

TITLE:

Replicated Conventional and Transgenic Cotton Variety Demonstration Under LEPA Irrigation, AG-CARES, Lamesa, TX, 2003.

AUTHORS:

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MATERIALS AND METHODS:

Varieties: AFD 2485, AFD 3511R, All-Tex Atlas RR, All-Tex Xpress RR, Beltwide Cotton Genetics 28R, Deltapine 5415RR, Douglas King CT210, FiberMax 958, FiberMax 960BR, Paymaster 2266RR, Paymaster 2326RR, Stoneville 5303R, and Stoneville 5599BR

Experimental design: Randomized complete block with 3 replications

Seeding rate: 5 seed per row-foot in 40-inch row spacing (John Deere Max Emerge vacuum planter)

Plot size: 4 rows by variable length due to circular pivot rows (340-810 ft long).

Planting date: Replanted June 11 (May 9 planting was hailed out on May 31)

Weed management: Treflan was applied preplant incorporated at 1 pt/acre across all varieties on April 7. No Roundup herbicide was applied on Roundup Ready varieties due to insufficient weed pressure. A blanket cultivation was performed across all varieties on July 3 and July 21.

Irrigation and rainfall: LEPA irrigation

April:	2.25"		
May:	1.50"		
June:	0.00"		
July:	2.40"		
August:	2.80"		
September:	0.00"		

Rainfall

April:	0.42"	July:	0.00"
May:	4.50"	August:	2.29"
June:	1.80"	September:	1.67"

Total moisture: 19.63"

Insecticides: Temik was applied at 3.5 lb/acre in-furrow at planting. No other insecticides were applied at this site. This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.

Fertilizer management:	Preplant fertilizer consisting of 10-34-0 was applied at 176 lb/acre on April 14. An additional 60 lb N/acre (32-0-0) was fertigated in 30 lb N/acre increments during the growing season.
Harvest aids:	Harvest aids included Boll'd (6-lb ethephon/gal) at 1.3 pt/acre plus Ginstar at 6 oz/acre applied at 70 percent open bolls on October 17, with follow-up application of Gramoxone Max at 20 oz/acre on October 28.
Harvest:	Plots were harvested on October 31 using a commercial John Deere 7445 with field cleaner bypassed. Harvested material was dumped into a weigh wagon with integral digital 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 Center at Lubbock to determine gin turnouts.
Fiber analysis:	Lint samples were submitted to the International Textile Center (ITC) at Texas Tech University for HVI analysis, and USDA loan values were determined for each variety by plot.
Ginning cost:	Ginning costs were based on \$2.25 per cwt. of bur cotton and \$125 per ton for and seed value. Ginning costs do not include checkoff.
Seed and tech fees:	Seed and technology fee costs were determined by variety per acre using manufacturer's suggested retail prices for seed, and appropriate technology fees for Bollgard and/or Roundup Ready based on the 5 seed per row-foot.

## RESULTS AND DISCUSSION:

Significant differences were noted for most characteristics measured (Tables 1 and 2). Lint turnout ranged from 23.5% to 29.4%. Lint yields varied from a low of 804 lb/acre to a high of 1453 lb/acre. Lint loan values varied from a low of \$0.5195/lb to a high of \$0.5698/lb. Lint Loan values were generally very high, with the exception of discounts for high micronaire in some replications of Paymaster 2326RR (average 5.0). Micronaire ranged from a low of 4.2 units to a high of 5.0 units. After adding lint and seed value, total value/acre for varieties ranged from a low of \$552.77 to a high of \$936.28. When subtracting ginning and seed and technology fee costs, the net value/acre among varieties ranged from a high value of \$789.24 to \$453.78, a difference of \$335.46. 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 some inclement weather was encountered in this trial prior to harvest. None of the picker type varieties experienced notable preharvest losses due to weather conditions, but high intensity rainfall and/or high wind events were not excessive. 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 LEPA irrigated replicated cotton variety demonstration, AG-CARES, 2003.

Variety	Lint turnout %	Seed turnout %	Bur cotton yield lb/acre	Lint yield lb/acre	Seed yield lb/acre	Lint loan value \$/lb	Lint value \$/acre	Seed value \$/acre	Total value \$/acre	Ginning cost \$/acre	Seed/tech fee \$/acre	Net value \$/acre	
DP 5415RR	28.3	45.2	4942	1395	2234	0.5656	789.41	139.68	929.09	111.18	28.66	789.24	a
ST 5599BR	29.4	44.3	4936	1453	2187	0.5501	799.59	136.69	936.28	111.06	47.50	777.72	a
AFD 2485	28.1	45.8	4699	1322	2153	0.5698	753.54	134.60	888.14	105.73	10.88	771.53	ab
ST 5303R	28.6	44.3	4826	1378	2137	0.5573	768.49	133.56	902.06	108.58	32.57	760.90	ab
FM 958	28.0	41.5	4707	1322	1953	0.5686	751.68	122.09	873.77	105.93	16.97	750.87	ab
DK CT210	28.6	45.2	4504	1289	2038	0.5635	726.34	127.36	853.70	101.33	15.35	737.01	ab
FM 960BR	28.9	44.9	4732	1370	2126	0.5458	748.09	132.91	881.01	106.47	50.05	724.48	ab
BCG 28R	27.6	43.8	4576	1265	2002	0.5615	710.32	125.16	835.48	102.96	27.40	705.11	b
All-Tex Atlas RR	27.5	48.3	4003	1103	1932	0.5415	597.37	120.79	718.16	90.07	19.06	609.03	c
PM 2326RR	26.9	46.2	4087	1099	1890	0.5241	574.98	118.14	693.12	91.96	19.79	581.38	c
PM 2266RR	26.0	45.8	4124	1072	1888	0.5195	558.01	118.00	676.10	92.79	20.26	563.05	c
AFD 3511R	26.3	46.8	3728	982	1746	0.5530	542.70	109.16	651.86	83.89	21.00	546.97	c
All-Tex Xpress RR	23.5	47.7	3425	804	1634	0.5600	450.63	102.13	552.77	77.07	21.92	453.78	d
Test average	27.5	45.4	4407	1220	1994	0.5523	674.70	124.64	799.35	99.16	25.49	674.70	
CV, %	4.0	4.2	5.9	6.0	5.9	2.3	6.1	5.9	6.0	5.9	--	6.3	
OSL	0.0001	0.0267	<0.0001	<0.0001	<0.0001	0.0007	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	
LSD 0.05	1.8	3.2	441	124	199	0.0217	69.95	12.44	81.75	9.92	--	72.30	

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, LSD - least significant difference.

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

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

Assumes:

\$2.25/cwt ginning cost.

\$125/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 LEPA irrigated replicated cotton variety demonstration, AG-CARES, 2003.

Variety	Micronaire units	Staple 32nds inches	Uniformity %	Strength g/tex	Elongation %	Leaf grade	Rd reflectance	+b yellowness	Color grade color 1 color 2	
AFD 2485	4.5	36.7	83.5	33.6	4.7	1.0	80.6	7.9	2.0	1.0
AFD 3511R	4.7	34.6	83.1	31.7	6.2	1.0	78.8	8.4	2.3	1.0
All-Tex Atlas RR	4.6	34.0	82.5	30.4	6.9	1.0	78.4	8.5	2.3	1.0
BCG 28R	4.4	35.8	82.2	29.2	5.9	1.0	79.1	8.6	2.0	1.0
DK CT210	4.2	35.3	81.8	31.1	7.2	1.0	81.5	8.4	1.0	1.0
DP 5415RR	4.2	36.6	83.1	30.3	8.1	1.0	80.9	8.3	1.6	1.0
FM 958	4.5	36.7	82.9	34.3	4.5	1.0	80.7	8.3	2.0	1.0
FM 960BR	4.5	33.8	82.8	35.1	4.8	1.0	80.2	8.2	2.0	1.0
PM 2266RR	4.8	33.7	82.6	30.8	7.8	1.6	78.3	8.3	2.6	1.0
PM 2326RR	5.0	34.0	83.9	31.4	7.1	1.0	77.5	8.5	2.6	1.0
ST 5303R	4.6	34.5	84.0	33.2	6.4	1.0	79.6	8.5	2.0	1.0
ST 5599BR	4.6	34.2	81.8	31.6	5.5	1.0	76.2	8.8	3.0	1.0
All-Tex Xpress RR	4.4	34.8	83.8	32.2	5.4	1.0	80.0	7.9	2.3	1.0
Test average	4.5	35.0	82.9	31.9	6.2	1.0	79.4	8.4	2.1	1.0
CV, %	3.5	1.3	0.6	2.8	3.8	30.4	0.7	3.2	17.4	--
OSL	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.4777	<0.0001	0.0126	0.0002	--
LSD 0.05	0.3	0.7	0.8	1.5	0.4	NS	0.9	0.4	0.6	--

CV - coefficient of variation.

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

LSD - least significant difference.