

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



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Lubbock, Tx

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Evaluation of Cotton Varieties
in the Texas High Plains**

2014 Final Report

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

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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 all locations. In previous years, plots were of sufficient size to enable the combining of all replications of each individual variety into a single module at harvest. Variety modules would then be followed through the commercial ginning process. After several years of comparing results from commercial ginning and ginning of grab samples, a strong relationship was observed. Therefore, the decision was made by Extension personnel and the producers to forgo moduling and utilize grab samples from each plot at each location. Plot weights were determined at harvest using either a West Texas Lee Weigh Wagon with integral electronic scales, or a Forage Systems flat-bed scale trailer, and bur cotton yields per acre were subsequently calculated by plot. After grab samples from each location and each plot were ginned, lint and seed turnout values were applied to bur cotton yields to determine lint and seed yield/acre. Lint samples resulting from the grab samples from each location were submitted to the Texas Tech University - Fiber and Biopolymer Research Institute for HVI fiber analyses and CCC lint loan values were calculated.

In 2014, yields were relatively low compared to 2013 mostly due to delayed crop from early season cool temperatures across the Texas High Plains region. A total of three irrigated locations were initiated in 2014 at Farwell (15 varieties), Plains (20 varieties) and Mt. Blanco (15 varieties), and two dryland locations at Plains (10 varieties) and Mt. Blanco (15 varieties). All locations were well maintained by the cooperating producers, however, delayed planting at Plains, coupled with lower rainfall in July and August, resulted in lower lint yields. Lint yields at Plains ranged from 650 lb/acre to a low of 416 lb/acre for FiberMax 2011GT and Deltapine 1219B2RF, respectively. Loan values were low and values averaged \$0.4473/lb across all varieties. Lint values averaged \$235.73 across all varieties and net values ranged from a high of \$300.95/acre (FiberMax 2011GT) to a low of \$165.65/acre (Croplan 3787B2RF), a difference of \$135.30. At the Mt. Blanco irrigated location, lint yields averaged 921 lb/acre and Deltapine 1441RF had the highest with 1054 lb/acre. Loan values ranged from \$0.5812 for Croplan 3787B2RF to \$0.5155 for NexGen 1511B2RF resulting in lint values ranging from a high of \$577.15 for Deltapine 1441B2RF to a low of \$366.35 for FiberMax 2011GT. Final net value ranged from a high of \$611.79/acre (Deltapine 1441RF) to a low of \$366.28/acre (FiberMax 2011GT), a difference of \$245.51/acre. The Mt. Blanco dryland location observed an average lint yield of 845 lb/acre and loan values ranged from \$0.5642 (Deltapine 1321B2RF) to \$0.4822 (Stoneville 4747GLB2). Resulting lint values ranged from a high of \$511.63 (PhytoGen 333WRF) to a low of \$378.21 (FiberMax 1830GLT). Net values ranged from a high of \$524.21/acre (NexGen 1511B2RF) to a low of \$354.89/acre (FiberMax 1830GLT), a difference of \$169.32/acre.

These data indicate that substantial differences can be observed in terms of net value/acre due to variety and technology selection. When comparing the top and bottom varieties at the Plains and Mt. Blanco locations, differences were approximately \$135, \$246, and \$169, respectively. Additional multi-site and multi-year applied research is needed to evaluate varieties across a series of environments.

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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. LibertyLink 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. LibertyLink with Bollgard II types were also commercialized in 2006. In 2011, Bayer CropScience made GlyTol and GlyTol stacked with LibertyLink available to producers in limited quantities. Furthermore, in 2012, Bayer introduced several GlyTol/LibertyLink varieties stacked with Bollgard II technology. Finally, for 2014, Bayer introduced new varieties containing TwinLink technology. Additional cotton biotechnologies are also anticipated in 2015 and 2016. These technologies include Xtendflex from Monsanto/Deltapine and Enlist from Dow AgroSciences/PhytoGen. Xtendflex technology will impart resistance to three herbicide molecules, dicamba, glyphosate, and glufosinate. Varieties with Enlist technology will be resistant to a new, low-volatility, formulation of the 2,4-D herbicide. New transgenic varieties continue to be marketed in the High Plains by All-Tex, Americot/NexGen, Croplan, 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. 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 all locations. In previous years, plots were of sufficient size to enable the combining of all replications of each individual variety into a single module at harvest. Variety modules would then be followed through the commercial ginning process. After several years of comparing results from commercial ginning and ginning of grab samples, a strong relationship was observed. Therefore, the decision was made by Extension personnel and the producers to forgo moduling and utilize grab samples

from each plot at each location. A randomized complete block design was used at all three locations. 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 at all locations. Individual location information was as follows:

Location 1: Farwell, TX – Parmer County

At the Farwell location, fifteen varieties were planted to 30" straight rows on the flat to strip-till rows on 6-May with a seeding rate of approximately 45,000 seed per acre. This location was under a Low Elevation Spray Application (LESA) center pivot irrigation system and the previous crop was sorghum silage. Plot size was 8 rows by variable length due to center pivot. Unfortunately, this location was lost early in the season due to inclement weather event that took out several cotton fields in the area.

Varieties planted at Farwell (LESA irrigation system):

1. Croplan 3006B2RF
2. Deltapine 1212B2RF
3. Deltapine 1321B2RF
4. Deltapine 1410B2RF
5. FiberMax 1320GL
6. FiberMax 1830GLT
7. FiberMax 2011GT
8. FiberMax 2322GL
9. NexGen 1511B2RF
10. NexGen 3306B2RF
11. NexGen 4111RF
12. PhytoGen 222WRF
13. PhytoGen 333WRF
14. PhytoGen 339WRF
15. Stoneville 4747GLB2

Location 2: Plains, TX – Yoakum County

Twenty commercially available varieties were included at the Plains location. Varieties planted on 2-June contained Roundup Ready Flex herbicide technology, alone or stacked with, Bollgard II or Widestrike insect technologies, or GlyTol, and/or LibertyLink technology alone or stacked with Bollgard II or TwinLink insect technologies. Plots were variable length due to LESA center pivot irrigation and included 6 – 40" rows. The seeding rate at Plains was approximately 39,000 seeds/acre. Harvesting of plots was performed on and 19-December using producer provided equipment. Plot weights were taken using weigh trailers with integral digital scale systems. During harvest, grab samples were taken by plot for ginning at the Texas A&M AgriLife Research and Extension Center near Lubbock. Lint samples were collected during ginning and submitted to the Texas Tech University – Fiber and Biopolymer Research Institute for HVI fiber analysis. After lint quality determination, CCC loan values were calculated for each plot. It should be noted that this location was planted late and remained developmentally behind throughout the growing season. Therefore, yields and fiber quality were observed to be well below what has come to be expected from this location (See below).

Varieties planted at Plains (LESA irrigation system):

1. Croplan 3787B2RF
2. Deltapine 1212B2RF
3. Deltapine 1219B2RF
4. Deltapine 1321B2RF

5. Deltapine 1410B2RF
6. Deltapine 1441B2RF
7. FiberMax 1320GL
8. FiberMax 1830GLT
9. FiberMax 2011GT
10. FiberMax 2322GL
11. FiberMax 2334GLT
12. FiberMax 2484B2F
13. NexGen 1511B2RF
14. NexGen 3306B2RF
15. NexGen 4111RF
16. PhytoGen 333WRF
17. PhytoGen Y 339WRF
18. PhytoGen 367WRF
19. Stoneville 4747GLB2
20. Stoneville 4946GLB2

Location 3: Mt Blanco, TX – Crosby County

Fifteen varieties were planted to 40" raised bed rows on 8 and 9-May with an approximate seeding rate of 42,000 seed per acre. This was a 210 acre center pivot irrigated location, however, only ½ of the pivot was fully irrigated, the other half was considered dryland (sprinkler irrigated for stand establishment only). All varieties were planted to both the irrigated and dryland sides of the pivot. The rows were circular due to center pivot LEPA irrigation system. Plot sizes were 8 rows wide by variable length due to circular rows. Varieties planted to both irrigated and dryland contained Roundup Ready Flex herbicide technology, alone or stacked with Bollgard II or Widestrike insect technologies, or GlyTol, and/or LibertyLink technology, alone or stacked with Bollgard II or TwinLink insect technologies. Both the irrigated and dryland sides of the variety trial were harvested and analyzed separately. Harvest of both trials occurred on 15, 16 and 18-December using the producer/cooperator harvesting equipment. Harvest material was weighed by plot using a Forage Systems flat-bed scale trailer. Gin turnouts, HVI fiber quality and CCC lint loan values were determined from grab samples taken at harvest.

Varieties planted at Mt. Blanco (LEPA irrigation system and dryland):

1. Croplan 3787B2RF
2. Deltapine 1219B2RF
3. Deltapine 1321B2RF
4. Deltapine 1441B2RF
5. FiberMax 1830GLT
6. FiberMax 2011GT
7. FiberMax 2334GLT
8. FiberMax 2484B2F
9. NexGen 1511B2RF
10. NexGen 3306B2RF
11. NexGen 4111RF
12. PhytoGen 333WRF
13. PhytoGen 339WRF
14. Stoneville 4747GLB2
15. Stoneville 4946GLB2

Yield and HVI Results

Agronomic and economic results by variety for the Plains and Mt. Blanco locations are included in tables 1 - 6.

Location 1 - Farwell

As stated above, this location was lost due to inclement weather and no data were collected. The field was planted back to sorghum following the loss.

Location 2 – Plains

Data from the Plains location indicated significant differences among varieties for most yield and economic parameters measured (Table 1). Lint turnout of field-cleaned bur cotton ranged from a high of 31.5% for FiberMax 2334GLT to a low of 27.3% for Deltapine 1219B2RF. Seed turnout averaged 47.6% across all varieties and differences were not significant. Bur cotton yields were relatively low due to the delayed planting and maturity, and averaged 1768 lb/acre. Differences in lint yield were observed among varieties, and values ranged from a high of 650 lb/acre to a low of 416 lb/acre for FiberMax 2011GT and Deltapine 1219B2RF, respectively. Seed yields averaged 841 lbs/acre across all varieties and Stoneville 4747GLB2 had the highest with 1018 lbs/acre. Loan values were low due to delayed maturity resulting in lower than usual micronaire values, color grade, and higher leaf values. Values averaged \$0.4473/lb across all varieties and no differences were observed. After applying lint loan values to lint yield, lint values (\$/acre) averaged \$235.73 across all varieties and FiberMax 2011GT had the highest with \$292.56/acre. After subtracting ginning and seed/technology fee costs from total value, net values ranged from a high of \$300.95/acre (FiberMax 2011GT) to a low of \$165.65/acre (Croplan 3787B2RF), a difference of \$135.30. At this location, 8 varieties were in the statistical upper tier for net value. These included FiberMax 2011GT (\$300.95/acre), FiberMax 2322GL (\$297.76/acre), Stoneville 4747GLB2 (\$289.80/acre), FiberMax 2334GLT (\$266.63/acre), FiberMax 1830GLT (\$266.10/acre), Deltapine 1212B2RF (\$259.56/acre), NexGen 3306B2RF (\$259.02/acre), and NexGen 4111RF (\$255.81/acre).

Classing data derived from grab samples are reported in Table 2. Micronaire values were considerably lower than usual and averaged 2.7. No differences were observed among varieties for micronaire. Staple length was highest for FiberMax 1830GLT (37.0) and lowest for NexGen 1511B2RF (33.8). The highest uniformity value of 82.3% was observed in both FiberMax 1830GLT and Deltapine 1212B2RF, and the test average was 81.3%. Strength values ranged from a high of 30.6 g/tex for NexGen 3306B2RF to a low of 27.2 g/tex for Croplan Genetics 3787B2RF and PhytoGen 333WF. Leaf grades were mostly 3, and color grades were mostly 31 across all varieties.

Location 3 B Mt. Blanco (Irrigated)

At the Mt. Blanco irrigated location, lint turnouts of field-cleaned bur cotton ranged from a high of 33.7% for FiberMax 1830GLT to a low of 30.4% for NexGen 4111RF (Table 3). Seed turnout averaged 45.4% across all varieties. An average bur cotton yield of 2837 lb/acre was also observed. Lint yields averaged 921 lb/acre and Deltapine 1441RF had the highest with 1054 lb/acre. Seed yields averaged 1288 lb/acre across varieties. Loan values derived from grab samples ranged from \$0.5812 for Croplan 3787B2RF to \$0.5155 for NexGen 1511B2RF. After applying lint loan values to lint yield, lint values

(\$/acre) ranged from a high of \$577.15 for Deltapine 1441B2RF to a low of \$366.35 for FiberMax 2011GT. After subtracting ginning and seed/technology costs from total value (lint value + seed value), net value ranged from a high of \$611.79/acre (Deltapine 1441RF) to a low of \$366.28/acre (FiberMax 2011GT) and averaged \$515.52/acre across all varieties. Seven varieties were included in the statistical upper tier with Deltapine 1441RF. These varieties included Deltapine 1219B2RF, PhytoGen 333WRF, Stoneville 4946GLB2, NexGen 4111RF, NexGen 3306B2RF, PhytoGen 339WRF, and Deltapine 1321B2RF, with net values of \$596.01/acre, \$585.21/acre, \$568.10/acre, \$554.77/acre, \$543.83/acre, \$529.91/acre, and \$524.79/acre, respectively.

Classing data derived from grab samples are reported in Table 4. Micronaire values were not significantly different and averaged 4.4 across all varieties. Staple length averaged 36.1 and was highest for NexGen 3306B2RF (37.9) and lowest for NexGen 1511B2RF (34.8). Uniformity averaged 82.2% and no differences were observed among varieties. Strength values averaged 31.3 g/tex and ranged from a high of 32.6 g/tex for NexGen 3306B2RF to a low of 29.3 g/tex for Stoneville 4747GLB2.

Location 3 B Mt. Blanco (Dryland)

At the Mt. Blanco dryland location, lint turnouts of field-cleaned bur cotton ranged from a high of 36.3% for NexGen 1511B2RF to a low of 28.8% for PhytoGen 339WRF (Table 5). Seed turnout averaged 43.9% across all varieties. An average bur cotton yield of 2690 lb/acre was also observed. Lint yields averaged 845 lb/acre and NexGen 1511B2RF had the highest with 924 lb/acre. Seed yields averaged 1184 lb/acre across varieties. Loan values derived from grab samples ranged from \$0.5642 for Deltapine 1321B2RF to \$0.4822 for Stoneville 4747GLB2. After applying lint loan values to lint yield, lint values (\$/acre) ranged from a high of \$511.63 for PhytoGen 333WRF to a low of \$378.21 for FiberMax 1830GLT. After subtracting ginning and seed/technology costs from total value (lint value + seed value), net value ranged from a high of \$524.21/acre (NexGen 1511B2RF) to a low of \$354.89/acre (FiberMax 1830GLT) and averaged \$453.84/acre across all varieties. Eight varieties were included in the statistical upper tier with NexGen 1511B2RF. These varieties included PhytoGen 333WRF (\$519.59/acre), Deltapine 1219B2RF (\$511.97/acre), FiberMax 2484B2F (\$511.53/acre), Deltapine 1441RF (\$492.67/acre), FiberMax 2334GLT (\$483.47/acre), PhytoGen 339WRF (\$467.52/acre), Deltapine 1321B2RF (\$446.17/acre), and Stoneville 4946GLB2 (\$438.34/acre).

Classing data derived from grab samples are reported in Table 6. Micronaire values averaged 4.6 across varieties and ranged from a high of 5.3 (Stoneville 4946GLB2) to a low of 4.0 (Croplan 3787B2RF). Staple length averaged 35.5 and was highest for Deltapine 1321B2RF (36.9) and lowest for Stoneville 4747GLB2 (33.7). Uniformity averaged 81.5% and values ranged from a high of 82.5% for FiberMax 2484B2F to a low of 79.6% for Stoneville 4747GLB2. Strength values ranged from a high of 33.1 g/tex for NexGen 3306B2RF to a low of 28.4 g/tex for Stoneville 4747GLB2 and averaged 31.1 g/tex.

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 all locations. In previous years, plots were of sufficient size to enable the combining of all replications of each individual variety into a single module at harvest. Variety modules would then be followed through the commercial ginning process. After several years of comparing results from commercial ginning and ginning of grab samples, a strong relationship was observed. Therefore, the decision was made by Extension personnel and the producers to forgo moduling and utilize grab samples from each plot at each location. Plot weights were determined at harvest using a West Texas Lee Weigh Wagon with integral electronic scales, or a Forage Systems flat-bed scale trailer, and bur cotton yields per acre were subsequently calculated by plot. After grab samples from each location and each plot were ginned (Plains, Mt. Blanco Irrigated, and Mt. Blanco Dryland), lint and seed turnout values were applied to bur cotton yields to determine lint and seed yields/acre. Lint samples resulting from the grab samples from the Plains and Blanco locations were submitted to the Texas Tech University - Fiber and Biopolymer Research Institute for HVI fiber analyses and CCC lint loan values were calculated.

In 2014, yields were relatively low compared to 2013 mostly due to delayed crop from early season cool temperatures across the Texas High Plains region. A total of three irrigated locations were initiated in 2014 at Farwell (15 varieties), Plains (20 varieties) and Mt. Blanco (15 varieties), and two dryland locations at Plains (10 varieties) and Mt. Blanco (15 varieties). All locations were well maintained by the cooperating producers, however, delayed planting at Plains, coupled with lower rainfall in July and August, resulted in lower lint yields. Lint yields averaged 525 lb/acre, 921 lb/acre, and 845 lb/acre at Plains, Mt. Blanco Irrigated and Mt. Blanco Dryland, respectively.

Lint yields at Plains ranged from 650 lb/acre to a low of 416 lb/acre for FiberMax 2011GT and Deltapine 1219B2RF, respectively, and seed yields averaged 841 lb/acre. Loan values were low due to delayed maturity resulting in lower than usual micronaire values, color grade, and higher leaf values. Values averaged \$0.4473/lb across all varieties and no differences were observed. After applying lint loan values to lint yield, lint values (\$/acre) averaged \$235.73 across all varieties. After subtracting ginning and seed/technology fee costs from total value, net values ranged from a high of \$300.95/acre (FiberMax 2011GT) to a low of \$165.65/acre (Croplan 3787B2RF), a difference of \$135.30.

At the Mt. Blanco irrigated location, lint yields averaged 921 lb/acre and Deltapine 1441RF had the highest with 1054 lb/acre. Loan values derived from grab samples ranged from \$0.5812 for Croplan 3787B2RF to \$0.5155 for NexGen 1511B2RF. Lint values (\$/acre) ranged from a high of \$577.15 for Deltapine 1441B2RF to a low of \$366.35 for FiberMax 2011GT. After subtracting ginning and seed/technology costs, net value ranged from a high of \$611.79/acre (Deltapine 1441RF) to a low of \$366.28/acre (FiberMax 2011GT), a difference of \$245.51/acre.

At the Mt. Blanco dryland location, lint yields averaged 845 lb/acre and NexGen 1511B2RF had the highest with 924 lb/acre, and seed yields averaged 1184 lb/acre across varieties. Lint loan values ranged from \$0.5642 for Deltapine 1321B2RF to \$0.4822 for Stoneville 4747GLB2, resulting in lint values (\$/acre) ranging from a high of \$511.63 for PhytoGen 333WRF, to a low of \$378.21 for FiberMax 1830GLT. After subtracting ginning and seed/technology costs, net value ranged from a high of \$524.21/acre (NexGen 1511B2RF) to a low of \$354.89/acre (FiberMax 1830GLT), a difference of \$169.32/acre.

These data indicate that substantial differences can be observed in terms of net value/acre due to variety and technology selection. When comparing the top and bottom varieties at the Plains and Mt. Blanco Irrigated and Dryland locations, differences were approximately \$135, \$246, and \$169, respectively. Additional multi-site and multi-year applied research is needed to evaluate varieties across a series of environments.

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Table 1. Harvest results from the Plains Irrigated Systems Cotton Variety Trial, Rickey Bearden Farm, Plains, TX, 2014.

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 ¹	Net value
	----- % -----			----- lb/acre -----		\$ /lb		----- \$/acre -----				
FiberMax 2011GT	30.4	46.0	2141	650	985	0.4500	292.56	123.15	415.71	64.24	50.52	300.95 a
FiberMax 2322GL	29.8	46.0	2157	643	992	0.4545	292.36	124.00	416.36	64.71	53.89	297.76 ab
Stoneville 4747GLB2	29.5	47.4	2147	634	1018	0.4548	288.54	127.31	415.85	64.41	61.64	289.80 ab
FiberMax 2334GLT	31.5	47.8	1794	564	858	0.4870	274.88	107.27	382.15	53.83	61.69	266.63 abc
FiberMax 1830GLT	31.0	46.6	1829	568	852	0.4867	276.21	106.44	382.65	54.86	61.69	266.10 abc
Deltapine 1212B2RF	31.2	49.2	1790	558	881	0.4682	261.10	110.08	371.18	53.69	57.93	259.56 abcd
NexGen 3306B2RF	30.1	50.5	1802	542	910	0.4703	255.10	113.73	368.83	54.06	55.75	259.02 abcde
NexGen 4111RF	29.2	50.0	1793	524	897	0.4617	241.71	112.10	353.81	53.79	44.22	255.81 abcdef
FiberMax 2484B2F	29.8	46.5	1929	574	897	0.4373	251.02	112.15	363.18	57.87	58.84	246.47 bcdefg
FiberMax 1320GL	30.8	48.3	1705	526	823	0.4707	247.34	102.88	350.21	51.15	53.89	245.17 bcdefg
NexGen 1511B2RF	31.0	46.0	1685	522	776	0.4493	234.57	96.98	331.55	50.56	55.75	225.23 cdefgh
Deltapine 1441RF	30.0	46.1	1608	482	741	0.4467	215.23	92.69	307.92	48.24	48.21	211.47 defghi
PhytoGen 339WRF	29.0	49.6	1703	494	845	0.4245	209.66	105.59	315.25	51.10	57.62	206.53 efghi
Deltapine 1321B2RF	30.0	47.3	1693	507	801	0.4235	214.93	100.10	315.02	50.79	59.80	204.43 fghi
Stoneville 4946GLB2	30.2	47.0	1629	492	766	0.4365	214.65	95.77	310.42	48.86	61.64	199.92 ghi
Deltapine 1410B2RF	28.1	48.0	1693	476	813	0.4305	205.06	101.68	306.74	50.80	57.93	198.01 ghi
PhytoGen 333WRF	27.6	46.7	1660	458	776	0.4198	192.32	96.98	289.31	49.81	57.62	181.88 hi
PhytoGen 367WRF	27.6	48.7	1624	449	791	0.4217	189.28	98.87	288.15	48.72	57.62	181.81 hi
Deltapine 1219B2RF	27.3	45.2	1520	416	687	0.4340	180.41	85.82	266.22	45.61	54.65	165.96 i
Croplan 3787B2RF	29.0	48.5	1464	425	709	0.4185	177.66	88.68	266.34	43.92	56.77	165.65 i
Test average	29.7	47.6	1768	525	841	0.4473	235.73	105.11	340.84	53.05	56.38	231.41
CV, %	5.0	5.1	11.8	11.3	11.5	9.0	11.1	11.5	11.2	11.8	--	13.8
OSL	0.0325	0.3693	0.0058	0.0002	0.0048	0.6225	<0.0001	0.0047	<0.0001	0.0057	--	<0.0001
LSD	2.5	NS	346	98	160	NS	43.23	19.95	62.93	10.37	--	52.67

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.

\$250/ton for seed.

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

¹ - Seed/technology cost does not include any rebates that may be available from seed companies based on quantities purchased.

Table 2. HVI fiber property results from the Plains Irrigated Systems Cotton Variety Trial, Rickey Bearden Farm, Plains, TX, 2014.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 ^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
Croplan 3787B2RF	2.5	34.3	80.5	27.2	8.7	3.3	73.3	9.7	3.0	2.0
Deltapine 1212B2RF	3.2	35.7	82.3	29.6	8.3	3.7	73.0	9.5	3.7	2.0
Deltapine 1219B2RF	2.5	35.3	80.6	28.5	7.5	2.7	71.4	10.8	3.0	2.7
Deltapine 1321B2RF	2.6	34.7	81.1	29.2	9.2	4.7	71.1	9.9	3.3	2.0
Deltapine 1410B2RF	2.4	36.3	81.0	29.0	7.4	3.7	73.0	9.4	3.7	1.7
Deltapine 1441RF	2.6	34.9	81.6	29.4	8.9	3.0	73.2	10.2	2.7	2.3
FiberMax 1320GL	2.7	34.5	81.4	29.7	8.5	3.0	75.0	9.5	2.7	1.3
FiberMax 1830GLT	2.7	37.0	82.3	29.4	7.1	2.0	75.1	8.9	3.3	1.3
FiberMax 2011GT	2.7	35.3	81.6	29.3	7.2	3.7	72.6	9.0	3.7	1.7
FiberMax 2322GL	2.7	36.2	81.7	30.2	7.3	4.0	72.5	9.4	3.7	1.7
FiberMax 2334GLT	2.7	36.2	82.1	29.2	7.2	2.3	75.3	9.9	2.3	1.7
FiberMax 2484B2F	2.6	35.7	81.2	28.9	7.0	2.3	72.9	10.3	3.0	2.3
NexGen 1511B2RF	2.8	33.8	81.4	29.8	9.2	3.0	72.1	9.8	3.0	2.0
NexGen 3306B2RF	2.8	35.5	81.8	30.6	8.8	3.0	73.4	9.7	3.0	2.0
NexGen 4111RF	2.9	34.6	82.0	30.1	8.5	2.7	71.8	10.5	3.0	2.7
PhytoGen 333WRF	2.4	35.0	80.0	27.2	7.6	4.0	71.4	9.6	3.3	2.0
PhytoGen 339WRF	2.5	34.0	80.2	27.8	8.8	3.7	73.0	9.2	3.3	1.7
PhytoGen 367WRF	2.4	35.3	81.5	28.8	8.1	4.0	72.7	9.7	3.0	2.0
Stoneville 4747GLB2	2.8	35.4	81.6	28.0	7.1	3.7	71.2	8.9	4.0	1.7
Stoneville 4946GLB2	2.5	34.9	80.3	28.7	8.2	3.0	71.7	10.0	3.7	2.0
Test average	2.7	35.2	81.3	29.0	8.0	3.3	72.8	9.7	3.2	1.9
CV, %	11.1	2.1	1.2	4.1	6.9	34.7	3.0	8.0	--	--
OSL	0.2099	0.0002	0.1445	0.0471	<0.0001	0.4065	0.5165	0.2602	--	--
SD	NS	1.2	NS	2.0	0.9	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

Table 3. Harvest results from the Mt. Blanco Irrigated Systems Variety Trial, Mark and David Applng Farm, Mt. Blanco, TX, 2014.

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 ¹	Net value
	%			lb/acre		\$/lb				\$/acre		
Deltapine 1441RF	33.5	46.3	3148	1054	1458	0.5473	577.15	182.25	759.40	94.45	53.16	611.79 a
Deltapine 1219B2RF	32.8	45.6	3187	1046	1452	0.5452	570.39	181.47	751.87	95.60	60.26	596.01 ab
PhytoGen 333WRF	32.4	44.3	3203	1038	1418	0.5468	567.54	177.27	744.82	96.08	63.53	585.21 ab
Stoneville 4946GLB2	33.3	48.1	2980	992	1434	0.5508	546.26	179.22	725.48	89.41	67.96	568.10 abc
NexGen 4111RF	30.4	43.2	3261	991	1408	0.5303	525.40	175.95	701.35	97.83	48.76	554.77 abc
NexGen 3306B2RF	32.5	49.4	2810	914	1387	0.5650	516.22	173.37	689.59	84.29	61.47	543.83 abcd
PhytoGen 339WRF	31.9	45.1	2985	952	1347	0.5407	514.62	168.37	682.99	89.55	63.53	529.91 abcd
Deltapine 1321B2RF	33.4	45.3	2832	946	1284	0.5445	515.15	160.55	675.70	84.97	65.94	524.79 abcd
FiberMax 2334GLT	31.6	44.5	2923	925	1300	0.5508	509.42	162.54	671.96	87.68	68.02	516.27 bcde
Stoneville 4747GLB2	31.7	44.7	2975	943	1329	0.5275	497.56	166.16	663.72	89.24	67.96	506.53 bcde
FiberMax 3787B2RF	33.6	45.3	2479	832	1123	0.5712	475.09	140.32	615.41	74.36	62.59	478.46 cde
NexGen 1511B2RF	32.7	44.9	2679	876	1202	0.5155	451.70	150.28	601.98	80.36	61.47	460.15 de
FiberMax 1830GLT	33.7	44.3	2500	842	1108	0.5453	459.08	138.49	597.57	75.00	68.02	454.55 def
FiberMax 2484B2F	32.6	46.6	2343	764	1091	0.5695	435.01	136.35	571.36	70.28	64.87	436.21 ef
FiberMax 2011GT	31.4	43.8	2246	705	984	0.5198	366.35	123.02	489.36	67.38	55.70	366.28 f
Test average	32.5	45.4	2837	921	1288	0.5447	501.80	161.04	662.84	85.10	62.22	515.52
CV, %	6.2	4.6	9.7	9.6	9.5	5.1	9.4	9.5	9.4	9.7	--	10.5
OSL	0.7916	0.0925 [†]	0.0006	0.0008	0.0003	0.4345	0.0004	0.0003	0.0004	0.0006	--	0.0003
LSD	NS	2.9	459	147	206	NS	78.73	25.69	104.39	13.77	--	90.66

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

CV - coefficient of variation.

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

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

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

Assumes:

\$3.00/cwt ginning cost.

\$250/ton for seed.

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

¹ - Seed/technology cost does not include any rebates that may be available from seed companies based on quantities purchased.

Table 4. HVI fiber property results from the Mt. Blanco Irrigated Systems Variety Trial, Mark and David Appling Farm, Mt. Blanco, TX, 2014.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	color 1	color 2
	units	32 ^{nds} inch	%	g/tex	%	grade	reflectance	yellowness		
Croplan 3787B2RF	4.4	35.6	82.4	30.3	8.0	1.3	78.4	8.0	3.0	1.0
Deltapine 1219B2RF	4.3	36.3	82.1	32.3	7.4	1.7	75.1	8.4	3.7	1.3
Deltapine 1321B2RF	4.6	35.1	82.4	30.5	9.2	2.7	74.5	9.1	3.3	1.0
Deltapine 1441RF	4.3	35.6	82.1	31.5	8.8	2.3	76.2	8.1	3.7	1.0
FiberMax 1830GLT	4.5	37.7	81.9	32.2	6.1	1.7	77.8	6.9	3.7	1.0
FiberMax 2011GT	4.6	34.9	80.6	30.1	6.5	3.3	72.3	7.4	4.3	1.0
FiberMax 2334GLT	4.6	37.2	82.7	31.0	7.0	2.3	77.3	7.4	3.7	1.0
FiberMax 2484B2F	4.3	36.4	82.5	31.9	7.0	2.0	77.3	7.9	3.0	1.0
NexGen 1511B2RF	4.1	34.8	81.7	30.2	8.6	3.0	73.1	10.0	3.0	2.0
NexGen 3306B2RF	4.3	37.9	83.4	32.6	7.7	2.0	77.2	7.8	3.3	1.0
NexGen 4111RF	4.8	35.3	82.0	32.0	8.0	3.0	73.1	7.7	4.0	1.0
PhytoGen 333WRF	4.5	35.9	82.4	31.4	7.0	3.7	74.6	7.7	3.7	1.0
PhytoGen 339WRF	4.1	36.2	81.6	31.9	7.3	2.3	75.0	7.3	4.0	1.0
Stoneville 4747GLB2	4.5	36.9	82.3	29.3	5.8	3.3	74.8	6.6	4.3	1.0
Stoneville 4946GLB2	4.5	35.7	82.5	32.2	7.6	2.3	77.8	7.6	3.3	1.0
Test average	4.4	36.1	82.2	31.3	7.5	2.5	75.7	7.9	3.6	1.1
CV, %	8.7	3.0	1.3	4.0	10.5	32.1	2.5	8.4	--	--
OSL	0.6936	0.0206	0.5163	0.0565 [†]	0.0003	0.0324	0.0046	0.0002	--	--
LSD	NS	1.8	NS	1.7	1.3	1.3	3.2	1.1	--	--

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 5. Harvest results from the Mt. Blanco Dryland Systems Variety Trial, Mark and David Appling Farm, Mt. Blanco, TX, 2014.

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 ¹	Net value
	%			lb/acre		\$/lb		\$/acre				
NexGen 1511B2RF	36.3	48.4	2546	924	1233	0.5495	507.93	154.12	662.05	76.37	61.47	524.21 a
PhytoGen 333WRF	32.0	44.0	2856	914	1257	0.5597	511.63	157.18	668.81	85.69	63.53	519.59 a
Deltapine 1219B2RF	31.6	44.9	2899	916	1302	0.5422	496.44	162.77	659.20	86.97	60.26	511.97 ab
FiberMax 2484B2F	31.4	44.9	2933	922	1316	0.5422	499.84	164.56	664.40	88.00	64.87	511.53 ab
Deltapine 1441RF	30.8	45.2	2895	892	1308	0.5263	469.24	163.45	632.69	86.86	53.16	492.67 ab
FiberMax 2334GLT	32.0	43.4	2734	874	1188	0.5547	485.05	148.46	633.51	82.02	68.02	483.47 abc
PhytoGen 339WRF	28.8	47.2	2880	829	1361	0.5398	447.35	170.10	617.46	86.41	63.53	467.52 abc
Deltapine 1321B2RF	30.5	44.0	2601	793	1144	0.5642	447.14	142.99	590.13	78.03	65.94	446.17 abcd
Stoneville 4946GLB2	30.3	43.8	2907	880	1272	0.4937	434.51	158.99	593.50	87.20	67.96	438.34 abcde
NexGen 3306B2RF	30.2	44.1	2691	812	1186	0.5235	425.07	148.29	573.36	80.74	61.47	431.15 bcde
FiberMax 2011GT	32.8	44.0	2470	810	1086	0.5213	422.50	135.73	558.23	74.09	55.70	428.43 bcde
NexGen 4111RF	29.7	42.7	2668	792	1139	0.5220	413.40	142.35	555.75	80.04	48.76	426.95 bcde
Croplan 3787B2RF	34.7	42.3	2305	799	976	0.5132	409.87	121.98	531.84	69.14	62.59	400.11 cde
Stoneville 4747GLB2	30.1	40.7	2640	795	1076	0.4822	383.33	134.44	517.78	79.19	67.96	370.63 de
FiberMax 1830GLT	31.3	39.4	2323	726	915	0.5210	378.21	114.38	492.59	69.68	68.02	354.89 e
Test average	31.5	43.9	2690	845	1184	0.5304	448.77	147.99	596.75	80.70	62.22	453.84
CV, %	6.7	6.7	10.0	10.0	9.9	6.6	10.0	9.9	10.0	10.0	--	11.4
OSL	0.0186	0.1011	0.0817 [†]	0.1457	0.0017	0.2621	0.0076	0.0017	0.0103	0.0816 [†]	--	0.0038
LSD	3.6	NS	373	NS	196	NS	75.17	24.53	99.67	11.20	--	86.23

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

CV - coefficient of variation.

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

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

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

Assumes:

\$3.00/cwt ginning cost.

\$250/ton for seed.

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

¹ - Seed/technology cost does not include any rebates that may be available from seed companies based on quantities purchased.

Table 6. HVI fiber property results from the Mt. Blanco Dryland Systems Variety Trial, Mark and David Applying Farm, Mt. Blanco, TX, 2014.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	color 1	color 2
	units	32 ^{nds} inch	%	g/tex	%	grade	reflectance	yellowness		
Croplan 3787B2RF	4.0	35.0	80.7	30.0	8.2	1.3	72.4	9.5	3.7	1.7
Deltapine 1219B2RF	4.1	35.3	81.6	30.9	7.6	2.0	75.6	9.0	3.3	1.3
Deltapine 1321B2RF	4.2	36.9	82.0	32.5	6.1	1.3	77.1	8.1	3.3	1.0
Deltapine 1441RF	4.7	35.0	81.8	30.4	8.1	2.7	74.4	8.4	3.7	1.3
FiberMax 1830GLT	4.6	35.5	82.0	30.2	7.2	4.0	74.9	7.9	3.7	1.0
FiberMax 2011GT	4.6	35.5	81.5	29.5	6.5	3.7	74.4	7.6	4.0	1.0
FiberMax 2334GLT	4.4	36.3	82.5	31.6	7.8	2.3	77.1	7.9	3.3	1.0
FiberMax 2484B2F	4.8	36.7	82.5	31.7	7.0	2.3	78.2	7.0	3.7	1.0
NexGen 1511B2RF	4.5	36.1	82.3	31.4	8.1	2.7	76.7	7.8	3.3	1.0
NexGen 3306B2RF	4.4	35.6	81.9	33.1	8.2	3.7	75.4	8.2	3.7	1.0
NexGen 4111RF	4.9	35.7	81.7	32.7	7.4	3.7	75.7	7.4	3.7	1.0
PhytoGen 333WRF	4.6	36.6	81.4	32.8	6.4	2.3	77.8	7.4	3.3	1.0
PhytoGen 339WRF	4.8	34.8	80.7	30.5	7.5	3.0	76.5	8.0	3.3	1.0
Stoneville 4747GLB2	5.1	33.7	79.6	28.4	7.0	4.0	74.1	8.0	4.0	1.0
Stoneville 4946GLB2	5.3	34.0	80.5	30.6	8.2	2.7	75.1	8.5	3.7	1.0
Test average	4.6	35.5	81.5	31.1	7.4	2.8	75.7	8.0	3.6	1.1
CV, %	9.9	3.0	1.0	3.9	10.0	37.5	2.9	9.5	--	--
OSL	0.0901 [†]	0.0284	0.0087	0.0017	0.0094	0.0424	0.1559	0.0481	--	--
LSD	0.6	1.8	1.4	2.0	1.2	1.7	NS	1.3	--	--

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

Additional Replicated Irrigated Large Plot Demonstrations



**Replicated Sub-Surface Drip Irrigated RACE Variety Trial,
Cone, TX - 2014**

Cooperator: Lonnie and Lloyd Arthur

**Mark Kelley, Kristie Keys, and Caitlin Jackson, Extension Agronomist – Cotton,
Extension Assistant – Cotton, and CEA-ANR Crosby County**

Crosby County

Objective: The objective of this study is to compare agronomic characteristics, yields, gin turnout, fiber quality, and economic returns of transgenic cotton varieties under sub-surface drip irrigation on the Texas High Plains.

Materials and Methods:

Varieties: PhytoGen 339WRF, PhytoGen 333WRF, Croplan 3787B2RF, FiberMax 2484B2F, DeltaPine 1219B2RF, NexGen 3306B2RF, NexGen 1511B2RF, FiberMax 2011GT, Stoneville 4747GLB2

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

Planting date: 16- May

Seeding rate: Planted 3.7 seeds/row-ft, or 49,000 seed/A, to prepared, listed 40 inch rows using a commercial IH Planter LRA and MX 210 vacuum planter.

Plot size: 12 rows

Weed management: Treflan (Triflurex HEP at 30oz/A) was applied pre-plant and incorporated with a twelve-row lister on 26-Feb. Post-emergent foliar applications of glyphosate (RoundUp PowerMAX) at 42 oz/A, AMS (Vixen at 3.2 oz/A) and NIS (Voyager 90/10 at 3.2 oz/A) were made on 19-June and 10-Aug.

Irrigation: From 3-May to 1-Sep. approximately 10.15 acre-inches of water were applied via sub-surface drip tape.

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

April: 0.26"	August: 1.17"
May: 6.25"	September: 5.41"
June: 3.81"	October: 0.26"
July: 4.25"	

Total rainfall: 21.41"

Plant growth regulators: Plant growth regulators were not used in this study.

Harvest aids: Foliar applications of ethephon (SuperBoll at 1.5 qt/A), pyraflufen ethyl (ETX at 1.3 oz/A), and crop oil concentrate at 12.8 oz/A, were made on 27-Oct and 31-Oct.

Harvest: Plots were harvested on 1-Dec with a commercial eight-row John Deere 7460 cotton stripper with bur extractor. Harvested material was transferred to producer boll buggy and a Western Forage Systems flat-bed scale trailer was used to determine individual plot weights. Plot weights were subsequently converted to lb/acre.

Gin turnout: Grab samples were taken from each plot harvested and ginned at the Texas A&M 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 was based on \$3.00 per cwt. of bur cotton and seed value/acre was based on \$250/ton. Ginning cost did not include check-off.

Seed and Technology fees: Seed and technology costs were calculated using the appropriate seeding rate (3.7 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: <http://plainscotton.org/Seed/PCGseed14.xls>

Results and Discussion:

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

Significant differences were noted for most yield and economic parameters (Table 2). Lint turnout averaged 33.2% with a high of 34.8% and low of 31.1% for NexGen 1511B2RF and Deltapine 1219B2RF, respectively. Bur cotton yields averaged 4257 lb/acre. Lint yields averaged 1411 lb/acre and ranged from a high of 1539 lb/acre for NexGen 1511B2RF to a low of 1291 lb/acre for PhytoGen 339WRF. Lint loan values

ranged from a high of \$0.5738 (Croplan 3787B2RF) to a low of \$0.5307 (Stoneville 4747GLB2) with a test average of \$0.5640/lb. After combining lint yield and loan value, lint values (\$/acre) averaged \$795.87/acre and ranged from a high of \$863.73 for NexGen 1511B2RF to a low of \$727.54 for PhytoGen 339WRF. When adding lint and seed value, total value ranged from a high of \$1123.06/acre to a low of \$958.65/acre for NexGen 3306B2RF and PhytoGen 339WRF, respectively. After subtracting ginning, seed costs and technology fees, net value/acre averaged \$846.21/acre. Net values ranged from a high of \$920.57/acre (NexGen 3306B2RF) to a low of \$772.01/acre (PhytoGen 339WRF), a difference of \$148.56.

Significant differences were observed among varieties for all fiber quality parameters at this location (Table 3). Differences in micronaire values were significant with a test average of 3.9. Staple averaged 36.4 across all varieties with a high of 38.2 for NexGen 3306B2RF and a low of 35.4 for FiberMax 2011GT. Uniformity averaged 81.3% across varieties. Strength values ranged from a low of 28.2 g/tex for Croplan 3787B2RF to a high of 32.5 g/tex for NexGen 3306B2RF. Elongation averaged 8.0% across varieties with a high of 9.6% for Croplan Genetics 3787B2RF and a low of 6.3% for Stoneville 4747GLB2. Leaf grades were mostly 2 with a test average of 1.9. Color grade components of Rd (reflectance) and +b (yellowness) averaged 79.2 and 7.5, 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 Lonnie and Lloyd Arthur for the use of their land, equipment and labor for this demonstration. Further assistance with this project was provided by Dr. Jane Dever and Ms. Valerie Morgan - Texas A&M 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 Crosby County Sub-surface Drip Irrigated RACE Variety Trial, Lonnie and Lloyd Arthur Farm, Ralls, TX, 2014.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of		
	plants/row ft	plants/acre	31-Jul	8-Aug	25-Aug
Croplan 3787B2RF	3.2	41,963	7.1	6.3	2.7
Deltapine 1219B2RF	3.3	43,270	6.5	6.4	2.7
FiberMax 2011GT	3.7	48,497	6.0	4.8	1.9
FiberMax 2484B2F	3.6	46,754	5.9	4.9	1.8
NexGen 1511B2RF	3.2	41,818	6.3	6.1	3.6
NexGen 3306B2RF	3.2	41,382	6.6	6.4	2.5
PhytoGen 333WRF	3.1	40,366	6.5	5.5	2.4
PhytoGen 339WRF	3.3	43,560	6.6	5.9	1.9
Stoneville 4747GLB2	3.3	43,705	5.9	4.8	1.7
Test average	3.3	43,479	6.4	5.7	2.4
CV, %	4.8	4.7	8.6	11.5	15.5
OSL	0.0052	0.0035	0.2151	0.0167	0.0002
LSD	0.3	3,566	NS	1.1	0.6

For NAWF, numbers represent an average of 5 plants per variety per rep (15 plants per variety)

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level, NS - not significant

Table 2. Harvest results from the Crosby County Sub-surface Drip Irrigated RACE Variety Trial, Lonnie and Lloyd Arthur Farm, Ralls, TX, 2014.

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 ¹	Net value
	%			lb/acre		\$/lb		\$/acre				
NexGen 3306B2RF	33.3	51.5	4415	1468	2273	0.5715	838.98	284.08	1123.06	132.44	70.05	920.57 a
NexGen 1511B2RF	34.8	45.8	4428	1539	2029	0.5612	863.73	253.60	1117.33	132.83	70.05	914.45 a
FiberMax 2484B2F	32.7	46.1	4424	1448	2039	0.5737	830.38	254.93	1085.32	132.73	73.92	878.66 ab
FiberMax 2011GT	33.9	45.3	4349	1475	1972	0.5592	824.90	246.44	1071.34	130.48	63.48	877.38 ab
PhytoGen 333WRF	33.8	47.2	4145	1401	1957	0.5713	800.58	244.63	1045.21	124.35	72.39	848.47 bc
Deltapine 1219B2RF	31.1	44.7	4415	1373	1971	0.5715	784.75	246.42	1031.17	132.44	68.67	830.06 cd
Croplan 3787B2RF	32.7	45.7	4056	1328	1853	0.5738	761.84	231.57	993.40	121.68	71.33	800.40 de
Stoneville 4747GLB2	32.2	46.7	4271	1376	1994	0.5307	730.16	249.31	979.47	128.14	77.44	773.89 e
PhytoGen 339WRF	33.9	48.5	3808	1291	1849	0.5635	727.54	231.11	958.65	114.25	72.39	772.01 e
Test average	33.2	46.8	4257	1411	1993	0.5640	795.87	249.12	1044.99	127.70	71.08	846.21
CV, %	8.0	9.1	2.9	2.9	2.9	1.9	2.9	2.9	2.9	2.9	--	3.1
OSL	0.8393	0.6731	<0.0001	<0.0001	<0.0001	0.0029	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001
LSD	NS	NS	212	70	99	0.0182	39.54	12.41	51.94	6.35	--	45.60

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.

\$250/ton for seed.

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

¹ - Seed/technology cost does not include any rebates that may be available from seed companies based on quantities purchased.

Table 3. HVI fiber property results from the Crosby County Sub-surface Drip Irrigated RACE Variety Trial, Lonnie and Lloyd Arthur Farm, Ralls, TX, 2014.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	color 1	color 2
	units	32 ^{nds} inch	%	g/tex	%	grade	reflectance	yellowness		
Croplan 3787B2RF	4.0	35.6	81.6	28.2	9.6	1.3	80.4	8.2	2.0	1.0
Deltapine 1219B2RF	3.8	36.4	80.5	31.5	7.8	1.0	80.1	7.7	3.0	1.0
FiberMax 2011GT	4.1	35.4	80.9	31.2	7.6	2.0	78.5	7.3	3.3	1.0
FiberMax 2484B2F	3.7	36.8	80.4	31.0	7.1	1.3	81.7	6.8	2.7	1.0
NexGen 1511B2RF	4.1	36.2	81.8	30.4	9.3	2.7	78.6	8.1	3.0	1.0
NexGen 3306B2RF	3.7	38.2	82.3	32.5	8.7	1.7	79.2	7.8	2.7	1.0
PhytoGen 333WRF	4.1	36.8	82.2	30.6	7.5	2.3	77.8	7.8	3.0	1.0
PhytoGen 339WRF	3.9	36.4	82.0	31.3	8.3	1.3	79.5	7.1	3.3	1.0
Stoneville 4747GLB2	3.9	36.1	80.1	28.7	6.3	3.7	76.8	6.6	4.0	1.0
Test average	3.9	36.4	81.3	30.6	8.0	1.9	79.2	7.5	3.0	1.0
CV, %	4.5	2.1	0.9	2.4	5.6	36.0	1.3	3.1	--	--
OSL	0.0378	0.0151	0.0123	<0.0001	<0.0001	0.0053	0.0011	<0.0001	--	--
LSD	0.3	1.3	1.3	1.3	0.8	1.2	1.8	0.4	--	--

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level.



**Replicated LEPA Irrigated RACE Variety Trial,
Lamesa, TX - 2014**

**Cooperator: Lamesa Cotton Growers/Texas A&M AgriLife Research/
Texas A&M AgriLife Extension**

**Mark Kelley, Kristie Keys, Tommy Doederlein
and Gary Roschetzky
Extension Agronomist – Cotton, Extension Assistant – Cotton,
EA-IPM Dawson/Lynn Counties and CEA-ANR Dawson County**

Dawson County

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

Materials and Methods:

Varieties: NexGen 1511B2RF, FiberMax 2011GT, Stoneville 4946GLB2, PhytoGen 367WRF, NexGen 3306B2RF, PhytoGen 417WRF, FiberMax 2334GLT, PhytoGen 499WRF

Planting date: 19-May

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

Seeding rate: Planted 4.0 seeds/row-ft, or 52,272 seed/A, into a terminated rye cover crop on prepared, listed 40 inch rows using a commercial John Deere MaxEmerge XP vacuum planter.

Plot size: 4 rows by variable length (253-872 ft)

Weed management: A burndown application of 2,4-D at 1 qt/A was made on 26-March. Pendimethalin (Prowl H2O at 3 pt/A) and glyphosate (RoundUp PowerMax at 32oz/A) were applied preplant and incorporated on 16-April. Post-emergent applications of glyphosate (RoundUp PowerMax at 32 oz/A) were made on 3-June and 1-Aug. The trial was cultivated with sweeps on 25-June and hoed by hand on 6-Aug.

Irrigation:	5" inches of irrigation were applied preplant, with 4.7" applied during the growing season for a total of 9.7" of irrigation applied.										
Rainfall:	Based on the nearest Texas Tech University – West Texas Mesonet station at Lamesa, rainfall amounts were: <table> <tr> <td>April: 0.25"</td><td>August: 0.45"</td></tr> <tr> <td>May: 1.26"</td><td>September: 6.42"</td></tr> <tr> <td>June: 3.67"</td><td>October: 0.02"</td></tr> <tr> <td>July: 1.24"</td><td></td></tr> <tr> <td>Total rainfall:</td><td>13.31"</td></tr> </table>	April: 0.25"	August: 0.45"	May: 1.26"	September: 6.42"	June: 3.67"	October: 0.02"	July: 1.24"		Total rainfall:	13.31"
April: 0.25"	August: 0.45"										
May: 1.26"	September: 6.42"										
June: 3.67"	October: 0.02"										
July: 1.24"											
Total rainfall:	13.31"										
Fertility Management:	A preplant application of 10-34-0 at a rate of 110 lb/A was made on 1-April. An additional 120 lb/A 32-0-0 was applied via fertigation throughout the growing season.										
Plant growth regulators:	No PGR's were used in this study.										
Harvest aids:	An application of ethephon (Boll Buster at 1 qt/A) and pyraflufen ethyl (ETX at 1.25oz/A) with 1% v/v COC was made on 4-Oct. This was followed by an application of pyraflufen ethyl (ET at 3 oz/acre) and 1% v/v COC on 18-Oct. Due to difficulties in terminating the crop and substantial regrowth, an additional application of pyraflufen ethyl (ETX at 1 oz/A) and paraquat (Gramoxone Inteon at 1 pt/A) and 1% v/v COC was made on 31-Oct.										
Harvest:	Plots were harvested on 14-Nov using a commercial John Deere 7445 with burr extractor. 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 A&M 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 burr cotton and seed value/acre was based on \$250/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://plainscotton.org/Seed/PCGseed14.xls										

Results and Discussion:

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

Significant differences were observed for most yield and economic parameters measured except lint and seed turnouts (Table 2). Lint yields ranged from a low of 534 lb/acre for PhytoGen 499WRF to a high of 809 lb/acre for PhytoGen 417WRF. Lint loan values averaged \$0.4904/lb across varieties. Lint value averaged \$333.63/acre and ranged from a high of \$388.26/acre for PhytoGen 417WRF to a low of \$260.72/acre for PhytoGen 499WRF. When subtracting ginning and seed and technology costs, the net value/acre averaged \$315.50. Differences among varieties were observed for net value and values ranged from a high of \$377.72/acre to a low of \$226.90/acre for PhytoGen 417WRF and PhytoGen 499WRF, respectively.

Significant differences were observed for most fiber quality parameters at this location (Table 3). Micronaire values averaged 4.6 with a high of 4.8 for both NexGen 1511B2RF and FiberMax 2334GLT and a low of 4.3 for FiberMax 2011GT. Staple averaged 32.7 with a high of 33.8 for FiberMax 2334GLT and NexGen 3306B2RF, and low of 31.5 for NexGen 1511B2RF. Differences in uniformity and strength values were not significant. Uniformity averaged 80.5% and strength averaged 28.8 g/tex. Elongation values were significantly different, with an average of 8.2%. Values ranged from a low of 6.6% (FiberMax 2334GLT) and a high of 9.4% (PhytoGen 499WRF). Leaf grades varied with most varieties averaging between 3 and 4. Finally, Rd or reflectance (avg. 71.4), and +b or yellowness (avg. 8.5) values resulted in color grades of mostly 41.

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 Drs. Wayne Keeling and Danny Carmichael, Texas A&M AgriLife Research Systems Agronomist - Lubbock and Research Associate - AGCARES, Lamesa. Further assistance with this project was provided by Dr. Jane Dever and Ms. Valerie Morgan - Texas A&M AgriLife Research and Extension Center, Lubbock, and Dr. Eric Hequet - Associate Director, Fiber and Biopolymer Research Institute, Texas Tech University. Furthermore, we greatly appreciate funding for HVI testing from the Cotton Fibers Initiative Fund.

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Table 1. Inseason plant measurement results from the Dawson County LEPA Irrigated RACE Variety Trial, AGCARES Farm, Lamesa, TX, 2014.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of	
	plants/row ft	plants/acre	28-Jul	5-Aug
FiberMax 2011GT	3.4	45,012	4.4	2.9
FiberMax 2334GLT	3.8	49,731	4.9	4.1
NexGen 1511B2RF	3.4	43,923	5.2	3.4
NexGen 3306B2RF	3.5	45,375	5.2	3.2
PhytoGen 367WRF	3.3	43,560	5.7	3.8
PhytoGen 417WRF	3.6	47,553	5.6	3.9
PhytoGen 499WRF	3.3	43,560	5.5	3.7
Stoneville 4946GLB2	3.9	51,546	5.1	3.4
Test average	3.5	46,283	5.2	3.5
CV, %	10.5	10.3	10.3	15.9
OSL	0.4167	0.3603	0.1713	0.2264
LSD	NS	NS	NS	NS

For NAWF, numbers represent an average of 5 plants per variety per rep (15 plants per variety)
For Final plant map, numbers represent and average of 6 plants per variety per rep (18 plants per variety)
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, NS - not significant.

Table 2. Harvest results from the Dawson County LEPA Irrigated RACE Variety Trial, AGCARES Farm, Lamesa, TX, 2014.

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 ¹	Net value
	%			lb/acre		\$/lb		\$/acre				
PhytoGen 417WRF	36.7	49.4	2206	809	1090	0.4802	388.26	136.28	524.54	66.18	80.64	377.72 a
Stoneville 4946GLB2	37.1	51.2	2064	765	1058	0.4710	360.32	132.21	492.53	61.92	82.61	347.99 ab
FiberMax 2334GLT	37.5	47.6	1872	702	890	0.5222	366.71	111.29	478.00	56.17	82.68	339.15 ab
NexGen 3306B2RF	35.2	51.2	1861	655	952	0.5188	340.04	119.01	459.05	55.84	74.73	328.48 ab
FiberMax 2011GT	36.6	48.2	1877	686	905	0.4870	334.31	113.07	447.38	56.31	67.72	323.35 ab
NexGen 1511B2RF	36.6	47.4	1860	680	882	0.4607	313.29	110.22	423.50	55.79	74.73	292.98 bc
PhytoGen 367WRF	35.5	51.3	1737	617	891	0.4953	305.41	111.35	416.76	52.12	77.23	287.41 bc
PhytoGen 499WRF	37.0	48.1	1443	534	693	0.4878	260.72	86.68	347.41	43.28	77.23	226.90 c
Test average	36.5	49.3	1865	681	920	0.4904	333.63	115.01	448.65	55.95	77.19	315.50
CV, %	7.6	6.0	11.6	11.6	11.6	3.4	11.5	11.6	11.5	11.6	--	14.3
OSL	0.9659	0.4731	0.0292	0.0234	0.0149	0.0046	0.0267	0.0149	0.0273	0.0291	--	0.0334
LSD	NS	NS	377	139	187	0.0288	67.06	23.46	90.48	11.32	--	79.17

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.

\$250/ton for seed.

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

¹ - Seed/technology cost does not include any rebates that may be available from seed companies based on quantities purchased.

Table 3. HVI fiber property results from the Dawson County LEPA Irrigated RACE Variety Trial, AGCARES Farm, Lamesa, TX, 2014.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	color 1	color 2
	units	32 ^{nds} inch	%	g/tex	%	grade	reflectance	yellowness		
FiberMax 2011GT	4.3	32.2	79.9	27.9	6.8	4.0	72.3	8.4	4.0	1.0
FiberMax 2334GLT	4.8	33.8	80.2	27.8	6.6	2.0	73.6	7.8	4.0	1.0
NexGen 1511B2RF	4.8	31.5	79.4	28.1	9.2	3.7	69.7	8.7	4.7	1.7
NexGen 3306B2RF	4.7	33.8	81.7	29.8	8.5	2.3	72.0	8.6	4.0	1.3
PhytoGen 367WRF	4.5	33.3	81.0	29.2	8.4	3.3	71.1	8.7	4.0	1.7
PhytoGen 417WRF	4.4	32.5	80.3	29.0	8.7	4.3	70.8	8.5	4.0	1.3
PhytoGen 499WRF	4.7	32.2	80.5	29.9	9.4	3.7	72.4	8.5	4.0	1.0
Stoneville 4946GLB2	4.5	32.4	81.0	29.0	8.2	3.7	69.0	8.5	4.7	1.7
Test average	4.6	32.7	80.5	28.8	8.2	3.4	71.4	8.5	4.2	1.3
CV, %	3.7	2.5	1.4	4.1	4.1	26.6	1.9	3.6	--	--
OSL	0.0237	0.0318	0.3447	0.2802	<0.0001	0.0753 [†]	0.0211	0.0448	--	--
LSD	0.3	1.4	NS	NS	0.6	1.3	2.4	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, NS - not significant



**Replicated LESA Irrigated RACE Variety Trial,
Memphis, TX - 2014**

Cooperator: Terry Lindsey

**Mark Kelley, Kristie Keys, and Josh Brooks
Extension Agronomist – Cotton, Extension Assistant – Cotton
and CEA-ANR**

Hall County

Objective: The objective of this study is to compare agronomic characteristics, yields, gin turnout, fiber quality, and economic returns of transgenic cotton varieties under LESA irrigation on the Texas Rolling Plains.

Materials and Methods:

Varieties:	FiberMax 2011GT, Deltapine 1410B2RF, NexGen 3306B2RF, Croplan 3787B2RF, Deltapine 1219B2RF, Deltapine 1321B2RF, NexGen 1511B2RF, FiberMax 1830GLT, Stoneville 4946GLB2, PhytoGen 222WRF, PhytoGen 333WRF
Experimental design:	Randomized complete block with three (3) replications.
Planting date:	22-May
Seeding rate:	Planted 3.7 seeds/row-ft on flat ground in 40 inch row spacings. The trial was planted into a terminated rye cover crop.
Plot size:	8 rows by variable length
Weed management:	Roundup PowerMax was applied at a rate of 26 oz/acre, 3 times during the season.
Irrigation:	Approximately 14 acre-inches of water were applied via LESA pivot over the course of the growing season.

Rainfall:	Based on the nearest Texas Tech University- West Texas Mesonet station at Memphis, rainfall amounts were:								
	<table> <tr> <td>April: 0.68"</td><td>August: 3.43"</td></tr> <tr> <td>May: 4.11"</td><td>September: 0.93"</td></tr> <tr> <td>June: 3.14"</td><td>October: 1.03"</td></tr> <tr> <td>July: 2.79"</td><td></td></tr> </table>	April: 0.68"	August: 3.43"	May: 4.11"	September: 0.93"	June: 3.14"	October: 1.03"	July: 2.79"	
April: 0.68"	August: 3.43"								
May: 4.11"	September: 0.93"								
June: 3.14"	October: 1.03"								
July: 2.79"									
	Total rainfall: 16.11"								
Fertilizer management:	50 lbs of N, P, and K were applied pre-plant. Black label was applied in furrow at the recommended rate and 100 lbs of N applied through the pivot using 32-0-0 during the growing season.								
Harvest aids:	Crop was conditioned by freeze event.								
Harvest:	Plots were harvested on 20-Nov. with a commercial eight-row John Deere 7445 cotton stripper with burr extractor. 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.								
Gin turnout:	Grab samples were taken by plot and ginned at the Texas A&M 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 burr cotton and seed value/acre was based on \$250/ton. Ginning cost did not include check-off.								
Seed and Technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (3.5 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/PCGseed14.xls								

Results and Discussion:

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

Significant differences were noted for some yield and economic parameters (Table 2). Lint turnout averaged 33.2% did not vary significantly in this trial. Burr cotton yields averaged 2978 lb/acre across all varieties with a high of 3393 lb/acre for Stoneville 4946GLB2 and a low of 2632 lb/acre for FiberMax 1830GLT. Lint yields ranged from a low of 884 lb/acre (FiberMax 1830GLT) to a high of 1172 lb/acre (Stoneville 4946GLB2). Lint loan values averaged \$0.5627/lb across all varieties and did not vary significantly. When adding lint and seed value, total value ranged from a high of \$858.65/acre for Stoneville 4946GLB2 to a low of \$669.49/acre for FiberMax 1830GLT. After subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of \$694.63/acre (FiberMax 2011GT) to a low of \$514.62/acre (FiberMax 1830GLT), a difference of \$180.01/acre.

Significant differences were observed among varieties for most fiber quality parameters at this location (Table 3). Micronaire averaged 3.8 and did not vary significantly in this trial. Staple averaged 36.6 across all varieties with a high of 37.4 for NexGen 3306B2RF and a low of 35.4 for Deltapine 1321B2RF. Uniformity ranged from a high of 84.4% for NexGen 3306B2RF to a low of 81.8% for Deltapine 1410B2RF with a test average of 82.9%. Strength averaged 32.3 g/tex across varieties with a low of 31.0 g/tex (Croplan Genetics 3787B2RF) and a high of 33.9 g/tex (NexGen 3306B2RF). Elongation averaged 8.1% across varieties and leaf grades were mostly 1 and 2. Color grade components of Rd (reflectance) and +b (yellowness) averaged 77.3 and 8.1, respectively. This resulted in color grades of mostly 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 Matt Montgomery for the use of his land and equipment for this project. Further assistance with this project was provided by Dr. Jane Dever and Ms. Valerie Morgan - Texas A&M 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 Fiber Initiative for funding of HVI testing.

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Table 1. Inseason plant measurement results from the 2014 Hall County Irrigated RACE, Terry Lindsey Farm, Memphis, TX, 2014

Entry	Plant population		Nodes Above White Flower (NAWF) for week of			
	plants/row ft	plants/acre	22-Jul	29-Jul	7-Aug	
Croplan 3787B2RF	1.7	21,780	6.7	5.6	6.1	
Deltapine 1219B2RF	2.1	28,024	6.9	6.7	6.7	
Deltapine 1321B2RF	2.0	25,700	7.3	6.5	6.2	
Deltapine 1410B2RF	2.8	36,736	6.5	6.0	5.7	
FiberMax 1830GLT	1.8	22,942	6.3	5.9	6.2	
FiberMax 2011GT	2.5	33,251	6.0	6.3	5.5	
NexGen 1511B2RF	2.2	28,459	6.9	5.9	5.6	
NexGen 3306B2RF	2.1	27,733	6.7	5.4	5.1	
PhytoGen 222WRF	1.5	20,183	6.5	6.0	5.6	
PhytoGen 333WRF	1.8	23,958	6.7	5.7	6.3	
Stoneville 4946GLB2	2.0	25,555	6.0	5.7	5.9	
Test average	2.0	26,756	6.6	6.0	5.9	
CV, %	18.3	17.9	8.0	7.7	9.8	
OSL	0.0182	0.0140	0.1641	0.0728†	0.0903†	
LSD	0.6	8,153	NS	0.7	0.8	

For NAWF, numbers represent an average of 5 plants per variety per rep (15 plants per variety)

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 2. Harvest results from the Hall County Irrigated RACE, Terry Lindsey Farm, Memphis, TX, 2014.

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	34.7	50.4	3302	1147	1665	0.5645	647.68	208.18	855.86	99.06	62.18	694.63 a
Stoneville 4946GLB2	34.6	50.0	3393	1172	1695	0.5517	646.80	211.85	858.65	101.78	75.86	681.01 a
PhytoGen 333WRF	33.5	50.1	3164	1060	1585	0.5635	597.16	198.08	795.24	94.93	70.91	629.39 b
NexGen 3306B2RF	32.6	52.3	3010	981	1574	0.5725	561.48	196.71	758.18	90.31	68.62	599.26 bc
Croplan 3787B2RF	33.5	49.4	2965	994	1466	0.5663	562.66	183.22	745.88	88.94	69.87	587.08 bcd
NexGen 1511B2RF	32.9	50.0	2905	955	1454	0.5633	538.09	181.71	719.79	87.14	68.62	564.03 cde
Deltapine 1321B2RF	32.8	50.0	2898	951	1449	0.5583	531.23	181.14	712.37	86.95	73.60	551.82 cdef
PhytoGen 222WRF	32.8	50.0	2803	920	1401	0.5733	527.65	175.18	702.83	84.09	70.91	547.82 def
Deltapine 1219B2RF	31.3	51.2	2864	898	1467	0.5588	501.73	183.40	685.13	85.93	67.27	531.93 ef
Deltapine 1410B2RF	32.6	49.7	2823	921	1403	0.5450	502.07	175.42	677.49	84.68	71.30	521.51 ef
FiberMax 1830GLT	33.6	49.7	2632	884	1307	0.5725	506.11	163.38	669.49	78.95	75.93	514.62 f
Test average	33.2	50.3	2978	989	1497	0.5627	556.61	187.12	743.72	89.34	70.46	583.92
CV, %	4.9	3.7	4.4	4.4	4.3	2.2	4.4	4.3	4.4	4.4	--	4.9
OSL	0.4332	0.8035	<0.0001	<0.0001	<0.0001	0.2054	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001
LSD	NS	NS	221	75	110	NS	41.92	13.75	55.67	6.62	--	49.05

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.

\$250/ton for seed.

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

¹ - Seed/technology cost does not include any rebates that may be available from seed companies based on quantities purchased.

Table 3. HVI fiber property results from the Hall County Irrigated RACE, Terry Lindsey Farm, Memphis, TX, 2014.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 ^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
Croplan 3787B2RF	3.9	36.6	83.0	31.0	8.8	1.0	77.3	8.5	3.0	1.0
Deltapine 1219B2RF	3.5	37.3	82.4	32.8	7.6	2.7	78.1	8.2	3.0	1.0
Deltapine 1321B2RF	4.0	35.4	82.6	32.1	9.1	2.3	76.2	8.4	3.3	1.0
Deltapine 1410B2RF	3.9	36.9	81.8	31.6	6.6	1.7	76.1	6.8	4.0	1.0
FiberMax 1830GLT	3.7	37.2	82.4	32.6	7.3	1.7	79.3	7.9	3.0	1.0
FiberMax 2011GT	4.0	36.4	82.8	31.5	7.1	1.7	77.9	7.5	3.3	1.0
NexGen 1511B2RF	4.0	35.5	82.9	32.2	9.0	2.0	77.8	8.4	3.0	1.0
NexGen 3306B2RF	3.8	37.4	84.4	33.9	8.9	1.3	77.6	8.6	2.7	1.0
PhytoGen 222WRF	3.7	36.6	83.8	32.3	9.0	1.3	77.6	8.6	3.0	1.0
PhytoGen 333WRF	3.7	37.2	83.4	31.9	7.8	2.7	76.2	8.3	3.3	1.0
Stoneville 4946GLB2	3.8	36.4	82.9	33.0	8.2	2.7	76.4	7.9	3.7	1.0
Test average	3.8	36.6	82.9	32.3	8.1	1.9	77.3	8.1	3.2	1.0
CV, %	7.2	1.5	0.7	2.3	5.1	29.1	1.6	4.7	--	--
OSL	0.5551	0.0019	0.0041	0.0085	<0.0001	0.0086	0.0898 [†]	0.0003	--	--
LSD	NS	1.0	1.0	1.3	0.7	0.9	1.7	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, [†]indicates significance at the 0.10 level, NS - not significant



**Replicated Sub-Surface Drip Irrigated RACE Variety Trial,
Levelland, TX - 2014**

Cooperator: Cory Ayers

**Mark Kelley, Kristie Keys, Wes Utley, and Kerry Siders
Extension Agronomist – Cotton, Extension Assistant – Cotton,
EA-ANR, and EA-IPM Cochran/Hockley Counties.**

Hockley County

Objective: The objective of this study is to compare agronomic characteristics, yields, gin turnout, fiber quality, and economic returns of transgenic cotton varieties under sub-surface drip irrigation on the Texas High Plains.

Materials and Methods:

Varieties: Croplan 3787B2RF, Deltapine 1212B2RF, Deltapine 1321B2RF, Deltapine 1410B2RF, FiberMax 1830GLT, FiberMax 2011GT, NexGen 1511B2RF, NexGen 3306B2RF, PhytoGen 367WRF, PhytoGen 417WRF, and Stoneville 4946GLB2

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

Planting date: 29-May

Seeding rate: Planted approximately 3.5 seeds/row-ft, or 46000 seed/acre, to prepared, listed 40-inch rows with a commercial John Deere MaxEmerge XP vacuum planter.

Plot size: 8 rows by 1290 ft.

Weed management: Trifluralin was applied pre-plant and incorporated at 2 pt/A across all varieties on 31-Jan. A pre-plant application of diuron (Direx at 24 oz/A) and pyriithobac sodium (Staple at 1.7 oz/A) was made on 17-May. A post-emergent application of glyphosate (RoundUp PowerMax at 32oz/A) with AMS was made on 12-June.

Irrigation: From 21-May to 10-Sep, a total of 17.82 acre-inches of water were applied via sub-surface drip tape.

Rainfall:	Based on the nearest Texas Tech University- West Texas Mesonet station at Levelland, rainfall amounts were: <table> <tr> <td>April: 0.15"</td><td>August: 0.99"</td></tr> <tr> <td>May: 3.15"</td><td>September: 4.58"</td></tr> <tr> <td>June: 3.72"</td><td>October: 0.31"</td></tr> <tr> <td>July: 2.59"</td><td></td></tr> </table> Total rainfall: 15.49"	April: 0.15"	August: 0.99"	May: 3.15"	September: 4.58"	June: 3.72"	October: 0.31"	July: 2.59"	
April: 0.15"	August: 0.99"								
May: 3.15"	September: 4.58"								
June: 3.72"	October: 0.31"								
July: 2.59"									
Insecticides:	This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.								
Fertilizer management:	Fertilizers applied to this location included 230 lbs/ac 10-34-0, 150 lb/ac 32-0-0 applied using fertigation during the growing season and 275 lbs/ac N-pHuric acid. A foliar 10% zinc was also applied to this location.								
Plant growth regulators:	An application of mepiquat pentaborate (Pentia at 10 oz/A) was made on 30-July.								
Harvest aids:	An initial application of ethephon (Boll'd at 1 qt/A) and pyraflufen ethyl (ET at 2 oz/A) was made on 3-Oct. A sequential application of paraquat (Gramoxone Inteon at 6 oz/A) and 1% v/v NIS was made on 12-Oct.								
Harvest:	Plots were harvested on 12-Nov using a 7460 John Deere stripper. Harvested material was transferred to producer boll buggy and a Western Forage Systems Flat-bed scale trailer was used to obtain individual plot weights. Plot weights were subsequently converted to lb/acre.								
Gin turnout:	Grab samples were taken by plot and ginned at the Texas A&M 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 burr cotton and seed value/acre was based on \$250/ton. Ginning cost did not include check-off.								
Seed and Technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (3.5 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/PCGseed14.xls								

Results and Discussion:

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

Significant differences were observed for most yield and economic parameters (Table 2). Lint turnout averaged 31.4% with a high of 35.3% and low of 27.3% for NexGen 1511B2RF and NexGen 3306B2RF, respectively. Bur cotton yields averaged 4495 lb/acre across all varieties. Lint yields varied from a low of 1110 lb/acre (NexGen 3306B2RF) to a high of 1601 lb/acre (FiberMax 2011GT). Due to substantial variability within varieties for leaf grade, all leaf grade values were set to 3. This resulted in lint loan values averaging \$0.5263/lb and differences among varieties were not significant. When adding lint and seed value, total value ranged from a high of \$1134.01/acre for FiberMax 2011GT to a low of \$817.03/acre for NexGen3306B2RF. After subtracting ginning, seed costs and technology fees, net value/acre among varieties ranged from a high of \$934.29/acre (FiberMax 2011GT) to a low of \$629.48/acre (NexGen 3306B2RF), a difference of \$304.80.

Significant differences were observed among varieties for all fiber quality parameters at this location (Table 3). Micronaire values ranged from a low of 2.7 for PhytoGen 367WRF to a high of 3.9 for NexGen 1511B2RF. Staple averaged 37.1 across all varieties with a high of 39.5 for FiberMax 1830GLT and a low of 35.8 for NexGen 1511B2RF. Uniformity ranged from a low of 80.1% for Deltapine 1410B2RF to a high of 82.0% for NexGen 3306B2RF with a test average of 81.2%. Strength ranged from a low of 28.1 g/tex for Croplan 3787B2RF to a high of 32.1 g/tex for Deltapine 1212B2RF. Elongation averaged 7.8% across all varieties. Color grade components of Rd (reflectance) and +b (yellowness) averaged 77.6 and 8.0, respectively and 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 Cory Ayers for the use of his land, equipment and labor for this demonstration. Further assistance with this project was provided by Dr. Jane Dever and Ms. Valerie Morgan - Texas A&M 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 Fiber Initiative for funding of HVI testing.

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Table 1. Inseason plant measurement results from the Hockley County Sub-surface Drip Irrigated RACE Variety Trial, Cory Ayers Farm, Levelland, TX, 2014.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of		
	plants/row ft	plants/acre	28-Jul	6-Aug	13-Aug
Croplan 3787B2RF	2.8	36,482	6.3	5.3	3.1
Deltapine 1212B2RF	2.8	37,208	5.7	4.3	2.4
Deltapine 1321B2RF	2.8	36,119	5.7	4.6	3.4
Deltapine 1410B2RF	2.9	37,752	5.5	4.0	1.9
FiberMax 1830GLT	2.4	30,855	5.5	4.5	2.7
FiberMax 2011GT	2.9	37,752	5.7	4.9	2.1
NexGen 1511B2RF	2.4	31,763	6.0	4.7	2.4
NexGen 3306B2RF	2.6	33,759	5.3	3.8	2.1
PhytoGen 367WRF	3.4	44,649	5.8	4.6	2.5
PhytoGen 417WRF	2.9	38,297	7.2	5.1	3.3
Stoneville 4946GLB2	2.8	35,937	5.9	5.3	3.1
Test average	2.8	36,416	5.9	4.6	2.6
CV, %	17.2	16.9	11.7	12.4	33.8
OSL	0.4214	0.4261	0.1558	0.0743 [†]	0.4483
LSD	NS	NS	NS	0.8	NS

For NAWF, numbers represent an average of 5 plants per variety per rep (15 plants per variety)

CV - coefficient of variation.

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

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

Table 2. Harvest results from the Hockley County Sub-surface Drip Irrigated RACE Variety Trial, Cory Ayers Farm, Levelland, TX, 2014.

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 ¹	Net value
----- % ----- lb/acre ----- \$/lb ----- \$/acre -----												
FiberMax 2011GT	34.3	48.1	4671	1601	2248	0.5328	853.03	280.97	1134.01	140.13	59.59	934.29 a
NexGen 1511B2RF	35.3	46.9	4429	1562	2078	0.5507	860.13	259.69	1119.82	132.88	65.76	921.17 ab
Deltapine 1212B2RF	31.1	45.9	4751	1477	2179	0.5615	829.19	272.40	1101.59	142.52	68.33	890.74 ab
Deltapine 1321B2RF	31.5	47.1	4811	1516	2264	0.5402	819.04	283.06	1102.10	144.34	70.54	887.22 ab
Stoneville 4946GLB2	32.5	49.6	4363	1420	2163	0.5380	763.81	270.36	1034.17	130.89	72.70	830.58 bc
Deltapine 1410B2RF	30.6	49.4	4711	1441	2327	0.5188	747.58	290.92	1038.50	141.33	68.33	828.84 bc
PhytoGen 417WRF	33.0	51.0	4483	1478	2286	0.5048	746.29	285.78	1032.07	134.48	70.96	826.63 bc
Croplan 3787B2RF	29.6	46.0	4486	1326	2062	0.5183	687.49	257.74	945.24	134.57	66.96	743.71 cd
FiberMax 1830GLT	32.6	44.0	4110	1338	1808	0.5285	707.15	226.04	933.19	123.31	72.76	737.11 cd
PhytoGen 367WRF	28.1	47.8	4573	1285	2185	0.4878	626.84	273.15	899.99	137.20	67.96	694.83 de
NexGen 3306B2RF	27.3	49.8	4060	1110	2021	0.5083	564.38	252.65	817.03	121.79	65.76	629.48 e
Test average	31.4	47.8	4495	1414	2147	0.5263	745.90	268.43	1014.34	134.86	68.15	811.33
CV, %	6.7	4.7	6.4	6.4	6.5	5.5	6.4	6.5	6.4	6.4	--	7.0
OSL	0.0037	0.0339	0.0612 [†]	0.0001	0.0100	0.1625	<0.0001	0.0100	<0.0001	0.0611 [†]	--	<0.0001
LSD	3.6	3.8	403	155	239	NS	81.19	29.87	110.98	12.09	--	96.38

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

CV - coefficient of variation.

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

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

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

Assumes:

\$3.00/cwt ginning cost.

\$250/ton for seed.

Value for lint based on CCC loan value from grab samples and FBRI HVI results. Due to significant variability within varieties, leaf grades were set at 3 for all varieties.

¹ - Seed/technology cost does not include any rebates that may be available from seed companies based on quantities purchased.

Table 3. HVI fiber property results from the Hockley County Sub-surface Drip Irrigated RACE Variety Trial, Cory Ayers Farm, Levelland, TX, 2014.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Rd	+b	Color grade	
	units	32 ^{nds} inch	%	g/tex	%	reflectance	yellowness	color 1	color 2
Croplan 3787B2RF	3.1	36.2	81.1	28.1	8.6	80.2	8.6	2.0	1.0
Deltapine 1212B2RF	3.5	36.8	81.2	32.1	8.0	76.2	8.2	3.0	1.0
Deltapine 1321B2RF	3.3	37.1	81.8	30.0	8.5	77.2	8.1	3.0	1.0
Deltapine 1410B2RF	3.2	37.7	80.1	30.9	6.4	76.2	7.3	4.0	1.0
FiberMax 1830GLT	3.0	39.5	81.6	30.7	6.5	80.0	7.5	2.7	1.0
FiberMax 2011GT	3.2	36.6	81.2	31.6	7.1	79.4	7.2	3.3	1.0
NexGen 1511B2RF	3.9	35.8	81.4	30.3	8.6	77.2	8.2	3.3	1.0
NexGen 3306B2RF	2.8	38.9	82.0	30.7	7.6	78.3	8.3	2.7	1.0
PhytoGen 367WRF	2.7	37.2	81.1	30.7	8.1	76.1	8.5	3.3	1.0
PhytoGen 417WRF	2.9	36.3	80.7	29.6	8.5	76.8	8.2	3.3	1.0
Stoneville 4946GLB2	3.3	36.3	81.3	31.8	7.8	76.5	8.1	3.3	1.0
Test average	3.2	37.1	81.2	30.6	7.8	77.6	8.0	3.1	1.0
CV, %	10.1	1.8	0.8	2.7	4.9	1.4	2.5	--	--
OSL	0.0066	<0.0001	0.0659 [†]	0.0007	<0.0001	0.0003	<0.0001	--	--
LSD	0.5	1.1	0.9	1.4	0.7	1.9	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.

Leaf grades were set to 3 across all varieties at this location due to significant variability within varieties.



**Replicated Sub-Surface Drip Irrigated RACE Variety Trial,
Amherst, TX - 2014**

Cooperator: Jeff Edwards

**Mark Kelley and Kristie Keys
Extension Agronomist – Cotton and Extension Assistant – Cotton**

Lamb County

Objective: The objective of this study is to compare agronomic characteristics, yields, gin turnout, fiber quality, and economic returns of transgenic cotton varieties under sub-surface drip irrigation on the Texas High Plains.

Materials and Methods:

Varieties: NexGen 1511B2RF, Croplan 3787B2RF, PhytoGen 222WRF, NexGen 3306B2RF, PhytoGen 339WRF, FiberMax 2011GT

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

Planting date: 21-May

Seeding rate: Planted 3.2 seeds/row-ft in to prepared, listed 40 inch rows using a commercial John Deere MaxEmerge XP vacuum planter.

Plot size: 8 rows by 1290 ft.

Weed management: Trifluralin was applied pre-plant and incorporated at a rate of 1.5 pt/A on 12-Apr. Post-emergent applications of generic glyphosate at 1 qt/A were made 14-June and 21-July.

Irrigation: A total of 17.82" of irrigation were applied beginning 21-May thru 10-September as per conversation with producer.

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

April:	0.28"	August:	2.25"
May:	4.09"	September:	7.82"

June: 4.47" October: 0.14"
July: 2.47"
Total rainfall: 21.52"

Insecticides: This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.

Fertilizer management: Fertilizers applied to this location include 230 lbs/ac 10-34-0, 150 lb/ac 32-0-0 applied using fertigation during the growing season and 275 lbs/ac N-pH₂SO₄ acid. A foliar 10% zinc solution was also applied to this location.

Plant growth regulators: Pentia was applied at 10 oz/ac on 30-July as well as an application of 12 oz/ac Mepiquat Chloride on 16-August.

Harvest aids: Harvest aids included an initial application of ethephon (Boll'D at 1 qt/ac with 2 oz/ac ET) on 3-Oct. and a sequential application of 6 oz/ac paraquat with 1% v/v NIS on 12-Oct.

Harvest: Plots were harvested on 22-Oct. using a John Deere stripper with burr extractor. Harvested material was transferred to a weigh wagon with integral electronic scales to record individual plot weights. Plot weights were subsequently converted to lb/A.

Gin turnout: Grab samples were taken from bales by plot and ginned at the Texas A&M 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 burr cotton and seed value/acre was based on \$250/ton. Ginning cost did not include check-off.

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://plainscotton.org/Seed/PCGseed14.xls>

Results and Discussion:

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

Significant differences were noted for most yield and economic parameters (Table 2). Lint turnout averaged 30.4% with a high of 33.9% and low of 28.8% for NexGen 1511B2RF and NexGen 3306B2RF, respectively. Bur cotton yields averaged 3394 lb/acre across varieties. Lint yields varied from a low of 905 lb/acre (Croplan Genetics 3787B2RF) to a high of 1221 lb/acre (NexGen 2011GT). Lint loan values averaged \$0.5280/lb and did not vary significantly. When adding lint and seed value, total value ranged from a high of \$881.88/acre for FiberMax 2011GT to a low of \$655.78/acre for Croplan Genetics 3787B2RF. After subtracting ginning, seed costs and technology fees, net value/acre among varieties ranged from a high of \$712.74/acre (FiberMax 2011GT) to a low of \$505.17/acre (Croplan Genetics 3787B2RF), a difference of \$207.57/acre.

Significant differences were observed among varieties for most fiber quality parameters at this location (Table 3). Micronaire values ranged from a low of 2.9 for PhytoGen 339WRF to a high of 3.5 for PhytoGen 222WRF. Staple averaged 37.3 across all varieties with a high of 38.1 for NexGen 3306B2RF and a low of 36.4 for NexGen 1511B2RF. Uniformity averaged 82.9% and did not vary significantly in this trial. Strength ranged from a low of 28.7 g/tex for Croplan Genetics 3787B2RF to a high of 32.4 g/tex for NexGen 3306B2RF. Elongation averaged 8.5% across and leaf grades were mostly 1 and 2. Color grade components of Rd (reflectance) and +b (yellowness) averaged 75.8 and 8.1, respectively and resulted in color grades of mostly 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 Jeff Edwards for the use of his land, equipment and labor for this demonstration. Further assistance with this project was provided by Dr. Jane Dever and Ms. Valerie Morgan - Texas A&M 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 Fiber Initiative for funding of HVI testing.

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Table 1. Inseason plant measurement results from the 2014 Lamb County Irrigated RACE, Jeff Edwards Farm, Amherst, TX, 2014.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of	
	plants/row ft	plants/acre	7-Aug	20-Aug
Croplan 3787B2RF	2.0	25,592	7.7	7.3
FiberMax 2011GT	2.2	29,222	7.6	6.8
NexGen 1511B2RF	2.2	28,677	7.9	7.5
NexGen 3306B2RF	2.2	29,040	8.3	7.2
PhytoGen 222WRF	2.2	29,040	7.2	6.9
PhytoGen 339WRF	2.2	28,677	7.9	7.7
Test average	2.2	28,375	7.8	7.2
CV, %	9.3	9.5	5.3	7.1
OSL	0.5923	0.5861	0.1214	0.3251
LSD	NS	NS	NS	NS

For NAWF, numbers represent an average of 5 plants per variety per rep (15 plants per variety)

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level, NS - not significant.

Table 2. Harvest results from the Lamb County Irrigated RACE, Jeff Edwards Farm, Amherst, TX, 2014.

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 ¹	Net value
	----- % -----			----- lb/acre -----		----- \$/lb -----		----- \$/acre -----				
FiberMax 2011GT	31.9	46.3	3824	1221	1769	0.5410	660.75	221.14	881.88	114.73	54.41	712.74 a
PhytoGen 222WRF	28.9	50.0	3558	1030	1779	0.5530	569.51	222.41	791.92	106.74	62.05	623.13 ab
PhytoGen 339WRF	28.8	48.5	3604	1038	1747	0.5028	522.01	218.36	740.37	108.11	62.05	570.21 bc
NexGen 1511B2RF	33.9	46.1	3106	1053	1433	0.5080	534.68	179.09	713.77	93.19	60.04	560.54 bc
NexGen 3306B2RF	28.8	49.6	3290	947	1632	0.5358	507.41	203.96	711.37	98.71	60.04	552.63 bc
Croplan 3787B2RF	30.3	47.9	2982	905	1428	0.5275	477.30	178.48	655.78	89.47	61.14	505.17 c
Test average	30.4	48.1	3394	1032	1631	0.5280	545.28	203.91	749.18	101.82	59.96	587.40
CV, %	5.5	5.0	8.1	8.3	8.1	4.3	8.3	8.1	8.2	8.1	--	9.1
OSL	0.0198	0.3057	0.0279	0.0160	0.0187	0.1323	0.0076	0.0187	0.0157	0.0279	--	0.0108
LSD	3.1	NS	503	156	240	NS	81.84	30.00	111.80	15.07	--	96.73

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, NS - not significant.

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

Assumes:

\$3.00/cwt ginning cost.

\$250/ton for seed.

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

¹ - Seed/technology cost does not include any rebates that may be available from seed companies based on quantities purchased.

Table 3. HVI fiber property results from the Lamb County Irrigated RACE, Jeff Edwards Farm, Amherst, TX, 2014.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 ^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
Croplan 3787B2RF	3.1	36.7	83.1	28.7	8.9	1.3	76.2	9.0	3.0	1.0
FiberMax 2011GT	3.4	37.4	82.5	29.7	7.3	1.7	77.8	7.0	3.7	1.0
NexGen 1511B2RF	3.5	36.4	82.9	31.0	8.7	2.7	71.7	9.0	4.0	2.0
NexGen 3306B2RF	3.2	38.1	83.2	32.4	8.1	2.3	75.4	8.6	3.0	1.0
PhytoGen 222WRF	3.5	37.4	83.5	29.6	9.5	3.0	76.8	7.6	3.3	1.0
PhytoGen 339WRF	2.9	37.7	82.2	30.7	8.4	2.7	76.9	7.6	3.7	1.0
Test average	3.3	37.3	82.9	30.4	8.5	2.3	75.8	8.1	3.4	1.2
CV, %	6.1	0.9	0.8	1.6	3.7	52.4	1.7	3.7	--	--
OSL	0.0155	0.0012	0.2001	<0.0001	0.0002	0.5266	0.0027	<0.0001	--	--
LSD	0.4	0.6	NS	0.9	0.6	NS	2.4	0.6	--	--

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level, NS - not significant



**Replicated Sub-Surface Drip Irrigated RACE Variety and Harvest Method Trial,
Acuff, TX - 2014**

Cooperator: Rhett Mimms

**Mark Kelley, Kristie Keys, Mark Brown, and John Wanjura
Extension Agronomist – Cotton, Extension Assistant – Cotton, CEA-ANR
Lubbock County, and Agricultural Engineer – USDA-ARS**

Lubbock County

Objective: The objective of this study is to compare agronomic characteristics, yields, gin turnout, fiber quality, and economic returns of picker and stripper harvested, transgenic cotton varieties under sub-surface drip irrigation on the Texas High Plains.

Materials and Methods:

Varieties: Deltapine 1044B2RF, Deltapine 1321B2RF, FiberMax 2011GT, FiberMax 2484B2F, NexGen 1511B2RF, NexGen 3306B2RF, NexGen 4111RF, PhytoGen 367WRF, PhytoGen 417WRF, Stoneville 4946GLB2, and Stoneville 5458B2F

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

Planting date: 20-May

Seeding rate: Planted 3.3 seeds/row-ft in to prepared, listed 40 inch rows using a commercial John Deere MaxEmerge XP vacuum planter.

Plot size: 8 rows by 1427' (4 rows Picker harvested and 4 rows Stripper harvested)

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 28 oz/acre with Valor at 2 oz/acre and AMS was made on 15-Aug.

Irrigation: The field had a 3.7 gpm/acre irrigation capacity. This provided for 0.19 acre-inches/day. From 25-June to 31-August a total of approximately 12 inches of irrigation were applied.

Rainfall:	Based on the nearest Texas Tech University- West Texas Mesonet station at Lubbock, rainfall amounts were:								
	<table> <tr> <td>April: 0.61"</td><td>August: 1.98"</td></tr> <tr> <td>May: 4.74"</td><td>September: 7.48"</td></tr> <tr> <td>June: 2.40"</td><td>October: 0.30"</td></tr> <tr> <td>July: 1.69"</td><td></td></tr> </table>	April: 0.61"	August: 1.98"	May: 4.74"	September: 7.48"	June: 2.40"	October: 0.30"	July: 1.69"	
April: 0.61"	August: 1.98"								
May: 4.74"	September: 7.48"								
June: 2.40"	October: 0.30"								
July: 1.69"									
	Total rainfall: 19.20"								
Fertilizer management:	Producer side-dress applied 188 lb/A of liquid 32-0-0 (60 lb N/A) on 25-June. An additional 40 lb/A of nitrogen was applied via sub-surface drip irrigation over the course of the growing season.								
Insecticides:	This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.								
Plant growth regulators:	No PGR's were used in this study.								
Harvest aids:	Harvest aids included an initial application of ethephon at 21 oz/acre with 1 oz/acre Aim on 21-Sep. and a sequential application of 24 oz/acre Gramoxone Inteon with 0.25% v/v non-ionic surfactant on 5-Oct.								
Harvest:	Plots were stripped and picked on 15-Nov. using a commercial John Deere 7460 cotton stripper with bur extractor and a commercial John Deere 9996 cotton picker. 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:	20 lb grab samples were taken by plot and ginned at the USDA-ARS Gin Lab 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 burr cotton and seed value/acre was based on \$250/ton. Ginning cost did not include check-off.								
Seed and Technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (3.3 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://plainscotton.org/Seed/PCGseed14.xls								

Results and Discussion - Stripped:

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

Significant differences were noted for most yield and economic parameters (Table 2). Lint turnout averaged 35.0% with a high of 36.6% for NexGen 1511B2RF and a low of 33.0% for Deltapine 1044B2RF. Bur cotton yield averaged 4734 lb/acre and ranged from a high of 5480 lb/acre for FiberMax 2484B2F to a low of 4277 lb/acre for Deltapine 1321B2RF. Lint yields varied from a low of 1469 lb/acre (NexGen 3306B2RF) to a high of 1951 lb/acre (FiberMax 2484B2F). Lint loan values averaged \$0.5532/lb across varieties and ranged from a high of \$0.5742 for NexGen 4111RF, to a low of \$0.5063 for PhytoGen 417WRF. This resulted in an average lint value (\$/acre) of \$919.22. When adding lint and seed value, total values ranged from a high of \$1452.73/acre for FiberMax 2484B2F to a low of \$1046.13/acre for PhytoGen 417WRF. After subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of \$1223.45/acre (FiberMax 2484B2F) to a low of \$849.07/acre (PhytoGen 417WRF), a difference of \$374.38/acre.

Significant differences were observed among varieties for most fiber quality parameters measured at this location (Table 3). Micronaire values ranged from a low of 3.0 for PhytoGen 417WRF to a high of 4.2 for NexGen 4111RF. Staple averaged 36.4 across all varieties with a high of 38.4 for FiberMax 2484B2F and a low of 35.4 for PhytoGen 367WRF. Uniformity values averaged 82.0% and ranged from a high of 83.3% (NexGen 3306B2RF) to a low of 80.6% (Stoneville 5458B2RF). Strength values ranged from a low of 30.2 g/tex for PhytoGen 417WRF to a high of 33.1 g/tex for NexGen 3306B2RF. Elongation averaged 7.7% across varieties and leaf grades averaged 3.2. Color grade components of Rd (reflectance) and +b (yellowness) averaged 78.8 and 8.5, respectively and 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.

Results and Discussion - Picked:

Significant differences were noted for all yield and economic parameters (Table 4). Lint turnout averaged 39.1% with a high of 41.6% and low of 36.9% for NexGen 1511B2RF and Stoneville 5458B2RF, respectively. Seed cotton yield averaged 3916 lb/acre resulting in an average lint yield across all varieties of 1530 lb/acre. Lint yields ranged from a low of 1352 lb/acre for Deltapine 1321B2RF to a high of 1821 lb/acre for FiberMax 2484B2F. Lint loan values averaged \$0.5721/lb with a high of \$0.5792 and a low of \$0.5558/lb for FiberMax 2484B2F and PhytoGen 417WRF, respectively. When adding lint and seed value, total value averaged \$1142.05/acre. After subtracting ginning, seed costs and technology fees, the average net value/acre across varieties was \$962.73/acre and ranged from a high of \$1162.46/acre for FiberMax 2484B2F to a low of \$826.46/acre for Deltapine 1321B2RF, a difference of \$336.00

Significant differences were observed among varieties for all fiber quality parameters at this location (Table 5). Micronaire values ranged from a low of 3.4 for PhytoGen 417WRF and NexGen 3306B2RF to a high of 4.1 for Stoneville 4946GLB2 and FiberMax 2011GT. Staple averaged 36.5 across all varieties with a high of 38.2 for FiberMax 2484B2F and a low of 35.2 for PhytoGen 417WRF. Uniformity ranged from a high of 83.3% for NexGen 4111RF to a low of 80.8% for Stoneville 5458B2RF with a test average of 82.2%. Strength ranged from a low of 29.2 g/tex for PhytoGen 417WRF to a high of 32.5 g/tex for NexGen 3306B2RF. Elongation averaged 8.0% across varieties and leaf grades

averaged 1.9. Color grade components of Rd (reflectance) and +b (yellowness) averaged 80.4 and 8.2, 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 Rhett Mimms for the use of his land, equipment and labor for this demonstration. Further assistance with this project was provided by Dr. Jane Dever and Ms. Valerie Morgan - Texas A&M 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 Fiber Initiative for funding of HVI testing.

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Table 1. Inseason plant measurement results from the Lubbock County Sub-surface Drip Irrigated Cotton Race Trial, Rhett Mimms Farm, Acuff, TX, 2014.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of	
	plants/row ft	plants/acre	7-Aug	25-Aug
Deltapine 1044B2RF	2.3	30,347	5.1	2.8
Deltapine 1321B2RF	2.3	30,637	6.1	2.7
FiberMax 2011GT	2.6	33,396	4.7	2.2
FiberMax 2484B2F	2.5	32,234	5.3	3.0
NexGen 1511B2RF	2.6	34,558	5.8	3.1
NexGen 3306B2RF	2.5	32,089	5.8	2.4
NexGen 4111RF	2.6	33,686	5.1	2.7
PhytoGen 367WRF	2.4	31,799	4.5	2.4
PhytoGen 417WRF	2.4	31,799	6.1	2.6
Stoneville 4946GLB2	2.4	31,654	5.4	2.9
Stoneville 5458B2F	2.1	28,024	5.5	2.6
Test average	2.4	31,838	5.4	2.7
CV, %	8.6	8.4	10.3	14.9
OSL	0.2538	0.2806	0.0273	0.2522
LSD	NS	NS	0.9	NS

For NAWF, numbers represent an average of 5 plants per variety per rep (15 plants per variety)

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level, NS - not significant

Table 2. Harvest results from the Lubbock County Stripper Harvested Sub-surface Drip Irrigated Cotton Race Trial, Rhett Mimms Farm, Acuff, TX, 2014.

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 ¹	Net value
	%			lb/acre		\$/lb				\$/acre		
FiberMax 2484B2F	35.6	53.4	5480	1951	2927	0.5570	1086.83	365.90	1452.73	164.41	64.87	1223.45 a
NexGen 4111RF	35.9	55.1	5145	1845	2833	0.5742	1059.52	354.14	1413.66	154.34	48.76	1210.56 a
FiberMax 2011GT	36.4	51.1	4949	1801	2527	0.5667	1020.37	315.87	1336.24	148.47	55.70	1132.06 b
Stoneville 4946GLB2	35.5	53.1	4862	1726	2582	0.5715	986.61	322.73	1309.35	145.87	67.96	1095.52 b
Deltapine 1044B2RF	33.0	54.6	4901	1617	2677	0.5515	891.75	334.67	1226.43	147.02	60.26	1019.14 c
PhytoGen 367WRF	34.8	53.2	4634	1612	2467	0.5592	901.27	308.36	1209.63	139.02	63.53	1007.08 cd
Stoneville 5458B2RF	34.2	53.6	4634	1586	2485	0.5482	869.29	310.64	1179.93	139.01	63.89	977.02 cde
NexGen 1511B2RF	36.6	51.8	4425	1618	2293	0.5392	872.44	286.57	1159.01	132.74	61.47	964.80 cde
NexGen 3306B2RF	33.3	55.8	4413	1469	2464	0.5613	824.68	308.05	1132.74	132.38	61.47	938.88 de
Deltapine 1321B2RF	35.8	52.8	4277	1533	2260	0.5505	843.77	282.47	1126.24	128.32	65.94	931.99 e
PhytoGen 417WRF	34.2	53.5	4358	1491	2330	0.5063	754.85	291.28	1046.13	130.73	66.33	849.07 f
Test average	35.0	53.5	4734	1659	2531	0.5532	919.22	316.43	1235.64	142.03	61.84	1031.78
CV, %	1.5	2.3	3.8	3.8	3.7	2.7	3.8	3.7	3.8	3.8	--	4.0
OSL	<0.0001	0.0057	<0.0001	<0.0001	<0.0001	0.0014	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001
LSD	0.9	2.1	304	108	161	0.0252	59.51	20.09	79.57	9.13	--	70.44

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.

\$250/ton for seed.

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

¹ - Seed/technology cost does not include any rebates that may be available from seed companies based on quantities purchased.

Table 3. HVI fiber property results from the Lubbock County Stripper Harvested Sub-surface Drip Irrigated Cotton Race Trial, Rhett Mimms Farm, Acuff, TX, 2014.

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 1044B2RF	3.4	36.1	81.6	30.5	8.8	3.3	80.0	8.7	2.0	1.0
Deltapine 1321B2RF	3.5	36.4	82.5	31.6	8.2	3.3	78.4	8.4	2.7	1.0
FiberMax 2011GT	3.7	35.9	81.7	31.1	7.0	3.0	78.9	7.8	3.0	1.0
FiberMax 2484B2F	3.4	38.4	82.2	31.2	6.2	3.0	81.4	7.7	2.3	1.0
NexGen 1511B2RF	3.4	36.1	81.9	32.0	8.4	4.0	78.5	8.2	3.0	1.0
NexGen 3306B2RF	3.5	37.9	83.3	33.1	7.7	3.3	79.0	8.2	2.3	1.0
NexGen 4111RF	4.2	35.9	83.0	31.6	7.9	2.7	79.0	9.2	1.7	1.0
PhytoGen 367WRF	3.6	35.4	81.4	30.5	7.9	2.7	78.0	8.8	2.3	1.0
PhytoGen 417WRF	3.0	35.8	81.7	30.2	8.3	3.7	77.1	9.1	2.3	1.0
Stoneville 4946GLB2	3.7	36.6	82.5	32.0	7.7	3.0	78.6	8.8	2.3	1.0
Stoneville 5458B2RF	3.5	35.7	80.6	31.1	6.9	3.3	77.6	8.5	2.7	1.0
Test average	3.5	36.4	82.0	31.3	7.7	3.2	78.8	8.5	2.4	1.0
CV, %	6.3	1.1	0.8	1.9	3.5	26.1	1.1	3.5	--	--
OSL	0.0009	<0.0001	0.0057	0.0003	<0.0001	0.7225	0.0004	<0.0001	--	--
SD	0.4	0.7	1.2	1.0	0.5	NS	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

Table 4. Harvest results from the Lubbock County Picker Harvested Sub-surface Drip Irrigated Cotton Race Trial, Rhett Mimms Farm, Acuff, TX, 2014.

Entry	Lint turnout	Seed turnout	Seed cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Seed/technology cost ¹	Net value
	%		lb/acre			\$/lb	\$/acre					
FiberMax 2484B2F	39.4	53.9	4620	1821	2491	0.5792	1054.51	311.44	1365.94	138.61	64.87	1162.46 a
NexGen 4111RF	39.4	55.2	4185	1647	2311	0.5752	947.25	288.86	1236.11	125.55	48.76	1061.80 b
Stoneville 4946GLB2	39.5	55.2	4174	1649	2305	0.5790	954.75	288.17	1242.93	125.21	67.96	1049.76 b
FiberMax 2011GT	40.1	54.0	4124	1652	2226	0.5723	945.55	278.22	1223.77	123.73	55.70	1044.33 b
PhytoGen 367WRF	38.8	54.8	3903	1515	2140	0.5772	874.35	267.49	1141.84	117.09	63.53	961.22 c
Deltapine 1044B2RF	37.8	56.1	3916	1481	2197	0.5780	855.80	274.68	1130.48	117.47	60.26	952.75 c
Stoneville 5458B2RF	36.9	53.0	4012	1480	2127	0.5717	845.81	265.92	1111.73	120.35	63.89	927.48 c
NexGen 1511B2RF	41.6	52.3	3587	1491	1877	0.5737	855.37	234.67	1090.04	107.60	61.47	920.97 c
NexGen 3306B2RF	37.5	56.3	3639	1365	2051	0.5595	763.77	256.33	1020.10	109.17	61.47	849.46 d
PhytoGen 417WRF	40.0	54.8	3449	1379	1891	0.5558	766.76	236.41	1003.16	103.46	66.33	833.37 d
Deltapine 1321B2RF	39.0	51.8	3468	1352	1796	0.5712	771.96	224.50	996.45	104.05	65.94	826.46 d
Test average	39.1	54.3	3916	1530	2128	0.5721	875.99	266.06	1142.05	117.48	61.84	962.73
CV, %	2.5	2.6	3.3	3.4	3.3	1.5	3.4	3.3	3.3	3.3	--	3.6
OSL	0.0005	0.0093	<0.0001	<0.0001	<0.0001	0.0489	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001
LSD	1.6	2.4	223	88	118	0.0148	50.28	14.75	64.99	6.69	--	58.31

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.

\$250/ton for seed.

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

¹ - Seed/technology cost does not include any rebates that may be available from seed companies based on quantities purchased.

Table 5. HVI fiber property results from the Lubbock County Picker Harvested Sub-surface Drip Irrigated Cotton Race Trial, Rhett Mimms Farm, Acuff, TX, 2014.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	color 1	color 2
	units	32 ^{nds} inch	%	g/tex	%	grade	reflectance	yellowness		
Deltapine 1044B2RF	3.8	35.9	82.1	29.7	8.9	2.0	81.3	8.2	2.0	1.0
Deltapine 1321B2RF	3.6	36.4	82.7	30.9	8.9	2.3	81.0	8.2	2.0	1.0
FiberMax 2011GT	4.1	36.5	82.3	29.8	7.0	1.7	80.9	7.5	2.7	1.0
FiberMax 2484B2F	3.6	38.2	81.6	30.1	6.4	1.7	82.1	7.5	2.0	1.0
NexGen 1511B2RF	3.9	35.8	82.7	30.5	8.9	2.7	80.5	8.4	2.0	1.0
NexGen 3306B2RF	3.4	38.0	83.1	32.5	8.2	2.7	80.0	8.0	2.3	1.0
NexGen 4111RF	4.0	36.5	83.3	31.9	8.3	2.0	79.1	8.6	2.7	1.0
PhytoGen 367WRF	3.7	35.9	81.6	29.9	8.0	1.3	79.9	8.7	2.0	1.0
PhytoGen 417WRF	3.4	35.2	81.4	29.2	8.9	1.7	79.8	8.6	2.0	1.0
Stoneville 4946GLB2	4.1	36.6	82.9	30.2	8.3	1.7	80.3	8.5	2.0	1.0
Stoneville 5458B2RF	3.9	36.1	80.8	29.6	6.6	1.7	79.0	8.3	2.7	1.0
Test average	3.8	36.5	82.2	30.4	8.0	1.9	80.4	8.2	2.2	1.0
CV, %	6.2	1.1	0.6	2.9	3.2	41.3	0.7	2.0	--	--
OSL	0.0065	<0.0001	<0.0001	0.0047	<0.0001	0.5386	<0.0001	<0.0001	--	--
LSD	0.4	0.7	0.8	1.5	0.4	NS	0.9	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 Trial,
Brownfield, TX - 2014**

Cooperator: Keith Harrison

**Mark Kelley and Kristie Keys
Extension Agronomist – Cotton and Extension Assistant – Cotton**

Terry County

Objective: The objective of this study is to compare agronomic characteristics, yields, gin turnout, fiber quality, and economic returns of transgenic cotton varieties under LESA irrigation on the Texas High Plains.

Materials and Methods:

Varieties: Deltapine 1454NR B2RF, FiberMax 1830GLT, NexGen 1511B2RF, PhytoGen 417WRF, Stoneville 4946GLB2, Deltapine 1321B2RF, FiberMax 2011GT, NexGen 3306B2RF, PhytoGen 367WRF

Experimental design: Randomized complete block with four (4) replications.

Planting date: 4-June

Seeding rate: Planted 2.9 seeds/row-ft in to prepared, listed 40 inch rows with a John Deere 1700 vacuum planter.

Plot size: 4 rows by variable length due to center pivot

Weed management: Trifluralin (Treflan at 1.5pt/A) was applied pre-plant and incorporated across all varieties on 1-Apr. A 20" banded application of glyphosate (RoundUp PowerMax at 20 oz/A) was made on 13-July. Post-emergent broadcast applications of glyphosate (Roundup PowerMax at 48oz/A) and AMS were made on 27-June and 29-July.

Irrigation: 3.0 acre-inches of water were applied via LESA irrigation prior to planting. 13.68 acre-inches of water were applied via LESA irrigation during the growing season for a total of 16.68".

Rainfall:	Based on the nearest Texas Tech University- West Texas Mesonet station at Brownfield, rainfall amounts were:								
	<table> <tr> <td>April: 0.95"</td><td>August: 0.18"</td></tr> <tr> <td>May: 2.01"</td><td>September: 6.82"</td></tr> <tr> <td>June: 3.31"</td><td>October: 0.10"</td></tr> <tr> <td>July: 1.31"</td><td></td></tr> </table>	April: 0.95"	August: 0.18"	May: 2.01"	September: 6.82"	June: 3.31"	October: 0.10"	July: 1.31"	
April: 0.95"	August: 0.18"								
May: 2.01"	September: 6.82"								
June: 3.31"	October: 0.10"								
July: 1.31"									
	Total rainfall: 14.68"								
Fertilizer management:	10 gal/A 32-0-0 were side dress applied with a sweep on 10-July.								
Plant growth regulators:	No PGR's were used in this study.								
Harvest aids:	No harvest aids were used in this study.								
Harvest:	Plots were harvested on 21-Nov. using a commercial John Deere 7450 cotton stripper with burr extractor. 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.								
Gin turnout:	Grab samples were taken by plot and ginned at the Texas A&M 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 burr cotton and seed value/acre was based on \$250/ton. Ginning cost did not include check-off.								
Seed and Technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (2.9 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://plainscotton.org/Seed/PCGseed14.xls								

Results and Discussion:

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

Significant differences were noted for most yield and economic parameters (Table 2). Lint turnout averaged 37.4% with a high of 39.6% for Deltapine 1321B2RF and a low of 34.6% for PhytoGen 417WRF. Burr cotton yield averaged 1803 lb/acre and ranged from a high of 1894 lb/acre for FiberMax 1830GLT to a low of 1801 lb/acre for Deltapine 1321B2RF. Lint yields varied from a low of 743 lb/acre (NexGen 3306B2RF) to a high of 707 lb/acre (Deltapine 1454NR B2RF). Lint loan values averaged \$.5509/lb across varieties with a high of \$.5655/lb for FiberMax 1830GLT and a low of \$.5252/lb for

NexGen 1511B2RF. When adding lint and seed value, total values ranged from a high of \$512.21/acre for FiberMax 1830GLT to a low of \$441.41/acre for Stoneville 4946GLB2. After subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of \$393.70/acre (FiberMax 1830GLT) to a low of \$328.76/acre (Stoneville 4946GLB2), a difference of \$64.94/acre.

Significant differences were observed among varieties for most fiber quality parameters measured at this location (Table 3). Micronaire values ranged from a low of 4.1 for PhytoGen 367WRF to a high of 5.0 for NexGen 1511B2RF. Staple averaged 35.2 across all varieties with a high of 37.4 for NexGen 3306B2RF and a low of 34.1 for PhytoGen 367WRF. Uniformity ranged from a high of 83.8% for FiberMax 1830GLT to a low of 81.9% for PhytoGen 367WRF with a test average of 82.8%. Strength ranged from a low of 28.9 g/tex for Stoneville 4946GLB2 to a high of 31.7 g/tex for FiberMax 1830GLT. Elongation averaged 8.4% across varieties and leaf grades did not vary significantly. Color grade components of Rd (reflectance) and +b (yellowness) averaged 76.4 and 8.4, respectively and resulted in a color grade of 31 for all varieties. Reflectance did not vary significantly in this trial.

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 Keith Harrison for the use of his land, equipment and labor for this demonstration. Further assistance with this project was provided by Dr. Jane Dever and Ms. Valerie Morgan - Texas A&M 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 Fiber Initiative 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 2014 Terry County Irrigated RACE, Farm, Meadow, TX, 2014.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of		
	plants/row ft	plants/acre	5-Aug	13-Aug	20-Aug
Deltapine 1321B2RF	3.1	41,092	5.9	4.3	4.1
Deltapine 1454NR B2RF	2.7	35,719	5.3	4.6	5.1
FiberMax 1830GLT	3.0	38,914	4.8	4.5	3.8
FiberMax 2011GT	3.2	41,963	5.7	4.1	3.8
NexGen 1511B2RF	3.0	39,349	5.7	5.1	4.5
NexGen 3306B2RF	2.7	34,703	5.6	4.9	2.7
PhytoGen 367WRF	3.1	40,075	5.5	4.7	3.9
PhytoGen 417WRF	3.0	39,640	5.1	4.8	4.4
Stoneville 4946GLB2	2.9	37,462	5.1	4.0	4.3
Test average	3.0	38,768	5.4	4.5	4.1
CV, %	9.1	9.2	10.5	10.9	21.0
OSL	0.2622	0.2923	0.3409	0.2335	0.1576
LSD	NS	NS	NS	NS	NS

For NAWF, numbers represent an average of 5 plants per variety per rep (15 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, NS - not significant

Table 2. Harvest results from the Terry County Irrigated RACE, Keith Harris Farm, Meadow, TX, 2014.

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 ¹	Net value
	----- % -----		----- lb/acre -----		-----	\$/lb				----- \$/acre -----		
FiberMax 1830GLT	36.6	50.6	1894	694	959	0.5655	392.35	119.87	512.21	56.83	61.69	393.70 a
Deltapine 1454NR B2RF	37.2	47.6	1900	707	904	0.5643	399.00	113.02	512.02	56.99	63.70	391.33 a
FiberMax 2011GT	37.6	46.9	1804	678	847	0.5635	382.08	105.85	487.94	54.13	50.52	383.29 ab
Deltapine 1321B2RF	39.6	44.7	1801	714	804	0.5313	379.15	100.56	479.71	54.03	59.80	365.87 abc
PhytoGen 367WRF	37.8	46.7	1808	683	844	0.5392	368.48	105.48	473.96	54.24	57.62	362.11 abcd
NexGen 1511B2RF	37.8	45.1	1835	694	827	0.5252	364.48	103.40	467.88	55.05	55.75	357.07 abcd
PhytoGen 417WRF	34.6	46.2	1854	642	857	0.5578	358.10	107.15	465.25	55.62	60.16	349.47 bcd
NexGen 3306B2RF	38.2	45.5	1634	624	743	0.5632	351.24	92.91	444.16	49.02	55.75	339.39 cd
Stoneville 4946GLB2	37.0	45.5	1701	629	774	0.5480	344.72	96.70	441.41	51.02	61.64	328.76 d
Test average	37.4	46.5	1803	674	840	0.5509	371.07	104.99	476.06	54.10	58.52	363.44
CV, %	3.7	3.9	5.9	5.9	6.1	3.0	6.1	6.1	6.1	5.9	--	7.1
OSL	0.0423	0.0330	0.1095	0.0865 [†]	0.0039	0.0480	0.1097	0.0039	0.0727 [†]	0.1089	--	0.0716 [†]
LSD	2.4	3.2	NS	56	89	0.0288	NS	11.18	41.21	NS	--	36.69

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, [†]indicates significance at the 0.10 level, NS - not significant.

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

Assumes:

\$3.00/cwt ginning cost.

\$250/ton for seed.

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

¹ - Seed/technology cost does not include any rebates that may be available from seed companies based on quantities purchased.

Table 3. HVI fiber property results from the Terry County Irrigated RACE, Keith Harris Farm, Meadow, TX, 2014.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	color 1	color 2
	units	32 ^{nds} inch	%	g/tex	%	grade	reflectance	yellowness		
Deltapine 1321B2RF	5.0	34.3	82.6	30.2	9.4	2.0	76.3	8.9	3.0	1.0
Deltapine 1454NR B2RF	4.4	35.1	82.9	31.5	8.1	2.0	75.7	8.9	3.0	1.0
FiberMax 1830GLT	4.7	35.9	83.8	31.7	8.4	1.0	77.2	8.0	3.0	1.0
FiberMax 2011GT	4.6	35.2	82.9	31.0	7.5	1.7	77.3	7.8	3.0	1.0
NexGen 1511B2RF	5.0	35.0	83.1	30.8	9.4	2.3	74.9	8.3	3.7	1.0
NexGen 3306B2RF	4.4	37.4	83.0	31.2	6.4	1.0	78.6	6.9	3.3	1.0
PhytoGen 367WRF	4.1	34.1	81.9	30.1	9.7	1.0	76.7	8.4	3.0	1.0
PhytoGen 417WRF	4.4	34.8	82.7	29.9	8.5	1.7	75.6	8.9	3.0	1.0
Stoneville 4946GLB2	4.2	35.0	82.6	28.9	7.9	2.0	75.3	9.3	3.0	1.3
Test average	4.5	35.2	82.8	30.6	8.4	1.6	76.4	8.4	3.1	1.0
CV, %	4.2	1.5	0.5	1.6	4.7	49.9	1.8	3.9	--	--
OSL	0.0002	<0.0001	0.0092	<0.0001	<0.0001	0.3640	0.1048	<0.0001	--	--
LSD	0.3	0.9	0.7	0.9	0.7	NS	NS	0.6	--	--

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level, NS - not significant



**Texas Panhandle Cotton Variety Trials
07-947TX**

Submitted: March 2015

**Dr. Jourdan Bell, Extension and Research Agronomist
Texas A&M AgriLife Extension Service
Amarillo, TX
and
Dr. Mark Kelley, Extension Agronomist – Cotton
Texas A&M AgriLife Extension Service
Lubbock, TX**

Introduction

Planted cotton acreage in the Texas Panhandle increased by approximately 115,000 acres in 2014. As regional groundwater water levels decline across the Texas Panhandle, producers are unable to meet the water demand for many crops. Cotton is a sustainable alternative for limited irrigated conditions that is increasing in popularity among Panhandle producers. Cotton yields in the Texas Panhandle increased by approximately 80,000 bales in 2014 from 2013 production. Increased annual production is attributed to increased harvested acreage. While in-season precipitation was comparable to seasonal averages, heat unit accumulation was greatly reduced through July 2014 resulting in delayed reproductive growth and boll development across the central and northern Panhandle. In short-season cotton producing regions, variety selection is critical to avoid yield penalties due to the narrow production window between planting and maturity. Early and medium maturing varieties have a shorter bloom period and are generally more determinant than full season varieties. As a result, early maturing varieties are often unable to recover from in-season stress. The objective of this project was to evaluate the profitability of newer early and medium maturing cotton varieties grown in on-farm trials in the Texas Panhandle.

Variety Characteristics

In the 2014 Texas Panhandle Cotton Variety Trials, the following varieties were planted at 5 locations:

- Deltapine 1212B2RF: early maturing variety with excellent seed vigor. Well suited for limited irrigation. Medium to medium-short plant height.
- Deltapine 1410B2RF: early maturing, light hairy leaf and medium plant height.
- FiberMax 1320GL: an early maturing, short plant
- FiberMax 1830GLT: an early, medium maturing variety with a smooth leaf and moderate storm resistance
- FiberMax 2011GT: a short stature, early maturing variety
- NexGen 1511B2RF: a medium maturing with semi-smooth leaf. Plant height is medium to tall and labeled to be moderately storm tolerant.

- NexGen 3306B2RF: an early-medium maturing variety with a semi-smooth leaf. Plant height is medium to tall and labeled to be very storm tolerant.
- PhytoGen 222WRF: a very early maturing variety with a smooth leaf, short plant height and excellent storm tolerance
- PhytoGen 333WRF: a medium to tall, early maturing variety with a hairy leaf type that is labeled to be very storm tolerant
- PhytoGen 339WRF: a tall, early maturing variety with fair storm tolerance that has fair storm tolerance
- Stoneville 4747GLB2: a very early maturing variety

Materials and Methods

Varieties were planted in a randomized complete block design with three replications at each of the five original locations. 2014 trials were located in the following counties:

County	Location	Agent	Cooperator
Sherman	Sunray	Marcel Fischbacher	Tommy Cartrite
Moore	Dumas	Marcel Fischbacher	Stan Spain
Hartley	Dalhart	Michael Bragg	Mark and Ryan Williams
Gray	Pampa	Brandon McGinty	Ryan Davis
Carson	White Deer	Jody Bradford	Dudley Pohnert

All locations were under center pivot irrigation. Weed and insect control measures, if needed, and harvest aid applications were performed by cooperating producers. Plots were harvested with commercial harvesters by producers with assistance provided by program personnel at all locations. The Carson County location was lost in early June due to thrips and hail damage. The remaining locations were taken to harvest; however, the yield at the Sherman County location was reduced by a late storm. Plots were harvested using producer/cooperator equipment, and grab samples were taken by plot and ginned at the Texas A&M 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 for all locations except the Sunray, Sherman County location. At Sunray, plot conditions were poor and variable at the time of harvest; upper position bolls had been dropped and lower bolls were of varying condition. Lint was strung out from the bolls that were open, or lint remained tight in the bur. Lint samples were insufficient to be properly evaluated for HVI fiber quality.

2014 Agronomic Information for Each Location:

County	Sherman	Moore	Hartley	Gray
Location	Sunray	Dumas	Middlewater	Pampa
Latitude, Longitude	36.113855, -101.765726	35.929955, -102.135087	35.866343, -102.802080	35.604750, -100.951973
Soil Type	Sherman Clay Loam	Sherman Silt Loam	Dallam Fine Sandy Loam	Pullman Clay Loam
Irrigation	N/A	7.18"	18"	10" (2" pre)
Precipitation	10.8"	8.6"	5.5"	12.2"
Previous Crop	Grain Sorghum	Cotton	Wheat	Wheat
Fertilizer	N/A	N/A	30 units NPK	N/A
Planting Population	56000	65000	55000	58000
Replications	3	3	3	3
Date Planted	5/7/2014	5/6/2014	5/8/2014	5/23/2014
Date of Initial Harvest Aid Application		10/17/2014	10/20/2014	10/21/2014
Harvest Aid		Harvest Pro 32 oz/ac	Folex 12 oz/ac	Boll'd 32 oz/ac)
		Folex 16 oz/ac	Ethephon 32 oz/ac	Folex 16 oz/ac + MSO 4oz/ac
Date of Sequential Harvest Aid Application		10/31/2014	11/1/2014	
Harvest Aid		Sharpen 1 oz/ac	Gramoxone 28 oz/ac	
		Harvest Pro 16 oz/ac		
Harvest Date	1/20/2015	12/4/2014	12/3 & 4/2014	1/16/2015
Varieties	Deltapine 1212B2RF	Deltapine 1212B2RF	Deltapine 1212B2RF	Deltapine 1212B2RF
	Deltapine 1410B2RF	Deltapine 1410B2RF	Deltapine 1410B2RF	Deltapine 1410B2RF
	FiberMax 1320GL	FiberMax 1320GL	FiberMax 1320GL	FiberMax 1320GL
	FiberMax 2011GT	FiberMax 2011GT	FiberMax 1830GLT	FiberMax 2011GT
	NexGen 1511B2RF	NexGen 1511B2RF	FiberMax 2011GT	NexGen 1511B2RF
	NexGen 3306B2RF	NexGen 3306B2RF	NexGen 3306B2RF	NexGen 3306B2RF
	PhytoGen 222WRF	PhytoGen 222WRF	PhytoGen 222WRF	PhytoGen 222WRF
	PhytoGen 333WRF	PhytoGen 333WRF	Stoneville 4747GLB2	PhytoGen 333WRF
	Stoneville 4747GLB2	PhytoGen 339WRF		PhytoGen 339WRF
		Stoneville 4747GLB2		Stoneville 4747GLB2

Yield and HVI Results

Location 1 – Sunray, Sherman County

At the Sunray, Sherman County location, substantial field variability was observed and resulted in significant differences among varieties for lint and seed turnout (Table 1). Lint turnouts of field-cleaned bur cotton averaged 17.9% with a high of 22.5% for Stoneville 4747GLB2 and a low of 15.4% for PhytoGen 222WRF. Seed turnouts averaged 37.8% and ranged from a high of 45.3% for Stoneville 4747GLB2 to a low of 30.5% for NexGen1511B2RF. Bur cotton, lint and seed yields averaged 2300, 427, and 897 lb/acre, respectively. Stoneville 4747GLB2 had the highest lint yield of 925 lbs/acre. Lint samples were unable to be evaluated for HVI fiber analysis which prevented evaluation of economic parameters.

Location 2 – Dumas, Moore County

At the Dumas, Moore County location, lint turnouts of field-cleaned bur cotton averaged 28.7% (Table 2) with a high of 30.7% for FiberMax 1320GL. Bur cotton yields averaged 3398 lbs/acre and Stoneville 4747GLB2 was greatest with 4011 lbs/acre. Lint yields averaged 977 lbs/ac and ranged from a high of 1183 lb/acre for Stoneville 4747GLB2 to a low of 801 lbs/acre for NexGen1511B2RF. Seed yields averaged 1731 lbs/acre across all varieties. Loan values derived from grab samples averaged \$0.4959, and ranged from a high of \$0.5127 for Deltapine 1212B2RF to a low of \$0.4517 for NexGen1511B2RF. After applying loan values to lint yields, the test average lint value was \$485.50/acre. After subtracting ginning and seed/technology costs from total value (lint value + seed value), net value averaged \$505.60/acre all across varieties. Net values ranged from a high of \$620.47/acre to a low of \$366.19/acre for Stoneville 4747GLB2 and NexGen1511B2RF, respectively. FiberMax 2011GT (\$597.37/acre), FiberMax 1320GL (\$565.91/acre), and PhytoGen 333WRF (\$552.36/acre) were included in the statistical upper tier for net value with Stoneville 4747GLB2. A difference of approximately \$254/acre was observed between the highest and lowest performing varieties at this location.

Classing data from grab samples are reported in Table 3. Micronaire values ranged from a high of 3.0 for FiberMax 1320GL to a low of 2.3 for NexGen1511B2RF. Staple was highest for Deltapine 1410B2RF (36.9) and lowest for NexGen 1511B2RF (34.6). The highest uniformity, 82.4%, was observed in NexGen 3306B2RF and NexGen 1511B2RF had the lowest with 80.5%. Fiber strength values ranged from a high of 30.4 g/tex for NexGen 3306B2RF to a low of 26.2 g/tex for Stoneville 4747GLB2. Elongation averaged 7.7% and leaf grades averaged 1.4 across varieties. Color grade components of Rd (reflectance) and +b (yellowness) averaged 80.5 and 8.2, respectively and resulted in average color grades of mostly 21.

Location 3 – Middlewater, Hartley County

Lint turnouts of field-cleaned bur cotton at the Middlewater, Hartley County location, averaged 31.9% (Table 4). Bur cotton yields averaged 4293 lbs/acre and lint yields ranged from a high of 1544 lbs/acre for FiberMax 2011GT to a low of 1205 lbs/acre for PhytoGen 222WRF. Seed yields averaged 1989 lbs/acre. Loan values derived from grab samples averaged \$0.5710/lb across all varieties. After applying loan values to lint

yields, the test average lint value was \$782.45/acre. After subtracting ginning and seed/technology costs from total value (lint value + seed value), net value averaged \$821.67/acre across all varieties. Net values ranged from a high of \$929.85/acre for FiberMax 2011GT to a low of \$721.17/acre for PhytoGen 222WRF. A difference of approximately \$209/acre was observed between the highest and lowest performing varieties at this location.

Classing data from grab samples at Middlewater are reported in Table 5. Micronaire values averaged 3.9 and ranged from a high of 4.3 for FiberMax 1320GL to a low of 3.6 for Deltapine 1410B2RF. Staple averaged 37.1 and uniformity averaged 82.1%. The highest staple was observed in FiberMax 1830GLT (38.5) and the greatest uniformity value of 83.6% was observed in NexGen 3306B2RF. Fiber strength values ranged from a high of 32.2 g/tex for NexGen 3306B2RF to a low of 28.0 g/tex for Stoneville 4747GLB2. Elongation and leaf grades averaged 8.2% and 1.3, respectively. Color grade components, reflectance (Rd) and yellow (+b) averaged 79.6 and 7.9 respectively. This resulted in color grades of mostly 21 and 31.

Location 4 – Pampa, Gray County

At the Pampa, Gray County location, lint turnouts of field-cleaned bur cotton averaged 27.3% (Table 6). Bur cotton yields averaged 4767 lbs/acre and PhytoGen 339WRF was greatest with 5374 lbs/acre. Lint yields ranged from a high of 1498 lbs/acre for PhytoGen 339WRF to a low of 1100 lbs/acre for Stoneville 4747GLB2. Seed yields averaged 2295 lbs/acre across all varieties. Loan values derived from grab samples averaged \$0.5043/lb and ranged from \$0.5377 for Deltapine 1212B2RF to \$0.4900 for NexGen 3306B2RF. After applying loan values to lint yields, the test average lint value was \$657.92/acre. After subtracting ginning and seed/technology costs from total value (lint value + seed value), net value averaged \$721.97/acre across all varieties. Net values ranged from a high of \$848.63/acre to a low of \$583.05/acre for Deltapine 1212B2RF and Stoneville 4747GLB2, respectively. PhytoGen 339WRF (\$830.92/acre), FiberMax 2011GT (\$829.04/acre), and FiberMax 1320GL (\$810.44/acre) were not statistically different from Deltapine 1212B2RF in terms of net value. A difference of approximately \$265/acre was observed between the highest and lowest performing varieties at this location.

Classing data from grab samples are reported in Table 7. Significant differences were observed among varieties for strength and elongation only at this location. Micronaire values averaged 2.9, staple averaged 37.5, and uniformity averaged 82.1%. Fiber strength values ranged from a high of 30.7 g/tex for FiberMax 1320GL to a low of 27.5 g/tex for PhytoGen 339WRF. Elongation values averaged 7.5% and leaf grades averaged 2.1. Color grade components, reflectance (Rd) and yellow (+b) averaged 76.9 and 7.9, respectively. This resulted in color grades of mostly 31 and 41.

Summary and Conclusions

Over the last several years, cotton producers in the Texas Panhandle region have increased planted acreage of cotton from approximately 616 thousand in 2008 to approximately 1.25 million in 2011. While regional cotton production has been variable since 2011 due to drought conditions, regionally, cotton production is still a very

important part of the Panhandle economy. With improved genetics and technologies, as well as the benefits of rotational crop management systems, cotton yields in the Texas Panhandle topped 1.4 million bales in 2010. In 2014, production increased approximately 90,000 bales over 2013 to 845,000 bales. As producers begin to regain cotton acreage, data generated from regional variety trials is utilized in varietal selections. Characteristics commonly evaluated include lint yield, turnout percentages, fiber quality, and earliness. The objective of this project was to evaluate the profitability of cotton varieties in producers' fields in the Texas Panhandle. Trials were located in Sherman County (northeast of Sunray), Moore County (northwest of Dumas), Hartley County (west of Middlewater), Gray County (north of Pampa), and Carson County (south of White Deer). The Carson County location was lost in early June due to thrips and hail. The remaining locations were taken to harvest; however, the yield at the Sherman County location was reduced by a late storm.

Across all trials, the greatest average lint turnout was 31.9% at the Middlewater location. The greatest average bur cotton yield was 4767 lbs/ac at Pampa with the greatest bur cotton yield achieved by PhytoGen 339WRF at 5374 lbs/ac. However, the greatest test average net value was achieved at Middlewater with \$821.67/acre. Evaluation of the highest and lowest performing varieties at Middlewater, Dumas and Pampa resulted in an overall difference of approximately \$243/acre. Several varieties performed well at individual locations, and when comparing across locations, Deltapine 1212B2RF, FiberMax 1320GL, FiberMax 1830GLT, FiberMax 2011GT, PhytoGen 333WRF, PhytoGen 339WRF, and Stoneville 4747GLB2 were generally in the statistical upper tier for net value. Differences in net value were observed among varieties at all locations for 2014. However, this is not always the case and producers should compare varieties across as many years and locations as possible before deciding on a new variety. As industry continues to release new varieties with varying technologies, additional multi-site and multi-year applied research is needed to evaluate these varieties across a series of environments.

Acknowledgments

We wish to express our appreciation to the producer-cooperators: Ryan Davis of Pampa (Gray County location), Mark and Ryan Williams of Middlewater (Hartley County), Tommy Cartrite of Sunray (Sherman County), Stan Spain of Dumas (Moore County), and Dudley Ponhert of Pampa (White Deer, Carson County location) for providing the land, equipment and time to conduct these projects. Furthermore, we thank Dr. Jane Dever and Ms. Valerie Morgan – Texas A&M AgriLife Research for use of the ginning facilities and Dr. Eric Hequet – Texas Tech University Fiber and Biopolymer Research Institute for HVI fiber quality analyses. We gratefully acknowledge Ms. Kristie Keys and Mr. Travis Brown for their assistance. Finally, we sincerely thank Cotton Incorporated – Texas State Support Committee for their generosity in funding this and other research projects.

Table 1. Harvest results from the Large Plot Replicated Irrigated Cotton Variety Trial , Cartrite Farm, Moore, TX, 2014.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield
	----- % -----			----- lb/acre -----	
Stoneville 4747GLB2	22.5	45.3	4102	925 a	1858
FiberMax 2011GT	20.8	43.6	2804	582 b	1221
FiberMax 1320GL	17.2	36.5	2647	455 b	967
PhytoGen 333WRF	17.1	35.8	2645	452 b	946
Deltapine 1410B2RF	18.0	35.4	2066	373 bc	731
Deltapine 1212B2RF	17.4	38.7	1865	325 bc	722
PhytoGen 222WRF	15.4	36.5	2036	314 bc	743
NexGen 3306B2RF	16.3	37.7	1475	241 c	557
NexGen 1511B2RF	16.6	30.5	1063	177 c	324
Test average	17.9	37.8	2300	427	897
CV, %	7.9	10.3	11.5	12.4	12.3
OSL	0.0003	0.0099	<0.0001	<0.0001	<0.0001
LSD	2.5	6.7	459	92	190

For lint yield, 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.

LSL - least significant difference at the 0.05 level.

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

Table 2. Harvest results from the Large Plot Irrigated Replicated Cotton Variety Trial at Stan Spain Farm, Dumas - Moore Co, TX, 2014.

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 4747GLB2	29.5	51.1	4011	1183	2050	0.4965	587.27	256.24	843.52	120.32	102.73	620.47 a
FiberMax 2011GT	30.2	50.9	3646	1102	1855	0.5072	559.04	231.91	790.96	109.39	84.20	597.37 ab
FiberMax 1320GL	30.7	48.9	3419	1050	1671	0.5232	549.40	208.91	758.31	102.58	89.82	565.91 abc
PhytoGen 333WRF	28.2	50.8	3773	1063	1917	0.4910	521.99	239.58	761.57	113.18	96.03	552.36 abc
Deltapine 1212B2RF	29.0	50.5	3371	978	1703	0.5127	501.64	212.82	714.46	101.12	96.55	516.79 bcd
Deltapine 1410B2RF	28.4	53.3	3414	971	1821	0.4948	480.42	227.67	708.09	102.43	96.55	509.11 bcde
PhytoGen 222WRF	26.9	50.0	3482	936	1741	0.4905	459.34	217.61	676.95	104.46	96.03	476.45 cde
PhytoGen 339WRF	27.4	50.2	3222	882	1617	0.4833	426.25	202.12	628.37	96.65	96.03	435.69 def
NexGen 3306B2RF	29.5	53.6	2725	803	1461	0.5077	407.66	182.67	590.33	81.74	92.92	415.67 ef
NexGen 1511B2RF	27.4	50.6	2920	801	1478	0.4517	361.96	184.75	546.71	87.60	92.92	366.19 f
Test average	28.7	51.0	3398	977	1731	0.4959	485.50	216.43	701.93	101.95	94.38	505.60
CV, %	5.9	4.3	9.6	9.6	9.8	3.3	9.7	9.8	9.7	9.6	—	11.6
OSL	0.1664	0.2999	0.0052	0.0012	0.0092	0.0036	0.0002	0.0092	0.0010	0.0052	—	0.0007
LSD	NS	NS	557	161	290	0.0278	81.00	36.26	117.20	16.72	—	100.50

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.

\$250/ton for seed.

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

Table 3. HVI fiber property results from the Large Plot Irrigated Replicated Cotton Variety Trial Stan Spain Farm, Dumas - Moore Co, TX, 2014.

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 1212B2RF	2.8	35.8	81.9	28.9	8.5	1.3	79.3	8.7	2.0	1.0
Deltapine 1410B2RF	2.6	36.9	80.9	29.7	6.7	1.3	80.2	7.9	2.3	1.0
FiberMax 1320GL	3.0	35.0	81.6	28.3	8.0	1.0	80.2	8.1	2.3	1.0
FiberMax 2011GT	2.7	35.4	81.3	28.1	7.1	1.3	82.1	7.7	2.0	1.0
NexGen 1511B2RF	2.3	34.6	80.5	26.4	7.7	2.5	80.6	8.7	1.7	1.0
NexGen 3306B2RF	2.7	36.5	82.4	30.4	8.4	1.0	80.2	8.8	1.7	1.0
PhytoGen 222WRF	2.8	35.1	82.3	28.2	8.9	1.0	80.3	8.3	2.0	1.0
PhytoGen 333WRF	2.6	35.9	81.1	28.9	7.2	2.0	80.0	8.7	2.0	1.0
PhytoGen 339WRF	2.5	35.5	81.3	28.0	8.2	1.3	81.5	8.2	2.0	1.0
Stoneville 4747GLB2	2.8	36.1	80.7	26.2	6.1	1.3	80.9	7.1	2.7	1.0
Test average	2.7	35.7	81.4	28.3	7.7	1.4	80.5	8.2	2.1	1.0
CV, %	5.5	1.1	0.4	3.4	6.3	48.8	1.5	3.1	--	--
OSL	0.0010	<0.0001	<0.0001	0.0011	<0.0001	0.2430	0.2748	<0.0001	--	--
LSD	0.3	0.7	0.6	1.6	0.8	NS	NS	0.4	--	--

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level, NS - not significant

Table 4. Harvest results from the Large Plot Replicated Irrigated Cotton Variety Trial, Mark and Ryan Williams Farm, Middlewater, TX, 2014.

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	33.8	45.1	4569	1544	2062	0.5703	880.45	257.71	1138.16	137.07	71.25	929.85 a
FiberMax 1320GL	34.7	44.9	4239	1473	1904	0.5658	833.32	238.04	1071.36	127.17	76.00	888.18 ab
Deltapine 1212B2RF	31.9	46.4	4513	1438	2096	0.5670	815.17	262.01	1077.18	135.40	81.70	860.09 ab
FiberMax 1830GLT	34.2	46.5	4176	1428	1940	0.5785	825.95	242.50	1068.45	125.27	87.00	856.17 ab
Stoneville 4747GLB2	30.5	45.3	4423	1351	2005	0.5615	758.67	250.59	1009.26	132.70	86.93	789.64 bc
NexGen 3306B2RF	30.3	49.4	4157	1260	2053	0.5822	733.26	256.59	989.85	124.72	78.63	786.50 bc
Deltapine 1410B2RF	30.4	47.9	4179	1269	2003	0.5663	718.45	250.39	968.84	125.36	81.70	761.78 c
PhytoGen 222WRF	29.5	45.1	4091	1205	1846	0.5760	694.37	230.80	925.17	122.73	81.26	721.17 c
Test average	31.9	46.3	4293	1371	1989	0.5710	782.45	248.58	1031.03	128.80	80.56	821.67
CV, %	5.2	4.0	5.5	5.6	5.4	2.3	5.5	5.4	5.5	5.5	--	6.0
OSL	0.0072	0.0921†	0.1743	0.0009	0.1503	0.5135	0.0012	0.1493	0.0079	0.1738	--	0.0029
LSD	2.9	2.6	NS	134	NS	NS	75.78	NS	99.26	NS	--	86.86

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, †indicates significance at the 0.10 level, NS - not significant.

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

Assumes:

\$3.00/cwt ginning cost.

\$250/ton for seed.

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

Table 5. HVI fiber property results from the Large Plot Replicated Irrigated Cotton Variety Trial, Mark and Ryan Williams Farm, Middlewater, TX, 2014.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	color 1	color 2
	units	32 ^{nds} inch	%	g/tex	%	grade	reflectance	yellowness		
Deltapine 1212B2RF	4.0	37.4	82.4	32.1	9.9	1.0	78.1	8.2	3.0	1.0
Deltapine 1410B2RF	3.6	37.8	81.0	30.9	7.3	1.7	79.4	7.9	2.7	1.0
FiberMax 1320GL	4.3	35.6	82.0	30.6	8.7	1.0	79.8	8.0	2.7	1.0
FiberMax 1830GL T	3.7	38.5	82.2	30.9	7.0	1.3	81.2	7.7	2.3	1.0
FiberMax 2011GT	3.8	35.7	81.7	30.5	7.7	1.3	80.0	7.6	2.7	1.0
NexGen 3306B2RF	3.8	38.3	83.6	32.2	8.7	1.3	80.2	8.8	2.0	1.0
PhytoGen 222WRF	4.1	36.3	82.6	29.3	9.8	1.3	80.3	8.1	2.3	1.0
Stoneville 4747GLB2	4.0	37.1	80.8	28.0	6.7	1.7	77.8	7.1	3.3	1.0
Test average	3.9	37.1	82.1	30.6	8.2	1.3	79.6	7.9	2.6	1.0
CV, %	6.2	1.6	1.0	2.9	4.1	54.6	1.6	3.9	--	--
OSL	0.0692 [†]	0.0001	0.0174	0.0009	<0.0001	0.9110	0.0637 [†]	0.0009	--	--
LSD	0.4	1.0	1.4	1.5	0.6	NS	1.8	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, NS - not significant

Table 6. Harvest results from the Large Plot Replicated Irrigated Cotton Variety Trial Ryan Davis Farm, Pampa, TX, 2014.

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	-----	-----
Deltapine 1212B2RF	29.7	48.2	4893	1455	2359	0.5377	782.26	294.85	1077.11	146.78	81.70	848.63 a
PhytoGen 339WRF	27.9	48.5	5374	1498	2606	0.4992	747.71	325.70	1073.41	161.23	81.26	830.92 a
FiberMax 2011GT	28.9	47.9	5193	1502	2489	0.4960	744.91	311.15	1056.07	155.78	71.25	829.04 a
FiberMax 1320GL	29.0	46.9	5029	1460	2358	0.5087	742.62	294.69	1037.32	150.87	76.00	810.44 ab
PhytoGen 333WRF	26.7	48.6	4918	1314	2390	0.5105	670.75	298.78	969.54	147.53	81.26	740.75 bc
NexGen 1511B2RF	24.7	48.0	4797	1187	2304	0.5073	602.01	287.95	889.96	143.91	78.63	667.43 cd
Deltapine 1410B2RF	26.0	49.9	4589	1194	2292	0.4968	593.21	286.44	879.65	137.67	81.70	660.28 d
NexGen 3306B2RF	25.8	49.1	4479	1156	2200	0.4900	566.24	275.05	841.29	134.38	78.63	628.29 de
PhytoGen 222WRF	28.4	46.0	4105	1166	1888	0.5053	589.30	235.99	825.28	123.14	81.26	620.89 de
Stoneville 4747GLB2	25.6	48.2	4289	1100	2067	0.4912	540.22	258.41	798.64	128.67	86.93	583.05 e
Test average	27.3	48.1	4767	1303	2295	0.5043	657.92	286.90	944.83	143.00	79.86	721.97
CV, %	11.1	10.1	5.4	5.4	5.4	5.6	5.3	5.4	5.4	5.4	--	6.0
OSL	0.4991	0.9966	0.0002	<0.0001	<0.0001	0.6836	<0.0001	<0.0001	<0.0001	0.0002	--	<0.0001
LSD	NS	NS	439	121	212	NS	60.38	26.52	86.83	13.16	--	73.69

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, NS - not significant.

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

Assumes:

\$3.00/cwt ginning cost.

\$250/ton for seed.

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

Table 7. HVI fiber property results from the Large Plot Replicated Irrigated Cotton Variety Trial Ryan Davis Farm, Pampa, TX, 2014.

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 1212B2RF	3.2	37.2	82.1	30.4	8.2	2.7	76.5	8.0	3.3	1.0		
Deltapine 1410B2RF	2.9	38.4	81.9	30.5	7.1	2.3	76.6	7.6	3.7	1.0		
FiberMax 1320GL	3.0	38.1	82.8	30.7	7.1	2.3	77.8	7.7	3.3	1.0		
FiberMax 2011GT	2.9	36.9	82.3	29.6	8.1	1.7	75.9	8.2	3.3	1.3		
NexGen 1511B2RF	2.9	37.4	82.6	29.3	7.6	2.0	77.7	8.4	3.0	1.0		
NexGen 3306B2RF	2.9	38.1	81.9	29.8	8.0	2.3	75.8	7.8	4.0	1.0		
PhytoGen 222WRF	2.9	36.6	81.9	29.3	8.1	2.7	75.5	8.7	3.3	1.0		
PhytoGen 333WRF	2.9	37.4	82.4	30.2	7.2	1.3	77.5	7.8	3.3	1.0		
PhytoGen 339WRF	2.9	37.4	81.4	27.5	6.0	2.0	77.7	7.0	3.7	1.0		
Stoneville 4747GLB2	2.7	37.5	82.0	29.4	8.1	1.3	77.6	7.6	3.3	1.0		
Test average	2.9	37.5	82.1	29.7	7.5	2.1	76.9	7.9	3.4	1.0		
CV, %	9.6	2.0	1.0	2.5	10.3	43.4	1.8	6.5	--	--		
OSL	0.7374	0.1729	0.6354	0.0029	0.0471	0.5426	0.3319	0.0464	--	--		
LSD	NS	NS	NS	1.3	1.3	NS	NS	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, NS - not significant

Replicated Dryland Large Plot Demonstrations



**Replicated Dryland RACE Variety Trial,
Lamesa, TX - 2014**

**Cooperator: Lamesa Cotton Growers/Texas A&M AgriLife Research/
Texas A&M AgriLife Extension**

**Mark Kelley, Kristie Keys, Tommy Doederlein,
and Gary Roschetzky
Extension Agronomist – Cotton, Extension Assistant – Cotton,
EA-IPM Dawson/Lynn Counties and CEA-ANR Dawson County**

Dawson County

Objective: The objective of this study is to compare agronomic characteristics, yields, gin turnout, fiber quality, and economic returns of transgenic cotton varieties under dryland production on the Texas High Plains.

Materials and Methods:

Varieties: NexGen 1511B2RF, PhytoGen 499WRF, FiberMax 2334GLT, PhytoGen 417WRF, Stoneville 4946GLB2, FiberMax 2011GT, PhytoGen 367WRF, NexGen 4111RF

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

Planting date: 19-May

Seeding rate: Planted 4.0 seeds/row-ft, or 52,272 seed/A, to prepared, listed 40 inch rows using a commercial John Deere MaxEmerge XP vacuum planter.

Plot size: 4 rows by variable length (253-872 ft)

Weed management: Trifluralin was applied preplant and incorporated at a rate of 1.3 pt/A on 9-April. A post-emergent application of glyphosate (RoundUp PowerMax at 32 oz/A) and metolachlor (Dual II Magnum at 1 pt/A) was made on 13-June. The trial was cultivated with sweeps on 21-June and hoed by hand on 6-Aug.

Irrigation:	To ensure germination, 3.30" of irrigation was applied preplant. An additional 0.4" of irrigation was applied 28-June to deliver fertilizer.										
Rainfall:	Based on the nearest Texas Tech University – West Texas Mesonet station at Lamesa, rainfall amounts were: <table> <tr> <td>April: 0.25"</td><td>August: 0.45"</td></tr> <tr> <td>May: 1.26"</td><td>September: 6.42"</td></tr> <tr> <td>June: 3.67"</td><td>October: 0.02"</td></tr> <tr> <td>July: 1.24"</td><td></td></tr> <tr> <td>Total rainfall:</td><td>13.31"</td></tr> </table>	April: 0.25"	August: 0.45"	May: 1.26"	September: 6.42"	June: 3.67"	October: 0.02"	July: 1.24"		Total rainfall:	13.31"
April: 0.25"	August: 0.45"										
May: 1.26"	September: 6.42"										
June: 3.67"	October: 0.02"										
July: 1.24"											
Total rainfall:	13.31"										
Fertility Management:	A preplant application of 10-34-0 at a rate of 110 lb/A was made on 1-April. On 28-June, 30 lb/A 32-0-0 was applied via fertigation.										
Plant growth regulators:	None were applied at this location.										
Harvest aids:	An application of ethephon (Boll Buster at 1 qt/A) and pyraflufen ethyl (ET at 2oz/A) with 1% v/v COC was made on 4-Oct. This was followed by an application of pyraflufen ethyl (ET at 3 oz/acre) and 1% v/v COC on 18-Oct. Due to difficulties in terminating crop and substantial regrowth, an additional application of pyraflufen ethyl (ETX at 1 oz/A) and paraquat (Gramoxone Inteon at 1 pt/A) with 1% v/v COC was made on 31-Oct.										
Harvest:	Plots were harvested on 14-Nov using a commercial John Deere 7445 with bur extractor. 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 A&M 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 burr cotton and seed value/acre was based on \$250/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://plainscotton.org/Seed/PCGseed14.xls .										

Results and Discussion:

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

Significant differences were noted for most yield and economic parameters (Table 2). Stripper harvested lint turnout averaged 37.1% across all varieties and seed turnouts averaged 49.4%. Lint yields ranged from a low of 286 lb/acre (PhytoGen 499WRF) to a high of 393 lb/acre (NexGen 1511B2RF). Lint loan values ranged from a high of \$0.4988/lb to a low of \$0.4412/lb for FiberMax 2334GLT and PhytoGen 417WRF, respectively. Lint values ranged from a high of \$180.02/acre for NexGen 1511B2RF to a low of \$134.68/acre for PhytoGen 499WRF. After adding lint and seed values, total values averaged \$218.05/acre with a high of \$242.02/acre for NexGen 1511B2Rf and a low of \$186.61/acre for PhytoGen 499WRF. When subtracting ginning and seed and technology costs, the net value/acre averaged \$114.67, and ranged from a high of \$137.67 for NexGen 1511B2RF to a low of \$83.30 for PhytoGen 499WRF, a difference of \$54.37/acre.

Significant differences were observed for some fiber quality parameters at this location (Table 3). Micronaire values ranged from a low of 4.4 for PhytoGen 417WRF and FiberMax 2011GT to a high of 4.8 for FiberMax 2334GLT and Stoneville 4946GLB2. Staple averaged 31.4 across all varieties with a low of 30.0 (PhytoGen 417WRF) and a high of 32.7 (FiberMax 2334GLT). Uniformity averaged 79.5% and strength averaged 26.8 g/tex across all varieties. Significant differences were observed among varieties for percent elongation, averaging 8.0% overall with a high of 8.9% and a low of 6.4% for NexGen 1511B2RF and FiberMax 2334GLT, respectively. Leaf grades averaged 3.0 across all varieties. Values for Rd, or reflectance averaged 69.8 and +b, or yellowness, averaged 9.0 across all varieties and resulted in color grades of mostly 41.

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

Acknowledgments:

Appreciation is expressed to Drs. Wayne Keeling and Danny Carmichael, Texas A&M AgriLife Research Systems Agronomist - Lubbock and Research Associate - AGCARES, Lamesa. Further assistance with this project was provided by Dr. Jane Dever and Ms. Valerie Morgan - Texas A&M AgriLife Research and Extension Center, Lubbock, and Dr. Eric Hequet - Associate Director, Fiber and Biopolymer Research Institute, Texas Tech University. Furthermore, we greatly appreciate funding for HVI testing from the Cotton Fibers Initiative Fund.

Disclaimer Clause:

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Table 1. Inseason plant measurement results from the Dawson County Dryland RACE Variety Trial, AGCARES Farm, Lamesa, TX, 2014.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of			
	plants/row ft	plants/acre	28-Jul	5-Aug	13-Aug	
FiberMax 2011GT	3.6	47,190	5.1	3.7	2.5	
FiberMax 2334GLT	3.1	41,019	5.1	4.3	3.4	
NexGen 1511B2RF	3.1	41,019	5.0	3.9	2.8	
NexGen 4111RF	3.3	42,834	4.7	3.5	2.5	
PhytoGen 367WRF	3.1	40,656	5.1	4.1	3.3	
PhytoGen 417WRF	3.4	45,012	5.7	4.7	2.9	
PhytoGen 499WRF	3.4	44,649	5.6	4.3	3.0	
Stoneville 4946GLB2	3.5	45,738	5.1	4.0	2.2	
Test average	3.3	43,515	5.2	4.1	2.8	
CV, %	8.0	7.9	11.7	18.9	13.0	
OSL	0.2114	0.2273	0.5513	0.6834	0.0178	
LSD	NS	NS	NS	NS	0.6	

For NAWF, numbers represent an average of 5 plants per variety per rep (15 plants per variety)

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level, NS - not significant

Table 2. Harvest results from the Dawson County Dryland RACE Variety Trial, AGCARES Farm, Lamesa, TX, 2014.

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 ¹	Net value
	%			lb/acre		\$/lb		\$/acre				
NexGen 1511B2RF	39.8	50.2	987	393	496	0.4580	180.02	62.00	242.02	29.62	74.73	137.67 a
FiberMax 2011GT	39.2	48.8	990	388	483	0.4445	172.32	60.33	232.65	29.70	67.72	135.24 ab
NexGen 4111RF	33.6	50.2	989	332	497	0.4592	152.50	62.12	214.62	29.68	59.27	125.67 abc
Stoneville 4946GLB2	35.2	49.4	1031	363	509	0.4575	166.13	63.68	229.81	30.94	82.61	116.25 abcd
FiberMax 2334GLT	40.4	49.3	835	337	412	0.4988	168.26	51.44	219.70	25.04	82.68	111.97 bcd
PhytoGen 367WRF	36.8	49.9	909	335	454	0.4615	154.52	56.75	211.27	27.28	77.23	106.76 cde
PhytoGen 417WRF	39.0	49.7	888	346	441	0.4412	152.55	55.19	207.74	26.63	80.64	100.48 de
PhytoGen 499WRF	32.9	47.8	870	286	415	0.4702	134.68	51.93	186.61	26.09	77.23	83.30 e
Test average	37.1	49.4	937	348	463	0.4614	160.12	57.93	218.05	28.12	75.26	114.67
CV, %	10.2	8.1	7.3	7.3	7.3	3.7	7.2	7.3	7.3	7.3	--	12.0
OSL	0.1728	0.9949	0.0286	0.0037	0.0158	0.0296	0.0075	0.0158	0.0207	0.0285	--	0.0041
LSD	NS	NS	119	45	59	0.0300	20.32	7.42	27.73	3.58	--	24.16

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.

\$250/ton for seed.

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

¹ - Seed/technology cost does not include any rebates that may be available from seed companies based on quantities purchased.

Table 3. HVI fiber property results from the Dawson County Dryland RACE Variety Trial, AGCARES Farm, Lamesa, TX, 2014.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 ^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
NexGen 1511B2RF	4.7	31.5	80.0	27.4	8.9	2.7	68.8	9.1	4.7	1.7
PhytoGen 499WRF	4.7	31.6	79.9	27.8	8.7	3.0	69.5	9.0	4.0	2.0
Stoneville 4946GLB2	4.8	31.1	79.5	27.7	8.6	3.7	70.1	8.9	4.0	2.0
PhytoGen 417WRF	4.4	30.0	78.0	26.1	8.5	3.7	70.5	9.4	4.0	2.0
PhytoGen 367WRF	4.6	31.4	79.6	26.3	8.1	3.3	69.1	9.2	4.0	1.7
NexGen 4111RF	4.6	31.7	79.8	27.6	7.8	2.3	67.3	9.6	4.7	2.0
FiberMax 2011GT	4.4	30.9	79.6	25.8	6.6	3.3	70.3	8.4	4.7	1.3
FiberMax 2334GLT	4.8	32.7	79.7	25.9	6.4	2.3	72.6	8.2	4.0	1.0
Test average	4.6	31.4	79.5	26.8	8.0	3.0	69.8	9.0	4.3	1.7
CV, %	2.8	2.2	1.0	4.9	5.6	28.2	2.2	3.9	--	--
OSL	0.0093	0.0142	0.1183	0.2864	<0.0001	0.3556	0.0389	0.0033	--	--
LSD	0.2	1.2	NS	NS	0.8	NS	2.7	0.6	--	--

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level, NS - not significant



**Replicated Dryland RACE Variety Trial,
Floydada- 2014**

Cooperator: Gary Nixon

**Mark Kelley, Kristie Keys, and Cristen Brooks, Extension Agronomist – Cotton,
Extension Assistant – Cotton, and
CEA-ANR Floyd County**

Floyd County

Objective: The objective of this study is to compare agronomic characteristics, yields, gin turnout, fiber quality, and economic returns of transgenic cotton varieties grown under dryland production on the Texas High Plains.

Materials and Methods:

Varieties: NexGen 1511B2RF, Stoneville 4946GLB2, PhytoGen 333WRF, NexGen 4111RF, PhytoGen 339WRF, FiberMax 2011GT

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

Planting date: 3-June

Seeding rate: Planted 2.3 seed/row-ft to prepared, listed 40 inch rows using a John Deere 1700 vacuum planter.

Plot size: 8 rows

Weed management: Diuron (Direx) was applied post-plant at a rate of 1 qt/A on 4-June. Post-emergent applications of generic glyphosate at 22oz/A were made on 12-June and 15-July.

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

April: 0.36"	July: 3.09"	Oct: 0.40"
May: 5.80"	Aug: 2.92"	
June: 3.22"	Sep: 4.30"	
Total rainfall:	20.09"	

Plant growth regulators:	Plant growth regulators were not used in this study.
Harvest aids:	A foliar application of ethephon (Boll'D at 1 qt/A) was made on 28-Oct.
Harvest:	Plots were harvested on 20-Nov with a commercial eight-row John Deere 7460 cotton stripper with bur extractor. 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.
Gin turnout:	Grab samples were taken by plot and ginned at the Texas A&M 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 was based on \$3.00 per cwt. of bur cotton and seed value/acre was based on \$250/ton. Ginning cost did not include check-off.
Seed and Technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (2.3 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/PCGseed14.xls

Results and Discussion:

No significant differences were noted for some yield and economic parameters (Table 1). Lint turnout averaged 30.7% and seed turnout averaged 45.9% across varieties and no differences were observed for either parameter. Bur cotton yields averaged 1981 lb/acre and resulted in lint yields averaging 605 lb/acre. Lint yields ranged from a high of 668 lb/acre for FiberMax 2011GT to a low of 539 lb/acre for NexGen 1511B2RF. Differences in lint loan values were significant and values ranged from a high of \$0.5542/lb (PhytoGen 333WRF) to a low of \$0.4768/lb for Stoneville 4946GLB2. After combining lint yield and loan value, lint values (\$/acre) averaged \$310.76/acre and ranged from a high of \$366.05 for FiberMax 2011GT to a low of \$263.50 for NexGen 1511B2RF. When adding lint and seed value, total value ranged from a high of \$481.67/acre to a low of \$354.97/acre for FiberMax 2011GT and NexGen 1511B2RF, respectively. After subtracting ginning, seed costs and technology fees, net value/acre averaged \$323.22/acre. Net values ranged from a high of \$383.06/acre (FiberMax 2011GT) to a low of \$261.45/acre (NexGen 1511B2RF), a difference of \$121.61.

Differences were observed among varieties for some fiber quality parameters at this location (Table 2). Differences in micronaire values were not significant with a test average of 3.6. Staple averaged 35.5 across all varieties with a high of 36.5 for PhytoGen 333WRF and a low of 34.2 for NexGen 1511B2RF. Uniformity

averaged 82.8% across varieties. Strength ranged from a low of 30.4 g/tex for PhytoGen 333WRF to a high of 32.3 g/tex for NexGen 4111RF. Elongation averaged 8.7% across varieties with a high of 10.0 for NexGen 1511B2RF and a low of 7.9 for FiberMax 2011GT and PhytoGen 333WRF. Color grade components of Rd (reflectance) and +b (yellowness) averaged 72.7 and 10.2, respectively. Leaf grades were mostly 2 and 3 and color grades were mostly 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 Gary Nixon for the use of his land, equipment and labor for this demonstration. Further assistance with this project was provided by Dr. Jane Dever and Ms. Valerie Morgan - Texas A&M 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. Harvest results from the Floyd County Dryland RACE Variety Trial, Gary Nixon Farm, Floydada, TX, 2014.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost ¹	Seed/technology cost ¹	Net value
	----- % -----			----- lb/acre -----		----- \$/lb -----		----- \$/acre -----				
FiberMax 2011GT	33.6	46.5	1990	668	925	0.5477	366.05	115.59	481.64	59.71	38.86	383.06 a
PhytoGen 339WRF	32.4	48.8	1919	622	936	0.5542	344.50	116.98	461.47	57.58	44.32	359.57 b
NexGen 4111RF	29.3	46.2	2015	591	930	0.5110	301.78	116.27	418.05	60.44	34.02	323.59 c
Stoneville 4946GLB2	29.2	46.0	2215	646	1020	0.4768	307.93	127.48	435.41	66.45	47.41	321.55 c
PhytoGen 333WRF	27.6	44.9	2056	567	923	0.4953	280.77	115.32	396.09	61.69	44.32	290.08 d
NexGen 1511B2RF	31.9	43.4	1688	539	732	0.4892	263.50	91.46	354.97	50.63	42.89	261.45 e
Test average	30.7	45.9	1981	605	911	0.5124	310.76	113.85	424.61	59.42	41.97	323.22
CV, %	9.1	5.6	3.1	3.0	3.1	4.7	3.0	3.1	3.0	3.1	--	3.3
OSL	0.1522	0.2751	<0.0001	<0.0001	<0.0001	0.0123	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001
LSD	NS	NS	112	33	51	0.0437	16.70	6.35	23.03	3.35	--	19.69

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, NS - not significant.

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

Assumes:

\$3.00/cwt ginning cost.

\$250/ton for seed.

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

¹ - Seed/technology cost does not include any rebates that may be available from seed companies based on quantities purchased.

Table 2. HVI fiber property results from the Floyd County Dryland RACE Variety Trial, Gary Nixon Farm, Floydada, TX, 2014.

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	3.9	35.8	82.6	31.0	7.9	2.3	75.7	8.8	3.0	1.3
NexGen 1511B2RF	3.6	34.2	81.9	30.7	10.0	3.3	69.5	11.0	3.3	3.0
NexGen 4111RF	3.8	35.2	83.0	32.3	8.9	2.3	72.4	10.9	2.3	3.0
PhytoGen 333WRF	3.3	36.5	83.0	30.4	7.9	2.7	72.3	10.5	3.0	2.7
PhytoGen 339WRF	3.9	35.7	83.3	31.0	9.2	2.7	75.9	8.8	3.0	1.3
Stoneville 4946GLB2	3.1	35.7	82.9	31.8	8.2	1.7	70.5	11.3	2.7	3.0
Test average	3.6	35.5	82.8	31.2	8.7	2.5	72.7	10.2	2.9	2.4
CV, %	12.0	2.2	1.2	2.3	2.1	24.2	1.7	4.9	--	--
OSL	0.2335	0.0732 [†]	0.6158	0.0700 [†]	<0.0001	0.1064	0.0004	0.0002	--	--
LSD	NS	1.2	NS	1.1	0.3	NS	2.3	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, NS - not significant

Disease and Root-knot Nematode Management

Response of commercially available cotton cultivars to Verticillium wilt, bacterial blight, root-knot nematodes, and Fusarium wilt.

Brand	Variety	Verticillium wilt	Bacterial blight	Root-knot nematodes	Fusarium Wilt
All-Tex	All-Tex ApexB2RF	I	S	S	S
All-Tex	All-Tex AridB2RF	Poor	S	S	S
All-Tex	All-Tex DineroB2RF	Unk	S	S	S
All-Tex	All-Tex EdgeB2RF	I	S	S	S
All-Tex	All-Tex EpicRF	Poor	S	S	S
All-Tex	All-Tex Nitro-44B2RF	I to Good	R	S	S
All-Tex	All-Tex RapidB2RF	Poor	Unk	S	S
Americot	AM 1532B2RF	I	S	S	S
Americot	AM 1550B2RF	Poor	S	S	S
Croplan Genetics	CG 3035RF	Poor	S	S	S
Croplan Genetics	CG 3156B2RF	Poor	S	S	S
Croplan Genetics	CG 3787B2RF	Poor	R	S	S
Deltapine	DP 0912B2RF	I	S	S	S
Deltapine	DP 104B2RF	Good	S	S	S
Deltapine	DP 1044B2RF	I	S	S	S
Deltapine	DP 1048B2RF	Poor	S	S	S
Deltapine	DP 1050B2RF	Poor	S	S	S
Deltapine	DP 1212B2RF	Poor-I	S	S	S
Deltapine	DP 1219B2RF	I	S	S	S
Deltapine	DP 1252B2RF	Poor	S	S	S
Deltapine	DP 1311B2RF	I to Good	S	S	S
Deltapine	DP 1321B2RF	I	S	S	S
Deltapine	DP1359B2RF	Poor	PR	S	S
Deltapine	DP 1410B2RF	I to good	R	S	S
Deltapine	DP 1441RF	I to good	S	S	S
Deltapine	DP 1454NRB2RF	I	S	R	Unk
Deltapine	DP 174RF	I	S	PR	PR
Fibermax	FM 1320GL	I	S	S	S
Fibermax	FM 1740B2F	I- good	R	S	S
Fibermax	FM 1830GLT	Good	R	S	S
Fibermax	FM 1845LLB2	Unk	PR	S	S
Fibermax	FM 1880B2F	Good	R	S	S
Fibermax	FM 1900GLT	I	R	S	S
Fibermax	FM 1944GLB2	Good	S	S	S
Fibermax	FM 2007GLT	I	R	S	S
Fibermax	FM 2011GT	Good	R	PR	Unk
Fibermax	FM 2320GL	Unk	Unk	Unk	Unk
Fibermax	FM 2322GL	Good	S	S	S
Fibermax	FM 2334GLT	Good	R	S	S
Fibermax	FM 2484B2F	Good	R	S	S

Brand	Variety	Verticillium wilt	Bacterial blight	Root-knot nematodes	Fusarium Wilt
Fibermax	FM 2989GLB2	Good	R	S	S
Fibermax	FM 8270GLB2	I	R	S	S
Fibermax	FM 9170B2F	Good	R	S	S
Fibermax	FM 9180B2F	Good	R	S	S
Fibermax	FM 9250GL	Good	R	S	S
NexGen	NG 1511B2RF	Poor to I	S	S	S
NexGen	NG 1551RF	I	S	S	S
NexGen	NG 1572RF	Poor	R	S	S
NexGen	NG 3306B2RF	I to Good	S	Unk	Unk
NexGen	NG 3348B2RF	Good	PR	S	S
NexGen	NG 4010B2RF	Good	R	S	S
NexGen	NG 4012B2RF	Good	R	S	S
NexGen	NG 4111RF	Good	R	S	S
NexGen	NG 5315B2RF	Poor	S	Unk	Unk
Phytogen	PHY 222WRF	I	S	S	S
Phytogen	PHY 315RF	Poor	S	S	S
Phytogen	PHY 333WRF	Poor	S	S	S
Phytogen	PHY 339WRF	I to Good	R	S	S
Phytogen	PHY 367ERF	I	S	PR	PR
Phytogen	PHY 375WRF	Poor	R	S	S
Phytogen	PHY 417WRF	Poor	S	R	R
Phytogen	PHY 427WRF	Poor	S	R	R
Phytogen	PHY 499WRF	I	S	S	S
Stoneville	ST 4747GLB2	Good	S	S	S
Stoneville	ST 4946GLB2	Poor	S	PR	Unk
Stoneville	ST 5032GLT	Poor	S	S	S
Stoneville	ST 5289GLT	Poor	R	S	S
Stoneville	ST 6448GLB2	Poor to I	R	S	S

I=Intermediate, PR=partially resistant, R=Resistant, S=Susceptible, Unk=unknown.

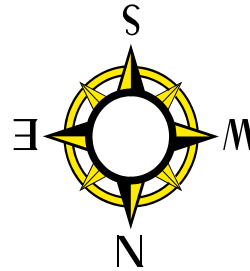
2014 Sites Planted but Lost Due to Weather

Farwell Irrigated Systems Variety Trial - 2014					
48 rows to Pivot (Seeding Rate Trial)					
1	Rep I	CP 3006B2RF	Variety	Maturity	Insecticide
2		DP 1321B2RF			
3		FM 1830GLT			
4		NG 1511B2RF			
5		PHY 222WRF			
6		ST 4747GLB2			
7		DP 1212B2RF			
8		NG 3306B2RF			
9		PHY 333WRF			
10		DP 1410B2RF			
11		PHY 339WRF			
12		FM 2322GL			
13		FM 1320GL			
14		NG 4111RF			
15		FM 2011GT			
15	Rep II	FM 2011GT	Planting date	5/6/2014	
14		NG 4111RF	Seeding rate	45,000	
13		FM 1320GL			
12		FM 2322GL	Temp @ planting	83	
11		PHY 339WRF	Soil Temp @ planting	70	
10		DP 1410B2RF	Moisture @ planting	Fair	
9		PHY 333WRF	Seed Bed Type	Flat	
8		NG 3306B2RF	Previous/Cover Crop	Previous: Silage Sorghum	
7		DP 1212B2RF	Planter Type	Case IH 1255 Early Riser	
3		FM 1830GLT			
2		DP 1321B2RF			
1		CP 3006B2RF			
6		ST 4747GLB2			
5		PHY 222WRF			
4		NG 1511B2RF			
10	Rep III	DP 1410B2RF			
11		PHY 339WRF			
12		FM 2322GL			
13		FM 1320GL			
14		NG 4111RF			
15		FM 2011GT			
1		CP 3006B2RF			
2		DP 1321B2RF			
3		FM 1830GLT			
7		DP 1212B2RF			
8		NG 3306B2RF			
9		PHY 333WRF			
4		NG 1511B2RF			
5		PHY 222WRF			
6		ST 4747GLB2			
Remainder of Field					

34.435567
-102.944331

8 row plots X variable length (circular pivot)
24 row planting pattern (3 varieties planted per pass)
Lat: 34.435640° Long: -102.942658°

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COMMENTS:
 8 row plots X variable length (circular pivot)
 24 row planting pattern (3 varieties planted per pass)
 Lat: 34.435640° Long: -102.942658°

34.435567
 -102.944331

Plains Dryland Variety Trial - 2014					
	Variety	Rep 1	Rep 2	Rep 3	
1	CG 3787B2RF				
2	FM 2011GT				
3	FM 2484B2F				
4	NG 4111RF				
5	FM 2334GLT				
6	NG 1511B2RF				
7	PHY 333WRF				
8	DP 1410B2RF				
9	PHY 367WRF				
10	ST 4946GLB2				
	Planting date	6/2/2014			
	Seeding rate	31,000			
	Temp @ planting				
	Soil Temp @ planting				
	Moisture @ planting	Good			
	Seed Bed Type	Packed Beds			
	Previous/Cover Crop				
	Planter Type				
Comments: 6 row plots					
<div><div></div><div>33.197017 -102.653959</div></div>					

RACE Trial

Planted May 19, 2014

Ray Haseloff farm
2014

GPS	Plot #	Rep #	Treatment #	Variety
	101	1	1	NG 3306
42	102	1	2	FM 2011
	103	1	3	PHY 339
41	104	1	4	ST 4747
	105	1	5	DP 1410
40	106	1	6	PHY 222
	107	1	7	NG 1511
39	108	1	8	DP 1212
	201	2	4	ST 4747
38	202	2	3	PHY 339
	203	2	2	FM 2011
37	204	2	1	NG 3306
	205	2	8	DP 1212
36	206	2	7	NG 1511
	207	2	6	PHY 222
35	208	2	5	DP 1410
	301	3	7	NG 1511
34	302	3	8	DP 1212
	303	3	5	DP 4010
33	304	3	6	PHY 222
	305	3	3	PHY 339
32	306	3	4	ST 4747
	307	3	1	NG 3306
31	308	3	2	FM 2011

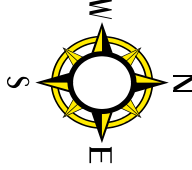
Ave planting rate: 41,000 47,400

34.341922
-102.707705

Hale County Irrigated RACE Variety Trial - 2014									
1	Rep I	FM 2011GT							
2		CP 3787B2RF							
3		NG 3306B2RF							
4		PHY 339WRF							
		Tower							
5		ST 4747GLB2							
6		PHY 222WRF							
7		NG 1511B2RF							
8		FM 1830GLT							
Tower									
5	Rep II	ST 4747GLB2							
7		NG 1511B2RF							
2		FM 2011GT							
93 1		CP 3787B2RF							
		Tower							
8		FM 1830GLT							
4		PHY 339WRF							
3		NG 3306B2RF							
6		PHY 222WRF							
Tower									
5	Rep III	ST 4747GLB2							
8		FM 1830GLT							
1		CP 3787B2RF							
7		NG 1511B2RF							
		Tower							
3		NG 3306B2RF							
6		PHY 222WRF							
2		FM 2011GT							
4		PHY 339WRF							
Tower									

Variety	Rep 1	Rep 2	Rep 3
1 CP 3787B2RF			
2 FM 2011GT			
3 NG 3306B2RF			
4 PHY 339WRF			
5 ST 4747GLB2			
6 PHY 222WRF			
7 NG 1511B2RF			
8 FM 1830GLT			
Planting date	5/22/2014		
Seeding rate	48,000		
Temp @ planting	88		
Soil Temp @ planting	76		
Moisture @ planting	Good		
Seed Bed Type	Flat		
Previous/Cover Crop	Sorghum Stalks		
Planter Type			
COMMENTS:			
12 row plots			
FM 2484 - Tower Tracks			
2 1/2 tons compost applied preplant			

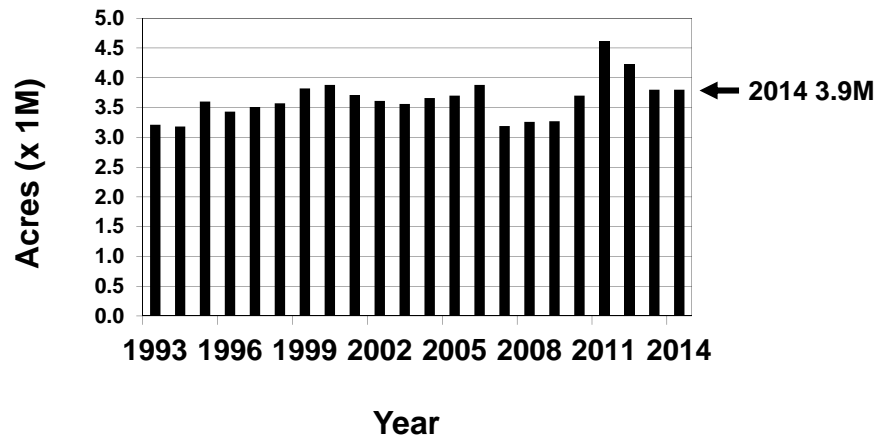
34° 0'32.52"N
101° 51'59.93"W

Parmer County Irrigated RACE Demonstration - 2014						
		Variety	Rep 1	Rep 2	Rep 3	
1	Rep I	PHY 339WRF				
2		DP 1410B2RF				
3		NG 3306B2RF				
4		PHY 222WRF				
5		FM 2011GT				
6		DP 1410B2RF				
7		NG 1511B2RF				
8		DP 1212B2RF				
		ST 4747GLB2				
4	Rep II	FM 2011GT	Planting date	5/1/2014		
3		PHY 222WRF	Seeding rate	65,000		
2		NG 3306B2RF				
1		PHY 339WRF	Temp @ planting	54		
8		ST 4747GLB2	Soil Temp @ planting	56		
7		DP 1212B2RF	Moisture @ planting	Dry		
6		NG 1511B2RF	Seed Bed Type	Bedded		
5		DP 1410B2RF	Cover Crop	None/Previous Crop Sorghum		
7	Rep III	DP 1212B2RF	Planter Type	Case IH 1200 Vacuum		
8		ST 4747GLB2				
1		PHY 339WRF				
2		NG 3306B2RF				
5		DP 1410B2RF				
6		NG 1511B2RF				
3		PHY 222WRF				
4		FM 2011GT				
COMMENTS: 30"						
6 Row Plots Planted Flat Following Corn						
						

34.573667
-102.798833

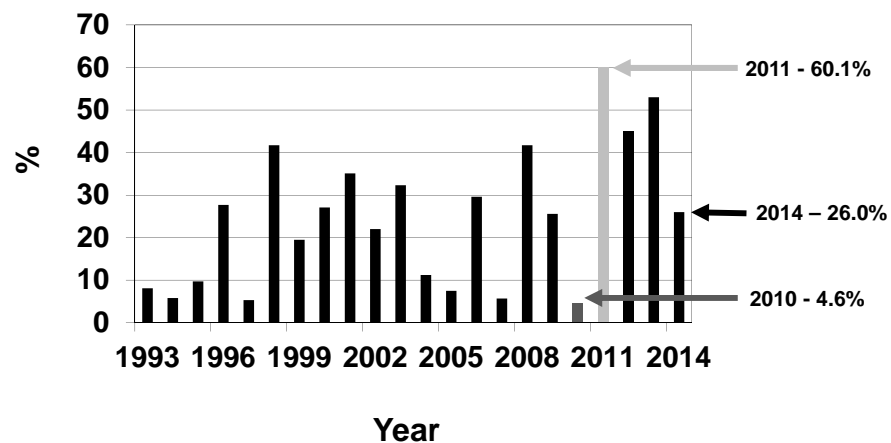
2013 Texas High Plains Production and Weather

High Plains (TASS 1N and 1S) Planted Acres 1993-2014



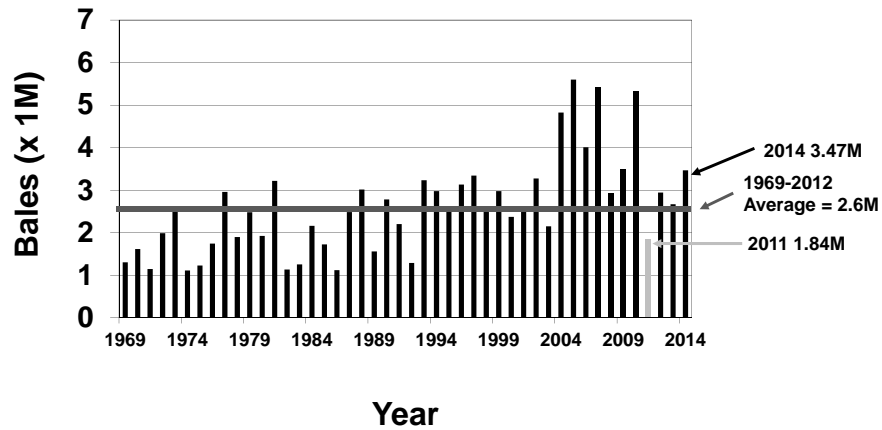
Source: USDA-NASS

High Plains (TASS 1N and 1S) Abandoned Acres 1993-2013



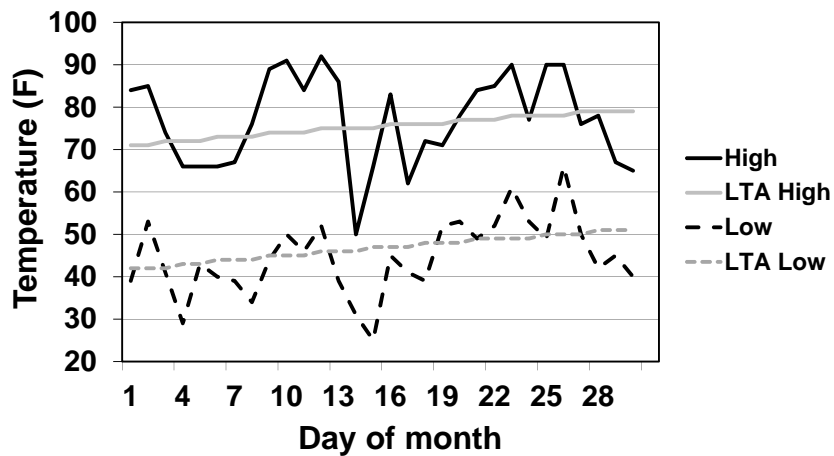
Source: USDA-NASS

High Plains (TASS 1N and 1S) Total Bale Production 1969-2014

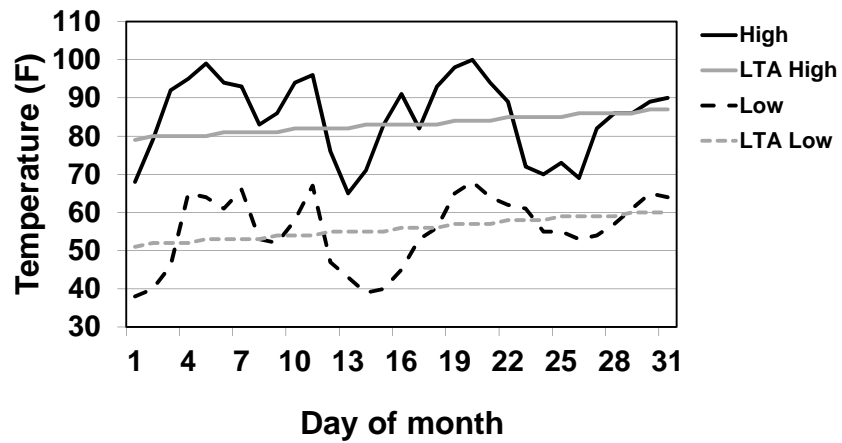


Source: USDA-NASS

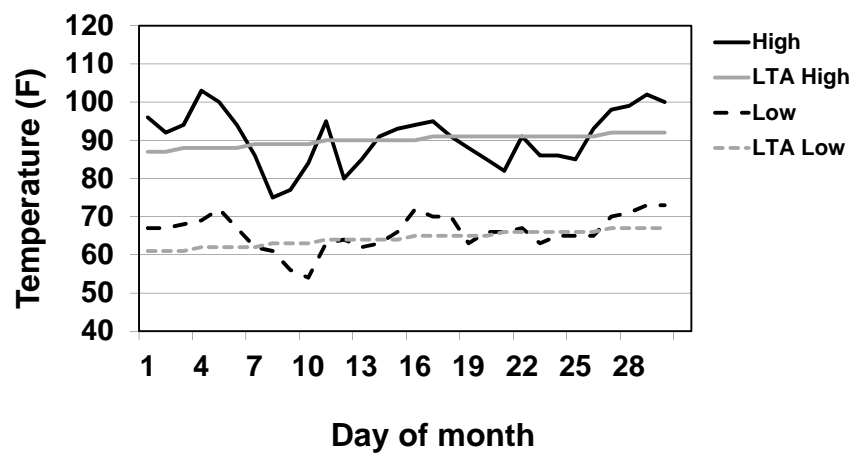
Lubbock Air Temperatures April, 2014



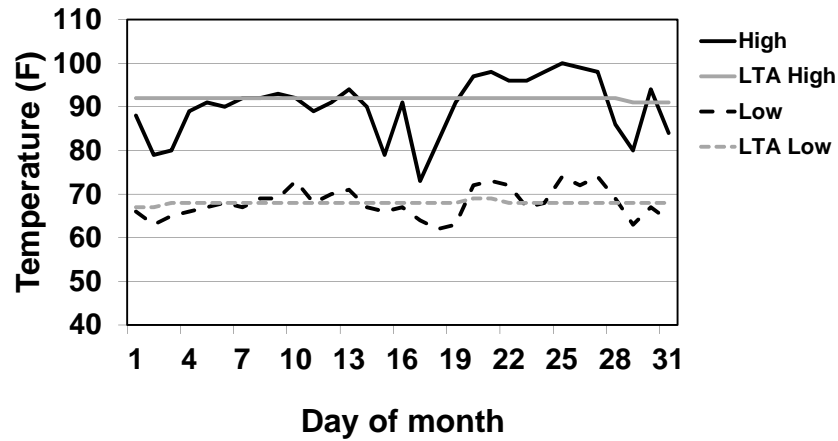
Lubbock Air Temperatures May, 2014



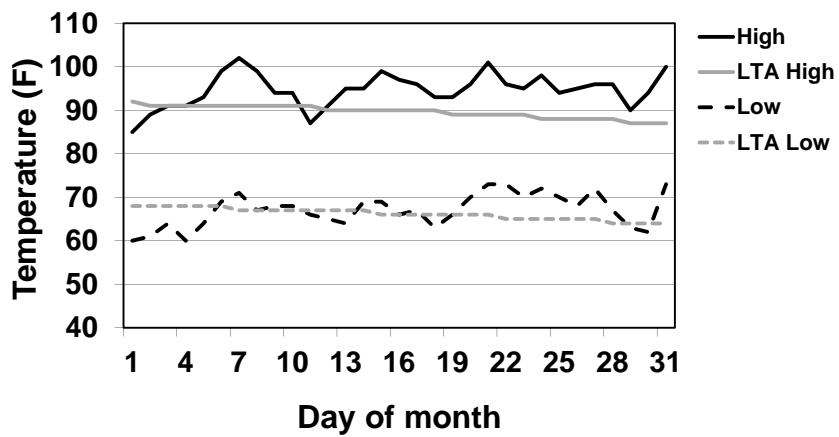
Lubbock Air Temperatures June, 2014



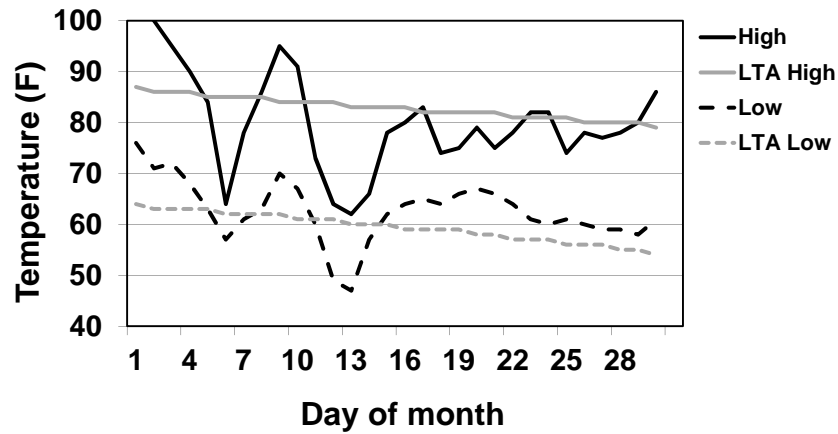
Lubbock Air Temperatures July, 2014



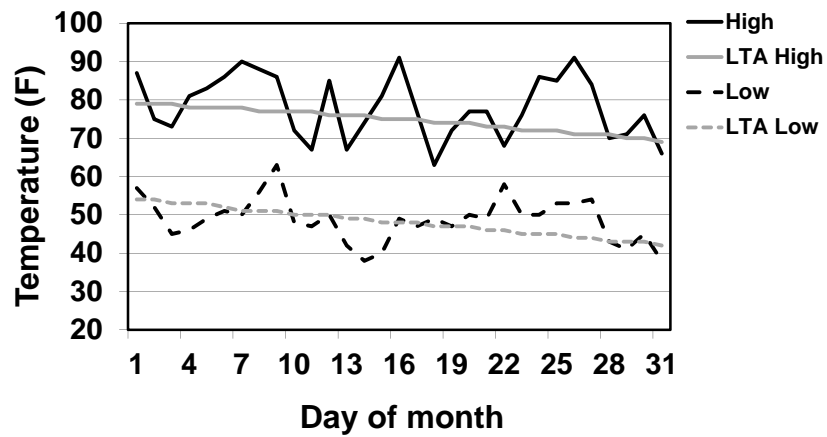
Lubbock Air Temperatures August, 2014



Lubbock Air Temperatures September, 2014

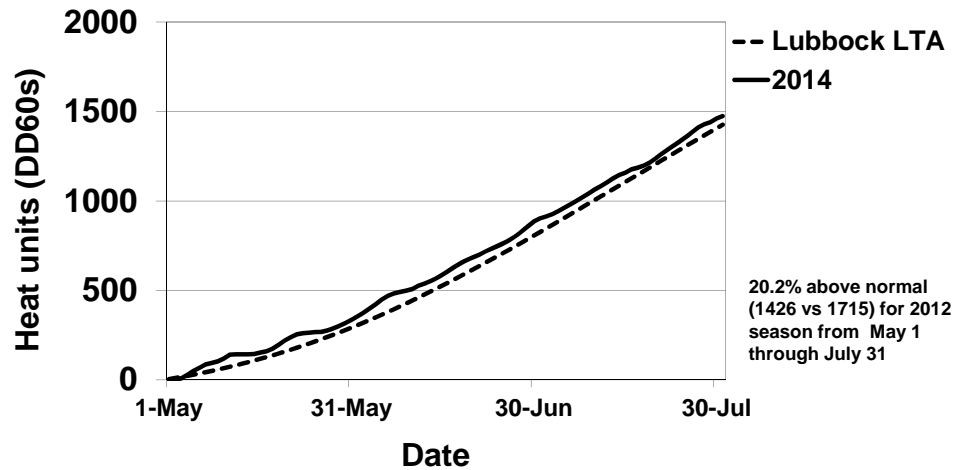


Lubbock Air Temperatures October, 2014



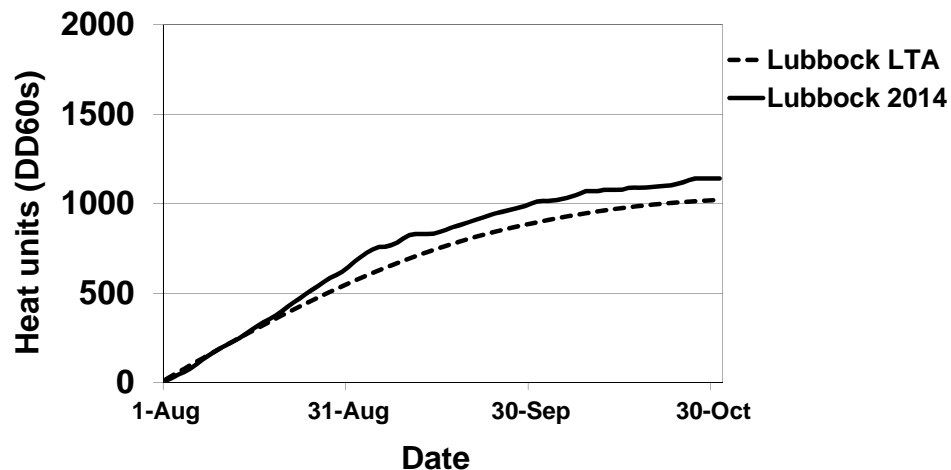
Lubbock 30-Yr Long Term Average (1971-2000) vs. 2014

Cotton Heat Unit Accumulation
From May 1 through July 31

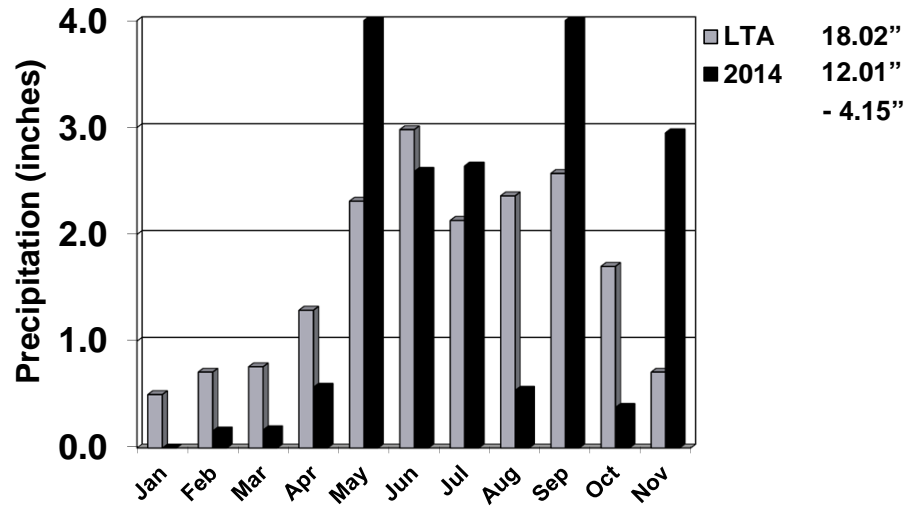


Lubbock 30-Yr Long Term Average (1971-2000) vs. 2014

Cotton Heat Unit Accumulation
From August 1 through October 31



Lubbock LTA (1971-2000) vs. 2014 Rainfall



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

EVALUATING FIELD TRIAL DATA

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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.