98	609.19	70.49	30.21	508.49	ab
Stoneville NexGen 3969R	30.5	53.3	2914	890	1553	0.5728	509.77	97.09	606.86	71.40	35.00	500.46	ab
Deltapine 113B2RF	33.7	50.6	2886	971	1460	0.5542	538.18	91.26	629.44	70.69	62.13	496.61	ab
Stoneville NexGen 2448R	32.0	52.1	2832	907	1476	0.5600	507.31	92.25	599.57	69.38	35.00	495.18	ab
All-Tex Patriot RR	29.8	54.1	2892	863	1564	0.5795	500.20	97.74	597.93	70.84	33.23	493.86	ab
FiberMax 960B2R	28.8	49.7	2993	862	1488	0.5743	493.66	93.02	586.67	73.32	50.21	463.15	bc
Beltwide Cotton Genetics 4021B2F	29.7	54.2	2908	865	1576	0.5695	492.05	98.47	590.52	71.25	59.65	459.62	bc
Stoneville NexGen 1553R	30.7	53.9	2574	790	1389	0.5788	456.92	86.78	543.70	63.06	35.00	445.64	bc
Stoneville NexGen 3273B2RF	29.9	54.0	2654	793	1433	0.5565	441.22	89.58	530.80	65.03	58.78	406.99	c
Test average	30.7	52.8	2866	881	1512	0.5702	502.42	94.48	596.90	70.22	45.89	480.79	
CV, %	2.9	2.2	8.3	8.2	8.2	2.0	8.5	8.2	8.4	8.3	---	9.3	
OSL	0.0002	0.0014	0.2883	0.0585	0.3863	0.0720	0.0696	0.3863	0.1119	0.2878	---	0.0876	
LSD	1.5	2.0	NS	102.85†	NS	0.0161†	60.53†	NS	NS	NS	---	63.21†	

For net value/acre, means within a column with the same letter are not significantly different at the 0.10 probability level.
CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, † denotes LSD at the 0.10 level, NS - nonsignificant.
Note: some columns may not add up due to rounding error.

Assumes:
$2.45/cwt ginning cost.
$125/ton for seed.
Value for lint based on CCC loan value from grab samples and ITC HVI results.

Table 2. HVI fiber property results from the irrigated replicated transgenic cotton variety demonstration, Bryan and Rex Reinart, Dimmitt, TX, 2006.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32^{nds} inches	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
Beltwide Cotton Genetics 3255B2F	4.4	36.4	83.4	26.4	7.0	2.7	78.8	8.2	2.7	1.0
Beltwide Cotton Genetics 50R	4.4	35.4	82.3	28.7	6.9	2.3	79.2	8.4	2.3	1.0
Stoneville NexGen 3969R	3.7	36.6	83.3	29.0	6.9	3.0	80.3	8.3	2.3	1.0
Deltapine 113B2RF	4.5	36.6	82.9	31.8	6.2	4.0	76.5	8.0	3.0	1.0
Stoneville NexGen 2448R	4.6	35.4	84.0	31.2	7.0	3.3	77.9	8.6	3.0	1.0
All-Tex Patriot RR	3.8	37.0	82.2	27.7	6.6	3.0	79.8	8.1	2.3	1.0
FiberMax 960B2R	3.9	38.0	83.6	30.7	5.0	3.3	76.8	8.9	2.7	1.0
Beltwide Cotton Genetics 4021B2F	3.9	36.2	82.4	25.0	7.0	3.0	79.8	8.1	2.3	1.0
Stoneville NexGen 1553R	4.0	37.7	83.0	29.8	7.3	3.0	79.0	8.1	3.0	1.0
Stoneville NexGen 3273B2RF	4.1	36.4	82.1	25.2	7.2	3.3	78.7	7.9	2.7	1.0
Test average	4.1	36.6	82.9	28.5	6.7	3.1	78.7	8.3	2.6	1.0
CV, %	5.0	1.4	0.7	3.5	5.1	13.9	1.6	2.6	--	--
OSL	<0.0001	0.0002	0.0046	<0.0001	<0.0001	0.0166	0.0190	0.0009	--	--
LSD	0.4	0.9	0.9	1.7	0.6	0.7	2.1	0.4	--	--

CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level.