



**Replicated LESA Irrigation Cotton Variety Research Trial
Under Moderate Root-Knot Nematode Pressure - 2012**

Cooperator: Chevront Farms

**Manda Anderson, Extension Agent - IPM
Dr. Jason Woodward, Extension Plant Pathologist**

Gaines County

Summary Significant differences were observed for most of the yield, economic, and HVI fiber quality parameters measured. Bur cotton yields averaged 3331 lb/acre with a high of 3903 lb/acre for Stoneville 4288B2RF, and a low of 3060 lb/acre for FiberMax 9160B2RF. Lint loan values ranged from a low of \$0.5233/lb (Deltapine 1044B2RF) to a high of \$0.5705/lb (Stoneville 4288B2RF). After adding lint and seed value, and subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of \$844.68 (Stoneville 4288B2RF) to a low of \$608.87 (Phytogen 499WRF), a difference of \$235.81.

Micronaire values ranged from a low of 3.0 for Deltapine 1044B2RF to a high of 3.5 for Stoneville 4288B2RF. Staple averaged 36.4 across all varieties with a low of 35.0 for Stoneville 5458B2RF and a high of 37.5 for FiberMax 9160B2RF. Uniformity ranged from a high of 82.4 (FiberMax 9160B2RF) to a low of 78.8 (Stoneville 5458B2RF).

Objective The objective of this project was to compare agronomic characteristics, yields, gin turnout, fiber quality, and economic returns of transgenic cotton variety under moderate southern root-knot nematode pressure in Gaines County.

Materials and Methods

Varieties: Deltapine 1044B2RF, FieberMax 9160B2RF, PhytoGen 367WRF, PhytoGen 499WRF, Stoneville 4288B2RF, Stoneville 5458B2RF

Experimental design: Randomized complete block with 3 replications

Seeding rate: 4 seeds/row-ft in 36-inch row spacing

Plot size: 6 rows by variable length of field (914ft to 1859ft long)

Planting date: 30-May

Soil Texture:	Sandy
Irrigation:	This location was under a LESA center pivot. This trial received approximately 12.15 inches of irrigation and rainfall throughout the growing season.
Harvest:	Plots were harvested on 23-October using a commercial stripper harvester. Harvest 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 AgriLife Research and Extension Center at Lubbock to determine gin turnovers.
Fiber Analysis:	Lint samples were submitted to the Fiber and Biopolymer Research Institute at Texas Tech University for HVI analysis, and USDA Commodity Credit Corporation (CCC) Loan values were determined for each variety by plot.
Ginning cost and seed values:	Ginning costs were based on \$3.00 per cwt. of bur cotton and seed value/acre was based on \$250/ton. Ginning costs did not include checkoff.
Seed and technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (4 seed/row-ft) for the 36 row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://www.plainscotton.org/Seed/PCGseed12.xls

Results and Discussion

Significant differences were observed for most of the yield, economic, and HVI fiber quality parameters measured (Tables 1 and 2). Lint turnout was set at 36% for all varieties. Seed turnout ranged from a low of 47.1% for Phytogen 499WRF to a high of 50.1% for Stoneville 4288B2RF. Bur cotton yields averaged 3331 lb/acre with a high of 3903 lb/acre for Stoneville 4288B2RF, and a low of 3060 lb/acre for FiberMax 9160B2RF. Lint yield varied with a low of 1102 lb/acre (FiberMax 9160B2RF) and a high of 1405 lb/acre (Stoneville 4288B2RF). Seed yield ranged from a high of 1957 lb/acre for Stoneville 4288B2RF to a low of 1462 lb/acre for Phytogen 499WRF. Lint loan values ranged from a low of \$0.5233/lb (Deltapine 1044B2RF) to a high of \$0.5705/lb (Stoneville 4288B2RF). After adding lint and seed value, total value/acre for varieties ranged from a low of \$787.07 for PhytoGen 499WRF to a high of \$1046.24 for Stoneville 4288B2RF. When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of \$844.68 (Stoneville 4288B2RF) to a low of \$608.87 (Phytogen 499WRF), a difference of \$235.81.

Micronaire values ranged from a low of 3.0 for Deltapine 1044B2RF to a high of 3.5 for Stoneville 4288B2RF. Staple averaged 36.4 across all varieties with a low of 35.0 for Stoneville 5458B2RF and a high of 37.5 for FiberMax 9160B2RF. Uniformity ranged from a high of 82.4 (FiberMax 9160B2RF) to a low of 78.8 (Stoneville 5458B2RF). Elongation ranged from a high of 8.6% for Deltapine 1044B2RF to a low of 5.2% for FiberMax 9160B2RF. Values for reflectance (Rd) and yellowness (+b) averaged 81.1 and 8.1, respectively.

Conclusions

These data indicate that differences can be obtained in terms of net value/acre and fiber quality under moderate southern root-knot nematode pressure. During the 2012 growing season Gaines County experienced high temperatures and very little rainfall. The environmental conditions prior to and during the growing season were a limiting factor in the varieties performance overall. It should be noted that no inclement weather was encountered at this location prior to harvest and therefore, no pre-harvest losses were observed. Additional multi-site and multi-year applied research is needed to evaluate varieties and technology across a series of environments.

Acknowledgements

Appreciation is expressed to Chevront Farms for the use of his land, equipment and labor for this demonstration.

Trade names of commercial products used in this report is included only for better understanding and clarity. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by Texas AgriLife Extension Service and the Texas A&M University System is implied. Readers should realize that results from one experiment do not represent conclusive evidence that the same response would occur where conditions vary.

Table 1. Harvest results from the Cotton Variety Trial Under Moderate Root-knot Nematode Pressure, Chevront Farms Farm, Seminole, TX, 2012.

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 -----			
Stoneville 4288B2F	36.0	50.1	3903	1405	1957	0.5705	801.65	244.58	1046.24	117.10	84.45	844.68 a
PhytoGen 367WRF	36.0	47.5	3485	1255	1655	0.5357	672.07	206.90	878.97	104.55	85.05	689.36 b
Deltapine 1044B2RF	36.0	48.0	3257	1172	1563	0.5233	613.55	195.37	808.92	97.70	79.53	631.68 c
FiberMax 9160B2F	36.0	49.8	3060	1102	1523	0.5577	614.36	190.35	804.71	91.81	84.45	628.46 c
Stoneville 5458B2RF	36.0	49.7	3177	1144	1580	0.5323	608.93	197.54	806.47	95.32	84.45	626.69 c
PhytoGen 499WRF	36.0	47.1	3105	1118	1462	0.5407	604.35	182.72	787.07	93.15	85.05	608.87 c
Test average	36.0	48.7	3331	1199	1623	0.5434	652.48	202.91	855.39	99.94	83.83	671.62
CV, %	--	3.3	3.6	3.6	3.6	3.1	3.6	3.6	3.6	3.6	--	4.1
OSL	--	0.1660	<0.0001	<0.0001	<0.0001	0.054†	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001
LSD	--	NS	219	79	106	0.0249	42.99	13.35	56.33	6.56	--	49.77

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.

#DIV/0!

Note: some columns may not add up due to rounding error.

Assumes:

\$3.00/cwt ginning cost.

\$250/ton for seed.

Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Table 2. HVI fiber property results from the Cotton Variety Trial Under Moderate Root-knot Nematode Pressure, Chevront Farms Farm, Seminole, TX, 2012.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 ^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
Deltapine 1044B2RF	3.0	36.5	80.9	32.3	8.6	2.0	82.3	7.9	2.0	1.0
FiberMax 9160B2F	3.3	37.5	82.4	31.7	5.2	1.7	83.0	7.5	1.7	1.0
PhytoGen 367WRF	3.2	36.1	81.5	31.3	8.1	3.0	79.7	8.4	2.0	1.0
PhytoGen 499WRF	3.2	36.7	82.1	31.9	7.2	2.7	80.6	8.0	2.3	1.0
Stoneville 4288B2F	3.5	36.6	80.9	30.1	6.9	2.3	81.8	8.2	2.0	1.0
Stoneville 5458B2RF	3.3	35.0	78.8	31.4	7.0	2.7	79.2	8.8	2.0	1.3
Test average	3.3	36.4	81.1	31.4	7.2	2.4	81.1	8.1	2.0	1.1
CV, %	4.6	1.6	1.1	3.4	15.2	33.9	1.2	4.1	--	--
OSL	0.0222	0.0065	0.0064	0.2644	0.0420	0.4173	0.0040	0.0115	--	--
LSD	0.3	1.0	1.6	NS	2.0	NS	1.7	0.6	--	--

CV - coefficient of variation.

OSL - observed significance level, or probability of a greater F value.

LSD - least significant difference at the 0.05 level, NS - not significant