



**Replicated Limited Irrigated Cotton Variety Demonstration
35°49' N 102°09' W Elevation – 3334 ft
Dumas, TX – 2010**

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Moore County

Summary: This trial received 4.15 inches of irrigation water during the season. Inconsistency in the data resulted in few significant differences between varieties. Deltapine 1028B2RF had the highest net value at \$602.74 (\$104.85 more than all other varieties) followed by Deltapine 0912B2RF at \$497.89. Lint yield ranged from a low of 923 lb/acre with All-Tex Summit B2RF to a high of 1,288 lb/acre with Deltapine 1028B2RF. Lint turnout varied considerably, ranging from 26% (All-Tex Summit B2RF and Deltapine 104B2RF) to 33.7% (Deltapine 1028B2RF). Lint loan values ranged from a low of \$0.4510/lb (All-Tex Summit B2RF) to a high of \$0.5047/lb (Deltapine 0912B2RF). Micronaire values ranged from a low of 2.5 for All-Tex Summit B2RF to a high of 3.2 for Deltapine 1028B2RF Table 2. Average staple length was 35.3 across all varieties with a low of 34.1 for NexGen 2549B2RF and a high of 36.9 for FiberMax 9180B2F. The highest percent uniformity was observed with NexGen 1551RF (80.7%) and FiberMax 9058F had the lowest (77.5%). Strength values ranged from 26.4 g/tex (All-Tex Summit B2RF) to 30.5 g/tex (NexGen 1551RF).

Objective: The objective of this project was to compare agronomic characteristics, yield, gin turnout, fiber quality, and economic returns of transgenic cotton varieties under limited irrigated production in Moore County.

Materials and Methods:

Varieties: Deltapine 1028B2RF, Deltapine 0912B2RF, Deltapine 104B2RF, FiberMax 9180B2RF, FiberMax 1740B2F, FiberMax 9058F, NexGen 1551RF, NexGen 2549B2RF, AllTex Summit B2RF

Experimental design: Randomized complete block with 3 replications

Seeding rate: 3.96 seeds/row-ft in 30-inch row spacing (69,000 seeds/acre)
Final stand 45,000 plants/acre (2.58 seeds/row-ft)

Plot Size: 8 rows by approximately 600 ft (0.28 acres)

Planting date: 11-May

Rainfall/Irrigation: Approximately 8" of rainfall was accumulated from 10-June through 25-August. During the growing season, 4.15" of irrigation was applied through a LESA center pivot.

Herbicides: 12-May: 1 qt Direx + 42 oz generic glyphosate + COC + AMS
 6-Jun: 48 oz generic glyphosate + 6 oz Select Max + NIS + AMS
 27-Jun: 32 oz generic glyphosate + 1 pt Medal + NIS + AMS
 15-Jul: 24 oz generic glyphosate + 12 oz Select Max + NIS + AMS
 25-Aug: 24 oz generic glyphosate + NIS + AMS

Insecticides: Initial acephate application at planting. Later two applications made for moderate to heavy fleahopper activity.

Fertilizer management: None applied based on soil test results.

Soil profile N:	Nitrogen NO ₃ -N, lb/ac			
	0-6 in.	6-12 in.	12-24 in.	24-36 in
Pre-plant	6	6	12	28
Post harvest	18	4	<4	<4

Plant Growth Regulators: 27-Jun: 2 oz Stance and 25-Aug: 3 oz Stance

Harvest aids: 6-Oct: 1 qt Prep + 1 pt Def + NIS

Harvest: Plots were harvested on 1-November using a commercial John Deere 7460 stripper harvester with field cleaner. Harvested material was transferred to a weigh wagon with integral electronic scales to determine plot weights. Plot yields were subsequently 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 Texas Tech University Fiber and Biopolymer Research Institute 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 (3.96 seed/row-ft) for the 30-inch 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:

Inconsistency in the data resulted in few yield components being statistically significant. However, Deltapine 104B2RF easily had the highest % lint turnout at 33.7% (Table 1). Lint yields varied with a low of 923 lb/acre with All-Tex Summit B2RF and a high of 1,288 lb/acre with Deltapine 1028B2RF. Lint loan values ranged from a low of \$0.4510/lb (All-Tex Summit B2RF) to a high of \$0.5047/lb (Deltapine 0912B2RF). After adding lint and seed value, total value/acre for varieties ranged from a low of \$575.46 for All-Tex Summit B2RF to a high of \$804.06 for Deltapine 1028B2RF. After subtracting ginning, seed and technology fee costs, the two top net value/acre varieties were Deltapine 1028B2RF at \$602.74 and Deltapine 0912BRF at \$497/89. The other varieties ranged from \$478.11 to \$378.07, but were not statistically different from each other.

Micronaire values ranged from a low of 2.5 for All-Tex Summit B2RF to a high of 3.2 for Deltapine 1028B2RF (Table 2). Micronaire values averaged 2.7. Staple length averaged 35.3 across all varieties with a low of 34.1 for NexGen 2549B2RF to a high of 36.9 for FiberMax 9180B2F. The highest percent uniformity was observed for NexGen 1551RF (80.7%) and FiberMax 9058F had the lowest (77.5%). Strength values averaged 28.5 g/tex with a high of 30.5 g/tex for NexGen 1551RF and a low of 26.4 for All-Tex Summit B2RF. Elongation ranged from a high of 7.7% for Deltapine 1028B2RF to a low of 5.6% for FiberMax 9058F. Leaf grades ranged from 2.0 to 4.3 with a test average of 3.4. Values for reflectance (Rd) and yellowness (+b) averaged 83.4 and 7.7, respectively.

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 eight inches of rainfall received during the growing season made a significant impact on yield. It is important to note that the yield and ranking of varieties in this trial differed considerably compared to trials in 2008 and 2009 in the Moore county area. In evaluating these results keep in mind that heat unit accumulation was much higher in 2010 compared to the previous two years. 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 David and Adam Ford for the use of their land, equipment and labor for this demonstration. Further assistance with this project was provided by Dr. Jane Dever - Texas AgriLife Research and Extension Center, Lubbock, and Dr. Eric Hequet - Associate Director, Fiber and Biopolymer Research Institute, Texas Tech University. Furthermore, we greatly appreciate the Texas Department of Agriculture - Food and Fiber Research for funding of HVI testing.

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Table 1. Harvest results from the cotton variety demonstration, Ford Farm, Moore Co, 2010.

Variety	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Seed/tech. cost	Net value	
	----- % -----		----- lb/acre -----			\$/lb	----- \$/acre -----						
Deltapine 1028B2RF	33.7	49.2	3820	1288	1879	0.4967	639.61	164.45	804.06	114.60	86.73	602.74	a
Deltapine 0912B2RF	29.1	49.1	3659	1064	1798	0.5047	537.05	157.34	694.39	109.77	86.73	497.89	ab
FiberMax 9180B2F	27.7	54.0	3829	1060	2069	0.4758	504.19	181.03	685.22	114.88	92.23	478.11	bc
Deltapine 104B2RF	26.0	52.9	3809	988	2015	0.5008	495.05	176.28	671.33	114.26	86.73	470.35	bc
FiberMax 1740B2F	29.8	50.2	3499	1041	1757	0.4715	490.90	153.73	644.63	104.98	92.23	447.42	bc
NexGen 2549B2RF	28.1	51.2	3592	1011	1838	0.4605	465.38	160.84	626.22	107.76	90.96	427.49	bc
FiberMax 9058F	27.6	51.6	3563	985	1837	0.4665	459.52	160.76	620.28	106.90	92.23	421.15	bc
NexGen 1551RF	27.1	52.9	3525	955	1864	0.4518	431.40	163.14	594.53	105.75	90.96	397.82	bc
All-Tex Summit B2RF	26.0	51.4	3548	923	1822	0.4510	416.06	159.40	575.46	106.43	90.96	378.07	c
Test average	28.3	51.4	3649	1035	1876	0.4755	493.24	164.11	657.35	109.48	89.97	457.89	
CV, %	2.7	3.5	14.1	14.0	14.2	6.7	14.0	14.2	14.0	14.1	--	16.5	
OSL	<0.0001	0.042	0.984	0.202	0.880	0.330	0.038	0.880	0.190	0.985	--	0.071†	
LSD	1.3	3.1	NS	NS	NS	NS	119.19	NS	NS	NS	--	107.87	

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, † indicates significance at the 0.10 level.

NS - not significant

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

Assumes:

\$3.00/cwt ginning cost and \$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, Ford Farm, Moore Co, 2010.

Variety	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 ^{nds} inches	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
Deltapine 1028B2RF	3.2	35.2	79.6	27.1	7.7	2.0	83.1	8.6	1.0	1.0
Deltapine 0912B2RF	3.0	34.7	78.2	28.5	6.7	3.7	82.7	7.9	1.3	1.0
FiberMax 9180B2F	2.7	36.9	80.0	29.6	6.1	4.0	84.5	7.1	1.3	1.0
Deltapine 104B2RF	2.4	35.4	79.2	28.9	7.0	4.3	83.1	7.6	2.0	1.0
FiberMax 1740B2F	2.7	35.1	78.0	28.0	6.3	2.7	84.6	7.4	1.0	1.0
NexGen 2549B2RF	2.6	34.1	80.2	29.8	6.9	4.3	82.0	7.8	2.0	1.0
FiberMax 9058F	2.6	36.1	77.5	27.7	5.6	3.7	84.5	7.0	1.7	1.0
NexGen 1551RF	3.0	35.4	80.7	30.5	6.2	2.7	82.3	8.4	1.3	1.0
All-Tex Summit B2RF	2.5	34.7	79.1	26.4	6.6	3.3	83.7	7.8	1.3	1.0
Test average	2.7	35.3	79.2	28.5	6.6	3.4	83.4	7.7	1.4	1.0
CV, %	3.4	1.7	1.3	3.1	3.4	17.5	0.3	1.6	--	--
OSL	<0.0001	0.0020	0.0127	0.0006	<0.0001	0.0018	<0.0001	<0.0001	--	--
LSD	0.2	1.1	1.7	1.5	0.4	1.0	0.5	0.2	--	--

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level.