



**Replicated Drip Irrigated Transgenic Cotton Variety Demonstration,
Morton, TX - 2006**

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Summary: Significant differences were observed for most parameters measured (Tables 1 and 2). Lint turnout ranged from a low of 31.2% to a high of 35.7% for Stoneville NexGen 3273B2RF and FiberMax 9058F, respectively. Lint yields varied with a low of 1255 lb/acre (Stoneville NexGen 3273B2RF) and a high of 1589 lb/acre (FiberMax 989B2R). Lint loan values ranged from a low of \$0.4782/lb (Deltapine 143B2RF) to a high of \$0.5735/lb (FiberMax 9063B2F). After adding lint and seed value, total value/acre for varieties ranged from a low of \$798.15 for Stoneville NexGen 3273B2RF to a high of \$1064.61 for FiberMax 989B2R. When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of \$897.34 (FiberMax 989B2R) to a low of \$637.84 (Stoneville NexGen 3273B2RF), a difference of \$259.50. Significant differences were observed among varieties for all lint quality parameters measured. 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 transgenic varieties under drip-irrigation production systems.

Materials and Methods:

Varieties: Deltapine 113B2RF, Deltapine 143B2RF, Stoneville NexGen 3273B2RF, Stoneville 4554B2RF, PhytoGen 485WRF, Beltwide Cotton Genetics 9775B2F, Americot 1532B2RF, FiberMax 9063B2F, FiberMax 9058F, and FiberMax 989B2R

Experimental design: Randomized complete block with 3 replications

Seeding rate: 4.0 seed per row-ft in 40-inch row spacing (John Deere 1700 Max Emerge)

Plot size: 10 rows by length of field (~1000 ft long)

Planting date: 12-May

Weed management: Trifluralin was impregnated on dry fertilizer and applied at a rate of 1.0 pt/acre on 15-March. At planting, Staple at a rate of 0.30 oz/acre and diuron at a rate of 8 oz/acre were applied on a 10 inch band. Roundup Original Max herbicide was applied over-the-top on 20-June at a rate of 32 oz/acre with ammonium sulfate (17 lbs/100 gallons of spray mix).

Rainfall and Irrigation: 16 inches of irrigation were applied during the growing season with approximately 5 inches of rainfall, according to personal communication with cooperator, for a total of 21 inches.

Insecticides: Temik was applied in-furrow at planting at 3.5 lbs/acre. No other insecticides were applied at this site.

Fertilizer management: 120 lbs/acre N and 80 lbs/acre P₂O₅ were applied throughout the growing season through the drip irrigation system.

Plant growth regulators: Pix was applied at a rate of 10 oz/acre on 01-July and an application of Stance at 3 oz/acre was made on 15-August.

Harvest aids: Prep at 1.0 qt/acre plus Def at 1.0 pt/acre were applied on 25-September. No sequential harvest aid application was necessary.

Harvest: Plots were harvested on 01-November 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 31.2% to a high of 35.7% for Stoneville NexGen 3273B2RF and FiberMax 9058F, respectively. Lint yields varied with a low of 1255 lb/acre (Stoneville NexGen 3273B2RF) and a high of 1589 lb/acre (FiberMax 989B2R). Lint loan values ranged from a low of \$0.4782/lb (Deltapine 143B2RF) to a high of \$0.5735/lb (FiberMax 9063B2F). After adding lint and seed value, total value/acre for varieties ranged from a low of \$798.15 for Stoneville NexGen 3273B2RF to a high of \$1064.61 for FiberMax 989B2R. When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of \$897.34 (FiberMax 989B2R) to a low of \$637.84 (Stoneville NexGen 3273B2RF), a difference of \$259.50. Micronaire values ranged from a low of 2.7 for Deltapine 143B2RF to a high of 3.7 for Beltwide Cotton Genetics 9775B2RF. Staple length averaged 37.7 across all varieties with a low of 36.7 for Deltapine 113B2RF and a high of 39.1 for FiberMax 9063B2F. Uniformity was highest for PhytoGen 485WRF (83.3%) and lowest for Deltapine 143B2RF (80.1%). A test average strength of 28.0 g/tex was observed with a high of 31.8 g/tex (Deltapine 113B2RF) and a low of 25.8 g/tex (Deltapine 143B2RF). Percent elongation ranged from a high of 8.0 to a low of 6.0 for Stoneville 4554B2RF and FiberMax 9058F, respectively. The highest average leaf grade (4.7) was observed for Deltapine 113B2RF and the lowest (3.0) was observed for five varieties. Test averages for reflectance (Rd) and yellowness (+b) were 81.7 and 7.8, respectively. Color grades were mostly 21's and 31's at this location with some 11's. 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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Disclaimer Clause:

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Table 1. Harvest results from the subsurface drip irrigated replicated transgenic cotton variety demonstration, Kevin Silhan Farm, Morton, 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
FiberMax 989B2R	33.9	53.5	4690	1589	2512	0.5705	907.64	156.97	1064.61	114.91	52.36	897.34 a
FiberMax 9058F	35.7	52.4	4391	1566	2302	0.5592	876.32	143.87	1020.19	107.59	48.38	864.22 ab
Stoneville 4554B2RF	35.1	53.4	4285	1505	2290	0.5673	854.69	143.12	997.81	105.00	63.75	829.06 abc
FiberMax 9063B2F	34.1	52.7	4048	1379	2133	0.5735	793.04	133.35	926.38	99.18	58.90	768.30 abcd
Americot 1532B2RF	33.2	53.6	4224	1402	2264	0.5533	775.57	141.52	917.09	103.49	59.68	753.92 bcd
Beltwide Cotton Genetics 9775B2F	31.3	56.0	4233	1325	2370	0.5805	769.12	148.15	917.28	103.70	62.77	750.80 bcd
PhytoGen 485WRF	32.9	52.4	4101	1349	2148	0.5528	745.80	134.26	880.06	100.47	62.61	716.98 cd
Deltapine 113B2RF	34.6	52.1	4092	1416	2132	0.5277	746.90	133.23	880.12	100.26	65.57	714.30 cd
Deltapine 143B2RF	31.5	54.4	4691	1480	2549	0.4782	709.38	159.33	868.71	114.91	65.57	688.22 d
Stoneville NexGen 3273B2RF	31.2	54.6	4021	1255	2195	0.5293	660.98	137.18	798.15	98.53	61.79	637.84 d
Test average	33.3	53.5	4278	1427	2289	0.5492	783.94	143.10	927.04	104.80	60.14	762.10
CV, %	2.6	1.5	9.1	9.0	9.0	3.5	9.5	9.0	9.4	9.1	--	10.2
OSL	<0.0001	0.0004	0.3513	0.0879	0.1976	0.0001	0.0187	0.1982	0.0451	0.3523	--	0.0168
LSD	1.5	1.4	NS	182 [†]	NS	0.0328	128.40	NS	149.08	NS	--	133.82

For net value/acre, means within a column with the same letter are not significantly different at the 0.05 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 subsurface drip irrigated replicated transgenic cotton variety demonstration, Kevin Silhan Farm, Morton, 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
FiberMax 989B2R	3.6	37.1	82.9	29.4	6.4	3.0	82.4	8.0	2	1
FiberMax 9058F	3.5	38.4	81.7	27.6	6.0	3.0	82.5	7.4	2	1
Stoneville 4554B2RF	3.6	36.9	82.6	27.6	8.0	3.3	80.7	8.6	2	1
FiberMax 9063B2F	3.5	39.1	82.9	30.7	6.1	3.0	83.6	7.4	2	1
Americot 1532B2RF	3.4	37.6	82.4	26.6	7.1	3.3	81.2	8.1	2	1
Beltwide Cotton Genetics 9775B2F	3.7	38.6	82.2	26.5	6.9	3.0	82.6	7.6	2	1
PhytoGen 485WRF	3.6	36.9	83.3	28.2	7.8	4.0	79.1	8.3	3	1
Deltapine 113B2RF	3.6	36.7	82.2	31.8	6.4	4.7	78.4	7.7	3	1
Deltapine 143B2RF	2.7	38.2	80.1	25.8	6.2	4.0	82.4	7.6	2	1
Stoneville NexGen 3273B2RF	3.1	37.5	81.6	25.9	7.2	3.0	83.8	7.7	1	1
Test average	3.4	37.7	82.2	28.0	6.8	3.4	81.7	7.8	2.1	1.0
CV, %	7.6	1.1	0.9	4.1	4.7	8.5	1.0	2.7	--	--
OSL	0.0037	<0.0001	0.0025	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	--
LSD	0.4	0.7	1.3	2.0	0.5	0.5	1.4	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.