



Replicated Dryland Cotton Systems Variety Demonstration, AG-CARES, Lamesa, TX - 2005

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Dawson County

Summary: Significant differences were noted for most parameters measured. Lint turnout ranged from 29.9% for Stoneville NexGen 3969R to 36.4% for Americot 821R. Lint yields varied from a low of 576 lb/acre (Beltwide Cotton Genetics 245) to a high of 715 lb/acre (Americot 821R). Lint loan values ranged from a low of \$0.5342/lb to a high of \$0.5672/lb for Paymaster 2326RR and FiberMax 958, respectively. After adding lint and seed value, total value/acre ranged from a low of \$357.18 for Beltwide Cotton Genetics 245, to a high of \$441.68 for FiberMax 958. When subtracting ginning costs and seed and technology fees, the net value/acre among varieties ranged from a high of \$344.99 (FiberMax 958) to a low of \$260.19 (Paymaster 2326RR), a difference of \$84.80. Micronaire values ranged from a low of 3.3 for Stoneville NexGen 3639R to a high of 4.2 for Paymaster 2326RR. Staple length averaged 34.5 across all varieties with a low of 33.6 (Paymaster 2326RR) and a high of 35.1 (FiberMax 958, Deltapine 393, and All-Tex Patriot RR).

Objective: The objective of this project was to compare yields, gin turnout, fiber quality, and economics of conventional and transgenic varieties in dryland production systems.

Materials and Methods:

Varieties: AFD 3602R, All-Tex Patriot RR, Americot 821R, Americot 8120, Beltwide Cotton Genetics 24R, Beltwide Cotton Genetics 245, Deltapine 393, FiberMax 958, Paymaster 2326RR, Stoneville NexGen 3969R

Experimental design: Randomized complete block with 3 replications

Seeding rate: 3.4 seed per row-ft in solid planted 40-inch row spacing (John Deere Max Emerge vacuum planter)

Plot size: 4 rows by length of field (~850 ft)

Planting date: 2-June

Weed management: Trifluralin was applied preplant incorporated at 1.25 pt/acre across all varieties on 14-April. Roundup Original MAX was applied over-the-top to Roundup Ready varieties on 22-June at 22 oz/acre with ammonium sulfate (17 lbs/100 gallons of spray mix) followed by a post-directed application on 30-August at 24 oz/acre with ammonium sulfate (17 lbs/100 gallons of spray mix). All conventional varieties were cultivated one time on 22-June followed by a blanket cultivation on 13-July. Hand hoeing of conventional varieties was conducted on 29-June followed by a blanket hoeing across all varieties on 29-July by project personnel.

Rainfall:

April:	0.20"	July:	0.00"
May:	2.00"	August:	3.10"
June:	1.20"	September:	0.00"

Total rainfall: 6.50"

Insecticides: Temik was applied at planting at 3.5 lbs/acre. Denim insecticide at 8.0 oz/acre for Beet armyworms plus 4.0 oz/acre Ammo for bollworms were applied on 29-July. This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.

Fertilizer management: No fertilizers were applied at this site.

Harvest aids: Gramoxone Max was ground applied at 10 oz/acre on 11-October.

Harvest: Plots were harvested on 7-November using a commercial John Deere 7445 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 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 \$100/ton. Ginning costs did not include checkoff.

Seed and
technology fees:

Seed and technology fees were determined by variety on a per acre basis using the manufacturer's suggested retail price for seed and appropriate technology fees for Roundup Ready based on 3.4 seed/row-ft.

Results and Discussion:

Weed pressure at this site would generally be considered light and consisted mainly of silverleaf nightshade, pigweed, and morningglory species "escapes". Significant differences were noted for most parameters measured (Tables 1 and 2). Lint turnout ranged from 29.9% for Stoneville NexGen 3969R to 36.4% for Americot 821R. Lint yields varied from a low of 576 lb/acre (Beltwide Cotton Genetics 245) to a high of 715 lb/acre (Americot 821R). Lint loan values ranged from a low of \$0.5342/lb to a high of \$0.5672/lb for Paymaster 2326RR and FiberMax 958, respectively. After adding lint and seed value, total value/acre ranged from a low of \$357.18 for Beltwide Cotton Genetics 245, to a high of \$441.68 for FiberMax 958. When subtracting ginning costs and seed and technology fees, the net value/acre among varieties ranged from a high of \$344.99 (FiberMax 958) to a low of \$260.19 (Paymaster 2326RR), a difference of \$84.80. Micronaire values ranged from a low of 3.3 for Stoneville NexGen 3639R to a high of 4.2 for Paymaster 2326RR. Staple length averaged 34.5 across all varieties with a low of 33.6 (Paymaster 2326RR) and a high of 35.1 (FiberMax 958, Deltapine 393, and All-Tex Patriot RR). Percent uniformity ranged from a low of 79.8 (AFD 3602R) to a high of 81.7 (Deltapine 393). Significant differences were observed among varieties for elongation (%), leaf grade, strength, reflectance (Rd) and 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 across a series of environments.

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Table 1. Harvest results from the replicated dryland cotton systems variety demonstration, AG-CARES, Lamesa, 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	Systems cost	Net value
	%	%	lb/acre	lb/acre	lb/acre	\$/lb	\$/acre	\$/acre	\$/acre	\$/acre	\$/acre	\$/acre
FiberMax 958	33.1	46.0	2093	694	963	0.5672	393.50	48.18	441.68	51.29	45.40	344.99 a
Americot 821R	36.4	53.5	1964	715	1050	0.5460	388.47	52.50	440.98	48.11	49.11	343.76 a
Deltapine 393	33.2	46.5	2046	680	951	0.5625	382.43	47.53	429.96	50.13	47.65	332.18 ab
All-Tex Patriot RR	33.5	51.1	1921	643	982	0.5627	363.26	49.11	412.38	47.07	51.82	313.49 abc
Americot 8120	33.9	53.0	1798	610	952	0.5383	327.82	47.62	375.44	44.06	34.98	296.41 abcd
Beltwide Cotton Genetics 24R	34.4	49.9	1860	640	927	0.5397	346.09	46.37	392.46	45.56	57.28	289.62 bcd
Beltwide Cotton Genetics 24S	32.9	47.1	1754	576	827	0.5485	315.86	41.33	357.18	42.97	37.97	276.24 cd
AFD 3602R	30.0	46.1	2033	610	937	0.5450	334.67	46.87	381.54	49.82	55.74	275.99 cd
Stoneville NexGen 3969R	29.9	47.9	1968	588	944	0.5447	320.15	47.17	367.31	48.22	55.40	263.69 cd
Paymaster 2326RR	32.3	52.2	1801	581	940	0.5342	310.39	47.02	357.41	44.12	53.10	260.19 d
Test average	33.0	49.3	1924	634	947	0.5489	348.26	47.37	395.63	47.13	48.85	299.66
CV, %	2.5	3.1	8.1	8.5	8.4	2.5	8.4	8.4	8.4	8.1	--	9.8
OSL	<0.0001	<0.0001	0.1670	0.0450	0.2496	0.0956	0.0117	0.2470	0.0213	0.1659	--	0.0100
LSD 0.05	1.4	2.6	NS	92	NS	NS	50.22	NS	56.77	NS	--	50.39

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 replicated dryland cotton systems variety demonstration, AG-CARES, Lamesa, 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
FiberMax 958	3.9	35.1	80.3	28.3	3.8	1.3	80.9	7.2	2.7	1.0
Americot 821R	3.9	34.2	80.1	26.1	6.4	1.3	78.9	8.0	2.7	1.0
Deltapine 393	3.9	35.1	81.7	28.2	6.6	1.7	78.8	7.6	3.0	1.0
All-Tex Patriot RR	3.5	35.1	79.9	27.0	5.5	1.0	80.9	7.6	2.0	1.0
Americot 8120	3.9	34.1	80.1	25.8	6.1	1.3	79.8	7.6	3.0	1.0
Beltwide Cotton Genetics 24R	3.7	33.7	81.1	28.7	6.2	1.0	81.3	7.5	2.0	1.0
Beltwide Cotton Genetics 245	3.4	34.9	80.1	29.1	3.8	1.7	80.6	6.7	3.0	1.0
AFD 3602R	3.9	33.9	79.8	28.2	4.9	1.0	80.1	8.1	2.0	1.0
Stoneville NexGen 3969R	3.3	35.0	81.0	28.6	5.6	1.0	81.6	7.5	2.0	1.0
Paymaster 2326RR	4.2	33.6	81.6	28.4	5.0	2.3	77.2	8.0	3.0	1.0
Test average	3.8	34.5	80.6	27.8	5.4	1.4	80.0	7.6	2.5	1.0
CV, %	2.6	1.6	0.7	2.5	7.6	32.4	0.6	2.1	--	--
OSL	<0.0001	0.0063	0.0031	0.0001	<0.0001	0.0296	<0.0001	<0.0001	--	--
LSD 0.05	0.2	0.9	1.0	1.2	0.7	0.8	0.8	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, NS - not significant.

Table 3. Seed and technology expenses* for the replicated dryland cotton systems variety demonstration, AG-CARES, Lamesa, 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 3602R	4538	226,900	5.15	64.40	65.80	130.20	25.26
All-Tex Patriot RR	4931	246,550	5.60	48.00	71.50	119.50	21.34
Americot 821R	5100	255,000	5.79	35.00	72.90	107.90	18.63
Beltwide Cotton Genetics 24R	5094	254,700	5.79	68.50	86.60	155.10	26.80
Paymaster 2326RR	--	250,000	5.68	56.95	71.50	128.45	22.62
Stoneville NexGen 3969R	--	230,000	5.23	64.40	65.80	130.20	24.92
Americot 8120	5000	250,000	5.68	28.00	0.00	28.00	4.93
Beltwide Cotton Genetics 245	5000	250,000	5.68	45.00	0.00	45.00	7.92
Deltapine 393	--	250,000	5.68	99.95	0.00	99.95	17.60
FiberMax 958	4472	223,600	5.08	77.95	0.00	77.95	15.35

*Trial was planted at 44,018 seed/acre in 40-inch rows.

Table 4. Expenses incurred for the replicated dryland cotton systems variety demonstration, AG-CARES, Lamesa, TX, 2005.

Variety	Seed cost/bag	Tech fees/bag	Total cost/bag	Seed & tech fee/ac	Herb apps	Herb app cost/ac	Roundup Original MAX cost/ac	Cultivation cost/ac	Hoe cost/ac	Systems cost/ac
1 AFD 3602R	64.40	65.80	130.20	25.26	2	9.00	11.08	--	10.40	55.74
2 All-Tex Patriot RR	48.00	71.50	119.50	21.34	2	9.00	11.08	--	10.40	51.82
3 Americot 821R	107.90	72.92	180.82	18.63	2	9.00	11.08	--	10.40	49.11
4 BCG 24R	68.50	86.60	155.10	26.80	2	9.00	11.08	--	10.40	57.28
5 PM 2326RR	56.95	71.50	128.45	22.62	2	9.00	11.08	--	10.40	53.10
6 ST NG 3969R	64.40	65.80	130.20	24.92	2	9.00	11.08	--	10.40	55.40
7 Americot 8120	28.00	0.00	28.00	4.93	0	0.00	--	6.00	24.05	34.98
8 BCG 245	45.00	0.00	45.00	7.92	0	0.00	--	6.00	24.05	37.97
9 DP 393	99.95	0.00	99.95	17.60	0	0.00	--	6.00	24.05	47.65
10 FM 958	77.95	0.00	77.95	15.35	0	0.00	--	6.00	24.05	45.40

				40" rows 3.4 seed/row-ft 44,018 seed/ac	4.50/ac	June 22 over-the-top 22oz/a Roundup Original MAX to Roundup Ready varieties	June 22 cultivated conventionals	June 29 spent 4 hrs and July 29 spent 7.4 hrs hoeing 3.1 acres of conventionals
Base weed control program				chem cost	app cost	total cost	28.50/gal includes AMS at 0.42/ac	3.7 hrs/a at 6.50/hr
14-Apr	1.25 pt/acre	trifluralin PPI	2.23	4.50	6.73	Aug 30 post-direct 24oz/a Roundup Original MAX to Roundup Ready varieties	July 29 spent 6.8 hrs hoeing 4.3 acres of Roundup Ready varieties	
13-Jul	Blanket cultivation		6.00	6.00		28.50/gal includes AMS at 0.42/ac	1.6 hrs/a at 6.50/hr	
Total blanket weed control program				12.73				
Insecticide program								
2-Jun	3.5 lb/acre	Temik at planting	11.48	11.48				
29-Jul	8.0 oz/acre	Denim for Beet armyworms	12.46	4.50	16.96			
	4.0 oz/acre	Ammo for bollworms	2.73		2.76			
	2.0 oz/acre	non-ionic surfactant	0.16		0.16			
Harvest aid Program								
11-Oct	6 oz/acre	Gramoxone Max	1.73	4.50	6.23			
Total blanket input cost (\$/acre)				50.32				