



Replicated Dryland Cotton Variety Research Trial - 2012

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Summary Significant differences were noted for lint turnout and net value. Lint turnout averaged 22.2% with a high of 23.8% and low of 20.4% for Deltapine 1044B2RF and Stoneville 5458B2RF, respectively. After subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of \$94.44/acre (Deltapine 1044B2RF) to a low of \$63.50/acre (Phytogen 375WRF), a difference of \$30.94.

Significant differences were observed among varieties for micronaire, elongation, leaf, and reflectance. Micronaire values ranged from a low of 3.0 for Stoneville 5458B2RF to a high of 3.9 for All-Tex Epic RF. Elongation averaged 7.0% across varieties with a high of 7.8% for Phytogen 499WRF and a low of 6.3% for Stoneville 5458B2RF. Color grade components of Rd (reflectance) and +b (yellowness) averaged 80.4 and 8.5, respectively.

These data indicate that differences can be obtained in terms of net value/acre due to variety selection. Additional multi-site and multi-year applied research is needed to evaluate varieties across a series of environments.

Objective The objective of this project was to compare agronomic characteristics, yields, gin turnout, fiber quality, and economic returns of transgenic cotton varieties under dryland production in the Texas High Plains.

Materials and Methods

Varieties:	All-Tex Edge B2RF, All-Tex Epic RF, Deltapine 1044B2RF, Deltapine 1219B2RF, FiberMax 2989GLB2, PhytoGen 375WRF, PhytoGen 499WRF, and Stoneville 5458B2RF
Experimental design:	Randomized complete block with three (3) replications.
Seeding rate:	2.5 seed/row-ft in 40 inch row spacings.
Plot size:	6 rows by variable length (1456 to 1713 feet)
Planting date:	28-May
Irrigation:	2.5" of irrigation were applied via LESA irrigation preplant with 14.5" of LEPA irrigation during the growing season for a total of 17" applied irrigation.
Rainfall:	7.73 inches of rainfall from 5-June to 1-October

Harvest:	Plots were harvested on 14-November using a commercial stripper harvester without a field cleaner. Harvested material was transferred to a weigh wagon with integral electronic scales to record individual plot weights. Plot weights were subsequently converted to lb/acre basis.
Gin turnout:	Grab samples were taken by plot and ginned at the Texas A&M 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 cost were based on \$3.00 per cwt. of bur cotton and seed value/acre was based on \$250/ton. Ginning cost did not include check-off.
Seed and Technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (2.5 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/PCGseed12.xls .

Results and Discussion

Significant differences were noted for lint turnout and net value (Table 1). Lint turnout averaged 22.2% with a high of 23.8% and low of 20.4% for Deltapine 1044B2RF and Stoneville 5458B2RF, respectively. After subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of \$94.44/acre (Deltapine 1044B2RF) to a low of \$63.50/acre (Phytogen 375WRF), a difference of \$30.94.

Significant differences were observed among varieties for micronaire, elongation, leaf, and reflectance (Table 2). Micronaire values ranged from a low of 3.0 for Stoneville 5458B2RF to a high of 3.9 for All-Tex Epic RF. Elongation averaged 7.0% across varieties with a high of 7.8% for Phytogen 499WRF and a low of 6.3% for Stoneville 5458B2RF. Color grade components of Rd (reflectance) and +b (yellowness) averaged 80.4 and 8.5, respectively.

Conclusions

These data indicate that differences can be obtained in terms of net value/acre due to variety selection. Additional multi-site and multi-year applied research is needed to evaluate varieties across a series of environments.

Acknowledgements

Appreciation is expressed to Cody Walters for the use of his land, equipment and labor for this demonstration.

Table 1. Harvest results from the Dryland Production Trial, Cody Walters Farm, Loop, TX, 2012.

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 -----			
Deltapine 1044B2RF	23.8	39.9	924	220	369	0.5495	120.78	46.12	166.90	27.73	44.74	94.44 a
All-Tex Epic RF	22.8	38.2	957	218	366	0.5248	114.30	45.69	159.99	28.70	37.21	94.07 a
All-Tex Edge B2RF	21.4	39.2	1011	217	396	0.5492	119.00	49.53	168.53	30.32	44.39	93.82 a
PhytoGen 499WRF	22.4	37.0	989	222	366	0.5482	121.75	45.74	167.49	29.68	47.84	89.96 ab
FiberMax 2989GLB2	21.6	37.5	945	204	354	0.5282	107.61	44.30	151.91	28.35	48.51	75.05 abc
Stoneville 5458B2RF	20.4	38.7	995	203	385	0.5027	102.12	48.12	150.24	29.85	47.51	72.88 bc
Deltapine 1219B2RF	23.1	38.6	845	195	326	0.5143	100.27	40.74	141.01	25.36	44.74	70.91 bc
PhytoGen 375WRF	22.0	36.5	834	184	304	0.5353	98.36	37.98	136.34	25.01	47.84	63.50 c
Test average	22.2	38.2	937	208	358	0.5315	110.52	44.78	155.30	28.12	45.35	81.83
CV, %	4.2	5.5	11.1	11.3	11.2	4.8	11.1	11.2	11.1	11.1	--	17.3
OSL	0.0134	0.5117	0.3471	0.4499	0.1852	0.2832	0.1536	0.1846	0.2266	0.3452	--	0.0807†
LSD	1.6	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	20.30

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.

\$250/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 Dryland Production Trial, Cody Walters Farm, Loop, TX, 2012.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 ^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
All-Tex Edge B2RF	3.7	35.7	79.0	29.4	6.3	3.0	82.0	7.6	2.3	1.0
All-Tex Epic RF	3.9	33.3	79.2	27.8	7.7	1.0	79.8	8.8	2.0	1.0
Deltapine 1044B2RF	3.8	34.8	80.2	28.4	7.8	1.3	81.8	8.1	2.0	1.0
Deltapine 1219B2RF	3.2	34.3	79.1	28.7	6.4	1.3	82.1	8.3	1.3	1.0
FiberMax 2989GLB2	3.4	35.3	79.1	29.8	6.6	1.7	78.9	8.4	2.3	1.3
PhytoGen 375WRF	3.2	35.5	80.5	28.1	6.7	1.3	81.0	8.8	1.3	1.0
PhytoGen 499WRF	3.5	34.7	80.9	29.4	7.8	1.7	80.4	8.4	2.0	1.0
Stoneville 5458B2RF	3.0	35.1	79.6	29.5	6.3	1.7	77.7	9.4	2.0	1.3
Test average	3.5	34.8	79.7	28.9	7.0	1.6	80.4	8.5	1.9	1.1
CV, %	9.0	3.0	1.6	4.4	8.6	39.4	1.7	9.3	--	--
OSL	0.0265	0.2022	0.5051	0.4579	0.0118	0.0571†	0.0149	0.2791	--	--
LSD	0.5	NS	NS	NS	1.0	0.9	2.5	NS	--	--

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