



2011 Irrigated Cotton Variety Demonstration near Perryton, TX

Cooperator: Roger Davis

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Ochiltree County

Summary: Twelve cotton varieties were planted on May 7th at 60,000 seed/A. FiberMax 9058F netted the highest value per acre at \$788. Four other varieties with net values per acre of \$683 or greater were Deltapine 1219B2RF, NexGen 4010B2RF, FiberMax 91802F and PhytoGen 367WRF. There was a difference of \$289/A between varieties with the highest and lowest net value, clearly indicating the importance of variety selection. Lint loan value of the twelve varieties ranged from \$0.577/lb to 0.524/lb with a test average of \$0.559/lb.

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 Ochiltree County.

Materials and Methods:

Varieties: Deltapine 1219B2RF (EXP 10R011), 0912B2RF and 104B2RF; FiberMax 9103GT, 9058F, 9180B2RF and 1740B2F; PhytoGen 367WRF; NexGen 4010B2RF, 2549B2RF, 2051B2RF and 1551RF

Experimental design: Randomized complete block with 3 replications

Seeding rate: 30-inch row spacing at 60,000 seed/A

Plot Size: 6 rows by approximately 800 ft in length

Planting date: May 7th

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Rainfall/Irrigation:	No significant rainfall during the season. Six inches of irrigation
Herbicides:	Three Roundup applications and one application of diuron
Insecticides:	Acephate
Fertilizer management:	56 lbs of N as 32-0-0
Plant Growth Regulators:	Stance
Harvest aids:	None
Harvest:	Plots were harvested on November 15 th and 17 th using a commercial John Deere 7460 with field cleaner. Harvested material was transferred to a weigh wagon with integral electronic scales to determine plot weights. Plot weights were converted to lb/A basis.
Gin turnout:	Samples from each plot were ginned at the Texas AgriLife Research and Extension Center near 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 \$300/ton. Ginning costs did not include checkoff.
Seed and Technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (3.44 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/ .

Results and Discussion:

Lint turnout ranged from 39.4% to 24.1% with a test average of 37% (Table 1). Lint yield ranged from 1,255 lb/A to 828 lb/A with a test average of 1,060 lb/A. The top yielding varieties also tended to have the highest lint loan values which averaged \$0.559/lb. When the net value of each variety was calculated (lint and seed value minus ginning and seed/tech costs) the top five varieties were FiberMax 9058F (\$788/A), Deltapine

1219B2RF (\$742/A, NexGen 4010B2RF (\$736/A), FiberMax 9180B2RF (\$699) and PhytoGen 367WRF (\$684/A).

Micronaire was good with all varieties ranging from 3.8 to 4.8 units (Table 2). Staple averaged 36.9, uniformity averaged 82% and strength averaged 30.8 g/tex. Leaf grades varied from a high of 5.3 to a low of 1.3. Fiber yellowness was fairly consistent averaging 7.8 while color 1 varied from 3.0 to 1.7.

These data indicate that substantial differences can be obtained in terms of net value/A due to variety and technology selection. Net values ranged from \$788/A to \$499/A, a difference of \$289/A. It should be noted that heat unit accumulation for the region was exceptional in 2011 and likely contributed to the ranking of these varieties. Additional multi-site and multi-year applied research is needed to evaluate varieties and technology across a series of environments.

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Table 1. Harvest results from the Cotton Variety Trial, Davis Farm, Perryton, 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/tech cost	Net value
	----- % -----		----- lb/acre -----			\$/lb				----- \$/acre -----		
FiberMax 9058F	38.0	50.8	3,300	1,255	1,676	0.5652	709.34	251.46	960.80	99.00	74.07	787.73 a
Deltapine 1219B2RF	37.0	50.7	3,193	1,181	1,619	0.5770	681.46	242.78	924.24	95.80	86.24	742.19 ab
NexGen 4010B2RF	37.2	51.6	3,148	1,171	1,623	0.5655	662.29	243.50	905.80	94.43	75.08	736.29 ab
FiberMax 9180B2F	37.7	50.3	2,990	1,126	1,504	0.5752	647.52	225.58	873.10	89.70	83.97	699.42 abc
PhytoGen 367WRF	39.4	49.4	2,973	1,170	1,469	0.5443	636.85	220.40	857.25	89.19	84.47	683.59 abcd
NexGen 2549B2RF	37.5	50.6	2,876	1,078	1,455	0.5522	595.09	218.22	813.31	86.28	75.08	651.95 bcd
FiberMax 9103GT	36.8	51.6	2,808	1,033	1,449	0.5615	580.06	217.33	797.39	84.25	71.18	641.95 bcd
Deltapine 0912B2RF	38.2	48.8	2,800	1,068	1,366	0.5380	574.79	204.96	779.75	84.00	86.24	609.51 cde
FiberMax 1740B2F	37.7	50.8	2,648	998	1,345	0.5667	565.50	201.68	767.19	79.45	85.34	602.40 cdef
Deltapine 104B2RF	36.0	52.7	2,640	951	1,392	0.5690	541.11	208.75	749.86	79.21	80.24	590.40 def
NexGen 1551RF	34.1	54.0	2,430	828	1,312	0.5663	469.02	196.77	665.79	72.91	60.47	532.41 ef
NexGen 2051B2RF	34.4	53.5	2,492	857	1,333	0.5237	448.58	200.00	648.58	74.75	75.08	498.76 f
Test average	37.0	51.2	2,858	1,060	1,462	0.5587	592.64	219.29	811.92	85.75	78.12	648.05
CV, %	3.3	2.5	8.6	8.6	8.6	3.1	8.7	8.6	8.7	8.6	--	9.7
OSL	0.0011	0.0013	0.0038	0.0001	0.0166	0.0321	<0.0001	0.0166	0.0002	0.0038	--	0.0003
LSD	2.1	2.1	416	155	212	0.0297	87.23	31.78	118.96	12.46	--	106.51

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.

Assumes:

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

\$3.00/cwt ginning cost.

LSD - least significant difference at the 0.05 level.

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

Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Table 2. HVI fiber property results from the Cotton Variety Trial, Davis Farm, Perryton, TX, 2011.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 ^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
FiberMax 9058F	4.0	38.0	81.5	29.8	6.1	2.7	82.8	7.1	2.7	1.0
Deltapine 1219B2RF	3.9	37.7	81.7	32.5	7.2	1.3	81.8	8.0	1.7	1.0
NexGen 4010B2RF	4.3	36.5	82.4	31.2	7.2	2.7	79.6	8.1	2.7	1.0
FiberMax 9180B2F	4.2	37.8	82.8	31.8	6.8	1.3	82.6	7.3	2.0	1.0
PhytoGen 367WRF	4.3	36.6	81.7	30.5	7.9	4.0	78.4	8.1	3.0	1.0
NexGen 2549B2RF	4.0	34.8	82.7	30.3	7.9	3.7	79.3	7.9	2.7	1.0
FiberMax 9103GT	3.9	37.9	81.0	30.9	6.6	3.3	80.8	7.7	2.3	1.0
Deltapine 0912B2RF	4.4	36.7	82.6	30.0	7.8	4.3	79.8	7.9	2.7	1.0
FiberMax 1740B2F	4.2	36.9	82.5	30.6	6.9	2.0	80.5	7.4	3.0	1.0
Deltapine 104B2RF	3.8	37.4	82.2	32.1	7.9	2.7	81.0	7.8	2.7	1.0
NexGen 1551RF	4.8	35.7	81.8	31.5	6.8	2.7	79.1	8.3	2.7	1.0
NexGen 2051B2RF	4.0	37.1	80.6	28.0	6.6	5.3	79.5	7.5	3.0	1.0
Test average	4.2	36.9	82.0	30.8	7.1	3.0	80.4	7.8	2.6	1.0
CV, %	5.4	1.4	0.9	2.3	4.8	33.0	1.4	5.1	--	--
OSL	0.0019	<0.0001	0.0251	<0.0001	<0.0001	0.0015	0.0012	0.0302	--	--
LSD	0.4	0.9	1.3	1.2	0.6	1.7	1.9	0.7	--	--

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