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Texas AgriLife Research and Extension Center at Lubbock
1102 E. FM Road 1294
Lubbock, TX 79403-6603

In September of 2009 the AgriLife Research and Extension Center at Lubbock celebrated 100 years of service to the Southern High Plains of Texas. The Texas Agriculture Experiment Substation #8 was established in the northeast part of Lubbock. It remained there for fifty years before relocating north of Lubbock International Airport in 1959. Some of the noteworthy accomplishments were the development of hybrid grain sorghum, storm proof cotton, and low energy precision application (LEPA) irrigation. These and many other contributions of our scientists were made possible by the continued leadership and support of producers and their associated commodity organizations.

Lamesa Cotton Growers has played a key role supporting AgriLife research and extension programs in the sandy lands south of Lubbock. This year marks the 20th anniversary of the establishment of AG-CARES. It was established to develop, demonstrate and deliver agriculture technology and information to producers in the southern growing region where water was limited and soils provided a challenge. Lamesa Cotton Growers purchased the land, installed a center pivot irrigation system and provided farm equipment to support research and demonstration projects for Research scientists and Extension specialists from the Lubbock Center. Leadership for this effort was provided by Kent Nix, Mike Hughes, and Donald Vogler with Lamesa Cotton Growers, John Abernathy, Bob Robinson and John Farris provided research and extension administrative support. Bill Lyle, Wayne Keeling and James Supak led activities to make AG-CARES a reality. Results from studies at the site have had major impacts for producers including:

1. Initiated "systems" based multi-disciplinary research and extension efforts.
2. Demonstrated feasibility of conservation tillage/cover crop system.
3. Adoption of LEPA systems for deficit irrigation of cotton.
4. Deep sampling (greater than 6") to determine nitrogen needs
5. Yield and fiber quality data for the wave of new cotton varieties
6. Developed management practices for root-knot nematode control
7. Comparison of LEPA and subsurface drip cotton irrigation studies
8. Reinforced the move from strictly discipline related problem solving to a systems approach to address the grower needs
9. Utilization of AG-CARES site as a showcase to inform elected officials, government agencies, news services and area farmers about the benefits of research and extension to meet current and future needs of production for the region

We wish to thank Lamesa Cotton Growers for their continued leadership, support, and direction that have made possible the continued expansion of programs to address regional problems over these past twenty years. Current officers are: Jerry Chapman, Kevin Pepper, Shawn Holliday and John Farris. Randy Boman, Jeff Wyatt, and Tommy Doederlein, along with Danny Carmichael (site manager) work closely with Wayne Keeling who coordinates programs. The Texas State Cotton Support Committee of the Texas Cotton Producers has also provided funding for many years. We are very grateful to all who have worked together to make AG-CARES successful.

Jaroy Moore

Jaroy Moore
Resident Director of Research
Texas AgriLife Research and Extension Center

Galen D Chandler

Galen Chandler
Regional Program Director -
Texas AgriLife Extension Service
Agriculture and Natural Resources

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APPENDIX

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TEXAS AGRILIFE EXTENSION

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THE LAMESA COTTON GROWERS WOULD LIKE TO THANK THE FOLLOWING FOR THEIR CONTRIBUTIONS TO THE AG-CARES PROJECT:

Americot Cotton Seed
Bayer CropScience/FiberMax
Cotton Inc. – State Support Program
Dawson County Commissioniers Court
DuPont Crop Protection
Monsanto/Delta & Pine Land Seed Co.
National Cotton Council
National Peanut Board
Sam Stevens, Inc.
Syngenta
Texas Peanut Producers Board
United Sorghum Checkoff Program

TITLE:

Cotton Variety Performance as Affected by Low-Energy Precision Application (LEPA) Irrigation Levels at AG-CARES, Lamesa, TX, 2009.

AUTHORS:

Wayne Keeling, Jim Bordovsky, Jacob Reed and Michael Petty; Professor, Agricultural Engineer-Irrigation, Sr. Research Associate, and Research Assistant.

MATERIALS AND METHODS:

Plot Size:	4 rows by 500 feet, 3 replications			
Planting Date:	May 5			
Varieties:	Stoneville 5458 B2RF			
	FiberMax 9160 B2F			
	Americot 1532 B2RF			
	Delta Pine 0935 B2RF			
Herbicides:	Prowl 3 pt/A PPI			
	Roundup WeatherMax 22 oz/A POST (Terminate Rye Cover)			
	Roundup WeatherMax 22 oz/A POST (June 2)			
	Staple 3 oz/A POST (June 2)			
	Roundup WeatherMax 32 oz/A POST (July 8)			
Fertilizer:	100-34-0			
Irrigation in-season:				
		Low	Medium	High
	Total	5.76"	7.20"	8.64"
Harvest Date:	October 15			

RESULTS AND DISCUSSION:

Four Roundup Ready Flex/Bollgard II varieties were planted under three low-energy precision application (LEPA) irrigation levels in 2009. Irrigation level is based on maximum pumping capacities of 0.12", 0.18", and 0.24"per day. These represent a “base” irrigation amount and ±33% of the base. Plots were cultivated and furrow dikes rebuilt once during the growing season. Plot weights and grab samples were collected at harvest and ginned for turnout and fiber analysis.

This trial was planted May 5 and benefited from timely rainfall through mid-July. Irrigation was initiated in late July and continued through early September and plots were harvested by mid-October. When averaged across irrigation treatments, lint yields ranged from 738 to 953 lbs/A (Table 1). Highest yields for the four varieties were produced with ST 5458 B2RF and DP 0935 B2RF, followed by AM 1532 B2RF. When averaged across varieties, higher yields were produced at the high irrigation (7.20"/A applied) compared to the low irrigation treatment (5.76"/A applied). Yields were not significantly greater between the high and medium irrigation treatments. Irrigation level did not affect loan value, but when averaged across irrigation levels, higher loan values were produced by AM 1532 B2RF, ST 5458 B2RF, and DP 0935 B2RF (Table 2). Gross revenues per acre increased from low to high irrigation but gross revenue values were not significantly different between the medium and high irrigation levels (Table 3). Gross revenues were different between varieties when averaged across irrigation treatments with ST 5458 B2RF, DP 0935 B2RF, and AM 1532 B2RF being the highest.

Table 1. Effects of B2RF variety and LEPA irrigation levels on cotton lint yields at AG-CARES, Lamesa, TX, 2009.

Variety	L	M	H	Avg.
	----------	----------lbs/A----------	----------	
AM 1532 B2RF	713 a	949 ab	930 a	864 B
ST 5458 B2RF	811 a	1043 a	1005 a	953 A
FM 9160 B2F	691 a	714 b	809 a	738 C
DP 0935 B2RF	783 a	926ab	994 a	901 AB
Avg.	750 B	908 AB	935 A	
% change	(-17%)	(-----)	(+3%)	

Table 2. Effects of B2RF variety and LEPA irrigation levels on lint value at AG-CARES, Lamesa, TX, 2009.

Variety	L	M	H	Avg.
	----------	----------¢/lb----------	----------	
AM 1532 B2RF	53.33 a	54.35 a	54.50 a	54.04 A
ST 5458 B2RF	52.73 a	53.48 a	52.95 a	53.05 AB
FM 9160 B2F	52.82 a	52.58 a	53.63 a	53.01 AB
DP 0935 B2RF	50.47 a	52.62 a	53.27 a	52.12 B
Avg.	52.32 A	53.26 A	53.59 A	

Table 3. Effects of B2RF variety and LEPA irrigation levels on gross revenues at AG-CARES, Lamesa, TX, 2009.

Variety	L	M	H	Avg.
	----------	----------$/A----------	----------	
AM 1532 B2RF	380 a	515 ab	507 a	467 B
ST 5458 B2RF	428 a	557 a	532 a	506 A
FM 9160 B2F	365 a	377 b	435 a	392 C
DP 0935 B2RF	396 a	487 ab	529 a	471 AB
Avg.	392 B	484 AB	501 A	
% change	(-19%)	(-----)	(+3%)	

TITLE:

Cotton Variety Performance in a Sorghum/Cotton Rotation as Affected by Low-Energy Precision Application (LEPA) Irrigation Levels at AG-CARES, Lamesa, TX, 2009.

AUTHORS:

Wayne Keeling, Terry Wheeler, Jim Bordovsky, Jacob Reed and Michael Petty; Professor, Professor, Agricultural Engineer-Irrigation, Sr. Research Associate, and Research Assistant.

MATERIALS AND METHODS:

Plot Size:	4 rows by 500 feet, 3 replications
Planting Date:	May 5
Varieties:	Stoneville 5458 B2RF
	FiberMax 9160 B2F
	Americot 1532 B2RF
	Delta Pine 0935 B2RF
Herbicides:	Prowl 3 pt/A PPI
	Roundup WeatherMax 22 oz/A POST (March 26)
	Roundup WeatherMax 26 oz/A POST (May 12)
	Roundup WeatherMax 32 oz/A POST (June 23)
	Roundup PowerMax 32 oz/A POST (August 5)
Fertilizer:	100-34-0
Irrigation in-season:	

	Low	Medium	High
Total	5.76"	7.20"	8.64"

Harvest Date:	October 16

RESULTS AND DISCUSSION:

Four Roundup Ready Flex/Bollgard II varieties were planted following sorghum grown in 2008. Sorghum stalks were shredded prior to planting. Irrigation levels were based on 0.12", 0.18", and 0.24" per day maximum pumping capacities and totaled 5.76", 7.20" and 8.64"/A during the growing season for the three irrigation levels. Plots were cultivated and furrow dikes rebuilt once during the growing season.

Higher cotton yields were produced in this trial following sorghum compared to the same varieties in the continuous cotton trial. When averaged across irrigation treatments, lint yields ranged from 780 to 1120 lbs/A (Table 1). Highest yields were produced with ST 5458 B2RF, DP 0935 B2RF and AM 1532 B2RF. When averaged across varieties, higher yields were produced at the high irrigation (7.20"/A applied) compared to the low irrigation treatment (5.76"/A applied). Yields were not significantly greater with the high irrigation treatment compared to the medium irrigation treatment. Irrigation level did not affect loan value, but when averaged across irrigation levels, all varieties produced similar lint values (Table 2). Gross revenues per acre increased from low to medium irrigation, but were not greater with the high irrigation level (Table 3). Similar gross revenues were produced with AM 1532 B2RF, ST 5458 B2RF, and DP 0935 B2RF varieties, which were greater than revenues produced with FM 9160 B2F.

Soil samples were taken in the fall of 2007, 2008, and 2009 in areas that were under continuous cotton, or cotton rotated with sorghum. Over the three years, root-knot nematode density averaged 2,525/500 cm^3 soil following continuous cotton. Root-knot nematode density following the sorghum crop during these three years averaged 1,035/500 cm^3 soil. Root-knot nematode density following cotton, one year after a rotation with sorghum averaged 3,270/500 cm^3 soil. Sorghum does not appear to be as good a host as cotton for root-knot nematode. While it is not a nonhost like peanut, it will cause a reduction in the root-knot nematode density. However, after the following cotton crop (one year after sorghum), root-knot densities are at least as high as in continuous cotton.

Table 1. Effects of B2RF variety and LEPA irrigation levels on cotton lint yields at AG-CARES, Lamesa, TX, 2009.

	L	M	H	Avg.
Variety	lbs/A			
AM 1532 B2RF	837 a	909 a	1052 ab	933 B
ST 5458 B2RF	806 a	1151 a	1402 a	1120 A
FM 9160 B2F	510 b	951 a	878 b	780 C
DP 0935 B2RF	859 a	1088 a	1082 ab	1010 AB
Avg.	753 B	1025 A	1104 A	
% change	(-26%)	(-----)	(+8%)	

Table 2. Effects of B2RF variety and LEPA irrigation levels on lint value at AG-CARES, Lamesa, TX, 2009.

	L	M	H	Avg.
Variety	¢/lb			
AM 1532 B2RF	55.57a	53.80 a	55.35 a	54.91 A
ST 5458 B2RF	53.18 a	53.63 a	54.40 a	53.74 A
FM 9160 B2F	52.78 a	54.07 a	53.60 a	53.48 A
DP 0935 B2RF	52.42 a	54.15 a	54.88 a	53.82 A
Avg.	53.49 A	53.91 A	54.56 A	

Table 3. Effects of B2RF variety and LEPA irrigation levels on gross revenues at AG-CARES, Lamesa, TX, 2009.

	L	M	H	Avg.
Variety	$/A			
AM 1532 B2RF	465 a	489 a	582 ab	512 B
ST 5458 B2RF	428 a	617 a	763 a	603 A
FM 9160 B2F	269 b	514 b	470 b	418 C
DP 0935 B2RF	451 a	590 a	594 ab	545 AB
Avg.	403 B	553 A	602 A	
% change	(-27%)	(-----)	(+9%)	

TITLE:

Effects of B2RF Variety, SDI Irrigation Levels, and Harvest Method on Cotton Lint Yields, Loan Values, and Gross Revenues at AG-CARES, Lamesa, TX, 2009.

AUTHORS:

Wayne Keeling, Randy Boman, Jim Bordovsky, John Wanjura, Jacob Reed and Michael Petty; Professor, Extension Cotton Agronomist, Agricultural Engineer-Irrigation, Agricultural Engineer, USDA-ARS, Sr. Research Associate, and Research Assistant.

MATERIALS AND METHODS:

Plot Size:	4 rows by 400 feet, 3 replications
Planting Date:	May 20 – 52,000 seeds/A, 3.5 lbs/A Temik applied
Varieties:	Americot 1532 B2RF
	Stoneville 5458 B2RF
	FiberMax 9160 B2F
	Delta Pine 0935 B2RF
Herbicides:	Treflan 1.5 pt/A
	Caparol 1.5 pt/A PPI (May 20)
	Roundup WeatherMax 22 oz/A POST (June 10)
	Roundup WeatherMax 22 oz/A POST (July 2)
Fertilizer:	120-0-0
Plant Growth Regulators:	Pix 6 oz/A (July 16)
	Pix 16 oz/A (July 26)

Irrigation in-season:

	Med	High
Preplant/germination	3.7"	5.5"
In-season irrigation	7.9"	11.6"
Total	11.6"	17.1"

Harvest Dates:	Picker – October 19
	Stripper – October 24

RESULTS AND DISCUSSION:

Four B2RF varieties were planted under two sub-surface drip (SDI) irrigation levels. Plots were split at harvest with four rows harvested with a John Deere 7445 cotton stripper with field cleaner and four rows harvested with a John Deere 9996 cotton picker. Grab samples were collected from each plot, ginned at the Texas AgriLife Research gin at Lubbock, and fiber samples were analyzed at the Texas Tech Fiber and Biopolymer Research Institute.

When averaged across varieties and harvest methods, higher yields were produced with the high irrigation level. Within the medium irrigation level, similar yields were produced with picker and stripper harvest, however at the high irrigation levels, yields were lower with picker harvest (Table 1). When averaged across irrigation levels and harvest methods, similar yields (1605-1702 lbs lint/A) were produced with all four varieties. Cotton loan value was not affected by irrigation level, variety or harvest method (Table 2). Gross revenues per acre (yield x loan value) was higher with the high irrigation level but was not affected by variety or harvest method (Table 3). No differential harvesting costs were included.

Table 1. Effects of B2RF variety, SDI irrigation levels, and harvest method on lint yield at AG-CARES, Lamesa, TX, 2009.

	Med		High		Avg.		Variety
	Pick	Strip	Pick	Strip	Pick	Strip	Avg.
Variety	----------------	----------------	----------------	lb/A	----------------	----------------	----------------
AM 1532 B2RF	1476	1529	1691	1728	1584	1629	1607 a
ST 5458 B2RF	1525	1464	1847	1970	1686	1717	1702 a
FM 9160 B2F	1312	1528	1718	1911	1515	1720	1618 a
DP 0935 B2RF	1399	1429	1667	1923	1533	1676	1605 a
Avg.	1428 a	1488 a	1731 b	1883 a	1580	1686	
Irrig. Level Avg.	1458 B		1807 A				

Table 2. Effects of B2RF variety, SDI irrigation levels, and harvest method on lint value at AG-CARES, Lamesa, TX, 2009.

	Med		High		Avg.		Variety
	Pick	Strip	Pick	Strip	Pick	Strip	Avg.
Variety	----------------	----------------	----------------	¢/lb	----------------	----------------	----------------
AM 1532 B2RF	55.56	56.13	56.05	56.23	55.81	56.18	55.98 a
ST 5458 B2RF	55.87	56.33	55.20	55.98	55.54	56.16	55.85 a
FM 9160 B2F	56.43	55.62	56.20	55.13	56.32	55.38	55.85 a
DP 0935 B2RF	56.58	56.07	55.15	56.07	55.87	56.07	55.97 a
Avg.	56.11 a	56.04 a	55.65 a	55.85 a	55.89	55.95	
Irrig. Level Avg.	56.07 A		55.75 A				

Table 3. Effects of B2RF variety, SDI irrigation levels, and harvest method on gross revenues at AG-CARES, Lamesa, TX, 2009.

	Med		High		Avg.		Variety
	Pick	Strip	Pick	Strip	Pick	Strip	Avg.
Variety	----------------	----------------	----------------	$/A	----------------	----------------	----------------
AM 1532 B2RF	820	858	948	972	884	915	900 a
ST 5458 B2RF	852	825	1018	1103	935	964	950 a
FM 9160 B2F	741	849	966	1051	854	950	902 a
DP 0935 B2RF	792	802	920	1078	856	940	898 a
Avg.	801 a	834 a	963 a	1051 a	882	942	
Irrig. Level Avg.	817 B		1007 A				

TITLE:

Bayer Cotton Agronomic Performance Trial at AG-CARES, Lamesa, TX, 2009.

AUTHORS:

Wayne Keeling, Jacob Reed, Michael Petty, and Kenny Melton; Professor, Sr. Research Associate, Research Assistant, Texas AgriLife Research; and Regional Cotton Agronomist, Bayer CropScience.

MATERIALS AND METHODS:

Plot Size:	4 rows by 500 feet, 3 replications
Planting Date:	May 6
Varieties:	FiberMax 1740 B2F
	FiberMax 9160 B2F
	FiberMax 9170 B2F
	Stoneville 4288 B2F
	Stoneville 5458 B2RF
Herbicides:	Prowl 3 pt/A PPI
	Roundup WeatherMax 22 oz/A POST (March 26)
	Roundup WeatherMax 26 oz/A POST (May 12)
	Roundup WeatherMax 32 oz/A POST (June 23)
	Roundup PowerMax 32 oz/A POST (August 5)
Fertilizer:	100-34-0
Irrigation in-season:	

	Low	Medium	High
Total	5.76"	7.20"	8.64"

Harvest Date:	October 16

RESULTS AND DISCUSSION:

Five varieties were evaluated under dryland and three irrigation levels based on maximum pumping capacities of 0.12", 0.18" and 0.24" per day. When averaged across varieties, yields ranged from 604-1199 lbs. lint per acre (Table 1). Highest yields for all three irrigation levels were produced with ST 4288 B2F and ST 5458 B2RF. Lint values ranged from 50.30 to 53.96¢/lb with a trend toward greater lint value with increased irrigation (Table 2). Gross revenues increased with increased irrigation capacity and were greatest with the two Stoneville varieties (Table 3).

Table 1. Effects of B2RF variety and LEPA irrigation levels on cotton lint yields at AG-CARES, Lamesa, TX, 2009.

Variety	Dryland	Low	Medium	High	Irrig. Avg.
	--		lbs/A		--
FM 1740 B2R	644	676	1037	1061	925 c
FM 9160 B2R	570	831	1054	1074	986 c
FM 9170 B2R	563	864	1001	1040	968 c
ST 4288 B2R	634	950	1196	1286	1143 b
ST 5458 B2RF	608	1007	1205	1534	1249 a
Avg.	604	866 B	1099 A	1199 A	

Table 2. Effects of B2RF variety and LEPA irrigation levels on lint value at AG-CARES, Lamesa, TX, 2009.

Variety	Dryland	Low	Medium	High	Irrig. Avg.
	--		¢/lb		--
FM 1740 B2R	52.40	50.30	53.80	53.02	52.37 c
FM 9160 B2R	53.98	53.18	53.93	53.43	53.52 ab
FM 9170 B2R	52.37	52.00	53.50	53.25	52.92 bc
ST 4288 B2R	52.30	53.70	53.80	53.68	53.73 ab
ST 5458 B2RF	52.78	53.82	53.73	53.96	53.82 a
Avg.	52.16	52.60 B	53.75 A	53.47 AB	

Table 3. Effects of B2RF variety and LEPA irrigation levels on gross revenues at AG-CARES, Lamesa, TX, 2009.

Variety	Dryland	Low	Medium	High	Irrig. Avg.
	--		$/A		--
FM 1740 B2R	338	339	558	562	486 c
FM 9160 B2R	302	442	568	575	528 c
FM 9170 B2R	294	450	536	555	514 c
ST 4288 B2R	332	510	644	690	614 b
ST 5458 B2RF	311	542	648	827	672 a
Avg.	315	457 B	591 A	642 A	

TITLE:

Results of the Sub-Surface Drip Irrigated Uniform Cotton Variety Performance Test at Lamesa, AG-CARES, 2009

AUTHORS:

Jane K. Dever, Lyndon Schoenhals and Valerie Morgan, Associate Professor, Senior Research Associate and Research Assistant

MATERIALS AND METHODS:

Test:	Uniform Cotton Variety, drip-irrigated
Planting Date:	May 18
Design:	Randomized Complete Block
Plot Size:	2-row plots, 25 ft
Row Spacing:	40-in
Planting Pattern:	Solid
Herbicide:	Trust @ 1.5pt/A applied pre-plant
	Caparol @ 1.5pt/A applied May 22
Fertilizer:	10-30-0 120lbs/A applied pre-plant
	-0-0 30 lbs/A applied August 24 (fertigation)
Irrigations:	4.39 acre-in applied pre-plant
	9.08 acre-in applied May-September
Insecticide:	Temik @ 2.4 lbs/A at planting
Growth Regulator:	Pix @ 16 oz/A applied July 26
Harvest Aid:	Prep @ 21 oz/A + 1% crop oil October 7
	Gramoxone Inteon 24oz/A October 21
Harvest Date:	November 2

RESULTS AND DISCUSSION:

Texas AgriLife Research, in conjunction with the AG-CARES location in Lamesa, provide an important service to seed companies and producers through a fee-based testing system that can evaluate a relatively large number of commercial and pre-commercial varieties in small-plot replicated performance trials. This service allows varieties from different companies and seed developers to be tested together by an independent source. The small-plot replicated trials are intended to evaluate the genetic performance of lines independent of biotechnology traits, so the tests are managed as conventional varieties as opposed to herbicide or insecticide systems. Every effort is made to minimize the effects of insect and weed pressure. The same varieties are tested at 5 locations across the Southern High Plains, including the drip-irrigated site at AG-CARES.

Lint yield is determined by the stripper-harvested plot weight and a lint percentage determined from a ~600 gram grab sample collected randomly from the harvested plot material. Boll size and pulled lint percent are determined from a 50 boll sample obtained from 2 replications of each entry. Maturity and storm resistance ratings are a visual assessment of percent open bolls and a 1 (very loose, considerable storm loss) to 9 (very tight boll, no storm loss) storm resistance rating.

Fifty cotton varieties from 8 different seed companies were submitted for variety testing at 5 locations, including the drip-irrigated location at AG-CARES in Lamesa. Average yield was

1,437 pounds of lint per acre with a test coefficient of variation of 13.9% and 280 pounds least significant difference. The highest yielding variety was PHY 367WRF, and the top 6 varieties in the test were not significantly different than the highest yielding variety (Table 1). The top-yielding varieties all had relative maturity and storm resistance similar to the test average. NG 1572 RF had the highest storm-proof rating of 7. DP 0935 B2RF, All-Tex Altas, NG 2549 B2RF, NG 2448 R, and five FiberMax varieties had storm-proof rating of 6. Maturity based on a visual assessment of percent open bolls on a given date ranged from 70% for Hazera YD-1199 and 74% for DP 555 BG/RR, DP 0949B2RF and Hazera YD-1198 to 94% for NG 1572 RF. Hazera YD-1198 and Hazera YD-1199 are interspecific hybrids.

Fiber quality evaluations are not available at the time of the 2009 Annual Report publication, and will be added to the website when they do become available.

Table 1. Results of the Uniform Cotton Variety Test drip irrigated, Lamesa AG-CARES, 2009

				Agronomic Properties						% Open		
		% Turnout		% Lint		Boll	Seed	Lint	Seed/Per	Bolls	Storm	
Variety	Yield	Lint	Seed	Picked	Pulled	Size	Index	Index	Boll	10/06/09	Resistance	Height
PhytoGen PHY 367 WRF	1948	30.0	45.7	38.4	30.5	5.3	9.5	6.4	32.1	79	4	36
Stoneville ST 4288B2F	1815	28.5	48.2	36.3	29.8	5.9	11.6	7.2	29.7	84	5	32
Stoneville ST 4498B2RF	1728	29.8	46.7	40.0	32.6	5.9	9.8	6.9	33.7	84	4	33
Stoneville ST 5458B2RF	1657	31.0	47.0	38.7	31.7	5.8	9.9	6.8	33.3	83	5	34
Croplan Genetics CG 3520B2RF	1610	30.2	46.5	37.4	29.5	5.2	9.7	6.2	31.1	85	4	33
Deltapine DP 121 RF	1602	30.4	44.4	40.6	32.5	5.5	9.5	6.9	32.3	84	4	34
PhytoGen PHY 315 RF	1596	29.1	45.8	40.6	32.6	5.5	9.6	7.1	31.7	84	3	32
Stoneville ST 4554B2RF	1594	30.0	46.1	38.1	31.3	5.7	10.0	6.8	31.9	83	4	35
PhytoGen PHY 375 WRF	1586	30.2	44.4	39.6	32.3	5.4	9.5	6.7	32.3	83	3	35
Croplan Genetics CG 3220B2RF	1579	31.1	47.8	39.3	31.6	5.4	10.1	6.9	30.5	85	4	32
Deltapine DP 0912 B2RF	1562	28.7	45.7	39.8	33.0	5.7	9.3	6.7	33.7	90	3	33
FiberMax FM 9170B2F	1562	31.4	44.0	37.9	31.4	5.7	10.6	7.0	30.7	80	5	31
Hazera YD-1198	1562	25.3	44.3	32.5	25.2	4.4	11.0	6.2	22.9	74	3	39
PhytoGen PHY 565 WRF	1557	29.7	45.6	41.5	34.6	5.1	9.0	6.6	32.5	79	4	35
Deltapine DP 164 B2RF	1553	29.7	49.5	36.3	29.9	5.4	9.2	5.6	34.6	79	4	34
PhytoGen PHY 525 RF	1536	30.1	47.2	38.7	31.5	5.3	9.6	6.5	31.5	76	4	36
Croplan Genetics CG 4020B2RF	1529	27.8	47.2	38.0	30.7	5.7	10.1	6.5	33.2	85	4	34
Deltapine DP 0924 B2RF	1524	30.6	46.4	40.0	32.0	5.4	9.5	6.7	32.0	83	4	32
Croplan Genetics CG 3035RF	1509	32.5	45.8	41.9	34.3	6.1	9.8	7.5	34.5	83	4	33
Stoneville ST 5288B2F	1499	30.1	45.3	38.4	31.7	5.2	8.9	6.0	33.4	83	5	35
Deltapine DP 143 B2RF	1458	28.0	47.0	36.9	30.6	5.5	9.6	6.0	33.7	81	5	32
FiberMax FM 1740B2F	1426	30.8	44.8	41.1	33.3	5.7	10.4	7.5	31.1	88	5	30
Deltapine DP 0935 B2RF	1418	31.4	44.6	41.0	32.7	6.0	9.9	7.4	33.4	78	6	35
FiberMax FM 9160B2F	1418	29.5	46.8	38.8	31.8	5.5	10.6	7.2	29.7	84	5	32
Deltapine DP 0949 B2RF	1405	28.6	43.5	41.9	34.4	5.7	9.4	7.2	33.1	74	4	36

Deltapine DP 555 BG/RR	1390	32.4	47.0	39.6	33.2	5.1	8.3	6.0	33.9	74	5	38
All-Tex AT Patriot + RF	1383	27.6	48.4	35.6	28.6	5.4	10.6	6.2	31.0	83	4	29
FiberMax FM 9180B2F	1382	28.6	48.5	36.7	29.4	6.1	11.4	7.1	31.4	89	6	27
All-Tex AT Apex B2RF	1382	29.4	46.9	38.8	30.4	5.3	9.5	6.4	32.2	84	4	32
All-Tex AT Summit B2F	1372	26.9	45.3	37.8	30.3	5.6	10.3	6.7	31.6	88	4	31
Americot AM 1532 B2RF	1365	29.0	46.1	40.7	32.6	5.5	10.0	7.0	31.6	88	4	32
All-Tex AT Orbit RF	1365	27.0	49.6	34.6	27.4	5.2	10.2	5.7	31.3	80	4	35
NexGen NG 3410 RF	1358	29.4	47.1	36.1	29.7	6.2	11.7	7.1	31.6	86	5	31
NexGen NG 1572 RF	1351	29.1	50.0	34.0	28.2	5.4	11.6	6.4	28.6	94	7	29
Bayer CropScience BCSX 1010B2F	1347	29.0	46.6	36.0	29.0	5.8	10.7	8.0	32.3	85	4	33
FiberMax FM 1845LLB2	1347	26.5	46.5	39.2	31.6	6.5	11.3	7.5	34.0	78	6	31
Hazera YD-1199	1339	22.9	48.0	33.4	27.4	4.7	11.2	6.0	26.0	70	4	41
Seed Source Genetics SSG HQ 110 CT	1329	28.2	47.1	37.8	30.4	5.1	9.3	6.0	32.0	80	3	31
NexGen NG 3348 B2RF	1328	30.4	46.8	35.9	29.6	5.8	11.2	6.8	30.4	88	5	30
Croplan Genetics CG 3020B2RF	1326	29.0	45.5	37.3	30.0	5.5	10.1	6.5	31.9	85	4	33
FiberMax FM 955LLB2	1312	27.0	48.2	35.6	28.4	6.7	11.7	6.8	35.2	80	6	32
FiberMax FM 9058F	1301	28.9	46.4	37.6	30.2	5.8	10.8	7.0	31.5	89	6	28
Seed Source Genetics SSG HQ 210 CT	1288	26.9	49.0	37.7	30.9	5.6	9.0	5.7	37.2	79	5	28
NexGen NG 2549 B2RF	1277	28.0	47.5	33.9	28.5	5.1	10.5	6.1	29.5	89	6	28
NexGen NG 2448 R	1275	27.5	49.7	35.3	28.7	5.5	10.7	6.2	31.1	93	6	31
FiberMax FM 958	1274	28.9	46.3	37.0	29.9	6.1	11.1	7.0	32.0	90	6	27
NexGen NG 1551 RF	1246	27.8	49.7	33.7	26.9	5.3	11.5	6.3	28.6	89	3	30
All-Tex AT Epic B2RF	1153	30.9	46.3	40.3	33.4	6.3	10.1	7.4	34.2	83	5	36
PhytoGen PHY 72	1107	28.2	47.5	41.9	33.8	6.2	10.4	7.3	35.6	84	2	31
All-Tex AT Atlas RR	1022	25.6	47.6	33.6	26.7	5.5	11.8	6.4	28.7	91	6	32
Mean	1437	29.0	46.7	37.8	30.7	5.6	10.2	6.7	31.8	83	4	32
c.v.%	13.9	5.0	3.0	4.8	4.6	4.7	4.3	8.2	4.9	3.3	11.5	7.4
LSD 0.05	280	2.0	2.0	3.6	2.9	0.5	0.9	1.1	3.1	4	1	3

TITLE:

Results of the Dryland Uniform Cotton Variety Performance Test at Lamesa, AG-CARES, 2009

AUTHORS:

Jane K. Dever, Lyndon Schoenhals and Valerie Morgan, Associate Professor, Senior Research Associate and Research Assistant

MATERIALS AND METHODS:

Test:	Uniform Cotton Variety, dryland
Planting Date:	May 18
Design:	Randomized Complete Block
Plot Size:	2-row plots, 30 ft
Row Spacing:	40in
Planting Pattern:	Solid
Herbicide:	Trust @ 1.5pt/A applied pre-plant
	Caparol @ 1.5pt/A applied May 22
Fertilizer:	20-10-0-7 @ 190 lbs/A applied pre-plant
Irrigations:	8.3 inches of rainfall (April-November)
Insecticide:	Temik @ 2.4lbs/A at planting
Harvest Aids:	Prep @ 21 oz/A + 1% crop oil September 21
	Gramoxone Inteon 24oz/A October 7
Harvest Date:	October 28

RESULTS AND DISCUSSION:

The AG-CARES facility provides an excellent opportunity to evaluate varieties in small-plot replicated trials under both irrigated and dryland conditions. Testing varieties in dryland conditions presents some of the same challenges of dryland cotton production, such as waiting for a planting rain which may favor early maturing varieties if it comes late, and trying to plant after a rain before the soil dries. The dryland location at Lamesa AG-CARES is one of the official locations included in the National Cotton Variety Testing Program, so data are reported even under difficult conditions. The dryland location also allows growers to evaluate variety performance in unpredictable situations, but other parameters, such as maturity, storm resistance and plant height are also important in assessing overall performance when yield may be influenced as much by field conditions as variety genetic response.

Fifty cotton varieties from 8 different seed companies were submitted for variety testing at 5 locations, including a dryland location at AG-CARES in Lamesa. The test was planted into good moisture followed by low and then high temperature on consecutive days after planting. Stand establishment was good, but early season water deficit resulted in a fairly high coefficient of variation for the test at 17.6%, with an average yield of 581 pounds of lint per acre. The top 26 varieties were not significantly different from the highest yielding variety, DP 0935 B2RF (Table 1). Relative maturity of the varieties as indicated by percent open bolls on October 6, ranged from 29% for Hazera YD-1199 to 86% for NG 2448 R, with a test average of 52%. Storm resistance averaged 5 on a scale of 1-9 and ranged from 3 for Phytogen 72 to 7 for NG 2549B2RF and NG 1572 RF. Plant height averaged 27 inches and ranged from 24 inches for FM 9058F to 32 inches for DP 555 BG/RR.

The uniform variety tests are part of the National Cotton Variety Testing Program, and include National Standards from each of the following growing regions of the United States cotton belt. The national standards are kept for a 3-year cycle and either replaced or continued. The standards for the 2009 test are the same as for 2008 and 2010 and include PHY 370WRF for the Mid-Atlantic region, DP 555 BG/RR for the Southeast region, ST 4554 B2F for the Mid-South region, FM 9058F for the Southwest region and Phytogen 72 for the West region. Some unadapted varieties with older technology are included in these tests because they are national or regional standards for the National Cotton Variety Testing program. There has been a NCVT location in the Plains region since the inception of the program in 1950.

Table 1. Results of the dryland regional cotton variety test at the AG-CARES farm, Lamesa, TX 2009.

Designation	Yield	% Turnout Lint	% Turnout Seed	Agronomic Properties: % Lint Picked	% Lint Pulled	Boll Size	Seed Index	Lint Index	Seed per Boll	% Open Bolls 10/6/09	Storm Resistance	Height
Deltapine DP 0935 B2RF	728	32.2	43.0	41.1	32.7	5.5	9.1	6.6	34.6	35	5	29
PhytoGen PHY 367 WRF	689	29.7	43.9	38.9	30.0	4.5	8.3	5.5	31.7	50	4	28
PhytoGen PHY 375 WRF	678	31.0	43.5	40.1	31.8	4.8	8.5	6.1	32.0	45	4	27
Croplan Genetics CG 3035RF	676	34.1	44.7	40.1	32.1	5.2	9.0	6.3	33.1	44	5	30
All-Tex AT Epic B2RF	670	32.7	44.3	41.6	33.4	5.5	8.9	6.5	34.8	48	5	29
FiberMax FM 1740B2F	664	31.0	45.4	39.4	31.0	4.9	9.1	6.1	31.3	64	5	26
Croplan Genetics CG 3520B2RF	660	27.1	46.1	34.6	26.9	4.4	8.6	4.8	31.9	76	5	26
Stoneville ST 5458B2RF	652	31.5	45.4	39.8	32.0	5.3	9.0	6.1	34.3	36	5	26
Deltapine DP 555 BG/RR	651	34.1	44.0	40.9	33.5	4.6	7.2	5.4	34.8	33	5	32
Stoneville ST 5288B2F	644	31.4	44.3	40.5	32.4	4.8	7.9	5.6	34.6	44	5	28
Deltapine DP 0912 B2RF	639	32.7	44.8	38.7	30.3	4.7	8.7	5.8	31.3	60	4	27
All-Tex AT Apex B2RF	638	28.8	45.6	36.7	28.5	5.1	9.1	5.5	33.8	58	5	29
FiberMax FM 9160B2F	635	30.5	45.6	38.2	30.8	5.2	9.1	5.9	33.7	56	5	26
Croplan Genetics CG 3020B2RF	627	28.4	47.3	35.7	29.7	5.4	9.2	5.8	33.3	55	4	28
Americot AM 1532 B2RF	625	28.6	45.8	37.2	29.1	4.9	8.8	5.4	33.5	60	5	27
All-Tex AT Summit B2F	622	28.3	46.7	35.6	28.2	5.1	9.4	5.5	33.1	61	5	27
Deltapine DP 0924 B2RF	618	30.6	45.3	39.4	31.7	5.1	9.0	6.2	32.3	49	5	29
Hazera YD-1198	616	25.6	46.1	34.3	27.6	4.0	9.1	5.2	26.6	38	4	30
NexGen NG 3348 B2RF	609	27.9	47.3	35.2	28.0	4.9	8.4	4.8	35.9	66	6	26
Deltapine DP 121 RF	607	29.6	43.1	39.9	30.8	4.8	8.7	6.1	31.1	66	4	28
Seed Source Genetics SSG HQ 210 CT	605	31.8	47.1	38.2	31.1	4.6	8.0	5.1	34.4	30	4	27
Deltapine DP 143 B2RF	602	29.5	47.4	38.0	29.8	5.0	8.8	5.7	33.1	40	5	26
Stoneville ST 4498B2RF	602	29.8	44.8	38.3	30.2	4.7	8.6	5.6	32.5	49	4	26
NexGen NG 2448 R	596	25.8	50.2	32.8	26.9	5.3	9.9	5.2	33.4	86	8	26
Stoneville ST 4554B2RF	591	31.3	44.8	39.2	31.1	5.0	9.3	6.4	31.1	43	4	26
All-Tex AT Patriot + RF	589	27.8	46.6	35.2	27.7	5.4	9.8	5.6	34.3	56	5	27
Croplan Genetics CG 3220B2RF	584	29.8	45.9	36.3	28.9	5.0	8.9	5.4	33.4	48	5	26
Deltapine DP 0949 B2RF	583	31.8	43.2	[illegible]	32.9	5.1	8.7	6.4	32.8	34	5	30

Table 1. Results of the dryland regional cotton variety test at the AG-CARES farm, Lamesa, TX 2009.

				Agronomic Properties						% Open		
		% Turnout		% Lint		Boll	Seed	Lint	Seed per	Bolls	Storm	
Designation	Yield	Lint	Seed	Picked	Pulled	Size	Index	Index	Boll	10/6/09	Resistance	Height
Hazera YD-1199	582	24.4	49.2	32.2	25.4	4.0	10.2	5.1	25.5	29	4	30
PhytoGen PHY 315 RF	562	29.6	44.4	38.9	30.2	4.6	8.6	5.8	31.3	58	4	29
FiberMax FM 958	559	30.1	45.9	38.2	30.2	5.4	9.6	6.3	32.9	70	6	25
Croplan Genetics CG 4020B2RF	559	29.5	45.3	35.9	27.7	5.0	9.2	5.4	33.0	46	5	27
Seed Source Genetics SSG HQ 110 CT	554	29.9	44.9	37.4	29.4	4.5	7.8	4.9	34.3	50	4	26
PhytoGen PHY 565 WRF	550	29.3	46.0	38.1	29.9	4.6	8.2	5.3	33.1	34	5	30
Deltapine DP 164 B2RF	549	31.0	46.6	37.3	30.1	4.8	8.5	5.2	34.0	34	5	29
FiberMax FM 9058F	544	28.8	44.6	36.6	28.7	5.2	9.6	5.9	31.9	76	6	24
NexGen NG 1572 RF	542	26.1	50.7	32.9	27.0	4.7	9.4	4.9	31.5	85	7	25
FiberMax FM 955LLB2	538	28.2	47.4	35.5	27.8	5.8	10.9	6.2	32.9	48	5	28
PhytoGen PHY 525 RF	538	30.9	44.4	39.3	31.1	4.6	8.5	5.7	31.9	36	4	29
All-Tex AT Orbit RF	534	26.9	46.8	34.0	26.4	4.9	9.3	5.0	33.5	56	5	28
Stoneville ST 4288B2F	527	28.9	45.5	38.4	29.0	4.7	9.1	5.7	31.8	40	4	26
NexGen NG 1551 RF	500	25.9	48.1	34.0	26.8	4.9	10.9	5.7	28.5	76	5	26
NexGen NG 2549 B2RF	499	27.1	48.1	35.3	27.6	4.3	9.2	5.1	29.7	76	7	26
NexGen NG 3410 RF	493	27.8	47.6	35.8	28.9	5.3	9.9	5.7	33.3	60	6	26
FiberMax FM 1845LLB2	479	29.5	45.0	36.7	28.9	5.2	9.8	6.0	32.3	43	5	27
FiberMax FM 9170B2F	479	30.4	44.0	39.6	31.5	4.6	8.7	5.9	30.9	34	5	29
Bayer CropScience BCSX 1010B2F	473	30.3	45.3	37.7	29.5	5.0	9.5	5.9	31.8	39	4	30
All-Tex AT Atlas RR	459	25.5	49.1	33.8	26.3	4.9	10.2	5.4	30.5	80	6	26
FiberMax FM 9180B2F	452	27.2	46.5	35.0	27.3	5.4	10.1	5.8	32.6	70	6	25
PhytoGen PHY 72	382	25.1	43.3	36.5	28.5	4.9	9.3	5.7	31.6	49	3	27
Mean	581	29.3	45.8	37.3	29.5	4.9	9.0	5.6	32.4	52	5	27
c.v.%	17.6	3.8	2.3	3.6	3.7	6.4	4.6	4.6	6.0	18.6	12.6	6.5
LSD 0.05	143	1.6	1.4	2.7	2.2	0.6	0.8	0.5	3.9	14	1	2

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TITLE:

Results of the Root-Knot Nematode Cotton Variety Performance Test and Nursery at AG-CARES, Lamesa, TX, 2009

AUTHORS:

Jane K. Dever, Terry A. Wheeler and Valerie Morgan, Associate Professor, Professor and Research Assistant

MATERIALS AND METHODS:

Test:	Root-Knot Nematode Resistance Cotton Variety Trial
Planting Date:	May 6
Design:	Randomized Complete Block
Plot Size:	2-row plots, 28 ft
Row Spacing:	40in
Planting Pattern:	Solid
Herbicide:	Prowl @ 3 pt/A applied pre-plant
Fertilizer:	10-34-0 100 lbs/A applied pre-plant
Irrigations:	7.3 acre-in. applied May-September
Insecticide:	Temik @ 2.4 lbs/A at planting
Harvest Aids:	Prep 21 oz/A + 2oa E. T. + 1% crop oil September 29
	Gramoxone Inteon @ 24 oz/A applied October 9
Harvest Date:	October 27

RESULTS AND DISCUSSION:

Some locations at the AG-CARES facility provide an excellent opportunity to evaluate a number of commercial, pre-commercial and breeding strains in small-plot replicated trials under root-knot nematode pressure. Texas AgriLife Research provides a fee-based testing service for seed companies to evaluate their products in the same test with other varieties, and allows producers access to independently-generated performance data in production situations that may resemble their own. In addition, the AgriLife Research cotton breeding program at Lubbock utilizes the same location to select progeny from breeding populations with nematode-tolerant parent and advance promising lines for yield testing.

Twenty cotton varieties and experimental strains were submitted for variety testing in a field where root-knot nematodes were known to have been present. The highest-yielding variety was DP 174 RF at 1,573 pounds of lint per acre and also allowed the lowest level of nematode production in the test at 305 root-knot nematodes/500 cc soil (Table 1). Other varieties that allowed similar low levels of nematode production include PHY 367WRF, ST 4288B2F, CG 3035 RF, DP 164B2RF, CG 4020B2RF and CG 3520B2RF. Test yield average was 1,296 pounds per acre with a coefficient of variation of 11.2%. Emergence, growing conditions and weed pressure were excellent and contributed to the low coefficient of variation for the test. FM 955LLB2 allowed the highest level of nematode production, followed by FM 9160B2F, FM 1845LLB2, FM 9063B2F, FM 9170B2F and ST 5288B2F. DP 0935B2RF, ST 5458B2F and ST 5288B2F were not significantly different than the highest yielding variety, but also not different than the variety with the highest nematode production. Fiber quality are not available in time for the publication of the report and will be added to the website at a later date.

Forty-two new populations were created from crosses with root-knot nematode resistant lines and elite breeding material in 2008. F_1 seed were sent to the National Cotton Council winter nursery facility in

Tecoman, Colima, Mexico, for increase during 2008/2009 counter season. Seed of the F_2 population, 42 selections from the 2008 nursery and appropriate check varieties were planted in 448 progeny rows in 2009. A total of 588 individual plants were selected from the F_2 populations, and 32 plants from the advanced generation selections. No rows were selected for 2010 yield testing. All selections will undergo greenhouse screening prior to planting in 2010. F_2:F_3 progeny rows from the best plants will be planted in the 2010 nursery for an additional round of selection.

Table 1. Results of the pivot irrigated nematode variety test at the AG-CARES farm, Lamesa, TX 2009.

				Agronomic Properties						% Open			Root-knot
		% Turnout		% Lint		Boll	Seed	Lint	Seed per	Bolls	Storm		Nematode 500CM^3
Designation	Yield	Lint	Seed	Picked	Pulled	Size	Index	Index	Boll	10/6/09	Res.	Height	soil
Deltapine DP 174 RF	1573	33.7	43.2	43.0	34.4	5.2	8.7	7.3	30.9	29	5	31	305 g[1]
Deltapine DP 0935 B2RF	1547	34.6	45.2	43.0	32.4	4.8	9.0	7.3	28.4	31	5	31	6,090 a-e
Stoneville ST 5458B2RF	1407	30.7	46.5	41.5	33.0	5.3	9.3	7.1	31.4	26	5	30	3,945 a-f
PhytoGen PHY 367 WRF	1396	30.4	45.7	40.5	30.7	4.1	8.4	6.2	27.2	44	3	28	600 fg
Stoneville ST 5288B2F	1384	31.2	45.9	40.5	32.2	4.8	8.0	5.9	33.2	20	5	30	10,830 ab
PhytoGen PHY 565 WRF	1373	30.9	46.2	40.0	30.0	4.2	8.0	5.7	28.9	24	4	34	9,150 ab
Stoneville ST 4288B2F	1348	30.4	47.3	43.2	32.1	5.4	9.4	7.0	32.1	26	4	30	1,110 b-g
FiberMax FM 955LLB2	1346	29.6	48.1	38.0	29.1	5.8	11.1	7.4	30.3	36	6	31	21,990 a
Croplan Genetics CG 3220B2RF	1324	31.6	46.7	41.5	32.6	4.9	9.4	6.9	29.6	46	5	31	5,820 a-e
All-Tex AT 8VCRN-123	1322	30.0	47.8	40.0	30.8	5.2	11.0	7.7	26.7	30	4	29	9,930 a-d
Croplan Genetics CG 3035RF	1277	32.0	45.7	42.0	33.6	5.0	8.6	7.1	30.1	30	5	30	4,050 efg
Deltapine DP 164 B2RF	1251	29.6	48.3	40.0	31.4	4.7	8.4	5.8	32.0	21	5	31	4,800 d-g
Bayer CropScience BCSX 1010B2F	1221	30.0	47.4	39.0	31.0	5.1	9.6	6.6	30.4	31	4	30	3,900 a-e
FiberMax FM 9170B2F	1211	31.3	45.6	42.0	31.8	4.4	9.1	6.9	26.3	31	5	30	11,490 ab
Croplan Genetics CG 3520B2RF	1199	28.2	48.2	39.5	29.7	4.3	8.8	6.2	27.6	49	4	29	1,920 b-g
FiberMax FM 1845LLB2	1146	29.9	46.5	38.5	30.1	5.2	10.5	7.1	28.3	33	6	29	11,910 a-d
FiberMax FM 9160B2F	1141	31.8	47.0	40.5	31.8	4.9	9.3	6.6	29.8	55	6	28	16,0200 ab
FiberMax FM 9063B2F	1134	28.6	47.4	35.5	26.5	4.9	11.2	6.5	26.9	51	6	27	11,790 abc
Croplan Genetics CG 3020B2RF	1112	27.0	49.7	40.5	31.1	4.9	9.4	6.5	30.2	55	4	28	4,200 a-e
Mean	1296	30.5	46.8	40.4	31.2	4.9	9.3	6.7	29.6	36	5	30	
c.v.%	11.2	4.0	2.1	3.8	3.7	5.0	2.9	5.1	3.4	17.6	9.4	8.3	
LSD 0.05	205	1.7	1.4	3.2	2.4	0.5	0.6	0.7	2.1	9	1	3	

[1] Different letters after the means indicates that means were significantly different based upon a log10 transformation of root-knot nematode density. There were varieties that had a plot with very high nematode populations that greatly increaded the average, so the transformation was necessary to normalize the data.

TITLE:

Picker Harvested Replicated LEPA Irrigated Cotton Variety Demonstration, AG-CARES, Lamesa, TX, 2009.

AUTHORS:

Jeff Wyatt, Tommy Doederlein, Randy Boman, Mark Kelley, and Chris Ashbrook; EA-ANR Dawson County, EA-IPM Dawson/Lynn Counties, Extension Agronomist-Cotton, Extension Program Specialist-Cotton, and Extension Assistant-Cotton.

MATERIALS AND METHODS:

Varieties:	All-Tex Epic RF, Croplan Genetics 3220B2RF, Deltapine 0935B2RF, Dyna-Gro 2570B2RF, FiberMax 9160B2F, NexGen 3348B2RF, PhytoGen 375WRF, and Stoneville 4288B2F
Experimental design:	Randomized complete block with 3 replications
Seeding rate:	4.0 seeds/row-ft in solid planted 40-inch row spacing (John Deere MaxEmerge vacuum planter)
Plot size:	4 rows by variable length due to circular pivot rows (586-874 ft long)
Planting date:	7-May
Fertilization:	100 lbs/acre 10-34-0 were applied on 24-March and 90 lbs N/acre as 32-0-0 were applied via fertigation at this location
Weed management:	Trifluralin was applied preplant incorporated at 1.5 qt/acre across all varieties on 10-April. Roundup PowerMax was applied over-the-top at 26 oz/acre on 28-May, and at 32 oz/acre on 8-July and on 25-July with AMS. Plots were rod-weeded on 22-April. On 4-August, plots were spot sprayed with a 1% Roundup PowerMax solution.
Irrigation	11" inches of irrigation were applied via LEPA irrigation during the growing season.
Rainfall:	April: 0.01"; May: 1.25"; June: 1.79"; July: 1.22"; August: 0.01"; September: 0.35"; October: 0.76" Total rainfall: 5.39" Total irrigation and rainfall: 16.39"
Insecticides:	This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.
Harvest aids:	Harvest aids included 21 oz/acre Prep + 2.0 oz/acre ET with 1% v/v crop oil on 12-October followed by 24 oz/acre Gramoxone Inteon with 0.25% v/v NIS on 19-October.
Harvest:	Plots were harvested on 20-October using a commercial John Deere 9996 Picker. 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 AgriLife Research and Extension Center at Lubbock to determine gin turnouts.
Fiber analysis:	Lint samples were submitted to the Fiber and Biopolymer Research Institute 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 $3.00 per cwt. of bur cotton and seed value/acre was based on $160/ton. Ginning costs did not include checkoff.

Seed and technology fees: Seed costs and technology fees were determined by variety on a per acre basis using the Plains Cotton Growers Seed Cost Calculator based on 4.0 seeds/row-ft.

RESULTS AND DISCUSSION:

Agronomic data including plant population and nodes above white flower (NAWF) are included in Table 1. Stand counts taken on 15-June indicated significant differences among varieties with a test average of 42,253 plants/acre. Stand counts ranged from a high of 45,564 plants/acre for PhytoGen 375WRF to a low of 37,375 for All-Tex Epic RF. Weekly NAWF counts were taken beginning 13-July to 10-August. Averages were 8.0 (13-July), 5.4 (20-July), 5.2 (27-July), 4.5 (3-August), and 2.7 (10-August). Significant differences among varieties were observed for all but the 13-July observation. On 20-July, NAWF values ranged from a low of 4.7 for NexGen 3348B2RF to a high of 6.1 for All-Tex Epic RF. By 27-July two varieties, Stoneville 4288B2F and NexGen 3348B2RF, had reached cutout (NAWF=5) and values ranged from a high of 6.0 for Deltapine 0935B2RF to a low of 4.3 for NexGen 3348B2RF. On 3-August, values ranged from a high of 5.8 (Deltapine 0935B2RF) to a low of 3.5 (NexGen 3348B2RF) and all but two varieties had reached cutout. By the final observation (10-August), all varieties had reached cutout with a range from 3.8 for Deltapine 0935B2RF to a low of 2.2 for NexGen 3348B2RF.

Significant differences were noted for most yield and some economic parameters (Table 2). Picker harvested lint turnout ranged from 35.6% for NexGen 3348B2RF to 41.5% for Deltapine 0935B2RF. Lint yields varied from a low of 974 lb/acre (NexGen 3348B2RF) to a high of 1333 lb/acre (Deltapine 0935B2RF). Lint loan values ranged from a low of $0.4842/lb to a high of $0.5598/lb for Deltapine 0935B2RF and NexGen 3348B2RF, respectively. After adding lint and seed value, total value/acre ranged from a low of $670.48 for NexGen 3348B2RF, to a high of $778.52 for Deltapine 0935B2RF. When subtracting ginning, seed costs and technology fees, the net value/acre among varieties was not statistically different and ranged numerically from a high of $615.55 (Dyna-Gro 2570B2RF) to a low of $520.49 (NexGen 3348B2RF), a difference of $95.07.

Significant differences were observed for most fiber quality parameters at this location (Table 3). Micronaire values ranged from a low of 3.7 for NexGen 3348B2RF to a high of 5.0 for Deltapine 0935B2RF. Staple averaged 33.7 across all varieties with a low of 31.5 (Deltapine 0935B2RF) and a high of 35.4 (NexGen 3348B2RF). Uniformity ranged from a low of 78.9 (Croplan Genetics 3220B2RF) to a high of 81.5 (NexGen 3348B2RF), and strength ranged from a low of 26.1 g/tex for Deltapine 0935B2RF to a high of 30.1 g/tex for NexGen 3348B2RF. Significant differences were observed among varieties for percent elongation (10.6 avg), Rd or reflectance (79.5 avg) and +b or yellowness (8.6 avg), but not for leaf (1.4 avg). It should be noted that no inclement weather was encountered at this location prior to picker harvest. Furthermore, some varieties may not have been suitable for picker harvesting due to greater storm resistant bolls and shorter more compact plants. Additional multi-site and multi-year applied research is needed to evaluate varieties across a series of environments.

ACKNOWLEDGMENTS:

Appreciation is expressed to Danny Carmichael, AgriLife Research Associate - AG-CARES, Lamesa for his cooperation with this project. Further assistance was provided by Dr. Jane Dever - Texas AgriLife Research and Extension Center, Lubbock, and Dr. Eric Hequet - Associate Director, Fiber and Biopolymer Research Institute, Texas Tech University. We also greatly appreciate the Texas Department of Agriculture - Food and Fiber Research for funding of HVI testing.

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Table 1. Plant Stand and NAWF Results from the Picker Harvested Replicated Irrigated RACE Variety Demonstration, AG-CARES Farm, Lamesa, TX, 2009.

	Plant Population 15-Jun		Nodes Above White Flower (NAWF) for Week of				
Entry	plants/row ft	plants/acre	13-Jul	20-Jul	27-Jul	3-Aug	10-Aug
All-Tex Epic RF	2.9	37,375	7.9	6.1	5.8	5.2	3.2
Croplan Genetics 3220B2RF	3.3	43,038	8.0	5.5	5.1	3.9	2.5
Deltapine 0935B2RF	3.3	42,602	8.2	5.7	6.0	5.8	3.8
Dyna-Gro 2570B2RF	3.0	39,378	8.1	5.5	5.1	4.3	2.8
FiberMax 9160B2F	3.4	45,302	8.1	5.6	5.4	4.6	2.8
NexGen 3348B2RF	3.2	42,515	8.0	4.7	4.3	3.5	2.2
PhytoGen 375WRF	3.5	45,564	8.0	5.2	5.2	4.4	2.3
Stoneville 4288B2F	3.3	42,253	8.0	5.2	4.8	4.1	2.3
Test average	3.2	42,253	8.0	5.4	5.2	4.5	2.7
CV, %	4.8	4.6	2.6	5.0	10.2	10.0	18.1
OSL	0.0032	0.0021	0.8161	0.0008	0.0365	0.0005	0.0200
LSD 0.05	0.3	3,391	NS	0.5	0.9	0.8	0.9

NAWF numbers represent an average of 10 plants per rep per variety for a total of 30 plants per variety.
CV - coefficient of variation, percent.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, NS - not significant.

Table 2. Harvest Results from the Picker Harvested Replicated Irrigated RACE Variety Demonstration, AG-CARES Farm, Lamesa, TX, 2009.

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 --					
Dyna-Gro 2570B2RF	38.6	52.2	3137	1212	1638	0.5332	645.94	131.06	777.00	94.10	67.35	615.55
Deltapine 0935B2RF	41.5	51.7	3215	1333	1660	0.4842	645.69	132.83	778.52	96.45	68.60	613.47
All-Tex Epic RF	41.2	51.5	3029	1249	1561	0.5045	630.08	124.88	754.96	90.87	56.49	607.60
PhytoGen 375WRF	39.1	52.8	3119	1218	1646	0.5195	633.02	131.70	764.72	93.57	67.33	603.82
Stoneville 4288B2F	36.7	55.3	3064	1124	1693	0.5498	617.79	135.45	753.24	91.92	69.14	592.18
Croplan Genetics 3220B2RF	39.2	54.2	2905	1140	1575	0.5417	617.73	125.99	743.73	87.16	67.13	589.44
FiberMax 9160B2F	38.7	52.8	2845	1100	1503	0.5518	607.01	120.29	727.30	85.35	69.14	572.81
NexGen 3348B2RF	35.6	57.2	2739	974	1566	0.5598	545.16	125.32	670.48	82.19	67.80	520.49
Test average	38.8	53.5	3007	1169	1605	0.5306	617.80	128.44	746.24	90.20	66.62	589.42
CV, %	3.5	1.8	6.1	6.0	6.2	2.9	6.1	6.2	6.1	6.1	--	6.8
OSL	0.0016	<0.0001	0.0813†	0.0009	0.3467	0.0004	0.0955†	0.3459	0.1710	0.0813†	--	0.1586
LSD	2.4	1.7	263	124	NS	0.0271	54.03	NS	NS	7.89	--	NS

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.
$160/ton for seed.
Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Table 3. HVI Fiber Property Results from the Picker Harvested Replicated Irrigated RACE Variety Demonstration, AG-CARES Farm, Lamesa, TX, 2009.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32^{nds} inches	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
All-Tex Epic RF	4.8	32.5	79.5	26.9	11.9	1.0	78.1	8.9	2.3	1.0
Croplan Genetics 3220B2RF	4.7	33.9	78.9	27.9	11.4	1.0	79.8	8.6	2.0	1.0
Deltapine 0935B2RF	5.0	31.5	79.3	26.1	10.8	1.7	79.8	8.8	1.7	1.0
Dyna-Gro 2570B2RF	4.8	33.6	80.3	28.2	11.7	1.0	79.6	8.8	2.0	1.0
FiberMax 9160B2F	4.2	34.6	80.6	29.4	8.8	1.3	81.1	8.1	2.0	1.0
NexGen 3348B2RF	3.7	35.4	81.5	30.1	9.6	1.7	79.2	8.5	2.7	1.0
PhytoGen 375WRF	4.4	33.3	79.0	26.6	10.4	1.7	78.9	8.2	3.0	1.0
Stoneville 4288B2F	4.7	34.6	79.9	27.9	10.4	1.7	79.3	8.6	2.0	1.0
Test average	4.5	33.7	79.9	27.9	10.6	1.4	79.5	8.6	2.2	1.0
CV, %	4.2	1.9	1.0	2.5	3.1	43.8	0.7	2.6	--	--
OSL	<0.0001	<0.0001	0.0156	<0.0001	<0.0001	0.5317	0.0004	0.005	--	--
LSD	0.3	1.1	1.4	1.2	0.6	NS	0.9	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.

TITLE: Replicated Dryland Cotton Variety Demonstration, AG-CARES, Lamesa, TX, 2009.

AUTHORS: Jeff Wyatt, Tommy Doederlein, Randy Boman, Mark Kelley, and Chris Ashbrook; EA-ANR Dawson County, EA-IPM Dawson/Lynn Counties, Extension Agronomist-Cotton, Extension Program Specialist-Cotton, and Extension Assistant-Cotton.

MATERIALS AND METHODS:

Varieties:	All-Tex Epic RF, Croplan Genetics 3035RF, Deltapine 0949B2RF, FiberMax 9058F, FiberMax 9160B2F, NexGen 3410RF, PhytoGen 375WRF, and Stoneville 4288B2F
Experimental design:	Randomized complete block with 3 replications
Seeding rate:	4 seeds/row-ft in solid planted 40-inch row spacing (John Deere MaxEmerge vacuum planter)
Plot size:	4 rows by length of field (~850 ft)
Planting date:	21-May
Weed management:	Trifluralin was applied preplant incorporated at 1 pt/acre across all varieties on 15-April. Roundup PowerMax was applied over-the-top on 16-June at 32 oz/acre with AMS. Two cultivation events were conducted at this location.

Rainfall:

April:	0.01"	August:	0.01"
May:	1.25"	September:	0.35"
June:	1.79"	October:	0.76"
July:	1.22"		

Total rainfall: 5.39"

Insecticides:	This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.
Fertilizer:	Applied 40 lbs N/acre using 32-0-0 on 9-March.
Harvest aids:	Harvest aids included 21 oz/acre Prep + 1.5 oz/acre ET with 1% v/v crop oil on 25-September followed by 24 oz/acre Gramoxone Inteon with 0.25% v/v NIS on 2-October.
Harvest:	Plots were harvested on 3-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 AgriLife Research and Extension Center at Lubbock to determine gin turnouts.

Fiber analysis: Lint samples were submitted to the Fiber and Biopolymer Research Institute 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 $3.00 per cwt. of bur cotton and seed value/acre was based on $160/ton. Ginning costs did not include checkoff.

Seed and technology fees: Seed costs and technology fees were determined by variety on a per acre basis using the Plains Cotton Growers Seed Cost Calculator based on 4.0 seeds/row-ft.

RESULTS AND DISCUSSION:

Weed pressure at this site would generally be considered light to medium and consisted mainly of silverleaf nightshade, pigweed, morningglory spp. "escapes", and puncturevine. Hot, dry conditions during and after planting resulted in significant stress on the trial.

Agronomic data including plant population and nodes above white flower (NAWF) are included in Table 1. Stand counts taken on 15-June indicated no significant differences among varieties with a test average of 26,790 plants/acre. Stand counts ranged from a high of 30,405 plants/acre for PhytoGen 375WRF to a low of 24,045 for All-Tex Epic RF. Weekly NAWF counts were taken beginning 13-July to 10-August. Averages were 6.9 (13-July), 6.0 (20-July), 5.3 (27-July), 3.9 (3-August), and 2.4 (10-August). Significant differences among varieties were observed for the 20-July observation only (alpha=0.10) and values ranged from a low of 5.3 for Deltapine 0949B2RF to a high of 6.4 for All-Tex Epic RF.

Significant differences were noted for most yield and some fiber quality parameters measured (Tables 2 and 3). Lint turnout ranged from 37.0% for Deltapine 0949B2RF to 29.8% for NexGen 3410RF. Lint yields varied from a low of 361 lb/acre (NexGen 3410RF) to a high of 550 lb/acre (All-Tex Epic RF). Lint loan values ranged from a low of $0.4657/lb to a high of $0.4897/lb for NexGen 3410RF and Croplan Genetics 3035RF, respectively. After adding lint and seed value, total value/acre ranged from a low of $221.22 for NexGen 3410RF, to a high of $330.06 for All-Tex Epic RF. When subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of $228.08 (All-Tex Epic RF) to a low of $128.16 (NexGen 3410RF), a difference of $99.92. No significant differences were observed for micronaire (3.9 average), staple (31.8 average), uniformity (77.8% average) or strength (25.0 g/tex average). Significant differences were observed among varieties for percent elongation (9.5 avg), leaf grade (2.4 avg), Rd or reflectance (79.0 avg) and +b or yellowness (7.8). These data indicate that substantial 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.

ACKNOWLEDGMENTS:

Appreciation is expressed to Danny Carmichael, AgriLife Research Associate - AG-CARES, Lamesa for his cooperation with this project. Further assistance was provided by Dr. Jane Dever - Texas AgriLife Research and Extension Center, Lubbock, and Dr. Eric Hequet - Associate Director, Fiber and Biopolymer Research Institute, Texas Tech University. We also greatly appreciate the Texas Department of Agriculture - Food and Fiber Research for funding of HVI testing.

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Table 1. Plant stand and NAWF results from the replicated dryland RACE variety demonstration, AG-CARES Farm, Lamesa, TX, 2009

	Plant Population 15-Jun		Nodes Above White Flower (NAWF) for Week of				
Entry	plants/row ft	plants/acre	13-Jul	20-Jul	27-Jul	3-Aug	10-Aug
All-Tex Epic RF	1.8	24,045	7.1	6.4	5.7	3.8	2.6
Croplan Genetics 3035RF	2.1	27,704	7.3	6.3	5.2	4.0	2.5
Deltapine 0949B2RF	2.0	25,701	6.6	5.3	5.3	4.2	2.5
FiberMax 9058F	1.8	24,132	6.7	6.1	5.2	4.0	2.1
FiberMax 9160B2F	2.0	26,397	6.3	6.1	5.4	3.9	2.2
NexGen 3410RF	2.3	29,447	7.1	5.8	4.5	3.1	1.9
PhytoGen 375WRF	2.3	30,405	7.1	6.1	5.7	4.1	2.7
Stoneville 4288B2F	2.0	26,485	7.2	6.1	5.2	4.1	2.5
Test average	2.0	26,790	6.9	6.0	5.3	3.9	2.4
CV, %	14.9	14.6	6.6	5.8	9.3	14.4	17.3
OSL	0.4388	0.4466	0.2021	0.0624†	0.1968	0.4057	0.2606
LSD 0.10	NS	NS	NS	0.5	NS	NS	NS

NAWF numbers represent an average of 10 plants per rep per variety for a total of 30 plants per variety.
CV - coefficient of variation, percent.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, †denotes significance at the 0.10 level, NS - not significant.

Table 2. Harvest results from the replicated dryland RACE variety demonstration, AG-CARES Farm, Lamesa, TX, 2009.

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 --					
All-Tex Epic RF	36.5	51.9	1505	550	782	0.4868	267.53	62.53	330.06	45.16	56.82	228.08 a
Croplan Genetics 3035RF	36.1	49.2	1369	494	674	0.4897	241.94	53.93	295.87	41.08	58.39	196.39 b
FiberMax 9058F	33.9	53.1	1307	443	694	0.4783	211.70	55.56	267.25	39.21	60.38	167.66 c
PhytoGen 375WRF	36.1	51.9	1226	442	636	0.4818	213.10	50.88	263.98	36.78	67.72	159.49 cd
FiberMax 9160B2F	35.5	51.7	1186	421	613	0.4798	201.93	49.02	250.96	35.57	69.54	145.85 cde
Stoneville 4288B2F	31.5	53.7	1306	411	701	0.4807	197.45	56.11	253.56	39.18	69.54	144.84 cde
Deltapine 0949B2RF	37.0	50.7	1116	413	565	0.4758	196.58	45.21	241.79	33.47	68.99	139.32 de
NexGen 3410RF	29.8	55.1	1209	361	666	0.4657	167.95	53.27	221.22	36.26	56.80	128.16 e
Test average	34.5	52.2	1278	442	666	0.4798	212.27	53.31	265.58	38.34	63.52	163.72
CV, %	3.4	3.4	6.6	6.8	6.6	5.4	6.8	6.5	6.7	6.6	--	9.4
OSL	<0.0001	0.0304	0.0017	<0.0001	0.0014	0.9700	<0.0001	0.0014	0.0001	0.0017	--	<0.0001
LSD	2.1	3.1	147	52	77	NS	25.28	6.11	31.31	4.41	--	26.93

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:
$3.00/cwt ginning cost.
$160/ton for seed.
Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Table 3. HVI fiber property results from the replicated dryland RACE variety demonstration, AG-CARES Farm, Lamesa, TX, 2009.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32nds inches	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
All-Tex Epic RF	4.2	30.8	78.5	25.3	11.0	1.7	78.4	8.3	3.0	1.0
Croplan Genetics 3035RF	4.1	31.4	78.7	26.1	10.9	2.0	78.7	8.2	2.7	1.0
Deltapine 0949B2RF	4.0	31.8	77.9	25.8	10.0	2.7	79.3	7.7	3.0	1.0
FiberMax 9058F	3.6	32.5	77.4	25.2	7.9	3.3	80.3	7.2	3.0	1.0
FiberMax 9160B2F	3.7	31.5	77.7	24.5	8.2	2.0	80.2	7.7	3.0	1.0
NexGen 3410RF	3.5	32.7	77.4	25.2	9.3	4.0	78.0	7.9	3.0	1.0
PhytoGen 375WRF	4.0	31.5	77.3	23.5	9.2	1.3	78.3	7.5	3.0	1.0
Stoneville 4288B2F	4.0	31.9	77.7	24.4	9.4	2.0	78.8	7.8	3.0	1.0
Test average	3.9	31.8	77.8	25.0	9.5	2.4	79.0	7.8	3.0	1.0
CV, %	10.7	3.3	1.6	5.7	3.9	26.2	0.4	3.7	--	--
OSL	0.3555	0.4150	0.7717	0.4786	<0.0001	0.0018	<0.0001	0.0054	--	--
LSD	NS	NS	NS	NS	0.6	1.1	0.6	0.5	--	--

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.

TITLE:

Replicated Dryland Conventional Cotton Variety Demonstration, AG-CARES, Lamesa, TX, 2009.

AUTHORS:

Jeff Wyatt, Tommy Doederlein, Randy Boman, Mark Kelley, and Chris Ashbraook; EA-ANR Dawson County, EA-IPM Dawson/Lynn Counties, Extension Agronomist-Cotton, Extension Program Specialist-Cotton, and Extension Assistant-Cotton.

MATERIALS AND METHODS:

Varieties:	Arkansas 9803-17-04, Bronco 141, Bronco 263, Bronco 7139, FiberMax 9058F (included as a transgenic check), Seed-Tec Genetics CT-210, Seed-Tec Genetics CT-212, and Seed-Tec Genetics Linwood
Experimental design:	Randomized complete block with 3 replications
Seeding rate:	4 seeds/row-ft in solid planted 40-inch row spacing (John Deere MaxEmerge vacuum planter)
Plot size:	4 rows by length of field (800 ft)
Planting date:	21-May
Weed management:	**The entire project was managed as conventional cotton.** Trifluralin was applied preplant incorporated at 1 pt/acre across all varieties on 15-April. Plots were hoed on 25-June and spot sprayed with a 1% Roundup PowerMax solution on 17-July. Two cultivation events were conducted at this location.

Rainfall:				
	April:	0.01"	August:	0.01"
	May:	1.25"	September:	0.35"
	June:	1.79"	October:	0.76"
	July:	1.22"		
Total rainfall:	5.39"			

Insecticides:	This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.
Fertilizer:	Applied 190 lbs/acre 20-10-0-7 on 9-March.
Harvest aids:	Harvest aids included 21 oz/acre Prep + 1.5 oz/acre ET with 1% v/v crop oil on 21-September followed by 24 oz/acre Gramoxone Inteon with 0.25% v/v NIS on 2-October.
Harvest:	Plots were harvested on 31-October 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 AgriLife Research and Extension Center at Lubbock to determine gin turnouts.
Fiber analysis:	Lint samples were submitted to the Fiber and Biopolymer Research Institute 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 $3.00 per cwt. of bur cotton and seed value/acre was based on $160/ton. Ginning costs did not include checkoff.

Seed and technology fees: Seed costs and technology fees were not included in the determination of net value due to differences weed control systems.

RESULTS AND DISCUSSION:

All entries in this trial were managed as conventional cotton even though a FiberMax 9058F (Roundup Ready Flex) variety was included for comparison. Weed pressure at this site would generally be considered light to medium and consisted mainly of silverleaf nightshade, pigweed, and puncturevine. Hot, dry conditions during and after planting resulted in significant stress on the trial. Even though a Roundup Ready Flex variety was planted as a buffer on the edges of the trial, some glyphosate drift from an adjacent field was encountered early in the growing season. **Conventional varieties in the first replicate were affected by this drift, which somewhat reduced yields.**

Significant differences were noted for most yield and some fiber quality parameters measured (Tables 1 and 2). Lint turnout ranged from 36.3% for Seed-Tec Genetics CT-210 to 30.8% for Bronco 263. Lint yields varied from a low of 325 lb/acre (Bronco 263) to a high of 522 lb/acre (FiberMax 9058F). Lint loan values ranged from a low of $0.4775/lb to a high of $0.5163/lb for Bronco 141 and Arkansas 9803-17-04, respectively. After adding lint and seed value, total value/acre ranged from a low of $210.37 for Bronco 263, to a high of $323.47 for FiberMax 9058F. When subtracting ginning costs, the net value/acre among varieties ranged from a high of $278.59 (FiberMax 9058F) to a low of $178.76 (Bronco 263), a difference of $99.83. **Net value/acre does not include seed costs (and technology fees for the FiberMax 9058F), or weed control cost.** Micronaire values ranged from a low of 3.7 for Bronco 263 to a high of 4.8 for Seed-Tec Genetics CT-210. Staple length averaged 32.0 across all varieties with a low of 30.7 (Seed-Tec Genetics CT-210) and a high of 32.9 (Arkansas 9803-17-04). Uniformity ranged from a low of 77.6 (FiberMax 9058F) to a high of 79.7 (Arkansas 9803-17-04), and strength ranged from a low of 25.3 g/tex for Bronco 141 to a high of 27.8 g/tex for Seed-Tec Genetics CT-212. Significant differences were observed among varieties for percent elongation (9.2 avg), Rd or reflectance (79.4 avg) and +b or yellowness (7.8) but not for leaf grade (2.4 avg). These data indicate that substantial 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 conventional varieties across a series of environments.

ACKNOWLEDGMENTS:

Appreciation is expressed to Danny Carmichael, AgriLife Research Associate - AG-CARES, Lamesa for his cooperation with this project. Further assistance was provided by Dr. Jane Dever - Texas AgriLife Research and Extension Center, Lubbock, and Dr. Eric Hequet - Associate Director, Fiber and Biopolymer Research Institute, Texas Tech University. We also greatly appreciate the Texas Department of Agriculture - Food and Fiber Research for funding of HVI testing.

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Table 1. Harvest Results from the Replicated Dryland Conventional Variety Demonstration, AG-CARES Farm, Lamesa, TX, 2009.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Net value*
	-------- % --------		------------- lb/acre -------------			$/lb	---------------------------------- $/acre ----------------------------------				
FiberMax 9058F	34.9	53.0	1496	522	793	0.4997	260.04	63.43	323.47	44.88	278.59 a
Bronco 7139	35.5	51.5	1239	440	638	0.5015	220.81	51.02	271.83	37.16	234.67 b
Seed-Tec Genetics CT-210	36.3	54.0	1210	439	654	0.4872	214.12	52.31	266.44	36.31	230.13 b
Seed-Tec Genetics CT-212	34.8	53.7	1149	400	616	0.5012	200.49	49.34	249.83	34.47	215.36 bc
Seed-Tec Genetics Linwood	33.9	50.5	1142	387	577	0.4925	190.85	46.14	236.99	34.26	202.73 cd
Bronco 141	31.2	56.6	1160	361	656	0.4775	172.58	52.47	225.05	34.79	190.25 cd
Arkansas 9803-17-04	34.3	51.4	968	332	498	0.5163	171.41	39.81	211.22	29.04	182.18 d
Bronco 263	30.8	56.7	1054	325	598	0.4993	162.55	47.81	210.37	31.61	178.76 d
Test average	34.0	53.4	1177	401	629	0.4969	199.11	50.29	249.40	35.31	214.08
CV, %	4.7	2.7	5.9	5.9	6.0	5.1	7.3	6.0	6.8	5.9	7.1
OSL	0.0068	0.0005	<0.0001	<0.0001	<0.0001	0.7340	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
LSD	2.8	2.5	122	41	66	NS	25.42	5.25	29.57	3.67	26.65

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:
$3.00/cwt ginning cost.
$160/ton for seed.
Value for lint based on CCC loan value from grab samples and FBRI HVI results.
*Net value after ginning. Seed/technology costs if applicable were not removed.

Table 2. HVI Fiber Property Results from the Replicated Dryland Conventional Variety Demonstration, AG-CARES Farm, Lamesa, TX, 2009.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32^{nds} inches	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
Arkansas 9803-17-04	4.3	32.9	79.7	27.8	9.6	2.7	78.5	7.7	3.0	1.0
Bronco 141	3.8	31.6	77.8	25.3	8.8	2.0	79.7	8.1	2.7	1.0
Bronco 263	3.7	32.7	79.0	27.7	8.5	3.3	79.7	7.8	3.0	1.0
Bronco 7139	4.1	32.2	78.6	27.0	8.6	2.7	79.2	7.8	3.0	1.0
FiberMax 9058F	3.8	32.8	77.6	25.3	8.1	2.0	80.2	7.0	3.0	1.0
Seed-Tec Genetics CT-210	4.8	30.7	78.5	26.9	9.8	1.0	79.9	7.9	3.0	1.0
Seed-Tec Genetics CT-212	4.6	31.1	78.4	27.8	10.4	2.3	80.2	8.0	2.3	1.0
Seed-Tec Genetics Linwood	4.7	32.2	78.6	27.7	10.1	3.3	77.4	8.2	3.3	1.0
Test average	4.2	32.0	78.5	26.9	9.2	2.4	79.4	7.8	2.9	1.0
CV, %	8.6	3.3	1.3	5.4	5.1	50.4	0.8	2.3	--	--
OSL	0.0078	0.1600	0.3756	0.2025	0.0002	0.3617	0.0007	<0.0001	--	--
LSD	0.6	NS	NS	NS	0.8	NS	1.1	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.

TITLE:

6-Year Summary of the Replicated Dryland Cotton Seeding Rate and Planting Pattern Demonstration, Ag-CARES, Lamesa, TX, 2003-2009.

AUTHORS:

Randy Boman, Mark Kelley, and Tommy Doederlein; Extension Agronomist-Cotton, Extension Program Specialist-Cotton, and EA-IPM Dawson/Lynn Counties

MATERIALS AND METHODS:

Varieties: 2003-2005 AFD 3511R, 2006-2009 FiberMax 9058F (2006 lost due to drought)

Experimental design: Randomized complete block with 3 replications

Seeding rates and planting patterns: 2, 4, and 6 seeds/row-ft down each row in 40-inch row spacing (John Deere MaxEmerge vacuum planter). For ease of planting, all plots were seeded in a solid pattern and shortly after seedling emergence, cultivator sweeps were used to destroy seedling plants in the skip row to appropriately establish the plant 2 and skip 1 planting pattern. Seeding rates for the plant 2 and skip 1 planting pattern were ultimately one-third less on a land-acre basis 16 rows by 250 ft long

Planting dates: June 11, 2003; June 8, 2004; June 2, 2005; 2006 lost; May 23, 2007; June 2, 2008; May 21, 2009

Weed management: Trifluralin was typically applied preplant incorporated at 1-1.25 pt/acre each year. Glyphosate was typically applied over-the-top in early June with 17 lbs/100 gallons of ammonium sulfate during years when AFD 3511RR was planted. When the planted variety was changed in 2006 to FiberMax 9058F, glyphosate was generally applied in June or July with ammonium sulfate based spray additive. Plots were cultivated as needed for weed escapes.

Rainfall: April - September rainfall

2003:	10.68"	2004:	13.96"
2005:	6.50"	2006:	lost crop
2007:	18.50"	2008:	14.19"
2009:	5.39"		

Harvest aids: Gramoxone Max or Inteon (paraquat) alone or tank mixes of Prep (ethephon) and Def (tribufos) were applied each year, with rates dependent upon crop condition.

Harvest: The center 8 rows of the 16 row plots were harvested 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 on a land-acre basis.

Gin turnout: Grab samples were taken by plot and ginned at the Texas AgriLife Research and Extension Center at Lubbock to determine gin turnouts.

Fiber analysis: Lint samples were submitted to the Fiber and Biopolymer Research Institute at Texas Tech University for HVI analysis. Commodity Credit Corporation (CCC) Loan values were determined for each plot based on HVI results. **The 2009 Loan chart was used to standardize loan value data for all years.**

Technology fees: Seed and technology fees were based on the 2, 4, and 6 seed/row-ft for the solid and the 2 x 1 skip row pattern (66.6% of solid planting rate) and reported on the land acre basis. **2009 seed and technology fee prices**

for FiberMax 9058F were assumed in the analysis. Seed and technology fee pricing was obtained from the 2009 Plains Cotton Growers Seed Cost Calculator. Land-acre basis seeding rates and seed and technology fee costs based on 2009 pricing for FiberMax 9058F were for the solid planted: 2 seed/row-ft, 26,136, $30.18; 4 seed/row-ft, 52,272, $60.35; and 6 seed/row-ft, 78,408, $90.53. For the 2x1 skip row pattern these were: 2 seed/row-ft, 17,424, $20.12; 4 seed/row-ft, 34,848, $40.24; and 6 seed/row-ft, 52,272, $60.35. The 2x1 skip row pattern was assumed to have one-third less seed on a land-acre basis.

Statistical analysis: Gross loan values (data not presented) were calculated by multiplying lint yields by the 2009 Commodity Credit Corporation loan chart for the HVI values obtained. Seed value was set at $160/ton (data not presented). Ginning cost was set at $3/cwt of bur cotton (data not presented). **Net value per land acre was determined using combined lint and seed values, minus ginning costs and 2009 seed and technology fee costs (for FiberMax 9058F).** Data were combined across years using the Mixed procedure in SAS 9.1 for Windows. Cultivar, Year(Cultivar) and Replicate(Cultivar*Year) were considered random effects. Least-squares means for the six-year data set were reported.

RESULTS AND DISCUSSION:

For the duration of the project, no substantial stand losses were encountered due to environmental or mechanical damage. Wind erosion control practices were timely, accurate and effective. Lint turnout (mean 30.2%) differences were minor but significant at the 0.05 level for 2 vs. 4 and 6 seed/ft solid planted (Table 1). The 6 seed/ft seeding rate reduced turnout by a difference of 1.3% when compared to 2 seed/ft. Lint yield (mean 421 lb/acre) differences (on a land-acre basis) were noted at the 0.10 level when comparing 2 and 4 vs. 6 seed/ft solid planted. Lint yield was significantly lower for the 6 seed/ft solid planted, attributed to excessive plant competition under dryland conditions. Loan value (mean 0.5289 $/lb) differences were noted at the 0.10 probability level when comparing 2 vs. 6/seed/ft solid and at the 0.05 probability level when comparing 2 vs. 4 seed/ft solid planted and 2 vs. 6 seed/ft 2x1 skip pattern. These arise from slight differences in staple and uniformity. As seeding rate increased, net value per land acre decreased regardless of planting pattern. This was a result of higher seed and technology fee costs associated with higher seeding rates. When comparing similar seeding rates (52,272) on a land-acre basis (4 seed/ft solid vs. 6 seed/ft 2x1 skip), no differences were observed. Seeding rate and planting pattern had no significant effect on micronaire (mean 4.1 units) or strength (mean 28.6 g/tex). Staple (mean 34.8 32nds inch) was reduced by the highest seeding rate in the solid planting pattern when comparing 2 vs. 6 seed/ft. No differences in staple were observed among seeding rates within 2X1 skip or when comparing 4 seed/ft solid vs. 6 seed/ft 2x1 skip planting patterns. Uniformity of 4 and 6 seed/ft was reduced when compared to 2 seed/ft in the solid planted treatments. No differences in uniformity were noted in the 2x1 skip row planting pattern. When comparing similar seeding rates on a land-acre basis slightly higher uniformity (mean 80.5%) was noted for the 2x1 skip row planting pattern vs. the solid planted.

CONCLUSIONS:

These data indicate that over a 6-year time period the 2x1 skip row planting pattern did not exhibit any substantial agronomic (yield and most quality characteristics) and economic benefit (in terms of net value per land acre) when compared to the solid planting pattern **at similar seeding rates on a land acre basis (4 seed/ft solid vs. 6 seed/ft 2x1 skip)**. No differences were noted between the 4 seed/ft solid and the 6 seed/ft 2x1 skip row pattern for lint turnout and yield, loan value, net value, micronaire, staple, and strength. There was a small, but significant, effect of these two comparison treatments on uniformity (0.8% favoring the 6 seed/ft skip row pattern). **This project was fertilized and managed (herbicides, insecticides, harvest-aid chemicals) uniformly across both skip row and solid planting patterns. It did not include evaluation of potential reduced input costs by not fertilizing, spraying, etc. the skip row. If these possible input savings on the skip row could be implemented, cost reductions favoring skip row production are likely.**

When comparing the lowest seeding rate (2 seed/ft) to the highest seeding rate (6 seed/ft), the highest seeding rate had a greater negative effect on lint yield and net value for the solid planting pattern than for the 2x1 skip row pattern. This is due to excessive competition with the higher plant population arising from the 6 seed/ft seeding rate when compared to 2 seed/ft. In terms of net value, seeding rate had a large effect regardless of planting pattern due to higher seed and technology fee costs.

We have been planting about 3.0-4.0 seed/ft in solid-planted 40-inch rows in AG-CARES dryland projects. Based on this work, it appears that somewhat fewer than that will not adversely affect potential profitability over the long term however, **knowing seed quality and utilizing effective seed treatments are critical, and potential stand losses due to weather should be considered**. **These data can also be used to support the fact that if producers are planting conventional varieties with much less cost on a per acre basis than transgenic, then seeding rates for those should not be excessive, as 6 seed/ft in solid planted stands reduced yield and some fiber quality parameters.**

ACKNOWLEDGMENTS:

Appreciation is expressed to Danny Carmichael, AgriLife Research Associate - AG-CARES, Lamesa for his cooperation with this project. Further assistance was provided by Dr. Jane Dever - Texas AgriLife Research and Extension Center, Lubbock, and Dr. Eric Hequet - Associate Director, Fiber and Biopolymer Research Institute, Texas Tech University. We also greatly appreciate the Texas Department of Agriculture - Food and Fiber Research for funding of HVI testing.

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Table 1. Six-year Least Squares Means of Agronomic and Economic Results of the Dryland Seeding Rate by Planting Pattern Trials (lint yield and net value expressed on a land-acre basis), Lamesa - AG-CARES 2003-2009.

Treatment	Lint turnout	Lint yield	Loan value	Net value††	Micronaire	Staple	Uniformity	Strength
	%	lb/acre	$/lb	$/acre	units	32nds inch	%	g/tex
Solid planting pattern								
2 seed/ft (26,136/acre with $30.18/acre cost)	30.8	420	0.5336	207.94	4.1	34.9	80.6	28.8
4 seed/ft (52,272/acre with $60.35/acre cost)	29.6	420	0.5169	170.90	4.0	34.5	79.8	28.3
6 seed/ft (78,408/acre with $90.53/acre cost)	29.5	393	0.5201	127.59	4.0	34.2	80.0	28.5
2x1 skip row planting pattern								
2 seed/ft (17,424/acre with $20.12/acre cost)	30.3	435	0.5429	230.60	4.2	35.2	80.9	28.6
4 seed/ft (34,848/acre with $40.24/acre cost)	30.4	433	0.5332	205.39	4.1	35.2	81.0	28.8
6 seed/ft (52,272/acre with $60.35/acre cost	30.4	424	0.5267	176.65	4.1	34.9	80.6	28.4
Mean	30.2	421	0.5289	186.51	4.1	34.8	80.5	28.6
Differences of least-squares means	----------	----------	----------	Pr > |t|	----------	----------	----------	----------
2 seed/ft solid vs. 4 seed/ft solid	*	NS	*	*	NS	NS	*	NS
2 seed/ft solid vs. 6 seed/ft solid	*	†	†	*	NS	*	†	NS
4 seed/ft solid vs. 6 seed/ft solid	NS	†	NS	*	NS	NS	NS	NS
2 seed/ft 2x1 skip vs. 4 seed/ft 2x1 skip	NS	NS	NS	*	NS	NS	NS	NS
2 seed/ft 2x1 skip vs. 6 seed/ft 2x1 skip	NS	NS	*	*	NS	NS	NS	NS
4 seed/ft 2x1 skip vs. 6 seed/ft 2x1 skip	NS	NS	NS	*	NS	NS	NS	NS
4 seed/ft solid vs. 6 seed/ft 2x1 skip	NS	NS	NS	NS	NS	NS	*	NS

†, * indicate significance at the 0.10 and 0.05 probablility levels, respectively, NS - not signficant.
†† - Net value/land acre was calculated using combined lint and seed value minus ginning cost and 2009 seed and technology fees for FiberMax 9058F.

TITLE:

Effect of Irrigation on Nematicides in Cotton

AUTHORS:

Terry Wheeler, Victor Mendoza, Gareth Clark, and Justin Carthel

MATERIALS AND METHODS:

Variety:	Fibermax 9160B2F
Plot size:	4-rows wide, length of the field from turnrow to turnrow.

RESULTS:

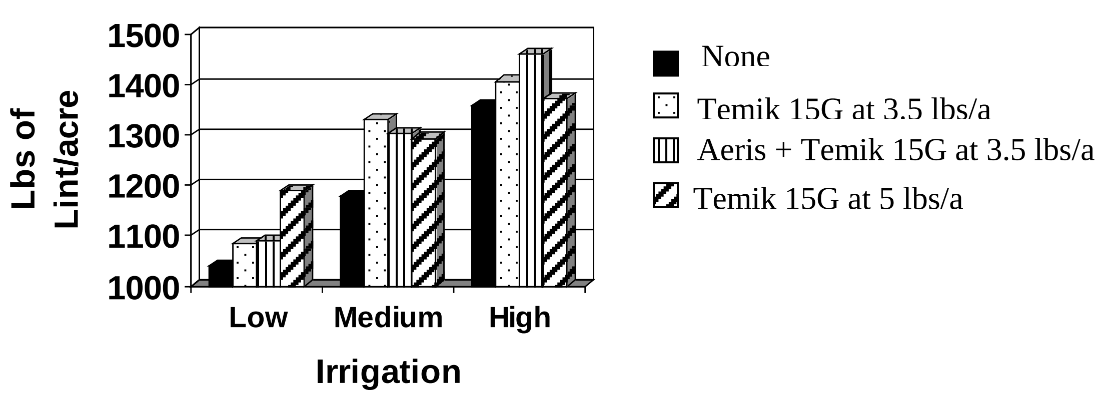
Lint yield increased as irrigation rate increased with the low, medium, and high rates, yielding 1100, 1276, and 1399 lbs of lint/acre respectively (Table 1). Plots treated with Temik 15G at 5 lbs/acre and Aeris + Temik 15G at 3.5 lbs/acre yielded better than the untreated check (Table 2). Temik at 3.5 lbs/a averaged 11 lbs of lint/a less than at 5 lbs/acre or with Aeris.

Table 1. The effects of irrigation rate on yield, plant stand, and root-knot nematode population density.

Irrigation rate	Lbs of Lint/acre	Plants/ Ft. row	Root-knot/ 500 cm^3 soil
Low	1,100 c	3.06 ab	2,640
Medium	1,276 b	3.14 a	3,050
High	1,399 a	2.91 b	4.010

Table 2. The effects of nematicide treatment on yield, plant stand, and root-knot nematode population density.

Nematicide Treatment	Lbs of Lint/acre	Plants/ Ft. row	Root-knot/ 500 cm^3 soil
None	1,192 b	3.0 a	3,267
Temik 15G at 3.5 lbs/a	1,274 ab	3.2 a	4,280
Aeris + Temik 15G at 3.5 lbs/a	1,285 a	2.8 b	2,213
Temik 15G at 5 lbs/a	1,285 a	3.1 a	3,173



TITLE:

Effect of Temik 15G and Vydate on Yield of Cotton Under Drip Irrigation.

AUTHORS:

Terry Wheeler, Victor Mendoza, Garreth Clark, and Justin Carthel

MATERIALS AND METHODS:

Variety:	Americot 1532B2RF
Planting Date:	21 May
Plot Size:	35 ft. long, 2 rows wide, four replications

Temik 15G (3.5 lbs/acre) was applied at planting to ½ of the plots, while Vydate was injected through the drip system (placed every other furrow) at pinhead size square at a rate of 17 oz/acre to ½ of the plots. The four treatment combinations were: no nematicide; Temik 15G at 3.5 lbs/acre; Vydate at 17 oz/acre; and Temik 15G + Vydate. One row of the test plot was hand harvested on 24 and 25 October. A test sample was ginned from two of the four replications to determine turnout.

RESULTS AND DISCUSSION:

There was no significant difference with yield between the four treatment combinations. The treatment with Vydate CLV alone yielded 6% more (1,724 lbs of lint/acre) than the untreated check (1,624 lbs of lint/acre), and Temik 15G alone yielded 4% more (1,687 lbs of lint/acre) than the untreated check. The combination of Vydate and Temik 15G yielded 7% more (1,745 lbs of lint/acre) than the untreated check. At this time, the drip irrigation field has an inconsistent population density of root-knot nematode, compared with the center pivot system. It is unlikely that a nematicide will affect yield in the drip field to the same extent as yield under the center pivot system. It is interesting that all three treatments with nematicides had higher average yields than the untreated check, and suggests that nematodes are starting to cause some damage in the drip field. It may be necessary to go to large plots in the drip area and compare yields with and without Vydate, in order to determine the true benefit of application of this product in the drip lines.

TITLE:

Effect of Cover Crop and Nitrogen Fertigation Rate in Subsurface Drip Irrigated Cotton at AG-CARES, Lamesa, TX, 2009

AUTHORS:

Kevin Bronson, Adi Malapati, Megha Parajulee, Dana Porter, and Jason Nusz.

METHODS AND PROCEDURES:

Experimental Design:	Randomized complete block with 6 replications
Plot Size:	53.3 ft wide (16, 40 inch row) and 823 ft long.
Experimental area:	6 ac
Soil Type:	Amarillo sandy loam
Variety :	Americot 1532 B2RF
Soil Sampling:	1/6 acre grid
Irrigation:	6 inches pre-plant, 9 inches in-season
Duration of fertigation:	21 days from first bloom
Planting Date:	May 20^{th}
Harvest Date:	Oct 24^{th}

RESULTS AND DISCUSSION:

Irrigated cotton (*Gossypium hirsutum* L.) is grown on half of the cotton area in the Southern High Plains (SHP) of Texas Water and nitrogen (N) are the major constraints to cotton production in this region. Subsurface drip irrigation (SDI) systems can convey water to the root zone with a greater efficiency than other systems including furrow irrigation and LEPA systems, and have been increasingly adopted in the Southern High Plains. Recent estimates of cropland in SDI in the SHP exceed 250,000 ac.

Cotton fields are most susceptible to erosion when there is no vegetative ground cover or plant residue on the soil surface. A cover crop like rye can provide a vegetative cover during spring wherein there is no crop to alleviate force of falling raindrops, which otherwise would detach soil particles and make them prone to erosion. It also slows the rate of runoff, thus improving moisture infiltration into the soil. Effect of cover crop during the winter/spring and nutrient management in SDI systems has not received as much attention as water management. The rate of N fertilizer injection in SDI cotton need optimizing in order to prevent N loss through leaching and denitrification.

A rye cover crop was planted in the experimental field immediately after cotton harvest in half of the plot area (8 rows), leaving the other half in conventional tillage. Fine-tuning the timing of N fertigation can result in improved N use efficiency and profit in cotton. Three rates of N fertilizer (50, 100, and 150 lb N/ac) were injected over a 21 day period, starting at first bloom.

Pre-plant soil test NO_3 was low, but greater in conventional –till than conservation tillage (Table 1). Nitrogen uptake by the rye cover crop in conservation tillage explains this trend. A significant interaction between N fertilizer rate and the tillage system was observed (Table 2).
On average, however, yields between the two tillage systems did not differ.

Table 1. Pre-plant Soil Profile Nitrate-Nitrogen as affected by Tillage and Winter Cover Crop. In SDI, Lamesa, TX 2009

Depth	Conven. till	Cover crop with conserv-till
feet	-------- lb NO_3-N/ac ---------	
0 - 2	8 a	9 a
0 - 3	11 a	10 a
0 – 4	15a	13 a
0 – 5	22 a	18 a

Means in a row followed by the same letter are not significantly different at P = 0.05

Table 2. Lint yields as affected by tillage and Winter cover crop and Nitrogen fertigation rate, in SDI, Lamesa, TX 2009

	Nitrogen fertigation rate (lb N/ac)		
	50	100	150
Conventional tillage	1293 Ac	1400 Ab	1462 Aa
Cover crop with Conservation tillage	1237 Bc	1396 Ab	1465 Aa

Means in a row followed by the same lower caps letter are not significantly different at P = 0.05
Means in a column followed by the same upper caps letter are not significantly different at P = 0.05

TITLE:

Effect of Cover Crop on Arthropod Population Dynamics in Subsurface Drip Irrigated Cotton at AGCARES, Lamesa, TX, 2009

AUTHORS:

Megha Parajulee, Bo Kesey, Stanley Carroll, and Kevin Bronson; Associate Professor, Technician II, Associate Research Scientist, Professor

METHODS AND PROCEDURES:

Experimental design:	Randomized complete block with 6 replications
Plot size:	53.3 ft wide (16, 40-inch rows) and 823 ft long
Experimental area:	6 acre
Soil type:	Amarillo sandy loam
Variety:	Americot 1532 B2RF
Soil sampling:	1/6 acre grid
Irrigation:	6 inches pre-plant, 9 inches in-season
N fertilizer rate:	100 lbs/ac during the season as fertigation
Duration of fertigation:	21 days from first bloom
Planting date:	May 20, 2009
Harvest date:	October 20, 2009

A small grain cover crop was planted in the experimental field immediately after cotton harvest in 2008 in half of each experimental plot area (8 rows X 823 ft), whereas the other half was exposed to conventional tillage. There were three blocks each for conservation and conventional tillage treatments that served as replications. Arthropods were sampled weekly from plant emergence until crop cut-out. In 2009, no arthropods were detected in any significant numbers to be reported. When plants were at about 5-6 leaf stage (July 6), 10 randomly selected plants per plot were measured for plant height and total leaf area per plant. Plant monitoring was conducted using cotton management program called COTMAN. COTMAN plant mapping was conducted weekly from July 7 to August 6.

RESULTS AND DISCUSSION:

Thrips activity was very low at the AGCARES research farm in 2009 and the density remained mostly at or below detectable levels throughout the growing season. Other insects (pest or predators) were also at very low densities for them to be recorded or reported. Plant growth pattern, as indicated by plant height, was similar between conservation and conventional tillage plots. Also, total leaf area per plant was similar between conventional and conservation tillage plots. It is possible that the loss of crop residue early in the season made the two cropping regimes near identical in terms of plant growth and fruiting profile.

Plant monitoring at weekly intervals showed very subtle differences in fruit production and retention profiles between the two tillage systems (Table 1). Although slight higher fruit production was noted as the plants begin setting fruit (July 7-28), the numerical differences did not prove to be significantly different. By the time of peak bloom, the fruit set and retention variables were nearly identical between conventional and no-tillage plots (Table 1). As a result, the lint yield did not vary between the two treatments. We intend to continue this study as a long-term research to elucidate the effect of tillage on plant growth, fruiting profile, insect activity, and resulting yield.

For 2010, the conservation tillage plots have a good cover crop stand of rye at this time plus we have received timely winter rainfall, therefore we look forward to a good comparisons in the two tillage systems in the upcoming crop season.

Table 1. Average first position fruit retention profile (number of fruits on vertical positions per plant) in conventional and minimum tillage plots as indicated by SQUAREMAN component of the COTMAN plant monitoring program, Lamesa, TX, 2009.

Treatment	Jul 7	Jul 15	Jul 21	Jul 28	Aug 6
Conventional tillage	4.1	6.9	8.6	9.8	10.6
Cover crop with no tillage	4.6	7.5	8.9	10.1	10.3

Table 2. Lint yield (lb/A) in conventional and no-tillage tillage plots, Lamesa, TX, 2009.

Treatment	Lint yield (lb/A)
Conventional tillage	1,400 a
Cover crop with no tillage	1,396 a

TITLE:

Cotton Fruiting/Yield Compensation after *Lygus* Induced Square Loss as Influenced by Variety x Water Treatments, Lamesa, TX, 2009.

AUTHORS:

Megha Parajulee, Ram Shrestha, Owen McSpadden, Anup Bastola, Diwash Neupane, Stanley Carroll, Wayne Keeling; Associate Professor, Research Associate, Technician II, Research Assistant, Research Assistant, Associate Research Scientist, Professor, Texas AgriLife Research.

MATERIALS AND METHODS:

Plot Size:	2 rows by 50 feet, 2 replications
Planting Date:	May 6
Varieties:	Stoneville 4288 B2RF
	Stoneville 5458 B2RF
Fertilizer:	100-34-0
Irrigation in-season:	Low: 5.76" High: 8.64"
Insect treatment:	4 *Lygus* bugs (late instars) released per plant (4PP) and Control
Insect release dates:	June 22, July 1 and July 7
Plant mapping dates:	June 22, July 1, 7, 14, 29, August 5
Harvest Date:	October 15, 2009 (Hand-harvested)

Two cotton varieties (ST 4288 B2RF and ST 5458 B2RF) were evaluated under low and high irrigation levels based on maximum pumping capacities of 0.12 and 0.24” per day. *Lygus* bugs were released in each treatment combination (8 plots) for three consecutive weeks to mimic a natural early season chronic infestation. The four bugs per plant treatment was designed to exert significant insect pressure on the fruiting cotton plants. Plant mapping was conducted three additional weeks beyond the last bug release date to monitor the fruit set and retention profile as influenced by the bug augmentation treatment.

RESULTS AND DISCUSSION:

Lygus augmentation resulted in a significantly greater percentage of fruit shed than control plots. However, the high irrigation water regime favored greater damage by *Lygus* than in low water regime (Fig. 1). Although interactions of cultivar, irrigation regime and bug treatment on lint yield were not significant due to fewer replications and higher variation in data (Table 1), there was a definite trend that the bug augmentation had a differential impact between the two cultivars and two irrigation regimes (Table 1). Overall, yield did not significantly vary between these two cultivars and both cultivars fully compensated the early fruit loss induced by *Lygus* augmentation (Table 1, Fig. 2). It was not surprising that these cultivars compensated the fruit loss, which was only up to 20%, as was observed in our previous studies in which cotton would generally compensate 20-25% *Lygus*-induced fruit loss. We expect to increase the level of fruit loss in 2010 to better assess the variation in compensation ability of cultivars at different irrigation regimes.

Table 1. Effects of *Lygus* bug releases on harvested lint yields (lb/A) for two different cotton cultivars and two in-season irrigation water levels.

Treatments	Control	4PP
Cultivar		
ST 5458 B2RF	1202 a	1536 a
ST 4288 B2RF	1292 a	986 a
Water Level		
High	1461 a	1308 a
Low	1033 a	1108 a

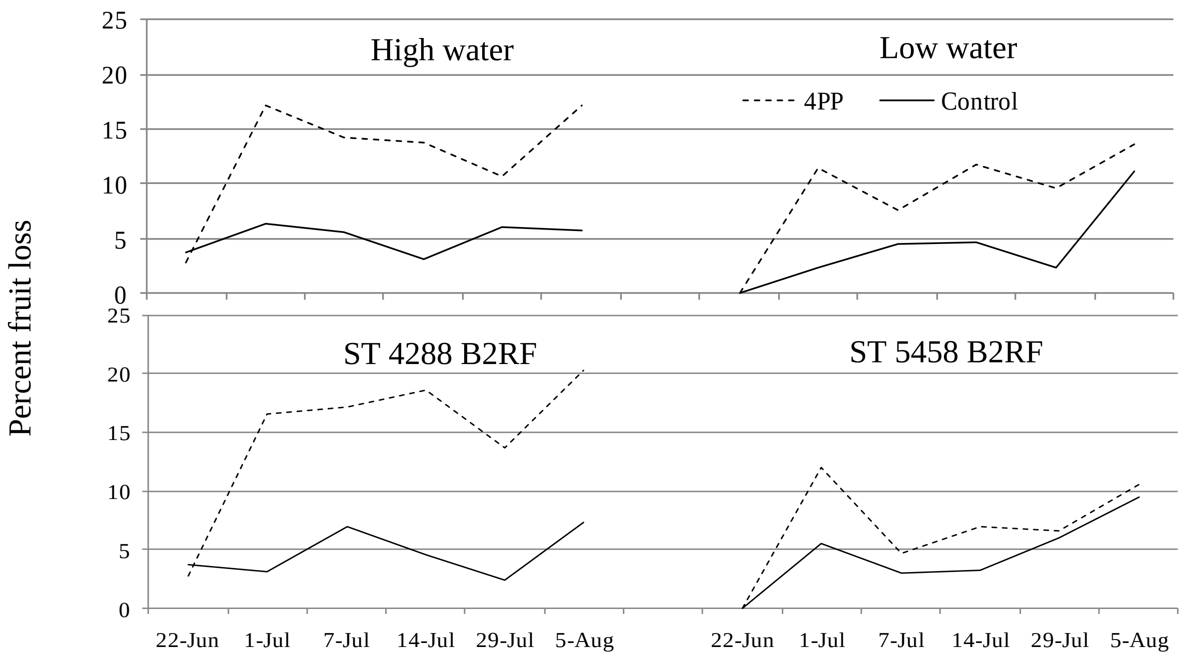


Figure 1. Temporal fruit retention profile through the reproductive phase of two selected cotton cultivars at low and high irrigation regimes, Lamesa, Texas, 2009.

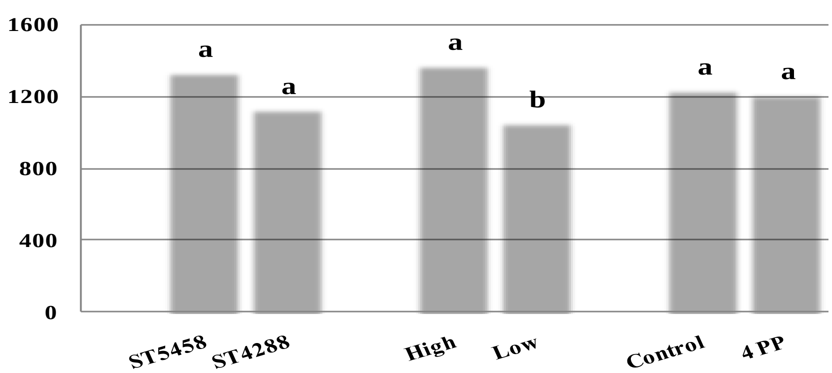


Figure 2. Lint yield (lb/A) main effects of cultivar, irrigation level, and bug augmentation treatments, Lamesa, Texas, 2009.

TITLE:

Evaluation of Cotton Boll Susceptibility to *Lygus* Bugs as Influenced by Cultivar x Irrigation Interaction, AGCARES, Lamesa, TX, 2009.

AUTHORS:

Megha Parajulee, Anup Bastola, Ram Shrestha, Wayne Keeling; Associate Professor, Graduate Research Assistant, Research Associate, Professor, Texas AgriLife Research.

MATERIALS AND METHODS:

Plot Size:	2 rows by 50 feet, 2 replications
Planting Date:	May 6
Cultivars:	DP 0935 B2RF AMC 1532 B2RF
Fertilizer:	100-34-0
Irrigation in-season:	Low: 5.74" High: 8.64"
Cotton flower tagging:	July 29, 2009
Cotton bolls tested:	August 14, 2009

Two cultivars (DP 0935 B2RF and AMC 1532 B2RF) were evaluated for boll maturity profile and their potential susceptibility to *Lygus* injury based on carpel wall penetrability. Twenty individual first position white flowers were tagged per plot on July 29 and heat units (>60°F threshold) were monitored daily. Bolls were carefully removed from the plant at 350 HU (August 14) and boll penetrability was examined by using a commercial penetrometer.

RESULTS AND DISCUSSION:

At the same heat unit based maturity (350 HU from flower), AMC 1532 B2RF had a significantly more matured or had tougher boll exocarp than DP 0935 B2RF (Fig. 1). While we evaluated only two cultivars, these data suggest that there exist considerable variations in boll susceptibility to *Lygus* bug injury across cultivars. Also, the low irrigation regime resulted in significantly more tolerant bolls than for high irrigation regime (Fig. 1). Thus, it can be inferred that a more full irrigation production regime such as subsurface drip irrigation may increase the susceptibility of maturing bolls to *Lygus* injury for a given HU than in limited irrigation and dryland production regimes. Cotton cultivars varied in the level of carpel wall maturity at the same level of heat units (350 HU from flower) at two irrigation regimes. AMC 1532 B2RF was significantly more susceptible than DP 0935 B2RF at high irrigation water treatment, whereas AMC 1532 B2RF was significantly more tolerant to boll penetration than DP 0935 B2RF at low irrigation water regime (Fig. 2). While this is only based on one-year data, it is interesting to note that the varietal differences in boll susceptibility to insect injury varies with the amount of irrigation water or, conversely, with the growth phenology and lushness of the crop. We will be further evaluating this phenomenon in continuing research.

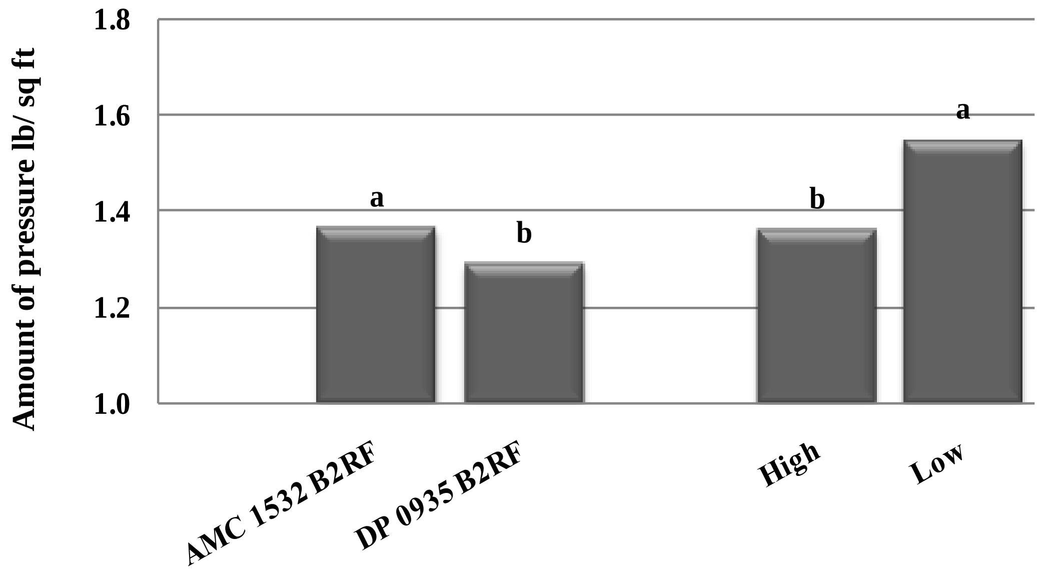


Figure 1. Amount of pressure required to successfully puncture the exocarp of 350 HU aged bolls in two cotton cultivars and two irrigation water levels as main factors in a split-plot factorial design, Lamesa, Texas, 2009.

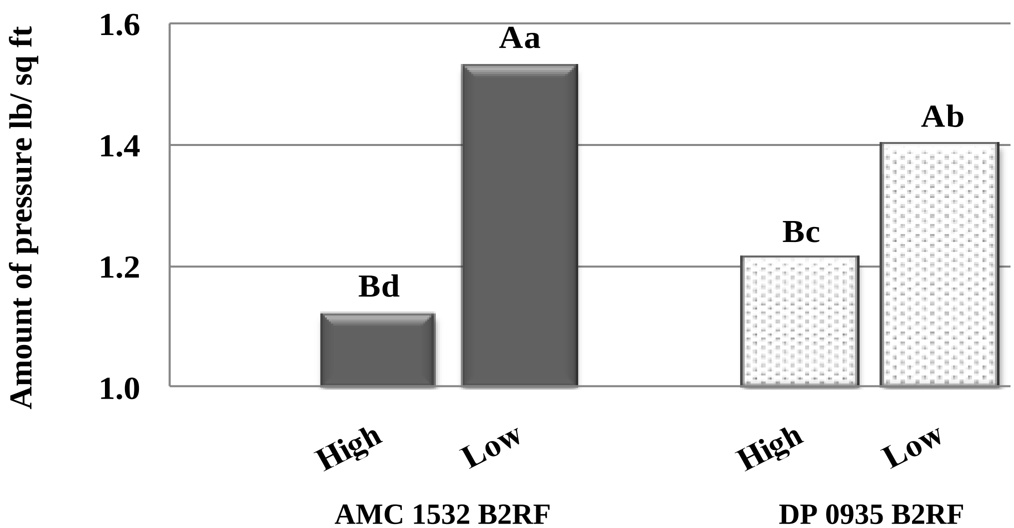


Figure 2. Amount of pressure required to successfully puncture the exocarp of 350 HU aged bolls at two irrigation regimes within AMC 1532 B2RF and DP 0935 B2RF. Bars with different uppercase letters within cultivar are significantly different and bars with different lowercase letters across cultivars are significantly different, Lamesa, Texas, 2009.

TITLE:

Seasonal Population Dynamics of Insect Communities in Sorghum and Cotton Under Different Crop Rotations and Irrigation Regimes.

AUTHORS:

Christian Nansen, Wayne Keeling, Texas AgriLife Research, Lubbock, TX.

OBJECTIVES:

The main objectives were to: 1) monitor seasonal dynamics of insect communities in sorghum and cotton, 2) assess the impacts of crop rotation and different irrigation regimes on insect communities in the two crops.

MATERIALS AND METHODS:

In the summers of 2008 and 2009, sweep net sampling was conducted in experimental pivot fields at Halfway and Lamesa to monitor insect populations in cotton and sorghum. At each sampling event at Halfway, we collected 12 sweep net samples from cotton (FM9160 in 2008 and FM9180 in 2009) and 12 from sorghum (Deltapine) during six bi-weekly sampling events (24 ×6 = 144 samples). At each sampling event at Lamesa, we collected 18 sweep net samples from cotton (FM9160 in 2008 and FM9180 in 2009) and nine from sorghum (Deltapine) which were also collected bi-weekly during 6 consecutive sampling events (27 × 6 = 162 samples). At both field locations, sweep net samples were collected from plots under three different water regimes and two crop rotations in Lamesa and three crop rotations in Halfway. Individual sweep net samples were transferred to vials with 70% ethanol for future identification.

RESULTS AND DISCUSSION:

Identification of insect specimens in the 306 samples is still on-going, so we are not able to provide any meaningful interpretations and or conclusions about the seasonal population dynamics of insect communities in sorghum and cotton under different crop rotations and irrigation regimes at this point. However, we will initiate data analysis and interpretation as soon as the identification process has been completed.

TITLE:

Evaluation of Foliar Applied Fungicides on Cotton Under Moderate Irrigation at AG-CARES, Lamesa, TX, 2008-2009.

AUTHORS:

Jason Woodward, Mitchell Ratliff, and Ira Yates, Extension Plant Pathologist, Extension Assistant, and Technician

MATERIALS AND METHODS:

Plot size:	4-rows by 50 feet, 4-6 replications (treated and harvested 2 middle rows)
Planting dates:	May 2, 2008 and May 6, 2009
Varieties:	2008 Americot 1532B2RF
	2009 Stoneville 54858B2RF
Harvest dates:	November 1, 2008 and October 15, 2009
Treatments:	A list of the fungicide programs evaluated are presented in Table 1.

RESULTS AND DISCUSSION:

No foliar diseases were observed in either of these trials. There were no significant treatment by year interactions; therefore, data were combined for analysis. The application of fungicides had no effect on gin turnout, or lint yields (Table 1). Lint yields averaged 1,122 lb/A with an average turnout of 28.3%. Neither Headline nor Quadris affected any of the fiber quality parameters evaluated. Micronaire and length averaged 4.50 ± 0.06 units and 1.10 inches, respectively. Uniformity ranged from 79.2 to 79.9%, and strength averaged 28.9 g/tex. Loan values were similar for all treatments and averaged $0.5373/A. The costs of the fungicides were estimated to be $1.90 and $2.00 acre^{-1} for Headline and Quadris, respectively. Application costs were estimated at $5.00 per application. Net returns were determined considering the cost of fungicides plus application, ginning costs, seed and technology fees, and loan values. No differences in net returns were observed between treatments. Returns ranged from $523.94 to $603.55 for the non-treated control (#2) and two applications of Headline, respectively. Based on these results, there is no apparent benefit to applying fungicides to cotton under moderate irrigation levels in the absence of disease. This is consistent with other studies where fungicides were applied (under varying levels of irrigation and in non-irrigated trials). These fungicides are commonly used in other cropping systems to minimize damage and losses associated with fungal diseases. Proper use of these products should be directed toward disease management.

Table 1. Effect of foliar applied fungicides on gin turnout, lint yield, fiber quality, loan value, and net return from AG-CARES, 2008-2009 (Cotton Inc. Trial)[a]

Treatment[b]	Turnout (%)	Lint yield (lb/A)	Mic.[c] (units)	Len.[d] (inches)	Unif.[e] (%)	Stren.[f] (g/tex)	Elon.[g] (%)	Rd (%)	+b (%)	Leaf grade	Loan value[h] ($/A)	Fungicide cost[i] ($/A)	Net return[j] ($/A)
1. Non-treated control (#1)	28.4	1,113	4.49	1.11	79.3	28.5	8.88	75.7	8.35	3.38	0.5343	0.00	588.43
2. Quadris 12 fl oz/A FB	28.0	1,085	4.46	1.09	19.2	28.4	8.99	75.2	8.58	2.63	0.5341	29.00	541.81
3. Quadris 6 fl oz/A FB Quadris 6 fl oz/A + 14	28.8	1,131	4.58	1.12	79.9	29.3	8.75	75.5	8.54	2.88	0.5488	34.00	579.31
4. Quadris 6 fl oz/A FB Quadris 12 fl oz/A + 14	28.3	1,123	4.48	1.10	79.8	29.1	8.85	75.4	8.40	3.00	0.5410	46.00	557.65
5. Headline 12 fl oz/A FB	27.7	1,132	4.50	1.10	19.8	29.0	8.91	75.3	8.55	3.13	0.5379	28.00	570.20
6. Headline 6 fl oz/A FB Headline 6 fl oz/A + 14	27.7	1,065	4.39	1.10	79.0	29.1	9.00	75.1	8.49	3.13	0.5328	33.00	523.94
7. Headline 6 fl oz/A FB Headline 12 fl oz/A + 14	28.3	1,194	4.58	1.11	79.5	28.7	9.08	75.0	8.51	3.25	0.5355	44.50	587.99
8. Non-treated control (#2)	29.0	1,134	4.54	1.10	79.3	28.9	8.84	75.8	8.45	2.88	0.5339	0.00	603.55
(LSD ≤ 0.05)[k]	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	-------	ns

[a] Data are the means of eight replications. The varieties Americot 1532B2RF and Stoneville 5458B2RF were used in 2008 and 2009, respectively. [b] FB refers to first bloom and + 14 indicates that a sequential application was made 14 days later. Two sets of non-treated controls where included in these trials. [c] Mic. = micronaire, [d] Len. = Length, [e] Unif. = Uniformity, [f] Streng. = Strength, [g] Elon. = Elongation, [h] Loan value is based on FBRI HVI results. [i] Fungicide costs reflect the current price structure. Application costs were estimated at $5.00/A per application. [j] Net returns reflect ginning cost ($3.00/cwt), seed value ($200/ton), as well as seed and technology fees and the cost of the fungicides. [kj] ns indicates means within a column are not significantly different according to Fisher's protected LSD.

AGRONOMIC AND TEST INFORMATION: LAMESA

UNITED SORGHUM CHECKOFF PROGRAM This project was made possible through producer funding received from the United Sorghum Checkoff Program

TEST:	**2009 Dryland Grain Sorghum Performance Test**
LOCATION:	AG-CARES/Lamesa Cotton Growers, Lamesa, Texas (~60 miles south of Lubbock)
COOPERATORS:	Dr. Calvin Trostle, Extension agronomist, Sean Wallace, Danny Carmichael
SOIL TYPE:	Amarillo fine sandy loam
ROW WIDTH:	40"
PREVIOUS CROP:	Cotton
LAND PREPARATION:	Rolling stalk cutter, lister
DATE PLANTED:	6-24-09 with cones mounted on a JD Max-Emerge planter
SEEDING RATE:	32,700 (~2.5 seeds per foot of 40"rows)
PLOT LENGTH:	4 rows X 25'
FERTILIZER:	None
HERBICIDE:	Atrazine, 0.75 quarts/A
INSECTICIDE:	None
RAINFALL:	May, 1.4" (accumulating soil moisture); June, 6.2"; July, 4.9", August, 0.5"; September, 0.9"; October 1-12, 0.2" (available to longer maturity hybrids)—Seasonal rainfall, May-September, 13.9".
IRRIGATION:	None
DATE HARVESTED:	11/17-18/09
SIZE HARVESTED PLOT:	2 rows X 22'

TEST DESIGN: Randomized complete block

NUMBER ENTRIES: 36

NUMBER REPLICATIONS: 4 (some hybrids 3 reps due to bird feeding on west end of trial)

NUMBER ROWS/PLOT: 4

TEST MEAN: 2,662 lbs./A; yield corrected to 14% moisture

TEST YIELD C.V.: 16.3% (Reported %CV excludes the lowest yielding entry, which had an individual rep. as low as 311 lbs./A. Including this long-season hybrid in %CV increased CV to 20.6%.)

COMMENTS: Initial stands were satisfactory, but due to planting the sorghum on top of beds, some hybrids had trouble standing as the brace roots had trouble penetrating the soil (hotter and drier on the top of the bed), but timely cultivation place sufficient soil around the base of the plants to establish a good brace root system.

Plant populations were regarded as near optimum for this type of dryland production, about 2/3 of planted seed becoming viable plants. This plant population in other test has demonstrated the ability to produce 4,000 lbs./A or more yield when conditions are favorable. One fault of this test is the lack of N fertilization which could potentially lead to a significant increase in yield.

Significant deep soil moisture was stored during June and July which carried the crop through August and September flowering and seed maturation where rainfall (1.4”) was about 1/3 of long the long-term average.

Sucker head tillering was minimal to non-existent for most hybrids though a few hybrids had significant later season tillers although the end of the season minimized their interference with any possible harvest for this particular crop year.

***

For further information about this report, contact Dr. Calvin Trostle, extension agronomist, Lubbock, (806) 746-6101, ctrostle@ag.tamu.edu

For further information about the Texas AgriLife Research Crop Testing program, contact Mr. Dennis Pietsch, Crop Testing Director, Texas AgriLife Research, College Station, TX, (979) 845-8505, croptest@neo.tamu.edu

Please visit the Crop Testing webpage at http://varietytesting.tamu.edu

2009 Dryland Grain Sorghum Performance Test
AG-CARES, Lamesa, Texas

Hybrid	Company or Brand Name	Matur. Class .(1)	Grain Color .(2)	Plant Color .(3)	Days to 0.5 Flower	Plants/ Acre	Tillers/ plant	Rating Sucker Head (4)	Plant Height (In.)	Test Weight (Lbs./bu)	Yield (Lbs./A)
Check (7C22)	NC+	M	CR	P	58	22,200	0.5	0	39	56.9	3,549
DK39Y	DeKalb	ME	Y	P	53	19,200	0.9	0.0	35	57.4	3,363
DG 762B	DynaGro	M	BZ	*	55	25,200	0.4	0.0	37	55.9	3,337
ATx399 x RTx430	TX AgriLife Res	ML	BZ	P	62	20,200	0.7	0.5	38	55.8	3,179
NK7633	Sorghum Partners	ML	BZ	P	58	23,200	0.4	0.0	38	55.1	3,162
DG 771B	DynaGro	M	BZ	*	60	18,700	0.7	0.0	37	56.3	3,141
Pulsar	Asgrow	E	BZ		53	22,800	0.8	0.0	33	55.9	3,077
NK5418	Sorghum Partners	M	BZ	P	53	18,800	0.7	0.5	32	57.1	2,965
DK44	DeKalb	M	BZ	P	57	20,900	0.4	0.0	35	57.8	2,931
Check (Sprint II)	Richardson	ME	R	P	54	17,700	1.1	2.5	38	56.9	2,906
DG 758B	DynaGro	M	BZ	*	59	20,300	0.4	0.0	39	56.1	2,819
NK4420	Sorghum Partners	ME	BZ	P	53	20,900	0.7	0.3	33	57.6	2,813
KS310	Sorghum Partners	E	BZ	P	52	25,000	0.5	2.3	33	57.0	2,755
DG 764B	DynaGro	M	BZ	*	58	20,000	0.3	1.0	36	56.5	2,718
DK29-28	DeKalb	E	BZ	P	51	19,600	0.5	0.3	32	55.7	2,715
DG 772B	DynaGro	M	BZ	*	62	23,600	0.5	0.0	38	56.0	2,676
TR438	Triumph	ME	BZ	P	56	19,200	0.6	1.0	38	56.8	2,664
DKS 37-07	DeKalb	ME	BZ	P	54	24,600	0.3	0.0	37	55.9	2,635
85G46	Pioneer Hi-Bred	M	R	R	56	22,600	0.6	0.0	36	58.9	2,625
DG 732B	DynaGro	ME	BZ	*	54	21,300	0.4	1.7	38	56.3	2,611
ATx631 x RTx436	TX AgriLife Res	ML	W	T	63	17,400	0.4	0.0	38	56.9	2,604
Check (DKS44-20)	DeKalb	M	BZ	P	57	18,600	0.7	0.8	40	56.6	2,566
NK7829	Sorghum Partners	ML	BZ	P	62	20,800	0.4	0.0	41	56.3	2,544
TR458	Triumph	M	T	P	56	18,400	0.7	0.0	37	55.9	2,542
TR459	Triumph	M	BZ	P	59	20,300	0.4	0.0	37	55.5	2,524
ATx378 x RTx430	TX AgriLife Res	ML	BZ	P	64	19,600	0.4	0.0	36	53.8	2,499
NK6638	Sorghum Partners	M	BZ	P	62	21,300	0.6	0.0	37	57.4	2,475
SP3303	Sorghum Partners	E	CM	T	53	18,600	0.3	0.3	35	58.1	2,431
ATx2752 x RTx430	TX AgriLife Res	ML	BZ	P	62	18,000	0.4	0.0	39	57.2	2,394
KS585	Sorghum Partners	M	BZ	P	55	22,400	0.4	2.0	33	58.8	2,362
85G03	Pioneer Hi-Bred	M	R	R	57	21,200	0.6	0.0	37	58.8	2,360
TR463	Triumph	M	T	P	62	14,900	0.8	0.0	36	56.7	2,319
DK28E	DeKalb	E	BZ	P	50	22,400	0.5	1.0	32	53.9	2,300
TR452	Triumph	M	T	P	58	19,700	0.4	0.0	38	56.7	2,225
86G32	Pioneer Hi-Bred	ME	R	R	55	20,300	0.7	0.0	38	56.2	2,139
TRX85001	Triumph	ML	R	P	>73	19,200	0.5	0.5	41	48.1	917
MEAN						20,500	0.5		36	56.3	2,662
P-Value (Hybrid)						<0.0001	<0.0001		<0.0001	0.0003	<0.0001
Fisher's Protected Least Significant Difference (0.05)						3,700	0.3		4	2.9	514
Coefficient of Variation, CV (%)						14.7	49		8.6	4.4	16.3†

Note 1: All data analyzed using StatView. L.S.D.'s are given for traits that were significantly different at P < 0 05, e.g. numbers

in the same column that do not differ by more than the LSD are not significantly different at the 95% confidence level.

Note 2: Hybrid names starting or ending with an "X" denotes a commercial experimental. Those hybrids entered by the Texas AgriLife Research are being tested as experimental check hybrids. Contact respective seed companies for the availability of planting seed for the upcoming crop year.

(1) Maturity classification designated by respective seed companies: E=Early, M=Medium, ML=Medium Late, L=Late.

(2) Grain color designated by respective seed companies: R=Red, Bz=Bronze, W=White, Cm=Cream, Y=Yellow.

(3) Plant color from seed companies: T=Tan, R=Red, P=Purple. Hybrids with asterisk (*) indicate company did not submit plant color

(4) Sucker head tiller ratings are for problem tillers that emerge late in the season from upper nodes. These sucker head tillers often delay harvest (0=none, 1=few, 2=some, 3=moderate, 4=high, 5=very high).

†Reported %CV excludes the lowest yielding entry, which had an single rep. as low as 311 lbs./A. Including this long-season hybrid in %CV increased CV to 20.6%.

For further information about this report, contact Mr. Dennis Pietsch, Crop Testing Director, Texas AgriLife Research, College Station, TX, (979) 845-8505, croptest@neo.tamu.edu

Please visit the Crop Testing webpage at http://varietytesting.tamu.edu

This project was made possible by producer funding received through the United Sorghum Checkoff Program.

Multi-Year Summary of Lamesa Dryland
Grain Sorghum Performance Test Yields, 2007-2009

Hybrid	Company or Brand Name	Test Yields, Annual & Multi-Year (Lbs./A) 2009	2009 Rank	2008	2008 Rank	2007	2007 Rank	07-09 3-Year Mean	08-09 2-Year Mean	07-08 2-Year Mean
7C22	NC+ Hybrids Inc.	3,549	1	2,452	2	3,559	6	**3,187**	3,000	3,005
ATx399 x RTx430	Texas AgriLife Research	3,179	4	2,195	5	3,619	5	**2,998**	2,687	2,907
NK5418	Sorghum Partners, Inc.	2,965	7	2,041	11	3,969	2	**2,992**	2,503	3,005
DG 762B	DynaGro Seed	3,337	3	2,067	9	3,476	7	**2,960**	2,702	2,771
DK44	DeKalb	2,931	8	1,702	21	3,668	4	**2,767**	2,317	2,685
Pulsar	Asgrow	3,077	6	1,812	18	3,209	13	**2,699**	2,445	2,511
DG 758B	DynaGro Seed	2,819	9	1,841	16	3,390	10	**2,683**	2,330	2,615
KS585	Sorghum Partners, Inc.	2,362	24	1,743	20	3,873	3	**2,660**	2,053	2,808
NK7633	Sorghum Partners, Inc.	3,162	5	1,951	12	2,812	21	**2,642**	2,556	2,381
NK4420	Sorghum Partners, Inc.	2,813	10	1,666	23	3,438	9	**2,639**	2,240	2,552
DKS37-07	DeKalb	2,635	14	1,865	15	3,117	16	**2,539**	2,250	2,491
TR459	Triumph Seed Co., Inc.	2,524	19	2,062	10	3,021	19	**2,536**	2,293	2,542
NK7829	Sorghum Partners, Inc.	2,544	17	2,598	1	2,360	26	**2,501**	2,571	2,479
ATx2752 x RTx430	Texas AgriLife Research	2,394	23	2,180	6	2,897	20	**2,490**	2,287	2,539
TR438	Triumph Seed Co., Inc.	2,664	13	1,548	28	3,251	12	**2,488**	2,106	2,400
85G46	Pioneer Hi-Bred Int., Inc.	2,625	15	1,554	27	3,196	14	**2,458**	2,090	2,375
ATx631 x RTx436	Texas AgriLife Research	2,604	16	2,198	4	2,564	24	**2,455**	2,401	2,381
ATx378 x RTx430	Texas AgriLife Research	2,499	20	2,090	7	2,762	22	**2,450**	2,294	2,426
NK6638	Sorghum Partners, Inc.	2,475	21	2,429	3	2,374	25	**2,426**	2,452	2,401
SP3303	Sorghum Partners, Inc.	2,431	22	1,670	22	3,142	15	**2,414**	2,050	2,406
DKS29-28	DeKalb	2,715	12	1,328	32	3,063	17	**2,368**	2,021	2,195
TR458	Triumph Seed Co., Inc.	2,542	18	1,836	17	2,339	27	**2,239**	2,189	2,088
KS310	Sorghum Partners, Inc.	2,755	11	1,258	33	2,660	23	**2,224**	2,006	1,959
TR463	Triumph Seed Co., Inc.	2,319	26	2,075	8	1,860	28	**2,085**	2,197	1,968
DK39Y	DeKalb	3,363	2	1,583	26	N/A	N/A		2,473	
TR452	Triumph Seed Co., Inc.	2,225	28	1,894	14	N/A	N/A		2,060	
DK28E	DeKalb	2,300	27	1,767	19	N/A	N/A		2,034	
85G03	Pioneer Hi-Bred Int., Inc.	2,360	25	1,386	31	N/A	N/A		1,873	
86G32	Pioneer Hi-Bred Int., Inc.	2,139	29	1,453	29	N/A	N/A		1,796	
DG 754B	DynaGro Seed			1,943	13	4,026	1			2,985
5B89	NC+ Hybrids Inc.			1,644	24	3,470	8			2,557
5B37	NC+ Hybrids Inc.			1,405	30	3,342	11			2,373
6B50	NC+ Hybrids Inc.			1,636	25	3,054	18			2,345
Number of Multi-year Entries			29		33		28			
Test Mean		2,700		1,845		3,125		2,579	2,285	2,505
Least Significant Difference (LSD, 0.05)		514		354		593				
Test CV		16.3		25.6		20.4				

For further information about this report, contact Dr. Calvin Trostle, extension agronomist, Lubbock, (806) 746-6101, ctrostle@ag.tamu.edu. For furrther information about the Texas AgriLife Crop Testing program, contact Mr. Dennis Pietsch, College Station, (979) 845-8505, croptest@neo.tamu.edu. Please visit the Crop Testing webpage at http://varietytesting.tamu.edu

TITLE:

Runner Peanut Tolerance to Valor Herbicide Applied Preemergence at AG-CARES, Lamesa, TX, 2009.

AUTHORS:

Peter Dotray, Lyndell Gilbert, Professor, Technician II
Texas AgriLife Research and Extension Service, Lubbock

MATERIALS AND METHODS:

Plot Size:	4 rows by 200 feet, 3 replications
Soil Type:	Amarillo fine sandy loam
Planting Date:	April 30
Variety:	Tamrun OL02
Application Date:	Preemergence, April 30
Rainfall (April to Sep.):	9.33 inches
Irrigation (April to Sep.):	12.9 inches
Digging Date:	October 23
Harvest Date:	November 3

RESULTS AND DISCUSSION:

Valor SX was registered for use in peanut in 2001. This herbicide effectively controls kochia, common lambsquarter, several pigweed species including Palmer amaranth (carelessweed), golden crownbeard, and several annual morningglory species including ivyleaf morningglory. Valor SX may be applied prior to planting or preemergence. Preemergence applications must be made within 48 hours after planting and prior to peanut emergence. Applications made after plants have begun to crack or after they have emerged may result in severe injury. Splashing from heavy rains or cool conditions at or near emergence may also result in injury and even delayed maturity and yield loss. Several studies were conducted in 2008 and 2009 in grower fields across the High Plains to gain experience and confidence with this relatively new peanut herbicide. At this research facility in Dawson County, Tamrun OL02 was planted on April 30 and Valor was applied at 2 or 3 ounces per acre immediately after planting. On May 1, 0.7 inches of irrigation was used to activate the herbicide. The amount and timing of this irrigation was ideal. Peanut stand was recorded on May 21 and no difference was observed when the Valor-treated plots were compared to the untreated plots (Table 1). Peanut canopy width was also recorded on May 21, and no difference was observed between the herbicide-treated and non-treated plots. Peanut injury (stunting, chlorosis) was evaluated on May 21, June 4, June 18, July 2, and September 25. No difference was observed between Valor at 2 ounces per acre and the untreated check. Peanut injury with Valor at 3 ounces per acre never exceeded 6 percent. Slight visual injury was noted at several locations in 2009 following Valor at 3 ounces. Peanuts were dug on October 23 and harvested on November 3. Yield following Valor at 2 ounces was 3722 lb/A, which was not less than the non-treated control (3299 lb/A); however, peanut yield was reduced following Valor at 3 ounces per acre (3116 lb/A). Grade was evaluated and no differences were observed when Valor-treated plots were compared to the non-treated check. Results from this study and several others across the High Plains in 2008 and 2009 suggest that Valor is a safe herbicide option to peanut producers in our region. Although moderate to severe peanut injury has been observed in other states and in the High Plains when rates exceeded labeled recommendations, we feel that this herbicide, when used according to the label, is a good option for peanut growers for early-season weed control (4 to 6 weeks of soil residual activity) on weeds such as carelessweed and ivyleaf morningglory. Consult the Valor label, Valent Corporation, or Texas AgriLife Research and Extension personnel for more information regarding the use of this herbicide.

Table 1. Runner Peanut Injury and Yield as Affected by Valor Herbicide Applied Preemergence at AG-CARES, Lamesa, TX, 2009[a].

Treatment	Rate	Prod.	Timing	Stand	Peanut Canopy Width	Peanut Injury					Yield	Grade
				May 21	May 21	May 21	Jun 4	Jun 18	Jul 2	Sep 25		
	lb ai/A	oz/A		Plants/3ft.	in.	------------------------%----------------------					lb/A	
Non-treated	---	---	---	9.2	4.1	0	0	0	0	0	3299	65
Valor SX	0.064	2	PRE	9.9	3.9	0	0	0	0	0	3722	66
Valor SX	0.096	3	PRE	9.2	4	0	3.3	5.7	3.3	0	3116	65
CV				9.18	11.96	0.0	150.0	35.29	150.0	0.0	2.41	1.98
pValue				0.5815	0.9395	1.0000	0.1111	0.0007	0.1111	1.0000	0.0019	0.3460
$LSD_{(0.10)}$				NS	NS	NS	NS	1.16	NS	NS	142.0	NS

[a]Abbreviations: PRE, preemergence

TITLE:

Virginia Peanut Tolerance to Valor Herbicide Applied Preemergence at AG-CARES, Lamesa, TX, 2009.

AUTHORS:

Peter Dotray, Lyndell Gilbert, Professor, Technician II
Texas AgriLife Research and Extension Service, Lubbock

MATERIALS AND METHODS:

Plot Size:	4 rows by 200 feet, 3 replications
Soil Type:	Amarillo fine sandy loam
Planting Date:	April 30
Variety:	Gregory
Application Date:	Preemergence, April 30
Rainfall (April to Sep.):	9.33 inches
Irrigation (April to Sep.):	12.9 inches
Digging Date:	October 14
Harvest Date:	October 24

RESULTS AND DISCUSSION:

Valor SX was registered for use in peanut in 2001. According to the Valor SX label, weeds controlled include kochia, common lambsquarter, several pigweed species including Palmer amaranth (carelessweed), golden crownbeard, and several annual morningglory species including ivyleaf morningglory. Valor SX may be applied prior to planting or preemergence. Preemergence applications must be made within 48 hours after planting and prior to peanut emergence. Applications made at or after ground-crack may result in severe injury. Splashing from heavy rains or cool conditions at or near emergence may also result in injury and even delayed maturity and yield loss. Several field studies were conducted in 2008 and 2009 in grower fields across the High Plains to gain experience and confidence with this relatively new peanut herbicide. At this research facility in Dawson County, a Virginia market-type (Gregory) was planted on April 30 and Valor was applied at 2 or 3 ounces per acre immediately after planting. On May 1, 0.7 inches of irrigation was used to activate the herbicide. Peanut stand was recorded on May 21 and no difference was observed when Valor-treated plots were compared to the non-treated plots (Table 1). Peanut canopy width was also recorded on May 21, and no difference was observed between the Valor-treated and non-treated plots. Peanut injury was evaluated on May 21, June 4, June 18, July 2, and September 25. No difference was observed between Valor at 2 ounces per acre and the untreated check. Peanut injury with Valor at 3 ounces per acre never exceeded 5 percent. Peanuts were dug on October 14 and harvested on October 24. Yield from Valor-treated plots ranged from 3338 to 3578 lb/A and were not different than the non-treated control (3385 lb/A). Grade was also evaluated and no difference was observed. Results from this study and several others across the High Plains suggest that Valor is a safe option to peanut producers in our region. Although peanut injury has been observed in other states and in the High Plains when rates exceeded labeled recommendations, we feel that this herbicide, when used according to label requirements, is a good option for peanut growers for early-season weed control (4 to 6 weeks of soil residual activity) on weeds such as carelessweed and annual morningglory. Consult the Valor label, Valent Corporation, or Texas AgriLife Research and Extension personnel for more information.

Table 1. Virginia Peanut Injury and Yield as Affected by Valor Herbicide Applied Preemergence at AG-CARES, Lamesa, TX, 2009[a].

Treatment	Rate	Prod.	Timing	Stand	Peanut Canopy Width	Peanut Injury					Yield	Grade
				May 21	May 21	May 21	Jun 4	Jun 18	Jul 2	Sep 25		
	lb ai/A	oz/A		Plants/3ft.	in.	------------------------%------------------------					lb/A	
Non-treated	---	---	---	11.6	4.8	0	0	0	0	0	3385	65
Valor SX	0.064	2	PRE	10.7	4.5	0	0	1.7	0	0	3338	60
Valor SX	0.096	3	PRE	11.5	4.7	0	1.7	5.0	0	0	3578	65
CV				5.34	9.08	0.0	300.0	75.0	0.0	0.0	4.52	10.22
pValue				0.2308	0.6836	1.0000	0.4444	0.0494	1.0000	1.0000	0.2480	0.5533
$LSD_{(0.10)}$				NS	NS	NS	NS	2.90	NS	NS	NS	NS

[a]Abbreviations: PRE, preemergence

TITLE:

Peanut Varietal Tolerance to Herbicides Applied Preemergence and Postemergence at AG-CARES, Lamesa, TX, 2009.

AUTHORS:

Peter Dotray, Lyndell Gilbert, Professor, Technician II
Texas AgriLife Research and Extension Service, Lubbock

MATERIALS AND METHODS:

Plot Size:	2 rows by 40 feet, 3 replications
Soil Type:	Amarillo fine sandy loam
Planting Date:	April 30
Varieties:	Flavorrunner 458, Tamrun OL01, Tamrun OL02, Tamrun OL07
Application Dates:	Preemergence (PRE), April 30; postemergence (POST), June 4
Rainfall (April to Sep):	9.33 inches
Irrigation (April to Sep):	12.9 inches
Digging Date:	October 23
Harvest Date:	November 2

RESULTS AND DISCUSSION:

The release of new crop varieties and the registration of new herbicide active ingredients need to be tested to determine if some varieties are more susceptible to herbicide injury. Previous research has shown that peanut market types and varieties within a market type may have differential tolerance levels to various herbicides. The objective of this research was to examine peanut response to Valor at 1.5, 3, and 6 oz/A (0.5X, 1X, and 2X the recommended labeled rate) and Cadre at 2, 4, and 8 oz/A (0.5X, 1X, and 2X the recommended labeled rate) when applied to four runner market type varieties (Flavorrunner 458, Tamrun OL01, Tamrun OL02, Tamrun OL07). No variety by herbicide interaction was observed for peanut injury on May 21 and September 25 or yield. Therefore, herbicides can be pooled within variety so varieties can be compared, and varieties can be pooled within herbicide so herbicides can be compared. A variety by herbicide interaction was observed for peanut injury on June 4, June 18, July 2, and July 31; therefore, individual treatments were compared. No difference in variety susceptibility when pooled over herbicide was observed on May 21 (early season) and September 25 (late season) (Table 1a). Valor at 3 and 6 oz/A injured peanut 4 and 16% on May 21 (Table 1B). No injury was observed from Valor at 1.5 oz/A. Late season peanut injury was observed following Cadre at 4 and 8 oz/A (3 and 7%, respectively). On June 4, Valor at 6 oz/A injured Tamrun OL07 and Flavorrunner 458 at least 10%, which was greater than the injury observed in Tamrun OL01 and Tamrun OL02 (Table 2). On June 18, Tamrun OL07 and Flavorrunner 458 were injured 13%, which was again more than that observed in Tamrun OL01 and Tamrun OL02. This same trend was observed on July 2 and July 31. Tamrun OL02 was most susceptible to Cadre at 4 and 8 oz/A on June 18, but this degree of injury was not noted later in the growing season. On July 31, Flavorrunner 458 was least susceptible to Cadre at 2 and 4 oz/A. When pooled across herbicide treatments, Flavorrunner 458 yielded 3297 lb/A, which was greater than all other varieties (Table 3). Tamrun OL01 and Tamrun OL02 produced 3060 and 3026 lb/A, respectively, which was greater than the yield produced by Tamrun OL07 (2775 lb/A). When pooled across varieties, all Cadre treatments yielded less than the non-treated control. This data suggests that visible peanut injury is dependent on not only the herbicide chosen and rate, but also on the variety planted. Valor at 3 and 6 oz/A did not adversely affected peanut yield when pooled across varieties; however, lower peanut yield was observed following all rates of Cadre.

Table 1a. Peanut Injury by Variety When Pooled Over Valor and Cadre Rates at AG-CARES, Lamesa, TX, 2009[a].

Variety	Peanut Injury	
	May 21	Sep 25
	----------------%----------------	
Flavorrunner 458	3	1
Tamrun OL01	2	2
Tamrun OL02	3	2
Tamrun OL07	4	1
pValue	0.1917	0.1929
LSD $_{(0.10)}$	NS	NS

[a]Abbreviations: PRE, preemergence; POST, post emergence topical

Table 1b. Peanut Injury by Herbicide When Pooled Over Variety at AG-CARES, Lamesa, TX, 2009[a].

Treatment	Timing	Prod.	Rate	Peanut Injury	
				May 21	Sep 25
		oz/A	lb ai/A	----------%----------	
Non-treated	---	---	---	0	0
Valor SX	PRE	1.5	0.048	0	0
Valor SX	PRE	3	0.096	4	0
Valor SX	PRE	6	0.191	16	0
Cadre + COC	POST	2	0.0315 + 1%	---	1
Cadre + COC	POST	4	0.063 + 1%	---	3
Cadre + COC	POST	8	0.126 + 1%	---	7
pValue				0.0001	0.0001
LSD $_{(0.10)}$				1.6	1.5

[a] Abbreviations: COC, crop oil concentrate; PRE, preemergence; POST, post emergence topical

Table 2. Peanut Injury by Variety as Affected by Herbicide and Rate at AG-CARES, Lamesa, TX, 2009[a].

Variety	Treatment	Timing	Prod.	Rate	Peanut Injury			
					Jun 4	Jun 18	Jul 2	Jul 31
			oz/A	lb ai/A	--------------%--------------			
Flavorrunner 458	Non-treated	---	---	---	0	0	0	0
Tamrun OL01	Non-treated	---	---	---	0	0	0	0
Tamrun OL02	Non-treated	---	---	---	0	0	0	0
Tamrun OL07	Non-treated	---	---	---	0	0	0	0
Flavorrunner 458	Valor SX	PRE	1.5	0.048	0	0	0	0
Tamrun OL01	Valor SX	PRE	1.5	0.048	0	0	0	0
Tamrun OL02	Valor SX	PRE	1.5	0.048	0	0	5	8
Tamrun OL07	Valor SX	PRE	1.5	0.048	0	0	0	0
Flavorrunner 458	Valor SX	PRE	3	0.096	3	3	2	3
Tamrun OL01	Valor SX	PRE	3	0.096	2	2	2	2
Tamrun OL02	Valor SX	PRE	3	0.096	3	5	5	5
Tamrun OL07	Valor SX	PRE	3	0.096	3	3	6	8
Flavorrunner 458	Valor SX	PRE	6	0.191	10	13	7	8
Tamrun OL01	Valor SX	PRE	6	0.191	4	3	6	3
Tamrun OL02	Valor SX	PRE	6	0.191	7	7	5	5
Tamrun OL07	Valor SX	PRE	6	0.191	12	13	12	10
Flavorrunner 458	Cadre + COC	POST	2	0.0315 + 1%	0	3	0	0
Tamrun OL01	Cadre + COC	POST	2	0.0315 + 1%	0	4	3	5
Tamrun OL02	Cadre + COC	POST	2	0.0315 + 1%	0	0	5	8
Tamrun OL07	Cadre + COC	POST	2	0.0315 + 1%	0	5	7	5
Flavorrunner 458	Cadre + COC	POST	4	0.063 + 1%	0	0	6	3
Tamrun OL01	Cadre + COC	POST	4	0.063 + 1%	0	8	10	10
Tamrun OL02	Cadre + COC	POST	4	0.063 + 1%	0	10	7	10
Tamrun OL07	Cadre + COC	POST	4	0.063 + 1%	0	5	6	7
Flavorrunner 458	Cadre + COC	POST	8	0.126 + 1%	0	15	17	13
Tamrun OL01	Cadre + COC	POST	8	0.126 + 1%	0	13	13	12
Tamrun OL02	Cadre + COC	POST	8	0.126 + 1%	0	20	18	13
Tamrun OL07	Cadre + COC	POST	8	0.126 + 1%	0	10	15	15
pValue					0.0361	0.0001	0.0063	0.0373
$LSD_{(0.10)}$					2.2	3.8	3.4	4.5

[a] Abbreviations: COC, crop oil concentrate; PRE, preemergence; POST, post emergence topical

Table 3a. Peanut Yield by Variety When Pooled Over Valor and Cadre rates at AG-CARES, Lamesa, TX, 2009[a].

Variety	Yield
	lb/A
Flavorrunner 458	3297
Tamrun OL01	3060
Tamrun OL02	3026
Tamrun OL07	2775
pValue	0.0009
LSD $_{(0.10)}$	200

[a]Abbreviations: PRE, preemergence; POST, post emergence topical

Table 3b. Peanut Yield by Herbicide When Pooled Over Variety at AG-CARES, Lamesa, TX, 2009[a].

Treatment	Timing	Prod.	Rate	Yield
		oz/A	lb ai/A	lb/A
Non-treated	---	---	---	3265
Valor SX	PRE	1.5	0.048	2944
Valor SX	PRE	3	0.096	3209
Valor SX	PRE	6	0.191	3265
Cadre + COC	POST	2	0.0315 + 1%	2911
Cadre + COC	POST	4	0.063 + 1%	2900
Cadre + COC	POST	8	0.126 + 1%	2783
pValue				0.0091
LSD $_{(0.10)}$				265

[a] Abbreviations: COC, crop oil concentrate; PRE, preemergence; POST, post emergence topical

TITLE:

Peanut Tolerance to Postemergence Broadleaf Herbicide-Fungicide Tank Mix Combinations in Peanut at AG-CARES, Lamesa, TX, 2009.

AUTHORS:

Peter Dotray, Lyndell Gilbert, James Grichar, Jason Woodward
Texas AgriLife Research and Extension Service, Lubbock

MATERIALS AND METHODS:

Plot Size:	4 rows by 30 feet, 3 replications
Soil Type:	Amarillo fine sandy loam
Planting Date:	April 30
Variety:	Tamrun OL02
Application Date:	Postemergence, June 12
Rainfall (April to Sept.):	9.33 inches
Irrigation (April to Sept.):	12.9 inches
Digging Date:	October 23
Harvest Date:	November 2

RESULTS AND DISCUSSION:

With the increasing costs involved in peanut production, any input cost savings might be the difference between a profit and a loss. Combining a fungicide and a herbicide in tank mixture, and making one application rather than two may be one way to reduce input costs. It is nearly impossible for pesticide labels to warn against all potential physical and chemical pesticide interactions. The objective of this research was to evaluate peanut injury and leaf spot incidence following tank mix combinations of several postemergence broadleaf herbicides and foliar fungicides. At 14 days after application, Cobra or Ultra Blazer applied alone injured peanut 13% and 5%, respectively. The addition of Headline, Folicur, or Provost did not enhance crop injury. No injury was observed following Pursuit, Cadre, or 2,4-DB applied alone, but enhanced peanut injury was observed when Headline was added to Pursuit, Cadre, and 2,4-DB; when Folicur was added to 2,4-DB; and when Provost was added to Pursuit. Previous research has shown that no peanut injury occurred following these fungicides when applied without crop oil. Headline and Provost (applied with crop oil concentrate) injured peanut 10% and 5%, respectively. At 28 days after treatment, Cobra or Ultra Blazer applied alone injured peanut 12% and 5%, respectively. The addition of Headline, Folicur, or Provost did not enhance crop injury. Slight peanut injury (3%) was observed following Pursuit applied alone, and the addition of a fungicide in tank mix did not enhance injury. No peanut injury was observed following Cadre or 2,4-DB applied alone, but enhanced peanut injury was observed when Headline was added to Cadre and 2,4-DB; and when Provost was added to 2,4-DB. Headline and Provost with crop oil injured peanut 8% and 7%, respectively. On September 30, peanut injury was still apparent following Cobra (8%), Ultra Blazer (3%), Pursuit (3%), and Cadre (2%). Only Headline tank mixed with Cadre enhanced peanut injury when compared to the herbicide applied alone. Peanut canopy width was not reduced when the fungicides were added to the tank when compared to the herbicides applied alone. Leaf spot was evaluated on October 20. Only Folicur + Pursuit and Provost + Pursuit had greater leaf spot when compared to the fungicide alone, and only Provost + Cadre had less leaf spot when compared to the fungicide alone. Though a minor leaf spot epidemic occurred late-season, well after the applications were made, the residual activities of these fungicides were likely exhausted. Peanut yield ranged from 3398 to 4079, and were not reduced relative to the non-treated control (3299 lb/A). Results from this test suggest that although some fungicides may cause a slight increase in visible peanut injury when added in tank mixture with some postemergence broadleaf herbicides, canopy closure and yield were not affected by any of these herbicide/fungicide tank mix combinations. Future experiments will be conducted to observe peanut response and weed control following herbicide/fungicide tank mix combinations.

Table 1. Peanut injury and yield as affected by herbicide-fungicide tank mix combinations for broadleaf weed control in peanut at AG-CARES, Lamesa, TX, 2009[a].

Treatment	Rate	Prod.	Timing	Peanut Injury			Peanut Canopy Width		Leaf Spot[b]	Yield
				Jun 26	Jul 9	Sep 30	Jun 26	Jul 9	Oct 20	
	lb ai/A	oz/A		----------%----------			-------in.-------			lb/A
Non-treated	---	---	---	0	0	0	14.0	28.3	5.8	3299
Cobra + COC	0.2 + 1.0%	12.8 + 12.8	POST	13.3	11.7	8.3	13.7	24.3	6.0	3408
Headline + Cobra + COC	0.245 + 0.2 + 1.0%	15 + 12.8 + 12.8	POST	9.3	5.0	1.7	13.7	26.7	5.5	3817
Folicur + Cobra + COC	0.203 + 0.2 + 1.0%	7.2 + 12.8 + 12.8	POST	6.7	8.3	4.3	14.0	27.0	5.5	3749
Provost + Cobra + COC	27 + 0.2 + 1.0%	8 + 12.8 + 12.8	POST	8.3	8.3	5.0	14.3	25.7	5.3	3689
Ultra Blazer + COC	0.375 + 1.0%	24 + 12.8	POST	5.0	5.0	3.3	14.3	25.7	5.5	3398
Headline + Ultra Blazer + COC	0.245 + 0.375 + 1.0%	15 + 24 + 12.8	POST	5.0	5.0	1.7	14.3	26.3	5.3	4079
Folicur + Ultra Blazer + COC	0.203 + 0.375 + 1.0%	7.2 + 24 + 12.8	POST	5.0	6.7	4.3	13.7	25.7	5.5	3581
Provost + Ultra Blazer + COC	27 + 0.375 + 1.0%	8 + 24 + 12.8	POST	5.0	3.3	0	14.7	26.3	5.2	3730
Pursuit + COC	0.063 + 1.0%	4 + 12.8	POST	0	3.3	3.3	14.3	27.0	5.8	3819
Headline + Pursuit + COC	0.245 + 0.063 + 1.0%	15 + 4 + 12.8	POST	7.0	6.7	5.0	14.7	25.0	5.3	3811
Folicur + Pursuit + COC	0.203 + 0.063 + 1.0%	7.2 + 4 + 12.8	POST	0	0	0	15.0	27.7	5.8	3806
Provost + Pursuit + COC	27 + 0.063 + 1.0%	8 + 4 + 12.8	POST	5.0	5.0	0	14.0	26.0	6.0	3755
Cadre + COC	0.063 + 1.0%	4 + 12.8	POST	0	0	1.7	14.0	26.7	5.2	3655
Headline + Cadre + COC	0.245 + 0.063 + 1.0%	15 + 4 + 12.8	POST	8.3	6.7	8.3	13.8	25.3	5.2	3696
Folicur + Cadre + COC	0.203 + 0.063 + 1.0%	7.2 + 4 + 12.8	POST	0	1.7	3.3	13.7	26.3	5.5	3601
Provost + Cadre + COC	27 + 0.063 + 1.0%	8 + 4 + 12.8	POST	0	0	3.3	14.3	26.0	5.0	3445
2,4-DB + COC	0.4 + 1.0%	25.6 + 12.8	POST	0	0	0	14.3	26.7	5.8	3698
Headline + 2,4-DB + COC	0.245 + 0.4 + 1.0%	15 + 25.6 + 12.8	POST	15.0	6.7	3.3	14.0	25.3	5.3	3865
Folicur + 2,4-DB + COC	0.203 + 0.4 + 1.0%	7.2 + 25.6 + 12.8	POST	5.0	3.3	3.3	14.0	26.0	5.5	3726
Provost + 2,4-DB + COC	27 + 0.4 + 1.0%	8 + 25.6 + 12.8	POST	10.0	10.0	6.0	13.7	24.0	5.7	3540
Headline + COC	0.245 + 1.0%	15 + 12.8	POST	10.0	8.3	8.3	13.7	24.7	5.2	3785
Folicur + COC	0.203 + 1.0%	7.2 + 12.8	POST	0	0	3.3	15.0	26.7	5.3	3594
Provost + COC	27 + 1.0%	8 + 12.8	POST	5.0	6.7	0	14.8	26.0	5.5	3828
CV				23.85	72.56	102.02	6.1	4.01	5.92	12.32
pValue				0.0001	0.0003	0.0267	0.7719	0.0017	0.0105	0.9792
$LSD_{(0.10)}$				1.68	4.64	4.56	1.188	1.44	0.447	624

[a]Abbreviations: COC, crop oil concentrate; POST, post emergence topical

[b] Scale of 1 to 10: 1=no leaf spot; 10=plants completely defoliated and dead due to leaf spot infections

TITLE:

Peanut Tolerance to Postemergence Grass Herbicide-Fungicide Tank Mix Combinations in Peanut at AG-CARES, Lamesa, TX, 2009.

AUTHORS:

Peter Dotray, Lyndell Gilbert, James Grichar, Jason Woodward
Texas AgriLife Research and Extension Service, Lubbock

MATERIALS AND METHODS:

Plot Size:	4 rows by 30 feet, 3 replications
Soil Type:	Amarillo fine sandy loam
Planting Date:	April 30
Variety:	Tamrun OL02
Application Date:	Postemergence, June 12
Rainfall (April to Sept.):	9.33 inches
Irrigation (April to Sept.):	12.9 inches
Digging Date:	October 23
Harvest Date:	November 2

RESULTS AND DISCUSSION:

Postemergence weed control and foliar and/or soilborne disease control are concerns for peanut growers across the state. Peanut growers have expressed an interest in mixing postemergence herbicides with foliar fungicides to reduce fuel costs. Some growers have questioned the need to increase herbicide rates to offset the possibility of reduced efficacy due to chemical incompatibility (antagonism) when tank mixing. Earlier work in different peanut growing regions suggested that some antagonism may occur with respect to weed control when a herbicide has been tank-mixed with a fungicide, and that herbicide and fungicide sprays be separated by approximately 2 to 3 days. Most labels do not contain adequate information on tank mix partners because of the extensive herbicide/fungicide possibilities and suggest that users perform jar tests for physical compatibility only. This type of test does not provide the necessary information on the possibility of reduction in weed or disease control due to antagonism. Our initial tests examined likely tank mix partners using common herbicides and fungicides in peanut. Several tests were conducted throughout the state in 2008 and repeated in 2009 in different peanut growing regions in the state as well as in different peanut market-types. Some of these tests looked at weed control while others including this one looked at crop response only in a weed-free environment. The objective of this research was to evaluate peanut injury following tank mix combinations of several fungicides and postemergence grass herbicides. Select or Poast Plus applied alone caused up to 3% injury when rated 4 weeks after treatment (Table 1). This injury was likely due to the crop oil additive and not the herbicide active ingredients and is viewed as a cosmetic injury only. Headline (applied with crop oil concentrate) injured peanut 11% 2 weeks after treatment, which was similar to the injury observed when applied in tank mix with Poast Plus (12%) and Select (13%). Previous research has shown that Headline applied without crop oil did not cause any peanut injury. Provost with crop oil caused no injury, but when applied with Poast Plus and Select injury increased to 3 and 8%, respectively. At 4 weeks after treatment, Headline or Folicur plus Poast Plus, and Provost plus Select or Poast Plus caused more injury than when applied alone but no injury exceeded 10%. By late season, no injury exceeded 5% in any treatment. Canopy width was recorded on June 26 and

July 9. On June 26, peanut canopy was reduced following Headline plus Poast Plus, Provost plus Poast Plus, and Provost applied with crop oil when compared to the non-treated control. On July 9, peanut canopy was reduced following Headline plus Select, Headline plus Poast Plus, Folicur plus Poast Plus, Provost plus Poast Plus when compared to the non-treated control. Leaf spot was evaluated on October 20 and no differences were noted following any treatment when compared to the non-treated control. Though a minor leaf spot epidemic occurred late-season, well after the applications were made, the residual activities of these fungicides were exhausted. Peanut yield ranged from 3172 to 3648 lb/A, but no differences were observed when compared to the non-treated control (3515 lb/A). This study suggests that some enhanced injury may result when tank mixing postemergence grass herbicides with foliar fungicides, but no yield loss occurred. The need to manage weed control, and possibly delay the foliar fungicides may make these tank mixes less important. Additional research is needed in this area to better determine these tank mix combinations.

Table 1. Peanut injury and yield as affected by herbicide-fungicide tank mix combinations for grass control in peanut at AG-CARES, Lamesa, TX, 2009[a].

Treatment	Rate	Prod.	Timing	Peanut Injury			Peanut Canopy Width		Leaf Spot[b]	Yield
				Jun 26	Jul 9	Sep 30	Jun 26	Jul 9	Oct 20	
	lb ai/A	oz/A		----------%----------			--------in.--------			lb/A
Non-treated	---	---	---	0	0	0	15.0	27.7	5.7	3515
Select + COC	0.125 + 1.0%	8 + 12.8	POST	0	3	0	15.3	27.3	5.8	3303
Headline + Select + COC	0.245 + 0.125 + 1.0%	15 + 8 + 12.8	POST	13	8	0	14.2	25.0	5.5	3177
Folicur + Select + COC	0.203 + 0.125 + 1.0%	7.2 + 8 + 12.8	POST	0	3	1	14.8	27.3	5.2	3305
Provost + Select + COC	27 + 0.125 + 1.0%	8 + 8 + 12.8	POST	8	8	3	15.7	26.7	5.7	3390
Poast Plus + COC	0.185 + 1.0%	23.7 + 12.8	POST	0	3	0	14.0	27.0	5.7	3248
Headline + Poast Plus + COC	0.245 + 0.185 + 1.0%	15 + 23.7 + 12.8	POST	12	10	4	13.7	25.7	5.3	3648
Folicur + Poast Plus + COC	0.203 + 0.185 + 1.0%	7.2 + 23.7 + 12.8	POST	0	7	5	14.3	25.7	5.5	3448
Provost + Poast Plus + COC	27 + 0.185 + 1.0%	8 + 23.7 + 12.8	POST	3	7	0	13.0	25.7	5.3	3551
Headline + COC	0.245 + 1.0%	15 + 12.8	POST	11	5	0	14.0	26.0	5.3	3491
Folicur + COC	0.203 + 1.0%	7.2 + 12.8	POST	0	2	0	14.7	27.3	5.8	3172
Provost + COC	27 + 1.0%	8 + 12.8	POST	0	0	0	13.5	28.0	5.3	3469
CV				40.65	74.26	110.69	5.56	3.91	6.87	9.2
pValue				0.0001	0.0165	0.0001	0.0163	0.0259	0.4767	0.7114
$LSD_{(0.10)}$				2.28	4.74	1.72	1.118	1.46	NS	NS

[a]Abbreviations: COC, crop oil concentrate; POST, post emergence topical

[b]Scale of 1 to 10: 1=no leaf spot; 10=plants completely defoliated and dead due to leaf spot infections

TITLE:

Peanut Tolerance to Valor Tank Mix Combinations at AG-CARES, Lamesa, TX, 2009.

AUTHORS:

Peter Dotray, Lyndell Gilbert, Professor, Technician II
Texas AgriLife Research and Extension Service, Lubbock

MATERIALS AND METHODS:

Plot Size:	4 rows by 30 feet, 3 replications
Soil Type:	Amarillo fine sandy loam
Planting Date:	April 30
Variety:	Tamrun OL02
Application Date:	Preemergence (PRE), April 30; At-crack (AC), May 11
Rainfall (April to Sep.):	9.33 inches
Irrigation (April to Sep.):	12.9 inches
Digging Date:	October 23
Harvest Date:	November 2

RESULTS AND DISCUSSION:

Valor SX was registered for use in peanut in 2001. This herbicide effectively controls kochia, common lambsquarter, several pigweed species including Palmer amaranth (carelessweed), golden crownbeard, and several annual morningglory species including ivyleaf morningglory. Valor SX may be applied prior to planting or preemergence. Preemergence applications must be made within 48 hours after planting and prior to peanut emergence. Applications made after plants have begun to crack or after they have emerged may result in severe injury. Splashing from heavy rains or cool conditions at or near emergence may also result in injury and even delayed maturity and yield loss. Some growers have expressed an interest in the possibility of tank mixing Valor with Gramoxone Inteon (paraquat). We initiated a study in 2009 to determine peanut response to Valor at 0, 2, and 3 oz/A and Gramoxone Inteon at 0, 8, and 16 oz/A applied alone and in tank mixture applied preemergence (PRE) or at ground crack (AC). A Valor by Gramoxone Inteon interaction was observed for peanut stand; therefore, individual treatment means were compared. Peanut stand ranged from 9.2 to 10.8 plants per 3 feet of row and no treatment caused a reduction in stand relative to the non-treated control (9.7 plants/3 feet) (Table 1). An application timing by Valor interaction was observed for peanut injury recorded on June 4. Only Valor applied AC at 2 and 3 oz/A injured peanut, but this injury was no greater than 5% (Table 2). On June 18 and July 2, Valor at 3 oz/A injured peanut 6% (Table 3). Yield from Valor-treated plots ranged from 3424 to 3608 lb/A, and were not reduced relative to the non-treated control (3297 lb/A). Results from this study suggest that Valor alone or in tank mix with Gramoxone Inteon is a safe herbicide option to peanut producers in our region. The current Valor label states that applications must be made within 48 hours of planting. There is a risk of peanut injury if Valor applications are delayed and peanuts are emerging.

Table 1. Peanut stand by Valor tank mix combinations averaged over application timings at AG-CARES, Lamesa, TX, 2009[a].

Treatment	Rate	Prod.	Stand
			May 21
	lb ai/A	oz/A	Plants/3ft.
Valor SX + Gramoxone Inteon	0 + 0	0 + 0	9.7
Valor SX + Gramoxone Inteon	0.064 + 0	2 + 0	10.2
Valor SX + Gramoxone Inteon	0.096 + 0	3 + 0	9.5
Valor SX + Gramoxone Inteon + NIS	0 + 0.125 + 0.25%	0 + 8 + 3.2	10.1
Valor SX + Gramoxone Inteon + NIS	0.064 + 0.125 + 0.25%	2 + 8 + 3.2	9.2
Valor SX + Gramoxone Inteon + NIS	0.096 + 0.125 + 0.25%	3 + 8 + 3.2	10.1
Valor SX + Gramoxone Inteon + NIS	0 + 0.25 + 0.25%	0 + 16 + 3.2	10.8
Valor SX + Gramoxone Inteon + NIS	0.064 + 0.25 + 0.25%	2 + 16 + 3.2	10.7
Valor SX + Gramoxone Inteon + NIS	0.096 + 0.25 + 0.25%	3 + 16 + 3.2	9.3
pValue			0.0071
$LSD_{(0.10)}$			0.8

[a]Abbreviations: NIS, non-ionic surfactant

Table 2. Peanut injury by Valor rate and application timing averaged over Gramoxone Inteon rates at AG-CARES, Lamesa, TX, 2009[a].

Treatment	Rate	Prod.	Timing	Peanut Injury
				Jun 4
	lb ai/A	oz/A		%
Valor SX	0	0	PRE	0
Valor SX	0	0	AC	0
Valor SX	0.064	2	PRE	0
Valor SX	0.064	2	AC	2
Valor SX	0.096	3	PRE	0
Valor SX	0.096	3	AC	5
pValue				0.0001
$LSD_{(0.10)}$				0.8

[a]Abbreviations: AC, at-crack; PRE, preemergence

Table 3. Peanut injury and yield by Valor rate averaged over application timing and Gramoxone Inteon rate at AG-CARES, Lamesa, TX, 2009.

Treatment	Rate	Prod.	Peanut Injury		Yield
			Jun 18	Jul 2	
	lb ai/A	oz/A	---------------%--------------		lb/A
Valor SX	0	0	0	0	3297
Valor SX	0.064	2	1	0	3424
Valor SX	0.096	3	6	6	3608
pValue			0.0001	0.0001	0.0374
$LSD_{(0.10)}$			1.4	0.3	197

TITLE:

Peanut Tolerance to Reflex Herbicide Applications at AG-CARES, Lamesa, TX, 2008 and 2009.

AUTHORS:

Peter Dotray, Lyndell Gilbert
Texas AgriLife Research and Extension Service, Lubbock

MATERIALS AND METHODS:

Plot Size:	4 rows by 30 feet, 4 replications
Soil Type:	Amarillo fine sandy loam
Planting Date:	April 30, 2008; April 30, 2009
Variety:	Flavorrunner 458 (2008); Tamrun OL02 (2009)
Application Dates:	Preemergence (PRE), May 1, 2008; April 30, 2009; At-crack (AC), May 13, 2008; May 11, 2009; 21 days after planting (DAP), May 20, 2008; May 21, 2009
Rainfall:	15.92 inches (2008); 9.33 inches (2009)
Irrigation:	12.4 inches (2008); 12.9 inches (2009)
Digging Date:	October 27, 2008; October 23, 2009
Harvest Date:	November 4, 2008; November 2, 2009

RESULTS AND DISCUSSION:

Reflex (fomesafen) was recently labeled for use in cotton west of I-35. Currently, this herbicide is restricted for use as either a fall or spring preplant application. Additional label changes for use preemergence in cotton are pending. The objective of this research was to examine peanut tolerance to Reflex applied at 12, 16, 24, and 32 oz/A preemergence (PRE), at ground crack (AC), and early postemergence (21 days after planting). This study was conducted under weed-free conditions to ensure that crop response was a result of the herbicide and not weed competition. This study was conducted in both 2008 and 2009 at AG-CARES. In 2008, Reflex applied PRE at 12 to 32 oz/A caused up to 59% peanut injury 47 days after application (Table 1a). More injury was observed as Reflex rate increased. Late-season (Sep 26) injury was still apparent following PRE applications. Reflex applied AC or POST caused up to 50 and 54% injury, respectively. More injury was observed as the Reflex rate increased and injury was still apparent late-season. Peanut yield was reduced following Reflex applied PRE at all rates, AC at 24 and 32 oz/A, and POST at 16, 24, and 32 oz/A. In 2009, Reflex applied PRE at 16 to 32 oz/A caused 6 to 15% peanut injury 21 days after application (DAA), 6 to 23% injury 35 DAA, and 8 to 46% injury mid-season (July 2) (Table 1b). More injury was observed as Reflex rate increased. Late-season (Sep 25) injury up to 44% was still apparent following PRE applications. Reflex applied AC or POST caused up to 36 and 15% injury, respectively. More injury was observed as the Reflex rate increased and injury following 16 to 32 oz/A treatments was still apparent late-season. Peanut yield was reduced following Reflex applied PRE at 16 to 32 oz/A rates, AC at 12, 16, and 32 oz/A; and POST at 24 oz/A. Results from this study suggest that Flavorrunner 458 (2008) and Tamrun OL02 (2009) are very susceptible to Reflex applied PRE, AC, and early postemergence at rates from 12 to 32 oz/A. Future label changes that would allow Reflex use in peanut seem unlikely based on this data collected on the Texas High Plains and data collected in south Texas and Georgia.

Table 1a. Peanut Injury and Yield as Affected by Reflex Herbicide Applications at AG-CARES, Lamesa, TX, 2008[a].

Treatment	Rate	Prod.	Timing	Peanut Injury					Yield
				May 20	Jun 3	Jun 16	Jul 8	Sep 26	
	lb ai/A	oz/A		--------------------------	----------	%	----------	--------------------------	lb/A
Non-treated	---	---	---	0	0	0	0	0	5196
Reflex 2SL fb	0.188	12	PRE	0	0	14	1	10	4475*
POST Combination[b]			21 DAP						
Reflex 2SL fb	0.25	16	PRE	0	0	23	9	8	4567*
POST Combination			21 DAP						
Reflex 2SL fb	0.375	24	PRE	0	1	45	27	15	4372*
POST Combination			21 DAP						
Reflex 2SL fb	0.5	32	PRE	5	2	59	46	23	3857*
POST Combination			21 DAP						
Valor fb	0.096	3	PRE	0	0	1	0	3	5021
POST Combination			21 DAP						
Valor fb	0.191	6	PRE	3	0	4	0	1	5381
POST Combination			21 DAP						
Reflex 2SL + POST Combination	0.188	12	AC	2	0	3	0	8	4759
Reflex 2SL + POST Combination	0.25	16	AC	2	0	16	7	9	4920
Reflex 2SL + POST Combination	0.375	24	AC	2	0	38	23	14	4498*
Reflex 2SL + POST Combination	0.5	32	AC	2	1	50	36	18	4301*
POST Combination			AC	3	0	0	1	4	4577*
Reflex 2SL + POST Combination	0.188	12	21 DAP	0	0	6	8	6	4918
Reflex 2SL + POST Combination	0.25	16	21 DAP	0	0	21	20	15	4664
Reflex 2SL + POST Combination	0.375	24	21 DAP	0	0	35	36	19	4006*
Reflex 2SL + POST Combination	0.5	32	21 DAP	0	0	54	60	19	3938*
POST Combination			21 DAP	0	0	1	0	5	5348
CV				42.2	243.14	20.24	21.5	46.45	9.51
pValue				0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
$LSD_{(0.10)}$				1	1	5	4	6	525

[a]Abbreviations: AC, At-crack; COC, crop oil concentrate; DAP, days after planting; NIS, non-ionic surfactant; PRE, preemergence

[b] POST Combination = Gramoxone Inteon 2SL (0.188 lb ai/A; 12 oz/A), Basagran 4 SL (0.5 lb ai/A; 16 oz/A), 2,4-DB (0.2188 lb ai/A; 14 oz/A), and NIS (0.125 %v/v; 1.6 oz/A)

Table 1b. Peanut Injury and Yield as Affected by Reflex Herbicide Applications at AG-CARES, Lamesa, TX, 2009[a].

Treatment	Rate	Prod.	Timing	Peanut Injury					Yield
				May 21	Jun 4	Jun 18	Jul 2	Sep 25	
	lb ai/A	oz/A		----------%				-----------	lb/A
Non-treated	---	---	---	0	0	0	0	0	3597
Reflex 2SL fb	0.188	12	PRE	0	6.0	10.0	7.8	0	3294
POST Combination[b]			21 DAP						
Reflex 2SL fb	0.25	16	PRE	6.0	11.3	13.8	13.8	6.3	3081*
POST Combination			21 DAP						
Reflex 2SL fb	0.375	24	PRE	9.3	17.5	21.3	22.5	26.3	2850*
POST Combination			21 DAP						
Reflex 2SL fb	0.5	32	PRE	15.5	22.5	35.0	46.3	43.8	2394*
POST Combination			21 DAP						
Valor fb	0.096	3	PRE	0	0	5.0	2.5	14.5	3571
POST Combination			21 DAP						
Valor fb	0.191	6	PRE	18.3	5.8	18.0	8.8	2.5	3598
POST Combination			21 DAP						
Reflex 2SL + POST Combination	0.188	12	AC	3.8	1.3	0	10.0	4.5	3252*
Reflex 2SL + POST Combination	0.25	16	AC	1.3	1.3	5.0	13.5	5.0	3446
Reflex 2SL + POST Combination	0.375	24	AC	0	8.0	13.8	18.8	20.0	3013*
Reflex 2SL + POST Combination	0.5	32	AC	9.3	11.3	26.3	30.0	36.3	2719*
POST Combination			AC	0	0	11.3	0	0	3643
Reflex 2SL + POST Combination	0.188	12	21 DAP	0	1.3	18.8	10.5	0	3273*
Reflex 2SL + POST Combination	0.25	16	21 DAP	0	1.3	0	6.3	2.5	3494
Reflex 2SL + POST Combination	0.375	24	21 DAP	0	5.0	12.5	14.3	9.3	3296
Reflex 2SL + POST Combination	0.5	32	21 DAP	0	6.8	11.8	15.0	15.0	3232*
POST Combination			21 DAP	0	1.3	2.5	3.8	0	3642
CV				60.47	35.84	28.27	23.45	68.88	7.87
pValue				0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
LSD $_{(0.10)}$				2.68	2.52	4.05	3.67	8.96	305

[a]Abbreviations: AC, At-crack; COC, crop oil concentrate; DAP, days after planting; NIS, non-ionic surfactant; PRE, preemergence

[b] POST Combination = Gramoxone Inteon 2SL (0.188 lb ai/A; 12 oz/A), Basagran 4 SL (0.5 lb ai/A; 16 oz/A), 2,4-DB (0.2188 lb ai/A; 14 oz/A), and NIS (0.125 %v/v; 1.6 oz/A)

TITLE:

Evaluation of Convoy and Abound on Peanuts at AG-CARES, Lamesa, TX, 2009

AUTHORS:

Jason Woodward, Mitchell Ratliff, and Ira Yates, Extension Plant Pathologist,
Extension Assistant, and Technician

MATERIALS AND METHODS:

Plot size:	2-rows by 50 feet, four replications
Soil type:	Amarillo fine sandy loam
Planting date:	30-Apr
Cultivars:	Flavorunner 458 (Runner), and Gregory (Virginia)
Fungicides:	Treatments were comprised of combinations of Abound (24.5 fl oz/A), Bravo WeatherStik (26 fl oz/A), and Convoy (26 fl oz/A). Detailed descriptions of the treatments evaluated are presented in Tables 1 and 2.
Application timing:	75, 105, and 120 days after planting
Digging date:	14-Oct (Gregory) and 23-Oct (Flavorrunnere 458)
Harvest date:	2-Nov

RESULTS AND DISCUSSION:

Convoy 40SC is a new formulation of the fungicide flutolanil (formerly registered as Moncut, also one of the principle components of Artisen). Convoy is labeled in peanuts for control several soilborne diseases, such as Southern blight and Rhizoctonia limb rot; however, flutolanil lack activity against the foliar diseases, such as leaf spot, pepper spot, and web blotch. The objective of this study was to evaluate the performance of fungicides comprised of Convoy and Abound under moderate disease pressure. Dry and warm conditions were experienced early in the season; however, adequate rainfall and mild temperatures were experienced later in the season. Rhizoctonia pod rot and Southern blight were observed at low levels in this trial (data not shown). Early leaf spot was the primary disease observed in the field, with initial symptoms being observed in mid-July (data not shown). For Flavorrunner 458, leaf spot intensity in the untreated control plots approached 20% defoliation (Table 1). All fungicide programs resulted in improved leaf spot control. Yields, damaged kernels, and grades were similar among treatments averaging 3878 lb/A, 2.6%, and 62.7%, respectively. Grades for Flavorrunner 458 were atypical due to stringent grading factors. Overall, leaf spot levels were lower for Gregory when compared to Flavorrunner 458 (Table 2). No differences in leaf spot, yield, or grade parameters were observed for the treatments evaluated. Leaf spot intensity averaged a rating of 3.0, whereas, yields averaged 3673 lb/A. Grades averaged 74% with 35.4% extra large kernels.

These results indicate that fungicide applications can reduce damage caused by leaf spot; however, disease levels experienced were relatively low. Additional studies evaluating these products in fields with soilborne disease pressure are needed, so that we can better identify the proper use of these products on the Southern High Plains of Texas.

Table 1. Effect of fungicide programs containing Abound, Bravo, and/or Convoy on leaf spot, yield, and grade, Flavorrunner 458 peanuts at AG-CARES, 2009

Treatment	Description	Rates	Application timing (DAP)[†]	Leaf spot (1-10scale)	Pod yields (lb/A)	Damaged kernels (%)	Grade (%)
1	Convoy + Bravo	26 fl oz + 24 fl oz	75	4.0 b[‡]	4142 a[‡]	3.4 a[‡]	61.8 a[‡]
	Bravo	24 fl oz	105				
2	Convoy + Bravo	26 fl oz + 24 fl oz	75, 105	4.0 b	3934 a	2.8 a	62.8 a
	Bravo	24 fl oz	120				
3	Abound	24.5 fl oz	75, 105	3.5 bc	3660 a	1.8 a	63.3 a
	Bravo	24 fl oz	120				
4	Abound	24.5 fl oz	75, 105	3.6 bc	3775 a	2.8 a	65.5 a
	Bravo	24 fl oz	120				
5	Convoy + Bravo	26 fl oz + 24 fl oz	75	3.1 c	3878 a	2.4 a	62.4 a
	Abound	24.5 fl oz	105				
	Bravo	24 fl oz	120				
6	Abound	24.5 fl oz	75	3.1 c	4171 a	2.5 a	62.9 a
	Convoy + Bravo	26 fl oz + 24 fl oz	105				
	Bravo	24 fl oz	120				
7	Untreated control	- - - -	- - - -	5.3 a	3587 a	2.8 a	60.0 a
LSD (P<0.05)[b]				0.8	ns	ns	ns

[†] DAP = Days after planting. This timing reflects when fungicides would be applied in a pod rot program. [‡] Means within a column followed by the same letter are not different according to Fisher's protected LSD.

Table 2. Effect of fungicide programs containing Abound, Bravo, and/or Convoy on leaf spot, yield, and grade, Gregory peanuts at AG-CARES, 2009

Treatment	Description	Rates	Application timing (DAP)†	Leaf spot (1-10scale)	Pod yields (lb/A)	Damaged kernels (%)	Extra large kernels (%)	Grade (%)
1	Convoy + Bravo	26 fl oz + 24 fl oz	75	3.3 a‡	3858 a‡	3.9 a‡	34.6 a‡	76.4 a‡
	Bravo	24 fl oz	105					
2	Convoy + Bravo	26 fl oz + 24 fl oz	75, 105	3.0 a	3841 a	3.1 a	36.7 a	73.1 a
	Bravo	24 fl oz	120					
3	Abound	24.5 fl oz	75	2.8 a	3336 a	4.6 a	36.6 a	74.1 a
	Bravo	24 fl oz	105					
4	Abound	24.5 fl oz	75, 105	3.0 a	3767 a	6.7 a	37.5 a	74.3 a
	Bravo	24 fl oz	120					
5	Convoy + Bravo	26 fl oz + 24 fl oz	75	2.8 a	3759 a	7.2 a	33.9 a	72.0 a
	Abound	24.5 fl oz	105					
	Bravo	24 fl oz	120					
6	Abound	24.5 fl oz	75	3.3 a	3656 a	5.6 a	34.3 a	75.9 a
	Convoy + Bravo	26 fl oz + 24 fl oz	105					
	Bravo	24 fl oz	120					
7	Untreated control	- - - -	- - - -	3.0 a	3491 a	5.7 a	34.2 a	72.1 a
LSD (P<0.05)				ns	ns	ns	ns	ns

† DAP = Days after planting. This timing reflects when fungicides would be applied in a pod rot program. ‡ Means within a column followed by the same letter are not different according to Fisher's protected LSD.

TITLE:

Evaluation of Topguard Fungicide on Peanut Leaf Spot at AG-CARES, Lamesa, TX, 2009.

AUTHORS:

Jason Woodward, Mitchell Ratliff, and Ira Yates, Extension Plant Pathologist,
Extension Assistant, and Technician

MATERIALS AND METHODS:

Plot size:	2-rows by 50 feet, four replications
Soil type:	Amarillo fine sandy loam
Planting date:	30-Apr
Cultivars:	Flavorunner 458 (Runner), and Gregory (Virginia)
Fungicides:	Treatments were comprised of combinations of Abound (24.5 fl oz/A), Bravo WeatherStik (26 fl oz/A), and Convoy (26 fl oz/A). Detailed descriptions of the treatments evaluated are presented in Tables 1 and 2.
Application timing:	75, 105, and 120 days after planting
Digging date:	14-Oct (Gregory) and 23-Oct (Flavorrunnere 458)
Harvest date:	2-Nov

RESULTS AND DISCUSSION:

Topguard (active ingredient flutriafol) is an experimental triazole fungicide seeking a label in peanuts. Topguard is active against early and late leaf spot. Field trials were conducted on Runner and Virginia-type peanuts to evaluate the performance of increasing rates of Topguard under low to moderate leaf spot pressure. Despite dry conditions early, appreciable levels of leaf spot developed late in the growing season. Rhizoctonia pod rot and Southern blight were observed at low levels in this trial (data not shown). Early leaf spot was the primary disease observed in the field, with initial symptoms being observed in mid-July (data not shown). Leaf spot intensity approached 20% defoliation in non-treated Flavorrunner 458 plots (Table 1). All fungicide programs resulted in improved leaf spot control compared to non-treated plots, and increasing rates of Topguard lead to improved leaf spot control. No differences among treatments were observed with regard to yield. Overall, leaf spot levels were lower for Gregory when compared to Flavorrunner 458 (Table 2). Differences in leaf spot were observed with Topguard at 28 fl oz/A providing levels of leaf spot control similar to commercial programs containing Folicur or Provost. Despite differences in leaf spot control, yields and grades for all treatments were similar.

These results indicate that fungicide applications can reduce damage caused by leaf spot; however, disease levels experienced were relatively low. Additional studies evaluating these products in fields with soilborne disease pressure are needed, so that we can better identify the proper use of these products on the Southern High Plains of Texas.

Table 1. Effect of increasing Topguard rates on leaf spot intensity and yield of Flavorruner 458 peanuts at AG-CARES in 2009

Treatment	Description	Rate/A	Application timing (DAP)[†]	Leaf spot (1-10scale)	Pod yields (lb/A)
1	Untreated control	-----	-----	5.5 a	4085
2	Bravo WeatherStik Topguard	24 fl oz 7 fl oz	60 75 & 105	4.9 b	3557
3	Bravo WeatherStik Topguard	24 fl oz 10 fl oz	60 75 & 105	3.5 c	3293
4	Bravo WeatherStik Topguard	24 fl oz 14 fl oz	60 75 & 105	3.3 cde	4396
5	Bravo WeatherStik Topguard	24 fl oz 28 fl oz	60 75 & 105	2.5 f	4712
6	Bravo WeatherStik Folicur	24 fl oz 7.2 fl oz	60 75 & 105	2.9 ef	4194
7	Bravo WeatherStik Provost	24 fl oz 8 fl oz	60 75 & 105	3.0 de	4089
8	Bravo WeatherStik Topguard + Bravo WeatherStik	24 fl oz 7 fl oz 16 fl oz	60 75 & 105	3.4 cd	4151
LSD (P<0.05)				0.5	ns

Table 2. Effect of increasing Topguard rates on leaf spot intensity and yield of Gregory peanuts at AG-CARES in 2009

Treatment	Description	Rate/A	Application timing (DAP)†	Leaf spot (1-10scale)	Pod yields (lb/A)	Damaged kernels (%)	Extra large kernels (%)	Grade (%)
1	Untreated control	-----	-----	4.3 a	3980 a	3.3 a	34.3 a	75.6 a
2	Bravo WeatherStik Topguard	24 fl oz 7 fl oz	60 75 & 105	3.6 b	3792 a	4.5 a	31.7 a	73.5 a
3	Bravo WeatherStik Topguard	24 fl oz 10 fl oz	60 75 & 105	3.3 bc	3749 a	4.5 a	33.2 a	75.3 a
4	Bravo WeatherStik Topguard	24 fl oz 14 fl oz	60 75 & 105	3.0 c	3656 a	5.1 a	32.2 a	73.7 a
5	Bravo WeatherStik Topguard	24 fl oz 28 fl oz	60 75 & 105	2.4 d	3713 a	4.7 a	32.7 a	76.6 a
6	Bravo WeatherStik Folicur	24 fl oz 7.2 fl oz	60 75 & 105	2.4 d	3759 a	4.2 a	32.7 a	73.6 a
7	Bravo WeatherStik Provost	24 fl oz 8 fl oz	60 75 & 105	2.4 d	3663 a	5.2 a	32.3 a	74.4 a
8	Bravo WeatherStik Topguard Bravo WeatherStik	24 fl oz 7 fl oz 16 fl oz	60 75 & 105	2.3 d	3719 a	6.4 a	31.3 a	75.8 a
LSD (P<0.05)				0.4	ns	ns	ns	ns

† DAP = Days after planting. This timing reflects when fungicides would be applied in a pod rot program. ‡ Means within a column followed by the same letter are not different according to Fisher's protected LSD.

APPENDIX

Detailed Growing Season Climate Data at AG-CARES, Lamesa, TX 2009

Date		Max Temp °F	Min Temp °F	Max RH %	Min RH %	Average Wind Speed mil/hr	ET (in.)	Rainfall (in.)	Heat Units: Cotton	Heat Units: Peanuts	Heat Units: Sorghum
April	1	N/A	N/A	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A
	2	65.7	41.5	63.7	11.5	15.5	0.26	0	0	0	0
	3	82.7	37.4	46.4	10.7	11.8	0.32	0	0	0	0
	4	80.4	48.3	62.1	9.3	13.8	0.33	0	0	0	0
	5	57.8	33.8	50.5	17.6	15.1	0.21	0	0	0	0
	6	61.8	24.6	68.7	11.5	6.9	0.19	0	0	0	0
	7	76	25.7	74.1	4.2	7.5	0.25	0	0	0	0
	8	88.2	43.8	43.8	7.2	6.9	0.27	0	0	0	0
	9	76.5	51.4	37.2	8	16.5	0.36	0	0	0	0
	10	65.5	40.3	67	21.6	10	0.21	0	0	0	0
	11	67.8	44.9	95.3	40.8	14.1	0.18	0	0	0	0
	12	66	44.3	96.1	26.8	10	0.17	0	0	0	0
	13	69.7	39.4	90.3	18.9	7.8	0.2	0	0	0	0
	14	79	43.1	81.8	15.5	9.7	0.27	0	0	0	0
	15	81	57.6	68.2	22.2	13.3	0.3	0	0	14	0
	16	80.9	54.6	94.2	21	9.9	0.23	0	0	13	0
	17	69	42.6	83.9	12.4	6.3	0.21	0.5	0	7	0
	18	74.3	40.7	68.8	10.7	8.8	0.26	0	0	10	0
	19	72.2	45	77.5	22.8	11.6	0.25	0	0	9	0
	20	81.1	38.6	87.9	13.2	5.3	0.24	0	0	13	0
	21	88.7	48.7	57.6	8.7	2.9	0.23	0	0	17	0
	22	94.4	49.4	57.8	5.2	7.6	0.34	0	0	20	0
	23	89.1	56.9	50.4	10.8	8.1	0.29	0	0	18	0
	24	90	55.5	66.6	7.6	9.4	0.34	0	0	18	0
	25	88.8	62.6	89	14.4	11.5	0.3	0	0	21	0
	26	87.2	65	84.8	10.2	13.4	0.33	0	0	21	0
	27	82.6	59	90.5	20.1	6.5	0.24	0	0	16	0
	28	67.7	57	95.3	65.8	13.2	0.09	0	0	7	0
	29	90.7	65.9	92.8	9.1	10.7	0.32	0	0	23	0
	30	94.5	62.1	94.9	7.1	7.2	0.33	0	0	23	
May	1	96.9	58	96.7	6.1	8.9	0.34	0	17	22	27
	2	69.2	51.6	96.5	53.4	8.7	0.13	0.2	0	7	10
	3	70.2	51.7	97.6	47.7	7.4	0.17	0	1	8	11
	4	75.5	47.5	96.3	41.4	7.3	0.17	0	1	10	13
	5	92.6	54.9	92	17.7	5.7	0.25	0	14	19	24
	6	86	58.7	97.6	33.5	8.5	0.25	0	12	17	22
	7	101.4	62.8	97.4	7.5	6.6	0.34	0	22	24	31
	8	96.2	68.2	77.5	10	10.5	0.39	0	22	27	32
	9	77.3	55.5	79.8	25.7	14.3	0.29	0	6	11	16
	10	83.2	53.1	87	37.6	10.2	0.26	0	8	14	18
	11	73.7	52.1	96.4	60.5	11.7	0.13	0	3	9	13
	12	96.6	57.1	97.8	9.7	10.1	0.35	0	17	21	27
	13	99.1	66	80.6	5.3	10.1	0.42	0	23	25	33
	14	87.2	60.5	86.8	37.6	10.6	0.28	0.5	14	19	24
	15	89.5	63.7	90.1	25.3	10	0.28	0.35	17	22	27
	16	64.7	51.4	94.3	70.4	9.6	0.06	0	0	5	8
	17	75.1	46	87.4	19.1	5	0.22	0	1	10	13
	18	82.7	53.3	85.6	23.1	7.5	0.27	0	8	14	18
	19	82.8	55.7	65.2	15.9	9	0.31	0	9	14	19
	20	84	51.7	70.4	17	9.1	0.3	0	8	15	18
	21	85.3	56.1	71.7	24	9.5	0.29	0	11	16	21
	22	81.5	57.9	83.2	27.3	7.9	0.23	0	10	15	20
	23	76.8	61.4	90.4	44.5	4	0.14	0	9	14	19

Detailed Growing Season Climate Data at AG-CARES, Lamesa, TX 2009

Date		Max Temp °F	Min Temp °F	Max RH %	Min RH %	Average Wind Speed mil/hr	ET (in.)	Rainfall (in.)	Heat Units Cotton	Heat Units Peanuts	Heat Units Sorghum
	24	77.7	59.2	94	41	4.2	0.16	0	8	13	18
	25	90	57.3	95.7	17	4.8	0.26	0	14	19	24
	26	89.9	59	85.8	14.5	8.6	0.32	0.1	14	19	24
	27	82.6	56.6	88.4	24.9	6.5	0.26	0.1	10	15	20
	28	87.4	56.6	95.4	16.7	6.3	0.28	0.13	12	17	22
	29	88.3	57.4	86	14.4	5.3	0.29	0	13	18	23
	30	88.8	57.8	76.2	11	5	0.27	0	13	18	23
	31	90.1	60.1	80.8	19.2	8.7	0.31	0	15	20	25
June	1	89	60.4	81.9	27.4	9.6	0.32	0	15	20	25
	2	92.9	64.4	85.6	18	9	0.31	0	19	24	29
	3	83.5	60.9	79.4	29.7	9.4	0.27	0	12	17	22
	4	86.7	57.9	86.3	27.2	6.1	0.27	0	12	17	22
	5	94.5	61.7	71.2	19.2	9.3	0.35	0	18	23	28
	6	100	69.3	53.5	13	11.2	0.43	0	25	27	35
	7	98.5	71.5	62.2	9.7	9.4	0.38	0	25	28	35
	8	99.3	60.2	79.9	10.6	6	0.32	0	20	23	30
	9	95.8	68.8	82.2	10.7	7.1	0.28	0	22	27	32
	10	77.3	63.2	94.8	50.5	6.3	0.16	1.24	10	15	20
	11	94.5	59.1	96.4	11.1	4.4	0.28	0	17	22	27
	12	98.8	61.9	89.7	7.8	6.2	0.34	0	20	23	30
	13	102.9	66.7	87.3	12.6	8.7	0.37	0.03	25	26	33
	14	99.3	65.6	90.9	15.5	10.1	0.36	0.02	22	25	32
	15	100.1	65.2	95.1	16	7.8	0.34	0.07	23	25	33
	16	102	67.8	65.8	10.5	7.1	0.37	0	25	26	34
	17	96.1	68.4	68.6	23.3	9.1	0.33	0	22	27	32
	18	93.8	71.7	75.7	30	10.3	0.33	0	23	28	33
	19	83.4	66.6	94.1	51.5	7.6	0.17	0.29	15	20	25
	20	83.4	66.3	95.9	56.4	10	0.17	1.89	15	20	25
	21	91.9	69.4	91.9	32.1	8.7	0.29	0	21	26	31
	22	93.5	69.6	88.6	23.8	7.5	0.32	0	22	27	32
	23	94.6	69.3	81.5	23.1	7.6	0.33	0	22	27	32
	24	96.7	67.6	83.6	20.8	2.7	0.26	0	22	26	32
	25	98.6	68.9	78.2	15.1	4.9	0.3	0	24	27	34
	26	99	71.9	60.9	18.1	4.6	0.28	0.03	25	28	35
	27	100.2	70.5	73.8	18.2	5.6	0.32	0.01	25	28	35
	28	91	71.7	87.3	35	7.9	0.23	0.07	21	26	31
	29	92.6	68.3	92.7	30.9	4.4	0.22	0.21	20	25	30
	30	78.1	66.3	95.2	71.3	4.8	0.11	2.36	12	17	22
July	1	87.9	63	97	34.4	2.9	0.23	0	15	20	25
	2	92.5	69.3	90	25.4	4.6	0.27	0	21	26	31
	3	93.8	70.5	84.1	25.8	7.9	0.31	0	22	27	32
	4	95.8	71	90.9	30.3	6.1	0.24	0.91	23	28	33
	5	76.2	66.7	95.4	72.4	4.5	0.09	0.85	11	16	21
	6	84.1	66.3	96.9	43.8	3.9	0.2	0	15	20	25
	7	92.5	68.7	91	30.9	5.6	0.27	0	21	26	31
	8	101.7	70.7	78.7	13	6.6	0.34	0	26	28	35
	9	102.8	74.3	59.1	12.5	7.8	0.38	0	29	30	37
	10	100.9	73.4	55.3	12.9	7.1	0.37	0	27	29	37
	11	94.9	66.9	68.8	19.9	5.6	0.31	0	21	26	31
	12	95	67.8	76.4	24.7	5.2	0.28	0	21	26	31
	13	97.1	67.1	73.6	20.4	6.9	0.33	0	22	26	32
	14	99.2	67.5	67.2	17.9	8.1	0.36	0	23	26	33
	15	97.7	70.5	65.2	19.9	8.1	0.36	0	24	28	34

Detailed Growing Season Climate Data at AG-CARES, Lamesa, TX 2009

Date		Max Temp °F	Min Temp °F	Max RH %	Min RH %	Average Wind Speed mil/hr	ET (in.)	Rainfall (in.)	Heat Units Cotton	Heat Units Peanuts	Heat Units Sorghum
	16	98.7	71	60.7	12.7	5.5	0.31	0	25	28	35
	17	96	66.4	82.1	23.6	7.8	0.33	0.61	21	26	31
	18	93.3	64.8	92.3	22.3	5.1	0.28	0.07	19	24	29
	19	95.1	69.3	78.8	22.5	6.2	0.3	0	22	27	32
	20	99.3	71	87.5	14.6	6.8	0.31	0.24	25	28	35
	21	93.2	70.9	73.7	24.3	7	0.27	0	22	27	32
	22	75.8	63.7	96.4	62.2	7.3	0.09	1.64	10	15	20
	23	76	63.1	93.8	66.8	4.1	0.11	0.09	10	15	20
	24	87.9	64.2	96.7	40.8	1.5	0.21	0	16	21	26
	25	93.5	66.7	86.5	22.5	4.5	0.27	0	20	25	30
	26	90.7	69.1	80.7	30.5	3.2	0.18	0	20	25	30
	27	92.8	72.1	92.3	32.1	5.6	0.24	0.01	22	27	32
	28	91.7	69.3	92.6	34.9	4.7	0.25	0	20	25	31
	29	91.1	65.6	94.2	39.6	6.2	0.24	0.16	18	23	28
	30	83.9	65.5	92.8	49	5.3	0.21	0.1	15	20	25
	31	85.2	67	92.5	40.6	5.3	0.21	0.26	16	21	26
August	1	89.4	68.5	94	34.4	5.5	0.24	0	19	24	29
	2	92	67.9	92.5	32	4	0.25	0	20	25	30
	3	93.8	65.2	91.4	27.2	4.7	0.26	0	20	25	30
	4	96.5	65	85.9	23.8	4.9	0.27	0	21	25	31
	5	96.6	66.1	84.4	19.8	4.9	0.28	0	21	26	31
	6	95	63.7	84.5	22.9	6.2	0.29	0	19	24	29
	7	97.1	63.7	81.1	18.9	7.6	0.33	0	20	24	30
	8	97.1	72	65.2	24.6	9.3	0.36	0	25	28	35
	9	95	69.4	75.5	25.1	7.9	0.32	0	22	27	32
	10	95.1	71.2	74.4	27	6	0.29	0	23	28	33
	11	95.6	69.2	76.5	26.3	5.1	0.25	0	22	27	32
	12	93.5	65.5	92.4	27.4	5.1	0.24	0.01	19	24	29
	13	93.7	64.3	90.8	25.2	5.5	0.26	0	19	24	29
	14	94.3	67.2	82	28.3	7.1	0.25	0.15	21	26	31
	15	99	69.3	86.4	19.3	7.2	0.3	0.1	24	27	34
	16	101.4	67.1	86.7	14.4	6	0.3	0	24	26	34
	17	97.6	68.7	74.6	20.7	7.5	0.32	0	23	27	33
	18	93.8	69.6	68.9	25.6	7.7	0.3	0	22	27	32
	19	98.8	67.6	78.9	18.1	8.4	0.33	0	23	26	33
	20	99.5	73.5	73.4	19.7	8.7	0.34	0.07	27	29	37
	21	93.1	66.2	70.3	31.2	5.8	0.26	0	20	25	30
	22	98.2	69.1	84.6	20.6	4.6	0.27	0	24	27	34
	23	97.5	67.1	81.7	19.6	5	0.27	0	22	26	32
	24	98.2	68.7	62.3	17.3	7.4	0.33	0	23	27	33
	25	96	59.4	74.1	14.7	5.6	0.28	0	18	22	28
	26	96.4	59.4	83.6	16.5	3.7	0.24	0	18	22	28
	27	90.6	68.1	89.7	30.7	3.9	0.17	0.17	19	24	29
	28	88.8	62.3	90	23.1	3.9	0.19	0	16	21	26
	29	92.3	57.4	86.7	13.1	4.5	0.25	0	15	20	25
	30	85.9	62.9	81.8	28.9	7.3	0.25	0	14	19	24
	31	87.7	61.6	74.2	27.6	7	0.24	0	15	20	25
September	1	91.7	61.3	73.4	22	6.9	0.27	0	17	22	27
	2	91.8	61.2	77.6	21.2	6.5	0.26	0	16	21	26
	3	90	59	87.5	27.2	3.8	0.19	0	14	20	25
	4	85.8	65.7	79.5	35.8	6.5	0.19	0	16	21	26
	5	85.1	63.5	93.4	34.5	4.5	0.18	0	14	19	24
	6	86.8	61.9	87.4	31	3.7	0.19	0	14	19	24
	7	89.7	65.3	83	28.9	7	0.24	0	17	22	27

Detailed Growing Season Climate Data at AG-CARES, Lamesa, TX 2009

Date		Max Temp °F	Min Temp °F	Max RH %	Min RH %	Average Wind Speed mil/hr	ET (in.)	Rainfall (in.)	Heat Units Cotton	Heat Units Peanuts	Heat Units Sorghum
	8	87.2	65.3	89.8	36.1	7.2	0.19	0.28	16	21	26
	9	83.5	64	94.7	50.4	3.2	0.11	0.62	14	19	24
	10	80.4	62.2	95.8	57.9	3.8	0.12	0	11	16	21
	11	81.9	63	95.2	43.2	3.3	0.14	0.01	12	17	22
	12	74.8	61.2	96.3	58	5.3	0.1	0	8	13	18
	13	70	60.1	94.5	70.7	8.2	0.08	0	5	10	15
	14	80.6	60.7	96	43.2	3.3	0.15	0	11	16	21
	15	83.8	57.4	97.1	40	3.3	0.16	0	11	16	21
	16	81.8	58.6	92	33	7	0.17	0	10	15	20
	17	81.3	56.4	93.8	23.1	7	0.21	0	9	14	19
	18	80.4	54.6	93.9	31.5	4.6	0.17	0	8	13	18
	19	82.3	54.9	90.1	31.4	2.7	0.14	0	9	14	19
	20	91.2	58.5	86.1	19	7.4	0.25	0	15	20	25
	21	89.3	54.2	91.1	21.1	7.6	0.25	0	12	17	22
	22	68.7	44.3	91.3	28.8	7.7	0.14	0	0	7	9
	23	73.1	41.6	85.3	17.7	3.4	0.15	0	0	9	12
	24	70.5	50.2	78	32.4	4.1	0.15	0	0	8	10
	25	81.9	46.8	90.5	30.5	6.8	0.2	0	4	13	16
	26	91.2	53	94.1	13.8	3.1	0.19	0	12	18	22
	27	96.4	51.8	82.1	9	5.5	0.25	0	14	20	24
	28	77.2	53.4	70	19.9	9.8	0.24	0	5	11	15
	29	83.5	49.6	75.6	29	5.6	0.19	0	7	14	17
	30	94.7	63.4	94.5	23.6	10.3	0.27	0	19	24	29
October	1	89.2	52.1	92.3	4.8	8.8	0.28	0	11	17	21
	2	77.5	40.1	60.1	15.6	5.3	0.19	0	0	11	14
	3	64.9	50.9	92.1	48.1	3.7	0.06	0.07	0	5	8
	4	76.9	57.1	97.3	49.8	4.9	0.13	0	7	12	17
	5	93.2	58.5	97.7	23.7	6.2	0.18	0	16	21	26
	6	77.4	52.2	95.3	35	9.5	0.18	0	5	11	15
	7	67.1	50.9	92.8	47.9	6.4	0.08	0.05	0	6	9
	8	89.7	49.3	96.5	23.9	8	0.2	0.06	9	17	20
	9	60.9	43.9	93.1	46.6	5	0.09	0	0	3	5
	10	55.7	40.2	98.1	66.9	7.5	0.06	0	0	0	3
	11	44.4	37.2	98.6	96.1	7.1	0.02	0.04	0	0	0
	12	66.4	44.3	97.8	69.2	3.8	0.06	0.02	0	6	8
	13	85.8	44.3	92.2	N/A	8.7	0.19	0	5	15	18
	14	92.1	57	97.5	18.6	6	0.2	0	15	20	25
	15	82.7	51.5	90.2	18.9	5.7	0.17	0	7	14	17
	16	72.8	42.4	93.9	28.4	6.5	0.14	0	0	0	11
	17	73.9	41	94.4	23	3.6	0.13	0	0	0	12
	18	80.2	43.5	87.1	26.4	9.8	0.2	0	2	0	15
	19	87.1	53.6	71.2	24.5	11.1	0.25	0	10	0	20
	20	83.3	57.6	84.3	33	11.5	0.21	0	10	0	20
	21	66.5	45.3	95.9	56.5	8.3	0.06	0.48	0	0	8
	22	60.7	38.8	88.7	37.5	8.1	0.12	0.01	0	0	5
	23	69.9	36	95.3	22.5	2.6	0.11	0	0	0	10
	24	80.1	43.3	79.3	13.5	8.3	0.2	0	2	0	15
	25	73.3	42.7	95.7	25.3	8.7	0.15	0	0	0	12
	26	57.1	34.4	89.7	32.1	9.5	0.1	0	0	0	4
	27	72.2	30.2	96.3	16.9	9.4	0.17	0	0	0	11
	28	82.7	47.6	88	14.3	12.8	0.24	0.06	5	0	16
	29	48	38	92.4	43.8	7.8	0.06	0.09	0	0	0
	30	57.9	28.9	94.7	15.9	5.2	0.1	0	0	0	4
	31	70.3	30.8	87.8	15.5	4.8	0.13	0	0	0	10