



**Replicated Irrigated Roundup Ready Flex Cotton Variety Demonstration,
Halfway, TX - 2006**

Cooperator: Texas Agricultural Experiment Station, Halfway Farm

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Summary: Significant differences were observed for most parameters measured (Tables 1 and 2). Lint turnout ranged from a low of 31.4% to a high of 36.7% for PhytoGen 125RF and FiberMax 9060F, respectively. Lint yields varied with a low of 754 lb/acre (AFD 3070F) and a high of 938 lb/acre (FiberMax 9060F). Lint loan values ranged from a low of \$0.5168/lb (Deltapine X04V344F) to a high of \$0.5670/lb (FiberMax 9058F). After adding lint and seed value, total value/acre among varieties ranged from a low of \$500.21 for AFD 3070F to a high of \$603.97 for FiberMax 9060F. When subtracting ginning and seed/technology costs, net value/acre ranged from a high of \$496.15 (FiberMax 9060F) to a low of \$392.86 (PhytoGen 125RF), a difference of \$103.29. Significant differences were observed among varieties for micronaire, staple, uniformity, strength, elongation, and leaf. 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 yields, gin turnout, fiber quality, and economics of transgenic varieties under irrigated production systems.

Materials and Methods:

Varieties: Deltapine X04V344F, Deltapine 147RF, Stoneville NexGen 3550RF, Stoneville 4664RF, PhytoGen 125RF, AFD 5064F, FiberMax 9060F, FiberMax 9058F, AFD 3074F, and AFD 3070F

Experimental design: Randomized complete block with 3 replications

Seeding rate: 4.3 seed per row-ft in 40-inch row spacing (John Deere Max Emerge vacuum planter)

Plot size: 4 rows by variable length (343 to 779 ft) due to circular pivot

Planting date: 18-May

Weed management: Prowl was applied at a rate of 2.0 qt/acre on 28-March. Roundup Weather Max herbicide was applied over-the-top on 3-June, 5-July, and 22-August at a rate of 22 oz/acre with ammonium sulfate (17 lbs/100 gallons of spray mix).

Rainfall and Irrigation: 12 acre-inches of irrigation were applied during the growing season with approximately 13 inches of rainfall.

Insecticides: Temik was applied in-furrow at planting at 3.0 lbs/acre. No other insecticides were applied at this site.

Fertilizer management: No fertilizers were applied at this location.

Plant growth regulators: No plant growth regulators were applied to this test during the growing season.

Harvest aids: Prep at 1.0 qt/acre plus Aim at 1.0 oz/acre was applied on 20-October.

Harvest: Plots were harvested on 01-November using a commercial John Deere 7445 stripper harvester with field cleaner. Harvested 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 University Agricultural Research and Extension Center at Lubbock to determine gin turnouts.

Fiber analysis: Lint samples were submitted to the International Textile Center at Texas Tech University for HVI analysis, and Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.

Ginning cost and seed values: Ginning costs were based on \$2.45 per cwt. of bur cotton and seed value/acre was based on \$125/ton of seed. Ginning costs did not include checkoff.

Seed and technology cost: Seed and technology costs were calculated using the appropriate seeding rate (seed/row-ft) for the row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet with Monsanto Cap Cost Thresholds. available at: <http://www.plainscotton.org/Seed/seedindex.html>

Results and Discussion:

Significant differences were observed for most parameters measured (Tables 1 and 2). Lint turnout ranged from a low of 31.4% to a high of 36.7% for PhytoGen 125RF and FiberMax 9060F, respectively. Lint yields varied with a low of 754 lb/acre (AFD 3070F) and a high of 938 lb/acre (FiberMax 9060F). Lint loan values ranged from a low of \$0.5168/lb (Deltapine X04V344F) to a high of \$0.5670/lb (FiberMax 9058F). After adding lint and seed value, total value/acre among varieties ranged from a low of \$500.21 for AFD 3070F to a high of \$603.97 for FiberMax 9060F. When subtracting ginning and seed/technology costs, net value/acre ranged from a high of \$496.15 (FiberMax 9060F) to a low of \$392.86 (PhytoGen 125RF), a difference of \$103.29. Four varieties were within the statistical upper tier for net value (\$/acre). FiberMax 9060F, FiberMax 9058F, Deltapine 147RF, and Stoneville 4664RF produced similar net values. Significant differences were observed among varieties for micronaire, staple, uniformity, strength, elongation, and leaf. Micronaire values ranged from a high of 4.6 for Stoneville 4664RF to a low of 3.8 for AFD 3074F and Stoneville NexGen 3550RF. FiberMax 9058F had the highest staple length (36.4) and Deltapine X04V344F had the lowest (33.5). The test average for percent uniformity was 81.5 and ranged from a low of 79.8 to a high of 82.9 for FiberMax 9060F and Stoneville 4664RF, respectively. Strength values ranged from a high of 31.3 g/tex for PhytoGen 125RF to a low of 26.4 for Deltapine X04V344F. Percent elongation was highest for Stoneville 4664RF (8.7%) and lowest for FiberMax 9058F (5.6%). A test average leaf grade of 3.6 was observed with a high of 4.0 for AFD 5064F, PhytoGen 125RF, Deltapine 147RF and Stoneville NexGen 3550RF, and a low of 3.0 for AFD 3074F. 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. Additional multi-site and multi-year applied research is needed to evaluate varieties and technology across a series of environments.

Acknowledgments:

Appreciation is expressed to Doug Nesmith, Farm Research Service Manager - Texas Agricultural Experiment Station (TAES), Halfway/Helms; and Jim Bordovsky, Research Scientist and Agricultural Engineer - TAES, Halfway/Helms, for their assistance with this project. Further assistance with this project was provided by Dr. John Gannaway - TAES, Lubbock, and Dr. Eric Hequet - Associate Director, International Textile Center, Texas Tech University.

Disclaimer Clause:

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Table 1. Harvest results from the irrigated replicated transgenic cotton variety demonstration, Texas Agricultural Experiment Station, Halfway, TX, 2006.

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	lb/acre	\$/lb	\$/acre	\$/acre	\$/acre	\$/acre	\$/acre	\$/acre
FiberMax 9060F	36.7	49.5	2557	938	1265	0.5600	524.93	79.04	603.97	62.64	45.18	496.15 a
FiberMax 9058F	35.4	48.9	2579	912	1262	0.5670	517.16	78.86	596.02	63.18	45.18	487.66 ab
Deltapine 147RF	35.4	48.9	2527	894	1235	0.5505	492.16	77.19	569.34	61.92	51.08	456.35 abc
Stoneville 4664RF	35.5	48.1	2535	900	1219	0.5453	492.39	76.20	568.59	62.10	50.64	455.85 abc
AFD 3074F	32.6	53.9	2493	813	1343	0.5668	460.70	83.95	544.65	61.08	41.01	442.57 bcd
AFD 5064F	33.0	51.6	2599	857	1341	0.5287	453.37	83.83	537.20	63.69	43.20	430.32 cd
Stoneville NexGen 3550RF	33.7	51.4	2498	842	1284	0.5385	453.68	80.26	533.94	61.20	42.80	429.94 cd
Deltapine X04V344F	34.4	51.1	2417	831	1235	0.5168	429.19	77.20	506.39	59.22	46.15	401.02 d
AFD 3070F	32.0	54.0	2354	754	1272	0.5582	420.73	79.48	500.21	57.68	41.67	400.86 d
PhytoGen 125RF	31.4	52.9	2502	786	1323	0.5332	419.16	82.67	501.83	61.30	47.67	392.86 d
Test average	34.0	51.0	2506	853	1278	0.5465	466.35	79.87	546.21	61.40	45.46	439.36
CV, %	2.0	1.8	5.4	5.4	5.4	1.9	6.3	5.4	6.2	5.4	--	6.9
OSL	<0.0001	<0.0001	0.5579	0.0023	0.3147	<0.0001	0.0016	0.3148	0.0081	0.5576	--	0.0052
LSD	1.2	1.6	NS	80	NS	0.0175	50.77	NS	57.71	NS	--	52.24

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:

\$2.45/cwt ginning cost.

\$125/ton for seed.

Value for lint based on CCC loan value from grab samples and ITC HVI results. Color grades set at 31.

Table 2. HVI fiber property results from the irrigated replicated transgenic cotton variety demonstration, Texas Agricultural Experiment Station, Halfway, TX, 2006.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf
	units	32 ^{nds} inches	%	g/tex	%	grade
FiberMax 9060F	4.1	36.0	79.8	28.3	5.7	3.3
FiberMax 9058F	4.0	36.4	80.8	29.5	5.6	3.3
Deltapine 147RF	3.9	36.1	81.4	28.9	6.2	4.0
Stoneville 4664RF	4.6	34.4	82.9	29.3	8.7	3.7
AFD 3074F	3.8	34.6	81.8	30.4	7.1	3.0
AFD 5064F	4.1	33.9	81.9	29.9	6.8	4.0
Stoneville NexGen 3550RF	3.8	34.7	81.2	29.1	6.9	4.0
Deltapine X04V344F	3.9	33.5	80.6	26.4	6.4	3.7
AFD 3070F	4.0	35.2	82.0	28.5	6.2	3.3
PhytoGen 125RF	3.9	33.8	82.7	31.3	7.0	4.0
Test average	4.0	34.8	81.5	29.2	6.7	3.6
CV, %	2.7	1.3	1.0	3.0	3.7	9.8
OSL	<0.0001	<0.0001	0.0070	0.0002	<0.0001	0.0169
LSD	0.2	0.8	1.4	1.5	0.4	0.6

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level.