

NORTHERN HIGH PLAINS COTTON VARIETY TRIALS

for

CARSON, MOORE, AND
SHERMAN COUNTIES





**Replicated Limited Irrigated Cotton Variety Demonstration
N 35.4° W 101.14° Elevation – 3334 ft
White Deer, TX – 2010**

Cooperator: Dudley Pohnert

**Rex Brandon, Jody Bradford, Brent Bean, Randy Boman, Mark Kelley,
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Carson County

Summary: The planting date of June 2nd clearly influenced the results of this trial. The varieties with the highest net value were NexGen 1551RF at \$440.15 and FiberMax 9058F at \$424.65. The variety with the third highest net value was Deltapine 0912B2RF at \$390.18. These three varieties had a net value of \$51/acre or more than all other varieties. When subtracting ginning, seed and technology fee costs, the average net value/acre of all varieties was \$343.52. Lint yield ranged from a low of 559 lb/acre with Deltapine 1028B2RF to a high of 915 lb/acre with NexGen 1551RF. Lint turnout varied considerably, ranging from 29% (FiberMax 1740B2F) to 37.4% (Nexgen 2549B2RF). Lint loan values ranged from a low of \$0.3765/lb (FiberMax 1740B2F) to a high of \$0.5452/lb (Deltapine 1028B2RF) followed by FiberMax 9180B2F at \$0.5412/lb. NexGen 1551RF had the highest Micronaire value at 4.0 followed by NexGen 2549B2RF at 3.9. Average staple length was 34.8, with very little variation between varieties. The highest percent uniformity was observed with NexGen 1551RF (81.1%) and FiberMax 9180B2F had the lowest (78%). Strength values ranged from 30.8 g/tex (FiberMax 1740B2F) to 27.2 g/tex (All-Tex Summit B2RF and NexGen 2549B2RF). NexGen 1551RF had the highest Leaf grade and color 1 grade at 5.5 and 2.5, respectively, followed by FiberMax 1740B2F with a leaf grade at 4.7. NexGen 2549B2RF had the lowest leaf and color 1 grade both at 1.7.

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 the Texas Panhandle.

Materials and Methods:

Varieties: Deltapine 1028B2RF, Deltapine 0912B2RF, Deltapine 104B2RF, Deltapine 1032B2RF FiberMax 9180B2RF, FiberMax 1740B2F, FiberMax 9058F, NexGen 1551RF, NexGen 2549B2RF, All-Tex Summit B2RF

Experimental design: Randomized complete block with 3 replications

Seeding rate: 3.2 seeds/row-ft in 30-inch row spacing (55,000 seeds/acre)

Plot Size: 8 rows by approximately 600 ft

Planting date: 2-June

Rainfall/Irrigation: Approximately 6.2 in. of rainfall was accumulated from 2-June through 2-November. During the growing season, 4 in. of irrigation was applied through a LESA center pivot.

Herbicides: 88 oz. Roundup applied three times during the season. 1.33 pints Dual and 9 oz. clethodium.

Insecticides: 4 lbs/acre Temik was applied in-furrow at planting.

Fertilizer: None applied due to sufficient N in soil profile.

Soil Profile N:	Nitrogen NO3-N, lb/ac			
	0-6 in	6-12 in	12-24 in	24-36 in
Pre-plant	6	78	84	112
Post harvest	13	5	7	11

Plant Growth Regulators: 16 oz/acre Pix

Harvest aids: 0.5 oz blizzard, 0.5 prep + 1 qt COC

Harvest: Plots were harvested on 22-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 (3.2 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:

Lint turnout ranged from a low of 29% to a high of 37.4% for FiberMax 1740B2F and NexGen 2549B2RF, respectively (Table 1). Highest lint yields were with NexGen 1551RF and FiberMax 9058F, with both yielding over 900 lb/acre. Lint loan values ranged from a low of \$0.3765/lb (FiberMax 1740B2F) to a high of \$0.5452/lb (Deltapine 1028B2RF). After adding lint and seed value, total value/acre for varieties ranged from a low of \$387.33 for Deltapine 1028B2RF to a high of \$601.04 for NexGen 1551RF. After subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of \$440.15 with NexGen 1551RF and a low of \$260.96 with Deltapine 1028B2RF, a difference of \$179.19.

Micronaire values ranged from a low of 2.9 for FiberMax 1740B2F to a high of 4.0 for NexGen 1551RF (Table 2). Most micronaire values were clustered around the mean of 3.5. Staple length averaged 34.8 across all varieties with a low of 33.2 for Deltapine 1032B2RF to a high of 35.9 for Deltapine 104B2RF. The highest percent uniformity was observed for NexGen 1551RF (81.1%) and FiberMax 9180B2F had the lowest (78%). Strength values averaged 28.7 g/tex with a high of 30.8 g/tex for FiberMax 1740B2F and a low of 27.2 for All-Tex Summit B2RF and NexGen 2549B2RF. Elongation ranged from a high of 8.2% for NexGen 2549B2RF to a low of 5.6% for Deltapine 104B2RF. Leaf grades were relatively high for NexGen 1551RF at 5.5 and FiberMax 1740B2F at 4.7. Values for reflectance (Rd) and yellowness (+b) averaged 81.8 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. In contrast to other 2010 cotton trials, the late planting date of this trial did not allow some of the later maturing varieties to take advantage of the higher number of heat units available in 2010 compared to 2009. Two varieties that yielded well in both 2009 and 2010 at this location were NexGen 1551RF and FiberMax 9058F. It should also be noted that the producer did not apply any nitrogen fertilizer to this field, but rather relied on an abundance of residual nitrogen in the soil. 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 Dudley Pohnert for the use of his 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.

Disclaimer Clause:

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Table 1. Harvest results from the cotton variety demonstration, D. Ponhert Farm, Carson 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 -----			
NexGen 1551RF	33.6	50.1	2733	915	1364	0.5281	481.71	119.33	601.04	82.00	78.89	440.15 a
FiberMax 9058F	34.4	47.3	2604	904	1228	0.5082	473.58	107.44	581.03	78.13	78.25	424.65 a
Deltapine 0912B2RF	30.9	51.0	2620	808	1335	0.5107	425.03	116.86	541.88	78.60	73.11	390.18 b
All-Tex Summit B2RF	30.6	52.4	2449	749	1283	0.4900	367.03	112.23	479.26	73.46	66.98	338.82 c
NexGen 2549B2RF	37.4	50.6	1989	744	1007	0.5055	376.29	88.09	464.39	59.68	73.94	330.77 c
FiberMax 9180B2F	34.1	50.0	2329	794	1165	0.5412	391.29	101.98	493.27	69.87	66.31	357.10 c
Deltapine 104B2RF	31.8	51.1	2397	762	1225	0.5032	383.58	107.20	490.78	71.90	66.98	351.91 c
Deltapine 1032 B2RF	30.5	50.7	2313	707	1173	0.4654	328.29	102.66	430.94	69.40	70.76	290.80 d
FiberMax 1740B2F	29.0	53.6	2571	745	1376	0.3765	280.52	120.45	400.97	77.13	73.94	249.91 e
Deltapine 1028B2RF	29.7	54.2	1895	559	1034	0.5452	296.86	90.47	387.33	56.85	69.52	260.96 e
Test average	32.2	51.1	2390	769	1219	0.4974	380.42	106.67	487.09	71.70	71.87	343.52
CV, %	2.0	3.8	4.5	4.6	4.5	18.7	4.6	4.5	4.6	4.5	5.4	5.9
OSL	<0.0001	0.0301	<0.0001	<0.0001	<0.0001	0.6129	<0.0001	<0.0001	<0.0001	<0.0001	0.0131	<0.0001
LSD	0.9	2.8	155	51	79	NS	25.57	6.93	32.43	4.64	5.65	29.55

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 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, D. Ponhert Farm, Carson 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
NexGen 1551RF	4.0	34.5	81.1	28.3	7.6	5.5	80.3	7.6	2.5	1.0
FiberMax 9058F	3.7	34.7	79.0	27.6	6.9	2.6	82.0	7.9	2.0	1.0
Deltapine 0912B2RF	3.4	35.5	79.8	29.7	6.4	2.3	83.2	7.2	2.0	1.0
All-Tex Summit B2RF	3.3	34.5	80.3	27.2	7.2	2.3	82.1	7.9	2.0	1.0
NexGen 2549B2RF	3.9	34.3	80.3	27.2	8.2	1.7	80.9	8.4	1.7	1.0
FiberMax 9180B2F	3.4	35.1	78.0	28.5	6.5	2.3	82.6	7.6	2.0	1.0
Deltapine 104B2RF	3.3	35.9	79.0	28.2	5.6	3.7	82.7	7.0	2.0	1.0
Deltapine 1032 B2RF	3.0	33.2	80.6	29.7	7.5	3.7	81.2	7.7	2.0	1.0
FiberMax 1740B2F	2.9	35.5	81.0	30.8	7.2	4.7	81.8	7.5	2.0	1.0
Deltapine 1028B2RF	3.9	35.1	81.0	29.9	6.8	2.9	81.0	8.1	2.0	1.0
Test average	3.5	34.8	80.0	28.7	7.0	3.2	81.8	7.7	2.0	1.0
CV, %	3.2	2.0	11.1	2.7	3.8	39.1	0.7	1.5	--	--
OSL	<0.0001	0.0103	0.0085	0.0003	<0.0001	0.0376	0.0003	<0.0001	--	--
LSD	0.2	1.0	1.3	1.1	0.4	1.8	0.8	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.



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

Cooperator: David/Adam Ford

**Rex Brandon, Marcel Fischbacher, Brent Bean, Randy Boman, Mark Kelley,
and Jake Becker – AgriLife Research Assistant - CEA Moore County, Extension
Agronomist - Amarillo, Extension Agronomist - Cotton - Lubbock, Extension
Program Specialist II - Cotton, AgriLife Research Assistant**

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.



**Replicated LESA Irrigated Cotton Variety Demonstration,
36°06'N 101°45'W Elevation-3468 ft
Sunray, TX – 2010
Cooperator: Tommy Cartrite**

**Rex Brandon, Marcel Fischbacher, Brent Bean, Randy Boman, Mark Kelley,
and Jake Becker - AgriLife Research Assistant, CEA-ANR Moore County,
Extension Agronomist - Amarillo, Extension Agronomist - Cotton - Lubbock,
Extension Program Specialist II - Cotton, AgriLife Research Assistant**

Sherman County

Summary: Average lint yield was 1,052 lb/acre and varied from a low of 926 lb/acre for Deltapine 104B2RF to a high of 1,293 lb/acre for Deltapine 0912B2RF. Average lint turnout was 29.7%. Lint loan values averaged \$0.5414. When subtracting ginning, seed and technology fee costs, the average net value/acre across varieties was \$523.76. Net value per acre ranged from a high of \$645.58 for Deltapine 0912B2RF to a low of \$450.48 for Deltapine 104B2RF, a difference of \$195.08. Micronaire averaged 3.4 with Deltapine 1028B2RF being the highest at 3.7. Average staple was 36.3 across all varieties. The highest uniformity was observed for NexGen 1551RF (81.8%), and FiberMax 9058F had the lowest at 79.6%. Strength values ranged from a low of 27.6 g/tex (Deltapine 1028B2RF) to a high of 32.1 g/tex (NexGen 1551RF). Performance and rankings of varieties tested varied greatly in 2010 compared to 2008 and 2009, largely due to excellent weather conditions in 2010.

Objective: The objective of this project was to compare yields, gin turnout, fiber quality, and economic returns of transgenic cotton varieties under LESA center pivot irrigated production in the Texas Panhandle.

Materials and Methods:

Varieties: Deltapine 1028B2RF, Deltapine 0912B2RF, Deltapine 104B2RF, Deltapine 1032B2RF, Deltapine 0920B2RF, FiberMax 9180B2RF, FiberMax 1740B2F, FiberMax 9058F, NexGen 1551RF, NexGen 2549B2RF, AllTex Summit B2RF

Experimental design: Randomized complete block with 3 replications

Seeding rate: 3 seeds/row-ft in 20-inch row spacing (78,000 seed/acre)
Plot Size: 12 rows approximately 600 ft in length

Planting date: 25-May

Weed management: Pre: 9-May, 2.5 pts Prowl H2O. Post: 16-May, 26 oz Roundup. 27-May, 32 oz Powermax + 1.5 gallon of 100 Bronco Plus. 21-July, PowerMax + 6 oz Interlock (drift retardant)

Rainfall and Irrigation: 7.75 inches irrigation with a LESA center pivot system. 13.26 inches rainfall during the growing season (data from Etter, TX weather station)

Insecticides: 27-June, 3 oz/acre acephate. 10-July, 4 oz/acre acephate

Fertilizer management: Fertigation: 13-August 3 gal/ac 16-22-0

Soil Profile N:

Nitrogen NO3-N, lb/ac

	0-6"	6-12"	12-24"	24-36"
Pre-plant	6	36	42	62
Post harvest	14	5	<4	<4

Plant growth regulators: 10-July, 3 oz/ac Stance + Surfactant. 21-July, 3 oz/ac Stance (applied with PowerMax for weed control)

Harvest aids: 13-Oct, 2 pts Boll Buster + 1 pt Folex + Nonionic adjuvant

Harvest: Plots were harvested on 23-November using a commercial John Deere 7460 stripper 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 Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.

Ginning cost and seed value: 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 seed/row-ft) for the 20-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:

Lint turnout ranged from a low of 26.7% to a high of 32.8% for All-Tex Summit B2RF and Deltapine 1032B2RF, respectively (Table 1). Lint yields varied from a low of 926 lb/acre with Deltapine 104B2RF to a high of 1,293 lb/acre with Deltapine 0912B2RF.

Lint loan values averaged \$0.5414/lb. Deltapine 0920B2RF had the highest lint loan value at \$0.5648. After adding lint and seed value, total value/acre ranged from a low of \$661.76 for Deltapine 104B2RF to a high of \$871.46 for Deltapine 0912B2RF. When subtracting ginning, seed and technology fee costs the net value/acre among varieties ranged from a low of \$450.48 for Deltapine 104B2RF to a high of \$645.58 for Deltapine 0912B2RF, a difference of \$195.08.

Significant differences were observed among varieties for all HVI quality grade parameters (Table2). Micronaire values ranged from a low of 3.0 for Deltapine 104B2RF and NexGen 2549B2RF to a high of 3.7 for Deltapine 128B2RF. Staple averaged 36.3 across all varieties with a low of 35.5 for Deltapine 1028B2RF to a high of 37.4 for FiberMax 9058B2F. The highest uniformity was observed for NexGen 1551RF at 81.8% and FiberMax 9058F had the lowest with 79.6%. Strength averaged 29.7 g/tex, with a high of 31.2 g/tex for FiberMax 9180B2F and a low of 27.6 g/tex for Deltapine 1028B2RF. Elongation averaged 7.0% across all varieties. Deltapine 104B2RF had the highest leaf grade at 3.3. Deltapine 1028B2RF was lowest at 1.3. Rd or reflectance averaged 82.8 and +b or yellowness averaged 8.1 within all varieties.

These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection. In this trial, Deltapine 0912B2RF gave the highest net value, returning \$81 more per acre more than the next highest variety, FiberMax 1740B2F. This is in contrast to last year where Deltapine 0912BRF produced one of the lowest net returns of the varieties tested. Additional multi-site and multi-year applied research is needed to evaluate varieties and technology across a series of environments.

Acknowledgments:

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Disclaimer Clause:

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Table 1. Harvest results from the cotton variety demonstration, Tommy Cartrite Farm, Sherman Co., 2010.

Entry	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 0912B2RF	32.5	51.8	3974	1293	2059	0.5348	691.31	180.15	871.46	119.22	106.66	645.58 a
FiberMax 1740B2F	31.4	52.3	3596	1129	1879	0.5457	616.29	164.43	780.72	107.88	108.22	564.61 b
Deltapine 0920B2RF	31.2	51.1	3250	1015	1662	0.5648	573.54	145.39	718.92	97.49	78.61	542.82 bc
Deltapine 1032B2RF	32.8	50.0	3545	1164	1774	0.5055	588.63	155.23	743.86	106.35	97.60	539.90 bcd
NexGen 2549B2RF	28.5	54.4	3712	1058	2020	0.5290	559.45	176.71	736.16	111.35	104.90	519.91 bcd
FiberMax 9058F	29.2	53.7	3462	1012	1857	0.5565	563.27	162.53	725.80	103.86	104.90	517.04 bcd
Deltapine 1028B2RF	31.6	49.9	3355	1060	1674	0.5413	574.03	146.46	720.49	100.66	106.66	513.17 bcde
All-Tex Summit B2RF	26.7	54.2	3666	979	1985	0.5533	541.97	173.71	715.68	109.97	106.66	499.05 cde
NexGen 1551RF	27.8	56.5	3458	962	1954	0.5523	531.30	170.95	702.25	103.74	104.90	493.61 cde
FiberMax 9180B2F	28.0	54.4	3455	969	1881	0.5392	522.44	164.59	687.04	103.65	108.22	475.17 de
Deltapine 104B2RF	26.9	56.1	3435	926	1928	0.5327	493.10	168.66	661.76	103.06	108.22	450.48 e
Test average	29.7	53.1	3537	1052	1879	0.5414	568.67	164.44	733.10	106.11	103.23	523.76
CV, %	3.7	1.2	6.3	6.3	6.3	3.6	6.3	6.3	6.3	6.3	--	7.3
OSL	<0.0001	<0.0001	0.0502 [†]	<0.0001	0.0064	0.0796 [†]	0.0002	0.0064	0.0027	0.0502 [†]	--	0.0007
LSD	1.9	1.1	313	112	202	0.0275	60.84	17.68	78.39	9.39	--	65.52

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.

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, Tommy Carrite Farm, Sherman Co., 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
Deltapine 0912B2RF	3.6	36.3	80.9	29.0	7.4	3.0	82.2	8.2	1.7	1.0
FiberMax 1740B2F	3.3	36.2	80.4	30.4	6.6	2.7	83.7	7.7	1.3	1.0
NexGen 2549B2RF	3.0	35.2	80.8	30.4	7.1	3.0	81.9	8.1	2.0	1.0
Deltapine 1032B2RF	3.6	36.3	80.4	29.4	6.9	2.0	83.0	8.3	1.0	1.0
Deltapine 1028B2RF	3.7	35.5	81.2	27.6	7.8	1.3	81.6	9.3	1.0	1.0
Deltapine 0920B2RF	3.6	35.7	79.9	28.5	7.3	3.0	82.4	8.3	1.0	1.0
FiberMax 9058F	3.1	37.4	79.6	29.1	5.9	2.0	84.5	7.2	1.3	1.0
NexGen 1551RF	3.6	36.4	81.8	32.1	6.7	2.3	81.4	8.5	1.3	1.0
All-Tex Summit B2RF	3.1	35.8	81.0	27.8	7.3	2.3	83.1	8.1	1.0	1.0
FiberMax 9180B2F	3.3	37.2	80.9	31.2	6.3	2.7	84.1	7.2	1.7	1.0
Deltapine 104B2RF	3.0	36.8	81.3	31.1	7.4	3.3	82.7	7.9	1.3	1.0
Test average	3.4	36.3	80.7	29.7	7.0	2.5	82.8	8.1	1.3	1.0
CV, %	4.6	1.2	0.9	2.7	4.3	27.5	0.6	2.9	--	--
OSL	<0.0001	<0.0001	0.0420	<0.0001	<0.0001	0.0709 [†]	<0.0001	<0.0001	--	--
LSD	0.3	0.7	1.2	1.4	0.5	1.0	0.9	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, [†]indicates significance at the 0.10 level.