

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

### **Agreement No. 04-465TX**

January, 2007

Dr. Randy Boman, Extension Agronomist-Cotton  
Dr. Mark Kelley, Extension Program Specialist-Cotton  
Mr. Aaron Alexander, Graduate Student Assistant

Texas Cooperative Extension  
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 each location. Plot size was of sufficient size to enable the combining of all replications of each individual variety into a single module at harvest. Each individual variety had at least three acres total (approximately one acre per plot with three replications equals three acres total). Plot weights were determined at harvest using a boll buggy with integral electronic scales. Modules were followed through the ginning process to determine lint turnout, USDA-AMS fiber quality, and CCC loan value. Expenses for each herbicide system (Roundup Ready, Roundup Ready Flex, and Liberty Link) were tracked. Three producer-cooperator locations were utilized for this project. Trials were planted in Parmer, Crosby and Yoakum counties. At the Muleshoe location, late-season rainfall and high yields resulted in immature fiber (low micronaire). Verticillium wilt was encountered at this location and adversely affected yield and fiber quality of some varieties. FiberMax 960BR produced the highest net value and was significantly greater than the remaining varieties. FiberMax 9058F was in the second statistical group. The third "statistical tier" included Paymaster 2140B2RF and FiberMax 9063B2RF. Of the top four varieties at this location, one was a Bollgard/Roundup Ready type, one was a Roundup Ready Flex type and the other two were Bollgard II with Roundup Ready Flex. At the Blanco location, substantial moisture stress resulted in early cutout and lower yield potential. This was followed by heavy late-season rainfall which resulted in significant new mainstem growth. Short staple and high micronaire was noted for some varieties. Within the statistical "upper tier" of net returns, three varieties produced the same net value (FiberMax 9058F, Deltapine 143B2RF, and Deltapine 455BG/RR). Two of the top three varieties contained Roundup Ready Flex technology, one with Bollgard II technology and one without, while the other contained Bollgard and Roundup Ready transgenic traits. At Plains, considerable growth was observed following late-season rainfall which resulted in excessive plant material (stems and leaves) above the uppermost harvestable bolls for several varieties. This increased variability among varieties and replications. This, in conjunction with verticillium wilt in some areas of the field contributed to greater than normal variation as evidenced by high coefficient of variation (CV) results for measured yield parameters. Within the statistical "upper tier" of net returns, two varieties produced the same net value Paymaster 2140B2RF and FiberMax 960BR. One of the top two varieties contained Bollgard II with Roundup Ready Flex technologies and one contained Bollgard with Roundup Ready technologies. Results from the 2006 production season at varying locations in the Texas High Plains indicate that some Roundup Ready Flex and Roundup Ready Flex/Bollgard II "stacked gene" varieties were competitive with Roundup Ready and Roundup Ready/Bollgard types in terms of production costs and returns. Discounts were observed for high micronaire values at Blanco and low micronaire values at Muleshoe and Plains. These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection. The differences in net value/acre, when comparing the top and bottom varieties were approximately \$396 at Muleshoe, \$151 at Blanco and \$316 at Plains. Additional multi-site and multi-year applied research is needed to evaluate varieties across a series of environments.

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### **Introduction**

Small-plot cotton variety testing generally includes evaluation of genetic components but not genetics in concert with management programs. Characteristics commonly evaluated in small-plot testing include lint yield, turnout percentages, fiber quality, and earliness. Over the last several years, High Plains cotton producers have increased planted acres of transgenic cottons (glyphosate- and glufosinate-herbicide tolerant and Bt insect-resistant types) from approximately 300 thousand in 1997 to approximately 2 million in 2005. Industry continues to increase the number of herbicide-tolerant, insect-resistant, and "stacked gene" varieties. The proliferation of transgenic varieties in the marketplace is expected to continue over the next several years. New transgenic varieties continue to be marketed in the High Plains by All-Tex; Americot; Beltwide Cotton Genetics; Croplan Genetics; Delta and Pine Land/Paymaster; Dyna-Gro; FiberMax/AFD; PhytoGen; Stoneville and NexGen, and others.

More transgenic varieties in both picker and stripper type cottons are expected to be released by these companies in the future. 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. This technology was available in a limited number of varieties including some containing Bollgard II "stacked" with Roundup Ready. Varieties containing Monsanto's Roundup Ready Flex gene system were increased in 2005, with commercialization in 2006. Many Roundup Ready Flex only types as well as those "stacked" with Bollgard II were available. 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.

Additional cotton biotechnologies are also anticipated in the near future. 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 each location. Plots were of sufficient size to enable the combining of all replications of each individual variety into a single module at harvest. Each individual variety had at least three acres total (approximately one acre per plot with three replications equals three acres total). A forced randomization was used at each location. This was a requirement due to the potential for drift of Roundup Original Max and/or Ignite 280 herbicide to adjacent herbicide resistant systems. For example, the Roundup Ready Flex varieties were planted in a contiguous block with a fill variety before the next herbicide system (unless the next system was

Roundup Ready). Varieties within the next herbicide system were then planted. Varieties were randomized in each replication and herbicide system, but the forced randomization due to herbicide system was maintained. All fill varieties were treated with conventional herbicides and were not used for data acquisition.

Preplant incorporated and/or preemergence herbicide applications were made at the discretion of the producer-cooperator. Broadcast over-the-top herbicide applications were made using project equipment and personnel or by the cooperator with assistance from project personnel. Ammonium sulfate was used with broadcast and post-directed applications of Roundup Original Max and Ignite 280. Ammonium sulfate cost (\$0.42/acre) was used in determining Roundup Ready, Roundup Ready Flex, and Liberty Link systems costs. Post-directed herbicide applications were made by the producer-cooperator with the guidance of project personnel. Weed species spectrum was determined by project personnel working with the cooperator. Control of weed escapes (hoeing and/or spot spraying) was performed by cooperator employees.

In-season plant mapping data were derived from mapping 6 representative plants/plot. Plot weights were determined at harvest using a boll buggy with integral electronic scales. Modules were followed through the ginning process to determine lint turnout, USDA-AMS fiber quality, and Commodity Credit Corporation (CCC) loan value. Seed and technology costs were calculated using the appropriate seeding rate (seed/row-ft) for the row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet with Monsanto Cap Cost Thresholds available at: <http://www.plainscotton.org/Seed/seedindex.html>. Gin managers were asked to gin each module separately and to tie off any remnant bales obtained in the ginning process in order to determine more precisely the turnout and lint yields. Data were then converted to a per acre basis and appropriate statistical analyses were performed.

Three producer-cooperator locations were utilized for this project.

### **Location 1 – Muleshoe (Parmer County)**

James Brown Farm, near Muleshoe (Parmer County)

Clean tillage following corn

Irrigation: Low elevation spray, straight rows

Plot size: 12 30-inch rows

Area: Variable (1.0 to 1.8 acres/plot), 3 replications of each variety

Planted: May 9 at 4.2 seed/per row-ft

Harvest aid program: October 13, 32.0 oz/acre Prep + 16.0 oz/acre Def followed by 32.0 oz/acre Gramoxone Inteon + 8.0 oz/acre Crop Oil on October 27

Harvested: November 9, 2006

Blanket Weed Control Program: \$30.30/acre

Dominant weed species: pigweed, kochia, johnsongrass, morningglory, volunteer corn

The whole field was treated with 2.0 pt/acre of trifluralin preplant incorporated on March 1. An additional 1.0 pt/acre of Direx (diuron) was banded (15" band) across all varieties at planting.

Specific herbicide systems costs included:

Liberty Link variety: 32 oz/acre Ignite 280 in 20 GPA over-the-top applications on June 5, and July 29, with 17 lbs ammonium sulfate per 100 gallons of spray solution.

Roundup Ready varieties: 22 oz/acre Roundup Original Max at 10 GPA on June 5, over-the-top application with 17 lb of ammonium sulfate per 100 gallons of spray solution.

Roundup Ready Flex varieties: 22 oz/acre Roundup Original Max in 10 GPA over-the-top applications on June 5, and July 29, with 17 lbs of ammonium sulfate per 100 gallons of spray solution.

No cultivation was conducted at this site; however, a blanket hoeing took place on August 10 at a cost of \$6.00/acre.

Temik was applied in-furrow at planting at 3.75 lb/acre.

Acephate was applied at 5.5 oz/acre for thrips control on June 5 with the Roundup Original Max and Ignite 280 applications. Karate was aerially applied at 3.7 oz/acre for bollworms with Trimax Pro at 0.9 oz/acre for aphids and 32 oz/acre of Crop Oil on August 22. This location was in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Foundation.

Mepiquat chloride applications included Pix at 5.0 oz/acre with 2.0 oz/acre Activator 90 on July 1 followed by another application on July 14 of 7.0 oz/acre Pix with 2.0 oz/acre Activator 90.

Varieties planted at this site included:

1. FiberMax 9058F
2. Deltapine 117B2RF
3. Paymaster 2140B2RF
4. FiberMax 9063B2RF
5. Stoneville 4357B2RF
6. Beltwide Cotton Genetics 3255B2F
7. FiberMax 960BR
8. Stoneville NexGen 1553R
9. Americot 821R
10. FiberMax 955LLB2

## **Location 2 – Blanco (Crosby County)**

Appling Farm, near Blanco (Crosby County)

Reduced tillage following cotton

Irrigation: LEPA, circular rows

Plot Size: 8 40-inch rows/plot

Area: Variable (0.7 to 1.5 acres/plot), 3 replications of each variety

Planted: May 8 at 3.6 seed/per row-ft

Harvest aid program: October 10, 1.5 oz/acre ET with 8 oz/acre crop oil followed by 16 oz/acre Gramoxone Inteon with 7.7 oz/acre non-ionic surfactant on October 21

Harvested: October 30 and 31, 2006

Blanket weed control program: \$18.17/acre

Dominant weed species: pigweed, silverleaf nightshade, morningglory, kochia, lanceleaf sage

The entire test was treated with 1 qt/acre trifluralin applied preplant incorporated on March 15. An additional 1 qt/acre rate of Direx (diuron) was banded (15" band) across all varieties at planting.

Specific herbicide systems costs included:

Roundup Ready Flex varieties: 22 oz/acre Roundup Original Max at 10 GPA on June 15, July 13 and August 2, over-the-top applications with 17 lb of ammonium sulfate per 100 gallons of spray solution.

Roundup Ready varieties: 22 oz/acre Roundup Original Max in 10 GPA over-the-top application on June 15 with 17 lbs of ammonium sulfate per 100 gallons of spray solution. Post-direct applications of 22 oz/acre Roundup Original Max with 17 lbs of ammonium sulfate per 100 gallons of spray solution were applied at a rate of 10 GPA on July 13 and August 2.

One cultivation to replace furrow dikes occurred but no hoeing was done at this site.

No mepiquat chloride growth regulators were used at this site.

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

Varieties planted at this site included:

1. Stoneville NexGen 2448R
2. Americot 821R
3. Deltapine 455 BG/RR
4. Beltwide Cotton Genetics 9775B2F
5. Beltwide Cotton Genetics 2038B2F
6. Deltapine 117B2RF
7. Deltapine 143B2RF
8. FiberMax 9063B2RF
9. All-Tex Apex B2RF
10. All-Tex Summit B2RF
11. PhytoGen 485WRF
12. Stoneville NexGen 3550RF
13. FiberMax 9058F
14. FiberMax 9068F
15. AFD 5064F

### **Location 3 – Plains (Yoakum County)**

Rickey Bearden Farm, Plains (Yoakum County)

Clean-tillage following cotton

Irrigation: Low elevation spray, straight rows

Plot Size: 12 40-inch rows/plot

Area: Variable (0.8 to 2.4 acres/plot), 3 replications of each variety

Planted: May 23 at 4 seed/per row-ft

Harvest aid program: October 14, 32 oz/acre Finish 6 Pro with 16 oz/acre Def 6

Harvested: December 5 and 6, 2006

Blanket Weed Control Program: \$14.55/acre

Dominant weed species: silverleaf nightshade, russian thistle, devils claw, buffalobur, prairie sunflower

A blanket herbicide program was used across all varieties, which included 1 pt/acre trifluralin preplant incorporated on March 15. Trifluralin at 4.0 oz/acre plus prometryn at 6.0 oz/acre with 0.2 oz/acre Staple LX were applied on a 10-inch band over the row across all varieties at planting.

No cultivation or hoeing was conducted at this site.

Specific herbicide systems costs included:

Roundup Ready, Roundup Ready Flex and "Stacked Gene" varieties: 22 oz/acre Roundup Original Max in 10 GPA was applied on June 17 over-the-top with 17 lb of ammonium sulfate per 100 gallons of spray solution.

Temik was applied in-furrow at planting at 4 lb/acre. No other insecticides were used at this location.

No mepiquat chloride plant growth regulators were applied at this site.

This location was in an active boll weevil eradication zone, but no applications were made by the Texas Boll Weevil Eradication Foundation.

Varieties planted at this site included:

1. FiberMax 9058F
2. PhytoGen 425RF
3. Deltapine 147RF
4. Stoneville NexGen 3550RF
5. Stoneville 4664RF
6. FiberMax 960BR
7. FiberMax 960B2R
8. FiberMax 9063B2RF
9. PhytoGen 485WRF
10. Beltwide Cotton Genetics 9775B2F
11. Beltwide Cotton Genetics 2038B2F
12. Americot 1532B2RF
13. All-Tex Apex B2RF
14. All-Tex Summit B2RF
15. Deltapine 143B2RF
16. Deltapine 117B2RF
17. Paymaster 2140B2RF
18. Stoneville 4664B2RF

## Results

Agronomic and economic results as well as summaries of the expenses and associated systems costs by location and variety are provided in Tables 1-15.

### Location 1 - Muleshoe

The early and late-season growth characteristics are presented in Tables 1 and 2. Plant stands averaged about 54,000 plants/acre on June 7. Notably lower stands were observed for FiberMax 955LLB2 and Paymaster 2140B2RF; however, other varieties were reasonably similar. Plant mapping

conducted on October 6 indicated no significant differences among varieties for node of first sympodium with a test average of 6. Small differences for plant heights and height to node ratios were noted. Significant differences were noted for total nodes, with FiberMax 955LLB2, Americot 821R and FiberMax 9063B2RF having the most total nodes. Significant differences were observed for first position fruit retention, with FiberMax 960BR and Stoneville 4357B2RF exhibiting the lowest retention. Significant differences were observed among varieties for nodes above white flower (NAWF) on August 4 and 10 with FiberMax 955LLB2 having the highest number of NAWF and Stoneville NexGen 1553R having the lowest at both observation dates.

**Verticillium wilt was encountered at this location and adversely affected yield and fiber quality of some varieties.** Commercial turnouts of non field cleaned bur cotton ranged from 19.2% for FiberMax 955LLB2 to 26.3% for FiberMax 960BR (Table 3). Bur cotton yields ranged from 5423 lb/acre for Stoneville NexGen 1553R to 6883 lb/acre for FiberMax 960BR. This resulted in lint yields ranging from 1122 lb/acre for FiberMax 955LLB2 to 1809 lb/acre for FiberMax 960BR. Lint loan values derived from USDA-AMS classing results of the bales obtained in the project indicated that values ranged from \$0.4392 for Deltapine 117B2RF to \$0.4887 for FiberMax 960BR. Loan value discounts were attributed to low micronaire, lower uniformity, leaf, and bark content for some varieties (Table 4). After totaling lint and seed value per acre and subtracting out ginning costs and system-specific costs (Table 5), the net value per acre ranged from a low of \$408.49/acre for FiberMax 955LLB2 to \$804.94/acre for FiberMax 960BR, a difference of \$396.45. FiberMax 960BR resulted in the highest net value and was significantly greater than the remaining varieties. FiberMax 9058F, with a net value of \$667.11, was in the second statistical group with Paymaster 2140B2RF and FiberMax 9063B2RF in the third tier (\$609.16 and \$580.42, respectively). Two of the top four varieties were Roundup Ready Flex/Bollgard II types (FiberMax 9063B2RF and Paymaster 2140B2RF). One FiberMax Liberty Link variety (955LLB2) was evaluated at this location and had the lowest net value with \$408.49. Low average micronaire (2.3 to 2.7) was encountered for all varieties at this location. This resulted in discounts as high as 1055 points. The highest average micronaire value (2.7) was produced by FiberMax 960BR and Paymaster 2140B2RF. Staple ranged from a high of 37.5 (FiberMax 9063B2RF) to a low of 34.2 (Americot 821R). Leaf grades 4 were observed in bales from Deltapine 117B2RF (6 of 6), FiberMax 9063B2RF (1 of 6), and Paymaster 2140B2RF (2 of 6). One bale from FiberMax 960BR, Stoneville NexGen 1553R, and Deltapine 117B2RF contained bark (220 point discount).

## **Location 2 – Blanco**

This site encountered significant moisture stress during the growing season. Lack of subsoil moisture resulted in high stress initially and subsequently throughout the growing season. Since little rainfall was obtained early in the season, yield potential was reduced due to low irrigation capacity at this site. Plant stand counts obtained on June 6 averaged 33,617 with a high of 38,071 for Beltwide Cotton Genetics 9775B2F and a low of 27,007 for FiberMax 9068F (Table 6). **Late-season rainfall occurred in late August/early September and resulted in initiation of post-cutout mainstem growth and high plant-to-plant variability in the field. Considerable growth was observed following late-season rainfall which resulted in excessive plant material (stems and leaves) above the uppermost harvestable bolls for several varieties.** No significant differences were observed among varieties for any of the plant map parameters measured on September 26 (Table 7).

Commercial turnouts of non field cleaned bur cotton ranged from 18.8% for Stoneville NexGen 2448R to 30.0% for Deltapine 117B2RF (Table 8). Bur cotton yields ranged from 1752 lb/acre for Stoneville NexGen 3550RF to a high of 2166 lb/acre for All-Tex Apex B2RF. This resulted in lint yields ranging from 338 lb/acre for Stoneville NexGen 2448R to 570 lb/acre for Deltapine 117B2RF. Lint loan values derived from USDA-AMS classing results of the bales obtained in the project show that values ranged from \$0.4540 for Deltapine 117B2RF to \$0.5744 for Deltapine 455BG/RR. Loan value discounts were attributed to high micronaire values for most varieties (Table 9) and short staple and/or high leaf grades for some others. After totaling lint and seed value per acre and subtracting out ginning costs and

system-specific costs (Table 10), the net value per acre ranged from a low of \$102.05/acre for Stoneville NexGen 2448R to \$252.80/acre for FiberMax 9058F, a difference of \$150.75. Within the statistical “upper tier” of net returns, three varieties produced the same net value (FiberMax 9058F, Deltapine 143B2RF, and Deltapine 455BG/RR). Two of the top three varieties contained Roundup Ready Flex technology, one with Bollgard II technology and one without, while the other contained Bollgard and Roundup Ready transgenic traits. Significant weed densities requiring three Roundup Original Max applications resulted in overall lower net returns at this location.

### **Location 3 – Plains**

The early and late-season growth characteristics are presented in tables 11 and 12. Plant stands averaged about 43,000 plants/acre on June 27. Stands ranged from a low of 37,462 for FiberMax 960B2R to a high of 48,787 for PhytoGen 425RF. Plant mapping conducted on August 16-18 indicated no significant differences among varieties for node of first sympodium. Plant heights ranged from a low of 24.0 inches for the stripper variety Paymaster 2140B2RF to a high of 33.4 inches for PhytoGen 425RF. Height to node ratios ranged from a low of 1.35 for Paymaster 2140B2RF to a high of 1.78 for PhytoGen 425RF and Stoneville 4664RF. Differences in total nodes were observed and ranged from a low of 17.1 for All-Tex Summit B2RF to a high of 20.8 for Stoneville NexGen 3550RF. Significant differences were noted for late-season first and second position fruit retention. Beltwide Cotton Genetics 9775B2F had the highest first position retention with 62.1% while Stoneville NexGen 3550RF had the lowest with 37.2%. For second position fruit retention, PhytoGen 485WRF had the highest with 35.3% and FiberMax 960BR with 16.0% was the lowest. On August 14, NAWF ranged from a low of 4.3 for FiberMax 960B2R to a high of 5.5 for PhytoGen 485WRF, both picker types.

**At this location, considerable growth was observed following late season rainfall which resulted in excessive plant material (stems and leaves) above the uppermost harvestable bolls for several varieties. This increased variability among varieties and replications. This, in conjunction with verticillium wilt in some areas in the field contributed to greater than normal variation as evidenced by high coefficient of variation (CV) results for measured yield parameters.** Relatively low commercial turnouts of field-cleaned bur cotton were observed. Values ranged from a low of 20.5% for PhytoGen 485WRF to 27.4% for Paymaster 2140B2RF (Table 13). Bur cotton yields ranged from 3660 lb/acre for Stoneville 4664RF to a high of 4933 lb/acre for FiberMax 960BR. Lint yields ranged from 801 lb/acre for Stoneville 4664RF to 1345 lb/acre for Paymaster 2140B2RF with a test average of 1036 lb/acre. Lint loan values derived from USDA-AMS classing results of the bales obtained in the project indicated that values ranged from \$0.4153 for PhytoGen 485WRF to \$0.5083 for FiberMax 9063B2RF. Loan value discounts were attributed to low micronaire, strength and uniformity values, high leaf grades for some entries, as well as high incidence of bark contamination for most varieties (Table 14). After totaling lint and seed value per acre and subtracting out ginning costs and system-specific costs (Table 15), the net value per acre ranged from a low of \$282.75 for Deltapine 147RF to \$598.75 for Paymaster 2140B2RF, a difference of \$316.00. Within the statistical “upper tier” of net returns, two varieties produced the same net value Paymaster 2140B2RF and FiberMax 960BR. One of the top two varieties contained Bollgard II with Roundup Ready Flex technologies and one contained Bollgard with Roundup Ready technologies. Relatively low weed pressure required only one Roundup Original Max application and resulted in overall lower system-specific costs at this location.

### **Summary and Conclusions**

In 2006 (a year characterized by limited rainfall, ample heat units for most of the growing season, but a cooler than normal September) some important variety differences were noted.



At the Muleshoe location, late-season rainfall and high yields resulted in immature fiber (low micronaire). Verticillium wilt was encountered at this location and adversely affected yield and fiber quality of some varieties. FiberMax 960BR produced the highest net value and was significantly greater than the remaining varieties. FiberMax 9058F was in the second statistical group. The third "statistical tier" included Paymaster 2140B2RF and FiberMax 9063B2RF. Of the top four varieties at this location, one was a Bollgard/Roundup Ready type, one was a Roundup Ready Flex type and the other two were Bollgard II with Roundup Ready Flex.

At the Blanco location, substantial moisture stress resulted in early cutout and lower yield potential. This was followed by heavy late-season rainfall which resulted in significant new mainstem growth. Short staple and high micronaire was noted for some varieties. Within the statistical "upper tier" of net returns, three varieties produced the same net value (FiberMax 9058F, Deltapine 143B2RF, and Deltapine 455BG/RR). Two of the top three varieties contained Roundup Ready Flex technology, one with Bollgard II technology and one without, while the other contained Bollgard and Roundup Ready transgenic traits.

At Plains, considerable growth was observed following late-season rainfall which resulted in excessive plant material (stems and leaves) above the uppermost harvestable bolls for several varieties. This increased variability among varieties and replications. This, in conjunction with verticillium wilt in some areas of the field contributed to greater than normal variation as evidenced by high coefficient of variation (CV) results for measured yield parameters. Within the statistical "upper tier" of net returns, two varieties produced the same net value Paymaster 2140B2RF and FiberMax 960BR. One of the top two varieties contained Bollgard II with Roundup Ready Flex technologies and one contained Bollgard with Roundup Ready technologies.

Results from the 2006 production season at varying locations in the Texas High Plains indicate that some Roundup Ready Flex and Roundup Ready Flex/Bollgard II "stacked gene" varieties were competitive with Roundup Ready and Roundup Ready/Bollgard types in terms of production costs and returns. Discounts were observed for high micronaire values at Blanco and low micronaire values at Muleshoe and Plains. Loan discounts were also observed at Plains for bark contamination. These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection. The differences in net value/acre, when comparing the top and bottom varieties were approximately \$396 at Muleshoe, \$151 at Blanco and \$316 at Plains. Additional multi-site and multi-year applied research is needed to evaluate varieties across a series of environments.

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Texas Cooperative Extension Agents:

Curtis Preston, CEA-Ag, Bailey County

Cody Hill, CEA-Ag, Parmer County

Monti Vandiver EA-IPM Parmer/Bailey Counties

Kyle Kight CEA-Ag, Crosby County

J.D. Ragland, CEA-Ag, Floyd County

Steve Davis, EA-IPM, Crosby/Floyd Counties

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Rhett Overman

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Mark Price

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Table 1. Stand count, vigor and nodes above white flower (NAWF) results from the irrigated large plot replicated systems trial, Brown Farm, Muleshoe, TX, 2006.

Entry	7-Jun		height inches	7-Jun	vigor index	4-Aug	10-Aug
	Plants/row ft	Plants/acre		mainstem nodes		NAWF	NAWF
FiberMax 960BR	3.2	54,479	2.5	3.1	0.79	3.9	3.1
FiberMax 9058F	3.2	55,292	2.4	3.0	0.80	4.1	3.3
Paymaster 2140B2RF	2.8	48,903	2.5	2.5	0.97	3.3	2.8
FiberMax 9063B2RF	3.2	55,873	2.4	2.5	0.97	4.2	4.1
Stoneville NexGen 1553R	3.0	51,691	2.7	3.2	0.84	2.8	2.4
Beltwide Cotton Genetics 3255B2F	3.3	57,615	2.5	2.2	1.09	4.0	3.8
Americot 821R	3.0	53,550	2.3	2.2	1.04	4.1	3.6
Deltapine 117B2RF	3.5	61,797	2.4	3.0	0.78	4.1	3.4
Stoneville 4357B2RF	3.2	56,221	2.4	2.4	0.99	4.3	3.3
FiberMax 955LLB2	2.8	48,439	2.4	2.3	1.04	4.6	4.5
Test average	3.1	54,386	2.4	2.6	0.93	3.9	3.4
CV, %	6.4	6.4	6.7	11.0	13.1	10.4	12.2
OSL	0.0047	0.0058	0.5113	0.0011	0.0318	0.0025	0.0004
LSD	0.3	5,953	NS	0.5	0.21	0.7	0.7

Nodes above white flower (NAWF) numbers represent an average of 30 plants per variety (10 plants/variety/rep with 3 reps).

CV - coefficient of variation, percent.

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. Plant map results from the irrigated large plot replicated systems trial, Brown Farm, Muleshoe, TX, 2006

Entry	Plant height	Node of first fruiting branch	Fruiting nodes	Mainstem nodes	Height to node	Fruit retention	
						First position	Second position
	inches	node number	total/plant	total/plant	ratio	percent	percent
FiberMax 960BR	21.8	5.8	8.2	13.0	1.69	44.0	41.9
FiberMax 9058F	23.0	6.5	8.2	13.7	1.68	49.0	39.3
Paymaster 2140B2RF	19.9	5.8	7.7	12.5	1.62	67.8	40.1
FiberMax 9063B2RF	24.4	6.7	9.0	14.7	1.67	48.6	40.6
Stoneville NexGen 1553R	22.7	5.6	7.9	12.4	1.84	73.9	46.9
Beltwide Cotton Genetics 3255B2F	22.3	5.9	8.3	13.2	1.69	60.9	32.8
Americot 821R	26.7	5.8	9.7	14.5	1.88	59.6	42.0
Deltapine 117B2RF	22.2	6.1	7.4	12.5	1.81	61.7	35.5
Stoneville 4357B2RF	23.4	5.7	7.2	11.9	1.99	44.2	40.3
FiberMax 955LLB2	22.7	6.3	9.7	15.1	1.53	64.9	44.4
Test average	22.9	6.0	8.3	13.4	1.7	57.5	40.4
CV, %	7.4	8.2	8.9	5.0	6.8	21.6	20.9
OSL	0.0150	0.1210	0.0037	<0.0001	0.0061	0.0849 <sup>†</sup>	0.7147
LSD	2.9	NS	1.3	1.1	0.20	17.6	NS

Numbers in table represent an average of 18 plants per variety (6 plants/variety/rep with 3 reps).

CV - coefficient of variation, percent.

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

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

Table 3. Harvest results from the irrigated large plot replicated systems trial, Brown Farm, Muleshoe, TX, 2006.

Entry	Commercial turnout	Bur cotton yield	Lint yield	Seed yield	Seed lb/bale	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Systems cost	Net value
	%	lb/acre	lb/acre	lb/acre		\$/lb	\$/acre	\$/acre	\$/acre	\$/acre	\$/acre	\$/acre
FiberMax 960BR	26.3	6883	1809	2483	659	0.4887	884.04	155.18	1039.22	168.63	65.65	804.94 a
FiberMax 9058F	24.7	6434	1589	2301	695	0.4738	752.99	143.77	896.76	157.63	72.02	667.11 b
Paymaster 2140B2RF	24.6	5997	1473	2189	713	0.4763	701.54	136.83	838.36	146.91	82.29	609.16 c
FiberMax 9063B2RF	23.2	6120	1419	2241	758	0.4742	673.00	140.08	813.08	149.93	82.73	580.42 c
Stoneville NexGen 1553R	24.4	5423	1324	1925	698	0.4593	608.39	120.32	728.72	132.86	52.43	543.43 d
Beltwide Cotton Genetics 3255B2F	22.4	6215	1391	2276	785	0.4493	625.06	142.25	767.31	152.27	87.06	527.98 de
Americot 821R	21.6	5720	1238	1952	757	0.4536	561.29	122.00	683.29	140.13	38.63	504.53 e
Deltapine 117B2RF	23.0	5718	1315	2008	733	0.4392	577.40	125.50	702.90	140.09	90.19	472.62 f
Stoneville 4357B2RF	20.3	5985	1213	2035	805	0.4563	553.42	127.16	680.58	146.63	88.16	445.79 f
FiberMax 955LLB2	19.2	5855	1122	1981	847	0.4626	519.32	123.77	643.09	143.45	91.16	408.49 g
Test mean	23.0	6035	1389	2139	745	0.4633	645.64	133.69	779.33	147.85	75.03	556.45
CV, %	--	2.8	2.9	2.8	--	--	2.9	2.8	2.9	2.8	--	3.3
OSL	--	<0.0001	<0.0001	<0.0001	--	--	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001
LSD	--	289	68	103	--	--	31.88	6.43	38.28	7.07	--	31.26

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

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level.

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

Assumes:

\$2.45/cwt ginning cost.

\$125/ton for seed.

Value for lint based on CCC loan value from USDA-AMS HVI results.

Table 4. USDA-AMS classing results of commercially ginned bales from the irrigated large plot replicated systems trial, Brown Farm, Muleshoe, TX 2006

Entry		Color 1	Color 2	Staple	Leaf	Mic	Remarks	rd	+b	Length	Strength	Unif	Loan
		units	units	32nds	units	units	bales	%	units	100ths	g/tex	%	\$/lb
FiberMax 960BR	Mean	1.0	1.0	35.4	2.1	2.7	1/8	84.0	8.1	109.9	29.0	79.8	0.4887
	Std Dev	0.0	0.0	0.9	0.4	0.1		0.0	0.2	2.2	1.0	0.6	0.0270
FiberMax 9058F	Mean	1.6	1.0	37.1	2.9	2.5	0/9	83.0	7.7	116.1	27.5	77.5	0.4738
	Std Dev	0.5	0.0	0.3	0.3	0.1		0.0	0.1	1.7	0.9	0.9	0.0067
Paymaster 2140B2RF	Mean	2.0	1.0	35.2	3.3	2.7	0/6	80.8	7.8	109.5	26.6	79.4	0.4763
	Std Dev	0.0	0.0	1.2	0.5	0.1		0.4	0.1	3.3	1.0	1.4	0.0090
FiberMax 9063B2RF	Mean	1.2	1.0	37.5	2.8	2.5	0/6	83.5	8.1	116.8	28.1	78.5	0.4742
	Std Dev	0.4	0.0	0.8	0.8	0.1		0.8	0.1	2.6	0.9	1.1	0.0124
Stoneville NexGen 1553R	Mean	1.7	1.0	35.7	3.0	2.4	1/6	81.2	8.5	110.8	28.2	78.7	0.4593
	Std Dev	0.5	0.0	1.0	0.0	0.1		0.4	0.2	2.3	1.0	1.7	0.0184
Beltwide Cotton Genetics 3255B2F	Mean	1.0	1.0	35.2	2.7	2.4	0/6	83.0	8.4	109.2	24.0	77.8	0.4493
	Std Dev	0.0	0.0	0.8	0.5	0.1		0.6	0.1	1.6	0.5	0.9	0.0108
Americot 821R	Mean	1.5	1.0	34.2	2.5	2.5	0/6	80.7	8.6	107.3	26.4	78.3	0.4536
	Std Dev	0.8	0.0	0.8	0.5	0.6		1.0	0.4	2.3	1.9	1.7	0.0583
Deltapine 117B2RF	Mean	2.2	1.0	36.0	4.0	2.4	1/6	79.0	8.4	113.0	28.0	77.3	0.4392
	Std Dev	0.4	0.0	0.0	0.0	0.1		0.0	0.1	0.0	0.8	0.7	0.0040
Stoneville 4357B2RF	Mean	1.0	1.0	36.4	2.4	2.3	0/5	82.4	8.4	113.0	24.0	76.3	0.4563
	Std Dev	0.0	0.0	0.5	0.5	0.0		0.5	0.2	1.0	1.0	1.0	0.0056
FiberMax 955LLB2	Mean	1.0	1.0	37.0	2.6	2.3	0/5	83.0	7.9	116.0	25.7	77.3	0.4626
	Std Dev	0.0	0.0	0.0	0.5	0.1		0.0	0.2	1.4	1.1	0.5	0.0104

Table 5. Expenses incurred for the irrigated large plot replicated systems trial, Brown Farm, Muleshoe, TX, 2006.

Entry	Seed cost/bag	Tech fees/bag	Total cost/bag	Seed & tech fee/ac	Herb apps	Herb app cost/ac	Roundup Original MAX <sup>1</sup> cost/ac	Ignite 280 cost/ac	Systems cost/ac
FiberMax 9058F	80.45	109.10	189.55	51.06	2	9.50	11.46	--	72.02
Deltapine 117B2RF	116.95	156.30	273.25	69.23	2	9.50	11.46	--	90.19
Paymaster 2140B2RF	89.95	156.30	246.25	61.33	2	9.50	11.46	--	82.29
FiberMax 9063B2RF	80.45	137.50	217.95	61.77	2	9.50	11.46	--	82.73
Stoneville 4357B2RF	101.20	143.80	245.00	67.20	2	9.50	11.46	--	88.16
Beltwide Cotton Genetics 3255B2F	97.75	143.80	241.55	66.10	2	9.50	11.46	--	87.06
FiberMax 960BR	80.45	116.50	196.95	55.17	1	4.75	5.73	--	65.65
Stoneville NexGen 1553R	69.00	69.80	138.80	41.95	1	4.75	5.73	--	52.43
Americot 821R	29.50	94.60	124.10	28.15	1	4.75	5.73	--	38.63
FiberMax 955LLB2	140.00	36.70	176.70	64.82	2	9.50	--	16.84	91.16
				30 inch rows 4.2 seed/row-ft 73,000 seed/ac		4.75	<sup>1</sup> June 5 over-the-top to all Roundup and Roundup Flex varieties and on July 29 the Roundup Flex varieties were sprayed over the top with 22 oz/acre Roundup Original MAX	June 5 and July 29 over-the-top 32 oz/a Ignite 280 to Liberty Link varieties.  \$32.00/gal includes AMS at \$0.42/ac	
<b>Base weed control program</b>		<b>chem cost</b>	<b>app cost</b>	<b>total cost</b>					
1-Mar	2 pts/acre trifluralin PPI	3.56	4.75	8.31					
9-May	1 pt/acre Direx 4L	1.93		1.93					
18-Jul	32 oz/acre MSMA	5.10	4.50	9.60					
	32 oz/acre Direx 4L	3.86		3.86					
	13 oz/acre Crop Oil	0.60		0.60					
10-Aug	blanket hoeing		6.00	6.00					
<b>Total blanket weed control program</b>				<b>30.30</b>					
<b>PGR program</b>		<b>chem cost</b>	<b>app cost</b>	<b>total cost</b>					
1-Jul	5.0 oz/acre Pix	1.05	4.55	5.60					
	2.0 oz/acre Activator 90 by airplane	0.18		0.18					
14-Jul	7.0 oz/acre Pix	1.47	4.55	6.02					
	2.0 oz/acre Activator 90 by airplane	0.18		0.18					
<b>Insecticide program</b>									
9-May	3.75 lb/acre Temik	4.91		4.91					
6-May	5.5 oz/acre acephate	2.96		2.96					
22-Aug	3.7 oz/acre Karate for bollworms	5.80	4.25	10.05					
	0.9 oz/acre Trimax Pro for aphids	3.60		3.60					
	32 oz/acre Crop Oil by airplane	1.48		1.48					
<b>Harvest aid program</b>									
13-Oct	2 pt/acre Prep	7.54	4.50	12.04					
	1 pt/acre Def 6	6.38		6.38					
27-Oct	32.0 oz/acre Gramoxone Inteon	7.10	4.50	11.60					
	8.0 oz/acre crop oil by airplane	0.37		0.37					
<b>Total blanket input cost (\$/acre)</b>				<b>95.68</b>					

Table 6. Stand count, vigor (height to node) and nodes above white flower (NAWF) results from the irrigated large plot replicated systems trial, Appling Farm, Blanco Canyon, TX, 2006.

Entry	6-Jun		6-Jun			28-Jul	3-Aug	14-Aug
	plants/row ft	plants/acre	height inches	mainstem nodes	vigor index	NAWF	NAWF	NAWF
FiberMax 9058F	2.6	33,715	2.1	3.2	0.66	4.6	2.5	2.0
Deltapine 143B2RF	2.4	31,712	2.1	3.2	0.63	4.3	2.6	2.1
Deltapine 455BG/RR	2.5	33,193	2.4	3.5	0.67	5.1	2.9	2.3
Beltwide Cotton Genetics 9775B2F	2.9	38,071	1.9	2.8	0.69	4.3	2.5	2.2
Beltwide Cotton Genetics 2038B2F	2.9	37,723	2.2	3.2	0.68	4.2	2.5	2.0
All-Tex Apex B2RF	2.4	31,276	2.3	3.2	0.70	4.6	3.1	2.4
Americot 821R	2.3	30,579	2.1	3.3	0.64	4.8	3.3	2.0
Deltapine 117B2RF	2.6	34,151	2.5	3.9	0.63	4.0	2.3	1.9
FiberMax 9063B2RF	2.6	34,674	2.1	3.6	0.59	4.7	2.8	2.0
FiberMax 9068F	2.1	27,007	2.1	3.3	0.64	4.8	2.4	2.1
All-Tex Summit B2RF	2.6	34,238	2.1	3.1	0.68	4.7	2.6	2.1
AFD 5064F	2.9	37,200	2.9	3.4	0.84	4.4	2.4	2.0
PhytoGen 485WRF	2.6	33,890	2.0	3.0	0.66	4.8	2.8	2.5
Stoneville NexGen 3550RF	2.6	33,367	2.2	3.5	0.64	4.8	2.6	2.4
Stoneville NexGen 2448R	2.6	33,454	1.9	2.8	0.69	4.3	3.3	2.0
Test average	2.6	33,617	2.2	3.3	0.67	4.6	2.7	2.1
CV, %	9.0	8.7	15.4	14.0	8.2	6.6	20.3	15.4
OSL	0.0126	0.0092	0.1374	0.2839	0.0056	0.0105	0.4624	0.5661
LSD 0.05	0.4	4,903	NS	NS	0.09	0.5	NS	NS

Nodes above white flower (NAWF) numbers represent an average of 30 plants per variety (10 plants/variety/rep with 3 reps)

CV - coefficient of variation, percent.

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

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



Table 7. Plant map results from the irrigated large plot replicated systems trial, Appling Farm, Blanco, TX, 2006.

Entry	Plant height	Node of first fruiting branch	Fruiting nodes	Mainstem		Height to node	Fruit retention	
				post-cutout nodes	total nodes		First position	Second position
	inches	node number	total/plant	total/plant	total/plant	ratio	percent	percent
FiberMax 9058F	20.3	5.9	5.9	9.7	20.5	0.99	44.2	31.3
Deltapine 143B2RF	20.5	6.8	5.8	9.3	21.0	0.98	34.5	50.3
Deltapine 455BG/RR	20.6	5.8	5.6	8.3	18.8	1.10	35.0	43.0
Beltwide Cotton Genetics 9775B2F	20.2	6.7	6.2	8.2	20.1	1.01	44.3	46.2
Beltwide Cotton Genetics 2038B2F	20.2	6.0	6.1	9.6	20.7	0.98	34.8	43.2
All-Tex Apex B2RF	20.0	6.2	6.8	7.7	19.7	1.03	54.7	32.3
Americot 821R	18.5	5.8	5.9	8.0	18.7	1.00	39.1	36.9
Deltapine 117B2RF	21.1	6.0	6.0	9.3	20.3	1.03	43.0	39.0
FiberMax 9063B2RF	19.6	6.2	6.4	8.9	20.5	0.96	32.7	37.9
FiberMax 9068F	20.5	6.2	6.4	8.6	20.2	1.02	37.4	48.1
All-Tex Summit B2RF	21.0	6.0	6.2	9.3	20.6	1.02	50.7	31.3
AFD 5064F	23.1	5.8	6.0	9.3	20.1	1.15	35.1	46.4
PhytoGen 485WRF	20.8	6.0	6.5	8.4	19.9	1.04	45.0	60.9
Stoneville NexGen 3550RF	22.3	5.7	6.4	11.0	22.2	1.01	35.6	47.5
Stoneville NexGen 2448R	20.3	6.0	7.8	5.8	18.5	1.10	30.1	63.6
Test average	20.6	6.1	6.3	8.8	20.1	1.03	39.7	43.9
CV, %	8.7	8.1	14.4	25.5	8.6	7.9	32.1	32.7
OSL	0.4442	0.3219	0.4502	0.6424	0.5843	0.2942	0.5660	0.2281
LSD	NS	NS	NS	NS	NS	NS	NS	NS

Numbers in table represent an average of 18 plants per variety (6 plants/variety/rep with 3 reps).

CV - coefficient of variation, percent.

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

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

Table 8. Harvest results from the irrigated large plot replicated systems trial, Appling Farm, Blanco, TX, 2006.

Entry	Commercial turnout	Bur cotton yield	Lint yield	Seed yield	Seed lb/bale	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Systems cost	Net value
	%	lb/acre	lb/acre	lb/acre	lb/bale	\$/lb	\$/acre	\$/acre	\$/acre	\$/acre	\$/acre	\$/acre
FiberMax 9058F	27.6	2043	563	832	724	0.5643	317.69	52.02	369.71	50.05	66.87	252.80 a
Deltapine 143B2RF	26.1	2114	551	818	727	0.5565	306.56	51.10	357.66	51.78	79.43	226.45 ab
Deltapine 455BG/RR	27.6	1924	532	674	620	0.5744	305.53	42.10	347.63	47.14	74.37	226.12 ab
Beltwide Cotton Genetics 9775B2F	26.6	2026	540	895	812	0.5320	287.12	55.93	343.05	49.63	77.55	215.87 b
Beltwide Cotton Genetics 2038B2F	26.6	1983	527	823	765	0.5508	290.36	51.42	341.78	48.58	77.55	215.65 b
All-Tex Apex B2RF	24.6	2166	532	760	700	0.5468	290.77	47.47	338.24	53.07	78.40	206.77 bc
Americot 821R	25.1	1962	492	647	644	0.5228	257.34	40.45	297.79	48.08	52.00	197.72 bcd
Deltapine 117B2RF	30.0	1897	570	805	692	0.4540	258.73	50.31	309.04	46.47	79.43	183.13 cd
FiberMax 9063B2RF	24.2	2044	494	679	674	0.5372	265.34	42.46	307.80	50.07	74.95	182.78 cd
FiberMax 9068F	23.4	1962	460	647	690	0.5415	248.89	40.44	289.32	48.06	68.66	172.60 de
All-Tex Summit B2RF	22.6	2076	468	730	763	0.5395	252.73	45.60	298.34	50.87	79.29	168.18 de
AFD 5064F	24.5	1887	462	646	684	0.4790	221.48	40.34	261.81	46.23	65.31	150.27 ef
PhytoGen 485WRF	22.0	2136	471	697	726	0.4983	234.52	43.56	278.08	52.33	80.08	145.67 ef
Stoneville NexGen 3550RF	22.9	1752	401	500	611	0.5049	202.25	31.24	233.49	42.91	65.00	125.58 fg
Stoneville NexGen 2448R	18.8	1798	338	518	752	0.5083	171.65	32.39	204.04	44.04	57.94	102.05 g
Test mean	24.8	1985	493	711	706	0.5274	260.73	44.45	305.18	48.62	71.79	184.78
CV, %	--	7.1	7.2	7.1	--	--	7.4	7.1	7.3	7.1	--	10.3
OSL	--	0.0411	<0.0001	<0.0001	--	--	<0.0001	<0.0001	<0.0001	0.0408	--	<0.0001
LSD	--	236	59	84	--	--	32.20	5.24	37.43	5.79	--	31.69

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

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level.

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

Assumes:

\$2.45/cwt ginning cost.

\$125/ton for seed.

Value for lint based on CCC loan value from USDA-AMS HVI results.

Table 9. USDA-AMS classing results of commercially ginned bales from the irrigated large plot replicated systems trial, Appling Farm, Blanco, TX 2006.

Entry		Color 1	Color 2	Staple	Leaf	Mic	Remarks	rd	+b	Length	Strength	Unif	Loan
		units	units	32nds	units	units	bales	%	units	100ths	g/tex	%	\$/lb
FiberMax 9058F	Mean	3.0	1.0	37.0	3.5	4.9	0/4	79.0	8.0	115.5	31.0	80.8	0.5643
	Std Dev	0.0	0.0	0.0	0.6	0.1		0.5	0.3	1.3	0.9	0.3	0.0136
Deltapine 143B2RF	Mean	3.0	1.0	36.8	3.8	4.7	0/4	77.7	8.2	114.5	30.2	80.6	0.5565
	Std Dev	0.0	0.0	0.5	0.5	0.1		0.6	0.3	1.3	1.3	0.6	0.0117
Deltapine 455BG/RR	Mean	2.3	1.0	35.3	2.3	4.9	0/4	79.1	8.9	110.0	31.3	80.9	0.5744
	Std Dev	0.5	0.0	0.5	0.5	0.0		0.6	0.2	2.2	1.6	1.0	0.0025
Beltwide Cotton Genetics 9775B2F	Mean	3.0	1.0	36.7	3.7	5.0	0/3	77.4	7.9	115.0	29.9	82.6	0.5320
	Std Dev	0.0	0.0	0.6	0.6	0.0		0.1	0.2	1.7	0.4	0.8	0.0156
Beltwide Cotton Genetics 2038B2F	Mean	2.7	1.0	36.0	3.0	4.9	0/3	77.9	8.4	112.3	28.8	82.0	0.5508
	Std Dev	0.6	0.0	0.0	1.0	0.3		2.0	0.7	1.2	1.5	1.2	0.0282
All-Tex Apex B2RF	Mean	3.0	1.0	36.5	3.5	5.0	0/4	78.6	8.4	113.8	28.9	81.8	0.5468
	Std Dev	0.0	0.0	0.6	0.6	0.1		0.4	0.2	2.4	0.8	1.2	0.0034
Americot 821R	Mean	3.0	1.0	34.3	3.3	5.1	0/4	78.1	8.7	107.5	30.0	81.2	0.5228
	Std Dev	0.0	0.0	0.5	0.5	0.1		0.2	0.1	1.7	1.3	0.4	0.0304
Deltapine 117B2RF	Mean	4.0	1.0	34.8	5.8	5.3	0/4	74.4	8.3	108.8	31.4	81.3	0.4540
	Std Dev	0.0	0.0	0.5	0.5	0.0		1.0	0.0	1.5	2.0	0.7	0.0142
FiberMax 9063B2RF	Mean	3.0	1.0	37.3	4.0	5.0	0/3	78.9	7.8	116.0	32.8	82.7	0.5372
	Std Dev	0.0	0.0	0.6	0.0	0.1		0.1	0.3	2.0	1.2	0.7	0.0168
FiberMax 9068F	Mean	3.0	1.0	36.5	3.3	5.1	0/4	78.8	8.1	113.3	31.9	81.7	0.5415
	Std Dev	0.0	0.0	0.6	0.5	0.0		0.3	0.2	1.0	1.5	0.6	0.0105
All-Tex Summit B2RF	Mean	2.8	1.0	35.0	3.5	5.0	0/4	78.1	8.7	109.5	28.5	82.1	0.5395
	Std Dev	0.5	0.0	0.8	0.6	0.1		0.3	0.4	2.1	1.6	0.9	0.0404
AFD 5064F	Mean	3.3	1.0	33.3	3.8	5.3	0/4	75.9	8.3	103.5	29.3	80.3	0.4790
	Std Dev	0.5	0.0	0.5	0.5	0.1		0.9	0.0	1.7	0.1	0.8	0.0238
PhytoGen 485WRF	Mean	3.3	1.3	35.5	4.5	5.1	0/4	75.8	8.8	110.8	31.6	82.6	0.4983
	Std Dev	0.5	0.5	0.6	1.0	0.1		0.7	0.7	1.0	1.3	0.4	0.0075
Stoneville NexGen 3550RF	Mean	3.3	1.0	34.3	3.8	5.1	0/4	76.1	8.6	107.0	31.0	80.5	0.5049
	Std Dev	0.5	0.0	1.0	0.5	0.2		0.5	0.1	2.2	0.9	0.6	0.0223
Stoneville NexGen 2448R	Mean	3.0	1.0	34.0	3.3	5.2	0/3	76.5	9.0	106.7	31.9	81.4	0.5083
	Std Dev	0.0	0.0	1.0	0.6	0.2		0.6	0.1	3.1	0.2	0.3	0.0270

Table 10. Expenses incurred for the replicated dryland systems variety demonstration, Appling Farms, Blanco, TX, 2006.

Entry	Seed cost/bag	Tech fees/bag	Total cost/bag	Seed & tech fee/ac	Herb apps	Herb app cost/ac	Roundup Original MAX cost/ac	Systems cost/ac
Stoneville NexGen 2448R	69.00	69.80	138.80	26.50	3	14.25	17.19	57.94
Americot 821R	29.50	94.60	124.10	20.56	3	14.25	17.19	52.00
Deltapine 455BG/RR	114.95	129.50	244.45	42.93	3	14.25	17.19	74.37
Beltwide Cotton Genetics 9775B2F	97.75	143.80	241.55	46.11	3	14.25	17.19	77.55
Beltwide Cotton Genetics 2038B2F	97.75	143.80	241.55	46.11	3	14.25	17.19	77.55
Deltapine 117B2RF	116.95	156.30	273.25	47.99	3	14.25	17.19	79.43
Deltapine 143B2RF	116.95	156.30	273.25	47.99	3	14.25	17.19	79.43
FiberMax 9063B2RF	80.45	137.50	217.95	43.51	3	14.25	17.19	74.95
All-Tex Apex B2RF	99.95	140.60	240.55	46.96	3	14.25	17.19	78.40
All-Tex Summit B2RF	99.95	134.50	234.45	47.85	3	14.25	17.19	79.29
PhytoGen 485WRF	112.00	144.80	256.80	48.64	3	14.25	17.19	80.08
Stoneville NexGen 3550RF	69.00	106.80	175.80	33.56	3	14.25	17.19	65.00
FiberMax 9058F	80.45	109.10	189.55	35.43	3	14.25	17.19	66.87
FiberMax 9068F	80.45	97.50	177.95	37.22	3	14.25	17.19	68.66
AFD 5064F	62.95	95.20	158.15	33.87	3	14.25	17.19	65.31

  

			40 inch rows		4.75/ac	June 15 over-the-top at 22 oz/a Roundup Original MAX. July 13 and Aug 2 sprayed the Flex and Bollgard II/Flex varieties over the top 22oz/a and post-directed 22 oz/a Roundup Original MAX to Roundup Ready varieties.  30.89/gal includes AMS at 0.42/ac
			3.4 seed/row-ft			
			43,900 seed/ac			
<b>Base weed control program</b>		chem cost	app cost	total cost		
15-Mar	1 qt/acre trifluralin PPI	3.56	4.75	8.31		
8-May	1 qt/acre Direx 4L 15" band at planting	3.86		3.86		
5-Jun	1 blanket cultivation		6.00	6.00		
<b>Total blanket weed control program</b>				<b>18.17</b>		
<b>Harvest aid program</b>						
10-Oct	1.5 oz/acre ET	3.54	4.75	8.29		
	8 oz/acre crop oil	0.32		0.32		
21-Oct	16 oz/acre Gramoxone Inteon	3.55	4.75	8.30		
	7.7 oz/acre non-ionic surfactant	1.05		1.05		
<b>Total blanket input cost (\$/acre)</b>				<b>36.13</b>		

Table 11. Stand count and nodes above white flower (NAWF) results from the irrigated large plot replicated systems trial, Bearden Farm, Plains, TX, 2006.

Entry	27-Jun		28-Jul	3-Aug	14-Aug
	plants/row ft	plants/acre	NAWF	NAWF	NAWF
Paymaster 2140B2RF	3.3	43,821	4.8	4.5	4.5
FiberMax 960BR	3.2	41,556	5.1	4.8	4.5
Beltwide Cotton Genetics 2038B2F	3.3	43,386	4.5	4.2	4.7
Beltwide Cotton Genetics 9775B2F	3.7	48,439	4.9	4.6	4.8
All-Tex Summit B2RF	3.3	43,298	5.1	4.4	5.0
Americot 1532B2RF	3.2	41,469	5.2	4.6	5.2
Stoneville NexGen 3550RF	3.4	44,780	4.7	4.5	5.3
Deltapine 117B2RF	3.4	45,041	5.0	4.7	4.9
FiberMax 960B2R	2.9	37,462	5.2	4.7	4.3
FiberMax 9063B2RF	3.0	39,901	5.1	4.8	4.4
Stoneville 4554B2RF	3.2	41,382	5.3	4.7	4.8
FiberMax 9058F	3.5	45,389	5.0	4.5	4.9
All-Tex Apex B2RF	3.1	39,814	4.9	4.6	4.7
Deltapine 143B2RF	3.3	42,776	5.1	5.0	4.7
PhytoGen 425RF	3.7	48,787	4.7	4.4	5.1
PhytoGen 485WRF	3.2	41,730	5.1	5.1	5.5
Stoneville 4664RF	3.3	43,212	4.8	4.7	5.1
Deltapine 147RF	3.4	44,867	4.7	5.0	4.8
Test average	3.3	43,173	5.0	4.7	4.8
CV, %	7.1	7.0	8.7	6.4	7.9
OSL	0.0147	0.0063	0.7266	0.1344	0.0247
LSD	0.4	4,981	NS	NS	0.6

Nodes above white flower (NAWF) numbers represent an average of 30 plants per variety (10 plants/variety/rep with 3 reps)

CV - coefficient of variation, percent.

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

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

Table 12. Plant map results from the irrigated large plot replicated systems trial, Bearden Farm, Plains, TX, 2006

Entry	Plant height	Node of first	Fruiting	Mainstem	Height to node	Fruit retention	
	inches	node number	total/plant	total/plant	ratio	First position	Second position
						percent	percent
Paymaster 2140B2RF	24.0	7.0	11.8	17.8	1.35	54.3	26.5
FiberMax 960BR	28.6	7.3	12.7	19.0	1.51	55.8	16.0
Beltwide Cotton Genetics 2038B2F	29.0	6.3	11.9	17.5	1.67	58.0	32.9
Beltwide Cotton Genetics 9775B2F	26.7	7.1	11.7	17.8	1.50	62.1	23.6
All-Tex Summit B2RF	26.2	6.3	11.8	17.1	1.54	52.3	23.1
Americot 1532B2RF	27.7	7.0	12.0	17.9	1.65	53.6	20.8
Stoneville NexGen 3550RF	33.3	6.6	15.2	20.8	1.60	37.2	19.7
Deltapine 117B2RF	29.2	7.1	12.0	18.1	1.61	57.9	20.8
FiberMax 960B2R	25.8	7.6	10.6	17.2	1.51	49.8	26.7
FiberMax 9063B2RF	27.2	7.2	12.3	18.5	1.47	50.2	23.3
Stoneville 4554B2RF	29.2	7.2	12.2	18.4	1.59	54.7	30.5
FiberMax 9058F	25.9	7.1	12.2	18.3	1.42	48.8	19.1
All-Tex Apex B2RF	29.3	6.6	12.5	18.0	1.63	52.5	19.1
Deltapine 143B2RF	28.2	7.6	11.8	18.4	1.54	52.2	31.4
PhytoGen 425RF	33.4	7.4	12.4	18.8	1.78	46.3	28.5
PhytoGen 485WRF	30.1	7.2	11.8	18.0	1.69	52.8	35.3
Stoneville 4664RF	32.7	7.1	12.3	18.4	1.78	37.9	28.2
Deltapine 147RF	32.0	6.8	13.4	19.2	1.67	47.5	25.6
Test average	28.8	7.0	12.3	18.3	1.6	51.3	25.1
CV, %	8.5	8.2	5.4	4.7	7.2	15.3	26.4
OSL	0.0007	0.2457	<0.0001	0.0035	0.0022	0.0483	0.0446
LSD	4.1	NS	1.1	1.4	0.19	13.1	11.0

Numbers in table represent an average of 18 plants per variety (6 plants/variety/rep with 3 reps).

CV - coefficient of variation, percent.

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

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

Table 13. Harvest results from the irrigated large plot replicated systems trial, Rickey Bearden Farm, Plains, TX, 2006.

Entry	Commercial turnout	Bur cotton yield	Lint yield	Seed yield	Seed lb/bale	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Systems cost	Net value
	%	lb/acre	lb/acre	lb/acre	lb/bale	\$/lb	\$/acre	\$/acre	\$/acre	\$/acre	\$/acre	\$/acre
Paymaster 2140B2F	27.4	4907	1345	2282	815	0.4748	638.35	142.58	780.93	120.21	61.97	598.75 a
FiberMax 960BR	25.8	4933	1272	2043	771	0.4969	632.10	127.69	759.79	120.87	56.24	582.69 a
Beltwide Cotton Genetics 2038B2F	23.8	4767	1135	2011	851	0.4886	554.27	125.71	679.98	116.78	65.38	497.81 b
Beltwide Cotton Genetics 9775B2F	24.4	4627	1129	2104	894	0.4806	542.52	131.48	674.00	113.35	65.38	495.27 b
All-Tex Summit B2RF	24.3	4653	1131	2005	851	0.4869	550.60	125.31	675.91	114.01	67.44	494.47 b
Americot 1532B2RF	25.7	4467	1148	2059	861	0.4510	517.72	128.69	646.40	109.43	62.90	474.07 bc
Stoneville NexGen 3550RF	22.7	4460	1010	1835	872	0.5020	507.19	114.67	621.85	109.27	50.43	462.15 bc
Deltapine 117B2F	25.9	4513	1169	1864	766	0.4464	521.85	116.52	638.37	110.58	67.61	460.19 bc
FiberMax 960B2R	23.2	4747	1102	1828	796	0.4676	515.11	114.23	629.34	116.29	56.67	456.37 bc
FiberMax 9063B2RF	24.0	4120	989	1644	798	0.5083	502.64	102.75	605.39	100.94	62.28	442.17 bcde
Stoneville 4554B2RF	23.9	4187	1000	1712	822	0.4888	489.05	107.04	596.09	102.57	66.16	427.36 bcde
FiberMax 9058F	24.0	4000	960	1511	756	0.4837	464.32	94.44	558.76	98.00	52.66	408.10 cde
All-Tex Apex B2RF	20.7	4700	973	1728	853	0.4606	448.10	108.02	556.12	115.15	66.39	374.58 def
Deltapine 143B2F	22.8	4220	962	1745	871	0.4273	411.09	109.08	520.17	103.39	67.61	349.17 efg
PhytoGen 425RF	21.6	3913	843	1502	855	0.4595	387.51	93.90	481.41	95.88	57.25	328.28 fg
PhytoGen 485WRF	20.5	4273	876	1582	867	0.4153	363.82	98.87	462.69	104.70	64.57	293.43 g
Stoneville 4664RF	21.9	3660	801	1319	790	0.4472	358.35	82.44	440.79	89.67	57.75	293.38 g
Deltapine 147RF	21.7	3733	812	1475	872	0.4191	340.17	92.21	432.38	91.47	58.16	282.75 g
Test mean	23.6	4382	1036	1792	831	0.4669	485.82	111.98	597.80	107.36	61.49	428.94
CV, %	--	9.8	9.9	10.1	--	--	9.6	10.1	9.7	9.8	--	11.1
OSL	--	0.0122	<0.0001	<0.0001	--	--	<0.0001	<0.0001	<0.0001	0.0122	--	<0.0001
LSD	--	712	170	300	--	--	77.56	18.77	96.18	17.45	--	79.07

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

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level.

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

Assumes:

\$2.45/cwt ginning cost.

\$125/ton for seed.

Value for lint based on CCC loan value from USDA-AMS HVI results.

Table 14. USDA-AMS classing results of commercially ginned bales from the irrigated large plot replicated systems trial, Rickey Bearden Farm, Plains, TX 2006.

Entry		Color 1	Color 2	Staple	Leaf	Mic	Remarks	rd	+b	Length	Strength	Unif	Loan
		units	units	32nds	units	units	bales	%	units	100ths	g/tex	%	\$/lb
Paymaster 2140B2RF	Mean	2.9	1.0	35.3	4.5	3.1	5/8	78.6	7.5	109.8	26.4	80.3	0.4748
	Std Dev	0.4	0.0	0.7	0.8	0.1		1.4	0.3	1.7	1.2	0.5	0.0141
FiberMax 960BR	Mean	2.0	1.0	34.9	3.0	2.9	3/8	80.5	8.2	109.0	27.7	80.0	0.4969
	Std Dev	0.0	0.0	0.8	0.0	0.1		0.9	0.3	1.9	0.7	1.1	0.0262
Beltwide Cotton Genetics 2038B2F	Mean	2.0	1.0	36.0	3.3	3.0	3/7	80.4	8.0	112.3	24.0	78.8	0.4886
	Std Dev	0.0	0.0	0.6	0.5	0.1		0.5	0.2	1.8	0.6	0.8	0.0219
Beltwide Cotton Genetics 9775B2F	Mean	2.1	1.0	37.0	3.0	2.8	5/7	81.6	7.5	115.1	24.4	78.8	0.4806
	Std Dev	0.4	0.0	0.6	0.0	0.1		1.1	0.3	1.8	0.5	0.8	0.0102
All-Tex Summit B2RF	Mean	2.0	1.0	35.4	3.0	2.9	5/7	81.0	7.9	109.9	23.5	80.3	0.4869
	Std Dev	0.0	0.0	0.5	0.0	0.1		0.8	0.5	1.5	0.3	0.7	0.0140
Americot 1532B2RF	Mean	2.3	1.1	35.9	3.4	2.7	6/7	77.7	8.8	111.6	24.0	78.2	0.4510
	Std Dev	0.5	0.4	0.7	0.5	0.1		1.6	0.6	1.7	0.7	1.2	0.0205
Stoneville NexGen 3550RF	Mean	2.8	1.0	36.3	3.8	3.2	4/6	78.3	8.0	113.5	26.4	79.1	0.5020
	Std Dev	0.4	0.0	0.5	0.4	0.1		1.0	0.3	2.2	0.8	1.2	0.0198
Deltapine 117B2RF	Mean	3.0	1.6	36.4	5.1	3.0	3/7	74.3	9.2	113.6	28.4	79.9	0.4464
	Std Dev	0.0	0.5	0.5	0.7	0.1		1.4	0.3	1.5	0.8	0.4	0.0330
FiberMax 960B2R	Mean	2.0	1.0	35.6	3.0	2.7	7/7	81.3	7.9	110.9	26.0	78.6	0.4676
	Std Dev	0.0	0.0	0.5	0.0	0.1		0.8	0.3	0.9	0.6	0.9	0.0189
FiberMax 9063B2RF	Mean	2.0	1.0	36.8	3.0	2.9	2/6	82.2	7.7	115.2	27.7	79.6	0.5083
	Std Dev	0.0	0.0	0.4	0.0	0.1		1.0	0.4	1.9	1.2	0.8	0.0087
Stoneville 4554B2RF	Mean	1.7	1.0	35.3	3.3	2.8	0/0	81.2	8.3	110.8	25.8	79.3	0.4888
	Std Dev	0.5	0.0	0.8	0.5	0.1		0.4	0.1	2.6	0.7	0.7	0.0195
FiberMax 9058F	Mean	2.5	1.0	37.2	3.2	2.9	5/6	80.7	7.7	115.5	26.8	79.1	0.4837
	Std Dev	0.5	0.0	0.8	0.4	0.0		0.5	0.4	3.1	0.6	1.5	0.0164
All-Tex Apex B2RF	Mean	2.2	1.0	35.7	3.2	2.7	6/6	80.2	8.0	111.2	23.6	77.8	0.4606
	Std Dev	0.4	0.0	0.5	0.4	0.0		1.2	0.4	1.6	0.5	0.9	0.0146
Deltapine 143B2RF	Mean	2.7	1.3	36.3	3.7	2.6	6/6	76.5	9.0	113.3	24.8	77.5	0.4273
	Std Dev	0.5	0.5	0.5	0.5	0.1		2.8	0.7	2.0	0.7	0.5	0.0321
PhytoGen 425RF	Mean	2.8	1.6	35.4	4.0	3.2	5/5	74.2	9.9	110.6	24.6	79.8	0.4595
	Std Dev	0.4	0.5	0.5	0.7	0.1		2.5	0.5	0.9	0.9	0.9	0.0285
PhytoGen 485WRF	Mean	3.4	2.4	35.6	4.8	3.0	5/5	71.6	10.0	111.4	27.2	80.7	0.4153
	Std Dev	0.5	0.9	0.5	0.4	0.1		3.5	1.0	1.3	1.7	0.7	0.0235
Stoneville 4664RF	Mean	2.0	1.0	34.4	3.8	2.8	4/5	78.8	8.7	107.8	25.3	79.0	0.4472
	Std Dev	0.0	0.0	0.5	0.4	0.0		0.4	0.1	1.6	0.9	1.4	0.0187
Deltapine 147RF	Mean	2.6	1.4	36.4	3.8	2.6	4/5	76.6	9.1	114.0	24.5	77.8	0.4191
	Std Dev	0.5	0.5	0.9	0.4	0.1		2.1	0.9	2.7	0.9	1.0	0.0284



Table 15. Expenses incurred for the irrigated large plot replicated systems trial, Bearden Farm, Plains, TX, 2006.

Entry	Seed cost/bag	Tech fees/bag	Total cost/bag	Seed & tech fee/ac	Herb apps	Herb cost/ac	Roundup Original MAX cost/ac	Systems cost/ac
FiberMax 9058F	80.45	109.10	189.55	42.18	1	4.75	5.73	52.66
PhytoGen 425RF	99.00	106.80	205.80	46.77	1	4.75	5.73	57.25
Deltapine 147RF	111.95	116.10	228.05	47.68	1	4.75	5.73	58.16
Stoneville NexGen 3550RF	69.00	106.80	175.80	39.95	1	4.75	5.73	50.43
Stoneville 4664RF	101.20	106.80	208.00	47.27	1	4.75	5.73	57.75
FiberMax 960BR	80.45	116.50	196.95	45.76	1	4.75	5.73	56.24
FiberMax 960B2R	80.45	113.90	194.35	46.19	1	4.75	5.73	56.67
FiberMax 9063B2RF	80.45	137.50	217.95	51.80	1	4.75	5.73	62.28
PhytoGen 485WRF	112.00	144.80	256.80	54.09	1	4.75	5.73	64.57
Beltwide Cotton Genetics 9775B2F	97.75	143.80	241.55	54.90	1	4.75	5.73	65.38
Beltwide Cotton Genetics 2038B2F	97.75	143.80	241.55	54.90	1	4.75	5.73	65.38
Americot 1532B2RF	92.50	153.10	245.60	52.42	1	4.75	5.73	62.90
All-Tex Apex B2RF	99.95	140.60	240.55	55.91	1	4.75	5.73	66.39
All-Tex Summit B2RF	99.95	134.50	234.45	56.96	1	4.75	5.73	67.44
Deltapine 143B2RF	116.95	156.30	273.25	57.13	1	4.75	5.73	67.61
Deltapine 117B2RF	116.95	156.30	273.25	57.13	1	4.75	5.73	67.61
Paymaster 2140B2RF	89.95	156.30	246.25	51.49	1	4.75	5.73	61.97
Stoneville 4554B2RF	101.20	143.80	245.00	55.68	1	4.75	5.73	66.16

40 inch rows  
4.0 seed/row-ft  
52,000 seed/ac

4.75/ac

June 17 over-the-top 22oz/a  
Roundup Original MAX to  
Roundup Ready varieties.

30.89/gal  
includes AMS at 0.42/ac

Base Weed Control Program				Chem Cost	App Cost	Total Cost
15-Mar	1 pt/acre	trifluralin PPI		1.78	4.50	6.28
23-May	4.0 oz/acre	trifluralin at planting		0.45	4.50	4.95
	6.0 oz/acre	prometryn at planting		1.94		1.94
	0.2 oz/acre	Staple LX at planting		1.38		1.38
<b>Total blanket weed control program</b>						<b>14.55</b>
Insecticide Program				Chem Cost	App Cost	Total Cost
23-May	4 lb/acre	temik at planting		5.25		5.25
Harvest Aid Program				Chem Cost	App Cost	Total Cost
14-Oct	32 oz/acre	Finish 6 Pro		17.50	4.50	22.00
	16 oz/acre	Def 6		6.38		6.38
<b>Total Blanket input cost (\$/acre)</b>						<b>41.80</b>