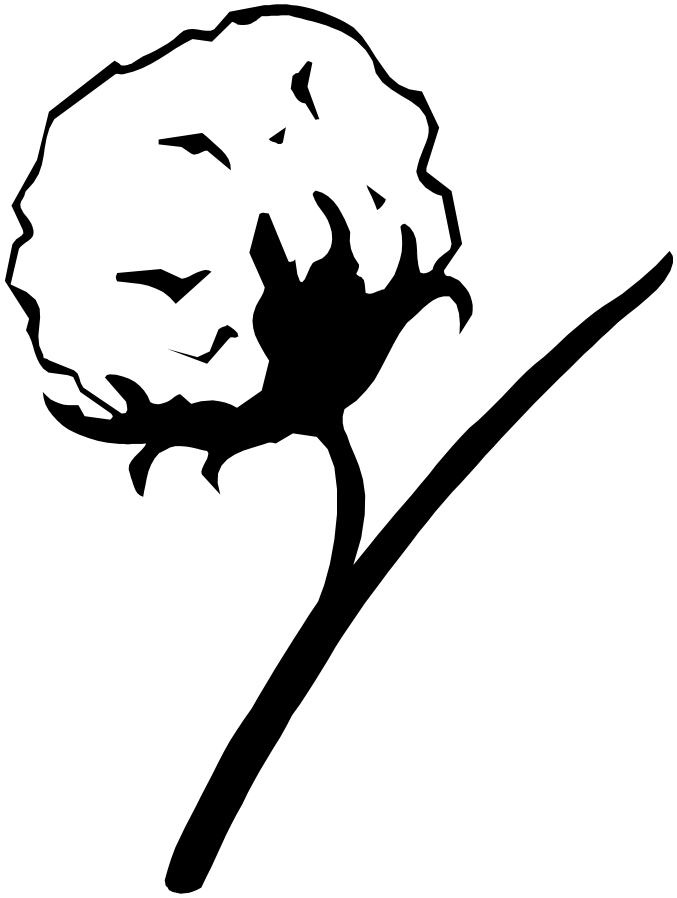
2012 Annual Report

AGRICULTURAL COMPLEX FOR ADVANCED RESEARCH AND EXTENSION SYSTEMS (AG-CARES)



IN COOPERATION WITH

Lamesa Cotton Growers Texas A&M Agrilife Extension Service Texas A&M Agrilife Research

Technical Report 13-1

Texas A&M AgriLife and Research and Extension Center of Lubbock
1102 E. FM 1294
Lubbock, TX 79403-6603

2012 was the sesquicentennial anniversary of the Morrill Act which established the land grant universities across the US. Texas A&M AgriLife Research and Extension continue to follow the land grant mission to expand learning, discovery, and engagement to meet the agriculture needs of the producers of the state and nation. Justin Morrill stated that "What has been an art to supply physical wants must become a science. AG-CARES continues to serve as an example of the land grant mission in action because of Lamesa Cotton growers foresight to recognize the value of research and extension programs and establish this location in 1990.

Likewise 2012 was significant in the Southern Plains that, although somewhat wetter than 2011 for much of the region, it will still rank as among the lower production years in the Southern High Plains. In fact, if bottom lines are examined, some producers spent considerable more money trying to make a crop in 2012 without seeing expected returns. So far 2013 has shown some promise for higher moisture.

Significant results at AG-CARES include:

- New cultivars were evaluated under varying irrigation levels.
- Yields increased as irrigation levels increased. An additional 50% input of water over the base level gave a 14% yield increase in continuous cotton. A 17% yield increase was found for cotton rotated with wheat.
- Root-knot nematode densities were similar in pivot and drip irrigations but absent in dry-land.

We are pleased to welcome Mr. Danny Nusser who was selected to lead Texas A&M AgriLife Extension programs for Districts 1, 2, and 3 following the retirement of Dr. Galen Chandler. He started his career as a CEA-Ag in Hale County in 1984. In 2009, he served as the District Extension Administrator in District 1 until recently being named as the Regional Program Director for Agriculture. Mr. Nusser grew up in Northwest Oklahoma on wheat and cattle farm/ranch and earned degrees from Oklahoma State University and Texas Tech University. Mr. Nusser is excited to renew relationships with producers and partners on the South Plains.

Finally we wish to thank the officers of Lamesa Cotton Growers for their continued guidance, support, and leadership that make this partnership possible to continue the land grant mission of Texas Agrilife. The current president is Shawn Holliday, VP is Johnny Ray Todd and secretary Quinton Kearney. Kevin Pepper is past president. Also the leadership of Dr. Wayne Keeling, who coordinates programs, and Dr. Danny Carmichael, the site manager, must be recognized for their continued time and effort.

Jaroy Moore
Resident Director of Research
Texas A&M AgriLife Research and Extension Center
Lubbock

Danny Nusser
Regional Program Director
Texas A&M AgriLife Extension Service
Agriculture and Natural Resources

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TEXAS A&M AGRILIFE EXTENSION

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TITLE:

Cotton variety performance (continuous cotton) as affected by low-energy precision application (LEPA) irrigation levels at AG-CARES, Lamesa, TX, 2012.

AUTHORS:

Wayne Keeling, Jim Bordovsky, Jacob Reed, Justin Spradley and Justin Cave; Professor, Agricultural Engineer-Irrigation, Assistant Research Scientist, and Research Assistants.

MATERIALS AND METHODS:

Plot Size:	4 rows by 300-800 feet, 3 replications
Planting Date:	May 22
Varieties:	Phytogen 367WRF Deltapine 1219B2RF FiberMax 2989B2F Stoneville 5458B2RF
Herbicides:	Prowl 3pt/A PRE (April 17) Roundup PowerMax 32 oz/A Terminate Rye Cover (April 25) Roundup PowerMax 28 oz/A + Warrant 3pt/A early-POST (June 11) Roundup PowerMax 28 oz/A mid-POST (July 20)
Fertilizer:	130-40-0
Irrigation:	

	Low	Base	High
Pre-plant/Emergence	5.1”	5.1”	5.1”
In-season	4.6”	6.8”	9.0”
Total	9.7”	11.9”	14.1”

Harvest Date:	October 29

RESULTS AND DISCUSSION:

Three new varieties, PHY 367WRF, DP 1219B2RF and FM 2989B2F, were compared to ST 5458B2RF under three irrigation levels in continuous cotton production. Although more rainfall was received in 2012, compared to 2011, very little rainfall and above-average temperature from June through mid-August increased irrigation demand. Lint yields varied from 491 to 901 lbs/A across the three irrigation levels. When averaged across irrigations levels, higher yields were produced with PHY 367WRF and DP 1219B2RF. When compared to the base irrigation (6.8” applied in-season) yields were reduced 42% with the lower irrigation treatment (4.6” applied) and increased 6% with the high irrigation treatment (9.0” applied). Lint values were similar across irrigation levels; with a trend toward higher values with increased irrigation. When varieties were averaged across irrigation levels, the highest loan values were produced with DP 1219B2RF. Gross revenues ($/A) increased with higher irrigation levels, but the high irrigation increased gross revenue only 8% compared to the base irrigation. The effects of cotton varieties and LEPA irrigation levels on cotton lint yields, loan values, and gross revenues are summarized in the following tables.

Table 1. Effects of cotton variety and LEPA irrigation levels on cotton lint yields at AG-CARES, Lamesa, TX, 2012.

	Irrigation Levels			
Cultivar	Low (4.0)	Base (6.0)	High (8.0)	Avg.
	lbs/A			
PHY 367WRF	464 a	862 a	1083 a	803 A
DP 1219B2RF	543 a	931 a	936 ab	803 A
FM 2989B2F	446 a	827 a	761 b	678 B
ST 5458B2RF	512 a	756 a	822 b	697 AB
Avg.	491 B	844 A	901 A	
% change	(-42%)	(——)	(+6%)	

(3 inches applied pre-plant/emergence)

Table 2. Effects of cotton variety and LEPA irrigation levels on lint value at AG-CARES, Lamesa, TX, 2012.

	Low	Base	High	Avg.
Variety	¢/lb			
PHY 367WRF	50.50 b	52.47 ab	54.47 a	52.48 B
DP 1219B2RF	54.90 a	55.23 a	54.50 a	54.88 A
FM 2989B2F	50.13 bc	53.17 ab	54.32 a	52.54 B
ST 5458B2RF	48.17 c	48.85 b	51.37 a	49.46 C
Avg.	50.93 A	52.43 A	53.66 A	

Table 3. Effects of cotton variety and LEPA irrigation levels on gross revenues at AG-CARES, Lamesa, TX, 2012.

	Low	Base	High	Avg.
Variety	$/A			
PHY 367WRF	235 a	453 a	592 a	426 A
DP 1219B2RF	298 a	516 a	510 ab	441 A
FM 2989B2F	224 a	442 a	413 b	359 B
ST 5458B2RF	247 a	371 a	424 b	348 B
Avg.	251 B	446 A	485 A	
% change	(-44%)	(——)	(+8%)	

TITLE:

Cotton variety performance (wheat-cotton rotation) as affected by low-energy precision application (LEPA) irrigation levels at AG-CARES, Lamesa, TX, 2012.

AUTHORS:

Wayne Keeling, Jim Bordovsky, Jacob Reed, Justin Spradley and Justin Cave; Professor, Agricultural Engineer-Irrigation, Assistant Research Scientist, and Research Assistants.

MATERIALS AND METHODS:

Plot Size:	4 rows by 300-800 feet, 3 replications
Planting Date:	May 22
Varieties:	Phytogen 367WRF
	Deltapine 1219B2RF
	FiberMax 2989B2F
	Stoneville 5458B2RF
Herbicides:	Prowl 3pt/A PRE (April 17)
	Roundup PowerMax 32 oz/A (April 3)
	Roundup PowerMax 28 oz/A + Warrant 3pt/A early-POST (June 11)
	Roundup PowerMax 28 oz/A mid-POST (July 20)
Fertilizer:	130-40-0

Irrigation:

	Low	Base	High
Pre-plant/emergence	5.1”	5.1”	5.1”
In-season	4.6”	6.8”	9.0”
Total	9.7”	11.9”	14.1”

Harvest Date: October 29

RESULTS AND DISCUSSION:

Three new cultivar varieties, PHY 367WRF, DP 1219B2RF, and FM 2989B2F, were compared to ST 5458B2RF under three irrigation levels which received 4.6”, 6.8”, and 9.0”/A, respectively, during the growing season. The field was planted to wheat in 2010-2011, stubble was maintained during the fallow period (2011), and cotton was planted, no-till, in 2012. Yields ranged from 600-1083 lbs. of lint/A across the irrigation treatments. When averaged across irrigation levels, yields ranged from 843-922 lbs./A, with the highest yields produced with PHY 367WRF and DP 1219B2RF. When compared to the base irrigation treatments, yields were reduced 35% with the low irrigation treatment and increased 14% with the high irrigation treatment. Irrigation level did not affect loan value, but DP 1219B2RF and FM 2989B2F had the highest loan values. Gross revenues with the three new varieties were higher than the revenues with ST 5458B2RF. The effects of cotton varieties and LEPA irrigation levels on cotton lint yields, loan values, and gross revenues are summarized in the following tables.

Table 1. Effects of cotton variety and LEPA irrigation levels on cotton lint yields at AG-CARES, Lamesa, TX, 2012.

Variety	Low	Base	High	Avg.
	——————————————lbs/A——————————————			
PHY 367WRF	535 a	1024 a	1206 a	922 A
DP 1219B2RF	649 a	918 a	1069 a	879 AB
FM 2989B2F	582 a	924 a	1002 a	836 B
ST 5458B2RF	635 a	837 a	1057 a	843 B
Avg.	600 B	926 A	1083 A	
% change	(-35%)	(——)	(+14%)	

Table 2. Effects of cotton variety and LEPA irrigation levels on lint value at AG-CARES, Lamesa, TX, 2012.

	Low	Base	High	Avg.
Variety	——————————————¢/lb——————————————			
PHY 367WRF	50.45 bc	53.63 ab	53.80 ab	52.63 B
DP 1219B2RF	53.97 a	56.48 ab	55.35 a	55.27 A
FM 2989B2F	52.73 ab	53.40 a	55.03 a	53.72 AB
ST 5458B2RF	48.57 c	50.95 b	49.72 b	49.74 C
Avg.	51.43 A	53.62 A	53.48 A	

Table 3. Effects of cotton variety and LEPA irrigation levels on gross revenues at AG-CARES, Lamesa, TX, 2012.

	Low	Base	High	Avg.
Variety	——————————————$/A——————————————			
PHY 367WRF	271 b	550 a	649 a	490 A
DP 1219B2RF	350 a	519 a	593 a	488 A
FM 2989B2F	306 ab	493 a	553 a	451 AB
ST 5458B2RF	309 ab	429 a	528 a	422 A
Avg.	309 B	498 A	581 A	
% change	(-38%)	(——)	(+14%)	

TITLE:

Replicated LEPA Irrigated RACE Cotton Variety Demonstration, AG-CARES, Lamesa, TX, 2012.

AUTHORS:

Mark Kelley, Chris Ashbrook, Tommy Doederlein, and Gary Roschetzky; Extension Agronomist-Cotton, Extension Assistant-Cotton, EA-IPM Dawson/Lynn Counties, CEA-ANR Dawson County

MATERIALS AND METHODS:

Plot size:	4 rows by variable length due to circular pivot rows (253-872 ft long)
Planting date:	May 22
Varieties:	AT 44 B2RF DP 0912B2RF DG 2570B2RF FM 2484B2F NG 1511B2RF NG 4012B2RF PHY 499WRF ST 5458B2RF
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 XP vacuum planter)
Fertilization:	116 lbs/acre 10-34-0 were band applied preplant, and 120 lbs N/acre using UAN 32-0-0 were applied via fertigation on March 6, June 29, July 16, and July 23
Weed management:	Prowl H2O PPI 3 pt/acre Roundup PowerMax 32 oz/A (April 13) Roundup PowerMax 28 oz/A (May 11) Roundup PowerMax 32 oz/A+Warrant 3 pints/A (June 20) Roundup PowerMax 28 oz/A+Warrant 3 pints/A (July 13) Roundup PowerMax 32 oz/A+Warrant 3 pints/A (Aug. 28)
Irrigation:	3.75" inches of irrigation were applied via LEPA irrigation preplant, with 8.4” applied during the growing season for a total of 12.15” of irrigation applied.

Rainfall:

April:	0.58"	August:	1.55"
May:	3.04"	September:	4.21"
June:	0.11"	October:	0.25”
July:	0.51"		

Total rainfall: 10.25"
Total irrigation and rainfall: 22.4"

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 3 pt/acre Prep + 2.0 oz/acre ET with 1% v/v crop oil on 3-October followed by 1 qt/acre Gramoxone Inteon with 0.25% v/v NIS on 17-October.
Harvest:	Plots were harvested on 23-November using a commercial John Deere 9996 basket 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 $250/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:

No significant differences were observed among varieties for plant population (average 3.8 plants/row ft) or nodes above white flower (Table 1). NAWF values reported represent averages from 5 plants per plot or 15 plants per variety. For final plant map on 11-October, significant differences were observed among varieties for most parameters measured (Table 2). Plant heights averaged 21.9" and differences were not significant. Node of first fruiting branch was highest for NexGen 1511B2RF (8.4) and lowest for All-Tex Nitro-44 B2RF (7.0). Total mainstem nodes averaged 16.3 across all varieties and ranged from a high of 18.5 for NexGen 4012B2RF to a low of 15.5 for Stoneville 5458B2RF. Height to node ratio averaged 1.3. Total fruiting branches were highest for NexGen 4012B2RF (11.4) and lowest for Stoneville 5458B2RF (9.3) with a test average of 10.1. Significant differences were observed at the 0.10 level for 1st position fruit retention percent (Table 3), and was highest for FiberMax 2484B2RF (54.9) and lowest for All-Tex Nitro-44 B2RF (34.5).

Significant differences were noted for some yield and economic parameters (Table 4). Picker harvested lint turnout ranged from 34.6% for All-Tex Nitro-44 B2RF to 38.7% for PhytoGen 499WRF. Seed turnouts averaged 52.9 with a high of 54.7 for Stoneville 5458B2RF and low of 50.1 for NexGen 1511B2RF. There were no differences in bur cotton yield and the

test average was 1876 lb/acre. Lint yields were significant (alpha 0.10) and ranged from a low of 533 lb/acre (NexGen 4012B2RF) to a high of 782 lb/acre (Stoneville 5458B2RF and NexGen 1511B2RF). Lint loan values ranged from a low of $0.4837/lb to a high of $0.5747/lb for Deltapine 0912B2RF and FiberMax 2484B2F, respectively. Lint value was not significant with a test average of $367.83/acre. When subtracting ginning and seed and technology costs, the net value/acre averaged $361.08, and no significant differences were observed among varieties.

Significant differences were observed for most fiber quality parameters at this location (Table 5). Micronaire values ranged from a low of 4.2 for All-Tex Nitro-44B2RF to a high of 5.2 for Deltapine 0912B2RF. Staple averaged 35.0 across all varieties with a low of 32.9 (Deltaping 0912B2RF) and a high of 37.5 (All-Tex Nitro-44 B2RF). Uniformity was not significant and averaged 81.8%. Strength ranged from a low of 29.3 g/tex for Deltapine 0912B2RF to a high of 35.4 g/tex for All-Tex Nitro-44 B2RF. Significant differences were observed among varieties for percent elongation (10.3 avg), Rd or reflectance (75.9 avg), and +b or yellowness (9.1 avg).

Although differences in net values were not significant in this trial previous data indicate that substantial differences can be obtained in terms of net value/acre due to variety selection. It should be noted that due to the continued drought conditions, stand variability was higher and yields lower than would normally be observed. Additional multi-site and multi-year applied research is needed to evaluate varieties across a series of environments.

ACKNOWLEDGMENTS:

Appreciation is expressed to Dr. Danny Carmichael, AgriLife Research Associate - AG-CARES, Lamesa. 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.

DISCLAIMER CLAUSE:

Trade names of commercial products used in this report are included only for better understanding and clarity. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the Texas A&M System is implied. Readers should realize that results from one experiment do not represent conclusive evidence that the same response would occur where conditions vary.

Table 1. Inseason plant measurement results from the picker harvested Dawson County irrigated RACE variety demonstration, AG-CARES Farm, Lamesa, TX, 2012.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of			
	plants/row ft	plants/acre	19-Jul	27-Jul	3-Aug	10-Aug
NexGen 1511B2RF	3.9	50,457	7.9	6.6	5.3	3.7
All-Tex Nitro-44 B2RF	4.0	52,272	7.1	6.4	4.9	2.6
Dyna-Gro 2570B2RF	3.8	49,005	8.1	7.1	5.1	3.1
Deltapine 0912B2RF	3.7	48,642	7.7	6.7	4.7	3.1
FiberMax 2484B2F	3.9	50,457	7.9	6.7	4.3	2.8
NexGen 4012B2RF	3.7	47,916	7.9	6.6	4.9	2.7
PhytoGen 499WRF	4.0	52,635	7.6	6.9	4.9	3.3
Stoneville 5458B2RF	3.7	47,916	7.2	7.0	4.9	2.9
Test average	3.8	49,913	7.7	6.8	4.9	3.0
CV, %	5.3	5.2	7.7	6.4	11.2	18.9
OSL	0.2892	0.2344	0.4929	0.5028	0.4692	0.4112
LSD	NS	NS	NS	NS	NS	NS

For NAWF, numbers represent an average of 5 plants per variety per rep (15 plants per variety)
CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, NS - not significant

Table 2. Final plant map results from the picker harvested Dawson County irrigated RACE variety demonstration, AG-CARES Farm, Lamesa, TX, 2012.

Entry	Final plant map 11-Oct					
	plant height (inches)	node of first fruiting branch	total mainstem nodes	height to node ratio	total fruiting branches	open boll (%)
All-Tex Nitro-44 B2RF	19.9	7.0	15.9	1.3	9.9	96.6
Dyna-Gro 2570B2RF	23.7	7.4	16.3	1.5	9.9	95.4
Deltapine 0912B2RF	20.6	6.6	15.7	1.3	10.1	83.2
FiberMax 2484B2F	21.6	8.4	16.9	1.3	9.6	85.4
NexGen 1511B2RF	24.1	5.8	15.7	1.5	10.8	93.6
NexGen 4012B2RF	23.2	8.1	18.5	1.3	11.4	90.4
PhytoGen 499WRF	22.2	7.3	15.8	1.4	9.5	92.0
Stoneville 5458B2RF	20.2	7.2	15.5	1.3	9.3	89.7
Test average	21.9	7.2	16.3	1.3	10.1	90.8
CV, %	12.4	5.7	4.1	9.4	6.7	6.2
OSL	0.4222	<0.0001	0.0013	0.1265	0.0283	0.1163
LSD	NS	0.7	1.2	NS	1.2	NS

For Final plant map, numbers represent and average of 6 plants per variety per rep (18 plants per variety)
CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, NS - not significant

Table 3. Final plant map results from the picker harvseted Dawson County irrigated RACE variety demonstration, AG-CARES Farm, Lamesa, TX, 2012.

Entry	Fruiting and Retention 11-Oct					
	% of fruit from 1st position	% of fruit from 2nd position	total fruit	1st position retention (%)	2nd position retention (%)	total retention (%)
All-Tex Nitro-44 B2RF	66.0	34.0	5.2	34.5	26.0	32.04
Dyna-Gro 2570B2RF	78.5	21.5	6.9	52.8	22.9	41.05
Deltapine 0912B2RF	69.9	30.1	8.1	54.7	33.5	45.67
FiberMax 2484B2F	79.7	20.3	6.7	54.9	24.0	42.70
NexGen 1511B2RF	75.2	24.8	7.9	51.8	25.7	40.49
NexGen 4012B2RF	80.1	19.9	6.2	41.8	21.6	33.73
PhytoGen 499WRF	77.1	22.9	6.8	52.5	24.3	42.05
Stoneville 5458B2RF	71.2	28.8	6.6	49.2	28.8	40.96
Test average	74.7	25.3	6.8	49.0	25.8	39.84
CV, %	15.0	44.3	23.4	15.9	50.6	18.4
OSL	0.7215	0.7215	0.4774	0.0628†	0.9640	0.3685
LSD	NS	NS	NS	11.2	NS	NS

For Final plant map, numbers represent and average of 6 plants per variety per rep (18 plants per variety)
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

Table 4. Harvest results from the picker harvested Dawson County irrigated RACE variety demonstration, AG-CARES Farm, Lamesa, TX, 2012.

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 ----------					
Stoneville 5458B2RF	37.5	54.7	2086	782	1140	0.5340	417.34	142.51	559.85	62.58	76.63	420.64
NexGen 1511B2RF	38.2	50.1	2049	782	1026	0.5158	403.51	128.19	531.71	61.47	70.53	399.71
PhytoGen 499WRF	38.7	53.4	1871	725	999	0.5477	396.80	124.89	521.69	56.14	77.17	388.38
FiberMax 2484B2F	36.1	53.6	1871	675	1002	0.5747	387.63	125.22	512.84	56.12	76.63	380.10
Dyna-Gro 2570B2RF	37.0	53.6	1920	710	1030	0.5157	366.13	128.71	494.84	57.59	76.71	360.54
Deltapine 0912B2RF	36.5	53.0	2019	737	1071	0.4837	356.29	133.85	490.14	60.58	77.44	352.12
All-Tex Nitro-44 B2RF	34.6	52.4	1684	582	882	0.5675	330.38	110.30	440.68	50.53	72.80	317.36
NexGen 4012B2RF	35.4	52.6	1505	533	791	0.5337	284.54	98.89	383.43	45.14	68.46	269.82
Test average	36.7	52.9	1876	691	993	0.5341	367.83	124.07	491.90	56.27	74.55	361.08
CV, %	2.4	2.2	14.5	14.6	14.1	4.0	14.5	14.1	14.4	14.5	--	17.3
OSL	0.0006	0.0129	0.2230	0.0750†	0.1631	0.0024	0.1223	0.1632	0.1492	0.2227	--	0.1648
LSD	1.5	2.0	NS	145	NS	0.0370	NS	NS	NS	NS	--	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.
$250/ton for seed.
Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Table 5. HVI fiber property results from the picker harvested Dawson County irrigated RACE variety demonstration, AG-CARES Farm, Lamesa, TX, 2012.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
All-Tex Nitro-44 B2RF	4.2	37.5	82.7	35.4	10.3	2.7	76.4	8.7	2.7	1.0
Dyna-Gro 2570B2RF	5.0	34.1	81.2	31.3	10.9	1.0	75.8	9.5	2.7	1.7
Deltapine 0912B2RF	5.2	32.9	81.8	29.3	10.5	1.3	74.2	9.0	3.3	1.3
FiberMax 2484B2F	4.4	36.8	82.0	32.1	9.1	1.3	78.6	8.2	2.7	1.0
NexGen 1511B2RF	4.9	34.0	80.7	29.9	11.4	1.7	75.1	9.2	3.0	1.3
NexGen 4012B2RF	4.8	35.4	81.5	31.9	8.7	1.3	75.6	9.4	3.0	1.7
PhytoGen 499WRF	4.8	34.3	82.3	32.8	11.5	2.0	75.4	9.0	3.0	1.0
Stoneville 5458B2RF	5.0	34.8	82.0	31.2	10.0	2.3	75.7	9.4	3.0	1.3
Test average	4.8	35.0	81.8	31.7	10.3	1.7	75.9	9.1	2.9	1.3
CV, %	3.7	1.9	1.2	2.5	3.5	48.6	1.5	4.1	--	--
OSL	0.0002	<0.0001	0.2910	<0.0001	<0.0001	0.2656	0.0153	0.0092	--	--
LSD	0.3	1.2	NS	1.4	0.6	NS	1.9	0.6	--	--

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:

New cotton variety performance as affected by low-energy precision application (LEPA) irrigation levels at AG-CARES, Lamesa, TX, 2012.

AUTHORS:

Mark Kelley, Chris Ashbrook, and Tommy Doederlein; Extension Agronomist-Cotton, Extension Assistant-Cotton, and EA-IPM Dawson/Lynn Counties.

MATERIALS AND METHODS:

Plot Size:	4 rows by 300-700 feet, 3 replications
Planting Date:	May 21
Varieties:	AllTex Nitro-44B2RF
	FiberMax 2484B2F
	NexGen 4012B2RF
	Stoneville 5458B2RF
Herbicides:	Trifluralin 1.5 pt/A PRE (April 13)
	Roundup PowerMax 32 oz/A (July 6)
Fertilizer:	130-40-0
Irrigation:	

	Low	Base	High
Pre-plant/emergence	5.1”	5.1”	5.1”
In-season	4.6”	6.8”	9.0”
Total	9.7”	11.9”	14.1”

Harvest Date: Picker harvested on November 23

RESULTS AND DISCUSSION:

Three additional new varieties (AllTex Nitro-44B2RF, FiberMax 2484B2F, and NexGen 4012B2RF) were compared to ST 5458B2RF under three irrigation levels. Average yields ranged from 453-879 lbs./A across the three irrigation levels; highest yields were produced with ST 5458B2RF. When Averaged across varieties, yields increased with increased irrigation. Loan values were highest with the Low irrigation treatment. Goss revenues ($/A) increased with increasing irrigation and were similar for AllTex Nitro-44B2RF, FM 2484B2F, and ST 5458B2RF. The effects of cotton varieties and LEPA irrigation levels on cotton lint yields, loan values, and gross revenues are summarized in the following tables.

Table 1. Effects of B2RF variety and LEPA irrigation levels on cotton lint yields at AG-CARES, Lamesa, TX, 2012.

Variety	L	M	H	Avg.
	----------lbs/A----------			
AT Nitro-44	384 b	583 b	990 a	652 AB
FM 2484B2F	444 ab	668 ab	825 b	645 B
NG 4012B2RF	442 ab	535 b	858 ab	612 B
ST 5458B2RF	540 a	781 a	841 b	721 A
Avg.	453 C	642 B	879 A	
% change	(-29%)	(——)	(+37%)	

Table 2. Effects of B2RF variety and LEPA irrigation levels on lint value at AG-CARES, Lamesa, TX, 2012.

Variety	L	M	H	Avg.
	----------¢/lb----------			
AT Nitro-44	53.27 b	56.75 a	55.03 b	55.02 B
FM 2484B2F	57.10 a	57.47 a	57.17 a	57.24 A
NG 4012B2RF	51.82 b	53.37 a	56.73 ab	53.97 BC
ST 5458B2RF	52.57 b	53.40 a	52.58 c	52.85 C
Avg.	53.69 B	55.25 A	55.38 A	

Table 3. Effects of B2RF variety and LEPA irrigation levels on gross revenues at AG-CARES, Lamesa, TX, 2012.

Variety	L	M	H	Avg.
	----------$/A----------			
AT Nitro-44	204 b	330 ab	544 a	359 AB
FM 2484B2F	254 ab	388 a	472 ab	371 AB
NG 4012B2RF	229 ab	285 b	487 ab	334 B
ST 5458B2RF	285 a	417 a	442 a	381 A
Avg.	243 C	355 B	486 A	
% change	(-32%)	(——)	(+37%)	

TITLE:

Performance of Bayer CropScience varieties as affected by irrigation level at AG-CARES, Lamesa, TX, 2012.

AUTHORS:

Wayne Keeling, Jim Bordovsky, Jacob Reed, Justin Cave, and Justin Spradley; Professor, Agricultural Engineer-Irrigation, Sr. Research Associate and Assistant Research Scientists.

MATERIALS AND METHODS:

Plot Size:	4 rows by 95 feet, 4 replications
Planting Date:	May 19
Varieties:	BX 1346GLB2
	FM 9170B2F
	FM 1944GLB2
	FM 2484B2F
	ST 5458B2RF
	FM 2989GLB2
	BX 1347GLB2
	FM 2011GT
Herbicides:	Trifluralin 1.5 pt/A PRE (April 7)
	Roundup PowerMax 32 oz./A early-POST (June 14)
Fertilizer:	12-40-0 applied April 7

Additional Nitrogen (in-season):	Low	Base	High
	60 lbs.	90 lbs.	120 lbs.

Irrigation:

	Low	Base	High
Pre-plant	3.3”	3.3”	3.3”
Emergence	4.3”	4.3”	4.3”
In-season	6.1”	11.7”	18.4”
Total	13.7”	19.3”	26.0”

Harvest Date: November 12

RESULTS AND DISCUSSION:

Eight cultivars were evaluated under three sub-surface drip (SDI) irrigation levels in 2012. Yields ranged from 1059 to 1682 lbs. lint/A as irrigation level increased. The high irrigation treatments received 50% more water than the base irrigation treatments but produced only 14% greater yield. When averaged across irrigation levels, seven of the eight cultivars produced similar yields. Irrigation level did not affect loan value, but loan values did differ across varieties. Gross revenues increased with increasing irrigation but only 18% with the additional 50% applied (6”/A) to the high water treatment, compared to the base. Seven of the eight cultivars produced similar gross revenues when averaged across irrigation levels. The effects of cotton variety and SDI irrigation level on cotton lint yields, loan values, and gross revenues are summarized in Tables 1, 2, and 3 on the following page.

Table 1. Effects of cotton variety and LEPA irrigation levels on cotton lint yields at AG-CARES, Lamesa, TX, 2012.

	Irrigation Levels			
Cultivar	Low (6.0)	Base (12.0)	High (18.0)	Avg.
	lbs/A			
ST 4946GLB2	1148 a	1547 a	1728 ab	1474 A
FM 9170B2F	1072 ab	1485 ab	1544 b	1367 B
FM 1944GLB2	1071 ab	1327 b	1764 ab	1386 AB
FM 2484B2F	1054 ab	1431 ab	1693 ab	1392 AB
ST 5458B2RF	1054 ab	1464 ab	1639 ab	1385 AB
FM 2989GLB2	1049 ab	1502 ab	1609 ab	1378 AB
BX 1347GLB2	1029 ab	1501ab	1672 ab	1400 AB
FM 2011GT	995 b	1548 a	1814 a	1452 AB
Avg.	1059 C	1472 B	1682 A	
% change	(-28%)	(——)	(+14%)	

Table 2. Effects of cotton variety and LEPA irrigation levels on lint value at AG-CARES, Lamesa, TX, 2012.

	Irrigation Levels			
Variety	Low	Base	High	Avg.
	¢/lb			
FM 2011GT	55.98 a	56.41 ab	57.00 ab	56.46 ABC
ST 4946GLB2	55.36 a	56.76 a	57.16 ab	56.43 ABC
FM 2989GLB2	56.24 a	56.08 ab	56.14 b	56.15 BC
BX 1347GLB2	56.90 a	56.25 ab	56.30 ab	56.50 ABC
FM 9170B2F	56.50 a	57.43 a	57.38 a	57.10 AB
ST 5458B2RF	54.54 a	55.24 b	56.61 ab	55.46 C
FM 2484B2F	57.33 a	57.30 a	57.10 ab	57.24 A
FM 1944GLB2	55.08 a	56.85 a	56.98 ab	56.30 ABC
Avg.	55.98 A	56.54 A	56.83 A	

Table 3. Effects of cotton variety and LEPA irrigation levels on gross revenues at AG-CARES, Lamesa, TX, 2012.

	Irrigation Levels			
Variety	Low	Base	High	Avg.
FM 2011GT	557 a	873 a	1034 a	821 A
ST 4946GLB2	636 a	878 a	988 ab	834 A
FM 2989GLB2	590 a	842 a	903 ab	707 B
BX 1347GLB2	586 a	844 a	942 ab	791 AB
FM 9170B2F	606 a	853 a	886 b	781 AB
ST 5458B2RF	575 a	808 a	928ab	771 AB
FM 2484B2F	604 a	820 a	966 ab	797 A
FM 1944GLB2	590 a	754 a	1005 ab	784 AB
Avg.	593 C	808 B	957 A	
% change	(-27%)	(——)	(+18%)	

TITLE:

Cotton Lint Yield, Fiber Quality, and Water-Use Efficiency as influenced by Cultivar and Irrigation Level at AG-CARES, Lamesa, TX, 2012.

AUTHORS:

Justin Cave, Wayne Keeling, Jim Bordovsky, Jacob Reed, and Justin Spradley; Graduate Research Assistant, Professor, Agricultural Engineer-Irrigation, Assistant Research Scientist, and Research Assistant

MATERIALS AND METHODS:

Plot Size:	4 rows by 95 feet, 4 replications
Planting Date:	May 21
Varieties:	DP 0912 B2RF
	DP 1032 B2RF
	DP 1044 B2RF
	DP 1212 B2RF
	DP 1219 B2RF
	11R110B2R2
	11R112B2R2 (DP 1321 B2RF)
	11R124B2R2 (DP 1311 B2RF)
	11R136B2R2
	11R154B2R2
	11R159B2R2 (DP 1359 B2RF)
	12R242B2R2
Herbicides:	Trifluralin 1.5 pt/A PRE (April 7)
	Roundup PowerMax 32 oz./A early-POST (June 14)
Fertilizer:	12-40-0 applied April 7

Additional Nitrogen (in-season):		Low	Base	High
		60 lbs.	90 lbs.	120 lbs
Sub-surface Drip Irrigation:		Low	Base	High
	Pre-plant	3.3”	3.3”	3.3”
	Emergence	4.3”	4.3”	4.3”
	In-season	6.1”	11.7”	18.4”
	Total	13.7”	19.3”	26.0”

Harvest Date: October 25

RESULTS AND DISCUSSION:

Cotton is produced in the Texas High Plains under a wide range of water levels, ranging from dryland to full irrigation. Irrigated cotton is grown under varying levels of deficit irrigation depending on well capacities. With declining well capacities, it is important to maximize water-use efficiency (WUE) by crop management and cultivar selection. The objective of this study was to determine lint yield, fiber quality, and water-use efficiency as influenced by cultivar and irrigation level at two locations with different soil textures and irrigation systems.

Field studies were conducted in 2012 to evaluate new cultivars under varying irrigation inputs at the AG-CARES research farm near Lamesa, TX. The experimental design of the trial was a split block design with irrigation as the main effect and cultivar as the split effect. Twelve cultivars were evaluated including: DP 0912 B2RF, DP 1032 B2RF, DP 1044 B2RF, DP 1212 B2RF, DP 1219 B2RF, 11R110B2R2, 11R112B2R2 (DP 1321 B2RF), 11R124B2R2 (DP 1311 B2RF), 11R136B2R2, 11R154B2R2, 11R159B2R2 (DP 1359 B2RF), and 12R242B2R2. Plots were 4 rows by 95 feet with four replications, and target irrigation levels were 30%, 60%, and 90% evapotranspiration replacement.

Lint yields and staple length increased as irrigation increased, but WUE decreased at the 90% level. Loan values increased at the 60% level, but not at the 90% level. Micronaire decreased as irrigation level increased, but all values were in the premium range. 11R136B2R2 had a staple length that was >0.06 inches longer than any other cultivar across irrigation levels, and had the highest loan values as a result. Differences in lint yield and WUE were found between cultivars across all irrigation levels. Further economic analysis will be conducted to assess the overall profitability of these cultivars in each management setting, and economic risk analysis will be used to rank the cultivars. Effects of cultivar and irrigation level on cotton lint yield, fiber quality, and gross revenues per acre are summarized in Tables 1, 2, and 3.

Table 1. Effects of B2RF variety and SDI irrigation levels on cotton lint yields at AG-CARES, Lamesa, TX, 2012.

	Irrigation Levels (inches applied in-season)							
	Low (6.1)		Base (11.7)		High (18.4)		Avg.	
Variety	---------- lbs/A ----------							
DP 0912 B2RF	1098	a	1479	a	1894	a	1489	BCD
DP 1032 B2RF	1078	a	1430	a	1684	a	1396	D
DP 1044 B2RF	1180	a	1417	a	1784	a	1474	BCD
DP 1212 B2RF	1152	a	1414	a	1762	a	1442	CD
DP 1219 B2RF	1153	a	1445	a	1741	a	1445	CD
11R110B2R2	1185	a	1569	a	1895	a	1549	AB
11R112B2R2	1165	a	1606	a	2037	a	1602	A
11R124B2R2	1224	a	1397	a	1811	a	1466	BCD
11R136B2R2	1111	a	1363	a	1798	a	1414	D
11R154B2R2	1080	a	1522	a	1855	a	1485	BCD
11R159B2R2	1153	a	1521	a	1911	a	1527	ABC
12R242B2R2	1253	a	1480	a	1958	a	1563	AB
Avg.	1127	C	1494	B	1842	A		
% Change	(- 25 %)		(---------)		(+ 23 %)			

Table 2. Effects of B2RF variety and SDI irrigation levels on lint value at AG-CARES, Lamesa, TX, 2012.

	Irrigation Levels (inches applied in-season)							
Cultivar	Low (6.1)		Base (11.7)		High (18.4)		Avg.	
Variety	---------- ¢/lbs ----------							
DP 0912 B2RF	51.50	cd	53.00	d	54.02	a	53.04	F
DP 1032 B2RF	54.20	ab	55.11	abc	55.49	a	55.13	ABCD
DP 1044 B2RF	54.30	ab	54.20	c	55.78	a	54.98	BCD
DP 1212 B2RF	53.50	ab	54.30	c	55.70	a	54.70	CDE
DP 1219 B2RF	54.72	a	55.80	a	55.79	a	55.64	AB
11R110B2R2	54.00	ab	55.48	ab	55.75	a	55.28	ABCD
11R112B2R2	50.72	d	54.85	abc	55.65	a	53.94	E
11R124B2R2	52.28	bcd	54.42	bc	55.05	a	54.25	DE
11R136B2R2	55.28	a	55.80	a	55.85	a	55.85	A
11R154B2R2	54.35	ab	55.63	a	55.76	a	55.45	ABC
11R159B2R2	53.45	abc	55.74	a	55.71	a	55.17	ABCD
12R242B2R2	53.72	ab	54.78	abc	55.47	a	54.86	BCD
Avg.	54.12	B	54.93	A	55.52	A		

Table 3. Effects of B2RF variety and SDI irrigation levels on cotton gross revenue at AG-CARES, Lamesa, TX, 2012.

	Irrigation Levels (inches applied in-season)							
	Low (6.1)		Base (11.7)		High (18.4)		Avg.	
Variety	---------- $/A ----------							
DP 0912 B2RF	559	a	783	a	1023	a	793	BC
DP 1032 B2RF	577	a	788	a	935	a	771	C
DP 1044 B2RF	634	a	768	a	995	a	812	ABC
DP 1212 B2RF	609	a	767	a	981	a	790	BC
DP 1219 B2RF	624	a	806	a	971	a	805	BC
11R110B2R2	634	a	870	a	1056	a	858	A
11R112B2R2	586	a	881	a	1133	a	871	A
11R124B2R2	633	a	761	a	997	a	799	BC
11R136B2R2	608	a	761	a	1004	a	790	BC
11R154B2R2	580	a	847	a	1034	a	824	ABC
11R159B2R2	610	a	848	a	1065	a	845	AB
12R242B2R2	666	a	811	a	1087	a	859	A
Avg.	610	C	821	B	1023	A		
% Change	(- 26 %)		(-----)		(+ 25 %)			

TITLE:

Effects of Subsurface Drip Irrigation Level, Nitrogen Rate, and Harvesting Method on Cotton Yield and Fiber Quality at AG-CARES, Lamesa, TX, 2012.

AUTHORS:

Wayne Keeling, Jim Bordovsky, John Wanjura and Eric Hequet. Cooperating Institutions: Texas A&M AgriLife Research, USDA-ARS and Texas Tech University.

MATERIALS AND METHODS:

Plot Size:	4 rows by 400 feet, 3 replications
Planting Date:	May 21, 52,000 seeds/A
Variety:	ST 5458B2RF
Herbicides:	Trifluralin 1.5 pt/A PPI (April 7)
	Roundup PowerMax 32 oz./A early-POST (June 14)
Fertilizer:	High Irrigation with Low N – 125-30-0/A
	High Irrigation with High N – 175-30-0/A
	Base Irrigation with Low N – 100-30-0/A
	Base Irrigation with High N – 150-30-0/A

Irrigation in-season:

	Base	High
Preplant/Germ.	7.6”	7.6”
In-Season	10.1”	14.5”
Total	17.7”	22.1”

Harvest Dates:	Picker – October 22, 2012
	Stripper – November 2, 2012

RESULTS AND DISCUSSION:

This trial, initiated in 2010, was established to evaluate effects of SDI irrigation levels (0.18” and 0.25” maximum daily pumping capacities), nitrogen rate (base rate considering soil residual N levels and expected yield compared to 25-50 lbs. higher depending on irrigation level) and picker versus stripper harvest. In-season irrigation totaled 10.1” for the base irrigation and 14.5” for the high irrigation treatment.

Plots were harvested with a John Deere 9996 picker or John Deere 7445 stripper. Large seed cotton samples (250 lbs. /plot) were differentially ginned at the USDA-ARS Cotton Production and Processing Unit laboratory at Lubbock. Lint yields ranged from 1213 to 1355 lbs. lint/A within the treatments. Similar lint yields were produced with both picker and stripper harvesting methods (Table 1). Within a harvesting method, yields were similar for all irrigation/nitrogen fertilizer level treatments. When averaged across harvesting method and nitrogen levels, yields increased only 9% with the high irrigation treatment.

Cotton lint value was not affected by harvesting method, irrigation level, or nitrogen level (Table 2). The base irrigation x base nitrogen treatment has a lower loan value when stripper harvested. Gross revenues per acre were not affected by harvesting method or nitrogen level, but did increase at the high irrigation level (Table 3).

Table 1. Effects of subsurface drip irrigation level, nitrogen rate, and harvesting method on cotton lint yield and turnout at AG-CARES, 2012.

		Harvesting Method		
		Picker	Stripper	Avg.
		lbs/A		
High Irrigation				
	High N (175)	1281 a (34.9) b	1314 a (32.6) a	1316 A
	Base N (125)	1314 a (36.7) ab	1355 a (32.7) a	
Base Irrigation				
	High N (125)	1169 a (36.5) ab	1210 a (34.4) a	1208 B
	Base N (100)	1213 a (37.7) a	1240 a (34.1) a	
Avg.		1244 A	1279 A	
		(34.9) A	(33.5) A	

Table 2. Effects of subsurface drip irrigation level, nitrogen rate, and harvesting method on cotton lint value at AG-CARES, 2012.

		Harvesting Method		
		Picker	Stripper	Avg.
		cents/lb		
High Irrigation				
	High N (175)	50.53a	51.73ab	52.16A
	Base N (125)	53.47a	52.93a	
Base Irrigation				
	High N (125)	51.12a	50.58ab	50.96A
	Base N (100)	52.28a	49.88b	
Avg.		51.85A	51.28A	

Table 3. Effects of subsurface drip irrigation level, nitrogen rate, and harvesting method on gross revenues at AG-CARES, 2012.

		Harvesting Method		
		Picker	Stripper	Avg.
		$/A		
High Irrigation				
	High N (175)	648a	680a	688A
	Base N (125)	704a	720a	
Base Irrigation				
	High N (125)	599a	614a	617B
	Base N (100)	634a	619a	
Avg.		646A	658A	

TITLE:

Effect of root-knot resistant varieties and various chemical treatments on root-knot nematodes and cotton yield.

AUTHORS:

Terry Wheeler, Victor Mendoza, Landon Kitten, and Jay Taylor, Texas A&M AgriLife Research, Lubbock.

OBJECTIVE:

Determine if alternatives to Temik 15G can be effective at controlling nematodes.

MATERIALS AND METHODS:

None; Cruiser (C); Avicta Complete Cotton (A); C+Vydate C-LV (17 oz/a); A+ Vydate C-LV; Temik 15 G (5 lbs/a); C + Telone II (3 gal/a)

Two varieties, a root-knot resistant (Stoneville (ST) 5458B2F) and susceptible (Fibermax (FM) 9160B2F) were planted, each with all seven chemical combinations, with four replications of each variety/chemical combination, arranged in a randomized complete block design.

RESULTS AND DISCUSSION:

Galls/root were examined at 35 days after planting. There were very few galls overall, indicating low nematode pressure, but ST 5458B2F had fewer galls (1.2) than FM 9160B2F (1.7). Soil samples were taken in August and root-knot nematode was extracted. There were more root-knot nematodes with FM 9160B2F (9,447/500 cm3 soil) than in plots with ST 5458B2F (3,883/500 cm3 soil). Yields were higher with ST 5458B2F (1,302 lbs of lint/a) than for FM 9160B2F (1,262 lbs of lint/a). However ST 5458B2F had a lower loan value than FM 9160B2F, so when multiplying yield x loan value, then FM 9160B2F had a higher value ($713/a) than ST 5458B2F ($687/a). There was no impact of chemical treatment on any of the measured parameters.

Table 1. Measured variables at Lamesa in 2012 for each combination of chemical treatment and variety (Average of six replications).

Variety[1]	Chemical[4]	Plants /ft. row	Galls/ root	RK[2]/ 500 cc soil	Lbs of lint/acre	Net value[3] ($/acre)
FM	None	1.79	2.1	4,760	1,187	601
FM	Insecticide (I)	1.45	1.1	7,070	1,211	641
FM	NST	2.16	1.3	5,020	1,296	622
FM	I+Vydate (V)	1.89	1.7	6,827	1,293	632
FM	NST+Vydate	2.25	2.2	18,980	1,289	608
FM	Temik 15G	2.22	2.4	14,430	1,240	588
FM	I+Telone II	2.13	1.2	9,040	1,320	596
ST	None	2.09	1.7	3,463	1,270	603
ST	Insecticide (I)	1.96	0.7	9,000	1,298	581
ST	NST	2.15	1.6	2,900	1,273	642
ST	I+Vydate (V)	2.48	1.6	2,047	1,306	626
ST	NST+Vydate	2.36	1.0	2,427	1,368	590
ST	Temik 15G	2.32	0.8	6,220	1,293	533
ST	I+Telone II	2.23	1.2	1,127	1,309	596

[1]FM is Fibermax 9160B2F, ST is Stoneville 5458B2F.
[2]RK is root-knot nematode.
[3]Net value is the (yield (lbs of lint/acre) x loan value) – variety cost ($74.35/acre) – chemical cost. Chemical costs for Cruiser was $8.10/acre, Avicta Complete Cotton was $16.20/acre, Cruiser + Vydate CLV = $13.65/acre, Avicta Complete Cotton + Vydate CLV = $21.75/acre, Temik 15G = $17.50/acre, and Cruiser + Telone II = $82.80/acre.
[4]Insecticide was Cruiser, NST was Avicta Complete Cotton, which was a nematicide seed treatment (Avicta 500) that also included an insecticide (Cruiser) and fungicide combination (Dynasty). Vydate CLV (17 oz/acre) was included as an over-the-top banded nematicide at the 4-5 leaf stage. Temik 15G (aldicarb) was applied at 5 lbs/acre in the furrow at planting. Telone II (3 gal/a) was applied in the bed before planting (number of days varied with location) at a depth of 12 inches and then seed was treated with Cruiser to provide insect protection.

TITLE:

Effect of irrigation amount, type, and wheat rotation on root-knot nematode population density.

AUTHORS:

Terry Wheeler, Wayne Keeling, and Justin Cave

MATERIALS AND METHODS:

Crop rotations can have a substantial impact on root-knot nematode density, which can then impact the following cotton crop. For example, rotation with peanut reduces root- knot nematode close to 0, so that the following cotton crop rarely has damage from nematodes. Rotation with sorghum reduced root-knot nematode approximately 50% from continuous cotton and in general there was a positive increase in yield following sorghum compared with continuous cotton. It is unknown what impact a wheat/cotton rotation will have on root-knot nematode density.

The center pivot field at AGCARES has historically had a root-knot nematode population density capable of damaging cotton. When the drip irrigation field was installed in what was previously a dryland field, root-knot nematode was present, but in much lower numbers than under the center pivot. The second objective of this paper is to compare the root-knot nematode numbers in the center pivot and drip irrigation field, after two seasons of very dry conditions.

Both the center pivot and drip areas were sampled in the fall of 2012 for root-knot nematode.

RESULTS AND DISCUSSION:

There was no root-knot nematodes recovered under the dryland cotton or wheat areas of the center pivot (also dryland). In the areas where cotton followed wheat there was a higher density of root-knot nematode on average (4,711 root-knot/500 cm^3 soil) than in continuous cotton (2,333 root-knot/500 cm^3 soil). There were no differences in root-knot nematode population density under the pivot between irrigation rates (Table 1), however, with drip irrigation, the high irrigation rate (90% ET) had more root-knot nematode than did the moderate or low irrigation rates (Table 1). The dryland was similar to under the center pivot with almost no root-knot nematode recovered. Root-knot nematode density was fairly similar between the center pivot and drip irrigation areas on average. Differences between the irrigation system occurred between rates (high water = high nematodes under the drip), while high water=moderate water=low water under the center pivot.

Table 1. Effect of crop rotation, center pivot versus drip irrigation, or irrigation rate on root-knot nematode density in the fall.

Irrigation	Center Pivot		Drip Irrigation	
rate	W/C[1]	CC	BCS	MON
90% ET	4,223 ab[2]	2,955 a	7,432 a	3,701 a
60% ET	7,135 a	1,932 a	948 b	1,393 b
30% ET	2,775 b	2,110 a	1,985 b	623 b
Dryland	0 c	0 b	32 c	18 c

[1]W/C = cotton following wheat; CC = continuous cotton; BCS = Bayer CropScience variety test; MON = Monsanto variety test.
[2]Different letters indicate differences between water treatments (P=0.05) within a column.

TITLE:

Results of the Root-Knot Nematode (RKN) Cotton Variety Performance Test and Nursery at AG-CARES, Lamesa, TX, 2012

AUTHORS:

Jane K. Dever, Terry A. Wheeler, Carol Mason Kelly and Valerie Morgan; Associate Professor, Professor, Assistant Research Scientist and Research Associate

MATERIALS AND METHODS:

Test:	Nematode Variety
Planting Date:	May 24
Design:	Randomized Complete Block, 4 replications
Plot Size:	2-row plots, 24 ft
Row Spacing:	40-in
Planting Pattern:	Solid
Herbicide:	Trifluralin @ 1.5 pt/A applied pre-plant
Fertilizer:	10-34-0 116bs/A applied pre-plant
	32-0-0 30 lbs/A applied June 27 (fertigation)
	32-0-0 30 lbs/A applied July 14 (fertigation)
	32-0-0 30 lbs/A applied July 24 (fertigation)
Irrigations:	2.75 acre-in applied pre-plant
	8.8 acre-in applied May-September
Harvest Aid:	Prep @ 3pt/A + 2oz e.t. October 3
	Gramoxone Inteon 1qt/A October 17
Harvest Date:	October 30

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 (RKN) pressure. Texas A&M 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. Texas A&M AgriLife Research cotton breeding program at Lubbock utilizes the same location to select progeny from root-knot nematode resistant breeding populations and advance promising lines for yield testing.

Variety Test

Twenty-four cotton varieties and experimental strains were submitted for small-plot, replicated testing in a field where root-knot nematodes were known to have been present. Nematode pressure was not significant enough to report numbers in 2012. The highest-yielding variety was DP 1219 B2RF at 1,410 pounds of lint per acre (Table 1). The next 10 varieties, in descending yield order, were not significantly different in yield from DP 1219 B2RF. FM 2011GT allowed the lowest level of nematode reproduction in 2011, and was among the top-yielding varieties in 2012. Other varieties considered to have some level of root-knot nematode tolerance among the highest yielding varieties are ST 5458B2RF, ST 4946GLB2, ST 4288B2F

and FM 1944GLB2. PHY 499 WRF, All-Tex Nitro 44B2RF and AM 1511 B2RF also performed well in the 2012 RKN trial, but have not been previously characterized as RKN-tolerant. DP 174RF has been characterized as RKN-tolerant, but did not produce as high a level of yield in 2012 as in previous years. Experimental lines that performed well in 2012 include Bayer CropScience BX 1347GLB2. Test yield average was 1,197 pounds per acre with a coefficient of variation of 10.2 %. Emergence, moisture and growing conditions improved compared to 2011, contributing to the relatively low coefficient of variation for the test. Fiber quality are not available and will be added to the website.

Root-knot Nematode Nursery

The nursery was planted in 1-row, 20 ft un-replicated plots. Seven new F_2 populations were evaluated and 209 individual plant selections were harvested in 2012. All individual plant selections were screened in the greenhouse for gall production since RKN pressure was variable in the nursery. Fifteen rows were selected for 2013 yield testing and these lines were screened in the greenhouse for both gall production and egg reproduction. Four plant selections were ranked more resistant than the resistant check, M-240, and 185 plant selection were ranked more resistant than the partially resistant check, DP 174RF. Six rows selected for yield-testing were more resistant than the partially resistant check, DP 174F. Good RKN response results from nursery selections indicate fiber quality, yield and boll type will be considered in advancement to the 2013 nursery.

Table 1. Yield and agronomic results of the pivot-irrigated root-knot nematode cotton variety trial conducted at AG-CARES, Lamesa, TX, 2012

				Agronomic Properties								
		% Turnout		% Turnout		Boll	Seed	Lint	Seed per	% Open Bolls	Storm	
Designation	Yield	Lint	Seed	Picked	Pulled	Size	Index	Index	Boll		Resistance	Height
Deltapine DP 1219 B2RF	1410	31.3	47.7	38.2	30.1	4.3	8.9	5.8	28.1	65	4	26
Stoneville 5458B2RF	1359	30.4	48.4	37.9	29.1	4.7	9.8	6.4	28.0	54	4	23
Stoneville ST 4946GLB2	1331	31.4	47.7	39.2	30.0	4.8	9.9	6.7	27.9	58	5	25
PhytoGen PHY 499 WRF	1302	30.3	46.6	39.7	30.1	4.2	8.9	6.3	26.5	78	4	27
Stoneville ST 4288B2F	1277	28.3	50.0	36.2	28.3	5.1	10.5	6.3	29.4	69	5	24
Bayer CropScience BX 1347GLB2	1258	30.6	47.0	37.7	27.7	4.4	9.1	6.0	27.8	61	5	24
FiberMax FM 2011GT	1258	30.5	45.9	41.6	33.3	5.7	10.9	8.2	29.1	65	6	23
FiberMax FM 1944GLB2	1256	29.5	49.3	37.9	29.8	5.0	10.3	6.6	28.4	71	5	26
All-Tex Nitro 44 B2RF	1241	29.4	49.3	37.2	29.2	5.0	10.6	6.7	27.8	63	4	26
Americot AM 1511B2RF	1239	32.0	46.7	40.5	31.8	4.6	9.6	6.9	26.9	65	4	25
Deltapine DP 1044 B2RF	1238	28.6	45.4	36.3	28.3	4.5	9.4	5.7	28.5	56	5	25
Deltapine DP 0912 B2RF	1181	31.0	46.3	39.1	29.1	4.4	9.4	6.4	27.0	66	4	24
FiberMax FM 2989GLB2	1177	29.4	49.3	36.7	28.3	4.7	10.3	6.3	27.3	66	5	26
All-Tex AT Atlas	1175	30.2	47.4	40.0	29.3	4.8	9.6	6.8	28.3	74	5	27
Deltapine DP 174 RF	1174	30.1	46.6	39.2	30.4	4.9	9.2	6.3	30.4	71	4	26
Deltapine DP 1321 B2RF	1151	30.6	46.9	40.4	31.1	4.3	9.0	6.5	26.7	68	4	24
All-Tex ATX CR106466 B2RF	1144	29.1	49.9	36.7	28.7	4.6	9.6	5.9	29.0	70	5	25
Deltapine DP 1311 B2RF	1114	31.5	45.5	40.7	31.6	4.4	7.9	5.7	30.8	74	6	24
NexGen NG4111 RF	1104	30.5	48.5	38.2	28.8	4.5	9.7	6.3	27.3	56	5	25
Stoneville ST 6448GLB2	1098	28.6	46.8	37.6	29.4	4.6	9.7	6.1	28.6	70	4	27
PhytoGen PHY 367 WRF	1086	29.5	46.5	38.2	28.2	4.1	8.7	5.7	27.1	68	4	24
NexGen NG4012 B2RF	1066	29.7	47.4	38.6	30.0	4.7	9.4	6.2	29.7	51	5	27
All-Tex ATX CR103233 B2RF	1060	30.3	46.2	39.1	28.7	4.3	8.8	6.0	27.9	63	6	26
Stoneville ST 5445LLB2	1042	29.8	45.3	39.9	30.0	4.7	9.7	6.8	27.7	53	4	21
Mean	1197	30.1	47.4	38.6	29.6	4.6	9.5	6.3	28.2	65	4	25
c.v.%	10.2	3.1	3.0	2.4	4.7	5.5	4.1	4.2	4.7	12.1	13.5	9.5
LSD 0.05	172	1.3	2.0	1.9	2.9	0.5	0.8	0.5	2.7	11	1	3

TITLE:

Results of the Pivot Irrigated Uniform Cotton Variety Performance Test at AG-CARES, Lamesa, TX, 2012

AUTHORS:

Jane K. Dever, Carol Mason Kelly and Valerie Morgan; Associate Professor, Assistant Research Scientist and Research Associate

MATERIALS AND METHODS:

Test:	Uniform Cotton Variety, pivot-irrigated
Planting Date:	May 24
Design:	Randomized Complete Block, 4 replications
Plot Size:	2-row plots, 24 ft
Row Spacing:	40-in
Planting Pattern:	Solid
Herbicide:	Trifluralin @ 1.5 pt/A applied pre-plant
Fertilizer:	10-34-0 116bs/A applied pre-plant
	32-0-0 30 lbs/A applied June 27 (fertigation)
	32-0-0 30 lbs/A applied July 14 (fertigation)
	32-0-0 30 lbs/A applied July 24 (fertigation)
Irrigations:	3.7 acre-in applied pre-plant
	7.25 acre-in applied May-September
Harvest Aid:	Prep @ 3pt/A + 2oz e.t. October 3
	Gramoxone Inteon 1qt/A October 17
Harvest Date:	November 1

RESULTS AND DISCUSSION:

Texas A&M 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 irrigated site at AG-CARES.

Lint yield is determined by the stripper-harvested plot weight and a lint percentage determined from a ~600 g 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.

Forty cotton varieties from 7 different seed companies were submitted for variety testing at 5 locations, including the irrigated location at AG-CARES in Lamesa. Tamcot 73, a conventional variety release from the Texas A&M cotton breeding program in College Station was also included. Average yield was 876 pounds of lint per acre with a test coefficient of variation of 14.1% and 173 pounds least significant difference. The highest yielding variety was ST 4946GLB2 with a yield of 1,115 pounds of lint per acre , and the next 12 varieties in the test were not significantly different than the highest yielding variety (Table 1). Plant height ranged from 16-20 inches, indicating water was fairly limited. Relative maturity of the varieties as indicated by percent open bolls on a given date averaged 50%, ranging from 38% to 66%, indicating a good range of relative maturity among varieties tested. FM 9058F had the highest storm-proof rating of 7, compared to a test average of 5. All of the top-yielding varieties had storm ratings of 5 or 6; with 6 and higher being appropriate for Texas High Plains production conditions. Fiber quality evaluations are not available at the time of the 2012 Annual Report publication, and will be added to the website when available. Stoneville, Deltapine, Phytogen, FiberMax, Nex-Gen, Americot and All-Tex brands were all represented in the top yield tier, as were conventional, herbicide alone, and herbicide tolerant and insect resistant stacks.

Table 1. Yield and agronomic results of the pivot-irrigated uniform cotton variety trial conducted at AG-CARES, Lamesa, TX, 2012

				Agronomic Properties								
		% Turnout		% Turnout		Boll	Seed	Lint	Seed per	% Open Bolls	Storm	
Designation	Yield	Lint	Seed	Picked	Pulled	Size	Index	Index	Boll		Resistance	Height
Stoneville ST 4946GLB2	1115	28.6	41.9	42.0	34.6	5.7	9.7	7.3	32.6	58	5	18
PhytoGen PHY 499WRF	1071	27.9	41.3	43.6	35.2	4.5	8.5	6.7	29.4	56	5	20
Deltapine DP 1044 B2F	1036	27.3	43.5	39.9	32.9	4.5	8.3	5.9	30.8	53	5	17
Stoneville ST 5458B2F	1028	29.1	43.0	41.5	33.8	5.0	9.1	6.7	30.9	38	6	18
Americot AM 1511B2RF	1027	30.1	39.6	43.5	35.9	5.1	8.8	7.2	30.9	49	5	19
FiberMax FM 9250GL	1012	27.3	43.5	40.7	33.1	6.1	11.0	7.9	31.7	56	6	19
NexGen NG4111 RF	993	28.4	43.1	42.5	34.2	5.0	9.6	7.2	29.5	38	6	19
FiberMax FM 989	989	26.3	42.7	39.9	32.0	5.4	9.7	6.8	31.9	41	5	19
PhytoGen PHY 367WRF	987	25.0	39.7	40.6	32.5	4.6	8.7	6.2	29.7	54	5	19
All-Tex AT Epic RF	975	28.8	41.2	42.3	34.0	4.9	8.7	6.6	31.5	64	5	18
FiberMax FM 2484B2F	955	27.4	42.7	41.6	33.7	4.2	9.9	7.3	23.7	40	6	18
Bayer CropScience BX 1347GLB2	953	25.7	41.1	40.9	32.7	5.3	9.5	7.0	31.4	43	5	18
Deltapine DP 0912 B2RF	948	27.9	41.9	42.5	34.6	5.1	8.8	6.9	31.2	42	5	18
FiberMax FM 1944GLB2	937	27.4	44.6	40.4	32.1	4.9	9.8	6.9	28.4	55	6	19
Stoneville ST 6448GLB2	934	26.8	40.7	41.2	33.3	4.7	9.1	6.5	30.0	54	4	18
Monsanto 10R011B2R2	931	27.4	40.0	43.2	35.6	4.7	7.8	6.4	31.7	39	5	20
All-Tex ATX 81227 B2RF	910	24.6	43.6	40.6	32.4	4.7	9.1	6.4	29.7	49	6	19
FiberMax FM 2011GT	910	28.7	39.8	44.0	35.1	5.9	10.8	9.0	28.9	40	6	18
Deltapine DP 491	894	27.0	40.6	42.0	34.4	5.2	8.9	6.6	32.8	63	5	17
Monsanto 10R013B2R2	889	26.3	40.2	42.2	34.4	5.0	9.3	7.1	29.7	58	5	18
Tamcot 73	889	26.5	42.2	38.6	31.5	5.2	9.6	6.4	31.5	66	6	16
FiberMax FM 958	873	26.5	42.5	39.8	31.8	5.6	11.6	8.0	27.8	40	6	18
FiberMax FM 2989GLB2	872	26.5	44.1	40.4	32.2	5.3	10.1	7.1	30.0	48	5	18
Deltapine DP 174 RF	870	27.7	41.9	43.2	35.0	5.5	8.8	7.1	33.3	54	5	18
All-Tex Nitro 44 B2RF	866	25.9	43.5	40.5	32.8	5.0	10.5	7.5	27.0	43	6	17
All-Tex ATX 9CR253 B2RF	854	28.9	40.1	44.4	35.6	5.1	8.4	6.9	33.0	56	5	20
NexGen NG4010 B2RF	840	27.2	43.9	40.9	32.9	4.8	9.3	6.7	29.8	38	6	19
FiberMax FM 1740B2F	832	27.0	40.9	42.7	34.9	5.0	9.7	7.7	27.4	48	6	17
Seed Source Genetics UA 222	813	26.0	40.1	40.9	33.2	4.9	9.6	6.9	28.9	51	5	17

FiberMax FM 9058F	811	27.5	42.4	41.6	33.1	4.9	9.9	7.2	28.5	48	7	17
FiberMax FM 9180B2F	801	25.0	43.7	39.8	31.8	5.3	10.5	7.2	29.0	44	6	18
PhytoGen PHY 375 WRF	780	27.4	41.8	41.9	34.2	4.6	8.5	6.5	29.7	56	5	17
NexGen NG3348 B2F	770	28.1	43.6	40.3	33.0	5.4	10.2	7.2	30.6	45	5	18
Deltapine DP 1032 B2RF	740	27.5	40.2	44.2	35.9	4.6	8.0	6.5	31.4	54	5	18
Stoneville ST 5445LLB2	740	25.1	39.8	41.9	33.5	5.1	8.8	6.6	32.5	48	6	17
Stoneville ST 4145LLB2	706	26.0	41.5	40.2	32.3	4.5	8.6	5.9	30.1	66	5	17
All-Tex Atlas	699	23.1	41.2	38.1	29.8	5.4	10.6	7.0	29.3	45	5	17
Seed Source Genetics SSG HQ 210 CT	692	25.1	43.0	40.4	33.2	4.8	7.9	5.5	35.2	64	5	16
Paymaster HS26	658	23.1	42.3	38.9	30.8	5.2	10.1	6.9	29.8	43	6	17
PhytoGen PHY 725 RF	458	21.0	37.6	38.8	31.3	4.9	10.0	6.7	28.6	45	5	19
Mean	876	26.7	41.8	41.3	33.4	5.0	9.4	6.9	30.2	50	5	18
c.v.%	14.1	5.3	3.8	2.5	3.0	4.2	3.8	4.1	4.8	19.2	13.3	7.0
LSD 0.05	173	2.0	2.2	2.1	2.0	0.4	0.7	0.6	2.9	13	1	2

TITLE:

Results of the Dryland Uniform Cotton Variety Performance Test at AG-CARES, Lamesa, TX, 2012

AUTHORS:

Jane K. Dever, Carol Mason Kelly and Valerie Morgan; Associate Professor, Assistant Research Scientist and Research Associate

MATERIALS AND METHODS:

Test:	Dryland Cotton Variety
Planting Date:	May 24
Design:	Randomized Complete Block
Plot Size:	2-row plots, 24 ft
Row Spacing:	40-in
Planting Pattern:	Solid
Herbicide:	Trifluralin @ 1.5 pt/A applied pre-plant
Fertilizer:	10-34-0 116bs/A applied pre-plant
Harvest Date:	November 2

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 (NCVT), so data are reported even under difficult conditions. Some un-adapted varieties 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.
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.

Lint yield is determined by the stripper-harvested plot weight and a lint percentage determined from a ~600 g 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.

Forty cotton varieties from 7 different seed companies were submitted for variety testing at 5 locations, including a dryland location at AG-CARES in Lamesa. Ten of the varieties submitted for testing are not included in the analysis of the dryland test because glyphosate drift affected performance of conventional or Liberty-Link varieties. The average yield for the test was 310 pounds of lint per acre with a coefficient of variation of 18.6%, least significant difference of 81.3; yields ranging from 189 to 412 pounds of lint per acre. The top eight varieties were not significantly different from the highest yielding variety, PHY 499WRF (Table 1). Relative maturity of the varieties as indicated by percent open bolls on a given date, ranged from 38% to 64%, with a test average of 49%. All of the varieties tested had storm resistance ratings from 5 to 7. Plant height averaged 18 inches and ranged from 17 to 20 inches across all varieties.

Fiber length average for the test was 1.08, indicating drought stress negatively impacted fiber elongation during boll fill. Eleven of the varieties tested had a staple equivalent or better than 35 (1.09 inches), demonstrating that varieties are available that can produce acceptable fiber for the global market under severe stress (Table 2). All but 10 of the varieties produced fiber in the premium micronaire range, and all were out of the discount range. Test average fiber strength was 30.3 grams/tex, and 28.9 was the lowest fiber strength in the test. Length uniformity was the only characteristic influencing loan value that was below what is expected in a competitive global market. Several varieties had favorable combinations of fiber properties, most notably All-Tex Nitro 44 B2RF.

Table 1. Yield and agronomic results of the dryland uniform cotton variety performance trial conducted at AG-CARES, Lamesa, TX, 2012

				Agronomic Properties								
		% Turnout		% Turnout		Boll	Seed	Lint	Seed per	% Open Bolls	Storm	
Designation	Yield	Lint	Seed	Picked	Pulled	Size	Index	Index	Boll	Mat	Resistance	Height
PhytoGen PHY 499WRF	412	27.9	41.3	43.6	35.2	4.5	8.5	6.7	29.4	56	5	20
All-Tex AT Epic RF	410	28.8	41.2	42.3	34.0	4.9	8.7	6.6	31.5	64	5	18
Monsanto 10R011B2R2	373	27.4	40.0	43.2	35.6	4.7	7.8	6.4	31.7	39	5	20
Stoneville ST 5458B2F	363	29.1	43.0	41.5	33.8	5.0	9.1	6.7	30.9	38	6	18
Stonveille ST 6448GLB2	354	26.8	40.7	41.2	33.3	4.7	9.1	6.5	30.0	54	4	18
FiberMax FM 2484B2F	347	27.4	42.7	41.6	33.7	4.2	9.9	7.3	23.7	40	6	18
Stoneville ST 4946GLB2	342	28.6	41.9	42.0	34.6	5.7	9.7	7.3	32.6	58	5	18
FiberMax FM 2011GT	337	28.7	39.8	44.0	35.1	5.9	10.8	9.0	28.9	40	6	18
Deltapine DP 0912 B2RF	328	27.9	41.9	42.5	34.6	5.1	8.8	6.9	31.2	42	5	18
PhytoGen PHY 375 WRF	327	27.4	41.8	41.9	34.2	4.6	8.5	6.5	29.7	56	5	17
Bayer CropScience BX 1347GLB2	327	25.7	41.1	40.9	32.7	5.3	9.5	7.0	31.4	43	5	18
All-Tex ATX 9CR253 B2RF	324	28.9	40.1	44.4	35.6	5.1	8.4	6.9	33.0	56	5	20
FiberMax FM 1740B2F	319	27.0	40.9	42.7	34.9	5.0	9.7	7.7	27.4	48	6	17
FiberMax FM 9250GL	317	27.3	43.5	40.7	33.1	6.1	11.0	7.9	31.7	56	6	19
FiberMax FM 1944GLB2	316	27.4	44.6	40.4	32.1	4.9	9.8	6.9	28.4	55	6	19
Deltapine DP 1044 B2F	306	27.3	43.5	39.9	32.9	4.5	8.3	5.9	30.8	53	5	17
All-Tex Nitro 44 B2RF	305	25.9	43.5	40.5	32.8	5.0	10.5	7.5	27.0	43	6	17
PhytoGen PHY 367WRF	299	25.0	39.7	40.6	32.5	4.6	8.7	6.2	29.7	54	5	19
FiberMax FM 9180B2F	289	25.0	43.7	39.8	31.8	5.3	10.5	7.2	29.0	44	6	18
FiberMax FM 2989GLB2	283	26.5	44.1	40.4	32.2	5.3	10.1	7.1	30.0	48	5	18
Monsanto 10R013B2R2	282	26.3	40.2	42.2	34.4	5.0	9.3	7.1	29.7	58	5	18
All-Tex ATX 81227 B2RF	281	24.6	43.6	40.6	32.4	4.7	9.1	6.4	29.7	49	6	19
Deltapine DP 1032 B2RF	281	27.5	40.2	44.2	35.9	4.6	8.0	6.5	31.4	54	5	18
NexGen NG4111 RF	276	28.4	43.1	42.5	34.2	5.0	9.6	7.2	29.5	38	6	19
FiberMax FM 9058F	271	27.5	42.4	41.6	33.1	4.9	9.9	7.2	28.5	48	7	17
Americot AM 1511B2RF	271	30.1	39.6	43.5	35.9	5.1	8.8	7.2	30.9	49	5	19
Deltapine DP 174 RF	271	27.7	41.9	43.2	35.0	5.5	8.8	7.1	33.3	54	5	18
NexGen NG4010 B2RF	262	27.2	43.9	40.9	32.9	4.8	9.3	6.7	29.8	38	6	19

NexGen NG3348 B2F	256	28.1	43.6	40.3	33.0	5.4	10.2	7.2	30.6	45	5	18
PhytoGen PHY 725 RF	189	21.0	37.6	38.8	31.3	4.9	10.0	6.7	28.6	45	5	19
Mean	310	27.1	41.8	41.7	33.7	5.0	9.3	7.0	30.0	49	5	18
c.v.%	18.6	5.3	3.6	2.4	2.9	3.4	3.1	4.1	4.6	20.3	13.1	7.0
LSD 0.05	81.3	2.0	2.1	2.1	2.0	0.4	0.6	0.6	2.8	14	1	2

Varieties without Flex or Glytol were not sampled due to glyphosate drift.

Table 2. Fiber quality results of the dryland uniform cotton variety performance trial conducted at AG-CARES, Lamesa, TX, 2012

Designation	Micronaire	Length	Uniformity	Strength	Elongation	Rd	+b	Leaf	Color Grade
PhytoGen PHY 499WRF	4.2	1.05	79.7	31.1	10.3	75.3	9.1	3	31-3,31-4
All-Tex AT Epic RF	4.5	1.05	78.8	29.6	10.3	73.3	9.4	2	32-2
Monsanto 10R011B2R2	4.3	1.12	79.7	28.9	8.2	76.7	8.7	2	31-1,31-3
Stoneville ST 5458B2F	4.5	1.05	78.0	29.1	9.0	75.0	9.1	2	31-3,31-4
Stonveille ST 6448GLB2	4.3	1.12	80.1	28.9	8.5	74.4	9.5	2	32-1,32-2
FiberMax FM 2484B2F	4.2	1.06	78.2	29.8	8.8	74.8	8.9	3	31-1,42-1
Stoneville ST 4946GLB2	4.2	1.07	78.7	30.8	9.3	73.8	9.3	2	31-4,32-2
FiberMax FM 2011GT	4.2	1.11	79.5	29.7	8.2	76.5	8.9	3	31-1,31-3
Deltapine DP 0912 B2RF	4.3	1.06	78.9	29.3	8.3	73.5	9.3	2	31-4,42-1
PhytoGen PHY 375 WRF	4.3	1.06	79.0	29.6	9.1	73.4	9.3	3	31-3,42-1
Bayer CropScience BX 1347GLB2	4.5	1.08	79.1	28.9	8.2	75.1	8.7	3	31-2,32-2
All-Tex ATX 9CR253 B2RF	4.6	1.06	77.2	29.9	8.1	74.1	9.0	2	31-3,41-3
FiberMax FM 1740B2F	4.7	1.06	77.9	28.9	8.6	76.0	9.1	2	31-3
FiberMax FM 9250GL	4.2	1.10	79.9	30.2	7.2	76.5	8.8	3	31-1,31-3
FiberMax FM 1944GLB2	4.4	1.13	79.8	30.2	7.6	76.4	8.6	2	31-1,31-2
Deltapine DP 1044 B2F	4.4	1.07	78.4	30.9	9.1	75.2	9.1	3	31-3,31-4
All-Tex Nitro 44 B2RF	4.0	1.15	80.4	33.4	9.1	73.8	9.1	2	31-4,42-1
PhytoGen PHY 367WRF	3.9	1.05	78.7	30.1	9.6	74.3	9.3	3	31-3,32-2
FiberMax FM 9180B2F	4.1	1.13	79.7	32.3	8.4	76.1	8.7	3	31-1,41-3
FiberMax FM 2989GLB2	4.2	1.04	77.3	30.5	9.3	73.2	9.3	3	31-4,42-1
Monsanto 10R013B2R2	4.5	1.08	79.6	31.5	10.7	72.6	9.8	2	32-2
All-Tex ATX 81227 B2RF	4.5	1.06	77.8	30.6	8.8	75.9	9.2	1	31-3
Deltapine DP 1032 B2RF	4.2	1.07	79.1	29.6	8.4	73.2	9.3	2	32-2,42-1
NexGen NG4111 RF	4.7	1.06	79.1	31.0	9.2	74.8	9.5	3	32-1,32-2
FiberMax FM 9058F	4.2	1.09	78.7	30.8	8.5	73.9	9.0	2	32-1,41-1

Americot AM 1511B2RF	4.6	1.07	79.6	31.7	10.1	73.8	9.5	2	32-2
Deltapine DP 174 RF	4.2	1.11	79.8	29.3	8.6	74.2	9.1	3	31-4
NexGen NG4010 B2RF	4.5	1.12	79.9	31.4	8.7	74.3	9.3	3	31-1,32-2
NexGen NG3348 B2F	3.9	1.04	77.5	30.2	8.5	72.1	9.1	3	41-1,42-1
PhytoGen PHY 725 RF	3.9	1.10	78.6	31.8	9.0	72.7	9.4	4	32-2,42-1
Mean	4.2	1.08	79.9	30.3	8.8	74.4	9.1	2	
c.v.%	5.8	3.3	1.6	6.6	8.7	2.5	4.9	37.1	
LSD 0.05	0.5	0.07	2.6	4.1	1.6	3.8	0.9	2	

TITLE:

Evaluation of chemical management options for nematode control as a replacement for Temik at AG-CARES, Lamesa, TX, 2012.

AUTHORS:

Jason Woodward, Ira Yates, Bobby Rodriguez and Eric Williams, Extension Plant Pathologist, Technician, Technician and Extension Assistant

MATERIALS AND METHODS:

Plot size:	4-rows by 35 feet, five replications
Soil type:	Amarillo fine sandy loam
Planting date:	23-May
Varieties:	Fibermax 9160B2F, Phytogen 367WRF and Stoneville 5458B2F
Harvest date:	27-Oct

RESULTS AND DISCUSSION:

This trial was conducted to evaluate the chemical treatments: *1.* imidacloprid + thiodicarb (Aeris Seed Applied System); *2.* & *3.* thiodicarb applied in-furrow at rates of 0.5 and 1.0 lb a.i./acre, respectively; *4.* abamectin + thiamethoxam (Avicta Duo Cotton); *5.* & *6.* abamectin applied in-furrow (Zephyer) at rates of 0.019 and 0.0375 lb a.i./acre, respectively; *7.* aldicarb (Temik) 3 lbs/acre, *8.* Vydate (17 fl oz/acre) applied once, *9.* Vydate (17 fl oz/acre) applied twice, compared to *10.* a non-treated control. Treatments *1-9* were applied to the susceptible variety Fiberma 9160B2F. In addition, the partially resistant varieties Stoneville 5458B2F (*11*) and Phytogen 367WRF (*12*) were included for comparison.

Soil assays conducted the winter prior to planting indicated that moderate nematode populations were found in the test area; however, nematode pressure at planting was low (data not shown). Harsh dry conditions were believed to have negatively affected nematode populations. Stands within the test area were similar among all treatments (data not shown); however, blowing sand experienced early in the growing season delayed development of the crop. Root-weights from samples collected 45 DAP ranged from 16.7 to 21.6 grams with differences between treatments being observed (Table 1). The production of eggs or juveniles was not statistically different for any of the treatments; however, lower levels of reproduction were found for the partially resistant varieties Phytogen 367WRF and Stoneville 5458B2F. Lint yields ranged from 889 to 1018 lb/A but did not differ for any variety. Additional studies are needed to determine the efficacy of the chemical treatments evaluated in these studies. With the loss of Temik, producers are currently being encouraged to use partially resistant varieties in fields with a history of moderate or severe nematode pressure.

Table 1. Effect of chemical treatments and partially resistant varieties on nematode reproduction and lint yield at AG-CARES, 2012[†]

Treatment	Root weigh (g)		Egg production (#/g root)		Juveniles (#/ pint soil)		Lint yield (lb/A)	
Aeris Seed Applied System	18.4	a-d	340	a	340	a	990	a
Thiodicarb, in-furrow (low rate)	18.0	a-d	660	a	470	a	889	a
Thiodicarb ,in-furrow (high rate)	16.7	d	510	a	390	a	956	a
Avicta Duo Cotton	21.1	b-d	580	a	400	a	1018	a
Zephyer in-furrow (low rate)	17.4	cd	240	a	380	a	938	a
Zephyer in-furrow (high rate)	20.3	a-c	600	a	280	a	968	a
Temik (3 lb/acre)	16.7	d	280	a	130	a	933	a
Vydate, one application	17.7	b-d	200	a	320	a	985	a
Vydate, two applications	17.9	a-d	250	a	420	a	951	a
Non-treated control	21.6	a	500	a	350	a	958	a
Stoneville 5458B2F	19.2	a-d	800	a	120	a	957	a
Phytogen 367WRF	20.3	a-c	230	a	240	a	920	a

[†] Means within a column followed by the same letter are not different according to Fisher's protected LSD ($P \leq 0.05$).

TITLE:

Cotton yield response to late-season *Lygus* plant bug infestations as influenced by cultivar x irrigation level treatments, Lamesa, TX, 2012.

AUTHORS:

Megha Parajulee, Ram Shrestha, Stanley Carroll, and Wayne Keeling; Professor, Senior Research Associate, Research Scientist, Professor, Texas A&M AgriLife Research

MATERIALS AND METHODS:

Plot Size:	4 rows by 50 feet, 3 replications
Planting Date:	May 22, 2012
Varieties:	PHY 367WRF, ST 5458B2RF
Fertilizer:	130-40-0
In-season Irrigation:	Low = 4.6 inches; High = 9.0 inches
Insect Treatments:	Control (zero *Lygus*); *Lygus* infested (4-6 nymphs per plant)
Insect Release Date:	August 6, 2012 (late-season boll developmental period)
Harvest Date:	October 18, 2012 (hand-harvested)

Two cotton cultivars (PHY 367WRF and ST 5458B2RF) were evaluated under low and high irrigation levels. There were a total of 24 experimental plots (2 insect release treatments x 2 water levels x 2 cultivars x 3 replications). Two 10 row-ft sections of cotton were randomly selected and flagged in each plot on August 6, 2012. *Lygus* bugs were released in one of the 10 ft sections in each plot, while the second 10 ft section per plot was maintained *Lygus*-free (control). The release treatment of 4-6 bugs per plant was designed to exert significant insect pressure on the fruiting cotton plants. After one week of *Lygus* infestation exposure, a total of six cotton plants (3 from *Lygus*-infested section; 3 from control) from each plot were cut and brought into the laboratory to evaluate the resulting *Lygus* external cotton boll injuries. Pre-harvest plant mapping was conducted on October 18, 2012 to monitor the harvestable boll retention profile as influenced by the bug augmentation treatment. Both flagged ten foot sections (control and *Lygus*-infested) from each plot were hand-harvested to determine the impact of a late-season *Lygus* infestation on lint yield and quality.

RESULTS AND DISCUSSION:

The PHY 367WRF cultivar plants were significantly taller (21.7 cm) than ST 5458B2RF (18.4 cm). Cotton plants in high irrigation plots were significantly taller (21.1 cm) than low irrigation plots (19.0 cm). The late-season *Lygus* infestations did not significantly influence final plant height of the two evaluated cotton cultivars (Table 1). A significantly higher number of green bolls (8.5 bolls/plant) were observed in PHY 367WRF as compared to ST 5458B2RF (6.4 boll/plant) following one week of exposure to the *Lygus* infestation. A numerically higher numbers of green bolls were found on the high irrigation plots than those observed on plants of the low irrigation treatment, yet there were no statistical differences between the number of green bolls from control and *Lygus* infested plants (Table 2). Pre-harvest plant mapping data showed PHY 367WRF retained a significantly higher number of harvestable open bolls (7.9 per plant) compared to ST 5458B2RF (5.6 per plant). A significantly larger numbers of harvestable bolls were found on PHY 367WRF grown under high irrigation (8.9 bolls/plant) compared to those

grown under low irrigation conditions (6.9 bolls/plant; Table 3). PHY 367WRF produced a significantly higher lint yield (853 lb/A) compared to ST 5458B2RF (695 lb/acre). The two irrigation levels did not significantly affect the lint yields within each of the two cultivars. The higher yielding cultivar, PHY 367WRF, produced significantly high lint yield in the *Lygus*-free control plots than in the *Lygus*-infested plots (Table 4), while the late-season (74 days after planting) *Lygus* infestations did not significantly influence the lint yields of ST 5458B2RF as compared to the control treatment plot yields.

Table 1. Cotton plant height (cm) as influenced by a late-season *Lygus* infestation in an irrigation level x variety study, Lamesa, Texas, 2012.

Insect Treatment	Plant Height (cm)					
	PHY 367WRF			ST 5458B2RF		
	High Water	Low Water	Average	High Water	Low Water	Average
Control	22.6	20.3	21.5 a	18.8	17.7	18.3 a
Infested	24.6	19.3	22.0 a	18.5	18.8	18.7 a
Average	23.6 A	19.8 A		18.7 A	18.3 A	

Table 2. Average number of bolls retained per plant following 1-week of *Lygus* infestation exposure, Lamesa, Texas, 2012.

Insect Treatment	Number of Bolls/Plant					
	PHY 367WRF			ST 5458B2RF		
	High Water	Low Water	Average	High Water	Low Water	Average
Control	10.9	7.8	9.4 a	9.7	4.6	7.2 a
Infested	9.9	5.6	7.8 a	9.2	4.2	6.8 a
Average	10.4 A	6.7 A		9.5 A	4.4 A	

Table 3. Average number of harvestable cotton bolls per plant as influenced by a late-season *Lygus* infestation in an irrigation level x variety study, Lamesa, Texas, 2012.

Insect Treatment	Number of Harvestable Bolls/Plant					
	PHY 367WRF			ST 5458B2RF		
	High Water	Low Water	Average	High Water	Low Water	Average
Control	8.0	7.7	7.9 a	6.5	4.6	5.6 a
Infested	9.7	6.1	7.9 a	7.1	4.2	5.7 a
Average	8.9 A	6.9 B		6.8 A	4.4 A	

Table 4. Lint yield (lb/acre) as influenced by a late-season *Lygus* infestation in an irrigation level x variety study, Lamesa, Texas, 2012.

Insect Treatment	Lint Yields (lb/acre)					
	PHY 367WRF			ST 5458B2RF		
	High Water	Low Water	Average	High Water	Low Water	Average
Control	1088.0	711.2	899.6 a	762.5	577.7	670.1 a
Infested	1090.0	522.7	806.4 b	818.5	621.6	720.1 a
Average	1089.0 A	617.0 A		790.5 A	599.7 A	

Appendix

	January			February		
Days	Temp. Max	Temp. Min.	Precipitation	Temp. Max	Temp. Min.	Precipitation
1	77	28	0	73	34	0
2	52	22	0	68	34	0
3	51	22	0	70	35	0
4	64	25	0	62	34	0
5	62	27	0	52	26	0
6	65	27	0	49	26	0
7	70	28	0	52	30	0
8	55	29	0	46	18	0
9	52	30	0	48	18	0
10	34	23	0	59	25	0
11	48	23	0	56	21	0
12	54	21	0	34	21	0
13	41	21	0	31	21	0
14	52	23	0	61	23	0
15	65	23	0	68	31	0
16	68	31	0	61	29	0
17	71	41	0	45	29	0
18	48	20	0	44	36	0.5
19	65	20	0	48	37	0
20	77	38	0	54	35	0
21	77	32	0	62	26	0
22	61	28	0	72	26	0
23	63	31	0	77	37	0
24	63	31	0	8	25	0
25	55	33	0	56	25	0
26	45	30	0	60	25	0
27	65	30	0	76	31	0
28	68	33	0	56	46	0
29	47	22	0	79	33	0
30	64	23	0			
31	68	28	0			

	March			April		
Days	Temp. Max	Temp. Min.	Precipitation	Temp. Max	Temp. Min.	Precipitation
1	71	33	0	93	44	0
2	79	37	0	92	49	0
3	64	33	0	82	43	0
4	56	25	0	70	41	0
5	72	25	0	76	46	0
6	74	33	0	86	52	0
7	71	44	0	89	56	0
8	80	43	0	82	52	0
9	44	32	0	77	50	0
10	42	32	0.3	82	50	0
11	40	32	0	81	54	0
12	71	32	0	78	54	0
13	79	37	0	87	55	0
14	81	41	0	86	60	0.3
15	80	49	0	89	44	0
16	84	49	0	70	44	0
17	79	47	0	73	41	0
18	86	47	0	80	41	0
19	82	47	0	88	49	0
20	57	35	0	92	50	0
21	55	35	0	76	43	0
22	54	35	0	87	43	0
23	68	34	0	87	51	0
24	78	34	0	87	49	0
25	89	39	0	87	49	0
26	89	49	0	87	55	0
27	85	49	0	87	60	0
28	88	50	0	87	55	0
29	87	50	0	87	55	0
30	89	47	0	87	59	0
31	89	44	0			

	May			June		
Days	Temp. Max	Temp. Min.	Precipitation	Temp. Max	Temp. Min.	Precipitation
1	93	55	0	86	62	0
2	96	57	0	90	61	0
3	97	58	0	98	61	0
4	98	57	0	96	66	0.65
5	95	57	0	98	64	0
6	99	60	0	87	64	0
7	94	60	0	85	65	0
8	76	52	1	88	64	0
9	67	50	0	82	60	0
10	76	50	1	103	60	0
11	60	52	0	105	63	0
12	69	50	0.3	103	63	0
13	73	52	0	90	62	0
14	74	52	1.25	93	62	0
15	66	51	0	102	65	0
16	77	50	0	98	64	0
17	84	53	0	96	64	0
18	86	54	0	96	66	0
19	94	59	0	103	66	0
20	95	61	0	98	70	0
21	83	61	0	97	68	0
22	84	61	0	93	65	0
23	91	61	0	95	64	0
24	99	61	0	96	64	0
25	99	64	0	98	66	0
26	100	64	0	102	65	0
27	92	66	0	106	65	0
28	93	63	0	105	69	0
29	96	63	0	102	67	0
30	100	64	0	100	65	0
31	101	64	0			

	July			August		
Days	Temp. Max	Temp. Min.	Precipitation	Temp. Max	Temp. Min.	Precipitation
1	98	65	0	101	66	0
2	93	67	0	104	66	0
3	89	67	0	106	67	0
4	95	70	0	103	65	0
5	97	67	0	102	68	0
6	94	62	0	97	66	0
7	96	62	0	100	66	0
8	98	65	0	102	69	0
9	99	66	0	94	66	0
10	90	67	0.55	101	66	0
11	89	66	0	97	63	0
12	89	65	0	102	63	0
13	95	65	0	108	65	1.75
14	97	65	0	91	65	0
15	96	65	0	98	66	0
16	97	64	0	100	71	0
17	94	64	0	91	71	0
18	93	64	0	93	66	0
19	95	65	0	89	66	0
20	94	65	0	81	64	0
21	97	67	0	91	64	0
22	101	67	0	84	63	0
23	103	66	0	89	63	0
24	99	66	0	88	68	0
25	97	67	0	93	67	0
26	101	73	0	98	67	0
27	93	66	0	93	65	0
28	94	65	0	91	64	0
29	96	64	0	91	59	0
30	99	64	0	92	59	0
31	100	67	0	94	60	0

	September			October		
Days	Temp. Max	Temp. Min	Precipitation	Temp. Max.	Temp. Min.	Precipitation
1	93	59	0	78	54	0
2	97	65	0	79	54	0
3	97	65	0	73	52	0
4	99	70	0	83	52	0
5	101	70	0	70	48	0
6	102	69	0	69	44	0
7	98	64	0	52	39	0
8	102	61	0	47	31	0
9	68	58	0	66	31	0
10	80	55	0	89	44	0
11	90	55	0	64	49	0
12	95	58	0	84	49	0
13	86	57	0.95	82	62	0
14	59	53	0	85	54	0
15	66	52	0	79	47	0
16	69	48	0	78	47	0
17	78	48	0	87	52	0
18	85	52	0	87	45	0
19	78	54	0	72	38	0
20	87	54	0	77	38	0
21	91	55	0	88	44	0
22	94	61	0	90	55	0
23	90	52	0	86	55	0
24	89	51	0	84	57	0
25	89	51	0	85	57	0
26	93	65	0	66	36	0
27	88	60	0	56	26	0
28	72	60	0	55	26	0
29	66	59	0	62	28	0
30	71	54	0			
31						

	November			December		
Days	Temp. Max.	Temp. Min.	Precipitation	Temp. Max.	Temp. Min.	Precipitation
1	80	40	0	77	33	0
2	81	43	0	80	34	0
3	86	43	0	75	34	0
4	65	41	0	79	39	0
5	74	42	0	65	30	0
6	74	41	0	66	30	0
7	78	41	0	79	33	0
8	78	41	0	65	32	0
9	85	43	0	69	30	0
10	83	45	0	52	18	0
11	75	42	0.05	43	17	0
12	57	26	0	51	17	0
13	55	26	0	62	18	0
14	58	25	0	65	28	0
15	61	25	0	65	38	0
16	68	25	0	59	35	0
17	65	39	0	58	35	0
18	66	42	0	64	31	0
19	59	38	0.1	73	31	0
20	73	37	0	67	18	0
21	74	37	0	50	18	0
22	76	41	0	56	19	0
23	78	42	0	60	23	0
24	58	27	0	65	26	0
25	64	27	0	55	23	0
26	77	28	0	35	16	0
27	65	26	0	34	16	0
28	54	26	0	49	19	0
29	73	30	0	39	15	0
30	75	33	0	48	15	0
31				46	26	0.16