



## Replicated Dryland Systems Variety Demonstration

**Cooperator: AG-CARES - Lamesa Cotton Growers/Texas Agricultural Experiment Station/Texas Cooperative Extension, Lamesa, TX - 2003**

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### Dawson County

**Summary:** Weed pressure at this site would generally be considered light and consisted mainly of silverleaf nightshade and pigweed "escapes." Significant differences were noted for most characteristics measured (Tables 1 and 2). Lint turnout ranged from 24.2% to 28.0%. Lint yields varied from a low of 364 lb/acre to a high of 520 lb/acre. Lint loan values varied from a low of \$0.4836/lb to a high of \$0.5521/lb. Lint loan values were generally very high for all varieties, with the exception of Paymaster 2379RR which received discounts for high micronaire in some replications (average 4.9). Micronaire ranged from a low of 3.5 units to a high of 4.9 units. After adding lint and seed value, total value/acre for varieties ranged from a low of \$229.42 to a high of \$329.26. When subtracting ginning and systems costs, the net value/acre among varieties ranged from \$263.81 to \$152.82, a difference of \$110.99. 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 variety and technology selection under dryland production systems.

### Materials and Methods:

**Varieties:** AFD 2485, All-Tex Atlas RR, Beltwide Cotton Genetics 24R, Deltapine 5415RR, Douglas King CT210, FiberMax 958, Paymaster 2379RR, Paymaster 2326RR, Paymaster HS26, and Stoneville 5303R

**Experimental design:** Randomized complete block with 3 replications

**Seeding rate:** 4 seed per row-foot in 40-inch row spacing (John Deere Max Emerge vacuum planter)

**Plot size:** 4 rows by length of field (800 ft)

Planting date: May 30

Weed management: Treflan was applied preplant incorporated at 1 pt/acre across all varieties on April 30. Roundup WeatherMax herbicide was broadcast applied on Roundup Ready varieties on June 26 at 22 oz/acre. A post directed application of Roundup WeatherMax was applied on August 13 at 22 oz/acre on Roundup Ready varieties. Spot spraying was conducted on conventional varieties on July 22, using a 1 percent solution of Roundup WeatherMax. Roundup Ready varieties were cultivated one time, and conventional varieties were cultivated twice.

Rainfall:

April:	0.42"	July:	0.00"
May:	4.50"	August:	2.29"
June:	1.80"	September:	1.67"
Total moisture:		10.68"	

Insecticides: No 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: No fertilizers were applied at this site.

Harvest aids: Harvest aids included Gramoxone Max applied at 26 oz/acre on November 17.

Harvest: Plots were harvested on November 19 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 costs and seed values: Ginning costs are based on \$2.25 per cwt. of bur cotton and seed values are based on \$125/ton. Ginning costs do not include checkoff.

Systems costs: Systems cost was determined by variety per acre using manufacturer's suggested retail price for seed, and appropriate technology fee for Roundup Ready based on the 4 seed per row-foot.

**Results and Discussion:**

Weed pressure at this site would generally be considered light and consisted mainly of silverleaf nightshade and pigweed “escapes.” Significant differences were noted for most characteristics measured (Tables 1 and 2). Lint turnout ranged from 24.2% to 28.0%. Lint yields varied from a low of 364 lb/acre to a high of 520 lb/acre. Lint loan values varied from a low of \$0.4836/lb to a high of \$0.5521/lb. Lint loan values were generally very high for all varieties, with the exception of Paymaster 2379RR which received discounts for high micronaire in some replications (average 4.9). Micronaire ranged from a low of 3.5 units to a high of 4.9 units. After adding lint and seed value, total value/acre for varieties ranged from a low of \$229.42 to a high of \$329.26. When subtracting ginning and systems costs, the net value/acre among varieties ranged from \$263.81 to \$152.82, a difference of \$110.99. 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 however, wind and rain events were not excessive. Therefore, none of the picker type varieties experience preharvest losses due to these weather conditions. Additional multi-site and multi-year applied research is needed to evaluate varieties across a series of environments.

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Table 1. Results from the dryland replicated cotton systems variety demonstration, AG-CARES, Lamesa, TX 2003.

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	
FM 958	28.0	42.3	1857	520	787	0.5385	280.05	49.20	329.26	41.79	23.65	263.81	a
AFD 2485	26.9	41.0	1896	511	778	0.5393	276.27	48.63	324.90	42.68	18.75	263.47	a
BCG 24R	27.3	43.8	1835	501	805	0.5388	269.98	50.35	320.34	41.30	49.24	229.79	ab
Douglas King CT210	24.2	42.8	1842	446	789	0.5240	234.75	49.32	284.07	41.45	22.35	220.27	abc
ST 5303R	26.8	43.6	1815	486	793	0.5270	255.11	49.55	304.66	40.85	53.41	210.40	bcd
DP 5415RR	26.7	43.8	1693	453	743	0.5521	250.06	46.44	296.51	38.09	50.26	208.15	bcd
PM HS26	25.0	44.7	1456	364	651	0.5241	190.93	40.73	231.68	32.76	21.94	176.97	ced
PM 2326RR	25.7	44.6	1580	407	706	0.5011	203.24	44.11	247.34	35.55	43.13	168.67	ed
All-Tex Atlas RR	26.0	45.5	1514	394	689	0.4931	194.24	43.07	237.31	34.07	42.54	160.70	e
PM 2379RR	26.4	45.3	1470	389	667	0.4836	187.72	41.70	229.42	33.07	43.53	152.82	e
Test average	26.3	43.7	1696	447	741	0.5222	234.24	46.31	280.55	38.16	36.88	205.51	
CV, %	3.2	2.6	10.4	10.5	10.4	5.3	11.2	10.4	10.9	10.4	--	13.1	
OSL	0.0018	0.0041	0.0242	0.0041	0.1706	0.1142	0.0006	0.1720	0.0014	0.0241	--	0.0004	
LSD 0.05	1.4	2.0	303	81	NS	NS	45.15	NS	52.63	6.81	--	46.46	

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.

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 dryland replicated cotton systems variety demonstration, AG-CARES, Lamesa, TX 2003.

Variety	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 <sup>nds</sup> inches	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
AFD 2485	4.7	36.2	82.9	32.1	3.8	1.3	76.2	7.4	3.6	1.0
All-Tex Atlas RR	4.5	32.6	81.5	29.5	5.9	2.0	73.4	7.7	4.0	1.0
BCG 24R	4.5	34.2	81.7	28.8	6.6	1.0	78.6	7.7	3.0	1.0
Douglas King CT210	3.5	34.7	80.1	29.1	6.2	1.0	79.2	7.6	2.6	1.0
DP 5415RR	4.3	35.3	81.2	29.1	6.5	1.0	77.9	7.8	3.0	1.0
FM 958	4.7	36.2	82.6	32.6	3.7	1.6	76.8	7.2	3.6	1.0
PM HS26	4.7	33.3	82.8	30.9	6.6	1.3	75.7	7.8	3.6	1.0
PM 2326RR	4.8	33.7	82.9	30.7	5.6	1.3	74.4	7.7	4.0	1.0
PM 2379RR	4.9	32.8	82.2	29.2	7.6	1.6	75.8	7.9	3.6	1.0
ST 5303R	4.8	34.2	82.7	31.6	5.2	1.0	77.0	7.9	3.3	1.0
Test average	4.5	34.3	82.1	30.4	5.8	1.3	76.5	7.7	3.4	1.0
CV, %	5.3	1.5	0.7	1.6	4.6	30.9	1.2	2.2	12.7	--
OSL	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0769	<0.0001	0.0009	0.0198	--
LSD 0.05	0.4	0.9	0.9	0.8	0.4	NS	1.5	0.2	0.8	--

CV - coefficient of variation.

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

LSD - least significant difference.

Table 3. Seed and tech fees cost from the dryland replicated cotton systems variety demonstration, AG-CARES, Lamesa, TX 2003.

Variety	Seed/lb	Seed/50 lb bag	Ac/bag	Seed and tech fee/bag	Total seed and tech cost/acre
PM 2326RR	4700	235000	4.50	71.55	15.92
PM 2379RR	4545	227250	4.35	70.95	16.32
DP 5415RR	5500	275000	5.26	121.25	23.05
ST 5303R	4450	222500	4.26	111.50	26.20
All-Tex Atlas RR	4600	230000	4.40	67.45	15.33
BCG 24R	5300	265000	5.07	111.70	22.03
PM HS26	4200	210000	4.02	47.95	11.94
DK CT210	5250	262500	5.02	62.00	12.35
AFD 2485	4600	230000	4.40	38.50	8.75
FM 958	4900	245000	4.69	63.95	13.65

Seed drop rate 4 seed/row-ft 40 inch rows  
 =52276 seed/acre

**Table 4. Expenses incurred for the AG-CARES dryland systems trial, Lamesa, TX 2003.**

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	Variety	Seed cost/bag	Tech fees/bag	Total cost/bag	Seed & tech fee/ac	Herb apps	Herb app cost/ac	Roundup Weather Max cost/ac	Roundup WeatherMax spot spraying cost/ac	Cultivation cost/ac	Systems cost/ac
1	PM 2326RR	43.95	27.60	71.55	15.92	2	7.00	20.21	0.00	0.00	43.13
2	PM 2379RR	43.95	27.00	70.95	16.32	2	7.00	20.21	0.00	0.00	43.53
3	DP 5415RR	70.95	50.30	121.25	23.05	2	7.00	20.21	0.00	0.00	50.26
4	ST 5303R	72.00	39.50	111.50	26.20	2	7.00	20.21	0.00	0.00	53.41
5	All-Tex Atlas RR	40.45	27.00	67.45	15.33	2	7.00	20.21	0.00	0.00	42.54
6	BCG 24R	65.00	46.70	111.70	22.03	2	7.00	20.21	0.00	0.00	49.24
7	PM HS26	47.95	0.00	47.95	11.94	0	0.00	0.00	5.00	5.00	21.94
8	DK CT210	62.00	0.00	62.00	12.35	0	0.00	0.00	5.00	5.00	22.35
9	AFD 2485	38.50	0.00	38.50	8.75	0	0.00	0.00	5.00	5.00	18.75
10	FM 958	63.95	0.00	63.95	13.65	0	0.00	0.00	5.00	5.00	23.65
					4 seed per row-foot	3.50/ac	1 over the top application of Roundup Weather Max	57.00/gal	Roundup WeatherMax 1% spray solution	22-Jul	
							1 hooded post directed application of Roundup Weather Max	includes AMS at 0.31/ac			
							22 oz/acre each application				
Base weed control program				chem cost	app cost	total cost		Roundup WeatherMax rate at 22 oz/ac			
	Preplant										
30-Apr	1 pt Treflan PPI			1.81	3.50	5.31					
	Cultivation										
13-Aug	Blanket cultivation				5.00	5.00					
Total blanket weed control program						10.31					
Harvest aid Program											
1-Dec	26 oz/acre Gramoxone Max			7.62	3.50	11.12					