



**Replicated Irrigated Roundup Ready Cotton Variety Demonstration,
Morton, TX - 2005**

Cooperator: Kevin Silhan

**Jeff Wyatt, Kerry Siders, Randy Boman, Mark Kelley, and Mark Stelter
County Extension Agent-Agriculture, Cochran County,
Extension Agent-IPM, Cochran/Hockley Counties,
Extension Agronomist-Cotton, Extension Program Specialist I-Cotton,
and Extension Assistant-Cotton**

Cochran County

Summary: Significant differences were observed for most parameters measured (Tables 1 and 2). Lint turnout ranged from a low of 25.5% to a high of 33.1% for All-Tex XpressRR and Phytogen 310R, respectively. Lint yields varied with a low of 769 lb/acre (Beltwide Cotton Genetics 50R) and a high of 962 lb/acre (Stoneville 4892BR). Lint loan values ranged from a low of \$0.4777/lb (Paymaster 2145RR) to a high of \$0.5533/lb (AFD 3511R). After adding lint and seed value, total value/acre for varieties ranged from a low of \$466.77 for Beltwide Cotton Genetics 50R to a high of \$570.96 for Stoneville 4892BR. When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of \$456.02 (Stoneville 4892BR) to a low of \$372.92 (Beltwide Cotton Genetics 50R), a difference of \$83.10. Micronaire values ranged from a low of 2.9 for FiberMax 960B2R and Stoneville 4646B2R to a high of 3.6 for AFD 3511R. Staple length averaged 34.4 across all varieties with a low of 32.9 for Paymaster 2145RR and a high of 36.0 for FiberMax 960B2R. Significant differences were observed among varieties for strength, elongation, uniformity, reflectance (Rd) or yellowness (+b). 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:	AFD 3511R, Beltwide Cotton Genetics 50R, Deltapine 434RR, FiberMax 960B2R, Paymaster 2145RR, Paymaster 2280BG/RR, PhytoGen 310R, Stoneville NexGen 2448R, Stoneville 4646B2R, Stoneville 4892BR, and All-Tex Xpress RR
Experimental design:	Randomized complete block with 3 replications
Seeding rate:	3.6 seed per row-ft in 40-inch row spacing (John Deere 1700 Max Emerge)
Plot size:	10 rows by variable length of field (~1700 ft long)
Planting date:	26-May
Weed management:	Trifluralin was impregnated on dry fertilizer and applied at a rate of 1.3 pts/acre on 15-March. At planting, Staple at a rate of 0.25 oz/acre and diuron at a rate of 8 oz/acre were applied on a 10 inch band. Roundup Weather Max herbicide was applied over-the-top on 20-June at a rate of 22 oz/acre with Staple at a rate of 0.50 oz/acre with ammonium sulfate (17 lbs/100 gallons of spray mix). Blanket cultivations were conducted on 14-July and 30-July.
Rainfall and Irrigation:	5 inches of irrigation were applied during the growing season with approximately 16 inches of rainfall, according to personal correspondence with cooperator, for a total of 21 inches.
Insecticides:	Temik was applied in-furrow at planting at 3.0 lbs/acre. No other insecticides were applied at this site.
Fertilizer management:	200 lbs/acre of 66-0-0-24 dry fertilizer were applied pre-plant on 15-March.
Plant growth regulators:	Pix was applied at a rate of 12 oz/acre on 20-July and another application of 10 oz/acre was made on 10-August.
Harvest aids:	Prep at 1.5 pt/acre plus ET at 1.0 oz/acre was applied on 25-October.
Harvest:	Plots were harvested on 18-November using a commercial John Deere 7460 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 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 USDA loan values were determined for each variety by plot.

Ginning costs and seed values: Ginning costs were based on \$2.45 per cwt. of bur cotton and seed value/acre was based on \$100/ton. Ginning costs did not include checkoff.

Seed and technology fees: Seed and technology fees were determined by variety per acre using manufacturer's suggested retail price for seed and appropriate technology fee for Bollgard or Bollgard II and/or Roundup Ready based on 3.6 seed per row-ft.

Results and Discussion:

Significant differences were observed for most parameters measured (Tables 1 and 2). Lint turnout ranged from a low of 25.5% to a high of 33.1% for All-Tex XpressRR and Phytogen 310R, respectively. Lint yields varied with a low of 769 lb/acre (Beltwide Cotton Genetics 50R) and a high of 962 lb/acre (Stoneville 4892BR). Lint loan values ranged from a low of \$0.4777/lb (Paymaster 2145RR) to a high of \$0.5533/lb (AFD 3511R). After adding lint and seed value, total value/acre for varieties ranged from a low of \$466.77 for Beltwide Cotton Genetics 50R to a high of \$570.96 for Stoneville 4892BR. When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of \$456.02 (Stoneville 4892BR) to a low of \$372.92 (Beltwide Cotton Genetics 50R), a difference of \$83.10. Micronaire values ranged from a low of 2.9 for FiberMax 960B2R and Stoneville 4646B2R to a high of 3.6 for AFD 3511R. Staple length averaged 34.4 across all varieties with a low of 32.9 for Paymaster 2145RR and a high of 36.0 for FiberMax 960B2R. Significant differences were observed among varieties for strength, elongation, uniformity, reflectance (Rd) or yellowness (+b). 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.

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Table 1. Harvest results from the irrigated replicated transgenic cotton variety demonstration, Kevin Silhan Farm, Morton, TX, 2005

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	lb/acre	\$/lb	\$/acre	\$/acre	\$/acre	\$/acre	\$/acre	\$/acre	
Stoneville 4892BR	31.5	46.9	3052	962	1433	0.5195	499.31	71.64	570.96	74.78	40.16	456.02	a
FiberMax 960B2R	30.3	51.0	3091	937	1576	0.5088	477.18	78.79	555.96	75.74	40.76	439.47	ab
PhytoGen 310R	33.1	47.0	2693	890	1265	0.5330	474.11	63.24	537.35	65.97	35.56	435.82	ab
AFD 3511R	26.8	52.0	3059	820	1589	0.5533	453.91	79.47	533.38	74.95	24.23	434.20	ab
Paymaster 2280BG/RR	26.7	52.3	3313	885	1732	0.5233	463.10	86.60	549.70	81.17	34.39	434.14	ab
Deltapine 434RR	32.3	48.7	2732	881	1329	0.5302	466.99	66.47	533.47	66.93	34.94	431.60	ab
Paymaster 2145RR	30.7	49.8	2990	919	1488	0.4777	439.30	74.42	513.72	73.24	24.28	416.19	bc
Stoneville NexGen 2448R	28.8	49.4	2897	833	1432	0.5248	436.94	71.60	508.53	70.98	26.75	410.80	bc
All-Tex XpressRR	25.5	52.5	3101	791	1628	0.5303	419.39	81.41	500.80	75.97	22.55	402.29	c
Stoneville 4646B2R	29.0	50.1	3145	913	1577	0.4792	437.46	78.84	516.30	77.06	43.47	395.77	cd
Beltwide Cotton Genetics 50R	28.2	52.2	2726	769	1422	0.5153	395.64	71.13	466.77	66.78	27.07	372.92	d
Test average	29.4	50.2	2982	873	1497	0.5178	451.21	74.87	526.09	73.05	32.20	420.84	
CV, %	4.0	5.5	2.8	2.8	2.8	2.8	3.7	2.8	3.5	2.8	---	4.0	
OSL	<0.0001	0.1666	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	---	0.0003	
LSD 0.05	2.0	NS	142	42	71	0.0244	28.62	3.57	31.15	3.48	---	28.71	

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.

\$100/ton for seed.

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

Table 2. HVI fiber property results from the irrigated replicated transgenic cotton variety demonstration, Kevin Silhan Farm, Morton, TX, 2005.

Variety	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 ^{nds} inches	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
AFD 3511R	3.6	34.7	81.6	28.5	5.4	2.7	74.6	9.0	3.0	1.0
Beltwide Cotton Genetics 50R	3.2	34.3	80.9	28.4	5.8	2.7	76.7	8.9	3.0	1.0
Deltapine 434RR	3.2	35.2	79.4	26.2	6.8	2.3	77.3	8.4	3.0	1.0
FiberMax 960B2R	2.9	36.0	79.2	28.0	4.3	2.0	79.0	7.8	3.0	1.0
Stoneville NexGen 2448R	3.2	34.7	82.1	30.1	5.7	2.3	76.9	8.6	3.0	1.0
PhytoGen 310R	3.5	33.7	80.6	27.2	6.7	3.0	75.6	8.7	3.0	1.0
Paymaster 2145RR	3.3	32.9	80.4	28.4	6.3	3.7	74.0	8.4	4.0	1.0
Paymaster 2280BG/RR	3.1	35.0	80.9	28.7	6.1	2.3	76.2	8.4	3.0	1.0
Stoneville 4646B2R	2.9	34.1	78.6	26.6	6.4	2.7	75.6	8.7	3.0	1.0
Stoneville 4892BR	3.5	33.6	80.5	26.9	6.0	2.7	75.9	9.1	3.0	1.0
All-Tex Xpress RR	3.3	34.7	82.0	29.9	5.2	2.7	75.4	8.9	3.0	1.0
Test average	3.3	34.4	80.6	28.1	5.9	2.6	76.1	8.6	3.1	1.0
CV, %	4.0	1.2	0.9	3.0	7.0	24.0	0.9	2.4	--	--
OSL	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	0.2460	<0.0001	<0.0001	--	--
LSD 0.05	0.2	0.7	1.2	1.4	0.7	NS	1.2	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, NS - not significant.

Table 3. Seed and technology expenses* for the irrigated replicated transgenic cotton variety demonstration, Kevin Silhan Farm, Morton, TX, 2005.

Variety	Seed/lb	Seed/bag	Acres planted /bag	Seed fee \$/bag	Tech fee \$/bag	Total seed and tech fee \$/bag	Seed and tech fee \$/acre
AFD 3511R	4,434	221,724	4.69	49.40	64.30	113.70	24.23
Beltwide Cotton Genetics 50R	4,241	212,069	4.49	60.00	61.50	121.50	27.07
Deltapine 434RR	--	250,000	5.29	99.95	84.90	184.85	34.94
FiberMax 960B2R	4,300	215,000	4.55	77.95	107.50	185.45	40.76
Stoneville NexGen 2448R	--	230,000	4.87	64.40	65.80	130.20	26.75
PhytoGen 310R	--	230,000	4.87	95.00	78.10	173.10	35.56
Paymaster 2145RR	--	250,000	5.29	56.95	71.50	128.45	24.28
Paymaster 2280BG/RR	--	250,000	5.29	56.95	125.00	181.95	34.39
Stoneville 4646B2R	--	230,000	4.87	96.60	115.00	211.60	43.47
Stoneville 4892BR	--	230,000	4.87	80.50	115.00	195.50	40.16
All-Tex Xpress RR	4,538	226,897	4.80	42.50	65.80	108.30	22.55

*Trial was planted at 47,250 seed/acre in 40-inch rows.