



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

**2013 Final Report**

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

**Dr. Mark Kelley , Extension Agronomist-Cotton  
Ms. Kristie Keys, Extension Assistant-Cotton  
Mr. Hayden Alexander, Extension Assistant-Cotton**

**Texas A&M AgriLife Extension Service  
Texas A&M AgriLife Research and Extension Center  
Lubbock, TX**

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### **Texas A&M AgriLife Extension Specialists:**

Dr. Gaylon Morgan  
Dr. Jason Woodward  
Dr. Peter Dotray  
Dr. Jackie Smith  
Dr. Dana Porter  
Mr. Jay Yates

### **Texas A&M AgriLife Extension Service Agents:**

Curtis Preson, CEA-AG/NR, Bailey County  
Monti Vandiver, EA-IPM, Bailey/Palmer Counties  
Caitlin Jackson, CEA-AG/NR, Crosby County  
Gary Roschetzky, CEA-AG/NR, Dawson County  
Tommy Doederlein, EA-IPM, Dawson/Lynn Counties  
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JW Wagner, CEA-AG/NR, Yoakum County

**Texas A&M AgriLife Research:**

Dr. Jane Dever  
Dr. Terry Wheeler  
Dr. Wayne Keeling  
Mr. Jim Bordovsky  
Mr. Casey Hardin  
Dr. Danny Carmichael

**USDA-ARS Researcher:**

Dr. John Wanjura – USDA-ARS, Lubbock

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## **2013 Systems Agronomic and Economic Evaluation of Cotton Varieties**

March 2014

Dr. Mark Kelley, Extension Agronomist - Cotton  
Ms. Kristie Keys and Mr. Hayden Alexander - Extension Assistants - Cotton  
Texas A&M 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 in producers' fields in the Texas High Plains. Three replications of each variety were included at all locations. In previous years, plots were of sufficient size to enable the combining of all replications of each variety into a single module at harvest and follow them through the commercial ginning process. After several years of comparing results from commercial ginning and ginning of grab samples, a strong relationship was observed. Therefore, the decision was made by Extension personnel and the producers to forgo moduling and utilize grab samples. Plot weights were determined at harvest using either a weigh wagon with integral electronic scales or a flat-bed scale trailer, and bur cotton yields per acre were subsequently calculated by plot. After grab samples from each location and each plot were ginned, lint and seed turnout values were applied to bur cotton yields to determine lint and seed yields/acre. Lint samples resulting from the grab samples were submitted to the Texas Tech University - Fiber and Biopolymer Research Institute for HVI fiber analyses and CCC lint loan values were calculated.

In 2013, yields were relatively high compared to 2011 and 2012 in spite of continued drought conditions and early season cool temperatures across the Texas High Plains region. A total of three irrigated locations were initiated in 2013 at Farwell, Plains and Blanco with one dryland location at Blanco. All locations were well maintained by the cooperating producers. Lint yields at Farwell ranged from 1146 lb/acre for Deltapine 0912B2RF to 912 lb/acre for Deltapine 1219B2RF. Loan values ranged from \$0.5713 for FiberMax 9180B2F to \$0.4957 for Deltapine 1219B2RF. Net value ranged from a high of \$629.16/acre (NexGen 1511B2RF) to a low of \$444.89/acre (Deltapine 1219B2RF), a difference of \$184.27. At Plains, lint yields ranged from a high of 1543 lb/acre to a low of 1184 lb/acre for FiberMax 2011GT and Croplan Genetics 3156B2RF, respectively. Loan values ranged from a high of \$0.5713/lb for FiberMax 1944GLB2 to a low of \$0.4608/lb for Croplan Genetics 3156B2RF. Net values ranged from a high of \$953.88/acre (FiberMax 2011GT) to a low of \$609.45/acre (Croplan Genetics 3156B2RF), a difference of \$344.43. At the Blanco irrigated location, FiberMax 2484B2F had the highest lint yield with 1489 lb/acre. Loan values ranged from \$0.5698 for FiberMax 2484B2F to \$0.5377 for FiberMax 1944GLB2. Net value ranged from a high of \$913.31/acre (FiberMax 2484B2F) to a low of \$698.51/acre (FiberMax 2989GLB2) a difference of \$214.80. For the Blanco dryland location, lint yields ranged from a high of 395 lb/acre for PhytoGen 367WRF to a low of 289 lb/acre for NexGen 4012B2RF. Loan values ranged from \$0.4882/lb for FiberMax 2989GLB2 to \$0.4383 for NexGen 4111RF. Net value ranged from a high of \$159.07/acre (PhytoGen 499WRF) to a low of \$104.36/acre (NexGen 4012B2RF), a difference of \$54.71.

These data indicate that substantial differences can be observed in terms of net value/acre due to variety and technology selection. When comparing the top and bottom varieties at the Farwell, Plains, Blanco irrigated and Blanco dryland locations, differences were approximately \$184, \$344, \$215, and \$54/acre, respectively. Additional multi-site and multi-year applied research is needed to evaluate varieties across a series of environments.



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Texas A&M AgriLife Extension Service  
Lubbock, TX**

## **Introduction**

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

Industry continues to increase the number of herbicide-tolerant, insect-resistant, and "stacked gene" varieties. Liberty Link Ignite herbicide-tolerant varieties (from Bayer CropScience) were first marketed in 2004. The first commercial "stacked Bt gene" system (Bollgard II from Monsanto) was launched in 2004. Varieties containing Monsanto's Roundup Ready Flex gene system were commercialized in 2006. Widestrike "stacked Bt gene" technology from Dow AgroSciences was available in some PhytoGen varieties in 2005, with additional Roundup Ready Flex "stacked" types in the market in 2006. Liberty Link with Bollgard II types were also commercialized in 2006. In 2011, Bayer CropScience made Glytol and Glytol stacked with Liberty Link available to producers in limited quantities. Furthermore, in 2012, Bayer introduced several Glytol/Liberty Link varieties stacked with Bollgard II technology. New transgenic varieties continue to be marketed in the High Plains by All-Tex, Americot/NexGen, Croplan Genetics, Delta and Pine Land/Monsanto, Dyna-Gro, the Bayer CropScience FiberMax/Stoneville brands, and the Dow AgroSciences PhytoGen brand. More transgenic varieties are expected to be released by these companies in the future. Additional cotton biotechnologies are also anticipated in the near future. These technologies include Bollgard II XtendFlex from Monsanto/Deltapine and Enlist from Dow AgroSciences/PhytoGen. XtendFlex technology will impart resistance to three herbicide molecules, dicamba, glyphosate, and glufosinate. Varieties with Enlist technology will be resistant to a new "colex" formulation of the 2,4-D herbicide. The proliferation of transgenic varieties in the marketplace is expected to continue over the next several years.

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

## **Materials and Methods**

For scientific validity, three replications of each variety were included at all locations. In previous years, plots were of sufficient size to enable the combining of all replications of each individual variety into a single module at harvest. Variety modules would then be followed through the commercial ginning process. After several years of comparing results from commercial ginning and ginning of grab samples, a strong relationship was observed. Therefore, the decision was made by Extension personnel and the producers to forgo building variety modules and utilize

grab samples from each plot at each location. A randomized complete block design was used at all four locations. Weed and insect control measures, if needed, and plant growth regulator and harvest aid applications were performed commercially or by cooperating producers. Plots were harvested with commercial harvesters by producers with assistance provided by program personnel at all locations. Individual location information was as follows:

#### **Location 1: Farwell, TX – Parmer County**

At the Farwell location, fourteen varieties were planted to 30" straight rows on the flat in a terminated rye cover-crop on 10-May with a seeding rate of approximately 60,000 seed per acre. This location was under a Low Elevation Spray Application (LESA) center pivot irrigation system. Plot size was 8 rows by variable length due to center pivot. Plots were harvested on 31-October and grab samples were taken by plot and ginned at the Texas A&M AgriLife Research and Extension Center at Lubbock. Resulting lint samples were submitted to the Texas Tech University – Fiber and Biopolymer Research Institute for HVI fiber analysis and CCC loan values were calculated.

Varieties planted at Farwell (LESA irrigation system):

1. All-Tex Nitro-44 B2RF
2. Croplan Genetics 3156B2RF
3. Deltapine 0912B2RF
4. Deltapine 1219B2RF
5. Deltapine 1321B2RF
6. FiberMax 1944GLB2
7. FiberMax 2011GT
8. FiberMax 9180B2F
9. FiberMax 9250GL
10. NexGen 1511B2RF
11. NexGen 4111RF
12. PhytoGen 399WRF
13. PhytoGen 367WRF
14. PhytoGen 499WRF

#### **Location 2: Plains, TX – Yoakum County**

Twenty commercially available varieties were included at the Plains location. Most varieties planted on 14-May contained Roundup Ready Flex technology stacked with Bollgard II or Widestrike insect technologies. Plots were variable length due to LESA center pivot irrigation and included 12 – 40" rows. The seeding rate at Plains was approximately 49,000 seeds/acre. Harvesting of plots was performed on 17 and 18-December using producer provided equipment. Plot weights were taken using weigh trailers with integral digital scale systems. During harvest, grab samples were taken by plot for ginning at the Texas A&M AgriLife Research and Extension Center near Lubbock. Lint samples were collected during ginning and submitted to the Texas Tech University – Fiber and Biopolymer Research Institute for HVI fiber analysis. After lint quality determination, CCC loan values were calculated for each plot.

Varieties planted at Plains (LESA irrigation system):

1. All-Tex Epic RF
2. All-Tex Nitro-44 B2RF
3. Croplan Genetics 3156B2RF
4. Croplan Genetics 3787B2RF
5. Deltapine 0912B2RF
6. Deltapine 1212B2RF
7. Deltapine 1219B2RF
8. Deltapine 1321B2RF
9. FiberMax 1944GLB2
10. FiberMax 2011GT
11. FiberMax 2484B2F
12. FiberMax 2989GLB2
13. FiberMax 9250GL
14. NexGen 1511B2RF
15. NexGen 3348B2RF
16. NexGen 4111RF
17. PhytoGen 339WRF
18. PhytoGen 367WRF
19. PhytoGen 499WRF
20. Stoneville 4946GLB2

**Location 3 (LEPA Irrigated): Mt Blanco, TX – Crosby County**

Fifteen varieties were planted to 40" raised bed rows on 13-May with an approximate seeding rate of 42,000 seed per acre. The rows were circular due to center pivot LEPA irrigation system (sprinklers utilized for stand establishment). Plot sizes were 8 rows wide by variable length due to circular rows. Harvest occurred on 1 and 2-November using the producer/cooperator harvesting equipment. Harvest material was weighed by plot using a Forage Systems flat-bed scale trailer. Gin turnouts, HVI fiber quality and CCC lint loan values were determined from grab samples taken at harvest.

Varieties planted at Blanco (LEPA irrigation system):

1. All-Tex Epic RF
2. All-Tex Nitro-44 B2RF
3. Croplan Genetics 3787B2RF
4. Deltapine 1044B2RF
5. FiberMax 1944GLB2
6. FiberMax 2011GT
7. FiberMax 2484B2F
8. FiberMax 2989GLB2
9. FiberMax 9250GL
10. NexGen 1511B2RF
11. NexGen 4012B2RF
12. NexGen 4111RF
13. PhytoGen 367WRF
14. PhytoGen 499WRF
15. Stoneville 4946GLB2

**Location 4 (Dryland): Mt Blanco, TX – Crosby County**

Thirteen varieties were planted to 40" raised bed rows on 29-May with an approximate seeding rate of 42,000 seed per acre. The rows were circular due to center pivot LEPA irrigation system (sprinklers utilized for stand establishment). Plot sizes were 8 rows wide by variable length due

to circular rows. Harvest occurred on 22 and 23-October using the producer/cooperator harvesting equipment. Harvest material was weighed by plot using a Forage Systems flat-bed scale trailer. Gin turnouts, HVI fiber quality and CCC lint loan values were determined from grab samples taken at harvest.

Varieties planted at Blanco (Dryland):

1. Croplan Genetics 3787B2RF
2. Deltapine 1044B2RF
3. FiberMax 1944GLB2
4. FiberMax 2011GT
5. FiberMax 2484B2F
6. FiberMax 2989GLB2
7. FiberMax 9170B2F
8. NexGen 1511B2RF
9. NexGen 4012B2RF
10. NexGen 4111RF
11. PhytoGen 367WRF
12. PhytoGen 499WRF
13. Stoneville 4946GLB2

### **Yield and HVI Results**

Agronomic and economic results by variety for all locations are included in tables 1 - 8.

#### **Location 1 - Farwell**

At the Farwell location, lint turnouts of field-cleaned bur cotton averaged 33.3% (Table 1). Differences in bur cotton yields among varieties were significant at the 0.10 level and averaged 3057 lb/acre. Bur cotton yields ranged from high of 3346 lb/acre for Deltapine 0912B2RF to a low of 2849 lb/acre for FiberMax 2011GT. Lint yields ranged from 1146 lb/acre for Deltapine 0912B2RF to 912 lb/acre for Deltapine 1219B2RF, and seed yields averaged 1441 lb/acre. Loan values derived from grab samples ranged from \$0.5713 for FiberMax 9180B2F to \$0.4957 for Deltapine 1219B2RF. After applying loan values to lint yields, the test average lint value was \$547.73/acre. After subtracting ginning and seed/technology costs from total value (lint value + seed value), net value ranged from a high of \$629.16/acre (NexGen 1511B2RF) to a low of \$444.89/acre (Deltapine 1219B2RF), a difference of \$184.27.

Classing data from grab samples are reported in Table 2. Micronaire ranged from 4.1 for Deltapine 0912B2RF to 3.2 for Deltapine 1219B2RF. Staple was highest for FiberMax 9180B2F (36.9) and lowest for Croplan Genetics 3156B2RF (33.7). The highest uniformity, 81.3%, was observed in PhytoGen 339WRF while Croplan Genetics 3156B2RF had the lowest with 78.1%. Fiber strength values ranged from a high of 31.8 g/tex for FiberMax 9180B2F to a low of 27.9 g/tex for Croplan Genetics 3156B2RF. Leaf grades were mostly 2 and 3, and color grades were mostly 21 and 31 with a few 32 grades observed.

#### **Location 2 – Plains**

Data from the Plains location indicated significant differences among varieties for most yield and economic parameters measured (Table 3). Lint turnout of field-cleaned bur

cotton ranged from a high of 35.2% for PhytoGen 499WRF to a low of 27.3% for Stoneville 4946GLB2. Seed turnout averaged 49.7% across all varieties and differences were not significant. Bur cotton yields averaged 4254 lb/acre. Differences in lint yield were significant at the 0.10 level and values ranged from a high of 1543 lb/acre to a low of 1184 lb/acre for FiberMax 2011GT and Croplan Genetics 3156B2RF, respectively. Seed yields averaged 2111 lbs/acre across all varieties and All-Tex Nitro-44 B2RF had the highest with 2361 lbs/acre. Loan values ranged from a high of \$0.5713/lb for FiberMax 1944GLB2 to a low of \$0.4608/lb for Croplan Genetics 3156B2RF. After applying lint loan values to lint yield, lint values (\$/acre) averaged \$724.87 across all varieties and FiberMax 2011GT had the highest with \$860.78/acre. After subtracting ginning and seed/technology fee costs from total value, net values ranged from a high of \$953.88/acre (FiberMax 2011GT) to a low of \$609.45/acre (Croplan Genetics 3156B2RF), a difference of \$344.43. At this location, 5 varieties were in the statistical upper tier for net value. These included FiberMax 2011GT (\$953.88/acre), FiberMax 2989GLB2 (\$889.08/acre), Deltapine 1212B2RF (\$886.91/acre), PhytoGen 499WRF (\$884.43/acre), and FiberMax 1944GLB2 (\$831.68/acre).

Classing data derived from grab samples are reported in Table 4. Micronaire values averaged 3.4 and ranged from a high of 3.9 for Deltapine 0912B2RF, Deltapine 1212B2RF, and NexGen 1511B2RF to a low of 2.9 for Croplan Genetics 3156B2RF. Staple length was highest for All-Tex Nitro-44 B2RF (37.8) and lowest for Croplan Genetics 3156B2RF (33.9). The highest uniformity value of 82.4% was observed in NexGen 3348B2RF and the test average was 81.0%. Strength values ranged from a high of 32.3 g/tex for All-Tex Nitro-44 B2RF to a low of 28.3 g/tex for Croplan Genetics 3787B2RF and All-Tex Epic RF. Leaf grades were mostly 2 and 3 with a high of 4 for All-Tex Nitro-44 B2RF, and color grades were mostly 31 across all varieties.

### **Location 3 – Blanco (LEPA Irrigated)**

At Blanco, lint turnouts of field-cleaned bur cotton ranged from a high of 36.2% for PhytoGen 499WRF to a low of 31.4% for Deltapine 1044B2RF (Table 5). Seed turnout averaged 48.1% across all varieties. An average bur cotton yield of 3927 lb/acre was also observed. Differences among varieties for bur cotton yield were significant at the 0.10 level at this location. However, lint yields averaged 1341 lb/acre and differences were significant at the 0.05 level. FiberMax 2484B2F had the highest lint yield with 1489 lb/acre. Seed yields were also significant at the 0.05 level, and averaged 1887 lb/acre across varieties. Loan values derived from grab samples ranged from \$0.5698 for FiberMax 2484B2F to \$0.5377 for FiberMax 1944GLB2. After applying lint loan values to lint yield, lint values (\$/acre) ranged from a high of \$848.71 for FiberMax 2484B2F to a low of \$651.91 for FiberMax 1944GLB2. After subtracting ginning and seed/technology costs from total value (lint value + seed value), net value ranged from a high of \$913.31/acre (FiberMax 2484B2F) to a low of \$698.51/acre (FiberMax 2989GLB2) and averaged \$800.64/acre across all varieties. Six varieties were included in the statistical upper tier with FiberMax 2484B2F. These varieties included Stoneville 4946GLB2, PhytoGen 367WRF, FiberMax 2011GT, NexGen 4111RF, NexGen 1511B2RF, and Deltapine 1044B2RF, with net values of \$881.06/acre, \$841.73/acre, \$835.47/acre, \$830.02/acre, \$826.28/acre, and \$826.11/acre, respectively.

Classing data derived from grab samples are reported in Table 6. Stoneville 4946GLB2 had the highest micronaire of 4.7 and the lowest was observed in All-Tex Nitro-44 B2RF with 3.7. Staple length averaged 35.5 and was highest for FiberMax 2484B2F (37.5) and lowest for NexGen 1511B2RF (34.5). The highest uniformity value of 82.1% was observed in NexGen 4111RF. Strength values averaged 30.7 g/tex and ranged from a

high of 33.1 g/tex for All-Tex Nitro-44 B2RF to a low of 29.4 g/tex for both Croplan Genetics 3787B2RF and FiberMax 2989GLB2.

#### **Location 4 – Blanco (Dryland)**

For the Blanco dryland location, lint turnouts of field-cleaned bur cotton were significant at the 0.10 level and ranged from a high of 32.1% for FiberMax 2484B2F to a low of 28.3% for NexGen 4111RF (Table 7). Seed turnout averaged 46.5% across all varieties. Bur cotton yields averaged 1153 lb/acre. Lint yields averaged 350 lb/acre and ranged from a high of 395 lb/acre for PhytoGen 367WRF to a low of 289 lb/acre for NexGen 4012B2RF. Seed yield differences were not significant and averaged 536 lb/acre across varieties. Loan values derived from grab samples ranged from \$0.4882/lb for FiberMax 2989GLB2 to \$0.4383 for NexGen 4111RF (significant at 0.10 level). After applying lint loan values to lint yield, lint values (\$/acre) ranged from a high of \$182.77 for PhytoGen 499WRF to a low of \$163.93 for NexGen 4012B2RF. After subtracting ginning and seed/technology costs from total value (lint value + seed value), net value ranged from a high of \$159.07/acre (PhytoGen 499WRF) to a low of \$104.36/acre (NexGen 4012B2RF). Differences in net value/acre were significant at the 0.10 level and a test average of \$137.58/acre was observed across all varieties. Eight varieties were included in the statistical upper tier with PhytoGen 499WRF. These varieties included PhytoGen 367WRF (\$157.11/acre), Stoneville 4946GLB2 (\$155.38/acre), NexGen 1511B2RF (\$152.91/acre), FiberMax 2989GLB2 (\$147.53/acre), FiberMax 9170B2F (\$146.95/acre), FiberMax 2011GT (\$140.63/acre), and FiberMax 2484B2F (\$133.61/acre). A difference of \$54.71/acre in net value was observed between the top and the bottom performing varieties.

Classing data derived from grab samples are reported in Table 8. Micronaire values averaged 3.2 and Croplan Genetics 3787B2RF had the highest with 3.5, and the lowest was observed in FiberMax 2011GT with 2.9. Staple length was highest for FiberMax 2484B2F (34.1) and lowest for NexGen 4111RF (30.9). The highest uniformity value of 78.8% was observed in Stoneville 4946GLB2. Strength values averaged 27.6 g/tex and differences were not significant.

#### **Summary and Conclusions**

Characteristics commonly evaluated in small-plot testing include lint yield, turnout percentages, fiber quality, and earliness. Current small-plot variety testing programs are inadequate in scale and design to investigate the economic impact of new transgenic varieties with value-added traits. The objective of this project was to evaluate the profitability of cotton varieties in producers' fields in the Texas High Plains. Three replications of each variety were included at all locations. In previous years, plots were of sufficient size to enable the combining of all replications of each individual variety into a single module at harvest. Variety modules would then be followed through the commercial ginning process. After several years of comparing results from commercial ginning and ginning of grab samples, a strong relationship was observed. Therefore, the decision was made by Extension personnel and the producers to forgo moduling and utilize grab samples from each plot at each location. Plot weights were determined at harvest using either a West Texas Lee Weigh Wagon with integral electronic scales, or a Western Forage Systems flat-bed scale trailer, and bur cotton yields per acre were subsequently calculated by plot. After grab samples from each location and each plot were ginned, lint and seed turnout values were applied to bur cotton yields to determine lint and seed yields/acre. Lint samples resulting from the grab samples were

subsequently submitted to the Texas Tech University - Fiber and Biopolymer Research Institute for HVI fiber analyses and CCC lint loan values were calculated.

In 2013, yields were relatively high compared to 2011 and 2012 in spite of continued drought conditions and early season cool temperatures across the Texas High Plains region. A total of three irrigated locations were initiated in 2013 at Farwell, Plains and Blanco with one dryland location at Blanco. The numbers of varieties at each irrigated location were 13, 20, and 15, for Farwell, Plains, and Blanco, respectively. Also, 13 varieties were included at the Blanco dryland location. All locations were well maintained by the cooperating producers. Lint yields averaged 1018 lb/acre (Farwell), 1334 lb/acre (Plains), 1341 lb/acre (Blanco irrigated), and 350 lb/acre (Blanco dryland).

Lint yields at Farwell ranged from 1146 lb/acre for Deltapine 0912B2RF to 912 lb/acre for Deltapine 1219B2RF, and seed yields averaged 1441 lb/acre. Loan values derived from grab samples ranged from \$0.5713 for FiberMax 9180B2F to \$0.4957 for Deltapine 1219B2RF. After applying loan values to lint yields, the test average lint value was \$547.73/acre. After subtracting ginning and seed/technology costs from total value (lint value + seed value), net value ranged from a high of \$629.16/acre (NexGen 1511B2RF) to a low of \$444.89/acre (Deltapine 1219B2RF), a difference of \$184.27.

At Plains, differences in lint yield were significant at the 0.10 level and values ranged from a high of 1543 lb/acre to a low of 1184 lb/acre for FiberMax 2011GT and Croplan Genetics 3156B2RF, respectively. Loan values ranged from a high of \$0.5713/lb for FiberMax 1944GLB2 to a low of \$0.4608/lb for Croplan Genetics 3156B2RF. After applying lint loan values to lint yield, lint values (\$/acre) averaged \$724.87 across all varieties and FiberMax 2011GT had the highest with \$860.78/acre. After subtracting ginning and seed/technology fee costs from total value, net values ranged from a high of \$953.88/acre (FiberMax 2011GT) to a low of \$609.45/acre (Croplan Genetics 3156B2RF), a difference of \$344.43.

At the Blanco irrigated location, lint yields averaged 1341 lb/acre and differences were significant at the 0.05 level. FiberMax 2484B2F had the highest lint yield with 1489 lb/acre. Loan values ranged from \$0.5698 for FiberMax 2484B2F to \$0.5377 for FiberMax 1944GLB2. After applying lint loan values to lint yield, lint values (\$/acre) ranged from a high of \$848.71 for FiberMax 2484B2F to a low of \$651.91 for FiberMax 1944GLB2. After subtracting ginning and seed/technology costs from total value (lint value + seed value), net value ranged from a high of \$913.31/acre (FiberMax 2484B2F) to a low of \$698.51/acre (FiberMax 2989GLB2) and averaged \$800.64/acre across all varieties.

For the Blanco dryland location, lint yields ranged from a high of 395 lb/acre for PhytoGen 367WRF to a low of 289 lb/acre for NexGen 4012B2RF. Loan values derived from grab samples ranged from \$0.4882/lb for FiberMax 2989GLB2 to \$0.4383 for NexGen 4111RF (significant at 0.10 level). After subtracting ginning and seed/technology costs from total value, net value ranged from a high of \$159.07/acre (PhytoGen 499WRF) to a low of \$104.36/acre (NexGen 4012B2RF). Differences in net value/acre were significant at the 0.10 level and a test average of \$137.58/acre was observed across all varieties. A difference of \$54.71/acre in net value was observed between the top and the bottom performing varieties.

These data indicate that substantial differences can be observed in terms of net value/acre due to variety and technology selection. When comparing the top and bottom varieties at the Farwell, Plains, Blanco irrigated and Blanco dryland locations,

differences were approximately \$184, \$344, \$215, and \$54/acre, respectively. Additional multi-site and multi-year applied research is needed to evaluate varieties across a series of environments.

### **Acknowledgments**

We wish to express our appreciation to the producer-cooperators: Mark and Ryan Williams of Farwell, Mark and David Appling of Blanco, and Rickey Bearden of Plains for providing the land, equipment and time to conduct these projects. Furthermore, we thank Dr. Jane Dever and Ms. Valerie Morgan – Texas A&M AgriLife Research for use of the ginning facilities at the Lubbock Center, and Dr. Eric Hequet – Texas Tech University Fiber and Biopolymer Research Institute for HVI fiber quality analyses. And finally, our deepest gratitude to Plains Cotton Growers – Plains Cotton Improvement Program and Cotton Incorporated – Texas State Support Committee for their generosity in funding for this and other research projects.



Table 1. Harvest results from the Farwell Irrigated Systems Variety Trial, Mark and Ryan Williams Farm, Farwell, TX, 2013.

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 <sup>1</sup>	Net value
	%		lb/acre		\$/lb		\$/acre					
NexGen 1511B2RF	36.7	46.8	3107	1142	1453	0.5440	621.08	181.59	802.68	93.22	80.30	629.16 a
Deltapine 0912B2RF	34.3	48.0	3346	1146	1607	0.5257	602.53	200.82	803.34	100.37	91.28	611.69 ab
FiberMax 9250GL	33.9	48.4	3118	1056	1510	0.5587	590.13	188.71	778.84	93.55	79.77	605.51 ab
Deltapine 1321B2RF	35.7	46.2	3099	1105	1431	0.5278	583.48	178.89	762.36	92.98	91.28	578.10 abc
PhytoGen 339WRF	32.3	48.1	3090	999	1485	0.5685	567.87	185.62	753.49	92.71	84.73	576.05 abc
All-Tex Nitro-44 B2RF	32.0	48.0	3211	1028	1540	0.5498	565.33	192.50	757.83	96.34	89.43	572.07 abc
NexGen 4111RF	34.4	47.2	3067	1056	1448	0.5093	538.00	180.96	718.96	92.02	63.34	563.60 bcd
FiberMax 1944GLB2	32.1	49.8	2988	958	1487	0.5635	539.96	185.85	725.81	89.63	91.69	544.49 cde
FiberMax 2011GT	34.8	46.4	2849	992	1322	0.5460	541.58	165.21	706.79	85.47	77.05	544.27 cde
FiberMax 9180B2F	30.7	50.5	2974	912	1502	0.5713	521.10	187.78	708.89	89.23	88.47	531.18 cde
PhytoGen 499WRF	32.9	46.8	2968	977	1388	0.5372	524.89	173.54	698.43	89.03	84.73	524.67 cde
PhytoGen 367WRF	31.4	43.1	3105	975	1337	0.5358	522.19	167.17	689.36	93.16	84.73	511.46 de
Croplan Genetics 3156B2RF	32.9	45.5	3025	995	1378	0.5007	498.02	172.20	670.23	90.76	83.95	495.52 ef
Deltapine 1219B2RF	32.0	45.3	2851	912	1293	0.4957	452.08	161.57	613.66	85.52	83.24	444.89 f
Test average	33.3	47.1	3057	1018	1441	0.5381	547.73	180.17	727.90	91.72	83.86	552.33
CV, %	6.5	4.8	5.3	5.4	5.3	4.5	5.4	5.3	5.4	5.3	--	6.2
OSL	0.0739 <sup>†</sup>	0.0567 <sup>†</sup>	0.0664 <sup>†</sup>	<0.0001	0.0010	0.0085	<0.0001	0.0010	0.0001	0.0663 <sup>†</sup>	--	<0.0001
LSD	3.0	3.2	225	92	128	0.0407	49.56	15.95	65.48	6.76	--	57.35

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. <sup>†</sup>Indicates significance at the 0.10 level.

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

Assumes:

\$3.00/cwt ginning cost.

\$250/ton for seed.

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

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

Table 2. HVI fiber property results from the Farwell Irrigated Systems Variety Trial, Mark and Ryan Williams Farm, Farwell, TX, 2013.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade
	units	32 <sup>nds</sup> inch	%	g/tex	%	grade	reflectance	yellowness	color 1 color 2
All-Tex Nitro-44 B2RF	3.4	36.8	80.7	31.7	9.5	2.7	76.2	9.3	2.7 1.3
Croplan Genetics 3156B2RF	3.3	33.7	78.1	27.9	8.9	2.7	75.8	9.0	3.0 1.0
Deltapine 0912B2RF	4.1	34.0	79.8	30.0	9.8	1.7	75.7	10.3	2.3 2.0
Deltapine 1219B2RF	3.2	34.7	78.8	29.4	9.0	1.7	76.3	10.3	2.0 2.0
Deltapine 1321B2RF	3.8	34.6	79.9	30.3	11.2	2.0	75.4	9.8	2.7 1.7
FiberMax 1944GLB2	3.7	36.2	79.4	30.2	8.2	2.0	76.8	9.6	2.3 1.3
FiberMax 2011GT	3.4	35.0	80.3	30.1	8.6	2.0	78.4	8.5	2.7 1.0
FiberMax 9180B2F	3.7	36.9	81.1	31.8	8.5	2.3	78.5	8.4	3.0 1.0
FiberMax 9250GL	3.5	35.7	79.0	30.1	7.8	2.0	78.5	8.5	2.3 1.0
NexGen 1511B2RF	3.9	35.2	81.0	31.0	10.8	2.0	75.9	10.0	2.3 1.7
NexGen 4111RF	3.4	34.3	79.3	30.4	9.7	2.0	75.7	10.7	1.7 2.0
PhytoGen 339WRF	3.6	36.8	81.3	31.0	10.0	2.0	76.4	9.0	2.7 1.0
PhytoGen 367WRF	3.6	35.3	80.9	29.7	10.2	2.0	75.9	9.9	2.0 2.0
PhytoGen 499WRF	3.7	34.9	78.7	29.9	10.5	2.3	75.8	9.9	2.7 1.7
Test average	3.6	35.3	79.9	30.2	9.5	2.1	76.5	9.5	2.5 1.5
CV, %	7.3	2.0	1.6	3.3	3.8	34.4	1.3	5.2	-- --
OSL	0.0174	<0.0001	0.0666 <sup>†</sup>	0.0110	<0.0001	0.8809	0.0022	<0.0001	-- --
LSD	0.4	1.2	1.8	1.7	0.6	NS	1.7	0.8	-- --

CV - coefficient of variation.

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

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

Table 3. Harvest results from the Irrigated Systems Variety Trial, Rickey Bearden Farm, Plains, TX, 2013.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Seed/technology cost	Net value
	----- % -----			----- lb/acre -----		\$/lb		----- \$/acre -----				
FiberMax 2011GT	31.9	48.3	4844	1543	2339	0.5578	860.78	292.35	1153.13	145.31	53.93	953.88 a
FiberMax 2989GLB2	31.7	52.3	4491	1422	2350	0.5587	794.23	293.77	1088.00	134.74	64.18	889.08 ab
Deltapine 1212B2RF	32.1	49.4	4485	1440	2213	0.5600	806.66	276.66	1083.33	134.54	61.88	886.91 ab
PhytoGen 499WRF	35.2	54.8	4142	1458	2268	0.5383	784.83	283.48	1068.31	124.26	59.31	884.73 ab
FiberMax 1944GLB2	30.5	51.1	4308	1312	2203	0.5713	749.71	275.39	1025.10	129.24	64.18	831.68 abc
FiberMax 9250GL	31.0	50.5	4338	1343	2192	0.5448	731.50	273.96	1005.46	130.13	55.84	819.49 bc
PhytoGen 367WRF	31.6	49.5	4182	1322	2071	0.5600	740.07	258.88	998.95	125.46	59.31	814.18 bc
All-Tex Nitro-44 B2RF	29.4	49.5	4771	1404	2361	0.5138	721.43	295.11	1016.54	143.13	62.60	810.81 bc
FiberMax 2484B2F	31.0	49.1	4447	1380	2185	0.5287	729.72	273.14	1002.86	133.40	62.89	806.58 bc
NexGen 3348B2RF	31.0	51.2	4111	1276	2103	0.5602	714.87	262.92	977.79	123.32	49.09	805.38 bc
PhytoGen 339WRF	31.6	50.3	4145	1310	2085	0.5482	718.11	260.69	978.79	124.35	59.31	795.13 bc
Deltapine 0912B2RF	30.7	47.8	4358	1338	2084	0.5417	724.48	260.46	984.95	130.74	63.90	790.31 bc
NexGen 4111RF	30.9	49.8	4059	1252	2020	0.5577	698.31	252.48	950.79	121.76	44.34	784.70 bc
NexGen 1511B2RF	33.8	48.6	3845	1300	1869	0.5548	721.46	233.63	955.09	115.35	56.21	783.54 bc
Deltapine 1219B2RF	30.5	48.3	4360	1329	2106	0.5320	706.87	263.27	970.14	130.79	58.27	781.09 bc
Stoneville 4946GLB2	27.3	44.5	4729	1289	2104	0.5537	713.49	263.01	976.50	141.86	64.18	770.46 bc
Deltapine 1321B2RF	32.3	48.5	3872	1252	1876	0.5615	703.10	234.55	937.65	116.17	63.90	757.58 c
Croplan Genetics 3787B2RF	31.6	47.8	3988	1259	1906	0.5400	679.82	238.26	918.09	119.63	60.59	737.86 c
All-Tex Epic RF	32.6	51.6	3888	1268	2007	0.5147	652.48	250.89	903.37	116.65	51.28	735.44 c
Croplan Genetics 3156B2RF	31.8	50.4	3720	1184	1874	0.4608	545.54	234.28	779.82	111.60	58.76	609.45 d
Test average	31.4	49.7	4254	1334	2111	0.5429	724.87	263.86	988.73	127.62	58.70	802.41
CV, %	6.0	6.3	8.4	8.6	8.5	3.2	8.6	8.5	8.6	8.4	--	9.2
OSL	0.0251	0.2227	0.0127	0.0884 <sup>†</sup>	0.0161	<0.0001	0.0016	0.0161	0.0065	0.0127	--	0.0037
LSD	3.1	NS	593	158	297	0.0287	103.01	37.09	139.98	17.80	--	122.22

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, <sup>†</sup>indicates significance at the 0.10 level, NS - not significant.

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

Assumes:

\$3.00/cwt ginning cost.

\$250/ton for seed.

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

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

Table 4. HVI fiber property results from the Irrigated Systems Variety Trial, Rickey Bearden Farm, Plains, TX, 2013.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	color 1	color 2
	units	32 <sup>nds</sup> inch	%	g/tex	%	grade	reflectance	yellowness		
All-Tex Epic RF	3.2	34.1	79.6	28.3	10.0	1.0	79.8	8.5	2.0	1.0
All-Tex Nitro-44 B2RF	3.1	37.8	81.9	32.3	8.9	4.0	78.4	7.3	3.0	1.0
Croplan Genetics 3156B2RF	2.9	33.9	80.0	29.0	7.9	3.0	78.3	7.2	3.7	1.0
Croplan Genetics 3787B2RF	3.5	34.7	80.4	28.3	10.0	1.0	79.9	8.1	2.3	1.0
Deltapine 0912B2RF	3.9	34.1	80.3	29.4	9.0	2.7	78.3	7.7	3.0	1.0
Deltapine 1212B2RF	3.9	35.7	81.4	30.6	10.3	2.3	77.9	7.8	3.0	1.0
Deltapine 1219B2RF	3.2	36.2	79.2	31.4	7.6	1.0	80.3	8.1	2.3	1.0
Deltapine 1321B2RF	3.8	35.2	81.5	30.2	10.5	2.0	78.8	7.6	3.0	1.0
FiberMax 1944GLB2	3.5	36.7	80.7	31.1	7.4	1.7	80.4	6.9	3.0	1.0
FiberMax 2011GT	3.5	35.8	81.7	31.3	8.1	1.3	80.2	7.4	3.3	1.0
FiberMax 2484B2F	3.1	37.3	80.1	29.4	7.7	1.7	81.9	7.0	2.7	1.0
FiberMax 2989GLB2	3.5	35.9	80.5	29.8	7.3	2.0	79.6	7.1	3.0	1.0
FiberMax 9250GL	3.3	36.6	81.2	30.8	6.6	2.7	79.6	7.2	3.0	1.0
NexGen 1511B2RF	3.9	35.0	81.0	30.5	9.9	2.0	78.7	7.7	3.0	1.0
NexGen 3348B2RF	3.6	35.6	82.4	31.2	8.6	2.3	78.3	7.6	3.0	1.0
NexGen 4111RF	3.5	35.2	81.6	31.4	9.5	1.7	78.7	8.3	2.7	1.0
PhytoGen 339WRF	3.2	36.6	81.7	30.5	8.8	1.3	79.1	7.2	3.0	1.0
PhytoGen 367WRF	3.5	35.3	80.9	29.6	9.4	2.0	77.4	8.1	3.0	1.0
PhytoGen 499WRF	3.2	35.2	81.7	30.8	9.8	2.3	77.4	7.9	3.0	1.0
Stoneville 4946GLB2	3.3	35.9	81.8	31.5	9.0	2.0	79.1	8.0	3.0	1.0
Test average	3.4	35.6	81.0	30.4	8.8	2.0	79.1	7.6	2.9	1.0
CV, %	6.6	1.5	0.8	3.1	5.9	29.9	1.1	3.0	--	--
OSL	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	--	--
LSD	0.4	0.9	1.1	1.6	0.9	1.0	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.

Table 5. Harvest results from the Blanco Irrigated Systems Variety Trial, Mark and David Applying Farm, Blanco, TX, 2013.

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 <sup>1</sup>	Net value
	%			lb/acre		\$/lb				\$/acre		
FiberMax 2484B2F	34.3	47.5	4344	1489	2062	0.5698	848.71	257.79	1106.51	130.31	62.89	913.31 a
Stoneville 4946GLB2	36.0	48.6	4132	1487	2007	0.5505	818.33	250.89	1069.22	123.97	64.18	881.06 ab
PhytoGen 367WRF	35.0	48.8	4007	1404	1957	0.5533	776.61	244.65	1021.26	120.22	59.31	841.73 ab
FiberMax 2011GT	36.0	46.2	3933	1417	1817	0.5505	780.29	227.09	1007.38	117.98	53.93	835.47 ab
NexGen 4111RF	33.4	48.4	3992	1334	1931	0.5642	752.76	241.35	994.11	119.75	44.34	830.02 ab
NexGen 1511B2RF	36.1	47.3	3907	1411	1847	0.5448	768.82	230.87	999.69	117.20	56.21	826.28 ab
Deltapine 1044B2RF	31.4	47.7	4310	1353	2055	0.5593	756.86	256.82	1013.68	129.30	58.27	826.11 ab
PhytoGen 499WRF	36.2	47.0	3829	1386	1801	0.5507	763.39	225.12	988.50	114.86	59.31	814.33 bc
All-Tex Epic RF	33.2	48.2	4006	1330	1931	0.5565	739.88	241.37	981.25	120.17	51.28	809.80 bc
NexGen 4012B2RF	34.6	49.3	3807	1318	1878	0.5550	731.58	234.76	966.33	114.22	54.56	797.55 bcd
FiberMax 9250GL	33.3	49.1	3895	1297	1912	0.5550	719.69	239.05	958.75	116.86	55.84	786.05 bcde
Croplan Genetics 3787B2RF	35.5	47.6	3483	1238	1657	0.5520	683.28	207.07	890.35	104.48	60.59	725.28 cde
All-Tex Nitro-44 B2RF	31.9	48.1	3879	1237	1865	0.5388	666.33	233.16	899.49	116.37	62.60	720.51 cde
FiberMax 1944GLB2	32.6	48.9	3724	1212	1821	0.5377	651.91	227.62	879.53	111.71	64.18	703.64 de
FiberMax 2989GLB2	33.0	48.1	3662	1208	1763	0.5398	652.16	220.39	872.55	109.86	64.18	698.51 e
Test average	34.2	48.1	3927	1341	1887	0.5519	740.71	235.87	976.57	117.82	58.11	800.64
CV, %	5.4	2.4	6.9	6.8	6.9	2.8	6.9	6.9	6.9	7.0	--	7.4
OSL	0.0288	0.1238	0.0504 <sup>†</sup>	0.0061	0.0440	0.4586	0.0011	0.0438	0.0057	0.0505 <sup>†</sup>	--	0.0025
LSD	3.1	NS	379	153	219	NS	85.29	27.39	112.64	11.38	--	98.96

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, <sup>†</sup>indicates significance at the 0.10 level, NS - not significant.

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

Assumes:

\$3.00/cwt ginning cost.

\$250/ton for seed.

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

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

Table 6. HVI fiber property results from the Blanco Irrigated Systems Variety Trial, Mark and David Appling Farm, Blanco, TX, 2013.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade
	units	32 <sup>nds</sup> inch	%	g/tex	%	grade	reflectance	yellowness	color 1 color 2
All-Tex Epic RF	3.8	35.6	80.8	31.4	10.0	2.0	76.6	8.8	3.0 1.0
All-Tex Nitro-44 B2RF	3.7	37.2	81.8	33.1	9.5	4.0	76.3	8.0	3.7 1.0
Croplan Genetics 3787B2RF	4.2	35.2	80.8	29.4	10.6	1.0	77.3	8.9	2.7 1.0
Deltapine 1044B2RF	3.9	35.3	81.2	30.7	11.1	3.0	77.6	8.5	3.0 1.0
FiberMax 1944GLB2	4.0	36.2	80.7	30.5	8.1	2.0	77.6	7.5	3.7 1.0
FiberMax 2011GT	4.3	35.0	81.2	30.1	8.5	2.7	76.4	8.0	3.3 1.0
FiberMax 2484B2F	3.8	37.5	81.2	31.5	8.1	1.7	79.1	7.8	2.7 1.0
FiberMax 2989GLB2	4.0	35.3	79.9	29.4	7.7	2.3	76.4	7.9	3.3 1.0
FiberMax 9250GL	4.6	35.0	81.1	29.8	8.5	2.3	77.6	8.4	2.7 1.0
NexGen 1511B2RF	4.3	34.5	80.8	30.3	10.8	2.7	77.9	8.8	2.7 1.0
NexGen 4012B2RF	4.4	35.2	81.5	30.1	8.4	1.7	76.0	8.7	3.0 1.0
NexGen 4111RF	4.2	35.2	82.1	31.4	9.5	1.7	76.3	8.9	3.0 1.0
PhytoGen 367WRF	4.3	34.7	80.4	29.7	10.2	1.7	77.2	9.2	2.3 1.0
PhytoGen 499WRF	4.3	34.8	81.6	30.9	11.1	2.7	75.0	8.6	3.3 1.0
Stoneville 4946GLB2	4.7	35.3	82.0	31.8	10.4	2.3	76.6	8.6	3.3 1.0
Test average	4.2	35.5	81.1	30.7	9.5	2.2	76.9	8.4	3.0 1.0
CV, %	8.6	2.3	0.9	3.2	5.0	36.7	2.0	3.8	-- --
OSL	0.0670 <sup>†</sup>	0.0019	0.0711 <sup>†</sup>	0.0039	<0.0001	0.0311	0.2997	<0.0001	-- --
LSD	0.5	1.4	1.1	1.7	0.8	1.4	NS	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, <sup>†</sup> indicates significance at the 0.10 level, NS - not significant

Table 7. Harvest results from the Blanco Dryland Systems Variety Trial, Mark and David Applying Farm, Blanco, TX, 2013.

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
\$/acre												
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
PhytoGen 499WRF	31.4	46.9	1246	392	584	0.4667	182.77	73.00	255.77	37.39	59.31	159.07 a
PhytoGen 367WRF	31.0	46.9	1274	395	598	0.4553	179.95	74.70	254.64	38.22	59.31	157.11 a
Stoneville 4946GLB2	31.7	49.5	1206	382	597	0.4737	181.10	74.65	255.75	36.19	64.18	155.38 ab
NexGen 1511B2RF	30.9	46.1	1202	372	554	0.4733	175.88	69.30	245.18	36.06	56.21	152.91 abc
FiberMax 2989GLB2	29.8	46.5	1220	364	567	0.4882	177.45	70.86	248.32	36.61	64.18	147.53 abc
FiberMax 9170B2F	29.5	45.9	1239	365	568	0.4793	175.04	71.01	246.05	37.17	61.93	146.95 abc
FiberMax 2011GT	30.8	45.3	1192	367	540	0.4437	162.80	67.52	230.32	35.76	53.93	140.63 abcd
FiberMax 2484B2F	32.1	43.8	1083	348	475	0.4878	169.66	59.33	228.99	32.49	62.89	133.61 abcde
Deltapine 1044B2RF	29.8	47.8	1066	318	509	0.4803	152.79	63.69	216.48	31.98	58.27	126.22 bcde
Croplan Genetics 3787B2RF	31.5	45.5	1068	336	486	0.4697	157.95	60.70	218.65	32.05	60.59	126.01 bcde
FiberMax 1944GLB2	29.0	47.7	1112	323	531	0.4810	155.41	66.32	221.73	33.37	64.18	124.17 cde
NexGen 4111RF	28.3	43.0	1076	304	463	0.4383	133.35	57.83	191.18	32.27	44.34	114.58 de
NexGen 4012B2RF	28.6	49.4	1010	289	499	0.4393	126.88	62.34	189.22	30.29	54.56	104.36 e
Test average	30.3	46.5	1153	350	536	0.4674	163.93	67.02	230.94	34.60	58.76	137.58
CV, %	5.0	3.2	11.2	11.0	11.3	4.7	11.0	11.3	11.1	11.2	--	15.8
OSL	0.0730 <sup>†</sup>	0.0005	0.2557	0.0397	0.1112	0.0855 <sup>†</sup>	0.0105	0.1111	0.0331	0.2555	--	0.0804 <sup>†</sup>
LSD	2.1	2.5	NS	65	NS	0.0310	30.48	NS	43.20	NS	--	30.41

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

CV - coefficient of variation.

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

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

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

Assumes:

\$3.00/cwt ginning cost.

\$250/ton for seed.

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

Table 8. HVI fiber property results from the Blanco Dryland Systems Variety Trial, Mark and David Applying Farm, Blanco, TX, 2013.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade
	units	32 <sup>nds</sup> inch	%	g/tex	%	grade	reflectance	yellowness	color 1 color 2
Stoneville 4946GLB2	3.0	33.3	78.8	29.8	9.4	2.0	73.5	9.3	3.3 1.7
PhytoGen 499WRF	3.3	32.4	78.6	28.6	10.2	3.0	73.3	9.7	3.0 2.0
NexGen 1511B2RF	3.3	32.3	77.9	28.0	10.2	2.0	74.1	9.8	3.0 2.0
FiberMax 2989GLB2	3.2	33.3	77.8	28.1	7.6	2.0	75.7	9.2	3.3 1.3
NexGen 4111RF	3.3	30.9	77.6	26.9	9.6	2.0	72.3	10.2	3.0 2.0
NexGen 4012B2RF	3.2	31.4	77.6	26.2	7.9	2.0	75.1	9.8	2.7 2.0
PhytoGen 367WRF	3.1	32.9	77.5	27.7	9.5	1.3	73.1	10.3	3.0 2.0
FiberMax 9170B2F	3.0	33.7	77.1	27.8	7.8	2.0	77.4	9.2	2.3 1.0
Deltapine 1044B2RF	3.3	32.7	77.1	28.6	10.1	2.3	74.8	9.3	3.3 1.7
FiberMax 2011GT	2.9	32.9	76.9	27.0	7.9	3.0	76.9	8.9	3.0 1.0
Croplan Genetics 3787B2RF	3.5	31.6	76.8	26.4	9.8	1.0	75.7	10.2	2.0 2.0
FiberMax 2484B2F	3.0	34.1	76.4	28.0	7.9	2.7	77.7	8.7	2.7 1.0
FiberMax 1944GLB2	3.3	33.0	75.8	25.5	7.8	1.0	77.9	9.1	2.0 1.0
Test average	3.2	32.6	77.4	27.6	8.9	2.0	75.2	9.5	2.8 1.6
CV, %	3.8	2.5	1.3	5.4	4.5	32.8	1.3	2.1	-- --
OSL	0.0002	0.0022	0.0556†	0.1130	<0.0001	0.0144	<0.0001	<0.0001	-- --
LSD	0.2	1.4	1.4	NS	0.7	1.1	1.6	0.3	-- --

CV - coefficient of variation.

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

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



# **Additional Replicated Irrigated Large Plot Demonstrations**



**Replicated Sub-Surface Drip Irrigated RACE Variety Trial,  
Ralls, TX - 2013**

**Cooperator: David Crump**

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

**Crosby County**

**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:** NexGen 1511B2RF, FiberMax 2011GT, Croplan Genetics 3787B2RF, Stoneville 4946GLB2, PhytoGen 367WRF, NexGen 4111RF, Deltapine 1044B2RF, FiberMax 2484B2F, NexGen 4012B2RF, PhytoGen 499WRF

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

**Seeding rate:** Planted 3.7 seed/row-ft to prepared, listed 40 inch rows using a John Deere 1700 vacuum planter.

**Plot size:** 8 rows by 1648' length

**Planting date:** 22-May

**Weed management:** Generic glyphosate was applied over-the-top at 22 oz/acre with AMS on 25-May, 26-June and 15-July.

**Irrigation:** Producer indicated he had a 2.5 gpm/acre irrigation capacity. This provided for 0.13 acre-inches/day. From 15-May to 15-September a total of approximately 16 inches of irrigation were applied.

Rainfall:	Based on the nearest Texas Tech University- West Texas Mesonet station at Ralls, rainfall amounts were:  <table> <tr> <td>April: 0.00"</td><td>August: 2.26"</td></tr> <tr> <td>May: 0.36"</td><td>September: 0.36"</td></tr> <tr> <td>June: 3.37"</td><td>October: 1.13"</td></tr> <tr> <td>July: 3.13"</td><td></td></tr> </table> Total rainfall: 10.61"	April: 0.00"	August: 2.26"	May: 0.36"	September: 0.36"	June: 3.37"	October: 1.13"	July: 3.13"	
April: 0.00"	August: 2.26"								
May: 0.36"	September: 0.36"								
June: 3.37"	October: 1.13"								
July: 3.13"									
Plant growth regulators:	None were applied at this location.								
Harvest aids:	1 oz/acre Prep and 22 oz/acre Paraquat with 0.25% v/v non-ionic surfactant on 11-November.								
Harvest:	Plots were harvested on 20-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 A&M AgriLife Research and Extension Center at Lubbock to determine gin turnouts.								
Fiber analysis:	Lint samples were submitted to the Texas Tech University – Fiber and Biopolymer Research Institute for HVI analysis, and USDA Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.								
Ginning cost and seed values:	Ginning cost was based on \$3.00 per cwt. of bur cotton and seed value/acre was based on \$250/ton. Ginning cost did not include check-off.								
Seed and Technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (3.7 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: <a href="http://plainscotton.org/Seed/PCGseed13.xls">http://plainscotton.org/Seed/PCGseed13.xls</a> .								

## Results and Discussion:

Agronomic data including plant population, nodes above white flower (NAWF), boll storm resistance, and final plant map data are included in Tables 1 and 2.

No significant differences were noted for some yield and economic parameters (Table 3). Lint turnout averaged 30.2% with a high of 33% and low of 27.1% for NexGen 1511B2RF and NexGen 4012B2RF, respectively. Bur cotton yields averaged 3623 lb/acre.

Lint yields averaged 1096 lb/acre and ranged from a high of 1397 lb/acre for FiberMax 2011GT to a low of 987 lb/acre for NexGen 4111RF. Differences in lint

loan values were not significant with a test average of \$0.5295/lb. After combining lint yield and loan value, lint values (\$/acre) averaged \$580.76/acre and ranged from a high of \$751.22 for FiberMax 2011GT to a low of \$513.47 for NexGen 4012B2RF. When adding lint and seed value, total value ranged from a high of \$997.78/acre to a low of \$717.42/acre for FiberMax 2011GT and Deltapine 1044B2RF, respectively. After subtracting ginning, seed costs and technology fees, net value/acre averaged \$613.97/acre. Net values ranged from a high of \$806.11/acre (FiberMax 2011GT) to a low of \$546.90/acre (Deltapine 1044B2RF), a difference of \$259.21.

Differences were observed among varieties for some fiber quality parameters at this location (Table 4). Differences in micronaire values were not significant with a test average of 3.2. Staple averaged 35.3 across all varieties with a high of 36.4 for FiberMax 2484B2F and a low of 34.6 for PhytoGen 499WRF. Uniformity averaged 81.3% across varieties. Strength ranged from a low of 30.0 g/tex for Croplan Genetics 3787B2RF to a high of 32.1 g/tex for NexGen 1511B2RF. Elongation averaged 9.8% across varieties with a high of 10.7 for Deltapine 1044B2RF and a low of 8.2 for FiberMax 2484B2F. Color grade components of Rd (reflectance) and +b (yellowness) averaged 76.7 and 8.5, respectively. Due to high “within variety” variability in leaf and color grades, values were set a 3 and 21, respectively.

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

#### **Disclaimer Clause:**

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

Table 1. Inseason plant measurement results from the Crosby County Sub-surface Drip Irrigated RACE Variety Trial, David Crump Farm, Ralls, TX, 2013.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of					Storm resistance
	plants/row ft	plants/acre	7-Aug	13-Aug	19-Aug	26-Aug	4-Sep	rating (0-9)
Croplan Genetics 3787B2RF	2.0	26,136	8.5	7.1	6.5	5.1	3.4	4.7
Deltapine 1044B2RF	2.6	34,267	7.8	6.8	6.1	5.3	2.7	5.3
FiberMax 2011GT	2.4	31,799	7.9	7.1	6.1	4.9	2.0	7.3
FiberMax 2484B2F	2.4	31,654	8.3	7.0	5.7	4.1	2.5	4.7
NexGen 1511B2RF	2.3	30,202	8.1	7.0	5.9	4.3	2.5	5.3
NexGen 4012B2RF	2.5	33,251	7.9	6.9	6.7	4.5	2.4	5.7
NexGen 4111RF	1.9	25,120	9.0	6.7	7.0	5.8	3.2	6.3
PhytoGen 367WRF	2.3	30,347	7.3	6.5	6.3	5.3	3.0	4.3
PhytoGen 499WRF	2.5	33,251	8.5	7.3	6.1	4.7	3.3	5.0
Stoneville 4946GLB2	2.4	30,782	8.3	7.6	5.4	4.2	2.5	6.3
Test average	2.3	30,681	8.2	7.0	6.2	4.8	2.8	5.5
CV, %	7.7	8.1	7.0	9.5	13.4	14.5	21.9	11.0
OSL	0.0017	0.0038	0.0898 <sup>†</sup>	0.7206	0.5216	0.1194	0.1516	0.0002
SD	0.3	4,243	0.8	NS	NS	NS	NS	1.0

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

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

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level, <sup>†</sup> indicates significance at the 0.10 level, NS - not significant

Table 2. Final plant map results from the Crosby County Sub-surface Drip Irrigated RACE Variety Trial, David Crump Farm, Ralls, TX, 2013.

Entry	Final plant map									
	plant height (inches)	node of first fruiting branch	total mainstem nodes	height to node ratio	total fruiting branches	1st position retention (%)	2nd position retention (%)	total retention (%)	1st five retention (%)	open boll (%)
Croplan Genetics 3787B2RF	28.1	6.2	16.9	1.7	11.7	66.6	54.9	61.22	91.7	31.1
Detapine 1044B2RF	23.5	6.1	15.1	1.7	10.8	66.5	25.2	47.77	93.0	40.1
FiberMax 2011GT	25.6	5.6	16.1	1.6	11.5	68.6	41.2	56.25	89.3	43.0
FiberMax 2484B2F	23.1	6.3	15.9	1.5	10.7	65.5	26.5	47.82	96.0	49.3
NexGen 1511B2RF	26.0	5.9	16.7	1.6	11.8	67.9	39.3	55.03	97.3	49.4
NexGen 4012B2RF	27.3	6.5	17.1	1.6	11.7	59.9	44.5	52.92	86.7	58.0
NexGen 4111RF	24.4	6.3	16.4	1.5	11.1	59.6	39.4	50.39	86.7	42.0
PhytoGen 367WRF	27.9	6.4	17.3	1.6	11.9	69.7	29.0	51.17	94.7	54.4
PhytoGen 499WRF	25.2	6.4	16.5	1.5	11.1	71.0	37.7	56.07	94.7	33.6
Stoneville 4946GLB2	23.4	6.0	15.9	1.5	10.9	62.8	26.9	46.73	90.7	45.4
Test average	25.4	6.2	16.4	1.6	11.3	65.8	36.4	52.54	92.1	44.6
CV, %	12.4	7.5	7.0	10.0	9.8	8.5	30.0	10.4	6.9	42.7
OSL	0.4389	0.4210	0.4524	0.6738	0.8517	0.2427	0.066 <sup>†</sup>	0.0796 <sup>†</sup>	0.4523	0.7805
LSD	NS	NS	NS	NS	NS	NS	15.5	7.7	NS	NS

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

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level, <sup>†</sup>indicates significance at the 0.10 level, NS - not significant

Table 3. Harvest results from the Crosby County Sub-surface Drip Irrigated RACE Variety Trial, David Crump Farm, Ralls, TX, 2013.

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 <sup>1</sup>	Net value
	%			lb/acre		\$/lb		\$/acre				
FiberMax 2011GT	32.5	46.0	4292	1397	1973	0.5378	751.22	246.56	997.78	128.75	62.92	806.11 a
NexGen 1511B2RF	33.0	45.2	3678	1215	1663	0.5502	668.64	207.86	876.50	110.35	65.57	700.58 ab
PhytoGen 367WRF	30.2	47.1	3538	1069	1666	0.5463	584.02	208.30	792.32	106.13	69.20	616.99 bc
Croplan Genetics 3787B2RF	31.0	44.6	3626	1122	1618	0.5222	586.02	202.28	788.30	108.78	70.69	608.83 bc
FiberMax 2484B2F	31.4	46.3	3499	1099	1619	0.5183	569.86	202.34	772.19	104.96	73.37	593.87 bc
PhytoGen 499WRF	30.2	44.4	3453	1042	1533	0.5320	554.50	191.67	746.17	103.58	69.20	573.40 c
NexGen 4111RF	28.6	47.4	3451	987	1635	0.5300	523.30	204.35	727.65	103.54	51.73	572.39 c
Stoneville 4946GLB2	28.4	45.9	3554	1010	1632	0.5333	538.74	203.97	742.71	106.63	74.88	561.20 c
NexGen 4012B2RF	27.1	47.5	3724	1008	1770	0.5092	513.47	221.30	734.77	111.71	63.66	559.40 c
Deltapine 1044B2RF	29.4	46.7	3418	1005	1596	0.5155	517.89	199.53	717.42	102.53	67.98	546.90 c
Test average	30.2	46.1	3623	1096	1671	0.5295	580.76	208.82	789.58	108.70	66.92	613.97
CV, %	5.7	2.5	9.5	9.6	9.5	4.7	9.6	9.5	9.5	9.5	--	10.6
OSL	0.0113	0.0295	0.1706	0.0038	0.1479	0.5795	0.0010	0.1476	0.0063	0.1707	--	0.0029
LSD	3.0	1.9	NS	180	NS	NS	95.25	NS	129.29	NS	--	111.65

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

CV - coefficient of variation.

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

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

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

Assumes:

\$3.00/cwt ginning cost.

\$250/ton for seed.

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

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

Table 4. HVI fiber property results from the Crosby County Sub-surface Drip Irrigated RACE Variety Trial, David Crump Farm, Ralls, TX, 2013.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf <sup>†</sup>	Rd	+b	color 1	color 2
	units	32 <sup>nds</sup> inch	%	g/tex	%	grade	reflectance	yellowness		
Croplan Genetics 3787B2RF	3.0	35.1	81.3	30.0	10.6	3.0	76.0	9.0	2.0	1.0
Deltapine 1044B2RF	3.0	35.4	80.4	31.3	10.7	3.0	76.1	8.7	2.0	1.0
FiberMax 2011GT	3.2	35.2	80.8	31.6	8.8	3.0	78.2	7.6	2.0	1.0
FiberMax 2484B2F	2.9	36.4	81.2	30.2	8.2	3.0	80.4	7.5	2.0	1.0
NexGen 1511B2RF	3.6	34.8	80.9	32.1	10.6	3.0	76.0	8.3	2.0	1.0
NexGen 4012B2RF	2.9	35.9	81.6	31.6	8.3	3.0	76.3	8.7	2.0	1.0
NexGen 4111RF	3.2	35.2	81.8	31.7	9.9	3.0	75.9	8.6	2.0	1.0
PhytoGen 367WRF	3.4	35.3	81.7	30.9	9.7	3.0	76.0	8.8	2.0	1.0
PhytoGen 499WRF	3.4	34.6	81.8	31.3	10.6	3.0	74.8	8.7	2.0	1.0
Stoneville 4946GLB2	3.3	35.2	81.8	31.9	10.3	3.0	77.5	8.6	2.0	1.0
Test average	3.2	35.3	81.3	31.3	9.8	3.0	76.7	8.5	2.0	1.0
CV, %	11.4	1.5	1.0	2.5	4.6	--	1.8	3.9	--	--
OSL	0.3474	0.0292	0.3978	0.0641 <sup>†</sup>	<0.0001	--	0.0072	0.0002	--	--
LSD	NS	0.9	NS	1.1	0.8	--	2.4	0.6	--	--

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level, <sup>†</sup> - significant at the 0.10 level, NS - not significant.

‡ - due to uncharacteristic variability within varieties, leaf grades were set at 3 and color grades set at 21.





**Replicated LEPA Irrigated RACE Variety Trial,  
Lamesa, TX - 2013**

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

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

**Dawson County**

**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:** Deltapine 1044B2RF, FiberMax 2989GLB2, FiberMax 2011GT, NexGen 1511B2RF, NexGen 3348B2RF, PhytoGen 499WRF, PhytoGen 367WRF and Stoneville 4946GLB2

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

**Seeding rate:** 4.0 seed/row-ft in 40 inch row spacing with John Deere MaxEmerge XP Vacuum planter, into terminated rye cover.

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

**Planting date:** 15-May

**Weed management:** 32 oz/acre of Roundup PowerMax and 3 pt/acre of Prowl H2O were applied preplant on 28-March and 24-April, respectively. In-season Roundup PowerMax applications were on 12-June and 25-July at 28oz/acre. Cultivation with sweeps and furrow diking was performed on 14-June.

**Irrigation:** 4.75" inches of irrigation were applied preplant, with 8.1" applied during the growing season for a total of 12.85" of irrigation applied.

Rainfall:	Based on the nearest Texas Tech University – West Texas Mesonet station at Lamesa, rainfall amounts were:  <table> <tr> <td>April: 0.00"</td><td>August: 1.02"</td></tr> <tr> <td>May: 0.43"</td><td>September: 3.56"</td></tr> <tr> <td>June: 2.39"</td><td>October: 2.02"</td></tr> <tr> <td>July: 3.15"</td><td></td></tr> </table> Total rainfall: 12.57"	April: 0.00"	August: 1.02"	May: 0.43"	September: 3.56"	June: 2.39"	October: 2.02"	July: 3.15"	
April: 0.00"	August: 1.02"								
May: 0.43"	September: 3.56"								
June: 2.39"	October: 2.02"								
July: 3.15"									
Fertilizer management:	116 lbs of 10-34-0 was applied on 28-March. An additional 90 lbs N/acre was applied via fertigation of 32-0-0 in 30 lb increments.								
Plant growth regulators:	None were applied at this location.								
Harvest aids:	Harvest aids included 1 qt/acre Bollbuster + 1oz/acre Sharpen with 1% v/v COC on 1-October followed by 3 oz/acre ET + 1% v/v COC on 11-October.								
Harvest:	Plots were harvested on 24-October using a commercial John Deere 7445 with field cleaner. Harvested material was transferred into a weigh wagon with integral electronic scales to determine individual plot weights. Plot yields were adjusted to lb/acre.								
Gin turnout:	Grab samples were taken by plot and ginned at the Texas A&M AgriLife Research and Extension Center at Lubbock to determine gin turnouts.								
Fiber analysis:	Lint samples were submitted to the Texas Tech University – Fiber and Biopolymer Research Institute for HVI analysis, and USDA Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.								
Ginning cost and seed values:	Ginning cost were based on \$3.00 per cwt. of burr cotton and seed value/acre was based on \$250/ton. Ginning cost did not include check-off.								
Seed and Technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (4.0 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: <a href="http://plainscotton.org/Seed/PCGseed13.xls">http://plainscotton.org/Seed/PCGseed13.xls</a> .								

## **Results and Discussion:**

Agronomic data including plant population, nodes above white flower (NAWF) and final plant map data are included in Tables 1 and 2.

Significant differences were noted for most yield and economic parameters (Table 3). Stripper harvested lint turnout ranged from a low of 32.0% for Deltapine 1044B2RF to a high of 39.5% for NexGen 1511B2RF. Seed turnouts averaged 51.1% and no significant differences were observed among varieties. Lint yields ranged from a low of 530 lb/acre (NexGen 3348B2RF) to a high of 820 lb/acre (Stoneville 4946GLB2). Lint loan values average \$0.5009/lb across varieties. Lint value averaged \$330.99/acre and ranged from a high of \$413.50/acre for Stoneville 4946GLB2 to a low of \$258.61/acre for NexGen 3348B2RF. When subtracting ginning and seed and technology costs, the net value/acre averaged \$324.98. Differences among varieties were observed at the 0.10 significance level and values ranged from a high of \$413.93/acre to a low of \$254.55/acre for Stoneville 4946GLB2 and NexGen 3348B2RF, respectively.

No significant differences were observed for fiber quality parameters at this location (Table 4). Micronaire values averaged 4.1 and staple averaged 33.0 across all varieties. Uniformity values averaged 79.1%. Strength and elongation values averaged 29.8 g/tex and 8.7%, respectively. Leaf grades were mostly 2 and 3 at this location. Finally, Rd or reflectance (73.5 avg), and +b or yellowness (9.1 avg) values resulted in color grades of mostly 31.

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

## **Acknowledgments:**

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

## **Disclaimer Clause:**

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

Table 1. Inseason plant measurement results from the Dawson County Irrigated RACE Variety Trial, AGCARES - Texas A&M AgriLife Research Farm, Lamesa, TX, 2013.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of		
	plants/row ft	plants/acre	30-Jul	8-Aug	19-Aug
Deltapine 1044B2RF	3.1	40,075	7.0	5.5	2.7
FiberMax 2011GT	2.9	38,333	6.6	3.8	2.1
FiberMax 2989GLB2	2.9	38,478	6.7	5.5	2.4
NexGen 1511B2RF	2.9	38,188	6.1	4.4	2.1
NexGen 3348B2RF	3.0	38,623	6.2	4.0	2.6
PhytoGen 367WRF	3.0	38,623	7.0	4.9	2.2
PhytoGen 499WRF	3.1	41,092	6.9	4.5	2.4
Stoneville 4946GLB2	3.0	39,640	6.3	4.0	2.2
Test average	3.0	39,131	6.6	4.6	2.3
CV, %	12.3	12.3	17.1	18.7	23.9
OSL	0.9874	0.9933	0.9427	0.1488	0.7985
LSD	NS	NS	NS	NS	NS

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

CV - coefficient of variation.

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

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

Table 2. Final plant map results from the Dawson County Irrigated RACE, AGCARES - Texas A&M AgrLife Research Farm, Lamesa, TX, 2013.

Entry	Final plant map (19-August)									
	plant height (inches)	node of first fruiting branch	total mainstem nodes	height to node ratio	total fruiting branches	1st position retention (%)	2nd position retention (%)	total retention (%)	1st five retention (%)	open boll (%)
Deltapine 1044B2RF	20.7	6.8	17.3	1.2	11.5	55.1	33.7	46.40	77.3	27.1
FiberMax 2011GT	19.2	6.6	16.2	1.2	10.6	48.7	35.1	42.77	72.0	34.8
FiberMax 2989GLB2	19.4	7.4	17.8	1.1	11.4	43.7	41.4	42.57	64.0	21.6
NexGen 1511B2RF	18.8	6.6	16.0	1.2	10.4	42.2	31.7	37.50	64.0	35.9
NexGen 3348B2RF	21.0	6.6	16.7	1.3	11.1	46.6	39.2	43.33	68.0	28.6
PhytoGen 367WRF	21.5	6.5	16.9	1.3	11.4	49.5	32.9	42.27	70.7	41.5
PhytoGen 499WRF	21.2	7.2	17.1	1.2	10.9	44.1	45.3	44.53	68.0	27.9
Stoneville 4946GLB2	19.0	6.3	16.3	1.2	11.0	49.0	56.3	52.17	80.0	16.0
Test average	20.1	6.8	16.8	1.2	11.0	47.4	39.4	43.94	70.5	29.2
CV, %	9.5	6.5	7.2	5.7	10.7	14.2	29.3	17.6	13.0	64.4
OSL	0.4761	0.1248	0.6330	0.0484	0.9271	0.3933	0.2347	0.5529	0.3583	0.7714
LSD	NS	NS	NS	0.1	NS	NS	NS	NS	NS	NS

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

CV - coefficient of variation.

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

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

Table 3. Harvest results from the Dawson County Irrigated RACE Variety Trial, AGCARES - Texas A&M AgriLife Research Farm, Lamesa, TX, 2013.

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 <sup>1</sup>	Net value
	%			lb/acre		\$/lb		\$/acre				
Stoneville 4946GLB2	35.7	50.2	2297	820	1154	0.5040	413.50	144.22	557.72	68.91	74.88	413.93 a
NexGen 1511B2RF	39.5	51.6	1919	759	991	0.4973	377.27	123.91	501.18	57.58	65.57	378.02 ab
PhytoGen 367WRF	36.4	51.6	1884	685	971	0.4952	339.13	121.43	460.56	56.51	69.20	334.86 bc
FiberMax 2011GT	38.4	50.9	1673	642	852	0.5157	331.28	106.45	437.72	50.19	62.92	324.61 bcd
Deltapine 1044B2RF	32.0	49.4	1956	626	966	0.5062	317.08	120.77	437.85	58.69	67.98	311.18 bcd
PhytoGen 499WRF	37.2	50.8	1741	648	885	0.4930	319.30	110.59	429.90	52.24	69.20	308.46 bcd
FiberMax 2989GLB2	34.8	51.7	1654	575	856	0.5077	291.74	106.96	398.70	49.61	74.88	274.21 cd
NexGen 3348B2RF	35.4	52.4	1497	530	785	0.4880	258.61	98.10	356.71	44.90	57.27	254.55 d
Test average	36.2	51.1	1828	661	932	0.5009	330.99	116.55	447.54	54.83	67.74	324.98
CV, %	3.7	4.8	13.6	13.9	13.6	3.6	14.0	13.6	13.9	13.6	--	16.8
OSL	0.0004	0.8477	0.0430	0.0321	0.0748 <sup>†</sup>	0.6243	0.0292	0.0747 <sup>†</sup>	0.0413	0.0431	--	0.0535 <sup>†</sup>
LSD	2.4	NS	437	161	183	NS	80.89	22.85	108.69	13.10	--	78.51

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

CV - coefficient of variation.

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

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

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

Assumes:

\$3.00/cwt ginning cost.

\$250/ton for seed.

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

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

Table 4. HVI fiber property results from the Dawson County Irrigated RACE Variety Trial, AGCARES - Texas A&M AgriLife Research Farm, Lamesa, TX, 2013.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	color 1	color 2
	units	32 <sup>nds</sup> inch	%	g/tex	%	grade	reflectance	yellowness		
Stoneville 4946GLB2	4.3	32.6	78.6	29.9	8.6	2.7	73.5	9.4	3.7	1.3
NexGen 1511B2RF	4.3	33.4	79.0	30.3	9.6	2.3	72.4	9.2	3.7	2.0
PhytoGen 367WRF	4.2	32.7	78.7	29.5	9.5	2.0	73.5	9.3	3.3	2.0
FiberMax 2011GT	4.3	33.4	79.0	29.3	7.3	2.0	74.9	8.7	3.3	1.0
Deltapine 1044B2RF	4.1	33.2	79.1	29.7	9.5	2.3	73.7	9.0	3.7	1.3
PhytoGen 499WRF	4.0	32.9	79.8	30.8	8.8	2.3	72.7	9.2	3.7	1.7
FiberMax 2989GLB2	4.1	33.3	79.3	29.7	8.0	3.3	74.3	9.1	3.3	1.3
NexGen 3348B2RF	4.0	32.7	78.8	29.3	8.3	2.7	72.8	9.1	4.0	1.7
Test average	4.1	33.0	79.1	29.8	8.7	2.5	73.5	9.1	3.6	1.5
CV, %	6.9	2.7	1.5	3.4	12.1	23.5	1.6	3.2	--	--
OSL	0.8034	0.9065	0.9386	0.6082	0.1665	0.1894	0.2190	0.2193	--	--
LSD	NS	NS	NS	NS	NS	NS	NS	NS	--	--

CV - coefficient of variation.

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

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



**Replicated LESA Irrigated RACE Variety Trial,  
Halfway, TX - 2013**

**Cooperator: Texas A&M AgriLife Research Center - Halfway**

**Mark Kelley, Kristie Keys, Hayden Alexander, Blayne Reed, and Gary Cross  
Extension Agronomist – Cotton, Extension Assistants – Cotton  
EA-IPM Hale/Swisher Counties, and CEA-ANR**

**Hale County**

**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:	NexGen 1511B2RF, NexGen 4111RF, FiberMax 2011GT, FiberMax 2484B2F, FM 2989GLB2, Stoneville 4946GLB2, Croplan Genetics 3787B2RF, Deltapine 121B2RF, PhytoGen 339WRF, PhytoGen 367WRF
Experimental design:	Randomized complete block with three (3) replications.
Seeding rate:	3.5 seed/row-ft planted into prepared, listed, and rolled 40 inch row spacings. (John Deere 1700 Vacuum planter)
Plot size:	4 rows by variable length (837 to 1340 feet)
Planting date:	15-May
Weed management:	Trifluralin was applied pre-plant at 1 qt/ac and incorporated with a field cultivator on 14-March. Roundup PowerMax was applied over-the-top at 32 oz/acre with AMS on 26-June and 25-July.
Irrigation:	3.02" of irrigation were applied preplant with 9.50" of LESA irrigation during the growing season for a total of 12.52" of irrigation.



Rainfall:	Based on the nearest Texas Tech University- West Texas Mesonet station at Plainview, rainfall amounts were:								
	<table> <tr> <td>April: 0.00"</td><td>August: 1.68"</td></tr> <tr> <td>May: 0.06"</td><td>September: 1.08"</td></tr> <tr> <td>June: 1.58"</td><td>October: 1.26"</td></tr> <tr> <td>July: 6.56"</td><td></td></tr> </table>	April: 0.00"	August: 1.68"	May: 0.06"	September: 1.08"	June: 1.58"	October: 1.26"	July: 6.56"	
April: 0.00"	August: 1.68"								
May: 0.06"	September: 1.08"								
June: 1.58"	October: 1.26"								
July: 6.56"									
	Total rainfall: 12.22"								
Insecticides:	Carbine was applied at a rate of 2.8 lb/acre on 20-August. This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program								
Fertilizer management:	Soil test results prior to planting accounted for 94 lbs N available in the soil. The producer applied a total of 50 more lbs N for a total of 144 lbs N/acre.								
Plant growth regulators:	Applied 8 oz/acre of Mepiquat Chloride on 25-July.								
Harvest aids:	Harvest aids included an application of 2 oz/acre ET with 24 oz/ac Finish on 17-October and a 30-October application of 24 oz/ac Paraquat with 0.5% v/v NIS.								
Harvest:	Plots were harvested on 14-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 A&M AgriLife Research and Extension Center at Lubbock to determine gin turnouts.								
Fiber analysis:	Lint samples were submitted to the Texas Tech University – Fiber and Biopolymer Research Institute for HVI analysis, and USDA Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.								
Ginning cost and seed values:	Ginning cost were based on \$3.00 per cwt. of burr cotton and seed value/acre was based on \$250/ton. Ginning cost did not include check-off.								
Seed and Technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (3.5 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: <a href="http://plainscotton.org/Seed/PCGseed13.xls">http://plainscotton.org/Seed/PCGseed13.xls</a> .								

## **Results and Discussion:**

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

Significant differences were noted for most yield and economic parameters (Table 2). Lint turnout averaged 34.2% across all varieties; however, differences were not significant. Bur cotton yields averaged 3580 lb/acre across varieties. Lint yields varied from a low of 1090 lb/acre (FiberMax 2989GLB2) to a high of 1339 lb/acre (PhytoGen 367WRF). Lint loan values ranged from a low of \$0.4613/lb to a high of \$0.5515/lb for FiberMax 2011GT and Croplan Genetics 3878B2RF, respectively. When adding lint and seed value, total value ranged from a high of \$927.15/acre for PhytoGen 367WRF to a low of \$763.33/acre for FiberMax 2989GLB2. After subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of \$746.37/acre (PhytoGen 367WRF) to a low of \$590.68/acre (FiberMax 2989GLB2), a difference of \$155.69.

Significant differences were observed among varieties for all fiber quality parameters at this location (Table 3). Micronaire values ranged from a low of 2.9 for FiberMax 2011GT and FiberMax 2484B2F to a high of 3.8 for Croplan Genetics 3787B2RF. Staple averaged 36.1 across all varieties with a high of 37.9 for FiberMax 2484B2F and a low of 35.2 for Croplan Genetics 3787B2RF. Uniformity ranged from a high of 81.4% for NexGen 1511B2RF to a low of 78.7% for FiberMax 2989GLB2 with a test average of 80.3%. Strength ranged from a low of 28.1 g/tex for Croplan Genetics 3787B2RF to a high of 31.5 g/tex Stoneville 4946GLB2. Elongation averaged 9.5% across varieties and leaf grades were mostly 3 and 4. Color grade components of Rd (reflectance) and +b (yellowness) averaged 77.2 and 7.6, respectively and resulted in color grades of mostly 31 and 41.

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

## **Acknowledgments:**

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

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Table 1. Inseason plant measurement results from the Hale County LESA Irrigated RACE Variety Trial, Texas A&M AgriLife Research Farm, Halfway, TX, 2013.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of			
	plants/row ft	plants/acre	29-Jul	7-Aug	12-Aug	19-Aug
Croplan Genetics 3787B2RF	2.7	35,284	8.9	6.3	4.4	4.2
Deltapine 1212B2RF	3.3	43,705	8.3	5.3	4.1	3.7
FiberMax 2011GT	3.2	41,382	8.9	5.3	5.3	3.5
FiberMax 2484B2F	3.4	44,286	8.1	5.3	3.9	3.8
FiberMax 2989GLB2	3.3	43,705	8.0	5.0	4.5	3.6
NexGen 1511B2RF	3.3	43,270	8.6	5.9	4.6	3.7
NexGen 4111RF	3.0	39,640	8.3	5.7	3.9	3.7
PhytoGen 339WRF	3.2	42,253	8.8	5.8	5.0	3.5
PhytoGen 367WRF	3.3	43,560	9.0	5.4	4.6	3.7
Stoneville 4946GLB2	3.2	42,253	8.1	5.5	4.7	3.3
Test average	3.2	41,934	8.5	5.6	4.5	3.7
CV, %	8.9	8.8	5.9	8.1	14.6	11.0
OSL	0.1722	0.1842	0.1965	0.0726 <sup>†</sup>	0.2271	0.4485
LSD	NS	NS	NS	0.6	NS	NS

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

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

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

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level, <sup>†</sup>indicates significance at the 0.10 level, NS - not significant

Table 2. Harvest results from the Hale County LESA Irrigated RACE Variety Trial, Texas A&M AgrLife Research Farm, Halfway, TX, 2013.

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 <sup>1</sup>	Net value
	%			lb/acre		\$/lb		\$/acre				
PhytoGen 367WRF	34.7	51.1	3861	1339	1971	0.5085	680.79	246.37	927.15	115.82	64.96	746.37 a
PhytoGen 339WRF	33.9	50.2	3796	1286	1906	0.5103	656.49	238.27	894.76	113.88	64.96	715.92 ab
Croplan Genetics 3787B2RF	37.5	49.1	3250	1220	1597	0.5515	672.86	199.59	872.45	97.50	66.36	708.59 ab
Stoneville 4946GLB2	34.0	50.1	3726	1268	1867	0.5038	639.04	233.34	872.38	111.77	70.30	690.32 ab
Deltapine 1212B2RF	32.9	48.9	3876	1275	1895	0.5000	637.50	236.87	874.37	116.28	67.78	690.32 ab
NexGen 1511B2RF	34.0	45.6	3474	1180	1583	0.5355	631.90	197.91	829.81	104.23	61.56	664.03 bd
FiberMax 2484B2F	35.2	49.5	3376	1189	1671	0.5113	608.22	208.92	817.14	101.29	68.87	646.97 de
NexGen 4111RF	33.4	49.7	3414	1140	1698	0.5105	582.18	212.31	794.49	102.43	48.56	643.50 de
FiberMax 2011GT	34.6	48.2	3619	1252	1743	0.4613	577.39	217.83	795.23	108.57	59.07	627.59 de
FiberMax 2989GLB2	31.9	50.5	3412	1090	1724	0.5028	547.85	215.48	763.33	102.35	70.30	590.68 e
Test average	34.2	49.3	3580	1224	1766	0.5096	623.42	220.69	844.11	107.41	64.27	672.43
CV, %	6.4	4.1	4.7	4.6	4.6	4.7	4.7	4.6	4.6	4.7	--	5.1
OSL	0.2516	0.1337	0.0011	0.0013	<0.0001	0.0260	0.0003	<0.0001	0.0013	0.0011	--	0.0010
LSD	NS	NS	286	97	141	0.0408	49.74	17.58	67.19	8.57	--	58.66

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

CV - coefficient of variation.

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

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

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

Assumes:

\$3.00/cwt ginning cost.

\$250/ton for seed.

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

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

Table 3. HVI fiber property results from the Hale County LESA Irrigated RACE Variety Trial, Texas A&M AgriLife Research Farm, Halfway, TX, 2013.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	color 1	color 2
	units	32 <sup>nds</sup> inch	%	g/tex	%	grade	reflectance	yellowness		
Croplan Genetics 3787B2RF	3.8	35.2	80.6	28.1	10.3	2.3	78.3	8.4	3.0	1.0
Deltapine 1212B2RF	3.3	36.5	81.0	31.1	10.6	4.7	75.2	7.7	4.0	1.0
FiberMax 2011GT	2.9	35.4	80.3	30.2	8.5	4.3	76.9	7.1	4.0	1.0
FiberMax 2484B2F	2.9	37.9	80.0	30.8	8.2	2.7	80.1	6.8	3.0	1.0
FiberMax 2989GLB2	3.0	35.8	78.7	29.6	8.5	3.0	76.5	7.3	4.0	1.0
NexGen 1511B2RF	3.6	35.8	81.4	30.6	10.5	4.0	76.3	7.6	4.0	1.0
NexGen 4111RF	3.2	35.7	80.5	30.8	9.3	4.3	76.7	8.1	3.3	1.0
PhytoGen 339WRF	3.2	37.1	80.7	31.3	9.9	4.0	77.7	7.5	3.3	1.0
PhytoGen 367WRF	3.2	35.5	79.8	29.7	10.0	3.7	76.2	8.0	3.3	1.0
Stoneville 4946GLB2	3.1	35.6	80.4	31.5	9.3	4.0	77.9	7.6	3.3	1.0
Test average	3.2	36.1	80.3	30.4	9.5	3.7	77.2	7.6	3.5	1.0
CV, %	3.3	1.5	1.0	2.9	6.8	27.9	1.7	3.5	--	--
OSL	<0.0001	0.0001	0.0496	0.0069	0.0012	0.1620	0.0140	<0.0001	--	--
LSD	0.2	0.9	1.4	1.5	1.1	NS	2.2	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



**Replicated LESA Irrigated RACE Variety Trial,  
Memphis, TX - 2013**

**Cooperator: Matt Montgomery**

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

**Hall County**

**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 Rolling Plains.

**Materials and Methods:**

Varieties:	NexGen 1511B2RF, FiberMax 1944GLB2, Stoneville 4946GLB2, NexGen 2051B2RF, FiberMax 2484B2F, Croplan Genetics 3787B2RF, Croplan Genetics 3156B2RF, Deltapine 1219B2RF, PhytoGen 339WRF, PhytoGen 367WRF
Experimental design:	Randomized complete block with three (3) replications.
Seeding rate:	Planted 3.5 seed/row-ft in 40 inch row spacings into a terminated rye cover crop on flat ground.
Plot size:	9 rows by variable length
Planting date:	16-May
Weed management:	Roundup PowerMax was applied at a rate of 26 oz/acre, 3 times during the season.
Irrigation:	A total of 14" of LESA irrigated was applied during the growing season.

Rainfall:	Based on the nearest Texas Tech University- West Texas Mesonet station at Memphis, rainfall amounts were:								
	<table> <tr> <td>April: 0.10"</td><td>August: 1.81"</td></tr> <tr> <td>May: 1.36"</td><td>September: 3.60"</td></tr> <tr> <td>June: 1.60"</td><td>October: 0.94"</td></tr> <tr> <td>July: 2.81"</td><td></td></tr> </table>	April: 0.10"	August: 1.81"	May: 1.36"	September: 3.60"	June: 1.60"	October: 0.94"	July: 2.81"	
April: 0.10"	August: 1.81"								
May: 1.36"	September: 3.60"								
June: 1.60"	October: 0.94"								
July: 2.81"									
	Total rainfall: 12.22"								
Fertilizer management:	50 lbs of N, P, and K were applied pre-plant. Black label was applied in furrow at the recommended rate and 100 lbs of N applied through the pivot using 32-0-0 during the growing season.								
Harvest aids:	Crop was conditioned by freeze event.								
Harvest:	Plots were harvested on 20-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 A&M AgriLife Research and Extension Center at Lubbock to determine gin turnouts.								
Fiber analysis:	Lint samples were submitted to the Texas Tech University – Fiber and Biopolymer Research Institute for HVI analysis, and USDA Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.								
Ginning cost and seed values:	Ginning cost were based on \$3.00 per cwt. of burr cotton and seed value/acre was based on \$250/ton. Ginning cost did not include check-off.								
Seed and Technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (3.5 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: <a href="http://plainscotton.org/Seed/PCGseed13.xls">http://plainscotton.org/Seed/PCGseed13.xls</a> .								

## **Results and Discussion:**

Agronomic data including plant population, nodes above white flower (NAWF), boll storm resistance, and final plant map data are included in Tables 1 and 2.

Significant differences were noted for most yield and economic parameters (Table 3). Lint turnout averaged 33.9% and ranged from a high of 38.2% for Stoneville 4946GLB2 to a low of 30.1% for NexGen 2051B2RF. Bur cotton yields averaged 3548 lb/acre across all varieties. Lint yields ranged from a low of 1003 lb/acre (NexGen 2051B2RF) to a high of 1376 lb/acre (Croplan Genetics 3787B2RF). Lint loan values ranged from a low of \$0.5162/lb to a high of \$0.5565/lb for Croplan Genetics 3156B2RF and PhytoGen 339WRF, respectively. When adding lint and seed value, total value ranged from a high of \$984.50/acre for Croplan genetics 3787B2RF to a low of \$735.61/acre for NexGen 2051B2RF. After subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of \$796.64/acre (Croplan Genetics 3787B2RF) to a low of \$582.00/acre (NexGen 2051B2RF), a difference of \$214.64.

Significant differences were observed among varieties for some fiber quality parameters at this location (Table 4). Micronaire values ranged from a low of 3.6 for Croplan Genetics 3156B2RF to a high of 4.5 for FiberMax 1944GLB2. Staple averaged 34.7 across all varieties with a high of 36.4 for Fibermax 2484B2F and a low of 33.9 for Croplan Genetics 3156B2RF. Uniformity ranged from a high of 80.7% for Croplan Genetics 3787B2RF to a low of 77.7% for Deltapine 1219B2RF with a test average of 79.3%. Strength averaged 28.7 g/tex across varieties and no significant differences were observed. Elongation averaged 8.3% across varieties and leaf grades were mostly 2 and 3. Color grade components of Rd (reflectance) and +b (yellowness) averaged 77.0 and 8.0, respectively. This resulted in color grades of mostly 31 and 41.

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

## **Acknowledgments:**

Appreciation is expressed to Matt Montgomery for the use of his land and equipment for this project. Further assistance with this project was provided by Dr. Jane Dever and Ms. Valerie Morgan - Texas A&M AgriLife Research and Extension Center, Lubbock, and Dr. Eric Hequet - Associate Director, Fiber and Biopolymer Research Institute, Texas Tech University. Furthermore, we greatly appreciate the Fiber Initiative for funding of HVI testing.

## **Disclaimer Clause:**

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



Table 1. Inseason plant measurement results from the Hall County Irrigated RACE Variety Trial, Matt Montgomery Farm, Memphis, TX, 2013.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of				Storm resistance
	plants/row ft	plants/acre	26-Jul	31-Jul	7-Aug	26-Aug	
Croplan Genetics 3156B2RF	2.9	37,752	9.5	8.7	7.1	4.9	7.0
Croplan Genetics 3787B2RF	2.9	37,316	9.0	8.5	6.7	3.1	7.0
Deltapine 1219B2RF	2.9	37,752	9.8	9.2	7.3	4.1	5.0
FiberMax 1944GLB2	2.6	34,558	9.4	9.1	7.1	4.3	4.7
FiberMax 2484B2F	3.0	39,494	8.5	7.5	6.6	4.3	5.7
NexGen 1511B2RF	2.8	36,590	9.0	9.1	6.4	3.4	6.0
NexGen 2051B2RF	2.7	35,284	8.6	9.1	6.6	3.9	5.0
PhytoGen 339WRF	2.8	36,300	8.9	9.4	7.1	3.9	3.3
PhytoGen 367WRF	2.9	37,752	9.0	8.8	6.9	3.7	4.0
Stoneville 4946GLB2	2.7	35,574	9.1	8.4	6.5	3.9	7.0
Test average	2.8	36,837	9.1	8.8	6.8	3.9	5.5
CV, %	6.8	6.6	6.4	7.8	7.8	17.7	5.3
OSL	0.3820	0.4074	0.2643	0.1301	0.4378	0.2330	<0.0001
LSD	NS	NS	NS	NS	NS	NS	0.5

For NAWF, numbers represent an average of 5 plants per variety per rep (15 plants per variety)  
For Storm resistance, ratings based on a scale of 0-9 where 9 represents maximum storm resistance.  
CV - coefficient of variation.  
OSL - observed significance level, or probability of a greater F value.  
LSD - least significant difference at the 0.05 level, NS - not significant

Table 2. Final plant map results from the Hall County Irrigated RACE Variety Trial, Matt Montgomery Farm, Memphis, TX, 2013.

Entry	Final plant map									
	plant height (inches)	node of first fruiting branch	total mainstem nodes	height to node ratio	total fruiting branches	1st position retention (%)	2nd position retention (%)	total retention (%)	1st five retention (%)	open boll (%)
Croplan Genetics 3156B2RF	28.5	6.3	21.1	1.3	11.1	51.5	20.6	37.13	70.7	29.8
Croplan Genetics 3787B2RF	29.4	7.7	20.7	1.4	11.2	56.3	27.6	42.98	78.7	23.4
Deltapine 1219B2RF	28.9	6.4	21.9	1.3	13.3	59.4	25.0	43.33	84.0	25.4
FiberMax 1944GLB2	28.1	6.6	20.9	1.3	12.5	54.4	30.8	43.52	73.3	30.6
FiberMax 2484B2F	31.6	7.9	22.0	1.4	11.1	52.6	20.7	37.81	70.7	27.0
NexGen 1511B2RF	27.3	6.7	21.0	1.3	12.5	58.3	25.6	43.09	81.3	34.1
NexGen 2051B2RF	24.3	6.5	19.4	1.3	10.6	54.1	23.4	40.03	77.3	37.0
PhytoGen 339WRF	31.5	7.2	22.6	1.4	12.8	57.4	22.4	41.05	72.0	34.0
PhytoGen 367WRF	28.1	6.3	20.9	1.3	12.9	56.0	28.9	43.27	74.7	40.7
Stoneville 4946GLB2	30.1	6.3	20.1	1.5	10.9	49.0	26.2	38.44	64.0	23.1
Test average	28.8	6.8	21.1	1.4	11.9	54.9	25.1	41.06	74.7	30.5
CV, %	8.6	8.7	5.3	7.5	14.1	9.0	30.1	10.2	9.4	26.7
OSL	0.0697 <sup>†</sup>	0.0190	0.0836 <sup>†</sup>	0.1616	0.4478	0.3235	0.7720	0.4101	0.0860 <sup>†</sup>	0.1895
LSD	3.5	1.0	1.6	NS	NS	NS	NS	NS	9.9	NS
For Final plant map, numbers represent and average of 6 plants per variety per rep (18 plants per variety)										

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

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level, <sup>†</sup>indicates significance at the 0.10 level, NS - not significant

Table 3. Harvest results from the Hall County Irrigated RACE Variety Trial, Matt Montgomery Farm, Memphis, TX, 2013.

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 <sup>1</sup>	Net value
	%			lb/acre		\$/lb		\$/acre				
Croplan Genetics 3787B2RF	34.0	47.5	4050	1376	1924	0.5407	744.04	240.46	984.50	121.50	66.36	796.64 a
Stoneville 4946GLB2	38.2	49.3	3534	1350	1742	0.5558	750.10	217.70	967.80	106.02	70.30	791.48 a
FiberMax 1944GLB2	33.9	47.3	3654	1240	1728	0.5442	674.72	216.03	890.74	109.63	70.30	710.82 b
NexGen 1511B2RF	34.5	47.4	3611	1247	1711	0.5325	663.97	213.83	877.80	108.33	61.56	707.91 b
PhytoGen 367WRF	33.4	49.1	3527	1178	1731	0.5418	638.34	216.42	854.76	105.80	64.96	684.00 b
Deltapine 1219B2RF	34.9	47.6	3442	1203	1638	0.5347	643.02	204.77	847.80	103.26	63.82	680.71 b
PhytoGen 339WRF	33.2	48.5	3447	1144	1670	0.5565	636.85	208.81	845.66	103.42	64.96	677.28 b
FiberMax 2484B2F	33.1	45.4	3527	1168	1602	0.5523	645.17	200.25	845.42	105.80	68.87	670.74 b
Croplan Genetics 3156B2RF	33.4	45.2	3364	1122	1521	0.5162	579.03	190.08	769.11	100.91	64.36	603.84 c
NexGen 2051B2RF	30.1	50.8	3328	1003	1689	0.5228	524.46	211.14	735.61	99.85	53.76	582.00 c
Test average	33.9	47.8	3548	1203	1696	0.5398	649.97	211.95	861.92	106.45	64.92	690.54
CV, %	6.0	3.6	4.6	4.6	4.6	3.7	4.6	4.6	4.6	4.6	--	5.0
OSL	0.0280	0.0265	0.0029	<0.0001	0.0011	0.2834	<0.0001	0.0011	<0.0001	0.0029	--	<0.0001
LSD	3.5	3.0	282	96	134	NS	51.47	16.77	68.22	8.45	--	59.78

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.

\$250/ton for seed.

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

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

Table 4. HVI fiber property results from the Hall County Irrigated RACE Variety Trial, Matt Montgomery Farm, Memphis, TX, 2013.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 <sup>nds</sup> inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
Croplan Genetics 3156B2RF	3.6	33.9	78.6	27.2	7.7	3.0	76.5	7.7	4.0	1.0
Croplan Genetics 3787B2RF	4.1	34.2	80.7	30.4	8.9	2.7	76.1	8.4	3.3	1.0
Deltapine 1219B2RF	4.1	34.0	77.7	29.5	7.6	1.7	78.5	8.3	2.7	1.0
FiberMax 1944GLB2	4.5	34.7	79.7	28.8	7.5	2.3	77.7	8.1	3.0	1.0
FiberMax 2484B2F	3.8	36.4	78.9	29.1	7.0	2.7	78.2	7.3	3.3	1.0
NexGen 1511B2RF	4.2	34.8	79.3	29.3	8.9	2.7	76.0	8.2	3.3	1.0
NexGen 2051B2RF	4.0	34.7	78.8	27.4	7.8	3.7	75.8	7.8	4.0	1.0
PhytoGen 339WRF	4.0	35.5	80.1	29.2	9.1	1.7	76.9	7.8	3.3	1.0
PhytoGen 367WRF	4.0	34.3	79.5	28.7	8.9	1.7	76.4	8.3	3.0	1.0
Stoneville 4946GLB2	3.9	34.9	79.9	27.5	9.5	2.0	77.5	8.5	2.7	1.0
Test average	4.0	34.7	79.3	28.7	8.3	2.4	77.0	8.0	3.3	1.0
CV, %	3.7	3.4	1.1	4.9	8.2	37.7	2.0	5.4	--	--
OSL	0.0002	0.3639	0.0229	0.1809	0.0021	0.1860	0.3766	0.0705 <sup>†</sup>	--	--
LSD	0.3	NS	1.5	NS	1.2	NS	NS	0.6	--	--

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level, <sup>†</sup>indicates significance at the 0.10 level, NS - not significant



**Replicated Sub-Surface Drip Irrigated RACE Variety Trial,  
Ropesville, TX - 2013**

**Cooperator: Mike Henson**

**Mark Kelley, Kristie Keys, Hayden Alexander, Kerry Siders, and Wes Utle  
Extension Agronomist – Cotton, Extension Assistants – Cotton,  
EA-IPM Hockley/Cochran Counties, and EA-ANR.**

**Hockley County**

**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:** Croplan Genetics 3787B2RF, Deltapine 1219B2RF, FiberMax 2011GT, FiberMax 2484B2F, NexGen 1511B2RF, NexGen 3348B2RF, PhytoGen 367WRF, PhytoGen 499WRF, and Stoneville 4946GLB2

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

**Seeding rate:** 3.5 seed/row-ft in 40 inch row spacings. (John Deere XP Vacuum planter) planted into prepared, listed rows.

**Plot size:** 8 rows by 1290 ft.

**Planting date:** 21-May

**Weed management:** Trifluralin was applied preplant incorporated at 2 pt/ac across all varieties on 31-January. 24 oz/ac Drex and 1.7 oz/ac Staple were applied 17-May. Roundup PowerMax was applied over-the-top with AMS twice during the growing season.

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

Rainfall:	Based on the nearest Texas Tech University- West Texas Mesonet station at Levelland, rainfall amounts were:  <table> <tr> <td>April: 0.00"</td><td>August: 0.92"</td></tr> <tr> <td>May: 0.97"</td><td>September: 0.66"</td></tr> <tr> <td>June: 3.53"</td><td>October: 1.04"</td></tr> <tr> <td>July: 3.43"</td><td></td></tr> </table> Total rainfall: 10.55"	April: 0.00"	August: 0.92"	May: 0.97"	September: 0.66"	June: 3.53"	October: 1.04"	July: 3.43"	
April: 0.00"	August: 0.92"								
May: 0.97"	September: 0.66"								
June: 3.53"	October: 1.04"								
July: 3.43"									
Insecticides:	This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.								
Fertilizer management:	Fertilizers applied to this location include 230 lbs/ac 10-34-0, 150 lb/ac 32-0-0 applied using fertigation during the growing season and 275 lbs/ac N-pHuric acid. A foliar 10% zinc was also applied to this location.								
Plant growth regulators:	Pentia was applied at 10 oz/ac on 30-July as well as an application of 12 oz/ac Mepiquat Chloride on 16-August..								
Harvest aids:	Harvest aids included an initial application of Boll'd at 1 qt/ac with 2 oz/ac ET on 3-October and a sequential application of 6 oz/ac paraquat with 1% v/v NIS on 12-October.								
Harvest:	Plots were harvested on 22-October using a experimental John Deere 7760 stripper-baler with field cleaner. For each plot, bales were ejected from the machine after each through and bales were weighed using a Western Forage Systems – Flat Bed Scale Trailer to determine plot weights. Plot weights were subsequently converted to lb/ac basis.								
Gin turnout:	Grab samples were taken from bales by plot and ginned at the Texas A&M AgriLife Research and Extension Center at Lubbock to determine gin turnouts.								
Fiber analysis:	Lint samples were submitted to the Texas Tech University – Fiber and Biopolymer Research Institute for HVI analysis, and USDA Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.								
Ginning cost and seed values:	Ginning cost were based on \$3.00 per cwt. of burr cotton and seed value/acre was based on \$250/ton. Ginning cost did not include check-off.								
Seed and Technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (3.5 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: <a href="http://plainscotton.org/Seed/PCGseed13.xls">http://plainscotton.org/Seed/PCGseed13.xls</a> .								

## **Results and Discussion:**

Agronomic data including plant population, nodes above white flower (NAWF), boll storm resistance, and final plant map data are included in Tables 1 and 2.

Significant differences were noted for most yield and economic parameters (Table 3). Lint turnout was significant at the 0.10 level and averaged 35.0% with a high of 38.9% and low of 32.6% for NexGen 1511B2RF and PhytoGen 367WRF, respectively. Bur cotton yields averaged 5565 lb/acre across varieties. Lint yields varied from a low of 1728 lb/acre (NexGen 3348B2RF) to a high of 2142 lb/acre (NexGen 1511B2RF). Lint loan values averaged \$0.5680/lb and differences among varieties were not significant. When adding lint and seed value, total value ranged from a high of \$1537.66/acre for NexGen 1511B2RF to a low of \$1281.08 /acre for NexGen 3348B2RF. After subtracting ginning, seed costs and technology fees, net value/acre among varieties ranged from a high of \$1302.69/acre (NexGen 1511B2RF) to a low of \$1066.36/acre (NexGen 3348B2RF), a difference of \$236.33.

Significant differences were observed among varieties for most fiber quality parameters at this location (Table 4). Micronaire values ranged from a low of 3.7 for NexGen 3348B2RF to a high of 4.4 for NexGen 1511B2RF. Staple averaged 35.9 across all varieties with a high of 37.9 for FiberMax 2484B2F and a low of 35.0 for NexGen 1511B2RF. Uniformity ranged from a high of 82.3% for PhytoGen 499WRF to a low of 80.0% for Deltapine 1219B2RF with a test average of 81.0%. Strength ranged from a low of 28.2 g/tex for Croplan Genetics 3787B2RF to a high of 31.1 g/tex for PhytoGen 499WRF. Elongation averaged 10.0% across and leaf grades were mostly 1 and 2. Color grade components of Rd (reflectance) and +b (yellowness) averaged 77.2 and 8.9, respectively and resulted in color grades of mostly 21 and 31.

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

## **Acknowledgments:**

Appreciation is expressed to 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 and Ms. Valerie Morgan - Texas A&M AgriLife Research and Extension Center, Lubbock, and Dr. Eric Hequet - Associate Director, Fiber and Biopolymer Research Institute, Texas Tech University. Furthermore, we greatly appreciate the Fiber Initiative for funding of HVI testing.

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Table 1. Inseason plant measurement results from the Hockley County Sub-surface Drip Irrigated RACE Trial, Mike Henson Farm, Ropesville, TX, 2013.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of			
	plants/row ft	plants/acre	24-Jul	31-Jul	8-Aug	23-Aug
Croplan Genetics 3787B2RF	2.4	31,799	8.9	8.7	5.2	3.4
Deltapine 1219B2RF	3.0	38,914	9.5	8.9	5.6	3.1
FiberMax 2011GT	2.9	38,042	9.4	8.9	4.9	2.5
FiberMax 2484B2F	2.9	37,316	8.7	9.1	4.9	2.7
NexGen 1511 B2RF	2.8	36,590	9.4	8.9	5.3	2.7
NexGen 3348B2RF	2.4	31,799	8.9	8.3	4.9	2.3
PhytoGen 367WRF	2.6	33,541	9.1	8.7	4.7	3.1
PhytoGen 499WRF	2.6	33,977	9.7	8.2	5.3	2.9
Stoneville 4946GLB2	2.7	34,703	8.2	8.8	4.5	3.1
Test average	2.7	35,187	9.1	8.7	5.0	2.9
CV, %	7.1	7.4	5.1	5.8	5.1	18.7
OSL	0.0268	0.0273	0.0310	0.4865	0.0034	0.3086
LSD	0.3	4,533	0.8	NS	0.4	NS

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

CV - coefficient of variation.

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

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



Table 2. Final plant map results from the Hockley County Sub-surface Drip Irrigated RACE Trial, Mike Henson Farm, Ropesville, TX, 2013.

Entry	Final plant map									
	plant height (inches)	node of first fruiting branch	total mainstem nodes	height to node ratio	total fruiting branches	1st position retention (%)	2nd position retention (%)	total retention (%)	1st five retention (%)	open boll (%)
Croplan Genetics 3787B2RF	26.9	5.7	17.0	1.6	12.3	65.0	45.6	4.47	89.3	66.3
Deltapine 1219B2RF	26.9	5.3	16.9	1.6	12.5	65.5	39.8	4.80	96.0	79.3
FiberMax 2011GT	26.3	6.2	17.5	1.5	12.4	64.3	42.4	4.40	88.0	67.8
FiberMax 2484B2F	28.7	9.5	21.1	1.4	14.2	70.6	56.5	4.53	90.7	67.9
NexGen 1511B2RF	24.7	8.5	20.1	1.3	11.7	62.7	38.1	4.00	80.0	71.8
NexGen 3348B2RF	25.3	6.1	17.5	1.4	13.3	66.4	45.9	4.60	92.0	71.0
PhytoGen 367WRF	25.7	5.9	17.1	1.5	13.8	65.5	50.4	4.27	85.3	74.6
PhytoGen 499WRF	29.7	6.6	17.7	1.7	14.6	71.2	59.1	4.67	93.3	56.2
Stoneville 4946GLB2	29.0	5.7	19.5	1.5	17.5	74.7	51.9	4.73	94.7	62.0
Test average	27.0	6.6	18.3	1.5	13.6	67.3	47.8	4.50	89.9	68.5
CV, %	11.7	35.9	13.6	15.0	19.9	11.0	20.2	9.6	9.6	25.1
OSL	0.5397	0.4213	0.3711	0.6160	0.3260	0.5820	0.1724	0.4650	0.4650	0.8608
LSD	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

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

CV - coefficient of variation.

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

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

Table 3. Harvest results from the Hockley County Sub-surface Drip Irrigated RACE Trial, Mike Henson Farm, Ropesville, TX, 2013.

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 <sup>1</sup>	Net value
	%			lb/acre		\$/lb		\$/acre				
NexGen 1511B2RF	38.9	47.7	5513	2142	2628	0.5645	1209.11	328.55	1537.66	165.38	69.59	1302.69 a
FiberMax 2011GT	35.3	46.1	5771	2036	2662	0.5707	1162.09	332.81	1494.89	173.14	66.77	1254.98 ab
Deltapine 1219B2RF	35.5	47.4	5670	2014	2687	0.5767	1161.30	335.86	1497.16	170.09	72.14	1254.92 ab
Stoneville 4946GLB2	33.7	46.9	5898	1986	2766	0.5662	1124.63	345.80	1470.42	176.95	79.47	1214.00 bc
FiberMax 2484B2F	34.7	45.7	5593	1940	2558	0.5717	1109.19	319.72	1428.91	167.80	77.86	1183.25 bc
Croplan Genetics 3787B2RF	35.8	44.8	5398	1934	2417	0.5725	1107.12	302.10	1409.22	161.95	75.02	1172.25 bc
PhytoGen 499WRF	34.6	44.2	5619	1942	2486	0.5662	1099.75	310.69	1410.45	168.56	73.43	1168.45 c
PhytoGen 367WRF	32.6	44.0	5487	1791	2415	0.5625	1007.38	301.87	1309.26	164.62	73.43	1071.20 d
NexGen 3348B2RF	33.7	48.5	5131	1728	2487	0.5613	970.15	310.93	1281.08	153.94	60.77	1066.36 d
Test average	35.0	46.1	5565	1946	2567	0.5680	1105.64	320.92	1426.56	166.94	72.05	1187.57
CV, %	5.5	5.1	3.9	3.8	4.0	1.5	3.8	4.0	3.9	3.9	--	4.1
OSL	0.0535 <sup>†</sup>	0.2792	0.0264	0.0002	0.0055	0.4198	<0.0001	0.0055	0.0004	0.0264	--	0.0002
LSD	2.8	NS	379	130	179	NS	73.49	22.31	95.75	11.35	--	84.41

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

CV - coefficient of variation.

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

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

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

Assumes:

\$3.00/cwt ginning cost.

\$250/ton for seed.

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

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

Table 4. HVI fiber property results from the Hockley County Sub-surface Drip Irrigated RACE Trial, Mike Henson Farm, Ropesville, TX, 2013.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade
	units	32 <sup>nds</sup> inch	%	g/tex	%	grade	reflectance	yellowness	color 1 color 2
Croplan Genetics 3787B2RF	4.2	35.7	81.3	28.2	10.8	1.0	78.2	9.3	2.0 1.0
Deltapine 1219B2RF	3.8	36.5	80.0	30.4	9.6	1.3	78.5	8.9	2.0 1.0
FiberMax 2011GT	4.1	36.4	80.8	30.3	8.6	1.7	77.1	8.2	3.0 1.0
FiberMax 2484B2F	4.0	37.9	80.4	30.4	8.2	2.0	79.2	8.1	3.0 1.0
NexGen 1511B2RF	4.4	35.0	80.9	30.1	11.3	1.7	76.9	8.9	2.7 1.0
NexGen 3348B2RF	3.7	35.6	81.6	30.2	9.4	2.0	76.5	8.7	3.3 1.0
PhytoGen 367WRF	4.0	35.2	80.6	29.4	10.4	1.0	76.2	9.4	2.7 1.0
PhytoGen 499WRF	4.2	35.6	82.3	31.1	10.9	2.0	76.0	8.9	3.0 1.0
Stoneville 4946GLB2	4.3	35.3	81.0	30.7	10.7	1.7	76.6	9.3	2.7 1.0
Test average	4.1	35.9	81.0	30.1	10.0	1.6	77.2	8.9	2.7 1.0
CV, %	2.6	1.2	0.8	2.8	3.1	43.6	0.9	1.7	-- --
OSL	<0.0001	<0.0001	0.0155	0.0255	<0.0001	0.4726	0.0003	<0.0001	-- --
LSD	0.2	0.7	1.1	1.4	0.5	NS	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, NS - not significant



**Replicated Sub-Surface Drip Irrigated RACE Variety and Harvest Method Trial,  
Acuff, TX - 2013**

**Cooperator: Rhett Mimms**

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

**Lubbock County**

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

**Materials and Methods:**

**Varieties:** NexGen 1511B2RF, NexGen 4012B2RF, FiberMax 2011GT, FiberMax 2484B2F, Stoneville 4946GLB2, Croplan Genetics 3787B2RF, Deltapine 1219B2RF, PhytoGen 367WRF

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

**Seeding rate:** 3.3 seed/row-ft in 40 inch row spacings. (John Deere XP Vacuum planter) into prepared, listed rows.

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

**Planting date:** 22-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 28 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-June to 31-August a total of approximately 12 inches of irrigation were applied.

Rainfall:	Based on the nearest Texas Tech University- West Texas Mesonet station at Lubbock, rainfall amounts were:								
	<table> <tr> <td>April: 0.02"</td><td>August: 3.41"</td></tr> <tr> <td>May: 0.39"</td><td>September: 0.69"</td></tr> <tr> <td>June: 3.89"</td><td>October: 1.14"</td></tr> <tr> <td>July: 3.08"</td><td></td></tr> </table>	April: 0.02"	August: 3.41"	May: 0.39"	September: 0.69"	June: 3.89"	October: 1.14"	July: 3.08"	
April: 0.02"	August: 3.41"								
May: 0.39"	September: 0.69"								
June: 3.89"	October: 1.14"								
July: 3.08"									
	Total rainfall: 12.62"								
Insecticides:	This location is in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Program.								
Plant growth regulators:	None were applied at this location.								
Harvest aids:	Harvest aids included an initial application of ethephon at 21 oz/acre with 1 oz/acre Aim on 21-September and a sequential application of 24 oz/acre Gramoxone Inteon with 0.25% v/v non-ionic surfactant on 5-October.								
Harvest:	Plots were stripped and picked on 15-November using a commercial John Deere 7460 with field cleaner stripper and a commercial John Deere 9990 picker. Harvested material was transferred to a weigh wagon with integral electronic scales to record individual plot weights. Plot weights were subsequently converted to lb/acre basis.								
Gin turnout:	20 lb grab samples were taken by plot and ginned at the USDA-ARS Gin Lab at Lubbock to determine gin turnouts.								
Fiber analysis:	Lint samples were submitted to the Texas Tech University – Fiber and Biopolymer Research Institute for HVI analysis, and USDA Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.								
Ginning cost and seed values:	Ginning cost were based on \$3.00 per cwt. of burr cotton and seed value/acre was based on \$250/ton. Ginning cost did not include check-off.								
Seed and Technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (3.3 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: <a href="http://plainscotton.org/Seed/PCGseed13.xls">http://plainscotton.org/Seed/PCGseed13.xls</a> .								

## Results and Discussion - Stripped:

Agronomic data including plant population, boll storm resistance and final plant map data are included in Tables 1 and 2.

Significant differences were noted for most yield and economic parameters (Table 3). Lint turnout averaged 33.7% with a high of 36.4% for NexGen 1511B2RF and a low of 32.1% for NexGen 4010B2RF. Bur cotton yield averaged 4318 lb/acre and ranged from a high of 4731 lb/acre for FiberMax 2011GT to a low of 3903 lb/acre for Croplan 3787B2RF. Lint yields varied from a low of 1331 lb/acre (Croplan Genetics 3787B2RF) to a high of 1651 lb/acre (FiberMax 2011GT). Lint loan values averaged \$0.5274/lb across varieties, however, differences were not significant. When adding lint and seed value, total values ranged from a high of \$1206.75/acre for FiberMax 2011GT to a low of \$927.75/acre for Croplan Genetics 3787B2RF. After subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of \$1010.24/acre (FiberMax 2011GT) to a low of \$749.35/acre (Croplan Genetics 3787B2RF), a difference of \$260.89.

Significant differences were observed among varieties for most fiber quality parameters measured at this location (Table 4). Micronaire values ranged from a low of 2.8 for Deltapine 1219B2RF and FiberMax 2484B2F to a high of 3.2 for FiberMax 2011GT, NexGen 1511B2RF, and NexGen 4012B2RF. Staple averaged 36.2 across all varieties with a high of 37.9 for FiberMax 2484B2F and a low of 35.4 for Croplan Genetics 3787B2RF. Uniformity values averaged 80.4% and ranged from a high of 81.4% (FiberMax 2011GT) to a low of 78.9% (Deltapine 1219B2RF). Strength values ranged from a low of 28.9 g/tex for Croplan Genetics 3787B2RF to a high of 32.1 g/tex for Stoneville 4946GLB2. Elongation averaged 7.5% across varieties and leaf grades averaged 2.1. Color grade components of Rd (reflectance) and +b (yellowness) averaged 80.2 and 8.9, respectively and 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 selection. Additional multi-site and multi-year applied research is needed to evaluate varieties across a series of environments.

## Results and Discussion - Picked:

Significant differences were noted for all yield and economic parameters (Table 5). Lint turnout averaged 37.5% with a high of 39.3% and low of 35.9% for NexGen 1511B2RF and NexGen 4012B2RF, respectively. Seed cotton yield averaged 3658 lb/acre resulting in an average lint yield across all varieties of 1373 lb/acre. Lint yields ranged from a low of 1280 lb/acre for NexGen 4012B2RF to a high of 1518 lb/acre for FiberMax 2011GT. Lint loan values averaged \$0.5522/lb with a high of \$0.5705 and a low of \$0.5248/lb for NexGen 1511B2RF and FiberMax 2484B2F, respectively. When adding lint and seed value, total value averaged \$1016.86/acre. After subtracting ginning, seed costs and technology fees, the average net value/acre across varieties was \$847.66/acre and ranged from a high of \$960.75/acre for FiberMax 2011GT to a low of \$783.42/acre for Croplan Genetics 3787B2RF, a difference of \$177.33.

Significant differences were observed among varieties for most fiber quality parameters at this location (Table 6). Micronaire values ranged from a low of 2.9 for FiberMax 2484B2F to a high of 3.6 for NexGen 1511B2RF. Staple averaged 36.2 across all varieties with a high of 37.3 for FiberMax 2484B2F and a low of

35.5 for NexGen 1511B2RF. Uniformity ranged from a high of 81.6% for FiberMax 2011GT to a low of 79.1% for Deltapine 1219B2RF with a test average of 80.6%. Strength ranged from a low of 29.0 g/tex for Croplan Genetics 3787B2RF to a high of 31.8 g/tex for NexGen 4012B2RF. Elongation averaged 7.7% across varieties with a high of 9.3% for NexGen 1511B2RF and a low of 6.7% for FiberMax 2484B2F. Leaf grades were mostly 1 and 2. Color grade components of Rd (reflectance) and +b (yellowness) averaged 80.8 and 8.3, respectively and resulted in color grades of mostly 21.

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

### **Acknowledgments:**

Appreciation is expressed to Rhett Mimms for the use of his land, equipment and labor for this demonstration. Further assistance with this project was provided by Dr. Jane Dever and Ms. Valerie Morgan - Texas A&M AgriLife Research and Extension Center, Lubbock, and Dr. Eric Hequet - Associate Director, Fiber and Biopolymer Research Institute, Texas Tech University. Furthermore, we greatly appreciate the Fiber Initiative for funding of HVI testing.

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Table 1. Inseason plant measurement results from the Lubbock County Sub-surface Drip Irrigated RACE Variety Trial, Rhett Mimms Farm, Acuff, TX, 2013.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of					Storm resistance
	plants/row ft	plants/acre						
			25-Jul	31-Jul	5-Aug	13-Aug	19-Aug	
								rating (0-9)
Croplan Genetics 3787B2RF	2.3	30,056	9.8	9.2	7.7	7.1	6.3	5.3
Deltapine 1219B2RF	2.9	38,478	9.8	9.0	8.3	7.3	6.4	5.7
FiberMax 2011GT	2.7	34,703	9.5	9.5	8.5	7.1	5.6	8.3
FiberMax 2484B2F	2.6	34,558	9.2	9.1	8.4	7.2	5.3	7.0
NexGen 1511B2RF	2.6	33,686	9.1	9.8	8.4	6.7	6.8	4.7
NexGen 4012B2RF	2.7	35,429	9.9	9.5	8.5	7.6	5.9	7.0
PhytoGen 367WRF	2.8	36,445	9.1	9.3	8.1	6.9	6.0	4.0
Stoneville 4946GLB2	2.8	36,736	9.1	9.3	8.3	7.2	5.3	6.3
Test average	2.7	35,011	8.9	9.3	8.3	7.1	6.0	6.0
CV, %	9.2	9.4	21.2	9.8	3.2	8.8	12.4	10.6
OSL	0.1719	0.1768	0.2699	0.9666	0.0438	0.7984	0.2213	<0.0001
LSD	NS	NS	NS	NS	0.5	NS	NS	1.1

For NAWF, numbers represent an average of 5 plants per variety per rep (15 plants per variety)  
For Storm resistance, ratings based on a scale of 0-9 where 9 represents maximum storm resistance.

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



Table 2. Final plant map results from the Lubbock County Sub-surface Drip Irrigated RACE Variety Trial, Rhett Mimms Farm, Acuff, TX, 2013.

Entry	Final plant map									
	plant height (inches)	node of first fruiting branch	total mainstem nodes	height to node ratio	total fruiting branches	1st position retention (%)	2nd position retention (%)	total retention (%)	1st five retention (%)	open boll (%)
Croplan Genetics 3787B2RF	29.3	6.1	17.3	1.7	14.2	65.9	57.4	22.60	94.7	27.9
Deltapine 1219B2RF	32.9	6.5	19.2	1.7	14.5	66.5	46.5	25.47	82.7	26.5
FiberMax 2011GT	28.0	6.0	17.7	1.6	12.9	64.9	46.4	23.00	84.0	43.0
FiberMax 2484B2F	28.2	7.3	18.5	1.5	12.1	65.1	36.5	22.67	90.7	24.8
NexGen 1511B2RF	27.9	5.9	17.0	1.6	11.0	56.3	40.0	22.27	76.0	52.5
NexGen 4012B2RF	30.8	6.5	18.6	1.7	13.3	68.5	44.1	23.00	90.7	38.6
PhytoGen 367WRF	27.9	5.8	16.7	1.7	11.9	67.2	45.5	20.53	93.3	29.8
Stoneville 4946GLB2	30.4	5.6	17.9	1.7	14.9	65.6	52.8	24.70	88.0	37.5
Test average	29.4	6.2	17.9	1.7	13.1	65.0	46.1	23.03	87.5	35.1
CV, %	7.3	11.8	4.7	8.5	12.0	7.8	19.0	7.6	7.4	48.3
OSL	0.1154	0.2031	0.0328	0.6984	0.0880 <sup>†</sup>	0.2134	0.1876	0.0974 <sup>†</sup>	0.0477	0.4950
LSD	NS	NS	1.5	NS	2.3	NS	NS	2.5	11.3	NS

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

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level, <sup>†</sup>indicates significance at the 0.10 level, NS - not significant

Table 3. Harvest results from the Lubbock County Stripper Harvested Sub-surface Drip Irrigated RACE Variety Trial, Rhett Mimms Farm, Acuff, TX, 2013.

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 <sup>1</sup>	Net value
	%			lb/acre		\$/lb		\$/acre				
FiberMax 2011GT	34.9	51.5	4731	1651	2437	0.5463	902.09	304.66	1206.75	141.94	54.57	1010.24 a
NexGen 1511B2RF	36.4	50.0	4271	1555	2137	0.5415	842.27	267.16	1109.43	128.14	56.88	924.42 b
Stoneville 4946GLB2	33.1	52.6	4438	1471	2334	0.5183	762.38	291.79	1054.17	133.13	64.95	856.09 c
NexGen 4012B2RF	32.1	53.4	4296	1380	2294	0.5440	750.92	286.70	1037.63	128.89	55.21	853.52 c
FiberMax 2484B2F	32.7	52.0	4406	1441	2291	0.5163	744.14	286.42	1030.56	132.19	63.63	834.74 c
PhytoGen 367WRF	32.8	52.2	4257	1394	2220	0.5290	737.50	277.53	1015.03	127.70	60.02	827.31 c
Deltapine 1219B2RF	33.4	51.0	4241	1418	2162	0.5140	728.99	270.24	999.23	127.22	58.96	813.05 c
Croplan Genetics 3787B2RF	34.1	51.1	3903	1331	1992	0.5098	678.69	249.06	927.75	117.08	61.31	749.35 d
Test average	33.7	51.7	4318	1455	2234	0.5274	768.38	279.19	1047.57	129.54	59.44	858.59
CV, %	2.0	1.6	3.2	3.2	3.3	4.1	3.3	3.2	3.3	3.2	--	3.5
OSL	<0.0001	0.0076	0.0005	<0.0001	0.0001	0.2825	<0.0001	0.0001	<0.0001	0.0005	--	<0.0001
LSD	1.2	1.5	245	82	127	NS	43.81	15.86	59.64	7.35	--	52.30

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, NS - not significant.

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

Assumes:

\$3.00/cwt ginning cost.

\$250/ton for seed.

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

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

Table 4. HVI fiber property results from the Lubbock County Stripper Harvested Sub-surface Drip Irrigated RACE Variety Trial, Rhett Mimms Farm, Acuff, TX, 2013.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 <sup>nds</sup> inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
Croplan Genetics 3787B2RF	2.9	35.4	79.9	28.9	8.5	1.7	81.8	9.2	1.0	1.0
Deltapine 1219B2RF	2.8	36.5	78.9	31.3	7.2	1.3	81.0	9.1	1.3	1.0
FiberMax 2011GT	3.2	36.4	81.4	31.9	6.9	2.3	79.7	8.3	2.3	1.0
FiberMax 2484B2F	2.8	37.9	80.3	31.2	6.4	2.0	82.6	7.9	1.7	1.0
NexGen 1511B2RF	3.2	35.5	80.9	31.1	8.8	2.3	78.9	8.9	2.0	1.0
NexGen 4012B2RF	3.2	36.5	80.3	31.7	6.2	2.0	80.1	9.2	1.3	1.0
PhytoGen 367WRF	3.0	35.9	80.5	30.5	7.9	2.3	78.9	9.1	2.0	1.0
Stoneville 4946GLB2	2.9	35.7	80.7	32.1	8.0	2.7	78.8	9.2	2.0	1.0
Test average	3.0	36.2	80.4	31.1	7.5	2.1	80.2	8.9	1.7	1.0
CV, %	8.9	1.2	0.6	2.0	5.1	34.9	1.3	2.6	--	--
OSL	0.2125	0.0001	0.0010	0.0004	<0.0001	0.4510	0.0032	<0.0001	--	--
LSD	NS	0.7	0.9	1.1	0.7	NS	1.8	0.4	--	--

CV - coefficient of variation.

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

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

Table 5. Harvest results from the Lubbock County Picker Harvested Sub-surface Drip Irrigated RACE Variety Trial, Rhett Mimms Farm, Acuff, TX, 2013.

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 <sup>1</sup>	Net value
	%			lb/acre		\$/lb		\$/acre				
FiberMax 2011GT	38.3	56.0	3962	1518	2217	0.5645	857.03	277.15	1134.19	118.87	54.57	960.75 a
NexGen 1511B2RF	39.3	54.6	3620	1421	1975	0.5705	810.56	246.82	1057.38	108.59	56.88	891.92 b
Stoneville 4946GLB2	37.3	56.4	3801	1417	2144	0.5552	786.43	268.04	1054.46	114.04	64.95	875.48 bc
PhytoGen 367WRF	36.4	56.9	3697	1344	2104	0.5630	756.73	263.06	1019.80	110.92	60.02	848.86 bcd
DeLapine 1219B2RF	37.3	55.9	3636	1357	2031	0.5458	740.61	253.91	994.53	109.07	58.96	826.50 cde
NexGen 4012B2RF	35.9	58.5	3564	1280	2084	0.5487	702.22	260.56	962.78	106.92	55.21	800.65 de
FiberMax 2484B2F	37.4	56.7	3620	1352	2051	0.5248	709.56	256.40	965.96	108.59	63.63	793.74 e
Croplan Genetics 3787B2RF	38.6	56.5	3368	1299	1903	0.5448	707.94	237.85	945.79	101.05	61.31	783.42 e
Test average	37.5	56.4	3658	1373	2064	0.5522	758.89	257.97	1016.86	109.75	59.44	847.66
CV, %	1.4	1.8	3.1	3.2	3.1	2.3	3.2	3.1	3.1	3.2	--	3.4
OSL	<0.0001	0.0204	0.0012	0.0002	0.0011	0.0126	<0.0001	0.0011	<0.0001	0.0012	--	<0.0001
LSD	0.9	1.8	202	76	113	0.0218	41.89	14.14	56.00	6.06	--	49.94

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

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level.

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

Assumes:

\$3.00/cwt ginning cost.

\$250/ton for seed.

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

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

Table 6. HVI fiber property results from the Lubbock County Picker Harvested Sub-surface Drip Irrigated RACE Variety Trial, Rhett Mimms Farm, Acuff, TX, 2013.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 <sup>nds</sup> inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
Croplan Genetics 3787B2RF	3.1	35.8	80.3	29.0	8.8	1.7	82.0	8.3	1.7	1.0
Deltapine 1219B2RF	3.2	36.3	79.1	30.7	7.2	1.7	81.5	8.4	2.0	1.0
FiberMax 2011GT	3.4	36.7	81.6	31.3	6.8	2.3	81.0	7.8	2.0	1.0
FiberMax 2484B2F	2.9	37.3	79.6	29.9	6.7	1.3	82.7	7.6	2.0	1.0
NexGen 1511B2RF	3.6	35.5	81.2	30.6	9.3	1.3	80.2	8.7	2.0	1.0
NexGen 4012B2RF	3.3	35.9	80.6	31.8	6.8	2.3	79.7	8.5	2.3	1.0
PhytoGen 367WRF	3.4	36.2	80.7	30.7	8.1	2.0	79.6	8.9	2.0	1.0
Stoneville 4946GLB2	3.4	36.2	81.4	31.6	8.4	2.7	79.4	8.5	2.3	1.0
Test average	3.3	36.2	80.6	30.7	7.7	1.9	80.8	8.3	2.0	1.0
CV, %	5.0	1.4	0.6	2.7	5.3	31.4	0.9	2.5	--	--
OSL	0.0057	0.0166	0.0002	0.0193	<0.0001	0.1225	0.0003	<0.0001	--	--
LSD	0.3	0.9	0.8	1.4	0.7	NS	1.2	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



**Replicated LESA Irrigated RACE Variety Trial,  
O'Donnell, TX - 2013**

**Cooperator: Randy and Alton Cook**

**Mark Kelley, Kristie Keys, Hayden Alexander, and Brian Reynolds  
Extension Agronomist – Cotton, Extension Assistants – Cotton,  
CEA-ANR Lynn County**

**Lynn County**

**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:** Croplan Genetics 3787B2RF, Deltapine 1044B2RF, Deltapine 1219B2RF, FiberMax 1944GLB2, FiberMax 2989GLB2, NexGen 1511B2RF, NexGen 3348B2RF, PhytoGen 367WRF, PhytoGen 499WRF and Stoneville 4946GLB2

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

**Seeding rate:** Planted 3.0 seed/row-ft in 40 inch row spacings into milo stubble from previous year on flat ground.

**Plot size:** 8 rows by variable length due to center pivot

**Planting date:** 20-May

**Weed management:** 1 qt/ac of Prowl H2O was applied on 27-March. Traxion (glyphosate) was applied at 48oz/ac on 15-April. On 22-June, 44 oz/ac Traxion was applied in a tank mix with Vydate. 1.5 pt of Prowl H2O was sprayed on 26-June. On 10-July, 34.3 oz/ac of Traxion and 3.5 oz/ac Staple were applied in a tank mix with Vydate. A sweep plow was used on 1-August for additional weed control.

**Irrigation:** 15" of LESA irrigation was applied during the growing season.

Rainfall:	Based on the nearest Texas Tech University- West Texas Mesonet station at O'Donnell, rainfall amounts were:								
	<table> <tr> <td>April: 0.00"</td><td>August: 3.25"</td></tr> <tr> <td>May: 0.87"</td><td>September: 1.29"</td></tr> <tr> <td>June: 4.16"</td><td>October: 2.13"</td></tr> <tr> <td>July: 2.93"</td><td></td></tr> </table>	April: 0.00"	August: 3.25"	May: 0.87"	September: 1.29"	June: 4.16"	October: 2.13"	July: 2.93"	
April: 0.00"	August: 3.25"								
May: 0.87"	September: 1.29"								
June: 4.16"	October: 2.13"								
July: 2.93"									
	Total rainfall: 14.57"								
Nematicides:	Due to a slight infestation of Root-Knot Nematodes, 17 oz/ac of Vydate was applied on 22-June and 10-July in order to reduce nematode pressure.								
Fertilizer management:	On 19-April a variable rate of 10-34-0 was applied and on 7-May 11.3 gal/ac of 32-0-0 were applied using a coulter set-up. On 10-June 1.08 lbs/ac Axilo, 32 oz/ac Trafix Zn, 32 oz/ac ENC and 17.23 oz/ac Megafol were applied as a broadcast foliar. Coron 10-0-10 and Trafix Zn were applied at 1 gal/ac and 32 oz/ac, respectively, on 22-July. 11.6 gal/ac of 28-0-0-5 and 0.6 gal/ac O-Phos 8-24-0 were applied on 10-Aug. 32 oz/ac ENC, 9.7 oz/ac Trafix Zn and 2.56 oz Micros (from Estes) were sprayed on 20-August.								
Plant growth regulators:	A 12 oz/ac application of Pentia was made on 22-July. On 20-August an application of 13.3 oz/ac Mepex Gin-Out and a 2.05 oz/ac of Pentia was sprayed.								
Harvest aids:	Harvest aids included an application of 1.5 pt/ac Folex 6EC with 1.5 pt/ac Ethephon 6 and 1.5 pt/ac Flash on the 22 <sup>nd</sup> of October.								
Harvest:	Plots were harvested on 13 & 14-November using a commercial John Deere with field cleaner. Harvested material was transferred to a boll buggy and weighed using a Western Forage Systems – Flat Bed Scale system 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 A&M AgriLife Research and Extension Center at Lubbock to determine gin turnouts.								
Fiber analysis:	Lint samples were submitted to the Texas Tech University – Fiber and Biopolymer Research Institute for HVI analysis, and USDA Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.								
Ginning cost and seed values:	Ginning cost were based on \$3.00 per cwt. of burr cotton and seed value/acre was based on \$250/ton. Ginning cost did not include check-off.								
Seed and Technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (3.0 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at:								

## **Results and Discussion:**

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

Due to substantial field variability, no significant differences were noted for most yield and economic parameters measured (Table 2). Lint and seed turnout averaged 30.4% and 45.9%, respectively. Bur cotton yield averaged 3874 lb/acre and lint yields averaged 1175 lb/acre. Lint loan values ranged from a low of \$0.4628/lb to a high of \$0.5310/lb for Deltapine 1044B2RF and FiberMax 1944GLB2, respectively. When adding lint and seed value, total value averaged \$816.99/acre. After subtracting ginning, seed costs and technology fees, the net value/acre averaged \$645.36 across varieties and replications.

Significant differences were observed among varieties for most fiber quality parameters at this location (Table 3). A test average micronaire of 3.1 was observed with values ranging from a high of 3.4 for NexGen 3348B2RF to a low of 2.8 for Croplan Genetics 3787B2RF and Deltapine 1044B2RF. Staple values ranged from a high of 38.0 to a low of 35.4 for Deltapine 1219B2RF, and Deltapine 1044B2RF and NexGen 1511B2RF, respectively. Uniformity averaged 80.3% across all varieties and replications. Strength values ranged from a high of 32.1 g/tex for Stoneville 4946GLB2 to a low of 29.1 g/tex for Croplan Genetics 3787B2RF. Elongation averaged 9.5% across all varieties and leaf grades were mostly 3 and 4. Color grade components of Rd (reflectance) and +b (yellowness) averaged 76.9 and 3.2, respectively and resulted in color grades of mostly 31 and 41.

These data indicate that under extreme field variability, differences among varieties can be difficult to obtain in terms of net value/acre. Additional multi-site and multi-year applied research is needed to evaluate varieties across a series of environments.

## **Acknowledgments:**

Appreciation is expressed to Randy and Alton Cook for the use of their land, equipment and labor for this demonstration. Further assistance with this project was provided by Dr. Jane Dever and Ms. Valerie Morgan - Texas A&M AgriLife Research and Extension Center, Lubbock, and Dr. Eric Hequet - Associate Director, Fiber and Biopolymer Research Institute, Texas Tech University. Furthermore, we greatly appreciate the Fiber Initiative for funding of HVI testing.

## **Disclaimer Clause:**

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



Table 1. Inseason plant measurement results from the 2013 Lynn County Irrigated RACE, Randy and Alton Cook Farm, O'Donnell, TX, 2013.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of			Storm resistance
	plants/row ft	plants/acre	30-Jul	8-Aug	22-Aug	
Croplan Genetics 3787B2RF	2.5	32,089	8.9	5.7	4.6	4.7
Deltapine 1044B2RF	2.6	34,558	8.9	5.6	3.9	5.7
Deltapine 1219B2RF	2.5	32,525	8.3	5.5	4.0	5.7
FiberMax 1944GLB2	2.5	32,089	8.7	4.9	4.6	6.3
FiberMax 2989GLB2	2.6	33,832	9.3	6.1	3.1	5.3
NexGen 1511B2RF	2.5	32,670	8.9	5.8	4.6	5.3
NexGen 3348B2RF	2.4	31,508	8.3	5.9	3.6	5.0
PhytoGen 367WRF	2.7	35,719	9.2	6.3	3.9	5.3
PhytoGen 499WRF	2.7	35,429	8.2	5.3	4.2	6.3
Stoneville 4946GLB2	2.4	31,944	9.0	6.6	3.1	5.7
Test average	2.5	33,236	8.8	5.7	4.0	5.5
CV, %	7.4	7.4	4.4	11.9	17.6	18.4
OSL	0.3218	0.3717	0.0288	0.1862	0.1059	0.6237
LSD	NS	NS	0.7	NS	NS	NS

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

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

CV - coefficient of variation.

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

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

Table 2. Harvest results from the Lynn County Irrigated RACE Variety Trial, Randy Cook Farm, O'donnell, TX, 2013.

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 <sup>1</sup>	Net value
	----- % -----			----- lb/acre -----		\$/lb				----- \$/acre -----		
Deltapine 1219B2RF	31.4	47.7	4109	1289	1959	0.5258	678.06	244.83	922.89	123.26	54.39	745.24
FiberMax 2989GLB2	31.9	48.4	4005	1278	1937	0.5078	648.81	242.09	890.89	120.15	59.91	710.84
FiberMax 1944GLB2	31.3	50.7	3756	1176	1903	0.5310	624.36	237.93	862.30	112.67	59.91	689.72
PhytoGen 367WRF	30.5	46.1	3984	1214	1837	0.5133	623.44	229.64	853.07	119.52	55.36	678.19
PhytoGen 499WRF	30.7	45.5	4026	1238	1830	0.4830	597.78	228.80	826.58	120.77	55.36	650.45
Deltapine 1044B2RF	27.3	43.2	4599	1255	1986	0.4628	580.63	248.28	828.91	137.96	54.39	636.56
NexGen 1511B2RF	30.6	42.6	3870	1183	1649	0.5053	597.65	206.08	803.73	116.09	52.47	635.18
NexGen 3348B2RF	30.8	44.7	3547	1092	1587	0.5252	573.34	198.39	771.73	106.42	45.82	619.49
Stoneville 4946GLB2	29.7	46.0	3729	1106	1716	0.5037	557.13	214.51	771.63	111.87	59.91	599.86
Croplan Genetics 3787B2RF	29.6	44.1	3116	922	1373	0.5062	466.44	171.68	638.12	93.48	56.56	488.08
Test average	30.4	45.9	3874	1175	1778	0.5064	594.76	222.22	816.99	116.22	55.41	645.36
CV, %	6.2	7.4	15.9	16.0	16.2	4.5	16.1	16.2	16.1	15.9	--	17.5
OSL	0.2386	0.1855	0.3646	0.4395	0.2675	0.0485	0.4118	0.2674	0.4178	0.3645	--	0.3687
LSD	NS	NS	NS	NS	NS	0.0390	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.

\$250/ton for seed.

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

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

Table 3. HVI fiber property results from the Lynn County Irrigated RACE Variety Trial, Randy Cook Farm, O'donnell, TX, 2013.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade
	units	32 <sup>nds</sup> inch	%	g/tex	%	grade	reflectance	yellowness	color 1 color 2
Croplan Genetics 3787B2RF	2.8	35.7	79.5	29.1	10.2	2.3	78.7	7.5	3.0 1.0
Deltapine 1044B2RF	2.8	35.4	79.7	30.2	10.8	4.0	76.2	7.3	4.0 1.0
Deltapine 1219B2RF	3.1	38.0	80.1	31.2	8.2	2.7	78.0	7.6	3.3 1.0
FiberMax 1944GLB2	3.2	37.5	80.5	31.5	7.7	2.7	80.3	6.6	3.3 1.0
FiberMax 2989GLB2	3.3	35.8	80.2	29.3	8.3	3.7	77.2	6.8	4.0 1.0
NexGen 1511B2RF	3.2	35.4	80.5	31.4	10.5	4.0	76.6	7.3	3.7 1.0
NexGen 3348B2RF	3.4	35.7	81.1	30.0	8.6	3.3	76.3	7.4	4.0 1.0
PhytoGen 367WRF	3.3	35.7	80.2	30.5	9.9	4.3	75.1	7.9	3.7 1.0
PhytoGen 499WRF	3.1	35.8	80.3	30.7	10.3	4.3	74.9	7.3	4.0 1.0
Stoneville 4946GLB2	3.0	36.3	81.1	32.1	10.0	3.7	75.7	7.6	4.0 1.0
Test average	3.1	36.1	80.3	30.6	9.5	3.5	76.9	7.3	3.7 1.0
CV, %	6.7	1.8	1.3	2.4	2.8	21.2	1.7	3.2	-- --
OSL	0.0366	0.0008	0.6626	0.0012	<0.0001	0.0279	0.0016	<0.0001	-- --
LSD	0.4	1.1	NS	1.2	0.5	1.3	2.2	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



**Replicated No-Till LESA Irrigated RACE Variety Trial,  
Kress, TX - 2013**

**Cooperator: Cody Gruhlkey**

**Mark Kelley, Kristie Keys, Hayden Alexander, David Graf, and John Villalba  
Extension Agronomist – Cotton, Extension Assistants – Cotton  
Former CEA-ANR, and Current CEA-ANR Swisher County**

**Swisher County**

**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 LESA irrigated production in the Texas High Plains.

**Materials and Methods:**

Varieties:	NexGen 1511B2RF, NexGen 4111RF, FiberMax 2011GT, FiberMax 9250GL, Croplan Genetics 3156B2RF, Deltapine 1212B2RF, PhytoGen 339WRF, PhytoGen 367WRF
Experimental design:	Randomized complete block with three (3) replications.
Seeding rate:	3.8 seed/row-ft in 40 inch row spacings. (John Deere 1700 Vacuum planter) on flat ground into wheat stubble.
Plot size:	8 rows by variable length due to circular rows
Planting date:	20-May
Weed management:	Roundup PowerMax was applied at 1 qt/acre with 2 oz/acre of Stance on 13-July.
Irrigation:	A total of 14.25 inches of irrigation were applied via LESA application at this location.
Rainfall:	According to the producer a total of 12.15 inches of rainfall was received at this location during the growing season.
Fertilizer management:	Producer applied 100 lbs/acre of dry 46-0-0 on 14-April.

Plant growth regulators:	The producer applied 4 oz/acre of Pentia on 20-June, followed by two applications of Stance at 2 oz/acre on 13-July and 28-July.
Harvest aids:	1 qt/acre Prep and 0.5 oz/acre Blizzard was applied on 21-October. Due to the freeze event on 19-October, no additional harvest aids were required.
Harvest:	Plots were harvested on 19-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 A&M AgriLife Research and Extension Center at Lubbock to determine gin turnouts.
Fiber analysis:	Lint samples were submitted to the Texas Tech University – Fiber and Biopolymer Research Institute for HVI analysis, and USDA Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.
Ginning cost and seed values:	Ginning cost were based on \$3.00 per cwt. of burr cotton and seed value/acre was based on \$250/ton. Ginning cost did not include check-off.
Seed and Technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (3.8 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: <a href="http://plainscotton.org/Seed/PCGseed13.xls">http://plainscotton.org/Seed/PCGseed13.xls</a> .

## Results and Discussion:

This location was planted flat into wheat stubble. Agronomic data including plant population, nodes above white flower (NAWF), boll storm resistance, and final plant map data are included in Tables 1 and 2.

No significant differences were observed for most yield and economic parameters measured at this location (Table 3). Lint turnout was significant at the 0.10 level and averaged 31.8% with a high of 34.3% and low of 29.8% for FiberMax 2011GT and FiberMax 9250GL, respectively. Bur cotton yield averaged 4862 lb/acre resulting in average lint yields across all varieties of 1548 lb/acre. Lint loan values averaged \$0.5580/lb and ranged from a high of \$0.5787/lb for PhytoGen 339WRF to a low of \$0.5173/lb for Croplan Genetics 3156B2RF. When adding lint and seed value, total value averaged \$1146.95/acre. After subtracting ginning, seed costs and technology fees, the average net value/acre across varieties was \$934.20/acre and differences among varieties were not significant.

Significant differences were observed among varieties for most fiber quality parameters measured at this location (Table 4). Micronaire values ranged from a low of 3.3 for Croplan Genetics 3156B2RF to a high of 4.2 for Deltapine 1212B2RF

and NexGen 1511B2RF. Staple averaged 36.3 across all varieties with a high of 37.8 for PhytoGen 339WRF and a low of 34.8 for Croplan Genetics 3156B2RF. Uniformity ranged from a high of 82.3% for Deltapine 1212B2RF to a low of 80.0% for FiberMax 9250GL with a test average of 81.3%. Strength ranged from a low of 27.6 g/tex for Croplan Genetics 3156B2RF to a high of 31.1 g/tex for Deltapine 1212B2RF. Elongation averaged 9.8% across varieties with a high of 11.4% for Deltapine 1212B2RF and a low of 7.6% for FiberMax 9250GL. Leaf grades were mostly 1 and 2. Color grade components of Rd (reflectance) and +b (yellowness) averaged 77.4 and 8.6, respectively and resulted in color grades of mostly 21 and 31.

These data indicate that similar yields and economic returns can be obtained with multiple varieties under similar growing conditions. However, as evidenced by previous and current variety test results from other locations, significant 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 Cody Gruhlkey for the use of his land, equipment and labor for this demonstration. Further assistance with this project was provided by Dr. Jane Dever and Ms. Valerie Morgan - Texas A&M AgriLife Research and Extension Center, Lubbock, and Dr. Eric Hequet - Associate Director, Fiber and Biopolymer Research Institute, Texas Tech University. Furthermore, we greatly appreciate the Fiber Initiative for funding of HVI testing.

### **Disclaimer Clause:**

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

Table 1. Inseason plant measurement results from the Swisher County No-till LESA Irrigated RACE variety trial, Cody Gruhlkey Farm, Kress, TX, 2013.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of		Storm resistance
	plants/row ft	plants/acre	29-Jul	12-Aug	
Croplan Genetics 3156B2RF	3.6	47,045	6.4	3.9	5.3
Deltapine 1212B2RF	3.4	45,012	6.5	3.5	3.7
FiberMax 2011GT	3.5	45,448	6.9	3.7	8.0
FiberMax 9250GL	3.5	45,448	6.3	3.3	6.7
NexGen 1511B2RF	3.5	45,738	6.7	3.9	4.7
NexGen 4111RF	3.3	43,705	6.8	3.7	6.3
PhytoGen 339WRF	3.7	48,061	6.7	3.9	4.7
PhytoGen 367WRF	3.5	45,157	6.7	3.4	5.3
Test average	3.5	45,702	6.6	3.7	5.6
CV, %	4.7	4.9	7.2	12.1	6.9
OSL	0.3195	0.4520	0.8567	0.5365	<0.0001
LSD	NS	NS	NS	NS	0.7

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

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

CV - coefficient of variation.

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

LSD - least significant difference at the 0.5 level, NS - not significant.

Table 2. Final plant map results from the Swisher County No-till LESA Irrigated RACE variety trial, Cody Gruhlkey Farm, Kress, TX, 2013.

Entry	Final plant map									
	plant height (inches)	node of first fruiting branch	total mainstem nodes	height to node ratio	total fruiting branches	1st position retention (%)	2nd position retention (%)	total retention (%)	1st five retention (%)	open boll (%)
Croplan Genetics 3156B2RF	20.7	6.8	16.5	1.3	6.3	48.0	12.8	32.10	76.0	85.0
Deltapine 1212B2RF	20.3	6.5	16.0	1.3	6.1	49.2	10.3	31.60	84.0	90.3
FiberMax 2011GT	19.8	6.2	15.5	1.3	5.5	46.1	7.9	28.87	74.7	90.1
FiberMax 9250GL	20.3	6.7	16.7	1.2	6.5	49.0	11.3	31.90	73.3	87.6
NexGen 1511B2RF	20.8	6.0	15.7	1.3	7.8	54.4	21.8	39.77	84.0	81.2
NexGen 4111RF	21.2	6.2	15.9	1.3	7.4	54.7	16.3	37.20	82.7	85.3
PhytoGen 339WRF	22.0	6.9	16.9	1.3	7.6	56.8	10.8	35.60	86.7	90.0
PhytoGen 367WRF	20.7	6.2	15.9	1.3	7.8	55.6	20.4	39.77	80.0	83.3
Test average	20.7	6.4	16.2	1.3	6.9	51.7	13.9	34.60	80.2	86.6
CV, %	3.3	3.4	4.4	3.9	16.9	11.5	44.2	12.8	15.0	9.3
OSL	0.0437	0.0011	0.2349	0.0778 <sup>†</sup>	0.1641	0.2787	0.1274	0.0632 <sup>†</sup>	0.8123	0.7822
LSD	1.2	0.4	NS	0.1	NS	NS	NS	6.3	NS	NS

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

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level, <sup>†</sup>indicates significance at the 0.10 level, NS - not significant



Table 3. Harvest results from the Swisher County No-till LESA Irrigated RACE variety trial, Cody Gruhlkey Farm, Kress, TX, 2013.

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 <sup>1</sup>	Net value
	----- %	-----	-----	----- lb/acre	-----	\$/lb	-----	-----	----- \$/acre	-----	-----	-----
NexGen 1511B2RF	33.9	45.6	5080	1722	2317	0.5633	970.16	289.58	1259.74	152.40	66.91	1040.42
Deltapine 1212B2RF	32.9	47.3	5030	1656	2379	0.5543	918.22	297.33	1215.55	150.90	73.67	990.98
FiberMax 2011GT	34.3	45.1	4636	1588	2090	0.5617	892.09	261.19	1153.28	139.07	64.20	950.01
PhytoGen 339WRF	31.1	46.9	4863	1511	2279	0.5787	874.19	284.83	1159.02	145.88	70.61	942.53
PhytoGen 367WRF	32.1	47.1	4763	1528	2244	0.5705	871.80	280.48	1152.28	142.88	70.61	938.79
NexGen 4111RF	29.9	46.7	4908	1469	2291	0.5757	845.47	286.34	1131.80	147.25	52.78	931.77
FiberMax 9250GL	29.8	47.9	4826	1440	2311	0.5427	781.56	288.83	1070.39	144.77	66.48	859.14
Croplan Genetics 3156B2RF	30.6	45.9	4787	1467	2195	0.5173	759.11	274.43	1033.54	143.62	69.96	819.96
Test average	31.8	46.5	4862	1548	2263	0.5580	864.07	282.87	1146.95	145.85	66.90	934.20
CV, %	6.1	1.6	9.8	9.6	9.8	2.6	9.8	9.8	9.8	9.8	--	10.5
OSL	0.0800 <sup>†</sup>	0.0047	0.9533	0.2982	0.8367	0.0029	0.1269	0.8372	0.3413	0.9533	--	0.2441
LSD	2.8	1.3	NS	NS	NS	0.0257	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, <sup>†</sup>indicates significance at the 0.10 level, NS - not significant.

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

Assumes:

\$3.00/cwt ginning cost.

\$250/ton for seed.

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

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

Table 4. HVI fiber property results from the Swisher County No-till LESA Irrigated RACE variety trial, Cody Gruhlkey Farm, Kress, TX, 2013.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	color 1	color 2
	units	32 <sup>nds</sup> inch	%	g/tex	%	grade	reflectance	yellowness		
Croplan Genetics 3156B2RF	3.3	34.8	80.2	27.6	9.1	2.3	76.5	8.1	3.3	1.0
Deltapine 1212B2RF	4.2	37.0	82.3	31.1	11.4	2.0	76.5	9.3	2.3	1.7
FiberMax 2011GT	4.1	36.1	81.1	29.7	8.8	1.3	77.7	8.0	3.3	1.0
FiberMax 9250GL	3.4	37.2	80.0	29.5	7.6	1.3	78.1	7.8	3.3	1.0
NexGen 1511B2RF	4.2	35.2	81.0	29.4	11.3	2.3	76.8	9.2	2.7	1.0
NexGen 4111RF	3.8	36.1	82.1	30.5	10.1	1.3	77.2	9.1	2.3	1.0
PhytoGen 339WRF	3.8	37.8	82.2	30.9	9.8	1.3	79.4	8.0	2.3	1.0
PhytoGen 367WRF	3.7	36.2	81.1	29.4	10.4	1.3	76.7	9.2	3.0	1.0
Test average	3.8	36.3	81.3	29.8	9.8	1.7	77.4	8.6	2.8	1.1
CV, %	5.8	1.4	0.9	2.1	3.2	43.4	1.3	2.8	--	--
OSL	0.0014	<0.0001	0.0059	0.0002	<0.0001	0.3309	0.0405	<0.0001	--	--
LSD	0.4	0.9	1.2	1.1	0.6	NS	1.8	0.4	--	--

CV - coefficient of variation.

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

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



**Replicated LESA Irrigated RACE Variety Trial,  
Brownfield, TX - 2013**

**Cooperator: Keith Harrison**

**Mark Kelley, Kristie Keys, Hayden Alexander, Chris Bishop, and Scott Russell  
Extension Agronomist – Cotton, Extension Assistants – Cotton,  
CEA-ANR Terry County, and EA-IPM Terry/Yoakum Counties**

**Terry County**

**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:	Deltapine 1044B2RF, FiberMax 2484B2F, FiberMax 2989GLB2, NexGen 1511B2RF, NexGen 3348B2RF, PhytoGen 367WRF, PhytoGen 499WRF and Stoneville 4946GLB2
Experimental design:	Randomized complete block with four (4) replications.
Seeding rate:	3.0 seed/row-ft in 40 inch row spacings. (John Deere 1700 Vacuum planter) into prepared, listed rows.
Plot size:	4 rows by variable length due to center pivot
Planting date:	23-May
Weed management:	Roundup PowerMax was applied over-the-top at 48 oz/ac with AMS on 27-June and 40 oz/ac on 29-July. A 20" banded application of 20 oz/ac Roundup PowerMax was applied with 6 oz/acre mepiquat chloride on 13-July
Irrigation:	3.0" of irrigation were applied via LESA irrigation preplant with 13.68" of LESA irrigation during the growing season for a total of 16.68" applied irrigation.

Rainfall:	Based on the nearest Texas Tech University- West Texas Mesonet station at Brownfield, rainfall amounts were:  <table> <tr> <td>April: 0.00"</td><td>August: 1.19"</td></tr> <tr> <td>May: 0.49"</td><td>September: 0.67"</td></tr> <tr> <td>June: 1.97"</td><td>October: 1.58"</td></tr> <tr> <td>July: 2.24"</td><td></td></tr> </table> Total rainfall: 8.14"	April: 0.00"	August: 1.19"	May: 0.49"	September: 0.67"	June: 1.97"	October: 1.58"	July: 2.24"	
April: 0.00"	August: 1.19"								
May: 0.49"	September: 0.67"								
June: 1.97"	October: 1.58"								
July: 2.24"									
Fertilizer management:	6 gals/ac 28-0-0-5 were side dress applied with a sweep with 2 gals/ac of Black Label on 20-June.								
Plant growth regulators:	6 oz/ac of mepiquat chloride was applied in a 20" band with 20 oz/ac Roundup PowerMax on 13-July								
Harvest aids:	No harvest aids were required at this location.								
Harvest:	Plots were harvested on 21-November using a commercial John Deere 7450 with field cleaner. Harvested material was transferred to producers boll buggy and a Western Forage Systems Flat-bed Scale system was used 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 A&M AgriLife Research and Extension Center at Lubbock to determine gin turnouts.								
Fiber analysis:	Lint samples were submitted to the Texas Tech University – Fiber and Biopolymer Research Institute for HVI analysis, and USDA Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.								
Ginning cost and seed values:	Ginning cost were based on \$3.00 per cwt. of burr cotton and seed value/acre was based on \$250/ton. Ginning cost did not include check-off.								
Seed and Technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (3.0 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: <a href="http://plainscotton.org/Seed/PCGseed13.xls">http://plainscotton.org/Seed/PCGseed13.xls</a> .								

## Results and Discussion:

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

Significant differences were noted for most yield and economic parameters (Table 2). Lint turnout averaged 34.3% with a high of 36.6% for NexGen 1511B2RF and a low of 33.3% for FiberMax 2989GLB2 (both company provided seed and Grower

Seed (GS)) and Deltapine 1044B2RF. Bur cotton yield averaged 1966 lb/acre and ranged from a high of 2516 lb/acre for Stoneville 4946GLB2 to a low of 1562 lb/acre for FiberMax 2484B2F. Lint yields varied from a low of 535 lb/acre (FiberMax 2484B2F and FiberMax 2989GLB2) to a high of 852 lb/acre (Stoneville 4946GLB2). Lint loan values averaged \$.5602/lb across varieties and differences among varieties were not significant. When adding lint and seed value, total values ranged from a high of \$645.21/acre for Stoneville 4946GLB2 to a low of \$398.83/acre for FiberMax 2989GLB2. After subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of \$508.61/acre (Stoneville 4946GLB2) to a low of \$289.40/acre (FiberMax 2989GLB2), a difference of \$219.21.

Significant differences were observed among varieties for most fiber quality parameters measured at this location (Table 3). Micronaire values ranged from a low of 3.6 for NexGen 3348B2RF and FiberMax 2484B2F to a high of 4.4 for NexGen 1511B2RF. Staple averaged 35.2 across all varieties with a high of 36.3 for FiberMax 2484B2F and a low of 34.5 for PhytoGen 499WRF and FiberMax 2989GLB2. Uniformity ranged from a high of 82.1% for Stoneville 4946GLB2 to a low of 79.9% for both company provided and GS FiberMax 2989GLB2 with a test average of 80.9%. Strength ranged from a low of 27.5 g/tex for FiberMax 2989GLB2 to a high of 31.6 g/tex for Stoneville 4946GLB2. Elongation averaged 9.1% across varieties and leaf grades were mostly 1 and 2. Color grade components of Rd (reflectance) and +b (yellowness) averaged 78.8 and 8.1, respectively and resulted in color grades of mostly 21 and 31.

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

### **Acknowledgments:**

Appreciation is expressed to Keith Harrison for the use of his land, equipment and labor for this demonstration. Further assistance with this project was provided by Dr. Jane Dever and Ms. Valerie Morgan - Texas A&M AgriLife Research and Extension Center, Lubbock, and Dr. Eric Hequet - Associate Director, Fiber and Biopolymer Research Institute, Texas Tech University. Furthermore, we greatly appreciate the Fiber Initiative for funding of HVI testing.

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Table 1. Inseason plant measurement results from the Terry County LESA Irrigated RACE Variety Trial, Keith Harrison Farm, Brownfield, TX, 2013.

Entry	Plant population		Nodes Above White Flower (NAWF) for week of			Storm resistance
	plants/row ft	plants/acre	30-Jul	19-Aug	28-Aug	
Deltapine 1044B2RF	2.3	29,403	10.1	6.4	3.7	6.0
FiberMax 2484B2F	2.5	32,307	8.4	5.8	3.1	6.7
FiberMax 2989GLB2	2.4	30,855	9.4	5.6	3.5	5.0
FiberMax 2989GLB2 (GS)	2.5	32,307	8.9	4.3	3.0	4.3
NexGen 1511B2RF	2.6	34,122	8.9	5.4	3.5	6.0
NexGen 3348B2RF	1.8	23,595	8.7	6.3	3.2	7.7
PhytoGen 367WRF	2.0	25,773	9.6	6.6	4.7	5.3
PhytoGen 499WRF	2.0	25,773	9.6	6.7	4.1	6.0
Stoneville 4946GLB2	2.5	32,670	8.5	5.3	2.9	7.0
Test average	2.3	29,645	9.1	5.8	3.5	6.0
CV, %	17.3	17.9	4.3	13.5	12.8	14.4
OSL	0.2161	0.2383	0.0008	0.0404	0.0037	0.0069
LSD	NS	NS	0.7	1.4	0.8	1.5

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

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

CV - coefficient of variation.

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

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

(GS) - Grower Seed

Table 2. Harvest results from the Terry County LESA Irrigated RACE Variety Trial, Keith Harrison Farm, Brownfield, TX, 2013.

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 <sup>1</sup>	Net value
	%		lb/acre		\$/lb		\$/acre					
Stoneville 4946GLB2	33.9	50.5	2516	852	1270	0.5710	486.41	158.80	645.21	75.48	61.13	508.61 a
NexGen 1511B2RF	36.6	48.3	2301	843	1113	0.5592	471.31	139.07	610.38	69.04	53.53	487.80 a
PhytoGen 367WRF	34.9	50.7	2299	802	1166	0.5680	455.40	145.79	601.20	68.96	56.49	475.75 ab
PhytoGen 499WRF	35.6	48.8	2040	726	995	0.5495	399.16	124.40	523.56	61.21	56.49	405.86 bc
NexGen 3348B2RF	33.6	52.3	1872	628	978	0.5573	350.02	122.29	472.32	56.16	46.75	369.41 cd
Deltapine 1044B2RF	33.3	52.8	1855	617	979	0.5605	345.94	122.36	468.30	55.66	55.50	357.15 cde
FiberMax 2989GLB2 (GS)	33.3	51.8	1639	546	848	0.5577	304.61	106.02	410.63	49.16	61.13	300.35 de
FiberMax 2484B2F	34.3	49.0	1562	535	765	0.5683	304.14	95.67	399.82	46.85	59.89	293.07 e
FiberMax 2989GLB2	33.3	51.8	1610	535	834	0.5503	294.58	104.24	398.83	48.30	61.13	289.40 e
Test average	34.3	50.7	1966	676	994	0.5602	379.06	124.30	503.36	58.98	56.89	387.49
CV, %	5.1	2.3	9.4	9.4	9.5	1.9	9.5	9.5	9.5	9.4	--	10.9
OSL	0.2821	0.0016	<0.0001	<0.0001	<0.0001	0.2321	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001
LSD	NS	2.0	321	110	163	NS	62.34	20.34	82.66	9.64	--	73.02

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, NS - not significant.

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

Assumes:

\$3.00/cwt ginning cost.

\$250/ton for seed.

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

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

(GS) - Grower Seed

Table 3. HVI fiber property results from the Terry County LESA Irrigated RACE Variety Trial, Keith Harrison Farm, Brownfield, TX, 2013.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade
	units	32 <sup>nds</sup> inch	%	g/tex	%	grade	reflectance	yellowness	color 1 color 2
Deltapine 1044B2RF	3.7	35.0	80.4	29.2	9.9	1.0	79.8	8.3	2.0 1.0
FiberMax 2484B2F	3.6	36.3	80.1	29.4	7.6	1.3	82.4	7.4	2.3 1.0
FiberMax 2989GLB2	4.1	34.5	79.9	27.5	7.8	1.3	79.5	7.8	3.0 1.0
FiberMax 2989GLB2 (GS)	3.9	34.7	79.9	28.7	7.8	1.3	78.6	7.7	3.0 1.0
NexGen 1511B2RF	4.4	34.9	82.0	30.9	10.1	1.3	77.3	8.2	3.0 1.0
NexGen 3348B2RF	3.6	35.4	81.6	30.9	8.8	1.7	76.9	7.9	3.3 1.0
PhytoGen 367WRF	3.9	35.1	80.6	29.1	9.7	1.3	78.2	8.8	2.3 1.0
PhytoGen 499WRF	4.1	34.5	81.7	30.4	10.4	1.3	78.3	8.7	2.3 1.0
Stoneville 4946GLB2	3.9	36.2	82.1	31.6	9.5	2.0	78.4	8.3	3.0 1.0
Test average	3.9	35.2	80.9	29.7	9.1	1.4	78.8	8.1	2.7 1.0
CV, %	2.9	1.6	0.7	3.0	3.4	52.1	1.1	3.5	-- --
OSL	<0.0001	0.0079	0.0002	0.0009	<0.0001	0.8854	<0.0001	0.0003	-- --
LSD	0.2	1.0	1.0	1.5	0.5	NS	1.5	0.5	-- --

CV - coefficient of variation.

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

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

(GS) - Grower Seed



## **Texas Panhandle Cotton Variety Trials**

January 2013

Dr. Mark Kelley, Extension Agronomist – Cotton  
Texas A&M AgriLife Extension Service  
Lubbock, TX  
and  
Mr. R. Colton Smith – Extension Assistant  
Texas A&M AgriLife Extension Service  
Amarillo, 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 in producers' fields in the Texas Panhandle. For scientific validity, three replications of each variety were included at each of 3 locations. Trials were conducted under irrigation in White Deer and Kress with a dryland location near Pampa. Plot weights were determined at harvest using a flat-bed scale trailer and bur cotton yields were subsequently calculated by plot.

At the White Deer location, substantial field variability was observed and resulted in significant differences among varieties for lint and seed turnout only for the yield and economic parameters measured at this location. Lint turnouts of field-cleaned bur cotton averaged 30.4% with a high of 34.2% for FiberMax 1740B2F and seed turnouts ranged from a high of 51.7% for Croplan Genetics 3006B2RF to a low of 44.6% for PhytoGen 367WRF. Bur cotton, lint and seed yields averaged 2472, 752, and 1184 lb/acre, respectively. Loan values averaged \$0.4952/lb and resulted in an average lint value/acre of \$372.04 and ultimately, net value averaged \$353.30/acre across varieties. At the Pampa dryland location, lint turnouts averaged 32.9%. Lint yields ranged from a high of 647 lb/acre for Deltapine 1212B2RF to a low of 476 lb/acre for FiberMax 1944GLB2. Loan values ranged from a high of \$0.5297 for Deltapine 1212B2RF to a low of \$0.4413 for Croplan Genetics 3156B2RF. After subtracting ginning and seed/technology costs, net value averaged \$294.78/acre and ranged from a high of \$359.64/acre to a low of \$241.46/acre for Deltapine 1212B2RF and FiberMax 1944GLB2, respectively. At the Kress irrigated location, lint turnouts averaged 31.8% and lint yields ranged from a high of 1722 lb/acre for NexGen 1511B2RF to a low of 1440 lb/acre for FiberMax 9250GL. Loan values ranged from \$0.5787 for PhytoGen 339WRF to \$0.5173 for Croplan Genetics 3156B2RF. After subtracting ginning and seed/technology costs from total value, net value averaged \$934.21/acre all across varieties. However, no significant differences were observed among varieties for net value/acre.

These current data indicate that substantial differences may not be observed in terms of net value/acre due to variety and technology selection under individual production systems. Differences in net value/acre, have however been observed among varieties at other locations across multiple years in the Texas Panhandle. As industry continues to release new varieties with varying technologies, additional multi-site and multi-year applied research is needed to evaluate these varieties across a series of environments.

## **Texas Panhandle Cotton Variety Trials**

**January 2014**

**Dr. Mark Kelley, Extension Agronomist – Cotton  
Texas A&M AgriLife Extension Service  
Lubbock, TX  
and  
Mr. R. Colton Smith – Extension Assistant  
Texas A&M AgriLife Extension Service  
Amarillo, TX**

### **Introduction**

Over the last couple years, cotton producers in the Texas Panhandle region have seen a decrease in the number of harvested acres of cotton from approximately 745,000 in 2010 to an estimated 415,000 in 2013. Although planted acreage, was down in 2013, cotton production is still a very important part of the economy in this region and it is anticipated that cotton acreage will increase in 2014. With improved genetics and technologies, as well as rotational crop management systems, cotton yields in the Texas Panhandle topped 1.022 million bales in 2012.

Industry continues to increase the number of herbicide-tolerant, insect-resistant, and "stacked gene" varieties. Liberty Link Ignite herbicide-tolerant varieties (from Bayer CropScience) were first marketed in 2004. The first commercial "stacked Bt gene" system (Bollgard II from Monsanto) was launched in 2004. Varieties containing Monsanto's Roundup Ready Flex gene system were commercialized in 2006. Widestrike "stacked Bt gene" technology from Dow AgroSciences was available in some PhytoGen varieties in 2005, with additional Roundup Ready Flex "stacked" types in the market in 2006. Liberty Link with Bollgard II types were also commercialized in 2006. In 2011, Bayer CropScience made Glytol and Glytol stacked with Liberty Link available to producers in limited quantities. Furthermore, in 2012, Bayer introduced several Glytol/Liberty Link varieties stacked with Bollgard II technology. New transgenic varieties continue to be marketed in the High Plains by All-Tex, Americot/NexGen, Croplan Genetics, Delta and Pine Land/Monsanto, Dyna-Gro, the Bayer CropScience FiberMax/Stoneville brands, and the Dow AgroSciences PhytoGen brand. More transgenic varieties are expected to be released by these companies in the future. Additional cotton biotechnologies are also anticipated in the near future. These technologies include Roundup ExtendFlex from Monsanto/Deltapine and Enlist from Dow AgroSciences/PhytoGen. ExtendFlex technology will impart resistance to three herbicide molecules, dicamba, glyphosate, and glufosinate. Varieties with Enlist technology will be resistant to a new formulation of the 2,4-D herbicide as well as glyphosate and glufosinate. 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 Panhandle regions.

## **Materials and Methods**

For scientific validity, three replications of each variety were planned at each of four original locations. Two trials were initiated under irrigation in Sherman County (near Sunray) and Carson County (near White Deer), and 1 dryland trial was located in Gray County (near Pampa). Another irrigated location was planned for Moore County, however, the producer inadvertently planted bulk cotton over the proposed test area. Additionally, due to inclement weather, the location in Sherman County was lost and replanted to an alternative crop. Therefore, it was mutually agreed upon to substitute 2 similar trials located in Swisher and Bailey Counties for the two lost locations. Unfortunately, the location in Bailey County was also lost to a severe weather event later in the season. Therefore, only three locations were taken to harvest and a randomized complete block design was used at all locations. Weed and insect control measures, if needed, and harvest aid applications were performed commercially or by cooperating producers. Plots were harvested with commercial harvesters by producers with assistance provided by program personnel at all locations. Individual location information was as follows:

### **Location 1: White Deer, TX – Carson County**

At the White Deer irrigated location, twelve varieties were planted to 30" rows following wheat on 24-May with a seeding rate of approximately 68,000 seed per acre. This location was under a Low Elevation Spray Application (LESA) center pivot irrigation system and a combined total of 17" of moisture was applied or received as rainfall. Plot size was 8 rows wide by 600 feet long. Plots were harvested on 31-December using producer/cooperator equipment and grab samples were taken by plot and ginned at the Texas A&M AgriLife Research and Extension Center at Lubbock. Resulting lint samples were submitted to the Texas Tech University – Fiber and Biopolymer Research Institute for HVI fiber analysis and CCC loan values were calculated.

Varieties planted at White Deer:

1. FiberMax 2011GT
2. FiberMax 9250GL
3. FiberMax 1740B2F
4. FiberMax 9180B2F
5. Deltapine 104B2RF
6. Deltapine 1212B2RF
7. Croplan Genetics 3006B2RF
8. Croplan Genetics 3156B2RF
9. NexGen 1511B2RF
10. NexGen 4111RF
11. PhytoGen 367WRF
12. PhytoGen 375WRF

### **Location 2: Pampa, TX – Gray County**

At the Pampa location, 8 varieties were planted to 30" rows on 16-May with a seeding rate of approximately 32,000 seed per acre. This location was under a dryland productions system and received a total of 16.05" of rainfall during the growing season. However, most of the rain events were in small amounts and it is anticipated that yields will reflect this occurrence. Plot size was 8 rows wide by 1320 feet long. Plots were harvested using producer/cooperator equipment and grab samples were taken by plot and were ginned at the Texas A&M AgriLife Research and Extension Center at Lubbock. Resulting lint samples were subsequently

submitted to the Texas Tech University – Fiber and Biopolymer Research Institute for HVI fiber analysis and CCC loan values were calculated.

Varieties planted at Pampa (Dryland):

1. Croplan Genetics 3156B2RF
2. Deltapine 1032B2RF
3. Deltapine 1212B2RF
4. FiberMax 1944GLB2
5. FiberMax 2011GT
6. NexGen 1511B2RF
7. NexGen 4010B2RF
8. PhytoGen 367WRF

**Location 3: Kress, TX – Swisher County**

At the Kress location, 8 varieties were planted to 40" rows on 20-May into fallowed wheat stubble under a no-till LESA irrigated production system. A seeding rate of approximately 50,000 seed per acre was utilized. This location received a total of 12.2" of rainfall during the growing season according to the producer. Furthermore, the producer indicated he applied an additional 14.25" of irrigation throughout the growing season. It should be noted that most of the rain events were in small amounts and did not greatly benefit the crop over the irrigation. This is reflected in the yields that were observed. Plot size was 8 rows wide by variable length due to center pivot. Plots were harvested on 19-Nov using producer/cooperator equipment and grab samples were taken by plot and will be ginned at the Texas A&M AgriLife Research and Extension Center at Lubbock. Resulting lint samples were submitted to the Texas Tech University – Fiber and Biopolymer Research Institute for HVI fiber analysis and CCC loan values were calculated.

Varieties planted at Kress:

1. Croplan Genetics 3156B2RF
2. Deltapine 1212B2RF
3. FiberMax 2011GT
4. FiberMax 9250GL
5. NexGen 1511B2RF
6. NexGen 4111RF
7. PhytoGen 339WRF
8. PhytoGen 367WRF

## **Yield and HVI Results**

Yield and HVI results by variety are included in tables 1 and 2 for the White Deer location, tables 3 and 4 for the Pampa location and tables 5 and 6 for the Kress location.

### **Location 1 – White Deer**

At the White Deer – Carson County irrigated location, substantial field variability was observed and resulted in significant differences among varieties for lint and seed turnout only for the yield and economic parameters measured at this location (Table 1). Lint turnouts of field-cleaned bur cotton averaged 30.4% with a high of 34.2% for FiberMax 1740B2F and a low of 26.0% for Croplan Genetics 3006B2RF. Seed turnouts ranged from a high of 51.7% for Croplan Genetics 3006B2RF to a low of 44.6% for PhytoGen 367WRF. Bur cotton, lint and seed yields averaged 2472, 752, and 1184 lb/acre, respectively. Loan values derived from grab samples averaged \$0.4952/lb and resulted in an average lint value/acre of \$372.04. After subtracting ginning and seed/technology costs from total value (lint value + seed value), net value averaged \$353.30/acre across varieties. This location was planted relatively late and therefore, the yield and fiber quality parameters were less than optimal for all varieties included. Furthermore, a large number of “sticks/stems” were observed in most of the samples and are attributed to creating the abnormal variability which prevented separation of variety performance for most yield and economic parameters.

Classing data from grab samples are reported in Table 2. Micronaire values at White Deer ranged from a high of 3.8 for NexGen 1511B2RF, to a low of 3.1 for Deltapine 104B2RF. Staple was highest for Croplan Genetics 3006B2RF (37.3) and lowest for Croplan Genetics 3156B2RF (34.2). The highest uniformity, 80.9%, was observed for Croplan Genetics 3006B2RF and FiberMax 2011GT had the lowest with 78.0%. Fiber strength values ranged from a high of 32.0 g/tex for Deltapine 104B2RF to a low of 27.7 g/tex for Croplan Genetics 3156B2RF. Elongation averaged 8.9% and leaf grades ranged from 1 to 3. Color grade components of Rd (reflectance) and +b (yellowness) averaged 70.9 and 11.1, respectively and resulted in color grades of mostly 32 and 33. These fiber qualities were below what has been observed under good growing conditions in the Texas Panhandle with the color grades a direct result of “weathering” from the late harvest that occurred at this location.

### **Location 2 - Pampa**

At the Pampa – Gray County dryland location, lint turnouts of field-cleaned bur cotton averaged 32.9% (Table 3). Bur cotton yields averaged 1745 lb/acre and Deltapine 1212B2RF was greatest with 1977 lbs/acre. Lint yields ranged from a high of 647 lb/acre for Deltapine 1212B2RF to a low of 476 lb/acre for FiberMax 1944GLB2, and seed yields averaged 822 lb/acre. Loan values derived from grab samples ranged from a high of \$0.5297 for Deltapine 1212B2RF to a low of \$0.4413 for Croplan Genetics 3156B2RF. After applying loan values to lint yields, the test average lint value was \$286.11/acre. After subtracting ginning and seed/technology costs from total value (lint value + seed value), net value averaged \$294.78/acre all across varieties. Net values ranged from a high of \$359.64/acre to a low of \$241.46/acre for Deltapine 1212B2RF and FiberMax 1944GLB2, respectively. Two other varieties were included in the statistical upper tier for net value with Deltapine 1212B2RF. These varieties were FiberMax 2011GT (\$331.97/acre) and NexGen 1511B2RF (\$321.12/acre). A difference

of approximately \$118/acre was observed between the highest and lowest performing varieties at this location.

Classing data from grab samples are reported in Table 4. Micronaire values at Pampa ranged from a high of 4.3 for NexGen 1511B2RF, to a low of 3.2 for Croplan Genetics 3156B2RF. Staple was highest for Deltapine 1212B2RF (33.9) and lowest for Croplan Genetics 3156B2RF (31.8). The highest uniformity, 78.7%, was observed in four varieties (Deltapine 1212B2RF, NexGen 1511B2RF, NexGen 4010B2RF, and PhytoGen 367WRF) and Croplan Genetics 3156B2RF had the lowest with 76.1%. Fiber strength values ranged from a high of 29.9 g/tex for NexGen 1511B2RF to a low of 25.2 g/tex for FiberMax 1944GLB2. Elongation averaged 7.6% and leaf grades ranged from 1 to 3. Color grade components of Rd (reflectance) and +b (yellowness) averaged 75.2 and 8.7, respectively and resulted in color grades of mostly 31 and 41.

### **Location 3 - Kress**

At the Kress location, lint turnouts of field-cleaned bur cotton averaged 31.8% (Table 5). Bur cotton yields averaged 4862 lb/acre and NexGen 1511B2RF was greatest with 5080 lbs/acre. Lint yields ranged from a high of 1722 lb/acre for NexGen 1511B2RF to a low of 1440 lb/acre for FiberMax 9250GL, and seed yields averaged 2263 lb/acre. Loan values derived from grab samples ranged from \$0.5787 for PhytoGen 339WRF to \$0.5173 for Croplan Genetics 3156B2RF. After applying loan values to lint yields, the test average lint value was \$864.09/acre. After subtracting ginning and seed/technology costs from total value (lint value + seed value), net value averaged \$934.21/acre all across varieties. No significant differences were observed among varieties for net value/acre.

Classing data from grab samples are reported in Table 6. Micronaire values at Kress ranged from a high of 4.2 for Deltapine 1212B2RF and NexGen 1551RF, to a low of 3.3 for Croplan Genetics 3156B2RF. Staple was highest for PhytoGen 339WRF (37.8) and lowest for Croplan Genetics 3156B2RF (34.8). The highest uniformity, 82.3%, was observed in Deltapine 1212B2RF and FiberMax 9250GL had the lowest with 80.0%. Fiber strength values ranged from a high of 31.1 g/tex for Deltapine 1212B2RF to a low of 27.6 g/tex for Croplan Genetics 3156B2RF. Leaf and color grades were mostly 2 and 31, respectively.

### **Summary and Conclusions**

Over the last several years, cotton producers in the Texas Panhandle region have increased planted acreage of cotton from approximately 616 thousand in 2008 to approximately 1.25 million in 2011. Although acreage was down in 2012, cotton production is still a very important part of the economy in this region. With improved genetics and technologies, as well as rotational crop management systems, cotton yields in the Texas Panhandle topped 1.4 million bales in 2010. Characteristics commonly evaluated in small-plot testing include lint yield, turnout percentages, fiber quality, and earliness. Current small-plot variety testing programs are inadequate in scale and design to investigate the economic impact of new transgenic varieties with value-added traits. The objective of this project was to evaluate the profitability of cotton

varieties in producers' fields in the Texas Panhandle. For scientific validity, three replications of each variety were planned at each of four original locations. Two trials were initiated under irrigation in Sherman County (near Sunray) and Carson County (near White Deer), and 1 dryland trial was located in Gray County (near Pampa). Another irrigated location was planned for Moore County; however, the producer inadvertently planted bulk cotton over the proposed test area. Additionally, due to inclement weather, the location in Sherman County was lost and replanted to an alternative crop. Therefore, it was mutually agreed upon to substitute 2 similar trials located in Swisher and Bailey Counties for the two lost locations. Unfortunately, the location in Bailey County was also lost to a severe weather event later in the season. Therefore, only three locations were taken to harvest and a randomized complete block design was used at all locations. Weed and insect control measures, if needed, and harvest aid applications were performed commercially or by cooperating producers. Plots were harvested with commercial harvesters by producers with assistance provided by program personnel at all locations. Plot weights were determined at harvest using a flat-bed scale trailer with integral electronic scales and bur cotton yields were subsequently calculated by plot.

At the White Deer – Carson County irrigated location, substantial field variability was observed and resulted in significant differences among varieties for lint and seed turnout only for the yield and economic parameters measured at this location. Lint turnouts of field-cleaned bur cotton averaged 30.4% with a high of 34.2% for FiberMax 1740B2F and seed turnouts ranged from a high of 51.7% for Croplan Genetics 3006B2RF to a low of 44.6% for PhytoGen 367WRF. Bur cotton, lint and seed yields averaged 2472, 752, and 1184 lb/acre, respectively. Loan values derived from grab samples averaged \$0.4952/lb and resulted in an average lint value/acre of \$372.04. After subtracting ginning and seed/technology costs from total value, net value averaged \$353.30/acre across varieties. This location was planted relatively late and therefore, the yield and fiber quality parameters were less than optimal for all varieties tested. Furthermore, a large number of “sticks/stems” were observed in most of the samples and are attributed to creating the abnormal variability which prevented separation of variety performance for most yield and economic parameters. At the Pampa dryland location, lint turnouts of field-cleaned bur cotton averaged 32.9%. Bur cotton yields averaged 1745 lb/acre and Deltapine 1212B2RF was greatest with 1977 lbs/acre. Lint yields ranged from a high of 647 lb/acre for Deltapine 1212B2RF to a low of 476 lb/acre for FiberMax 1944GLB2. Loan values ranged from a high of \$0.5297 for Deltapine 1212B2RF to a low of \$0.4413 for Croplan Genetics 3156B2RF. When subtracting ginning and seed/technology costs from total value (lint value + seed value), net value averaged \$294.78/acre all across varieties. Net values ranged from a high of \$359.64/acre to a low of \$241.46/acre for Deltapine 1212B2RF and FiberMax 1944GLB2, respectively. Two other varieties were included in the statistical upper tier for net value with Deltapine 1212B2RF. These varieties were FiberMax 2011GT (\$331.97/acre) and NexGen 1511B2RF (\$321.12/acre). A difference of approximately \$118/acre was observed between the highest and lowest performing varieties at this location. At the Kress irrigated location, lint turnouts of field-cleaned bur cotton averaged 31.8%. Bur cotton yields averaged 4862 lb/acre and NexGen 1511B2RF was greatest with 5080 lbs/acre. Lint yields ranged from a high of 1722 lb/acre for NexGen 1511B2RF to a low of 1440 lb/acre for FiberMax 9250GL, and seed yields averaged 2263 lb/acre. Loan values derived from grab samples ranged from \$0.5787 for PhytoGen 339WRF to \$0.5173 for Croplan Genetics 3156B2RF. After applying loan values to lint yields, the test average lint value

was \$864.09/acre. When subtracting ginning and seed/technology costs from total value (lint value + seed value), net value averaged \$934.21/acre all across varieties. No significant differences were observed among varieties for net value/acre.

These current data indicate that substantial differences may not be observed in terms of net value/acre due to variety and technology selection under individual production systems. Differences in net value/acre, have however been observed among varieties at other locations across multiple years in the Texas Panhandle. As industry continues to release new varieties with varying technologies, additional multi-site and multi-year applied research is needed to evaluate these varieties across a series of environments.

### **Acknowledgments**

We wish to express our appreciation to the producer-cooperators: Dudley Ponhert of Pampa (White Deer, or Carson County location), Chris Rapstine of Pampa (Gray County location) and Cody Gruhlkey of Kress (Swisher County location) for providing the land, equipment and time to conduct these projects. Furthermore, we thank Dr. Jane Dever and Ms. Valerie Morgan – Texas A&M AgriLife Research for use of the ginning facilities and Dr. Eric Hequet – Texas Tech University Fiber and Biopolymer Research Institute for HVI fiber quality analyses. Finally, our deepest gratitude is expressed to Cotton Incorporated – Texas State Support Committee for their generosity in funding for this and other research projects.



Table 1. Harvest results from the Irrigated Large Plot Replicated Cotton Variety Trial, Dudley Ponhert Farm, White Deer, TX, 2013.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Seed/technology cost	Net value
	----- % -----			----- lb/acre -----		\$/lb				\$/acre		
Deltapine 1212B2RF	32.2	51.2	2541	818	1301	0.5047	413.01	162.63	575.65	76.23	100.19	399.23
NexGen 1511B2RF	32.4	44.9	2626	850	1179	0.4877	414.60	147.36	561.96	78.77	91.00	392.19
FiberMax 9180B2F	29.0	48.4	2650	768	1282	0.5185	398.33	160.21	558.54	79.50	100.27	378.77
Deltapine 104B2RF	27.9	50.2	2880	803	1446	0.4705	377.68	180.70	558.39	86.39	94.34	377.65
FiberMax 1740B2F	34.2	49.7	2311	790	1149	0.4993	394.53	143.62	538.14	69.33	93.16	375.65
FiberMax 2011GT	32.2	44.7	2420	779	1081	0.4992	388.87	135.17	524.03	72.60	87.32	364.11
PhytoGen 375WRF	32.6	47.8	2444	797	1168	0.4837	385.63	145.96	531.59	73.33	96.03	362.23
Croplan Genetics 3156B2RF	30.4	47.0	2505	761	1178	0.4913	373.68	147.19	520.87	75.14	95.14	350.59
FiberMax 9250GL	29.9	47.7	2372	709	1130	0.4997	354.39	141.31	495.70	71.15	90.41	334.14
PhytoGen 367WRF	28.6	44.6	2614	746	1166	0.4843	361.46	145.71	507.17	78.41	96.03	332.74
NexGen 4111RF	29.8	47.1	2105	628	991	0.4910	308.24	123.89	432.12	63.16	71.78	297.18
Croplan Genetics 3006B2RF	26.0	51.7	2202	573	1137	0.5130	294.10	142.18	436.28	66.07	95.14	275.07
Test average	30.4	47.9	2472	752	1184	0.4952	372.04	147.99	520.04	74.17	92.57	353.30
CV, %	7.6	4.8	21.0	21.2	20.8	3.8	21.1	20.8	21.0	21.0	--	26.5
OSL	0.0115	0.0079	0.8842	0.6815	0.7610	0.1919	0.7256	0.7608	0.8508	0.8842	--	0.8909
LSD	3.9	3.9	NS	NS	NS	NS	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.

\$250/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 Irrigated Large Plot Replicated Cotton Variety Trial, Dudley Ponhert Farm, White Deer, TX, 2013.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 <sup>nds</sup> inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
Croplan Genetics 3006B2RF Croplan Genetics 3156B2RF Deltapine 104B2RF Deltapine 1212B2RF FiberMax 1740B2F FiberMax 2011GT FiberMax 9180B2F FiberMax 9250GL NexGen 1511B2RF NexGen 4111RF PhytoGen 367WRF PhytoGen 375WRF	3.6	37.3	80.9	29.5	9.2	3.3	72.0	9.8	3.3	2.0
	3.4	34.2	78.1	27.7	8.4	2.3	70.7	11.0	2.7	2.7
	3.1	35.8	80.0	32.0	9.5	3.3	71.2	10.3	3.3	2.7
	3.7	36.4	80.3	30.9	9.9	2.7	71.1	11.4	3.0	3.0
	3.7	34.2	78.7	29.2	8.7	1.0	70.6	11.4	2.7	3.0
	3.4	34.6	78.0	29.1	8.3	1.7	72.6	11.3	2.3	2.7
	3.7	36.7	80.5	31.5	9.0	3.0	71.8	10.3	3.3	2.0
	3.3	36.4	79.4	29.7	7.1	2.3	73.4	9.9	3.3	2.0
	3.8	34.9	79.6	30.4	10.4	3.3	67.0	12.1	3.0	3.3
	3.5	35.4	80.6	30.8	8.7	2.3	69.4	12.1	2.7	3.3
	3.4	35.8	80.3	30.0	9.3	2.0	70.5	11.5	3.0	3.0
	3.5	34.8	79.6	29.8	8.5	2.3	69.9	11.8	2.7	3.0
Test average	3.5	35.5	79.7	30.1	8.9	2.5	70.9	11.1	2.9	2.7
CV, %	6.5	2.6	1.4	4.8	8.7	32.2	2.5	6.8	--	--
OSL	0.0272	0.0039	0.0617 <sup>†</sup>	0.0829 <sup>†</sup>	0.0041	0.0364	0.0296	0.0049	--	--
LSD	0.4	1.5	1.6	2.0	1.3	1.3	3.0	1.3	--	--

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level, <sup>†</sup>indicates significance at the 0.10 level.

Table 3. Harvest results from the Large Plot Dryland Cotton Variety Demonstration, Chris Rapstine Farm, Pampa, TX, 2013.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Seed/technology cost	Net value
	%			lb/acre		\$/lb		\$/acre				
Deltapine 1212B2RF	32.7	48.7	1977	647	963	0.5297	342.70	120.44	463.14	59.30	44.20	359.64 a
FiberMax 2011GT	35.3	45.0	1818	642	818	0.5025	322.80	102.23	425.04	54.54	38.52	331.97 ab
NexGen 1511B2RF	36.5	45.1	1742	636	785	0.4957	315.42	98.10	413.52	52.25	40.15	321.12 ab
NexGen 4010B2RF	29.4	47.8	1815	534	868	0.5193	277.13	108.49	385.62	54.45	35.06	296.11 bc
PhytoGen 367WRF	33.4	49.1	1717	574	843	0.4892	280.83	105.39	386.22	51.52	42.37	292.33 bcd
Deltapine 1032B2RF	35.0	46.5	1525	534	710	0.5017	268.05	88.75	356.79	45.76	45.64	265.40 cde
Croplan Genetics 3156B2RF	31.7	46.5	1739	551	808	0.4413	243.37	100.98	344.36	52.16	41.97	250.22 de
FiberMax 1944GLB2	29.2	47.9	1629	476	781	0.5008	238.58	97.59	336.18	48.87	45.85	241.46 e
Test average	32.9	47.1	1745	574	822	0.4975	286.11	102.75	388.86	52.36	41.72	294.78
CV, %	7.6	2.4	7.2	7.3	7.3	3.5	7.6	7.3	7.5	7.2	--	8.6
OSL	0.0223	0.0022	0.0238	0.0014	0.0072	0.0013	0.0003	0.0073	0.0013	0.0237	--	0.0005
LSD	4.4	1.9	220	73	105	0.0307	37.96	13.08	50.92	6.61	--	44.34

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

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level.

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

Assumes:

\$3.00/cwt ginning cost.

\$250/ton for seed.

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

Table 4. HVI fiber property results from the Large Plot Dryland Cotton Variety Demonstration, Chris Rapstine Farm, Pampa, TX, 2013.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 <sup>nds</sup> inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
Croplan Genetics 3156B2RF	3.2	31.8	76.1	25.4	6.0	3.0	75.5	7.9	3.7	1.0
Deltapine 1032B2RF	4.2	33.0	78.0	28.6	7.3	1.3	74.7	8.8	3.3	1.0
Deltapine 1212B2RF	3.7	33.9	78.7	28.8	9.2	3.3	74.4	8.9	3.3	1.0
FiberMax 1944GLB2	3.6	33.2	77.3	25.2	6.2	1.7	77.7	8.2	3.0	1.0
FiberMax 2011GT	3.7	33.0	78.6	28.0	6.9	3.0	75.3	8.4	3.3	1.0
NexGen 1511B2RF	4.3	32.3	78.7	29.9	9.6	3.3	75.1	8.9	3.3	1.0
NexGen 4010B2RF	3.9	33.4	78.7	29.7	7.8	2.7	74.5	9.2	3.0	1.3
PhytoGen 367WRF	3.7	32.5	78.7	27.8	7.7	2.7	74.4	9.4	3.0	1.7
Test average	3.8	32.9	78.1	27.9	7.6	2.6	75.2	8.7	3.3	1.1
CV, %	4.4	1.6	1.5	3.2	6.1	25.5	2.5	3.4	--	--
OSL	<0.0001	0.0073	0.1266	<0.0001	<0.0001	0.0174	0.4549	0.0003	--	--
LSD	0.3	0.9	NS	1.6	0.8	1.2	NS	0.5	--	--
CV - coefficient of variation.										

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 5. Harvest results from the Swisher County No-till LESA Irrigated RACE variety trial, Cody Gruhlkey Farm, Kress, TX, 2013.

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 <sup>1</sup>	Net value
	----- % -----			----- lb/acre -----		\$/lb						
NexGen 1511B2RF	33.9	45.6	5080	1722	2317	0.5633	970.16	289.58	1259.74	152.40	66.91	1040.42
Deltapine 1212B2RF	32.9	47.3	5030	1656	2379	0.5543	918.22	297.33	1215.55	150.90	73.67	990.98
FiberMax 2011GT	34.3	45.1	4636	1588	2090	0.5617	892.09	261.19	1153.28	139.07	64.20	950.01
PhytoGen 339WRF	31.1	46.9	4863	1511	2279	0.5787	874.19	284.83	1159.02	145.88	70.61	942.53
PhytoGen 367WRF	32.1	47.1	4763	1528	2244	0.5705	871.80	280.48	1152.28	142.88	70.61	938.79
NexGen 4111RF	29.9	46.7	4908	1469	2291	0.5757	845.47	286.34	1131.80	147.25	52.78	931.77
FiberMax 9250GL	29.8	47.9	4826	1440	2311	0.5427	781.56	288.83	1070.39	144.77	66.48	859.14
Croplan Genetics 3156B2RF	30.6	45.9	4787	1467	2195	0.5173	759.11	274.43	1033.54	143.62	69.96	819.96
Test average	31.8	46.5	4862	1548	2263	0.5580	864.07	282.87	1146.95	145.85	66.90	934.20
CV, %	6.1	1.6	9.8	9.6	9.8	2.6	9.8	9.8	9.8	9.8	--	10.5
OSL	0.0800 <sup>†</sup>	0.0047	0.9533	0.2982	0.8367	0.0029	0.1269	0.8372	0.3413	0.9533	--	0.2441
LSD	2.8	1.3	NS	NS	NS	0.0257	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, <sup>†</sup>indicates significance at the 0.10 level, NS - not significant.

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

Assumes:

\$3.00/cwt ginning cost.

\$250/ton for seed.

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

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

Table 6. HVI fiber property results from the Swisher County No-till LESA Irrigated RACE variety trial, Cody Gruhlkey Farm, Kress, TX, 2013.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	color 1	color 2
	units	32 <sup>nds</sup> inch	%	g/tex	%	grade	reflectance	yellowness		
Croplan Genetics 3156B2RF	3.3	34.8	80.2	27.6	9.1	2.3	76.5	8.1	3.3	1.0
Deltapine 1212B2RF	4.2	37.0	82.3	31.1	11.4	2.0	76.5	9.3	2.3	1.7
FiberMax 2011GT	4.1	36.1	81.1	29.7	8.8	1.3	77.7	8.0	3.3	1.0
FiberMax 9250GL	3.4	37.2	80.0	29.5	7.6	1.3	78.1	7.8	3.3	1.0
NexGen 1511B2RF	4.2	35.2	81.0	29.4	11.3	2.3	76.8	9.2	2.7	1.0
NexGen 4111RF	3.8	36.1	82.1	30.5	10.1	1.3	77.2	9.1	2.3	1.0
PhytoGen 339WRF	3.8	37.8	82.2	30.9	9.8	1.3	79.4	8.0	2.3	1.0
PhytoGen 367WRF	3.7	36.2	81.1	29.4	10.4	1.3	76.7	9.2	3.0	1.0
Test average	3.8	36.3	81.3	29.8	9.8	1.7	77.4	8.6	2.8	1.1
CV, %	5.8	1.4	0.9	2.1	3.2	43.4	1.3	2.8	--	--
OSL	0.0014	<0.0001	0.0059	0.0002	<0.0001	0.3309	0.0405	<0.0001	--	--
LSD	0.4	0.9	1.2	1.1	0.6	NS	1.8	0.4	--	--

CV - coefficient of variation.

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

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

# **Replicated Dryland Large Plot Demonstrations**



**Replicated Dryland RACE Variety Trial,  
Lamesa, TX - 2013**

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

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

**Dawson County**

**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:	Deltapine 1044B2RF, FiberMax 1944GLB2, FiberMax 2989B2F, NexGen 1511B2RF, NexGen 5315B2RF, PhytoGen 499WRF, PhytoGen 367WRF and Stoneville 4946GLB2
Experimental design:	Randomized complete block with three (3) replications.
Seeding rate:	4.0 seed/row-ft in 40 inch row spacings with a John Deere MaxEmerge XP Vacuum planter on prepared, listed rows
Plot size:	4 rows by variable length (253-872 ft)
Planting date:	15-May
Weed management:	Preplant application of trifluralin was applied at a rate of 1.5 pt/acre on 11-April and a rolling cultivator and rodweeder were used on 12-April and 24-April, respectively. Roundup PowerMax was applied over-the-top at 28 oz/acre on 19-June and at 28 oz/acre on 24-June.



Irrigation: To insure germination, 1.00" inch of irrigation was applied preplant.

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

April: 0.00"	August: 1.02"
May: 0.43"	September: 3.56"
June: 2.39"	October: 2.02"
July: 3.15"	
Total rainfall: 12.57"	

Plant growth regulators: None were applied at this location.

Harvest aids: Harvest aids included 1qt/acre Bollbuster + 1 oz/acre Sharpen with 1% v/v crop oil on 25-September followed by 3 oz/acre ET with 1% v/v crop oil on 1-October.

Harvest: Plots were harvested on 24-October using a commercial John Deere 7445 with field cleaner. Harvested material was transferred into a weigh wagon with integral electronic scales to determine individual plot weights. Plot yields were adjusted to lb/acre.

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

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

Ginning cost and seed values: Ginning costs were based on \$3.00 per cwt. of burr cotton and seed value/acre was based on \$250/ton. Ginning cost did not include check-off.

Seed and Technology fees: Seed and technology costs were calculated using the appropriate seeding rate (4.0 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at:  
<http://plainscotton.org/Seed/PCGseed13.xls>.

## **Results and Discussion:**

Agronomic data including plant population, nodes above white flower (NAWF) and final plant map data are included in Tables 1 and 2.

Significant differences were noted for most yield and economic parameters (Table 3). Stripper harvested lint turnout averaged 37.5% across all varieties. Seed turnouts averaged 48.8% with a high of 50.5% for NexGen 5315B2RF and low of 45.5% for NexGen 1511B2RF. Lint yields ranged from a low of 214 lb/acre (FiberMax 2989GLB2) to a high of 349 lb/acre (Stoneville 4946GLB2). Lint loan values ranged from a low of \$0.4618/lb to a high of \$0.4715/lb for NexGen 1511B2RF and FiberMax 2989GLB2, respectively. Lint value was not significant with a test average of \$137.51/acre. When subtracting ginning and seed and technology costs, the net value/acre averaged \$91.60, and ranged from a high of \$117.13 for Stoneville 4946GLB2 to a low of \$45.38 for FiberMax 2989GLB2, a difference of \$72.05/acre.

Significant differences were observed for most fiber quality parameters at this location (Table 4). Micronaire values ranged from a low of 4.4 for NexGen 1511B2RF and PhytoGen 367WRF to a high of 4.8 for Deltapine 1044B2RF. Staple averaged 31.1 across all varieties with a low of 29.8 (NexGen 1511B2RF) and a high of 31.8 (FiberMax 2989GLB2). Uniformity was significant at the 0.10 level and averaged 77.9%. Strength ranged from a low of 26.4 g/tex for FiberMax 1944GLB2 to a high of 28.9 g/tex for PhytoGen 499WRF. No significant differences were observed among varieties for percent elongation (8.6% avg), Rd or reflectance (72.5 avg), and +b or yellowness (9.9 avg). Leaf grades were mostly 1 and 2, 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. Additional multi-site and multi-year applied research is needed to evaluate varieties across a series of environments.

## **Acknowledgments:**

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

## **Disclaimer Clause:**

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

Table 1. Inseason plant measurement results from the Dawson County Dryland RACE Variety Trial, Texas A&M AgriLife Research - AGCARES Farm, Lamesa, TX, 2013.

Entry	Plant population		Nodes above white flower (NAWF)	
	plants/row ft	plants/acre	30-Jul	8-Aug
Deltapine 1044B2RF	3.3	43,270	6.4	3.5
FiberMax 1944GLB2	3.3	43,705	5.7	3.5
FiberMax 2989GLB2	3.3	43,415	5.7	4.0
NexGen 1511B2RF	3.4	45,012	5.5	4.1
NexGen 5315B2RF	2.7	35,719	6.7	3.5
PhytoGen 367WRF	3.3	42,834	6.2	3.7
PhytoGen 499WRF	3.4	44,431	5.5	4.1
Stoneville 4946GLB2	3.7	48,352	6.1	3.9
Test average	3.3	43,342	6.0	3.8
CV, %	11.7	12.0	11.5	20.9
OSL	0.2370	0.2817	0.3210	0.9126
LSD	NS	NS	NS	NS

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

CV - coefficient of variation.

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

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

Table 2. Final plant map results from the Dawson County Dryland RACE Variety Trial, Texas A&M AgriLife Research - AGCARES Farm, Lamesa, TX, 2013.

Entry	Final plant map									
	plant height (inches)	node of first fruiting branch	total mainstem nodes	height to node ratio	total fruiting branches	1st position retention (%)	2nd position retention (%)	total retention (%)	1st five retention (%)	open boll (%)
Deltapine 1044B2RF	15.0	6.9	14.9	1.0	9.0	38.3	16.5	29.15	56.0	64.3
FiberMax 1944GLB2	15.9	7.3	15.5	1.0	9.2	35.5	23.8	30.59	53.3	56.2
FiberMax 2989GLB2	14.6	6.6	14.9	1.0	9.3	35.9	22.7	30.14	58.7	62.8
NexGen 1511B2RF	17.4	6.8	15.5	1.1	9.7	37.3	25.3	32.95	61.7	67.2
NexGen 5315B2RF	14.5	6.5	14.3	1.0	8.7	26.0	17.6	22.27	41.3	66.4
PhytoGen 367WRF	15.6	7.7	15.9	1.0	9.3	32.9	20.6	27.44	50.7	38.7
PhytoGen 499WRF	14.5	6.5	13.9	1.0	8.5	27.6	17.1	23.00	40.0	70.3
Stoneville 4946GLB2	16.5	6.7	14.9	1.1	9.2	43.8	27.6	36.71	66.7	36.6
Test average	15.5	6.9	15.0	1.0	9.1	34.7	21.4	29.03	53.5	57.8
CV, %	6.7	7.2	5.1	6.2	6.5	26.3	48.8	24.2	25.6	25.2
OSL	0.0326	0.1172	0.1015	0.0723 <sup>†</sup>	0.3846	0.3635	0.8415	0.2744	0.2804	0.0765 <sup>†</sup>
LSD	1.8	NS	NS	0.1	NS	NS	NS	NS	NS	21.0

For Final plant map, numbers represent and average of 6 plants per variety per rep (18 plants per variety)  
CV - coefficient of variation.  
OSL - observed significance level, or probability of a greater F value.  
LSD - least significant difference at the 0.05 level, <sup>†</sup>indicates significance at the 0.10 level, NS - not significant

Table 3. Harvest results from the Dawson County Dryland RACE Variety Trial, Texas A&M AgriLife Research - AGCARES Farm, Lamesa, TX, 2013.

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 <sup>1</sup>	Net value
	%			lb/acre		\$/lb		\$/acre				
Stoneville 4946GLB2	37.7	49.1	925	349	454	0.4675	163.27	56.81	220.07	27.76	74.88	117.43 a
PhytoGen 367WRF	36.2	49.7	899	325	447	0.4713	153.31	55.83	209.13	26.97	69.20	112.97 a
DeLapine 1044B2RF	38.4	49.9	851	327	425	0.4648	151.92	53.09	205.01	25.53	67.98	111.50 a
PhytoGen 499WRF	38.5	47.5	859	331	408	0.4653	154.01	51.04	205.05	25.77	69.20	110.08 a
NexGen 5315B2RF	39.0	50.5	777	303	392	0.4708	142.60	49.06	191.66	23.32	65.57	102.76 a
FiberMax 1944GLB2	36.7	48.2	744	273	358	0.4708	128.57	44.78	173.35	22.31	74.88	76.16 b
NexGen 1511B2RF	36.6	45.5	622	228	283	0.4618	105.34	35.39	140.74	18.67	65.57	56.49 bc
FiberMax 2989GLB2	36.8	50.4	583	214	293	0.4715	101.06	36.69	137.75	17.48	74.88	45.38 c
Test average	37.5	48.8	783	294	383	0.4680	137.51	47.84	185.35	23.48	70.27	91.60
CV, %	3.4	1.5	9.1	9.2	9.0	2.4	9.2	9.0	9.2	9.1	--	16.2
OSL	0.1244	<0.0001	0.0002	0.0001	0.0001	0.9334	0.0001	0.0001	0.0001	0.0002	--	0.0001
LSD	NS	1.3	124	47	60	NS	22.16	7.56	29.71	3.73	--	25.99

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

CV - coefficient of variation.

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

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

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

Assumes:

\$3.00/cwt ginning cost.

\$250/ton for seed.

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

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

Table 4. HVI fiber property results from the Dawson County Dryland RACE Variety Trial, Texas A&M AgriLife Research - AGCARES Farm, Lamesa, TX, 2013.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	color 1	color 2
	units	32 <sup>nds</sup> inch	%	g/tex	%	grade	reflectance	yellowness		
Deltapine 1044B2RF	4.8	30.3	77.7	27.4	9.2	2.0	73.2	9.9	3.0	2.0
FiberMax 1944GLB2	4.5	31.7	77.3	26.4	6.7	2.0	74.2	9.3	3.3	1.7
FiberMax 2989GLB2	4.7	31.8	77.7	26.9	6.8	1.3	72.1	9.7	3.7	2.0
NexGen 1511B2RF	4.4	29.8	76.1	27.9	9.4	2.7	72.6	10.0	3.0	2.0
NexGen 5315B2RF	4.5	31.7	78.5	27.0	8.9	1.0	71.8	10.1	3.3	2.0
PhytoGen 367WRF	4.4	31.4	78.8	27.6	8.8	1.7	72.5	10.0	3.0	2.0
PhytoGen 499WRF	4.5	30.8	78.0	28.9	10.1	2.3	71.4	10.1	3.7	2.0
Stoneville 4946GLB2	4.6	31.5	79.0	28.8	8.8	2.3	72.1	10.1	3.3	2.0
Test average	4.5	31.1	77.9	27.6	8.6	1.9	72.5	9.9	3.3	2.0
CV, %	3.1	1.7	1.3	2.9	4.9	20.9	1.7	1.6	--	--
OSL	0.0279	0.0021	0.0575 <sup>†</sup>	0.0171	<0.0001	0.0027	0.2630	0.0002	--	--
LSD	0.2	0.9	1.4	1.4	0.7	0.7	NS	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, <sup>†</sup>indicates significance at the 0.10 level, NS - not significant

# **Disease and Root-knot Nematode Management**

## Management of Root-knot Nematode with Currently Available Products and Varieties

By Terry Wheeler<sup>1</sup>, Manda Anderson<sup>2</sup>, Kerry Siders<sup>3</sup>, and Scott Russell<sup>4</sup>

<sup>1</sup>Texas A&M AgriLife Research, Lubbock; <sup>2</sup>Texas A&M AgriLife Extension Service, Seminole;

<sup>3</sup>Texas A&M AgriLife Extension Service, Levelland; and <sup>4</sup>Texas A&M AgriLife Extension Service, Brownfield.

Management of root-knot nematode in cotton was substantially affected by the decision to stop production of Temik 15G by its principle manufacturer in 2011. The remaining commercially available tools to manage root-knot nematodes included: soil fumigation (Telone II), nematicide seed treatments (AVICTA or AERIS), post-emergence nematicide application (Vydate CLV), and partially resistant cultivars to root-knot nematodes. Small plot field studies were conducted on a total of nine sites from 2011 – 2013 to examine the effects of each of these tools alone or in combinations, on early season gall reduction, late season nematode population density, yield, and value (\$)/acre. Value per acre was calculated as the (lint yield x loan value + \$0.20/lb) – chemical and variety costs/acre.

The use of a partially resistant variety (either Stoneville [ST] 5458B2F or Phytogen [PHY] 367WRF) resulted in fewer galls/root system at 35 days after planting in 8 of 9 tests (Table 1), lower root-knot nematode density late in the growing season for all test sites (Table 1), higher lint yield in 8 of 9 sites (Table 1), and higher value/acre in 6 of 9 sites (Table 1).

Table 1. Effect of variety on root galls, root-knot nematode population density (RK), lint yield, and value/acre<sup>b</sup>.

Site <sup>a</sup>	Galls/plant		RK/500 cm <sup>3</sup> soil		lbs lint/acre		Value (\$/acre)	
	Sus <sup>c</sup>	Res <sup>c</sup>	Sus	Res	Sus	Res	Sus	Res
1	13.3 a <sup>d</sup>	10.0 b	23,777 a	8,147 b	804 b	1,003 a	494 b	607 a
2	5.2 a	4.0 b	9,517 a	1,077 b	1,114 b	1,241 a	756 b	854 a
3	1.2 a	0.5 a	10,690 a	2,291 b	1,096 a	1,093 a	666 a	665 a
4	1.4 a	0.3 b	4,418 a	615 b	700 b	742 a	424 a	453 a
5	1.7 a	1.2 b	9,447 a	3,883 b	1,263 b	1,303 a	868 a	851 a
6	7.0 a	3.3 b	14,295 a	6,851 b	556 b	606 a	298 b	329 a
7	31.9 a	19.3 b	18,773 a	6,007 b	719 b	887 a	465 b	566 a
8	14.6 a	9.8 b	7,543 a	1,433 b	746 b	821 a	464 b	505 a
9	12.7 a	7.1 b	10,886 a	5,025 b	1,430 b	1,683 a	992 b	1,189 a

<sup>a</sup>1=Gaines Co. in 2011; 2=Cochran Co. in 2011; 3=Gaines Co. in 2012; 4=Cochran Co. in 2012; 5=Dawson Co. in 2012; 6=Terry Co. in 2012; 7=Gaines Co. in 2013; 8=Cochran Co., in 2013; 9=Dawson Co. in 2013.

<sup>b</sup>Value/acre = (lbs lint/acre x (loan value + \$0.20/lb))-(seed costs + chemical costs/acre).

<sup>c</sup>Sus = susceptible variety= Fibermax 9160B2F, Res = partially resistant variety (either



Stoneville 5458B2F or Phytogen 367WRF).

<sup>d</sup>Letters that are the same between Susc and Res cultivars for an attribute are not significantly different at  $P \leq 0.05$ .

Galls per root were reduced by Temik 15G (5 lbs/acre) in 3 of 9 sites and by Telone II (soil fumigant, 3 gal/acre) in 2 of 8 sites, relative to the non-treated control (no insecticide or nematicide treatment) (Table 2). Soil fumigation reduced root-knot nematode population density late in the season in 3 of 9 sites compared to the non-treated control (Table 3). No chemical treatment improved lint yields above that of the non-treated control (Table 4). In four of the 9 sites, all chemicals performed similarly (site 2,4,5,9 Table 5). In the remaining five sites, the non-treated control was either the treatment with the highest value/acre, or not different from the treatment with the highest value/acre **87.5%** of the time. The combination of seed treatment insecticide (Cruiser) + Vydate CLV (17 oz/acre applied once at the 4-leaf stage) or just Temik 15G were among the highest value/acre treatments **75%** of the time in those five sites. The combination of seed treatment nematicide (AVICTA COMPLETE COTTON) alone, or with Vydate CLV was among the highest value/acre treatments **50%** of the time in those five sites. The use of Cruiser alone (insecticide seed treatment with no nematicide product) was among the highest value/acre treatment **37.5%** of the time in those five sites. The use of Cruiser seed treatment plus soil fumigation with Telone II was among the highest value/acre treatment **14%** of the time in those five sites. As was mentioned earlier, \$ value/acre involved subtracting the cost of the chemical and variety from the lint yield x loan value.

In general, the less expensive the treatment, the better it did during the three drought years of 2011 – 2013. Soil fumigation plus Cruiser, which was expensive (\$82.80/acre), did not increase yields sufficiently to pay for the products. Vydate CLV was the only product which was not negatively affected by the dry spring soil conditions, since it is applied to the foliage. Even when Temik 15G did perform well, as evidenced by reduced galls at 35 days after planting for sites 1 and 7, there was not enough moisture for the plants to realize the potential benefit in added yield. So, the best treatments were the cheapest ones like the non-treated check. However, the benefit of using varieties with some resistance to root-knot nematode was apparent even in three dry years, and at their worst, they had similar yields and value/acre as the susceptible variety. The benefit of using partially resistant varieties increased as the nematode pressure in the field increased (Fig. 1).

Table 2. Effect of chemical treatment on galls/root system caused by root-knot nematodes at nine test sites.

Chemical	Site <sup>a</sup>								
	1	2	3	4	5	6	7	8	9
None	16.1 a <sup>b</sup>	5.5 a	1.6 a	0.7 a	1.9 a	5.5 a	32.2 a	14.7 ab	7.9 a
Cruiser (C)	13.0 a	4.8 a	0.3 a	1.5 a	0.9 a	5.7 a	30.4 a	15.6 a	13.1 a
AVICTA (A)	13.0 a	4.6 a	1.1 a	0.5 a	1.4 a	5.2 a	32.1 a	12.2 abc	14.1 a
C+Vydate	13.4 a	4.2 a	0.5 a	1.2 a	1.6 a	3.8 a	24.6 a	15.1 a	11.8 a
A+Vydate	13.7 a	7.1 a	1.0 a	0.6 a	1.6 a	4.4 a	31.8 a	10.1 abc	8.8 a
Temik 15G	6.5 b	4.7 a	0.2 a	0.7 a	1.6 a	5.5 a	2.8 b	8.2 c	4.9 a
Telone II + C	5.7 b	1.2 a	0.8 a	0.6 a	1.2 a	5.4 a	-----	9.5 bc	8.4 a

<sup>a</sup>1=Gaines Co. in 2011; 2=Cochran Co. in 2011; 3=Gaines Co. in 2012; 4=Cochran Co. in 2012; 5=Dawson Co. in 2012; 6=Terry Co. in 2012; 7=Gaines Co. in 2013; 8=Cochran Co., in 2013; 9=Dawson Co. in 2013.

<sup>b</sup>Values that are within a column followed by the same letter are not significantly different for galls/root at  $P \leq 0.05$ .

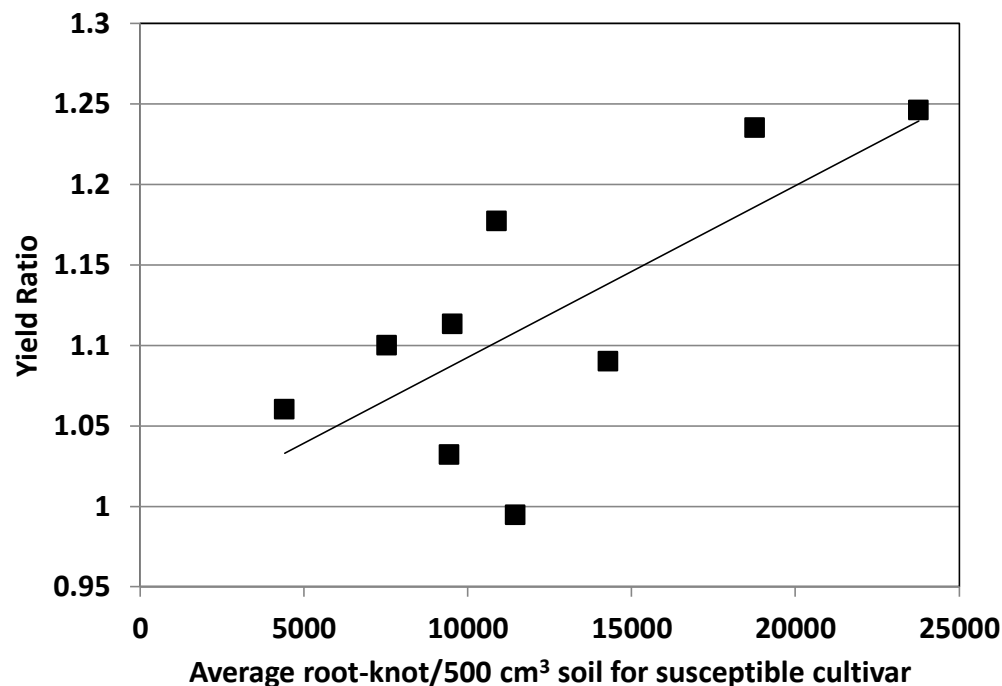


Figure 1. Relationship between the average root-knot nematode population density (RK) for the susceptible variety at a site and the ratio of the average lint yield for the partially resistant variety and the susceptible variety at each of nine sites. Each data point represents the % increase in yield expected by the resistant variety compared to the susceptible variety. So 1.05 means that a 5% increase in yield is expected by using a resistant variety; 1.15 means a 15% increase in yield is expected by using the resistant variety compared to the susceptible variety.

Table 3. Effect of chemical treatment on root-knot nematode population density at nine test sites.

C <sup>b</sup>	Site <sup>a</sup>											
	1	2	3FM <sup>c</sup>	3ST	4FM	4PHY	5FM	5ST	6	7	8	9
1	17385 a <sup>c</sup>	4190 a	4840 a	3717 a	4533 a	107 bc	4760 b	3463 ab	11740 a	12050 a	5238 ab	9300 a
2	12315 a	5240 a	6500 a	1363 a	6680 ab	340 bc	7070 ab	9000 a	14200 a	16020 a	6530 a	11520 a
3	21330 a	10390 a	5260 a	2597 a	1420 c	1120 a	5020 b	2900 ab	8339 a	11753 a	2863 ab	6620 a
4	16095 a	5280 a	12720 a	1298 b	5120 a	200 c	6827 ab	2047 b	6349 a	10667 a	8812 ab	6590 a
5	18240 a	5350 a	20240 a	2360 a	5120 a	740 ab	18980 a	2427 ab	8052 a	10710 a	5323 ab	6727 a
6	14670 a	6480 a	13890 a	2177 b	6293 abc	1640 ab	14430 ab	6220 ab	7343 a	13140 a	1605 bc	7200 a
7	11700 a	150 b	11377 a	2527 a	1760 bc	160 c	9040 ab	1127 ab	12810 a	-----	1047 c	7730 a

<sup>a</sup>1=Gaines Co. in 2011; 2=Cochran Co. in 2011; 3=Gaines Co. in 2012; 4=Cochran Co. in 2012; 5=Dawson Co. in 2012; 6=Terry Co. in 2012; 7=Gaines Co. in 2013; 8=Cochran Co., in 2013; 9=Dawson Co. in 2013.

<sup>b</sup>C=Chemical treatment: : 1 = none; 2 = seed treatment insecticide (Cruiser); 3 =seed treatment combination of nematocide, insecticide, and fungicides(AVICTA COMPLETE COTTON); 4 = Cruiser + Vydate CLV applied at the 4 leaf stage; 5 = AVICTA + Vydate CLV applied at the 4 leaf stage; 6 = Temik 15G at 5 lbs/acre; 7 =Telone II (3 gal/acre) + Crusier.

FM = Fibermax 9160B2F and was susceptible to root-knot nematode; ST = Stoneville 5458B2F and was partially resistant to root-knot nematode; PHY = Phytogen 367WRF and was partially resistant to root-knot nematode. Site number/cultivar combinations had significant variety x chemical interactions.

<sup>c</sup>Values within a column followed by the same letter are not significantly different for root-knot nematode density at  $P \leq 0.05$ .

Table 4. Effect of chemical treatment on cotton lint yield at nine test sites naturally infested with root-knot nematode.

Chemical	Site <sup>a</sup>											
	1FM <sup>b</sup>	1ST	2	3	4	5	6	7FM	7ST	8FM	8PHY	9
None	835 ab <sup>c</sup>	879 c	1,157 a	1,126 a	726 a	1,229 a	597 a	695 a	923 ab	778 ab	825 abc	1,504 a
Cruiser (C)	761 b	1,015 abc	1,136 a	1,138 a	716 a	1,254 a	544 a	698 a	836 bc	698 b	746 c	1,514 a
AVICTA (A)	782 ab	918 bc	1,201 a	1,102 a	736 a	1,285 a	579 a	700 a	885 bc	790 a	809 bc	1,521 a
C+Vydate	913 a	1,048 ab	1,214 a	997 a	735 a	1,299 a	558 a	725 a	1,006 a	735 ab	796 c	1,575 a
A+Vydate	742 b	1,111 a	1,131 a	1,121 a	720 a	1,329 a	604 a	744 a	796 c	762 ab	775 c	1,504 a
Temik 15G	756 b	1,016 abc	1,122 a	1,078 a	674 a	1,266 a	588 a	750 a	875 bc	767 ab	888 ab	1,675 a
Telone II + C	839 ab	1,029 ab	1,285 a	1,099 a	741 a	1,314 a	592 a	-----	-----	690 b	906 a	1,604 a

<sup>a</sup>1=Gaines Co. in 2011; 2=Cochran Co. in 2011; 3=Gaines Co. in 2012; 4=Cochran Co. in 2012; 5=Dawson Co. in 2012; 6=Terry Co. in 2012; 7=Gaines Co. in 2013; 8=Cochran Co., in 2013; 9=Dawson Co. in 2013.

<sup>b</sup>FM = Fivermax 9160B2F and was susceptible to root-knot nematode; ST = Stoneville 5458B2F and was partially resistant to root-knot nematode; PHY = Phytogen 367WRF and was partially resistant to root-knot nematode. Site number/cultivar combinations had significant cultivar x chemical interactions.

<sup>c</sup>Values within a column followed by the same letter are not significantly different for cotton lint yield at  $P \leq 0.05$ .

Table 5. Effect of chemical treatment (C) on value (\$)/ha<sup>a</sup> at nine test sites naturally infested with root-knot nematode.

C <sup>c</sup>	Site <sup>b</sup>												
	1FM <sup>d</sup>	1ST	2	3	4	5	6FM	6PHY	7FM	7ST	8FM	8PHY	9
1	1,349 ab	1,296 b	2,007 a	1,755 a	1,150 a	2,080 a	865 a	897 a	1,136 a	1,497 ab	1,263 a	1,311 ab	2,653 a
2	1,208 b <sup>e</sup>	1,637 a	1,944 a	1,754 a	1,111 a	2,107 a	688 b	830 abc	1,122 a	1,317 bc	1,096 b	1,149 b	2,651 a
3	1,186 b	1,336 b	2,048 a	1,672 ab	1,128 a	2,145 a	705 b	826 abc	1,107 a	1,386 bc	1,247 ab	1,242 ab	2,642 a
4	1,480 a	1,660 a	2,080 a	1,499 b	1,133 a	2,178 a	780 ab	710 bc	1,161 a	1,615 a	1,150 ab	1,224 ab	2,752 a
5	1,112 b	1,683 a	1,903 a	1,691 ab	1,084 a	2,211 a	681 b	882 a	1,176 a	1,211 c	1,180 ab	1,167 b	2,598 a
6	1,108 b	1,502 ab	1,897 a	1,629 ab	1,011 a	2,107 a	770 ab	858 ab	1,198 a	1,366 bc	1,201 ab	1,380 a	2,931 a
7	1,093 b	1,395 b	2,042 a	1,504 b	972 a	2,035 a	670 b	699 c	-----	-----	895 c	1,254 ab	2,637 a

<sup>a</sup>Value (\$)/acre was (lint yield/acre x (loan value + \$0.20/lb)) – chemical costs/acre – seed cost/acre.

<sup>b</sup>1=Gaines Co. in 2011; 2=Cochran Co. in 2011; 3=Gaines Co. in 2012; 4=Cochran Co. in 2012; 5=Dawson Co. in 2012; 6=Terry Co. in 2012; 7=Gaines Co. in 2013; 8=Cochran Co., in 2013; 9=Dawson Co. in 2013.

<sup>c</sup>C=Chemical treatments: 1 = none; 2 = seed treatment insecticide (Cruiser); 3 =seed treatment combination of nematicide, insecticide, and fungicides(AVICTA COMPLETE COTTON); 4 = Cruiser + Vydate CLV applied at the 4 leaf stage; 5 = AVICTA + Vydate CLV applied at the 4 leaf stage; 6 = Temik 15G at 5 lbs/acre; 7 =Telone II (3 gal/acre) + Crusier.

<sup>d</sup>FM = Fibermax 9160B2F and was susceptible to root-knot nematodes; ST = Stoneville 5458B2F and was partially resistant to root-knot nematodes; PHY = Phytogen 367WRF and was partially resistant to root-knot nematodes. Site number/variety combinations had significant variety x chemical interactions.

<sup>e</sup>Values within a column followed by the same letter are not significantly different for value/ha at  $P \leq 0.05$ .

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

**By Terry Wheeler (Texas A&M AgriLife Research, Lubbock) and Jason Woodward (Texas A&M AgriLife Extension Service, Lubbock).**

<b>Brand</b>	<b>Variety</b>	<b>Verticillium wilt</b>	<b>Bacterial blight</b>	<b>Root-knot nematodes</b>	<b>Fusarium Wilt</b>
All-Tex	All-Tex 65207B2RF	I	Unk	S	S
All-Tex	All-Tex ApexB2RF	I	S	S	S
All-Tex	All-Tex AridB2RF	Poor	S	S	S
All-Tex	All-Tex DineroB2RF	Unk	S	S	S
All-Tex	All-Tex EdgeB2RF	I	S	S	S
All-Tex	All-Tex EpicRF	Poor	S	S	S
All-Tex	All-Tex MarathonB2RF	Poor	R	S	S
All-Tex	All-Tex Nitro-44B2RF	I to Good	R	S	S
All-Tex	All-Tex OrbitRF	I	S	S	S
All-Tex	All-Tex Patriot+RF	I	S	S	S
All-Tex	All-Tex RapidB2RF	Poor	Unk	S	S
All-Tex	All-Tex TitanB2RF	Poor	R	S	S
Americot	AM 1504B2RF	Poor	R	S	S
Americot	AM 1532B2RF	I	S	S	S
Americot	AM 1550B2RF	Poor	S	S	S
Americot	AM 1622B2RF	I	R	S	S
Americot	AM 1664 B2RF	Poor	S	S	S
Croplan Genetics	CG 3020B2RF	Poor	R	S	S
Croplan Genetics	CG 3035RF	Poor	S	S	S
Croplan Genetics	CG 3156B2RF	Poor	S	S	S
Croplan Genetics	CG 3220B2RF	Poor	S	S	S
Croplan Genetics	CG 3428B2RF	Poor	Unk	Unk	Unk
Croplan Genetics	CG 3520B2RF	I	S	S	S
Croplan Genetics	CG 3787B2RF	Poor	R	S	S
Deltapine	DP 0912B2RF	I	S	S	S
Deltapine	DP 0920B2RF	Good	R	S	S
Deltapine	DP 09242RF	I	S	S	S
Deltapine	DP 0935B2RF	I	S	S	S
Deltapine	DP 0949B2RF	I	S	S	S
Deltapine	DP 1028B2RF	Poor	S	S	S
Deltapine	DP 1032B2RF	Poor	PR	S	S
Deltapine	DP 1034B2RF	Poor	S	S	S
Deltapine	DP 104B2RF	Good	S	S	S
Deltapine	DP 1044B2RF	I	S	S	S
Deltapine	DP 1048B2RF	Poor	S	S	S
Deltapine	DP 1050B2RF	Poor	S	S	S
Deltapine	DP 1133B2RF	I	R	S	S

<b>Brand</b>	<b>Variety</b>	<b>Verticillium wilt</b>	<b>Bacterial blight</b>	<b>Root-knot nematodes</b>	<b>Fusarium Wilt</b>
Deltapine	DP 1137B2RF	Poor	S	S	S
Deltapine	DP 121RF	Poor	S	S	S
Deltapine	DP 1212B2RF	Poor-I	S	S	S
Deltapine	DP 1219B2RF	I	S	S	S
Deltapine	DP 1252B2RF	Poor	S	S	S
Deltapine	DP 1311B2RF	I to Good	Unk	Unk	Unk
Deltapine	DP 1321B2RF	I	Unk	Unk	Unk
Deltapine	DP1359B2RF	Poor	Unk	Unk	Unk
Deltapine	DP 141B2RF	Poor	S	S	S
Deltapine	DP 161B2RF	I	S	S	S
Deltapine	DP 164B2RF	I	S	S	S
Deltapine	DP 174RF	I	S	PR	PR
DynaGro	CT 13545B2RF	I	Unk	Unk	Unk
Fibermax	FM 1320GL	I	Unk	Unk	Unk
Fibermax	FM 1740B2F	I- good	R	S	S
Fibermax	FM 1773LLB2	Unk	S	S	S
Fibermax	FM 1845LLB2	Unk	PR	S	S
Fibermax	FM 1880B2F	Good	R	S	S
Fibermax	FM 1944GLB2	Good	S	S	S
Fibermax	FM 2011GT	Good	R	PR	Unk
Fibermax	FM 2322GL	Good	Unk	Unk	Unk
Fibermax	FM 2484B2F	Good	R	S	S
Fibermax	FM 2989GLB2	Good	R	S	S
Fibermax	FM 8270GLB2	I	R	S	S
Fibermax	FM 832LL	Unk	R	S	S
Fibermax	FM 835LLB2	Unk	Unk	S	S
Fibermax	FM 840B2F	Poor	R	S	S
Fibermax	FM 9058F	Good	R	S	S
Fibermax	FM 9063B2F	Good	R	S	S
Fibermax	FM 9101GT	Unk	R	S	S
Fibermax	FM 9103GT	Poor	I	S	S
Fibermax	FM 9160B2F	Good	R	S	S
Fibermax	FM 9170B2F	Good	R	S	S
Fibermax	FM 9180B2F	Good	R	S	S
Fibermax	FM 9250GL	Good	R	S	S
Fibermax	FM 955LLB2	Unk	R	S	S
Fibermax	FM 958LL	Good	R	S	S
NexGen	NG 1511B2RF	Poor to I	S	S	S
NexGen	NG 1551RF	I	S	S	S
NexGen	NG 1556RF	Poor	S	S	S
NexGen	NG 1572RF	Poor	R	S	S
NexGen	NG 2051B2RF	Poor	PR	Unk	Unk
NexGen	NG 2501B2RF	Poor	PR	S	S

<b>Brand</b>	<b>Variety</b>	<b>Verticillium wilt</b>	<b>Bacterial blight</b>	<b>Root-knot nematodes</b>	<b>Fusarium Wilt</b>
NexGen	NG 2549B2RF	Good	S	S	S
NexGen	NG 3273 B2RF	Poor	R	S	S
NexGen	NG 3306B2RF	I to Good	S	Unk	Unk
NexGen	NG 3348B2RF	Good	PR	S	S
NexGen	NG 3410RF	Good	PR	S	S
NexGen	NG 3538RF	Poor	S	S	S
NexGen	NG 3550RF	I	S	S	S
NexGen	NG 4010B2RF	Good	R	S	S
NexGen	NG 4012B2RF	Good	R	S	S
NexGen	NG 4111RF	Good	R	S	S
NexGen	NG 5315B2RF	Poor	S	Unk	Unk
Phytogen	PHY 315RF	Poor	S	S	S
Phytogen	PHY 339WRF	I to Good	R	Unk	Unk
Phytogen	PHY 367ERF	I	S	PR	PR
Phytogen	PHY 375WRF	Poor	R	S	S
Phytogen	PHY 417WRF	Poor	Unk	R	R
Phytogen	PHY 427WRF	Poor	Unk	R	R
Phytogen	PHY 485WRF	I	S	S	S
Phytogen	PHY 499WRF	I	S	S	S
Phytogen	PHY 525RF	I	Unk	S	S
Phytogen	PHY 565WRF	I	S	S	S
Stoneville	ST 4145LLB2	Unknown	S	S	S
Stoneville	ST 4288B2F	I	S	PR	PR
Stoneville	ST 4498B2F	I	S	S	S
Stoneville	ST 4747GLB2	Good	unk	unk	Unk
Stoneville	ST 4946GLB2	Poor	S	PR	Unk
Stoneville	ST 5288B2F	I	R	S	S
Stoneville	ST 5458B2F	Poor	S	PR	PR
Stoneville	ST 6448GLB2	Poor to I	R	S	S

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



## **The Effect of Verticillium wilt on Varieties in Texas**

By Terry Wheeler (Texas A&M AgriLife Research, Lubbock) and Jason Woodward (Texas A&M AgriLife Extension Service, Lubbock).

Funding for the project was provided by Texas Cotton State Support Committee. We would also like to thank the producers that contributed their time and land for these trials: Ron Graves, Glen Schur, Larry Smith, and Mitchell Jansa.

Trials were conducted in Floydada, Halfway, Plainview, Garden City, and Ropesville. At each site there were 32 entries, and they were replicated four times within a test. Plots were small (35 ft. long and 2 rows wide). Data that was collected included stand counts, incidence of Verticillium wilt, defoliation, lint yield, and fiber quality. The results are arranged by location, with the first Table including the disease and yield attributes, arranged in order by the most valuable entry (Yield x loan value), and the second Table including the fiber attributes. The final Table is an attempt to combine all cultivars into a single ranking system. Cultivars are ranked by wilt incidence, defoliation, lint yield, and lint yield x loan value.

**Table 1A. The effect of Verticillium wilt on varieties in Floydada.**

Variety	Plants/ ft	% Wilt on 8/29	%Defol- iation	Lbs lint/a	Turn out	Yield x Loan (\$/a)	Loan (\$/lb)
FM 2484B2F	2.9	12	23	2170	0.3071	1241	0.5720
FM 2322GL	1.8	9	23	2149	0.3440	1225	0.5700
FM 2989GLB2	2.5	18	29	2132	0.2930	1221	0.5725
FM 9170B2F	2.6	12	29	2012	0.3021	1161	0.5773
FM 2011GT	2.6	19	38	2037	0.3118	1156	0.5678
DG CT13545B2RF	2.7	19	24	1979	0.2983	1143	0.5773
NG 3306B2RF	2.9	23	45	1997	0.2968	1126	0.5640
DP 1219B2RF	2.6	12	22	1945	0.2998	1122	0.5770
FM 9180B2F	2.7	21	28	1951	0.2846	1114	0.5710
ST 4747GLB2	2.6	14	34	2054	0.2946	1107	0.5390
FM 1944GLB2	2.6	22	41	1872	0.2937	1073	0.5733
PHY 339WRF	2.9	13	34	1848	0.3140	1063	0.5455
AT Nitro-44B2RF	2.8	21	22	1928	0.2989	1052	0.5753
DP 1212B2RF	3.1	19	68	1948	0.2932	1045	0.5363
PHY 499WRF	2.7	36	63	1902	0.2989	1037	0.5453
NG 4111RF	2.6	16	35	1795	0.2972	1031	0.5745
DP 0912B2RF	2.9	16	58	1781	0.3038	1001	0.5618
FM 9250GL	2.8	14	39	1834	0.2876	996	0.5433
NG 1511B2RF	2.5	23	53	1816	0.3008	990	0.5450
FM 1320GL	2.2	18	60	1717	0.3049	962	0.5603
CG 3428B2RF	2.4	22	56	1649	0.3151	950	0.5758
AT EdgeB2RF	3.1	24	53	1825	0.2762	948	0.5195
PHY 3080-1	2.6	24	48	1696	0.2911	944	0.5568
NG 3348B2RF	2.2	13	28	1719	0.2816	915	0.5323
NGX 2322B2RF	2.6	18	40	1599	0.2807	912	0.5705
PHY 4433-25	2.8	23	64	1708	0.2944	887	0.5193
NG 2051B2RF	2.7	21	39	1623	0.2542	870	0.5358
AM 1532B2RF	2.7	24	54	1591	0.2749	869	0.5460
CG 3156B2RF	2.7	35	62	1667	0.2955	864	0.5185
CT 13363B2RF	2.7	33	54	1558	0.2758	863	0.5540
AM 1504B2RF	2.1	25	44	1440	0.2668	806	0.5600
PHY 4433-27	2.5	33	72	1409	0.2675	690	0.4893
MSD(0.05)	0.4	13	15	199	0.021	104	0.025

\*AM = Americot, AT=All-Tex, BX=experimental line for Bayer Cropsciences, CG=Croplan Genetics, DG CT= experimental line for Dynagro, DP = Deltapine, FM=Fibermax, NG=NexGen, NGX=experimental line for NexGen, PHY= Phytogen, ST=Stoneville.

**Table 1B. Effect of Verticillium wilt on fiber properties of varieties in Floydada.**

<b>Variety</b>	<b>Micro- naire</b>	<b>Length</b>	<b>Unif- ormity</b>	<b>Strength</b>	<b>Elong- ation</b>	<b>Rd</b>	<b>+b</b>	<b>Leaf</b>
AM 1504B2RF	3.70	1.115	82.90	29.25	10.35	79.85	8.35	2.5
AM 1532B2RF	3.55	1.175	81.40	29.90	9.40	78.10	7.85	2.5
AT EdgeB2RF	3.50	1.175	81.20	32.50	9.00	75.95	7.05	4.0
AT Nitro-44B2RF	3.80	1.235	81.95	34.20	9.25	76.90	7.60	4.0
CG 3156B2RF	3.65	1.075	79.30	27.20	8.60	78.90	7.60	3.0
CG 3428B2RF	4.35	1.180	81.90	29.20	9.95	79.45	8.50	2.0
CT 13363B2RF	3.40	1.195	82.90	32.40	9.55	77.25	7.75	2.5
DG CT13545B2RF	3.80	1.170	81.25	33.00	9.10	79.70	8.30	2.0
DP 0912B2RF	4.05	1.110	81.80	31.50	9.55	78.65	8.00	3.0
DP 1212B2RF	3.95	1.190	82.85	31.30	9.85	76.10	8.15	4.5
DP 1219B2RF	4.25	1.155	80.50	31.75	8.95	78.25	8.40	1.5
FM 1320GL	3.85	1.115	80.95	30.95	10.00	78.55	7.75	3.0
FM 1944GLB2	4.00	1.175	81.10	30.35	7.80	79.40	7.55	2.0
FM 2011GT	3.75	1.140	81.40	29.60	8.70	78.40	7.40	2.5
FM 2322GL	4.45	1.170	81.46	30.95	7.50	77.05	7.80	2.5
FM 2484B2F	3.75	1.230	82.55	31.35	8.20	80.10	7.25	2.5
FM 2989GLB2	3.70	1.160	80.85	30.55	7.60	79.90	7.55	2.5
FM 9170B2F	3.70	1.210	81.45	31.20	8.05	81.00	7.50	1.5
FM 9180B2F	3.95	1.195	82.20	30.40	8.80	78.50	7.40	2.5
FM 9250GL	3.50	1.210	82.30	31.40	7.35	77.70	7.30	3.5
NG 1511B2RF	3.95	1.140	81.05	31.50	10.25	75.85	7.90	4.0
NG 2051B2RF	3.90	1.110	79.90	27.85	8.45	75.55	7.25	3.5
NG 3348B2RF	3.65	1.160	82.35	31.50	8.85	75.45	7.95	3.5
NG 4111RF	4.00	1.155	82.05	33.00	9.30	77.10	8.60	1.5
NGX 2322B2RF	3.90	1.160	82.15	30.45	8.90	77.75	7.95	2.5
NG 3306B2RF	3.70	1.210	83.35	32.25	10.25	78.95	8.40	3.0
PHY 3080-1	4.15	1.135	82.50	30.00	11.10	75.65	8.15	3.5
PHY 339WRF	3.95	1.185	82.95	32.60	9.60	80.05	7.85	2.0
PHY 4433-25	3.10	1.145	81.45	31.20	10.25	78.15	7.85	3.5
PHY 4433-27	2.95	1.120	81.50	31.10	9.75	77.25	7.65	3.0
PHY 499WRF	4.10	1.140	82.35	32.00	10.15	76.00	7.95	4.0
ST 4747GLB2	3.75	1.205	81.20	29.35	7.65	77.05	6.60	3.5
MSD(0.05)	0.63	0.043	1.84	1.38	0.71	2.42	0.39	1.9

\*AM = Americot, AT=All-Tex, BX=experimental line for Bayer Cropsciences, CG=Croplan Genetics, CT= experimental line for Dynagro, DP = Deltapine, FM=Fibermax, NG=NexGen, NGX=experimental line for NexGen, PHY= Phytogen, ST=Stoneville.

**Table 2A. The effect of Verticillium wilt on varieties at Garden City.**

<b>Variety</b>	<b>Plants/ft</b>	<b>%Wilt on 8/28</b>	<b>%Defol- iation</b>	<b>Lbs lint/a</b>	<b>Turnout</b>	<b>Yield x Loan (\$/a)</b>	<b>Loan (\$/lb)</b>
BX 1445GLB2	2.7	28	23	2294	0.298	1251	0.5455
FM 2484B2F	2.9	17	18	2105	0.273	1149	0.5458
FM 9170B2F	2.8	17	24	2051	0.286	1110	0.5410
NG 4012B2RF	2.8	24	30	1828	0.280	1015	0.5555
FM 9180B2F	2.8	28	31	1888	0.260	1014	0.5370
DP 1311B2RF	2.0	32	29	1908	0.296	1008	0.5280
FM 2989GLB2	2.8	15	17	1904	0.265	993	0.5213
DP 1321B2RF	2.8	37	58	1820	0.296	991	0.5445
FM 1944GLB2	2.6	23	18	1811	0.265	988	0.5455
ST 4747GLB2	2.6	22	32	1938	0.271	972	0.5015
NG 4010B2RF	2.5	32	34	1733	0.244	940	0.5428
PHY 3080-1	2.7	35	52	1692	0.270	910	0.5380
CG 3787B2RF	2.6	36	48	1666	0.281	907	0.5443
ST 4946GLB2	2.7	31	50	1784	0.275	899	0.5040
FM 2322GL	1.8	13	11	1646	0.297	897	0.5450
AM 1532B2RF	2.7	34	46	1583	0.259	893	0.5640
DP 1219B2RF	2.4	26	20	1689	0.267	885	0.5238
CG 3428B2RF	2.4	36	46	1670	0.274	884	0.5290
NG 2051B2RF	2.9	21	29	1609	0.248	859	0.5340
NG 5315B2RF	2.1	39	36	1598	0.283	857	0.5363
DP 1252B2RF	2.1	42	40	1564	0.284	851	0.5445
AT Nitro-44B2RF	2.8	23	25	1711	0.263	850	0.4968
PHY 375WRF	2.8	25	53	1629	0.268	843	0.5178
PHY 565WRF	2.6	25	31	1619	0.255	839	0.5183
DP 0912B2RF	2.0	42	50	1581	0.274	832	0.5263
PHY 499WRF	3.1	31	44	1634	0.269	830	0.5080
PHY 4433-25	2.6	31	46	1663	0.274	795	0.4778
DP 1359B2RF	2.8	29	37	1586	0.258	765	0.4828
CT 13125B2RF	2.8	32	71	1456	0.268	743	0.5100
ST 6448GLB2	2.5	36	38	1481	0.261	740	0.4995
CT 13513RF	2.1	46	60	1294	0.248	678	0.5238
AM 1504B2RF	2.0	45	41	1244	0.241	653	0.5253
MSD(0.05)	0.4	12	11	132	0.018	70	NS

\*AM = Americot, AT=All-Tex, BX=experimental line for Bayer Cropsciences, CG=Croplan Genetics, CT= experimental line for Dynagro, DP = Deltapine, FM=Fibermax, NG=NexGen, NGX=experimental line for NexGen, PHY= Phytogen, ST=Stoneville.

**Table 2B. Effect of Verticillium wilt on fiber properties of varieties in Garden City.**

<b>Variety</b>	<b>Micro- naire</b>	<b>Length</b>	<b>Unif- ormity</b>	<b>Strength</b>	<b>Elong- ation</b>	<b>Rd</b>	<b>+b</b>	<b>Leaf</b>
AM 1504B2RF	3.30	1.115	82.05	29.70	9.55	78.00	7.55	2.50
AM 1532B2RF	3.55	1.155	81.40	29.20	9.00	78.20	7.40	2.00
AT Nitro-44B2RF	3.10	1.265	82.10	33.05	9.00	76.25	6.75	4.00
BX 1445GLB2	3.70	1.245	82.85	32.20	7.90	78.65	6.50	2.00
CG 3428B2RF	3.30	1.195	81.70	30.00	10.20	78.30	7.25	2.50
CG 3787B2RF	3.30	1.145	81.80	29.15	10.50	78.35	7.35	2.00
CT 13125B2RF	2.95	1.180	81.25	30.70	10.10	77.15	7.30	2.50
CT 13513RF	3.30	1.165	80.05	29.65	9.20	76.50	7.10	2.50
DP 0912B2RF	3.50	1.125	82.00	30.90	9.15	76.05	7.40	2.50
DP 1219B2RF	3.00	1.185	79.95	31.05	8.65	79.35	7.25	2.00
DP 1252B2RF	3.25	1.165	81.60	29.10	10.30	80.30	7.30	1.50
DP 1311B2RF	3.60	1.135	80.70	28.90	11.15	78.30	6.65	3.50
DP 1321B2RF	3.80	1.160	81.95	31.55	10.70	75.20	7.15	3.00
DP 1359B2RF	2.70	1.195	79.70	31.10	8.25	79.25	7.50	1.50
FM 1944GLB2	3.30	1.200	81.95	32.25	7.85	80.65	6.70	2.50
FM 2322GL	3.80	1.220	82.00	32.35	7.15	76.45	7.60	2.00
FM 2484B2F	3.25	1.260	82.35	32.40	7.40	80.55	6.55	2.50
FM 2989GLB2	3.35	1.195	80.55	31.25	7.75	79.45	6.65	3.50
FM 9170B2F	3.40	1.210	81.15	30.50	8.00	79.35	6.60	1.50
FM 9180B2F	3.65	1.215	82.80	31.75	8.05	78.10	6.50	3.00
NG 2051B2RF	3.95	1.150	79.25	27.50	8.55	76.65	6.85	3.50
NG 4010B2RF	3.45	1.190	81.95	32.20	9.20	76.85	7.80	1.50
NG 4012B2RF	3.50	1.165	81.10	31.60	7.85	78.05	7.65	2.00
NG 5315B2RF	3.45	1.145	81.75	29.35	10.40	78.05	7.15	2.00
PHY 3080-1	3.80	1.155	82.20	30.70	10.25	77.25	7.20	4.00
PHY 375WRF	3.10	1.155	81.35	30.35	8.70	77.55	7.25	1.50
PHY 4433-25	2.75	1.135	81.10	30.95	9.70	76.60	7.25	3.00
PHY 499WRF	3.35	1.165	82.30	31.65	9.70	76.75	7.40	4.00
PHY 565WRF	3.30	1.160	82.10	32.05	9.65	76.65	7.50	2.05
ST 4747GLB2	3.45	1.200	80.90	29.85	7.15	78.30	6.30	5.00
ST 4946GLB2	3.20	1.190	82.45	33.00	9.45	78.40	7.45	4.00
ST 6448GLB2	3.20	1.215	80.70	28.95	7.40	77.50	6.80	3.00
MSD(0.05)	0.56	0.0325	1.47	1.44	0.76	4.45	0.41	2.66

\*AM = Americot, AT=All-Tex, BX=experimental line for Bayer Cropsciences, CG=Croplan Genetics, CT= experimental line for Dynagro, DP = Deltapine, FM=Fibermax, NG=NexGen, NGX=experimental line for NexGen, PHY= Phytogen, ST=Stoneville.

**Table 3A. The effect of Verticillium wilt on variety in Halfway.**

Variety	Plants/ft	%Wilt on 8/24	%Defol- iation	Lbs lint/a	Turnout	Yield x Loan (\$/a)	Loan (\$/lb)
FM 2484B2F	2.99	19	30	1752	0.395	936	0.534
ST 4747GLB2	2.49	21	32	1547	0.384	822	0.532
FM 2011GT	2.64	26	36	1445	0.370	792	0.548
FM 2322GL	1.94	16	22	1404	0.421	786	0.560
PHY 339WRF	2.63	40	25	1320	0.379	739	0.560
FM 9180B2F	2.74	30	34	1321	0.338	735	0.557
FM 2989GLB2	2.71	21	39	1372	0.362	733	0.534
NG 4111RF	2.47	28	40	1296	0.369	713	0.551
PHY 367WRF	2.94	36	52	1222	0.377	682	0.558
DP 1212B2RF	2.92	39	65	1204	0.358	670	0.557
DP 1321B2RF	2.97	29	60	1212	0.372	667	0.551
FM 1944GLB2	2.15	24	31	1175	0.372	665	0.566
DP 1219B2RF	2.44	26	33	1157	0.377	649	0.561
FM 9250GL	2.65	15	36	1218	0.356	644	0.529
DP 1311B2RF	2.74	19	25	1173	0.397	643	0.548
DP 0912B2RF	2.18	36	45	1188	0.379	639	0.538
NG 1511B2RF	2.44	27	51	1180	0.391	636	0.539
NG 3348B2RF	2.44	23	36	1193	0.357	630	0.529
PHY 3080-1	2.59	30	38	1173	0.364	617	0.526
AM 1532B2RF	2.34	30	41	1101	0.356	610	0.554
NG 4010B2RF	2.39	31	45	1069	0.347	605	0.566
NG 2051B2RF	2.76	29	47	1098	0.317	595	0.543
DG CT13545B2RF	2.93	36	46	1099	0.369	591	0.538
FM 1320GL	1.72	21	35	1069	0.372	590	0.552
CG 3156B2RF	2.75	40	61	1196	0.374	585	0.489
NGX 2322B2F	2.49	26	40	1061	0.354	579	0.546
PHY 4433-27	2.49	33	62	1137	0.352	570	0.502
CT 13125B2RF	2.45	40	64	1129	0.364	567	0.502
CT 13363B2RF	2.02	42	48	1018	0.373	566	0.557
CT 13663	2.76	45	54	1080	0.340	548	0.507
AT EdgeB2RF	2.74	41	58	1119	0.330	537	0.480
AM 1504B2RF	1.75	37	34	925	0.342	473	0.511
MSD(0.05)	0.40	17	9	217	0.023	115	0.048

\*AM = Americot, AT=All-Tex, BX=experimental line for Bayer Cropsciences, CG=Croplan Genetics, DG CT= experimental line for Dynagro, DP = Deltapine, FM=Fibermax, NG=NexGen, NGX=experimental line for NexGen, PHY= Phytogen, ST=Stoneville.

**Table 3B. Effect of Verticillium wilt on fiber properties of varieties in Halfway.**

<b>Variety</b>	<b>Micro- naire</b>	<b>Length</b>	<b>Unif- ormity</b>	<b>Strength</b>	<b>Elong- ation</b>	<b>Rd</b>	<b>+b</b>	<b>Leaf</b>
AM 1504B2RF	3.37	1.06	80.05	27.60	8.55	78.55	8.20	2.5
AM 1532B2RF	3.40	1.11	81.30	28.25	8.60	78.65	8.50	1.5
AT EdgeB2RF	3.27	1.09	80.30	29.15	7.45	76.20	7.35	5.0
CG 3156B2RF	3.24	1.06	80.05	28.25	7.55	78.40	7.55	4.0
CT 13125B2RF	2.82	1.11	80.50	30.10	8.90	78.90	8.15	2.5
CT 13363B2RF	3.31	1.18	81.40	31.60	8.45	79.45	7.95	2.5
DG CT13545B2RF	3.20	1.12	80.60	32.65	7.55	80.00	8.35	2.0
CT 13663	3.33	1.07	80.65	29.60	8.95	77.30	7.95	4.0
DP 0912B2RF	3.98	1.06	81.20	29.30	8.40	77.55	8.30	2.5
DP 1212B2RF	3.54	1.12	81.20	31.15	9.55	77.10	8.10	3.0
DP 1219B2RF	3.45	1.12	80.70	31.20	7.45	80.45	8.45	1.0
DP 1311B2RF	3.85	1.07	81.60	28.80	8.85	78.65	7.80	2.0
DP 1321B2RF	3.55	1.08	82.10	31.10	9.60	76.75	8.30	2.5
FM 1320GL	3.60	1.09	81.55	30.70	8.35	78.75	8.30	2.0
FM 1944GLB2	3.64	1.14	80.65	30.55	6.70	81.70	7.40	1.5
FM 2011GT	3.39	1.12	81.65	30.50	7.35	78.00	7.45	3.0
FM 2322GL	3.85	1.15	80.90	29.95	6.65	79.00	7.65	2.5
FM 2484B2F	3.45	1.21	81.70	31.95	6.90	80.10	7.35	3.5
FM 2989GLB2	3.48	1.09	80.55	29.90	7.20	79.00	7.90	2.5
FM 9180B2F	3.44	1.16	81.45	31.70	7.45	80.15	7.60	2.5
FM 9250GL	3.31	1.12	80.40	29.70	7.10	78.85	7.50	3.5
NG 1511B2RF	3.65	1.07	81.60	30.80	9.55	77.35	8.55	2.5
NG 2051B2RF	3.44	1.10	80.35	28.75	7.25	78.25	7.60	3.5
NG 3348B2RF	3.28	1.13	81.90	31.25	7.90	78.00	7.90	3.0
NG 4010B2RF	3.59	1.11	81.80	31.45	8.00	78.20	8.50	2.0
NG 4111RF	3.53	1.09	81.80	32.60	8.65	77.35	8.70	2.5
NGX 2322B2F	3.32	1.13	81.20	30.15	7.60	78.45	8.20	2.0
PHY 3080-1	3.37	1.10	81.40	29.75	8.50	77.30	8.65	3.5
PHY 339WRF	3.50	1.15	82.05	32.00	8.65	79.30	7.65	2.5
PHY 367WRF	3.57	1.12	82.95	31.95	9.10	75.85	8.10	2.5
PHY 4433-27	3.02	1.11	81.25	30.55	8.10	78.25	7.90	4.0
ST 4747GLB2	3.70	1.12	79.80	27.90	6.50	76.55	7.15	3.5
MSD(0.05)	0.33	0.035	1.97	2.16	0.54	1.7	0.42	1.83

\*AM = Americot, AT=All-Tex, BX=experimental line for Bayer Cropsciences, CG=Croplan Genetics, DG CT= experimental line for Dynagro, DP = Deltapine, FM=Fibermax, NG=NexGen, NGX=experimental line for NexGen, PHY= Phytogen, ST=Stoneville.

**Table 4A. The effect of Verticillium wilt on variety in Plainview.**

Variety	Plants/ft	%Wilt on 7/31	%Defol- iation	Lbs lint/a	Turnout	Yield x Loan (\$/a)	Loan (\$/lb)
NG4111RF	2.7	37	48	1965	0.287	1111	0.5658
FM2484B2F	3.2	23	30	1910	0.278	1025	0.5370
FM 2322GL	1.7	38	30	1746	0.317	1016	0.5820
FM2011GT	2.9	27	50	1774	0.298	984	0.5545
ST 4747GLB2	2.6	34	46	1884	0.297	979	0.5195
DP1321B2RF	3.4	27	73	1675	0.299	909	0.5430
FM9180B2F	3.1	34	42	1632	0.259	904	0.5543
NG 3306B2RF	3.5	36	47	1594	0.288	897	0.5628
PHY339WRF	3.3	33	42	1623	0.279	877	0.5400
FM 1320GL	1.6	49	57	1512	0.295	873	0.5775
ATNitro-44B2RF	3.1	31	40	1692	0.263	847	0.5008
FM9250GL	2.7	31	57	1512	0.273	825	0.5458
PHY3080-1	2.4	32	55	1457	0.281	820	0.5630
NG1511B2RF	2.8	37	63	1415	0.295	803	0.5675
DP1044B2RF	3.2	32	36	1590	0.258	800	0.5035
FM2989GLB2	2.8	37	41	1470	0.260	791	0.5383
NG3348B2RF	2.3	28	35	1472	0.251	785	0.5335
PHY4433-27	2.6	38	64	1473	0.277	784	0.5325
FM1944GLB2	2.7	36	45	1501	0.249	772	0.5143
DP1219B2RF	2.7	33	38	1526	0.261	767	0.5025
DP1311B2RF	1.8	54	36	1465	0.263	764	0.5215
PHY367WRF	2.9	35	68	1432	0.267	748	0.5225
DP0912B2RF	2.5	35	60	1340	0.275	715	0.5335
NG2051B2RF	2.9	37	51	1293	0.238	703	0.5435
CT13883	2.9	36	57	1332	0.254	684	0.5133
CG3156B2RF	3.1	40	67	1272	0.281	674	0.5300
PHY375WRF	3.0	31	76	1259	0.261	651	0.5173
CT13125B2RF	2.9	33	74	1196	0.276	609	0.5093
AM1532B2RF	2.6	41	53	1109	0.245	591	0.5328
AM1504B2RF	1.8	45	47	1076	0.246	543	0.5047
CG3428B2RF	1.4	54	54	977	0.251	506	0.5178
CT13513RF	2.1	55	67	932	0.251	499	0.5350
MSD (0.05)	0.3	14	13	137	0.023	73	0.0600

\*AM = Americot, AT=All-Tex, BX=experimental line for Bayer Cropsciences, CG=Croplan Genetics, CT= experimental line for Dynagro, DP = Deltapine, FM=Fibermax, NG=NexGen, NGX=experimental line for NexGen, PHY= Phytogen, ST=Stoneville.



**Table 4B. Effect of Verticillium wilt on fiber properties of varieties in Plainview.**

<b>Variety</b>	<b>Micro- naire</b>	<b>Length</b>	<b>Unif- ormity</b>	<b>Strength</b>	<b>Elong- ation</b>	<b>Rd</b>	<b>+b</b>	<b>Leaf</b>
AM 1504B2RF	3.10	1.120	81.15	28.45	9.45	79.00	7.80	2.5
AM 1532B2RF	3.10	1.155	80.90	29.35	9.00	78.80	7.70	2.5
AT Nitro-44B2RF	3.10	1.260	82.95	32.90	9.20	77.55	7.00	4.5
CG 3156B2RF	3.00	1.130	80.40	29.30	8.60	80.10	6.80	3.0
CG 3428B2RF	2.85	1.170	81.70	29.65	9.20	80.85	7.85	2.0
CT 13125B2RF	2.95	1.165	81.20	31.25	10.20	79.35	7.80	2.0
CT 13513RF	3.30	1.135	80.10	30.10	9.00	79.10	7.75	2.5
CT 13883	2.95	1.105	80.75	28.50	8.55	78.45	7.55	2.5
DP 0912B2RF	3.35	1.130	81.75	31.10	9.45	77.40	7.75	3.5
DP 1044B2RF	2.85	1.155	80.25	31.10	10.40	78.75	8.00	3.0
DP 1219B2RF	2.85	1.190	80.25	31.80	8.35	81.65	7.75	3.0
DP 1311B2RF	3.10	1.135	80.35	28.65	10.05	80.10	7.15	3.5
DP 1321B2RF	3.70	1.146	82.56	32.35	10.55	76.90	7.85	4.0
FM 1320GL	3.85	1.170	80.95	31.10	8.75	79.60	8.10	1.0
FM 1944GLB2	3.10	1.215	81.20	30.85	7.60	80.95	6.95	3.0
FM 2011GT	3.30	1.190	82.70	31.55	7.80	80.45	7.00	2.5
FM 2322GL	3.90	1.200	81.90	31.10	7.10	80.00	8.00	1.0
FM 2484B2F	3.25	1.265	81.75	31.65	7.80	81.70	7.20	3.0
FM 2989GLB2	3.15	1.170	81.40	30.25	7.20	80.85	7.45	2.0
FM 9180B2F	3.45	1.190	82.10	31.70	8.70	80.40	6.85	3.0
FM 9250GL	3.30	1.200	82.35	32.35	6.70	80.55	7.30	2.5
NG 1511B2RF	3.70	1.160	82.30	31.40	10.60	77.00	7.90	3.0
NG 2051B2RF	3.50	1.110	79.85	28.20	7.85	79.10	7.15	4.0
NG 3348B2RF	3.35	1.170	83.25	31.15	8.80	77.70	7.70	3.5
NG 4111RF	3.50	1.180	82.75	33.75	9.05	78.40	8.45	1.0
NG 3306B2RF	3.45	1.205	82.80	32.65	9.25	78.90	8.15	2.5
PHY 3080-1	3.60	1.140	82.05	30.15	10.25	78.95	7.85	2.0
PHY 339WRF	3.20	1.205	82.70	31.65	9.10	80.05	7.75	2.0
PHY 367WRF	3.00	1.160	81.20	31.45	9.85	78.10	8.30	2.5
PHY 375WRF	2.90	1.150	81.40	29.55	8.30	78.50	7.65	3.0
PHY 4433-27	3.15	1.145	81.50	31.55	9.50	78.00	7.65	3.0
ST 4747GLB2	3.40	1.190	80.45	28.60	7.10	77.60	6.65	3.5
MSD(0.05)	0.39	0.027	1.32	1.74	0.51	2.65	0.34	2.7

\*AM = Americot, AT=All-Tex, BX=experimental line for Bayer Cropsciences, CG=Croplan Genetics, CT= experimental line for Dynagro, DP = Deltapine, FM=Fibermax, NG=NexGen, NGX=experimental line for NexGen, PHY= Phytogen, ST=Stoneville.

**Table 5A. The effect of Verticillium wilt on variety in Ropesville.**

<b>Variety</b>	<b>Plants /ft</b>	<b>% Wilt on 8/26</b>	<b>%Def- olia- tion</b>	<b>Lbs lint/a</b>	<b>Turn out</b>	<b>Yield x Loan (\$/a)</b>	<b>Loan (\$/lb)</b>	<b>RK/ 500 cc soil**</b>
FM 2484B2F	3.0	49	38	1464	0.292	786	0.5373	21,030 a
NG 4111RF	2.6	54	39	1349	0.279	736	0.5458	4,650 a-d
DP 1311B2RF	2.0	56	34	1401	0.286	722	0.5153	1,885 a-d
BX 1445GLB2	2.4	68	47	1336	0.305	707	0.5290	18,450 ab
FM 9180B2F	2.9	61	43	1343	0.277	700	0.5210	1,680 a-d
FM 2989GLB2	2.7	52	54	1224	0.278	604	0.4935	4,620 a-d
FM 9250GL	2.9	46	55	1196	0.260	574	0.4803	9,720 ab
NG 4012B2RF	2.7	53	51	1116	0.272	571	0.5123	3,960 abc
FM 1320GL	1.5	64	54	1156	0.278	544	0.4708	3,210 cd
DP 1044B2RF	2.9	45	35	1193	0.251	543	0.4550	9,600 abc
FM 2011GT	3.1	47	63	1174	0.270	542	0.4613	1,530 a-d
NG 2051B2RF	3.0	52	45	1157	0.244	538	0.4645	7,440 abc
NG 3348B2RF	2.4	56	39	1138	0.263	534	0.4688	7,020 abc
DP 0912B2RF	2.8	60	60	1098	0.272	530	0.4833	795 a-d
NGX 2322B2RF	2.8	61	40	1050	0.247	523	0.4980	18,510 abc
DP 1212B2RF	3.2	58	71	1105	0.278	519	0.4698	6,775 a-d
ST 6448GLB2	2.4	64	48	1026	0.281	502	0.4893	13,380 abc
NG 1511B2RF	2.5	63	68	972	0.298	480	0.4943	3,270 a-d
PHY 499WRF	3.0	57	60	1021	0.272	477	0.4670	15,390 abc
ST 4946GLB2	2.6	58	58	1016	0.268	466	0.4585	480 d
PHY 565WRF	2.4	57	52	998	0.274	461	0.4623	1,650 a-d
PHY 4433-25	2.8	53	55	1006	0.266	451	0.4488	130 b-d
DP 1219B2RF	2.3	55	45	941	0.264	444	0.4715	10,170 abc
NG 5315B2RF	1.6	70	60	836	0.274	430	0.5145	770 a-d
AM 1504B2RF	1.9	66	52	877	0.248	425	0.4850	5,750 abc
CT 13663	2.8	63	63	924	0.256	423	0.4583	5,340 abc
CT 13883	2.8	59	52	921	0.244	417	0.4533	4,410 abc
DP 1359B2RF	2.9	46	53	855	0.259	405	0.4740	9,395 abc
CG 3787B2RF	2.5	68	64	815	0.258	393	0.4825	1,950 a-d
PHY 367WRF	2.9	46	66	862	0.237	387	0.4490	3,600 a-d
DP 1252B2RF	1.9	80	56	741	0.258	373	0.5030	4,800 a-d
CT 13513RF	1.9	68	71	593	0.248	275	0.4648	9,630 abc
MSD(0.05)	0.3	16	11.6	152	0.027	74	0.0487	LOG <sub>10</sub> (RK)

\*AM = Americot, AT=All-Tex, BX=experimental line for Bayer Cropsciences, CG=Croplan Genetics, CT= experimental line for Dynagro, DP = Deltapine, FM=Fibermax, NG=NexGen, NGX=experimental line for NexGen, PHY= Phytogen, ST=Stoneville.

\*\*Mean separation based on Log10 transformation of root-knot nematode (RK) density.

**Table 5B. Effect of Verticillium wilt on fiber properties of varieties in Ropesville.**

<b>Variety</b>	<b>Micro- naire</b>	<b>Length</b>	<b>Unif- ormity</b>	<b>Strength</b>	<b>Elong- ation</b>	<b>Rd</b>	<b>+b</b>	<b>Leaf</b>
AM 1504B2RF	2.68	1.085	81.35	27.80	9.00	79.40	8.25	2.5
BX 1445GLB2	3.23	1.215	83.00	31.40	7.75	79.55	7.45	1.5
CG 3787B2RF	2.83	1.105	80.75	28.55	9.85	77.15	8.15	4.0
CT 13513RF	2.66	1.115	79.25	29.20	8.25	77.60	8.25	3.0
CT 13663	2.63	1.160	81.95	30.90	9.20	76.30	7.75	4.5
CT 13883	2.71	1.130	80.00	28.25	8.20	76.35	7.75	4.5
DP 0912B2RF	2.91	1.110	81.45	31.10	8.70	77.10	8.30	4.0
DP 1044B2RF	2.52	1.140	81.00	31.15	9.80	77.40	8.05	4.5
DP 1212B2RF	3.07	1.160	82.55	32.50	10.05	73.40	7.75	5.0
DP 1219B2RF	2.64	1.185	80.50	30.20	8.75	79.50	8.15	3.5
DP 1252B2RF	2.82	1.135	79.95	27.70	8.25	79.15	8.45	3.0
DP 1311B2RF	3.27	1.120	81.15	29.05	9.90	77.15	7.35	4.0
DP 1359B2RF	2.45	1.160	80.20	29.85	8.40	77.65	8.40	2.0
FM 1320GL	2.98	1.150	81.30	30.95	9.35	76.70	8.00	4.0
FM 2011GT	2.55	1.155	81.00	31.35	7.85	77.95	7.75	3.5
FM 2484B2F	3.10	1.250	82.35	31.45	7.60	80.55	7.25	2.5
FM 2989GLB2	2.83	1.165	81.80	30.65	7.35	79.05	7.45	3.5
FM 9180B2F	3.13	1.185	81.70	31.45	8.00	78.45	7.50	3.0
FM 9250GL	2.71	1.185	81.20	31.20	7.15	77.40	7.50	3.0
NG 1511B2RF	3.04	1.120	80.95	30.30	9.95	76.30	8.00	4.0
NG 2051B2RF	3.00	1.130	79.90	28.55	7.80	75.85	7.25	5.0
NG 3348B2RF	2.82	1.180	82.45	31.55	8.60	76.60	7.85	4.0
NG 4012B2RF	2.85	1.150	81.70	32.45	7.20	78.05	8.15	2.0
NG 4111RF	3.17	1.135	82.10	31.10	9.45	77.65	9.05	2.0
NG 5315B2RF	2.88	1.115	81.50	28.30	9.85	79.70	8.40	1.5
NGX 2322B2RF	2.65	1.185	81.45	30.85	8.30	79.15	7.85	2.5
PHY 367WRF	2.36	1.155	81.10	31.65	8.95	76.20	8.30	4.0
PHY 4433-25	2.52	1.110	80.00	28.40	9.75	77.30	8.15	4.0
PHY 499WRF	2.93	1.160	82.85	31.20	9.25	75.85	7.80	4.5
PHY 565WRF	2.78	1.170	82.35	32.15	9.95	75.40	8.20	4.0
ST 4946GLB2	2.55	1.155	80.95	32.15	9.05	76.85	7.95	4.0
ST 6448GLB2	2.70	1.165	80.56	29.20	7.80	79.70	7.90	3.0
MSD(0.05)	0.30	0.032	1.43	1.39	1.26	3.76	0.46	1.7

\*AM = Americot, AT=All-Tex, BX=experimental line for Bayer Cropsciences, CG=Croplan Genetics, CT= experimental line for Dynagro, DP = Deltapine, FM=Fibermax, NG=NexGen, NGX=experimental line for NexGen, PHY= Phytogen, ST=Stoneville.

**Table 6. The relative\*\* wilt, defoliation, and yield of all varieties tested, analyzed over all sites.**

<b>Variety*</b>	<b>RelWilt</b>	<b>Rank Wilt</b>	<b>RelDef</b>	<b>Rank Defol.</b>	<b>Relyield</b>	<b>Rank Yield</b>	<b>RelValue</b>	<b>Rank Value</b>
FM 2484B2F	0.428	3	0.390	2	0.978	1	0.968	1
BX 1445GLB2	0.708	34	0.499	12	0.959	2	0.968	2
NG 4111RF	0.597	16	0.538	16	0.874	4	0.885	3
FM 9170B2F	0.401	1	0.438	6	0.871	5	0.868	4
FM 2322GL	0.409	2	0.325	1	0.847	7	0.853	5
ST 4747GLB2	0.503	5	0.531	14	0.905	3	0.846	6
FM 2011GT	0.536	9	0.631	25	0.869	6	0.840	7
FM 9180B2F	0.647	23	0.496	10	0.845	8	0.839	8
NG 3306B2RF	0.671	28	0.618	23	0.832	10	0.824	9
FM 2989GLB2	0.525	7	0.505	13	0.836	9	0.808	10
PHY 339WRF	0.628	20	0.462	9	0.809	13	0.800	11
DP 1311B2RF	0.680	30	0.423	4	0.819	12	0.794	12
NG 4012B2RF	0.572	13	0.572	18	0.782	17	0.787	13
DP 1321B2RF	0.637	22	0.920	48	0.799	15	0.785	14
FM 1944GLB2	0.592	15	0.499	11	0.769	19	0.753	15
DG CT13545B2RF	0.697	33	0.536	15	0.765	20	0.753	16
FM 9250GL	0.469	4	0.625	24	0.784	16	0.743	17
DP 1212B2RF	0.713	36	0.954	50	0.781	18	0.739	18
AT Nitro-44B2RF	0.565	12	0.425	5	0.807	14	0.738	19
DP 1044B2RF	0.525	8	0.414	3	0.820	11	0.734	20
FM 1320GL	0.659	25	0.688	31	0.742	23	0.723	21
DP 1219B2RF	0.552	10	0.441	7	0.742	22	0.712	22
PHY 3080-1	0.684	31	0.697	32	0.730	27	0.710	23
NG 4010B2RF	0.696	32	0.635	26	0.711	30	0.709	24
NG 1511B2RF	0.665	26	0.797	41	0.725	28	0.705	25
NG 3348B2RF	0.517	6	0.458	8	0.752	21	0.701	26
DP 0912B2RF	0.710	35	0.765	36	0.724	29	0.694	27
PHY 499WRF	0.807	43	0.793	40	0.736	25	0.685	28
ST 4946GLB2	0.679	29	0.767	37	0.738	24	0.674	29
PHY 375WRF	0.632	21	0.874	45	0.703	33	0.674	30
NGX 2322B2RF	0.611	19	0.551	17	0.687	36	0.672	31
NG 2051B2RF	0.602	17	0.595	20	0.705	32	0.668	32
PHY 565WRF	0.608	18	0.591	19	0.696	35	0.647	33
AT EdgeB2RF	0.819	44	0.820	43	0.735	26	0.645	34
AM 1532B2RF	0.719	37	0.705	33	0.651	42	0.638	35
NG 5315B2RF	0.843	46	0.681	30	0.636	48	0.634	36
ST 6448GLB2	0.765	39	0.603	21	0.676	38	0.633	37
CG 3156B2RF	0.873	48	0.882	46	0.698	34	0.631	38
CG 3787B2RF	0.794	40	0.791	39	0.644	45	0.630	39
PHY 4433-25	0.668	27	0.781	38	0.710	31	0.627	40

CT 13363B2RF	0.957	51	0.752	35	0.645	44	0.627	41
CG 3428B2RF	0.806	42	0.743	34	0.637	47	0.617	42
PHY 4433-27	0.798	41	0.924	49	0.681	37	0.612	43
PHY 367WRF	0.564	11	0.843	44	0.667	39	0.611	44
CT 13883	0.649	24	0.666	28	0.661	41	0.601	45
CT 13663	0.868	47	0.808	42	0.662	40	0.600	46
DP 1252B2RF	0.935	50	0.680	29	0.596	49	0.595	47
CT 13125B2RF	0.721	38	1.000	51	0.650	43	0.593	48
DP 1359B2RF	0.577	14	0.642	27	0.640	46	0.582	49
AM 1504B2RF	0.823	45	0.610	22	0.576	50	0.541	50
CT 13513RF	0.931	49	0.898	47	0.484	51	0.463	51

\*AM = Americot, AT=All-Tex, BX=experimental line for Bayer Cropsciences, CG=Croplan Genetics, CT= experimental line for Dynagro (DG), DP = Deltapine, FM=Fibermax, NG=NexGen, NGX=experimental line for NexGen, PHY= Phytogen, ST=Stoneville.

\*\*Relative wilt was calculated by dividing the wilt rating at a site by the highest average wilt rating at the same site for a variety. Relative defoliation was calculated by dividing the % defoliation by the highest average defoliation rating for a variety at that site. Relative yield was calculated by dividing the yield by the highest average yielding variety at that site. A value of 1 for relative wilt or defoliation indicates that the variety was the most susceptible to wilt. A value of 1 or close to 1 for relative yield indicates that the variety consistently yielded close to the best variety at each site.

# **2013 Sites Planted but Lost Due to Weather**

# Bailey County RACE Trial

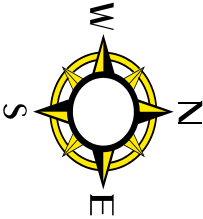
## Planted May 22, 2013

Ray Haseloff farm  
2013

Plot #	Rep #	Treatment #	Variety
101	1	1	NG 2051
102	1	2	FM 9250
103	1	3	PHY 339
104	1	4	CG 3787
105	1	5	FM 2011
106	1	6	PHY 367
107	1	7	NG 1511
108	1	8	DP 1212
201	2	4	CG 3787
202	2	3	PHY 339
203	2	2	FM 9250
204	2	1	NG 2051
205	2	8	DP 1212
206	2	7	NG 1511
207	2	6	PHY 367
208	2	5	FM 2011
301	3	7	NG 1511
302	3	8	DP 1212
303	3	5	FM 2011
304	3	6	PHY 367
305	3	3	PHY 339
306	3	4	CG 3787
307	3	1	NG 2051
308	3	2	FM 9250

Ave planting rate: 41,000/ac

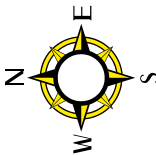
Floyd County Dryland RACE Demonstration - 2013						
32 Rows Fill						
Rep I	10	CG 3787 B2RF	Rep 1	Variety	Rep 1	Rep 2
	9	FM 2011 GT				
	6	FM 2484 B2F				
	5	NG 4111 RF				
	2	FM 1944 GLB2				
	1	NG 1511 B2RF				
	8	PHY 499 WRF				
	7	DP 1044 B2RF				
	4	PHY 367 WRF				
	3	ST 4946 GLB2				
Rep II	1	NG 1511 B2RF	Rep II	Planting date	5/21/2013	
	2	FM 1944 GLB2		Seeding rate	40,000	
	3	ST 4946 GLB2		Plot size (rows/length)	8 rows X field length	
	4	PHY 367 WRF		Row spacing	40"	
	7	DP 1044 B2RF		Herbicides	none	
	8	PHY 499 WRF		Fertilizer	none	
	5	NG 4111 RF				
	6	FM 2484 B2F		Temp @ planting	74	
	9	FM 2011 GT		Soil Temp @ planting	~80	
	10	CG 3787 B2RF				
Rep III	6	FM 2484 B2F	Rep III	COMMENTS: 8 row plots (16 row planter)		
	5	NG 4111 RF				
	2	FM 1944 GLB2				
	1	NG 1511 B2RF				
	10	CG 3787 B2RF				
	9	FM 2011 GT				
	8	PHY 499 WRF				
	7	DP 1044 B2RF				
	4	PHY 367 WRF				
	3	ST 4946 GLB2				
Rep IV	9	FM 2011 GT	Rep IV			
	10	CG 3787 B2RF				
	3	ST 4946 GLB2				
	4	PHY 367 WRF				
	7	DP 1044 B2RF				
	8	PHY 499 WRF				
	1	NG 1511 B2RF				
	2	FM 1944 GLB2				
5	NG 4111 RF					
6	FM 2484 B2F					

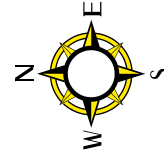




<b>Lamb County Irrigated RACE - 2013</b>					
	Variety	Rep 1	Rep 2	Rep 3	
1	NG 1511 B2RF				
2	FM 2484 B2RF				
3	ST 4946 GLB2				
4	DP 1044 B2RF				
5	PHY 367 WRF				
6	NG 4012 B2RF				
7	Grower Seed (FM2484)				
8	CG 3787 B2RF				
9	PHY 339 WRF				
10	FM 2011 GT				
6	NG 4012 B2RF				
5	PHY 367 WRF				
8	CG 3787 B2RF				
7	Grower Seed (FM2484)				
4	DP 1044 B2RF				
3	ST 4946 GLB2				
10	FM 2011 GT				
9	PHY 339 WRF				
2	FM 2484 B2RF				
1	NG 1511 B2RF				
7	Grower Seed (FM2484)				
8	CG 3787 B2RF				
1	NG 1511 B2RF				
2	FM 2484 B2RF				
9	PHY 339 WRF				
10	FM 2011 GT				
5	PHY 367 WRF				
6	NG 4012 B2RF				
3	ST 4946 GLB2				
4	DP 1044 B2RF				
32 rows fill					

N  
W E  
S

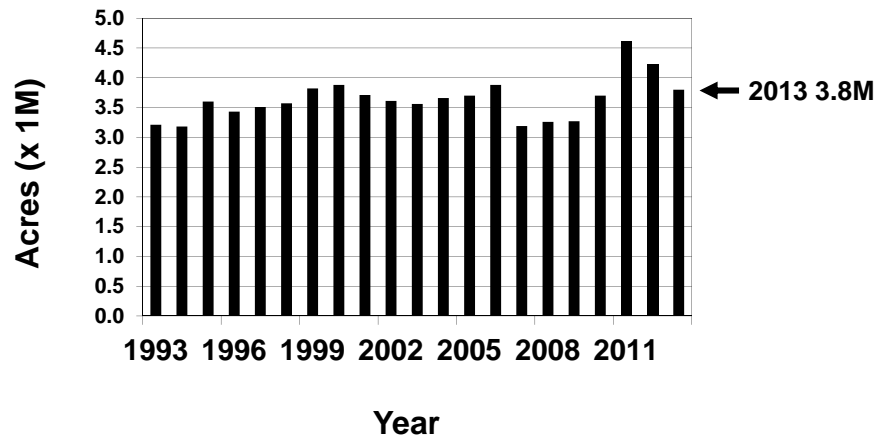
Lubbock County Dryland RACE Demonstration - 2013					
		Variety	Rep 1	Rep 2	Rep 3
1	Rep I	CG 3787B2RF			
2		ST 4946GLB2			
3		PHY 499WRF			
4		FM 2484B2F			
5		NG 1511B2RF			
6		FM 2011GT			
7		NG 4111RF			
8		NG 4111RF			
9		DP 1044B2RF			
10		PHY 367WRF			
3	Rep II	PHY 499WRF		6/4/2013	
9		DP 1044B2RF		39,204	
5		NG 1511B2RF			
8		NG 4111RF		None	
10		PHY 367WRF		None	
7		NG 4111RF		None	
6		FM 2011GT			
4		FM 2484B2F			
2		ST 4946GLB2			
1		CG 3787B2RF			
5	Rep III	NG 1511B2RF			
10		PHY 367WRF			
7		NG 4111RF			
2		ST 4946GLB2			
1		CG 3787B2RF			
9		DP 1044B2RF			
6		FM 2011GT			
3		PHY 499WRF			
7		NG 4111RF			
4		FM 2484B2F			
COMMENTS: 4 row planter.					
					



Parmer County Irrigated RACE Demonstration - 2013				Variety	Rep 1	Rep 2	Rep 3
1	Rep I	NG 1511 B2RF	1	NG 1511 B2RF			
2		FM 2011 GT	5	NG 4111 RF			
3		DP 1212 B2RF	2	FM 2011 GT			
4		PHY 367 WRF	6	FM 9250 GL			
5		NG 4111 RF	3	DP 1212 B2RF			
6		FM 9250 GL	7	PHY 339 WRF			
7		PHY 339 WRF	4	PHY 367 WRF			
8		Grower Seed	8	Grower Seed			
4	Rep II	PHY 367 WRF		Planting date			
3		DP 1212 B2RF		Seeding rate			
2		FM 2011 GT					
1		NG 1511 B2RF		Insecticide			
8		Grower Seed		Herbicide			
7		PHY 339 WRF		Fertilizer			
6		FM 9250 GL					
5		NG 4111 RF		Temp @ planting			
7	Rep III	PHY 339 WRF		Moisture @ planting			
8		Grower Seed					
1		NG 1511 B2RF		COMMENTS: Case 1200 Vacuum Planter 12 row 30" 6 Row Plots Planted Flat Following Corn			
2		FM 2011 GT					
5		NG 4111 RF					
6		FM 9250 GL					
3		DP 1212 B2RF					
4		PHY 367 WRF					

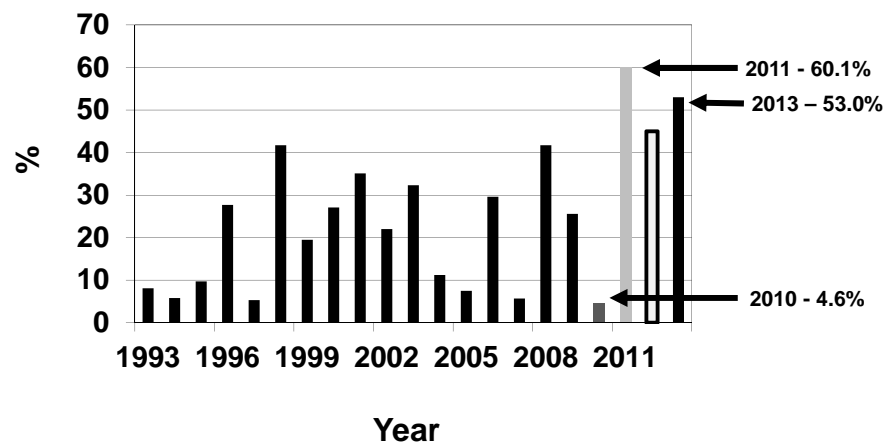
# **2013 Texas High Plains Production and Weather**

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



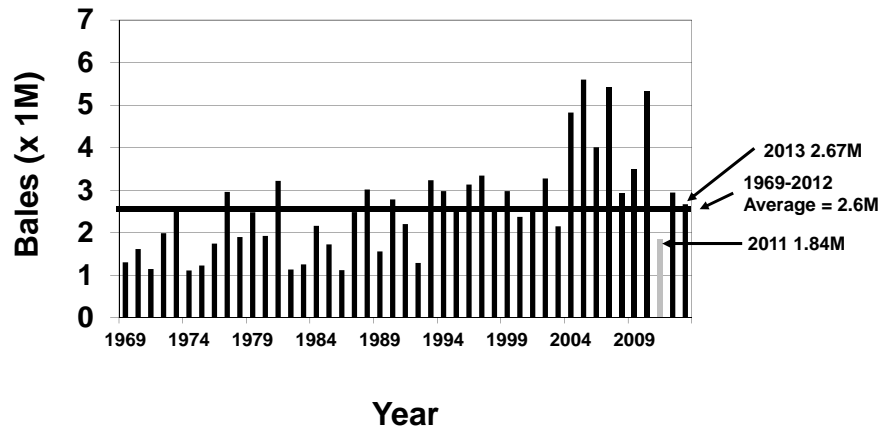
Source: USDA-NASS

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



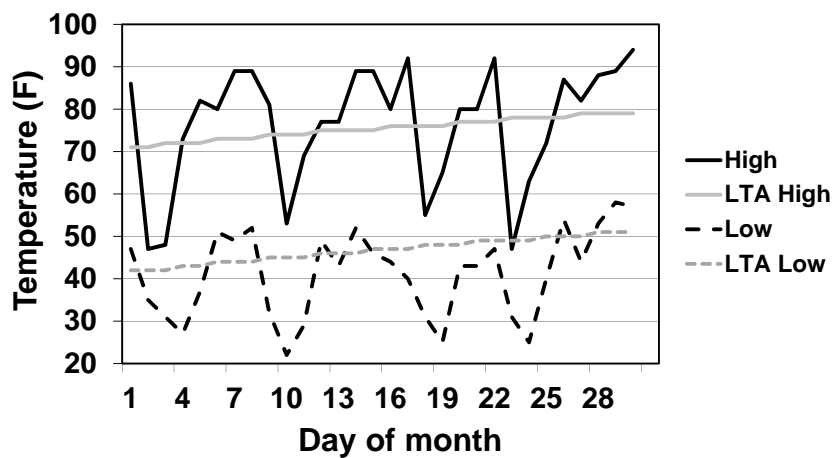
Source: USDA-NASS

## High Plains (TASS 1N and 1S) Total Bale Production 1969-2013

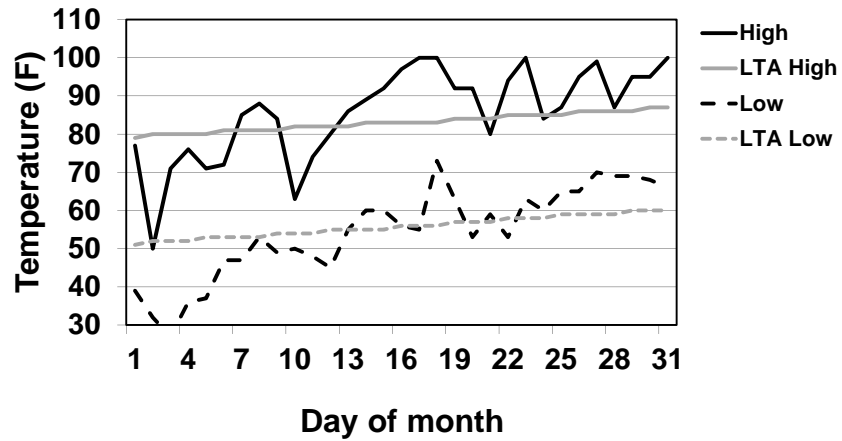


Source: USDA-NASS

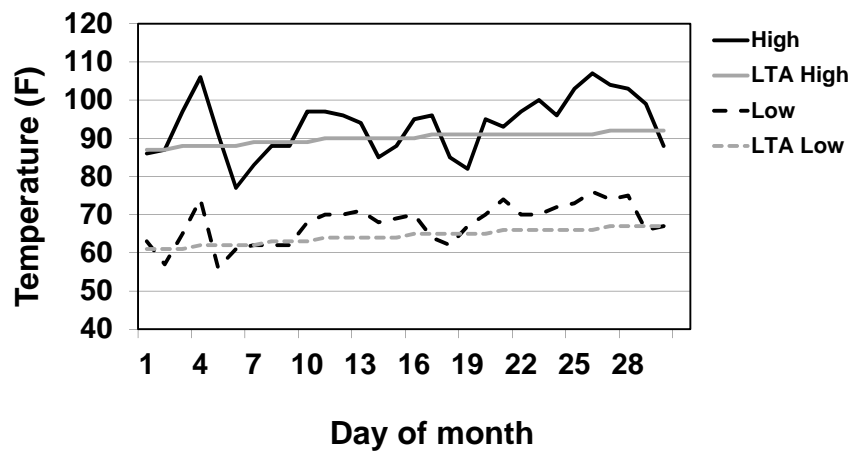
## Lubbock Air Temperatures April, 2013



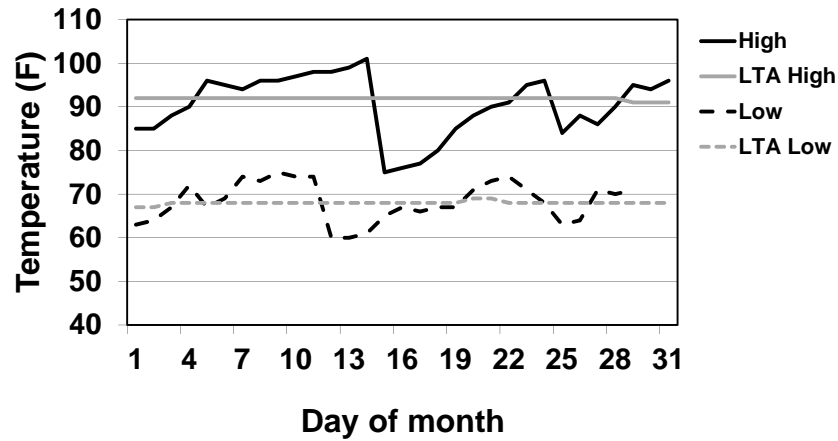
## Lubbock Air Temperatures May, 2013



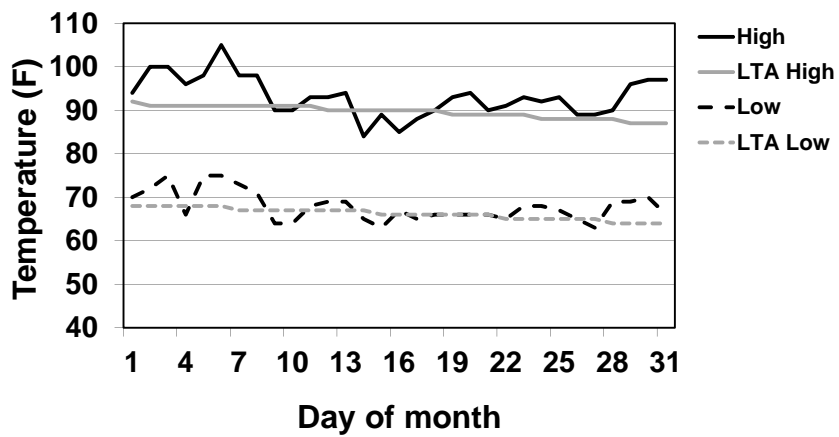
## Lubbock Air Temperatures June, 2013



## Lubbock Air Temperatures July, 2013

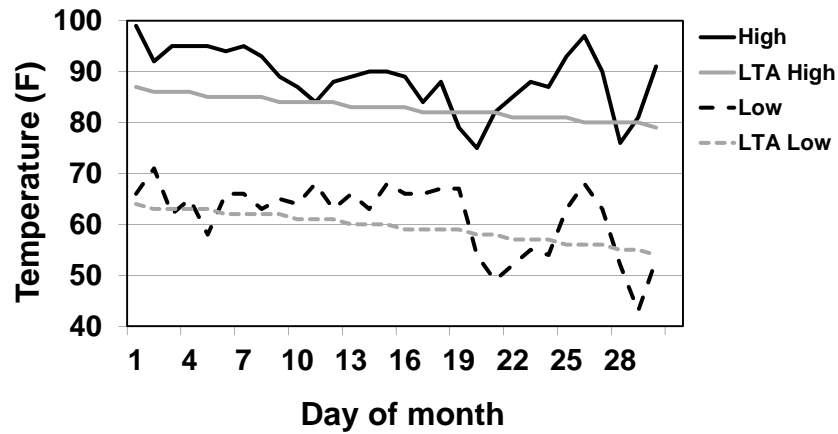


## Lubbock Air Temperatures August, 2013

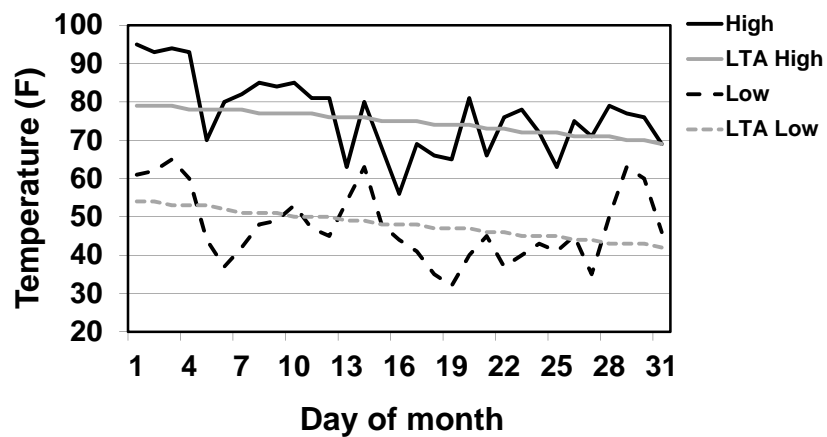




## Lubbock Air Temperatures September, 2013

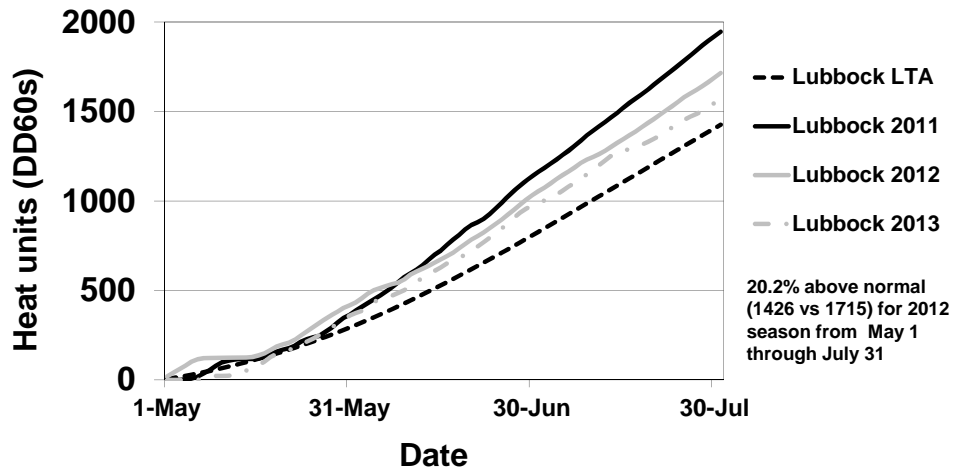


## Lubbock Air Temperatures October, 2013



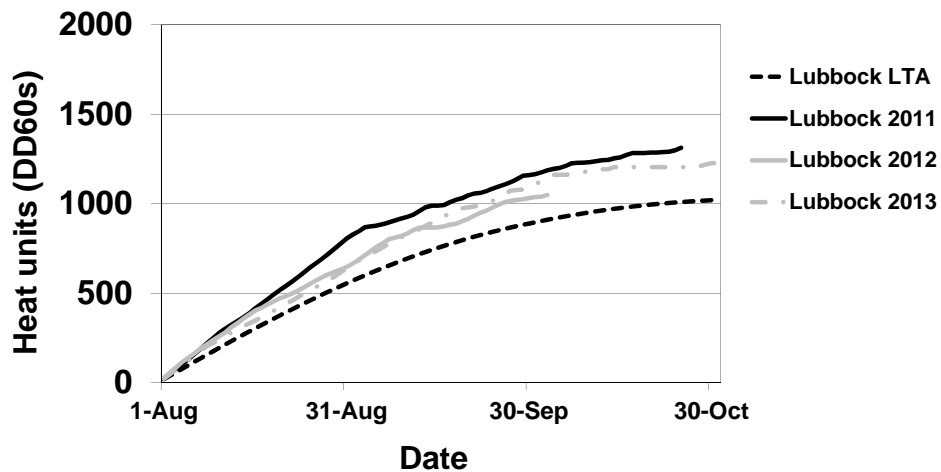
## Lubbock 30-Yr Long Term Average (1971-2000) vs. 2011-2013

Cotton Heat Unit Accumulation  
From May 1 through July 31

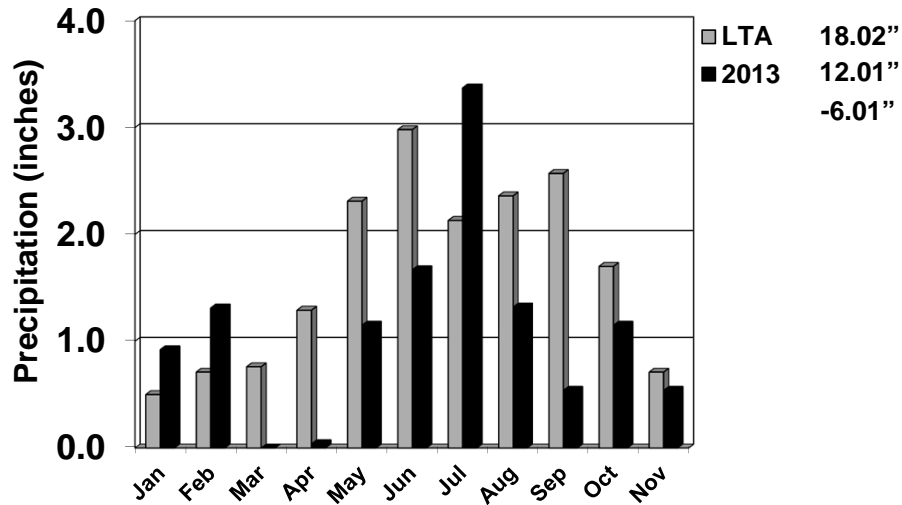


## Lubbock 30-Yr Long Term Average (1971-2000) vs. 2011-2013

Cotton Heat Unit Accumulation  
From August 1 through October 31

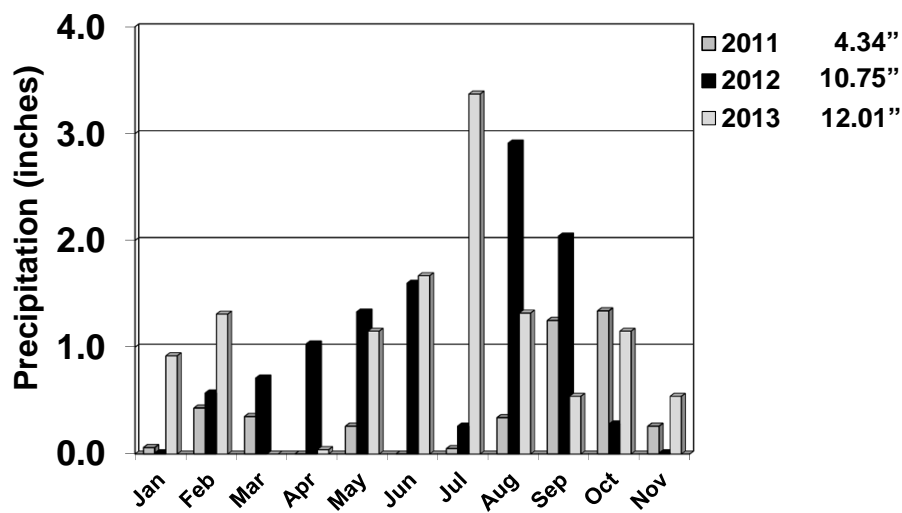


## Lubbock LTA (1971-2000) vs. 2013 Rainfall



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

## Lubbock 2011 - 2013 Rainfall



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

## **EVALUATING FIELD TRIAL DATA**

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

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

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

### **What are the best sources of field trial data?**

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

### **What are the common types of field trials?**

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

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

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

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

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

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

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

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

### **Scenario 1:**

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

### **What you can learn:**

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

### **Scenario 2:**

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

### **What you can learn:**

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

### **Scenario 3:**

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

#### **What can you learn:**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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