



**Replicated Irrigated Cotton Variety Demonstration,
Loop, TX - 2009**

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Gaines County

Summary: Significant differences were observed for most of the yield, economic and HVI fiber quality parameters measured. Lint turnout was significant at the 0.10 probability level and ranged from a low of 26.3% and a high of 31.3% for NexGen 3348B2F and Deltapine 164B2F, respectively. Lint yields varied with a low of 823 lb/acre (FiberMax 9160B2F) and a high of 1183 lb/acre (Deltapine 174F). Lint loan values did not significantly differ. Net value/acre among varieties ranged from a high of \$611.68 (Deltapine 174F) to a low of \$294.98 (NG3348B2F), a difference of \$316.70. Micronaire values ranged from a low of 3.2 for NexGen 2549B2F to a high of 4.4 for Deltapine 0935B2RF, Deltapine 164B2F, and Phytogen 375WRF. Staple averaged 35.2 across all varieties with a low of 33.0 for NexGen 2549B2F and a high of 36.4 for FiberMax 9160B2F. Strength values averaged 29.2 g/tex with a high of 31.0 g/tex for FiberMax 9180B2F and a low of 26.8 g/tex for All-Tex ApexB2F. Elongation ranged from a high of 9.5% for Dyna-Gro 2570B2F to a low of 6.4% for FiberMax 9160B2F. Leaf grades were relatively high with a range of 1 to 5, with a test average of 3.1. These data indicate that substantial differences can be 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 varieties under irrigated production in Gaines County.

**Materials and
Methods:**

Varieties: All-Tex Apex B2F, Deltapine 174F, Deltapine 164B2F, Deltapine 0935B2F, DynaGro 2570B2F, FiberMax 9160B2F, FiberMax 9170, FiberMax 9180B2F, NexGen 2549B2F, NexGen 3348B2F, Phytogen 375WF

Field Soil Texture and pH: 93% sand, 3% silt, and 4% clay; pH of 7.9

Experimental design: Randomized complete block with 3 replications

Seeding rate: 3 seeds/row-ft in 40-inch row spacing

Plot size: 8 rows by variable length of field (0.42 - 2.06 acre)

Planting date: 6 May in terminated wheat

Irrigation: This location was under a LESA center pivot

Irrigation & Rainfall: Pre-bloom irrigation and rainfall totaled ~6.71 inches
Bloom to harvest rainfall totaled ~10.38 inches

Insecticides: Temik was applied infurrow at planting at 3.5 lbs/acre

Weed Management: Field was treated with Treflan at 1 1/3 pt broadcast pre-plant and 1 1/3 pt banded on at planting. 2 roundup applications during the season.

Fertilizer Management: 48 units phosphate and 120 units of Nitrogen

Plant Growth Regulators: At pinhead square applied 2 oz Mepex

Harvest Aides: First application: 1 pt of Def and 1 pt of Prep.
Second application: 12.8 oz of Gramoxone

Harvest: Plots were harvested on 20 October using a commercial stripper harvester. Harvested material was transferred to a weigh wagon with integral electronic scales to determine individual 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 \$160/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 40-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:

Significant differences were observed for most of the yield, economic and HVI fiber quality parameters measured (Tables 1 and 2). Lint turnout was significant at the 0.10 probability level and ranged from a low of 26.3% and a high of 31.3% for NexGen 3348B2F and Deltapine 164B2F, respectively. Seed turnout ranged from a high of 44.0% for FiberMax 9160B2F to a low of 39.9% for Deltapine 174F. Bur cotton yields were significant at the 0.10 probability level and averaged 3392 lb/acre with a high of 4013 lb/acre for Deltapine 174F, and a low of 2971 lb/acre for FiberMax 9160B2F. Lint yields varied with a low of 823 lb/acre (FiberMax 9160B2F) and a high of 1183 lb/acre (Deltapine 174F). Lint loan values did not significantly differ. After adding lint and seed value, total value/acre for varieties ranged from a low of \$449.12 for NexGen 3348B2F to a high of \$776.03 for Deltapine 174F. When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of \$611.68 (Deltapine 174F) to a low of \$294.98 (NG3348B2F), a difference of \$316.70.

Micronaire values ranged from a low of 3.2 for NexGen 2549B2F to a high of 4.4 for Deltapine 0935B2RF, Deltapine 164B2F, and Phytogen 375WRF. Staple averaged 35.2 across all varieties with a low of 33.0 for NexGen 2549B2F and a high of 36.4 for FiberMax 9160B2F. Percent uniformity did not significantly differ. Strength values averaged 29.2 g/tex with a high of 31.0 g/tex for FiberMax 9180B2F and a low of 26.8 g/tex for All-Tex ApexB2F. Elongation ranged from a high of 9.5% for Dyna-Gro 2570B2F to a low of 6.4% for FiberMax 9160B2F. Leaf grades were relatively high with a range of 1 to 5, with a test average of 3.1. Values for reflectance (Rd) and yellowness (+b) averaged 80.2 and 7.9, respectively. This resulted in color grades of 21s and 31s.

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 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.

Acknowledgments:

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Table 1. Harvest results from the replicated irrigated cotton variety demonstration, Ricky Mills Farms , Loop TX, 2009

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 -----			
DP 174F	29.5	39.9	4013	1183	1601	0.5477	647.93	128.09	776.03	120.38	43.96	611.68 a
DP 164B2F	31.3	46.0	3458	1081	1588	0.5698	616.35	127.08	743.43	103.73	50.82	588.88 a
DG 2570B2F	29.7	46.1	3402	1010	1567	0.5542	558.68	125.40	684.08	102.05	50.78	531.25 ab
PHY 375WF	30.2	42.0	3324	1004	1394	0.5572	559.05	111.55	670.60	99.73	50.76	520.11 ab
AT Apex B2F	27.1	42.5	3612	979	1534	0.5587	547.85	122.70	670.54	108.37	50.70	511.48 abc
DP 0935B2F	30.5	42.0	3344	1018	1406	0.5363	549.00	112.46	661.45	100.32	51.72	509.42 abc
FM 9170B2F	29.3	42.6	3170	928	1351	0.5652	524.09	108.09	632.18	95.10	52.12	484.95 abc
FM 9180B2F	27.1	44.7	3369	912	1506	0.5653	515.45	120.51	635.96	101.08	52.12	482.75 abc
FM 9160B2F	27.7	44.0	2971	823	1309	0.5335	438.72	104.70	543.42	89.13	52.12	402.17 bcd
NG 2549B2F	27.0	45.4	3212	866	1456	0.4642	402.15	116.48	518.63	96.36	51.12	371.15 cd
NG 3348B2F	26.3	45.7	3434	904	1571	0.3988	323.48	125.64	449.12	103.02	51.12	294.98 d
Test average	28.7	43.7	3392	973	1480	0.5319	516.61	118.43	635.04	101.75	50.67	482.62
CV, %	7.1	2.7	9.7	9.4	9.5	13.9	16.5	9.5	13.8	9.7	--	17.6
OSL	0.0774	<0.0001	0.0948	0.0058	0.1833	0.1955	0.0064	0.1836	0.0066	0.0948	--	0.0068
LSD	2.9	2.0	462	156	NS	NS	145.40	NS	149.44	13.86	--	144.77

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

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.

\$160/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 irrigated cotton variety demonstration, Ricky Mills Farms , Loop TX, 2009.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 ^{nds} inches	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
DP 174F	4.0	35.6	80.3	28.1	8.8	3.7	79.5	7.8	3.0	1.0
DP 164B2F	4.4	35.6	80.8	29.3	7.9	1.7	81.7	7.8	2.0	1.0
DG 2570B2F	4.2	34.5	80.9	29.3	9.5	2.3	80.5	8.4	2.0	1.0
PHY 375WF	4.4	34.7	81.1	28.0	8.3	2.3	79.8	8.2	2.3	1.0
AT Apex B2F	4.2	35.2	80.4	26.8	8.5	2.7	80.6	8.2	2.3	1.0
DP 0935B2F	4.4	33.7	80.1	28.0	8.6	1.7	81.0	8.4	2.0	1.0
FM 9170B2F	3.8	36.1	80.8	30.9	7.4	3.0	81.6	7.3	2.3	1.0
FM 9180B2F	3.7	36.1	81.1	31.0	7.6	3.0	81.0	7.3	2.7	1.0
FM 9160B2F	3.7	36.4	81.3	30.3	6.4	4.3	80.3	7.5	2.7	1.0
NG 2549B2F	3.2	33.0	80.6	29.7	8.7	5.0	77.4	7.9	3.0	1.0
NG 3348B2F	3.7	35.9	81.3	29.3	8.1	4.7	78.6	7.8	3.0	1.0
Test average	4.0	35.2	80.8	29.2	8.2	3.1	80.2	7.9	2.5	1.0
CV, %	5.2	1.9	0.7	1.9	3.5	34.3	1.0	2.6	--	--
OSL	<0.0001	<0.0001	0.2297	<0.0001	<0.0001	0.0081	<0.0001	<0.0001	--	--
LSD	0.3	1.1	NS	0.9	0.5	1.8	1.4	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, † indicates significance at the 0.10 level, NS - not significant.