



Systems Agronomic and Economic Evaluation of Cotton Varieties in the Texas High Plains

2011 Final Report

**Submitted to
Plains Cotton Growers
Plains Cotton Improvement Program**

**Dr. Mark Kelley, Extension Agronomist-Cotton
Mr. Chris Ashbrook, Extension Assistant-Cotton**

**Texas AgriLife Extension Service
Texas AgriLife Research and Extension Center
Lubbock, TX**

February, 2012

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Agronomic and Economic Evaluation of Cotton Varieties

January 2012

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Characteristics commonly evaluated in small-plot testing include lint yield, turnout percentages, fiber quality, and earliness. Current small-plot variety testing programs are inadequate in scale and design to investigate the economic impact of new transgenic varieties with value-added traits. The objective of this project was to evaluate the profitability of cotton varieties in producers' fields in the Texas High Plains. Three replications of each variety were included at the Farwell and Plains locations with four replications at the Mount Blanco location. Plots were of sufficient size at Plains and Blanco to enable the combining of all replications of each individual variety into a single module at harvest. Each individual variety had at least three acres total (approximately one acre per plot with three replications equals three acres total). At the Farwell location, in order to include a greater number of varieties, plot sizes were reduced and grab samples were taken at harvest for ginning and fiber quality analysis. Plot weights were determined at harvest using a boll buggy with integral electronic scales. Modules from the Mount Blanco location were followed through the ginning process to determine lint turnout, USDA-AMS fiber quality, and CCC loan value.

In 2011 (a year characterized by extreme drought, high temperatures and unrelenting winds at planting) yields were well below normal. A total of three locations were initiated in 2011. Fourteen varieties were included at the Farwell and Mount Blanco sites, and the Plains location included 19 varieties. However, the Plains location was lost to extreme drought conditions and sustained high winds shortly after planting. The Farwell and Mount Blanco locations were well maintained by the cooperating producers, but the continued drought conditions took a toll on variety yields. Lint yields averaged 881 lb/acre and 441 lb/acre at the Farwell and Mount Blanco sites, respectively. Lint loan values derived from grab samples taken at harvest at the Farwell site averaged \$0.5500/lb and ranged from a high of \$0.5705/lb for FiberMax 2484B2F to a low of \$0.5275/lb for FiberMax 1740B2F. Average loan values of commercially ginned bales from Mount Blanco ranged from a high of \$0.5367 for FiberMax 9180B2F to \$0.4895 for Deltapine 1032B2RF with a test average of \$0.5095/lb. After adding lint and seed values and subtracting out ginning and seed and technology fee costs, the Farwell site net value per acre ranged from a low of \$365.78 for Croplan Genetics 3006B2RF to a high of \$615.78 for FiberMax 2011GT. A total of 4 varieties were in the statistical upper tier at this location and included FiberMax 2011GT, FiberMax 2484B2F, NexGen 4111RF and FiberMax 9250GL. The Mount Blanco site test average net value per acre was \$214.74 and ranged from a high of \$242.87 for FiberMax 2011GT to a low of \$178.68 for Deltapine 1032B2RF. At this location, eight varieties were included in the statistical upper tier in terms of net value per acre, and included FiberMax 2011GT, FiberMax 9180B2F, Deltapine 1044B2RF, FiberMax 9103GT, NexGen 4111RF, FiberMax 9170B2F, All-Tex Dinero B2RF, and Deltapine 10R011B2RF. These data indicate that substantial differences can be observed in terms of net value/acre due to variety and technology selection. The differences in net value/acre, when comparing the top and bottom varieties were approximately \$250 at Farwell and \$64 at Blanco. Additional multi-site and multi-year applied research is needed to evaluate varieties across a series of environments.

Agronomic and Economic Evaluation of Cotton Varieties

February 2012

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Introduction

Small-plot cotton variety testing generally includes evaluation of genetic components but not genetics in concert with management programs. Characteristics commonly evaluated in small-plot testing include lint yield, turnout percentages, fiber quality, and earliness. Over the last several years, High Plains cotton producers have increased planted acreage of transgenic cotton (glyphosate- and glufosinate-herbicide tolerant and Bt insect-resistant types) from approximately 300 thousand in 1997 to approximately 3 million in 2010.

Industry continues to increase the number of herbicide-tolerant, insect-resistant, and "stacked gene" varieties. Liberty Link Ignite herbicide-tolerant varieties (from Bayer CropScience) were first marketed in 2004. The first commercial "stacked Bt gene" system (Bollgard II from Monsanto) was launched in 2004. Varieties containing Monsanto's Roundup Ready Flex gene system were commercialized in 2006. Widestrike "stacked Bt gene" technology from Dow AgroSciences was available in some PhytoGen varieties in 2005, with additional Roundup Ready Flex "stacked" types in the market in 2006. Liberty Link with Bollgard II types were also commercialized in 2006. In 2011, Bayer CropScience made Glytol and Glytol stacked with Liberty Link available to producers in limited quantities. New transgenic varieties continue to be marketed in the High Plains by All-Tex, Americot/NexGen, Croplan Genetics, Delta and Pine Land/Monsanto, Dyna-Gro, the Bayer CropScience FiberMax/Stoneville brands, and the Dow AgroSciences PhytoGen brand. More transgenic varieties are expected to be released by these companies in the future. Additional cotton biotechnologies are also anticipated in the future. The proliferation of transgenic varieties in the marketplace is expected to continue over the next several years.

Current small-plot variety testing programs are inadequate in scale and design to investigate the economic impact of new transgenic varieties with value-added traits. The objective of this project was to evaluate the profitability of cotton varieties in producers' fields in the Texas High Plains.

Materials and Methods

For scientific validity, three replications of each variety were included at the Plains and Farwell locations, with four replications included at Mount Blanco. Plots at Plains and Mount Blanco were of sufficient size to enable the combining of all replications of each individual variety into a single module at harvest. Each individual variety had at least three acres total (approximately one acre per experimental unit with three replications equals three acres total). A randomized complete block design was used at all three locations. Unfortunately, the Plains location was abandoned due to poor stand establishment resulting from the harsh drought and windy conditions experienced shortly after planting. At the remaining locations, all weed and insect

control measures, if needed, and harvest aid applications were performed commercially or by cooperating producers. Plots were harvested with commercial harvesters by producers with assistance provided by program personnel. Individual location information was as follows:

Location 1: Farwell, TX – Parmer County

At the Farwell location, fourteen varieties were planted to 30” straight rows on the flat on 10-May with a seeding rate of approximately 60,000 seed per acre. Varieties included 10 Bollgard II/Roundup Ready Flex, 1 Widestrike/Roundup Ready Flex, 1 Glytol/Liberty Link, 1 Glytol and 1 Roundup Ready Flex:

1. All-Tex Edge B2RF
2. All-Tex Rapid B2RF
3. Croplan Genetics 3006B2RF
4. Deltapine 1032B2RF
5. Deltapine 1219B2RF (10R011B2RF)
6. Dyna-Gro 2450B2RF
7. FiberMax 1740B2F
8. FiberMax 2011GT
9. FiberMax 2484B2F
10. FiberMax 9250GL
11. NexGen 2051B2RF
12. NexGen 4111RF
13. PhytoGen 367WRF
14. Stoneville 4288B2F

This location was under a Low Elevation Spray Application (LESA) center pivot irrigation system with a terminated wheat cover crop. Approximately 14.5 inches of pre-plant and in-season irrigation was applied and 2 inches of rainfall was accumulated during the growing season for a total of 16.5 inches. Plot size was 8 rows by variable length due to center pivot. Approximately 93 lbs NO₃-N/acre were applied as 28-0-0-5 on 24-March. Weed control consisted of a pre-emerge application of Diuron (32 oz/acre) on 18-April, two post-emerge broadcast applications of Roundup PowerMax were applied on 4-June (with Orthene for thrips control) and 11-July. No plant growth regulators were required at this location. Harvest aids were applied on 12-October as a tank mix of Harvest Pro (ethephon – boll opener) and Folex (tribufos – defoliant). No sequential desiccant application was required for harvest. Plots were harvested on 10-November and grab samples were taken by plot and ginned at the Texas AgriLife Research and Extension Center at Lubbock. Resulting lint samples were submitted to the Texas Tech University – Fiber and Biopolymer Research Institute for HVI fiber analysis and CCC loan values were calculated.

Location 2: Mt Blanco, TX – Crosby County

Fourteen varieties were planted to 40" raised bed rows on 9-May with an approximate seeding rate of 42,000 seed per acre. Varieties included 10 Bollgard II/Roundup Ready Flex, 1 Widestrike/Roundup Ready Flex, 2 Glytol and 1 Roundup Ready Flex only varieties:

1. All-Tex Dinero B2RF
2. Deltapine 1032B2RF
3. Deltapine 1044B2RF
4. Deltapine 1219B2RF (10R011B2RF)
5. FiberMax 2011GT
6. FiberMax 2484B2F
7. FiberMax 9103GT
8. FiberMax 9170B2F
9. FiberMax 9180B2F
10. NexGen 4010B2RF
11. NexGen 4012B2RF
12. NexGen 4111RF
13. PhytoGen 367WRF
14. Stoneville 4288B2F

The rows were circular due to center pivot LEPA irrigation system (sprinklers utilized for stand establishment). Irrigation capacity was 600 gpm over 200 acres for 3 gpm/a. Approximately 3 inches of pre-plant irrigation and 19.6 inches of in-season irrigation (10-May to 10-September) was applied for an approximate total of 22.6 inches. Plot sizes were 8 rows wide by variable length due to circular rows. Two applications of 23 oz/acre Roundup PowerMax were applied during the growing season for weed control. Prior to planting, 100 lbs of 11-52-0 fertilizer was applied and an additional 30 lbs of N were applied using 32-0-0. An initial harvest aid application of Blizzard (0.6 oz/a) and First Pick (48 oz/a) was applied by the grower on 21-September and a sequential application of Gramoxone Inteon (24 oz/a) with NIS (0.25% v/v) was applied on 5-October. Harvest occurred on 25 and 26-October using the producer/cooperator harvesting equipment. Harvest material was transferred to a West Texas Lee Weigh Wagon with digital scales for plot weight determination. Replications were combined by variety into individual modules and followed through the commercial ginning process for lint and seed turnout. USDA-AMS classing office HVI fiber quality and CCC loan values were obtained from resulting bales.

Results

Agronomic and economic results by variety for Farwell and Mount Blanco are included in tables 1 - 10.

Location 1 - Farwell

Plant population, NAWF and storm resistance data are presented in table 1. Plant stands averaged 44,202 plants/acre on 6-June, and ranged from a high of 50,163 for FiberMax 1740B2F to a low of 34,404 for NexGen 4111RF. NAWF counts were conducted on 19-July, 26-July, and 2-August. Differences were observed for counts taken on all dates with 19-July counts different at the $\alpha=0.10$ level. The test average on 19-July was 6.5 NAWF with a high of 7.1 for Deltapine 1219B2RF, and a low of 6.2

for All-Tex Rapid B2RF. Average NAWF decreased to 4.8 on 26-July with several varieties reaching cutout (NAWF=5). By 2-August, all varieties had reached cutout and a test average of 2.9 was observed. Storm resistance ratings (1-9 with 1 being extremely loose) were taken at harvest on 10-November and significant differences were observed among varieties. Values ranged from a high of 8.0 for FiberMax 2011GT to a low of 3.3 for All-Tex Edge B2RF. On 3-October, final plant map data were collected and are included in table 2. Significant differences were observed among varieties for all plant map parameters measured. Plant height averaged 17.8 inches and was greatest for NexGen 4111RF (21.4) and lowest for All-Tex Edge B2RF (15.2). Node of first sympodium averaged 7.1 and FiberMax 2484B2F had the highest with 8.1. Croplan Genetics 3006B2RF had the highest average number of mainstem nodes with 19.4 and the lowest number of nodes was observed for FiberMax 2011GT with 16.6. The test average for total mainstem nodes was 17.8. For height to node ratio, the test average was 1.0. Total fruiting branches was highest for Croplan Genetics 3006B2RF with 13.9 and lowest for Dyna-Gro 2450B2RF with 10.7. A test average open boll percent of 52.8% was observed and values ranged from a high of 71.5% for FiberMax 2011GT to a low of 31.9% for Deltapine 1219B2RF. Percent open boll differences were significant at the 0.10 level. Fruiting and fruit retention values were also recorded on 3-October and reported in table 3. Parameters measured included percent of total fruit from positions 1 and 2, total fruit (actual count), positions 1 and 2 retention percents, and total fruit retention (%). Significant differences were observed among varieties for all but total fruit. Total fruit retention averaged 41.1% and ranged from a high of 50.0% for FiberMax 1740B2F to a low of 33.1% for FiberMax 9250GL.

At the Farwell location, lint turnouts of field-cleaned bur cotton averaged 34.5% (Table 4). Bur cotton yields averaged 2547 lb/acre and ranged from high of 2771 lb/acre for FiberMax 2484B2F to a low of 2000 lb/acre for Croplan Genetics 3006B2RF. Lint yields ranged from 1040 lb/acre for FiberMax 2011GT to 640 lb/acre for Croplan Genetics 3006B2RF, and seed yields averaged 1276 lb/acre. Loan values derived from grab samples ranged from \$0.5705 for FiberMax 2484B2F to \$0.5275 for FiberMax 1740B2F. After applying loan values to lint yields, the test average lint value was \$485.25/acre. When subtracting ginning and seed/technology costs from total value (lint value + seed value) net value averaged \$520.39/acre across varieties. FiberMax 2011GT resulted in the highest net value with \$615.78/acre and Croplan Genetics 3006B2RF had the lowest with \$365.78/acre.

Classing data from grab samples are reported in table 5. Micronaire ranged from 4.7 for Croplan Genetics 3006B2RF to 3.9 for Deltapine 10R011B2RF. Staple was highest for FiberMax 2484B2F (35.4) and lowest for All-Tex Rapid B2RF (33.7). The highest uniformity, 82.2%, was observed in All-Tex Edge B2RF while NexGen 2051B2RF had the lowest with 79.1%. Fiber strength values ranged from a high of 32.2 g/tex for NexGen 4111RF and All-Tex Edge B2RF to a low of 27.4 g/tex for NexGen 2051B2RF. Leaf grades were mostly 1 and 2, and color grades were mostly 11 and 21 with a few 31 grades observed.

Location 2 – Mount Blanco

Plant population, NAWF and storm resistance data are presented in table 6. Plant stands averaged 32,107 plants/acre on 16-June and no significant differences were observed among varieties. NAWF counts were conducted on 19-July, 26-July, and 2-August. No differences were observed for counts taken on any date. The test averages were 5.6, 3.4 and 1.6 on 19-July, 26-July and 2-August, respectively. All varieties had reached cutout by the 26-July observation date. Storm resistance ratings (1-9 with 1 being extremely loose) were taken on 25-October just prior to harvest and significant differences were observed among varieties. Values ranged from a high of 7.0 for FiberMax 2484B2F to a low of 3.7 for Deltapine 1032B2RF.

On 9-September, final plant map data were collected and results are included in table 7. Significant differences were observed among varieties for most plant map parameters measured. Plant height averaged 17.8 inches and was greatest for NexGen 4012B2RF (21.6) and lowest for FiberMax 2484B2F (16.3). Node of first sympodium averaged 7.1 and FiberMax 2484B2F and FiberMax 9180B2F had the highest with 8.1. NexGen 4012B2RF had the highest total number of mainstem nodes with 17.7 and the lowest was observed for FiberMax 9103GT with 14.7. The test average for total mainstem nodes was 16.1. For height to node ratio, the test average was 1.1. Total fruiting branch differences were significant at the 0.10 level and values were highest for NexGen 4012B2RF with 11.1 and lowest for FiberMax 2484B2F with 8.7. A test average open boll percent of 83.7% was observed with no significant differences among varieties. Fruiting and fruit retention values were also recorded on 9-September and reported in table 8. Parameters measured included percent of total fruit from positions 1 and 2, total fruit (actual count), positions 1 and 2 retention percents, and total fruit retention (%). Significant differences were observed among varieties for all parameters. Total fruit retention averaged 31.9% and ranged from a high of 40.6% for PhytoGen 367WRF to a low of 26.7 for NexGen 4012B2RF.

Prior to harvest, it was observed that bolls across all varieties did not “fluff” after opening. After further investigation, it was determined that, on average, individual locks contained only 6-7 seeds. Typically, we would find 8-10 seeds/lock. Lint turnouts of field-cleaned bur cotton ranged from a high of 34.8% for Deltapine 1032B2RF to a low of 29.7% for Stoneville 4288B2F (Table 9). Lint yields averaged 441 lb/acre and differences were significant at the 0.10 level. FiberMax 2011GT had the highest lint yield with 481 lb/acre. Seed yields averaged 580 lb/acre. Loan values derived from commercially ginned bales ranged from \$0.5367 for FiberMax 9180B2F to \$0.4895 for Deltapine 1032B2RF. After applying lint loan values to lint yield, lint values (\$/acre) ranged from \$248.49/acre for FiberMax 2011GT to \$196.08/acre for Deltapine 1032B2RF. When subtracting ginning and seed/technology costs from total value (lint value + seed value) net value averaged \$214.74/acre across varieties. FiberMax 2011GT resulted in the highest net value with \$242.87/acre and Deltapine 1032B2RF had the lowest with \$178.68/acre.

Classing data derived from bales are reported in table 4. Micronaire averages were highest for Deltapine 1044B2RF with 4.6 and lowest for FiberMax 9103GT at 3.9. Staple average and was highest for FiberMax 9180B2F (33.8) and lowest for Deltapine 1032B2RF (31.9). The highest uniformity (80.4%) was observed in NexGen 4111RF. Strength values ranged from a high of 30.4 g/tex for NexGen 4111RF to a low of 26.0 g/tex for Stoneville 4288B2F.

Summary and Conclusions

Characteristics commonly evaluated in small-plot testing include lint yield, turnout percentages, fiber quality, and earliness. Current small-plot variety testing programs are inadequate in scale and design to investigate the economic impact of new transgenic varieties with value-added traits. The objective of this project was to evaluate the profitability of cotton varieties in producers' fields in the Texas High Plains. Three replications of each variety were included at the Farwell and Plains locations with four replications at the Mount Blanco location. Plots were of sufficient size at Plains and Blanco to enable the combining of all replications of each individual variety into a single module at harvest. Each individual variety had at least three acres total (approximately one acre per plot with three replications equals three acres total). At the Farwell location, in order to include a greater number of varieties, plot sizes were reduced and grab samples were taken at harvest for ginning and fiber quality analysis. Plot weights were determined at harvest using a boll buggy with integral electronic scales. Modules from the Mount Blanco location were followed through the ginning process to determine lint turnout, USDA-AMS fiber quality, and CCC loan value.

In 2011 (a year characterized by extreme drought, high temperatures and unrelenting winds at planting) yields were well below normal. A total of three locations were initiated in 2011. Fourteen varieties were included at the Farwell and Mount Blanco sites, and the Plains location included 19 varieties. However, the Plains location was lost to extreme drought conditions and sustained high winds shortly after planting. The Farwell and Mount Blanco locations were well maintained by the cooperating producers, but the continued drought conditions took a toll on variety yields. Lint yields averaged 881 lb/acre and 441 lb/acre at the Farwell and Mount Blanco sites, respectively. Lint loan values derived from grab samples taken at harvest at the Farwell site averaged \$0.5500/lb and ranged from a high of \$0.5705/lb for FiberMax 2484B2F to a low of \$0.5275/lb for FiberMax 1740B2F. Average loan values of commercially ginned bales from Mount Blanco ranged from a high of \$0.5367 for FiberMax 9180B2F to \$0.4895 for Deltapine 1032B2RF with a test average of \$0.5095/lb. After adding lint and seed values and subtracting out ginning and seed and technology fee costs, the Farwell site net value per acre ranged from a low of \$365.78 for Croplan Genetics 3006B2RF to a high of \$615.78 for FiberMax 2011GT. A total of 4 varieties were in the statistical upper tier at this location and included FiberMax 2011GT, FiberMax 2484B2F, NexGen 4111RF and FiberMax 9250GL. The Mount Blanco site test average net value per acre was \$214.74 and ranged from a high of \$242.87 for FiberMax 2011GT to a low of \$178.68 for Deltapine 1032B2RF. At this location, eight varieties were included in the statistical upper tier in terms of net value per acre, and included FiberMax 2011GT, FiberMax 9180B2F, Deltapine 1044B2RF, FiberMax 9103GT, NexGen 4111RF, FiberMax 9170B2F, All-Tex Dinero B2RF, and Deltapine 10R011B2RF.

These data indicate that substantial differences can be observed in terms of net value/acre due to variety and technology selection. The differences in net value/acre, when comparing the top and bottom varieties were approximately \$250 at Farwell and \$64 at Blanco. Additional multi-site and multi-year applied research is needed to evaluate varieties across a series of environments.

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Table 1. Inseason plant measurement results from the irrigated large plot replicated systems variety demonstration, Mark and Ryan Williams Farm, Farwell, TX, 2011.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of			Storm resistance
	plants/row ft	6-Jun plants/acre	19-Jul	26-Jul	2-Aug	10-Nov rating (1-9)
FiberMax 2011GT	2.8	47,500	5.7	3.6	2.1	8.0
FiberMax 2484B2F	2.8	48,610	6.3	4.6	2.4	5.7
NexGen 4111RF	2.0	34,404	7.0	4.8	2.7	6.3
FiberMax 9250GL	2.8	48,388	6.3	4.3	2.2	7.3
Deltapine 1219B2RF	2.5	44,171	7.1	5.8	3.4	6.7
All-Tex Edge B2RF	2.5	44,392	6.6	4.7	2.7	3.3
FiberMax 1740B2F	2.9	50,163	6.3	4.1	3.1	6.0
Stoneville 4288B2F	2.8	48,610	6.5	5.1	3.3	5.0
Dyna-Gro 2450B2RF	2.6	44,836	6.7	5.1	3.0	6.7
PhytoGen 367WRF	2.6	44,614	6.3	5.4	3.5	5.0
Deltapine 1032B2RF	2.1	37,068	7.0	5.6	3.7	4.3
NexGen 2051B2RF	2.2	38,399	6.8	5.1	3.1	7.0
All-Tex Rapid B2RF	2.6	45,058	6.2	4.3	2.0	6.3
Croplan Genetics 3006B2RF	2.4	42,617	6.4	4.3	2.7	3.7
Test average	2.6	44,202	6.5	4.8	2.9	5.8
CV, %	9.8	9.7	7.2	11.8	19.4	7.6
OSL	0.0029	0.0026	0.0764 [†]	0.0025	0.0095	<0.0001
LSD	0.4	7,194	0.7	0.9	0.9	0.7

For NAWF, numbers represent an average of 10 plants per variety per rep (30 plants per variety)

For Storm resistance, ratings based on a scale of 0-9 where 9 represents maximum storm resistance.

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.

Table 2. Final plant map results from the irrigated large plot replicated systems variety demonstration, Mark and Ryan Williams Farm, Farwell, TX, 2011.

Entry	Final plant map 3-Oct					
	plant height (inches)	node of first fruiting branch	total mainstem nodes	height to node ratio	total fruiting branches	open boll (%)
FiberMax 2011GT	15.9	6.7	16.6	1.0	10.8	71.5
FiberMax 2484B2F	17.8	8.1	18.2	1.0	11.1	38.9
NexGen 4111RF	21.4	7.1	19.1	1.1	13.0	45.6
FiberMax 9250GL	16.7	7.9	18.0	0.9	11.1	60.3
Deltapine 1219B2RF	18.9	7.1	18.3	1.0	12.2	31.9
All-Tex Edge B2RF	15.2	6.6	16.7	0.9	11.4	56.0
FiberMax 1740B2F	17.8	7.1	17.7	1.0	11.6	46.9
Stoneville 4288B2F	15.7	7.2	17.1	0.9	10.9	49.2
Dyna-Gro 2450B2RF	17.4	7.5	17.2	1.0	10.7	61.5
PhytoGen 367WRF	17.1	7.1	16.9	1.0	10.8	43.4
Deltapine 1032B2RF	20.3	6.7	17.6	1.2	11.9	56.3
NexGen 2051B2RF	16.6	7.1	17.9	0.9	11.9	59.5
All-Tex Rapid B2RF	18.3	7.1	19.1	1.0	13.0	57.4
Croplan Genetics 3006B2RF	19.4	6.4	19.4	1.0	13.9	60.1
Test average	17.8	7.1	17.8	1.0	11.7	52.8
CV, %	7.8	7.2	4.2	8.3	6.0	23.8
OSL	0.0003	0.0307	0.0005	0.0058	<0.0001	0.0509 [†]
LSD	2.3	0.9	1.2	0.1	1.2	17.5

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 3. Final plant map results from the irrigated large plot replicated systems variety demonstration, Mark and Ryan Williams Farm, Farwell, TX, 2011.

Entry	Fruiting and retention 3-Oct					
	% of fruit from 1st position	% of fruit from 2nd position	total fruit	1st position retention (%)	2nd position retention (%)	total retention (%)
FiberMax 2011GT	59.5	21.6	8.7	43.2	30.3	36.5
FiberMax 2484B2F	47.4	25.8	11.4	45.4	44.3	43.1
NexGen 4111RF	39.2	28.1	12.2	36.6	39.1	35.3
FiberMax 9250GL	69.9	18.4	6.7	38.8	22.8	33.1
Deltapine 1219B2RF	58.2	31.4	11.7	52.6	47.5	48.6
All-Tex Edge B2RF	67.0	20.2	9.5	52.1	29.3	41.9
FiberMax 1740B2F	50.1	31.8	11.7	50.5	54.3	50.0
Stoneville 4288B2F	70.4	19.2	9.4	57.7	29.8	45.5
Dyna-Gro 2450B2RF	60.7	23.5	8.4	45.0	32.4	38.9
PhytoGen 367WRF	61.5	24.2	9.4	50.4	34.9	42.2
Deltapine 1032B2RF	63.6	23.9	10.8	54.1	35.8	44.4
NexGen 2051B2RF	68.2	17.7	10.1	51.1	27.6	40.5
All-Tex Rapid B2RF	62.9	23.7	9.2	43.5	29.8	36.2
Croplan Genetics 3006B2RF	59.6	24.2	11.9	49.5	35.6	39.1
Test average	59.9	23.8	10.1	47.9	35.2	41.1
CV, %	12.8	20.1	22.2	11.8	25.4	12.5
OSL	0.0011	0.0217	0.1713	0.0041	0.0143	0.0121
LSD	12.9	8.1	NS	9.5	15.1	8.6

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 4. Harvest results from the irrigated large plot replicated systems variety demonstration, Mark and Ryan Williams Farm, Farwell, TX, 2011.

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 -----		
FiberMax 2011GT	38.1	47.2	2732	1040	1291	0.5533	575.30	193.63	768.93	81.97	71.18	615.78 a
FiberMax 2484B2F	36.0	48.3	2771	996	1339	0.5705	568.49	200.87	769.36	83.12	85.34	600.91 a
NexGen 4111RF	34.0	50.9	2689	915	1369	0.5670	518.95	205.39	724.34	80.66	60.47	583.21 ab
FiberMax 9250GL	34.8	50.0	2692	938	1345	0.5618	527.13	201.77	728.90	80.77	73.91	574.22 ab
Deltapine 1219B2RF	34.3	47.7	2684	921	1280	0.5663	521.87	191.93	713.80	80.52	86.24	547.04 bc
All-Tex Edge B2RF	34.7	50.7	2602	904	1319	0.5587	504.83	197.81	702.64	78.06	79.61	544.97 bc
FiberMax 1740B2F	35.3	48.9	2636	930	1290	0.5275	490.51	193.47	683.99	79.09	85.34	519.56 c
Stoneville 4288B2F	34.7	51.5	2523	876	1300	0.5477	479.59	195.03	674.61	75.68	85.34	513.60 c
Dyna-Gro 2450B2RF	33.6	51.7	2584	869	1336	0.5415	470.64	200.36	671.00	77.51	83.17	510.33 c
PhytoGen 367WRF	34.1	49.8	2568	875	1278	0.5428	475.18	191.72	666.90	77.03	84.47	505.41 c
Deltapine 1032B2RF	36.7	49.1	2397	879	1176	0.5495	483.07	176.37	659.44	71.90	86.24	501.30 c
NexGen 2051B2RF	33.1	52.6	2528	838	1329	0.5350	448.30	199.40	647.69	75.85	75.08	496.76 c
All-Tex Rapid B2RF	31.6	51.6	2256	713	1163	0.5322	379.46	174.49	553.96	67.69	79.61	406.65 d
Croplan Genetics 3006B2RF	32.0	52.3	2000	640	1046	0.5468	350.20	156.92	507.12	60.00	81.34	365.78 d
Test average	34.5	50.2	2547	881	1276	0.5500	485.25	191.37	676.62	76.42	79.81	520.39
CV, %	5.5	2.5	5.2	5.2	5.2	1.8	5.1	5.2	5.1	5.2	--	5.9
OSL	0.0252	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	--	<0.0001
LSD	3.2	2.1	221	76	111	0.0167	41.89	16.70	58.47	6.62	--	51.86

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.

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

Assumes:

\$3.00/cwt ginning cost.

\$300/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 irrigated large plot replicated systems variety demonstration, Mark and Ryan Williams Farm, Farwell, TX, 2011.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 ^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
FiberMax 2011GT	4.1	34.8	80.4	30.0	8.1	1.0	80.9	8.1	2.0	1.0
FiberMax 2484B2F	4.1	35.4	80.6	30.7	8.0	1.0	82.6	8.0	1.3	1.0
NexGen 4111RF	4.1	34.9	81.8	32.2	9.6	1.0	80.4	9.2	1.7	1.0
FiberMax 9250GL	4.4	34.9	80.0	29.3	7.2	1.3	81.2	8.0	2.0	1.0
Deltapine 1219B2RF	3.9	34.8	80.5	30.6	8.8	1.0	80.4	8.7	1.7	1.0
All-Tex Edge B2RF	4.6	34.8	82.2	32.2	9.2	2.3	79.4	8.1	2.3	1.0
FiberMax 1740B2F	4.1	34.0	79.3	28.7	8.9	1.0	81.5	8.5	1.3	1.0
Stoneville 4288B2F	4.5	34.2	80.1	28.9	9.2	1.0	80.0	9.1	1.7	1.0
Dyna-Gro 2450B2RF	4.3	34.0	80.7	27.5	9.0	1.0	79.6	8.7	2.0	1.0
PhytoGen 367WRF	4.2	34.0	80.6	29.4	9.6	1.0	79.8	9.2	1.7	1.0
Deltapine 1032B2RF	4.2	34.3	80.8	29.5	8.9	1.0	81.7	8.6	1.7	1.0
NexGen 2051B2RF	4.4	33.8	79.1	27.4	8.2	1.3	81.0	8.0	2.3	1.0
All-Tex Rapid B2RF	4.5	33.7	79.8	28.9	8.4	1.0	80.5	8.3	1.7	1.0
Croplan Genetics 3006B2RF	4.7	34.7	81.6	28.5	9.0	2.3	77.9	8.1	3.0	1.0
Test average	4.3	34.5	80.5	29.6	8.7	1.2	80.5	8.5	1.9	1.0
CV, %	6.5	1.8	0.6	2.3	3.7	34.0	1.2	1.9	--	--
OSL	0.0485	0.0594 [†]	<0.0001	<0.0001	<0.0001	0.0016	0.0005	<0.0001	--	--
LSD	0.5	0.9	0.8	1.2	0.5	0.7	1.6	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, [†]indicates significance at the 0.10 level.

Table 6. Inseason plant measurement results from the irrigated large plot replicated systems variety demonstration, Mark and David Appling Farm, Mount Blanco, TX, 2011.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of			Storm resistance
	16-Jun plants/row ft	plants/acre	19-Jul	26-Jul	2-Aug	25-Oct rating (1-9)
FiberMax 2011GT	2.4	31,832	5.7	3.6	1.6	6.7
FiberMax 9180B2F	2.3	30,324	6.0	3.9	1.7	6.3
Deltapine 1044B2RF	2.5	32,167	5.8	3.6	1.9	5.0
FiberMax 9103GT	2.4	32,000	5.7	3.3	1.6	6.3
NexGen 4111RF	2.3	29,990	5.9	3.4	1.6	5.7
FiberMax 9170B2F	2.5	32,000	5.6	3.7	1.4	5.3
All-Tex Dinero B2RF	2.5	32,670	5.3	3.2	1.4	6.0
Deltapine 1219B2RF	2.7	34,680	5.7	3.4	1.6	4.0
NexGen 4012B2RF	2.5	32,837	5.7	3.0	1.6	5.7
Stoneville 4288B2F	2.5	33,005	5.7	3.2	1.5	4.3
PhytoGen 367WRF	2.4	30,659	5.8	3.7	1.6	4.3
NexGen 4010B2RF	2.5	32,167	5.7	3.1	1.7	5.3
FiberMax 2484B2F	2.6	34,345	5.0	3.0	1.4	7.0
Deltapine 1032B2RF	2.4	30,827	5.4	2.9	1.3	3.7
Test average	2.5	32,107	5.6	3.4	1.6	5.4
CV, %	7.5	7.7	9.9	16.1	22.6	12.4
OSL	0.3587	0.5254	0.7652	0.5107	0.8651	<0.0001
LSD	NS	NS	NS	NS	NS	1.1

For NAWF, numbers represent an average of 10 plants per variety per rep (30 plants per variety)

For Storm resistance, ratings based on a scale of 0-9 where 9 represents maximum storm resistance.

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 7. Final plant map results from the irrigated large plot replicated systems variety demonstration, Mark and David Appling Farm, Mount Blanco, TX, 2011.

Entry	Final plant map 9-Sep					
	plant height (inches)	node of first fruiting branch	total mainstem nodes	height to node ratio	total fruiting branches	open boll (%)
FiberMax 2011GT	16.5	6.5	15.9	1.0	10.4	92.0
FiberMax 9180B2F	16.5	8.1	16.4	1.0	9.3	73.8
Deltapine 1044B2RF	18.7	7.3	16.5	1.1	10.2	85.6
FiberMax 9103GT	17.2	6.2	14.7	1.2	9.5	85.7
NexGen 4111RF	17.4	6.7	16.1	1.1	10.3	81.9
FiberMax 9170B2F	17.8	7.6	16.8	1.1	10.2	83.0
All-Tex Dinero B2RF	17.6	6.8	15.3	1.1	9.5	82.8
Deltapine 1219B2RF	17.3	7.2	16.2	1.1	10.0	77.9
NexGen 4012B2RF	21.6	7.6	17.7	1.2	11.1	90.4
Stoneville 4288B2F	17.4	7.1	16.2	1.1	10.1	85.2
PhytoGen 367WRF	17.0	6.4	15.6	1.1	10.2	77.5
NexGen 4010B2RF	18.3	7.0	16.9	1.1	10.9	84.4
FiberMax 2484B2F	16.3	8.1	15.7	1.0	8.7	85.6
Deltapine 1032B2RF	20.2	6.7	15.8	1.3	10.1	86.3
Test average	17.8	7.1	16.1	1.1	10.0	83.7
CV, %	9.1	6.2	4.3	7.4	7.8	9.3
OSL	0.0223	<0.0001	0.0032	0.0252	0.0822 [†]	0.3438
LSD	2.7	0.7	1.2	0.1	1.1	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 8. Final plant map results from the irrigated large plot replicated systems variety demonstration, Mark and David Appling Farm, Mount Blanco, TX, 2011.

Entry	Fruiting and retention 9-Sep					
	% of fruit from 1st position	% of fruit from 2nd position	total fruit	1st position retention (%)	2nd position retention (%)	total retention (%)
FiberMax 2011GT	89.3	6.6	4.9	39.1	6.5	28.0
FiberMax 9180B2F	72.0	13.6	6.7	50.3	16.7	36.1
Deltapine 1044B2RF	87.2	5.9	6.0	49.9	6.8	29.5
FiberMax 9103GT	89.2	9.7	4.5	41.1	9.6	29.4
NexGen 4111RF	80.0	14.8	6.2	46.4	13.6	30.4
FiberMax 9170B2F	63.4	26.0	6.9	42.9	26.4	32.3
All-Tex Dinero B2RF	79.1	14.6	6.2	49.5	16.6	33.0
Deltapine 1219B2RF	84.1	11.1	6.1	50.0	13.6	36.5
NexGen 4012B2RF	83.4	15.8	5.9	43.2	13.5	26.7
Stoneville 4288B2F	84.5	10.4	5.8	46.6	10.1	29.1
PhytoGen 367WRF	69.0	20.2	9.1	56.2	31.2	40.6
NexGen 4010B2RF	77.0	16.6	6.6	45.7	17.5	30.7
FiberMax 2484B2F	68.1	14.7	5.6	41.5	16.9	32.2
Deltapine 1032B2RF	78.4	16.3	6.3	46.3	17.8	32.1
Test average	78.9	14.0	6.2	46.3	15.5	31.9
CV, %	11.3	40.5	17.1	10.1	42.9	10.6
OSL	0.0222	0.0196	0.0088	0.0101	0.0056	0.0024
LSD	15.0	9.5	1.8	7.8	11.1	5.7

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.

Table 9. Harvest results from the irrigated large plot replicated systems variety demonstration, Mark and David Appling Farm, Mount Blanco, TX, 2011.

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 -----		
FiberMax 2011GT	34.1	40.9	1409	481	577	0.5170	248.49	86.47	334.96	42.26	49.83	242.87 a
FiberMax 9180B2F	31.5	44.7	1456	458	651	0.5367	245.80	97.57	343.37	43.67	58.78	240.93 a
Deltapine 1044B2RF	32.0	42.2	1477	473	624	0.5030	237.74	93.58	331.32	44.30	56.17	230.85 ab
FiberMax 9103GT	32.0	44.7	1421	455	636	0.4949	225.16	95.38	320.54	42.64	49.83	228.07 ab
NexGen 4111RF	31.5	40.3	1376	434	555	0.5135	222.76	83.27	306.03	41.28	42.33	222.42 abc
FiberMax 9170B2F	32.5	43.8	1374	446	602	0.5192	231.43	90.29	321.71	41.21	59.74	220.77 abc
All-Tex Dinero B2RF	30.5	41.5	1435	438	595	0.5176	226.47	89.26	315.72	43.04	55.73	216.95 abc
Deltapine 1219B2RF	33.7	42.8	1329	448	568	0.5151	230.66	85.24	315.91	39.87	60.37	215.67 abc
NexGen 4012B2RF	31.3	41.9	1363	427	571	0.5071	216.22	85.68	301.90	40.90	52.55	208.45 bcd
Stoneville 4288B2F	29.7	41.9	1494	444	626	0.4929	218.89	93.94	312.83	44.82	59.74	208.28 bcd
PhytoGen 367WRF	30.7	39.6	1437	441	569	0.5030	221.76	85.32	307.07	43.11	59.13	204.83 bcd
NexGen 4010B2RF	30.6	33.4	1407	430	470	0.5103	219.37	70.46	289.83	42.21	52.55	195.07 cd
FiberMax 2484B2F	32.8	45.9	1216	399	559	0.5137	204.99	83.78	288.77	36.48	59.74	192.55 cd
Deltapine 1032B2RF	34.8	44.9	1152	400	517	0.4895	196.08	77.52	273.60	34.56	60.37	178.68 d
Test average	32.0	42.0	1382	441	580	0.5095	224.70	86.98	311.68	41.45	55.49	214.74
CV, %	--	--	7.8	7.8	7.8	--	7.9	7.8	7.8	7.8	--	9.9
OSL	--	--	0.0027	0.0798 [†]	0.0001	--	0.0109	0.0001	0.0152	0.0028	--	0.0039
LSD	--	--	154	41	65	--	25.23	9.68	34.88	4.63	--	30.26

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.

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

Assumes:

\$3.00/cwt ginning cost.

\$300/ton for seed.

Value for lint based on CCC loan value from commercially classed bales.

Table 10. USDA-AMS classing results of commercially ginned bales from the irrigated large plot replicated systems variety demonstration, Mark and David Appling Farm, Mount Blanco, TX, 2011.

Variety		Color 1	Color 2	Staple	Leaf	Micronaire	Remarks	rd	+b	Length	Strength	Uniformity	Loan
		units	units	32nds	units	units	bales	units	units	inches	g/tex	%	\$/lb
FiberMax 2011GT	Mean	2.0	1.0	32.7	2.4	4.2	0/7	79.6	8.8	1.02	28.3	79.8	0.5170
	Std Dev	0.0	0.0	0.8	0.5	0.1		0.3	0.2	0.02	0.9	1.0	0.0165
FiberMax 9180B2F	Mean	1.8	1.0	33.8	1.9	4.2	0/8	79.6	9.0	1.05	29.1	80.1	0.5367
	Std Dev	0.5	0.0	0.7	0.4	0.3		1.0	0.3	0.02	1.4	1.0	0.0150
Deltapine 1044B2RF	Mean	2.0	1.4	32.1	2.1	4.6	0/7	76.9	9.8	1.01	28.3	79.3	0.5030
	Std Dev	0.0	0.5	0.7	0.4	0.0		1.3	0.4	0.02	1.1	0.9	0.0121
FiberMax 9103GT	Mean	2.3	1.6	32.7	2.7	3.9	2/7	76.3	9.7	1.02	27.1	78.4	0.4949
	Std Dev	0.5	0.5	0.8	0.5	0.3		1.9	0.4	0.02	1.2	0.9	0.0277
NexGen 4111RF	Mean	2.0	1.0	32.4	2.6	4.4	0/7	78.0	9.6	1.01	30.4	80.4	0.5135
	Std Dev	0.0	0.0	0.5	0.5	0.1		0.3	0.2	0.02	1.1	0.7	0.0087
FiberMax 9170B2F	Mean	1.9	1.0	33.1	2.0	4.1	0/8	80.3	8.8	1.03	28.3	78.5	0.5192
	Std Dev	0.4	0.0	0.8	0.0	0.2		0.7	0.2	0.02	1.0	0.8	0.0154
All-Tex Dinero B2RF	Mean	2.1	1.0	33.4	1.9	4.4	1/7	78.2	9.2	1.04	26.7	79.7	0.5176
	Std Dev	0.4	0.0	1.3	0.7	0.1		0.9	0.3	0.04	2.4	1.1	0.0206
Deltapine 1219B2RF	Mean	2.0	1.0	32.9	1.6	4.4	0/7	78.9	9.3	1.02	27.7	79.2	0.5151
	Std Dev	0.0	0.0	0.7	0.5	0.1		0.4	0.2	0.02	0.6	1.1	0.0154
NexGen 4012B2RF	Mean	2.0	1.1	32.3	2.1	4.2	0/7	78.4	9.2	1.01	27.0	79.2	0.5071
	Std Dev	0.0	0.4	1.0	0.4	0.1		0.8	0.3	0.02	1.3	0.9	0.0174
Stoneville 4288B2F	Mean	2.0	1.4	32.1	2.0	4.5	0/7	77.5	9.9	1.01	26.0	79.1	0.4929
	Std Dev	0.0	0.5	0.4	0.6	0.1		0.7	0.4	0.01	1.7	0.5	0.0118
PhytoGen 367WRF	Mean	2.0	1.9	32.4	2.3	4.3	0/7	76.4	10.1	1.01	26.9	79.4	0.5030
	Std Dev	0.0	0.4	0.5	0.5	0.1		1.1	0.4	0.01	0.7	0.5	0.0120
NexGen 4010B2RF	Mean	2.0	2.0	33.0	2.4	4.3	0/7	75.7	10.4	1.03	30.0	79.8	0.5103
	Std Dev	0.6	0.8	1.0	0.5	0.4		3.1	0.8	0.02	1.1	0.6	0.0138
FiberMax 2484B2F	Mean	2.0	1.2	32.8	1.8	4.4	0/6	78.8	9.2	1.03	26.1	79.1	0.5137
	Std Dev	0.0	0.4	1.0	0.4	0.2		1.7	0.5	0.03	1.2	0.6	0.0221
Deltapine 1032B2RF	Mean	2.0	1.4	31.9	2.0	4.4	0/7	77.7	9.6	0.99	26.3	78.1	0.4895
	Std Dev	0.0	0.5	0.7	0.0	0.4		0.8	0.3	0.02	2.1	1.2	0.0107

Additional Replicated Irrigated Large Plot Demonstrations



**Replicated Minimum-Till LEPA Irrigated RACE Variety Demonstration,
AG-CARES, Lamesa, TX - 2011**

**Cooperator: Lamesa Cotton Growers/Texas AgriLife Research/
Texas AgriLife Extension**

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

Dawson County

Summary: Significant differences were noted for some yield and economic parameters (Table 1). Lint turnout of field cleaned stripper harvested bur cotton ranged from 28.9% for Croplan Genetics 3787B2RF to 34.1% for Deltapine 1032B2RF. Lint yields ranged from a low of 226 lb/acre (NexGen 4012B2RF) to a high of 401 lb/acre (Stoneville 5458B2RF). Lint loan values ranged from a low of \$0.4898/lb to a high of \$0.5250/lb for PhytoGen 367WRF and NexGen 4012B2RF, respectively. When subtracting ginning and seed and technology costs, the net value/acre averaged \$133.89, and no significant differences were observed among varieties. Significant differences were observed for all fiber quality parameters at this location with the exception of leaf (Table 2). Micronaire values ranged from a low of 3.5 for Croplan Genetics 3787B2RF to a high of 4.5 for Dyna-Gro 2570B2RF. Staple averaged 32.1 across all varieties with a low of 31.6 (PhytoGen 367WRF) and a high of 33.1 (NexGen 4012B2RF). Uniformity ranged from a low of 78.4% (All-Tex Dinero B2RF) to a high of 79.8% (Dyna-Gro 2570B2RF). Strength ranged from a low of 25.9 g/tex for Deltapine 1032B2RF to a high of 28.8 g/tex for FiberMax 2484B2F.

Objective: The objective of this project was to compare agronomic characteristics, yields, gin turnout, fiber quality, and economic returns of transgenic cotton varieties under minimum-till LEPA irrigated production in the Texas High Plains.

Materials and Methods:

Varieties:	All-Tex Dinero B2RF, Croplan Genetics 3787B2RF, Deltapine 1032B2RF, Dyna-Gro 2570B2RF, FiberMax 2484B2F, NexGen 4012B2RF, PhytoGen 367WRF, and Stoneville 5458B2RF		
Experimental design:	Randomized complete block with 3 replications		
Seeding rate:	4.1 seeds/row-ft in solid planted 40-inch row spacing (John Deere MaxEmerge XP vacuum planter)		
Plot size:	4 rows by variable length due to circular pivot rows (253-872 ft long)		
Planting date:	4-May		
Weed management:	Prowl H2O was applied preplant incorporated at 3 pt/acre across all varieties. Roundup PowerMax was applied over-the-top at 32 oz/acre on 31-March (weed control and cover crop termination), at 22 oz/acre on 11-May, and 28 oz/acre on 15-July with AMS.		
Irrigation	4.75" inches of irrigation were applied via LEPA irrigation preplant, with 13.32" applied during the growing season for a total of 18.07" of irrigation applied.		
Rainfall:	April: 0.00" May: 0.00" June: 0.16" July: 0.24"	August: 0.00" September: 0.83" October: 0.33"	
	Total rainfall:	1.56"	
Total irrigation and rainfall:	19.63"		
Insecticides:	Temik was applied in-furrow at planting at 3.5 lb/acre. One application of Intruder was sprayed by airplane on 26-August at 1 oz/acre. This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.		
Fertilizer:	125 lbs/acre 10-34-0 were band applied preplant, and 30 lbs N ₀₃ -N/acre using UAN (32-0-0) were applied via fertigation on 22-November 2010 (for rye cover crop), 29-April, 3-July, and 14-July.		
Harvest aids:	Harvest aids included 32 oz/acre Prep + 2.0 oz/acre ET with 1% v/v crop oil on 5-October followed by 24 oz/acre Gramoxone Inteon with 0.25% v/v NIS on 20-October.		
Harvest:	Plots were harvested on 13-October using a commercial John Deere 7445 stripper 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 \$300/ton. Ginning costs did not include checkoff.
Seed and technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (4.1 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://www.plainscotton.org/Seed/PCGseed11.xls .

Results and Discussion:

This location was planted flat into a terminated rye cover crop following cotton. Due to the extreme drought conditions, stand establishment was variable across all varieties. It was determined due to this variability in stand, that only yield and fiber quality data would be collected.

Significant differences were noted for some yield and economic parameters (Table 1). Most differences were significant at the 0.10 level with the exception of lint turnout (significant at 0.05 level). Lint turnout of field cleaned stripper harvested bur cotton ranged from 28.9% for Croplan Genetics 3787B2RF to 34.1% for Deltapine 1032B2RF. Differences in bur cotton yield were significant and the test average was 988 lb/acre with a low of 700 lb/acre (NexGen 4012B2RF) and a high of 1205 lb/acre (Stoneville 5458B2RF). Lint yields ranged from a low of 226 lb/acre (NexGen 4012B2RF) to a high of 401 lb/acre (Stoneville 5458B2RF). Lint loan values ranged from a low of \$0.4898/lb to a high of \$0.5250/lb for PhytoGen 367WRF and NexGen 4012B2RF, respectively. Lint value averaged \$158.28/acre with a low of \$118.43/acre (NexGen 4012B2RF) and a high of \$198.30/acre (Stoneville 5458B2RF). When subtracting ginning and seed and technology costs, the net value/acre averaged \$133.89, and no significant differences were observed among varieties.

Significant differences were observed for all fiber quality parameters at this location with the exception of leaf (Table 2). Of these differences, all but one (uniformity) were significant at the 0.05 level. Micronaire values ranged from a low of 3.5 for Croplan Genetics 3787B2RF to a high of 4.5 for Dyna-Gro 2570B2RF. Staple averaged 32.1 across all varieties with a low of 31.6 (PhytoGen 367WRF) and a high of 33.1 (NexGen 4012B2RF). Uniformity ranged from a low of 78.4% (All-Tex Dinero B2RF) to a high of 79.8% (Dyna-Gro 2570B2RF). Strength ranged from a low of 25.9 g/tex for Deltapine 1032B2RF to a high of 28.8 g/tex for FiberMax 2484B2F. Significant differences were observed

among varieties for percent elongation (8.3 avg), Rd or reflectance (77.8 avg), and +b or yellowness (9.5 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 2011 drought, stand variability was higher and yields much 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 and Michael Petty for their 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 Dawson County LEPA irrigated RACE variety demonstration, AG-CARES Research Farm, Lamesa, TX, 2011.

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	33.2	48.3	1205	401	583	0.4950	198.30	87.39	285.69	36.15	74.38	175.16
Dyna-Gro 2570B2RF	33.8	51.8	1120	378	580	0.5120	193.77	87.02	280.78	33.60	72.49	174.69
PhytoGen 367WRF	31.5	52.2	1181	373	617	0.4898	182.51	92.55	275.06	35.44	73.63	165.99
Croplan Genetics 3787B2RF	28.9	53.7	1145	331	616	0.4917	162.58	92.33	254.90	34.36	70.90	149.64
Deltapine 1032B2RF	34.1	52.4	904	308	473	0.4937	152.20	71.01	223.21	27.11	75.18	120.92
FiberMax 2484B2F	32.4	53.4	851	275	455	0.4988	137.41	68.19	205.60	25.54	74.38	105.68
All-Tex Dinero B2RF	30.6	53.6	795	243	426	0.4978	121.01	63.92	184.93	23.86	69.39	91.67
NexGen 4012B2RF	32.2	52.8	700	226	369	0.5250	118.43	55.36	173.79	20.99	65.44	87.36
Test average	32.1	52.3	988	317	515	0.5005	158.28	77.22	235.49	29.63	71.98	133.89
CV, %	5.7	4.0	21.8	22.4	22.0	2.6	22.7	22.0	22.4	21.8	--	34.6
OSL	0.0495	0.1129	0.0675 [†]	0.0662 [†]	0.1073	0.0711 [†]	0.0873 [†]	0.1068	0.1073	0.0676 [†]	--	0.1443
LSD	3.2	NS	310	102	NS	0.0191	51.61	NS	NS	9.31	--	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.

\$300/ton for seed.

Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Table 2. HVI fiber property results from the Dawson County LEPA irrigated RACE variety demonstration, AG-CARES Research Farm, Lamesa, TX, 2011.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 ^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
Stoneville 5458B2RF	4.3	31.9	79.1	28.3	9.4	1.3	76.5	10.0	2.0	2.0
Dyna-Gro 2570B2RF	4.5	32.4	79.8	27.7	9.5	1.0	77.6	9.8	2.0	1.3
PhytoGen 367WRF	4.4	31.6	78.7	26.9	8.3	2.0	76.5	9.7	2.3	1.7
Croplan Genetics 3787B2RF	3.5	32.1	79.0	27.1	7.0	1.3	78.4	9.2	2.0	1.0
Deltapine 1032B2RF	4.2	32.2	78.5	25.9	7.8	1.0	78.3	9.2	2.0	1.0
FiberMax 2484B2F	4.4	31.8	79.3	28.8	9.6	1.7	77.2	9.9	2.0	1.7
All-Tex Dinero B2RF	4.1	31.8	78.4	26.3	7.7	1.7	78.2	9.0	2.3	1.0
NexGen 4012B2RF	4.3	33.1	78.9	27.3	7.4	1.3	79.5	8.8	2.0	1.0
Test average	4.2	32.1	79.0	27.3	8.3	1.4	77.8	9.5	2.1	1.3
CV, %	5.0	1.5	0.6	2.3	4.5	42.2	1.3	2.1	--	--
OSL	0.0020	0.0398	0.0512 [†]	0.0010	<0.0001	0.4706	0.0256	<0.0001	--	--
LSD	0.4	0.8	0.7	1.1	0.7	NS	1.7	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, [†] indicates significance at the 0.10 level, NS - not significant



**Replicated LEPA Irrigated RACE Variety Demonstration,
Halfway, TX - 2011**

Cooperator: Texas AgriLife Research Center - Halfway

**Mark Kelley and Chris Ashbrook
Extension Agronomist – Cotton and
Extension Assistant - Cotton**

Hale County

Summary: Significant differences were noted for some early season and plant map measurements taken and for all yield and economic parameters. Lint turnout averaged 33.8%. Lint yields varied from a low of 541 lb/acre (Stoneville 4288B2F) to a high of 693 lb/acre (Dyna-Gro 2570B2RF). Lint loan values ranged from a low of \$0.4980/lb to a high of \$0.5455/lb for Deltapine 0912B2RF and NexGen 4111RF, respectively. When subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of \$368.70 (Dyna-Gro 2570B2RF) to a low of \$277.37 (Stoneville 4288B2F), a difference of \$91.33. Significant differences were observed for most fiber quality parameters at this location. Micronaire values ranged from a low of 3.4 for FiberMax 2484B2F to a high of 4.1 for NexGen 4111RF and Deltapine 0912B2RF. Staple averaged 33.0 across all varieties with a high of 34.3 for FiberMax 2484B2F and a low of 32.1 for Deltapine 0912B2RF. Uniformity ranged from a high of 81.0% for NexGen 4111RF to a low of 78.3% for Stoneville 4288B2F with a test average of 79.1%. Strength ranged from a low of 26.5 g/tex for Croplan Genetics 3156B2RF to a high of 31.8 g/tex for NexGen 4111RF. Color grades were mostly 21. These data indicate that substantial differences can be obtained in terms of net value/acre due to variety selection.

Objective: The objective of this project was to compare agronomic characteristics, yields, gin turnout, fiber quality, and economic returns of transgenic cotton varieties under LEPA irrigated production in the Texas High Plains.

Materials and Methods:

Varieties: All-Tex Edge B2RF, Croplan Genetics 3156B2RF, Deltapine 0912B2RF, Dyna-Gro 2570B2RF, FiberMax 2484B2F, NexGen 4111RF, PhytoGen 367WRF, and Stoneville 4288B2F

Experimental design: Randomized complete block with three (3) replications.

Seeding rate: 4.0 seed/row-ft in 40 inch row spacings. (John Deere 1700 Vacuum planter)

Plot size: 4 rows by variable length (837 to 1340 feet)

Planting date: 13-May

Weed management: Prowl H₂O was applied preplant incorporated at 3 pt/acre across all varieties. Caparol was applied at 3 pt/acre with glyphosate at 32 oz/acre at planting. Roundup PowerMax was applied over-the-top at 32 oz/acre with AMS on 9-June, 5-July, and 4-August. On 15-June, plots were cultivated with sweeps and dikes were installed.

Irrigation: 2.5" of irrigation were applied via LESA irrigation preplant with 14.5" of LEPA irrigation during the growing season for a total of 17" applied irrigation.

Rainfall: Based on the nearest Texas Tech University- West Texas Mesonet station at Plainview, rainfall amounts were:

April: 0.00	August: 0.01
May: 0.13	September: 0.51
June: 0.00	October: 1.65
July: 0.12	

Total rainfall: 2.42

Insecticides: Orthene was applied at a rate of 3.2 oz/acre on 7-June. This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.

Fertilizer management: On 8-March, 60 lbs NO₃-N/acre were applied with an additional 60 lbs applied on 15-June for a total of 120 lbs NO₃-N/acre.

Plant growth regulators: None were applied at this location.

Harvest aids: Harvest aids included an initial application of ethephon (boll opener) at 1.3 pt/acre with 12 oz/acre Folex (tribufos – defoliant) on 27-September and a sequential application of 24 oz/acre Gramoxone Inteon with 0.25% v/v non-ionic surfactant on 10-October.

Harvest:	Plots were harvested on 24-October using a commercial John Deere 7445 with field cleaner. Harvested material was transferred to a weigh wagon with integral electronic scales to record individual plot weights. Plot weights were subsequently converted to lb/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 Texas Tech University – Fiber and Biopolymer Research Institute for HVI analysis, and USDA Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.
Ginning cost and seed values:	Ginning cost were based on \$3.00 per cwt. of bur cotton and seed value/acre was based on \$300/ton. Ginning cost did not include check-off.
Seed and Technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (4.0 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://www.plainscotton.org/Seed/PCGseed11.xls .

Results and Discussion:

Agronomic data including plant population, nodes above white flower (NAWF), and boll storm resistance are included in Table 1.

Stand counts were taken on 6-June for plant populations. Plants/acre averaged 36,440 across varieties and ranged from a high of 41,214 for All-Tex Edge B2RF to a low of 31,497 for NexGen 4111RF. Weekly NAWF counts were taken beginning 22-July to 3-August. Averages were 7.6 (22-July), 5.9 (27-July), 5.0 (3-August). Significant differences at the 0.10 level were observed for the 22-July date with a high of 8.2 for NexGen 4111RF and a low of 7.1 for Deltapine 0912B2RF. By the final observation date, 3-August, all varieties had reached cutout (NAWF=5 or less). Just prior to harvest on 24-October, a visual observation of storm resistance was recorded for each variety in all three replications. The ratings were on a scale of 1-9 where 1 represents the least storm resistance. The test average was 5.0 and values ranged from a high of 7.3 for All-Tex Edge to a low of 3.0 for Deltapine 0912B2RF and Stoneville 4288B2F. For final plant map parameters measured on 20-September, significant differences were observed for node of first fruiting branch and total mainstem nodes only (Table 2). Node of first fruiting branch was highest for FiberMax

2484B2F (7.9) and lowest for PhytoGen 367WRF (6.3). Total mainstem nodes averaged 16.0 across all varieties and ranged from a high of 16.7 for Dyna-Gro 2570B2RF, All-Tex Edge B2RF, and FiberMax 2484B2F to a low of 15.0 for Deltapine 0912B2RF. Significant differences were observed at the 0.10 level for total fruit and 2nd position retention percent on 20-September (Table 3). Total fruit averaged 6.6 with a high of 8.7 (PhytoGen 367WRF) and low 5.3 (Croplan Genetics 3156B2RF). Second position retention percent was highest for NexGen 4111RF (32.3%) and lowest for Croplan Genetics 3156B2RF (14.9%) and the test average was 22.5%.

Significant differences were noted for all yield and economic parameters (Table 4). Lint turnout averaged 33.8% with a high of 35.1% and low of 31.9% for Dyna-Gro 2570B2RF and All-Tex Edge B2RF, respectively. Bur cotton yield averaged 1830 lb/acre and ranged from a high of 2051 lb/acre for All-Tex Edge B2RF to a low of 1612 lb/acre for FiberMax 2484B2F. Lint yields varied from a low of 541 lb/acre (Stoneville 4288B2F) to a high of 693 lb/acre (Dyna-Gro 2570B2RF). Lint loan values ranged from a low of \$0.4980/lb to a high of \$0.5455/lb for Deltapine 0912B2RF and NexGen 4111RF, respectively. When adding lint and seed value, total value was significant at the 0.10 level and ranged from a high of \$499.92/acre for Dyna-Gro 2570B2RF to a low of \$400.42/acre for Stoneville 4288B2F. After subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of \$368.70/acre (Dyna-Gro 2570B2RF) to a low of \$277.37/acre (Stoneville 4288B2F), a difference of \$91.33.

Significant differences were observed among varieties for most fiber quality parameters at this location (Table 5). Micronaire values ranged from a low of 3.4 for FiberMax 2484B2F to a high of 4.1 for NexGen 4111RF and Deltapine 0912B2RF. Staple averaged 33.0 across all varieties with a high of 34.3 for FiberMax 2484B2F and a low of 32.1 for Deltapine 0912B2RF. Uniformity ranged from a high of 81.0% for NexGen 4111RF to a low of 78.3% for Stonville 4288B2F with a test average of 79.1%. Strength ranged from a low of 26.5 g/tex for Croplan Genetics 3156B2RF to a high of 31.8 g/tex for NexGen 4111RF. Elongation averaged 9.1% across varieties with a high of 10.2% for Dyna-Gro 2570B2RF and a low of 7.9% for FiberMax 2484B2F. Color grade components of Rd (reflectance) and +b (yellowness) averaged 80.3 and 8.3, respectively and resulted in color grades of mostly 21.

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 Andy Cranmer - Farm Research Service Manager and Jim Bordovsky - Research Scientist and Agricultural Engineer, Texas AgriLife Research Center, Halfway/Helms, for their assistance with this project. Further assistance with this project 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. Furthermore, we greatly appreciate the Texas Department of Agriculture - Food and Fiber Research for funding of HVI testing.

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Table 1. Inseason plant measurement results from the Hale County Irrigated RACE variety demonstration, Texas AgriLife Research Center Farm, Halfway, TX, 2011.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of			Storm resistance
	6-Jun plants/row ft	plants/acre	22-Jul	27-Jul	3-Aug	24-Oct rating (1-9)
Dyna-Gro 2570B2RF	2.5	33,173	8.1	6.6	3.7	6.3
All-Tex Edge B2RF	3.2	41,214	7.7	5.6	2.9	7.3
NexGen 4111RF	2.4	31,497	8.2	6.2	3.7	6.0
Croplan Genetics 3156B2RF	2.9	37,361	7.6	5.7	3.4	5.0
PhytoGen 367WRF	3.0	39,036	7.5	6.0	3.4	3.3
Deltapine 0912B2RF	3.0	38,869	7.1	5.5	3.1	3.0
FiberMax 2484B2F	2.8	36,188	7.2	5.3	3.1	6.0
Stoneville 4288B2F	2.6	34,178	7.5	5.8	3.5	3.0
Test average	2.8	36,440	7.6	5.9	3.4	5.0
CV, %	7.8	8.0	5.4	8.5	13.8	19.5
OSL	0.0154	0.0148	0.0784 [†]	0.1422	0.4288	0.0003
LSD	0.4	5,091	0.6	NS	NS	1.7

For NAWF, numbers represent an average of 10 plants per variety per rep (30 plants per variety)

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

For Storm resistance, ratings based on a scale of 0-9 where 9 represents maximum storm resistance.

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 2. Final plant map results from the Hale County LEPA irrigated RACE variety demonstration, Texas AgriLife Research Center Farm, Halfway, TX, 2011.

Entry	Final plant map 20-Sep					
	plant height (inches)	node of first fruiting branch	total mainstem nodes	height to node ratio	total fruiting branches	open boll (%)
Dyna-Gro 2570B2RF	35.1	7.2	16.7	2.1	9.2	79.4
All-Tex Edge B2RF	21.6	6.8	16.7	1.3	9.9	82.2
NexGen 4111RF	23.3	6.7	16.0	1.5	10.4	76.2
Croplan Genetics 3156B2RF	21.5	6.6	15.4	1.4	9.3	82.7
PhytoGen 367WRF	21.9	6.3	15.2	1.4	9.7	75.6
Deltapine 0912B2RF	21.9	6.8	15.0	1.5	10.5	83.0
FiberMax 2484B2F	22.5	7.9	16.7	1.4	10.7	70.7
Stoneville 4288B2F	21.7	7.2	15.9	1.4	10.6	77.8
Test average	23.7	6.9	16.0	1.5	10.0	78.5
CV, %	28.3	6.1	2.8	27.1	7.0	14.2
OSL	0.2670	0.0122	0.0010	0.3705	0.1044	0.8594
LSD	NS	0.7	0.8	NS	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, NS - not significant

Table 3. Final plant map results from the Hale County LEPA irrigated RACE variety demonstration, Texas AgriLife Research Center Farm, Halfway, TX, 2011.

Entry	Fruiting and retention 20-Sep					
	% of fruit from 1st position	% of fruit from 2nd position	total fruit	1st position retention (%)	2nd position retention (%)	total retention (%)
Dyna-Gro 2570B2RF	73.2	18.0	6.7	45.3	21.4	33.33
All-Tex Edge B2RF	66.5	25.5	6.8	36.9	24.5	28.37
NexGen 4111RF	57.9	23.2	5.5	51.4	32.3	37.33
Croplan Genetics 3156B2RF	77.3	13.9	5.3	41.8	14.9	29.30
PhytoGen 367WRF	60.9	26.9	8.7	45.0	31.1	34.90
Deltapine 0912B2RF	75.7	17.5	5.8	37.4	16.3	26.03
FiberMax 2484B2F	72.2	15.5	7.1	43.5	16.6	27.43
Stoneville 4288B2F	67.9	20.1	6.7	42.1	22.7	31.93
Test average	69.0	20.1	6.6	42.9	22.5	31.08
CV, %	14.0	33.9	18.3	16.2	34.0	15.3
OSL	0.2303	0.2648	0.0682 [†]	0.3053	0.0935 [†]	0.1191
LSD	NS	NS	1.7	NS	11.0	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 Hale County LEPA irrigated RACE variety demonstration, Texas AgriLife Research Center Farm, Halfway, TX, 2011.

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	35.1	49.5	1971	693	977	0.5103	353.42	146.50	499.92	59.14	72.08	368.70 a
All-Tex Edge B2RF	31.9	48.4	2051	654	992	0.5150	336.62	148.73	485.34	61.52	68.99	354.83 a
NexGen 4111RF	34.1	47.5	1732	591	823	0.5455	322.42	123.43	445.84	51.95	52.41	341.49 ab
Croplan Genetics 3156B2RF	33.5	46.2	1899	637	878	0.5083	323.83	131.66	455.49	56.98	70.49	328.02 abc
PhytoGen 367WRF	34.0	47.9	1857	631	890	0.5088	321.14	133.49	454.63	55.70	73.21	325.72 abc
Deltapine 0912B2RF	34.3	47.6	1881	646	896	0.4980	321.60	134.33	455.92	56.43	74.74	324.75 abc
FiberMax 2484B2F	34.4	48.2	1612	554	777	0.5318	294.74	116.56	411.30	48.35	73.96	289.00 bc
Stoneville 4288B2F	33.1	49.5	1636	541	809	0.5153	279.00	121.41	400.42	49.08	73.96	277.37 c
Test average	33.8	48.1	1830	618	880	0.5166	319.10	132.01	451.11	54.89	69.98	326.24
CV, %	1.5	1.7	7.7	7.7	7.6	2.3	7.8	7.6	7.7	7.7	--	9.4
OSL	<0.0001	0.0045	0.0173	0.0207	0.0141	0.0053	0.0619 [†]	0.0142	0.0513 [†]	0.0175	--	0.0372
LSD	0.9	1.4	246	83	117	0.0205	35.77	17.57	50.19	7.39	--	53.73

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.

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

Assumes:

\$3.00/cwt ginning cost.

\$300/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 Hale County LEPA irrigated RACE variety demonstration, Texas AgriLife Research Center Farm, Halfway, TX, 2011.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 ^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
Dyna-Gro 2570B2RF	3.9	32.7	79.2	28.8	10.2	1.0	80.5	8.8	1.7	1.0
All-Tex Edge B2RF	4.0	33.1	78.4	28.0	8.7	1.0	80.7	8.1	2.3	1.0
NexGen 4111RF	4.1	33.8	81.0	31.8	9.6	1.3	78.4	8.8	2.3	1.0
Croplan Genetics 3156B2RF	3.6	32.5	78.7	26.5	8.3	1.7	81.0	7.6	2.3	1.0
PhytoGen 367WRF	3.6	32.7	78.9	27.7	9.6	1.0	79.5	8.8	2.0	1.0
Deltapine 0912B2RF	4.1	32.1	79.1	27.6	9.4	1.0	79.5	8.4	2.3	1.0
FiberMax 2484B2F	3.4	34.3	79.3	28.9	7.9	1.3	82.7	7.6	2.0	1.0
Stoneville 4288B2F	4.0	32.9	78.3	26.6	9.1	1.3	79.7	8.6	2.0	1.0
Test average	3.9	33.0	79.1	28.2	9.1	1.2	80.3	8.3	2.1	1.0
CV, %	2.0	0.9	0.4	1.5	2.0	44.7	0.7	2.0	--	--
OSL	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.7222	<0.0001	<0.0001	--	--
LSD	0.1	0.5	0.5	0.8	0.3	NS	1.0	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



**Replicated LESA Irrigated RACE Variety Demonstration,
Ropesville, TX - 2011**

Cooperator: Mike Henson

**Robert Scott, Kerry Siders, Mark Kelley
and Chris Ashbrook
CEA-ANR Hockley County, EA-IPM Cochran/Hockley Counties,
Extension Agronomist - Cotton,
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Hockley County

Summary: Significant differences were observed for most yield and economic parameters measured. Differences in lint turnout from grab samples were not significant and averaged 31.3% across varieties. Lint yields varied with a low of 564 lb/acre (Deltapine 1032B2RF) and a high of 738 lb/acre (Dyna-Gro 2570B2RF). Lint loan values ranged from a low of \$0.5242/lb (Stoneville 5458B2RF) to a high of \$0.5705/lb (FiberMax 9170B2F). When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of \$435.62/acre (Dyna-Gro 2570B2RF) to a low of \$330.61/acre (Deltapine 1032B2RF), a difference of \$105.01. Significant differences were observed among varieties for all HVI parameters measured. Micronaire ranged from a low of 4.4 for Deltapine 1032B2RF to a high of 5.0 for Stoneville 5458B2RF. Staple averaged 35.0 across all varieties and percent uniformity averaged 80.7%. Strength values (alpha 0.10) averaged 31.4 g/tex with a high of 32.1 g/tex for FiberMax 9170B2F and PhytoGen 499WRF, and a low of 30.2 g/tex for Croplan Genetics 3787B2RF. Elongation averaged 9.3 with a high of 10.7 for PhytoGen 499WRF and a low of 8.0 FiberMax 9170B2F. Leaf grades were mostly 1 and 2 at this location. Color grades of 11 and 21 were observed for most varieties. These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection.

Objective: The objective of this project was to compare agronomic characteristics, yields, gin turnout, fiber quality, and economic returns of transgenic cotton varieties under LESA irrigated production in the Texas High Plains.

Materials and Methods:

Varieties:	All-Tex Edge B2RF, Croplan Genetics 3787B2RF, Deltapine 1032B2RF, Dyna-Gro 2570B2RF, FiberMax 9170B2F, NexGen 4012B2RF, PhytoGen 499WRF, and Stoneville 5458B2F								
Experimental design:	Randomized complete block with three (3) replications.								
Seeding rate:	3.4 seed/row-ft in 40 inch row spacings. (John Deere XP Vacuum planter)								
Plot size:	8 rows by variable length of field (straight rows under center pivot)								
Planting date:	1-June								
Weed management:	Trifluralin was applied preplant incorporated at 1.5 pt/acre across all varieties. Roundup PowerMax was applied over-the-top at 24 oz/acre on 25-July, and at 32 oz/acre on 20-August with AMS.								
Irrigation:	6" of preplant irrigation were applied via LESA irrigation with 12" of irrigation applied during the growing season for a total of 18" applied irrigation.								
Rainfall:	Based on the nearest Texas Tech University-West Texas Mesonet station at Levelland, rainfall amounts were: <table><tr><td>April: 0.00</td><td>August: 0.06</td></tr><tr><td>May: 0.35</td><td>September: 0.32</td></tr><tr><td>June: 0.23</td><td>October: 1.03</td></tr><tr><td>July: 0.01</td><td></td></tr></table> Total rainfall: 2.00"	April: 0.00	August: 0.06	May: 0.35	September: 0.32	June: 0.23	October: 1.03	July: 0.01	
April: 0.00	August: 0.06								
May: 0.35	September: 0.32								
June: 0.23	October: 1.03								
July: 0.01									
Insecticides:	No insecticides were applied by the producer at this site. This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.								
Fertilizer management:	75 lbs NO ₃ -N/acre were applied during the growing season. Also, 75 lbs P ₂ O ₅ /acre were applied preplant.								
Harvest aids:	Harvest aids included 48 oz/acre of Ethephon applied by producer on 25-October followed by 32 oz/acre Gramoxone Inteon with 0.25% v/v non-ionic surfactant on 7-November.								
Harvest:	Plots were harvested on 14-November using a commercial John Deere 7460 with field cleaner. Harvested material was transferred to a weigh wagon with integral electronic scales to record individual plot weights. Plot weights were subsequently converted to lb/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 Texas Tech University – Fiber and Biopolymer Research Institute for HVI analysis, and USDA Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.
Ginning cost and seed values:	Ginning cost were based on \$3.00 per cwt. of bur cotton and seed value/acre was based on \$300/ton. Ginning cost did not include check-off.
Seed and Technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (3.4 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://www.plainscotton.org/Seed/PCGseed11.xls .

Results and Discussion:

No significant differences were observed among varieties for plant population (15-June) or nodes above white flower (4-August) provided in Table 1. NAWF values reported represent averages from 10 plants per plot or 30 plants per variety. Just prior to harvest on 14-November, a visual observation for storm resistance was recorded for each variety in all three replications. The ratings were on a scale of 1-9 where 1 represents the least storm resistance. Significant differences were observed among varieties and values ranged from a high of 7.3 (FiberMax 9170B2F and NexGen 4012B2RF) to a low of 4.3 (Deltapine 1032B2RF).

For final plant map parameters measured on 11-October, significant differences were observed for all but open boll percent (Table 2). Plant height averaged 15.9 with a high of 17.8 (PhytoGen 499WRF) and a low of 13.7 (Stoneville 5458B2RF). Node of first fruiting branch was highest for FiberMax 9170B2F (10.6) and lowest for Croplan Genetics 3787B2RF (6.7). Total mainstem nodes averaged 17.7 across all varieties and ranged from a high of 20.1 for NexGen 4012B2RF to a low of 15.2 for Croplan Genetics 3787B2RF. Height to node ratio averaged 0.9. Total fruiting branches was highest for NexGen 4012B2RF (12.2) and lowest for FiberMax 9170B2F (9.3) with a test average of 10.4. Significant differences were observed at the 0.10 level for 1st position retention percent on 11-October (Table 3). 1st position retention percent was highest for PhytoGen 499WRF (43.9) and lowest for NexGen 4012B2RF (27.4) and averaged 33.3.

Significant differences were observed for most yield and economic parameters measured (Table 4). However, lint turnout from grab samples was not significant and averaged 31.3%. Bur cotton yields averaged 2099 lb/acre with a high of 2425 lb/acre for Stoneville 5458B2RF, and a low of 1776 lb/acre for Deltapine

1032B2RF. Lint yields varied from a low of 564 lb/acre (Deltapine 1032B2RF) to a high of 738 lb/acre (Dyna-Gro 2570B2RF). Lint loan values ranged from a low of \$0.5242/lb (Stoneville 5458B2RF) to a high of \$0.5705/lb (FiberMax 9170B2F). Resulting lint values (\$/acre) averaged \$364.69 across varieties with a high of \$411.18/acre for PhytoGen 499WRF to a low of \$320.58/acre for Deltapine 1032B2RF. After adding lint and seed value, total value/acre ranged from a low of \$447.15/acre for Deltapine 1032B2RF to a high of \$565.01/acre for PhytoGen 499WRF. When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of \$435.62/acre (Dyna-Gro 2570B2RF) to a low of \$330.61/acre (Deltapine 1032B2RF), a difference of \$105.01.

Significant differences were observed among varieties for all HVI parameters measured. Micronaire ranged from a low of 4.4 for Deltapine 1032B2RF to a high of 5.0 for Stoneville 5458B2RF. Staple averaged 35.0 across all varieties with a high of 35.9 for Croplan Genetics 3787B2RF and a low of 34.3 for PhytoGen 499WRF. Percent uniformity ranged from a high of 81.9% for Croplan Genetics 3787B2RF to a low of 80.0% for All-Tex Edge B2RF with a test average of 80.7%. Strength values ($\alpha=0.10$) averaged 31.4 g/tex with a high of 32.1 g/tex for FiberMax 9170B2F and PhytoGen 499WRF, and a low of 30.2 g/tex for Croplan Genetics 3787B2RF. Elongation averaged 9.3 with a high of 10.7 for PhytoGen 499WRF and a low of 8.0 FiberMax 9170B2F. Leaf grades were mostly 1 and 2 at this location. Color grades of mostly 21 were observed across varieties.

These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection. Additional multi-site and multi-year applied research is needed to evaluate varieties and technology across a series of environments.

Acknowledgments:

Appreciation is expressed to Mike Henson for the use of his land, equipment and labor for this demonstration. Further assistance with this project 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. Furthermore, we 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 Hockley County LESA irrigated RACE variety demonstration, Mike Henson Farm, Ropesville, TX, 2011.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of	Storm resistance
	15-Jun plants/row ft	plants/acre	4-Aug avg/plant	14-Nov rating (1-9)
Dyna-Gro 2570B2RF	3.0	38,534	5.5	5.7
PhytoGen 499WRF	3.3	43,895	5.5	6.7
Stoneville 5458B2RF	3.0	38,869	4.7	6.7
FiberMax 9170B2F	3.2	42,052	5.1	7.3
Croplan Genetics 3787B2RF	3.3	43,058	5.2	5.3
NexGen 4012B2RF	3.1	40,879	5.4	7.3
All-Tex Edge B2RF	3.5	46,408	5.3	6.3
Deltapine 1032B2RF	2.8	36,021	5.8	4.3
Test average	3.2	41,214	5.3	6.2
CV, %	11.1	10.8	9.3	8.9
OSL	0.2740	0.1882	0.3587	0.0001
LSD	NS	NS	NS	1.0

For NAWF, numbers represent an average of 10 plants per variety per rep (30 plants per variety)

For Storm resistance, ratings based on a scale of 0-9 where 9 represents maximum storm resistance.

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 Hockley County LESA irrigated RACE variety demonstration, Mike Henson Farm, Ropesville, TX, 2011.

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 (%)
Dyna-Gro 2570B2RF	15.7	8.7	18.0	0.9	10.3	78.7
PhytoGen 499WRF	17.8	8.9	17.6	1.0	9.6	77.3
Stoneville 5458B2RF	13.7	7.9	17.2	0.8	10.3	69.9
FiberMax 9170B2F	15.2	10.6	18.9	0.8	9.3	72.8
Croplan Genetics 3787B2RF	15.3	6.7	15.2	1.0	9.5	80.7
NexGen 4012B2RF	16.1	8.8	20.1	0.8	12.2	82.7
All-Tex Edge B2RF	16.3	8.0	18.3	0.9	11.3	67.9
Deltapine 1032B2RF	17.0	7.3	16.6	1.0	10.3	83.7
Test average	15.9	8.4	17.7	0.9	10.4	76.7
CV, %	5.6	6.9	4.0	6.2	6.3	11.3
OSL	0.0028	<0.0001	<0.0001	0.0002	0.0011	0.2807
LSD	1.6	1.0	1.3	0.1	1.1	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 Hockley County LESA irrigated RACE variety demonstration, Mike Henson Farm, Ropesville, TX, 2011.

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 (%)
Dyna-Gro 2570B2RF	92.3	6.9	3.6	31.4	7.1	25.8
PhytoGen 499WRF	92.1	7.9	4.7	43.9	16.2	37.3
Stoneville 5458B2RF	90.2	5.6	3.6	29.6	8.7	25.3
FiberMax 9170B2F	85.3	6.7	3.7	33.5	11.2	29.9
Croplan Genetics 3787B2RF	91.0	7.9	3.6	33.1	8.1	25.5
NexGen 4012B2RF	89.7	8.2	3.8	27.4	13.9	25.3
All-Tex Edge B2RF	82.7	15.7	4.7	33.1	24.5	29.9
Deltapine 1032B2RF	90.5	8.1	4.0	34.6	10.9	28.4
Test average	89.2	8.4	4.0	33.3	12.6	28.4
CV, %	8.5	73.5	17.2	15.5	77.3	17.9
OSL	0.7408	0.6311	0.2085	0.0556 [†]	0.4527	0.1350
LSD	NS	NS	NS	7.4	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 Hockley County LESA irrigated RACE variety demonstration, Mike Henson Farm, Ropesville, TX, 2011.

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	33.2	48.5	2221	738	1078	0.5442	401.54	161.71	563.24	66.64	60.99	435.62 a
PhytoGen 499WRF	32.4	45.2	2268	736	1026	0.5588	411.18	153.83	565.01	68.04	61.94	435.02 a
Stoneville 5458B2RF	30.0	45.7	2425	727	1107	0.5242	381.02	166.10	547.12	72.75	62.58	411.78 a
FiberMax 9170B2F	31.7	47.3	2126	674	1006	0.5705	384.66	150.89	535.55	63.78	62.58	409.18 a
Croplan Genetics 3787B2RF	31.8	47.3	1954	621	924	0.5692	353.57	138.65	492.22	58.62	59.65	373.95 b
NexGen 4012B2RF	29.8	46.1	2000	595	921	0.5648	336.25	138.20	474.45	60.01	55.06	359.39 bc
All-Tex Edge B2RF	29.6	46.6	2020	598	941	0.5493	328.69	141.19	469.88	60.59	58.38	350.91 bc
Deltapine 1032B2RF	31.8	47.5	1776	564	844	0.5683	320.58	126.57	447.15	53.29	63.25	330.61 c
Test average	31.3	46.8	2099	657	981	0.5562	364.69	147.14	511.83	62.97	60.55	388.31
CV, %	5.1	3.4	4.3	4.4	4.4	2.2	4.5	4.4	4.5	4.3	--	5.2
OSL	0.1126	0.2573	<0.0001	<0.0001	<0.0001	0.0048	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001
LSD	NS	NS	160	50	76	0.0217	28.58	11.35	39.92	4.79	--	35.13

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.

\$300/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 Hockley County LESA irrigated RACE variety demonstration, Mike Henson Farm, Ropesville, TX, 2011.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 ^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
Dyna-Gro 2570B2RF	4.8	34.7	81.1	31.3	10.3	1.0	78.7	9.3	2.0	1.0
PhytoGen 499WRF	4.8	34.3	80.7	32.1	10.7	1.0	77.6	9.2	2.0	1.0
Stoneville 5458B2RF	5.0	34.8	80.4	31.3	9.1	2.0	75.5	9.5	3.0	1.7
FiberMax 9170B2F	4.5	35.8	80.2	32.1	8.0	1.0	79.9	8.8	2.0	1.0
Croplan Genetics 3787B2RF	4.6	35.9	81.9	30.2	10.4	1.0	80.2	9.2	1.3	1.0
NexGen 4012B2RF	4.6	34.7	80.9	31.6	8.1	2.0	79.3	9.1	1.7	1.0
All-Tex Edge B2RF	4.9	34.6	80.0	31.4	9.2	2.3	78.3	8.1	3.0	1.0
Deltapine 1032B2RF	4.4	35.3	80.7	30.9	8.8	1.0	80.2	9.0	1.3	1.0
Test average	4.7	35.0	80.7	31.4	9.3	1.4	78.7	9.0	2.0	1.1
CV, %	3.8	1.5	0.7	2.3	4.3	28.8	1.3	3.4	--	--
OSL	0.0097	0.0122	0.0140	0.0908 [†]	<0.0001	0.0020	0.0007	0.0026	--	--
LSD	0.3	0.9	0.9	1.0	0.7	0.7	1.7	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, [†]indicates significance at the 0.10 level.



**Replicated Sub-Surface Drip Irrigated RACE Variety Demonstration,
Acuff, TX - 2011**

Cooperator: Rhett and Brady Mimms

**Mark Brown, Mark Kelley and Chris Ashbrook
CEA-ANR Lubbock County, Extension Agronomist - Cotton,
and Extension Assistant - Cotton**

Lubbock County

Summary: Significant differences were observed for all yield and economic parameters measured with the exception of lint loan value. Lint turnout of field cleaned bur cotton ranged from a low of 33.9% to a high of 38.5% for NexGen 4010B2RF and PhytoGen 499WRF, respectively. Lint yields varied with a low of 671 lb/acre (NexGen 4010B2RF) and a high of 838 lb/acre (PhytoGen 499WRF). Lint loan values averaged \$0.5531/lb and were not significantly different. After subtracting ginning, seed and technology fee costs from total value, net value/acre among varieties ranged from a high of \$483.88/acre (PhytoGen 499WRF) to a low of \$407.55/acre (NexGen 4010B2RF), a difference of \$76.33. Fiber quality data indicated significant differences among varieties for all parameters measured. Micronaire averaged 4.5 and ranged from a low of 3.9 for FiberMax 2484B2F to a high of 4.7 for Stoneville 5458B2RF. Staple (alpha=0.10) was highest for FiberMax 2484B2F (35.8) and lowest for All-Tex Dinero B2RF (33.8). Uniformity values ranged from a high of 81.7% for PhytoGen 499WRF to a low of 79.4% for Deltapine 1032B2RF and the test average was 80.6%. Strength values averaged 30.0 g/tex with a high of 31.5 g/tex for NexGen 4010B2RF and PhytoGen 499WRF and a low of 28.0 g/tex for All-Tex Dinero B2RF. Elongation averaged 9.1% and ranged from a high of 10.4% for PhytoGen 499WRF to a low of 7.8 for FiberMax 2484B2F. Leaf grades (alpha=0.10) averaged 1.1 across all varieties. Averages for Rd, or reflectance, and +b, or yellowness, were 80.5 and 8.4, respectively. This resulted in color grades of mostly 21 at this location. These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection.

Objective: The objective of this project was to compare agronomic characteristics, yields, gin turnout, fiber quality, and economic returns of transgenic cotton varieties under sub-surface drip irrigated production in the Texas High Plains.

Materials and Methods:

- Varieties: All-Tex Dinero B2RF, Croplan Genetics 3787B2RF, Deltapine 1032B2RF, Dyna-Gro 2595B2RF, FiberMax 2484B2F, NexGen 4010B2RF, PhytoGen 499WRF, and Stoneville 5458B2RF
- Experimental design: Randomized complete block with 3 replications
- Seeding rate: 4.0 seeds/row-ft in 40-inch row spacing (John Deere MaxEmerge XP vacuum planter)
- Plot size: 8 rows by length of field (~1350 ft long)
- Planting date: 27-May
- Weed management: Roundup PowerMax was applied over-the-top on 15-June and 8-July at 28 oz/acre with AMS. An additional post-directed application of Roundup PowerMax at 32 oz/acre with Valor at 2 oz/acre and AMS was made on 15-August.
- Irrigation: 5.5" of irrigation were applied via sub-surface drip irrigation preplant with 20" of irrigation applied during the growing season for a total of 25.5" applied irrigation.
- Rainfall: Based on the nearest Texas Tech University- West Texas Mesonet station at Lubbock, rainfall amounts were:
- | | |
|--------------|------------------|
| April: 0.00" | August: 1.30" |
| May: 0.27" | September: 0.91" |
| June: 0.00" | October: 1.25" |
| July: 0.16" | |
- Total rainfall: 3.89"
- Insecticides: No insecticides were applied by the producer at this site. This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.
- Fertilizer management: A total of 120 lbs N/acre was applied via compost preplant (30 lbs N/acre) and fertigation of 32-0-0 (90 lbs N/acre). The preplant compost also supplied 20 lbs P₂O₅/acre.
- Harvest aids: Harvest aids included 21 oz/acre Prep and 1 oz/acre Aim applied by producer at this location on 10-October followed by 24 oz/acre Gramoxone Inteon with 0.25% v/v non-ionic surfactant on 20-October.
- Harvest: Plots were harvested on 1-November using a commercial John Deere 7460 with field cleaner. Harvested material was transferred

to a weigh wagon with integral electronic scales to record individual plot weights. Plot weights were subsequently converted to lb/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 Texas Tech University - Fiber and Biopolymer Research Institute 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 \$300/ton. Ginning costs did not include check-off.

Seed and technology fees: Seed and technology costs were calculated using the appropriate seeding rate (4.0 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: <http://www.plainscotton.org/Seed/PCGseed11.xls>.

Results and Discussion:

Significant differences were observed among varieties for plant population on 15-June (Table 1). Plant stands averaged 32,356 plants/acre and ranged from a high of 37,361 plants/acre for All-Tex Dinero B2RF to a low of 25,968 plants/acre for Deltapine 1032B2RF. Nodes above white flower (NAWF) counts were taken on a weekly basis beginning 29-July to 18-August.

Significant differences were observed among varieties for the 29-July (alpha=0.10) and 18-August observation dates. On 29-July, NAWF values averaged 7.6 with a high of 7.9 for Deltapine 1032B2RF and a low of 7.1 for All-Tex Dinero B2RF. The test averages on 4-August and 12-August were 6.9 and 4.8, respectively. By 18-August all varieties had reached cutout (NAWF=5) and values ranged from a high of 4.1 for Croplan Genetics 3787B2RF to a low of 2.5 for Stoneville 5458B2RF with a test average of 3.5. Just prior to harvest on 1-November, a visual observation of storm resistance was recorded for each variety in all three replications. The ratings were on a scale of 1-9 where 1 represents the least storm resistance. Significant differences were observed among varieties and values ranged from a high of 8.3 for NexGen 4010B2RF to a low of 4.7 for PhytoGen 499WRF and Deltapine 1032B2RF.

For final plant map parameters measured on 30-September, some significant differences were observed (Table 2). Plant height averaged 23.2 inches across varieties, however, differences were not significant.

Node of first fruiting branch was highest for NexGen 4010B2RF (9.3) and lowest for Croplan Genetics 3787B2RF (7.1). Total mainstem nodes ($\alpha=0.10$) averaged 18.0 across all varieties and ranged from a high of 19.4 for FiberMax 2484B2F to a low of 16.8 for Croplan Genetics 3787B2RF. Neither height to node ratio or total fruiting branch differences were significant and test averages were 1.3 and 10.8, respectively. Open boll percents averaged 40.8% with a high of 60.5% (All-Tex Dinero B2RF) and a low of 10.0% (FiberMax 2484B2F). Significant differences were observed for most fruiting and retention parameters measured on 30-September (Table 3). All but “% of fruit from 1st position” and “total fruit” were significant. Percent of fruit from 2nd position averaged 20.8% and ranged from 11.2% for Stoneville 5458B2RF to 27.5% for Dyna-Gro 2595B2RF. First position retention percent was highest for Deltapine 1032B2RF (60.1%) and lowest for NexGen 4010B2RF (45.1%) with a test average of 54.3%. Second position retention percent averaged 31.4% with a high of 42.7% (Dyna-Gro 2595B2RF) and a low of 16.7% (Stoneville 5458B2RF). Total retention percent was highest for Dyna-Gro 2595B2RF with 44.3% and lowest for Stoneville 5458B2RF with 33.5% and a test average of 39.7% was observed.

Significant differences were observed for all yield and economic parameters measured with exception of lint loan value (Table 4). Lint turnout of field cleaned bur cotton ranged from a low of 33.9% to a high of 38.5% for NexGen 4010B2RF and PhytoGen 499WRF, respectively. Bur cotton yields averaged 2131 lb/acre with a high of 2304 lb/acre for Stoneville 5458B2RF, to a low of 1981 lb/acre for NexGen 4010B2RF. Lint yields varied with a low of 671 lb/acre (NexGen 4010B2RF) and a high of 838 lb/acre (PhytoGen 499WRF). Lint loan values averaged \$0.5531/lb and were not significantly different. Resulting lint values ranged from a high of \$468.03/acre for PhytoGen 499WRF to a low of \$381.40/acre for NexGen 4010B2RF. After adding lint and seed value, total value/acre ranged from a low of \$532.05/acre for NexGen 4010B2RF to a high of \$622.43/acre for PhytoGen 499WRF. When subtracting ginning, seed and technology fee costs, the net value/acre ranged from a high of \$483.88/acre (PhytoGen 499WRF) to a low of \$407.55/acre (NexGen 4010B2RF), a difference of \$76.33.

Fiber quality data indicated significant differences among varieties for all parameters measured (Table 5). Micronaire averaged 4.5 and ranged from a low of 3.9 for FiberMax 2484B2F to a high of 4.7 for Stoneville 5458B2RF. Staple ($\alpha=0.10$) was highest for FiberMax 2484B2F (35.8) and lowest for All-Tex Dinero B2RF (33.8). Uniformity values ranged from a high of 81.7% for PhytoGen 499WRF to a low of 79.4% for Deltapine 1032B2RF and the test average was 80.6%. Strength values averaged 30.0 g/tex with a high of 31.5 g/tex for NexGen 4010B2RF and PhytoGen 499WRF and a low of 28.0 g/tex for All-Tex Dinero B2RF. Elongation averaged 9.1% and ranged from a high of 10.4% for PhytoGen 499WRF to a low of 7.8% for FiberMax 2484B2F. Leaf grades ($\alpha=0.10$) averaged 1.1 across all varieties. Averages for Rd, or reflectance, and +b, or yellowness, were 80.5 and 8.4, respectively. This resulted in color grades of mostly 21 at this location.

These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection. Additional multi-site and

multi-year applied research is needed to evaluate varieties and technology across a series of environments.

Acknowledgments:

Appreciation is expressed to Rhett and Brady Mimms for the use of their land, equipment and labor for this demonstration. Further assistance with this project 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. Furthermore, we 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 Lubbock County Drip Irrigated RACE variety demonstration, Rhett Mimms Farm, Acuff, TX, 2011.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of				Storm resistance
	15-Jun plants/row ft	plants/acre	29-Jul	4-Aug	12-Aug	18-Aug	1-Nov rating (1-9)
PhytoGen 499WRF	2.6	34,178	7.8	6.9	5.2	3.4	4.7
Dyna-Gro 2595B2RF	2.7	34,680	7.8	7.0	5.4	3.5	5.7
Stoneville 5458B2RF	2.5	33,005	7.3	6.9	4.7	2.5	6.3
FiberMax 2484B2F	2.3	30,492	7.7	6.9	5.0	2.6	7.0
Croplan Genetics 3787B2RF	2.3	29,989	7.4	7.0	5.2	4.1	5.3
Deltapine 1032B2RF	2.0	25,968	7.9	7.2	4.8	3.9	4.7
All-Tex Dinero B2RF	2.9	37,361	7.1	6.2	4.2	3.9	6.3
NexGen 4010B2RF	2.5	33,173	7.6	6.8	4.0	3.9	8.3
Test average	2.5	32,356	7.6	6.9	4.8	3.5	6.0
CV, %	9.1	8.8	4.3	9.1	16.3	18.0	8.9
OSL	0.0082	0.0081	0.0867 [†]	0.7206	0.4006	0.0418	<0.0001
LSD	0.4	4,977	0.5	NS	NS	1.1	0.9

For NAWF, numbers represent an average of 10 plants per variety per rep (30 plants per variety)

For Storm resistance, ratings based on a scale of 0-9 where 9 represents maximum storm resistance.

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 2. Final plant map results from the Lubbock County drip irrigated RACE variety demonstration, Rhett Mimms Farm, Acuff, TX, 2011.

Entry	Final plant map 30-Sep					
	plant height (inches)	node of first fruiting branch	total mainstem nodes	height to node ratio	total fruiting branches	open boll (%)
PhytoGen 499WRF	22.7	9.2	18.1	1.2	10.4	43.3
Dyna-Gro 2595B2RF	24.6	7.8	18.2	1.4	11.4	26.3
Stoneville 5458B2RF	21.8	8.7	17.4	1.3	9.8	26.0
FiberMax 2484B2F	23.9	9.2	19.4	1.2	11.2	10.0
Croplan Genetics 3787B2RF	23.4	7.1	16.8	1.4	10.8	49.6
Deltapine 1032B2RF	24.3	7.4	17.8	1.4	11.3	59.4
All-Tex Dinero B2RF	21.1	7.4	17.1	1.2	11.1	60.5
NexGen 4010B2RF	23.5	9.3	19.2	1.2	10.9	51.8
Test average	23.2	8.3	18.0	1.3	10.8	40.8
CV, %	7.4	5.2	5.7	6.3	8.3	38.2
OSL	0.2367	<0.0001	0.0806 [†]	0.1141	0.4049	0.0122
LSD	NS	0.8	1.5	NS	NS	27.3

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 3. Final plant map results from the Lubbock County drip irrigated RACE variety demonstration, Rhett Mimms Farm, Acuff, TX, 2011.

Entry	Fruting and retention 30-Sep					
	% of fruit from 1st position	% of fruit from 2nd position	total fruit	1st position retention (%)	2nd position retention (%)	total retention (%)
PhytoGen 499WRF	67.1	13.4	9.7	59.4	20.6	41.55
Dyna-Gro 2595B2RF	56.8	27.5	12.5	58.8	42.7	44.25
Stoneville 5458B2RF	57.9	11.2	9.1	48.2	16.7	33.47
FiberMax 2484B2F	47.2	23.6	12.8	50.3	39.2	43.34
Croplan Genetics 3787B2RF	59.7	21.5	11.1	59.5	31.9	40.91
Deltapine 1032B2RF	58.7	23.7	12.0	60.1	36.4	41.80
All-Tex Dinero B2RF	59.8	19.8	10.3	52.9	28.3	35.68
NexGen 4010B2RF	50.8	25.4	10.0	45.1	35.5	36.52
Test average	57.3	20.8	10.9	54.3	31.4	39.7
CV, %	13.6	22.5	21.9	7.7	27.5	6.8
OSL	0.1686	0.0079	0.4711	0.0022	0.0276	0.0018
LSD	NS	8.2	NS	7.3	15.1	4.8

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 4. Harvest results from the Lubbock County drip irrigated RACE variety demonstration, Rhett Mimms Farm, Acuff, TX, 2011.

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 -----		
PhytoGen 499WRF	38.5	47.3	2178	838	1029	0.5588	468.03	154.40	622.43	65.34	73.21	483.88 a
Dyna-Gro 2595B2RF	37.0	48.4	2246	830	1086	0.5485	455.27	162.97	618.25	67.37	72.08	478.80 a
Stoneville 5458B2RF	35.4	50.1	2304	815	1155	0.5460	445.13	173.23	618.35	69.12	73.96	475.28 ab
FiberMax 2484B2F	36.3	47.6	2230	809	1062	0.5612	454.18	159.36	613.54	66.91	73.96	472.67 ab
Croplan Genetics 3787B2RF	37.1	47.8	1984	736	949	0.5643	415.60	142.34	557.94	59.51	70.49	427.94 bc
Deltapine 1032B2RF	38.0	48.0	2014	766	966	0.5457	418.10	144.88	562.99	60.43	74.74	427.81 bc
All-Tex Dinero B2RF	35.2	51.1	2113	743	1080	0.5322	395.38	162.02	557.39	63.40	68.99	425.00 bc
NexGen 4010B2RF	33.9	50.7	1981	671	1004	0.5680	381.40	150.65	532.05	59.44	65.07	407.55 c
Test average	36.4	48.9	2131	776	1042	0.5531	429.14	156.23	585.37	63.94	71.56	449.87
CV, %	4.0	2.7	5.5	5.6	5.5	2.7	5.6	5.5	5.5	5.5	--	6.4
OSL	0.0277	0.0122	0.0222	0.0042	0.0101	0.1487	0.0047	0.0100	0.0167	0.0220	--	0.0256
LSD	2.6	2.3	206	76	100	NS	41.90	15.02	56.74	6.19	--	50.57

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.

\$300/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 Lubbock County drip irrigated RACE variety demonstration, Rhett Mimms Farm, Acuff, TX, 2011.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 ^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
PhytoGen 499WRF	4.6	34.2	81.7	31.5	10.4	1.0	79.2	8.7	2.0	1.0
Dyna-Gro 2595B2RF	4.6	34.5	80.8	29.5	9.2	1.3	80.7	8.5	2.0	1.0
Stoneville 5458B2RF	4.7	34.5	80.1	30.7	8.9	1.7	78.2	8.6	2.3	1.0
FiberMax 2484B2F	3.9	35.8	80.2	30.4	7.8	1.0	82.5	7.7	2.0	1.0
Croplan Genetics 3787B2RF	4.4	35.3	81.5	29.3	10.2	1.0	81.2	8.7	1.3	1.0
Deltapine 1032B2RF	4.6	34.2	79.4	28.8	9.1	1.0	81.8	8.2	2.0	1.0
All-Tex Dinero B2RF	4.5	33.8	79.6	28.0	8.9	1.0	80.8	8.1	2.0	1.0
NexGen 4010B2RF	4.6	35.2	81.2	31.5	8.7	1.0	79.4	8.8	2.0	1.0
Test average	4.5	34.7	80.6	30.0	9.1	1.1	80.5	8.4	2.0	1.0
CV, %	2.2	2.2	1.0	3.3	3.2	24.7	0.8	2.1	--	--
OSL	<0.0001	0.0743 [†]	0.0176	0.0057	<0.0001	0.0788 [†]	<0.0001	<0.0001	--	--
LSD	0.2	1.1	1.4	1.7	0.5	0.4	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, [†] indicates significance at the 0.10 level.



**Replicated LESA Irrigated RACE Variety Demonstration,
Tahoka, TX - 2011**

Cooperator: Charles Ashbrook

**Bryan Reynolds, Tommy Doederlein, Mark Kelley
and Chris Ashbrook
CEA-ANR Lynn County, EA-IPM Dawson/Lynn Counties,
Extension Agronomist - Cotton,
and Extension Assistant - Cotton**

Lynn County

Summary: Significant differences were noted for most yield and fiber quality parameters measured. Lint turnout ranged from 37.5% for Croplan Genetics 3787B2RF to 32.9% for NexGen 4010B2RF. Lint yields varied from a low of 486 lb/acre (NexGen 4010B2RF) to a high of 648 lb/acre (Stoneville 5458B2RF). Lint loan values ranged from a low of \$0.5090/lb to a high of \$0.5518/lb for Stoneville 5458B2RF and Deltapine 1032B2RF, respectively. After subtracting ginning, seed costs and technology fees from total value, the net value/acre among varieties ranged from a high of \$362.07/acre (PhytoGen 367WRF) to a low of \$286.39/acre (NexGen 4010B2RF), a difference of \$75.68. Micronaire values ranged from a high of 5.1 for Stoneville 5458B2RF to a low of 4.6 for Deltapine 1032B2RF and the test average was 4.8. The test average staple was 33.9 and Deltapine 1032B2RF had the highest with 34.6 while FiberMax 1740B2F had the lowest with 33.2. Uniformity ($\alpha=0.10$) was highest for Croplan Genetics 3787B2RF (81.3%) and lowest for All-Tex Dinero B2RF (79.2%). Strength values averaged 30.2 g/tex across all varieties and ranged from a high of 31.6 g/tex for NexGen 4010B2RF to a low of 28.9 g/tex for All-Tex Dinero B2RF. Color grade components of Rd (reflectance) and +b (yellowness) averaged 78.6 and 8.8, respectively. This resulted in color grades of mostly 21 and 31. These data indicate that substantial differences can be obtained in terms of net value/acre due to variety selection.

Objective: The objective of this project was to compare agronomic characteristics, yields, gin turnout, fiber quality, and economic returns of transgenic cotton varieties under LESA irrigated production in the Texas High Plains.

Materials and Methods:

Varieties:	All-Tex Dinero B2RF, Croplan Genetics 3787B2RF, Deltapine 1032B2RF, Dyna-Gro 2595B2RF, FiberMax 1740B2F, NexGen 4010B2RF, PhytoGen 367WRF, and Stoneville 5458B2F						
Experimental design:	Randomized complete block with 3 replications						
Seeding rate:	3.2 seeds/row-ft in solid planted 40-inch row spacing (Case IH 1200 vacuum planter)						
Plot size:	8 rows by variable length (straight rows under center pivot)						
Planting date:	26-May						
Weed management:	Prowl H ₂ O was applied preplant incorporated at 1.3 pt/acre across all varieties on 21-February. Glyphosate was applied over-the-top at 40 oz/acre on 10-June and 15-July with AMS.						
Irrigation:	2" of irrigation were applied via LESA irrigation preplant with 26.5" of irrigation applied during the growing season for a total of 28.5" applied irrigation.						
Rainfall:	Based on the nearest Texas Tech University- West Texas Mesonet station at Tahoka, rainfall amounts were: <table><tr><td>April: 0.00"</td><td>July: 0.28"</td></tr><tr><td>May: 0.03"</td><td>August: 0.78"</td></tr><tr><td>June: 0.28"</td><td>September: 0.87"</td></tr></table> Total rainfall: 2.24	April: 0.00"	July: 0.28"	May: 0.03"	August: 0.78"	June: 0.28"	September: 0.87"
April: 0.00"	July: 0.28"						
May: 0.03"	August: 0.78"						
June: 0.28"	September: 0.87"						
Insecticides:	No insecticides were applied by the producer at this site. This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.						
Fertilizer:	The grower applied 150 lbs/acre of 18-12-2-5 fertilizer on 1-April supplying 27 lbs NO ₃ -N/acre. Also, 32-0-0 was applied via fertigation at 10 gpa on 15-June and 12-July for a total of approximately 100 lbs NO ₃ -N/acre.						
Harvest aids:	Harvest aids included 32 oz/acre ethephon + 2 oz/acre ET with 1% v/v crop oil on 25-October, followed by 24 oz/acre Gramoxone Inteon with 0.25% v/v non-ionic surfactant on 10-November.						
Harvest:	Plots were harvested on 15-November using a commercial John Deere 7450 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 \$300/ton. Ginning costs did not include checkoff.
Seed and technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (3.2 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://www.plainscotton.org/Seed/PCGseed11.xls .

Results and Discussion:

Due to extreme drought conditions, plant stand variability was higher than normal and no significant differences were observed among varieties on 30-June (Table 1). Plant stands averaged 31,916 plants/acre. Nodes above white flower (NAWF) counts were taken on a weekly basis beginning 28-July to 12-August. On 28-July, NAWF values averaged 8.0 with a high of 8.7 (PhytoGen 367WRF, Deltapine 1032B2RF, NexGen 4010B2RF) and a low of 6.9 (Stoneville 5458B2RF). On 4-August NexGen 4010B2RF had the highest NAWF of 7.6 with Stoneville 5458B2RF and FiberMax 1740B2F having the lowest of 5.2. By 12-August all varieties had reached cutout (NAWF=5) and values averaged 3.9 with a high of 4.9 (NexGen 4010B2RF) and a low of 3.0 (Stoneville 5458B2RF). Just prior to harvest on 15-November, a visual observation of storm resistance was recorded for each variety in all three replications. The ratings were on a scale of 1-9 where 1 represents the least storm resistance. Significant differences were observed among varieties and values averaged 7.3 and ranged from a high of 8.7 for FiberMax 1740B2F to a low of 6.0 for Deltapine 1032B2RF and Croplan Genetics 3787B2RF.

For final plant map parameters measured on 13-October, significant differences were observed for total mainstem nodes only (Table 2). Total mainstem nodes ($\alpha=0.10$) averaged 18.7 across all varieties and ranged from a high of 20.2 for NexGen 4010B2RF to a low of 17.1 for Croplan Genetics 3787B2RF. No significant differences were observed among varieties for fruiting and retention parameters on 13-October (Table 3).

Significant differences were noted for most yield and fiber quality parameters measured (Tables 4 and 5). Lint turnout ranged from 37.5% for Croplan Genetics 3787B2RF to 32.9% for NexGen 4010B2RF. Bur cotton yield averaged 1677

lb/acre and ranged from a high of 1949 lb/acre for Stoneville 5458B2RF to a low of 1478 lbs/acre for NexGen 4010B2RF. Lint yields varied from a low of 486 lb/acre (NexGen 4010B2RF) to a high of 648 lb/acre (Stoneville 5458B2RF). Lint loan values ranged from a low of \$0.5090/lb to a high of \$0.5518/lb for Stoneville 5458B2RF and Deltapine 1032B2RF, respectively. When adding lint and seed value, total value/acre ranged from a low of \$383.29/acre for NexGen 4010B2RF to a high of \$477.16/acre for PhytoGen 367WRF. After subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of \$362.07/acre (PhytoGen 367WRF) to a low of \$286.39/acre (NexGen 4010B2RF), a difference of \$75.68.

Micronaire values ranged from a high of 5.1 for Stoneville 5458B2RF to a low of 4.6 for Deltapine 1032B2RF and the test average was 4.8. The test average staple was 33.9 and Deltapine 1032B2RF had the highest with 34.6 while FiberMax 1740B2F had the lowest with 33.2. Uniformity ($\alpha=0.10$) was highest for Croplan Genetics 3787B2RF (81.3%) and lowest for All-Tex Dinero B2RF (79.2%). Strength values averaged 30.2 g/tex across all varieties and ranged from a high of 31.6 g/tex for NexGen 4010B2RF to a low of 28.9 g/tex for All-Tex Dinero B2RF. Elongation values averaged 9.3% across all varieties. Leaf grades were mostly 1 and 2 at this location. Color grade components of Rd (reflectance) and +b (yellowness) averaged 78.6 and 8.8, respectively. This resulted in color grades of mostly 21 and 31.

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 Charles Ashbrook for the use of his land, equipment and labor at this location. 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. Inseason plant measurement results from the Lynn County LESA irrigated RACE variety demonstration, Charles Ashbrook Farm, Tahoka, TX, 2011.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of			Storm resistance
	30-Jun plants/row ft	plants/acre	28-Jul	4-Aug	12-Aug	15-Nov rating (1-9)
PhytoGen 367WRF	2.6	34,513	8.7	6.8	4.1	7.0
Stoneville 5458B2RF	2.0	26,806	6.9	5.2	3.0	8.3
Deltapine 1032B2RF	2.4	31,162	8.7	7.2	4.3	6.0
Dyna-Gro 2595B2RF	2.2	29,319	8.5	7.4	4.8	7.3
Croplan Genetics 3787B2RF	2.5	32,502	7.9	6.6	3.6	6.0
All-Tex Dinero B2RF	2.5	33,508	7.1	5.5	3.3	7.0
FiberMax 1740B2F	2.3	30,492	7.4	5.2	3.1	8.7
NexGen 4010B2RF	2.8	37,026	8.7	7.6	4.9	8.0
Test average	2.4	31,916	8.0	6.5	3.9	7.3
CV, %	16.2	15.9	9.1	12.4	15.3	7.0
OSL	0.3787	0.3740	0.0254	0.0068	0.0070	<0.0001
LSD	NS	NS	1.3	1.4	1.0	0.9

For NAWF, numbers represent an average of 10 plants per variety per rep (30 plants per variety)

For Storm resistance, ratings based on a scale of 0-9 where 9 represents maximum storm resistance.

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 Lynn County LESA irrigated RACE variety demonstration, Charles Ashbrook Farm, Tahoka, TX, 2011.

Entry	Final plant map 13-Oct					
	plant height (inches)	node of first fruiting branch	total mainstem nodes	height to node ratio	total fruiting branches	open boll (%)
PhytoGen 367WRF	18.7	6.4	19.5	1.0	14.1	77.5
Stoneville 5458B2RF	17.7	7.8	18.5	1.0	11.7	73.8
Deltapine 1032B2RF	18.2	7.0	19.2	1.0	13.2	76.6
Dyna-Gro 2595B2RF	16.0	7.1	18.5	0.9	12.4	73.1
Croplan Genetics 3787B2RF	17.4	7.0	17.1	1.0	11.1	81.6
All-Tex Dinero B2RF	17.3	7.6	18.7	0.9	12.0	84.5
FiberMax 1740B2F	14.2	7.5	17.9	0.8	11.4	73.0
NexGen 4010B2RF	17.5	8.0	20.2	0.9	13.2	73.1
Test average	17.1	7.3	18.7	0.9	12.4	76.6
CV, %	13.3	8.7	5.8	10.9	10.4	20.3
OSL	0.3811	0.1404	0.0941 [†]	0.2388	0.1322	0.9678
LSD	NS	NS	1.6	NS	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 3. Final plant map results from the Lynn County LESA irrigated RACE variety demonstration, Charles Ashbrook Farm, Tahoka, TX, 2011.

Entry	Fruiting and retention 13-Oct					
	% of fruit from 1st position	% of fruit from 2nd position	total fruit	1st position retention (%)	2nd position retention (%)	total retention (%)
PhytoGen 367WRF	67.6	20.6	15.4	63.2	35.1	44.1
Stoneville 5458B2RF	70.1	20.7	9.8	53.9	27.6	39.1
Deltapine 1032B2RF	68.2	26.7	12.8	63.1	41.0	45.2
Dyna-Gro 2595B2RF	69.8	22.7	12.2	65.2	34.2	45.7
Croplan Genetics 3787B2RF	72.0	21.5	9.3	58.9	29.3	41.1
All-Tex Dinero B2RF	62.7	23.4	11.3	56.4	33.5	40.5
FiberMax 1740B2F	68.9	23.5	9.3	53.7	33.7	44.3
NexGen 4010B2RF	73.4	20.0	10.4	55.8	27.5	42.0
Test average	69.1	22.4	11.3	58.8	32.7	42.7
CV, %	10.2	24.7	29.0	12.4	29.5	9.3
OSL	0.7196	0.8445	0.3576	0.3768	0.7010	0.4161
LSD	NS	NS	NS	NS	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, NS - not significant

Table 4. Harvest results from the Lynn County LESA irrigated RACE variety demonstration, Charles Ashbrook Farm, Tahoka, TX, 2011.

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 -----			
PhytoGen 367WRF	33.7	48.5	1866	628	905	0.5433	341.46	135.70	477.16	55.97	59.13	362.07 a
Stoneville 5458B2RF	33.2	50.2	1949	648	977	0.5090	329.62	146.58	476.20	58.46	59.74	358.01 a
Deltapine 1032B2RF	36.6	49.6	1676	613	832	0.5518	338.48	124.76	463.24	50.28	60.37	352.59 a
Dyna-Gro 2595B2RF	35.9	50.0	1697	609	849	0.5193	316.07	127.31	443.38	50.92	58.22	334.24 ab
Croplan Genetics 3787B2RF	37.5	49.2	1543	579	760	0.5477	317.27	113.95	431.23	46.30	56.94	327.99 ab
All-Tex Dinero B2RF	33.4	51.5	1641	548	845	0.5298	290.24	126.77	417.01	49.23	55.73	312.05 ab
FiberMax 1740B2F	34.6	50.5	1564	542	790	0.5132	277.89	118.56	396.45	46.92	59.74	289.79 b
NexGen 4010B2RF	32.9	53.3	1478	486	788	0.5455	265.05	118.24	383.29	44.34	52.55	286.39 b
Test average	34.7	50.4	1677	582	843	0.5325	309.51	126.49	436.00	50.30	57.80	327.89
CV, %	3.4	1.2	7.5	7.8	7.4	4.0	8.0	7.4	7.8	7.5	--	9.2
OSL	0.0015	<0.0001	0.0053	0.0108	0.0158	0.1497	0.0127	0.0157	0.0277	0.0053	--	0.0431
LSD	2.1	1.1	219	80	109	NS	43.14	16.38	59.44	6.57	--	52.88

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.

\$300/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 Lynn County LESA irrigated RACE variety demonstration, Charles Ashbrook Farm, Tahoka, TX, 2011.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 ^{nds} inch	%	g/tex	%	grade	reflectance	yellowness rating (1-9)	color 1	color 2
PhytoGen 367WRF	4.7	34.2	80.7	30.9	10.2	1.7	77.6	9.1	2.3	1.0
Stoneville 5458B2RF	5.1	33.6	80.1	31.0	9.1	1.3	76.6	9.3	2.7	1.0
Deltapine 1032B2RF	4.6	34.6	79.7	30.0	8.8	1.0	79.1	8.3	2.3	1.0
Dyna-Gro 2595B2RF	4.9	33.6	80.1	29.8	9.4	1.0	79.2	8.5	2.7	1.0
Croplan Genetics 3787B2RF	4.7	34.1	81.3	29.0	10.2	1.0	79.7	8.9	2.0	1.0
All-Tex Dinero B2RF	4.8	33.6	79.2	28.9	9.2	1.3	79.2	8.4	2.3	1.0
FiberMax 1740B2F	5.0	33.2	79.4	30.0	8.8	1.0	79.2	8.4	2.7	1.0
NexGen 4010B2RF	4.8	34.1	80.7	31.6	9.1	1.0	78.0	9.1	2.0	1.0
Test average	4.8	33.9	80.2	30.2	9.3	1.2	78.6	8.8	2.4	1.0
CV, %	3.2	1.3	1.0	2.7	2.3	31.7	0.6	1.7	--	--
OSL	0.0109	0.0326	0.0937 [†]	0.0103	<0.0001	0.2831	<0.0001	<0.0001	--	--
LSD	0.3	0.8	1.2	1.4	0.4	NS	0.8	0.3	--	--

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level, [†]indicates significance at the 0.10 level, NS - not significant



2011 Irrigated Cotton Variety Demonstration near Sunray, TX

Cooperator: Tommy Cartrite

Marcel Fischbacher¹, Brad Easterling¹, Jake Becker², Jake Robinson²,
Brent Bean³, Rex Brandon², Mark Kelley⁴

Southeast Sherman County

Summary: Fifteen cotton varieties were planted on May 6th at a seeding rate of 55,000 seed/A on 30 inch rows. Lint yield averaged 984 lb/A and ranged from 1,126 to 845 lb/A. Net value ranged from a high of \$698/A to a low of \$472/A, a difference of \$226/A. The three top varieties in the trial were NexGen 4010B2RF, Deltapine 1219B2RF and FiberMax 9058F, each with a net value of over \$646/A. Two other varieties, FiberMax 9180B2F and FiberMax 9103GT, were close behind with net values of approximately \$592/A. Lint loan values ranged from \$0.5678/lb to \$0.4887/lb.

Objective: The objective of this project was to compare yields, gin turnout, fiber quality, and economic returns of transgenic cotton varieties under center pivot irrigated production in the Texas Panhandle.

Materials and Methods:

Varieties: Deltapine 1219B2RF (EXP 10R011), 0912B2RF and 104B2RF; FiberMax 9103GT, 9250GL, 9101GT, 9058F, 9180B2RF and 1740B2F; PhytoGen 367WRF; NexGen 4010B2RF, 2549B2RF, 2051B2RF and 1551RF; All-Tex Dinero B2RF

Experimental design: Randomized complete block with 3 replications

Seeding rate: 3.15 seeds/row-ft in 30-inch row spacing (55,000 seed/acre)

Plot Size: 8 rows approximately 600 ft in length

¹ Moore County Extension Agent and Sherman County Extension Agent

² Texas AgriLife Research Assistants

³ Texas AgriLife Extension and Research Agronomist, b-bean@tamu.edu

⁴ Texas AgriLife Extension Agronomist - Cotton

Planting date:	May 6th
Weed management:	2.5 pt Prowl H2O and three applications of WeatherMax
Rainfall and Irrigation:	No significant rainfall. Irrigation – 2 inches preplant and 10 inches during the season
Insecticides:	Acephate
Fertilizer management:	50 lb N as Anhydrous and 5 gal 10-34-0
Plant growth regulators:	None
Harvest aids:	Generic Prep + Def
Harvest:	Plots were harvested on 23-November using a commercial John Deere 7460 stripper with field cleaner. Harvested material was transferred to a weigh wagon with integral electronic scales to determine plot weights. Plot yields were subsequently 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 Texas Tech University Fiber and Biopolymer Research Institute for HVI analysis, and Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.
Ginning cost and seed value:	Ginning costs were based on \$3.00 per cwt. of bur cotton and seed value/acre was based on \$300/ton. Ginning costs did not include checkoff.
Seed and technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (3.15 seed/row-ft) for the 30-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://www.plainscotton.org/ .

Results and Discussion:

Lint turnout of each variety was clustered around the mean of 36.3% with the exception of NexGen 2051B2RF with a turnout of only 31.4% (Table 1). When the net value of each variety was calculated (lint and seed value minus ginning and seed/tech costs) the top three varieties were NexGen 4010B2RF, Deltapine 1219B2RF and FiberMax 9058F with net values/A of \$698, \$672 and \$647, respectively. These three varieties had the highest lint yields and also had some of the highest lint loan values. The next two varieties in net value were FiberMax

9180B2F and FiberMax 9103GT, with net values of \$592/A. Lint loan values of all varieties ranged from \$0.5648/lb to \$0.4883/lb and averaged 0.5418/lb.

Significant differences were observed among varieties for all HVI quality grade parameters with the exception of % uniformity (Table 2). Micronaire was generally above 4.5 units and ranged from 5.1 to 4.2. Staple averaged 34.2, uniformity averaged 80.8%, and strength averaged 29.2 g/tex. Percent elongation ranged from 8.7% to 5.9%. Leaf grade ranged from 4.3 (FiberMax 9101GT) to 1.7 (three varieties). Rd or reflectance averaged 81.4 and +b or yellowness averaged 8.2.

These data indicate that substantial differences can be obtained in terms of net value/A due to variety and technology selection. In this trial NexGen 4010B2RF gave the highest net value, returning \$226 more per acre than the variety returning the least amount of net value. It should be noted that heat unit accumulation for the region was exceptional in 2011 and likely contributed to the ranking of these varieties. Additional multi-site and multi-year applied research is needed to evaluate varieties and technology across a series of environments.

Acknowledgments:

Appreciation is expressed to Tommy Cartrite for the use of his land, equipment and labor for this demonstration. Further assistance with this project 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.

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Table 1. Harvest results from the 2011 Cotton Variety Trial, Tommy Cartrite Farm, Sunray, TX.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Seed/tech. cost	Net value	
	-- % --		----- lb/acre -----			\$/lb			----- \$/acre -----				
NexGen 4010B2RF	37.1	48.7	3,039	1,126	1,480	0.5648	636.16	222.02	858.18	91.16	68.82	698.20	a
Deltapine 1219B2RF	37.1	47.8	2,974	1,104	1,422	0.5678	626.82	213.31	840.13	89.21	79.06	671.87	ab
FiberMax 9058F	35.1	49.4	2,977	1,046	1,470	0.5577	583.55	220.43	803.98	89.32	67.90	646.76	abc
FiberMax 9180B2F	35.2	49.6	2,742	966	1,360	0.5673	548.09	204.06	752.15	82.27	76.98	592.90	bcd
FiberMax 9103GT	35.9	49.9	2,702	970	1,347	0.5523	535.79	202.07	737.86	81.06	65.25	591.55	bcd
Deltapine 104B2RF	35.6	50.4	2,770	985	1,395	0.5428	534.66	209.32	743.98	83.09	73.56	587.33	cd
NexGen 2549B2RF	35.6	48.9	2,864	1,019	1,400	0.5177	527.73	210.05	737.78	85.91	68.82	583.05	cd
FiberMax 1740B2F	38.4	47.3	2,611	1,003	1,235	0.5493	550.84	185.26	736.10	78.32	78.23	579.56	cd
FiberMax 9101GT	38.0	46.3	2,698	1,025	1,249	0.5213	534.17	187.39	721.56	80.94	65.25	575.37	cd
NexGen 1551RF	36.9	50.1	2,654	978	1,331	0.5213	509.90	199.61	709.50	79.61	55.43	574.46	cd
PhytoGen 367WRF	37.9	43.7	2,709	1,027	1,184	0.5280	542.48	177.57	720.05	81.27	77.43	561.35	de
FiberMax 9250GL	36.0	49.8	2,512	905	1,251	0.5482	496.08	187.61	683.69	75.35	67.75	540.60	def
NexGen 2051B2RF	31.4	52.7	2,692	845	1,418	0.5543	468.29	212.74	681.03	80.77	68.82	531.44	def
All-Tex Dinero B2RF	37.5	48.0	2,276	853	1,091	0.5452	465.24	163.71	628.95	68.28	72.98	487.69	ef
Deltapine 0912B2RF	36.4	47.6	2,509	914	1,195	0.4887	446.71	179.23	625.94	75.27	79.06	471.61	f
Test average	36.3	48.7	2,715	984	1,322	0.5418	533.77	198.29	732.06	81.46	71.02	579.58	
CV, %	4.9	4.8	7.5	7.6	7.4	1.9	7.5	7.4	7.5	7.5	--	8.4	
OSL	0.0103	0.0285	0.0088	0.0024	0.0007	<0.0001	<0.0001	0.0007	0.0005	0.0088	--	0.0003	
LSD	3.0	3.9	342	125	164	0.0172	67.15	24.59	91.67	10.27	--	81.41	

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.

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

Assumes:

\$3.00/cwt ginning cost.

\$300/ton for seed.

Value for lint based on CCC loan value from grab samples and HVI results.

Table 2. HVI fiber property results from the 2011 Cotton Variety Trial, Tommy Cartrite Farm, Sunray, TX.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32nds inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
All-Tex Dinero B2RF	4.7	34.2	80.7	28.2	7.6	1.7	81.9	8.2	2.0	1.0
Deltapine 0912B2RF	5.1	32.2	80.8	27.3	8.4	2.0	80.8	8.6	2.0	1.0
Deltapine 104B2RF	4.2	33.8	81.5	29.9	8.7	2.0	81.9	8.1	2.0	1.0
Deltapine 1219B2RF	4.4	35.0	81.0	30.8	7.5	1.0	82.4	8.4	1.0	1.0
FiberMax 1740B2F	4.8	34.1	81.2	29.4	7.3	1.7	81.6	8.3	2.0	1.0
FiberMax 9058F	4.6	35.0	80.2	28.7	6.6	2.0	83.1	7.6	1.7	1.0
FiberMax 9101GT	4.6	34.0	80.4	27.9	5.9	4.3	80.7	7.9	2.3	1.0
FiberMax 9103GT	4.4	34.7	80.6	29.0	7.1	2.3	81.6	8.0	2.0	1.0
FiberMax 9180B2F	4.6	35.0	81.5	30.6	7.1	2.0	83.2	7.6	2.0	1.0
FiberMax 9250GL	4.6	34.8	80.2	29.0	6.1	3.0	82.0	7.6	2.3	1.0
NexGen 1551RF	4.8	33.4	80.0	30.4	7.1	2.3	79.0	9.1	2.0	1.3
NexGen 2051B2RF	4.3	35.0	80.6	27.9	6.8	2.7	82.1	7.6	2.0	1.0
NexGen 2549B2RF	4.5	32.7	81.2	29.4	8.3	3.3	79.7	8.5	2.3	1.0
NexGen 4010B2RF	4.6	34.9	81.2	31.2	7.8	1.7	81.0	8.7	2.0	1.0
PhytoGen 367WRF	4.6	33.6	80.5	28.5	8.4	2.3	79.6	9.0	2.0	1.0
Test average	4.6	34.2	80.8	29.2	7.4	2.3	81.4	8.2	2.0	1.0
CV, %	3.1	1.6	0.9	2.3	2.6	30.1	1.1	3.4	--	--
OSL	<0.0001	<0.0001	0.2470	<0.0001	<0.0001	0.0007	<0.0001	<0.0001	--	--
LSD	0.2	0.9	NS	1.1	0.3	1.2	1.5	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



2011 Irrigated Cotton Variety Demonstration near Dumas, TX

Cooperator: David/Adam Ford

**Marcel Fischbacher¹, Jake Becker², Brent Bean³, Rex Brandon²,
Jake Robinson² Mark Kelley⁴**

Southwest Moore County

Summary: Fifteen varieties were tested at this location. The top four varieties in this trial based on net value were Deltapine 1219B2RF, FiberMax 9103GT, PhytoGen 375WRF and PhytoGen 367WRF. The net value per acre of these four varieties ranged from \$742 to \$668. Net value takes into account lint and seed yield, lint quality, loan value, and ginning and seed/technology costs. Lint yield ranged from 1,247 lb/A to 836 lb/A and the average loan value was \$0.5514/lb with the highest loan value being \$0.5735/lb. There was a difference of \$252/A in net value between cotton varieties planted in this trial.

Objective: The objective of this project was to compare agronomic characteristics, yield, gin turnout, fiber quality, and economic returns of transgenic cotton varieties under irrigated production in Moore County.

Materials and Methods:

Varieties: Deltapine 1219B2RF (EXP 10R011), 0912B2RF and 104B2RF; FiberMax 9103GT, 2011GT, 9058F, 9180B2RF and 1740B2F; PhytoGen 375WRF and 367WRF; NexGen 4010B2RF, 2549B2RF, 2051B2RF and 1551RF; All-Tex Dinero B2RF

Experimental design: Randomized complete block with 3 replications

Seeding rate: 72,000 seed/A on 30 inch rows

Plot Size: 8 rows by approximately 600 ft (0.28 acres)

Planting date: 11-May

¹ Moore County Extension Agent

² Texas AgriLife Research Assistant

³ Texas AgriLife Extension and Research Agronomist, b-bean@tamu.edu

⁴ Texas AgriLife Extension Agronomist - Cotton

Rainfall/Irrigation:	Approximately 2 inches of rainfall was accumulated during the growing season. Irrigation amount totaled 12 inches and was applied through a center pivot using a LESA system.
Herbicides:	Pre: Caparol+glyphosate, Post: Two applications of Assure II + glyphosate, One application of Dual+glyphosate, Two applications of glyphosate alone
Insecticides:	Two applications of acephate
Fertilizer:	100 lbs N + 50 lbs P ₂ O ₅
Plant Growth Regulators:	None
Harvest aids:	Prep + Folex
Harvest:	Plots were harvested on November 19 th using a commercial John Deere 7460 stripper harvester with field cleaner. Harvested material was transferred to a weigh wagon with integral electronic scales to determine plot weights. Plot yields were subsequently adjusted to lb/A.
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 Texas Tech University Fiber and Biopolymer Research Institute 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 \$300/ton. Ginning costs did not include checkoff.
Seed and Technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (4.13 seed/row-ft) for the 30-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://www.plainscotton.org/

Results and Discussion:

Lint turnout was generally good ranging from a low of 32.6% to a high of 37.2% with FiberMax 1740B2RF (Table 1). Average turnout was 35.3%. Lint loan values averaged \$0.5514/lb, but three varieties NexGen 1551RF, Deltapine 0912B2RF and NexGen 2549B2RF were below \$0.53/lb. When the net value of each variety was calculated (lint and seed value minus ginning and seed/tech costs) the top four varieties were Deltapine 1219B2RF, FiberMax 9103GT, PhytoGen 375WRF and PhytoGen367WRF. These top varieties ranged in net value from \$742 to \$668 per acre. The next three varieties in net value were All-Tex Dinero B2RF, NexGen 4010B2RF and FiberMax 2011GT, all with net values greater than \$600 per acre.

Micronaire values ranged from a low of 4.2 for Deltapine 1219B2RF to a high of 5.3 with Deltapine 0912B2RF (Table 2). Micronaire values averaged 4.7. Staple length averaged 35.0 across all varieties with a low of 32.6 for NexGen 2549B2RF to a high of 36.9 for FiberMax 9180B2F. Uniformity was similar with all varieties averaging 81.4%. Strength values averaged 28.7 g/tex with a high of 30.9 g/tex for FiberMax 9180B2RF and a low of 27.0 g/tex for PhytoGen 367WRF. Elongation averaged 7.7% and leaf grades averaged 1.2. Values for reflectance (Rd) and yellowness (+b) averaged 82.6 and 7.3, respectively.

These data indicate that substantial differences can be obtained in terms of net value/A due to variety and technology selection. Net values ranged from \$742 to \$490/A, a difference of \$252/A. It should be noted that heat unit accumulation for the region was exceptional in 2011 and likely contributed to the ranking of these varieties. Additional multi-site and multi-year applied research is needed to evaluate varieties and technology across a series of environments.

Acknowledgements:

Appreciation is expressed to David and Adam Ford for the use of their land, equipment and labor for this demonstration. Further assistance with this project 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.

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. Harvest results from the 2011 Cotton Variety Trial, David Ford Farm, Southwest Moore County.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Seed/tech. cost	Net value	
	----- % -----		----- lb/acre -----			\$/lb	----- \$/acre -----						
Deltapine 1219B2RF	37.0	47.6	3,367	1,247	1,604	0.5662	705.78	240.64	946.42	101.01	103.49	741.91	a
FiberMax 9103GT	35.9	49.7	3,090	1,109	1,537	0.5645	626.06	230.48	856.54	92.71	85.42	678.41	ab
PhytoGen 375WRF	36.8	48.0	3,144	1,158	1,509	0.5523	639.72	226.34	866.06	94.32	101.36	670.38	ab
PhytoGen 367WRF	38.7	46.7	3,065	1,187	1,432	0.5445	646.40	214.75	861.15	91.95	101.36	667.84	ab
All-Tex Dinero B2RF	34.9	50.3	3,018	1,052	1,518	0.5660	595.39	227.76	823.15	90.54	95.53	637.08	bc
NexGen 4010B2RF	34.0	50.8	3,050	1,038	1,548	0.5647	585.94	232.27	818.20	91.51	90.09	636.60	bc
FiberMax 2011GT	36.2	48.6	2,783	1,006	1,353	0.5643	567.83	202.92	770.74	83.48	85.42	601.85	bcd
FiberMax 9058F	35.0	50.2	2,746	961	1,378	0.5598	538.24	206.77	745.01	82.37	88.89	573.76	cde
FiberMax 9180B2F	33.0	51.3	2,773	916	1,424	0.5735	525.59	213.60	739.19	83.20	100.77	555.22	cde
NexGen 2549B2RF	34.9	49.6	2,857	997	1,418	0.5155	514.21	212.71	726.92	85.70	90.09	551.12	cde
NexGen 2051B2RF	33.9	51.4	2,693	914	1,384	0.5582	510.00	207.60	717.60	80.78	90.09	546.73	de
Deltapine 0912B2RF	36.0	48.7	2,782	1,002	1,356	0.5210	522.25	203.40	725.65	83.46	103.49	538.71	de
FiberMax 1740B2F	37.2	48.2	2,611	971	1,259	0.5462	530.25	188.80	719.05	78.33	102.40	538.32	de
NexGen 1551RF	32.9	52.7	2,585	851	1,361	0.5232	445.43	204.22	649.65	77.54	72.56	499.54	e
Deltapine 104B2RF	32.6	52.5	2,566	836	1,348	0.5510	460.73	202.14	662.88	76.97	96.29	489.61	e
Test average	35.3	49.8	2,875	1,016	1,429	0.5514	560.92	214.29	775.21	86.26	93.82	595.14	
CV, %	4.1	2.3	7.7	7.7	7.7	2.2	7.8	7.7	7.7	7.7	--	9.0	
OSL	0.0003	<0.0001	0.0027	<0.0001	0.0317	<0.0001	<0.0001	0.0315	<0.0001	0.0027	--	<0.0001	
LSD	2.4	1.9	368	131	183	0.0202	72.88	27.46	100.24	11.05	--	89.20	

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.

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

Assumes:

\$3.00/cwt ginning cost.

\$300/ton for seed.

Value for lint based on CCC loan value from grab samples and HVI results.

Table 2. HVI fiber property results from the 2011 Cotton Variety Trial, David Ford Farm, Southwest Moore County.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32nds inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
All-Tex Dinero B2RF	4.6	35.4	81.5	27.9	7.6	1.0	83.6	7.3	2.0	1.0
Deltapine 0912B2RF	5.3	33.9	81.3	27.4	8.0	1.0	81.4	7.7	2.3	1.0
Deltapine 104B2RF Deltapine 1219B2RF	4.5	34.6	81.8	28.9	8.8	1.0	82.1	7.9	2.0	1.0
FiberMax 1740B2F	4.2	35.7	80.9	30.7	7.8	1.0	82.3	7.1	2.3	1.0
FiberMax 2011GT	4.9	34.2	80.9	28.1	7.7	1.0	82.6	7.4	2.0	1.0
FiberMax 9058F	4.8	35.2	81.6	28.9	7.2	1.0	82.9	7.3	2.0	1.0
FiberMax 9103GT	4.6	35.8	81.6	29.6	6.9	1.0	81.9	6.4	2.7	1.0
FiberMax 9180B2F	4.3	35.8	81.0	29.0	7.3	1.3	82.2	7.3	2.3	1.0
NexGen 1551RF	4.6	36.9	82.6	30.9	7.1	1.0	83.6	6.7	2.3	1.0
NexGen 2051B2RF	5.1	34.6	81.1	29.2	7.5	1.0	80.2	7.6	3.0	1.0
NexGen 2549B2RF	4.5	35.0	80.4	27.4	7.0	2.0	83.1	6.8	2.7	1.0
NexGen 4010B2RF	4.6	32.6	81.0	28.0	8.5	1.0	80.7	7.7	2.7	1.0
PhytoGen 375WRF	4.7	35.6	82.4	30.0	7.9	1.3	80.8	7.5	2.7	1.0
PhytoGen 367WRF	4.6	35.0	81.7	28.1	8.1	1.7	81.7	7.7	2.3	1.0
Test average	4.7	35.0	81.4	28.7	7.7	1.2	82.1	7.3	2.4	1.0
CV, %	3.6	1.3	0.7	2.3	4.2	43.8	1.1	5.6	--	--
OSL	<0.0001	<0.0001	0.0023	<0.0001	<0.0001	0.3468	0.0011	0.0071	--	--
LSD	0.3	0.7	0.9	1.1	0.5	NS	1.5	0.7	--	--

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.



2011 Irrigated Cotton Variety Demonstration near White Deer, TX

Cooperator: Dudley Pohnert

**Jody Bradford¹, Jake Becker², Brent Bean³, Rex Brandon²,
Jake Robinson², Mark Kelley⁴**

Carson County

Summary: Twelve cotton varieties were planted on May 16th at a seeding rate of 55,000 seed/A on 30 inch rows. **Cotton yields and lint quality in this trial were greatly affected by a hail storm event in mid-August.** Net value per acre ranged from a high of \$302 to a low of \$140, a difference of \$162/A. The four top varieties based on net value per acre were Deltapine 1219B2RF, NexGen 4010B2RF, PhytoGen 367WRF and NexGen 1551RF. All four varieties had net values greater than \$290/A. There was actually very little difference in lint yield between varieties in this trial, ranging from 639 lb/A to 523 lb/A. The most important factor in determining net value per acre was leaf grade. Grades varied from 4.7 to 7.3. This greatly affected the loan values which ranged from \$0.52 to \$0.24. **If leaf grade is set at 3 for all varieties there is little difference in net values between varieties, ranging from a high of \$327 to a low of \$275. Because of the hail damage and poor defoliation, care should be taken in interpreting the results of this trial.**

Objective: The objective of this project was to compare agronomic characteristics, yield, gin turnout, fiber quality, and economic returns of transgenic cotton varieties under irrigated production in the Texas Panhandle.

Materials and Methods:

Varieties: Deltapine 1219B2RF (EXP 10R011), 0912B2RF and 104B2RF; FiberMax 9103GT, 9058F, 9180B2RF and 1740B2F; PhytoGen 367WRF; NexGen 4010B2RF, 2549B2RF, 2051B2RF and 1551RF

¹ Carson County Extension Agent

² Texas AgriLife Research Assistants

³ Texas AgriLife Extension and Research Agronomist, b-bean@tamu.edu

⁴ Texas AgriLife Extension Agronomist - Cotton

Experimental design: Randomized complete block with 3 replications

Previous crop: Corn

Seeding rate: 3.2 seeds/row-ft in 30-inch row spacing (55,000 seeds/acre)

Plot Size: 8 rows by approximately 600 ft

Planting date: May 16

Rainfall/Irrigation: Approximately 4.25 inches of rainfall was received during the growing season. Field was pre-irrigated and had excellent soil moisture at planting. Approximately 8.5 inches of irrigation was applied through a LESA center pivot.

Herbicides: Three glyphosate applications were made during the growing season.

Insecticides: None

Fertilizer: 50 lb N + 35 lb P + 1 lb Zn

Plant Growth Regulators: None

Harvest aids: Prep

Harvest: Plots were harvested on December 17th using a commercial John Deere 7460 stripper harvester with field cleaner. Harvested material was transferred to a weigh wagon with integral electronic scales to determine plot weights. Plot yields were subsequently 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 Texas Tech University Fiber and Biopolymer Research Institute 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 \$300/ton. Ginning costs did not include checkoff.

Seed and technology fees: Seed and technology costs were calculated using the appropriate seeding rate (3.2 seed/row-ft) for the 30-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: <http://www.plainscotton.org>.

Results and Discussion:

Yields in this trial were greatly affected by a hail storm that occurred in mid-August. The field was adjusted at a 82% loss. Lint yields ranged from 639 lb/A to 523 lb/A with a test average of 591 lb/A (Table 1). Loan values, however, varied greatly ranging from \$0.52/lb to \$0.24/lb. Leaf grades of the lowest loan valued varieties were 7 (Table 2). This was likely due to poor defoliation of some varieties. No harvest aid was used in this trial.

Net value per acre of varieties ranged from \$301 to \$140 for a difference of \$161 (Table 1). In this trial, those varieties that were able withstand hail damage better, and had the lowest leaf grade value, had the highest net value per acre. If better defoliation had been achieved then it would have been expected that leaf grade would have been much lower for all varieties. If a leaf value of 3 is set for all varieties, then very little difference in net value can be observed between varieties, ranging from \$327 to \$275 per acre (Table 3). **Because of the hail damage and poor defoliation, care should be taken in interpreting the results of this trial.**

It should also be noted that heat unit accumulation for the region was exceptional in 2011 and likely contributed to the ranking of these varieties. Additional multi-site and multi-year applied research is needed to evaluate varieties and technology across a series of environments.

Acknowledgements:

Appreciation is expressed to Dudley Pohnert for the use of his land, equipment and labor for this demonstration. Further assistance with this project 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.

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Table 1. Harvest results from the Cotton Variety Trial, Pohnert Farm, White Deer, TX, 2011.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Seed/tech cost	Net value	
	----- % -----		----- lb/acre -----			\$/lb	----- \$/acre -----						
Deltapine 1219B2RF	36.4	48.5	1632	594	792	0.5235	310.84	118.74	429.58	48.96	79.06	301.56	a
NexGen 4010B2RF	40.4	44.6	1521	614	678	0.5082	311.89	101.75	413.64	45.63	68.82	299.19	ab
PhytoGen 367WRF	40.6	44.3	1537	623	680	0.5133	320.00	102.06	422.07	46.11	77.43	298.53	ab
NexGen 1551RF	38.2	46.6	1460	558	680	0.5152	287.59	102.06	389.65	43.80	55.43	290.42	ab
FiberMax 1740B2F	40.7	44.4	1473	599	654	0.5008	299.89	98.09	397.98	44.18	78.23	275.57	bc
FiberMax 9103GT	36.9	48.0	1417	523	680	0.5098	266.70	102.05	368.75	42.50	65.25	261.00	c
FiberMax 9180B2F	39.8	45.7	1360	541	621	0.5157	278.87	93.18	372.04	40.80	76.98	254.27	c
Deltapine 0912B2RF	41.5	44.2	1508	625	666	0.3782	236.47	99.95	336.43	45.23	79.06	212.14	d
Deltapine 104B2RF	40.5	44.5	1447	586	644	0.3517	205.97	96.66	302.63	43.41	73.56	185.66	e
NexGen 2051B2RF	38.4	46.4	1464	563	679	0.3480	195.76	101.92	297.68	43.92	68.82	184.94	e
NexGen 2549B2RF	39.9	45.9	1601	639	735	0.2432	155.47	110.20	265.67	48.02	68.82	148.82	f
FiberMax 9058F	41.3	43.5	1529	632	666	0.2430	153.66	99.90	253.55	45.88	67.90	139.77	f
Test average	39.5	45.6	1496	591	681	0.4292	251.92	102.21	354.14	44.87	71.61	237.65	
CV, %	4.0	2.9	5.0	5.0	5.0	31.2	4.9	5.0	4.9	5.0	--	6.3	
OSL	0.0078	0.0019	0.0111	0.0007	0.0006	0.0763†	<0.0001	0.0006	<0.0001	0.0113	--	<0.0001	
LSD	2.7	2.3	126	50	57	0.1877	20.72	8.61	29.22	3.78	--	25.49	

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.

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

Because of hail damage and poor defoliation, care should be taken interpreting the results of this trial.

Assumes:

\$3.00/cwt ginning cost.

\$300/ton for seed.

Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Table 2. HVI fiber property results from the Cotton Variety Trial, Pohnert Farm, White Deer, TX, 2011.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 ^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
Deltapine 1219B2RF	4.2	36.1	81.3	32.2	7.0	5.0	77.3	7.6	3.3	1.0
NexGen 4010B2RF	3.7	35.9	81.4	32.4	7.0	5.7	75.7	8.0	3.7	1.0
PhytoGen 367WRF	4.3	35.4	80.7	30.5	7.9	5.0	74.7	8.0	4.0	1.0
NexGen 1551RF	4.0	33.9	80.3	31.1	6.6	4.7	74.1	9.0	3.0	1.0
FiberMax 1740B2F	4.4	34.9	80.8	29.5	6.7	5.7	76.2	7.8	3.7	1.0
FiberMax 9103GT	4.1	36.1	80.7	30.7	6.4	5.3	75.5	7.8	4.0	1.0
FiberMax 9180B2F	3.8	36.1	81.1	31.9	6.5	5.3	77.8	7.4	3.3	1.0
Deltapine 0912B2RF	4.5	34.5	80.8	30.1	7.5	6.0	74.4	7.8	4.0	1.0
Deltapine 104B2RF	3.7	34.5	81.0	32.3	8.3	7.3	74.5	7.7	4.0	1.0
NexGen 2051B2RF	4.0	35.0	80.0	28.1	6.4	7.3	75.0	7.4	4.0	1.0
NexGen 2549B2RF	3.8	33.6	80.5	30.0	7.5	7.3	73.2	8.4	4.0	1.0
FiberMax 9058F	4.0	35.7	80.4	29.3	6.0	7.3	76.2	7.6	4.0	1.0
Test average	4.0	35.1	80.7	30.7	7.0	6.0	75.4	7.9	3.8	1.0
CV, %	4.6	1.4	0.8	2.5	3.1	17.3	0.7	3.9	--	--
OSL	0.0003	<0.0001	0.2681	<0.0001	<0.0001	0.0131	<0.0001	<0.0001	--	--
LSD	0.3	0.8	NS	1.3	0.4	1.8	0.9	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.

Table 3. Change in net value if leaf grade for all varieties is set at 3.

Entry	Lint loan value	Lint value	Net value
	\$/lb	\$/acre	\$/acre
NexGen 2549B2RF	0.5222	333.84	327.20 a
FiberMax 9058F	0.5387	340.61	326.73 a
NexGen 4010B2RF	0.5497	337.36	324.66 a
Deltapine 12919B2RF	0.5563	330.33	321.06 ab
PhytoGen 367WRF	0.5407	337.04	315.57 abc
Deltapine 0912B2RF	0.5312	332.15	307.81 abcd
NexGen 1551RF	0.5352	298.76	301.58 abcde
FiberMax 1740B2F	0.5407	323.74	299.42 abcde
Deltapine 104B2RF	0.5297	310.22	289.91 bcde
NexGen 2051B2RF	0.5312	298.80	287.98 cde
FiberMax 9103GT	0.5430	284.05	278.35 de
FiberMax 9180B2F	0.5542	299.69	275.09 e
Test average	0.5394	318.88	304.61
CV, %	1.5	5.0	6.2
OSL	0.0011	0.0013	0.0131
LSD	0.0140	26.92	31.74

Note: Leaf grade in the original data (Table 2) varied considerably between varieties. This was likely caused by poor defoliation and may have been related to a hail storm in mid-August. In this table, leaf grade was set at 3 to better reflect differences if good defoliation had been achieved.



2011 Irrigated Cotton Variety Demonstration near Perryton, TX

Cooperator: Roger Davis

**Scott Strawn¹, Jake Becker², Brent Bean³, Rex Brandon²,
Jake Robinson², Mark Kelley⁴**

Ochiltree County

Summary: Twelve cotton varieties were planted on May 7th at 60,000 seed/A. FiberMax 9058F netted the highest value per acre at \$788. Four other varieties with net values per acre of \$683 or greater were Deltapine 1219B2RF, NexGen 4010B2RF, FiberMax 91802F and PhytoGen 367WRF. There was a difference of \$289/A between varieties with the highest and lowest net value, clearly indicating the importance of variety selection. Lint loan value of the twelve varieties ranged from \$0.577/lb to 0.524/lb with a test average of \$0.559/lb.

Objective: The objective of this project was to compare agronomic characteristics, yield, gin turnout, fiber quality, and economic returns of transgenic cotton varieties under limited irrigated production in Ochiltree County.

Materials and Methods:

Varieties: Deltapine 1219B2RF (EXP 10R011), 0912B2RF and 104B2RF; FiberMax 9103GT, 9058F, 9180B2RF and 1740B2F; PhytoGen 367WRF; NexGen 4010B2RF, 2549B2RF, 2051B2RF and 1551RF

Experimental design: Randomized complete block with 3 replications

Seeding rate: 30-inch row spacing at 60,000 seed/A

Plot Size: 6 rows by approximately 800 ft in length

Planting date: May 7th

¹ Ochiltree County Extension Agent

² Texas AgriLife Research Assistants

³ Texas AgriLife Extension and Research Agronomist, b-bean@tamu.edu

⁴ Texas AgriLife Extension Agronomist - Cotton

Rainfall/Irrigation:	No significant rainfall during the season. Six inches of irrigation
Herbicides:	Three Roundup applications and one application of diuron
Insecticides:	Acephate
Fertilizer management:	56 lbs of N as 32-0-0
Plant Growth Regulators:	Stance
Harvest aids:	None
Harvest:	Plots were harvested on November 15 th and 17 th using a commercial John Deere 7460 with field cleaner. Harvested material was transferred to a weigh wagon with integral electronic scales to determine plot weights. Plot weights were converted to lb/A basis.
Gin turnout:	Samples from each plot were ginned at the Texas AgriLife Research and Extension Center near Lubbock to determine gin turnouts.
Fiber analysis:	Lint samples were submitted to the Texas Tech University Fiber and Biopolymer Research Institute 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 \$300/ton. Ginning costs did not include checkoff.
Seed and Technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (3.44 seed/row-ft) for the 30-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://www.plainscotton.org/ .

Results and Discussion:

Lint turnout ranged from 39.4% to 24.1% with a test average of 37% (Table 1). Lint yield ranged from 1,255 lb/A to 828 lb/A with a test average of 1,060 lb/A. The top yielding varieties also tended to have the highest lint loan values which averaged \$0.559/lb. When the net value of each variety was calculated (lint and seed value minus ginning and seed/tech costs) the top five varieties were FiberMax 9058F (\$788/A), Deltapine

1219B2RF (\$742/A, NexGen 4010B2RF (\$736/A), FiberMax 9180B2RF (\$699) and PhytoGen 367WRF (\$684/A).

Micronaire was good with all varieties ranging from 3.8 to 4.8 units (Table 2). Staple averaged 36.9, uniformity averaged 82% and strength averaged 30.8 g/tex. Leaf grades varied from a high of 5.3 to a low of 1.3. Fiber yellowness was fairly consistent averaging 7.8 while color 1 varied from 3.0 to 1.7.

These data indicate that substantial differences can be obtained in terms of net value/A due to variety and technology selection. Net values ranged from \$788/A to \$499/A, a difference of \$289/A. It should be noted that heat unit accumulation for the region was exceptional in 2011 and likely contributed to the ranking of these varieties. Additional multi-site and multi-year applied research is needed to evaluate varieties and technology across a series of environments.

Acknowledgments:

Appreciation is expressed to Roger Davis for the use of his land, equipment and labor for this demonstration. Further assistance with this project 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.

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Table 1. Harvest results from the Cotton Variety Trial, Davis Farm, Perryton, TX, 2011.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Seed/tech cost	Net value
	----- % -----		----- lb/acre -----			\$/lb				----- \$/acre -----		
FiberMax 9058F	38.0	50.8	3,300	1,255	1,676	0.5652	709.34	251.46	960.80	99.00	74.07	787.73 a
Deltapine 1219B2RF	37.0	50.7	3,193	1,181	1,619	0.5770	681.46	242.78	924.24	95.80	86.24	742.19 ab
NexGen 4010B2RF	37.2	51.6	3,148	1,171	1,623	0.5655	662.29	243.50	905.80	94.43	75.08	736.29 ab
FiberMax 9180B2F	37.7	50.3	2,990	1,126	1,504	0.5752	647.52	225.58	873.10	89.70	83.97	699.42 abc
PhytoGen 367WRF	39.4	49.4	2,973	1,170	1,469	0.5443	636.85	220.40	857.25	89.19	84.47	683.59 abcd
NexGen 2549B2RF	37.5	50.6	2,876	1,078	1,455	0.5522	595.09	218.22	813.31	86.28	75.08	651.95 bcd
FiberMax 9103GT	36.8	51.6	2,808	1,033	1,449	0.5615	580.06	217.33	797.39	84.25	71.18	641.95 bcd
Deltapine 0912B2RF	38.2	48.8	2,800	1,068	1,366	0.5380	574.79	204.96	779.75	84.00	86.24	609.51 cde
FiberMax 1740B2F	37.7	50.8	2,648	998	1,345	0.5667	565.50	201.68	767.19	79.45	85.34	602.40 cdef
Deltapine 104B2RF	36.0	52.7	2,640	951	1,392	0.5690	541.11	208.75	749.86	79.21	80.24	590.40 def
NexGen 1551RF	34.1	54.0	2,430	828	1,312	0.5663	469.02	196.77	665.79	72.91	60.47	532.41 ef
NexGen 2051B2RF	34.4	53.5	2,492	857	1,333	0.5237	448.58	200.00	648.58	74.75	75.08	498.76 f
Test average	37.0	51.2	2,858	1,060	1,462	0.5587	592.64	219.29	811.92	85.75	78.12	648.05
CV, %	3.3	2.5	8.6	8.6	8.6	3.1	8.7	8.6	8.7	8.6	--	9.7
OSL	0.0011	0.0013	0.0038	0.0001	0.0166	0.0321	<0.0001	0.0166	0.0002	0.0038	--	0.0003
LSD	2.1	2.1	416	155	212	0.0297	87.23	31.78	118.96	12.46	--	106.51

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.

Assumes:

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

\$3.00/cwt ginning cost.

LSD - least significant difference at the 0.05 level.

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

Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Table 2. HVI fiber property results from the Cotton Variety Trial, Davis Farm, Perryton, TX, 2011.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 ^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
FiberMax 9058F	4.0	38.0	81.5	29.8	6.1	2.7	82.8	7.1	2.7	1.0
Deltapine 1219B2RF	3.9	37.7	81.7	32.5	7.2	1.3	81.8	8.0	1.7	1.0
NexGen 4010B2RF	4.3	36.5	82.4	31.2	7.2	2.7	79.6	8.1	2.7	1.0
FiberMax 9180B2F	4.2	37.8	82.8	31.8	6.8	1.3	82.6	7.3	2.0	1.0
PhytoGen 367WRF	4.3	36.6	81.7	30.5	7.9	4.0	78.4	8.1	3.0	1.0
NexGen 2549B2RF	4.0	34.8	82.7	30.3	7.9	3.7	79.3	7.9	2.7	1.0
FiberMax 9103GT	3.9	37.9	81.0	30.9	6.6	3.3	80.8	7.7	2.3	1.0
Deltapine 0912B2RF	4.4	36.7	82.6	30.0	7.8	4.3	79.8	7.9	2.7	1.0
FiberMax 1740B2F	4.2	36.9	82.5	30.6	6.9	2.0	80.5	7.4	3.0	1.0
Deltapine 104B2RF	3.8	37.4	82.2	32.1	7.9	2.7	81.0	7.8	2.7	1.0
NexGen 1551RF	4.8	35.7	81.8	31.5	6.8	2.7	79.1	8.3	2.7	1.0
NexGen 2051B2RF	4.0	37.1	80.6	28.0	6.6	5.3	79.5	7.5	3.0	1.0
Test average	4.2	36.9	82.0	30.8	7.1	3.0	80.4	7.8	2.6	1.0
CV, %	5.4	1.4	0.9	2.3	4.8	33.0	1.4	5.1	--	--
OSL	0.0019	<0.0001	0.0251	<0.0001	<0.0001	0.0015	0.0012	0.0302	--	--
LSD	0.4	0.9	1.3	1.2	0.6	1.7	1.9	0.7	--	--

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



Replicated Seeding Rate Research Trial with Four Different Cotton Varieties

Cooperator: Chevront Farms

**Manda Anderson, Extension Agent – IPM
Mark Kelley, Extension Agronomist - Cotton**

Gaines County

Summary: There was no significant interaction between varieties and seeding rates for lint turnout, seed turnout, bur cotton yields, lint loan values, and ginning costs, which indicates that the response was consistent with all seeding rates. Lint turn out ranged from a high of 29.8% for FM 9170B2RF to a low of 28.7% for DP 1044B2RF. Lint loan values ranged from a low of \$0.4907/lb (ST 5458B2RF) to a high of \$0.5426/lb (FiberMax 9170B2F). There was a significant interaction between varieties and seeding rates for lint yield, seed yield, lint value, seed value, total value, seed and technology costs, and net value, which indicates that the response was not consistent with all seeding rates. FiberMax 9170B2RF at a seeding rate of 2 seed/ft had the highest lint yield (1052 lb/acre), seed yield (1625 lb/acre), lint value (\$569.31 per acre), seed value (\$243.70 per acre), total value (\$813.01 per acre), and net value (\$681.84 per acre). ST 5458B2RF had the lowest loan value (\$0.4907/lb), and this contributed to ST 5458B2RF at seeding rates of 2.5 and 3.5 seed/ft having the lowest lint values per acre. After adding lint and seed value, and subtracting ginning, seed and technology fee costs, the net value/acre ranged from a high of \$681.84 (FiberMax 9170B2F at a seeding rate of 2 seed/ft) to a low of \$466.43 (Phytogen 367WRF at a seeding rate of 3.5 seed/ft), a difference of \$215.41. There was no significant interaction between varieties and seeding rates for the HVI fiber quality parameters measured. Focusing solely on varieties, all of the HVI fiber quality parameters, except for leaf, were significantly different. Focusing solely on seeding rates, micronaire was the only HVI fiber quality parameter that was significantly different.

Objective: The objective of this project was to compare agronomic characteristics, yields, gin turnout, fiber quality, and economic returns of four transgenic cotton varieties in combination with four seeding rates under irrigated production in Gaines County.

Materials and Methods:

Varieties: Deltapine 1044B2RF, FiberMax 9170B2F, PhytoGen 367WRF, Stoneville 5458B2F

Experimental design: Randomized complete block with 3 replications

Seeding rates: 2 seeds/row-ft in 36-inch row spacing
2.5 seeds/row-ft in 36-inch row spacing
3 seeds/row-ft in 36-inch row spacing
3.5 seeds/row-ft in 36-inch row spacing

Plot size: 6 rows by variable length of the field (655ft to 2449ft long)

Planting date: 6-May

Irrigation: This location was under a LESA center pivot.

Harvest: Plots were harvested on 6 & 7-October using a commercial stripper harvester. Harvest 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 \$300/ton. Ginning costs did not include checkoff.

Seed and technology fees: Seed and technology costs were calculated using the appropriate seeding rate (2, 2.5, 3, or 3.5 seed/row-ft) for the 36 row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: <http://www.plainscotton.org/Seed/PCGseed10.xls>

Results and Discussion:

There was no significant interaction between varieties and seeding rates for lint turnout, seed turnout, bur cotton yields, lint loan values, and ginning costs, which indicates that the response was consistent with all seeding rates (Table 1). Lint turn out ranged from a high of 29.8% for FM 9170B2RF to a low of 28.7% for DP 1044B2RF. Seed turn out ranged from a high of 45.8 for DP 1044B2RF to a low of 44.3 for Phytogen 367WRF. Bur cotton yields averaged 2953 lb/acre with a high of 3084 lb/acre for DP 1044B2RF, and a low of 2856 lb/acre for FM 9170B2RF. Lint loan values ranged from a low of \$0.4907/lb (ST 5458B2RF) to a high of \$0.5426/lb (FiberMax 9170B2F).

There was a significant interaction between varieties and seeding rates for lint yield, seed yield, lint value, seed value, total value, seed and technology costs, and net value, which indicates that the response was not consistent with all seeding rates (Table 2). FiberMax 9170B2RF at a seeding rate of 2 seed/ft had the highest lint yield (1052 lb/acre), seed yield (1625 lb/acre), lint value (\$569.31 per acre), seed value (\$243.70 per acre), total value (\$813.01 per acre), and net value (\$681.84 per acre). FiberMax 9170B2RF at a seeding rate of 3 seed/ft had the lowest lint yield (800 lb/acre) and total value (\$622.29). FiberMax at a seeding rate of 3.5 seed/ft had the lowest seed yield (1236 lb/acre) and seed value (\$185.40). In *Table 1* ST 5458B2RF had the lowest loan value (\$0.4907/lb), and this contributed to ST 5458B2RF at seeding rates of 2.5 and 3.5 seed/ft having the lowest lint values per acre. After adding lint and seed value, and subtracting ginning, seed and technology fee costs, the net value/acre ranged from a high of \$681.84 (FiberMax 9170B2F at a seeding rate of 2 seed/ft) to a low of \$466.43 (Phytogen 367WRF at a seeding rate of 3.5 seed/ft), a difference of \$215.41.

There was no significant interaction between varieties and seeding rates for the HVI fiber quality parameters measured (Table 3 & 4). Focusing solely on varieties, there were several differences observed in HVI fiber quality parameters (Table 3). Micronaire values ranged from a low of 4.7 for FiberMax 9170B2RF to a high of 5.2 for Stoneville 5458B2F and Deltapine 1044B2RF. Staple averaged 33.6 across all varieties with a low of 33.0 for Stoneville 5458B2RF and a high of 34.1 for Deltapine 1044B2RF. Percent uniformity ranged from a high of 81.1% for Deltapine 1044B2RF to a low of 79.9% for Stoneville 5458B2RF. Strength values averaged 30.7 g/tex with a high of 32.0 g/tex for Deltapine 1044B2RF and a low of 29.9 g/tex for Phytogen 367WRF. Elongation ranged from a high of 10.3% for Deltapine 1044B2RF to a low of 7.9% for FiberMax 9170B2F. Values for reflectance (Rd) and yellowness (+b) averaged 78.4 and 9.9, respectively.

Focusing solely on seeding rates, micronaire was the only HVI fiber quality parameter that was significantly different (Table 4). 2 seed/ft had a micronaire of 4.9, which the other seeding rates had a micronaire of 5.0.

Conclusions:

These data indicate that substantial differences can be obtained in terms of net value/acre due to the combination of different varieties with various seeding rates. Several difference in HVI properties were observed when we solely looked at variety performance. Whereas, micronaire was the only HVI parameter that we observed as being different among seeding rates. During the 2011 growing season Gaines County experienced above normal temperatures and very little rainfall. The environmental conditions prior to and during the growing season were a limiting factor in the varieties performance overall. It should be noted that no inclement weather was encountered at this location prior to harvest and therefore, no pre-harvest losses were observed. Additional multi-site and multi-year applied research is needed to evaluate varieties and seeding rates across a series of environments.

Acknowledgements:

Appreciation is expressed to Chevront Farms for the use of his land, equipment and labor for this demonstration.

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Table 1. Harvest results that had a significant difference between varieties, Chevront Farms, Seminole, TX, 2011.

Variety	Lint turnout	Seed turnout	Bur cotton yield	Lint loan value	Ginning cost
	----- % -----		lb/acre	\$/lb	\$/acre
FM 9170B2RF	29.8	45.7	2856	0.5426	85.68
DP 1044B2RF	28.7	45.8	3084	0.5248	92.53
PHY 367WRF	29.7	44.3	2884	0.5202	86.51
ST 5458B2RF	29.4	45.6	2987	0.4907	89.60
Test average	29.4	45.3	2953	0.5196	88.58
OSL	0.0459	0.0364	0.0126	<0.0001	0.0126
LSD	0.9	1.2	146	0.0098	4.37

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

LSD - least significant difference at the 0.05 level.

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

Assumes:

\$3.00/cwt ginning cost.

Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Table 2. Harvest results with a significant interaction between varieties and seeding rate, Chevront Farms, Seminole, TX, 2011.

Variety	Seeding Rate	Lint yield	Seed yield	Lint value	Seed value	Total value	Seed/technology cost	Net value
		----- lb/acre -----		----- \$/acre -----				
FM 9170B2RF	2 seed/ft	1052	1625	569.31	243.70	813.01	41.30	681.84 a
DP 1044B2RF	2.5 seed/ft	910	1440	476.52	216.01	692.53	48.55	549.48 b
DP 1044B2RF	3.5 seed/ft	905	1450	479.23	217.50	696.73	67.97	534.63 bc
FM 9170B2RF	2.5 seed/ft	862	1345	460.29	201.69	661.98	51.63	523.76 bcd
ST 5458B2RF	2 seed/ft	897	1381	445.73	207.20	652.93	41.30	523.14 bcd
DP 1044B2RF	2 seed/ft	840	1346	445.20	201.89	647.10	38.84	518.03 bcd
DP 1044B2RF	3 seed/ft	881	1415	454.58	212.23	666.82	58.26	517.29 bcde
PHY 367WRF	2 seed/ft	848	1256	445.50	188.42	633.92	40.88	507.32 cdef
PHY 367WRF	3 seed/ft	883	1298	461.87	194.66	656.53	61.32	506.56 cdef
PHY 367WRF	2.5 seed/ft	850	1274	444.50	191.13	635.63	51.10	499.61 cdefg
ST 5458B2RF	3 seed/ft	900	1412	434.60	211.78	646.38	61.95	493.30 defg
FM 9170B2RF	3.5 seed/ft	841	1236	463.76	185.40	649.16	72.28	492.05 defg
ST 5458B2RF	2.5 seed/ft	866	1347	426.93	202.04	628.96	51.63	487.69 defg
FM 9170B2RF	3 seed/ft	800	1248	435.15	187.13	622.29	61.95	478.90 efg
ST 5458B2RF	3.5 seed/ft	876	1354	429.25	203.05	632.31	72.28	470.90 fg
PHY 367WRF	3.5 seed/ft	851	1275	433.40	191.33	624.74	71.55	466.43 g
Test average		879	1356	457	203	660	56	515.68
OSL		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001
LSD		60	93	31.14	13.98	45.10	--	38.46

For net value/acre, means within a column with the same letter are not significantly different at the 0.05 probability level.

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

LSD - least significant difference at the 0.05 level.

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

Table 3. HVI fiber property results by variety, Chevront Farms, Seminole, TX, 2011.

Variety	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b
	units	32 ^{nds} inch	%	g/tex	%	grade	reflectance	yellowness
FM 9170B2RF	4.7	33.9	80.0	30.4	7.9	1.8	80.1	9.1
DP 1044B2RF	5.2	34.1	81.1	32.0	10.3	1.5	79.1	9.9
PHY 367WRF	4.8	33.2	80.3	29.9	9.7	1.8	78.0	10.0
ST 5458B2RF	5.2	33.0	79.9	30.4	8.8	1.8	76.4	10.4
Test average	5.0	33.6	80.3	30.7	9.2	1.7	78.4	9.9
OSL	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.6874	<0.0001	<0.0001
LSD	0.9	3.8	0.5	0.7	0.2	NS	0.7	0.2

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

LSD - least significant difference at the 0.05 level.

Table 4. HVI fiber property results by seeding rate, Chevront Farms, Seminole, TX, 2011.

Seeding Rate	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b
	units	32 ^{nds} inch	%	g/tex	%	grade	reflectance	yellowness
2 seed/ft	4.9	33.7	80.5	30.9	9.1	1.8	78.6	9.9
2.5 seed/ft	5.0	33.5	80.2	30.6	9.3	1.6	78.4	9.9
3 seed/ft	5.0	33.5	80.6	30.8	9.2	1.9	78.5	9.9
3.5 seed/ft	5.0	33.5	80.2	30.4	9.1	1.7	78.3	9.9
Test average	5.0	33.6	80.3	30.7	9.2	1.7	78.4	9.9
OSL	0.0174	0.4736	0.2122	0.5190	0.3419	0.7511	0.7667	0.9822
LSD	0.1	NS	NS	NS	NS	NS	NS	NS

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

LSD - least significant difference at the 0.05 level.



**Replicated LESA Irrigated Cotton Variety Research Trial
Under Full and Limited (15% reduction) Irrigation**

Cooperator: Shelby Elam Farms

**Manda Anderson, Extension Agent – IPM
Dr. Dana Porter, Extension Ag Engineering Specialist
Dr. Mark Kelley, Extension Agronomist - Cotton**

Gaines County

Summary: There was no significant interaction between varieties and irrigation levels for the yield and economic parameters measured, which indicates that the response was consistent with all varieties and irrigations levels. Focusing solely on varieties, seed turnout and lint loan value were the only yield & economic parameters that were significantly different. When looking solely at irrigation level, all of the yield and economic parameters measured, except for lint turnout and lint loan value, were significantly different. Full irrigation had a seed turnout of 51.4%, whereas limited irrigation seed turnout was 53.2%. Full irrigated had a bur cotton yield of 1280 lb/acre & limited irrigation was 978 lb/acre. Full irrigation lint yield was 419 lb/acre, and the lint yield for the limited irrigation was 315 lb/acre. After adding lint and seed value, total value/acre was \$302.63 for the full irrigation and \$227.97 for the limited irrigation. When subtracting ginning, seed and technology fee costs, the net value/acre was \$201.97 (full irrigation) and \$136.37 (limited irrigation), a difference of \$65.60.

Focusing solely on variety, all of the HVI fiber quality parameters, except for staple and uniformity, were significantly different. Micronaire values ranged from a low of 3.6 for NexGen 4012B2RF to a high of 4.2 for Deltapine 1044B2RF. Focusing solely on irrigation level, micronaire, elongation, and (+b), were the only HVI fiber quality parameters that were significantly different.

During the 2011 growing season Gaines County experienced above normal temperatures and very little rainfall. The environmental conditions prior to and during the growing season were a limiting factor in the varieties performance overall.

Objective: The objective of this project was to compare agronomic characteristics, yields, gin turnout, fiber quality, and economic returns of transgenic cotton variety under full and limited (15% reduction) irrigated production in Gaines County.

Materials and Methods:

Varieties: All-Tex DineroB2RF, Deltapine 1044B2RF, FiberMax 2484B2F, NexGen 4012B2RF, PhytoGen 367WRF, Stoneville 5458B2F

Irrigation: This location was under a LESA center pivot.
There were two irrigations levels evaluated in the trial.

- Full irrigation
- Limited irrigation (approximately a 15% reduction).

Experimental design: Randomized complete block with 3 replications

Seeding rate: 3.5 seeds/row-ft in 40-inch row spacing

Plot size: 4 rows by variable length (402ft to 834ft long)

Planting date: 12-May

Harvest: Plots were harvested on 23-September using a commercial stripper harvester. Harvest 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 \$300/ton. Ginning costs did not include checkoff.

Seed and technology fees: Seed and technology costs were calculated using the appropriate seeding rate (3.5 seed/row-ft) for the 40 row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: <http://www.plainscotton.org/Seed/PCGseed10.xls>

Results and Discussion:

There was no significant interaction between varieties and irrigation levels for the yield and economic parameters measured, which indicates that the response was consistent with all varieties and irrigations levels (Table 1 & 2).

Focusing solely on varieties, seed turnout and lint loan value were the only yield & economic parameters that were significantly different (Table 1). Seed turnout ranged from a high of 53.6 for All-Tex DineroB2RF to a low of 50.2 for Phytogen 367WRF. Lint loan value ranged from a low of \$0.4738/lb (NexGen 4012B2RF) to a high of \$0.5017/lb for FiberMax 2484B2F.

Focusing solely on irrigation level, all of the yield and economic parameters measured, except for lint turnout and lint loan value, were significantly different (Tables 2). Full irrigation had a seed turnout of 51.4%, whereas limited irrigation seed turnout was 53.2%. Full irrigated had a bur cotton yield of 1280 lb/acre & limited irrigation was 978 lb/acre. Full irrigation lint yield was 419 lb/acre, and the lint yield for the limited irrigation was 315 lb/acre. Seed yield was 651 lb/acre for full irrigation and 513 lb/acre for limited irrigation. After adding lint and seed value, total value/acre was \$302.63 for the full irrigation and \$227.97 for the limited irrigation. When subtracting ginning, seed and technology fee costs, the net value/acre was \$201.97 (full irrigation) and \$136.37 (limited irrigation), a difference of \$65.60.

Focusing solely on variety, all of the HVI fiber quality parameters, except for staple and uniformity, were significantly different (Table 3). Micronaire values ranged from a low of 3.6 for NexGen 4012B2RF to a high of 4.2 for Deltapine 1044B2F. Strength values averaged 25.9 g/tex with a high of 28.0 g/tex for Deltapine 1044B2F and a low of 24.4 g/tex for All-Tex DineroB2RF. Elongation ranged from a high of 9.1% for Deltapine 1044B2RF to a low of 6.5% for NexGen 4012B2RF. Values for reflectance (Rd) and yellowness (+b) averaged 77.6 and 10.5, respectively.

Focusing solely on irrigation level, micronaire, elongation, and (+b), were the only HVI fiber quality parameters that were significantly different (Table 4). The full irrigation micronaire was 4.1, whereas the limited irrigation micronaire was 3.8. Full irrigation had an elongation of 8.0% and limited irrigation had an elongation of 7.5%.

Conclusions:

These data indicate that substantial differences can be obtained in terms of net value/acre due to irrigation level, but not due to variety selection. During the 2011 growing season Gaines County experienced above normal temperatures and very little rainfall. The environmental conditions prior to and during the

growing season were a limiting factor in the varieties performance overall. Additional multi-site and multi-year applied research is needed to evaluate varieties and irrigation levels across a series of environments.

Acknowledgements:

Appreciation is expressed to Shelby Elam for the use of his land, equipment and labor for this demonstration.

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. Harvest results by variety, Shelby Elam Farms, Seminole, TX, 2011.

Variety	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		
FiberMax 2484B2F	33.0	50.6	1086	360	549	0.5017	180.45	82.30	262.75	32.57	65.05	165.12
Stoneville 5458B2RF	32.1	52.7	1139	358	588	0.4788	171.71	88.16	259.87	34.17	65.05	160.65
Deltapine 1044B2RF	33.3	53.2	1173	391	622	0.4922	192.50	93.34	285.84	35.19	61.17	189.48
PhytoGen 367WRF	33.2	50.2	1183	393	594	0.4793	189.08	89.04	278.11	35.50	64.39	178.23
NexGen 4012B2RF	32.0	53.4	1045	336	558	0.4738	159.91	83.62	243.53	31.34	57.23	154.95
All-Tex Dinero B2RF	33.2	53.6	1146	363	582	0.4809	174.34	87.34	261.68	34.38	60.69	166.61
Test average	32.8	52.3	1129	367	582	0.4845	178.00	87.30	265.30	33.86	62.26	169.17
OSL	0.2606	0.0233	0.9640	0.9201	0.9746	0.0506	0.8634	0.9747	0.9339	0.9638	--	0.9429
LSD	NS	2.4	NS	NS	NS	0.0187	NS	NS	NS	NS	--	NS

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

LSD - least significant difference at the 0.05 level.

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

Assumes:

\$3.00/cwt ginning cost.

\$300/ton for seed.

Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Table 2. Harvest results by irrigation level, Shelby Elam Farms, Seminole, TX, 2011.

Irrigation Level	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		
Full	33.0	51.4	1280	419	651	0.4895	204.94	97.69	302.63	38.39	62.26	201.97 a
Limited (15% reduction)	32.6	53.2	978	315	513	0.4794	151.06	76.91	227.97	29.33	62.26	136.37 b
Test average	32.8	52.3	1129	367	582	0.4845	178.00	87.30	265.30	33.86	62.26	169.17
OSL	0.3943	0.0130	0.0065	0.0053	0.0177	0.0666	0.0029	0.0178	0.0054	0.0064	--	0.0053
LSD	NS	1.4	208	69	112	NS	33.37	16.83	50.17	6.24	--	43.96

For net value/acre, means within a column with the same letter are not significantly different at the 0.05 probability level.

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

LSD - least significant difference at the 0.05 level.

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

Assumes:

\$3.00/cwt ginning cost.

\$300/ton for seed.

Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Table 3. HVI fiber property results by variety, Shelby Elam Farms, Seminole, TX, 2011.

Variety	Micronaire	Staple	Uniformity	Strength	Elongation	Rd	+b
	units	32 ^{nds} inch	%	g/tex	%	reflectance	yellowness
FiberMax 2484B2F	3.9	32.0	78.5	26.4	7.0	80.3	9.9
Stoneville 5458B2RF	4.1	30.9	78.0	25.5	7.7	74.8	11.0
Deltapine 1044B2RF	4.2	31.1	78.4	28.0	9.1	77.8	10.6
PhytoGen 367WRF	3.8	31.3	78.5	26.2	8.5	76.0	11.1
NexGen 4012B2RF	3.6	30.9	78.0	24.8	6.5	77.9	10.3
All-Tex Dinero B2RF	4.0	31.4	77.8	24.4	7.6	78.7	10.3
Test average	3.9	31.3	78.2	25.9	7.7	77.6	10.5
OSL	<0.0001	0.1010	0.3981	0.0003	<0.0001	<0.0001	<0.0001
LSD	0.1	NS	NS	1.4	0.5	0.6	0.2

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

LSD - least significant difference at the 0.05 level.

Table 4. HVI fiber property results by irrigation level, Shelby Elam Farms, Seminole, TX, 2011.

Irrigation Level	Micronaire	Staple	Uniformity	Strength	Elongation	Rd	+b
	units	32 ^{nds} inch	%	g/tex	%	reflectance	yellowness
Full	4.1	31.5	78.4	26.2	8.0	77.5	10.4
Limited (15% reduction)	3.8	31.1	78.0	25.6	7.5	77.6	10.6
Test average	3.9	31.3	78.2	25.9	7.7	77.6	10.5
OSL	<0.0001	0.0824	0.0763	0.1501	0.0013	0.5829	0.0187
LSD	0.1	NS	NS	NS	0.3	NS	0.1

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

LSD - least significant difference at the 0.05 level.



Replicated LESA Irrigated Cotton Variety Research Trial

Cooperator: Froese Farms

**Manda Anderson, Extension Agent - IPM
Dr. Mark Kelley, Extension Agronomist - Cotton**

Gaines County

Summary: Significant differences were observed for all yield, economic, and HVI fiber quality parameters measured. Lint turnout ranged from a low of 26.1% and a high of 31.8% for NexGen 4010B2RF and FiberMax 9170B2F, respectively. Lint yield varied with a low of 337 lb/acre (NexGen 4010B2RF) and a high of 456 (PhytoGen 499WRF). Lint loan values ranged from a low of \$0.4875/lb (Deltapine 174RF) to a high of \$0.5268/lb (NexGen 4010B2RF). Net value/acre among varieties ranged from a high of \$232.22 (PhytoGen 499WRF) to a low of \$165.93 (FiberMax 2989GLB2), a difference of \$66.29. Micronaire values ranged from a low of 4.3 for NexGen 4012B2RF to a high of 4.9 for Deltapine 1044B2RF and FiberMax 2989GLB2. Staple averaged 32.4 across all varieties with a low of 31.6 for All-Tex EdgeB2RF and a high of 33.3 for NexGen 4010B2RF and FiberMax 2484B2F. Percent uniformity ranged from a high of 81.2% for NexGen 4010B2RF to a low of 78.0% for All-Tex EdgeB2RF. Strength values averaged 28.6 g/tex with a high of 31.3 g/tex for PhytoGen 499WRF and a low of 26.6 g/tex for All-Tex DineroB2RF. These data indicate that differences can be obtained in terms of net value/acre due to variety and technology selection. However, the environmental conditions prior to and during the growing season were a major limiting factor in the varieties performance overall.

Objective: The objective of this project was to compare agronomic characteristics, yields, gin turnout, fiber quality, and economic returns of transgenic cotton variety under irrigated production in Gaines County.

Materials and Methods:

Varieties: All-Tex EdgeB2RF, All-Tex DineroB2RF, Deltapine 1044B2RF, Deltapine 174RF, FiberMax 2484B2F, FiberMax 2989GLB2, FiberMax 9170B2F, NexGen 4010B2RF, NexGen 4012B2RF, PhytoGen 367WRF, PhytoGen 499WRF, Stoneville 4288B2F

Experimental design: Randomized complete block with 3 replications

Seeding rate: 2.5 seeds/row-ft in 36-inch row spacing

Plot size: 8 rows by variable length of field (455ft to 2426ft long)

Planting date: 13-May

Irrigation: This location was under a LESA center pivot.

Harvest: Plots were harvested on 10-October using a commercial picker harvester. Harvest 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 turnovers.

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 \$300/ton. Ginning costs did not include checkoff.

Seed and technology fees: Seed and technology costs were calculated using the appropriate seeding rate (2.5 seed/row-ft) for the 36 row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: <http://www.plainscotton.org/Seed/PCGseed10.xls>

Results and Discussion:

Significant differences were observed for all yield, economic, and HVI fiber quality parameters measured (Tables 1 and 2). Lint turnout ranged from a low of 26.1% and a high of 31.8% for NexGen 4010B2RF and FiberMax 9170B2F, respectively. Seed turnout ranged from a high of 50.2% for All-Tex EdgeB2F to a

low of 42.4% for PhytoGen 499WRF. Bur cotton yields averaged 1263 lb/acre with a high of 1527 lb/acre for Deltapine 1044B2RF, and a low of 1119 lb/acre for FiberMax 2989GLB2. Lint yield varied with a low of 337 lb/acre (NexGen 4010B2RF) and a high of 456 (PhytoGen 499WRF). Lint loan values ranged from a low of \$0.4875/lb (Deltapine 174RF) to a high of \$0.5268/lb (NexGen 4010B2RF). After adding lint and seed value, total value/acre for varieties ranged from a low of \$251.48 for FiberMax 2989GLB2 to a high of \$326.70 for PhytoGen 499WRF. When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of \$232.22 (PhytoGen 499WRF) to a low of \$165.93 (FiberMax 2989GLB2), a difference of \$66.29.

Micronaire values ranged from a low of 4.3 for NexGen 4012B2RF to a high of 4.9 for Deltapine 1044B2RF and FiberMax 2989GLB2. Staple averaged 32.4 across all varieties with a low of 31.6 for All-Tex EdgeB2RF and a high of 33.3 for NexGen 4010B2RF and FiberMax 2484B2F. Percent uniformity ranged from a high of 81.2% for NexGen 4010B2RF to a low of 78.0% for All-Tex EdgeB2RF. Strength values averaged 28.6 g/tex with a high of 31.3 g/tex for PhytoGen 499WRF and a low of 26.6 g/tex for All-Tex DineroB2RF. Elongation ranged from a high of 10.5% for Deltapine 1044B2RF to a low of 7.1% for FiberMax 2989GLB2. Leaf grades ranged from 1 to 3, with a test average of 2.2. Values for reflectance (Rd) and yellowness (+b) averaged 77.6 and 10.1, respectively.

Conclusions:

These data indicate that differences can be obtained in terms of net value/acre due to variety and technology selection. During the 2011 growing season Gaines County experienced above normal temperatures and very little rainfall. The environmental conditions prior to and during the growing season were a limiting factor in the varieties performance overall. It should be noted that no inclement weather was encountered at this location prior to harvest and therefore, no pre-harvest losses were observed. Additional multi-site and multi-year applied research is needed to evaluate varieties and technology across a series of environments.

Acknowledgements:

Appreciation is expressed to Froese Farms for the use of his land, equipment and labor for this demonstration.

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results from one experiment do not represent conclusive evidence that the same response would occur where conditions vary.

Table 1. Harvest results from the Cotton Variety Trial Under Center Pivot Irrigation, Froese Farms, Seminole, TX, 2011.

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 -----			
PhytoGen 499WRF	30.2	42.4	1507	456	639	0.5063	230.79	95.91	326.70	45.21	49.27	232.22 a
Deltapine 1044B2RF	28.3	44.0	1527	432	672	0.5005	216.44	100.76	317.19	45.82	46.81	224.56 a
PhytoGen 367WRF	29.6	44.1	1413	419	623	0.4943	207.04	93.52	300.56	42.38	49.27	208.90 ab
NexGen 4012B2RF	30.1	49.7	1212	365	602	0.5032	183.76	90.27	274.02	36.35	43.80	193.87 bc
Deltapine 174RF	30.6	43.1	1266	388	546	0.4875	188.95	81.96	270.91	37.99	41.03	191.89 bc
FiberMax 9170B2F	31.8	49.5	1151	366	570	0.5135	188.02	85.46	273.48	34.52	49.78	189.18 bcd
FiberMax 2484B2F	31.4	48.1	1126	354	542	0.5252	185.99	81.27	267.26	33.79	49.78	183.69 bcd
NexGen 4010B2RF	26.1	45.5	1292	337	588	0.5268	177.55	88.19	265.74	38.77	43.80	183.17 cd
All-Tex Edge B2RF	29.4	50.2	1196	352	600	0.4892	172.00	90.04	262.04	35.88	46.44	179.72 cd
All-Tex Dinero B2RF	31.2	49.5	1128	352	558	0.4982	175.48	83.76	259.24	33.84	46.44	178.96 cd
Stoneville 4288B2F	28.2	47.3	1216	343	575	0.4963	170.05	86.21	256.26	36.48	49.78	170.01 cd
FiberMax 2989GLB2	30.5	48.6	1119	341	545	0.4975	169.81	81.68	251.48	33.58	51.98	165.93 d
Test average	29.8	46.8	1263	375	588	0.5032	188.82	88.25	277.07	37.88	47.35	191.84
CV, %	3.1	2.1	6.3	6.4	6.3	2.4	6.4	6.3	6.3	6.3	--	7.9
OSL	<0.0001	<0.0001	<0.0001	<0.0001	0.0045	0.0061	<0.0001	0.0046	0.0002	<0.0001	--	0.0004
LSD	1.6	1.7	134	41	63	0.0200	20.36	9.39	29.71	4.02	--	25.69

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.

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

Assumes:

\$3.00/cwt ginning cost.

\$300/ton for seed.

Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Table 2. HVI fiber property results from the Cotton Variety Trial Under Center Pivot Irrigation, Froese Farms, Seminole, TX, 2010.

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 Dinero B2RF	4.4	32.0	79.3	26.6	8.6	1.3	78.6	9.9	1.3	1.3
All-Tex Edge B2RF	4.5	31.6	78.0	26.9	8.2	3.7	77.8	9.2	2.3	1.0
Deltapine 1044B2RF	4.9	32.4	79.3	30.7	10.5	2.7	77.6	10.3	1.3	2.0
Deltapine 174RF	4.8	31.7	78.2	27.0	8.7	2.3	76.0	10.5	2.0	2.0
FiberMax 2484B2F	4.5	33.3	79.4	28.7	7.9	1.7	79.8	9.4	1.0	1.0
FiberMax 2989GLB2	4.9	32.9	79.4	28.5	7.1	1.7	77.7	10.0	1.7	1.7
FiberMax 9170B2F	4.5	32.6	79.4	28.0	8.2	1.3	80.4	9.4	1.0	1.0
NexGen 4010B2RF	4.4	33.3	81.2	31.2	9.0	2.3	76.6	10.5	2.0	2.0
NexGen 4012B2RF	4.3	32.6	79.7	27.8	7.6	2.3	77.1	10.1	1.7	2.0
PhytoGen 367WRF	4.4	31.9	78.4	28.5	9.9	1.7	76.3	10.9	1.3	2.0
PhytoGen 499WRF	4.6	32.3	80.5	31.3	10.4	3.0	77.0	10.3	1.7	2.0
Stoneville 4288B2F	4.6	32.1	79.6	27.7	8.8	2.3	76.6	10.4	2.0	2.0
Test average	4.6	32.4	79.4	28.6	8.7	2.2	77.6	10.1	1.6	1.7
CV, %	1.5	1.7	1.0	3.4	2.4	38.6	0.9	1.5	--	--
OSL	<0.0001	0.0113	0.0019	<0.0001	<0.0001	0.0709†	<0.0001	<0.0001	--	--
LSD	0.1	1.0	1.3	1.6	0.4	1.2	1.2	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, † indicates significance at the 0.10 level.



Replicated Seeding Rate Research Trial

Cooperator: Weldon Shook Farms

**Manda Anderson, Extension Agent – IPM
Mark Kelley, Extension Agronomist - Cotton**

Gaines County

Summary: Significant differences were observed for a few of the yield and economic parameters. There were no differences in the HVI fiber quality parameters measured. After adding lint value and seed value, there was no difference in total value/acre for the different seeding rates. When subtracting ginning, seed and technology fee costs, the net value/acre among seeding rates ranged from a high of \$434.86 (2 seed/ft) to a low of \$407.61 (3.5 seed/ft), a difference of \$27.20. Seed and technology cost ranged from a high of \$64.39 (3.5 seed/ft) to a low of \$36.79 (2 seed/ft), a difference of \$27.60. Seed and technology fee costs greatly influenced which seeding rates had the highest net values in the end. These data indicate that very little differences can be obtained in terms of total value per acre. However, differences in seed and technology fees gave way to differences in net value per acre. During the 2011 growing season Gaines County experienced above normal temperatures and very little rainfall. The environmental conditions prior to and during the growing season were a limiting factor in the seeding rates performance overall.

Objective: The objective of this project was to compare agronomic characteristics, yields, gin turnout, fiber quality, and economic returns of four seeding rates under irrigated production in Gaines County.

Materials and Methods:

Variety: PhytoGen 367WRF

Experimental design: Randomized complete block with 3 replications

Seeding rates:	2 seeds/row-ft in 40-inch row spacing 2.5 seeds/row-ft in 40-inch row spacing 3 seeds/row-ft in 40-inch row spacing 3.5 seeds/row-ft in 40-inch row spacing
Plot size:	8 rows by variable length of the field (1627ft to 2091ft long)
Planting date:	10-May
Irrigation:	This location was under a LESA center pivot.
Harvest:	Plots were harvested on 14-November using a commercial stripper harvester. Harvest 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 \$300/ton. Ginning costs did not include check-off.
Seed and technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (2, 2.5, 3, or 3.5 seed/row-ft) for the 40 row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://www.plainscotton.org/Seed/PCGseed11.xls

Results and Discussion:

Significant differences were observed for a few of the yield and economic parameters (Tables 1). Seed yield ranged from a low of 1072 lb/acre (2 seed/ft) to a high of 1141 (3 seed/ft). Seed yield was indicative of seed values, with 2 seed/ft having the lowest seed value (\$160.80) and 3 seed/ft having the highest seed value (\$171.14). After adding lint value and seed value, there was no difference in total value per acre for the different seeding rates. When

subtracting ginning, seed and technology fee costs, the net value per acre among seeding rates ranged from a high of \$434.86 (2 seed/ft) to a low of \$407.61 (3.5 seed/ft), a difference of \$27.20. Seed and technology cost ranged from a high of \$64.39 (3.5 seed/ft) to a low of \$36.79 (2 seed/ft), a difference of \$27.60. Seed and technology fee costs greatly influenced which seeding rates had the highest net values in the end. There were no differences in the HVI fiber quality parameters measured (Tables 2).

Conclusions:

These data indicate that very little differences can be obtained in terms of total value per acre. However, differences in seed and technology fees gave way to differences in net value per acre. During the 2011 growing season Gaines County experienced above normal temperatures and very little rainfall. The environmental conditions prior to and during the growing season were a limiting factor in the seeding rates performance overall. It should be noted that no inclement weather was encountered at this location prior to harvest and therefore, no pre-harvest losses were observed. Additional multi-site and multi-year applied research is needed to evaluate seeding rates across a series of environments.

Acknowledgements:

Appreciation is expressed to Weldon Shook for the use of his land, equipment and labor for this demonstration.

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. Harvest results from the Cotton Seeding Rate Trial, Weldon Shook Farm, Seminole, TX, 2011.

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 -----			
PhytoGen 367WRF (2 seed/ft)	30.7	44.8	2393	734	1072	0.5212	382.65	160.80	543.45	71.80	36.79	434.86 a
PhytoGen 367WRF (2.5 seed/ft)	30.3	45.8	2406	729	1102	0.5288	385.64	165.36	551.00	72.19	45.99	432.81 a
PhytoGen 367WRF (3 seed/ft)	30.5	46.2	2469	752	1141	0.5088	382.77	171.14	553.91	74.08	55.19	424.64 a
PhytoGen 367WRF (3.5 seed/ft)	30.7	45.5	2447	752	1114	0.5030	378.37	167.04	545.41	73.41	64.39	407.61 b
Test average	30.5	45.6	2429	742	1107	0.5155	382.36	166.09	548.44	72.87	50.59	424.98
CV, %	3.0	2.4	1.7	1.7	1.7	3.1	1.7	1.7	1.7	1.7	--	1.9
OSL	0.9172	0.5047	0.1880	0.1383	0.0210	0.2922	0.6225	0.0220	0.5339	0.1890	--	0.0218
LSD	NS	NS	NS	NS	37	NS	NS	5.60	NS	NS	--	16.19

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.

\$300/ton for seed.

Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Table 2. HVI fiber property results from the Cotton Seeding Rate Trial, Weldon Shook Farm, Seminole, TX, 2010.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 ^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
PhytoGen 367WRF (2 seed/ft)	4.2	33.0	79.5	28.8	9.4	1.3	78.3	9.2	2.0	1.0
PhytoGen 367WRF (2.5 seed/ft)	4.3	33.2	79.6	29.6	9.2	1.3	79.0	9.0	2.0	1.0
PhytoGen 367WRF (3 seed/ft)	4.2	32.6	78.3	28.8	9.3	1.0	78.3	9.2	2.0	1.0
PhytoGen 367WRF (3.5 seed/ft)	4.1	32.3	78.0	27.9	9.4	1.3	79.1	9.5	2.0	1.0
Test average	4.2	32.8	78.8	28.8	9.3	1.3	78.7	9.2	2.0	1.0
CV, %	2.8	1.4	1.4	3.0	1.4	40.0	1.3	2.5	--	--
OSL	0.4321	0.2161	0.2584	0.2145	0.5830	0.8022	0.7326	0.2471	--	--
LSD	NS	NS	NS	NS	NS	NS	NS	NS	--	--

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

Common Variety Comparisons Across Irrigated Locations

Table 1. Lint Yield Summary Across Irrigated Locations - 2011.

Entry	RACE Trials					Systems Trials	
	Dawson County	Hale County	Hockley County	Lubbock County	Lynn County	Blanco	Farwell
	----- lb/acre -----						
All-Tex Dinero B2RF	243	--	--	743	548	438	--
All-Tex Edge B2RF	--	654	598	--	--	--	904
All-Tex Rapid B2RF	--	--	--	--	--	--	713
Croplan Genetics 3006B2RF	--	--	--	--	--	--	640
Croplan Genetics 3156B2RF	--	637	--	--	--	--	--
Croplan Genetics 3787B2RF	331	--	621	736	579	--	--
Deltapine 0912B2RF	--	646	--	--	--	--	--
Deltapine 1032B2RF	308	--	564	766	613	400	879
Deltapine 1044B2RF	--	--	--	--	--	473	--
Deltapine 10R011B2RF	--	--	--	--	--	448	921
Dyna-Gro 2450B2RF	--	--	--	--	--	--	869
Dyna-Gro 2570B2RF	378	693	738	--	--	--	--
Dyna-Gro 2595B2RF	--	--	--	830	609	--	--
FiberMax 1740B2F	--	--	--	--	542	--	930
FiberMax 2011GT	--	--	--	--	--	481	1040
FiberMax 2484B2F	275	554	--	809	--	399	996
FiberMax 9103GT	--	--	--	--	--	455	--
FiberMax 9170B2F	--	--	674	--	--	446	--
FiberMax 9180B2F	--	--	--	--	--	458	--
FiberMax 9250GL	--	--	--	--	--	--	938
NexGen 2051B2RF	--	--	--	--	--	--	838
NexGen 4010B2RF	--	--	--	671	486	430	--
NexGen 4012B2RF	226	--	595	--	--	427	--
NexGen 4111B2RF	--	591	--	--	--	434	915
PhytoGen 367WRF	373	631	--	--	628	441	875
PhytoGen 499WRF	--	--	736	838	--	--	--
Stoneville 4288B2F	--	541	--	--	--	444	876
Stoneville 5458B2RF	401	--	727	815	648	--	--
Test average	317	618	657	776	582	441	881
CV, %	22.4	7.7	4.4	5.6	7.8	7.8	5.2
OSL	0.0662 [†]	0.0207	<0.0001	0.0042	0.0108	<0.0001	<0.0001
LSD	102	83	50	76	80	65	76

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.

Table 2. Micronaire Summary Across Irrigated Locations - 2011.

Entry	RACE Trials					Systems Trials	
	Dawson County	Hale County	Hockley County	Lubbock County	Lynn County	Blanco	Farwell
----- micronaire units -----							
All-Tex Dinero B2RF	4.1	--	--	4.5	4.8	4.4	--
All-Tex Edge B2RF	--	4.0	4.9	--	--	--	4.6
All-Tex Rapid B2RF	--	--	--	--	--	--	4.5
Croplan Genetics 3006B2RF	--	--	--	--	--	--	4.7
Croplan Genetics 3156B2RF	--	3.6	--	--	--	--	--
Croplan Genetics 3787B2RF	3.5	--	4.6	4.4	4.7	--	--
Deltapine 0912B2RF	--	4.1	--	--	--	--	--
Deltapine 1032B2RF	4.2	--	4.4	4.6	4.6	4.4	4.2
Deltapine 1044B2RF	--	--	--	--	--	4.6	--
Deltapine 10R011B2RF	--	--	--	--	--	4.4	3.9
Dyna-Gro 2450B2RF	--	--	--	--	--	--	4.3
Dyna-Gro 2570B2RF	4.5	3.9	4.8	--	--	--	--
Dyna-Gro 2595B2RF	--	--	--	4.6	4.9	--	--
FiberMax 1740B2F	--	--	--	--	5.0	--	4.1
FiberMax 2011GT	--	--	--	--	--	4.2	4.1
FiberMax 2484B2F	4.4	3.4	--	3.9	--	4.4	4.1
FiberMax 9103GT	--	--	--	--	--	3.9	--
FiberMax 9170B2F	--	--	4.5	--	--	4.1	--
FiberMax 9180B2F	--	--	--	--	--	4.2	--
FiberMax 9250GL	--	--	--	--	--	--	4.4
NexGen 2051B2RF	--	--	--	--	--	--	4.4
NexGen 4010B2RF	--	--	--	4.6	4.8	4.3	--
NexGen 4012B2RF	4.3	--	4.6	--	--	4.2	--
NexGen 4111B2RF	--	4.1	--	--	--	4.4	4.1
PhytoGen 367WRF	4.4	3.6	--	--	4.7	4.3	4.2
PhytoGen 499WRF	--	--	4.8	4.6	--	--	--
Stoneville 4288B2F	--	4.0	--	--	--	4.5	4.5
Stoneville 5458B2RF	4.3	--	5.0	4.7	5.1	--	--
Test average	4.2	3.9	4.7	4.5	4.8	--	4.3
CV, %	5.0	2.0	3.8	2.2	3.2	--	6.5
OSL	0.0020	<0.0001	0.0097	<0.0001	0.0109	--	0.0485
LSD	0.4	0.1	0.3	0.2	0.3	--	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.

Table 3. Staple Summary Across Irrigated Locations - 2011.

Entry	RACE Trials					Systems Trials	
	Dawson County	Hale County	Hockley County	Lubbock County	Lynn County	Blanco	Farwell
----- 32nds Inch -----							
All-Tex Dinero B2RF	31.8	--	--	33.8	33.6	33.4	--
All-Tex Edge B2RF	--	33.1	34.6	--	--	--	34.8
All-Tex Rapid B2RF	--	--	--	--	--	--	33.7
Croplan Genetics 3006B2RF	--	--	--	--	--	--	34.7
Croplan Genetics 3156B2RF	--	32.5	--	--	--	--	--
Croplan Genetics 3787B2RF	32.1	--	35.9	35.3	34.1	--	--
Deltapine 0912B2RF	--	32.1	--	--	--	--	--
Deltapine 1032B2RF	32.2	--	35.3	34.2	34.6	31.9	34.3
Deltapine 1044B2RF	--	--	--	--	--	32.1	--
Deltapine 10R011B2RF	--	--	--	--	--	32.9	34.8
Dyna-Gro 2450B2RF	--	--	--	--	--	--	34.0
Dyna-Gro 2570B2RF	32.4	32.7	34.7	--	--	--	--
Dyna-Gro 2595B2RF	--	--	--	34.5	33.6	--	--
FiberMax 1740B2F	--	--	--	--	33.2	--	34.0
FiberMax 2011GT	--	--	--	--	--	32.7	34.8
FiberMax 2484B2F	31.8	34.3	--	35.8	--	32.8	35.4
FiberMax 9103GT	--	--	--	--	--	32.7	--
FiberMax 9170B2F	--	--	35.8	--	--	33.1	--
FiberMax 9180B2F	--	--	--	--	--	33.8	--
FiberMax 9250GL	--	--	--	--	--	--	34.9
NexGen 2051B2RF	--	--	--	--	--	--	33.8
NexGen 4010B2RF	--	--	--	35.2	34.1	33.0	--
NexGen 4012B2RF	33.1	--	34.7	--	--	32.3	--
NexGen 4111B2RF	--	33.8	--	--	--	32.4	34.9
PhytoGen 367WRF	31.6	32.7	--	--	34.2	32.4	34.0
PhytoGen 499WRF	--	--	34.3	34.2	--	--	--
Stoneville 4288B2F	--	32.9	--	--	--	32.1	34.2
Stoneville 5458B2RF	31.9	--	34.8	34.5	33.6	--	--
Test average	32.1	33.0	35.0	34.7	33.9	--	34.5
CV, %	1.5	0.9	1.5	2.2	1.3	--	1.8
OSL	0.0398	<0.0001	0.0122	0.0743 [†]	0.0326	--	0.0594 [†]
LSD	0.8	0.5	0.9	1.1	0.8	--	0.9

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.

Table 4. Uniformity Summary Across Irrigated Locations - 2011.

Entry	RACE Trials					Systems Trials	
	Dawson County	Hale County	Hockley County	Lubbock County	Lynn County	Blanco	Farwell
	----- % -----						
All-Tex Dinero B2RF	78.4	--	--	79.6	79.2	79.7	--
All-Tex Edge B2RF	--	78.4	80.0	--	--	--	82.2
All-Tex Rapid B2RF	--	--	--	--	--	--	79.8
Croplan Genetics 3006B2RF	--	--	--	--	--	--	81.6
Croplan Genetics 3156B2RF	--	78.7	--	--	--	--	--
Croplan Genetics 3787B2RF	79.0	--	81.9	81.5	81.3	--	--
Deltapine 0912B2RF	--	79.1	--	--	--	--	--
Deltapine 1032B2RF	78.5	--	80.7	79.4	79.7	78.1	80.8
Deltapine 1044B2RF	--	--	--	--	--	79.3	--
Deltapine 10R011B2RF	--	--	--	--	--	79.2	80.5
Dyna-Gro 2450B2RF	--	--	--	--	--	--	80.7
Dyna-Gro 2570B2RF	79.8	79.2	81.1	--	--	--	--
Dyna-Gro 2595B2RF	--	--	--	80.8	80.1	--	--
FiberMax 1740B2F	--	--	--	--	79.4	--	79.3
FiberMax 2011GT	--	--	--	--	--	79.8	80.4
FiberMax 2484B2F	79.3	79.3	--	80.2	--	79.1	80.6
FiberMax 9103GT	--	--	--	--	--	78.4	--
FiberMax 9170B2F	--	--	80.2	--	--	78.5	--
FiberMax 9180B2F	--	--	--	--	--	80.1	--
FiberMax 9250GL	--	--	--	--	--	--	80.0
NexGen 2051B2RF	--	--	--	--	--	--	79.1
NexGen 4010B2RF	--	--	--	81.2	80.7	79.8	--
NexGen 4012B2RF	78.9	--	80.9	--	--	79.2	--
NexGen 4111B2RF	--	81.0	--	--	--	80.4	81.8
PhytoGen 367WRF	78.7	78.9	--	--	80.7	79.4	80.6
PhytoGen 499WRF	--	--	80.7	81.7	--	--	--
Stoneville 4288B2F	--	78.3	--	--	--	79.1	80.1
Stoneville 5458B2RF	79.1	--	80.4	80.1	80.1	--	--
Test average	79.0	79.1	80.7	80.6	80.2	--	80.5
CV, %	0.6	0.4	0.7	1.0	1.0	--	0.6
OSL	0.0512 [†]	<0.0001	0.0140	0.0176	0.0937 [†]	--	<0.0001
LSD	0.7	0.5	0.9	1.4	1.2	--	0.8

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.

Table 5. Strength Summary Across Irrigated Locations - 2011.

Entry	RACE Trials					Systems Trials	
	Dawson County	Hale County	Hockley County	Lubbock County	Lynn County	Blanco	Farwell
	----- g/tex -----						
All-Tex Dinero B2RF	26.3	--	--	28.0	28.9	26.7	--
All-Tex Edge B2RF	--	28.0	31.4	--	--	--	32.2
All-Tex Rapid B2RF	--	--	--	--	--	--	28.9
Croplan Genetics 3006B2RF	--	--	--	--	--	--	28.5
Croplan Genetics 3156B2RF	--	26.5	--	--	--	--	--
Croplan Genetics 3787B2RF	27.1	--	30.2	29.3	29.0	--	--
Deltapine 0912B2RF	--	27.6	--	--	--	--	--
Deltapine 1032B2RF	25.9	--	30.9	28.8	30.0	26.3	29.5
Deltapine 1044B2RF	--	--	--	--	--	28.3	--
Deltapine 10R011B2RF	--	--	--	--	--	27.7	30.6
Dyna-Gro 2450B2RF	--	--	--	--	--	--	27.5
Dyna-Gro 2570B2RF	27.7	28.8	31.3	--	--	--	--
Dyna-Gro 2595B2RF	--	--	--	29.5	29.8	--	--
FiberMax 1740B2F	--	--	--	--	30.0	--	28.7
FiberMax 2011GT	--	--	--	--	--	28.3	30.0
FiberMax 2484B2F	28.8	28.9	--	30.4	--	26.1	30.7
FiberMax 9103GT	--	--	--	--	--	27.1	--
FiberMax 9170B2F	--	--	32.1	--	--	28.3	--
FiberMax 9180B2F	--	--	--	--	--	29.1	--
FiberMax 9250GL	--	--	--	--	--	--	29.3
NexGen 2051B2RF	--	--	--	--	--	--	27.4
NexGen 4010B2RF	--	--	--	31.5	31.6	30.0	--
NexGen 4012B2RF	27.3	--	31.6	--	--	27.0	--
NexGen 4111B2RF	--	31.8	--	--	--	30.4	32.2
PhytoGen 367WRF	26.9	27.7	--	--	30.9	26.9	29.4
PhytoGen 499WRF	--	--	32.1	31.5	--	--	--
Stoneville 4288B2F	--	26.6	--	--	--	26.0	28.9
Stoneville 5458B2RF	28.3	--	31.3	30.7	31.0	--	--
Test average	27.3	28.2	31.4	30.0	30.2	--	29.6
CV, %	2.3	1.5	2.3	3.3	2.7	--	2.3
OSL	0.0010	<0.0001	0.0908 [†]	0.0057	0.0103	--	<0.0001
LSD	1.1	0.8	1.0	1.7	1.4	--	1.2

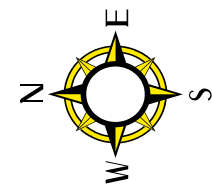
CV - coefficient of variation.

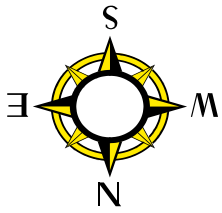
OSL - observed significance level, or probability of a greater F value.

LSD - least significant difference at the 0.05 level, [†]indicates significance at the 0.10 level.

2011 Sites Planted but Lost Due to Weather

Bearden Irrigated Systems Variety Trial - 2011				Variety	Rep 1	Rep 2	Rep 3
BCS B2RF CAP Trial			BCS B2RF CAP Trial	1 DG 2400RF			
Rep I	1	DG 2400RF	Rep III	10	NG 4010B2RF	2	FM 2011GT
	2	FM 2011GT		18	ST 5458B2RF	3	FM 9058F
	3	FM 9058F		5	AT 81220B2RF	4	FM 9101GT
	4	FM 9101GT		15	DP 10R011B2RF	5	AT 81220B2RF
	5	AT 81220B2RF		11	PHY 367WRF	6	CG 3156B2RF
	6	CG 3156B2RF		17	FM 9170B2F	7	DG 2450B2RF
	7	DG 2450B2RF		8	DP 1032B2RF	8	DP 1032B2RF
	8	DP 1032B2RF		19	NG 4012B2RF	9	FM 2989GLB2
	9	FM 2989GLB2		14	DG 2570B2RF	10	NG 4010B2RF
	10	NG 4010B2RF		9	FM 2989GLB2	11	PHY 367WRF
	11	PHY 367WRF		1	DG 2400RF	12	AT 81227B2RF
	12	AT 81227B2RF		3	FM 9058F	13	CG 3787B2RF
	13	CG 3787B2RF		2	FM 2011GT	14	DG 2570B2RF
	14	DG 2570B2RF		4	FM 9101GT	15	DP 10R011B2RF
	15	DP 10R011B2RF		20	PHY 499WRF	16	FM 2484B2F
	16	FM 2484B2F		7	DG 2450B2RF	17	FM 9170B2F
	17	FM 9170B2F		12	AT 81227B2RF	18	ST 5458B2RF
	18	ST 5458B2RF		6	CG 3156B2RF	19	NG 4012B2RF
	19	NG 4012B2RF		16	FM 2484B2F	20	PHY 499WRF
	20	PHY 499WRF		13	CG 3787B2RF		
Through "0"		24 Rows Bulk		Planting date	5/16/2011		
Rep II	2	FM 2011GT	Seeding rate	46,000 seed/acre			
	1	DG 2400RF	Insecticide	5#/acre Temik			
	4	FM 9101GT	Herbicide	10 oz/a Treflan and 0.3 oz/a Staple (10" band)			
	3	FM 9058F	Fertilizer	110 lb/a 11-52-0 + 100 lb/a 32-0-0 + 100 lb/a 8-20-0-4			
	10	NG 4010B2RF	Temp @ planting	65 F			
	5	AT 81220B2RF	Moisture @ planting	Poor			
	13	CG 3787B2RF	COMMENTS:				
	8	DP 1032B2RF	Lat: 33.210955° Long: -102.676037°				
	19	NG 4012B2RF					
	6	CG 3156B2RF					
	14	DG 2570B2RF					
	18	ST 5458B2RF					
	9	FM 2989GLB2					
	17	FM 9170B2F					
	11	PHY 367WRF					
	15	DP 10R011B2RF					
20	PHY 499WRF						
7	DG 2450B2RF						
16	FM 2484B2F						
12	AT 81227B2RF						
Fill							



Floyd County Dryland RACE Demonstration - 2011			Variety	Rep 1	Rep 2	Rep 3
32 Rows Fill			1 AT Epic RF			
1	AT Epic RF	Rep I	2 NG 4111RF			
2	NG 4111RF		3 CG 3156B2RF			
3	CG 3156B2RF		4 DP 0924B2RF			
4	DP 0924B2RF		5 DG 2570B2RF			
5	DG 2570B2RF		6 FM 2484B2F			
6	FM 2484B2F		7 ST 4288B2F			
7	ST 4288B2F		8 PHY 499WRF			
8	PHY 499WRF					
6	FM 2484B2F	Rep II	Planting date	5/24/2011		
5	DG 2570B2RF		Seeding rate	30K/A		
2	NG 4111RF		Plot size (rows/length)	8 - 40" rows by field length		
1	AT Epic RF		Row spacing	40		
8	PHY 499WRF		Herbicides	None		
7	ST 4288B2F		Fertilizer			
4	DP 0924B2RF		Temp @ planting			
3	CG 3156B2RF		Moisture @ planting			
7	ST 4288B2F	Rep III	COMMENTS: <div style="text-align: right; margin-top: 20px;">  </div>			
8	PHY 499WRF					
3	CG 3156B2RF					
4	DP 0924B2RF					
1	AT Epic RF					
2	NG 4111RF					
5	DG 2570B2RF					
6	FM 2484B2F					

Lamb County Dryland RACE Demonstration - 2011			Variety	Rep 1	Rep 2	Rep 3
			1 AT Epic RF			
1	Rep I	AT Epic RF	2 NG 4111RF			
2		NG 4111RF	3 CG 3156B2RF			
3		CG 3156B2RF	4 DP 1044B2RF			
4		DP 1044B2RF	5 DG 2570B2RF			
5		DG 2570B2RF	6 FM 1740B2F			
6		FM 1740B2F	7 ST 4288B2F			
7		ST 4288B2F	8 PHY 499WRF			
8		PHY 499WRF				
3	Rep II	CG 3156B2RF	Planting date	5/31/2011		
6		FM 1740B2F	Seeding rate	30K/A		
1		AT Epic RF				
7		ST 4288B2F	Insecticide	None		
4		DP 1044B2RF	Herbicide	None		
8		PHY 499WRF	Fertilizer	None		
2		NG 4111RF				
5		DG 2570B2RF				
8	Rep III	PHY 499WRF	Temp @ planting			
5		DG 2570B2RF	Moisture @ planting			
7		ST 4288B2F				
2		NG 4111RF				
4		DP 1044B2RF				
6		FM 1740B2F				
1		AT Epic RF				
3		CG 3156B2RF				
			COMMENTS: 8 row plots			

Irrigation Management Research Results

Subsurface Drip Irrigation Pre-plant Irrigation Timing Effects on Germination and Cotton Yield (Field 2).

James Bordovsky and Joe Mustian

Objective: To determine the effects on germination and cotton lint yield of three pre-plant irrigation sequences using SDI.

Methodology: Plot size was 8 rows by 1300' with three replications. Treatment factors were pre-plant irrigation sequence and depth of planting. SDI laterals were spaced at 60 inches. Crop rows were spaced 30 inches apart with two rows planted on single 60 inch beds. All tillage and seedbed shaping occurred immediately following the 2010 harvest, therefore, the seedbeds were undisturbed from December 2010 until cotton planting in May 2011. Three irrigation sequences were replicated three times in a complete randomized block design and are depicted graphically in Figure 1. Additional treatments within each of the three sequences included removing dry soil from the planting bed surface with disks in front of planter units in an attempt to place seed into wetted soil (deep planting).



Figure 2. Subsurface drip irrigated cotton germination test plot. This picture was taken on July 6 during the record drought of 2011 at the Helms Research Farm.

859 lb/ac (Figure 3). Removing dry soil in front of the planter failed to improve germination, failed to consistently improve yield, and would have caused additional germination problems with significant rain immediately following planting. When considering normal planting methods, applying a large pre-plant irrigation immediately prior to planting (T3) resulted in significantly less yield than applying a sequence of smaller irrigations (T1 and T2). The 2011 growing season was extremely hot, dry, and windy, particularly during the early stages. As such, these single year test results may not represent those of a more typical growing season.

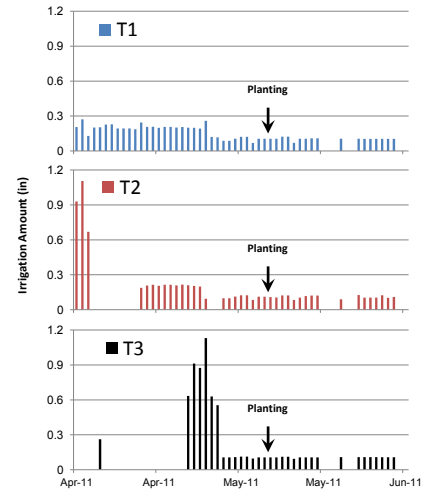


Figure 1. Pre-plant and early season irrigation sequences in germination study at the Texas AgriLife Research Center, Helm Farm, 2011.

Results:

Germination was low and erratic in all treatments with final plant

stands at less than 25% of initial seed drop (Figure 2). All treatments were identically irrigated through the growing season at approximately 40% ETc. In-season rain was low at 1.5 inches. Plots from each treatment and replicate were harvested by traditional methods. Although plant stands were extremely poor, average cotton lint yield of all treatments was

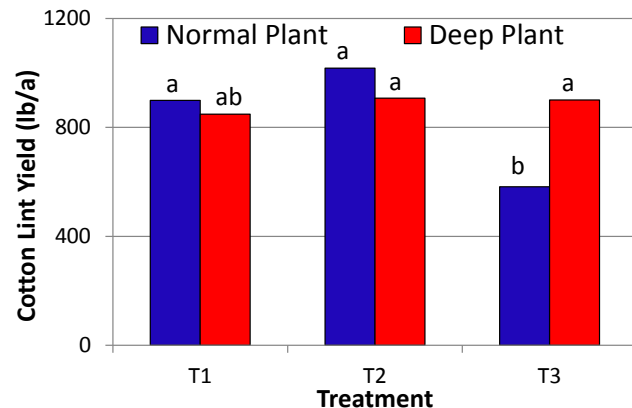


Figure 3. Cotton lint yield resulting from pre-plant irrigation sequences of 0.2 in/d for 25 days (T1), 2.5 inch plus 0.2 in/d for 12 days (T2), and 5.0 inch immediately prior to plant (T3). Cotton was planted with normal planter settings and also following the removal of some dry soil or "deep planting" at the Helms Research Farm, Halfway, TX, 2011.

Comparison of Cotton Germination Among Three SDI Fields During the Drought of 2011 (Fields 2, 3 and 6h).

James P. Bordovsky, Joe Mustian, and Casey Hardin

Objective: To make general comparisons of germination and cotton yield resulting from three SDI system/plant position strategies during the drought of 2011.

Methodology: Seed germination has been a major issue when irrigating with SDI, particularly in years with little rain during the planting period. The 2011 growing season was extreme in terms of low rainfall and high evaporation rates. Cotton was drip irrigated in three separate field experiments at the Helms Research Farm. The "traditional drip" installation and planting was discussed in a previous report (Figure 1). Cotton was planted in a second field where SDI laterals had been at 8 inches of depth or in a "shallow drip" installation (Figure 2). A third field, with traditional lateral installation, had been pre-plant irrigated with such poor soil wetting that the original experiment was abandoned. On June 14, to evaluate germination, cotton was planted in an alternate row pattern with one row over the lateral, the adjacent row 30 inches from the lateral, or in a "skip-row" fashion (Figure 3). The "traditional" and the "skip-row" drip were irrigated at approximately 50% ET_c due to the low plant populations, the "shallow" drip was irrigated at 80% ET_c .

Results: The cotton lint yields were 859, 1450, and 900 lb lint/ac from selected treatments of the "traditional", "shallow", and "skip-row" fields, respectively (Table 1). Considering the extreme weather conditions, seasonal IWUE was good (>50 lb/ac) in all fields. Due to the high pre-plant irrigation, total irrigation efficiency was poor for the traditional and skip-row fields at less than 50 lb/ac-in. If the skip-row field had been planted earlier, yield and IWUE would have been higher. Results indicate germination can be improved in dry years if alternate furrow SDI laterals are installed at depths of 8 to 9 inches or if rows are planted directly over the drip laterals.

Table1. Yield and water use efficiency from treatments in SDI fields at the Helms Research Farm, 2011.

	Traditional Drip	Shallow Drip	Skip Row Drip
Planting Date	5/13/2012	5/13/2012	6/14/2012
Pre & At Plant Irrigation (in)	8.6	7.3	13.71
Seasonal Irrigation (in)	10.8	15.4	9.26
Yield (lb/ac)	859	1540	900
Seasonal Irrigation WUE (lb/ac-in)	58	85	72
Total Irrigation Use Efficiency (lb/ac-in)	44	68	39



Figure 1. "Traditional drip" with 60-inch lateral spacing, 14-inch lateral depth, 30-inch crop rows, and cotton planted on May 13. Picture was taken on July 6, 2011.



Figure 2. "Shallow lateral drip" with 60-inch lateral spacing, 8-inch lateral depth, 30-inch crop rows, and cotton planted on May 13. Picture was taken on July 6, 2011.

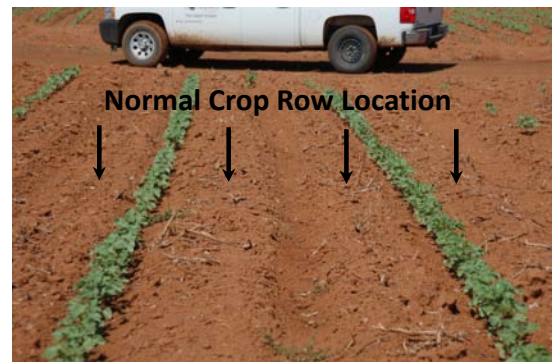


Figure 3. "Skip-row drip" with 60-inch lateral spacing, 14-inch lateral depth, and 60-inch cotton rows planted directly above laterals on June 16. Picture was taken on July 6, 2011.

Effects of Variable In-Season Irrigation Capacity on Cotton

Project 11-811 TX

James P. Bordovsky, Texas AgriLife Research, Lubbock/Halfway
Cotton Incorporated Project Manager: Dr. Ed M. Barnes

Within the Ogallala Aquifer region, the available irrigation capacity on a given field can change within a growing season. Typically this is due to declining water tables. More recently, it is due to growers diverting irrigation from one crop (cotton) to other crops (corn) which may have higher value, or are at a more critical growth stage than cotton, particularly in a year of low rainfall. Furthermore, water districts in the Texas High Plains will begin enforcing pumping restrictions to comply with state regulations which could cause abrupt changes in irrigation rates as limits are reached. Preplanned timing of irrigations with available water allowances and erratic rainfall will become more critical.

The objectives of this project were to:

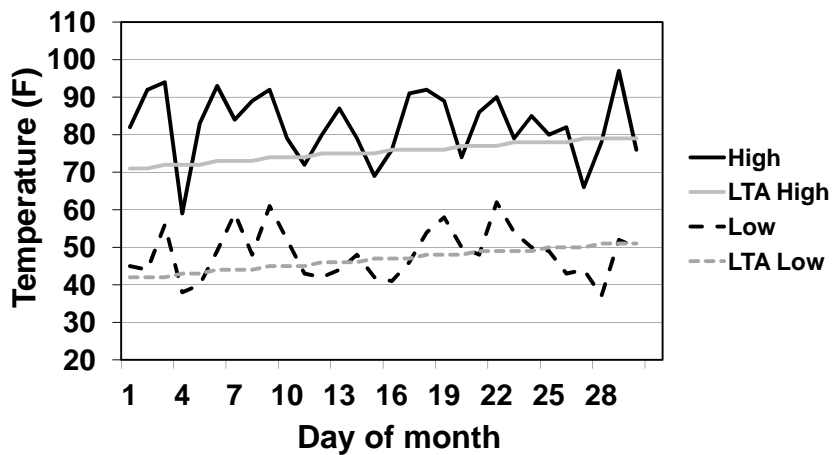
1. Determine cotton lint yield, fiber quality, and water use efficiency as a function of combinations of irrigation capacities during three cotton growth periods; and to
2. Develop strategies to improve water management and water value in a semi-arid environment where new policies restrict irrigation volume and irrigation capacities are limited.

The treatment factors included in-season irrigation capacity (maximums of 0 in/d, 0.125 in/d, and 0.25 in/d) and irrigation application within a specific growth period. Periods were determined by heat unit (hu) accumulation and were generally designated as early vegetative/juvenile (< 950 hu), reproductive (950-1350 hu) and maturation period (>1350 hu). Combinations of these factor levels resulted in 27 irrigation regimes or treatments. A 4-span LEPA pivot was used to irrigate the 9.5 acres for this field experiment containing three replications. The pivot was modified so that each 8-row section (40-in rows) along the lateral length could automatically provide different irrigation amounts depending on the treatments being irrigated and pivot position. Groups of four valves (irrigating an 8-row plot) were actuated using signals from a controller (Farmscan 7000, Dothan, Alabama) with specific time sequences for each irrigation treatment and distance from the pivot point. Inputs to the controller were pivot location (via GPS signal) and irrigation quantity (via application map) at each 8-row x 16-degree section for each irrigation sequence.

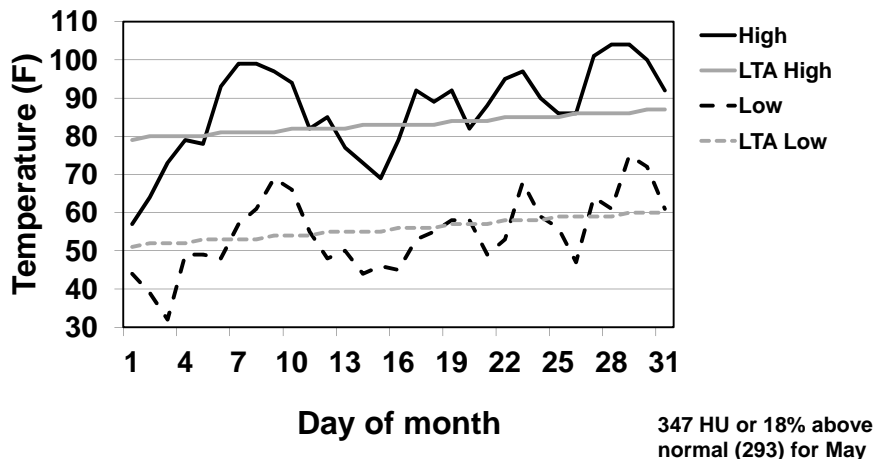
Test results to date were obtained from years representing record breaking extremes - high rainfall in 2010 and low rainfall in 2011. In both of these years, cotton yield and water productivity data indicated that building soil water in the profile, or irrigating in excess of the evapotranspiration rate of cotton in May and June, reduced irrigation water value compared to applying irrigation later in the growing season. This was attributed to water loss from excessive evaporation (high wind, low humidity) that often occurs during this period on the Texas High Plains. Irrigation water value during reproductive and maturation periods resulted in water use efficiencies in excess of 100 lb/ac-inch of irrigation applied. Additional field tests will provide the foundation for in-season irrigation recommendations that will optimize lint yield (and water value) based on irrigation pumping rates and irrigation volume restrictions.

2011 Lubbock Weather and Crop Information

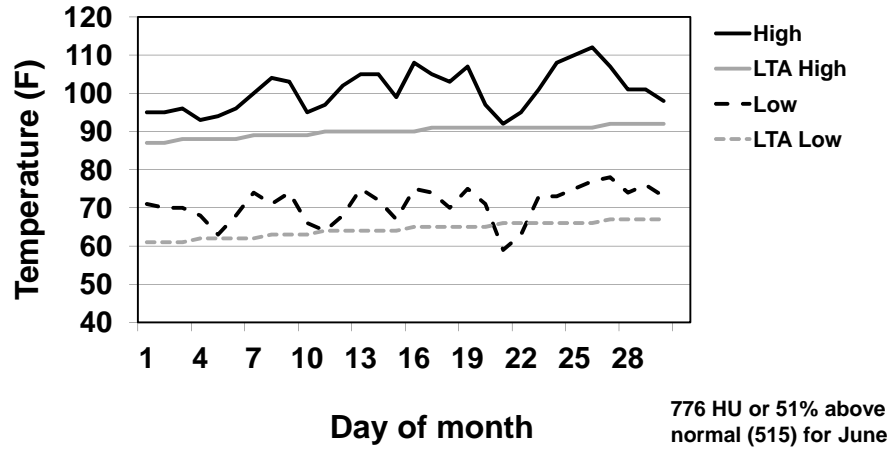
Lubbock Air Temperatures April, 2011



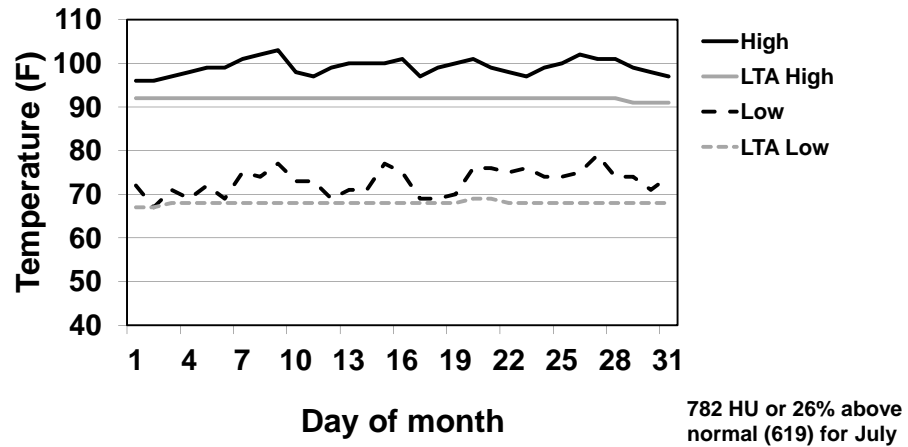
Lubbock Air Temperatures May, 2011



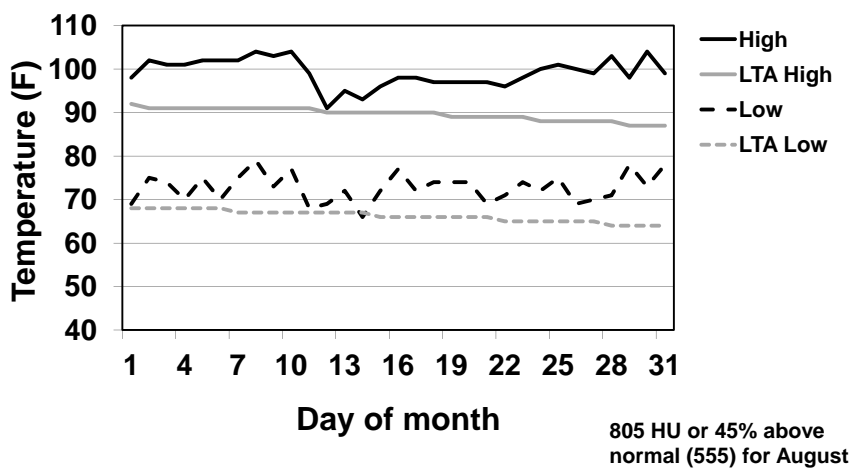
Lubbock Air Temperatures June, 2011



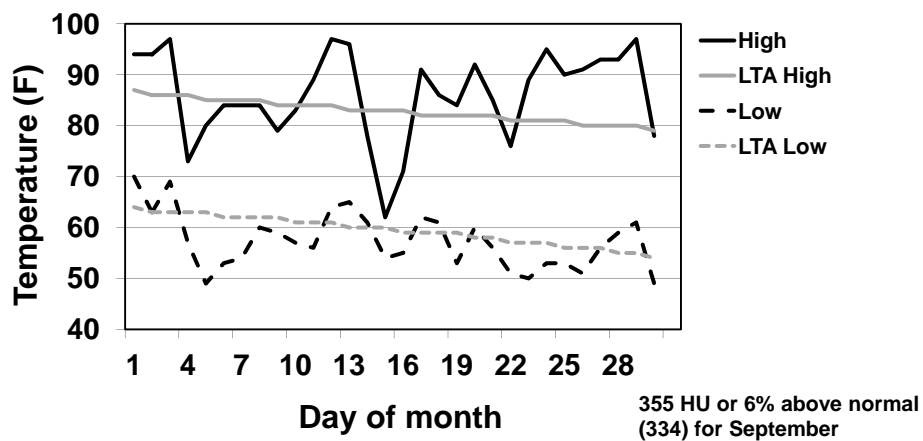
Lubbock Air Temperatures July, 2011



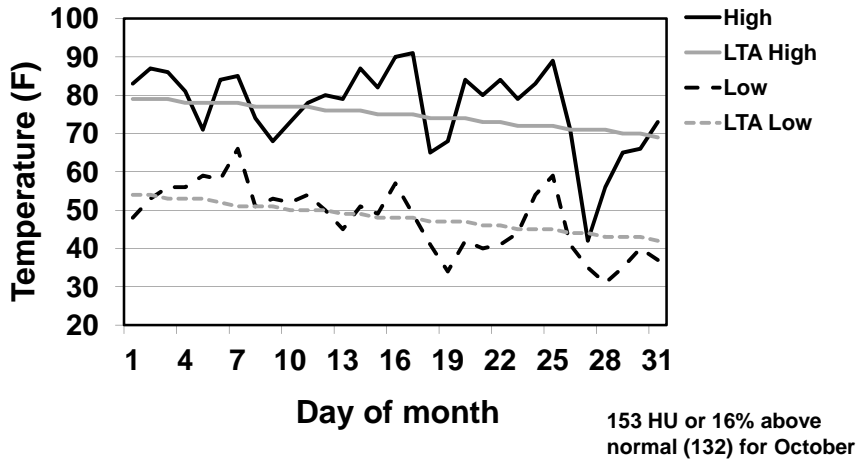
Lubbock Air Temperatures August, 2011



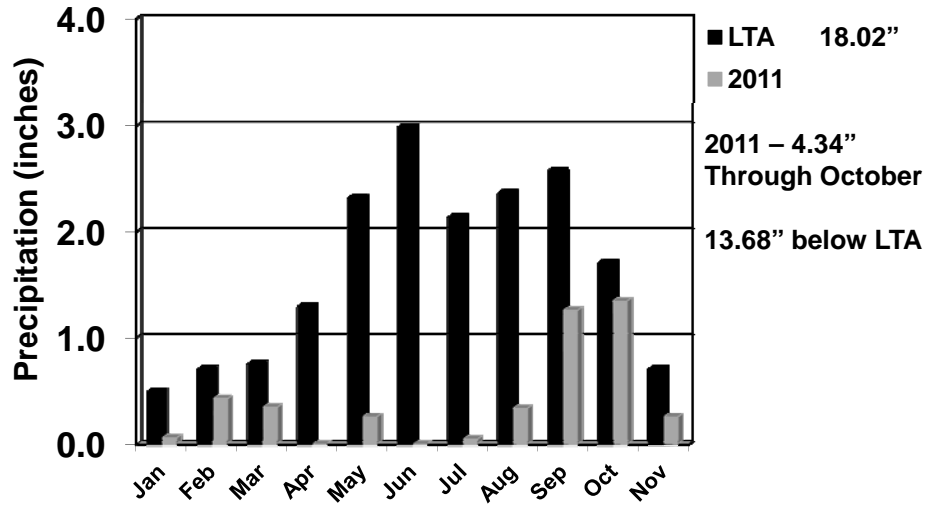
Lubbock Air Temperatures September, 2011



Lubbock Air Temperatures October, 2011

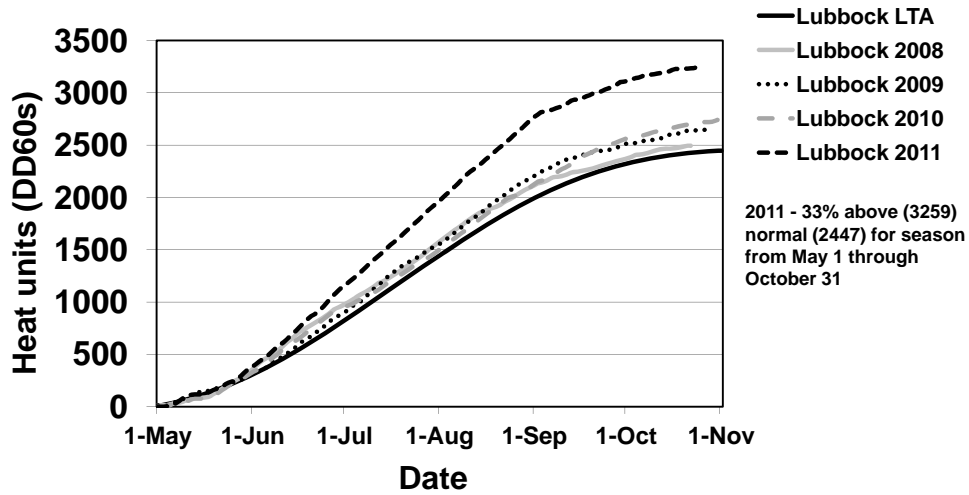


Lubbock LTA (1971-2000) vs. 2011 Rainfall

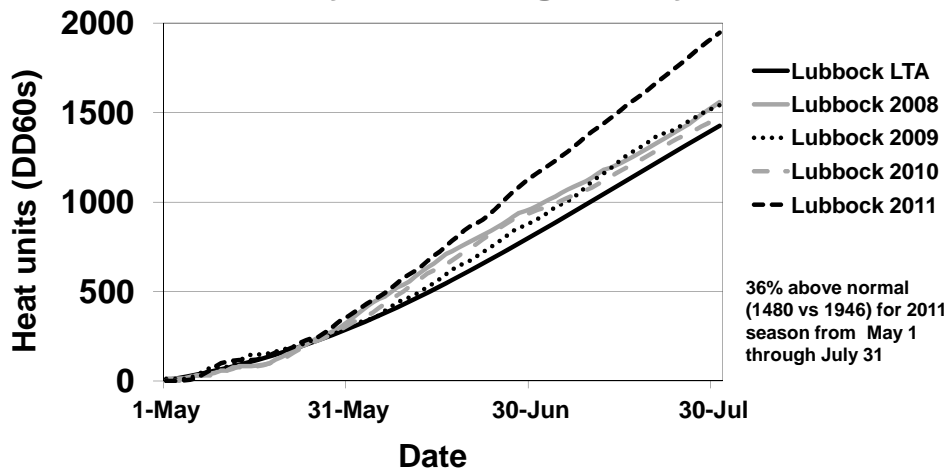


Source: <http://www.weather.gov/climate/index.php?wfo=lub>

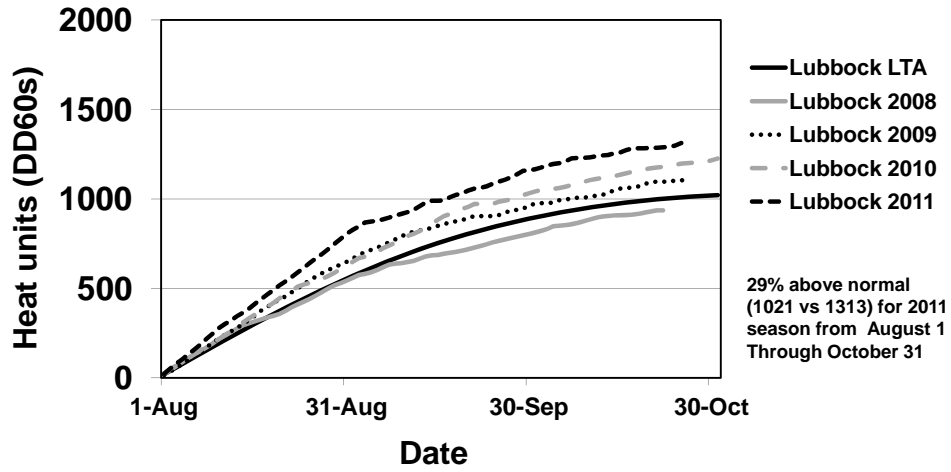
Lubbock 30-Yr Long Term Average (1971-2000) vs. 2008 - 2011 Cotton Heat Unit Accumulation



Lubbock 30-Yr Long Term Average (1971-2000) vs. 2008-2011 Cotton Heat Unit Accumulation From May 1 through July 31



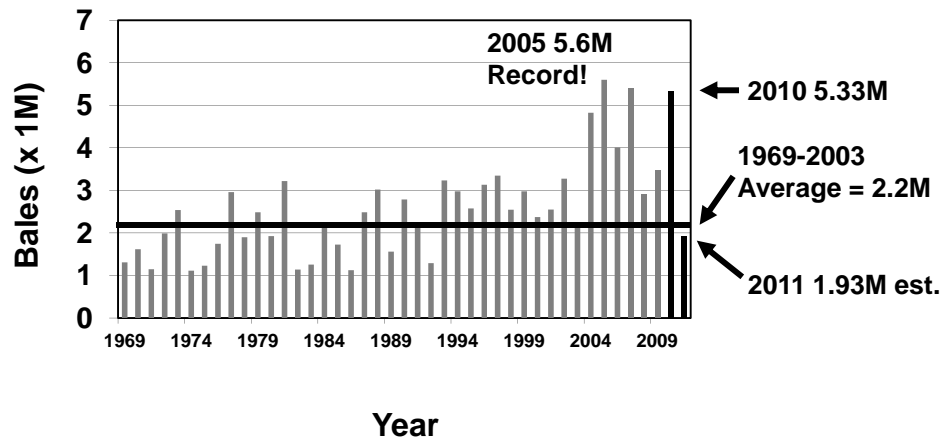
**Lubbock 30-Yr Long Term Average
(1971-2000) vs. 2008-2011
Cotton Heat Unit Accumulation
From August 1 through October 31**



2011 Crop

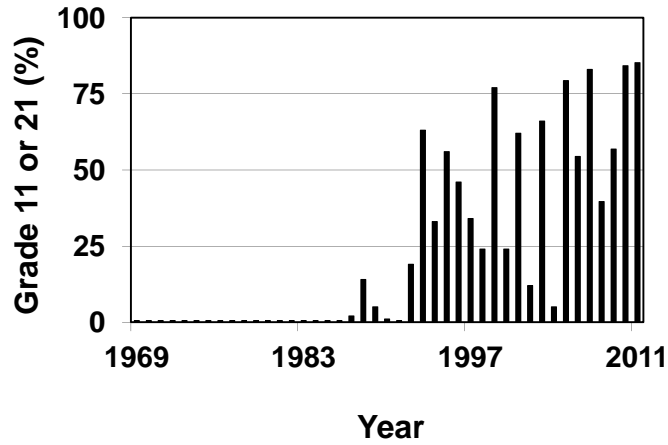
- If TASS estimates hold up, we will harvest 1.93 million bales in 1N and 1S
 - Just below the long term average (2.2M)
 - The smallest crop since 1993
- 85% color grades 11 or 21
 - About the same as 2010 (84%)
- Average leaf approximately the same compared to last year (96% leaf 3 or better compared to 95% in 2010)
- Length a bit lower at 34.8 compare to 2010 (35.8)
- Strength was 29.7 g/tex
- Micronaire excellent with 4.37 average (4.09 for 2010)
 - 5.3% was 3.4 or lower
- Bark contamination higher than last year (9%) at 12%

High Plains (TASS 1N and 1S) Total Bale Production 1969-2010 and 2011 Estimate



Source: USDA-NASS

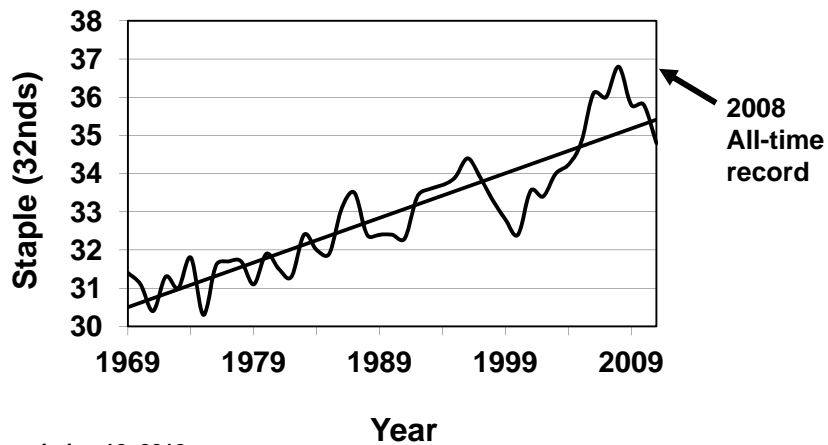
High Plains Color Grades 11 or 21 1969-2011



Source: USDA-AMS

2011 Through Jan 12, 2012

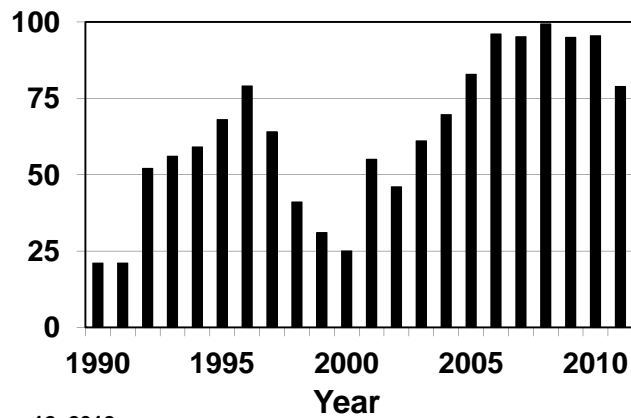
High Plains Average Staple 1969-2011



2011 Through Jan 12, 2012

Source: USDA-AMS

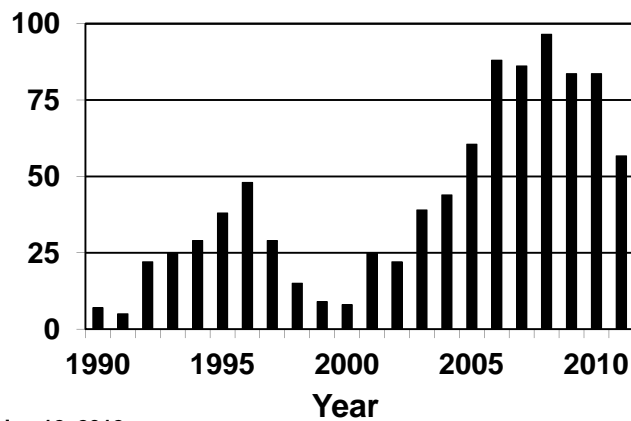
Percent of High Plains Bales with ≥ 34 Staple 1990-2011



2011 Through Jan 12, 2012

Source: USDA-AMS

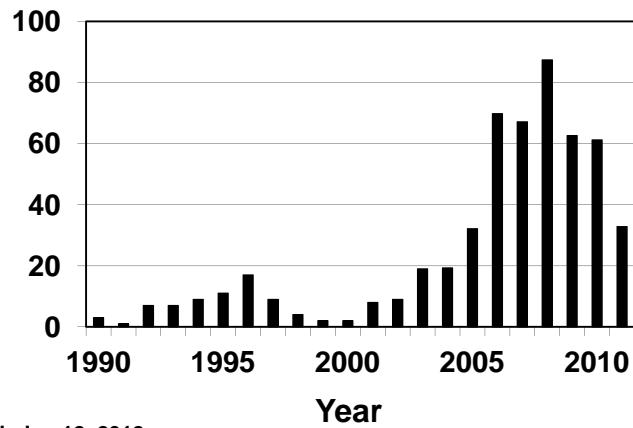
Percent of High Plains Bales with ≥ 35 Staple 1990-2011



2011 Through Jan 12, 2012

Source: USDA-AMS

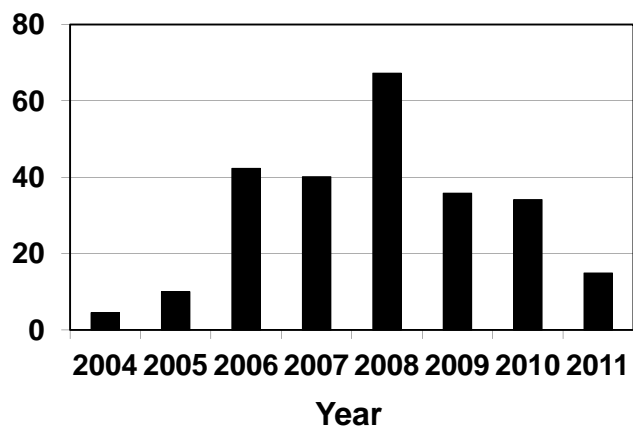
Percent of High Plains Bales with ≥ 36 Staple 1990-2011



2011 Through Jan 12, 2012

Source: USDA-AMS

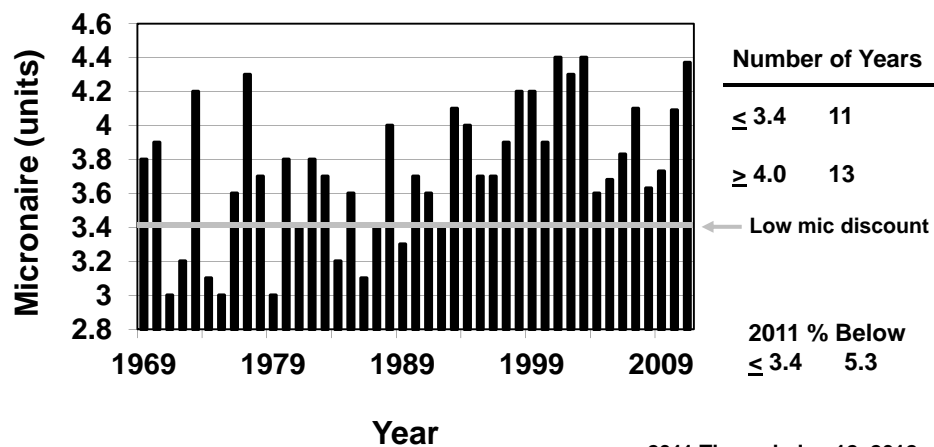
Percent of High Plains Bales with ≥ 37 Staple 2005-2011



2011 Through Jan 12, 2012

Source: USDA-AMS

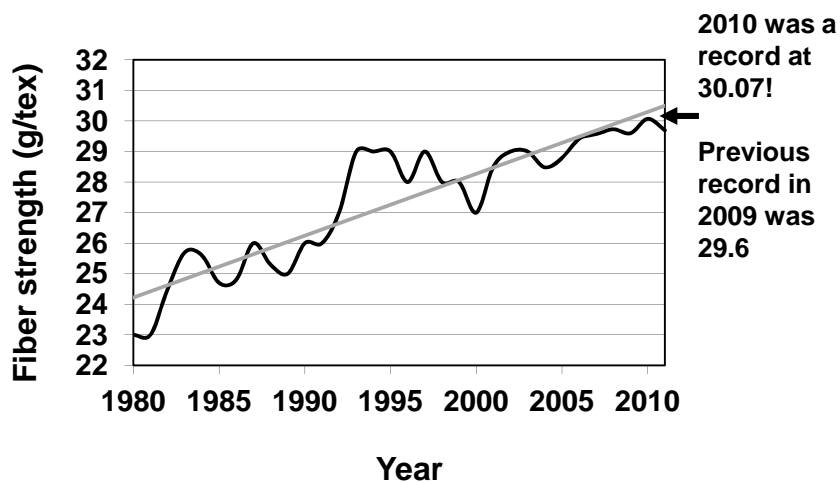
High Plains Micronaire 1969-2011 (43 Years)



Source: USDA-AMS

2011 Through Jan 12, 2012

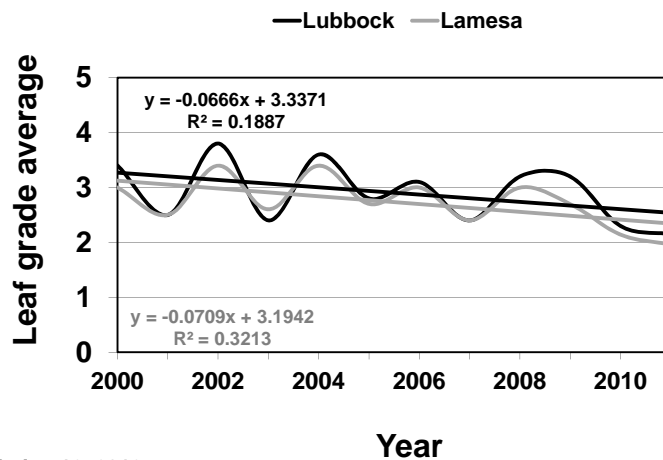
High Plains Average Fiber Strength 1980-2011



2011 Through Jan 12, 2012

Source: USDA-AMS

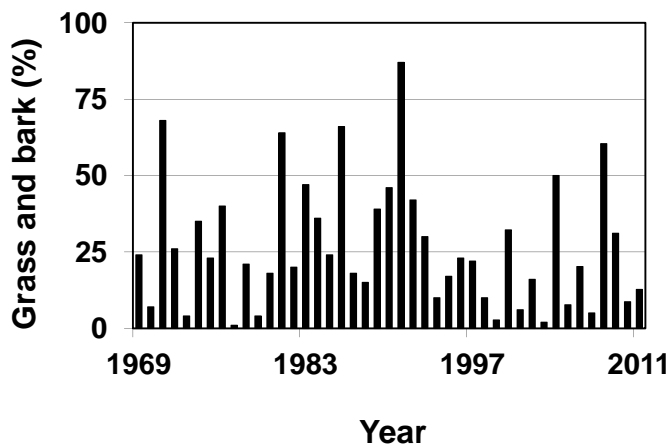
High Plains Average Leaf Grades 2000-2011



2011 Through Jan 12, 2012

Source: USDA-AMS

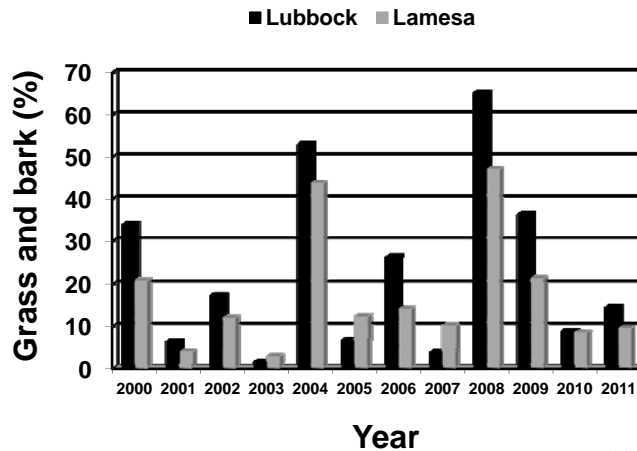
High Plains Grass and Bark 1969-2011



Source: USDA-AMS

2011 Through Jan 12, 2012

High Plains Bark Contamination 2000-2011



Source: USDA-AMS

2011 Through Jan 12, 2012

Q: What was planted?

**A: Continued Grower
Gravitation to
Technology in 2011**

2011 USDA-AMS Cotton Varieties Planted

- **Lubbock:**
 - 40.4% FiberMax, 24.0% Americot/NexGen, 6.7% Deltapine, 4.8% PhytoGen, 2.9% Stoneville, 2.7% Dyna-Gro, 18.5% Unidentified other
- **Lamesa:**
 - 30.7% FiberMax, 20.8% Americot/NexGen, 16.2% Deltapine, 7.4% PhytoGen, 7.3% Stoneville, 1.8% Dyna-Gro, 15.8% Unidentified other

Identifiable Technologies Planted (Unable to Ascertain “Other”)

- **Bollgard 2 and Widestrike insect resistance for caterpillar pests**
 - Lubbock: 65.3%
 - Lamesa: 74.2%

Identifiable Technologies Planted (Unable to Ascertain “Other”)

- **Roundup Ready Flex (herbicide tolerant)**
 - Lubbock: 81.5%
 - Lamesa: 84.1%

EVALUATING FIELD TRIAL DATA

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Southwest Farm Press Vol 25, Number 11, April 9, 1998.**

Field trials can provide helpful information to producers as they compare products and practices for their operations. However, field trials must be evaluated carefully to make sure results are scientifically sound, not misleading and indicate realistic expectations for on-farm performance.

This fact sheet is designed to give you the tools to help you determine whether data from a field trial is science fact or science fiction.

What are the best sources of field trial data?

Field trials are conducted by a broad range of individuals and institutions, including universities, ag input suppliers, chemical and seed companies and growers themselves. All are potentially good sources of information.

What are the common types of field trials?

Most field trials fall into one of two categories: side-by-side trials (often referred to as strip trials) or small-plot replicated trials. Side-by-side trials are the most common form of on-farm tests. As the name suggests, these trials involve testing practices or products against one another in plots arrayed across a field, often in strips the width of the harvesting equipment.

These strips should be replicated across the field or repeated at several locations to increase reliability. Small-plot replicated trials often are conducted by universities and companies at central locations because of the complexity of managing them and the special planting and harvesting equipment often required.

Replicated treatments increase the reliability of an experiment. They compare practices or products against one another multiple times under uniform growing conditions in several randomized small plots in the same field or location.

Small-plot replicated trials also may be conducted on farmers' fields where special conditions exist, for example, a weed infestation that does not occur on an experiment station.

Are side-by-side plots more valuable than small-plot replicated trials, or vice versa?

Both types of plots can provide good information. The key is to evaluate the reliability of the data. It is also important to consider the applicability of the trial to your farming operation.

When is plot data valid, and when isn't it?

There isn't a black-and-white answer to that questions. But there are good rules of thumb that can help guide you. Consider these three field trial scenarios:

Scenario 1:

A single on-farm side-by-side trial comparing 10 varieties. Each variety is planted in one strip the width of the harvesting equipment and is 250 to 300 feet long.

What you can learn:

This trial will allow you to get a general feel for each variety or hybrid in the test, including how it grows and develops during the season. However, this trial, by itself, probably won't be able to reliably measure differences in yield. This is because variability within the field, even if it appears to be relatively uniform, may be large enough to cause yield variations that mask genetic difference among the varieties. Other varietal characteristics, such as maturity or micronaire in cotton, can also be masked by soil variation.

Scenario 2:

Yield data from side-by-side variety trials conducted on the same varieties on multiple farms in your region.

What you can learn:

When data from multiple side-by-side trials are considered together, reliability increases. In this case, the more trials comparing the same varieties, the better. As you go from three to five to 10 or more locations, the certainty goes up that yield differences represent genetic differences and not field variability. Be aware, however, that small differences between treatments (in this case varieties) may still be within the margin of random variability of the combined trial and may not indicate actual genetic differences. One treatment will almost always be numerically higher. Statistical analysis helps determine if differences are significant (consistent).

Scenario 3:

A university-style small-block replicated trial comparing the same 10 varieties.

What can you learn:

Data from such trials, if they are designed well and carried out precisely, generally are reliable. That is, the results generally determine the yield potential of crop varieties. However, it is still important to consider whether results are applicable to your farming operation and are consistent with other research.

How do I know whether differences in yield, for example, are real and not caused by field variability or sloppy research?

Scientists use statistical analysis to help determine whether differences are real or are the result of experimental error, such as field variation.

The two most commonly used statistics are Least Significant Difference (LSD) and the Coefficient of Variation (CV), both of which can provide insight on the validity of trial data. If these values aren't provided with trial results, ask for them.

Least Significant Difference (LSD) is the minimum amount that two varieties must differ to be considered significantly different. Consider a trial where the LSD for yield is four bushels per acre. If one variety yields 45 bushels per acre and another yields 43 bushels per acre, the two are not statistically different in yield. The difference in their yields is due to normal field variation, not to their genetics. In this example, a variety that yields 45 bushels per acre is significantly better than those yielding less than 41 bushels per acre. In many research trials, LSDs are calculated at confidence level of 75 to 95 percent. For example, a confidence level of 95 percent means you can be 95 percent certain that yield differences greater than the LSD amount are due to genetics and not to plot variability.

Coefficient of Variation (CV) measures the relative amount of random experimental variability not accounted for in the design of a test. It is expressed as a percent of the overall average of the test.

For measuring yield differences, CV's of up to five percent are considered excellent; 5.1 to 10 percent are considered good; and 10.1 to 15 percent are fair.

A high CV means there must be larger differences among treatments to conclude that significant differences exist. The bottom line: When considering yield test data, be skeptical when the CV exceeds 15 percent.

Is a one-year test valid, or are several years of results necessary to know whether one product or practice is superior to another?

In an ideal world, having several years of tests to verify use of a practice or product is best. But where changes are rapid, such as with crop varieties, having university data from multiple years isn't always possible.

When multi-year university data aren't available, pay more careful attention to statistical measures like CV and LSD, and the number of locations and testing environments.

Multi-year data on yield and performance can also be requested from the developers of new products prior to university testing. In either case, be cautious about making major production changes and trying large acreages of a given variety based on one year's data.

How should I evaluate trial results that are markedly different from other research in my area?

When research results are at odds with the preponderance of scientific evidence, examine the new research with extra care.

Pay special attention to factors that might have influenced the outcome, such as soil type, planting date, soil moisture and other environmental conditions, and disease, insect and weed pressures. For example, was the growing season unusually wet or unusually dry? When was it dry or wet? What was the crop growth stage when it was wet or dry? Was there a disease that affected one variety or hybrid more than another one? Were there insect problems? Could this have influenced the trial's outcome and its applicability to your operation? If you determine that unusual circumstances affected the outcome, be cautious about how you use the results.