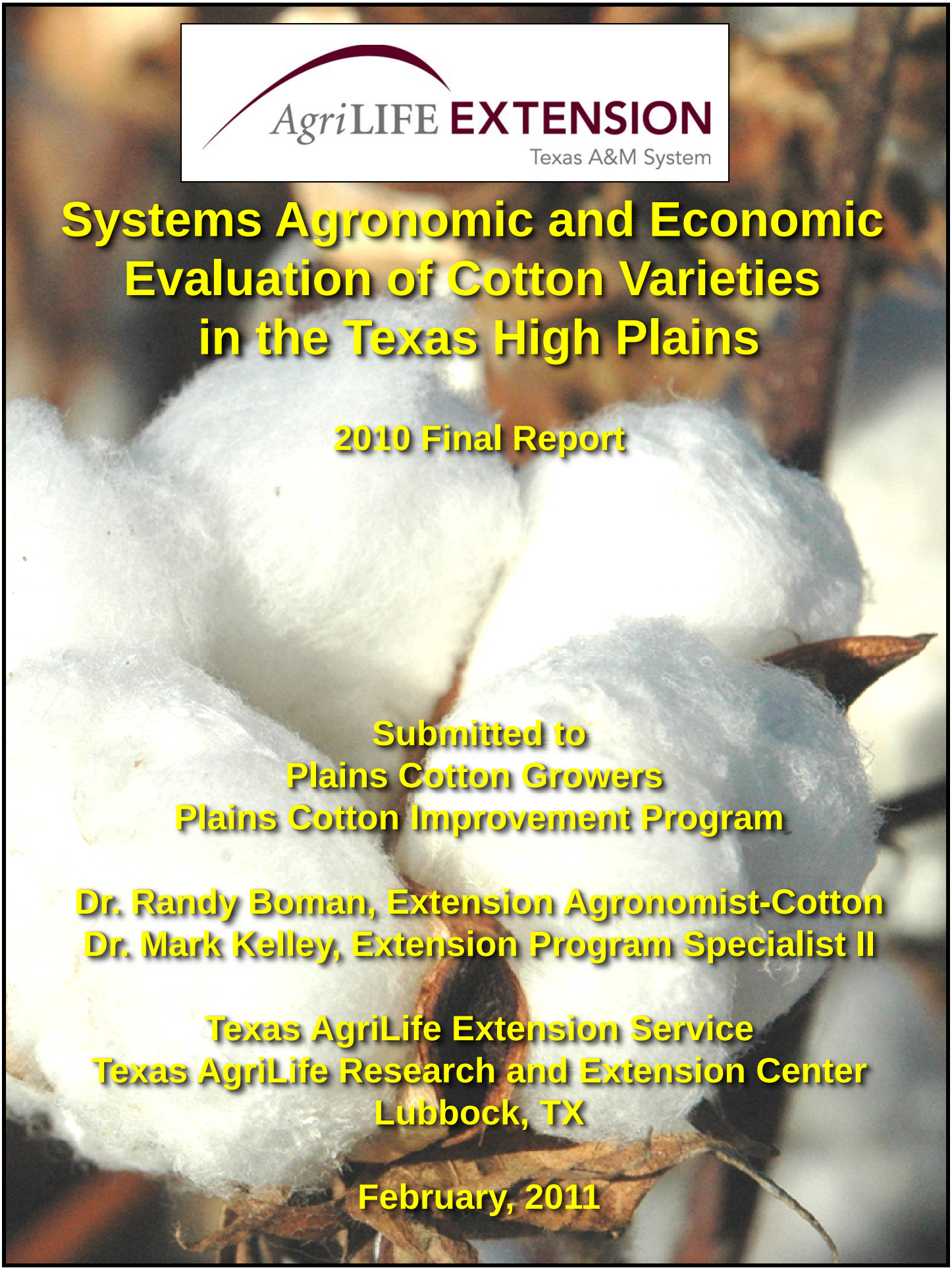

AgriLIFE EXTENSION
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Systems Agronomic and Economic Evaluation of Cotton Varieties in the Texas High Plains

2010 Final Report

Submitted to
Plains Cotton Growers
Plains Cotton Improvement Program

Dr. Randy Boman, Extension Agronomist-Cotton
Dr. Mark Kelley, Extension Program Specialist II

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

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February 2011

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Texas AgriLife Extension Service
Lubbock, TX

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 and to a lesser degree harvesting methods in producers' fields in the Texas High Plains. Three replications of each variety were included at the Muleshoe and Plains locations with four replications (harvested three) at the Blanco location. Plots were of sufficient size to enable the combining of all replications of each individual variety into a single module at harvest. Each individual variety had at least three acres total (approximately one acre per plot with three replications equals three acres total). Plot weights were determined at harvest using a boll buggy with integral electronic scales. Modules from the Muleshoe and Blanco loacations (Plains was lost due to late season hail event) were followed through the ginning process to determine lint turnout, USDA-AMS fiber quality, and CCC loan value.

In 2010 (a year characterized by excellent early season moisture, well above average precipitation in July and above average late season heat unit accumulation) yields were good to excellent at most locations. A total of three locations were initiated in 2010. Ten varieties were included at the Muleshoe site, fourteen varieties at the Blanco site and the Plains location included 18 varieties. However, the Plains location was lost to a late season hail event that affected several thousand acres in Terry and Yoakum counties. *Verticillium* wilt pressure continues to build in the region and significant wilt pressure was noted at Muleshoe. At the Blanco site however, only slight pressure was observed. In addition to the *Verticillium* wilt pressure, the Muleshoe site was exposed to significant herbicide drift damage to the east end of the plots and therefore, only the west half was taken at harvest. Lint yields averaged 1162 lb/acre and 1332 lb/acre at the Muleshoe and Blanco sites, respectively. Average loan values of commercially ginned bales ranged from a high of $0.5668 for NexGen 4010B2RF to $0.4959 for NexGen 2549B2RF at Muleshoe. At the Blanco site, the range was from $0.5700/lb (FiberMax 9170B2F) to $0.5492/lb (NexGen 3410RF). After adding lint and seed values and subtracting out ginning and seed and technology fee costs, the Muleshoe site net value per acre ranged from a low of $454.03 for PhytoGen 375WRF to a high of $592.51 for Deltapine 0912B2RF, a difference of $138.50. A total of 5 varieties were in the statistical upper tier at this location and included Deltapine 0912B2RF, Stoneville 4288B2F, Deltapine 1032B2RF, FiberMax 1740B2F, and NexGen 4010B2RF. The Blanco site test average net value per acre was $731.30 and ranged from a high of $846.56 for Deltapine 1032B2RF to a low of $641.53 for FiberMax 9180B2F, a difference of $208.03. At this location, four varieties were included in the statistical upper tier in terms of net value per acre, which included Deltapine 1032B2RF, All-Tex Epic RF, PhytoGen 375WRF, and FiberMax 9170B2F. These data indicate that substantial differences can be observed in terms of net value/acre due to variety and technology selection. The differences in net value/acre, when comparing the top and bottom varieties were approximately $139 at Muleshoe and $208 at Blanco. Additional multi-site and multi-year applied research is needed to evaluate varieties across a series of environments.

Agronomic and Economic Evaluation of Cotton Varieties

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Introduction

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

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

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

Materials and Methods

For scientific validity, three replications of each variety were included at the Muleshoe and Plains locations, with four replications included at Blanco (harvested 3 replications). Plots were of sufficient size to enable the combining of all replications of each individual variety into a single module at harvest. Each individual variety had at least three acres total (approximately one acre per experimental unit with three replications equals three acres total). A randomized

complete block design was used at all three locations. Unfortunately, the Plains location was hailed out on 21-October just prior to harvest and therefore, no yield results were obtainable. Preplant incorporated and/or preemergence herbicide applications were made at the discretion of the producer-cooperator. At all sites, varieties were either Roundup Ready Flex, or Roundup Ready Flex stacked with Bollgard II or Widestrike; therefore, no differential herbicide applications were made. Herbicide, insecticide and plant growth regulator applications were made by the cooperator or commercially when and if needed. Weed species spectrum was determined by project personnel working with the cooperator. Harvest aids were applied by the cooperator or commercially as needed at remaining locations.

Nodes above white flower (NAWF) data were derived from 10 representative plants/plot for a total of 30 plants/variety. Plot weights were determined at harvest at Muleshoe and Blanco using a weigh wagon with integral electronic scales. Variety specific modules were followed through the commercial ginning process and lint and seed turnouts were recorded to determine lint and seed yields. High Volume Instrument (HVI) commercial classing data provided by the USDA-AMS Classing Office were obtained for each bale classed and averaged by variety. Seed and technology costs were calculated using the appropriate seeding rate (seed/row-ft) for the row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at:
http://www.plainscotton.org/Seed/PCGseed10.xls. Data were then converted to a per acre basis and appropriate statistical analyses were performed.

Three producer-cooperator locations were initiated for this project.

Location 1 – Muleshoe (Parmer County)

James Brown Farm, near Muleshoe (Parmer County)
Strip tillage following corn
Irrigation: Low elevation spray, straight rows
Plot size: 12 30-inch rows
Area: Variable (1.3 to 1.8 acres/plot), 3 replications of each variety
Planted: 10-May at 4.0 seed/per row-ft or ~70,000 seed/acre
Harvested: 4-November (1/2 of each plot)

Varieties planted at this site included:

1. All-Tex Patriot+ RF
2. NexGen 1551RF
3. NexGen 2549B2RF
4. NexGen 4010B2RF
5. FiberMax 1740B2F
6. FiberMax 9180B2F
7. Deltapine 0912B2RF
8. Deltapine 1032B2RF
9. Stoneville 4288B2F
10. PhytoGen 375WRF

Weed Control Program: $77.15/acre
Dominant weed species: volunteer corn, russian thistle and morningglory

Blanket herbicide applications were made commercially via ground rig and airplane at this location. A preplant incorporated application of 2.0 pt/acre Prowl H2O was made commercially. An application of 32 oz/acre Direx was applied to a band behind the presswheel at planting. Three applications of Roundup PowerMax with AMS were made during the growing season. On 18-June and 15-July, 32 oz/acre was applied with 8.5 oz/acre Select and on 20-July, 22 oz/acre was applied.

Insect Control Program: $13.29/acre

Temik was applied infurrow at planting at a rate of 3.5 lbs/acre. On 18-June, 4 oz/acre acephate was applied with a Roundup PowerMax application to control thrips. This location was in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Foundation.

PGR Program: $26.03/acre

Four applications of Pix were made during the growing season at this location. On 8-July, 7 oz/acre were applied commercially. Pix was applied at 10 oz/acre with the 20-July Roundup PowerMax application. On 29-July and 7-August, Pix was applied at 20 and 24 oz/acre respectively. All applications were aerially applied.

Harvest Aid Program: $43.54/acre

Harvest aids applied aerially included, 9-October, 1.0 qt/acre Finish 6 Pro with 0.5 oz/acre Blizzard and 6 oz/acre Def 6 followed by a sequential application of 32 oz/acre Gramoxone Inteon with 2 oz/acre Activator 90 on 20-October.

Total input cost for this location was $160.01/acre and include all herbicide and insecticide costs and application costs, when applicable (Table 4). This cost is not reflected in the net value/acre means in Table 2.

Location 2 – Plains (Yoakum County)

Rickey Bearden Farm, Plains (Yoakum County)
Clean-tillage following cotton
Irrigation: Low elevation spray, straight rows
Plot Size: 12 40-inch rows/plot
Area: Variable (0.9 to 1.2 acres/plot), 3 replications of each
Planted: 6-May at 4 seed/per row-ft, or 52,272 seed/acre

Varieties planted at this site included:

1. All-Tex 65207B2RF
2. All-Tex Epic RF
3. Croplan Genetics 3006B2RF
4. Croplan Genetics 3220B2RF
5. Dyna-Gro 2570B2RF
6. Deltapine 0924B2RF
7. Deltapine 1032B2RF
8. FiberMax 1740B2F

9. FiberMax 9058F
10. FiberMax 9160B2F
11. FiberMax 9170B2F
12. FiberMax 9180B2F
13. NexGen 2549B2RF
14. NexGen 3348B2RF
15. NexGen 3410RF
16. PhytoGen 367WRF
17. PhytoGen 375WRF
18. Stoneville 4288B2F

This site was lost to a hail event on October 21.

Location 3 – Blanco (Crosby County)

Appling Farm, near Blanco (Crosby County)
Clean tillage following cotton
Irrigation: LEPA, circular rows
Plot Size: 8 40-inch rows/plot
Area: Variable (1.1 to 2.3 acres/plot), 3 replications harvested of each variety (planted 4 replications)
Planted: 12-May at 3.2 seed/per row-ft, or ~42,000 seed/acre
Harvested: 1 and 2-November

Varieties planted at this site included:

1. All-Tex Epic RF
2. Deltapine 0912B2RF
3. Deltapine 1032B2RF
4. Deltapine 1044B2RF
5. FiberMax 1740B2F
6. FiberMax 9058F
7. FiberMax 9170B2F
8. FiberMax 9180B2F
9. NexGen 3348B2RF
10. NexGen 3410RF
11. NexGen 4010B2RF
12. NexGen 4012B2RF
13. PhytoGen 375WRF
14. Stoneville 4288B2F

Weed Control Program: $30.33/acre

Dominant weed species: pigweed, silverleaf nightshade, marestail, kochia, lanceleaf sage, and volunteer Roundup Ready cotton

Blanket herbicide applications were made by the producer via ground rig at this location. No preplant herbicides were applied at this location in 2010. Three applications of 22 oz/acre Roundup PowerMax with AMS were made on 27-May, 7-June, and 10-August. Two cultivations were conducted during the growing season for control of volunteer Roundup Ready Flex cotton. No hoeing was conducted at this site for weed control.

Insect Control Program: $1.00/acre

Acephate was applied at 2.3 oz/acre with the 7-June application of Roundup PowerMax for thrips control. This location was in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Foundation.

PGR Program: $6.22/acre

A single application of 12 oz/a mepiquat chloride was applied via ground rig on 15-July by the producer for plant height control across all varieties.

Harvest Aid Program: $32.58/acre

Harvest aids applied by the producer on 15-October included 21 oz/acre Finish 6 Pro and 5 oz/acre Ginstar EC. On 25-October, a sequential application of 24 oz/acre Gramoxone Inteon with 0.25% v/v NIS was applied to facilitate stripper harvesting.

Total input cost for this location was $70.13/acre and include all herbicide and insecticide costs and application costs, when applicable (Table 9). This cost is not reflected in the net value/acre means in Table 7.

Results

Agronomic and economic results by variety as well as summaries of expenses incurred at Muleshoe, Plains (in-season data only), and Blanco are included in Tables 1 - 9.

Location 1 - Muleshoe

Plant population and NAWF data are presented in Table 1. Plant stands averaged 55,265 plants/acre on 9-June. No significant differences were observed among varieties for plant stand with a range from a high of 59,853 for Deltapine 0912B2RF to a low of 49,213 for NexGen 4010B2RF. NAWF counts were conducted on 26-July, 2-August, 9-August, and 17-August. Differences were observed for counts taken on 26-July only. The test average on 26-July was 7.6 NAWF with a high of 8.1 for PhytoGen 375WRF, and a low of 7.1 for NexGen 1551RF. Average NAWF decreased to 6.7 on 2-August. By 9-August, all but two varieties (Deltapine 1032B2RF at 5.2 and PhytoGen 375WRF at 5.6) had reached cutout (NAWF=5 or less) and a test average of 4.8 was observed. By the final observation date (17-August), all varieties had reached cutout with a test average of 2.9. On 16-September, final plant map data were collected for plant height, total nodes, height to node ratio and node of first sympodium (first fruiting branch). Significant differences were observed among varieties for all plant map parameters measured. Plant height averaged 26.1 inches and was greatest for NexGen 2549B2RF (28.3) and lowest for All-Tex Patriot+ RF (23.2). NexGen 2549B2RF also had the highest average mainstem nodes with 20.6 and the lowest was again observed for All-Tex Patriot+ RF with 16.9. The test average for total mainstem nodes was 18.4. For height to node ratio, the test average was 1.42 and ranged from a high of 1.6 for Deltapine 1032B2RF to a low of 1.27 for FiberMax 9180B2F. Node of first sympodium averaged 6.9 and FiberMax 9180B2F and Stoneville 4288B2F had the highest with 7.8.

The lowest node of first sympodium was observed for NexGen 1551RF (5.8). Just prior to harvest on 4-November, observations were recorded for storm resistance across all varieties and replicates. Varieties were visually rated on a scale of 1-9 with 9 being the most storm resistant. The amounts of seed cotton on the ground as well as the "string out" factor were taken into consideration. The most storm resistant variety at this location was NexGen 2549B2RF with an average rating of 8.5 and the lowest was PhytoGen 375WRF with a 3.5 average rating.

In early June, the east end of this field was exposed to hormone herbicide damage due to drift from a neighboring field of grass early in the season. Therefore, all in-season plant measurements were taken from the west end of the plots. Although the east end of the crop appeared to have recovered somewhat from the damage, it was decided at harvest to take yield measurements from the west half of the field only. In spite of taking only on half of the plots, enough harvested material (after disengaging the field cleaner) was obtained to maintain by variety moduling (although somewhat small) for commercial ginning and classing. **Also, significant *Verticillium* wilt was observed at this location which reduced yields for some less tolerant varieties and introduced some variability into the test.**

Lint turnouts of non field-cleaned bur cotton averaged 24.1% with a high of 26.2% for Deltapine 1032B2RF and FiberMax 1740B2F and a low of 20.5% for NexGen 1551RF (Table 2). Bur cotton yields ranged from 4979 lb/acre for Stoneville 4288B2F to 4559 lb/acre for PhytoGen 375WRF. Lint yields ranged from 1273 lb/acre for Deltapine 0912B2RF to 1000 lb/acre for NexGen 1551RF, with a test average of 1162 lb/acre. Lint Loan values derived from commercial bales for all varieties indicated that values ranged from $0.5668 for NexGen 4010B2RF to $0.4959 for NexGen 2549B2RF. After totaling lint and seed value per acre and subtracting out ginning costs and seed and technology costs, the net value per acre ranged from a low of $454.03 for PhytoGen 375WRF to a high of $592.51 for Deltapine 0912B2RF, a difference of $138.50. A total of 5 varieties were in the statistical upper tier at this location and included Deltapine 0912B2RF, Stoneville 4288B2F, Deltapine 1032B2RF, FiberMax 1740B2F, and NexGen 4010B2RF.

Classing data from commercial bales were averaged by variety and are reported in Table 3. Micronaire averages ranged from 4.2 for NexGen 1551RF to 3.4 for NexGen 2549B2RF. Average staple was highest for All-Tex Patriot+ RF, NexGen 1551RF and NexGen 4010B2RF (35.8) and lowest for NexGen 2549B2RF (32.7). The highest average uniformity (81.9%) was observed in NexGen 1551RF and FiberMax 1740B2F had the lowest with 79.6%. Average fiber strength values ranged from a high of 32.6 g/tex for NexGen 1551RF to a low of 28.2 for PhytoGen 375WRF. Reflectance (Rd) ranged from 82.4 (FiberMax 1740B2F) to 77.9 (NexGen 1551RF). The highest yellowness or +b value was observed for NexGen 1551RF of 9.5 and the lowest of 8.3 for FiberMax 9180B2F. Resulting color grades were generally 11 and 21, with a minimum of bark contamination for most entries. Leaf grades were good to excellent and ranged from 2 to 3.

Location 2 – Plains

This location had excellent yield potential and was defoliated and ready for harvest when it was destroyed by an 21-October hail event that affected several thousand acres in Yoakum and Terry counties. Although no yield information could be obtained, the in-

season measurements of plant population and NAWF data are presented in Table 5. Plant stands averaged 30,926 plants/acre on 9-June. Significant differences were observed among varieties for plant stand with a range from a high of 35,167 for FiberMax 1740B2F to a low of 25,833 for All-Tex Epic RF. NAWF counts were conducted on 27-July, 3-August, 10-August, and 17-August. Differences were observed for counts taken on 27-July and 17-August only. The test average on 27-July was 7.2 NAWF with a high of 7.7 for Deltapine 1032B2RF and Dyna-Gro 2570B2RF, and a low of 6.7 for FiberMax 9058F and NexGen 3348B2RF. On 3-August, the test average was 5.7 and one variety, NexGen 3410RF had reached cutout. Average NAWF decreased to 4.2 on 10-August and all varieties were at cutout. By the final observation date (17-August), the test average was 3.3. The lowest (2.6) was observed for NexGen 3410RF, and the highest (4.3) was again observed for Deltapine 1032B2RF.

Location 3 – Blanco

Four replications were planted at this location to insure adequate harvest material for moduling by variety. However, it was determined at harvest that three replications would be sufficient. The stand count, NAWF and storm resistance data are presented in Table 6. Plant populations averaged 32,219 plants/acre on 8-June. Significant differences were observed among varieties at the 0.10 level for plant stand with a range from a high of 34,416 for NexGen 3348B2RF to a low of 28,929 for NexGen 4010B2RF. Significant differences were observed among varieties for NAWF for all observation dates. The test average on 15-July was 9.2 NAWF with a high of 9.6 for PhytoGen 375WRF and a low of 8.6 for NexGen 3348B2RF. On 22-July, the test average was 8.4 and ranged from a high of 8.9 for PhytoGen 375WRF, and a low of 7.7 for NexGen 3348B2RF. PhytoGen 375WRF and NexGen 4012B2RF had the highest NAWF on 29-July of 7.2 and the lowest was 6.1 for NexGen 3348B2RF. The test average on 29-July was 6.5. By 5-August all but one variety had reached cutout and the test average was 4.7. FiberMax 9180B2F had the highest value with 5.8 and the lowest, 4.2, was observed for NexGen 3410RF and NexGen 3348B2RF. Just prior to harvest on 1 and 2-November, visual observations were recorded for storm resistance across all varieties and replicates. Test average for storm resistance was 6.2. The most storm resistant variety at this location was NexGen 3410RF with an average rating of 8.8 and the lowest was Deltapine 0912B2RF with a 3.2 average rating.

Minimal *Verticillium* wilt pressure was observed at this location. Lint turnouts of field-cleaned bur cotton averaged 32.1% and ranged from a high of 34.8% for All-Tex Epic RF to a low of 29.1% for FiberMax 9180B2F (Table 7). Bur cotton yields averaged 4152 lb/acre and ranged from 4397 lb/acre for Deltapine 1032B2RF to 3851 lb/acre for NexGen 4010B2RF. Lint yields ranged from a high of 1523 lb/acre for Deltapine 1032B2RF to a low of 1198 lb/acre for NexGen 4010B2RF with a test average of 1332 lb/acre. Average lint Loan values derived from commercial bales indicated that FiberMax 9170B2F had the highest with $0.5700/lb and NexGen 3410RF had the lowest with $0.5492/lb. After totaling lint and seed value per acre and subtracting out ginning costs and seed and technology costs, the test average net value per acre was $731.30 and ranged from a high of $849.56 for Deltapine 1032B2RF to a low of $641.53 for FiberMax 9180B2F, a difference of $208.03. At this location, four varieties were included in the statistical upper tier in terms of net value per acre, which included Deltapine 1032B2RF, All-Tex Epic RF, PhytoGen 375WRF, and FiberMax 9170B2F.

Fiber data derived from commercially ginned bales were averaged by variety with results reported in Table 8. Deltapine 0912B2RF, Stoneville 4288B2F and FiberMax 1740B2F had the highest average micronaire of 4.8 and NexGen 3410RF had the lowest with 3.9. Average staple was highest for FiberMax 9058F (38.1) and lowest for Deltapine 0912B2RF (35.2). The highest average uniformity (82.2%) was observed for FiberMax 9180B2F and FiberMax 9170B2F had the lowest with 80.9%. Fiber strength average values ranged from a high of 33.0 g/tex for FiberMax 9170B2F to a low of 28.9 g/tex for Stoneville 4288B2F. Average reflectance (Rd) ranged from a high of 81.4 (FiberMax 9170B2F) to a low of 77.7 (NexGen 3410RF). The highest +b (yellowness) value was observed for NexGen 4010B2RF and NexGen 4012B2RF (8.7) and the lowest for FiberMax 9170B2F (7.8). These HVI color components results in color grades of 21 to 31. Bark contamination was minimal at this site, and found in only a few bales of some entries. Leaf grades ranged from 2 to 4, with slight differences noted in some varieties.

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 and to a lesser degree harvesting methods in producers' fields in the Texas High Plains. Three replications of each variety were included at the Muleshoe and Plains locations with four replications (harvested three) at the Blanco location. Plots were of sufficient size to enable the combining of all replications of each individual variety into a single module at harvest. Each individual variety had at least three acres total (approximately one acre per plot with three replications equals three acres total). Plot weights were determined at harvest using a boll buggy with integral electronic scales. Modules from the Muleshoe and Blanco locations were followed through the commercial ginning process to determine lint turnout, USDA-AMS fiber quality, and CCC loan value.

In 2010 (a year characterized by excellent early season moisture, well above average precipitation in July and above average late season heat unit accumulation) yields were good to excellent at most locations. A total of three locations were initiated in 2010. Ten varieties were included at the Muleshoe site, fourteen varieties at the Blanco site and the Plains location included 18 varieties. However, the Plains location was lost to a late season hail event that affected several thousand acres in Terry and Yoakum counties. *Verticillium* wilt pressure continues to build in the region and significant wilt pressure was noted at Muleshoe. At the Blanco site however, only slight pressure was observed. In addition to the *Verticillium* wilt pressure, the Muleshoe site was exposed to significant herbicide drift damage to the east end of the plots and therefore, only the west half was taken at harvest. Lint yields averaged 1162 lb/acre and 1332 lb/acre at the Muleshoe and Blanco sites, respectively. Average loan values of commercially ginned bales ranged from a high of $0.5668 for NexGen 4010B2RF to $0.4959 for NexGen 2549B2RF at Muleshoe. At the Blanco site, the range was from $0.5700/lb (FiberMax 9170B2F) to $0.5492/lb (NexGen 3410RF). After adding lint and seed values and subtracting out ginning and seed and technology fee costs, the Muleshoe site net value per acre ranged from a low of $454.03 for PhytoGen 375WRF to a high of $592.51 for Deltapine 0912B2RF, a difference of $138.50. A total of 5 varieties were in the statistical upper tier at this location and included Deltapine 0912B2RF, Stoneville 4288B2F,

Deltapine 1032B2RF, FiberMax 1740B2F, and NexGen 4010B2RF. The Blanco site test average net value per acre was $731.30 and ranged from a high of $846.56 for Deltapine 1032B2RF to a low of $641.53 for FiberMax 9180B2F, a difference of $208.03. At this location, four varieties were included in the statistical upper tier in terms of net value per acre, which included Deltapine 1032B2RF, All-Tex Epic RF, PhytoGen 375WRF, and FiberMax 9170B2F.

These data indicate that substantial differences can be observed in terms of net value/acre due to variety and technology selection. The differences in net value/acre, when comparing the top and bottom varieties were approximately $139 at Muleshoe and $208 at Blanco. Additional multi-site and multi-year applied research is needed to evaluate varieties across a series of environments.

Acknowledgments

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Table 1. In-season plant measurement results from the irrigated large plot replicated systems variety demonstration, James Brown Farm, Muleshoe, TX, 2010.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of				Final plant map data				Storm resistance
	9-Jun		26-Jul	2-Aug	9-Aug	17-Aug	16-Sep				4-Nov
	plants/row-ft	plants/acre					plant height inches	total nodes	height to node ratio	node of first sympodium	rating (1-9)
All-Tex Patriot+ RF	3.1	54,311	7.3	6.9	4.6	2.6	23.2	16.9	1.38	6.1	4.8
Deltapine 0912B2RF	3.4	59,853	7.6	6.3	4.3	2.5	25.3	17.7	1.43	7.2	3.7
Deltapine 1032B2RF	2.9	50,321	8.0	6.8	5.2	3.5	27.6	17.3	1.60	5.9	4.5
FiberMax 1740B2F	3.3	56,972	7.5	6.4	4.8	2.5	26.0	18.2	1.43	6.9	7.2
FiberMax 9180B2F	3.1	53,868	7.6	6.5	4.9	3.0	24.8	19.6	1.27	7.8	7.8
NexGen 1551RF	3.4	59,188	7.1	6.7	4.3	3.8	26.5	18.9	1.40	5.8	6.8
NexGen 2549B2RF	3.2	56,307	7.8	6.7	4.5	2.9	28.3	20.6	1.37	7.2	8.5
NexGen 4010B2RF	2.8	49,213	7.4	7.0	4.6	2.7	26.7	19.1	1.40	7.3	6.2
PhytoGen 375WRF	3.2	55,863	8.1	7.0	5.6	3.3	27.9	18.0	1.55	6.6	3.5
Stoneville 4288B2F	3.3	56,750	7.5	6.6	4.7	2.5	24.6	18.1	1.37	7.8	4.3
Test average	3.2	55,265	7.6	6.7	4.8	2.9	26.1	18.4	1.42	6.9	5.7
CV, %	8.4	8.3	4.8	7.5	12.3	18.9	6.3	3.3	6.3	6.5	7.3
OSL	0.1632	0.1586	0.0924†	0.7573	0.2526	0.1024	0.0235	<0.0001	0.0179	0.0001	<0.0001
LSD	NS	NS	0.5	NS	NS	NS	2.8	1.0	0.2	0.8	0.7

For NAWF, numbers represent an average of 10 plants per variety per rep (30 plants per variety).
For Final plant map, numbers represent and average of 6 plants per variety per rep (18 plants per variety).
For Storm resistance, ratings based on a scale of 1-9 where 9 represents maximum storm resistance.
CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, †indicates significance at the 0.10 level, NS - not significant.

Table 2. Harvest results from the irrigated large plot replicated systems variety demonstration, James Brown Farm, Muleshoe, TX 2010.

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 0912B2RF	26.0	33.4	4901	1273	1639	0.5466	695.62	143.42	839.04	147.03	99.50	592.51	a
Stoneville 4288B2F	24.6	34.6	4979	1225	1720	0.5546	679.32	150.54	829.86	149.37	97.97	582.52	ab
Deltapine 1032B2RF	26.2	32.2	4715	1236	1517	0.5570	688.40	132.76	821.16	141.44	99.50	580.22	ab
FiberMax 1740B2F	26.2	34.8	4825	1262	1679	0.5353	675.80	146.92	822.72	144.74	97.97	580.01	ab
NexGen 4010B2RF	23.8	35.3	4797	1143	1695	0.5668	647.68	148.34	796.01	143.92	87.59	564.50	ab
FiberMax 9180B2F	24.0	34.4	4906	1175	1690	0.5570	654.60	147.83	802.43	147.19	96.38	558.86	b
All-Tex Patriot+ RF	22.5	33.9	4771	1075	1618	0.5542	595.73	141.59	737.32	143.13	77.51	516.68	c
NexGen 2549B2RF	24.6	32.9	4800	1179	1580	0.4959	584.87	138.23	723.11	143.99	87.59	491.53	cd
NexGen 1551RF	20.5	32.9	4887	1000	1610	0.5574	557.32	140.87	698.18	146.61	70.55	481.03	de
PhytoGen 375WRF	23.1	29.8	4559	1054	1359	0.5387	567.98	118.95	686.93	136.78	96.11	454.03	e
Test average	24.1	33.4	4814	1162	1611	0.5463	634.73	140.95	775.68	144.42	91.07	540.19	
CV, %	--	--	3.0	3.0	2.8	--	3.0	2.8	3.0	3.0	--	3.5	
OSL	--	--	0.0926†	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	0.0922†	--	<0.0001	
LSD	--	--	202	61	78	--	32.82	6.79	39.58	6.06	--	32.30	

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 signficance at the 0.10 level.
Note: some columns may not add up due to rounding error.

Assumes:
$3.00/cwt ginning cost.
$175/ton for seed.
Value for lint based on CCC loan value from commercially classed bales.

Table 3. USDA-AMS classing results of commercially ginned bales from the irrigated large plot replicated systems variety demonstration, James Brown Farm, Muleshoe, TX 2010.

Variety		Color 1	Color 2	Staple	Leaf	Micronaire	Remarks	rd	+b	Length	Strength	Uniformity	Loan
		units	units	32nds	units	units	bales	units	units	inches	g/tex	%	$/lb
AT Patriot+ RF	Mean	1.8	1.0	35.8	3.0	3.8	1/5	79.7	9.0	1.12	29.4	80.1	0.5542
	Std Dev	0.4	0.0	0.8	0.0	0.0		0.7	0.0	0.03	1.4	1.2	0.0160
DP 0912RF	Mean	1.8	1.0	34.3	2.7	4.0	0/6	80.3	9.1	1.07	29.8	80.1	0.5466
	Std Dev	0.4	0.0	1.0	0.5	0.1		0.4	0.2	0.02	0.8	0.6	0.0207
DP 1032B2RF	Mean	1.5	1.0	35.2	2.0	3.9	1/6	81.0	8.7	1.09	29.1	79.8	0.5570
	Std Dev	0.5	0.0	0.4	0.0	0.1		0.5	0.1	0.01	0.6	0.7	0.0112
FM 9180B2F	Mean	1.7	1.0	35.7	2.5	3.5	0/6	82.0	8.3	1.10	30.6	80.4	0.5570
	Std Dev	0.5	0.0	0.5	0.5	0.1		0.8	0.1	0.02	1.5	0.7	0.0132
FM 1740B2F	Mean	1.3	1.0	34.0	2.0	3.6	0/6	82.4	8.4	1.06	29.1	79.6	0.5353
	Std Dev	0.5	0.0	0.6	0.0	0.1		0.2	0.2	0.01	0.7	1.2	0.0110
NG 1551B2RF	Mean	2.0	1.0	35.8	3.0	4.2	1/5	77.9	9.5	1.11	32.6	81.9	0.5574
	Std Dev	0.0	0.0	1.1	0.0	0.2		0.8	0.2	0.03	1.2	0.8	0.0128
NG 2549B2RF	Mean	2.0	1.0	32.7	3.0	3.4	0/6	79.0	9.1	1.02	28.6	80.8	0.4959
	Std Dev	0.0	0.0	0.5	0.6	0.1		0.5	0.1	0.01	0.5	0.6	0.0083
NG 4010B2RF	Mean	1.8	1.0	35.8	2.8	3.7	0/6	79.5	9.3	1.11	32.2	80.8	0.5668
	Std Dev	0.4	0.0	0.4	0.4	0.1		0.4	0.1	0.01	1.4	0.6	0.0042
ST 4288B2F	Mean	2.0	1.0	35.0	3.0	3.8	0/6	79.8	9.0	1.09	29.0	80.5	0.5546
	Std Dev	0.0	0.0	0.6	0.0	0.2		0.5	0.2	0.01	0.6	0.6	0.0077
PHY 375WRF	Mean	2.0	1.0	35.0	2.8	3.8	3/5	79.7	8.7	1.09	28.2	80.3	0.5387
	Std Dev	0.0	0.0	0.7	0.4	0.1		0.7	0.1	0.01	0.8	1.1	0.0149

Table 4. Total blanket inputs costs from the irrigated large plot replicated systems variety demonstration, James Brown Farm, Muleshoe, TX 2010.

Weed control program		Application method	Chemical cost $/acre	Application $/acre	Total cost $/acre
Pre-plant	32 oz/acre Prowl H2O	Ground	$ 9.38	$ 5.00	$ 14.38
At planting	32 oz/acre Direx	Ground	$ 7.00	$ 5.00	$ 12.00
18-Jun	32 oz/acre Roundup PowerMax	Ground	$ 7.44	$ 5.00	$ 12.44
	8.5 oz/acre Select		$ 7.64		$ 7.64
15-Jul	32 oz/acre Roundup PowerMax	Ground	$ 7.44	$ 5.00	$ 12.44
	8.5 oz/acre Select		$ 7.64		$ 7.64
20-Jul	22 oz/acre Roundup PowerMax	Aerial	$ 5.11	$ 5.50	$ 10.61
Total Blanket Base Weed Control Program					$ 77.15
Insecticide program					
At planting	3.5 lb/acre Temik	Ground	$ 11.55	$ 5.00	$ 11.55
18-Jun	4.0 oz/acre acephate	Ground	$ 1.74	Applied w/ R-up	$ 1.74
Total Blanket Insecticide Program					$ 13.29
PGR program					
8-Jul	7 oz/acre Pix	Aerial	$ 1.09	$ 5.50	$ 6.59
20-Jul	10 oz/acre Pix	Aerial	$ 1.56	Applied w/R-up	$ 1.56
29-Jul	20 oz/acre Pix	Aerial	$ 3.13	$ 5.50	$ 8.63
7-Aug	24 oz/acre Pix	Aerial	$ 3.75	$ 5.50	$ 9.25
Total Blanket PGR program					$ 26.03
Harvest aid program					
9-Oct	32 oz/acre Finish 6 Pro	Aerial	$ 13.63	$ 5.50	$ 22.03
	0.5 oz/acre Blizzard		$ 2.90		$ 5.27
	6 oz/acre Def 6		$ 2.37		$ 2.37
20-Oct	32 oz/acre Gramoxone Inteon	Aerial	$ 8.00	$ 5.50	$ 13.69
	2 oz/acre Activator 90		$ 0.19		$ 0.19
Total Blanket Harvest Aid Program					$ 43.54
Total blanket input cost ($/acre)					$ 160.01

Table 5. In-season plant measurement results from the irrigated large plot replicated systems variety demonstration, Rickey Bearden Farm, Plains, TX, 2010.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of			
	9-Jun		27-Jul	3-Aug	10-Aug	17-Aug
	plants/row-ft	plants/acre				
All-Tex 65207B2RF	2.0	26,333	7.1	5.7	4.3	3.5
All-Tex Epic RF	2.0	25,833	7.3	5.5	4.6	3.6
Croplan Genetics 3220B2RF	2.6	34,000	7.6	5.4	4.5	3.0
Croplan Genetics 3006B2RF	2.6	34,500	7.5	5.8	4.2	2.7
Dyna-Gro 2570B2RF	2.3	30,333	7.7	6.4	4.6	4.2
Deltapine 0924B2RF	2.4	31,000	7.5	6.4	4.7	4.3
Deltapine 1032B2RF	2.1	27,667	7.7	6.2	4.8	3.8
FiberMax 1740B2F	2.7	35,167	6.9	5.5	4.1	3.3
FiberMax 9058F	2.6	33,833	6.7	5.2	4.2	2.6
FiberMax 9160B2F	2.1	27,833	6.9	5.4	3.6	2.8
FiberMax 9170B2F	2.6	34,333	7.0	6.0	3.7	3.1
FiberMax 9180B2F	2.3	30,667	6.8	5.4	3.9	2.7
NexGen 2549B2RF	2.4	32,000	7.4	5.4	4.4	3.2
NexGen 3348B2RF	2.4	31,500	6.7	5.7	3.6	2.8
NexGen 3410RF	2.0	26,667	7.0	4.9	3.7	2.6
PhytoGen 367WRF	2.7	34,667	7.3	6.3	4.0	3.8
PhytoGen 375WRF	2.3	29,667	7.5	5.4	4.5	4.1
Stoneville 4288B2F	2.3	30,667	7.1	5.5	4.5	3.6
Test average	2.4	30,926	7.2	5.7	4.2	3.3
CV, %	10.4	10.1	3.9	11.5	12.4	17.4
OSL	0.0064	0.0036	0.0001	0.2276	0.1099	0.0038
LSD	0.4	5,187	0.5	NS	NS	1.0

For NAWF, numbers represent an average of 10 plants per variety per rep (30 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 6. In-season plant measurement results from the irrigated large plot replicated systems variety demonstration, Mark Appling Farm, Blanco, TX, 2010.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of				Storm resistance
	8-Jun		15-Jul	22-Jul	29-Jul	5-Aug	1 & 2-Nov
	plants/row-ft	plants/acre					rating (1-9)
All-Tex Epic RF	2.5	32,254	9.2	8.6	6.9	4.9	5.3
Deltapine 0912B2RF	2.3	30,425	9.2	8.3	6.5	4.5	3.2
Deltapine 1032B2RF	2.4	31,922	9.3	8.6	6.8	4.7	4.3
Deltapine 1044B2RF	2.6	34,249	9.3	8.4	6.8	5.0	6.8
FiberMax 1740B2F	2.4	31,257	9.4	8.3	6.2	4.6	6.0
FiberMax 9058F	2.6	34,249	8.9	8.3	6.4	4.5	7.8
FiberMax 9170B2F	2.5	33,086	9.2	8.1	6.3	4.4	5.3
FiberMax 9180B2F	2.5	33,086	9.0	8.2	6.2	5.8	7.7
NexGen 3348B2RF	2.6	34,416	8.6	7.7	6.1	4.2	8.3
NexGen 3410RF	2.4	31,257	8.7	8.3	6.3	4.2	8.8
NexGen 4010B2RF	2.2	28,929	9.2	8.5	6.7	4.4	7.3
NexGen 4012B2RF	2.4	31,091	9.5	8.8	7.2	4.9	7.7
PhytoGen 375WRF	2.5	33,252	9.6	8.9	7.2	5.0	4.2
Stoneville 4288B2F	2.4	31,589	9.3	8.3	6.2	4.3	3.3
Test average	2.5	32,219	9.2	8.4	6.5	4.7	6.2
CV, %	6.1	6.1	3.8	2.7	2.8	14.7	7.4
OSL	0.0863†	0.0656†	0.0747†	0.0001	<0.0001	0.3640	<0.0001
LSD	0.2	2,736	0.5	0.4	0.3	NS	0.8

For NAWF, numbers represent an average of 10 plants per variety per rep (30 plants per variety).
For Storm resistance, ratings based on a scale of 1-9 where 9 represents maximum storm resistance.
CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, †indicates significance at the 0.10 level, NS - not significant.

Table 7. Harvest results from the irrigated large plot replicated systems variety demonstration, Mark Appling Farm, Blanco, TX 2010.

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 1032B2RF	34.6	47.7	4397	1523	2097	0.5633	857.72	183.45	1041.17	131.91	59.70	849.56	a
All-Tex Epic RF	34.8	47.9	4073	1417	1951	0.5674	803.97	170.72	974.69	122.19	46.51	806.00	ab
PhytoGen 375WRF	33.0	45.4	4331	1429	1968	0.5642	806.27	172.18	978.45	129.93	57.67	790.86	abc
FiberMax 9170B2F	32.5	44.7	4302	1397	1923	0.5700	796.11	168.29	964.40	129.07	58.78	776.55	abcd
FiberMax 1740B2F	34.3	47.3	3986	1368	1884	0.5681	777.23	164.83	942.06	119.59	58.78	763.69	bcd
NexGen 4012B2RF	32.3	44.5	4158	1343	1849	0.5679	762.58	161.78	924.36	124.75	52.55	747.06	bcd
Deltapine 1044B2RF	30.9	42.6	4341	1342	1848	0.5651	758.45	161.70	920.15	130.24	57.85	732.06	bcde
FiberMax 9058F	32.4	44.6	3968	1286	1770	0.5679	730.35	154.88	885.23	119.05	50.90	715.28	cdef
Deltapine 0912B2RF	31.4	43.2	4181	1311	1806	0.5560	729.15	157.98	887.13	125.44	59.70	702.00	def
NexGen 3348B2RF	31.6	43.5	4082	1289	1776	0.5595	721.37	155.37	876.74	122.45	52.55	701.73	def
Stoneville 4288B2F	30.5	42.0	4332	1323	1822	0.5511	728.95	159.38	888.33	129.96	58.78	699.59	def
NexGen 3410RF	30.6	42.1	4005	1224	1685	0.5492	672.16	147.46	819.62	120.14	42.33	657.15	ef
NexGen 4010B2RF	31.1	42.8	3851	1198	1649	0.5669	678.92	144.27	823.19	115.54	52.55	655.09	ef
FiberMax 9180B2F	29.1	40.1	4126	1202	1656	0.5641	678.27	144.86	823.13	123.78	57.83	641.53	f
Test average	32.1	44.2	4152	1332	1834	0.5629	750.11	160.51	910.62	124.57	54.75	731.30	
CV, %	--	--	6.1	6.1	6.1	--	6.2	6.1	6.1	6.1	--	6.6	
OSL	--	--	0.2717	0.0018	0.0018	--	0.0008	0.0018	0.0010	0.2712	--	0.0003	
LSD	--	--	NS	137	188	--	77.44	16.48	93.92	NS	--	81.09	

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.
$175/ton for seed.
Value for lint based on CCC loan value from commercially classed bales.

Table 8. USDA-AMS classing results of commercially ginned bales from the irrigated large plot replicated systems variety demonstration, Mark Appling Farm, Blanco, TX 2010.

Variety		Color 1	Color 2	Staple	Leaf	Micronaire	Remarks	rd	+b	Length	Strength	Uniformity	Loan
		units	units	32nds	units	units	bales	units	units	inches	g/tex	%	$/lb
NexGen 4012B2RF	Mean	2.1	1.0	37.2	2.9	4.3	0/10	79.0	8.7	1.16	32.9	81.9	0.5679
	Std Dev	0.3	0.0	0.6	0.3	0.1		0.4	0.1	0.02	1.1	0.9	0.0023
Deltapine 0912B2RF	Mean	2.1	1.0	35.2	3.0	4.8	0/11	79.4	8.4	1.10	29.7	81.5	0.5560
	Std Dev	0.3	0.0	0.6	0.0	0.1		0.3	0.1	0.01	0.7	0.7	0.0071
Deltapine 1044B2RF	Mean	2.1	1.0	36.4	2.8	4.4	0/11	79.7	8.5	1.13	30.2	81.6	0.5651
	Std Dev	0.3	0.0	0.5	0.4	0.1		0.4	0.1	0.01	1.1	1.3	0.0050
FiberMax 9180B2F	Mean	2.7	1.0	37.5	3.0	4.6	0/11	80.3	7.9	1.17	31.5	82.2	0.5641
	Std Dev	0.5	0.0	0.8	0.0	0.1		0.3	0.1	0.02	1.1	0.9	0.0024
Deltapine 1032B2RF	Mean	2.1	1.0	37.1	2.2	4.6	4/13	80.0	8.3	1.16	31.9	81.9	0.5633
	Std Dev	0.3	0.0	0.5	0.4	0.1		0.3	0.2	0.02	1.1	0.6	0.0105
Stoneville 4288B2F	Mean	2.8	1.0	35.8	3.4	4.8	0/11	78.6	8.4	1.11	28.9	81.1	0.5511
	Std Dev	0.4	0.0	0.6	0.5	0.1		0.4	0.1	0.01	1.0	0.9	0.0105
FiberMax 9170B2F	Mean	2.0	1.0	37.4	2.6	4.0	0/12	81.4	7.8	1.17	33.0	80.9	0.5700
	Std Dev	0.0	0.0	0.7	0.5	0.1		0.5	0.1	0.02	0.7	0.9	0.0042
FiberMax 1740B2F	Mean	2.1	1.0	36.1	2.2	4.8	0/13	80.4	8.2	1.12	30.6	81.5	0.5681
	Std Dev	0.3	0.0	0.6	0.4	0.1		0.4	0.1	0.02	0.5	1.4	0.0056
NexGen 4010B2RF	Mean	2.1	1.0	36.5	2.5	4.5	1/11	78.9	8.7	1.14	32.2	81.6	0.5669
	Std Dev	0.3	0.0	0.5	0.5	0.1		0.3	0.2	0.02	1.1	1.2	0.0077
PhytoGen 375WRF	Mean	2.6	1.0	36.0	2.2	4.2	0/12	79.5	8.2	1.12	29.7	81.5	0.5642
	Std Dev	0.5	0.0	0.9	0.4	0.0		0.4	0.1	0.02	0.8	1.1	0.0068
NexGen 3348B2RF	Mean	2.9	1.0	36.3	3.1	4.3	0/11	78.3	8.3	1.13	30.2	81.7	0.5595
	Std Dev	0.3	0.0	0.6	0.3	0.1		0.5	0.1	0.02	0.9	1.1	0.0059
FiberMax 9058F	Mean	2.7	1.0	38.1	2.5	4.1	0/12	80.3	7.9	1.19	31.0	81.8	0.5679
	Std Dev	0.5	0.0	0.8	0.5	0.1		0.7	0.1	0.02	1.0	0.9	0.0038
All-Tex Epic RF	Mean	2.3	1.0	36.0	2.0	4.2	0/12	79.1	8.5	1.12	30.9	81.2	0.5674
	Std Dev	0.5	0.0	0.9	0.4	0.1		0.4	0.1	0.03	1.1	1.3	0.0109
NexGen 3410RF	Mean	2.9	1.0	37.4	3.6	3.9	3/11	77.7	8.3	1.17	31.6	81.8	0.5492
	Std Dev	0.3	0.0	0.5	0.5	0.1		0.4	0.2	0.02	1.4	0.7	0.0148

Table 9. Total blanket inputs costs from the irrigated large plot replicated systems variety demonstration, Mark Appling Farm, Blanco, TX 2010.

Weed control program		Application method	Chemical cost $/acre	Application $/acre	Total cost $/acre
27-May	22 oz/acre Roundup PowerMax	Ground	$ 5.11	$ 5.00	$ 10.11
7-Jun	22 oz/acre Roundup PowerMax	Ground	$ 5.11	$ 5.00	$ 10.11
10-Aug	22 oz/acre Roundup PowerMax	Ground	$ 5.11	$ 5.00	$ 10.11
Total Blanket Base Weed Control Program					$ 30.33
Insecticide program					
7-Jun	2.3 oz/acre acephate	Ground	$ 1.00	Applied w/ R-up	$ 1.00
Total Blanket Insecticide Program					$ 1.00
PGR program					
15-Jul	12 oz/acre mepiquat chloride	Ground	$ 1.22	$ 5.00	$ 6.22
Total Blanket PGR program					$ 6.22
Harvest aid program					
15-Oct	21 oz/acre Finish 6 Pro	Ground	$ 8.94	$ 5.00	$ 20.97
	5 oz/acre Ginstar		$ 7.03		
25-Oct	24 oz/acre Gramoxone Inteon	Ground	$ 6.00	$ 5.00	$ 11.61
	0.25% v/v NIS		$ 0.61		
Total Blanket Harvest Aid Program					$ 32.58
Total blanket input cost ($/acre)					$ 70.13

2010 Picker vs. Stripper Harvester Comparisons

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In 2007 Case-IH first commercialized the Module Express 625 spindle picker with on-board moduling. This same year, John Deere tested the 7760 prototype spindle picker in several regions in the U.S. Cotton Belt. With the commercialization of these module-building pickers, many High Plains producers are questioning the harvesting efficiency of these machines when compared to brush roll stripper harvesters. In addition to the harvesting efficiency, many producers are asking about ultimate fiber quality. In 2010, picker vs. stripper harvester comparisons were established at Ralls (Verett Farm – two locations), Lamesa (Merritt Farm) and Littlefield (Heffington Farm) to help address these questions. These trials were established to facilitate commercial harvest, module construction, and commercial ginning of both picker and stripper harvested plots. All sites utilized a producer-cooperator field planted to a single commercial variety. The experimental units were module sized and replicated four times therefore, each treatment consisted of four modules. **Dr. John Wanjura, with USDA-Agricultural Research Service (ARS) Cotton Production and Processing Unit at Lubbock provided vital logistical and harvesting support for the John Deere 9996 basket picker used at the Ralls JD 2010 location. This picker was available per a loan agreement with John Deere and the USDA-ARS at Lubbock.** The objectives of these trials were to compare picker and stripper harvesting methods in commercial, large-scale settings to determine subsequent yield, fiber quality (HVI, AFIS), and yarn quality in the Texas High Plains. Results from this project should help answer producer questions concerning some components of harvester type economics and could determine potential quality improvements to make High Plains cotton more competitive in the export market.

Materials and Methods

Location #1 - Ralls Case-IH 625 Module Express Project (Crosby County)

Cooperators: Steve, Kris, Eddie, and Heath Verett

Minimum tillage (stalks cut, disk bedder, rod weeder)

Irrigation: SDI (sub-surface drip irrigation, alternate furrow 80-inch tape)

Plot Size: Stripper with stripper ginning – 24 40-inch rows wide x 1660 ft long
Picker with picker ginning - 24 rows 40-inch rows wide x 1660 ft long

Experimental design: Randomized complete block design with 4 replicates, each individual plot (experimental unit) was a module.

Area: Stripper – 3.048 acres x 4 replicates = 12.17 acres total
Picker – 3.048 acres x 4 replicates = 12.19 acres total
Some minor plot size variation due to SDI flush valves, etc.

Planted to FiberMax 9170B2F

Differential harvesting dates were used at this site. The picker modules were harvested on October 14. The stripper modules were harvested on November 1. A 4 to 5 inch rainfall event occurred on October 21. Some minor preharvest loss occurred in the stripper harvested plots during this weather event.

Treatments harvested at this site included:

1. Stripper harvesting and stripper ginning (Stripper System)
2. Picker harvesting and picker ginning (Picker System)

Ginning: Differential ginning was performed at this site by Buzz Cooper, Texas Star Gin, Wilson, TX. **For Picker System modules, no stick machines were used and only one stage of lint cleaning was used. Stripper System included one stick machine in precleaning and one stage of lint cleaning.**

Harvesters: Picker – Case-IH 625 Module Express
Stripper - John Deere 7460 with field cleaner

Location #2 - Ralls John Deere 9996 Project (Crosby County)

Cooperators: Steve, Kris, Eddie, and Heath Verett

Minimum tillage (stalks cut, disk bedder, rod weeder)

Irrigation: SDI (sub-surface drip irrigation, alternate furrow 80-inch tape)

Plot Size: Stripper with stripper ginning – 3 replicates were 24 40-inch rows wide x 2753 ft long, 1 replicate was 2476 ft long
Picker with picker ginning – 3 replicates were 24 rows 40-inch rows wide x 2753 ft long, 1 replicate was 2476 ft long

Experimental design: Randomized complete block design with 4 replicates, each individual plot (experimental unit) was a module.

Area: Stripper – 5.056 acres x 3 replicates plus 4.547 acres x 1 replicate = 19.70 acres total; Picker – 5.056 acres x 3 replicates plus 4.547 acres x 1 replicate = 19.69 acres total. Some minor plot size variation due to SDI flush valves, etc.

Planted to FiberMax 9180B2F

Differential harvesting dates were used at this site. Picker modules were harvested on November 4. Stripper modules were harvested on November 18. Minimal preharvest losses occurred at this site.

Treatments harvested at this site included:

1. Stripper harvesting and stripper ginning (Stripper System)
2. Picker harvesting and picker ginning (Picker System)

Ginning: Similar ginning was performed at this site by Steve Newton, Owens Co-op Gin, Ralls, TX. **For both Picker System and Stripper System modules, one stick machine was used and one lint cleaner was bypassed.**

Harvesters: Picker – John Deere 9996
Stripper - John Deere 7460 with field cleaner

Location #3 - Lamesa Case-IH 620 Cotton Express Project (Dawson County)

Cooperators: Kelli Merritt, Lee Riggins

Minimum tillage

Irrigation: SDI (sub-surface drip irrigation, alternate furrow 80-inch tape)

Plot Size: Stripper with stripper ginning – 2 replicates were 24 40-inch rows wide x 2560 ft long, 2 replicates were 16 rows x 2560 ft long
Picker with picker ginning – all replicates were 24 40-inch rows wide x 2560 ft long

Experimental design: Randomized complete block design with 4 replicates, each individual plot (experimental unit) was a module.

Area: Stripper – 4.70 acres x 2 replicates plus 3.13 acres x 2 replicates = 15.67 acres total; Picker – 4.70 acres x 3 replicates plus 4.64 acres x 1 replicate = 18.75 acres total. Some minor plot size variation due to SDI flush valves, etc.

Planted to FiberMax 9160B2F

Differential harvesting dates were used at this site. Picker modules were harvested on October 26. Stripper modules were harvested on November 5. Minimal preharvest losses occurred at this site.

Treatments harvested at this site included:

1. Stripper harvesting and stripper ginning (Stripper System)
2. Picker harvesting and picker ginning (Picker System)

Ginning: Differential ginning was performed at this site by Jerry Reynolds, Ocho Gin Co., Seminole, TX. **For Picker System modules, one stick machine was used in precleaning and one lint cleaner was bypassed. Stripper System included two stick machines in precleaning and two stages of lint cleaning. It should be noted that module weights for two of the four stripper modules were compromised, therefore, bur cotton yield, turnouts, and some economic data are missing.**

Harvesters: Picker – Case-IH Cotton Express 620
Stripper - John Deere 7460 with field cleaner

Location #4 - Littlefield Case-IH 625 Module Express Project (Lamb County)

Cooperator: Brad Heffington

Minimum tillage

Irrigation: SDI (sub-surface drip irrigation, alternate furrow 80-inch tape)

Plot Size: Stripper with stripper ginning – all replicates were 48 40-inch rows wide x 1380 ft long
Picker with picker ginning – all replicates were 48 40-inch rows wide x 1380 ft long

Experimental design: Randomized complete block design with 4 replicates, each individual plot (experimental unit) was a module.

Area: Stripper – 5.07 acres, 5.06 acres, 4.86 acres, and 5.06 acres = 20.05 acres total; Picker – 5.01 acres, 5.08 acres, 5.07 acres, 5.04 acres = 20.21 acres total. Some minor plot size variation due to SDI flush valves, etc.

Planted to FiberMax 958LL

Picker and stripper modules were harvested on November 26. Minimal preharvest losses occurred at this site.

Treatments harvested at this site included:

1. Stripper harvesting and stripper ginning (Stripper System)
2. Picker harvesting and picker ginning (Picker System)

Ginning: Ginning was performed at this site by Charles Heffington, Bula Gin Co., Bula, TX. **For all modules, two stages of extractor type cleaners (stick machines) and two stages of lint cleaning were used.**

Harvesters: Picker – Case-IH Module Express 625
Stripper - John Deere 7460 with field cleaner

In order to more fully determine fiber quality and spinning characteristics, one bale per module from each site was purchased by the Texas Tech University Fiber and Biopolymer Research Institute (FBRI). Fiber quality will be analyzed in a detailed manner using Advanced Fiber Information System (AFIS) testing and spinning tests will be conducted.

Commodity Credit Corporation (CCC) 2010 loan values were determined based on the average USDA-AMS classing results for all bales in each respective module. In 2010 ginning costs were established at $3.00/cwt and seed values were set at $175/ton. For harvesting cost comparisons, custom harvesting rates of $0.10/lint-lb for spindle picking and $0.08/lint-lb for stripper harvesting were used. **Since this does not include the overall cost of ownership, possible increased farm operation efficiencies, etc, this overall comparison must be used with caution.** Data were subjected to analysis of variance where applicable.

Results and Discussion

Ralls Case-IH 625 Module Express Site

Results from the Ralls Case-IH 625 Module Express site are presented in Tables 1 and 2. This site was very uniform due to subsurface drip irrigation and more standardized plot sizes. Lint turnout was increased by 5.0%, and seed turnout increased by 6.3% with the Picker System (Table 1). The Picker System reduced by 691 lb/acre the amount of harvested material taken to the gin, and this is reflected in higher lint and seed turnout. Lint and seed yields were unaffected by harvester type at this site. It should be noted that due to the differential harvest dates and the 4-5 inches of rainfall that occurred between picker and stripper harvest, earlier picker harvest likely provided some value with respect to yield preservation. No significant differences were observed in CCC

loan value for lint when comparing harvester systems at this site. When combining lint and seed values into total value no differences were observed for harvest method. Reduced ginning cost associated with the picker was $20.72/acre). When custom harvesting cost is assumed at $0.10/lint-lb for picking and $0.08/lint-lb for stripper harvesting, the overall net value per acre is not statistically different, and is numerically $12 lower for the Picker System than the Stripper System at this site.

When comparing the USDA-AMS commercial classing data for the Picker System and the Stripper System, improvements in some fiber quality characteristics were noted for the picker system. Results for commercially ginned and classed bales at this location can be found in Table 2. Micronaire was significantly but only slightly improved at this site (0.1 unit above stripper for picker). Staple was unaffected by harvesting system. Uniformity was improved by 0.7%, and strength was improved by 1 g/tex when using the Picker System. Color grades were similar with the majority 11 and 21 color. No bark contamination was observed in this trial. At this site, benefits from the Picker System provided only slight improvements in quality when compared to the Stripper System, and these improvements did not translate into Loan value differences.

Ralls John Deere 9996 Site

Results from the Ralls John Deere 9996 site are presented in Tables 3 and 4. This site was also very uniform due to subsurface drip irrigation and more standardized plot sizes. Lint turnout was increased by 5.4%, and seed turnout increased by 7% with the Picker System (Table 3). The Picker System reduced by 718 lb/acre the amount of harvested material taken to the gin, and this is reflected in higher lint and seed turnout. Lint yield was reduced by 35 lb/acre (statistically significant at the 0.10 probability level) with the Picker System (1314 lb/acre) when compared to Stripper System (1348 lb/acre). Due to the reduction in the amount of seed cotton harvested, seed yield was also reduced by 92 lb/acre by the Picker System. No significant differences were observed in CCC loan value for lint when comparing harvester systems. When combining lint and seed values into total value, picking resulted in about $18/acre less income. Reduced ginning cost associated with the picker was about $21/acre. When custom harvesting cost is assumed at $0.10/lint-lb for picking and $0.08/lint-lb for stripper harvesting, the overall net value per acre is statistically different, and is about $20 lower for the Picker System than the Stripper System at this site.

When comparing the USDA-AMS commercial classing data for the Picker System and the Stripper System, few improvements in fiber quality characteristics were noted at this site. Results for commercially ginned and classed bales at this location can be found in Table 4. Micronaire, staple, uniformity and strength were unaffected by harvesting system. A small

improvement in leaf grade was observed for the Picker System (1.9) when compared to the Stripper System (2.3). Color grades were similar with the majority 21 and 31 color. Bark contamination was present in about 22% of the Stripper System bales and none was noted in the Picker System bales. At this site, benefits from the Picker System provided few improvements in HVI quality when compared to the Stripper System.

Lamesa Case-IH 620 Cotton Express Site

Results from the Lamesa Case-IH site are presented in Tables 5 and 6. This site was somewhat variable across the field. It should be noted that weights for some modules were compromised. Therefore, bur cotton yield, turnout and some economic data are missing. However, the integrity of lint and seed generated for each module was fully maintained.

Lint yield was reduced (10% probability level) by 139 lb/acre with the Picker System (1309 lb/acre) when compared to Stripper System (1448 lb/acre). Due to variability, seed yield was not significantly different for harvesting systems. No significant differences were observed in CCC loan value for lint when comparing harvester systems. When combining lint and seed values into total value, picking resulted in about $102/acre less income. When custom harvesting cost is assumed at $0.10/lint-lb for picking and $0.08/lint-lb for stripper harvesting, the harvest cost per acre is different, and is about $15 higher for the Picker System than the Stripper System at this site.

When comparing the USDA-AMS commercial classing data for the Picker System and the Stripper System no statistically significant improvements in fiber quality characteristics were noted. Results for commercially ginned and classed bales at this location can be found in Table 6. Micronaire, staple, uniformity, and strength were unaffected by harvesting system. Color grades were similar with the majority 11 and 21 color. Bark contamination was present in 4.6% of the Stripper System bales and none was noted in the Picker System bales. At this site, the Picker System provided minimal improvements in commercially classed quality when compared to the Stripper System.

Littlefield Case-IH 625 Module Express Site

Results from the Littlefield site are presented in Tables 7 and 8. This site was very uniform due to subsurface drip irrigation. Lint turnout was increased by 3.9%, and seed turnout increased by 4.2% with the Picker System (Table 7). The Picker System reduced by 908 lb/acre the amount of harvested material taken to the gin, and this is reflected in higher lint and seed turnout and lower lint yield. Lint yield was reduced by 124 lb/acre with the Picker System (1033 lb/acre) when compared to Stripper System (1157 lb/acre). Due to the reduction

in the amount of seed cotton harvested, seed yield was also reduced by 265 lb/acre by the Picker System. No significant differences were observed in CCC loan value for lint when comparing harvester systems. When combining lint and seed values into total value, picking resulted in about $93/acre less income. Reduced ginning cost associated with the picker was about $27/acre. When custom harvesting cost is assumed at $0.10/lint-lb for picking and $0.08/lint-lb for stripper harvesting, the overall net value per acre is statistically different, and is about $76 lower for the Picker System than the Stripper System at this site.

When comparing the USDA-AMS commercial classing data for the Picker System and the Stripper System no improvements in fiber quality characteristics were noted. Results for commercially ginned and classed bales at this location can be found in Table 8. Micronaire, staple, uniformity, strength, and leaf grade were unaffected by harvesting system. Color grades were similar with the majority 11 and 21 color. Bark contamination was present in about 2% of the Stripper System bales and none was noted in the Picker System bales. At this site, the Picker System provided few improvements in commercially classed quality when compared to the Stripper System.

Summary and Conclusions

In 2010, warm fall temperatures resulted in excellent heat unit accumulation which had a positive impact on fiber maturity in most fields. Exhibiting excellent micronaire and low bark contamination potential, 2010 was a year where few HVI fiber quality improvements were observed when comparing the Picker System to the Stripper System. Few improvements in commercial classing quality were observed. Therefore subsequent CCC loan value increases were not observed at all sites when using the Picker System compared to the Stripper System. Significantly higher micronaire was only observed at one location due to the Picker System and it only provided a 0.1 unit increase. Staple was essentially unaffected by the Picker System at all sites. Higher uniformity was observed due to the Picker System at one site and there it provided a 0.7% compared to the Stripper System. Strength was slightly improved by 1 g/tex by the Picker System at one site, and was unaffected by harvesting system at other locations. Leaf grades were slightly better due to the Picker System at one site and exhibited a difference of 0.4 unit higher quality when compared to the Stripper System. Color grades were generally similar or slightly better at all sites with picker harvesting. Color grades of 11, 21 and 31 were predominant at all locations. Bark contamination was generally low. However, the Picker System resulted in 0% bark incidence at all locations, while the Stripper System encountered 0, 22, 5, and 2%.

When compared to the Stripper System, lint yield was numerically reduced by the Picker System by 10, 35, 139, and 124 lb/acre, at Ralls Case-IH 625, Ralls John Deere 9996, Lamesa Case-IH 629, and Littlefield Case-IH 625 sites,

respectively. Picker harvesting exhibited a positive impact on gin turnouts. At the three sites where data were available, lint turnouts were substantially increased by the Picker System (5.0%, 5.4%, and 3.9% for an average of 4.8%). This results in fewer pounds/acre of harvested cotton (and thus modules) having to be transported to the gin when picker harvesting compared to stripper harvesting. However, more lint and seed would also be left in the field. When factoring these components into the analysis, the overall net value/acre (when using custom harvest rates of $0.10 for picking and $0.08 for stripping and CCC Loan value for lint) did not indicate any advantage to picker harvesting. These results indicate a statistically significant $20/acre and $76/acre difference to the advantage of the stripper when using CCC Loan value as lint value and the other assumptions for the Ralls John Deere 9996 and Littlefield Case-IH 625 sites, respectively. The Ralls Case-IH 625 site was statistically equivalent for the picker and stripper in terms of net value/acre when these assumptions are used. **Since this custom harvest cost does not include direct ownership, and the value of potential increased farm operation efficiencies, etc, this comparison must be used with caution.**

Similar field trials were conducted comparing stripper and picker based harvest systems on a commercial basis during 2008 and 2009. Findings from these tests indicate that the difference in lint yield by harvest method favors the Stripper System as it did in 2010. Across all seven test sites shown in Figure 1, lint yield was 96 lb/acre lower for the picker system compared to the stripper system. Lint value in this and previous reports is based on the CCC Loan value for cotton quality obtained. The net value on a per acre basis across all of the test sites from 2008 through 2010 is provided in Figure 2. Note that the Lamesa 2010 site stripper data is missing due to issues reported above. Based on 2010 Loan rates, seed values and accounting for harvesting and ginning costs defined above, the statistically significant difference across all sites tested favored the Stripper System by $27/acre. If a higher lint value of $1.25/lb is assumed regardless of fiber quality (e.g. the case where fiber quality improvements arising from the picker system are less important in marketing), this same dataset results in highly significant ($P>|t| <0.0001$) lower net returns for the picker system ($1,645/acre) compared to the stripper system ($1,765/acre). Therefore, the conclusions one might make based upon a highly competitive global fiber quality market compared to a high-lint value market can differ.

Good to excellent September and October heat unit accumulation is important to obtain adequate boll maturity and exertion to improve picker harvesting efficiency. Variety selection may be important, especially in low maturity years, as bolls in varieties typically planted in the region with greater storm resistance may not properly exert for efficient picker harvesting. However, this may not be as much of a factor in years with warm, open fall conditions. In some years, adverse weather events such as late-season rainfall or an early freeze can exacerbate bark contamination problems associated with stripper harvesting. Picker harvesting under these conditions can reduce or eliminate bark

contamination. In many years, earlier harvesting dates for pickers compared to strippers can be of fiber quality and perhaps yield preservation value. This potentially results in lower production risk. Although picker harvesters are more expensive to purchase and maintain, some advantages can be obtained. These advantages could include less expense for some inputs such as plant growth regulators (pickers can harvest larger cotton easier than strippers), and reduced harvest aid costs (no terminating paraquat application after ethephon treatment is generally required for picker as opposed to stripper harvest). Picker harvesting can many times be initiated earlier and conclude later in the day than stripper harvesting. This in turn could reduce the length of the harvest window on a large operation. The value of this across sizeable high yielding irrigated acreage is difficult to establish. The overall economics of the entire package of improved farm operation efficiency must be weighed heavily by producers in the Texas High Plains when considering the purchase of module-building pickers. Cotton Incorporated has recently provided an excellent harvester economic decision aid which can be found here: http://www.cottoninc.com/Economic-Decision-Aids/
The default values for differences in yield, Loan price, turnout, and other harvest related parameters were based on results of this work.

Picker harvesting of high yielding fields may play a role in helping to develop strategies to produce fiber that is more competitive in the global market. Subsequent detailed AFIS and spinning testing by the FBRI should provide more information to producers concerning the potential impacts of both picker harvesting and differential ginning when compared to the Stripper System.

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Table 1. Harvest results from the replicated Case IH Module Express picker vs. stripper harvester demonstration, Eddie and Steve Verett Farm, Ralls, TX, 2010.

Harvest/ginning method	Lint turnout	Seed turnout	Bur or seed cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Harvest cost*	Net value	
	-------- % --------		---------- lb/acre ----------			$/lb	---------- $/acre ----------						
Picker system	36.3	44.5	4214	1527	1871	0.5697	869.96	163.73	1033.69	126.43	152.73	754.54	a
Stripper system	31.4	38.2	4905	1537	1871	0.5685	873.44	163.69	1037.13	147.14	122.92	767.06	a
Difference (Picker system - Stripper system)	5.0	6.3	-691	-10	0	0.0012	-3.48	0.04	-3.44	-20.72	29.81	-12.52	
CV, %	5.1	3.9	3.2	3.3	3.6	0.3	3.3	3.6	3.2	3.2	3.3	3.9	
OSL	0.0268	0.0116	0.0071	0.8125	0.9923	0.3206	0.8756	0.9934	0.8921	0.0071	0.0026	0.5946	
LSD (0.05)	3.9	3.6	333	NS	NS	NS	NS	NS	NS	9.98	10.11	NS	

For net value/acre, means within a column with the same letter are not significantly different at the 0.05 probability level.
CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, NS - not significant.
Note: some columns may not add up due to rounding error.

Assumes:
$3.00/cwt ginning cost.
$175/ton for seed.
***Harvest cost = Picker at $0.10/lint lb ; Stripper at $0.08/lint lb.**

Table 2. Commercial classing results from the replicated Case IH Module Express picker vs. stripper harvester demonstration, Eddie and Steve Verett Farm, Ralls, TX, 2010.

Harvest/ginning method	Micronaire	Staple	Uniformity	Strength	Leaf	Bark	Color grade	
	units	32nds inches	%	g/tex	grade	%	color 1	color 2
Picker system	4.3	37.0	80.6	30.1	2.0	0.0	1.8	1.0
Stripper system	4.2	36.6	80.0	29.0	1.9	0.0	1.6	1.0
Difference (Picker system - Stripper system)	0.1	0.4	0.7	1.0	0.1	0.0	0.1	0.0
CV, %	0.9	0.7	0.2	1.5	4.7	--	--	--
OSL	0.0249	0.1102	0.0049	0.0482	0.3189	--	--	--
LSD (0.05)	0.1	NS	0.3	1.0	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.

Total Picker system bales classed = 39 from 12.19 acres (does not include remnant bales)
Total Stripper system bales classed = 38 from 12.17 acres (does not include remnant bales)

Table 3. Harvest results from the replicated John Deere 9996 picker vs. stripper harvester demonstration, Eddie and Steve Verett Farm, Ralls, TX, 2010.

Harvest/ginning method	Lint turnout	Seed turnout	Bur or seed cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Harvest cost*	Net value	
	-------- % --------		---------- lb/acre ----------			$/lb	---------- $/acre ----------						
Picker system	37.0	54.2	3555	1314	1926	0.5718	751.00	168.51	919.51	106.66	131.35	681.50	b
Stripper system	31.6	47.2	4273	1348	2018	0.5649	761.31	176.55	937.86	128.20	107.86	701.80	a
Difference (Picker system - Stripper system)	5.4	7.0	-718	-35	-92	0.0069	-10.31	-8.04	-18.35	-21.54	23.49	-20.30	
CV, %	0.8	1.0	1.6	1.4	2.0	0.9	0.5	2.0	0.7	1.6	0.8	0.6	
OSL	0.0001	0.0003	0.0006	0.0736†	0.0443	0.1651	0.0251	0.0443	0.0293	0.0006	<0.0001	0.0059	
LSD (0.05)	0.6	1.2	145	30	88	NS	7.86	7.66	14.85	4.35	2.12	9.19	

For net value/acre, means within a column with the same letter are not significantly different at the 0.05 probability level.
CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, †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.
$175/ton for seed.
***Harvest cost = Picker at $0.10/lint lb ; Stripper at $0.08/lint lb.**

Table 4. Commercial classing results from the replicated John Deere 9996 picker vs. stripper harvester demonstration, Eddie and Steve Verett Farm, Ralls, TX, 2010.

Harvest/ginning method	Micronaire	Staple	Uniformity	Strength	Leaf	Bark	Color grade	
	units	32nds inches	%	g/tex	grade	%	color 1	color 2
Picker system	4.3	37.0	81.4	30.8	1.9	0.0	2.1	1.0
Stripper system	4.3	37.0	81.5	31.1	2.3	22.1	2.2	1.0
Difference (Picker system - Stripper system)	0.0	0.0	-0.1	-0.3	-0.4	-22.1	-0.1	0.0
CV, %	1.6	--	0.4	1.4	8.2	133.7	--	--
OSL	0.6376	--	0.5995	0.3517	0.0469	0.1247	--	--
LSD (0.05)	NS	--	NS	NS	0.4	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.

Total Picker system bales classed = 51 from 19.69 acres (does not include remnant bales)
Total Stripper system bales classed = 52 from 19.70 acres (does not include remnant bales)

Table 5. Harvest results from the replicated Case IH 620 picker vs. stripper harvester demonstration, Kelli Merritt Farm, Lamesa, TX, 2010.

Harvest/ginning method	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Harvest cost*
	-------- lb/acre --------		$/lb	---------- $/acre ----------			
Picker system	1309	1898	0.5703	746.55	166.06	912.60	130.87
Stripper system	1448	2094	0.5735	831.14	183.18	1014.32	115.86
Difference (Picker system - Stripper system)	-139	-196	-0.0032	-84.59	-17.12	-101.72	15.01
CV, %	5.7	6.2	0.5	5.7	6.2	5.8	5.8
OSL	0.0885	0.1108	0.1781	0.0754	0.1115	0.0809	0.0588
LSD (0.10)	40	NS	NS	22.79	NS	24.26	3.98

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 0.10 level, NS - not significant.
Note: some columns may not add up due to rounding error.

Assumes:
$3.00/cwt ginning cost.
$175/ton for seed.
***Harvest cost = Picker at $0.10/lint lb ; Stripper at $0.08/lint lb.**

Table 6. Commercial classing results from the replicated Case IH 620 picker vs. stripper harvester demonstration, Kelli Merritt Farm, Lamesa, TX, 2010.

Harvest/ginning method	Micronaire	Staple	Uniformity	Strength	Leaf	Bark	Color grade	
	units	32nds inches	%	g/tex	grade	%	color 1	color 2
Picker system	4.6	37.0	81.3	30.7	2.2	0.0	2.1	1.0
Stripper system	4.6	36.9	81.1	30.5	2.4	4.6	1.8	1.0
Difference (Picker system - Stripper system)	0.0	0.1	0.2	0.2	-0.2	-4.6	0.3	0.0
CV, %	2.7	0.5	0.2	0.5	7.4	163.3	--	--
OSL	0.7361	0.3393	0.3120	0.2999	0.2351	0.1817	--	--
LSD (0.05)	NS	NS	NS	NS	NS	NS	--	--

CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, NS - not significant.

Total Picker system bales classed = 52 from 18.8 acres (does not include remnant bales)
Total Stripper system bales classed = 45 from 15.7 acres (does not include remnant bales)

Table 7. Harvest results from the replicated Case IH Module Express picker vs. stripper harvester demonstration, Brad Heffington Farm, Littlefield, TX, 2010.

Harvest/ginning method	Lint turnout	Seed turnout	Bur or seed cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Harvest cost*	Net value	
	-------- % --------		---------- lb/acre ----------			$/lb	---------- $/acre ----------						
Picker system	31.7	48.5	3262	1033	1581	0.5753	593.95	138.31	732.25	97.85	103.25	531.16	b
Stripper system	27.8	44.3	4170	1157	1846	0.5731	663.33	161.50	824.82	125.10	92.58	607.15	a
Difference (Picker system - Stripper system)	3.9	4.2	-908	-124	-265	0.0022	-69.38	-23.19	-92.57	-27.25	10.67	-75.99	
CV, %	3.9	3.6	2.9	2.2	0.7	0.4	2.2	0.7	1.9	2.9	2.4	2.3	
OSL	0.0175	0.0389	0.0012	0.0054	<0.0001	0.2373	0.0056	<0.0001	0.0029	0.0012	0.0081	0.0039	
LSD (0.05)	2.6	3.8	240	54	27	NS	30.81	2.33	32.81	7.21	5.38	29.69	

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.
$175/ton for seed.
***Harvest cost = Picker at $0.10/lint lb ; Stripper at $0.08/lint lb.**

Table 8. Commercial classing results from the replicated Case IH Module Express picker vs. stripper harvester demonstration, Brad Heffington Farm, Littlefield, TX, 2010.

Harvest/ginning method	Micronaire	Staple	Uniformity	Strength	Leaf	Bark	Color grade	
	units	32nds inches	%	g/tex	grade	%	color 1	color 2
Picker system	4.0	37.1	82.4	32.1	1.4	0.0	1.8	1.0
Stripper system	3.8	37.1	82.1	32.6	1.5	2.1	1.5	1.0
Difference (Picker system - Stripper system)	0.2	0.0	0.3	-0.5	-0.1	-2.1	0.3	0.0
CV, %	3.1	0.5	0.3	1.4	9.0	282.8	--	--
OSL	0.1328	0.8729	0.1266	0.2369	0.2734	0.3910	--	--
LSD (0.05)	NS	NS	NS	NS	NS	NS	--	--

CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, NS - not significant.

Total Picker system bales classed = 42 from 20.2 acres (does not include remnant bales)
Total Stripper system bales classed = 48 from 20.1 acres (does not include remnant bales)

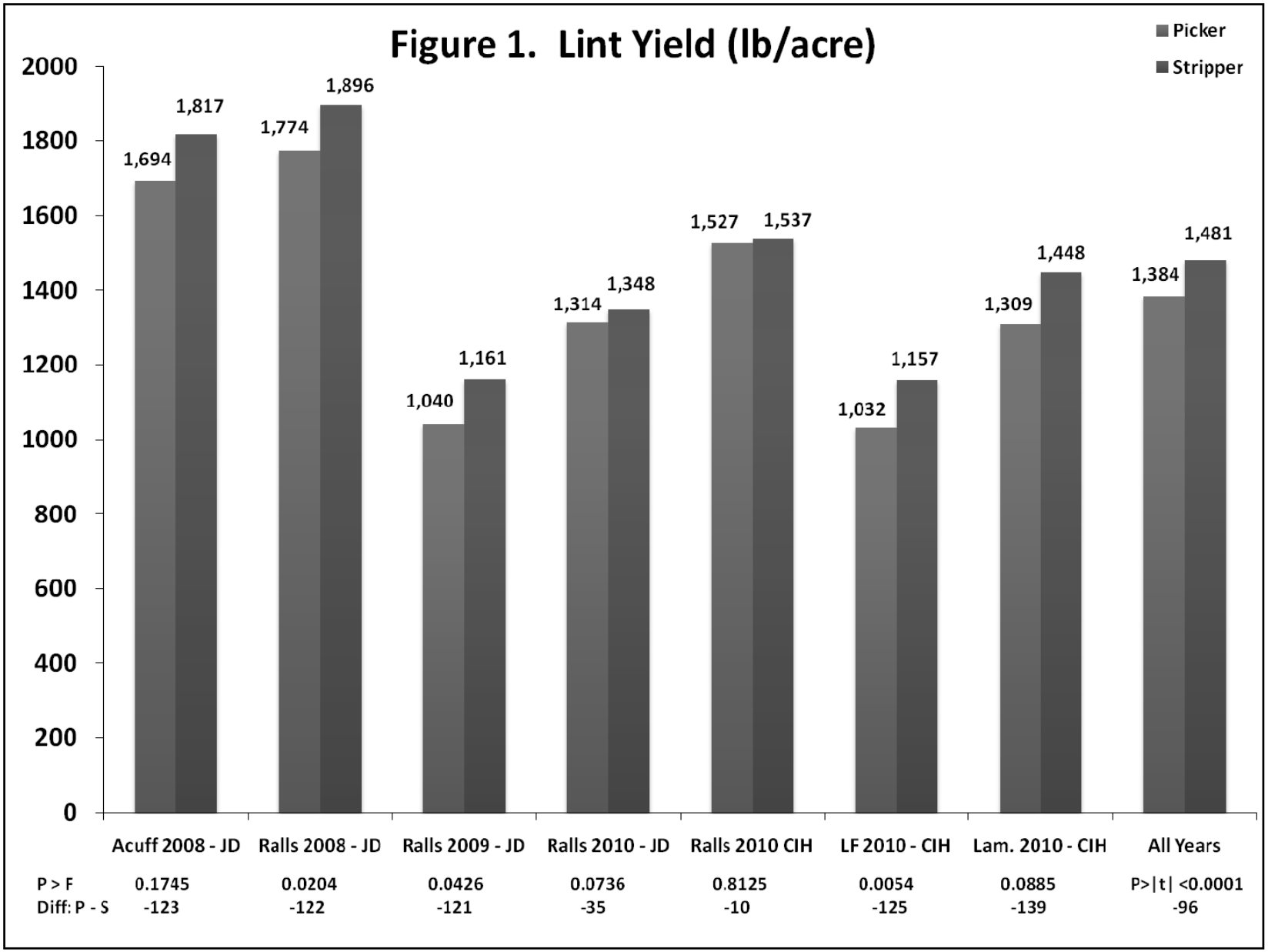
Figure 1. Lint Yield (lb/acre)
Picker
Stripper
2000
1800
1600
1400
1200
1000
800
600
400
200
0
1,694
1,817
1,774
1,896
1,040
1,161
1,314
1,348
1,527
1,537
1,032
1,157
1,309
1,448
1,384
1,481
Acuff 2008 - JD
Ralls 2008 - JD
Ralls 2009 - JD
Ralls 2010 - JD
Ralls 2010 CIH
LF 2010 - CIH
Lam. 2010 - CIH
All Years
P > F 0.1745 0.0204 0.0426 0.0736 0.8125 0.0054 0.0885 P>|t| <0.0001
Diff: P - S -123 -122 -121 -35 -10 -125 -139 -96

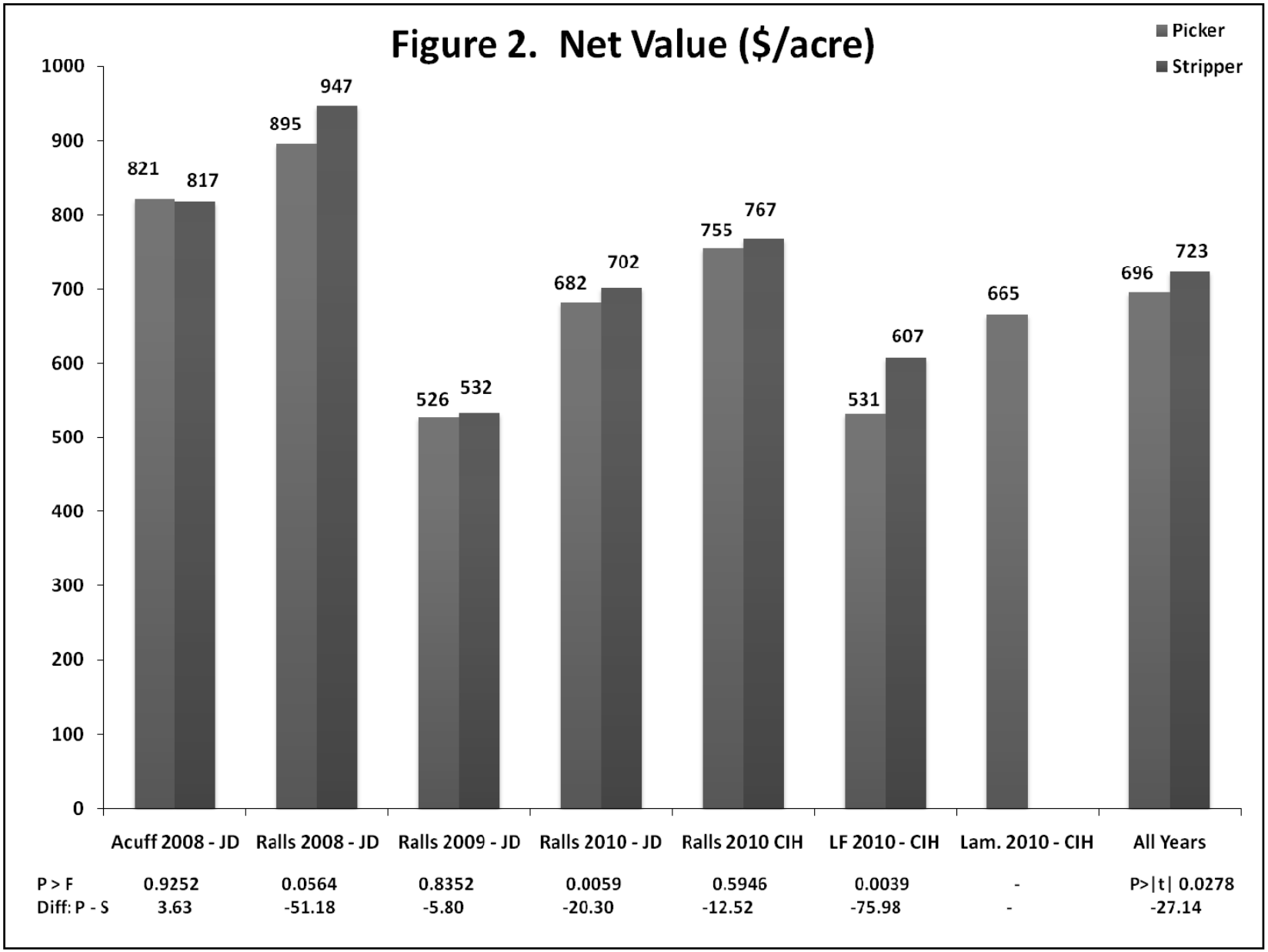
Figure 2. Net Value ($/acre)
Picker
Stripper
1000
900
800
700
600
500
400
300
200
100
0
821
817
895
947
526
532
682
702
755
767
531
607
665
696
723
Acuff 2008 - JD
Ralls 2008 - JD
Ralls 2009 - JD
Ralls 2010 - JD
Ralls 2010 CIH
LF 2010 - CIH
Lam. 2010 - CIH
All Years
P > F 0.9252 0.0564 0.8352 0.0059 0.5946 0.0039 - P>|t| 0.0278
Diff: P - S 3.63 -51.18 -5.80 -20.30 -12.52 -75.98 - -27.14

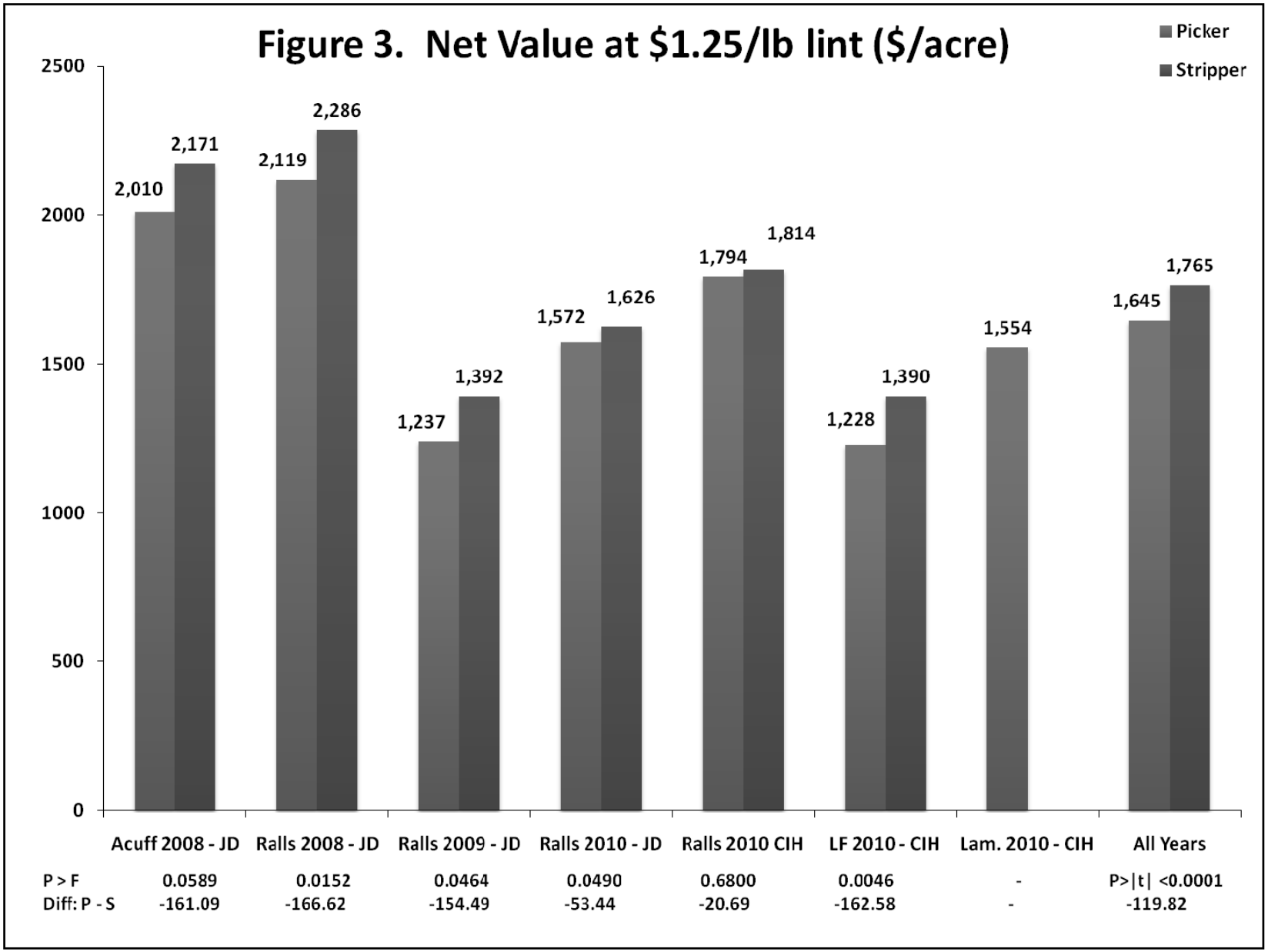
Figure 3. Net Value at $1.25/lb lint ($/acre)
Picker
Stripper
2500
2000
1500
1000
500
0
2,010
2,171
2,119
2,286
1,237
1,392
1,572
1,626
1,794
1,814
1,228
1,390
1,554
1,645
1,765
Acuff 2008 - JD
Ralls 2008 - JD
Ralls 2009 - JD
Ralls 2010 - JD
Ralls 2010 CIH
LF 2010 - CIH
Lam. 2010 - CIH
All Years
P > F 0.0589 0.0152 0.0464 0.0490 0.6800 0.0046 - P>|t| <0.0001
Diff: P - S -161.09 -166.62 -154.49 -53.44 -20.69 -162.58 - -119.82

HARVEST TIMING AND TECHNIQUES TO OPTIMIZE FIBER QUALITY IN THE TEXAS HIGH PLAINS

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Abstract

Production conditions typical to the Texas High Plains region can produce cotton crops with high short fiber and nep content, both of which have a detrimental impact on ring spinning performance. Since Texas now produces nearly 50% of the US cotton crop annually, it is critical that research focuses on finding ways to maximize fiber quality in order to improve the competitiveness of US cotton on the world market. In 2009 and 2010, a joint project was conducted between research personnel from USDA - ARS and the Texas AgriLife Extension Service in Lubbock to compare various harvest timings and techniques. The objectives of this work were to 1) investigate differences in fiber quality and maturity of cotton harvested using conventional equipment (e.g. a spindle picker and a brush-roll stripper with field cleaner) at different levels of final crop maturity, and 2) evaluate the economic feasibility of using these new harvesting techniques in irrigated cotton. Treatments containing a stripper component had higher bur cotton yields, and therefore higher ginning costs, than those with picker components only. In 2009, no significant differences were observed among treatments for lint yield. However, in 2010, the pick then strip and the conventional strip treatments resulted in higher lint yield than the pick then pick treatment. After subtracting harvest aid, ginning and harvest costs, net value for the pick then pick treatment was significantly lower than all other treatments in 2010 but not in 2009. This was attributed to lower lint yield, lower loan values, and higher harvest costs. Loan values were observed to be affected more by harvest timing than by harvest machinery. Micronaire values were higher for the initial harvesting events than for the sequential or conventional harvest events in 2009 and 2010. The higher micronaire values resulted in lower loan values due to not being in the premium range of 3.7 to 4.2. Loan values can also be negatively influenced by higher color grades due to lint staining from the initial green picker harvest event if ginning is not performed within a relatively short period of time, as was observed in 2009. Based on these results, either conventional picker harvesting or conventional stripper harvesting may be employed for optimum yield and quality as opposed to green picked followed by picker harvesting. More research is needed to determine the benefit, if any, of the green pick harvest event in low micronaire situations.

Introduction

Cotton produced in the Texas High Plains has exhibited substantial improvements in terms of yield and fiber quality over the last decade. These improvements are due primarily to new cultivars and improved irrigation practices. However, cotton produced in the region continues to receive larger price discounts from buyers compared to cotton of equal grade and classification produced in other areas of the US. Foreign mills attribute inferior ring spinning performance of west Texas cotton to increased levels of neps and short fibers, both of which are not reported in fiber testing results from the USDA Agricultural Marketing Service using the high volume instrument (HVI) classification system.

The amount of neps and short fiber contained in ginned lint is influenced by many factors including: variety, fiber maturity, harvest method, and ginning practice. Inclement weather, periods of excessive soil moisture from rainfall or irrigation, and limited heat unit accumulation (< 2500 dd60's) are production conditions experienced on the High Plains that tend to produce immature fiber with low micronaire (MIC). Cotton harvest is traditionally accomplished using brush-roll strippers that indiscriminately harvest seed cotton from bolls regardless of physiological maturity. Consequently, MIC for stripper harvested cotton has been shown to be reduced by 0.3 units compared to spindle picker harvested cotton of the same variety (Faulkner et al., 2009). Spindle pickers employ a selective harvesting mechanism which harvests seed cotton only from open bolls, leaving seed cotton in less-open/less mature bolls.

Moreover, aggressive ginning practices that expose seed cotton to excessive mechanical action tend to break fibers and cause fiber entanglements (i.e. neps) (Anthony et al., 1986).

Objective

The goal of this work is to improve fiber quality and value of cotton produced in the Texas High Plains through new harvesting techniques utilizing conventional harvesting equipment applied at various stages of final crop maturity. The specific objectives are:

- Investigate differences in fiber quality and maturity of cotton harvested using conventional equipment (e.g. a spindle picker and a brush-roll stripper with field cleaner) at different levels of final crop maturity, and
- Evaluate the economic feasibility of using these new harvesting techniques on irrigated cotton.

Materials and Methods

One variety of cotton, FiberMax 9180 B2F, was grown in a sub-surface drip irrigated field at the USDA - ARS Plant Stress Lab in Lubbock, TX. The crop was planted to 40 inch row spacing with drip lines under each row on 6-May, 2009 and on 19-May, 2010. Seeding rates of 5 seed/row-ft (65,000 seed/acre) and 4.1 seed/row-ft (54,000 seed/acre) were used in 2009 and 2010, respectively. Subsequent plant stand counts indicated average populations of 4.2 plants/row-ft (55,500 plants/acre) in 2009 and 4.2 plants/row-ft (54,885 plants/acre) in 2010. By plot soil sampling was conducted in both years prior to planting to a depth of 24 inches to determine residual fertility levels. Accounting for residual N, supplemental N was applied through the irrigation system to achieve a yield goal of 4 bales/acre (Hons et al., 2004). No supplemental phosphorous, potassium, or micronutrients were applied. In 2009 early season irrigation was conducted by an automated irrigation controller at a rate of 0.2 acre-in/day. However, cut-out (defined as < 4 nodes above white flower) was observed earlier than expected on 28-Jul, 2009 due to heat stress and daily irrigation was increased to 0.31 acre-in/day to help retain fruit load. Total irrigation amount was 17.5 acre-in with an additional 5.9 acre-in from rainfall. Total irrigation amount in 2010 was 10.5 acre-in (0.24 acre-in/day) with 16.1 acre-in supplemental rainfall for a total of 26.6 acre-in of moisture from 1-May to first harvest event on 20-Oct.

Harvesting treatments evaluated in the study consisted of applying a conventional six-row cotton picker (John Deere model 9996) and a conventional six-row brush-roll stripper with field cleaner (John Deere model 7445) in various sequences at different levels of final crop maturity. Treatments are included in table 1. Finish 6 Pro was applied at 24 and 30 oz/acre in 2009 and 2010, respectively with Ginstar at 8 oz/acre over all plots to defoliate the crop and open bolls subsequent to the initial picking event for the pick then pick and pick then strip treatments. Following the second picking event for the pick then pick treatment and once over picking for the conventional pick treatment, Gramoxone Inteon was applied at 32 oz/acre (in 2010, 1 oz/acre Aim 2EC was included as a tank mix) to the remaining plots to desiccate the crop for stripper harvesting.

Table 1. Treatment descriptions.

Treatment Description	
Treatment #1 - Pick then Pick	Picker harvest (~80% OB in 2009 and 50% OB in 2010) prior to application of crop harvest-aid chemicals followed by a second picking (~100% open bolls) after crop defoliation
Treatment #2 - Pick then Strip	Picker harvest (~80% OB in 2009 and 50% OB in 2010) prior to application of crop harvest-aid chemicals followed by stripper harvesting (~100% open bolls) after defoliation and desiccation
Treatment #3 - Conventional Pick	Once over picker harvest (~100% open bolls) after crop defoliation
Treatment #4 - Conventional Strip	Once over stripper harvest (~100% open bolls) after crop defoliation and desiccation

The field was sub-divided into four blocks to which each treatment was randomly applied once (tables 2 and 3). The blocks, serving as replications, each contained four 6-row plots (24 rows/block). Statistical analyses were performed according to a randomized complete block design with field reps serving as blocks. Statistical analysis was conducted using the General Linear Model procedure in SAS (SAS v. 9.1, SAS Institute, Cary, NC). Differences were determined using Fisher's Protected LSD method.

Table 2. Field layout and treatment assignment for 2009.

Rep #	Treatment Assignment	Plot #
Rep 1	Treatment #3 - Conventional Pick	1
	Treatment #4 - Conventional Strip	2
	Treatment #1 - Pick then Pick	3
	Treatment #2 - Pick then Strip	4
Rep 2	Treatment #2 - Pick then Strip	5
	Treatment #4 - Conventional Strip	6
	Treatment #3 - Conventional Pick	7
	Treatment #1 - Pick then Pick	8
Rep 3	Treatment #2 - Pick then Strip	9
	Treatment #3 - Conventional Pick	10
	Treatment #1 - Pick then Pick	11
	Treatment #4 - Conventional Strip	12
Rep 4	Treatment #2 - Pick then Strip	13
	Treatment #1 - Pick then Pick	14
	Treatment #4 - Conventional Strip	15
	Treatment #3 - Conventional Pick	16

Table 3. Field layout and treatment assignment for 2010.

Rep #	Treatment Assignment	Plot #
Rep 1	Treatment #2 - Pick then Strip	1
	Treatment #3 - Conventional Pick	2
	Treatment #4 - Conventional Strip	3
	Treatment #1 - Pick then Pick	4
Rep 2	Treatment #3 - Conventional Pick	5
	Treatment #2 - Pick then Strip	6
	Treatment #1 - Pick then Pick	7
	Treatment #4 - Conventional Strip	8
Rep 3	Treatment #1 - Pick then Pick	9
	Treatment #3 - Conventional Pick	10
	Treatment #2 - Pick then Strip	11
	Treatment #4 - Conventional Strip	12
Rep 4	Treatment #4 - Conventional Strip	13
	Treatment #1 - Pick then Pick	14
	Treatment #3 - Conventional Pick	15
	Treatment #2 - Pick then Strip	16

After each plot was machine harvested, the bur or seed cotton was weighed in a weigh wagon with integral digital scale system. A 250 lb sample was subsequently collected for ginning at the USDA – ARS Cotton Production and Processing Research Unit in Lubbock, TX. Each bur or seed cotton sample was weighed and processed through commercial scale ginning equipment. Lint samples were collected after the second stage lint cleaner and sent for HVI and advanced fiber information system (AFIS) fiber analysis at the Texas Tech University Fiber and Biopolymer Research Institute in Lubbock, TX. Commodity Credit Corporation (CCC) loan values for the fiber

samples from both years were calculated according to the 2010 loan chart using HVI fiber classification results. Total lint and seed weights were recorded for each sample and used to calculate lint and seed turnout values.
Lint values were calculated by multiplying the lint yield by the loan values, seed values were calculated using $175.00/ton, and ginning costs were calculated using $3.00/100 lbs seed/bur cotton. Net values were determined by subtracting harvest aid, ginning and harvesting costs from the total value (lint value plus seed value). Harvest costs were calculated using $0.08 lb/lint for custom stripper harvest and $0.10 lb/lint for custom picker harvest.

Results and Discussion

Total bur cotton, lint and seed yields and resulting economic parameters for 2009 are shown by harvest treatment in table 4. Significant differences were observed among treatments for bur cotton yield, ginning costs and harvest costs only. For total bur and seed cotton yield and subsequent ginning costs, the conventional picker treatment was significantly lower than all other treatments. Furthermore, harvest costs were significantly greater for the conventional picker and the picker followed by picker harvest treatments than the two treatments containing a stripper harvesting component. Lint yield averaged 1644 lbs/acre and ranged from a high of 1685 for the pick then pick treatment to a low of 1611 for the pick the strip treatment. However this difference was not significant. After adding lint and seed values and subtracting harvest aid, ginning and harvest costs, the net values ($/acre) were not significantly different. Net values ranged from a high of $856.81/acre for the conventional pick treatment to a low of $781.56/acre for the pick then strip treatment.

Table 4. Yield and economic results for 2009.

Treatment	Bur cotton yield	Lint yield	Seed yield	Lint value	Seed value	Total value	Harvest aid cost	Ginning cost	Harvest cost	Net value
	lb/acre			$/acre						
Conventional Pick	5227	1652	2957	949.05	258.75	1207.80	29.00	156.80	165.18	856.81
Pick then Pick	5816	1685	3158	920.69	276.32	1197.01	29.00	174.47	168.50	825.05
Pick then Strip	6140	1611	3203	881.28	280.27	1161.55	43.89	184.20	151.90	781.56
Conventional Strip	6039	1627	3002	924.71	262.67	1187.38	43.89	181.15	130.19	832.16
Test average	5805	1644	3080	918.93	269.50	1188.43	36.45	174.16	153.94	823.89
CV, %	5.7	4.8	6.9	4.5	6.9	4.9	--	5.7	4.8	5.1
OSL	0.0154	0.5914	0.3444	0.2118	0.3443	0.7184	--	0.0154	0.0002	0.1550
LSD	532	NS	NS	NS	NS	NS	--	15.95	11.71	NS

For net value/acre, means within a column with the same letter are not significantly different at the 0.05 probability level.
CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, NS - not significant.
Note: some columns may not add up due to rounding error.

Significant differences were observed among treatments for all yield and economic parameters measured in 2010 (table 5.) Bur or seed cotton yield averaged 4505 lb/acre for the pick then strip treatment which was significantly greater than the pick then pick treatment (4223 lb/acre) and the conventional pick treatment (3857 lb/acre) but not the conventional strip treatment (4444 lb/acre). Lint yield was significantly greater for the pick then strip treatment (1225 lb/acre) than for the pick then pick treatment (1131 lb/acre) only. After adding lint and seed values, total values ($/acre) ranged from a high of $896.79/acre for the conventional strip treatment to a low of $815.47/acre for the pick then pick treatment. When subtracting harvest aid, ginning and harvesting costs from the total value, net value for the conventional strip treatment was significantly greater than the pick then pick treatment but not the conventional pick or the pick then strip treatments.

Table 5. Yield and economic results for 2010.

Entry	Bur cotton yield	Lint yield	Seed yield	Lint value	Seed value	Total value	Harvest aid cost	Ginning cost	Harvest cost	Net value
	lb/acre			$/acre						
Conventional Strip	4444	1220	2268	698.36	198.43	896.79	45.82	133.31	97.56	620.10 a
Conventional Pick	3857	1185	2092	677.77	183.02	860.80	28.98	115.71	118.51	597.59 a
Pick then Strip	4505	1225	2176	690.77	190.43	881.20	45.82	135.17	122.48	594.57 a
Pick then Pick	4223	1131	2059	635.36	180.12	815.47	28.98	126.69	106.70	536.27 b
Test average	4257	1190	2149	675.56	188.00	863.56	37.40	127.72	111.31	587.13
CV, %	2.5	3.5	4.9	4.2	4.9	4.2	--	2.5	3.5	5.3
OSL	<0.0001	0.0402	0.0774†	0.0486	0.0779†	0.0510†	--	<0.0001	<0.0001	0.0214
LSD	169	67	136	45.50	11.93	46.75	--	5.06	6.30	49.36

For net value/acre, means within a column with the same letter are not significantly different at the 0.05 probability level.
CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, †indicates significance at the 0.10 level.
Note: some columns may not add up due to rounding error.

HVI fiber quality analysis results for lint samples collected after two stages of lint cleaning are presented in table 6 for 2009 and in table 7 for 2010. In general, the initial harvest events for the pick then pick and pick then strip treatments resulted in higher micronaire than the conventional pick, conventional strip and the sequential harvest events for the pick then pick and pick then strip treatments for both years. Furthermore, in 2009 and 2010, picker harvest events tended to have higher staple values than stripper harvesting. The same was true for uniformity in both years. Differences in strength values were observed among treatments for both years, however, those differences were small (1.2 g/tex in 2009 and 1.8 g/tex in 2010) and did not contribute to lower loan values. Color grades were mostly 21 and 31 in 2009 and mostly 11 and 21 in 2010. Loan values tended to be lower for the initial harvest events for the pick then pick and pick then strip treatments in 2009 and 2010. These differences were attributed to higher micronaire values which were not in the premium range.

Table 6. HVI and loan values for 2009.

Entry	Micronaire	Staple	Uniformity	Strength	Rd	+b	Color grade		Loan
	units	32^{nds} inches	%	g/tex	reflectance	yellowness	color 1	color 2	$/lb lint
Conventional Pick	4.3 b	38.6 a	82.8 a	32.5 a	82.0 a	7.5 b	2.3	1.0	0.5736 a
Conventional Strip	4.2 bc	37.6 c	81.6 b	31.6 bc	81.6 a	6.7 c	3.0	1.0	0.5673 a
Pick then Pick - Initial	4.5 a	38.5 a	82.7 a	31.3 c	74.8 c	10.1 a	3.0	2.0	0.5360 c
Pick then Pick - Sequential	4.1 cd	38.2 ab	82.0 b	32.1 ab	81.1 a	7.4 b	2.8	1.0	0.5701 a
Pick then Strip - Initial	4.4 a	38.6 a	82.9 a	32.0 abc	75.5 c	10.1 a	2.5	2.0	0.5450 bc
Pick then Strip - Sequential	4.1 d	37.8 bc	81.7 b	31.8 abc	79.0 b	6.7 c	3.8	1.0	0.5496 b
Test average	4.3	38.2	82.3	31.9	79.0	8.1	2.9	1.3	0.5569
CV, %	1.6	0.8	0.5	1.4	0.8	2.2	--	--	1.2
OSL	<0.0001	0.0017	0.0012	0.0345	<0.0001	<0.0001	--	--	<0.0001
LSD	0.1	0.5	0.6	0.7	0.9	0.3	--	--	0.0097

CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, NS - not significant.

Table 7. HVI and loan values for 2010.

Entry	Micronaire	Staple	Uniformity	Strength	Rd	+b	Color grade		Loan
	units	32nds inches	%	g/tex	reflectance	yellowness	color 1	color 2	$/lb lint
Conventional Pick	4.3 b	37.9 ab	82.0 bc	30.3 ab	80.2 b	8.5 b	2.0	1.0	0.5719 a
Conventional Strip	4.3 b	37.7 b	81.9 c	30.4 a	81.6 a	8.4 b	1.5	1.0	0.5728 a
Pick then Pick - Initial	4.6 a	38.3 a	82.6 a	29.8 bc	78.7 d	10.2 a	1.3	1.8	0.5573 b
Pick then Pick - Sequential	3.9 c	38.1 a	81.4 d	30.0 abc	79.8 bc	8.6 b	2.0	1.0	0.5725 a
Pick then Strip - Initial	4.6 a	37.9 ab	82.4 ab	29.6 c	79.1 cd	10.0 a	1.3	1.5	0.5608 b
Pick then Strip - Sequential	3.7 c	37.6 b	81.3 d	29.9 bc	80.0 b	8.7 b	2.0	1.0	0.5714 a
Test average	4.2	37.9	81.9	30.0	79.9	9.1	1.7	1.2	0.5678
CV, %	2.6	0.9	0.4	1.0	0.7	3.7	--	--	1.2
OSL	<0.0001	0.0876†	<0.0001	0.0254	<0.0001	<0.0001	--	--	0.0147
LSD	0.2	0.4	0.5	0.5	0.8	0.5	--	--	0.0102

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.

Conclusions

As was expected, the treatments containing a stripper component had higher bur cotton yields, and therefore higher ginning costs, than those with picker components only. In 2009, no significant differences were observed among treatments for lint yield. However, in 2010, the pick then strip and the conventional strip treatments resulted in higher lint yield than the pick then pick treatment. After subtracting harvest aid, ginning and harvest costs, net value ($/acre) for the pick then pick treatment was significantly lower than all other treatments in 2010 but not in 2009. This was attributed to lower lint yield, lower loan values (initial harvest event), and higher harvest costs. Loan values were observed to be affected more by harvest timing (initial vs. sequential/conventional) than by harvest machinery (picker vs. stripper). Micronaire values were higher for the initial harvesting events than for the sequential or conventional harvest events. In low micronaire years, this may be beneficial but in 2009 and 2010 the higher micronaire resulted in lower loan values due to being outside the premium range of 3.7 to 4.2. Loan values can also be negatively influenced by higher color grades due to lint staining from the initial harvest (green pick) event if ginning is not performed within a short period of time, as was observed in 2009. Based on these results, either conventional picker harvesting or conventional stripper harvesting may be employed for optimum yield and quality as opposed to green picker followed by picker harvesting. More research is needed to determine the benefit, if any, of the green pick harvest event in low micronaire situations.

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Additional Replicated Irrigated Large Plot Demonstrations

AgriLIFE EXTENSION
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Replicated LESA Irrigated RACE Variety Demonstration, Muleshoe, TX - 2010

Cooperator: Chris Bass

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CEA-ANR Bailey County, EA-IPM Bailey/Parmer Counties, Extension Agronomist - Cotton, Extension Program Specialist II - Cotton, and Extension Assistant - Cotton

Bailey County

Summary: Significant differences were observed for most yield and economic parameters measured. Lint turnout from grab samples averaged 28.3% and ranged from a low of 26.9% for NexGen 3348B2RF to a high of 30.0% for Deltapine 0912B2RF. Lint yields averaged 1450 lb/acre and no significant differences were observed among varieties. Significant differences at the 10% level were observed among varieties for lint loan value, lint value, total value, and net value. Lint loan values ranged from a low of $0.4632/lb (FiberMax 1740B2F) to a high of $0.4982/lb (Croplan Genetics 3006B2RF) . When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of $738.93 (Croplan Genetics 3006B2RF) to a low of $645.01 (All-Tex Apex B2RF), a difference of $93.92. Significant differences were observed among varieties for all parameters measured with the exception of micronaire. Micronaire values were relatively low and averaged 2.6 across varieties. Staple averaged 36.1 across all varieties with a low of 35.2 for FiberMax 1740B2F and a high of 37.5 for Croplan Genetics 3006B2RF. Percent uniformity averaged 79.7 with a high of 81.7 NexGen 3348B2RF and a low of 77.4 for Stoneville 4288B2F. Strength values ranged from a high of 30.3 g/tex to a low of 27.6 g/tex for NexGen 3348B2RF and All-Tex Apex B2RF, respectively. Elongation averaged 7.4% with a high of 8.0% for Croplan Genetics 3006B2RF and a low of 6.9 for NexGen 3348B2RF. Color grade components of Rd (reflectance) and +b (yellowness) averaged 82.4 and 7.8, respectively. This resulted in color grades of mostly 11 and 21. These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection.

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

Materials and Methods:

Varieties: All-Tex Apex B2RF, Croplan Genetics 3006B2RF, Dyna-Gro 2570B2RF, Deltapine 0912B2RF, FiberMax 1740B2F, NexGen 3348B2RF, PhytoGen 367WRF, and Stoneville 4288B2F

Experimental design: Randomized complete block with 3 replications

Seeding rate: 3.7 seeds/row-ft in 30-inch row spacing or approximately 64,500 seed/acre (John Deere 7300 vacuum planter)

Plot size: 6 rows by variable length of field (2411-2580 ft long)

Planting date: 3-May

Weed management: Three applications of glyphosate were applied during the growing season. Glyphosate was applied at 32 oz/acre with AMS. Also, 2 oz/acre Staple and 1 pt/acre Dual was applied during the growing season.

Irrigation: This location was under a LESA center pivot. The system provides 400 gpm on 120 acres and ran from 4-May to 31-August for a total of 21" of irrigation.

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

April:	1.63	July:	2.50
May:	1.68	August:	1.21
June:	1.72	September:	1.32

Total rainfall: 10.06"

Total irrigation and rainfall: 31.06"

Insecticides: Temik was applied infurrow at planting at 3.5 lb/acre. This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.

Fertilizer management: Applied 70 lbs N/acre and 15 lbs P_2O_5/acre in a band with a strip-till rig preplant. An additional 50 lbs N/acre was applied via fertigation during June and July, for a total of 120 lbs N/acre.

Plant growth regulators: Three applications of mepiquat chloride were made across all varieties at this location at match-head square, early bloom and full bloom at 6, 12, and 16 oz/acre, respectively.

Harvest aids: Prep was applied at 32 oz/acre with 16 oz/acre Def, and no sequential harvest aid application was required.

Harvest: Plots were harvested on 19-October using a commercial John Deere 7450 stripper harvester without field cleaner. Harvested material was transferred to a weigh wagon with integral electronic scales to determine individual plot weights. Plot yields were subsequently adjusted to lb/acre.

Gin turnout: Gin turnouts for lint and seed were determined from grab samples taken by plot at harvest and ginned at the Texas AgriLife Research and Extension Center at Lubbock.

Fiber analysis: Lint samples were submitted to the Texas Tech University - Fiber and Biopolymer Research Institute for HVI analysis, and USDA Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.

Ginning cost and seed values: Ginning costs were based on $3.00 per cwt. of bur cotton and seed value/acre was based on $175/ton. Ginning costs did not include checkoff.

Seed and technology fees: Seed and technology costs were calculated using the appropriate seeding rate (3.7 seed/row-ft) for the 30-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://www.plainscotton.org/Seed/PCGseed10.xls

Results and Discussion:

Significant differences were observed among varieties for plant population on (Table 1). Plant stands ranged from a high of 46,303 for Croplan Genetics 3006B2RF to a low of 37,107 for Deltapine 0912B2RF. Nodes above white flower (NAWF) data were collected weekly on 21-July, 27-July, 4-August, and 11-August. Significant differences were observed on 21-July (alpha=0.10) and 11-August only. NAWF values reported represent averages from 10 plants per plot or 30 plants per variety. The test average for NAWF on 21-July was 7.6 and ranged from a high of 8.0 for Dyna-Gro 2570B2RF to a low of 7.4 for Croplan Genetics 3006B2RF. On 27-July and 4-August, the test averages were 6.3 and 4.6, respectively. All varieties had reached physiological cutout (NAWF = 5) by the 4-August observation. On 11-August, the test average was 3.1 and values ranged from a high of 3.5 for Dyna-Gro 2570B2RF to a low of 2.7 for Deltapine 0912B2RF and Stoneville 4288B2F.

Significant differences were observed for most yield and economic parameters measured (Table 2). Lint turnout from grab samples averaged 28.3% and ranged from a low of 26.9% for NexGen 3348B2RF to a high of 30.0% for Deltapine 0912B2RF. Bur cotton yields averaged 5124 lb/acre with a high of 5402 lb/acre for Croplan Genetics 3006B2RF, and a low of 4874 lb/acre for Deltapine 0912B2RF. Lint yields averaged 1450 lb/acre and no significant differences were observed among varieties. Significant differences at the 10% level were

observed among varieties for lint loan value, lint value, total value, and net value. Lint loan values ranged from a low of $0.4632/lb (FiberMax 1740B2F) to a high of $0.4982/lb (Croplan Genetics 3006B2RF) . After adding lint and seed value, total value/acre for varieties ranged from a high of $975.06 for Croplan Genetics 3006B2RF to a low of $861.39 for All-Tex Apex B2RF. When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of $738.93 (Croplan Genetics 3006B2RF) to a low of $645.01 (All-Tex Apex B2RF), a difference of $93.92.

Significant differences were observed among varieties for all fiber quality parameters measured with the exception of Micronaire (Table 3). Micronaire values were relatively low and averaged 2.6 across varieties. Staple averaged 36.1 across all varieties with a low of 35.2 for FiberMax 1740B2F and a high of 37.5 for Croplan Genetics 3006B2RF. Percent uniformity averaged 79.7 with a high of 81.7 NexGen 3348B2RF and a low of 77.4 for Stoneville 4288B2F. Strength values ranged from a high of 30.3 g/tex to a low of 27.6 g/tex for NexGen 3348B2RF and All-Tex Apex B2RF, respectively. Elongation averaged 7.4% with a high of 8.0% for Croplan Genetics 3006B2RF and a low of 6.9 for NexGen 3348B2RF. Color grade components of Rd (reflectance) and +b (yellowness) averaged 82.4 and 7.8, respectively. This resulted in color grades of mostly 11 and 21.

These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection. It should be noted that no inclement weather was encountered at this location prior to harvest and therefore, no pre-harvest losses were observed. Additional multi-site and multi-year applied research is needed to evaluate varieties and technology across a series of environments.

Acknowledgments:

Appreciation is expressed to Chris Bass for the use of his land, equipment and labor for this demonstration. Further assistance with this project was provided by Dr. Jane Dever - Texas AgriLife Research and Extension Center, Lubbock, and Dr. Eric Hequet - Associate Director, Fiber and Biopolymer Research Institute, Texas Tech University. Furthermore, we greatly appreciate the Texas Department of Agriculture - Food and Fiber Research for funding of HVI testing.

Disclaimer Clause:

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

Table 1. In-season plant measurement results from the LESA irrigated RACE variety demonstration, Chris Bass Farm, Muleshoe, TX, 2010.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of			
	plants/row-ft	plants/acre	21-Jul	27-Jul	4-Aug	11-Aug
Deltapine 0912B2RF	2.1	37,107	7.5	6.1	4.3	2.7
Stoneville 4288B2F	2.2	39,043	7.5	6.2	4.5	2.7
NexGen 3348B2RF	2.3	40,172	7.5	6.1	4.6	3.5
All-Tex Apex B2RF	2.3	40,817	7.7	6.3	5.0	2.8
FiberMax 1740B2F	2.5	42,753	7.7	6.5	4.8	3.1
Dyna-Gro 2570B2RF	2.5	42,915	8.0	6.5	4.8	3.5
PhytoGen 367WRF	2.5	42,915	7.6	6.5	4.3	3.0
Croplan Genetics 3006B2RF	2.7	46,303	7.4	6.0	4.8	3.3
Test average	2.4	41,503	7.6	6.3	4.6	3.1
CV, %	6.9	6.9	3.0	3.9	8.1	10.7
OSL	0.0405	0.0408	0.0578†	0.2227	0.2441	0.0389
LSD	0.2	4,116	0.3	NS	NS	0.5

For NAWF, numbers represent an average of 10 plants per variety per rep (30 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 LESA irrigated RACE variety demonstration, Chris Bass Farm, Muleshoe, TX, 2010.

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 ----------						
Croplan Genetics 3006B2RF	27.1	51.8	5402	1466	2800	0.4982	730.10	244.96	975.06	162.05	74.08	738.93	a
Deltapine 0912B2RF	30.0	49.1	4874	1462	2395	0.4843	708.28	209.59	917.87	146.21	78.18	693.48	b
Stoneville 4288B2F	28.0	50.5	5255	1473	2655	0.4667	687.61	232.29	919.90	157.64	76.98	685.28	bc
NexGen 3348B2RF	26.9	49.8	5245	1413	2610	0.4822	681.43	228.40	909.83	157.36	68.82	683.65	bc
Dyna-Gro 2570B2RF	29.5	50.8	4966	1465	2522	0.4657	682.08	220.71	902.78	148.98	75.28	678.52	bc
FiberMax 1740B2F	29.4	48.2	5076	1492	2445	0.4632	690.99	213.96	904.95	152.28	76.98	675.69	bc
PhytoGen 367WRF	27.4	48.0	5293	1453	2542	0.4693	681.71	222.45	904.16	158.78	75.52	669.86	bc
All-Tex Apex B2RF	28.3	49.6	4880	1380	2422	0.4707	649.44	211.96	861.39	146.41	69.98	645.01	c
Test average	28.3	49.7	5124	1450	2549	0.4750	688.95	223.04	911.99	153.71	74.48	683.80	
CV, %	3.5	2.0	3.6	3.7	3.6	2.8	3.7	3.6	3.7	3.6	--	4.1	
OSL	0.0117	0.0047	0.0210	0.2903	0.0013	0.0704†	0.0727†	0.0013	0.0621†	0.0210	--	0.0557†	
LSD	1.8	1.8	326	NS	159	0.0191	37.02	13.94	48.45	9.78	--	40.43	

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.
$175/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 LESA irrigated RACE variety demonstration, Chris Bass Farm, Muleshoe, TX, 2010.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Rd	+b	Color grade	
	units	32^{nds} inch	%	g/tex	%	reflectance	yellowness	color 1	color 2
All-Tex Apex B2RF	2.6	35.7	78.5	27.6	7.2	83.0	8.0	1.3	1.0
Croplan Genetics 3006B2RF	2.8	37.5	80.4	29.5	8.0	81.6	7.2	2.3	1.0
Dyna-Gro 2570B2RF	2.5	35.8	79.4	29.4	7.8	82.9	8.1	1.0	1.0
Deltapine 0912B2RF	2.7	35.7	79.8	29.7	7.6	82.2	7.9	2.0	1.0
FiberMax 1740B2F	2.6	35.2	79.6	28.4	7.1	84.3	7.5	1.0	1.0
NexGen 3348B2RF	2.7	36.6	81.7	30.3	6.9	81.4	7.6	2.3	1.0
PhytoGen 367WRF	2.5	36.7	80.4	29.7	7.4	81.4	8.2	2.0	1.0
Stoneville 4288B2F	2.6	35.6	77.4	28.4	7.1	82.3	7.9	2.0	1.0
Test average	2.6	36.1	79.7	29.1	7.4	82.4	7.8	1.8	1.0
CV, %	5.4	2.1	1.5	3.1	3.6	0.7	2.5	--	--
OSL	0.1395	0.0337	0.0189	0.0320	0.0017	0.0003	0.0002	--	--
LSD	NS	1.3	2.0	1.6	0.5	1.0	0.3	--	--

CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, NS - not significant.

Leaf grades set to 3 (field commercial average) for all varieties due to highly variable leaf grades from grab samples.

AgriLIFE EXTENSION
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Replicated Sub-Surface Drip Irrigated RACE Variety Demonstration, Ralls, TX - 2010

Cooperator: David Crump

Tyler Hawthorne, Dustin Patman, Randy Boman, Mark Kelley and Chris Ashbrook
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Extension Agronomist - Cotton, Extension Program Specialist II - Cotton, and Extension Assistant - Cotton

Crosby County

Summary: Significant differences were observed for all yield and economic parameters measured with exception of lint loan value. Lint turnout ranged from a low of 30.2% to a high of 34.9% for Croplan Genetics 3220B2RF and Deltapine 1032B2RF, respectively. Lint yields varied with a low of 1047 lb/acre (Croplan Genetics 3220B2RF) and a high of 1389 lb/acre (Deltapine 1032B2RF). When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of $776.98 (Deltapine 1032B2RF) to a low of $597.33 (Croplan Genetics 3220B2RF), a difference of $179.65. Fiber quality data indicated significant differences among varieties for some parameters measured. No significant differences were observed among varieties for micronaire (3.8 average), staple (36.1 32nd inch average) or uniformity (80.3% average). Strength values averaged 29.2 g/tex with a high of 30.5 g/tex for NexGen 3348B2RF and a low of 27.6 g/tex for All-Tex Apex B2RF. Elongation averaged 8.3% and ranged from a high of 9.1% for Dyna-Gro 2570B2RF to a low of 7.6 for NexGen 3348B2RF. Significant differences were observed among varieties for leaf (1.7 avg), Rd or reflectance (78.9 avg), and +b or yellowness (9.0 avg). Color grades of mostly 21 and 31 were observed at this location. These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection.

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

Materials and Methods:

Varieties: All-Tex Apex B2RF, Croplan Genetics 3220B2RF, Deltapine 1032B2RF, Dyna-Gro 2570B2RF, FiberMax 1740B2F, NexGen 3348B2RF, PhytoGen 367WRF, and Stoneville 4288B2F

Experimental design: Randomized complete block with 3 replications

Seeding rate: 3.5 seeds/row-ft in 40-inch row spacing (John Deere 1700 vacuum planter)

Plot size: 8 rows by length of field (~1626 ft long)

Planting date: 21-May

Weed management: A burndown application of glyphosate at 40 oz/acre was applied prior to planting on 26-April. Glyphosate was applied during the growing season at 40 oz/acre with 1 pt/acre Barron (non-ionic surfactant) and 2 qts/acre Duke (ammonium sulfate) on 27-May, 6-June, and 8-Aug. One cultivation was conducted on 16-June for weed escapes and volunteer Roundup Ready Flex cotton.

Irrigation: The field had a 4 gpm/acre irrigation capacity. This provided for 0.21 acre-inches/day. From 15-May to 15-September (shut down for 2 weeks in July due to rainfall), a total of approximately 22.9 inches of irrigation were applied.

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

April:	4.29	July:	8.47
May:	1.17	August:	0.32
June:	1.85	September:	0.51

Total rainfall: 16.71

Insecticides: No insecticides were applied by the producer at this site. This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.

Fertilizer management: 60 lbs N/acre was applied using composted manure in February, and 60 lbs N/acre using 28-0-0 was applied via fertigation during the growing season.

Harvest aids: Harvest aids included 1 qt/acre of ethephon and 1 oz/acre Aim applied by producer at this location on 4-October followed by 24 oz/acre Gramoxone Inteon with 0.25% v/v non-ionic surfactant on 24-November.

Harvest: Plots were harvested on 28-October using a commercial John Deere 7460 with field cleaner. Harvested material was transferred to a weigh wagon with integral electronic scales to record individual

plot weights. Plot weights were subsequently converted to lb/acre basis.

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

Fiber analysis: Lint samples were submitted to the Texas Tech University - Fiber and Biopolymer Research Institute for HVI analysis, and USDA Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.

Ginning cost and seed values: Ginning costs were based on $3.00 per cwt. of bur cotton and seed value/acre was based on $175/ton. Ginning costs did not include checkoff.

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

Results and Discussion:

Significant differences were observed among varieties for plant population on 11-June (Table 1). Plant stands averaged 36,896 plants/acre and ranged from a high of 41,500 plants/acre for Dyna-Gro 2570B2RF to a low of 30,500 for Deltapine 1032B2RF. Nodes above white flower (NAWF) counts were taken on a weekly basis beginning 23-July to 12-August. Significant differences were observed among varieties for 6-August (alpha=0.10) and 12-August observation dates only. On 23-July, NAWF values averaged 6.9. The test average on 30-July was 5.0. By 6-August all varieties had reached cutout (NAWF=5) and values ranged from a high of 4.9 for Dyna-Gro 2570B2RF to a low of 4.2 for PhytoGen 367WRF. On 12-August, values ranged from a high of 4.9 (FiberMax 1740B2F) to a low of 3.7 (PhytoGen 367WRF). Just prior to harvest on 28-October, a visual observation of storm resistance was recorded for each variety in all three replications. The ratings were on a scale of 1-9 where 1 represents the least storm resistance. Significant differences were observed among varieties and values ranged from a high of 7.3 (NexGen 3348B2RF) to a low of 3.5 (Stoneville 4288B2F).

Significant differences were observed for all yield and economic parameters measured with exception of lint loan value (Table 2). Lint turnout ranged from a low of 30.2% to a high of 34.9% for Croplan Genetics 3220B2RF and Deltapine 1032B2RF, respectively. Bur cotton yields averaged 3723 lb/acre with a high of 3978 lb/acre for Deltapine 1032B2RF, to a low of 3469 lb/acre for Croplan Genetics 3220B2RF. Lint yields varied with a low of 1047 lb/acre (Croplan Genetics 3220B2RF) and a high of 1389 lb/acre (Deltapine 1032B2RF). Lint loan values averaged $0.5622/lb and were not significantly different. After adding lint and seed value, total value/acre for varieties ranged from a low of $762.69 for Croplan Genetics 3220B2RF to a high of $960.99 for Deltapine 1032B2RF.

When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of $776.98 (Deltapine 1032B2RF) to a low of $597.33 (Croplan Genetics 3220B2RF), a difference of $179.65. Fiber quality data indicated significant differences among varieties for some parameters measured (Table 3.)

No significant differences were observed among varieties for micronaire (3.8 average), staple (36.1 32nd inch average) or uniformity (80.3% average). Strength values averaged 29.2 g/tex with a high of 30.5 g/tex for NexGen 3348B2RF and a low of 27.6 g/tex for All-Tex Apex B2RF. Elongation averaged 8.3% and ranged from a high of 9.1% for Dyna-Gro 2570B2RF to a low of 7.6 for NexGen 3348B2RF. Significant differences were observed among varieties for leaf (1.7 avg), Rd or reflectance (78.9 avg), and +b or yellowness (9.0 avg). Color grades of mostly 21 and 31 were observed at this location.

These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection. It should be noted that inclement weather was encountered at this location prior to harvest; however, minimal pre-harvest losses were observed for less storm resistant varieties. Additional multi-site and multi-year applied research is needed to evaluate varieties and technology across a series of environments.

Acknowledgments:

Appreciation is expressed to David Crump for the use of his land, equipment and labor for this demonstration. Further assistance with this project was provided by Dr. Jane Dever - Texas AgriLife Research and Extension Center, Lubbock, and Dr. Eric Hequet - Associate Director, Fiber and Biopolymer Research Institute, Texas Tech University. Furthermore, we greatly appreciate the Texas Department of Agriculture - Food and Fiber Research for funding of HVI testing.

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Table 1. In-season plant measurement results from the subsurface drip irrigated RACE variety demonstration, David Crump Farm, Ralls, TX, 2010.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of				Storm resistance
	11-Jun		23-Jul	30-Jul	6-Aug	12-Aug	28-Oct
	plants/row-ft	plants/acre					rating (1-9)
All-Tex Apex B2RF	2.9	38,500	7.0	5.0	4.7	4.3	5.2
Croplan Genetics 3220B2RF	2.7	35,833	6.8	5.1	4.7	4.0	4.3
Dyna-Gro 2570B2RF	3.2	41,500	7.0	5.1	4.9	4.4	5.0
Deltapine 1032B2RF	2.3	30,500	6.9	5.0	4.8	4.6	4.8
FiberMax 1740B2F	3.1	40,667	6.9	5.0	4.8	4.9	5.7
NexGen 3348B2RF	2.7	34,833	7.1	5.0	4.4	3.9	7.3
PhytoGen 367WRF	3.1	40,167	6.7	4.9	4.2	3.7	4.5
Stoneville 4288B2F	2.5	33,167	7.0	4.9	4.5	3.9	3.5
Test average	2.8	36,896	6.9	5.0	4.6	4.2	5.0
CV, %	10.6	10.9	3.4	3.5	6.2	9.3	7.1
OSL	0.0362	0.0433	0.7318	0.5418	0.0995†	0.0231	<0.0001
LSD	0.5	7,039	NS	NS	0.4	0.6869	0.6

For NAWF, numbers represent an average of 10 plants per variety per rep (30 plants per variety).
For Storm resistance, ratings based on a scale of 1-9 where 9 represents maximum storm resistance.
CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, †indicates significance at the 0.10 level, NS - not significant.

Table 2. Harvest results from the subsurface drip irrigated RACE variety demonstration, David Crump Farm, Ralls, TX, 2010.

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 1032B2RF	34.9	48.9	3978	1389	1945	0.5692	790.80	170.19	960.99	119.33	64.67	776.98 a
Dyna-Gro 2570B2RF	34.7	53.2	3968	1377	2113	0.5563	765.89	184.87	950.75	119.05	62.28	769.43 a
PhytoGen 367WRF	32.4	49.6	3814	1235	1891	0.5693	702.86	165.48	868.35	114.43	62.47	691.45 b
FiberMax 1740B2F	33.1	52.0	3670	1215	1907	0.5668	688.51	166.86	855.36	110.11	63.68	681.58 bc
All-Tex Apex B2RF	31.2	52.5	3619	1128	1902	0.5688	641.74	166.38	808.12	108.58	57.89	641.66 cd
Stoneville 4288B2F	31.4	54.7	3625	1137	1981	0.5565	632.69	173.37	806.06	108.76	63.68	633.63 d
NexGen 3348B2RF	30.8	54.9	3641	1120	2000	0.5395	604.00	175.01	779.01	109.22	56.93	612.86 d
Croplan Genetics 3220B2RF	30.2	54.3	3469	1047	1885	0.5710	597.80	164.89	762.69	104.08	61.29	597.33 d
Test average	32.3	52.5	3723	1206	1953	0.5622	678.04	170.88	848.92	111.69	61.61	675.61
CV, %	4.0	1.9	3.7	3.6	3.7	1.9	3.7	3.7	3.7	3.7	--	4.0
OSL	0.0027	<0.0001	0.0046	<0.0001	0.0234	0.0318	<0.0001	0.0234	<0.0001	0.0046	--	<0.0001
LSD	2.3	1.8	241	77	126	0.0185	43.40	11.07	54.41	7.24	--	47.18

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.
$175/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 subsurface drip irrigated RACE variety demonstration, David Crump Farm, Ralls, TX, 2010.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
All-Tex Apex B2RF	3.8	36.5	80.3	27.6	8.2	1.7	78.7	9.3	2.0	1.0
Croplan Genetics 3220B2RF	3.6	36.5	80.5	30.3	8.5	1.0	79.4	9.1	2.0	1.0
Dyna-Gro 2570B2RF	3.8	35.7	79.9	29.4	9.1	1.7	78.6	8.9	2.3	1.0
Deltapine 1032B2RF	4.0	36.6	80.3	29.0	7.8	1.0	80.0	8.9	2.0	1.0
FiberMax 1740B2F	4.0	35.8	80.3	29.1	7.8	1.3	80.4	8.8	1.7	1.0
NexGen 3348B2RF	3.4	36.4	81.1	30.5	7.6	3.3	78.2	8.5	3.0	1.0
PhytoGen 367WRF	3.9	36.4	80.8	30.0	8.7	2.0	77.5	9.4	2.0	1.0
Stoneville 4288B2F	4.0	35.1	79.5	28.1	8.6	1.7	78.5	9.0	2.3	1.0
Test average	3.8	36.1	80.3	29.2	8.3	1.7	78.9	9.0	2.2	1.0
CV, %	6.6	1.8	0.9	2.4	3.2	42.1	0.8	1.8	--	--
OSL	0.1182	0.1375	0.2263	0.0016	<0.0001	0.0302	0.0008	0.0004	--	--
LSD	NS	NS	NS	1.2	0.5	1.3	1.1	0.3	--	--

CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, NS - not significant.

AgriLIFE EXTENSION
Texas A&M System

Picker Harvested Replicated LEPA Irrigated RACE Variety Demonstration, AG-CARES, Lamesa, TX - 2010

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

Jeff Wyatt, Tommy Doederlein, Randy Boman, Mark Kelley and Chris Ashbrook
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Dawson County

Summary: Significant differences were noted for all yield and economic parameters, with the exception of lint loan value. Picker harvested lint turnout averaged 34.6%. Lint yields varied from a low of 817 lb/acre (NexGen 4010B2RF) to a high of 1092 lb/acre (Dyna-Gro 2570B2RF). Lint loan values ranged from a low of $0.5355/lb to a high of $0.5632/lb for Phyto-Gen 367WRF and Croplan Genetics 3006B2RF, respectively. When subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of $579.19 (Dyna-Gro 2570B2RF) to a low of $424.47 (FiberMax 1740B2F), a difference of $154.72. Significant differences were observed for all fiber quality parameters at this location. Micronaire values ranged from a low of 3.6 for PhytoGen 367WRF to a high of 4.4 for Deltapine 1032B2RF. Staple averaged 34.7 across all varieties and uniformity averaged 80.2%. Strength ranged from a low of 27.7 g/tex for All-Tex Apex B2RF to a high of 31.3 g/tex for NexGen 4010B2RF. Leaf grades were mostly 1 and 2 and color grades were mostly 31. It should be noted that no inclement weather was encountered at this location prior to picker harvest.These data indicate that substantial differences can be obtained in terms of net value/acre due to variety selection.

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

Materials and Methods:

Varieties:	All-Tex Apex B2RF, Croplan Genetics 3006B2RF, Deltapine 1032B2RF, Dyna-Gro 2570B2RF, FiberMax 1740B2F, NexGen 4010B2RF, PhytoGen 367WRF, and Stoneville 5458B2RF
Experimental design:	Randomized complete block with 3 replications
Seeding rate:	4.1 seeds/row-ft in solid planted 40-inch row spacing (John Deere MaxEmerge XP vacuum planter)
Plot size:	4 rows by variable length due to circular pivot rows (253-872 ft long)
Planting date:	7-May
Weed management:	Trifluralin was applied preplant incorporated at 1.3 qt/acre across all varieties. Roundup PowerMax was applied over-the-top at 32 oz/acre on 9-June, and at 28 oz/acre on 13-July with AMS. Plots were rod-weeded on 13-April. On 3-June, plots were cultivated with sweeps for volunteer cotton control.
Irrigation	7" inches of irrigation were applied via LEPA irrigation during the growing season.

Rainfall:

April:	3.02"	June:	2.43"	August:	0.15"
May:	0.87"	July:	4.29"	September:	4.66"
		Total rainfall:	15.42"		

Total irrigation and rainfall:	22.42"
Insecticides:	This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.
Fertilizer:	116 lbs/acre 10-34-0 were band applied preplant, and 30 lbs N/acre using UAN 32-0-0 were applied via fertigation on 26-May, 24-June, 2-July, and 25-July.
Harvest aids:	Harvest aids included 21 oz/acre Prep + 2.0 oz/acre ET with 1% v/v crop oil on 29-September followed by 24 oz/acre Gramoxone Inteon with 0.25% v/v NIS on 9-October.
Harvest:	Plots were harvested on 12-October using a commercial John Deere 9996 Picker. Harvested material was transferred into a weigh wagon with integral electronic scales to determine individual plot weights. Plot yields were adjusted to lb/acre.
Gin turnout:	Grab samples were taken by plot and ginned at the Texas AgriLife Research and Extension Center at Lubbock to determine gin turnouts.

Fiber analysis: Lint samples were submitted to the Fiber and Biopolymer Research Institute at Texas Tech University for HVI analysis, and USDA Commodity Credit Corporation (CCC) Loan values were determined for each variety by plot.

Ginning cost and seed values: Ginning costs were based on $3.00 per cwt. of bur cotton and seed value/acre was based on $175/ton. Ginning costs did not include checkoff.

Seed and technology fees: Seed and technology costs were calculated using the appropriate seeding rate (4.1 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://www.plainscotton.org/Seed/PCGseed10.xls .

Results and Discussion:

Agronomic data including plant population, nodes above white flower (NAWF), and boll storm resistance are included in Table 1. Stand counts taken on 10-June indicated significant differences among varieties with a test average of 38,438 plants/acre. Stand counts ranged from a high of 43,667 plants/acre for Croplan Genetics 3006B2RF to a low of 29,167 for Deltapine 1032B2RF. Weekly NAWF counts were taken beginning 14-July to 11-August. Averages were 9.2 (14-July), 7.7 (21-July), 6.0 (28-July), 4.7 (4-August), and 3.0 (11-August). No significant differences among varieties were observed for any of the count dates. On 4-August, all but one variety (Dyna-Gro 2570B2RF) had reached cutout (NAWF=5 or less). By the final observation date, 11-August, all varieties had reached cutout. Just prior to harvest on 12-October, a visual observation of storm resistance was recorded for each variety in all three replications. The ratings were on a scale of 1-9 where 1 represents the least storm resistance. Significant differences were observed among varieties and values ranged from a high of 6.3 (NexGen 4010B2RF) to a low of 3.0 (PhytoGen 367WRF).

Significant differences were noted for all yield and economic parameters, with the exception of lint loan value (Table 2). Picker harvested lint turnout ranged from 31.5% for Croplan Genetics 3006B2RF to 37.7% for Deltapine 1032B2RF. Lint yields varied from a low of 817 lb/acre (NexGen 4010B2RF) to a high of 1092 lb/acre (Dyna-Gro 2570B2RF). Lint loan values numerically ranged from a low of $0.5355/lb to a high of $0.5632/lb for Phyto-Gen 367WRF and Croplan Genetics 3006B2RF, respectively. After adding lint and seed value, total value/acre ranged from a low of $470.21 for FiberMax 1740B2F, to a high of $743.68 for Dyna-Gro 2570B2RF. When subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of $579.19 (Dyna-Gro 2570B2RF) to a low of $424.47 (FiberMax 1740B2F), a difference of $154.72.

Significant differences were observed for all fiber quality parameters at this location (Table 3). Micronaire values ranged from a low of 3.6 for PhytoGen 367WRF to a high of 4.4 for Deltapine 1032B2RF. Staple averaged 34.7 across all varieties with a low of 34.0 (Dyna-Gro 2570B2RF and FiberMax 1740B2F) and a high of 35.8 (Croplan Genetics 3006B2RF). Uniformity ranged from a low of

78.9 (Stoneville 5458B2RF) to a high of 81.7 (Croplan Genetics 3006B2RF), and strength ranged from a low of 27.7 g/tex for All-Tex Apex B2RF to a high of 31.3 g/tex for NexGen 4010B2RF. Significant differences were observed among varieties for percent elongation (8.4 avg), Rd or reflectance (77.5 avg), +b or yellowness (8.3 avg), and leaf (1.7 avg). It should be noted that no inclement weather was encountered at this location prior to picker harvest.

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

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Table 1. In-season plant measurement results from the picker harvested LEPA irrigated RACE variety demonstration, AG-CARES Farm, Lamesa, TX, 2010.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of					Storm resistance
	10-Jun		14-Jul	21-Jul	28-Jul	4-Aug	11-Aug	12-Oct
	plants/row-ft	plants/acre						rating (1-9)
All-Tex Apex B2RF	2.7	35,833	8.9	7.5	5.9	4.6	2.8	4.3
Croplan Genetics 3006B2RF	3.3	43,667	9.0	7.4	6.0	4.7	2.6	4.0
Dyna-Gro 2570B2RF	3.1	40,833	9.7	8.1	6.4	5.1	3.1	3.7
Deltapine 1032B2RF	2.2	29,167	9.1	7.7	6.0	4.6	3.3	4.0
FiberMax 1740B2F	2.9	38,500	9.3	7.9	6.0	4.4	3.2	4.7
NexGen 4010B2RF	2.7	35,000	9.1	7.7	5.9	4.8	2.6	6.3
PhytoGen 367WRF	3.2	41,667	9.5	7.8	6.0	4.6	3.0	3.0
Stoneville 5458B2RF	3.3	42,833	9.0	7.7	6.1	4.9	3.1	4.3
Test average	2.9	38,438	9.2	7.7	6.0	4.7	3.0	4.3
CV, %	10.4	10.4	4.1	3.8	6.3	7.8	15.5	10.8
OSL	0.0077	0.0080	0.2213	0.1537	0.7609	0.4097	0.4592	<0.0001
LSD	0.5	6,978	NS	NS	NS	NS	NS	0.8

For NAWF, numbers represent an average of 10 plants per variety per rep (30 plants per variety).
For Storm resistance, ratings based on a scale of 1-9 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 picker harvested LEPA irrigated RACE variety demonstration, AG-CARES Farm, Lamesa, TX, 2010.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Seed/technology cost	Net value	
	-------- % --------		---------- lb/acre ----------			$/lb	---------- $/acre ----------						
Dyna-Gro 2570B2RF	36.2	58.3	3019	1092	1760	0.5402	589.65	154.02	743.68	90.58	73.91	579.19	a
Stoneville 5458B2RF	34.2	58.6	2859	979	1677	0.5448	533.18	146.71	679.89	85.78	75.58	518.53	ab
PhytoGen 367WRF	35.9	57.9	2779	998	1610	0.5355	534.20	140.89	675.09	83.37	74.14	517.57	ab
Croplan Genetics 3006B2RF	31.5	61.5	2778	875	1707	0.5632	492.62	149.39	642.01	83.34	72.74	485.93	bc
Deltapine 1032B2RF	37.7	54.8	2442	920	1339	0.5517	507.39	117.17	624.56	73.26	76.76	474.54	bc
All-Tex Apex B2RF	33.6	58.8	2610	878	1535	0.5520	484.58	134.35	618.93	78.30	68.70	471.93	bc
NexGen 4010B2RF	32.3	60.2	2526	817	1521	0.5522	451.00	133.05	584.05	75.77	67.57	440.71	bc
FiberMax 1740B2F	35.6	59.3	2339	833	1386	0.5388	448.95	121.26	570.21	70.17	75.58	424.47	c
Test average	34.6	58.7	2669	924	1567	0.5473	505.20	137.11	642.30	80.07	73.12	489.11	
CV, %	1.9	2.0	8.1	8.2	7.9	3.0	8.2	7.9	8.2	8.1	--	9.4	
OSL	<0.0001	0.0005	0.0243	0.0078	0.0090	0.4985	0.0154	0.0090	0.0226	0.0242	--	0.0239	
LSD	1.2	2.1	377	133	218	NS	72.70	19.08	91.70	11.29	--	80.42	

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.
$175/ton for seed.
Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Table 3. HVI fiber property results from the picker harvested LEPA irrigated RACE variety demonstration, AG-CARES Farm, Lamesa, TX, 2010.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
All-Tex Apex B2RF	4.0	34.8	79.8	27.7	8.4	1.0	77.9	8.2	3.0	1.0
Croplan Genetics 3006B2RF	4.2	35.8	81.7	30.5	8.1	2.7	77.3	8.0	3.0	1.0
Dyna-Gro 2570B2RF	4.2	34.0	80.5	29.6	9.3	1.0	77.7	8.5	3.0	1.0
Deltapine 1032B2RF	4.4	34.9	81.3	29.4	9.3	1.0	79.0	8.4	3.0	1.0
FiberMax 1740B2F	4.0	34.0	79.3	28.3	7.8	1.3	77.9	7.9	3.0	1.0
NexGen 4010B2RF	4.0	34.9	80.2	31.3	8.0	2.3	77.2	8.4	3.0	1.0
PhytoGen 367WRF	3.6	34.3	79.5	29.4	8.5	1.7	76.5	8.4	3.0	1.0
Stoneville 5458B2RF	4.1	34.5	78.9	30.1	7.8	2.7	76.4	8.7	3.0	1.0
Test average	4.1	34.7	80.2	29.5	8.4	1.7	77.5	8.3	3.0	1.0
CV, %	1.6	1.8	1.2	2.9	3.0	35.8	0.7	1.4	--	--
OSL	<0.0001	0.0498	0.0275	0.0037	<0.0001	0.0087	0.0009	<0.0001	--	--
LSD	0.1	1.1	1.6	1.5	0.4	1.1	1.0	0.2	--	--

CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level.

AgriLIFE EXTENSION
Texas A&M System

Replicated LESA Irrigated RACE Variety Demonstration, Halfway, TX - 2010

Cooperator: Texas AgriLife Research Center - Halfway

Scott Adair, Randy Boman, Mark Kelley and Chris Ashbrook
CEA-ANR Hale County, Extension Agronomist - Cotton,
Extension Program Specialist II - Cotton,
and Extension Assistant - Cotton

Hale County

Summary: Significant differences were noted for all yield and economic parameters. Lint turnout averaged 32.2%. Lint yields varied from a low of 1159 lb/acre (Croplan Genetics 3006B2RF) to a high of 1333 lb/acre (Dyna-Gro 2570B2RF). Lint loan values ranged from a low of $0.5315/lb to a high of $0.5692/lb for Phyto-Gen 367WRF and Stoneville 4288B2F, respectively. When subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of $748.30 (Dyna-Gro 2570B2RF) to a low of $624.37 (All-Tex Apex B2RF), a difference of $123.94. Significant differences were observed for all fiber quality parameters at this location. Micronaire values ranged from a low of 3.2 for All-Tex Apex B2RF and PhytoGen 367WRF to a high of 3.7 for Stoneville 4288B2F. Staple averaged 36.7 across all varieties with a high of 37.9 for Croplan Genetics 3006B2RF and a low of 35.8 for Deltapine 0912B2RF. Uniformity ranged from a high of 82.5% for NexGen 3348B2RF to a low of 79.7% for All-Tex Apex B2RF with a test average of 81.2%. Strength ranged from a low of 27.3 g/tex for All-Tex Apex B2RF to a high of 31.7 g/tex for FiberMax 9170B2F. Leaf grades were mostly 1 and 2 and color grades were mostly 21. It should be noted that no inclement weather was encountered at this location prior to harvest. These data indicate that substantial differences can be obtained in terms of net value/acre due to variety selection.

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

Materials and Methods:

Varieties:	All-Tex Apex B2RF, Croplan Genetics 3006B2RF, Deltapine 0912B2RF, Dyna-Gro 2570B2RF, FiberMax 9170B2F, NexGen 3348B2RF, PhytoGen 367WRF, and Stoneville 4288B2F
Experimental design:	Randomized complete block with three (3) replications.
Seeding rate:	4.0 seed/row-ft in 40 inch row spacings. (John Deere 1700 Vacuum planter)
Plot size:	4 rows by variable length (837 to 1340 feet)
Planting date:	13-May, replanted 2-June due to poor emergence
Weed management:	Prowl H20 was applied preplant incorporated at 3 pt/acre across all varieties. Caparol was applied over-the-top soon after planting at 3 pt/acre. On 6-July Fusion was applied to control volunteer Roundup Ready Flex corn. Roundup PowerMax was applied over-the-top at 32 oz/acre with AMS on 11-July and 19-July, and at 28 oz/acre on 3-August with AMS. On 23-June, plots were cultivated with sweeps and dikes were installed.
Irrigation:	7" of irrigation were applied via LESA irrigation during the growing season.
Rainfall:	Based on the nearest Texas Tech University- West Texas Mesonet station at Plainview, Rainfall amounts were:

April:	4.09	August:	1.51
May:	1.79	September:	0.74
June:	1.58	October:	1.42
July:	7.46		

Total rainfall: 18.59

Insecticides:	Temik was applied infurrow at planting at a rate of 3.0 lb/acre. This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.
Fertilizer management:	Applied 80 lbs N/acre and 20 lbs P_2O_5/acre via knife rig on 29-June.
Plant growth regulators:	On 19-July, applied 8 oz/acre of mepiquat chloride followed by 12 oz/acre on 3-Aug.
Harvest aids:	Harvest aids included 32 oz/acre of Prep and 1 oz/acre Aim 2EC applied on 19-October followed by 24 oz/acre Gramoxone Inteon with 0.25% v/v non-ionic surfactant on 28-October.

Harvest: Plots were harvested on 10-November using a commercial John Deere 7445 with field cleaner. Harvested material was transferred to a weigh wagon with integral electronic scales to record individual plot weights. Plot weights were subsequently converted to lb/acre basis.

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

Fiber analysis: Lint samples were submitted to the Texas Tech University – Fiber and Biopolymer Research Institute for HVI analysis, and USDA Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.

Ginning cost and seed values: Ginning cost were based on $3.00 per cwt. of burr cotton and seed value/acre was based on $175/ton. Ginning cost did not include checkoff.

Seed and Technology fees: Seed and technology costs were calculated using the appropriate seeding rate (4.0 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://www.plainscotton.org/Seed/PCGseed10.xls .

Results and Discussion:

Agronomic data including plant population, nodes above white flower (NAWF), and boll storm resistance are included in Table 1. Stand counts taken on 10-June indicated significant differences among varieties with a test average of 38,438 plants/acre. Stand counts ranged from a high of 43,667 plants/acre for Croplan Genetics 3006B2RF to a low of 29,167 for Deltapine 1032B2RF. Weekly NAWF counts were taken beginning 14-July to 11-August. Averages were 9.2 (14-July), 7.7 (21-July), 6.0 (28-July), 4.7 (4-August), and 3.0 (11-August). No significant differences among varieties were observed for any of the count dates. On 4-August, all but one variety (Dyna-Gro 2570B2RF) had reached cutout (NAWF=5 or less). By the final observation date, 11-August, all varieties had reached cutout. Just prior to harvest on 12-October, a visual observation of storm resistance was recorded for each variety in all three replications. The ratings were on a scale of 1-9 where 1 represents the least storm resistance. Significant differences were observed among varieties and values ranged from a high of 6.3 (NexGen 4010B2RF) to a low of 3.0 (PhytoGen 367WRF).

Significant differences were noted for all yield and economic parameters (Table 2). Lint turnout averaged 32.2% with a high of 34.7% and low of 30.2% for Dyna-Gro 2570B2RF and NexGen 3348B2RF, respectively. Bur cotton yield averaged 3897 lb/acre and ranged from a high of 4149 lb/acre for NexGen 3348B2RF to a

low of 3680 lb/acre for All-Tex Apex B2RF. Lint yields varied from a low of 1159 lb/acre (Croplan Genetics 3006B2RF) to a high of 1333 lb/acre (Dyna-Gro 2570B2RF). Lint loan values ranged from a low of $0.5315/lb to a high of $0.5692/lb for Phyto-Gen 367WRF and Stoneville 4288B2F, respectively. When adding lint and seed value, total value ranged from a high of $934.67/acre for Dyna-Gro 2570B2RF to a low of $800.91/acre for All-Tex Apex B2RF. After subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of $748.30 (Dyna-Gro 2570B2RF) to a low of $624.37 (All-Tex Apex B2RF), a difference of $123.94.

Significant differences were observed among varieties for all fiber quality parameters at this location (Table 3). Micronaire values ranged from a low of 3.2 for All-Tex Apex B2RF and PhytoGen 367WRF to a high of 3.7 for Stoneville 4288B2F. Staple averaged 36.7 across all varieties with a high of 37.9 for Croplan Genetics 3006B2RF and a low of 35.8 for Deltapine 0912B2RF. Uniformity ranged from a high of 82.5% for NexGen 3348B2RF to a low of 79.7% for All-Tex Apex B2RF with a test average of 81.2%. Strength ranged from a low of 27.3 g/tex for All-Tex Apex B2RF to a high of 31.7 g/tex for FiberMax 9170B2F. Elongation averaged 8.7% with a high of 9.1% for All-Tex Apex B2RF and a low of 7.4% for FiberMax 9170B2F. Leaf grades were mostly 1 and 2 at this location. Color grade components of Rd (reflectance) and +b (yellowness) averaged 81.5 and 7.9, respectively and resulted in color grades of mostly 21.

It should be noted that no inclement weather was encountered at this location prior to harvest. These data indicate that substantial differences can be obtained in terms of net value/acre due to variety selection. Additional multi-site and multi-year applied research is needed to evaluate varieties across a series of environments.

Acknowledgments:

Appreciation is expressed to Andy Cranmer - Farm Research Service Manager and Jim Bordovsky - Research Scientist and Agricultural Engineer, Texas AgriLife Research Center, Halfway/Helms, for their assistance with this project. Further assistance with this project was provided by Dr. Jane Dever - Texas AgriLife Research and Extension Center, Lubbock, and Dr. Eric Hequet - Associate Director, Fiber and Biopolymer Research Institute, Texas Tech University. Furthermore, we greatly appreciate the Texas Department of Agriculture - Food and Fiber Research for funding of HVI testing.

Disclaimer Clause:

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Table 1. In-season plant measurement results from the LEPA irrigated RACE variety demonstration, Texas AgriLife Research - Halfway Farm, Halfway, TX, 2010.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of				Storm resistance
	14-Jun		2-Aug	9-Aug	16-Aug	24-Aug	10-Nov
	plants/row-ft	plants/acre					rating (1-9)
All-Tex Apex B2RF	2.8	37,167	8.2	5.5	4.5	3.5	4.7
Croplan Genetics 3006B2RF	2.8	36,000	8.4	6.0	4.3	2.6	3.8
Dyna-Gro 2570B2RF	2.8	36,833	8.5	6.6	4.8	3.9	4.2
Deltapine 0912B2RF	2.6	34,500	8.1	6.1	4.5	3.5	3.7
FiberMax 9170B2F	2.5	33,000	7.8	5.8	3.5	2.9	7.2
NexGen 3348B2RF	2.5	33,167	7.7	6.1	3.8	2.3	7.7
PhytoGen 367WRF	2.9	37,667	8.2	6.5	5.1	4.2	3.8
Stoneville 4288B2F	2.3	30,333	8.0	5.7	4.2	3.0	4.8
Test average	2.7	34,833	8.1	6.0	4.3	3.2	5.0
CV, %	7.0	6.9	2.6	7.9	12.0	15.4	8.1
OSL	0.0430	0.0258	0.0034	0.1932	0.0390	0.0054	<0.0001
LSD	0.3	4,217	0.4	NS	0.9	0.9	0.7

For NAWF, numbers represent an average of 10 plants per variety per rep (30 plants per variety).
For Storm resistance, ratings based on a scale of 1-9 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 LEPA irrigated RACE variety demonstration, Texas AgriLife Research, Halfway Farm, Halfway, TX, 2010.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Seed/technology cost	Net value	
	-------- % --------		---------- lb/acre ----------			$/lb	---------- $/acre ----------						
Dyna-Gro 2570B2RF	34.7	54.5	3840	1333	2093	0.5637	751.52	183.15	934.67	115.20	71.17	748.30	a
FiberMax 9170B2F	33.2	51.9	3993	1327	2071	0.5497	729.65	181.23	910.88	119.80	72.78	718.30	a
Deltapine 0912B2RF	33.6	52.7	3849	1293	2028	0.5637	728.69	177.47	906.16	115.46	73.91	716.79	a
Stoneville 4288B2F	32.0	54.8	3919	1253	2148	0.5692	713.30	187.92	901.22	117.57	72.78	710.87	ab
NexGen 3348B2RF	30.2	54.4	4149	1253	2255	0.5547	694.93	197.30	892.22	124.46	65.07	702.70	ab
PhytoGen 367WRF	31.7	51.0	3983	1264	2030	0.5315	671.80	177.65	849.45	119.48	71.40	658.57	bc
Croplan Genetics 3006B2RF	30.8	55.5	3766	1159	2091	0.5557	644.24	182.93	827.17	112.99	70.04	644.14	c
All-Tex Apex B2RF	31.7	55.2	3680	1166	2032	0.5342	623.09	177.82	800.91	110.39	66.16	624.37	c
Test average	32.2	53.7	3897	1256	2094	0.5528	694.65	183.18	877.83	116.92	70.41	690.50	
CV, %	1.6	1.5	4.0	4.0	4.1	2.2	4.0	4.1	4.0	4.0	--	4.4	
OSL	<0.0001	<0.0001	0.0609†	0.0046	0.0749†	0.0175	0.0005	0.0747†	0.0040	0.061†	--	0.0022	
LSD	0.9	1.4	226	87	123	0.0217	48.24	10.76	61.33	6.79	--	53.07	

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 signficance at the 0.10 level.
Note: some columns may not add up due to rounding error.

Assumes:
$3.00/cwt ginning cost.
$175/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 LEPA irrigated RACE variety demonstration, Texas AgriLife Research, Halfway Farm, Halfway, TX, 2010.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
All-Tex Apex B2RF	3.2	36.2	79.7	27.3	9.1	1.3	81.9	7.9	2.0	1.0
Croplan Genetics 3006B2RF	3.5	37.9	82.2	30.3	8.9	2.7	81.5	7.2	2.7	1.0
Dyna-Gro 2570B2RF	3.6	35.9	80.9	29.8	9.6	1.0	81.9	8.4	1.3	1.0
Deltapine 0912B2RF	3.6	35.8	81.2	30.9	8.9	2.3	81.9	8.0	2.0	1.0
FiberMax 9170B2F	3.3	37.4	81.5	31.7	7.4	1.0	83.8	7.1	2.0	1.0
NexGen 3348B2RF	3.4	37.1	82.5	31.4	8.2	2.7	80.1	7.8	2.7	1.0
PhytoGen 367WRF	3.2	36.9	80.6	29.9	8.9	1.3	80.8	8.5	2.0	1.0
Stoneville 4288B2F	3.7	36.6	80.6	30.3	8.7	1.7	80.3	8.2	2.3	1.0
Test average	3.4	36.7	81.2	30.2	8.7	1.8	81.5	7.9	2.1	1.0
CV, %	4.3	1.2	0.8	1.8	2.2	40.4	0.6	2.2	--	--
OSL	0.0090	0.0005	0.0034	<0.0001	<0.0001	0.0381	<0.0001	<0.0001	--	--
LSD	0.3	0.8	1.2	1.0	0.3	1.2	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.

AgriLIFE EXTENSION
Texas A&M System

Replicated Sub-Surface Drip Irrigated RACE Variety Demonstration, Ropesville, TX - 2010

Cooperator: Mike Henson

Chris Edens, Kerry Siders, Randy Boman, Mark Kelley and Chris Ashbrook
CEA-ANR Hockley County, EA-IPM Cochran/Hockley Counties, Extension Agronomist - Cotton, Extension Program Specialist II - Cotton, and Extension Assistant - Cotton

Hockley County

Summary: Significant differences were observed for all yield and economic parameters measured. Lint turnout from grab samples averaged 32.3%. Lint yields varied with a low of 1528 lb/acre (All-Tex Apex B2RF) and a high of 1852 lb/acre (Deltapine 1032B2RF). Lint loan values ranged from a low of $0.5657/lb (Stoneville 4288B2F) to a high of $0.5745/lb (FiberMax 9170B2F). When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of $1062.84 (Deltapine 1032B2RF) to a low of $896.39 (All-Tex Apex B2RF), a difference of $166.40. Significant differences were observed among varieties for all HVI parameters measured with exception of leaf. Micronaire ranged from a low of 3.9 for FiberMax 9170B2F to a high of 4.6 for Stoneville 4288B2F. Staple averaged 37.0 across all varieties and percent uniformity averaged 81.6%. Strength values averaged 30.3 g/tex with a high of 31.9 g/tex for FiberMax 9170B2F and NexGen 4010B2RF, and a low of 28.4 g/tex for All-Tex Apex B2RF. Elongation averaged 8.6 with a high of 9.6 for Dyna-Gro 2570B2RF and a low of 7.0 FiberMax 9170B2F. Leaf grades were mostly 1 and 2 at this location. Color grades of mostly 21 were observed across varieties. These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection.

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

Materials and Methods:

Varieties: All-Tex Apex B2RF, Croplan Genetics 3220B2RF, Deltapine 1032B2RF, Dyna-Gro 2570B2RF, FiberMax 9170B2F, NexGen 4010B2RF, PhytoGen 367WRF, and Stoneville 4288B2F

Experimental design:	Randomized complete block with three (3) replications.
Seeding rate:	3.4 seed/row-ft in 40 inch row spacings. (John Deere XP Vacuum planter)
Plot size:	8 rows by length of field (1285 ft)
Planting date:	18-May
Weed management:	Trifuralin was applied preplant incorporated at 1.5 pt/acre across all varieties. Roundup PowerMax was applied over-the-top at 32 oz/acre on 9-July, and at 40 oz/acre on 18-August with AMS.
Irrigation:	A total of 18.2" of irrigation were applied via SDI during the growing season. The system supplied 3.5 gal/acre/min and operated 14 weeks.
Rainfall:	Based on the nearest Texas Tech University-West Texas Mesonet station at Levelland, rainfall amounts were: April: 1.74 July: 4.45 May: 1.66 August: 0.21 June: 2.23 September: 1.81 Total rainfall: 12.1"
Total irrigation and rainfall:	30.3"
Insecticides:	Temik was applied infurrow at planting at a rate of 5.0 lb/acre. This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.
Fertilizer management:	200 lbs N/acre was applied during the growing season with 80 lbs applied as dry formulation preplant and the remaining applied via fertigation through the sub-surface drip irrigation systems. Also, 80 lbs P/acre was applied preplant.
Plant growth regulators:	Mepiquat chloride was applied by producer across all varieties on 9-July (10 oz/acre) and on 18-August (18 oz/acre) for a total of 28 oz/acre.
Harvest aids:	Harvest aids included 32 oz/acre of Prep with 1 oz/acre ET applied by producer on 13-October followed by 32 oz/acre Gramoxone Inteon with 0.25% v/v non-ionic surfactant on 5-November.
Harvest:	Plots were harvested on 12-October using a commercial John Deere 7460 with field cleaner. Harvested material was transferred to a weigh wagon with integral electronic scales to record individual plot weights. Plot weights were subsequently converted to lb/acre basis.

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

Fiber analysis: Lint samples were submitted to the Texas Tech University – Fiber and Biopolymer Research Institute for HVI analysis, and USDA Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.

Ginning cost and seed values: Ginning cost were based on $3.00 per cwt. of bur cotton and seed value/acre was based on $175/ton. Ginning cost did not include checkoff.

Seed and Technology fees: Seed and technology costs were calculated using the appropriate seeding rate (3.4 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://www.plainscotton.org/Seed/PCGseed10.xls .

Results and Discussion:

Significant differences were observed among varieties for plant population on 15-June (Table 1). Plant stands ranged from a high of 36,500 for PhytoGen 367WRF to a low of 25,167 for Croplan Genetics 3220B2RF. Significant differences were observed for nodes above white flower (NAWF) on 27-July and 3-August (alpha=0.10), but not on 10-August. NAWF values reported represent averages from 10 plants per plot or 30 plants per variety. The test average for NAWF on 27-July was 7.4 and ranged from a high of 7.6 for Deltapine 1032B2RF, Dyna-Gro 2570B2RF and NexGen 4010B2RF to a low of 6.8 for All-Tex Apex B2RF. On 3-August values ranged from a high of 6.7 for Deltapine 1032B2RF to a low of 5.6 for FiberMax 9170B2F and PhytoGen 367WRF with a test average of 6.1. All varieties had reached physiological cutout (NAWF = 5) by the 10-August observation. However, no significant differences were observed among varieties and the test average was 4.2. Just prior to harvest on 15-November, a visual observation for storm resistance was recorded for each variety in all three replications. The ratings were on a scale of 1-9 where 1 represents the least storm resistance. Significant differences were observed among varieties and values ranged from a high of 7.0 (FiberMax 9170B2F) to a low of 4.3 (Dyna-Gro 2570B2RF and Deltapine 1032B2RF).

Significant differences were observed for all yield and economic parameters measured (Table 2). Lint turnout from grab samples averaged 32.3%. Bur cotton yields averaged 5228 lb/acre with a high of 5607 lb/acre for PhytoGen 367WRF, and a low of 4976 lb/acre for Croplan Genetics 3220B2RF. Lint yields varied with a low of 1528 lb/acre (All-Tex Apex B2RF) and a high of 1852 lb/acre (Deltapine 1032B2RF). Lint loan values ranged from a low of $0.5657/lb (Stoneville 4288B2F) to a high of $0.5745/lb (FiberMax 9170B2F). After adding

All-Tex Apex B2RF to a high of $1058.70 for Deltapine 1032B2RF. When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of $1062.84 (Deltapine 1032B2RF) to a low of $896.39 (All-Tex Apex B2RF), a difference of $166.40.

Significant differences were observed among varieties for all HVI parameters measured with exception of leaf. Micronaire ranged from a low of 3.9 for FiberMax 9170B2F to a high of 4.6 for Stoneville 4288B2F. Staple averaged 37.0 across all varieties with a high of 37.8 for FiberMax 9170B2F and a low of 36.3 for Croplan Genetics 3220B2RF. Percent uniformity ranged from a high of 82.4 for NexGen 4010B2RF to a low of 81.2 for All-Tex Apex B2RF and PhytoGen 367WRF with a test average of 81.6%. Strength values averaged 30.3 g/tex with a high of 31.9 g/tex for FiberMax 9170B2F and NexGen 4010B2RF, and a low of 28.4 g/tex for All-Tex Apex B2RF. Elongation averaged 8.6 with a high of 9.6 for Dyna-Gro 2570B2RF and a low of 7.0 FiberMax 9170B2F. Leaf grades were mostly 1 and 2 at this location. Color grades of mostly 21 were observed across varieties. These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection.

These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection. It should be noted that no inclement weather was encountered at this location prior to harvest and therefore, no pre-harvest losses were observed. Additional multi-site and multi-year applied research is needed to evaluate varieties and technology across a series of environments.

Acknowledgments:

Appreciation is expressed to Mike Henson for the use of his land, equipment and labor for this demonstration. Further assistance with this project was provided by Dr. Jane Dever - Texas AgriLife Research and Extension Center, Lubbock, and Dr. Eric Hequet - Associate Director, Fiber and Biopolymer Research Institute, Texas Tech University. Furthermore, we greatly appreciate the Texas Department of Agriculture - Food and Fiber Research for funding of HVI testing.

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Table 1. In-season plant measurement results from the subsurface drip irrigated RACE variety demonstration, Mike Henson Farm, Ropesville, TX, 2010.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of			Storm resistance
	15-Jun		27-Jul	3-Aug	10-Aug	15-Nov
	plants/row-ft	plants/acre				rating (1-9)
All-Tex Apex B2RF	2.3	30,167	6.8	5.9	4.4	5.0
Croplan Genetics 3220B2RF	1.9	25,167	7.4	6.4	4.6	5.0
Dyna-Gro 2570B2RF	2.1	27,667	7.6	6.4	4.6	4.3
Deltapine 1032B2RF	2.2	28,500	7.6	6.7	4.5	4.3
FiberMax 9170B2F	2.5	32,667	7.1	5.6	3.9	7.0
NexGen 4010B2RF	2.1	27,167	7.6	6.2	3.5	5.3
PhytoGen 367WRF	2.8	36,500	7.4	5.6	4.0	4.8
Stoneville 4288B2F	2.0	25,500	7.4	6.2	4.1	4.5
Test average	2.2	29,167	7.4	6.1	4.2	5.0
CV, %	11.6	11.1	3.1	7.4	11.7	8.8
OSL	0.0121	0.0106	0.0039	0.0704†	0.1839	<0.0001
LSD	0.5	5,670	0.4	0.6	NS	0.8

For NAWF, numbers represent an average of 10 plants per variety per rep (30 plants per variety).
For Storm resistance, ratings based on a scale of 1-9 where 9 represents maximum storm resistance.
CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, †indicates significance at the 0.10 level, NS - not significant.

Table 2. Harvest results from the subsurface drip irrigated RACE variety demonstration, Mike Henson Farm, Ropesville, TX, 2010.

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 1032B2RF	34.7	48.6	5334	1852	2591	0.5717	1058.70	226.70	1285.40	160.02	62.54	1062.84	a
PhytoGen 367WRF	31.9	49.8	5607	1791	2793	0.5715	1023.58	244.40	1267.98	168.21	60.41	1039.36	ab
Dyna-Gro 2570B2RF	33.5	52.4	5274	1767	2765	0.5718	1010.37	241.96	1252.33	158.21	60.22	1033.89	ab
Stoneville 4288B2F	30.7	53.2	5528	1697	2941	0.5657	959.97	257.37	1217.34	165.84	61.58	989.92	bc
FiberMax 9170B2F	32.9	50.6	5027	1656	2542	0.5745	951.28	222.40	1173.67	150.82	61.58	961.28	cd
Croplan Genetics 3220B2RF	32.9	53.2	4976	1639	2648	0.5702	934.26	231.74	1166.00	149.27	59.27	957.47	cd
NexGen 4010B2RF	30.7	52.4	5093	1563	2669	0.5742	897.30	233.50	1130.80	152.80	55.06	922.94	de
All-Tex Apex B2RF	30.6	52.9	4989	1528	2640	0.5700	871.07	230.97	1102.05	149.67	55.98	896.39	e
Test average	32.3	51.6	5228	1687	2699	0.5712	963.32	236.13	1199.45	156.85	59.58	983.01	
CV, %	2.3	1.3	3.0	2.9	3.1	0.5	2.9	3.1	2.9	3.0	--	3.1	
OSL	<0.0001	<0.0001	0.0007	<0.0001	0.0009	0.0261	<0.0001	0.0009	<0.0001	0.0007	--	<0.0001	
LSD	1.3	1.2	273	85	145	0.0046	48.48	12.65	61.02	8.20	--	52.84	

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.
$175/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 subsurface drip irrigated RACE variety demonstration, Mike Henson Farm, Ropesville, TX, 2010.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
All-Tex Apex B2RF	4.2	37.2	81.2	28.4	8.4	1.7	81.3	8.0	2.0	1.0
Croplan Genetics 3220B2RF	4.4	36.3	82.0	29.6	9.3	1.0	81.7	8.1	2.0	1.0
Dyna-Gro 2570B2RF	4.3	36.4	82.0	30.2	9.6	1.0	80.9	8.4	2.0	1.0
Deltapine 1032B2RF	4.5	37.3	81.6	30.2	8.3	1.3	82.4	7.8	1.7	1.0
FiberMax 9170B2F	3.9	37.8	81.4	31.9	7.0	1.3	82.7	7.3	2.0	1.0
NexGen 4010B2RF	4.3	37.3	82.4	31.9	8.3	1.3	80.7	8.5	2.0	1.0
PhytoGen 367WRF	4.0	37.1	81.2	30.9	9.3	2.0	80.5	8.3	2.0	1.0
Stoneville 4288B2F	4.6	36.4	81.4	29.2	8.6	2.0	80.5	8.1	2.0	1.0
Test average	4.3	37.0	81.6	30.3	8.6	1.5	81.3	8.1	2.0	1.0
CV, %	1.9	0.9	0.5	2.5	3.5	45.2	0.8	1.6	--	--
OSL	<0.0001	0.0005	0.0158	0.0005	<0.0001	0.4239	0.0025	<0.0001	--	--
LSD	0.1	0.6	0.7	1.3	0.5	NS	1.1	0.2	--	--

CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, NS - not significant

AgriLIFE EXTENSION
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Replicated Sub-Surface Drip Irrigated RACE Variety Demonstration, Acuff, TX - 2010

Cooperator: Rhett and Brady Mimms

Mark Brown, Randy Boman, Mark Kelley and Chris Ashbrook
CEA-ANR Lubbock County, Extension Agronomist - Cotton,
Extension Program Specialist II - Cotton,
and Extension Assistant - Cotton

Lubbock County

Summary: Significant differences were observed for all yield and economic parameters measured with exception of lint loan value. Lint turnout ranged from a low of 27.2% to a high of 33.5% for Croplan Genetics 3006B2RF and Dyna-Gro 2570B2RF, respectively. Lint yields varied with a low of 1199 lb/acre (Croplan Genetics 3006B2RF) and a high of 1516 lb/acre (NexGen 4010B2RF). Lint loan values averaged $0.5601/lb and were not significantly different. When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of $865.14 (NexGen 4010B2RF) to a low of $649.49 (Croplan Genetics 3006B2RF), a difference of $215.65. Fiber quality data indicated significant differences among varieties for all parameters measured. Micronaire averaged 4.2 and ranged from a low of 3.6 for FiberMax 9170B2F to a high of 4.6 for Stoneville 4288B2F. Staple was highest for Croplan Genetics 3006B2RF (37.4) and lowest for Stoneville 4288B2F (35.7). Uniformity values ranged from a high of 82.0% for PhytoGen 367WRF to a low of 80.1% for Stoneville 4288B2F and the test average was 81.4%. Strength values averaged 29.7 g/tex with a high of 31.0 g/tex for NexGen 4010B2RF and a low of 28.5 g/tex for Stoneville 4288B2F. Elongation averaged 8.2% and ranged from a high of 9.1% for Dyna-Gro 2570B2RF to a low of 7.0 for FiberMax 9170B2F. Leaf grades averaged 2.0 across all varieties. Averages for Rd, or reflectance, and +b, or yellowness, were 80.7 and 7.9, respectively. This resulted in color grades of mostly 21 and 31 at this location. These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection.

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

Materials and Methods:

Varieties: All-Tex Apex B2RF, Croplan Genetics 3006B2RF, Deltapine 1032B2RF, Dyna-Gro 2570B2RF, FiberMax 9170B2F, NexGen 4010B2RF, PhytoGen 367WRF, and Stoneville 4288B2F

Experimental design: Randomized complete block with 3 replications

Seeding rate: 4.0 seeds/row-ft in 40-inch row spacing (John Deere MaxEmerge XP vacuum planter)

Plot size: 8 rows by length of field (~1350 ft long)

Planting date: 11-May

Weed management: Roundup PowerMax was applied over-the-top on 15-June and 8-July at 28 oz/acre with AMS. An additional post-directed application of Roundup PowerMax at 32 oz/acre with Valor at 2 oz/acre and AMS was made on 15-August.

Irrigation: The field had a 3.7 gpm/acre irrigation capacity. This provided for 0.19 acre-inches/day. From 25-July to 3-September a total of approximately 7.8 inches of irrigation were applied.

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

April:	8.00" (grower)	August:	8.00" (grower)
May:	1.39"	September:	1.60"
June:	1.34"	October:	2.30"
July:	12.00" (grower)		

Total rainfall: 34.63"

Insecticides: Temik was applied infurrow at planting at a rate of 3.0 lb/acre. This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.

Fertilizer management: A total of 135 lbs N/acre was applied via compost preplant (40 lbs N/acre) and fertigation of 32-0-0 (95 lbs N/acre). The preplant compost also supplied 20 lbs P_2O_5/acre.

Plant growth regulators: On 8-July, 3 oz/acre of Stance was applied by producer across all varieties.

Harvest aids: Harvest aids included 21 oz/acre Prep and 1 oz/acre Aim applied by producer at this location on 10-October followed by 24 oz/acre Gramoxone Inteon with 0.25% v/v non-ionic surfactant on 20-October.

Harvest:	Plots were harvested on 11-November using a commercial John Deere 7460 with field cleaner. Harvested material was transferred to a weigh wagon with integral electronic scales to record individual plot weights. Plot weights were subsequently converted to lb/acre basis.
Gin turnout:	Grab samples were taken by plot and ginned at the Texas AgriLife Research and Extension Center at Lubbock to determine gin turnouts.
Fiber analysis:	Lint samples were submitted to the Texas Tech University - Fiber and Biopolymer Research Institute for HVI analysis, and USDA Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.
Ginning cost and seed values:	Ginning costs were based on $3.00 per cwt. of bur cotton and seed value/acre was based on $175/ton. Ginning costs did not include checkoff.
Seed and technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (4 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://www.plainscotton.org/Seed/PCGseed10.xls .

Results and Discussion:

No significant differences were observed among varieties for plant population on 11-June (Table 1). Plant stands averaged 45,979 plants/acre. Nodes above white flower (NAWF) counts were taken on a weekly basis beginning 23-July to 6-August. No significant differences were observed among varieties for any of the observation dates. On 23-July, NAWF values averaged 7.2. The test average on 30-July was 5.0. By 6-August all varieties had reached cutout (NAWF=5) and values averaged 3.8. Just prior to harvest on 11-November, a visual observation of storm resistance was recorded for each variety in all three replications. The ratings were on a scale of 1-9 where 1 represents the least storm resistance. Significant differences were observed among varieties and values ranged from a high of 6.3 (FiberMax 9170B2F and NexGen 4010B2RF) to a low of 4.0 (Stoneville 4288B2F).

Significant differences were observed for all yield and economic parameters measured with exception of lint loan value (Table 2). Lint turnout ranged from a low of 27.2% to a high of 33.5% for Croplan Genetics 3006B2RF and Dyna-Gro 2570B2RF, respectively. Bur cotton yields averaged 4640 lb/acre with a high of 5003 lb/acre for PhytoGen 367WRF, to a low of 4408 lb/acre for Croplan Genetics 3006B2RF. Lint yields varied with a low of 1199 lb/acre (Croplan Genetics 3006B2RF) and a high of 1516 lb/acre (NexGen 4010B2RF). Lint loan values

averaged $0.5601/lb and were not significantly different. After adding lint and seed value, total value/acre for varieties ranged from a low of $851.76 for Croplan Genetics 3006B2RF to a high of $1071.19 for NexGen 4010B2RF. When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of $865.14 (NexGen 4010B2RF) to a low of $649.49 (Croplan Genetics 3006B2RF), a difference of $215.65.

Fiber quality data indicated significant differences among varieties for all parameters measured (Table 3). Micronaire averaged 4.2 and ranged from a low of 3.6 for FiberMax 9170B2F to a high of 4.6 for Stoneville 4288B2F. Staple was highest for Croplan Genetics 3006B2RF (37.4) and lowest for Stoneville 4288B2F (35.7). Uniformity values ranged from a high of 82.0% for PhytoGen 367WRF to a low of 80.1% for Stoneville 4288B2F and the test average was 81.4%. Strength values averaged 29.7 g/tex with a high of 31.0 g/tex for NexGen 4010B2RF and a low of 28.5 g/tex for Stoneville 4288B2F. Elongation averaged 8.2% and ranged from a high of 9.1% for Dyna-Gro 2570B2RF to a low of 7.0 for FiberMax 9170B2F. Leaf grades averaged 2.0 across all varieties. Averages for Rd, or reflectance, and +b, or yellowness, were 80.7 and 7.9, respectively. This resulted in color grades of mostly 21 and 31 at this location.

These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection. It should be noted that inclement weather was encountered at this location prior to harvest and some pre-harvest losses were observed for less storm resistant varieties. Additional multi-site and multi-year applied research is needed to evaluate varieties and technology across a series of environments.

Acknowledgments:

Appreciation is expressed to Rhett and Brady Mimms for the use of their land, equipment and labor for this demonstration. Further assistance with this project was provided by Dr. Jane Dever - Texas AgriLife Research and Extension Center, Lubbock, and Dr. Eric Hequet - Associate Director, Fiber and Biopolymer Research Institute, Texas Tech University. Furthermore, we greatly appreciate the Texas Department of Agriculture - Food and Fiber Research for funding of HVI testing.

Disclaimer Clause:

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

Table 1. In-season plant measurement results from the subsurface drip irrigated RACE variety demonstration, Rhett Mimms Farm, Acuff, TX, 2010.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of			Storm resistance
	11-Jun		23-Jul	30-Jul	6-Aug	11-Nov
	plants/row-ft	plants/acre				rating (1-9)
All-Tex Apex B2RF	3.2	41,500	6.8	4.7	3.4	5.0
Croplan Genetics 3006B2RF	3.5	46,167	7.2	5.1	4.0	5.0
Dyna-Gro 2570B2RF	3.3	43,500	7.2	5.1	3.7	5.3
Deltapine 1032B2RF	3.6	46,833	7.1	4.8	3.8	4.3
FiberMax 9170B2F	3.7	48,000	7.5	5.2	4.1	6.3
NexGen 4010B2RF	3.5	46,000	7.1	5.0	3.8	6.3
PhytoGen 367WRF	3.6	47,333	7.5	5.1	3.7	4.2
Stoneville 4288B2F	3.7	48,500	7.3	5.0	3.8	4.0
Test average	3.5	45,979	7.2	5.0	3.8	5.1
CV, %	8.3	8.5	4.5	5.2	10.2	6.8
OSL	0.4510	0.4158	0.2678	0.3805	0.5440	<0.0001
LSD	NS	NS	NS	NS	NS	0.6

For NAWF, numbers represent an average of 10 plants per variety per rep (30 plants per variety).
For Storm resistance, ratings based on a scale of 1-9 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 subsurface drip irrigated RACE variety demonstration, Rhett Mimms Farm, Acuff, TX, 2010.

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 ----------						
NexGen 4010B2RF	32.3	51.7	4700	1516	2432	0.5663	858.43	212.76	1071.19	140.99	65.07	865.14	a
Dyna-Gro 2570B2RF	33.5	52.4	4474	1497	2346	0.5680	850.16	205.32	1055.48	134.21	71.17	850.10	ab
PhytoGen 367WRF	29.4	50.8	5003	1473	2542	0.5708	840.66	222.42	1063.08	150.09	71.40	841.60	ab
FiberMax 9170B2F	30.2	50.1	4853	1464	2433	0.5560	814.20	212.90	1027.10	145.59	72.78	808.74	bc
Stoneville 4288B2F	30.1	51.6	4748	1430	2450	0.5608	801.96	214.39	1016.35	142.44	72.78	801.14	bc
Deltapine 1032B2RF	31.8	48.4	4454	1416	2157	0.5573	789.16	188.75	977.90	133.63	73.91	770.36	c
All-Tex Apex B2RF	28.2	51.7	4478	1263	2317	0.5635	711.43	202.74	914.16	134.33	66.16	713.67	d
Croplan Genetics 3006B2RF	27.2	53.6	4408	1199	2365	0.5380	644.85	206.91	851.76	132.23	70.04	649.49	e
Test average	30.3	51.3	4640	1407	2380	0.5601	788.86	208.27	997.13	139.19	70.41	787.53	
CV, %	5.3	2.5	3.3	3.3	3.3	2.4	3.4	3.3	3.3	3.3	--	3.7	
OSL	0.0044	0.0076	0.0018	<0.0001	0.0019	0.1736	<0.0001	0.0019	<0.0001	0.0018	--	<0.0001	
LSD	2.8	2.2	264	82	139	NS	46.97	12.18	58.12	7.92	--	50.62	

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.
$175/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 subsurface drip irrigated RACE variety demonstration, Rhett Mimms Farm, Acuff, TX, 2010.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
All-Tex Apex B2RF	4.0	37.1	81.3	28.7	8.0	1.7	81.5	7.8	2.0	1.0
Croplan Genetics 3006B2RF	4.3	37.4	81.9	29.2	8.4	4.3	78.4	7.2	3.3	1.0
Dyna-Gro 2570B2RF	4.4	36.3	81.8	29.1	9.1	1.3	81.0	8.1	2.0	1.0
Deltapine 1032B2RF	4.1	36.9	81.2	29.3	7.8	1.3	81.8	7.9	2.0	1.0
FiberMax 9170B2F	3.6	38.5	81.3	30.9	7.0	2.3	83.1	7.3	2.0	1.0
NexGen 4010B2RF	4.1	36.4	81.7	31.0	8.2	1.7	80.6	8.2	2.0	1.0
PhytoGen 367WRF	4.1	36.8	82.0	30.8	8.4	1.7	80.0	8.3	2.3	1.0
Stoneville 4288B2F	4.6	35.7	80.1	28.5	8.3	2.0	79.3	8.1	2.7	1.0
Test average	4.2	36.9	81.4	29.7	8.2	2.0	80.7	7.9	2.3	1.0
CV, %	4.5	1.6	0.8	3.9	6.1	33.6	0.8	2.4	--	--
OSL	0.0007	0.0014	0.0529†	0.0634†	0.0094	0.0020	<0.0001	<0.0001	--	--
LSD	0.3	1.0	0.9	1.7	0.9	1.2	1.2	0.3	--	--

CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, †indicates signficance at the 0.10 level.

AgriLIFE EXTENSION
Texas A&M System

Replicated Limited Irrigated Cotton Variety Demonstration
N 35.4° W 101.14° Elevation – 3334 ft
White Deer, TX – 2010

Cooperator: Dudley Pohnert

Rex Brandon, Jody Bradford, Brent Bean, Randy Boman, Mark Kelley, Jake Becker - AgriLife Research Assistant, CEA-ANR Carson County, Extension Agronomist - Amarillo, Extension Agronomist - Cotton - Lubbock, Extension Program Specialist II - Cotton, AgriLife Research Assistant

Carson County

Summary: The planting date of June 2nd clearly influenced the results of this trial. The varieties with the highest net value were NexGen 1551RF at $440.15 and FiberMax 9058F at $424.65. The variety with the third highest net value was Deltapine 0912B2RF at $390.18. These three varieties had a net value of $51/acre or more than all other varieties. When subtracting ginning, seed and technology fee costs, the average net value/acre of all varieties was $343.52. Lint yield ranged from a low of 559 lb/acre with Deltapine 1028B2RF to a high of 915 lb/acre with NexGen 1551RF. Lint turnout varied considerably, ranging from 29% (FIberMax 1740B2F) to 37.4% (Nexgen 2549B2RF). Lint loan values ranged from a low of $0.3765/lb (FIberMax 1740B2F) to a high of $0.5452/lb (Deltapine 1028B2RF) followed by FiberMax 9180B2F at $0.5412/lb. NexGen 1551RF had the highest Micronaire value at 4.0 followed by NexGen 2549B2RF at 3.9. Average staple length was 34.8, with very little variation between varieties. The highest percent uniformity was observed with NexGen 1551RF (81.1%) and FIberMax 9180B2F had the lowest (78%). Strength values ranged from 30.8 g/tex (FiberMax 1740B2F) to 27.2 g/tex (All-Tex Summit B2RF and NexGen 2549B2RF). NexGen 1551RF had the highest Leaf grade and color 1 grade at 5.5 and 2.5, respectively, followed by FiberMax 1740B2F with a leaf grade at 4.7. NexGen 2549B2RF had the lowest leaf and color 1 grade both at 1.7.

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

Materials and Methods:

Varieties: Deltapine 1028B2RF, Deltapine 0912B2RF, Deltapine 104B2RF, Deltapine 1032B2RF FiberMax 9180B2RF, FiberMax 1740B2F, FiberMax 9058F, NexGen 1551RF, NexGen 2549B2RF, and All-Tex Summit B2RF

Experimental design: Randomized complete block with 3 replications

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

Plot Size: 8 rows by approximately 600 ft

Planting date: 2-June

Rainfall/Irrigation: Approximately 6.2 in. of rainfall was accumulated from 2-June through 2-November. During the growing season, 4 in. of irrigation was applied through a LESA center pivot.

Herbicides: 88 oz. Roundup applied three times during the season. 1.33 pints Dual and 9 oz. clethodim.

Insecticides: 4 lbs/acre Temik was applied in-furrow at planting.

Fertilizer: None applied due to sufficient N in soil profile.

Soil Profile N:	**Nitrogen NO3-N, lb/ac**			
	0-6 in	**6-12 in**	**12-24 in**	**24-36 in**
Pre-plant	6	78	84	112
Post harvest	13	5	7	11

Plant Growth Regulators: 16 oz/acre Pix

Harvest aids: 0.5 oz blizzard, 0.5 prep + 1 qt COC

Harvest: Plots were harvested on 22-November using a commercial John Deere 7460 stripper harvester with field cleaner. Harvested material was transferred to a weigh wagon with integral electronic scales to determine plot weights. Plot yields were subsequently adjusted to lb/acre.

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

Fiber analysis: Lint samples were submitted to the Texas Tech University Fiber and Biopolymer Research Institute for HVI analysis, and USDA Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.

Ginning cost and seed values: Ginning costs were based on $3.00 per cwt. of bur cotton and seed value/acre was based on $175/ton. Ginning costs did not include checkoff.

Seed and technology fees: Seed and technology costs were calculated using the appropriate seeding rate (3.2 seed/row-ft) for the 30-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://www.plainscotton.org/Seed/PCGseed10.xls.

Results and Discussion:

Lint turnout ranged from a low of 29% to a high of 37.4% for FiberMax 1740B2F and NexGen 2549B2RF, respectively (Table 1). Highest lint yields were with NexGen 1551RF and FiberMax 9058F, with both yielding over 900 lb/acre. Lint loan values ranged from a low of $0.3765/lb (FiberMax 1740B2F) to a high of $0.5452/lb (Deltapine 1028B2RF). After adding lint and seed value, total value/acre for varieties ranged from a low of $387.33 for Deltapine 1028B2RF to a high of $601.04 for NexGen 1551RF. After subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of $440.15 with NexGen 1551RF and a low of $260.96 with Deltapine 1028B2RF, a difference of $179.19.

Micronaire values ranged from a low of 2.9 for FiberMax 1740B2F to a high of 4.0 for NexGen 1551RF (Table 2). Most micronaire values were clustered around the mean of 3.5. Staple length averaged 34.8 across all varieties with a low of 33.2 for Deltapine 1032B2RF to a high of 35.9 for Deltapine 104B2RF. The highest percent uniformity was observed for NexGen 1551RF (81.1%) and FiberMax 9180B2F had the lowest (78%). Strength values averaged 28.7 g/tex with a high of 30.8 g/tex for FiberMax 1740B2F and a low of 27.2 for All-Tex Summit B2RF and NexGen 2549B2RF. Elongation ranged from a high of 8.2% for NexGen 2549B2RF to a low of 5.6% for Deltapine 104B2RF. Leaf grades were relatively high for NexGen 1551RF at 5.5 and FiberMax 1740B2F at 4.7. Values for reflectance (Rd) and yellowness (+b) averaged 81.8 and 7.7, respectively.

These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection. In contrast to other 2010 cotton trials, the late planting date of this trial did not allow some of the later maturing varieties to take advantage of the higher number of heat units available in 2010 compared to 2009. Two varieties that yielded well in both 2009 and 2010 at this location were NexGen 1551RF and FiberMax 9058F. It should also be noted that the producer did not apply any nitrogen fertilizer to this field, but rather relied on an abundance of residual nitrogen in the soil. Additional multi site and multi year applied research is needed to evaluate varieties and technology across a series of environments.

Acknowledgements:

Appreciation is expressed to Dudley Pohnert for the use of his land, equipment and labor for this demonstration. Further assistance with this project was provided by Dr. Jane Dever - Texas AgriLife Research and Extension Center, Lubbock, and Dr. Eric Hequet - Associate Director, Fiber and Biopolymer Research Institute, Texas Tech University. Furthermore, we greatly appreciate the Texas Department of Agriculture - Food and Fiber Research for funding of HVI testing.

Disclaimer Clause:

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Table 1. Harvest results from the cotton variety demonstration, D. Ponhert Farm, Carson Co., 2010

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 ----------						
NexGen 1551RF	33.6	50.1	2733	915	1364	0.5281	481.71	119.33	601.04	82.00	78.89	440.15	a
FiberMax 9058F	34.4	47.3	2604	904	1228	0.5082	473.58	107.44	581.03	78.13	78.25	424.65	a
Deltapine 0912B2RF	30.9	51.0	2620	808	1335	0.5107	425.03	116.86	541.88	78.60	73.11	390.18	b
All-Tex Summit B2RF	30.6	52.4	2449	749	1283	0.4900	367.03	112.23	479.26	73.46	66.98	338.82	c
NexGen 2549B2RF	37.4	50.6	1989	744	1007	0.5055	376.29	88.09	464.39	59.68	73.94	330.77	c
FiberMax 9180B2F	34.1	50.0	2329	794	1165	0.5412	391.29	101.98	493.27	69.87	66.31	357.10	c
Deltapine 104B2RF	31.8	51.1	2397	762	1225	0.5032	383.58	107.20	490.78	71.90	66.98	351.91	c
Deltapine 1032 B2RF	30.5	50.7	2313	707	1173	0.4654	328.29	102.66	430.94	69.40	70.76	290.80	d
FiberMax 1740B2F	29.0	53.6	2571	745	1376	0.3765	280.52	120.45	400.97	77.13	73.94	249.91	e
Deltapine 1028B2RF	29.7	54.2	1895	559	1034	0.5452	296.86	90.47	387.33	56.85	69.52	260.96	e
Test average	32.2	51.1	2390	769	1219	0.4974	380.42	106.67	487.09	71.70	71.87	343.52	
CV, %	2.0	3.8	4.5	4.6	4.5	18.7	4.6	4.5	4.6	4.5	5.4	5.9	
OSL	<0.0001	0.0301	<0.0001	<0.0001	<0.0001	0.6129	<0.0001	<0.0001	<0.0001	<0.0001	0.0131	<0.0001	
LSD	0.9	2.8	155	51	79	NS	25.57	6.93	32.43	4.64	5.65	29.55	

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.
$175/ton for seed.
Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Table 2. HVI fiber property results from the replicated cotton variety demonstration, D. Ponhert Farm, Carson Co., 2010

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32^{nds} inches	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
NexGen 1551RF	4.0	34.5	81.1	28.3	7.6	5.5	80.3	7.6	2.5	1.0
FiberMax 9058F	3.7	34.7	79.0	27.6	6.9	2.6	82.0	7.9	2.0	1.0
Deltapine 0912B2RF	3.4	35.5	79.8	29.7	6.4	2.3	83.2	7.2	2.0	1.0
All-Tex Summit B2RF	3.3	34.5	80.3	27.2	7.2	2.3	82.1	7.9	2.0	1.0
NexGen 2549B2RF	3.9	34.3	80.3	27.2	8.2	1.7	80.9	8.4	1.7	1.0
FiberMax 9180B2F	3.4	35.1	78.0	28.5	6.5	2.3	82.6	7.6	2.0	1.0
Deltapine 104B2RF	3.3	35.9	79.0	28.2	5.6	3.7	82.7	7.0	2.0	1.0
Deltapine 1032 B2RF	3.0	33.2	80.6	29.7	7.5	3.7	81.2	7.7	2.0	1.0
FiberMax 1740B2F	2.9	35.5	81.0	30.8	7.2	4.7	81.8	7.5	2.0	1.0
Deltapine 1028B2RF	3.9	35.1	81.0	29.9	6.8	2.9	81.0	8.1	2.0	1.0
Test average	3.5	34.8	80.0	28.7	7.0	3.2	81.8	7.7	2.0	1.0
CV, %	3.2	2.0	11.1	2.7	3.8	39.1	0.7	1.5	--	--
OSL	<0.0001	0.0103	0.0085	0.0003	<0.0001	0.0376	0.0003	<0.0001	--	--
LSD	0.2	1.0	1.3	1.1	0.4	1.8	0.8	0.2	--	--

CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level.

AgriLIFE EXTENSION
Texas A&M System

Replicated Limited Irrigated Cotton Variety Demonstration
35°49' N 102°09' W Elevation – 3334 ft
Dumas, TX – 2010

Cooperator: David/Adam Ford

Rex Brandon, Marcel Fischbacher, Brent Bean, Randy Boman, Mark Kelley, and Jake Becker – AgriLIfe Research Assistant - CEA Moore County, Extension Agronomist - Amarillo, Extension Agronomist - Cotton - Lubbock, Extension Program Specialist II - Cotton, AgriLife Research Assistant

Moore County

Summary: This trial received 4.15 inches of irrigation water during the season. Inconsistency in the data resulted in few significant differences between varieties. Deltapine 1028B2RF had the highest net value at $602.74 ($104.85 more than all other varieties) followed by Deltapine 0912B2RF at $497.89. Lint yield ranged from a low of 923 lb/acre with All-Tex Summit B2RF to a high of 1,288 lb/acre with Deltapine 1028B2RF. Lint turnout varied considerably, ranging from 26% (All-Tex Summit B2RF and Deltapine 104B2RF) to 33.7% (Deltapine 1028B2RF). Lint loan values ranged from a low of $0.4510/lb (All-Tex Summit B2RF) to a high of $0.5047/lb (Deltapine 0912B2RF). Micronaire values ranged from a low of 2.5 for All-Tex Summit B2RF to a high of 3.2 for Deltapine 1028B2RF Table 2. Average staple length was 35.3 across all varieties with a low of 34.1 for NexGen 2549B2RF and a high of 36.9 for FiberMax 9180B2F. The highest percent uniformity was observed with NexGen 1551RF (80.7%) and FiberMax 9058F had the lowest (77.5%). Strength values ranged from 26.4 g/tex (All-Tex Summit B2RF) to 30.5 g/tex (NexGen 1551RF).

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

Materials and Methods:

Varieties: Deltapine 1028B2RF, Deltapine 0912B2RF, Deltapine 104B2RF, FiberMax 9180B2RF, FiberMax 1740B2F, FiberMax 9058F, NexGen 1551RF, NexGen 2549B2RF, and All-Tex Summit B2RF

Experimental design: Randomized complete block with 3 replications

Seeding rate: 3.96 seeds/row-ft in 30-inch row spacing (69,000 seeds/acre)
Final stand 45,000 plants/acre (2.58 plants/row-ft)

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

Planting date: 11-May

Rainfall/Irrigation: Approximately 8" of rainfall was accumulated from 10-June through 25-August. During the growing season, 4.15" of irrigation was applied through a LESA center pivot.

Herbicides: 12-May: 1 qt Direx + 42 oz generic glyphosate + COC + AMS
6-Jun: 48 oz generic glyphosate + 6 oz Select Max + NIS + AMS
27-Jun: 32 oz generic glyphosate + 1 pt Medal + NIS + AMS
15-Jul: 24 oz generic glyphosate + 12 oz Select Max + NIS + AMS
25-Aug: 24 oz generic glyphosate + NIS + AMS

Insecticides: Initial acephate application at planting. Later two applications made for moderate to heavy fleahopper activity.

Fertilizer management: None applied based on soil test results.

Soil profile N:	**Nitrogen NO3-N, lb/ac**			
	0-6 in.	**6-12 in.**	**12-24 in.**	**24-36 in**
Pre-plant	6	6	12	28
Post harvest	18	4	<4	<4

Plant Growth Regulators: 27-Jun: 2 oz Stance and 25-Aug: 3 oz Stance

Harvest aids: 6-Oct: 1 qt Prep + 1 pt Def + NIS

Harvest: Plots were harvested on 1-November using a commercial John Deere 7460 stripper harvester with field cleaner. Harvested material was transferred to a weigh wagon with integral electronic scales to determine plot weights. Plot yields were subsequently adjusted to lb/acre.

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

Fiber analysis: Lint samples were submitted to the Texas Tech University Fiber and Biopolymer Research Institute for HVI analysis, and USDA Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.

Ginning cost and seed values: Ginning costs were based on $3.00 per cwt. of bur cotton and seed value/acre was based on $175/ton. Ginning costs did not include checkoff.

Seed and technology fees: Seed and technology costs were calculated using the appropriate seeding rate (3.96 seed/row-ft) for the 30-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://www.plainscotton.org/Seed/PCGseed10.xls.

Results and Discussion:

Inconsistency in the data resulted in few yield components being statistically significant. However, Deltapine 104B2RF easily had the highest % lint turnout at 33.7% (Table 1). Lint yields varied with a low of 923 lb/acre with All-Tex Summit B2RF and a high of 1,288 lb/acre with Deltapine 1028B2RF. Lint loan values ranged from a low of $0.4510/lb (All-Tex Summit B2RF) to a high of $0.5047/lb (Deltapine 0912B2RF). After adding lint and seed value, total value/acre for varieties ranged from a low of $575.46 for All-Tex Summit B2RF to a high of $804.06 for Deltapine 1028B2RF. After subtracting ginning, seed and technology fee costs, the two top net value/acre varieties were Deltapine 1028B2RF at $602.74 and Deltapine 0912BRF at $497/89. The other varieties ranged from $478.11 to $378.07, but were not statistically different from each other.

Micronaire values ranged from a low of 2.5 for All-Tex Summit B2RF to a high of 3.2 for Deltapine 1028B2RF (Table 2). Micronaire values averaged 2.7. Staple length averaged 35.3 across all varieties with a low of 34.1 for NexGen 2549B2RF to a high of 36.9 for FiberMax 9180B2F. The highest percent uniformity was observed for NexGen 1551RF (80.7%) and FiberMax 9058F had the lowest (77.5%). Strength values averaged 28.5 g/tex with a high of 30.5 g/tex for NexGen 1551RF and a low of 26.4 for All-Tex Summit B2RF. Elongation ranged from a high of 7.7% for Deltapine 1028B2RF to a low of 5.6% for FiberMax 9058F. Leaf grades ranged from 2.0 to 4.3 with a test average of 3.4. Values for reflectance (Rd) and yellowness (+b) averaged 83.4 and 7.7, respectively.

These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection. It should be noted that eight inches of rainfall received during the growing season made a significant impact on yield. It is important to note that the yield and ranking of varieties in this trial differed considerably compared to trials in 2008 and 2009 in the Moore county area. In evaluating these results keep in mind that heat unit accumulation was

much higher in 2010 compared to the previous two years. Additional multi-site and multi-year applied research is needed to evaluate varieties and technology across a series of environments.

Acknowledgements:

Appreciation is expressed to David and Adam Ford for the use of their land, equipment and labor for this demonstration. Further assistance with this project was provided by Dr. Jane Dever - Texas AgriLife Research and Extension Center, Lubbock, and Dr. Eric Hequet - Associate Director, Fiber and Biopolymer Research Institute, Texas Tech University. 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 cotton variety demonstration, Ford Farm, Moore Co, TX, 2010.

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 1028B2RF	33.7	49.2	3820	1288	1879	0.4967	639.61	164.45	804.06	114.60	86.73	602.74	a
Deltapine 0912B2RF	29.1	49.1	3659	1064	1798	0.5047	537.05	157.34	694.39	109.77	86.73	497.89	ab
FiberMax 9180B2F	27.7	54.0	3829	1060	2069	0.4758	504.19	181.03	685.22	114.88	92.23	478.11	bc
Deltapine 104B2RF	26.0	52.9	3809	988	2015	0.5008	495.05	176.28	671.33	114.26	86.73	470.35	bc
FiberMax 1740B2F	29.8	50.2	3499	1041	1757	0.4715	490.90	153.73	644.63	104.98	92.23	447.42	bc
NexGen 2549B2RF	28.1	51.2	3592	1011	1838	0.4605	465.38	160.84	626.22	107.76	90.96	427.49	bc
FiberMax 9058F	27.6	51.6	3563	985	1837	0.4665	459.52	160.76	620.28	106.90	92.23	421.15	bc
NexGen 1551RF	27.1	52.9	3525	955	1864	0.4518	431.40	163.14	594.53	105.75	90.96	397.82	bc
All-Tex Summit B2RF	26.0	51.4	3548	923	1822	0.4510	416.06	159.40	575.46	106.43	90.96	378.07	c
Test average	28.3	51.4	3649	1035	1876	0.4755	493.24	164.11	657.35	109.48	89.97	457.89	
CV, %	2.7	3.5	14.1	14.0	14.2	6.7	14.0	14.2	14.0	14.1	--	16.5	
OSL	<0.0001	0.0425	0.9849	0.2020	0.8800	0.3309	0.0389	0.8802	0.1900	0.9850	--	0.0718†	
LSD	1.3	3.1	NS	NS	NS	NS	119.19	NS	NS	NS	--	107.87	

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.
$175/ton for seed.
Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Table 2. HVI fiber property results from the replicated cotton variety demonstration, Ford Farm, Moore Co, TX, 2010.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
Deltapine 1028B2RF	3.2	35.2	79.6	27.1	7.7	2.0	83.1	8.6	1.0	1.0
Deltapine 0912B2RF	3.0	34.7	78.2	28.5	6.7	3.7	82.7	7.9	1.3	1.0
FiberMax 9180B2F	2.7	36.9	80.0	29.6	6.1	4.0	84.5	7.1	1.3	1.0
Deltapine 104B2RF	2.4	35.4	79.2	28.9	7.0	4.3	83.1	7.6	2.0	1.0
FiberMax 1740B2F	2.7	35.1	78.0	28.0	6.3	2.7	84.6	7.4	1.0	1.0
NexGen 2549B2RF	2.6	34.1	80.2	29.8	6.9	4.3	82.0	7.8	2.0	1.0
FiberMax 9058F	2.6	36.1	77.5	27.7	5.6	3.7	84.5	7.0	1.7	1.0
NexGen 1551RF	3.0	35.4	80.7	30.5	6.2	2.7	82.3	8.4	1.3	1.0
All-Tex Summit B2RF	2.5	34.7	79.1	26.4	6.6	3.3	83.7	7.8	1.3	1.0
Test average	2.7	35.3	79.2	28.5	6.6	3.4	83.4	7.7	1.4	1.0
CV, %	3.4	1.7	1.3	3.1	3.4	17.5	0.3	1.6	--	--
OSL	<0.0001	0.0020	0.0127	0.0006	<0.0001	0.0018	<0.0001	<0.0001	--	--
LSD	0.2	1.1	1.7	1.5	0.4	1.0	0.5	0.2	--	--

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level.

AgriLIFE EXTENSION
Texas A&M System

Replicated LESA Irrigated Cotton Variety Demonstration, 36°06'N 101°45'W Elevation-3468 ft Sunray, TX – 2010 Cooperator: Tommy Cartrite

Rex Brandon, Marcel Fischbacher, Brent Bean, Randy Boman, Mark Kelley, and Jake Becker - AgriLife Research Assistant, CEA-ANR Moore County, Extension Agronomist - Amarillo, Extension Agronomist - Cotton - Lubbock, Extension Program Specialist II - Cotton, AgriLife Research Assistant

Sherman County

Summary: Average lint yield was 1,052 lb/acre and varied from a low of 926 lb/acre for Deltapine 104B2RF to a high of 1,293 lb/acre for Deltapine 0912B2RF. Average lint turnout was 29.7%. Lint loan values averaged $0.5414. When subtracting ginning, seed and technology fee costs, the average net value/acre across varieties was $523.76. Net value per acre ranged from a high of $645.58 for Deltapine 0912B2RF to a low of $450.48 for Deltapine 104B2RF, a difference of $195.08. Micronaire averaged 3.4 with Deltapine 1028B2RF being the highest at 3.7. Average staple was 36.3 across all varieties. The highest uniformity was observed for NexGen 1551RF (81.8%), and FiberMax 9058F had the lowest at 79.6%. Strength values ranged from a low of 27.6 g/tex (Deltapine 1028B2RF) to a high of 32.1 g/tex (NexGen 1551RF). Performance and rankings of varieties tested varied greatly in 2010 compared to 2008 and 2009, largely due to excellent weather conditions in 2010.

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

Materials and Methods:

Varieties: Deltapine 1028B2RF, Deltapine 0912B2RF, Deltapine 104B2RF, Deltapine 1032B2RF, Deltapine 0920B2RF, FiberMax 9180B2F, FiberMax 1740B2F, FiberMax 9058F, NexGen 1551RF, NexGen 2549B2RF, and All-Tex Summit B2RF

Experimental design: Randomized complete block with 3 replications

Seeding rate: 3 seeds/row-ft in 20-inch row spacing (78,000 seed/acre)

Plot Size: 12 rows approximately 600 ft in length

Planting date: 25-May

Weed management: Pre: 9-May, 2.5 pts Prowl H20. Post: 16-May, 26 oz Roundup. 27-May, 32 oz Powermax + 1.5 gallon of 100 Bronco Plus. 21-July, PowerMax + 6 oz Interlock (drift retardant)

Rainfall and Irrigation: 7.75 inches irrigation with a LESA center pivot system. 13.26 inches rainfall during the growing season (data from Etter, TX weather station)

Insecticides: 27-June, 3 oz/acre acephate. 10-July, 4 oz/acre acephate

Fertilizer management: Fertigation: 13-August 3 gal/ac 16-22-0

Soil Profile N: Nitrogen NO3-N, lb/ac

	0-6"	6-12"	12-24"	24-36"
Pre-plant	6	36	42	62
Post harvest	14	5	<4	<4

Plant growth regulators: 10-July, 3 oz/ac Stance + Surfactant. 21-July, 3 oz/ac Stance (applied with PowerMax for weed control)

Harvest aids: 13-Oct, 2 pts Boll Buster + 1 pt Folex + Nonionic adjuvant

Harvest: Plots were harvested on 23-November using a commercial John Deere 7460 stripper with field cleaner. Harvested material was transferred to a weigh wagon with integral electronic scales to determine plot weights. Plot yields were subsequently adjusted to lb/acre.

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

Fiber analysis: Lint samples were submitted to the Texas Tech University Fiber and Biopolymer Research Institute for HVI analysis, and Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.

Ginning cost and seed value: Ginning costs were based on $3.00 per cwt. of bur cotton and seed value/acre was based on $175/ton. Ginning costs did not include checkoff.

Seed and technology fees: Seed and technology costs were calculated using the appropriate seeding rate (3 seed/row-ft) for the 20-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://www.plainscotton.org/Seed/PCGseed10.xls.

Results and Discussion:

Lint turnout ranged from a low of 26.7% to a high of 32.8% for All-Tex Summit B2RF and Deltapine 1032B2RF, respectively (Table 1). Lint yields varied from a low of 926 lb/acre with Deltapine 104B2RF to a high of 1,293 lb/acre with Deltapine 0912B2RF. Lint loan values averaged $0.5414/lb. Deltapine 0920B2RF had the highest lint loan value at $0.5648. After adding lint and seed value, total value/acre ranged from a low of $661.76 for Deltapine 104B2RF to a high of $871.46 for Deltapine 0912B2RF. When subtracting ginning, seed and technology fee costs the net value/acre among varieties ranged from a low of $450.48 for Deltapine 104B2RF to a high of $645.58 for Deltapine 0912B2RF, a difference of $195.08.

Significant differences were observed among varieties for all HVI quality grade parameters (Table2). Micronaire values ranged from a low of 3.0 for Deltapine 104B2RF and NexGen 2549B2RF to a high of 3.7 for Deltapine 128B2RF. Staple averaged 36.3 across all varieties with a low of 35.5 for Deltapine 1028B2RF to a high of 37.4 for FiberMax 9058B2F. The highest uniformity was observed for NexGen 1551RF at 81.8% and FiberMax 9058F had the lowest with 79.6%. Strength averaged 29.7 g/tex, with a high of 31.2 g/tex for FiberMax 9180B2F and a low of 27.6 g/tex for Deltapine 1028B2RF. Elongation averaged 7.0% across all varieties. Deltapine 104B2RF had the highest leaf grade at 3.3. Deltapine 1028B2RF was lowest at 1.3. Rd or reflectance averaged 82.8 and +b or yellowness averaged 8.1 within all varieties.

These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection. In this trial, Deltapine 0912B2RF gave the highest net value, returning $81 more per acre more than the next highest variety, FiberMax 1740B2F. This is in contrast to last year where Deltapine 0912BRF produced one of the lowest net returns of the varieties tested. Additional multi-site and multi-year applied research is needed to evaluate varieties and technology across a series of environments.

Acknowledgments:

Appreciation is expressed to Tommy Cartrite for the use of his land, equipment and labor for this demonstration. Further assistance with this project was provided by Dr. Jane Dever - Texas AgriLife Research and Extension Center, Lubbock, and Dr. Eric Hequet - Associate Director, Fiber and Biopolymer Research Institute, Texas Tech University. Furthermore, we greatly appreciate the Texas Department of Agriculture - Food and Fiber Research for funding of HVI testing.

Disclaimer Clause:

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Table 1. Harvest results from the cotton variety demonstration, Tommy Cartrite Farm, Sherman Co., 2010

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 0912B2RF	32.5	51.8	3974	1293	2059	0.5348	691.31	180.15	871.46	119.22	106.66	645.58	a
FiberMax 1740B2F	31.4	52.3	3596	1129	1879	0.5457	616.29	164.43	780.72	107.88	108.22	564.61	b
Deltapine 0920B2RF	31.2	51.1	3250	1015	1662	0.5648	573.54	145.39	718.92	97.49	78.61	542.82	bc
Deltapine 1032B2RF	32.8	50.0	3545	1164	1774	0.5055	588.63	155.23	743.86	106.35	97.60	539.90	bcd
NexGen 2549B2RF	28.5	54.4	3712	1058	2020	0.5290	559.45	176.71	736.16	111.35	104.90	519.91	bcd
FiberMax 9058F	29.2	53.7	3462	1012	1857	0.5565	563.27	162.53	725.80	103.86	104.90	517.04	bcd
Deltapine 1028B2RF	31.6	49.9	3355	1060	1674	0.5413	574.03	146.46	720.49	100.66	106.66	513.17	bcde
All-Tex Summit B2RF	26.7	54.2	3666	979	1985	0.5533	541.97	173.71	715.68	109.97	106.66	499.05	cde
NexGen 1551RF	27.8	56.5	3458	962	1954	0.5523	531.30	170.95	702.25	103.74	104.90	493.61	cde
FiberMax 9180B2F	28.0	54.4	3455	969	1881	0.5392	522.44	164.59	687.04	103.65	108.22	475.17	de
Deltapine 104B2RF	26.9	56.1	3435	926	1928	0.5327	493.10	168.66	661.76	103.06	108.22	450.48	e
Test average	29.7	53.1	3537	1052	1879	0.5414	568.67	164.44	733.10	106.11	103.23	523.76	
CV, %	3.7	1.2	6.3	6.3	6.3	3.6	6.3	6.3	6.3	6.3	--	7.3	
OSL	<0.0001	<0.0001	0.0502†	<0.0001	0.0064	0.0796†	0.0002	0.0064	0.0027	0.0502†	--	0.0007	
LSD	1.9	1.1	313	112	202	0.0275	60.84	17.68	78.39	9.39	--	65.52	

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 signficance at the 0.10 level.
Note: some columns may not add up due to rounding error.

Assumes:
$3.00/cwt ginning cost.
$175/ton for seed.
Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Table 2. HVI fiber property results from the replicated cotton variety demonstration, Tommy Cartrite Farm, Sherman Co., 2010

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32^{nds} inches	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
Deltapine 0912B2RF	3.6	36.3	80.9	29.0	7.4	3.0	82.2	8.2	1.7	1.0
FiberMax 1740B2F	3.3	36.2	80.4	30.4	6.6	2.7	83.7	7.7	1.3	1.0
NexGen 2549B2RF	3.0	35.2	80.8	30.4	7.1	3.0	81.9	8.1	2.0	1.0
Deltapine 1032B2RF	3.6	36.3	80.4	29.4	6.9	2.0	83.0	8.3	1.0	1.0
Deltapine 1028B2RF	3.7	35.5	81.2	27.6	7.8	1.3	81.6	9.3	1.0	1.0
Deltapine 0920B2RF	3.6	35.7	79.9	28.5	7.3	3.0	82.4	8.3	1.0	1.0
FiberMax 9058F	3.1	37.4	79.6	29.1	5.9	2.0	84.5	7.2	1.3	1.0
NexGen 1551RF	3.6	36.4	81.8	32.1	6.7	2.3	81.4	8.5	1.3	1.0
All-Tex Summit B2RF	3.1	35.8	81.0	27.8	7.3	2.3	83.1	8.1	1.0	1.0
FiberMax 9180B2F	3.3	37.2	80.9	31.2	6.3	2.7	84.1	7.2	1.7	1.0
Deltapine 104B2RF	3.0	36.8	81.3	31.1	7.4	3.3	82.7	7.9	1.3	1.0
Test average	3.4	36.3	80.7	29.7	7.0	2.5	82.8	8.1	1.3	1.0
CV, %	4.6	1.2	0.9	2.7	4.3	27.5	0.6	2.9	--	--
OSL	<0.0001	<0.0001	0.0420	<0.0001	<0.0001	0.0709†	<0.0001	<0.0001	--	--
LSD	0.3	0.7	1.2	1.4	0.5	1.0	0.9	0.4	--	--

CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, †indicates signficance at the 0.10 level.

AgriLIFE EXTENSION
Texas A&M System

Replicated LESA Irrigated Cotton Variety Demonstration

Cooperator: Jud Cheuvront

Manda Anderson, Extension Agent - IPM
Dr. Mark Kelley, Extension Program Specialists II - Cotton
Dr. Randy Boman, Extension Agronomist - Cotton

Gaines County

Summary: Significant differences were observed for all yield, economic, and HVI fiber quality parameters measured. Lint turnout ranged from a low of 34.7% and a high of 41.8% for Stoneville 4288B2F and PhytoGen 375WRF, respectively. Lint yield varied with a low of 1253 lb/acre (All-Tex ApexB2RF) and a high of 1708 (FiberMax 9170B2F). Lint loan values ranged from a low of $0.5507/lb (All-Tex 65207B2RF) to a high of $0.5738/lb (FiberMax 9170B2F). Net value/acre among varieties ranged from a high of $973.05 (FiberMax 9170B2F) to a low of $683.29 (All-Tex 65207B2RF), a difference of $289.80. Micronaire values ranged from a low of 4.0 for Phytogen 367WRF and NexGen 3348B2RF to a high of 4.7 for Stoneville 4288B2F. Staple averaged 35.6 across all varieties with a low of 34.8 for Deltapine 0935B2RF and a high of 38.0 for FiberMax 9170B2F. Percent uniformity ranged from a high of 82.8% for NexGen 3348B2RF to a low of 80.2% for Deltapine 1032B2RF. Strength values averaged 28.6 g/tex with a high of 30.9 g/tex for FiberMax 9170B2F and a low of 26.2 g/tex for All-Tex ApexB2RF. These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection.

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

Materials and Methods:

Varieties: All-Tex 65207B2RF, All-Tex ApexB2RF, Dyna-Gro 2570B2RF, Deltapine 0935B2RF, Deltapine 1032B2RF, FiberMax 1740B2F, FiberMax 9170B2F, NexGen 3348B2RF, PhytoGen 367WRF, PhytoGen 375WRF, Stoneville 4288B2F, and Stoneville 5458B2RF

Experimental design: Randomized complete block with 3 replications

Seeding rate: 4.2 seeds/row-ft in 36-inch row spacing

Plot size: 6 rows by variable length of field (465ft to 722ft long)

Planting date: 6-May

Soil texture: 90% sand, 3% silt, and 7% clay

Soil pH: 7.6

Fertilization: 2-April applied 39 gallons of 7-12-6-3. Applied 19 gal of 32-0-0 on 5-June, 17-June, and 23-June. 5 oz/acre of Zinc applied on 7-August.

Weed management: A preplant application of Trifluralin (1pt/acre) on 12-April. 2.1 oz/acre Staple and 40 oz/acre of Makaze applied on 7-July.

Plant growth regulators: 2 oz/acre Potenza applied on 22-June, 7-July, and 21-July. 4 oz/acre of Pentza applied on 7-August.

Irrigation: This location was under a LESA center pivot. This trial received approximately 25.66 inches of irrigation and rainfall from 6-May to 14-October.

Date	Inches of Irrigation/Rainfall
6-May to 10-June	3.36
11-June to 15-July	11.35
16-July to 27-August	6.15
28-August to 22-October	4.8

Insecticides/ Nematicides: Temik 15G was applied infurrow at planting at a rate of 5 lb/acre. 8 oz of Vydate C-LV applied in a band on 9-June and 22-June.

Harvest aids: Applied $1^1/_2$ pt/acre of Bollbuster, 1 oz/acre Aim on 4-September. Applied 1 pt/acre of Gramoxone on 15-September.

Harvest: Plots were harvested on 22-October using a commercial picker harvester. Harvest material was transferred into a weigh wagon with integral electronic scales to determine individual plot weights. Plot yields were adjusted to lb/acre.

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

Fiber analysis: Lint samples were submitted to the Fiber and Biopolymer Research Institute at Texas Tech University for HVI analysis, and USDA Commodity Credit Corporation (CCC) Loan values were determined for each variety by plot.

Ginning cost and seed values: Ginning costs were based on $3.00 per cwt. of bur cotton and seed value/acre was based on $175/ton. Ginning costs did not include checkoff.

Seed and technology fees: Seed and technology costs were calculated using the appropriate seeding rate (4.2 seed/row-ft) for the 36 row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://www.plainscotton.org/Seed/PCGseed10.xls

Results and Discussion:

Significant differences were observed for all yield, economic, and HVI fiber quality parameters measured (Tables 1 and 2). Lint turnout ranged from a low of 34.7% and a high of 41.8% for Stoneville 4288B2F and PhytoGen 375WRF, respectively. Seed turnout ranged from a high of 56.0% for Stoneville 4288B2F to a low of 51.7% for Deltapine 1032B2RF. Bur cotton yields averaged 3792lb/acre with a high of 4594 lb/acre for FiberMax 9170B2F, and a low of 3401 lb/acre for Dyna-Gro 2570B2RF. Lint yield varied with a low of 1253 lb/acre (All-Tex ApexB2RF) and a high of 1708 (FiberMax 9170B2F). Lint loan values ranged from a low of $0.5507/lb (All-Tex 65207B2RF) to a high of $0.5738/lb (FiberMax 9170B2F). After adding lint and seed value, total value/acre for varieties ranged from a low of $858.46 for All-Tex 65207B2RF to a high of $1196.23 for FiberMax 9170B2F. When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of $973.05 (FiberMax 9170B2F) to a low of $683.29 (All-Tex 65207B2RF), a difference of $289.80.

Micronaire values ranged from a low of 4.0 for Phytogen 367WRF and NexGen 3348B2RF to a high of 4.7 for Stoneville 4288B2F. Staple averaged 35.6 across all varieties with a low of 34.8 for Deltapine 0935B2RF and a high of 38.0 for FiberMax 9170B2F. Percent uniformity ranged from a high of 82.8% for NexGen 3348B2RF to a low of 80.2% for Deltapine 1032B2RF. Strength values averaged 28.6 g/tex with a high of 30.9 g/tex for FiberMax 9170B2F and a low of 26.2 g/tex for All-Tex ApexB2RF. Elongation ranged from a high of 8.5% for Dyna-Gro 2570B2F to a low of 6.1% for FiberMax 9170B2F. Leaf grades ranged from 1 to 3, with a test average of 2.0. Values for reflectance (Rd) and yellowness (+b) averaged 82.1 and 7.8, respectively.

Conclusions:

These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection. It should be noted that no inclement weather was encountered at this location prior to harvest and therefore, no pre-harvest losses were observed. Additional multi-site and multi-year applied research is needed to evaluate varieties and technology across a series of environments.

Acknowledgements:

Appreciation is expressed to Jud Cheuvront for the use of his land, equipment and labor for this demonstration. Further assistance with harvesting was provided by Jerardo Froese. 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 cotton variety trial under center pivot irrigation, Jud Cheuvront Farm, Seminole, TX, 2010.

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 9170B2F	37.2	53.8	4594	1708	2471	0.5738	980.06	216.17	1196.23	137.83	85.35	973.05	a
PhytoGen 367WRF	37.5	52.8	4033	1512	2130	0.5655	855.14	186.41	1041.55	120.98	83.73	836.83	b
FiberMax 1740B2F	37.6	53.5	3964	1491	2121	0.5635	840.11	185.61	1025.72	118.91	85.35	821.46	bc
Stoneville 4288B2F	34.7	56.0	4162	1443	2328	0.5613	810.24	203.74	1013.98	124.85	85.35	803.78	bcd
PhytoGen 375WRF	41.8	52.4	3460	1448	1814	0.5615	812.88	158.73	971.60	103.81	83.73	784.06	bcd
Deltapine 0935B2RF	38.2	53.7	3765	1437	2020	0.5577	801.25	176.75	978.01	112.94	85.46	779.60	bcd
Deltapine 1032B2RF	39.6	51.7	3584	1418	1853	0.5658	802.23	162.14	964.37	107.53	86.68	770.16	bcde
NexGen 3348B2RF	35.3	55.9	3841	1356	2147	0.5577	756.24	187.83	944.07	115.22	76.31	752.54	cdef
Stoneville 5458B2RF	36.0	54.9	3721	1338	2042	0.5637	754.29	178.66	932.95	111.62	85.35	735.98	def
Dyna-Gro 2570B2RF	37.9	54.5	3401	1289	1855	0.5610	722.99	162.33	885.32	102.03	83.47	699.82	ef
All-Tex Apex B2RF	35.7	55.8	3505	1253	1954	0.5663	709.43	170.96	880.40	105.14	77.59	697.67	f
All-Tex 65207B2RF	36.2	54.8	3473	1257	1903	0.5507	691.93	166.53	858.46	104.19	70.99	683.29	f
Test average	37.3	54.1	3792	1412	2053	0.5624	794.73	179.65	974.39	113.75	82.45	778.19	
CV, %	5.1	1.1	5.1	4.9	5.2	1.2	4.9	5.2	5.0	5.1	--	5.5	
OSL	0.0089	<0.0001	<0.0001	<0.0001	<0.0001	0.0549†	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	
LSD	3.2	1.0	326	118	180	0.0093	65.95	15.76	81.69	9.78	--	71.92	

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 signficance at the 0.10 level.
Note: some columns may not add up due to rounding error.

Assumes:
$3.00/cwt ginning cost.
$175/ton for seed.
Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Table 2. HVI fiber property results from the cotton variety trial under center pivot irrigation, Jud Cheuvront Farm, Seminole, TX, 2010.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32^{nds} inches	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
All-Tex 65207B2RF	4.3	35.0	82.0	27.9	7.3	3.0	81.3	8.0	2.0	1.0
All-Tex Apex B2RF	4.3	35.6	81.1	26.2	7.3	1.7	82.3	7.7	2.0	1.0
Dyna-Gro 2570B2RF	4.3	35.0	81.7	28.6	8.5	1.3	81.8	8.2	1.7	1.0
Deltapine 0935B2RF	4.2	34.8	80.4	28.7	7.1	1.3	83.1	7.9	1.7	1.0
Deltapine 1032B2RF	4.4	35.4	80.2	28.8	6.8	1.3	83.0	7.4	2.0	1.0
FiberMax 1740B2F	4.3	35.3	81.5	28.8	6.8	1.7	83.1	7.4	2.0	1.0
FiberMax 9170B2F	4.2	38.0	81.6	30.9	6.1	1.0	83.9	7.1	2.0	1.0
NexGen 3348B2RF	4.0	35.9	82.8	29.4	7.1	3.3	80.7	7.9	2.0	1.0
PhytoGen 367WRF	4.0	36.4	81.2	29.2	7.7	2.7	81.3	8.3	2.0	1.0
PhytoGen 375WRF	4.1	35.0	80.7	28.2	7.3	1.7	82.6	7.5	2.0	1.0
Stoneville 4288B2F	4.7	35.2	81.3	27.7	7.8	2.3	81.6	8.2	2.0	1.0
Stoneville 5458B2RF	4.4	35.7	80.5	28.7	7.1	2.7	80.8	8.2	2.0	1.0
Test average	4.3	35.6	81.2	28.6	7.2	2.0	82.1	7.8	1.9	1.0
CV, %	3.1	1.5	0.9	2.2	2.7	32.9	0.5	2.1	--	--
OSL	0.0002	<0.0001	0.0068	<0.0001	<0.0001	0.0025	<0.0001	<0.0001	--	--
LSD	0.2	0.9	1.2	1.0	0.3	1.1	0.7	0.3	--	--

CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level.

Replicated LESA Irrigated Cotton Variety Demonstration Under Full and Limited (15% reduction) Irrigation Texas AgriLife Extension Service

Cooperator: Shelby Elam

Manda Anderson, Extension Agent - IPM
Dr. Dana Porter, Extension Ag Engineering Specialist
Dr. Mark Kelley, Extension Program Specialists II - Cotton
Dr. Randy Boman, Extension Agronomist - Cotton

Gaines County

Summary: Significant differences were observed for all yield, economic, and most of the HVI fiber quality parameters measured. Net value/acre among varieties ranged from a high of $914.77 (Deltapine 1032B2RF-Full Irrigation) to a low of $619.30 (NexGen 3348B2RF-Limited Irrigation), a difference of $295.48. There was a significant difference of $209.74 between the Deltapine 1032B2RF-Full Irrigation and Deltapine 1032B2RF-Limited Irrigation. There was also a significant difference of $97.72 between the NexGen 3348B2RF-Full Irrigation and NexGen 3348B2RF-Limited Irrigation. However, there was no significant difference between the Stoneville 4288B2RF-Full Irrigation and Stoneville 4288B2RF-Limited Irrigation. Phytogen 367WRF showed a large numerical difference in net value of $118.90 between the full and limited irrigation. Dyna-Gro 2570B2RF also showed a large numerical difference of $62.90 between the full and limited irrigation. However, Stoneville 5458B2RF did not show a large numerical difference between full and limited irrigation. These data indicate that some varieties may have substantial differences in terms of varieties performance due to irrigation amounts. However, other varieties may not have as great of performance differences under varying levels of irrigation.

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

Materials and Methods:

Varieties: Dyna-Gro 2570B2RF, Deltapine 1032B2RF, NexGen 3348B2RF, PhytoGen 367WRF, Stoneville 4288B2F, and Stoneville 5458B2RF

Experimental design: Randomized complete block with 3 replications

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

Plot size: 4 rows by variable length of field (175ft to 810ft long)

Planting date: 11-May

Soil Texture: 92% sand, 1% silt, and 7% clay

Soil pH: 8.0

Irrigation: This location was under a LESA center pivot. The full irrigation portion of the trial received approximately 15.87 inches of irrigation and rainfall from 11-May to 3-August. The limited irrigation portion of the trial received approximately 13.53 inches (15% reduction) of irrigation and rainfall from 11-May to 27-August 27. Irrigation and rainfall was not recorded after this time period.

Date	Inches of Irrigation/Rainfall Full Irrigation	Inches of Irrigation/Rainfall Limited Irrigation
11-May to 10-June	2.48	1.76
11-June to 15-July	8.29	7.07
16-July to 27-August	5.1	4.7

Insecticides: Temik 15G was applied infurrow at planting at a rate of 5 lb/acre

Harvest: Plots were harvested on 18-October using a commercial stripper harvester. Harvest material was transferred into a weigh wagon with integral electronic scales to determine individual plot weights. Plot yields were adjusted to lb/acre.

We were unable to harvest the 3rd replication of Dyna-Gro 2570B2RF, PhytoGen 367WRF, and Stoneville 5458B2RF. Therefore, these three varieties were excluded from the statistical analysis that is reported in Tables 1 and 2.

Averages of the 1st and 2nd replications for all varieties are reported in Table 3.

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

Fiber Analysis: Lint samples were submitted to the Fiber and Biopolymer Research Institute at Texas Tech University for HVI analysis, and USDA Commodity Credit Corporation (CCC) Loan values were determined for each variety by plot.

Ginning cost and seed values: Ginning cost were based on $3.00 per cwt. of bur cotton and seed value/acre was based on $175/ton. Ginning costs did not include checkoff.

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

Results and Discussion:

Significant differences were observed for all yield, economic, and most of the HVI fiber quality parameters measured (Tables 1 and 2). Lint turnout ranged from a low of 29.8% and a high of 37.4% for NexGen 3348B2RF-Limited and Deltapine 1032B2RF-Full, respectively (Table 1). Seed turnout ranged from a high of 52.1% for NexGen 3348B2RF-Limited to a low of 47.1% for Deltapine 1032B2RF-Limited. Bur cotton yields averaged 4271lb/acre with a high of 4892 lb/acre for Stoneville 4288B2RF-Full, and a low of 3659 lb/acre for NexGen 3348B2RF-Limited. Lint yield varied with a low of 1092 lb/acre (NexGen 3348B2RF-Limited) and a high of 1616 (Deltapine 1032B2RF-Full). Lint loan values ranged from a low of $0.5548/lb (Stoneville 4288B2RF-Limited) to a high of $0.5742/lb (Deltapine 1032B2RF-Full). After adding lint and seed value, total value/acre for varieties ranged from a low of $786.31 for NexGen 3348B2RF-Limited to a high of $1109.58 for Deltapine 1032B2RF-Full.

When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of $914.77 (Deltapine 1032B2RF-Full Irrigation) to a low of $619.30 (NexGen 3348B2RF-Limited Irrigation), a difference of $295.48 (Table 1). There was a significant difference of $209.74 between the Deltapine 1032B2RF-Full Irrigation and Deltapine 1032B2RF-Limited Irrigation. There was also a significant difference of $97.72 between the NexGen 3348B2RF-Full Irrigation and NexGen 3348B2RF-Limited Irrigation. However, there was no significant difference between the Stoneville 4288B2RF-Full Irrigation and Stoneville 4288B2RF-Limited Irrigation.

Phytogen 367WRF showed a large numerical difference in net value of $118.90 between the full and limited irrigation (Table 3). Dyna-Gro 2570B2RF also showed a large numerical difference of $62.90 between the full and limited irrigation. However, Stoneville 5458B2RF did not show a large numerical difference between full and limited irrigation.

Micronaire values ranged from a low of 4.2 for NexGen 3348B2RF-Full to a high of 4.8 for Stoneville 4288B2F (Table 2). Staple averaged 36.6 across all

varieties with a low of 35.9 for Stoneville 4288B2F-Limited and a high of 37.3 for Deltapine 1032B2RF. Percent uniformity averaged 82.4% and strength averaged 30.0 g/tex with no differences noted. Elongation ranged from a high of 7.8% for Stoneville 4288B2F-Limited to a low of 6.6% for Deltapine 1032B2RF-Full. Leaf grades ranged from 1 to 3, with a test average of 2.5. Values for reflectance (Rd) and yellowness (+b) averaged 80.8 and 8.4, respectively.

Conclusions:

These data indicate that some varieties may have substantial differences in terms of varieties performance due to irrigation amounts. However, other varieties may not have as great of performance differences under varying levels of irrigation. Additional multi-site and multi-year applied research is needed to evaluate varieties and technology across a series of environments.

Acknowledgements:

Appreciation is expressed to Shelby Elam for the use of his land, equipment and labor for this demonstration. 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 cotton variety trial under full and limited center pivot irrigation (3 varieties), Shelby Elam Farm, Seminole, TX, 2010.

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 1032B2RF (Full Irrigation)	37.4	48.0	4327	1616	2075	0.5742	928.05	181.53	1109.58	129.80	65.01	914.77 a
Stoneville 4288B2F (Full Irrigation)	30.1	51.2	4892	1474	2505	0.5557	819.27	219.21	1038.47	146.76	64.01	827.70 a
Stoneville 4288B2F (Limited Irrigation)	30.8	51.1	4795	1475	2451	0.5548	818.51	214.49	1033.00	143.85	64.01	825.14 a
NexGen 3348B2RF (Full Irrigation)	30.5	51.8	4122	1256	2135	0.5662	711.12	186.79	897.92	123.66	57.23	717.02 b
Deltapine 1032B2RF (Limited Irrigation)	33.2	47.1	3828	1269	1805	0.5727	726.98	157.92	884.90	114.85	65.01	705.03 bc
NexGen 3348B2RF (Limited Irrigation)	29.8	52.1	3659	1092	1907	0.5672	619.44	166.87	786.31	109.78	57.23	619.30 c
Test average	32.0	50.2	4271	1364	2146	0.5651	770.56	187.80	958.36	128.12	62.09	768.16
CV, %	8.1	2.2	6.0	6.0	6.1	1.4	6.0	6.1	6.0	6.0	--	6.5
OSL	0.0345	0.0009	0.0007	0.0002	0.0003	0.0524†	0.0002	0.0003	0.0004	0.0007	--	0.0003
LSD	4.7	2.0	470	150	239	0.0117	84.17	20.95	104.72	14.10	--	90.75

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 signficance at the 0.10 level.
Note: some columns may not add up due to rounding error.

Assumes:
$3.00/cwt ginning cost.
$175/ton for seed.
Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Table 2. HVI fiber property results from the cotton variety trial under full and limited center pivot irrigation (3 varieties), Shelby Elam Farm, Seminole, TX, 2010.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32^{nds} inches	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
Deltapine 1032B2RF (Limited Irrigation)	4.7	37.3	82.4	30.9	6.9	1.0	82.5	8.1	1.3	1.0
Deltapine 1032B2RF (Full Irrigation)	4.4	37.3	83.3	30.9	6.6	1.7	81.9	8.1	1.7	1.0
NexGen 3348B2RF (Limited Irrigation)	4.3	36.4	81.8	30.1	6.9	2.7	79.9	8.6	2.0	1.0
NexGen 3348B2RF (Full Irrigation)	4.2	36.3	82.5	29.9	6.9	3.0	79.9	8.6	2.0	1.0
Stoneville 4288B2F (Limited Irrigation)	4.8	35.9	82.5	28.4	7.8	3.0	80.7	8.4	1.7	1.0
Stoneville 4288B2F (Full Irrigation)	4.8	36.6	82.1	29.6	7.5	3.7	79.6	8.6	2.0	1.0
Test average	4.5	36.6	82.4	30.0	7.1	2.5	80.8	8.4	1.8	1.0
CV, %	4.3	1.0	1.1	3.8	4.2	16.3	0.5	2.9	--	--
OSL	0.0172	0.0039	0.4628	0.1629	0.0045	0.0001	<0.0001	0.0556†	--	--
LSD	0.4	0.7	NS	NS	0.5	0.7	0.7	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, †indicates significance at the 0.10 level, NS - not significant

Table 3. Harvest results from the cotton variety trial under full and limited center pivot irrigation (all varieties), Shelby Elam Farm, Seminole, TX, 2010.

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 ----------					
PHY 367WRF (Full Irrigation)	32.5	49.3	4942	1605	2440	0.5708	916.73	213.49	1130.22	148.27	62.80	919.15
DP 1032B2RF (Full Irrigation)	34.1	48.5	4524	1539	2192	0.5740	883.48	191.79	1075.27	135.73	65.01	874.53
ST 5458B2RF (Full Irrigation)	31.2	50.1	4982	1551	2496	0.5603	869.20	218.40	1087.60	149.46	64.01	874.13
ST 5458B2RF (Limited Irrigation)	32.6	50.8	4837	1571	2456	0.5458	857.45	214.90	1072.35	145.11	64.01	863.23
DG 2570B2RF (Full Irrigation)	33.7	51.8	4412	1485	2282	0.5735	851.43	199.71	1051.13	132.35	62.60	856.18
ST 4288B2F (Full Irrigation)	30.6	51.9	4946	1509	2555	0.5530	834.50	223.55	1058.05	148.37	64.01	845.67
ST 4288B2F (Limited Irrigation)	30.9	51.9	4770	1472	2475	0.5495	810.55	216.52	1027.07	143.09	64.01	819.97
PHY 367WRF (Limited Irrigation)	32.6	48.8	4364	1417	2130	0.5693	807.55	186.40	993.95	130.91	62.80	800.24
DG 2570B2RF (Limited Irrigation)	33.1	51.2	4188	1386	2145	0.5725	793.84	187.69	981.53	125.65	62.60	793.28
NG 3348B2RF (Full Irrigation)	30.5	51.3	4184	1275	2147	0.5658	721.53	187.84	909.38	125.53	57.23	726.62
DP 1032B2RF (Limited Irrigation)	33.8	47.8	3824	1293	1828	0.5735	741.73	159.99	901.72	114.72	65.01	721.99
NG 3348B2RF (Limited Irrigation)	29.9	52.3	3554	1060	1862	0.5673	601.23	162.91	764.15	106.63	57.23	600.29

We were not able to collect data from the third replication of PHY 367WRF, ST 5458B2RF, and DG 2570B2RF.
Therefore, the data in this table represents the average of two replications. Statistical Analysis was not performed.

AgriLIFE EXTENSION
Texas A&M System

Replicated LESA Irrigated Cotton Variety Demonstration and the Use of Vydate C-LV Under Root-knot Nematode Pressure

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Dr. Jason Woodward, Extension Plant Pathologist
Dr. Mark Kelley, Extension Program Specialists II - Cotton
Dr. Randy Boman, Extension Agronomist - Cotton

Gaines County

Summary: Significant differences were observed for most of the yield, economic, and HVI fiber quality parameters measured. Net value/acre among varieties ranged from a high of $619.38 (PhytoGen 375WRF-with Vydate) to a low of $472.24 (NexGen 4010B2RF), a difference of $147.14. There were no differences among varieties for root galling and root-knot nematode populations in the soil. Two of the varieties (Phytogen 375WRF and Stoneville 5458B2RF) were also tested with and without the nematicide Vydate CLV. Root-knot nematode population density was higher for Phytogen 375WRF than for Stoneville 5458B2RF when Vydate CLV was absent, but root-knot nematode had similar densities across both varieties when Vydate CLV was present. Root-knot nematode density was lower in Phytogen 375WRF when Vydate CLV was present, than when it was absent. However, root-knot population density was similar both in the absence and presence of Vydate CLV for Stoneville 5458B2RF. Net Value did not significantly differ between the PhytoGen 375WRF (no Vydate) and PhytoGen 375WRF (with Vydate). Also, net value did not significantly differ between the Stoneville 5458B2RF (no Vydate) and Stoneville 5458B2RF (with Vydate).

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

Materials and Methods:

Varieties: Deltapine 0935B2RF, Deltapine 1044B2RF, Deltapine 174RF, Dyna-Gro 2570B2RF, NexGen 3348B2RF, NexGen 4010B2RF, PhytoGen 367WRF, PhytoGen 375WRF, Stoneville 4288B2F, and Stoneville 5458B2RF

Experimental design: Randomized complete block with 3 replications

Seeding rate: 3.5 seeds/row-ft in 36-inch row spacing

Plot size: Variable length of field (770ft to 2507ft long) by 8 rows for all varieties except for Stoneville 5458B2RF and Phytogen 375WRF which had 16 rows

Planting date: 13-May

Soil texture: 90% sand, 3% silt, and 7% clay

Soil pH: 7.6

Irrigation: This location was under a LESA center pivot. This trial received approximately 13.45 inches of irrigation and rainfall from May 13 to July 20. Irrigation and rainfall amounts were not recorded after this period.

Date	Inches of Irrigation/Rainfall
13-May to 10-June	3.49
11-June to 20-July	9.96

Insecticides: Temik 15G was applied infurrow at planting at a rate of 5 lb/acre. Vydate C-LV was applied in a band at a rate of 17oz per acre on18-June to all plots except for 8 rows of Stoneville 5458B2RF and Phytogen 375WRF in each replication

Harvest: Plots were harvest on 16 & 18-November using a commercial stripper harvester. Harvest material was transferred into a weigh wagon with integral electronic scales to determine individual plot weights. Plot yields were adjusted to lb/acre.

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

Fiber analysis: Lint samples were submitted to the Fiber and Biopolymer Research Institute at Texas Tech University for HVI analysis, and USDA Commodity Credit Corporation (CCC) Loan values were determine for each variety by plot.

Ginning cost and seed values: Ginning cost were based on $3.00 per cwt. of bur cotton and seed value/acre was based on $175/tone. Ginning costs did not include checkoff.

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

Results and Discussion:

Significant differences were observed for most of the yield, economic, and HVI fiber quality parameters measured (Tables 1 and 2). Lint turnout ranged from a low of 29.7% and a high of 36.4% for NexGen 4010B2RF and PhytoGen 375WRF (with Vydate), respectively. Seed turnout ranged from a high of 51.8% for Stoneville 4288B2F to a low of 46.9% for Deltapine 174RF. Bur cotton yields averaged 3240lb/acre with a high of 3579 lb/acre for Stoneville 4288B2F, and a low of 2924 lb/acre for Deltapine 0935B2RF. Lint yield varied with a low of 879 lb/acre (NexGen 4010B2RF) and a high of 1175 (PhytoGen 375WRF-with Vydate). After adding lint and seed value, total value/acre for varieties ranged from a low of $634.54 for NexGen 4010B2RF to a high of $795.96 for PhytoGen 375WRF (with Vydate). When subtracting ginning, Vydate C-LV, seed and technology fee costs, the net value/acre among varieties ranged from a high of $619.38 (PhytoGen 375WRF-with Vydate) to a low of $472.24 (NexGen 4010B2RF), a difference of $147.14. There was no significant difference between the PhytoGen 375WRF (no Vydate) and PhytoGen 375WRF (with Vydate). Also, there was no significant difference between the Stoneville 5458B2RF (no Vydate) and Stoneville 5458B2RF (with Vydate).

Micronaire values ranged from a low of 3.6 for NexGen 3348B2RF to a high of 4.7 for Deltapine 0935B2RF, Stoneville 4288B2F, and Stoneville 5458B2RF with Vydate. Staple averaged 35.2 across all varieties with a low of 34.0 for Deltapine 0935B2RF and a high of 36.6 for NexGen 4010B2RF. Percent uniformity ranged from a high of 81.9% for NexGen 4010B2RF to a low of 79.1% for Stoneville 5458B2RF. Strength values averaged 28.3 g/tex with a high of 30.8 g/tex for NexGen 4010B2RF and a low of 26.5 g/tex for Stoneville 4288B2RF. Elongation ranged from a high of 8.4% for Deltapine 1044B2RF to a low of 6.6% for NexGen 3348B2RF. Leaf grades ranged from 1 to 3, with a test average of 2.5. Values for reflectance (Rd) and yellowness (+b) averaged 82.2 and 7.7, respectively.

All of the varieties were examined for differences in root galling and root-knot nematode populations in the soil. There were no differences among varieties for these parameters (Table 3).

Two of the varieties (Phytogen 375WRF and Stoneville 5458B2RF) were also tested with and without the nematicide Vydate CLV. The application of this chemical is made after the first generation of the nematode has already entered the roots and caused some galling, so the soil and root population density of root-knot was the only parameter of interest. Root-knot nematode population density was higher for Phytogen 375WRF than for Stoneville 5458B2RF when Vydate CLV was absent (Table 4), but root-knot nematode had similar densities across both varieties when Vydate CLV was present. Root-knot nematode density was lower in Phytogen 375WRF when Vydate CLV was present, than

when it was absent (Table 4). However, root-knot population density was similar both in the absence and presence of Vydate CLV for Stoneville 5458B2RF.

Conclusions:

These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection. However, no differences were obtained in terms of net value/acre due to the use of Vydate C-LV. It should be noted that no inclement weather was encountered at this location prior to harvest and therefore, no pre-harvest losses were observed. Additional multi-site and multi-year applied research is needed to evaluate varieties, technology, and use of Vydate C-LV across a series of environments.

Acknowledgements:

Appreciation is expressed to Roy Johnson for the use of his land, equipment and labor for this demonstration. 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 cotton variety trial under low root-knot nematode pressure, Roy Johnson Farm, Seminole, TX, 2010.

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	Vydate cost	Net value	
	-------- % --------		---------- lb/acre ----------			$/lb	---------- $/acre ----------							
PhytoGen 375WRF (Vydate)	36.4	48.0	3232	1175	1551	0.5617	660.23	135.73	795.96	96.97	69.78	9.83	619.38	a
PhytoGen 367WRF (Vydate)	32.7	48.2	3523	1152	1699	0.5567	641.27	148.70	789.97	105.69	69.78	9.83	604.68	ab
Stoneville 4288B2F (Vydate)	31.8	51.8	3579	1138	1854	0.5522	628.37	162.26	790.62	107.36	71.12	9.83	602.31	abc
Stoneville 5458B2RF (No Vydate)	32.6	49.8	3450	1124	1718	0.5455	613.01	150.33	763.34	103.51	71.12	0.00	588.70	abc
PhytoGen 375WRF (No Vydate)	34.5	47.9	3157	1090	1512	0.5612	611.59	132.33	743.92	94.72	69.78	0.00	579.43	abc
Stoneville 5458B2RF (Vydate)	33.4	49.5	3350	1117	1658	0.5442	608.04	145.06	753.10	100.50	71.12	9.83	571.65	abcd
Dyna-Gro 2570B2RF (Vydate)	33.7	51.2	3213	1082	1644	0.5577	603.30	143.87	747.17	96.38	69.56	9.83	571.40	abcd
NexGen 3348B2RF (Vydate)	31.3	51.6	3440	1077	1775	0.5450	586.81	155.31	742.12	103.19	63.59	9.83	565.50	bcd
Deltapine 174RF (Vydate)	35.6	46.9	2955	1051	1385	0.5610	589.49	121.23	710.72	88.66	61.60	9.83	550.63	cde
Deltapine 0935B2RF (Vydate)	35.4	49.5	2924	1036	1448	0.5408	560.41	126.67	687.09	87.73	71.22	9.83	518.31	def
Deltapine 1044B2RF (Vydate)	31.5	51.1	3099	976	1584	0.5515	538.50	138.56	677.06	92.98	70.00	9.83	504.26	ef
NexGen 4010B2RF (Vydate)	29.7	51.4	2962	879	1521	0.5705	501.41	133.13	634.54	88.87	63.59	9.83	472.24	f
Test average	33.2	49.7	3240	1075	1613	0.5540	595.20	141.10	736.30	97.21	68.52	8.19	562.37	
CV, %	4.6	1.6	4.8	5.0	4.8	2.4	5.0	4.8	4.9	4.8	--	--	5.6	
OSL	0.0005	<0.0001	0.0001	<0.0001	<0.0001	0.2492	<0.0001	<0.0001	0.0003	0.0001	--	--	0.0002	
LSD	2.6	1.4	266	90	130	NS	50.24	11.38	61.56	7.97	--	--	53.61	

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.
$175/ton for seed.
Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Table 2. HVI fiber property results from the cotton variety trial under low root-knot nematode pressure, Roy Johnson Farm, Seminole, TX, 2010.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32^{nds} inches	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
Deltapine 0935B2RF (Vydate)	4.7	34.0	80.5	27.7	7.0	1.0	83.4	7.8	1.3	1.0
Deltapine 1044B2RF (Vydate)	4.5	34.6	81.1	28.6	8.4	2.0	83.1	7.5	1.7	1.0
Deltapine 174RF (Vydate)	4.5	35.7	80.8	26.8	7.0	2.7	81.3	7.8	2.0	1.0
Dyna-Gro 2570B2RF (Vydate)	4.1	35.3	80.4	28.1	8.1	2.0	82.7	7.8	2.0	1.0
NexGen 3348B2RF (Vydate)	3.6	35.7	81.4	29.8	6.6	3.7	81.4	7.5	2.0	1.0
NexGen 4010B2RF (Vydate)	4.1	36.6	81.9	30.8	6.8	2.0	82.2	7.9	2.0	1.0
PhytoGen 367WRF (Vydate)	4.0	35.7	80.7	29.0	7.5	3.3	82.0	7.9	2.0	1.0
PhytoGen 375WRF (Vydate)	4.2	35.6	80.5	27.6	6.7	2.7	82.6	7.3	2.0	1.0
PhytoGen 375WRF (No Vydate)	4.3	35.1	81.6	27.7	6.8	2.3	82.9	7.4	1.7	1.0
Stoneville 4288B2F (Vydate)	4.7	35.1	80.1	26.5	7.5	3.0	82.2	7.8	2.0	1.0
Stoneville 5458B2RF (Vydate)	4.7	34.6	80.1	28.7	6.7	2.7	81.4	8.0	2.0	1.0
Stoneville 5458B2RF (No Vydate)	4.4	34.5	79.1	27.9	7.1	2.7	80.9	8.1	2.0	1.0
Test average	4.3	35.2	80.7	28.3	7.2	2.5	82.2	7.7	1.9	1.0
CV, %	7.3	1.5	1.0	2.4	5.1	27.9	0.6	2.5	--	--
OSL	0.0087	0.0005	0.0241	<0.0001	<0.0001	0.0122	<0.0001	0.0005	--	--
LSD	0.5	0.9	1.4	1.2	0.6	1.2	0.8	0.3	--	--

CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level.

Table 3. Root galling and population density of root-knot nematode for ten varieties when Vydate CLV was applied

Entry	Galls/ root	No. of root-knot nematode per 500 cm3 soil
Dyna-Gro 2570B2RF	19.3	267
Deltapine 1044B2RF	15	347
Deltapine 174RF	19	560
Deltapine 0935B2RF	11.3	2193
NexGen 3348B2RF	13.7	667
NexGen 4010B2RF	9	1245
PhytoGen 367WRF	11	525
PhytoGen 375WRF	16	284
Stoneville 4288B2F	12	0
Stoneville 5458B2RF	6	260

Table 4. Effect of Vydate CLV and variety on population density of root-knot nematode

Entry	Vydate CLV oz/acre	No. of root-knot nematode per 500 cm3 soil
PhytoGen 375WRF	0	1453 a
Stoneville 5458B2RF	0	640 b
PhytoGen 375WRF	17	347 b
Stoneville 5458B2RF	17	260 b

Common Variety Comparisons Across Irrigated Locations

Table 1. Lint Yield Summary Across Irrigated Locations - 2010.

Entry	RACE Trials						Systems Trials	
	Bailey County	Crosby County	Dawson County	Hale County	Hockley County	Lubbock County	Blanco	Muleshoe
	lb/acre							
All-Tex Apex B2RF	1380	1128	878	1166	1528	1263	--	--
All-Tex Epic RF	--	--	--	--	--	--	1417	--
All-Tex Patriot+ RF	--	--	--	--	--	--	--	1075
Croplan Genetics 3006B2RF	1466	--	875	1159	--	1199	--	--
Croplan Genetics 3220B2RF	--	1047	--	--	1639	--	--	--
Deltapine 0912B2RF	1462	--	--	1293	--	--	1311	1273
Deltapine 1032B2RF	--	1389	920	--	1852	1416	1523	1236
Deltapine 1044B2RF	--	--	--	--	--	--	1342	--
Dyna-Gro 2570B2RF	1465	1377	1092	1333	1767	1497	--	--
FiberMax 1740B2F	1492	1215	833	--	--	--	1368	1262
FiberMax 9058F	--	--	--	--	--	--	1286	--
FiberMax 9170B2F	--	--	--	1327	1656	1464	1397	--
FiberMax 9180B2F	--	--	--	--	--	--	1202	1175
NexGen 1551RF	--	--	--	--	--	--	--	1000
NexGen 2549B2RF	--	--	--	--	--	--	--	1179
NexGen 3348B2RF	1413	1120	--	1253	--	--	1289	--
NexGen 3410RF	--	--	--	--	--	--	1224	--
NexGen 4010B2RF	--	--	817	--	1563	1516	1198	1143
NexGen 4012B2RF	--	--	--	--	--	--	1343	--
PhytoGen 367WRF	1453	1235	998	1264	1791	1473	--	--
PhytoGen 375WRF	--	--	--	--	--	--	1429	1054
Stoneville 4288B2F	1473	1137	--	1253	1697	1430	1323	1225
Stoneville 5458B2RF	--	--	979	--	--	--	--	--
Test average	1450	1206	924	1256	1687	1407	1332	1162
CV, %	3.7	3.6	8.2	4.0	2.9	3.3	6.1	3.0
OSL	0.2903	<0.0001	0.0078	0.0046	<0.0001	<0.0001	0.0018	<0.0001
LSD	NS	77	133	87	85	82	137	61

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. Micronaire Summary Across Irrigated Locations - 2010.

Entry	RACE Trials						Systems Trials	
	Bailey County	Crosby County	Dawson County	Hale County	Hockley County	Lubbock County	Blanco	Muleshoe
	micronaire units							
All-Tex Apex B2RF	2.6	3.8	4.0	3.2	4.2	4.0	--	--
All-Tex Epic RF	--	--	--	--	--	--	4.2	--
All-Tex Patriot+ RF	--	--	--	--	--	--	--	3.8
Croplan Genetics 3006B2RF	2.8	--	4.2	3.5	--	4.3	--	--
Croplan Genetics 3220B2RF	--	3.6	--	--	4.4	--	--	--
Deltapine 0912B2RF	2.7	--	--	3.6	--	--	4.8	4.0
Deltapine 1032B2RF	--	4.0	4.4	--	4.5	4.1	4.6	3.9
Deltapine 1044B2RF	--	--	--	--	--	--	4.4	--
Dyna-Gro 2570B2RF	2.5	3.8	4.2	3.6	4.3	4.4	--	--
FiberMax 1740B2F	2.6	4.0	4.0	--	--	--	4.8	3.6
FiberMax 9058F	--	--	--	--	--	--	4.1	--
FiberMax 9170B2F	--	--	--	3.3	3.9	3.6	4.0	--
FiberMax 9180B2F	--	--	--	--	--	--	4.6	3.5
NexGen 1551RF	--	--	--	--	--	--	--	4.2
NexGen 2549B2RF	--	--	--	--	--	--	--	3.4
NexGen 3348B2RF	2.7	3.4	--	3.4	--	--	4.3	--
NexGen 3410RF	--	--	--	--	--	--	3.9	--
NexGen 4010B2RF	--	--	4.0	--	4.3	4.1	4.5	3.7
NexGen 4012B2RF	--	--	--	--	--	--	4.3	--
PhytoGen 367WRF	2.5	3.9	3.6	3.2	4.0	4.1	--	--
PhytoGen 375WRF	--	--	--	--	--	--	4.2	3.8
Stoneville 4288B2F	2.6	4.0	--	3.7	4.6	4.6	4.8	3.8
Stoneville 5458B2RF	--	--	4.1	--	--	--	--	--
Test average	2.6	3.8	4.1	3.4	4.3	4.2	4.4	3.8
CV, %	5.4	6.6	1.6	4.3	1.9	4.5	--	--
OSL	0.1395	0.1182	<0.0001	0.0090	<0.0001	0.0007	--	--
LSD	NS	NS	0.1	0.3	0.1	0.3	--	--

CV - coefficient of variation.

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

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

Table 3. Staple Summary Across Irrigated Locations - 2010.

Entry	RACE Trials						Systems Trials	
	Bailey County	Crosby County	Dawson County	Hale County	Hockley County	Lubbock County	Blanco	Muleshoe
	32nds inch							
All-Tex Apex B2RF	35.7	36.5	34.8	36.2	37.2	37.1	--	--
All-Tex Epic RF	--	--	--	--	--	--	36.0	--
All-Tex Patriot+ RF	--	--	--	--	--	--	--	35.8
Croplan Genetics 3006B2RF	37.5	--	35.8	37.9	--	37.4	--	--
Croplan Genetics 3220B2RF	--	36.5	--	--	36.3	--	--	--
Deltapine 0912B2RF	35.7	--	--	35.8	--	--	35.2	34.3
Deltapine 1032B2RF	--	36.6	34.9	--	37.3	36.9	37.1	35.2
Deltapine 1044B2RF	--	--	--	--	--	--	36.4	--
Dyna-Gro 2570B2RF	35.8	35.7	34.0	35.9	36.4	36.3	--	--
FiberMax 1740B2F	35.2	35.8	34.0	--	--	--	36.1	34.0
FiberMax 9058F	--	--	--	--	--	--	38.1	--
FiberMax 9170B2F	--	--	--	37.4	37.8	38.5	37.4	--
FiberMax 9180B2F	--	--	--	--	--	--	37.5	35.7
NexGen 1551RF	--	--	--	--	--	--	--	35.8
NexGen 2549B2RF	--	--	--	--	--	--	--	32.7
NexGen 3348B2RF	36.6	36.4	--	37.1	--	--	36.3	--
NexGen 3410RF	--	--	--	--	--	--	37.4	--
NexGen 4010B2RF	--	--	34.9	--	37.3	36.4	36.5	35.8
NexGen 4012B2RF	--	--	--	--	--	--	37.2	--
PhytoGen 367WRF	36.7	36.4	34.3	36.9	37.1	36.8	--	--
PhytoGen 375WRF	--	--	--	--	--	--	36.0	35.0
Stoneville 4288B2F	35.6	35.1	--	36.6	36.4	35.7	35.8	35.0
Stoneville 5458B2RF	--	--	34.5	--	--	--	--	--
Test average	36.1	36.1	34.7	36.7	37.0	36.9	36.6	34.9
CV, %	2.1	1.8	14.8	1.2	0.9	1.6	--	--
OSL	0.0337	0.1375	0.0498	0.0005	0.0005	0.0014	--	--
LSD	1.3	NS	1.1	0.8	0.6	1.0	--	--

CV - coefficient of variation.

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

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

Table 4. Uniformity Summary Across Irrigated Locations - 2010.

Entry	RACE Trials						Systems Trials	
	Bailey County	Crosby County	Dawson County	Hale County	Hockley County	Lubbock County	Blanco	Muleshoe
	%							
All-Tex Apex B2RF	78.5	80.3	79.8	79.7	81.2	81.3	--	--
All-Tex Epic RF	--	--	--	--	--	--	81.2	--
All-Tex Patriot+ RF	--	--	--	--	--	--	--	80.1
Croplan Genetics 3006B2RF	80.4	--	81.7	82.2	--	81.9	--	--
Croplan Genetics 3220B2RF	--	80.5	--	--	82.0	--	--	--
Deltapine 0912B2RF	79.8	--	--	81.2	--	--	81.5	80.1
Deltapine 1032B2RF	--	80.3	81.3	--	81.6	81.2	81.9	79.8
Deltapine 1044B2RF	--	--	--	--	--	--	81.6	--
Dyna-Gro 2570B2RF	79.4	79.9	80.5	80.9	82.0	81.8	--	--
FiberMax 1740B2F	79.6	80.3	79.3	--	--	--	81.5	79.6
FiberMax 9058F	--	--	--	--	--	--	81.8	--
FiberMax 9170B2F	--	--	--	81.5	81.4	81.3	80.9	--
FiberMax 9180B2F	--	--	--	--	--	--	82.2	80.4
NexGen 1551RF	--	--	--	--	--	--	--	81.9
NexGen 2549B2RF	--	--	--	--	--	--	--	80.8
NexGen 3348B2RF	81.7	81.1	--	82.5	--	--	81.7	--
NexGen 3410RF	--	--	--	--	--	--	81.8	--
NexGen 4010B2RF	--	--	80.2	--	82.4	81.7	81.6	80.8
NexGen 4012B2RF	--	--	--	--	--	--	81.9	--
PhytoGen 367WRF	80.4	80.8	79.5	80.6	81.2	82.0	--	--
PhytoGen 375WRF	--	--	--	--	--	--	81.5	80.3
Stoneville 4288B2F	77.4	79.5	--	80.6	81.4	80.1	81.1	80.5
Stoneville 5458B2RF	--	--	78.9	--	--	--	--	--
Test average	79.7	80.3	80.2	81.2	81.6	81.4	81.6	80.4
CV, %	1.5	0.9	1.2	0.8	0.5	0.8	--	--
OSL	0.0189	0.2263	0.0275	0.0034	0.0158	0.0529†	--	--
LSD	2.0	NS	1.6	1.2	0.7	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.

Table 5. Strength Summary Across Irrigated Locations - 2010.

Entry	RACE Trials						Systems Trials	
	Bailey County	Crosby County	Dawson County	Hale County	Hockley County	Lubbock County	Blanco	Muleshoe
	g/tex							
All-Tex Apex B2RF	27.6	27.6	27.7	27.3	28.4	28.7	--	--
All-Tex Epic RF	--	--	--	--	--	--	30.9	--
All-Tex Patriot+ RF	--	--	--	--	--	--	--	29.4
Croplan Genetics 3006B2RF	29.5	--	30.5	30.3	--	29.2	--	--
Croplan Genetics 3220B2RF	--	30.3	--	--	29.6	--	--	--
Deltapine 0912B2RF	29.7	--	--	30.9	--	--	29.7	29.8
Deltapine 1032B2RF	--	29.0	29.4	--	30.2	29.3	31.9	29.1
Deltapine 1044B2RF	--	--	--	--	--	--	30.2	--
Dyna-Gro 2570B2RF	29.4	29.4	29.6	29.8	30.2	29.1	--	--
FiberMax 1740B2F	28.4	29.1	28.3	--	--	--	30.6	29.1
FiberMax 9058F	--	--	--	--	--	--	31.0	--
FiberMax 9170B2F	--	--	--	31.7	31.9	30.9	33.0	--
FiberMax 9180B2F	--	--	--	--	--	--	31.5	30.6
NexGen 1551RF	--	--	--	--	--	--	--	32.6
NexGen 2549B2RF	--	--	--	--	--	--	--	28.6
NexGen 3348B2RF	30.3	30.5	--	31.4	--	--	30.2	--
NexGen 3410RF	--	--	--	--	--	--	31.6	--
NexGen 4010B2RF	--	--	31.3	--	31.9	31.0	32.2	32.2
NexGen 4012B2RF	--	--	--	--	--	--	32.9	--
PhytoGen 367WRF	29.7	30.0	29.4	29.9	30.9	30.8	--	--
PhytoGen 375WRF	--	--	--	--	--	--	29.7	28.2
Stoneville 4288B2F	28.4	28.1	--	30.3	29.2	28.5	28.9	29.0
Stoneville 5458B2RF	--	--	30.1	--	--	--	--	--
Test average	29.1	29.2	29.5	30.2	30.3	29.7	31.0	29.9
CV, %	3.1	2.4	2.9	1.8	2.5	3.9	--	--
OSL	0.0320	0.0016	0.0037	<0.0001	0.0005	.0634†	--	--
LSD	1.6	1.2	1.5	1.0	1.3	1.7	--	--

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.

Additional Replicated Dryland Large Plot Demonstrations

AgriLIFE EXTENSION
Texas A&M System

Replicated Dryland Cotton Variety Demonstration, Blanco, TX - 2010

Cooperator: Mark Appling

Tyler Hawthorne, J. W. Wagner, Dustin Patman, Randy Boman, Mark Kelley and Chris Ashbrook
EA-AG/NR Crosby County, EA-AG/NR Floyd County, EA-IPM Crosby/Floyd Counties, Extension Agronomist - Cotton, Extension Program Specialist II - Cotton, and Extension Assistant - Cotton

Floyd County

Summary: **Stand establishment was variable due to hot and dry conditions following planting.** Significant differences were observed among varieties for all yield and economic and most fiber quality parameters measured. Lint turnout ranged from 30.5% for Deltapine 1032B2RF to 27.0% for All-Tex Patriot+ RF. Lint yields varied from a low of 495 lb/acre (All-Tex Patriot+ RF) to a high of 703 lb/acre (All-Tex Epic RF). Lint loan values ranged from a low of $0.5237/lb to a high of $0.5717/lb for Deltapine 0912B2RF and FiberMax 9170B2F, respectively. When subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of $368.44 (All-Tex Epic RF) to a low of $254.18 (All-Tex Patriot+ RF), a difference of $114.26. Micronaire values ranged from a high of 5.0 for Deltapine 0912B2RF to a low of 4.2 for FiberMax 9170B2F with a test average of 4.5. The test average staple was 35.4 and FiberMax 9058F and FiberMax 9180B2F had the highest with 36.7 while Americot 1532B2RF and Deltapine 0912B2RF had the lowest with 34.1. Uniformity averaged 81.3% and strength averaged 29.1 g/tex. Elongation averaged 8.1% and ranged from a high of 9.8% for Deltapine 1044B2RF to a low of 6.3% for FiberMax 9058F. Leaf grades were mostly 1 and 2. Color grades were mostly 21 and 31. These data indicate that substantial differences can be obtained in terms of net value/acre due to variety selection.

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

Materials and Methods:

Varieties: Americot 1532B2RF, All-Tex Epic RF, All-Tex Patriot+ RF, Deltapine 0912B2RF, Deltapine 1032B2RF, Deltapine 1044B2RF, FiberMax 1740B2F, FiberMax 9058F, FiberMax 9170B2F, FiberMax 9180B2F, NexGen 3348B2RF, NexGen 4111RF, PhytoGen 375WRF, and Stoneville 4288B2F

Experimental design: Randomized complete block with 3 replications

Seeding rate: 3.2 seeds/row-ft in solid planted 40-inch row spacing (Case IH 1200 vacuum planter)

Plot size: 4 rows by 1600 ft length

Planting date: 24-May on the flat in grain sorghum stalks

Weed management: Trifuralin was applied preplant incorporated at 1.0 qt/acre across all varieties. Two applications of Roundup OriginalMax was applied over-the-top at 22 oz/acre in June and August with AMS.

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

April:	7.42	July:	7.30
May:	3.31	August:	1.01
June:	4.70	September:	2.09

Total rainfall: 25.83

Insecticides: No insecticides were applied by the producer at this site. This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.

Fertilizer: Applied 25 lbs N/acre using 32-0-0 fertilizer preplant.

Harvest aids: No harvest aids were utilized at this location (left to freeze)

Harvest: Plots were harvested on 18-November using a commercial John Deere 7455 with field cleaner. Harvested material was transferred into a weigh wagon with integral electronic scales to determine individual plot weights. Plot yields were adjusted to lb/acre.

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

Fiber analysis: Lint samples were submitted to the Fiber and Biopolymer Research Institute at Texas Tech University for HVI analysis, and USDA Commodity Credit Corporation (CCC) Loan values were determined for each variety by plot.

Ginning cost and seed values: Ginning costs were based on $3.00 per cwt. of bur cotton and seed value/acre was based on $175/ton. Ginning costs did not include checkoff.

Seed and technology fees: Seed and technology costs were calculated using the appropriate seeding rate (3.2 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://www.plainscotton.org/Seed/PCGseed10.xls .

Results and Discussion:

Weed pressure at this site would generally be considered light and consisted mainly of silverleaf nightshade and lake weed. **Stand establishment was variable due to hot and dry conditions following planting.**

Agronomic data including plant population, nodes above white flower (NAWF), and storm resistance are included in Table 1. Stand counts taken on 16-June indicated significant differences among varieties with a test average of 21,091 plants/acre and ranged from a high of 26,435 plants/acre for FiberMax 9180B2F to a low of 16,293 plants/acre for Deltapine 1032B2RF. NAWF counts were taken on a weekly basis from 5-August to 19-August. Significant differences were observed for the 19-August date only. Test averages for the 5-August and 12-August were 6.4 and 4.2, respectively. All varieties had reached cutout (NAWF=5) by the 12-August observation. Values on 19-August ranged from a low of 1.9 for All-Tex Patriot+ RF and PhytoGen 375WRF to a high of 3.8 for Deltapine 1032B2RF and Deltapine 1044B2RF. Just prior to harvest on 18-November, a visual observation of storm resistance was recorded for each variety in all three replications. The ratings were on a scale of 1-9 where 1 represents the least storm resistance. Significant differences were observed among varieties and values ranged from a high of 7.3 (FiberMax 9058F) to a low of 2.8 (Deltapine 0912B2RF).

Significant differences were noted for all yield and most fiber quality parameters measured (Tables 2 and 3). Lint turnout ranged from 30.5% for Deltapine 1032B2RF to 27.0% for All-Tex Patriot+ RF. Bur cotton yield averaged 2049 lb/acre and ranged from a high of 2337 lb/acre for All-Tex Epic RF to a low of 1832 lb/acre for All-Tex Patriot+ RF. Lint yields varied from a low of 495 lb/acre (All-Tex Patriot+ RF) to a high of 703 lb/acre (All-Tex Epic RF). Lint loan values ranged from a low of $0.5237/lb to a high of $0.5717/lb for Deltapine 0912B2RF and FiberMax 9170B2F, respectively. After adding lint and seed value, total value/acre ranged from a low of $355.10 for All-Tex Patriot+ RF, to a high of $484.51 for All-Tex Epic RF. When subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of $368.44 (All-Tex Epic RF) to a low of $254.18 (All-Tex Patriot+ RF), a difference of $114.26.

Micronaire values ranged from a high of 5.0 for Deltapine 0912B2RF to a low of 4.2 for FiberMax 9170B2F with a test average of 4.5. The test average staple was 35.4 and FiberMax 9058F and FiberMax 9180B2F had the highest with 36.7 while Americot 1532B2RF and Deltapine 0912B2RF had the lowest with 34.1. Uniformity averaged 81.3% with a high of 82.3% for NexGen 4111RF and a low of 80.5% for Americot 1532B2RF. Strength values ranged from a high of 32.0 g/tex for NexGen 4111RF to a low of 27.6 g/tex for PhytoGen 375WRF. Elongation averaged 8.1% and ranged from a high of 9.8% for Deltapine 1044B2RF to a low of 6.3% for FiberMax 9058F. Leaf grades were mostly 1 and 2 at this location and were not significantly different. Color grade components of Rd (reflectance) and +b (yellowness) averaged 79.7 and 8.4, 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:

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Disclaimer Clause:

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Table 1. In-season plant measurement results from the dryland large plot replicated systems variety demonstration, Mark Appling Farm, Blanco, TX, 2010.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of			Storm resistance
	16-Jun		5-Aug	12-Aug	19-Aug	18-Nov
	plants/row-ft	plants/acre				rating (1-9)
Americot 1532B2RF	1.5	19,951	6.9	4.7	3.0	3.3
All-Tex Epic RF	1.7	22,445	6.6	5.0	2.5	4.8
All-Tex Patriot+ RF	1.6	20,616	5.8	4.0	1.9	4.5
Deltapine 0912B2RF	1.4	17,956	6.4	3.9	2.2	2.8
Deltapine 1032B2RF	1.2	16,293	6.5	4.1	3.8	3.2
Deltapine 1044B2RF	1.7	22,113	7.1	4.2	3.8	5.5
FiberMax 1740B2F	1.4	18,455	7.0	4.4	2.5	5.0
FiberMax 9058F	1.6	20,782	5.9	4.4	2.5	7.3
FiberMax 9170B2F	1.6	20,949	6.5	4.3	2.8	6.7
FiberMax 9180B2F	2.0	26,435	6.0	4.2	2.3	7.2
NexGen 3348B2RF	1.8	23,110	6.2	3.3	2.0	6.2
NexGen 4111RF	1.5	19,619	6.3	3.7	2.2	6.2
PhytoGen 375WRF	1.8	23,276	6.1	3.9	1.9	4.0
Stoneville 4288B2F	1.8	23,276	6.1	4.3	2.2	4.2
Test average	1.6	21,091	6.4	4.2	2.5	5.1
CV, %	14.0	14.1	8.9	17.8	15.2	9.8
OSL	0.0427	0.0326	0.1603	0.5648	<0.0001	<0.0001
LSD	0.4	4,981	NS	NS	0.6	0.8

For NAWF, numbers represent an average of 10 plants per variety per rep (30 plants per variety).
For Storm resistance, ratings based on a scale of 1-9 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 dryland large plot replicated systems variety demonstration, Mark Appling Farm, Blanco, TX, 2010.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Seed/technology cost	Net value	
	-------- % --------		---------- lb/acre ----------			$/lb	---------- $/acre ----------						
All-Tex Epic RF	30.1	44.4	2337	703	1037	0.5600	393.76	90.75	484.51	70.12	45.95	368.44	a
Deltapine 1044B2RF	29.2	44.8	2205	644	987	0.5545	357.06	86.37	443.43	66.16	57.16	320.11	b
Americot 1532B2RF	29.6	42.5	2167	642	921	0.5465	350.60	80.56	431.16	65.01	51.93	314.21	bc
FiberMax 9170B2F	29.9	45.0	2058	615	927	0.5717	351.38	81.11	432.49	61.75	58.08	312.66	bc
Deltapine 1032B2RF	30.5	42.7	2021	617	863	0.5692	351.44	75.48	426.92	60.64	58.99	307.29	bc
NexGen 4111RF	27.7	43.6	2139	592	933	0.5702	337.56	81.68	419.24	64.16	51.93	303.15	bc
FiberMax 1740B2F	30.2	45.0	2008	607	903	0.5577	338.25	79.04	417.29	60.24	58.08	298.98	bc
FiberMax 9180B2F	28.2	45.3	2087	588	945	0.5698	335.12	82.71	417.83	62.60	57.14	298.09	bc
FiberMax 9058F	27.9	45.0	2036	569	917	0.5692	323.88	80.23	404.11	61.09	50.29	292.72	cd
NexGen 3348B2RF	28.5	46.8	1915	546	896	0.5555	303.05	78.41	381.46	57.46	51.93	272.07	de
Stoneville 4288B2F	27.4	46.3	2002	549	928	0.5625	308.55	81.19	389.73	60.07	58.08	271.58	de
PhytoGen 375WRF	29.0	46.3	1876	544	869	0.5650	307.49	76.02	383.51	56.27	56.98	270.25	de
Deltapine 0912B2RF	28.9	43.3	2005	580	867	0.5237	303.60	75.90	379.50	60.15	58.99	260.36	e
All-Tex Patriot+ RF	27.0	47.1	1832	495	863	0.5647	279.60	75.50	355.10	54.97	45.95	254.18	e
Test average	28.9	44.9	2049	592	918	0.5600	331.52	80.35	411.88	61.48	54.39	296.01	
CV, %	4.6	2.3	4.1	4.1	4.1	1.2	4.1	4.1	4.1	4.1	--	4.8	
OSL	0.0469	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	--	<0.0001	
LSD	2.2	1.7	140	40	63	0.0112	22.57	5.53	28.09	4.21	--	23.89	

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.
$175/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 dryland large plot replicated systems variety demonstration, Mark Appling Farm, Blanco, TX, 2010.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
Americot 1532B2RF	4.5	34.1	80.5	28.0	8.1	1.7	80.1	8.3	2.0	1.0
All-Tex Epic RF	4.5	35.2	81.1	28.5	9.4	1.3	79.2	8.9	2.0	1.0
All-Tex Patriot+ RF	4.5	35.9	81.6	29.6	8.3	1.3	79.2	8.2	2.7	1.0
Deltapine 0912B2RF	5.0	34.1	81.3	28.4	8.7	1.3	78.9	8.5	2.7	1.0
Deltapine 1032B2RF	4.6	35.7	81.0	29.1	7.6	1.0	80.5	8.5	2.0	1.0
Deltapine 1044B2RF	4.7	34.6	81.5	28.7	9.8	1.3	79.6	8.5	2.0	1.0
FiberMax 1740B2F	4.5	35.0	81.1	28.2	8.0	1.0	80.0	8.2	2.3	1.0
FiberMax 9058F	4.4	36.7	81.3	29.2	6.3	1.7	80.4	8.0	2.0	1.0
FiberMax 9170B2F	4.2	36.3	81.0	29.9	7.0	1.3	81.4	7.9	2.0	1.0
FiberMax 9180B2F	4.5	36.7	82.5	30.4	7.4	1.3	81.1	7.7	2.3	1.0
NexGen 3348B2RF	4.3	35.2	81.2	29.4	7.7	2.3	78.0	8.5	3.0	1.0
NexGen 4111RF	4.5	35.6	82.3	32.0	8.6	1.0	78.6	9.0	2.0	1.0
PhytoGen 375WRF	4.5	35.3	80.9	27.6	8.3	1.3	79.4	8.6	2.0	1.0
Stoneville 4288B2F	4.8	35.3	80.8	28.4	8.0	1.3	79.5	8.7	2.0	1.0
Test average	4.5	35.4	81.3	29.1	8.1	1.4	79.7	8.4	2.2	1.0
CV, %	1.8	1.1	0.6	2.3	3.5	42.9	0.7	2.3	--	--
OSL	<0.0001	<0.0001	0.0059	<0.0001	<0.0001	0.4786	<0.0001	<0.0001	--	--
LSD	0.1	0.6	0.9	1.1	0.5	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.

AgriLIFE EXTENSION
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Replicated Dryland Cotton Variety Demonstration, Plains, TX - 2010

Cooperator: Rickey Bearden

Scott Russell, Randy Boman, Mark Kelley and Chris Ashbrook
EA-IPM Terry/Yoakum Counties,
Extension Agronomist - Cotton, Extension Program Specialist II - Cotton, and Extension Assistant - Cotton

Yoakum County

Summary: **Stand establishment was variable due to hot and dry conditions following planting.** Significant differences were noted for all yield and most fiber quality parameters measured. Lint turnout ranged from 36.0% for Croplan Genetics 3035RF to 30.0% for All-Tex Patriot+ RF. Lint yields varied from a low of 317 lb/acre (All-Tex 65207B2RF) to a high of 474 lb/acre (Dyna-Gro 2400RF). Lint loan values ranged from a low of $0.5107/lb to a high of $0.5550/lb for Croplan Genetics 3035RF and FiberMax 9160B2F, respectively. When subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of $213.62 (Dyna-Gro 2400RF) to a low of $128.58 (Deltapine 0912B2RF), a difference of $85.04. Micronaire values ranged from a high of 4.8 for Deltapine 0924B2RF to a low of 4.2 for NexGen 3410RF and PhytoGen 367WRF with a test average of 4.5. The test average staple was 33.8 and NexGen 3410RF had the highest with 34.9 while Croplan Genetics 3035RF had the lowest with 32.6. Uniformity and strength differences were not significant with test averages of 79.9% and 28.0 g/tex, respectively. Color grade components of Rd (reflectance) and +b (yellowness) averaged 76.8 and 9.3, respectively. This resulted in color grades of mostly 21 and 31. Leaf grades were mostly 1 and 2 across varieties. **It should be noted that minimal preharvest loss was observed with looser varieties due to a hail event on 21-October.** These data indicate that substantial differences can be obtained in terms of net value/acre due to variety selection.

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

Materials and Methods:

Varieties:	All-Tex 65207B2RF, All-Tex Patriot+ RF, Croplan Genetics 3035RF, Dyna-Gro 2400RF, Deltapine 0912B2RF, Deltapine 0924B2RF, FiberMax 9058F, FiberMax 9160B2F, NexGen 3410RF, and PhytoGen 367WRF
Experimental design:	Randomized complete block with 3 replications
Seeding rate:	3.0 seeds/row-ft in solid planted 40-inch row spacing (John Deere MaxEmerge XP vacuum planter)
Plot size:	6 rows by 1000 ft length
Planting date:	3-June
Weed management:	Trifuralin was applied preplant incorporated at 1.0 pt/acre across all varieties. An application of 4.0 oz/acre trifuralin and 6.0 oz/acre Caparol was applied to a 10" band behind the presswheel at planting. Roundup PowerMax was applied over-the-top at 32 oz/acre on 17-July and 28-August with AMS.
Rainfall:	Based on the nearest Texas Tech University- West Texas Mesonet station at Plains, rainfall amounts were:

April:	0.89"	July:	5.08"
May:	1.77"	August:	0.85"
June:	1.30"	September:	0.85"
Total rainfall:		10.74	

Insecticides:	Temik was applied infurrow at planting at a rate of 3 lb/acre. This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.
Fertilizer:	Applied 50 lbs/acre of 32-0-0 fertilizer preplant supplying 16 lbs N/acre. An additional application of 75 lb/acre 32-0-0 was made mid July which supplied an additional 24 lbs N/acre.
Harvest aids:	Harvest aids included 32 oz/acre Prep applied on 22-October. No additional harvest aids were utilized.
Harvest:	Plots were harvested on 29-November using a commercial John Deere 7460 with field cleaner. Harvested material was transferred into a weigh wagon with integral electronic scales to determine individual plot weights. Plot yields were adjusted to lb/acre.
Gin turnout:	Grab samples were taken by plot and ginned at the Texas AgriLife Research and Extension Center at Lubbock to determine gin turnouts.

Fiber analysis: Lint samples were submitted to the Fiber and Biopolymer Research Institute at Texas Tech University for HVI analysis, and USDA Commodity Credit Corporation (CCC) Loan values were determined for each variety by plot.

Ginning cost and seed values: Ginning costs were based on $3.00 per cwt. of bur cotton and seed value/acre was based on $175/ton. Ginning costs did not include checkoff.

Seed and technology fees: Seed and technology costs were calculated using the appropriate seeding rate (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/PCGseed10.xls .

Results and Discussion:

Weed pressure at this site would generally be considered light to medium and consisted mainly of silverleaf nightshade and sand sunflower. **Stand establishment was variable due to hot and dry conditions following planting.**

Agronomic data including plant population and nodes above white flower (NAWF) are included in Table 1. Stand counts taken on 14-June indicated no significant differences among varieties with a test average of 32,717 plants/acre. NAWF counts were taken 10-August to 17-August. Averages were 4.5 (10-August) and 3.3 (17-August). Significant differences were observed among varieties for the 10-August observation (alpha=0.10) as well as the 17-August observation date (alpha=0.05). Values on 10-August ranged from a low of 3.9 for NexGen 3410RF to a high of 5.1 for FiberMax 9160B2F. By 17-August, all varieties had reached cutout (NAWF=5) and values ranged from a high of 4.0 for Croplan Genetics 3035RF to a low of 2.5 for FiberMax 9058F.

Significant differences were noted for all yield and most fiber quality parameters measured (Tables 2 and 3). Lint turnout ranged from 36.0% for Croplan Genetics 3035RF to 30.0% for All-Tex Patriot+ RF. Bur cotton yield averaged 1155 lb/acre and ranged from a high of 1326 lb/acre for Dyna-Gro 2400RF to a low of 1003 lb/acre for All-Tex 65207B2RF. Lint yields varied from a low of 317 lb/acre (All-Tex 65207B2RF) to a high of 474 lb/acre (Dyna-Gro 2400RF). Lint loan values ranged from a low of $0.5107/lb to a high of $0.5550/lb for Croplan Genetics 3035RF and FiberMax 9160B2F, respectively. After adding lint and seed value, total value/acre ranged from a low of $208.06 for All-Tex 65207B2RF, to a high of $301.53 for Dyna-Gro 2400RF. When subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of $213.62 (Dyna-Gro 2400RF) to a low of $128.58 (Deltapine 0912B2RF), a difference of $85.04. **It should be noted that minimal preharvest loss was observed with looser varieties due to a hail event on 21-October.**

Micronaire values ranged from a high of 4.8 for Deltapine 0924B2RF to a low of 4.2 for NexGen 3410RF and PhytoGen 367WRF with a test average of 4.5. The test average staple was 33.8 and NexGen 3410RF had the highest with 34.9 while Croplan Genetics 3035RF had the lowest with 32.6. Uniformity and strength differences were not significant with test averages of 79.9% and 28.0 g/tex, respectively. Color grade components of Rd (reflectance) and +b (yellowness) averaged 76.8 and 9.3, respectively. This resulted in color grades of mostly 21 and 31. Leaf grades were mostly 1 and 2 across varieties.

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 Rickey Bearden for the use of his land, equipment and labor at this location. Further assistance was provided by Dr. Jane Dever - Texas AgriLife Research and Extension Center, Lubbock, and Dr. Eric Hequet - Associate Director, Fiber and Biopolymer Research Institute, Texas Tech University. We also greatly appreciate the Texas Department of Agriculture - Food and Fiber Research for funding of HVI testing.

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. In-season plant measurement results from the dryland large plot replicated systems variety demonstration, Rickey Bearden Farm, Plains, TX, 2010.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of	
	14-Jun		10-Aug	17-Aug
	plants/row-ft	plants/acre		
All-Tex 65207B2RF	2.6	33,667	4.4	2.9
All-Tex Patriot+ RF	2.4	31,833	4.6	3.5
Croplan Genetics 3035RF	2.4	30,833	4.9	4.0
Dyna-Gro 2400RF	2.3	30,667	5.0	3.8
Deltapine 0912B2RF	2.4	31,667	4.1	3.2
Deltapine 0924B2RF	2.4	31,833	4.8	3.1
FiberMax 9058F	2.8	36,000	4.0	2.5
FiberMax 9160B2F	2.5	33,000	5.1	3.6
NexGen 3410RF	2.6	34,500	3.9	2.8
PhytoGen 367WRF	2.5	33,167	4.4	3.2
Test average	2.5	32,717	4.5	3.3
CV, %	11.9	12.0	11.4	14.1
OSL	0.7820	0.8202	0.0882†	0.0198
LSD	NS	NS	0.7	0.8

For NAWF, numbers represent an average of 10 plants per variety per rep (30 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 dryland large plot replicated systems variety demonstration, Rickey Bearden Farm, Plains, TX, 2010.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Seed/technology cost	Net value
	-------- % --------		---------- lb/acre ----------			$/lb	---------- $/acre ----------					
Dyna-Gro 2400RF	35.8	46.0	1326	474	610	0.5235	248.13	53.40	301.53	39.77	48.14	213.62 a
Croplan Genetics 3035RF	36.0	46.8	1249	449	584	0.5107	229.26	51.14	280.41	37.46	47.27	195.68 ab
FiberMax 9160B2F	32.9	45.9	1282	422	589	0.5550	234.33	51.49	285.82	38.46	55.98	191.38 ab
FiberMax 9058F	32.8	46.9	1239	406	581	0.5457	221.48	50.82	272.30	37.16	48.47	186.67 b
NexGen 3410RF	32.3	47.0	1198	387	563	0.5172	199.98	49.26	249.25	35.94	40.31	173.00 b
All-Tex Patriot+ RF	30.0	49.4	1047	314	518	0.5423	170.50	45.28	215.78	31.41	44.29	140.09 c
Deltapine 0924B2RF	32.3	44.7	1088	351	486	0.5192	182.16	42.54	224.70	32.63	56.06	136.02 c
PhytoGen 367WRF	31.4	45.4	1093	344	497	0.5247	180.24	43.48	223.72	32.80	54.92	136.00 c
All-Tex 65207B2RF	31.6	46.2	1003	317	464	0.5285	167.50	40.57	208.06	30.10	46.56	131.40 c
Deltapine 0912B2RF	32.9	46.3	1025	337	474	0.5177	174.68	41.51	216.18	30.75	56.86	128.58 c
Test average	32.8	46.5	1155	380	537	0.5284	200.83	46.95	247.78	34.65	49.89	163.24
CV, %	1.9	2.0	6.8	6.8	6.8	2.7	6.8	6.8	6.8	6.8	--	8.9
OSL	<0.0001	0.0012	0.0003	<0.0001	0.0003	0.0177	<0.0001	0.0003	<0.0001	0.0004	--	<0.0001
LSD	1.1	1.6	135	45	63	0.0241	23.58	5.49	29.05	4.05	--	25.02

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.
$175/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 dryland large plot replicated systems variety demonstration, Rickey Bearden Farm, Plains, TX, 2010.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
All-Tex 65207B2RF	4.5	33.5	80.9	28.3	9.1	1.3	76.0	9.6	2.7	1.3
All-Tex Patriot+ RF	4.5	34.3	79.4	28.1	8.8	1.0	77.3	9.4	2.0	1.0
Croplan Genetics 3035RF	4.6	32.6	79.1	27.2	9.9	1.0	77.8	9.4	2.0	1.0
Dyna-Gro 2400RF	4.5	33.4	80.0	28.1	9.9	1.0	77.7	9.5	2.0	1.3
Deltapine 0912B2RF	4.7	33.5	80.2	28.2	8.9	1.3	76.4	9.2	2.7	1.3
Deltapine 0924B2RF	4.8	33.3	80.6	28.2	8.8	2.0	75.8	9.4	3.0	1.3
FiberMax 9058F	4.3	34.7	79.4	27.5	7.3	1.0	78.1	8.5	3.0	1.0
FiberMax 9160B2F	4.3	34.6	80.4	28.7	7.1	1.0	78.7	8.9	2.0	1.0
NexGen 3410RF	4.2	34.9	80.2	28.7	7.6	2.7	74.1	9.3	3.0	1.7
PhytoGen 367WRF	4.2	33.7	78.9	27.3	9.6	1.3	76.3	9.4	2.7	1.3
Test average	4.5	33.8	79.9	28.0	8.7	1.4	76.8	9.3	2.5	1.2
CV, %	2.1	1.7	1.0	2.5	3.6	61.2	2.1	1.7	--	--
OSL	<0.0001	0.0035	0.1064	0.1629	<0.0001	0.2947	0.0814†	<0.0001	--	--
LSD	0.2	1.0	NS	NS	0.5	NS	2.3	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.

AgriLIFE EXTENSION
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Replicated Dryland RACE Variety Demonstration, AG-CARES Lamesa, TX - 2010

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

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

Dawson County

Summary: Significant differences were noted for all yield and most fiber quality parameters measured. Lint turnout of field cleaned cotton averaged 33.9%. Lint yields varied from a low of 500 lb/acre (NexGen 3348B2RF) to a high of 872 lb/acre (PhytoGen 367WRF). Lint loan values ranged from a low of $0.5383/lb to a high of $0.5622/lb for Stoneville 5458B2RF and Dyna-Gro 2570B2RF, respectively. When subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of $453.91 (PhytoGen 367WRF) to a low of $237.02 (NexGen 3348B2RF), a difference of $216.89. Micronaire values ranged from a high of 4.8 for Croplan Genetics 3220B2RF, Dyna-Gro 2570B2RF, Deltapine 1044B2RF and Stoneville 5458B2RF to a low of 4.0 for NexGen 3348B2RF and the test average was 4.6. The test average staple and percent uniformity was 34.6 and 81.0, respectively. Strength values averaged 30.2 g/tex across all varieties and ranged from a high of 31.2 g/tex for Dyna-Gro 2570B2RF to a low of 29.7 g/tex for Croplan Genetics 3220B2RF. Leaf grades were mostly 1 and 2 across varieties and color grades were mostly 21 and 31. These data indicate that substantial differences can be obtained in terms of net value/acre due to variety selection.

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

Materials and Methods:

Varieties:	All-Tex Epic RF, Croplan Genetics 3220B2RF, Dyna-Gro 2570B2RF, Deltapine 1044B2RF, FiberMax 9160B2F, NexGen 3348B2RF, PhytoGen 367WRF, and Stoneville 5458B2RF
Experimental design:	Randomized complete block with 3 replications
Seeding rate:	4 seeds/row-ft in solid planted 40-inch row spacing (John Deere MaxEmerge XP vacuum planter)
Plot size:	4 rows by length of field (~850 ft)
Planting date:	19-May
Weed management:	Trifluralin was applied preplant incorporated at 1.3 pt/acre across all varieties on 7-April. The entire test was rod-weeded prior to planting. Caparol was applied at 1.5 pt/acre on 15-May and Roundup PowerMax was applied over-the-top on 16-June at 32 oz/acre with AMS. One in-season cultivation to install furrow dikes was conducted in early July.

Rainfall:

April:	3.02"	June:	2.43"	August:	0.15"
May:	0.87"	July:	4.29"	September:	4.66"

Total rainfall: 15.42"

Insecticides:	This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.
Fertilizer:	Applied 200 lbs/acre of 20-10-05 fertilizer on 30-March supplying 40 lbs N/acre.
Harvest aids:	Harvest aids included 21 oz/acre Prep + 1.5 oz/acre ET with 1% v/v crop oil on 21-October followed by 24 oz/acre Gramoxone Inteon with 0.25% v/v NIS on 1-November.
Harvest:	Plots were harvested on 8-November using a commercial John Deere 7445 with field cleaner. Harvested material was transferred into a weigh wagon with integral electronic scales to determine individual plot weights. Plot yields were adjusted to lb/acre.
Gin turnout:	Grab samples were taken by plot and ginned at the Texas AgriLife Research and Extension Center at Lubbock to determine gin turnouts.
Fiber analysis:	Lint samples were submitted to the Fiber and Biopolymer Research Institute at Texas Tech University for HVI analysis, and USDA Commodity Credit Corporation (CCC) Loan values were determined for each variety by plot.

Ginning cost and seed values: Ginning costs were based on $3.00 per cwt. of bur cotton and seed value/acre was based on $175/ton. Ginning costs did not include checkoff.

Seed and technology fees: Seed and technology costs were calculated using the appropriate seeding rate (4.0 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://www.plainscotton.org/Seed/PCGseed10.xls .

Results and Discussion:

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

Agronomic data including plant population, nodes above white flower (NAWF), and boll storm resistance are included in Table 1. Stand counts taken on 17-June indicated no significant differences among varieties with a test average of 28,646 plants/acre. Stand counts ranged from a high of 36,667 plants/acre for PhytoGen 367WRF to a low of 24,167 for Dyna-Gro 2570B2RF. Weekly NAWF counts were taken beginning 21-July to 4-August. Averages were 8.3 (21-July), 6.3 (28-July), and 4.5 (4-August). Significant differences among varieties were observed for the 28-July and 4-August observations only (alpha=0.10). Values on 28-July ranged from a low of 5.8 for NexGen 3348B2RF to a high of 6.6 for Dyna-Gro 2570B2RF and Deltapine 1044B2RF. By 4-August, all varieties had reached cutout (NAWF=5) and values ranged from a high of 5.0 for Dyna-Gro 2570B2RF to a low of 3.9 for PhytoGen 367WRF. Just prior to harvest on 8-November, a visual observation of storm resistance was recorded for each variety in all three replications. The ratings were on a scale of 1-9 where 1 represents the least storm resistance. Significant differences were observed among varieties and values ranged from a high of 7.7 (NexGen 3348B2RF) to a low of 3.5 (PhytoGen 367WRF).

Significant differences were noted for all yield and most fiber quality parameters measured (Tables 2 and 3). Lint turnout ranged from 36.7% for All-Tex Epic RF to 30.8% for FiberMax 9160B2F. Lint yields varied from a low of 500 lb/acre (NexGen 3348B2RF) to a high of 872 lb/acre (PhytoGen 367WRF). Lint loan values ranged from a low of $0.5383/lb to a high of $0.5622/lb for Stoneville 5458B2RF and Dyna-Gro 2570B2RF, respectively. After adding lint and seed value, total value/acre ranged from a low of $350.89 for NexGen 3348B2RF, to a high of $600.74 for PhytoGen 367WRF. When subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of $453.91 (PhytoGen 367WRF) to a low of $237.02 (NexGen 3348B2RF), a difference of $216.89.

Micronaire values ranged from a high of 4.8 for Croplan Genetics 3220B2RF, Dyna-Gro 2570B2RF, Deltapine 1044B2RF and Stoneville 5458B2RF to a low of 4.0 for NexGen 3348B2RF and the test average was 4.6. The test average staple was 34.6 and FiberMax 9160B2F had the highest with 35.8 while All-Tex Epic RF and Stoneville 5458B2RF had the lowest with 33.9. Uniformity was highest for Dyna-Gro 2570B2RF and FiberMax 9160B2F (81.8%) and lowest for Stoneville 5458B2RF (79.6%). Strength values averaged 30.2 g/tex across all varieties and ranged from a high of 31.2 g/tex for Dyna-Gro 2570B2RF to a low of 29.7 g/tex for Croplan Genetics 3220B2RF. Color grade components of Rd (reflectance) and +b (yellowness) averaged 80.2 and 7.8, respectively. This resulted in color grades of mostly 21 and 31. Leaf grades were mostly 1 and 2 across varieties.

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

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Table 1. In-season plant measurement results from the dryland RACE variety demonstration, AG-CARES Farm, Lamesa, TX, 2010.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of			Storm resistance
	17-Jun		21-Jul	28-Jul	4-Aug	8-Nov
	plants/row-ft	plants/acre				rating (1-9)
All-Tex Epic RF	2.1	27,500	8.7	6.3	4.4	5.7
Croplan Genetics 3220B2RF	1.9	24,333	8.6	6.2	4.4	4.8
Dyna-Gro 2570B2RF	1.8	24,167	9.1	6.6	5.0	5.2
Deltapine 1044B2RF	2.4	31,167	8.6	6.6	4.9	5.3
FiberMax 9160B2F	2.1	27,667	8.4	6.4	4.7	7.5
NexGen 3348B2RF	2.3	29,500	8.3	5.8	4.1	7.7
PhytoGen 367WRF	2.8	36,667	8.3	6.1	3.9	3.5
Stoneville 5458B2RF	2.2	28,167	8.4	6.5	4.6	6.3
Test average	2.2	28,646	8.6	6.3	4.5	5.8
CV, %	20.2	20.0	2.0	4.5	9.0	9.5
OSL	0.3173	0.2575	0.0014	0.0633†	0.0622†	<0.0001
LSD	NS	NS	0.3	0.4	0.6	1.0

For NAWF, numbers represent an average of 10 plants per variety per rep (30 plants per variety).
For Storm resistance, ratings based on a scale of 1-9 where 9 represents maximum storm resistance.
CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, †indicates significance at the 0.10 level, NS - not significant.

Table 2. Harvest results from the dryland RACE variety demonstration, AG-CARES Farm, Lamesa, TX, 2010.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Seed/technology cost	Net value	
	-------- % --------		---------- lb/acre ----------			$/lb	---------- $/acre ----------						
PhytoGen 367WRF	34.9	51.9	2501	872	1299	0.5585	487.12	113.62	600.74	75.03	71.81	453.91	a
All-Tex Epic RF	36.7	53.1	2314	850	1228	0.5428	461.55	107.45	569.00	69.41	57.91	441.67	ab
Stoneville 5458B2RF	34.7	51.8	2439	846	1263	0.5383	455.24	110.53	565.76	73.18	73.20	419.39	b
Dyna-Gro 2570B2RF	35.3	52.5	2124	750	1115	0.5622	421.80	97.55	519.35	63.73	71.58	384.04	c
Deltapine 1044B2RF	33.1	51.8	2292	758	1186	0.5528	418.83	103.81	522.63	68.76	72.04	381.84	c
Croplan Genetics 3220B2RF	34.5	54.3	2047	706	1111	0.5537	390.79	97.23	488.02	61.42	70.45	356.15	c
FiberMax 9160B2F	30.8	50.8	2019	622	1027	0.5620	349.74	89.82	439.56	60.57	73.20	305.79	d
NexGen 3348B2RF	31.0	53.8	1614	500	869	0.5500	274.88	76.01	350.89	48.43	65.44	237.02	e
Test average	33.9	52.5	2169	738	1137	0.5525	407.49	99.50	506.99	65.07	69.45	372.48	
CV, %	3.6	1.8	4.0	3.9	4.0	1.2	3.9	4.0	3.9	4.0	--	4.6	
OSL	0.0003	0.0100	<0.0001	<0.0001	<0.0001	0.0067	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	
LSD	2.1	1.7	154	50	80	0.0121	27.89	7.04	34.90	4.60	--	30.31	

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.
$175/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 dryland RACE variety demonstration, AG-CARES Farm, Lamesa, TX, 2010.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
All-Tex Epic RF	4.7	33.9	80.7	30.3	9.0	1.0	79.8	8.1	2.3	1.0
Croplan Genetics 3220B2RF	4.8	34.5	81.0	29.7	8.8	1.0	80.5	8.0	2.3	1.0
Dyna-Gro 2570B2RF	4.8	34.7	81.8	31.2	9.1	1.0	80.0	8.0	2.3	1.0
Deltapine 1044B2RF	4.8	34.7	80.9	30.0	9.4	1.3	81.0	7.6	2.3	1.0
FiberMax 9160B2F	4.5	35.8	81.8	30.3	6.2	2.3	81.5	7.2	3.0	1.0
NexGen 3348B2RF	4.0	34.6	81.5	30.2	7.5	2.3	79.3	7.8	3.0	1.0
PhytoGen 367WRF	4.5	34.9	80.9	30.1	8.4	1.7	79.9	7.8	2.7	1.0
Stoneville 5458B2RF	4.8	33.9	79.6	30.1	8.0	1.7	79.5	8.2	2.7	1.0
Test average	4.6	34.6	81.0	30.2	8.3	1.5	80.2	7.8	2.6	1.0
CV, %	2.7	1.2	0.6	2.1	3.0	37.8	0.6	2.1	--	--
OSL	<0.0001	0.0017	0.0008	0.2921	<0.0001	0.0485	0.0005	0.0001	--	--
LSD	0.2	0.7	0.8	NS	0.4	1.0	0.8	0.3	--	--

CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, NS - not significant.

AgriLIFE EXTENSION
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Replicated Dryland RACE Variety Demonstration, Floydada, TX - 2010

Cooperator: Gary Nixon

J. W. Wagner, Dustin Patman, Randy Boman, Mark Kelley and Chris Ashbrook
Former CEA-ANR Floyd County, EA-IPM Crosby/Floyd Counties, Extension Agronomist - Cotton, Extension Program Specialist II - Cotton, and Extension Assistant - Cotton

Floyd County

Summary: Significant differences were observed for all yield and economic parameters measured. Lint turnout of field cleaned cotton from grab samples averaged 34.9%. Lint yields varied with a low of 638 lb/acre (NexGen 3348B2RF) and a high of 748 lb/acre (All-Tex Epic RF). Lint loan values ranged from a low of $0.5198/lb (Deltapine 1044B2RF) to a high of $0.5655/lb (FiberMax 9170B2F). When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of $388.18 (All-Tex Epic RF) to a low of $330.78 (Deltapine 1044B2RF), a difference of $57.40. Significant differences were observed among varieties for most HVI parameters measured. Micronaire ranged from a low of 4.0 for FiberMax 9170B2F to a high of 4.7 for Stoneville 4288B2F. Staple averaged 33.9 across all varieties with a high of 35.6 for FiberMax 9170B2F and a low of 32.7 for Deltapine 1044B2RF. Percent uniformity averaged 80.2%, and strength values averaged 27.8 g/tex. Leaf grades were mostly 1 at this location and color grades of mostly 21 were observed across varieties. These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection.

Objective: The objective of this project was to compare agronomic characteristics, yields, gin turnout, fiber quality, and economic returns of transgenic cotton varieties under no-till dryland production in the Texas High Plains.

Materials and Methods:

Varieties: All-Tex Epic RF, Croplan Genetics 3220B2RF, Deltapine 1044B2RF, Dyna-Gro 2570B2RF, FiberMax 9170B2F, NexGen 3348B2RF, PhytoGen 375WRF, and Stoneville 4288B2F

Experimental design: Randomized complete block with 3 replications.

Seeding rate:	3.0 seed/row-ft in 40 inch row spacing (John Deere 1700 Vacuum planter)
Plot size:	8 rows by variable length of field (1320 to 1542 feet)
Planting date:	24-May
Weed management:	A burndown application of Roundup PowerMax at 22 oz/acre and 32 oz/acre Direx was applied the day after planting (25-May). One application of Roundup PowerMax was applied at 22 oz/acre on 24-June. This location was under no-till production and therefore, no cultivations were performed.
Rainfall:	Based on the nearest Texas Tech University - West Texas Mesonet station at Floydada, rainfall amounts were:

April:	7.42	July:	7.30
May:	3.31	August:	1.01
June:	4.70	September:	2.09

Total rainfall: 25.83

Insecticides:	No insecticides were applied by the producer at this site. This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.
Fertilizer management:	38 lbs N/acre were applied in July via coulter rig.
Harvest aids:	Harvest aids included 21 oz/acre of Prep applied by producer at this location on 21-October followed by 32 oz/acre Firestorm with 0.25% v/v non-ionic surfactant on 31-October.
Harvest:	Plots were harvested on 10-November using a commercial John Deere 7460 with field cleaner. Harvested material was transferred to a weigh wagon with integral electronic scales to record individual plot weights. Plot weights were subsequently converted to lb/acre basis.
Gin turnout:	Grab samples were taken by plot and ginned at the Texas AgriLife Research and Extension Center at Lubbock to determine gin turnouts.
Fiber analysis:	Lint samples were submitted to the Texas Tech University – Fiber and Biopolymer Research Institute for HVI analysis, and USDA Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.

Ginning cost and seed values: Ginning cost were based on $3.00 per cwt. of burr cotton and seed value/acre was based on $175/ton. Ginning cost did not include checkoff.

Seed and Technology fees: Seed and technology costs were calculated using the appropriate seeding rate (3.0 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://www.plainscotton.org/Seed/PCGseed10.xls .

Results and Discussion:

Significant differences were observed among varieties for plant population on 16-June (Table 1). Plant stands ranged from a high of 33,584 for Dyna-Gro 2570B2RF to a low of 27,433 for NexGen 3348B2RF. Nodes above white flower (NAWF) counts were taken on 5-August, 12-August, and 19-August. Significant differences were observed among varieties on all dates. NAWF values reported represent averages from 10 plants per plot or 30 plants per variety. The test average for NAWF on 5-August was 6.9 and ranged from a high of 7.6 for All-Tex Epic RF to a low of 6.1 for Stoneville 4288B2F. On 12-August all but two varieties had reach physiological cutout (NAWF=5) and values ranged from a high of 5.8 for All-Tex Epic RF to a low of 3.6 for Stoneville 4288B2F with a test average of 4.6. All varieties had reached cutout by the 19-August observation and All-Tex Epic RF again had the highest value of 3.4 and Stoneville 4288B2F had the lowest value of 2.0. Just prior to harvest on 10-November, a visual observation for storm resistance was recorded for each variety in all three replications. The ratings were on a scale of 1-9 where 1 represents the least storm resistance. Significant differences were observed among varieties and values ranged from a high of 7.8 (NexGen 3348B2RF) to a low of 4.5 (PhytoGen 375WRF).

Significant differences were observed for all yield and economic parameters measured (Table 2). Lint turnout of field cleaned cotton from grab samples averaged 34.9%. Bur cotton yields averaged 2012 lb/acre with a high of 2102 lb/acre for Stoneville 4288B2F, and a low of 1901 lb/acre for NexGen 3348B2RF. Lint yields varied with a low of 638 lb/acre (NexGen 3348B2RF) and a high of 748 lb/acre (All-Tex Epic RF). Lint loan values ranged from a low of $0.5198/lb (Deltapine 1044B2RF) to a high of $0.5655/lb (FiberMax 9170B2F). After adding lint and seed value, total value/acre for varieties ranged from a low of $438.63 for NexGen 3348B2RF to a high of $405.42 for All-Tex Epic RF. When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of $388.18 (All-Tex Epic RF) to a low of $330.78 (Deltapine 1044B2RF), a difference of $57.40.

Significant differences were observed among varieties for most HVI parameters measured. Micronaire ranged from a low of 4.0 for FiberMax 9170B2F to a high of 4.7 for Stoneville 4288B2F. Staple averaged 33.9 across all varieties with a high of 35.6 for FiberMax 9170B2F and a low of 32.7 for Deltapine 1044B2RF.

Percent uniformity averaged 80.2%, and no significant differences were observed. Strength values averaged 27.8 g/tex with a low of 26.1 g/tex for Stoneville 4288B2F, and a high of 29.6 g/tex for FiberMax 9170B2F. Elongation averaged 8.8 with a high of 10.1 for Deltapine 1044B2RF and a low of 7.4 FiberMax 9170B2F. Leaf grades were mostly 1 at this location and color grades of mostly 21 were observed across varieties.

These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection. It should be noted that no inclement weather was encountered at this location prior to harvest and therefore, no pre-harvest losses were observed. Additional multi-site and multi-year applied research is needed to evaluate varieties and technology across a series of environments.

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 - Texas AgriLife Research and Extension Center, Lubbock, and Dr. Eric Hequet - Associate Director, Fiber and Biopolymer Research Institute, Texas Tech University. Furthermore, we greatly appreciate the Texas Department of Agriculture - Food and Fiber Research for funding of HVI testing.

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Table 1. In-season plant measurement results from the dryland RACE variety demonstration, Gary Nixon Farm, Floydada, TX, 2010.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of			Storm resistance
	16-Jun		5-Aug	12-Aug	19-Aug	10-Nov
	plants/row-ft	plants/acre				rating (1-9)
All-Tex Epic RF	2.4	31,922	7.6	5.8	3.4	6.2
Croplan Genetics 3220B2RF	2.3	29,428	6.9	4.6	3.3	6.2
Dyna-Gro 2570B2RF	2.6	33,584	7.0	4.9	3.1	6.5
Deltapine 1044B2RF	2.3	30,592	7.3	4.9	3.4	6.5
FiberMax 9170B2F	2.4	31,257	6.8	4.1	2.3	7.7
NexGen 3348B2RF	2.1	27,433	6.4	4.0	2.8	7.8
PhytoGen 375WRF	2.3	30,259	7.3	5.2	2.8	4.5
Stoneville 4288B2F	2.1	27,599	6.1	3.6	2.0	5.8
Test average	2.3	30,259	6.9	4.6	2.9	6.4
CV, %	10.3	10.2	4.6	8.5	6.5	6.2
OSL	0.3307	0.2834	0.0013	0.0002	<0.0001	<0.0001
LSD	NS	NS	0.6	0.7	0.3	0.7

For NAWF, numbers represent an average of 10 plants per variety per rep (30 plants per variety).
For Storm resistance, ratings based on a scale of 1-9 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 dryland RACE variety demonstration, Gary Nixon Farm, Floydada, TX, 2010.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Seed/technology cost	Net value	
	-------- % --------		---------- lb/acre ----------			$/lb	---------- $/acre ----------						
All-Tex Epic RF	37.0	49.0	2022	748	990	0.5418	405.42	86.60	492.01	60.65	43.18	388.18	a
Croplan Genetics 3220B2RF	36.1	50.1	2027	732	1016	0.5410	395.77	88.89	484.65	60.82	52.53	371.30	b
Dyna-Gro 2570B2RF	34.5	49.2	2086	720	1027	0.5410	389.51	89.85	479.36	62.59	53.38	363.39	bc
FiberMax 9170B2F	34.9	48.1	1949	680	937	0.5655	384.45	81.96	466.41	58.47	54.58	353.36	cd
Stoneville 4288B2F	33.6	50.9	2102	707	1070	0.5227	369.67	93.66	463.33	63.07	54.58	345.68	de
PhytoGen 375WRF	35.5	49.1	1973	701	968	0.5270	369.42	84.68	454.10	59.18	53.55	341.37	de
NexGen 3348B2RF	33.6	51.2	1901	638	974	0.5537	353.44	85.20	438.63	57.02	48.80	332.81	e
Deltapine 1044B2RF	33.8	49.1	2036	689	999	0.5198	358.13	87.45	445.58	61.08	53.72	330.78	e
Test average	34.9	49.6	2012	702	998	0.5391	378.23	87.28	465.51	60.36	51.79	353.36	
CV, %	2.4	1.1	2.2	2.2	2.2	2.4	2.2	2.2	2.2	2.2	--	2.5	
OSL	0.0011	<0.0001	0.0011	<0.0001	0.0001	0.0103	<0.0001	0.0001	0.0001	0.0011	--	<0.0001	
LSD	1.4	1.0	79	27	39	0.0230	14.59	3.41	17.99	2.35	--	15.64	

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.
$175/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 dryland RACE variety demonstration, Gary Nixon Farm, Floydada, TX, 2010.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
All-Tex Epic RF	4.3	33.8	80.0	27.9	9.6	1.0	79.8	8.9	2.0	1.0
Croplan Genetics 3220B2RF	4.5	33.7	80.2	27.3	9.3	1.0	80.9	8.6	2.0	1.0
Dyna-Gro 2570B2RF	4.5	33.9	81.0	28.0	9.5	1.0	80.5	8.6	2.0	1.0
Deltapine 1044B2RF	4.3	32.7	79.9	27.6	10.1	1.0	80.1	8.5	2.3	1.0
FiberMax 9170B2F	4.0	35.6	80.3	29.6	7.4	1.0	82.3	7.8	2.0	1.0
NexGen 3348B2RF	4.1	34.6	80.5	28.9	7.8	1.3	79.6	8.2	2.3	1.0
PhytoGen 375WRF	4.3	33.4	80.0	27.0	8.1	1.0	80.6	8.4	2.0	1.0
Stoneville 4288B2F	4.7	33.3	79.5	26.1	8.7	1.3	80.3	8.6	2.0	1.0
Test average	4.3	33.9	80.2	27.8	8.8	1.1	80.5	8.5	2.1	1.0
CV, %	2.9	1.3	0.8	2.6	3.4	27.6	0.7	1.6	--	--
OSL	<0.0001	<0.0001	0.3091	0.0014	<0.0001	0.6004	0.0024	<0.0001	--	--
LSD	0.2	0.8	NS	1.3	0.5	NS	1.0	0.2	--	--

CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, NS - not significant.

AgriLIFE EXTENSION
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Replicated Dryland Skip-Row Cotton Variety Demonstration, Littlefield, TX - 2010

Cooperator: Greg White

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Extension Agronomist - Cotton, Extension Program Specialist II - Cotton, and Extension Assistant - Cotton

Lamb County

Summary: **This location was planted to a 8x1 skip-row planting pattern in 40-inch row spacings, however, all data except stand counts are reported on a land-acre basis**. Significant differences were noted for all yield and HVI fiber quality parameters measured. Lint turnout ranged from a high of 38.1% for All-Tex Epic RF to a low of 29.4% for Croplan Genetics 3006B2RF with a test average of 33.5%. Lint yields varied from a low of 593 lb/acre (Croplan Genetics 3006B2RF) to a high of 812 lb/acre (All-Tex Epic RF). Lint loan values ranged from a low of $0.4920/lb to a high of $0.5410/lb for Stoneville 4288B2F and Croplan Genetics 3006B2RF, respectively. When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of $409.87 for All-Tex Epic RF to a low of $306.28 for Croplan Genetics 3006B2RF, a difference of $103.59. Micronaire values ranged from a low of 3.8 for NexGen 3348B2RF to a high of 4.5 for All-Tex Epic RF. Staple averaged 33.0 across all varieties with a low of 32.2 (Stoneville 4288B2F) and a high of 34.2 (Croplan Genetics 3006B2RF). Uniformity ranged from a low of 78.4% for FiberMax 1740B2F and Stoneville 4288B2F to a high of 80.5% for Croplan Genetics 3006B2RF, and strength ranged from a low of 25.1 g/tex for Stoneville 4288B2F to a high of 27.4 g/tex for Dyna-Gro 2570B2RF. Elongation ranged from a high of 9.7% for Dyna-Gro 2570B2RF to a low of 7.8% for NexGen 3348B2RF and PhytoGen 375WRF. Leaf grades were mostly 1 and 2 at this location. Values for reflectance (Rd) and yellowness (+b) averaged 79.7 and 8.4, respectively. This resulted in color grades of mostly 21 across varietiesThese data indicate that substantial differences can be obtained in terms of net value/acre due to variety selection.

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

Materials and Methods:

Varieties: All-Tex Epic RF, Croplan Genetics 3006B2RF, Deltapine 1044B2RF, Dyna-Gro 2570B2RF, FiberMax 1740B2F, NexGen 3348B2RF, PhytoGen 375WRF, and Stoneville 4288B2F

Experimental design: Randomized complete block with 3 replications

Seeding rate: 3 seed/ft down the row in 8x1 skip-row planted 40-inch row spacing (John Deere 7300 MaxEmerge vacuum planter). This is equivalent to approximately 34,667 seed/land acre.

Plot size: 9 rows (8 planted) by length of field (2650 ft)

Planting date: 18-May

Weed management: Trifluralin was applied preplant incorporated at 1.3 pt/acre across all varieties in early March. Roundup PowerMax was applied over-the-top on 15-June and 1-August at 32 oz/acre with ammonium sulfate.

Rainfall: Based on the nearest Texas Tech University - West Texas Mesonet Station at Anton, the following precipitation amounts were recorded:

April:	3.59"	July:	5.11"
May:	0.71"	August:	0.22"
June:	2.66"	September:	1.46"

Total rainfall: 13.75"

Insecticides: Temik was applied infurrow at planting at a rate of 2 lb/acre. This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.

Fertilizer: Applied 150 lb/acre 32-0-0 preplant providing 48 lbs N/acre.

Harvest aids: Harvest aids included 16 oz/acre ethephon and 8 oz/acre Folex applied commercially via ground rig on 15-October followed by 16 oz/acre Gramoxone Inteon with 0.25% v/v NIS on 27-October.

Harvest: Plots were harvested on 4-November using a commercial John Deere 7460 with field cleaner. Harvested material was

transferred into a weigh wagon with integral electronic scales to determine individual plot weights. Plot yields were adjusted to lb/acre basis.

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

Fiber analysis: Lint samples were submitted to the Fiber and Biopolymer Research Institute at Texas Tech University for HVI analysis, and USDA Commodity Credit Corporation (CCC) Loan values were determined for each variety by plot.

Ginning cost and seed values: Ginning costs were based on $3.00 per cwt. of bur cotton and seed value/acre was based on $175/ton. Ginning costs did not include checkoff.

Seed and technology fees: Seed and technology costs were calculated on a per land acre basis using the appropriate seeding rate (3 seed/row-ft) for the 40-inch row spacing in 8X1 skip-row planting pattern (or 34,667 seed per land acre) and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://www.plainscotton.org/Seed/PCGseed10.xls.

Results and Discussion:

This location was planted to a 8x1 skip-row planting pattern in 40-inch row spacings, however, all data except stand counts are reported on a land-acre basis. Agronomic data including plant population, nodes above white flower (NAWF), and boll storm resistance are included in Table 1. Stand counts taken on 9-June indicated significant differences among varieties with a test average of 31,729 plants/planted acre. Stand counts ranged from a high of 35,833 plants/planted acre for Deltapine 1044B2RF to a low of 28,667 for Stoneville 4288B2F. Weekly NAWF counts were taken beginning 26-July to 9-August. No significant differences among varieties were observed for the 26-July (7.6 average) or the 9-August (4.1 average) count dates. On 2-August, the test average was 6.3 with a high of 6.7 for Deltapine 1044B2RF and Dyna-Gro 2570B2RF and a low of 5.9 for NexGen 3348B2RF and Stoneville 4288B2F. By the 9-August date, all varieties had reach cutout (NAWF=5). Just prior to harvest on 4-November, a visual observation of storm resistance was recorded for each variety in all three replications. The ratings were on a scale of 1-9 where 1 represents the least storm resistance. Significant differences were observed among varieties and values ranged from a high of 7.3 (NexGen 3348B2RF) to a low of 2.8 (PhytoGen 375WRF).

Significant differences were noted for all yield and HVI fiber quality parameters measured (Tables 2 and 3). Lint turnout ranged from a high of 38.1% for All-Tex Epic RF to a low of 29.4% for Croplan Genetics 3006B2RF with a test average of 33.5%. Bur cotton yield averaged 2071 lb/acre across all varieties

and ranged from 1989 lb/acre for PhytoGen 375WRF to 2155 lb/acre for Dyna-Gro 2570B2RF. Lint yields varied from a low of 593 lb/acre (Croplan Genetics 3006B2RF) to a high of 812 lb/acre (All-Tex Epic RF). Lint loan values ranged from a low of $0.4920/lb to a high of $0.5410/lb for Stoneville 4288B2F and Croplan Genetics 3006B2RF, respectively. After adding lint and seed value, total value/acre ranged from a low of $413.52 for Croplan Genetics 3006B2RF, to a high of $512.20 for All-Tex Epic RF. When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of $409.87 for All-Tex Epic RF to a low of $306.28 for Croplan Genetics 3006B2RF, a difference of $103.59.

Micronaire values ranged from a low of 3.8 for NexGen 3348B2RF to a high of 4.5 for All-Tex Epic RF. Staple averaged 33.0 across all varieties with a low of 32.2 (Stoneville 4288B2F) and a high of 34.2 (Croplan Genetics 3006B2RF). Uniformity ranged from a low of 78.4% for FiberMax 1740B2F and Stoneville 4288B2F to a high of 80.5% for Croplan Genetics 3006B2RF, and strength ranged from a low of 25.1 g/tex for Stoneville 4288B2F to a high of 27.4 g/tex for Dyna-Gro 2570B2RF. Elongation ranged from a high of 9.7% for Dyna-Gro 2570B2RF to a low of 7.8% for NexGen 3348B2RF and PhytoGen 375WRF. Leaf grades were mostly 1 and 2 at this location. Values for reflectance (Rd) and yellowness (+b) averaged 79.7 and 8.4, respectively. This resulted in color grades of mostly 21 across varieties.

These data indicate that substantial differences can be obtained in terms of net value/acre due to variety selection. It should be noted that a significant rainfall event occurred on 21-October at this location prior to harvest; however, no significant lint loss was observed. Additional multi-site and multi-year applied research is needed to evaluate varieties across a series of environments.

Acknowledgments:

Appreciation is expressed to Greg White for the use of his land, labor and equipment for this demonstration. Further assistance with this project was provided by Dr. Jane Dever - Texas AgriLife Research and Extension Center, Lubbock, and Dr. Eric Hequet - Associate Director, Fiber and Biopolymer Research Institute, Texas Tech University. Furthermore, we greatly appreciate the Texas Department of Agriculture - Food and Fiber Research for funding of HVI testing.

Disclaimer Clause:

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Table 1. In-season plant measurement results from the 8 in 1 out skip-row dryland RACE variety demonstration, Greg White Farm, Littlefield, TX, 2010.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of			Storm resistance
	9-Jun		26-Jul	2-Aug	9-Aug	4-Nov
	plants/row-ft	plants/ planted acre				rating (1-9)
All-Tex Epic RF	2.4	31,333	7.8	6.5	4.4	3.8
Croplan Genetics 3006B2RF	2.6	33,333	7.3	6.0	3.8	3.3
Dyna-Gro 2570B2RF	2.3	30,000	8.0	6.7	4.7	4.0
Deltapine 1044B2RF	2.7	35,833	7.5	6.7	4.2	4.8
FiberMax 1740B2F	2.4	31,500	7.4	6.4	4.1	4.5
NexGen 3348B2RF	2.4	31,833	7.5	5.9	3.8	7.3
PhytoGen 375WRF	2.4	31,333	7.7	6.5	4.1	2.8
Stoneville 4288B2F	2.2	28,667	7.2	5.9	4.1	3.0
Test average	2.4	31,729	7.6	6.3	4.1	4.2
CV, %	4.8	4.6	4.5	3.7	10.6	9.1
OSL	0.0028	0.0016	0.1309	0.0030	0.2374	<0.0001
LSD	0.2	2,560	NS	0.4	NS	0.7

For NAWF, numbers represent an average of 10 plants per variety per rep (30 plants per variety).
For Storm resistance, ratings based on a scale of 1-9 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 8 in 1 out skip-row dryland RACE cotton variety demonstration, Greg White Farm, Littlefield, TX, 2010*.

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/land-acre ----------			$/lb	---------- $/land-acre ----------						
All-Tex Epic RF	38.1	48.8	2131	812	1040	0.5190	421.20	91.00	512.20	63.94	38.39	409.87	a
Dyna-Gro 2570B2RF	35.1	50.4	2155	757	1086	0.5220	395.24	94.99	490.23	64.64	47.45	378.13	b
FiberMax 1740B2F	34.0	48.8	2134	725	1042	0.5083	368.59	91.20	459.79	64.01	48.52	347.26	c
Deltapine 1044B2RF	33.7	52.0	2040	688	1062	0.5190	357.02	92.90	449.93	61.20	47.75	340.97	c
NexGen 3348B2RF	32.4	52.1	2072	672	1079	0.5225	351.19	94.44	445.62	62.16	43.38	340.09	c
PhytoGen 375WRF	33.0	49.1	1989	656	976	0.5045	330.98	85.42	416.40	59.66	47.60	309.14	d
Stoneville 4288B2F	32.5	51.9	2028	660	1052	0.4920	324.64	92.03	416.66	60.83	48.52	307.32	d
Croplan Genetics 3006B2RF	29.4	52.3	2018	593	1056	0.5410	321.08	92.44	413.52	60.55	46.69	306.28	d
Test average	33.5	50.7	2071	695	1049	0.5160	358.74	91.80	450.54	62.12	46.04	342.38	
CV, %	1.4	2.0	1.7	1.7	1.7	2.3	1.6	1.7	1.6	1.7	--	1.9	
OSL	<0.0001	0.0008	0.0002	<0.0001	<0.0001	0.0067	<0.0001	<0.0001	<0.0001	0.0002	--	<0.0001	
LSD	0.8	1.8	60	20	31	0.0204	10.23	2.68	12.89	1.80	--	11.10	

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.
$175/ton for seed.
Value for lint based on CCC loan value from grab samples and FBRI HVI results.
***All yield, value and cost components were determined on a land-acre basis.**

Table 3. HVI fiber property results from the 8 in 1 out skip-row dryland RACE cotton variety demonstration, Greg White Farm, Littlefield, TX, 2010.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
All-Tex Epic RF	4.5	33.2	79.5	27.2	9.5	1.0	79.7	8.8	2.0	1.0
Croplan Genetics 3006B2RF	4.4	34.2	80.5	26.9	8.2	2.3	78.7	8.0	3.0	1.0
Dyna-Gro 2570B2RF	4.4	33.1	80.0	27.4	9.7	1.0	80.3	8.6	2.0	1.0
Deltapine 1044B2RF	4.4	32.9	79.4	27.1	9.6	1.7	80.2	8.5	2.0	1.0
FiberMax 1740B2F	4.4	32.5	78.4	26.6	7.9	1.0	81.1	8.2	2.0	1.0
NexGen 3348B2RF	3.8	33.5	79.7	27.2	7.8	2.3	79.5	8.2	2.7	1.0
PhytoGen 375WRF	4.2	32.6	79.2	25.4	7.8	1.7	79.0	8.3	2.3	1.0
Stoneville 4288B2F	4.4	32.2	78.4	25.1	8.3	1.7	78.9	8.4	2.7	1.0
Test average	4.3	33.0	79.4	26.6	8.6	1.6	79.7	8.4	2.3	1.0
CV, %	2.7	1.2	0.6	1.8	3.4	55.3	1.0	2.1	--	--
OSL	0.0001	0.0008	0.0014	0.0002	<0.0001	0.3596	0.0275	0.0023	--	--
LSD	0.2	0.7	0.9	0.9	0.5	NS	1.3	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 Dryland RACE Variety Demonstration, Glover Farm
Lubbock, TX - 2010

Cooperator: Texas AgriLife Research/
Texas AgriLife Extension

Mark Brown, Randy Boman, Mark Kelley
and Chris Ashbrook
CEA-ANR Lubbock County, Extension Agronomist - Cotton,
Extension Program Specialist II - Cotton,
and Extension Assistant - Cotton

Lubbock County

Summary: **Hot, dry conditions during and after planting resulted in delayed emergence and significant stress in the trial. As a result, plant stands were highly variable.** Significant differences were noted for some yield and most fiber quality parameters measured. Lint turnout of non-field cleaned bur cotton ranged from 31.7% for All-Tex Epic RF and Dyna-Gro 2570B2RF to 27.6% for Stoneville 4288B2F. Lint yields were not significantly different and averaged 857 lbs/acre across varieties. Lint loan values averaged $0.5536/lb and no differences were observed among varieties. Furthermore, no significant differences were noted among varieties for total value ($595.16/acre average) or net value ($448.77 average). Micronaire values ranged from a high of 4.6 for Dyna-Gro 2570B2RF to a low of 3.8 for NexGen 3348B2RF and the test average was 4.3. The test averages for staple and uniformity were 34.6 and 80.8%, respectively. Strength values averaged 29.5 g/tex across all varieties and ranged from a high of 30.7 g/tex for Deltapine 1044B2RF and NexGen 3348B2RF to a low of 28.0 g/tex for PhytoGen 375WRF. Color grades were mostly 11 and 21 and leaf grades were mostly 1 and 2 across varieties. **The lack of differences among varieties for lint yield, loan value and subsequently total and net values was attributed in most part to the lack of stand uniformity across all varieties**.

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

Materials and Methods:

Varieties:	All-Tex Epic RF, Croplan Genetics 3006B2RF, Deltapine 1044B2RF, Dyna-Gro 2570B2RF, FiberMax 1740B2F, NexGen 3348B2RF, PhytoGen 375WRF, and Stoneville 4288B2F
Experimental design:	Randomized complete block with 3 replications
Seeding rate:	3.5 seeds/row-ft in solid planted 40-inch row spacing (John Deere MaxEmerge XP vacuum planter)
Plot size:	4 rows by length of field (~920 ft)
Planting date:	20-May
Weed management:	Trifluralin was applied preplant incorporated at 32 oz/acre across all varieties on 2-April. Two applications of Roundup PowerMax were applied at 32 oz/acre on 21-June and 18-August.
Rainfall:	Based on the recorded rainfall at the Texas AgriLife Research and Extension Center, Rainfall amounts were:

April:	4.75”	July:	7.59”
May:	1.35”	August:	2.30”
June:	2.55”	September:	0.65”

Total rainfall: 19.19”

Insecticides:	Temik was applied infurrow at planting at a rate of 5 lbs/acre. This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.
Fertilizer:	40 lbs N/acre were applied preplant incorporated.
Plant growth regulators:	One application of Stance at 3 oz/acre was made on 25-July.
Harvest aids:	Harvest aids included 24 oz/acre Finish 6 Pro + 8 oz/acre Def 6 on 30-September followed by 24 oz/acre Gramoxone Inteon with 0.25% v/v NIS on 6-October.
Harvest:	Plots were harvested on 14 and 15-October using a commercial John Deere 484 without field cleaner. Harvested material was transferred into a weigh wagon with integral electronic scales to determine individual plot weights. Plot yields were adjusted to lb/acre.
Gin turnout:	Grab samples were taken by plot and ginned at the Texas AgriLife Research and Extension Center at Lubbock to determine gin turnouts.

Fiber analysis: Lint samples were submitted to the Fiber and Biopolymer Research Institute at Texas Tech University for HVI analysis, and USDA Commodity Credit Corporation (CCC) Loan values were determined for each variety by plot.

Ginning cost and seed values: Ginning costs were based on $3.00 per cwt. of bur cotton and seed value/acre was based on $175/ton. Ginning costs did not include checkoff.

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

Results and Discussion:

Weed pressure at this site would generally be considered light to medium and consisted mainly of silverleaf nightshade, pigweed, and devil's claw. **Hot, dry conditions during and after planting resulted in delayed emergence and significant stress in the trial. As a result, plant stands were highly variable.**

Due to the lack of uniform stand establishment, no agronomic data including plant population and nodes above white flower (NAWF) were recorded. Significant differences were noted for some yield and most fiber quality parameters measured (Tables 1 and 2). Lint turnout of non-field cleaned bur cotton ranged from 31.7% for All-Tex Epic RF and Dyna-Gro 2570B2RF to 27.6% for Stoneville 4288B2F. Bur cotton yields varied (alpha=0.10) from a low of 2533 lb/acre (All-Tex Epic RF) to a high of 3428 lb/acre (Stoneville 4288B2F). Lint yields were not significantly different and averaged 857 lbs/acre across varieties. Lint loan values averaged $0.5536/lb and no differences were observed among varieties. Furthermore, no significant differences were noted among varieties for total value ($595.16/acre average) or net value ($448.77 average).

Micronaire values ranged from a high of 4.6 for Dyna-Gro 2570B2RF to a low of 3.8 for NexGen 3348B2RF and the test average was 4.3. The test average staple was 34.6 and no significant differences were observed. Uniformity differences were also not significant and the test average was 80.8%. Strength values averaged 29.5 g/tex across all varieties and ranged from a high of 30.7 g/tex for Deltapine 1044B2RF and NexGen 3348B2RF to a low of 28.0 g/tex for PhytoGen 375WRF. Color grade components of Rd (reflectance) and +b (yellowness) averaged 81.1 and 8.6, respectively. This resulted in color grades of mostly 11 and 21. Leaf grades were mostly 1 and 2 across varieties.

The lack of differences among varieties for lint yield, loan value and subsequently total and net values was attributed in most part to the lack of stand uniformity across all varieties. Additional multi-site and multi-year applied research is needed to evaluate varieties across a series of environments.

Acknowledgments:

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

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Table 1. Harvest results from the dryland RACE cotton variety demonstration, Texas AgriLife Research, Glover Farm, Lubbock, TX, 2010.

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 4288B2F	27.6	50.3	3428	945	1724	0.5478	517.59	150.89	668.48	102.84	63.68	501.96
Dyna-Gro 2570B2RF	31.7	48.1	2945	934	1418	0.5553	518.53	124.04	642.56	88.35	62.28	491.94
FiberMax 1740B2F	30.5	46.8	3028	925	1418	0.5425	501.66	124.09	625.76	90.84	63.68	471.24
Deltapine 1044B2RF	29.8	47.9	2952	880	1414	0.5580	490.82	123.75	614.57	88.56	62.67	463.34
PhytoGen 375WRF	30.5	46.5	2815	858	1309	0.5458	468.56	114.51	583.07	84.44	62.47	436.15
All-Tex Epic RF	31.7	48.1	2533	802	1217	0.5550	445.04	106.51	551.54	75.99	50.38	425.17
Croplan Genetics 3006B2RF	30.2	49.3	2618	792	1290	0.5578	441.79	112.90	554.69	78.55	61.29	414.86
NexGen 3348B2RF	27.8	48.5	2604	724	1264	0.5663	410.00	110.59	520.59	78.12	56.93	385.53
Test average	30.0	48.2	2865	857	1382	0.5536	474.25	120.91	595.16	85.96	60.42	448.77
CV, %	3.2	2.7	11.3	11.4	11.2	2.6	11.4	11.2	11.4	11.3	--	12.9
OSL	0.0006	0.0564†	0.0726†	0.1334	0.0329	0.5464	0.2171	0.0328	0.1896	0.0724†	--	0.2684
LSD	1.7	1.9	465	NS	272	NS	NS	23.76	NS	13.95	--	NS

For net value/acre, means within a column with the same letter are not significantly different at the 0.05 probability level.
CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, †indicates significance at the 0.10 level, NS - not significant.
Note: some columns may not add up due to rounding error.

Assumes:
$3.00/cwt ginning cost.
$175/ton for seed.
Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Table 2. HVI fiber property results from the dryland RACE cotton variety demonstration, Texas AgriLife Research, Glover Farm, Lubbock, TX, 2010.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
All-Tex Epic RF	4.4	34.7	81.3	29.4	9.6	1.0	81.0	9.1	1.3	1.0
Croplan Genetics 3006B2RF	4.4	35.2	80.6	29.7	8.4	1.7	80.9	8.3	1.7	1.0
Dyna-Gro 2570B2RF	4.6	34.6	81.4	29.6	9.4	1.0	80.9	8.8	1.3	1.0
Deltapine 1044B2RF	4.3	34.8	80.9	30.7	9.5	1.0	81.4	8.7	1.3	1.0
FiberMax 1740B2F	4.4	34.0	80.5	29.3	7.9	1.3	82.0	8.4	1.3	1.0
NexGen 3348B2RF	3.8	35.2	81.5	30.7	7.9	2.3	80.0	8.5	2.0	1.0
PhytoGen 375WRF	4.1	34.2	79.8	28.0	8.1	1.0	82.0	8.7	1.0	1.0
Stoneville 4288B2F	4.5	34.5	80.1	28.4	8.2	1.3	80.8	8.7	2.0	1.0
Test average	4.3	34.6	80.8	29.5	8.6	1.3	81.1	8.6	1.5	1.0
CV, %	3.7	2.1	1.2	2.7	2.4	42.9	0.6	1.2	--	--
OSL	0.0019	0.4442	0.3338	0.0101	<0.0001	0.1219	0.0017	<0.0001	--	--
LSD	0.3	NS	NS	1.4	0.4	NS	0.8	0.2	--	--

CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, NS - not significant.

Replicated Dryland Glytol Variety Demonstration, Glover Farm
Lubbock, TX - 2010

**Cooperator: Texas AgriLife Research/
Texas AgriLife Extension**

**Mark Brown, Randy Boman, Mark Kelley
and Chris Ashbrook
CEA-ANR Lubbock County, Extension Agronomist - Cotton,
Extension Program Specialist II - Cotton,
and Extension Assistant - Cotton**

Lubbock County

Summary: Significant differences were noted for some yield and fiber quality parameters measured. Lint turnout of non-field cleaned bur cotton ranged from 32.2% for FiberMax 9101GT to 28.7% for FiberMax 9180B2F. Lint yields averaged 619 lbs/acre across varieties and ranged from a high of 667 lbs/acre for FiberMax 9250GL to a low of 580 lbs/acre for FiberMax 9180B2F. Lint loan values averaged $0.5663/lb and no differences were observed among varieties. When subtracting ginning cost from total value, net value/acre averaged $362.54/acre across varieties with a low of $338.24 for FiberMax 9180B2F and a high of $390.96 for FiberMax 9250GL, a difference of $52.72. Micronaire values ranged from a high of 4.5 for FiberMax 9101GT, 9180B2F and 9250GL to a low of 4.3 for FiberMax 9058F and the test average was 4.4. The test averages for staple and uniformity were 35.4 and 81.6%, respectively and no significant differences were observed. Strength values averaged 31.0 g/tex across all varieties and ranged from a high of 31.8 g/tex for FiberMax 9101GT to a low of 28.9 g/tex for FiberMax 9058F. Additional multi-site and multi-year applied research is needed to evaluate these and similar varieties across a series of environments.

Objective: The objective of this project was to compare agronomic characteristics, yields, gin turnout, fiber quality, and economic returns of Glytol, glyphosate tolerant, and Glytol/Liberty Link stacked FiberMax cotton varieties under dryland production in the Texas High Plains.

Materials and Methods:

Varieties:	FiberMax 9250GL, FiberMax 9103GT, FiberMax 9101GT, FiberMax 9058F, and FiberMax 9180B2F
Experimental design:	Randomized complete block with 3 replications
Seeding rate:	4 seeds/row-ft in solid planted 40-inch row spacing (John Deere MaxEmerge XP vacuum planter)
Plot size:	4 rows by length of field (~375 ft)
Planting date:	4-June
Weed management:	Trifluralin was applied preplant incorporated at 32 oz/acre across all varieties on 2-April. Two applications of Roundup PowerMax were applied at 32 oz/acre on 21-June and 18-August.
Rainfall:	Based on the recorded rainfall at the Texas AgriLife Research and Extension Center, Rainfall amounts were:

April:	4.75”	July:	7.59”
May:	1.35”	August:	2.30”
June:	2.55”	September:	0.65”

Total rainfall: 19.19”

Insecticides:	Temik was applied infurrow at planting at a rate of 3 lbs/acre. This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.
Fertilizer:	40 lbs N/acre were applied preplant incorporated.
Plant growth regulators:	None were applied at this location.
Harvest aids:	Harvest aids included 24 oz/acre Finish 6 Pro + 8 oz/acre Def 6 on 30-September followed by 24 oz/acre Gramoxone Inteon with 0.25% v/v NIS on 6-October.
Harvest:	Plots were harvested on 26-October using a commercial John Deere 484 without field cleaner. Harvested material was transferred into a weigh wagon with integral electronic scales to determine individual plot weights. Plot yields were adjusted to lb/acre.
Gin turnout:	Grab samples were taken by plot and delivered to Bayer CropScience personnel for ginning and HVI classing.

Ginning cost and seed values: Ginning costs were based on $3.00 per cwt. of bur cotton and seed value/acre was based on $175/ton. Ginning costs did not include checkoff.

Results and Discussion:

Weed pressure at this site would generally be considered medium and consisted mainly of silverleaf nightshade, pigweed, lakeweed and devil's claw. Significant differences were noted for some yield and fiber quality parameters measured (Tables 1 and 2). Lint turnout of non-field cleaned bur cotton ranged from 32.2% for FiberMax 9101GT to 28.7% for FiberMax 9180B2F. Bur cotton yields averaged 2024 lbs/acre and no significant differences were observed among varieties. Lint yields averaged 619 lbs/acre across varieties and ranged from a high of 667 lbs/acre for FiberMax 9250GL to a low of 580 lbs/acre for FiberMax 9180B2F. Lint loan values averaged $0.5663/lb and no differences were observed among varieties. After adding lint and seed value ($/acre), total value ranged from a high of $455.42/acre for FiberMax 9250GL to a low of $398.24/acre for FiberMax 9058F. When subtracting ginning cost from total value, net value/acre averaged $362.54/acre across varieties with a low of $338.24 for FiberMax 9180B2F and a high of $390.96 for FiberMax 9250GL, a difference of $52.72.

Micronaire values ranged from a high of 4.5 for FiberMax 9101GT, 9180B2F and 9250GL to a low of 4.3 for FiberMax 9058F and the test average was 4.4. The test averages for staple and uniformity were 35.4 and 81.6%, respectively and no significant differences were observed. Strength values averaged 31.0 g/tex across all varieties and ranged from a high of 31.8 g/tex for FiberMax 9101GT to a low of 28.9 g/tex for FiberMax 9058F. Additional multi-site and multi-year applied research is needed to evaluate these and similar varieties across a series of environments.

Acknowledgments:

Appreciation is expressed to Dr. Wayne Keeling, Danny Meason, and Beau Henderson, Texas AgriLife Research and Extension Center, Lubbock for their cooperation with this project.

Disclaimer Clause:

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

Table 1. Harvest results from the dryland replicated Glytol/Liberty Link variety demonstration, Texas AgriLife Research, Glover Farm, Lubbock, TX, 2010.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Net value after ginning
	-------- % --------		---------- lb/acre ----------			$/lb	---------- $/acre ----------				
FiberMax 9250GL	31.0	40.4	2149	667	868	0.5688	379.45	75.97	455.42	64.47	390.96 a
FiberMax 9103GT	31.3	41.4	2039	639	844	0.5695	363.95	73.81	437.76	61.16	376.60 a
FiberMax 9101GT	32.2	41.9	1951	628	818	0.5645	354.34	71.58	425.92	58.54	367.38 ab
FiberMax 9058F	29.8	40.2	1957	583	787	0.5655	329.42	68.83	398.24	58.72	339.53 b
FiberMax 9180B2F	28.7	40.7	2023	580	824	0.5632	326.85	72.07	398.92	60.68	338.24 b
Test average	30.6	40.9	2024	619	828	0.5663	350.80	72.45	423.25	60.72	362.54
CV, %	2.2	2.9	5.3	5.1	5.3	1.5	5.1	5.3	5.1	5.3	5.1
OSL	0.0018	0.4332	0.2458	0.0402	0.3030	0.8636	0.0282	0.2988	0.0460	0.2453	0.0292
LSD	1.3	NS	NS	59	NS	NS	33.49	NS	40.65	NS	34.64

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.
$175/ton for seed.
Value for lint based on CCC loan value from grab samples and HVI results from Bayer CropScience.

Table 2. HVI fiber property results from the dryland replicated Glytol/Liberty Link variety demonstration, Texas AgriLife Research, Glover Farm, Lubbock, TX, 2010.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation
	units	32^{nds} inch	%	g/tex	%
FiberMax 9058F	4.3	35.5	81.4	28.9	6.4
FiberMax 9101GT	4.5	34.8	81.7	31.8	6.5
FiberMax 9103GT	4.4	35.7	81.3	31.2	6.9
FiberMax 9180B2F	4.5	35.3	81.6	31.6	7.1
FiberMax 9250GL	4.5	35.7	81.9	31.2	6.5
Test average	4.4	35.4	81.6	31.0	6.7
CV, %	1.6	1.7	0.6	2.7	3.7
OSL	0.0167	0.4373	0.6479	0.0165	0.0303
LSD	0.1	NS	NS	1.6	0.5

CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, NS - not significant.

AgriLIFE EXTENSION
Texas A&M System

Replicated Dryland RACE Variety Demonstration, Tahoka, TX - 2010

Cooperator: Charles Ashbrook

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

Lynn County

Summary: Significant differences were noted for all yield and most fiber quality parameters measured. Lint turnout ranged from 37.3% for All-Tex Epic RF to 32.3% for NexGen 3348B2RF. Lint yields varied from a low of 470 lb/acre (FiberMax 9160B2F) to a high of 609 lb/acre (Dyna-Gro 2570B2RF). Lint loan values ranged from a low of $0.5195/lb to a high of $0.5547/lb for Stoneville 5458B2RF and FiberMax 9160B2F, respectively. When subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of $305.08 (Dyna-Gro 2570B2RF) to a low of $234.51 (FiberMax 9160B2F), a difference of $70.57. Micronaire values ranged from a high of 4.6 for Dyna-Gro 2570B2RF and Stoneville 5458B2RF to a low of 4.1 for FiberMax 9160B2F and NexGen 3348B2RF and the test average was 4.4. The test average staple was 33.7 and FiberMax 9160B2F had the highest with 34.8 while Stoneville 5458B2RF had the lowest with 33.2. Uniformity was highest for NexGen 3348B2RF (80.6%) and lowest for Stoneville 5458B2RF (78.5%). Strength values averaged 27.8 g/tex across all varieties and ranged from a high of 29.4 g/tex for Deltapine 1044B2RF to a low of 26.7 g/tex for PhytoGen 375WRF. Color grade components of Rd (reflectance) and +b (yellowness) averaged 80.1 and 8.4, respectively. This resulted in color grades of mostly 21. Leaf grades were mostly 2 across varieties. These data indicate that substantial differences can be obtained in terms of net value/acre due to variety selection.

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

Materials and Methods:

Varieties: All-Tex Epic RF, Croplan Genetics 3035RF, Deltapine 1044B2RF, Dyna-Gro 2570B2RF, FiberMax 9160B2F, NexGen 3348B2RF, PhytoGen 375WRF, and Stoneville 5458B2F

Experimental design: Randomized complete block with 3 replications

Seeding rate: 2.5 seeds/row-ft in solid planted 40-inch row spacing (Case IH 1200 vacuum planter)

Plot size: 8 rows by length of field (~1333 ft)

Planting date: 26-May

Weed management: Prowl H2O was applied preplant incorporated at 1.5 pt/acre across all varieties on 15-March. Glyphosate was applied over-the-top at 40 oz/acre on 17-July and 4-August with AMS.

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

April:	6.81”	July:	11.68”
May:	0.79”	August:	0.55”
June:	5.64”	September:	1.72”
Total rainfall:		27.19	

Insecticides: No insecticides were applied by the producer at this site. This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.

Fertilizer: Applied 200 lbs/acre of 18-12-2-5 fertilizer on 15-March supplying 36 lbs N/acre.

Harvest aids: Harvest aids included 32 oz/acre ethephon + 2 oz/acre ET with 1% v/v crop oil on 15-October. No additional harvest aids were required.

Harvest: Plots were harvested on 5-November using a commercial John Deere 7450 with field cleaner. Harvested material was transferred into a weigh wagon with integral electronic scales to determine individual plot weights. Plot yields were adjusted to lb/acre.

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

Fiber analysis: Lint samples were submitted to the Fiber and Biopolymer Research Institute at Texas Tech University for HVI analysis, and USDA

Commodity Credit Corporation (CCC) Loan values were determined for each variety by plot.

Ginning cost and seed values: Ginning costs were based on $3.00 per cwt. of bur cotton and seed value/acre was based on $175/ton. Ginning costs did not include checkoff.

Seed and technology fees: Seed and technology costs were calculated using the appropriate seeding rate (2.5 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://www.plainscotton.org/Seed/PCGseed10.xls .

Results and Discussion:

Weed pressure at this site would generally be considered medium and consisted mainly of silverleaf nightshade, pigweed, bindweed, and lakeweed.

Agronomic data including plant population and nodes above white flower (NAWF) are included in Table 1. Stand counts taken on 17-June indicated no significant differences among varieties with a test average of 25,396 plants/acre. Weekly NAWF counts were taken beginning 4-August to 18-August. Averages were 6.6 (4-August), 4.8 (11-August), and 3.3 (18-August). Significant differences among varieties were observed for the 4-August and 18-August observations only (alpha=0.10). Values on 4-August ranged from a low of 5.6 for NexGen 3348B2RF to a high of 6.9 for Croplan Genetics 3035RF and Deltapine 1044B2RF. By 18-August, all varieties had reached cutout (NAWF=5) and values ranged from a high of 4.0 for Deltapine 1044B2RF to a low of 2.2 for NexGen 3348B2RF.

Significant differences were noted for all yield and most fiber quality parameters measured (Tables 2 and 3). Lint turnout ranged from 37.3% for All-Tex Epic RF to 32.3% for NexGen 3348B2RF. Bur cotton yield averaged 1527 lb/acre and ranged from a high of 1658 lb/acre for Dyna-Gro 2570B2RF to a low of 1395 lbs/acre for FiberMax 9160B2F. Lint yields varied from a low of 470 lb/acre (FiberMax 9160B2F) to a high of 609 lb/acre (Dyna-Gro 2570B2RF). Lint loan values ranged from a low of $0.5195/lb to a high of $0.5547/lb for Stoneville 5458B2RF and FiberMax 9160B2F, respectively. After adding lint and seed value, total value/acre ranged from a low of $321.86 for FiberMax 9160B2F, to a high of $399.29 for Dyna-Gro 2570B2RF. When subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of $305.08 (Dyna-Gro 2570B2RF) to a low of $234.51 (FiberMax 9160B2F), a difference of $70.57.

Micronaire values ranged from a high of 4.6 for Dyna-Gro 2570B2RF and Stoneville 5458B2RF to a low of 4.1 for FiberMax 9160B2F and NexGen 3348B2RF and the test average was 4.4. The test average staple was 33.7 and FiberMax 9160B2F had the highest with 34.8 while Stoneville 5458B2RF had the

lowest with 33.2. Uniformity was highest for NexGen 3348B2RF (80.6%) and lowest for Stoneville 5458B2RF (78.5%). Strength values averaged 27.8 g/tex across all varieties and ranged from a high of 29.4 g/tex for Deltapine 1044B2RF to a low of 26.7 g/tex for PhytoGen 375WRF. Color grade components of Rd (reflectance) and +b (yellowness) averaged 80.1 and 8.4, respectively. This resulted in color grades of mostly 21. Leaf grades were mostly 2 across varieties.

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

Acknowledgments:

Appreciation is expressed to Charles Ashbrook for the use of his land, equipment and labor at this location. Further assistance was provided by Dr. Jane Dever - Texas AgriLife Research and Extension Center, Lubbock, and Dr. Eric Hequet - Associate Director, Fiber and Biopolymer Research Institute, Texas Tech University. We also greatly appreciate the Texas Department of Agriculture - Food and Fiber Research for funding of HVI testing.

Disclaimer Clause:

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Table 1. In-season plant measurement results from the dryland RACE variety demonstration, Charles Ashbrook Farm, Tahoka, TX, 2010.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of		
	17-Jun		4-Aug	11-Aug	18-Aug
	plants/row-ft	plants/acre			
All-Tex Epic RF	1.8	24,167	6.7	4.9	3.9
Croplan Genetics 3035RF	1.9	24,500	6.9	5.1	3.2
Dyna-Gro 2570B2RF	2.0	26,667	6.6	5.0	3.7
Deltapine 1044B2RF	1.8	23,333	6.9	5.5	4.0
FiberMax 9160B2F	2.0	26,167	6.7	4.7	3.1
NexGen 3348B2RF	2.0	25,833	5.6	4.0	2.2
PhytoGen 375WRF	1.9	24,500	6.7	4.1	2.7
Stoneville 5458B2RF	2.1	28,000	6.5	5.1	3.3
Test average	1.9	25,396	6.6	4.8	3.3
CV, %	7.3	7.5	7.1	13.9	21.7
OSL	0.1546	0.1388	0.0823†	0.1780	0.0904†
LSD	NS	NS	0.7	NS	1.0

For NAWF, numbers represent an average of 10 plants per variety per rep (30 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 dryland RACE variety demonstration, Charles Ashbrook Farm, Tahoka, TX, 2010.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Seed/technology cost	Net value	
	-------- % --------		---------- lb/acre ----------			$/lb	---------- $/acre ----------						
Dyna-Gro 2570B2RF	36.7	51.0	1658	609	846	0.5345	325.28	74.01	399.29	49.73	44.48	305.08	a
Croplan Genetics 3035RF	37.2	50.8	1577	587	801	0.5345	313.85	70.07	383.91	47.30	38.41	298.21	a
All-Tex Epic RF	37.3	50.3	1498	558	754	0.5350	298.66	65.94	364.60	44.95	35.99	283.66	ab
PhytoGen 375WRF	35.7	50.3	1509	538	760	0.5330	286.78	66.47	353.25	45.27	44.62	263.36	bc
Stoneville 5458B2RF	35.5	51.3	1550	549	795	0.5198	285.61	69.58	355.19	46.49	45.49	263.21	bc
NexGen 3348B2RF	32.3	52.1	1575	509	821	0.5378	273.56	71.87	345.43	47.25	40.67	257.51	bcd
Deltapine 1044B2RF	35.6	50.8	1453	517	739	0.5308	274.64	64.66	339.30	43.60	44.77	250.94	cd
FiberMax 9160B2F	33.7	50.3	1395	470	701	0.5547	260.48	61.37	321.86	41.86	45.49	234.51	d
Test average	35.5	50.9	1527	542	777	0.5350	289.86	68.00	357.85	45.81	42.49	269.56	
CV, %	2.1	0.9	4.7	4.8	4.7	1.7	4.8	4.7	4.8	4.7	--	5.6	
OSL	<0.0001	0.0015	0.0153	0.0004	0.0049	0.0302	0.0009	0.0050	0.0019	0.0153	--	0.0006	
LSD	1.3	0.8	126	46	64	0.0163	24.44	5.58	30.02	3.77	--	26.25	

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.
$175/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 dryland RACE variety demonstration, Charles Ashbrook Farm, Tahoka, TX, 2010.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
All-Tex Epic RF	4.4	33.4	80.1	27.7	9.6	1.0	79.9	8.9	2.0	1.0
Croplan Genetics 3035RF	4.4	33.8	80.5	27.9	9.6	1.0	80.0	8.7	2.0	1.0
Dyna-Gro 2570B2RF	4.6	33.5	80.2	27.4	9.2	1.0	80.3	8.5	2.0	1.0
Deltapine 1044B2RF	4.4	33.7	80.2	29.4	9.4	2.0	79.8	8.4	2.3	1.0
FiberMax 9160B2F	4.1	34.8	80.4	27.3	7.3	1.7	81.5	8.1	2.0	1.0
NexGen 3348B2RF	4.1	33.9	80.6	28.2	7.6	2.3	79.1	8.3	3.0	1.0
PhytoGen 375WRF	4.3	33.6	80.0	26.7	7.8	1.3	81.2	8.0	2.0	1.0
Stoneville 5458B2RF	4.6	33.2	78.5	27.7	7.9	1.3	78.9	8.6	2.0	1.0
Test average	4.4	33.7	80.1	27.8	8.5	1.5	80.1	8.4	2.2	1.0
CV, %	2.9	1.3	0.7	1.7	3.0	50.5	0.9	2.2	--	--
OSL	0.0005	0.0214	0.0078	0.0004	<0.0001	0.2815	0.0085	0.0011	--	--
LSD	0.2	0.8	0.9	0.8	0.5	NS	1.3	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.

AgriLIFE EXTENSION
Texas A&M System

Replicated Dryland RACE Variety Demonstration, Plains, TX - 2010

Cooperator: Rickey Bearden

Scott Russell, Randy Boman, Mark Kelley and Chris Ashbrook
EA-IPM Terry/Yoakum Counties,
Extension Agronomist - Cotton, Extension Program Specialist II - Cotton, and Extension Assistant - Cotton

Yoakum County

Summary: **Stand establishment was variable due to hot and dry conditions following planting.** Significant differences were noted for most yield and most fiber quality parameters measured. Lint turnout ranged from 35.4% for Dyna-Gro 2570B2RF to 31.4% for Deltapine 1044B2RF. Lint yields varied from a low of 357 lb/acre (FiberMax 9170B2F) to a high of 455 lb/acre (Dyna-Gro 2570B2RF). Lint loan values ranged from a low of $0.5163/lb to a high of $0.5468/lb for PhytoGen 375WRF and Croplan Genetics 3220B2RF, respectively. When subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of $197.27 (Dyna-Gro 2570B2RF) to a low of $141.83 (FiberMax 9170B2F), a difference of $55.44. Micronaire values ranged from a high of 4.8 for NexGen 3348B2RF and PhytoGen 375WRF to a low of 4.3 for Croplan Genetics 3220B2RF and the test average was 4.6. The test average staple was 33.5 and Croplan Genetics 3220B2RF had the highest with 34.6 while All-Tex Epic RF had the lowest with 32.9. Uniformity differences were not significant with a test average of 79.5%. Strength values averaged 27.7 g/tex across all varieties and ranged from a high of 28.8 g/tex for Croplan Genetics 3220B2RF to a low of 26.2 g/tex for Dyna-Gro 2570B2RF. Color grade components of Rd (reflectance) and +b (yellowness) averaged 77.5 and 9.0, respectively. This resulted in color grades of mostly 21 and 31. Leaf grades were mostly 1 across varieties. **It should be noted that minimal preharvest loss was observed with looser varieties due to a hail event on 21-October.** These data indicate that substantial differences can be obtained in terms of net value/acre due to variety selection.

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

Materials and Methods:

Varieties:	All-Tex Epic RF, Croplan Genetics 3220B2RF, Deltapine 1044B2RF, Dyna-Gro 2570B2RF, FiberMax 9170B2F, NexGen 3348B2RF, PhytoGen 375WRF, and Stoneville 5458B2RF
Experimental design:	Randomized complete block with 3 replications
Seeding rate:	3.0 seeds/row-ft in solid planted 40-inch row spacing (John Deere MaxEmerge XP vacuum planter)
Plot size:	6 rows by 1000 ft length
Planting date:	3-June
Weed management:	Trifuralin was applied preplant incorporated at 1.0 pt/acre across all varieties. An application of 4.0 oz/acre trifuralin and 6.0 oz/acre Caparol was applied to a 10" band behind the presswheel at planting. Roundup PowerMax was applied over-the-top at 32 oz/acre on 17-July and 28-August with AMS.
Rainfall:	Based on the nearest Texas Tech University- West Texas Mesonet station at Plains, rainfall amounts were:

April:	0.89"	July:	5.08"
May:	1.77"	August:	0.85"
June:	1.30"	September:	0.85"
Total rainfall:		10.74	

Insecticides:	Temik was applied infurrow at planting at a rate of 3 lb/acre. This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.
Fertilizer:	Applied 50 lbs/acre of 32-0-0 fertilizer preplant supplying 16 lbs N/acre. An additional application of 75 lb/acre 32-0-0 was made mid July which supplied an additional 24 lbs N/acre.
Harvest aids:	Harvest aids included 32 oz/acre Prep applied on 22-October. No additional harvest aids were utilized.
Harvest:	Plots were harvested on 29-November using a commercial John Deere 7460 with field cleaner. Harvested material was transferred into a weigh wagon with integral electronic scales to determine individual plot weights. Plot yields were adjusted to lb/acre.
Gin turnout:	Grab samples were taken by plot and ginned at the Texas AgriLife Research and Extension Center at Lubbock to determine gin turnouts.

Fiber analysis: Lint samples were submitted to the Fiber and Biopolymer Research Institute at Texas Tech University for HVI analysis, and USDA Commodity Credit Corporation (CCC) Loan values were determined for each variety by plot.

Ginning cost and seed values: Ginning costs were based on $3.00 per cwt. of bur cotton and seed value/acre was based on $175/ton. Ginning costs did not include checkoff.

Seed and technology fees: Seed and technology costs were calculated using the appropriate seeding rate (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/PCGseed10.xls .

Results and Discussion:

Weed pressure at this site would generally be considered light to medium and consisted mainly of silverleaf nightshade and sand sunflower. **Stand establishment was variable due to hot and dry conditions following planting.**

Agronomic data including plant population and nodes above white flower (NAWF) are included in Table 1. Stand counts taken on 14-June indicated significant differences among varieties and ranged from a high of 39,833 for Deltapine 1044B2RF to a low of 26,500 for Stoneville 5458B2RF with a test average of 32,653 plants/acre. NAWF counts were taken 10-August to 17-August. Averages were 4.8 (10-August) and 3.8 (17-August). Significant differences among varieties were observed for both observation dates. Values on 10-August ranged from a low of 4.1 for NexGen 3348B2RF to a high of 5.2 for Dyna-Gro 2570B2RF. By 17-August, all varieties had reached cutout (NAWF=5) and values ranged from a high of 4.5 for All-Tex Epic RF to a low of 3.4 for FiberMax 9170B2F.

Significant differences were noted for most yield and most fiber quality parameters measured (Tables 2 and 3). Lint turnout ranged from 35.4% for Dyna-Gro 2570B2RF to 31.4% for Deltapine 1044B2RF. Bur cotton yield averaged 1164 lb/acre and differences were not significant. Lint yields varied from a low of 357 lb/acre (FiberMax 9170B2F) to a high of 455 lb/acre (Dyna-Gro 2570B2RF). Lint loan values ranged from a low of $0.5163/lb to a high of $0.5468/lb for PhytoGen 375WRF and Croplan Genetics 3220B2RF, respectively. After adding lint and seed value, total value/acre ranged from a low of $229.83 for FiberMax 9170B2F, to a high of $290.53 for Dyna-Gro 2570B2RF. When subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of $197.27 (Dyna-Gro 2570B2RF) to a low of $141.83 (FiberMax 9170B2F), a difference of $55.44. **It should be noted that minimal preharvest loss was observed with looser varieties due to a hail event on 21-October.**

Micronaire values ranged from a high of 4.8 for NexGen 3348B2RF and PhytoGen 375WRF to a low of 4.3 for Croplan Genetics 3220B2RF and the test average was 4.6. The test average staple was 33.5 and Croplan Genetics 3220B2RF had the highest with 34.6 while All-Tex Epic RF had the lowest with 32.9. Uniformity differences were not significant with a test average of 79.5%. Strength values averaged 27.7 g/tex across all varieties and ranged from a high of 28.8 g/tex for Croplan Genetics 3220B2RF to a low of 26.2 g/tex for Dyna-Gro 2570B2RF. Color grade components of Rd (reflectance) and +b (yellowness) averaged 77.5 and 9.0, respectively. This resulted in color grades of mostly 21 and 31. Leaf grades were mostly 1 across varieties.

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 Rickey Bearden for the use of his land, equipment and labor at this location. Further assistance was provided by Dr. Jane Dever - Texas AgriLife Research and Extension Center, Lubbock, and Dr. Eric Hequet - Associate Director, Fiber and Biopolymer Research Institute, Texas Tech University. We also greatly appreciate the Texas Department of Agriculture - Food and Fiber Research for funding of HVI testing.

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Table 1. In-season plant measurement results from the dryland RACE variety demonstration, Rickey Bearden Farm, Plains, TX, 2010.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of	
	14-Jun		10-Aug	17-Aug
	plants/row-ft	plants/acre		
All-Tex Epic RF	2.6	33,833	4.9	4.5
Croplan Genetics 3220B2RF	2.2	29,000	4.7	3.7
Dyna-Gro 2570B2RF	2.5	32,500	5.2	4.4
Deltapine 1044B2RF	3.0	39,833	4.8	3.8
FiberMax 9170B2F	2.6	34,500	4.5	3.4
NexGen 3348B2RF	2.1	27,500	4.1	3.7
PhytoGen 375WRF	2.8	36,833	5.1	3.5
Stoneville 5458B2RF	2.0	26,500	4.9	3.6
Test average	2.5	32,563	4.8	3.8
CV, %	10.4	10.3	7.4	10.1
OSL	0.0033	0.0028	0.0390	0.0269
LSD	0.5	5,900	0.6	0.7

For NAWF, numbers represent an average of 10 plants per variety per rep (30 plants per variety).
CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level.

Table 2. Harvest results from the dryland RACE variety demonstration, Rickey Bearden Farm, Plains, TX, 2010.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Seed/technology cost	Net value	
	-------- % --------		---------- lb/acre ----------			$/lb	---------- $/acre ----------						
Dyna-Gro 2570B2RF	35.4	48.4	1284	455	622	0.5190	236.13	54.39	290.53	38.51	54.75	197.27	a
All-Tex Epic RF	35.3	47.8	1179	416	563	0.5168	214.81	49.27	264.08	35.37	44.29	184.41	ab
Stoneville 5458B2RF	34.1	48.7	1214	414	592	0.5220	216.29	51.77	268.07	36.42	55.98	175.67	abc
Croplan Genetics 3220B2RF	34.4	49.1	1131	389	555	0.5468	212.94	48.60	261.54	33.93	53.88	173.72	abc
NexGen 3348B2RF	32.3	47.9	1150	371	550	0.5252	194.87	48.17	243.04	34.50	50.05	158.49	bcd
Deltapine 1044B2RF	31.4	45.1	1151	362	519	0.5425	196.32	45.40	241.72	34.54	55.10	152.08	cd
PhytoGen 375WRF	32.9	46.2	1137	374	526	0.5163	193.36	46.01	239.37	34.11	54.92	150.34	cd
FiberMax 9170B2F	33.4	45.9	1067	357	489	0.5242	187.01	42.82	229.83	32.02	55.98	141.83	d
Test average	33.7	47.4	1164	392	552	0.5266	206.47	48.30	254.77	34.92	53.12	166.73	
CV, %	1.7	1.2	7.6	7.4	7.5	2.2	7.5	7.4	7.5	7.6	--	9.9	
OSL	<0.0001	<0.0001	0.2201	0.0119	0.0335	0.0375	0.0257	0.0333	0.0289	0.2212	--	0.0126	
LSD	1.0	1.0	NS	51	72	0.0204	27.10	6.29	33.40	NS	--	28.78	

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.
$175/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 dryland RACE variety demonstration, Rickey Bearden Farm, Plains, TX, 2010.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
All-Tex Epic RF	4.6	32.9	79.2	27.5	9.6	1.0	77.2	9.0	2.7	1.0
Croplan Genetics 3220B2RF	4.3	34.6	79.5	28.8	7.8	1.0	79.4	8.1	2.7	1.0
Dyna-Gro 2570B2RF	4.4	33.4	79.0	26.2	9.0	1.0	77.4	8.9	2.7	1.0
Deltapine 1044B2RF	4.5	34.1	80.2	28.7	8.2	1.7	76.1	9.1	3.0	1.0
FiberMax 9170B2F	4.7	33.3	79.3	28.1	10.0	1.0	77.6	9.0	2.3	1.0
NexGen 3348B2RF	4.8	33.4	79.7	27.1	9.2	1.3	77.3	9.2	2.7	1.0
PhytoGen 375WRF	4.8	33.2	79.0	28.7	8.6	1.0	77.2	9.3	2.3	1.0
Stoneville 5458B2RF	4.5	33.2	79.5	26.9	10.5	1.0	77.4	9.0	2.7	1.3
Test average	4.6	33.5	79.5	27.7	9.1	1.1	77.5	9.0	2.6	1.0
CV, %	2.1	1.6	0.7	3.0	3.7	41.7	1.0	2.5	--	--
OSL	<0.0001	0.0264	0.1960	0.0119	<0.0001	0.5743	0.0126	0.0009	--	--
LSD	0.2	0.9	NS	1.5	0.6	NS	1.4	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.

AgriLIFE EXTENSION
Texas A&M System

Replicated Dryland Conventional Cotton Variety Demonstration, AG-CARES, Lamesa, TX - 2010

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

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

Dawson County

Summary: **All entries in this trial were managed as conventional cotton even though a FiberMax 9058F (Roundup Ready Flex) variety was included for comparison.** Marginal soil moisture and hot, dry conditions after planting resulted in a significantly delayed stand establishment and stress on the trial. **Final stand was variable, but was deemed adequate for harvesting.** Significant differences were noted for lint turnout and loan value as well some fiber quality parameters measured. Lint turnout ranged from 35.0% for All-Tex LA122 to 31.3% for Seed-Tec Genetics CT 212. Lint yields averaged 524 lbs/acre with no significant differences among varieties noted. Lint loan values ranged from a low of $0.5487/lb to a high of $0.5698/lb for Seed-Tec Genetics CT 210 and Downer Cotton Genetics 74, respectively. When subtracting ginning costs, the net value/acre among varieties averaged $321.51/acre. **Net value/acre does not include seed costs (and technology fees for the FiberMax 9058F), or weed control cost.** Micronaire values ranged from a low of 3.8 for Downer Cotton Genetics 74 to a high of 4.5 for Downer Cotton Genetics 59. Staple averaged 35.1 across all varieties with a low of 34.0 (Seed-Tec Genetics CT-210) and a high of 36.4 (FiberMax 9058F). Uniformity ranged from a low of 80.1 (Seed-Tec Genetics CT 212) to a high of 81.2 (FiberMax 958), and strength ranged from a low of 29.6 g/tex for Downer Cotton Genetics 56 to a high of 32.0 g/tex for Seed-Tec Genetics CT-212. Although no differences were observed for yield related parameters due to non-uniform stand and emergence, fiber quality differences were noted. Additional multi-site and multi-year applied research is needed to evaluate conventional varieties across a series of environments.

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

Materials and Methods:

Varieties:	All-Tex A102, All-Tex 1203, All-Tex LA122, Downer Cotton Genetics 56, Downer Cotton Genetics 59, Downer Cotton Genetics 74, FiberMax 9058F (included as a transgenic check), FiberMax 958 (brown bag), Seed-Tec Genetics CT-210, and Seed-Tec Genetics CT-212
Experimental design:	Randomized complete block with 3 replications
Seeding rate:	4 seeds/row-ft in solid planted 40-inch row spacing (John Deere MaxEmerge XP vacuum planter)
Plot size:	4 rows by variable length of field (695 to 885 ft)
Planting date:	19-May
Weed management:	**The entire project was managed as conventional cotton.** Trifluralin was applied preplant incorporated at 1 pt/acre across all varieties on 15-April. A preemergence application of 1.5 pts/acre Caparol and 32 oz/a Roundup WeatherMax was made on 20-May. Two cultivations were performed.

Rainfall:

April:	3.02"	June:	2.43"	August:	0.15"
May:	0.87"	July:	4.29"	September:	4.66"

Total rainfall: 15.42"

Insecticides:	This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.
Fertilizer:	Applied 200 lbs/acre of 20-10-05 fertilizer on 30-March supplying 40 lbs N/acre.
Harvest aids:	Harvest aids included 21 oz/acre Prep + 1.5 oz/acre ET with 1% v/v crop oil on 21-October followed by 24 oz/acre Gramoxone Inteon with 0.25% v/v NIS on 1-November.
Harvest:	Plots were harvested on 8-November using a commercial John Deere 7445 with field cleaner. Harvested material was transferred into a weigh wagon with integral electronic scales to determine individual plot weights. Plot yields were adjusted to lb/acre.
Gin turnout:	Grab samples were taken by plot and ginned at the Texas AgriLife Research and Extension Center at Lubbock to determine gin turnouts.
Fiber analysis:	Lint samples were submitted to the Fiber and Biopolymer Research Institute at Texas Tech University for HVI analysis, and USDA Commodity Credit Corporation (CCC) Loan values were determined for each variety by plot.

Ginning cost and seed values: Ginning costs were based on $3.00 per cwt. of bur cotton and seed value/acre was based on $175/ton. Ginning costs did not include checkoff.

Seed and technology fees: Seed costs and technology fees were not included in the determination of net value.

Results and Discussion:

All entries in this trial were managed as conventional cotton even though a FiberMax 9058F (Roundup Ready Flex) variety was included for comparison. Weed pressure at this site would generally be considered medium and consisted mainly of kochia, russian thistle, and puncturevine. Marginal soil moisture and hot, dry conditions after planting resulted in a significantly delayed stand establishment and stress on the trial. **Final stand was variable, but was deemed adequate for harvesting.**

Significant differences were noted for lint turnout and loan value as well some fiber quality parameters measured (Tables 1 and 2). Lint turnout ranged from 35.0% for All-Tex LA122 to 31.3% for Seed-Tec Genetics CT 212. Lint yields averaged 524 lbs/acre with no significant differences among varieties noted. Lint loan values ranged from a low of $0.5487/lb to a high of $0.5698/lb for Seed-Tec Genetics CT 210 and Downer Cotton Genetics 74, respectively. After adding lint and seed value, total value/acre averaged $369.89/acre with no significant differences observed. When subtracting ginning costs, the net value/acre among varieties averaged $321.51/acre. **Net value/acre does not include seed costs (and technology fees for the FiberMax 9058F), or weed control cost.**

Micronaire values ranged from a low of 3.8 for Downer Cotton Genetics 74 to a high of 4.5 for Downer Cotton Genetics 59. Staple averaged 35.1 across all varieties with a low of 34.0 (Seed-Tec Genetics CT-210) and a high of 36.4 (FiberMax 9058F). Uniformity ranged from a low of 80.1 (Seed-Tec Genetics CT 212) to a high of 81.2 (FiberMax 958), and strength ranged from a low of 29.6 g/tex for Downer Cotton Genetics 56 to a high of 32.0 g/tex for Seed-Tec Genetics CT-212. Significant differences were observed among varieties for percent elongation (7.5 average) and +b or yellowness (7.3 average), but not for Rd or reflectance (81.2 avg) and leaf grade (1.4 avg). Color grades were mostly 21 and 31 across all varieties.

Although no differences were observed for yield related parameters due to non-uniform stand and emergence, fiber quality differences were noted. Additional multi-site and multi-year applied research is needed to evaluate conventional varieties across a series of environments.

Acknowledgments:

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

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Table 1. Harvest results from the dryland conventional variety demonstration, AG-CARES Farm, Lamesa, TX, 2010.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Net value
	-------- % --------		---------- lb/acre ----------			$/lb	---------- $/acre ----------				
FiberMax 9058F	33.2	55.4	1742	579	965	0.5678	328.62	84.46	413.08	52.26	360.82
All-Tex A102	31.5	53.2	1857	585	987	0.5617	328.61	86.35	414.96	55.70	359.26
All-Tex LA122	35.0	51.2	1638	574	839	0.5553	318.67	73.37	392.04	49.15	342.90
Downer Cotton Genetics 74	32.3	55.3	1629	525	900	0.5698	299.37	78.78	378.15	48.86	329.29
FiberMax 958	32.3	54.2	1624	524	880	0.5633	295.02	77.00	372.02	48.71	323.31
Downer Cotton Genetics 56	31.9	55.1	1629	519	898	0.5500	285.33	78.55	363.88	48.86	315.02
Downer Cotton Genetics 59	32.2	53.8	1601	515	862	0.5532	285.00	75.42	360.42	48.04	312.38
All-Tex 1203	32.8	54.6	1482	486	810	0.5660	275.04	70.85	345.88	44.46	301.42
Seed-Tec Genetics CT212	31.3	54.1	1547	485	836	0.5632	272.98	73.19	346.16	46.42	299.75
Seed-Tec Genetics CT210	32.5	55.4	1377	447	763	0.5487	245.52	66.75	312.27	41.31	270.96
Test average	32.5	54.2	1613	524	874	0.5599	293.42	76.47	369.89	48.38	321.51
CV, %	3.0	3.5	12.4	12.2	12.6	1.2	12.2	12.6	12.3	12.4	12.2
OSL	0.0120	0.2490	0.3073	0.2270	0.3808	0.0052	0.1746	0.3781	0.2339	0.3080	0.2159
LSD	1.7	NS	NS	NS	NS	0.0111	NS	NS	NS	NS	NS

For net value/acre, means within a column with the same letter are not significantly different at the 0.05 probability level.
CV - coefficient of variation.
OSL - observed significance level, or probability of a greater F value.
LSD - least significant difference at the 0.05 level, NS - not significant.
Note: some columns may not add up due to rounding error.

Assumes:
$3.00/cwt ginning cost.
$175/ton for seed.
Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Table 2. HVI fiber property results from the dryland conventional variety demonstration, AG-CARES Farm, Lamesa, TX, 2010.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
All-Tex 1203	4.2	35.3	81.0	31.7	7.2	1.3	80.3	7.5	2.7	1.0
All-Tex A102	4.1	35.3	80.7	29.9	7.6	1.0	81.5	7.3	2.7	1.0
All-Tex LA122	4.4	34.9	81.1	29.9	8.7	2.0	81.1	7.2	3.0	1.0
Downer Cotton Genetics 56	4.3	34.5	80.6	29.6	7.8	1.3	81.1	7.6	2.0	1.0
Downer Cotton Genetics 59	4.5	34.6	80.9	30.5	7.2	1.0	80.8	7.5	2.7	1.0
Downer Cotton Genetics 74	3.8	35.6	80.4	30.2	6.9	1.7	81.4	7.6	2.0	1.0
FiberMax 9058F	4.1	36.4	80.6	30.3	6.3	1.7	82.1	7.1	2.7	1.0
FiberMax 958	4.4	35.6	81.2	32.0	6.5	1.3	81.4	7.1	3.0	1.0
Seed-Tec Genetics CT210	4.4	34.0	80.3	31.3	8.0	1.3	80.8	7.2	2.7	1.0
Seed-Tec Genetics CT212	4.3	34.8	80.1	32.0	8.3	1.0	81.9	7.3	2.3	1.0
Test average	4.2	35.1	80.7	30.7	7.5	1.4	81.2	7.3	2.6	1.0
CV, %	2.9	1.2	0.8	2.4	2.6	39.1	1.1	2.8	--	--
OSL	<0.0001	<0.0001	0.4789	0.0027	<0.0001	0.3772	0.4684	0.0442	--	--
LSD	0.2	0.7	NS	1.3	0.3	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.

Common Variety Comparisons Across Dryland Locations

Table 1. Lint Yield Summary Across Dryland Locations - 2010.

Entry	RACE Trials						Systems Trials	
	Dawson County	Floyd County	Lamb County	Lubbock County	Lynn County	Yoakum County	Plains	Blanco
	lb/acre							
All-Tex 65207B2RF	--	--	--	--	--	--	317	--
All-Tex Epic RF	850	748	812	802	558	416	--	703
All-Tex Patriot+ RF	--	--	--	--	--	--	314	495
Americot 1532B2RF	--	--	--	--	--	--	--	642
Croplan Genetics 3006B2RF	--	--	593	792	--	--	--	--
Croplan Genetics 3035RF	--	--	--	--	587	--	449	--
Croplan Genetics 3220B2RF	706	732	--	--	--	389	--	--
Deltapine 0912B2RF	--	--	--	--	--	--	337	580
Deltapine 0924B2RF	--	--	--	--	--	--	351	--
Deltapine 1032B2RF	--	--	--	--	--	--	--	617
Deltapine 1044B2RF	758	689	688	880	517	362	--	644
Dyna-Gro 2400RF	--	--	--	--	--	--	474	--
Dyna-Gro 2570B2RF	750	720	757	934	609	455	--	--
FiberMax 1740B2F	--	--	725	925	--	--	--	607
FiberMax 9058F	--	--	--	--	--	--	406	569
FiberMax 9160B2F	622	--	--	--	470	--	422	--
FiberMax 9170B2F	--	680	--	--	--	357	--	615
FiberMax 9180B2F	--	--	--	--	--	--	--	588
NexGen 3348B2RF	500	638	672	724	509	371	--	546
NexGen 3410RF	--	--	--	--	--	--	387	--
NexGen 4111RF	--	--	--	--	--	--	--	592
PhytoGen 367WRF	872	--	--	--	--	--	344	--
PhytoGen 375WRF	--	701	656	858	538	374	--	544
Stoneville 4288B2F	--	707	660	945	--	--	--	549
Stoneville 5458B2RF	846	--	--	--	549	414	--	--
Test average	738	702	695	857	542	392	380	592
CV, %	3.9	2.2	1.7	11.4	4.8	7.4	6.8	4.1
OSL	<0.0001	<0.0001	<0.0001	0.1334	0.0004	0.0119	<0.0001	<0.0001
LSD	50	27	20	NS	46	51	45	40

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. Micronaire Summary Across Dryland Locations - 2010.

Entry	RACE Trials						Systems Trials	
	Dawson County	Floyd County	Lamb County	Lubbock County	Lynn County	Yoakum County	Plains	Blanco
	micronaire units							
All-Tex 65207B2RF	--	--	--	--	--	--	4.5	--
All-Tex Epic RF	4.7	4.3	4.5	4.4	4.4	4.6	--	4.5
All-Tex Patriot+ RF	--	--	--	--	--	--	4.5	4.5
Americot 1532B2RF	--	--	--	--	--	--	--	4.5
Croplan Genetics 3006B2RF	--	--	4.4	4.4	--	--	--	--
Croplan Genetics 3035RF	--	--	--	--	4.4	--	4.6	--
Croplan Genetics 3220B2RF	4.8	4.5	--	--	--	4.3	--	--
Deltapine 0912B2RF	--	--	--	--	--	--	4.7	5.0
Deltapine 0924B2RF	--	--	--	--	--	--	4.8	--
Deltapine 1032B2RF	--	--	--	--	--	--	--	4.6
Deltapine 1044B2RF	4.8	4.3	4.4	4.3	4.4	4.5	--	4.7
Dyna-Gro 2400RF	--	--	--	--	--	--	4.5	--
Dyna-Gro 2570B2RF	4.8	4.5	4.4	4.6	4.6	4.4	--	--
FiberMax 1740B2F	--	--	4.4	4.4	--	--	--	4.5
FiberMax 9058F	--	--	--	--	--	--	4.3	4.4
FiberMax 9160B2F	4.5	--	--	--	4.1	--	4.3	--
FiberMax 9170B2F	--	4.0	--	--	--	4.7	--	4.2
FiberMax 9180B2F	--	--	--	--	--	--	--	4.5
NexGen 3348B2RF	4.0	4.1	3.8	3.8	4.1	4.8	--	4.3
NexGen 3410RF	--	--	--	--	--	--	4.2	--
NexGen 4111RF	--	--	--	--	--	--	--	4.5
PhytoGen 367WRF	4.5	--	--	--	--	--	4.2	--
PhytoGen 375WRF	--	4.3	4.2	4.1	4.3	4.8	--	4.5
Stoneville 4288B2F	--	4.7	4.4	4.5	--	--	--	4.8
Stoneville 5458B2RF	4.8	--	--	--	4.6	4.5	--	--
Test average	4.6	4.3	4.3	4.3	4.4	4.6	4.5	4.5
CV, %	2.7	2.9	2.7	3.7	2.9	2.1	2.1	1.8
OSL	<0.0001	<0.0001	0.0001	0.0019	0.0005	<0.0001	<0.0001	<0.0001
LSD	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.1

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 3. Staple Summary Across Dryland Locations - 2010.

Entry	RACE Trials						Systems Trials	
	Dawson County	Floyd County	Lamb County	Lubbock County	Lynn County	Yoakum County	Plains	Blanco
	32nds inch							
All-Tex 65207B2RF	--	--	--	--	--	--	33.5	--
All-Tex Epic RF	33.9	33.8	33.2	34.7	33.4	32.9	--	35.2
All-Tex Patriot+ RF	--	--	--	--	--	--	34.3	35.9
Americot 1532B2RF	--	--	--	--	--	--	--	34.1
Croplan Genetics 3006B2RF	--	--	34.2	35.2	--	--	--	--
Croplan Genetics 3035RF	--	--	--	--	33.8	--	32.6	--
Croplan Genetics 3220B2RF	34.5	33.7	--	--	--	34.6	--	--
Deltapine 0912B2RF	--	--	--	--	--	--	33.5	34.1
Deltapine 0924B2RF	--	--	--	--	--	--	33.3	--
Deltapine 1032B2RF	--	--	--	--	--	--	--	35.7
Deltapine 1044B2RF	34.7	32.7	32.9	34.8	33.7	34.1	--	34.6
Dyna-Gro 2400RF	--	--	--	--	--	--	33.4	--
Dyna-Gro 2570B2RF	34.7	33.9	33.1	34.6	33.5	33.4	--	--
FiberMax 1740B2F	--	--	32.5	34.0	--	--	--	35.0
FiberMax 9058F	--	--	--	--	--	--	34.7	36.7
FiberMax 9160B2F	35.8	--	--	--	34.8	--	34.6	--
FiberMax 9170B2F	--	35.6	--	--	--	33.3	--	36.3
FiberMax 9180B2F	--	--	--	--	--	--	--	36.7
NexGen 3348B2RF	34.6	34.6	33.5	35.2	33.9	33.4	--	35.2
NexGen 3410RF	--	--	--	--	--	--	34.9	--
NexGen 4111RF	--	--	--	--	--	--	--	35.6
PhytoGen 367WRF	34.9	--	--	--	--	--	33.7	--
PhytoGen 375WRF	--	33.4	32.6	34.2	33.6	33.2	--	35.3
Stoneville 4288B2F	--	33.3	32.2	34.5	--	--	--	35.3
Stoneville 5458B2RF	33.9	--	--	--	33.2	33.2	--	--
Test average	34.6	33.9	33.0	34.6	33.7	33.5	33.8	35.4
CV, %	1.2	1.3	1.2	2.1	1.3	1.6	1.7	1.1
OSL	0.0017	<0.0001	0.0008	0.4442	0.0214	0.0264	0.0035	<0.0001
LSD	0.7	0.8	0.7	NS	0.8	0.9	1.0	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, [†]indicates significance at the 0.10 level, NS - not significant.

Table 4. Uniformity Summary Across Dryland Locations - 2010.

Entry	RACE Trials						Systems Trials	
	Dawson County	Floyd County	Lamb County	Lubbock County	Lynn County	Yoakum County	Plains	Blanco
	%							
All-Tex 65207B2RF	--	--	--	--	--	--	80.9	--
All-Tex Epic RF	80.7	80.0	79.5	81.3	80.1	79.2	--	81.1
All-Tex Patriot+ RF	--	--	--	--	--	--	79.4	81.6
Americot 1532B2RF	--	--	--	--	--	--	--	80.5
Croplan Genetics 3006B2RF	--	--	80.5	80.6	--	--	--	--
Croplan Genetics 3035RF	--	--	--	--	80.5	--	79.1	--
Croplan Genetics 3220B2RF	81.0	80.2	--	--	--	79.5	--	--
Deltapine 0912B2RF	--	--	--	--	--	--	80.2	81.3
Deltapine 0924B2RF	--	--	--	--	--	--	80.6	--
Deltapine 1032B2RF	--	--	--	--	--	--	--	81.0
Deltapine 1044B2RF	80.9	79.9	79.4	80.9	80.2	80.2	--	81.5
Dyna-Gro 2400RF	--	--	--	--	--	--	80.0	--
Dyna-Gro 2570B2RF	81.8	81.0	80.0	81.4	80.2	79.0	--	--
FiberMax 1740B2F	--	--	78.4	80.5	--	--	--	81.1
FiberMax 9058F	--	--	--	--	--	--	79.4	81.3
FiberMax 9160B2F	81.8	--	--	--	80.4	--	80.4	--
FiberMax 9170B2F	--	80.3	--	--	--	79.3	--	81.0
FiberMax 9180B2F	--	--	--	--	--	--	--	82.5
NexGen 3348B2RF	81.5	80.5	79.7	81.5	80.6	79.7	--	81.2
NexGen 3410RF	--	--	--	--	--	--	80.2	--
NexGen 4111RF	--	--	--	--	--	--	--	82.3
PhytoGen 367WRF	80.9	--	--	--	--	--	78.9	--
PhytoGen 375WRF	--	80.0	79.2	79.8	80.0	79.0	--	80.9
Stoneville 4288B2F	--	79.5	78.4	80.1	--	--	--	80.8
Stoneville 5458B2RF	79.6	--	--	--	78.5	79.5	--	--
Test average	81.0	80.2	79.4	80.8	80.1	79.5	79.9	81.3
CV, %	0.6	0.8	0.6	1.2	0.7	0.7	1.0	0.6
OSL	0.0008	0.3091	0.0014	0.3338	0.0078	0.1960	0.1064	0.0059
LSD	0.8	NS	0.9	NS	0.9	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, †indicates significance at the 0.10 level, NS - not significant.

Table 5. Strength Summary Across Dryland Locations - 2010.

Entry	RACE Trials						Systems Trials	
	Dawson County	Floyd County	Lamb County	Lubbock County	Lynn County	Yoakum County	Plains	Blanco
	g/tex							
All-Tex 65207B2RF	--	--	--	--	--	--	28.3	--
All-Tex Epic RF	30.3	27.9	27.2	29.4	27.7	27.5	--	28.5
All-Tex Patriot+ RF	--	--	--	--	--	--	28.1	29.6
Americot 1532B2RF	--	--	--	--	--	--	--	28.0
Croplan Genetics 3006B2RF	--	--	26.9	29.7	--	--	--	--
Croplan Genetics 3035RF	--	--	--	--	27.9	--	27.2	--
Croplan Genetics 3220B2RF	29.7	27.3	--	--	--	28.8	--	--
Deltapine 0912B2RF	--	--	--	--	--	--	28.2	28.4
Deltapine 0924B2RF	--	--	--	--	--	--	28.2	--
Deltapine 1032B2RF	--	--	--	--	--	--	--	29.1
Deltapine 1044B2RF	30.0	27.6	27.1	30.7	29.4	28.7	--	28.7
Dyna-Gro 2400RF	--	--	--	--	--	--	28.1	--
Dyna-Gro 2570B2RF	31.2	28.0	27.4	29.6	27.4	26.2	--	--
FiberMax 1740B2F	--	--	26.6	29.3	--	--	--	28.2
FiberMax 9058F	--	--	--	--	--	--	27.5	29.2
FiberMax 9160B2F	30.3	--	--	--	27.3	--	28.7	--
FiberMax 9170B2F	--	29.6	--	--	--	28.1	--	29.9
FiberMax 9180B2F	--	--	--	--	--	--	--	30.4
NexGen 3348B2RF	30.2	28.9	27.2	30.7	28.2	27.1	--	29.4
NexGen 3410RF	--	--	--	--	--	--	28.7	--
NexGen 4111RF	--	--	--	--	--	--	--	32.0
PhytoGen 367WRF	30.1	--	--	--	--	--	27.3	--
PhytoGen 375WRF	--	27.0	25.4	28.0	26.7	28.7	--	27.6
Stoneville 4288B2F	--	26.1	25.1	28.4	--	--	--	28.4
Stoneville 5458B2RF	30.1	--	--	--	27.7	26.9	--	--
Test average	30.2	27.8	26.6	29.5	27.8	27.7	28.0	29.1
CV, %	2.1	2.6	1.8	2.7	1.7	3.0	2.5	2.3
OSL	0.2921	0.0014	0.0002	0.0101	0.0004	0.0119	0.1629	<0.0001
LSD	NS	1.3	0.9	1.4	0.8	1.5	NS	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.

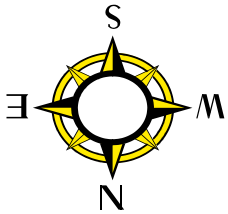
2010 Lubbock Weather and Crop Information

Terry County Irrigated RACE Variety Trial - 2010			
16 rows fill NG 3348B2RF			
1	AT Apex B2RF	Rep I	
2	NG 4010B2RF		
3	FM 9170B2F		
4	ST 5458B2RF		
5	CG 3220B2RF		
Tower Fill			
6	DP 1032B2RF		
7	DG 2570B2RF		
8	PHY 367WRF		
5	CG 3220B2RF		
3	FM 9170B2F		
8	PHY 367WRF		
Tower Fill			
1	AT Apex B2RF	Rep II	
7	DG 2570B2RF		
4	ST 5458B2RF		
2	NG 4010B2RF		
6	DP 1032B2RF		
1	AT Apex B2RF		
Tower Fill			
8	PHY 367WRF	Rep III	
2	NG 4010B2RF		
7	DG 2570B2RF		
5	CG 3220B2RF		
3	FM 9170B2F		
6	DP 1032B2RF		
Tower Fill			
4	ST 5458B2RF		

	Variety	Rep 1	Rep 2	Rep 3
1	AT Apex B2RF			
2	NG 4010B2RF			
3	FM 9170B2F			
4	ST 5458B2RF			
5	CG 3220B2RF			
6	DP 1032B2RF			
7	DG 2570B2RF			
8	PHY 367WRF			

Planting date	5/27/2010
Seeding rate	32,000 seed/acre
Insecticide	3 lbs/acre Temik
Herbicide	Triflualin, Caparol, and Staple
Fertilizer	None
Temp @ planting	93 F
Moisture @ planting	Good

COMMENTS:
Planted flat in terminated wheat.
8 row plots.

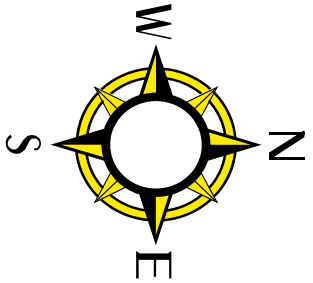


Lynn County Dryland Conventional Demonstration - 2010		
1	AT ATX 1203	Rep I
2	SSG CT 210	
3	DCG 74	
4	FM 958	
5	AT A102	
6	SSG CT 212	
7	DCG 59	
8	FM 9058F	
9	AT LA 122	
10	DCG 56	
4	FM 958	Rep II
3	DCG 74	
8	FM 9058F	
7	DCG 59	
10	DCG 56	
9	AT LA 122	
2	SSG CT 210	
1	AT ATX 1203	
6	SSG CT 212	
5	AT A102	
7	DCG 59	Rep III
8	FM 9058F	
3	DCG 74	
4	FM 958	
9	AT LA 122	
10	DCG 56	
1	AT ATX 1203	
2	SSG CT 210	
5	AT A102	
6	SSG CT 212	

	Variety	Rep 1	Rep 2	Rep 3
1	AT ATX 1203			
2	SSG CT 210			
3	DCG 74			
4	FM 958			
5	AT A102			
6	SSG CT 212			
7	DCG 59			
8	FM 9058F			
9	AT LA 122			
10	DCG 56			

Planting date	5/27/2010
Seeding rate	39,200 seed/acre
Insecticide	None
Herbicide	None
Fertilizer	None
Temp @ planting	93 F
Moisture @ planting	Fair/Marginal

COMMENTS:
4 row plots (2 x 1 skip) 3 rows planted.
N 33.12214
W 101.69384



2010 High Plains Deep Soil Sampling Results

AgriLIFE EXTENSION Texas A&M System		pH	Nitrogen 0-6" NO_3-N, ppm	Nitrogen 6-24" NO_3-N, ppm	Nitrogen 0-6" NO_3-N, lb/a	Nitrogen 6-24" NO_3-N, lb/a	Nitrogen Total (0-24") NO_3-N, lb/a
Dryland	**Avg**	7.7	5.3	5.7	11	32	43
Irrigated	**Avg**	7.7	7.4	6.3	15	38	52
Furrow	**Avg**	7.7	4.8	6.1	10	37	46
Drip	**Avg**	7.6	7.6	6.2	15	37	52
LEPA	**Avg**	7.8	8.7	6.0	17	36	53
LESA	**Avg**	7.8	6.0	6.9	12	41	53
Dryland	**Max**	8.3	13.0	19.0	26	114	140
Irrigated	**Max**	8.4	33.0	21.0	66	126	142
Furrow	**Max**	8.1	8.0	9.0	16	54	70
Drip	**Max**	8.1	33.0	14.5	66	87	110
LEPA	**Max**	8.2	30.0	21.0	60	126	142
LESA	**Max**	8.4	17.0	18.0	34	108	140
Dryland	**Min**	6.9	0.0	0.8	0	0	7
Irrigated	**Min**	6.7	1.0	0.1	2	1	8
Furrow	**Min**	7.4	1.0	3.7	2	22	24
Drip	**Min**	6.7	1.0	1.0	2	6	12
LEPA	**Min**	7.3	1.0	0.1	2	1	8
LESA	**Min**	7.3	1.0	0.3	2	2	8
All fields	**Avg**	7.7	7	6	13	37	50

		ICP Mehlich III Phosphorus P, ppm	Potassium K, ppm	Calcium Ca, ppm	Magnesium Mg, ppm	Sulfur S, ppm	Sodium Na, ppm	Iron Fe, ppm	Zinc Zn, ppm	Manganese Mn, ppm	Copper Cu, ppm	Conductivity, umho/cm
Dryland	**Avg**	24	393	3189	449	13	83	5.4	0.43	6.9	0.58	187
Irrigated	**Avg**	52	496	2978	704	21	125	6.1	0.77	9.2	0.75	234
Furrow	**Avg**	112	507	2098	718	14	106	6.4	0.70	6.3	0.63	190
Drip	**Avg**	50	467	2503	581	19	101	5.2	0.37	11.4	0.70	193
LEPA	**Avg**	46	478	3308	752	25	133	5.6	0.87	10.1	0.77	258
LESA	**Avg**	48	555	3267	774	19	146	7.5	0.94	6.8	0.79	258
Dryland	**Max**	78	649	5775	895	40	170	8.5	1.80	15.3	0.89	371
Irrigated	**Max**	313	812	7115	1230	156	250	10.3	3.60	27.3	1.51	448
Furrow	**Max**	313	760	2613	1086	24	167	8.1	1.78	9.2	0.76	338
Drip	**Max**	133	665	6227	1055	45	191	8.5	0.72	27.3	1.17	373
LEPA	**Max**	116	808	7115	1230	156	242	10.3	3.60	26.9	1.51	448
LESA	**Max**	131	812	6581	1163	38	250	10.3	2.17	10.9	1.09	376
Dryland	**Min**	7	224	887	126	2	27	3.5	0.01	3.1	0.36	48
Irrigated	**Min**	11	164	721	160	9	59	2.5	0.06	2.6	0.34	54
Furrow	**Min**	22	267	1308	491	10	78	5.1	0.12	3.9	0.44	126
Drip	**Min**	17	164	721	160	9	59	3.4	0.06	6.6	0.46	54
LEPA	**Min**	11	283	824	471	12	78	2.5	0.11	4.3	0.34	103
LESA	**Min**	13	374	1666	437	12	98	3.6	0.15	2.6	0.48	120
All fields	**Avg**	55	482	2890	663	18	116	6.0	0.68	8.5	0.70	220
Critical level (value BELOW which fertilization is recommended)		**50 ppm**	**125 ppm**	**180 ppm**	**50 ppm**	**13 ppm**	**--**	**4.25 ppm**	**0.27 ppm**	**1.0 ppm**	**0.16 ppm**	--

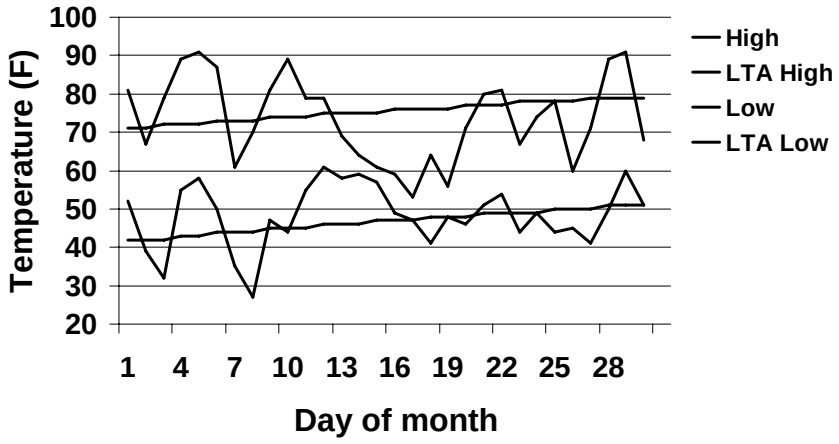
Survey conducted in North Region by Texas AgriLife County Extension Agents - Agriculture/Natural Resources. Assistance in District 2 counties was provided by Mr. Chris Ashbrook, Extension Assistant-Cotton, Texas Agrilife Research and Extension Center, Lubbock. Support in District 1 counties was provided by Mr. Rex Brandon, Technician I, Texas Agrilife Research and and Dr. Brent Bean, Extension Agronomist, Texas Agrilife Research and Extension Center, Amarillo. Data compiled by Drs. Randy Boman, Extension Agronomist - Cotton, and Mark Kelley, Extension Program Specialist II - Cotton, Texas Agrilife Research and Extension Center, Lubbock.
Includes results from Briscoe, Carson, Deaf Smith, Moore, and Sherman Counties of District 1 and Bailey, Crosby, Floyd, Hale, Hockley, Lamb, Lubbock, and Parmer Counties of District 2.

Practice	Total number of fields per practice	Total number of fields per practice with				
		0 to 25 lb/a N	26 to 50 lb/a	51 to 75 lb/a	76 to 100 lb/a	>100 lb/a
All	113	26	42	21	14	10
Dryland	17	6	4	6	0	1
Irrigated (All)	96	20	38	15	14	9
Furrow	6	1	3	2	0	0
Drip	29	4	15	4	4	2
LEPA	36	9	12	6	4	5
LESA	25	6	8	3	6	2

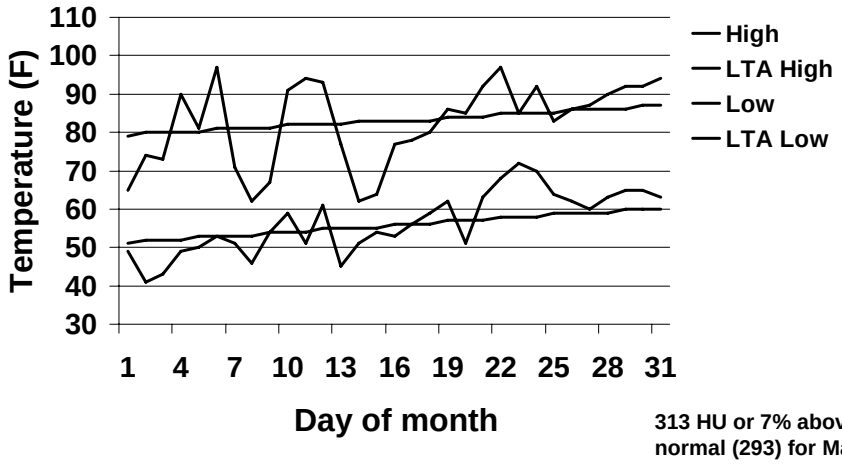
Practice	Total number of fields per practice	Percent of fields per practice with				
		0 to 25 lb/a N	26 to 50 lb/a	51 to 75 lb/a	76 to 100 lb/a	>100 lb/a
All	113	23	37	19	12	9
Dryland	17	35	24	35	0	6
Irrigated (All)	96	21	40	16	15	9
Furrow	6	17	50	33	0	0
Drip	29	14	52	14	14	7
LEPA	36	25	33	17	11	14
LESA	25	24	32	12	24	8

2010 Lubbock Weather and Crop Information

Lubbock Air Temperatures
April, 2010

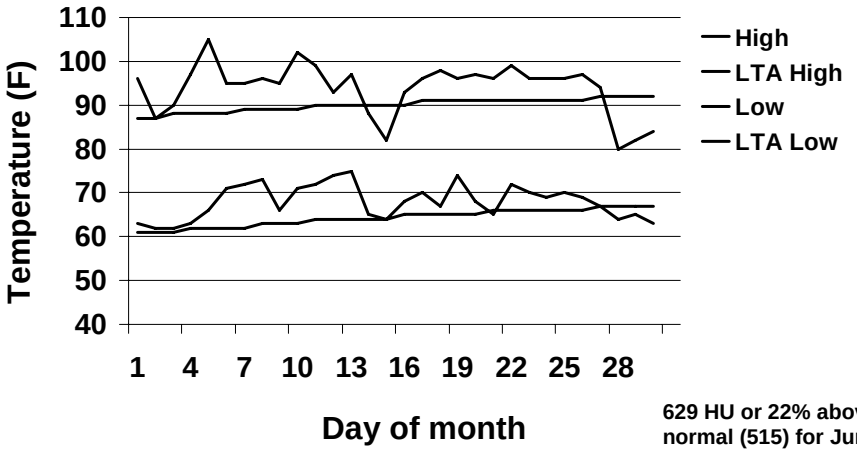


Lubbock Air Temperatures
May, 2010



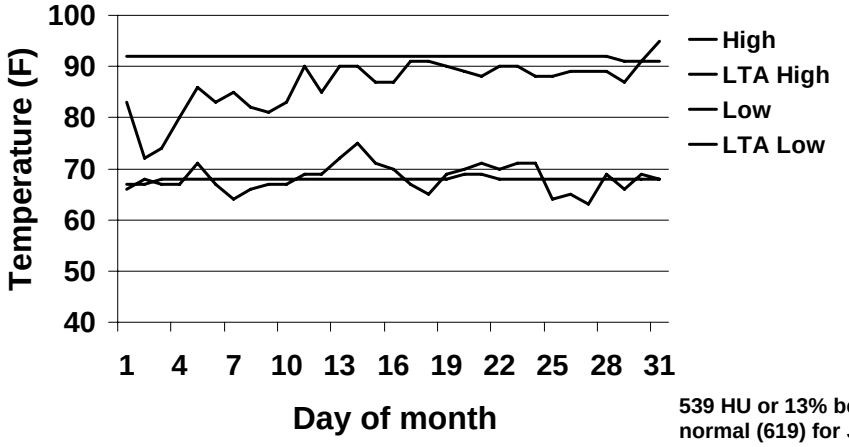
313 HU or 7% above normal (293) for May

Lubbock Air Temperatures
June, 2010



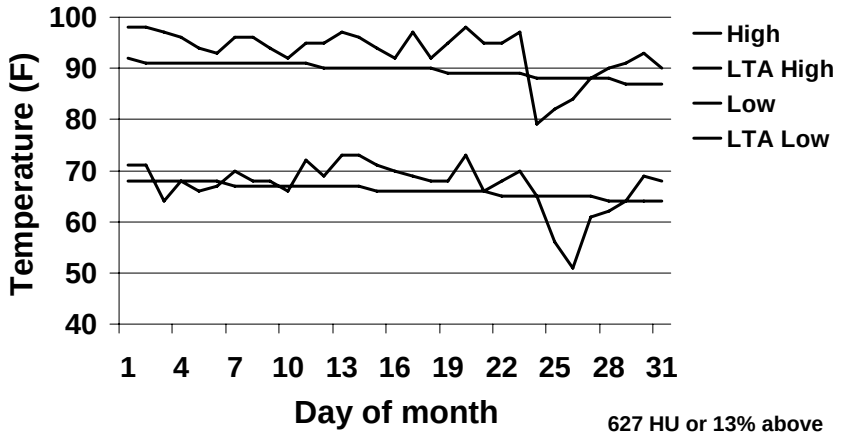
629 HU or 22% above normal (515) for June

Lubbock Air Temperatures
July, 2010



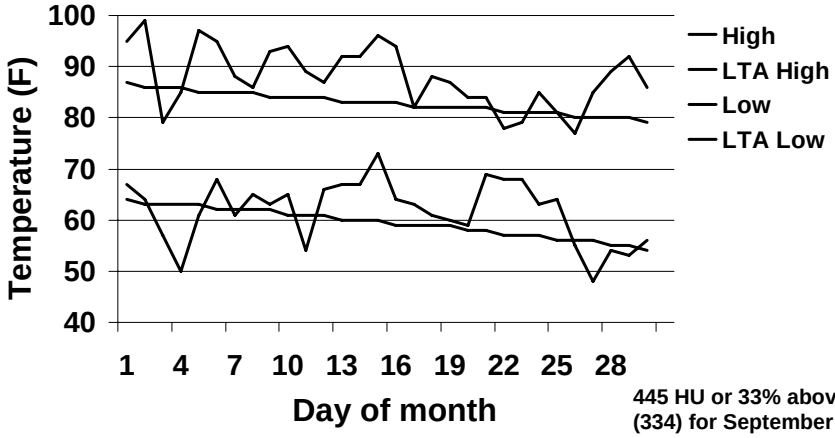
539 HU or 13% below normal (619) for July

Lubbock Air Temperatures
August, 2010



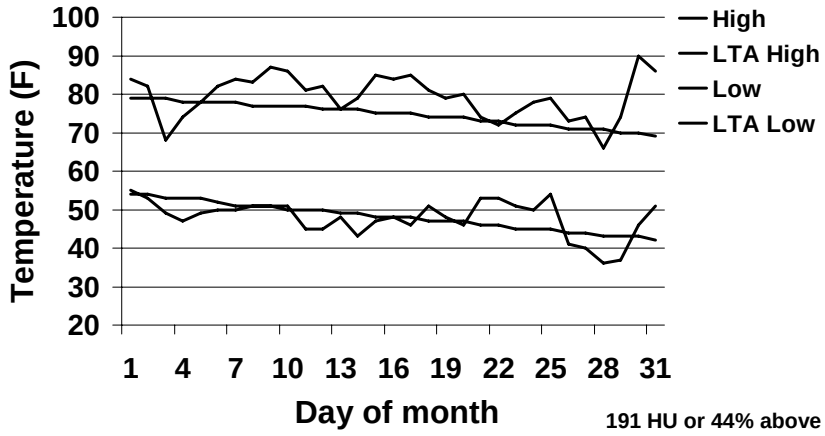
627 HU or 13% above normal (555) for August

Lubbock Air Temperatures
September, 2010



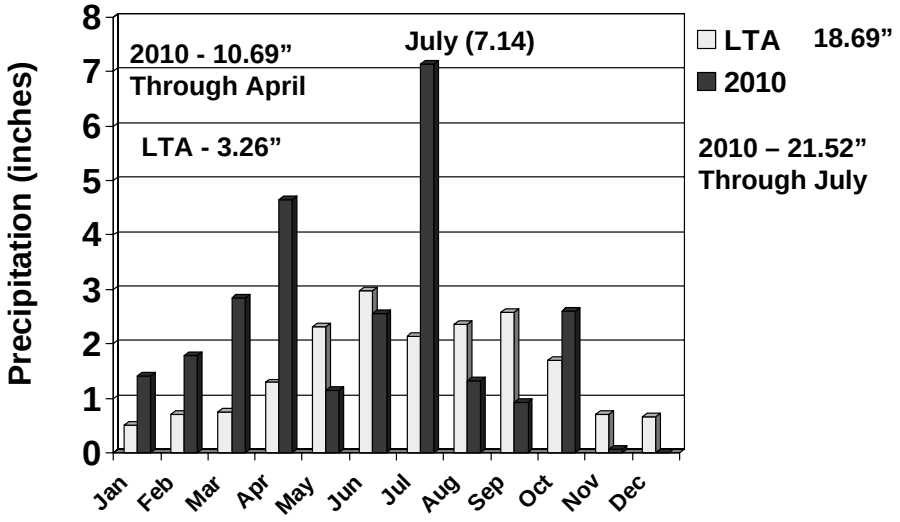
445 HU or 33% above normal (334) for September

Lubbock Air Temperatures
October, 2010



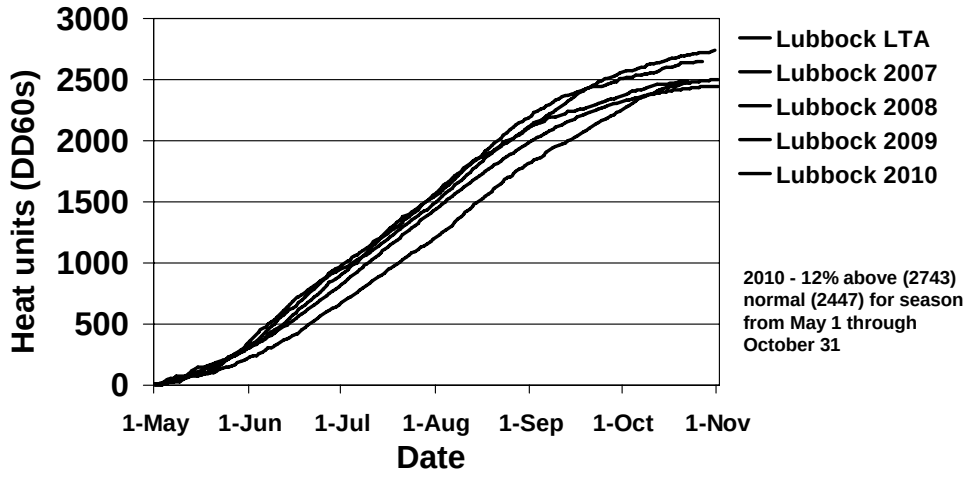
191 HU or 44% above normal (132) for October

Lubbock LTA (1971-2000) vs. 2010 Rainfall

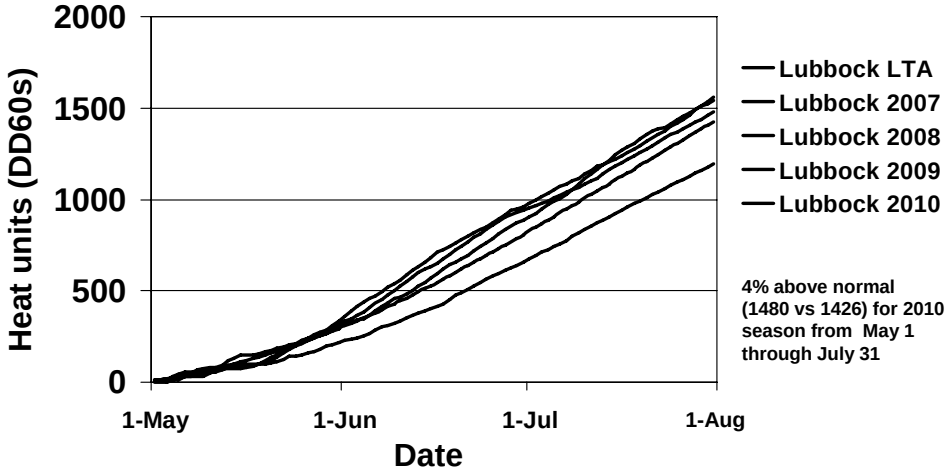


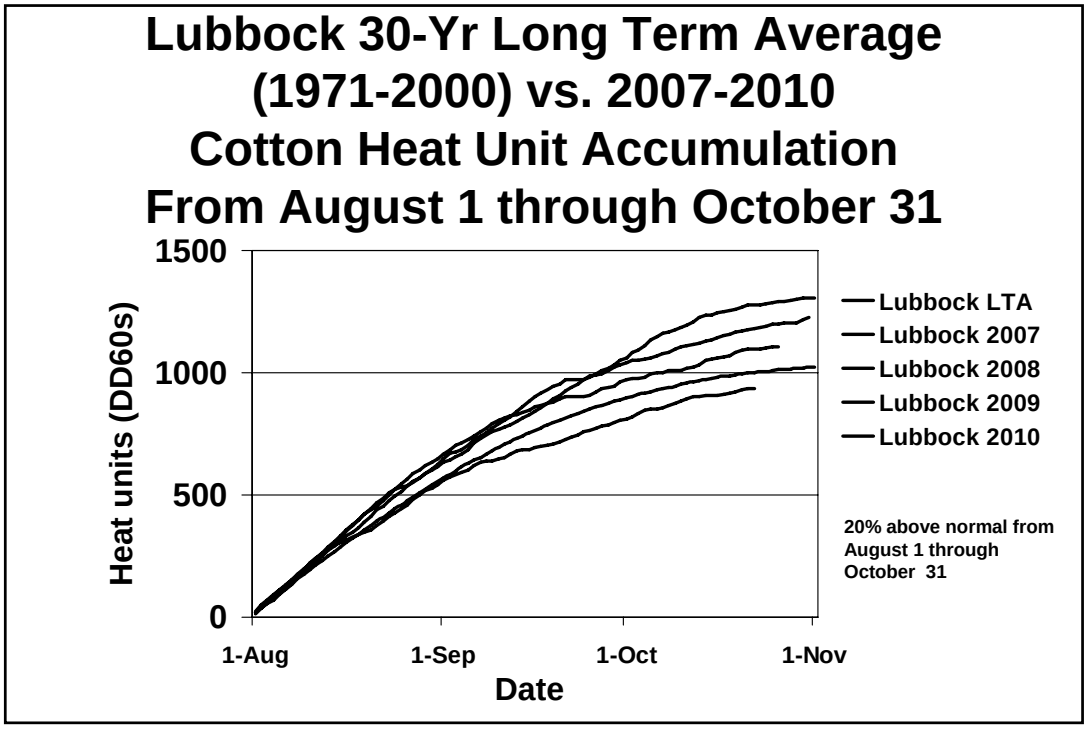
Source: http://www.weather.gov/climate/index.php?wfo=lub

Lubbock 30-Yr Long Term Average (1971-2000) vs. 2007 - 2010 Cotton Heat Unit Accumulation



Lubbock 30-Yr Long Term Average (1971-2000) vs. 2007-2010 Cotton Heat Unit Accumulation From May 1 through July 31

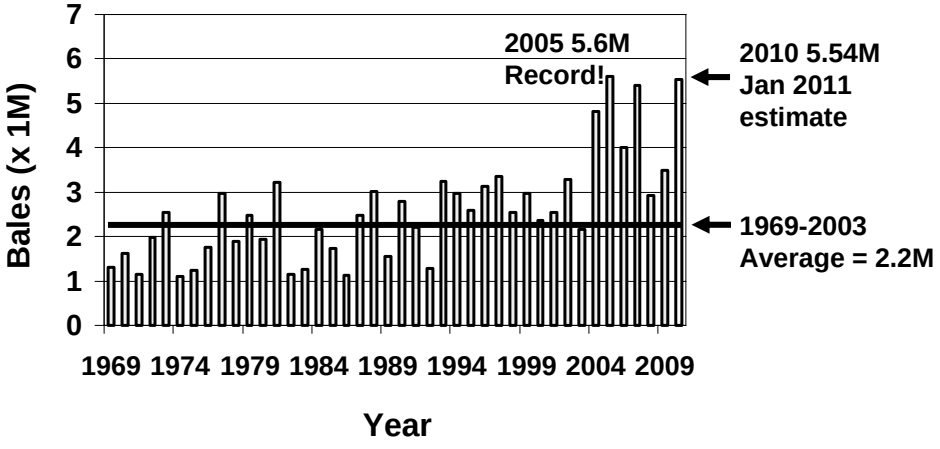



Lubbock 30-Yr Long Term Average
(1971-2000) vs. 2007-2010
Cotton Heat Unit Accumulation
From August 1 through October 31
Heat units (DD60s)
1500
1000
500
0
1-Aug
1-Sep
1-Oct
1-Nov
Date
Lubbock LTA
Lubbock 2007
Lubbock 2008
Lubbock 2009
Lubbock 2010
20% above normal from August 1 through October 31

2010 Crop?

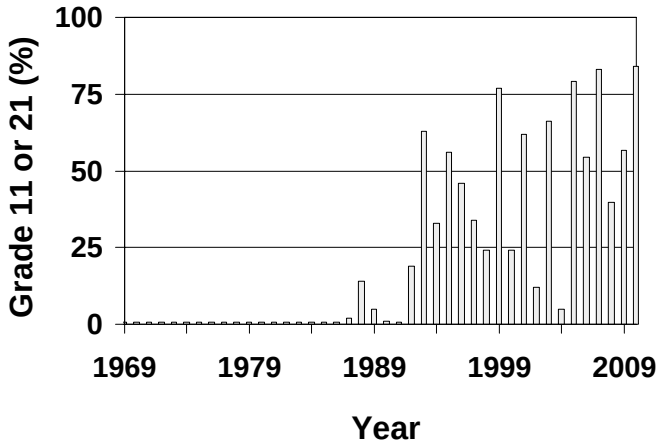
- If TASS estimates hold up, we will harvest 5.54 million bales in 1N and 1S
  - About 2,000,000 bales larger than last year (3.5M)
  - 2nd or 3rd largest crop ever (will have to see after statistical bales)
- 84% color grades 11 or 21
  - Significantly higher than 2009 at 56%
- Average leaf substantially improved compared to last year (95% leaf 3 or better compared to 75% in 2009)
- Length same as 2009 (35.8)
- Strength set a record at 30.07 g/tex
- Micronaire excellent with 4.09 average
  - 9% was 3.4 or lower, 4.6% 3.2 or lower
- Bark contamination much lower than last year (32%) at 9%

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



Source: USDA-NASS

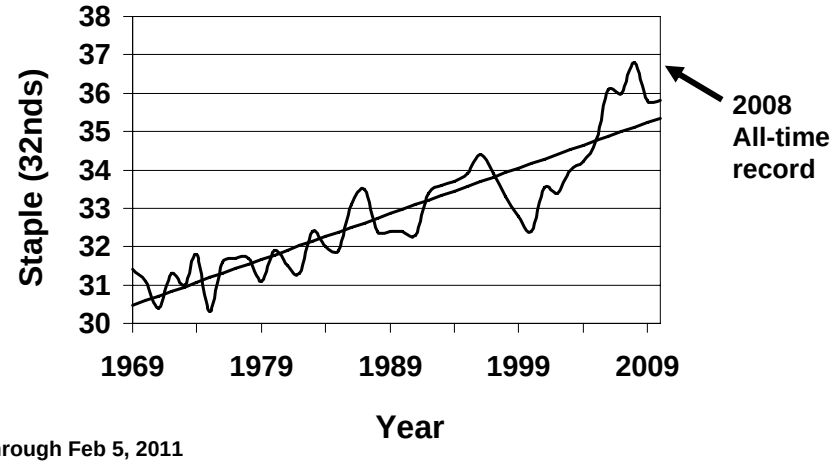
High Plains Color Grades 11 or 21 1969-2010



Source: USDA-AMS

2010 Through Feb 5, 2011

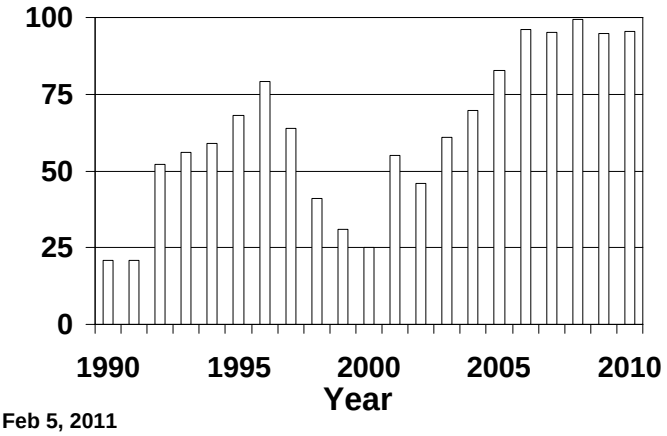
High Plains Average Staple 1969-2010



2010 Through Feb 5, 2011

Source: USDA-AMS

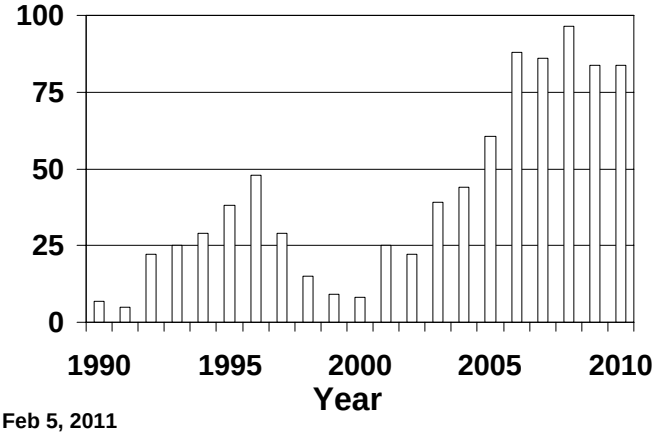
Percent of High Plains Bales with ≥34 Staple 1990-2010



2010 Through Feb 5, 2011

Source: USDA-AMS

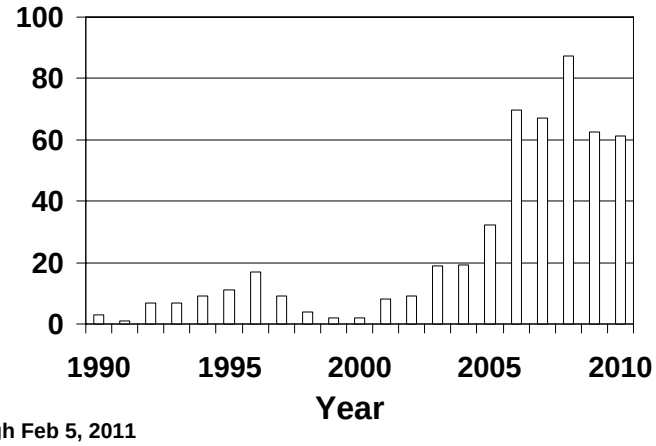
Percent of High Plains Bales with ≥35 Staple 1990-2010



2010 Through Feb 5, 2011

Source: USDA-AMS

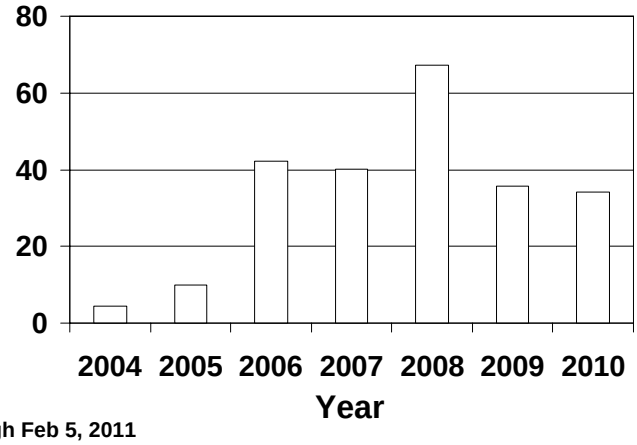
Percent of High Plains Bales with ≥36 Staple 1990-2010



2010 Through Feb 5, 2011

Source: USDA-AMS

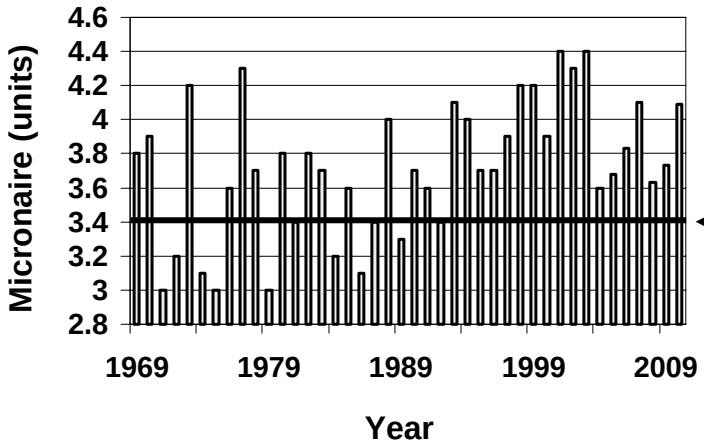
Percent of High Plains Bales with ≥37 Staple 2005-2010



2010 Through Feb 5, 2011

Source: USDA-AMS

High Plains Micronaire
1969-2010 (42 Years)



Number of Years	
≤ 3.4	11
≥ 4.0	13

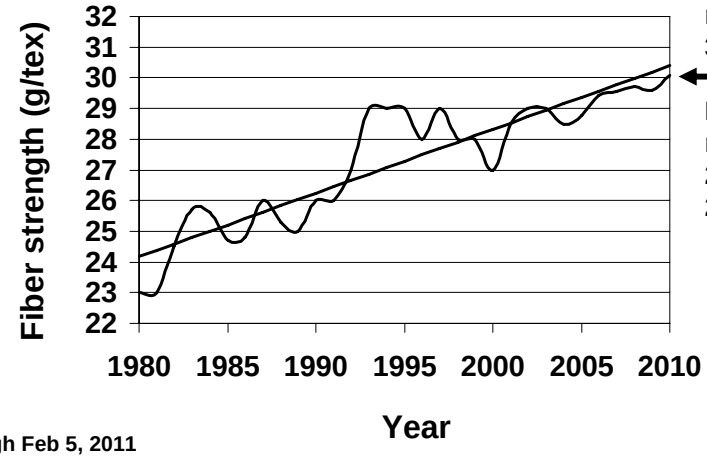
← Low mic discount

2010 % Below	
≤ 3.4	9.3
≤ 3.2	4.6

Source: USDA-AMS

2010 Through Feb 5, 2011

High Plains Average Fiber Strength
1980-2010



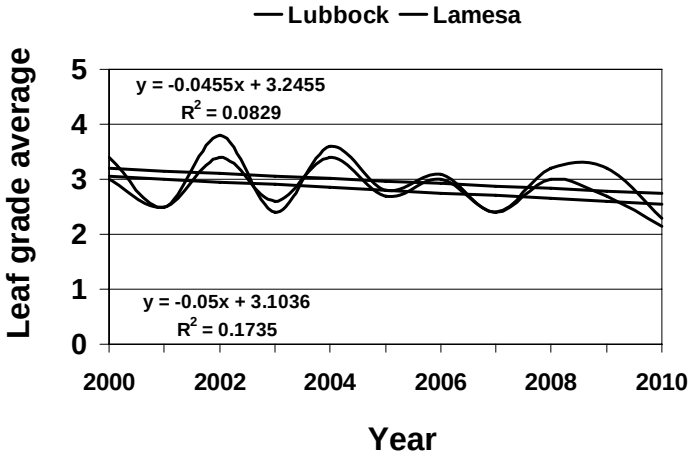
2010 was a record at 30.07!

Previous record in 2009 was 29.6

2010 Through Feb 5, 2011

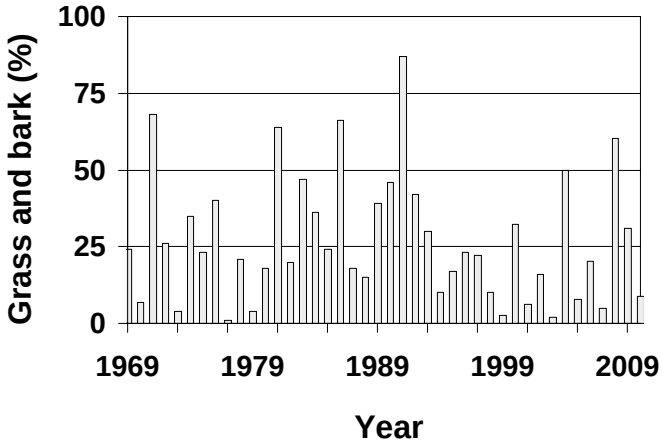
Source: USDA-AMS

High Plains Average Leaf Grades 2000-2010



Source: USDA-AMS

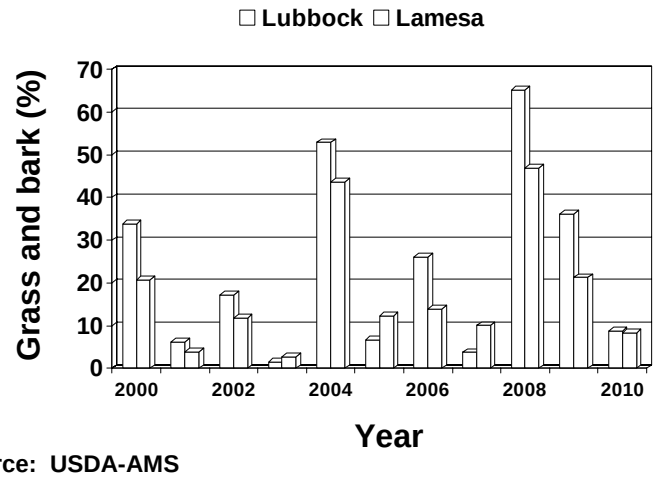
High Plains Grass and Bark 1969-2010



Source: USDA-AMS

2010 Through Feb 5, 2011

High Plains Bark Contamination 2000-2009



Source: USDA-AMS

Q: What was planted?

A: Continued Grower Gravitation to Technology in 2010

2010 USDA-AMS Cotton Varieties Planted

- **Lubbock:**
  - **67% FiberMax, 10% Americot/NexGen, 4% All-Tex, 3% Deltapine, 1% Stoneville, <1% PhytoGen, <1% FiberMax 958 conventional, 15% Unidentified other**
- **Lamesa:**
  - **43% FiberMax, 12% Americot/NexGen, 9% Deltapine, 6% Stoneville, 10% FiberMax 958 conventional, 1% All-Tex, <1% PhytoGen, 21% Unidentified other**

Identifiable Technologies Planted (Unable to Ascertain "Other")

- **Bollgard 2 insect resistance for caterpillar pests**
  - **Lubbock: 46%**
  - **Lamesa: 60%**

Identifiable Technologies Planted (Unable to Ascertain “Other”)

- **Roundup Ready Flex (herbicide tolerant)**
  - **Lubbock: 85%**
  - **Lamesa: 69%**

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.