



## Replicated LESA Irrigation Cotton Variety Research Trial Under Light Root-Knot Nematode Pressure - 2012

**Cooperator: Scott Nolen Farms**

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

**Gaines County**

**Summary** Significant differences were observed for all the yield, economic, and some HVI fiber quality parameters measured. Lint turnout ranged from a low of 29.29% and a high of 35.2% for All-Tex Nitro-44 B2RF and Deltapine 174RF, respectively. Seed turnout ranged from a low of 44.8% for All-Tex Nitro-44 B2RF and NexGen 1511B2RF to a high of 48.1% for All-Tex 106466B2RF. Bur cotton yields averaged 2618 lb/acre with a high of 2819 lb/acre for PhytoGen 499WRF, and a low of 2257 lb/acre for NexGen 4012B2RF. 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 \$500.37 (PhytoGen 499WRF) to a low of \$382.63 (All-Tex 106466B2RF), a difference of \$117.73.

Micronaire values ranged from a low of 4.5 for All-Tex Nitro-44 B2RF to a high of 5.2 for Stoneville 4288B2RF and NexGen 1511B2RF. Staple averaged 34.3 across all varieties with a low of 32.4 for NexGen 1511B2RF and a high of 35.9 for All-Tex Nitro-44 B2RF. Strength values averaged 29.3 g/tex with a high of 31.7 g/tex for All-Tex Nitro-44 B2RF and a low of 27.0 g/tex for All-Tex 106466B2RF.

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

### **Materials and Methods**

Varieties: All-Tex 106466B2RF, All-Tex Nitro-44 B2RF, Deltapine 1044B2RF, Deltapine 174RF, NexGen 1511B2RF, NexGe 4012B2RF, 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 (1153ft to 2278ft long)

Planting date: 18-May

Soil Texture:	Sandy
Irrigation:	This location was under a LESA center pivot. This trial received approximately 15.49 inches of irrigation and rainfall throughout the growing season.
Harvest:	Plots were harvested on 20-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: <a href="http://www.plainscotton.org/Seed/PCGseed12.xls">http://www.plainscotton.org/Seed/PCGseed12.xls</a>

## **Results and Discussion**

Significant differences were observed for all the yield, economic, and some HVI fiber quality parameters measured (Tables 1 and 2). Lint turnout ranged from a low of 29.29% and a high of 35.2% for All-Tex Nitro-44 B2RF and Deltapine 174RF, respectively. Seed turnout ranged from a low of 44.8% for All-Tex Nitro-44 B2RF and NexGen 1511B2RF to a high of 48.1% for All-Tex 106466B2RF. Bur cotton yields averaged 2618 lb/acre with a high of 2819 lb/acre for PhytoGen 499WRF, and a low of 2257 lb/acre for NexGen 4012B2RF. Lint yield varied with a low of 738 lb/acre (All-Tex 106466B2RF) and a high of 943 lb/acre (PhytoGen 499WRF). Seed yield ranged from a high of 1294 lb/acre for Stoneville 4288B2RF to a low of 1080 lb/acre for NexGen 4012B2RF. Lint loan values ranged from a low of \$0.4892/lb (NexGen 1511B2RF) to a high of \$0.5635/lb (All-Tex Nitro-44 B2RF). After adding lint and seed value, total value/acre for varieties ranged from a low of \$534.62 for All-Tex 106466B2RF to a high of \$669.992 for PhytoGen 499WRF. When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of \$500.37 (PhytoGen 499WRF) to a low of \$382.63 (All-Tex 106466B2RF), a difference of \$117.73.

Micronaire values ranged from a low of 4.5 for All-Tex Nitro-44 B2RF to a high of 5.2 for Stoneville 4288B2RF and NexGen 1511B2RF. Staple averaged 34.3 across all varieties with a low of 32.4 for NexGen 1511B2RF and a high of 35.9 for All-Tex Nitro-44 B2RF. Strength values averaged 29.3 g/tex with a high of 31.7 g/tex for All-Tex Nitro-44 B2RF and a low of 27.0 g/tex for All-Tex 106466B2RF. Elongation ranged from a high of 9.0% for Deltapine 1044B2RF to a low of 5.9% for NexGen 4012B2RF. Values for reflectance (Rd) and yellowness (+b) averaged 79.5 and 8.6, respectively.

### **Conclusions**

These data indicate that differences can be obtained in terms of net value/acre and fiber quality under light 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 Scott Nolen Farms for the use of his land, equipment and labor for this demonstration.

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Table 1. Harvest results from the Cotton Variety Trial Under Light Root-Knot Nematode Pressure, Scott Nolen 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 -----			
PhytoGen 499WRF	33.5	45.3	2819	943	1277	0.5412	510.42	159.57	669.99	84.58	85.05	500.37 a
PhytoGen 367WRF	32.0	45.8	2786	892	1276	0.5495	489.90	159.48	649.39	83.59	85.05	480.75 ab
Deltapine 174RF	35.2	45.6	2533	892	1154	0.5270	470.33	144.29	614.62	76.00	69.94	468.69 abc
Stoneville 5458B2RF	33.4	46.2	2756	919	1273	0.5063	465.53	159.12	624.65	82.69	84.45	457.50 bc
Deltapine 1044B2RF	31.0	46.2	2689	834	1242	0.5260	438.56	155.30	593.86	80.68	79.53	433.64 cd
Stoneville 4288B2F	30.5	46.2	2802	854	1294	0.5158	440.28	161.81	602.09	84.06	84.45	433.58 cd
NexGen 1511B2RF	35.1	44.8	2551	896	1144	0.4892	438.07	142.95	581.03	76.54	77.73	426.76 cd
All-Tex Nitro-44 B2RF	29.2	44.8	2590	756	1160	0.5635	426.02	145.01	571.03	77.71	80.23	413.08 de
NexGen 4012B2RF	32.8	47.8	2257	741	1080	0.5427	401.86	134.95	536.81	67.71	75.45	393.65 de
All-Tex 106466B2RF	30.9	48.1	2392	738	1150	0.5297	390.91	143.72	534.62	71.76	80.23	382.63 e
Test average	32.3	46.1	2618	846	1205	0.5291	447.19	150.62	597.81	78.53	80.21	439.06
CV, %	3.0	1.9	4.7	4.9	4.7	4.0	4.8	4.7	4.8	4.7	--	5.7
OSL	<0.0001	0.0026	0.0002	<0.0001	0.0014	0.0189	<0.0001	0.0014	0.0002	0.0002	--	0.0003
LSD	1.7	1.5	212	71	98	0.0364	36.87	12.27	49.05	6.35	--	42.72

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.

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 Light Root-Knot Nematode Pressure, Scott Nolen Farm, Seminole, TX, 2012.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 <sup>nds</sup> inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
All-Tex 106466B2RF	4.8	33.4	79.9	27.0	6.7	1.7	80.5	8.3	2.0	1.0
All-Tex Nitro-44 B2RF	4.5	35.9	81.3	31.7	7.9	2.7	80.8	8.1	2.0	1.0
NexGen 1511B2RF	5.2	32.4	80.1	28.4	8.7	2.0	79.6	8.6	2.0	1.0
Deltapine 1044B2RF	5.1	34.5	80.5	30.4	9.0	1.7	80.2	8.1	2.3	1.0
Deltapine 174RF	5.1	34.6	79.6	28.3	7.9	2.0	79.3	8.6	2.3	1.0
NexGen 4012B2RF	5.0	34.7	80.9	30.5	5.9	1.7	79.6	8.8	2.0	1.0
PhytoGen 367WRF	4.8	34.3	80.8	29.4	7.8	1.7	79.9	8.8	2.0	1.0
PhytoGen 499WRF	5.0	35.2	82.8	31.2	8.4	3.0	78.8	8.6	2.7	1.0
Stoneville 4288B2F	5.2	34.2	80.5	27.5	7.4	1.7	79.2	8.7	2.3	1.0
Stoneville 5458B2RF	5.1	33.8	80.0	28.6	7.2	1.0	77.6	9.6	2.0	1.0
Test average	5.0	34.3	80.6	29.3	7.7	1.9	79.5	8.6	2.2	1.0
CV, %	1.6	2.7	1.6	4.4	5.5	49.9	1.1	2.4	--	--
OSL	<0.0001	0.0167	0.2195	0.0031	<0.0001	0.4260	0.0155	<0.0001	--	--
LSD	0.1	1.6	NS	2.2	0.7	NS	1.5	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, NS - not significant