



**Replicated LESA Irrigated Cotton Variety Demonstration
Under Verticillium Wilt Pressure
Texas AgriLife Extension Service
Gaines County**

Cooperator: Froese Farms

Manda Anderson, Extension Agent - IPM

Dr. Mark Kelley, Extension Program Specialists II - Cotton

Dr. Randy Boman, Extension Agronomist - Cotton

Summary Significant differences were observed for some yield, economic, and HVI fiber quality parameters measured (Tables 1 and 2). Lint turnout ranged from a low of 30.8% to a high of 38% for NexGen 3348B2RF and PhytoGen 375WRF, respectively. Seed turnout ranged from a high of 52.2% for NexGen 4010B2RF to a low of 46.1% for Deltapine 1032B2RF. Seed yield ranged from a high of 1973 for Stoneville 4288B2F to a low of 1523 for Deltapine 09619B2RF. Lint loan values ranged from a low of \$0.5408/lb (All-Tex 65207B2RF) to a high of \$0.5718/lb (NexGen 4010B2RF). Net value did not significantly differ among varieties. These data indicate that substantial differences were not obtained in terms of net value/acre due to variety and technology selection.

Objective The objective of this project was to compare agronomic characteristics, yields, gin turnout, fiber quality, and economic returns of transgenic cotton variety under Verticillium wilt pressure in Gaines County.

Materials and Methods

Varieties: All-Tex 65207B2RF, Deltapine 09619B2RF, Deltapine 1032B2RF, Deltapine 1034B2RF, Deltapine 1044B2RF, Deltapine 174RF, FFiberMax 9170B2F, NexGen 3348B2RF, NexGen 4010B2RF, PhytoGen 367WRF, PhytoGen 375WRF, Stoneville 4288B2F

Experimental design: Randomized complete block with 3 replications

Seeding rate: 3.5 seeds/row-ft in 36-inch row spacing

Plot size: 8 rows by variable length of field (465ft to 722ft long)

Planting date: 7-May

Soil Texture: 86% sand, 1% silt, and 13% clay

Soil pH: 7.9

Irrigation: This location was under a LESA center pivot. This trial received approximately 24.07 inches of irrigation and rainfall from 7-May to 19-October.

Date	Inches of Irrigation/Rainfall
7-May to 10-June	4.56
11-June to 15-July	10.68
16-July to 27-August	3.53
28-August to 19-October	5.3

Insecticides/
Nematicides: Temik 15G was applied infurrow at planting at a rate of 3 lb/acre.

Harvest: Plots were harvested on 19-October using a commercial picker 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 AgriLife Research and Extension Center at Lubbock to determine gin turnouts.

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 \$175/ton. Ginning costs did not include checkoff.

Seed and technology fees: Seed and technology costs were calculated using the appropriate seeding rate (3.5 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/PCGseed10.xls>

Results and Discussion

Significant differences were observed for some yield, economic, and HVI fiber quality parameters measured (Tables 1 and 2). Lint turnout ranged from a low of 30.8% to a high of 38% for NexGen 3348B2RF and PhytoGen 375WRF, respectively. Seed turnout ranged from a high of 52.2% for NexGen 4010B2RF to a low of 46.1% for Deltapine 1032B2RF.

Seed yield ranged from a high of 1973 for Stoneville 4288B2F to a low of 1523 for Deltapine 09619B2RF. Lint loan values ranged from a low of \$0.5408/lb (All-Tex 65207B2RF) to a high of \$0.5718/lb (NexGen 4010B2RF). Net value did not significantly differ amount varieties.

Micronaire values ranged from a low of 3.6 for NexGen 3348B2RF to a high of 4.6 for Stoneville 4288B2F. Staple averaged 35.2 across all varieties with a low of 33.8 for All-Tex 65207B2RF and a high of 36.4 for NexGen 4010B2RF. Strength values averaged 28.2 g/tex with a high of 29.9 g/tex for NexGen 4010B2RF and a low of 26.9 g/tex for Deltapine 174RF. Elongation ranged from a high of 8.8% for Deltapine 1044B2RF to a low of 6.4% for FiberMax 9170B2F. Leaf grades ranged from 1 to 3, with a test average of 2.4. Values for reflectance (Rd) and yellowness (+b) averaged 82.4 and 8.1, respectively.

Conclusions

These data indicate that substantial differences were not obtained in terms of net value/acre due to variety and technology selection. 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 Froese Farms for the use of his land, equipment and labor for this demonstration. Furthermore, we greatly appreciate the Texas Department of Agriculture - Food and Fiber Research for funding of HVI testing.

Disclaimer Clause:

Trade names of commercial products used in this report are 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 the Texas A&M 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 demonstration under Verticillium wilt Pressure, Froese Farm, Seminole, TX, 2011

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 367WRF	34.2	47.8	3797	1299	1813	0.5483	712.12	158.67	870.79	113.90	69.78	687.11
Deltapine 174RF	35.0	47.0	3608	1264	1695	0.5548	701.45	148.34	849.79	108.24	61.60	679.95
Stoneville 4288B2F	31.8	50.8	3883	1236	1973	0.5570	688.50	172.66	861.16	116.49	71.12	673.55
PhytoGen 375WRF	38.0	47.8	3317	1260	1586	0.5577	702.86	138.78	841.64	99.52	69.78	672.35
Deltapine 1044B2RF	32.3	50.6	3801	1228	1923	0.5600	687.90	168.22	856.12	114.03	70.00	672.09
NexGen 4010B2RF	31.7	52.2	3731	1181	1947	0.5718	675.21	170.35	845.57	111.92	63.59	670.06
NexGen 3348B2RF	30.8	50.7	3835	1179	1946	0.5447	642.38	170.31	812.68	115.06	63.59	634.03
Deltapine 1034B2RF	35.8	49.2	3255	1166	1600	0.5665	660.53	140.00	800.53	97.64	71.22	631.67
FiberMax 9170B2F	34.0	49.2	3424	1163	1685	0.5608	652.37	147.44	799.81	102.73	71.12	625.96
Deltapine 1032B2RF	34.5	46.1	3373	1164	1554	0.5660	658.76	136.00	794.75	101.19	72.24	621.33
Deltapine 09619B2RF	35.7	48.9	3113	1111	1523	0.5593	621.51	133.25	754.76	93.40	71.22	590.14
All-Tex 65207B2RF	33.3	50.5	3269	1088	1651	0.5408	588.66	144.50	733.16	98.08	59.15	575.93
Test average	33.9	49.2	3534	1195	1741	0.5573	666.02	152.38	818.40	106.02	67.87	644.51
CV, %	5.5	1.8	9.7	9.7	9.7	1.2	9.7	9.7	9.7	9.7	--	10.7
OSL	0.0041	<0.0001	0.1001	0.5571	0.0130	0.0004	0.5159	0.0130	0.5560	0.1001	--	0.5980
LSD	3.2	1.5	NS	NS	286	0.0115	NS	25.02	NS	NS	--	NS

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, NS - not significant

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

Assumes:

\$3.00/cwt ginning cost.

\$175/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 replicated cotton variety demonstration under Verticillium wilt Pressure, Froese Farm, Seminole, TX, 2010

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 ^{nds} inches	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
All-Tex 65207B2RF	4.2	33.8	80.6	27.6	7.3	2.7	81.4	8.4	1.7	1.0
Deltapine 09619B2RF	4.3	34.8	81.4	27.2	7.6	1.7	83.2	8.2	1.0	1.0
Deltapine 1032B2RF	4.3	35.4	80.9	28.6	7.0	1.3	83.5	7.9	1.0	1.0
Deltapine 1034B2RF	4.2	35.4	80.7	27.4	8.0	1.0	83.4	8.4	1.0	1.0
Deltapine 1044B2RF	4.2	35.0	81.3	28.8	8.8	2.7	82.6	8.1	1.3	1.0
Deltapine 174RF	4.0	35.4	80.6	26.9	7.6	3.3	81.5	8.1	2.0	1.0
FiberMax 9170B2F	4.0	36.2	79.6	29.7	6.4	2.0	84.2	7.5	1.3	1.0
NexGen 3348B2RF	3.6	35.8	82.0	29.2	6.6	4.3	80.9	7.7	2.3	1.0
NexGen 4010B2RF	4.2	36.4	81.7	29.9	7.1	2.0	82.0	8.6	1.0	1.0
PhytoGen 367WRF	4.0	34.9	80.9	28.6	7.3	3.7	81.5	8.3	1.7	1.0
PhytoGen 375WRF	4.1	34.8	80.8	27.0	7.0	1.3	82.9	8.2	1.0	1.0
Stoneville 4288B2F	4.6	34.9	82.2	27.4	7.6	2.3	82.0	8.3	1.7	1.0
Test average	4.1	35.2	81.1	28.2	7.4	2.4	82.4	8.1	1.4	1.0
CV, %	3.6	1.9	1.1	2.4	4.7	34.3	0.5	1.9	--	--
OSL	<0.0001	0.0072	0.1098	<0.0001	<0.0001	0.0009	<0.0001	<0.0001	--	--
LSD	0.3	1.1	NS	1.2	0.6	1.4	0.7	0.3	--	--

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