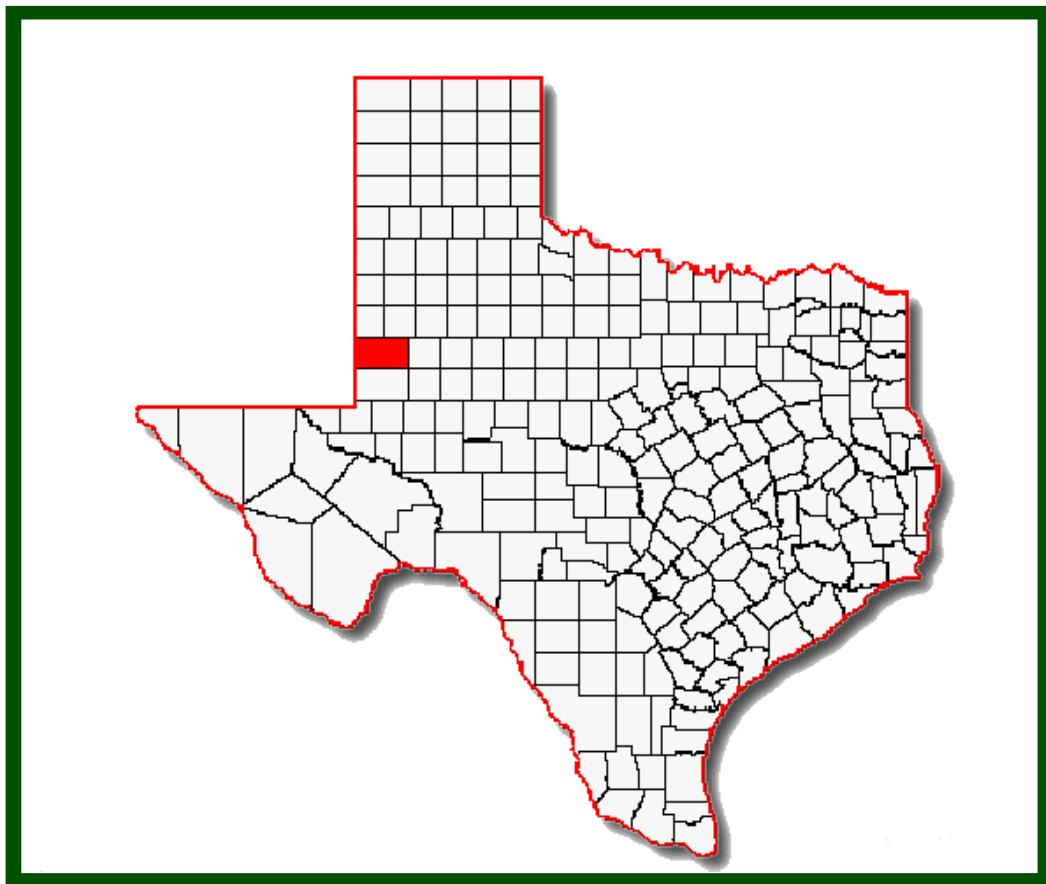


# INTEGRATED PEST MANAGEMENT



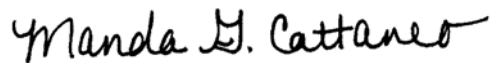
## Gaines County IPM Program 2009



**GAINES COUNTY  
INTEGRATED PEST MANAGEMENT PROGRAM**

**2009 ANNUAL REPORT**

**Prepared by**

A handwritten signature in black ink that reads "Manda G. Cattaneo". The script is cursive and fluid.

**Manda G. Cattaneo  
Extension Agent – Integrated Pest Management  
Gaines County**

**in cooperation with**

**Terry Millican, Gaines County Extension Agent - Agriculture**

**and**

**Texas Pest Management Association**

**Gaines County Integrated Pest Management Steering Committee**

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## **Introduction**

The Gaines County Integrated Pest Management (IPM) Program is part of the Texas IPM Program and serves as a multi-purpose education effort to provide the Gaines County agriculture industry with up-to-date information on all aspects of IPM. The Gaines County IPM Program is coordinated by Manda Cattaneo, Extension Agent – IPM. The local IPM Steering Committee (made up of growers, consultants, and agriculture industry representatives) is the fundamental, local support unit for the Gaines County IPM Program. This committee met on April 22 and November 19, 2009 to determine local priorities including education programming, applied research and result demonstration priorities, and to evaluate the 2009 Gaines County IPM Program.

In 2009 the Gaines County IPM Program ran a survey scouting program which encompassed cotton, peanuts, and wheat. This survey scouting program was funded by twenty-five business sponsors who brought in over \$9,650. Fourteen fields were scouted throughout the season for pest and beneficial populations, along with crop stage and development. The information gathered from these fields was used to write the Gaines County IPM Newsletter (See Appendix A) that was sent out to over 278 growers, ginners, crop consultants and agriculture industry representatives. The Gaines County IPM Program also conducted thirteen on-farm trials to evaluate cotton variety performance, disease management, insect management, and use of plant growth regulators. Results from these trials will be provided to the growers in a book titled “2009 Gaines County, Texas Cotton, Peanut, and Wheat Research Reports.” Additionally, the Gaines County IPM Program had several educational events throughout the season such as presentations at field days and grower meetings, newspaper articles, and newsletters.

## **Acknowledgements and Recognition**

### **Integrated Pest Management (IPM) Steering Committee**

Shelby Elam	Scott Nolen
Chuck Rowland	Jack Shanklin
Jody Anderson	Raymond McPherson
Jud Chevront	Michael Todd

### **2009 Gaines County Commissioners Court**

Gaines County Judge	Tom Keyes
Commissioner, Precinct 1	Danny Yoakum
Commissioner, Precinct 2	Craig Belt
Commissioner, Precinct 3	Blair Tharp
Commissioner, Precinct 4	Charlie Lopez

## **2009 Gaines County IPM Program Sponsors and Contributors**

Carter & Co. Irrigation Inc.  
Oasis Gin Inc.  
Ocho Gin Company  
TriCounty Producers Gin  
AG Aero  
Nolen AG Services Inc.  
Ocho Corp. Crop Plus Insurance  
Western Peanut Growers  
Agriliance  
Anderson Welding Pump and Machine  
Birdsong Peanuts  
City Bank in Lubbock  
Crop Production Services, Inc.  
First United Bank  
Five Points Gin  
Gaines County Farm Bureau  
Ten High Gin Inc.

Valley Irrigation & Pump Service Inc.  
West Gaines Seed and Delinting Inc.  
West Texas Agriplex, Inc.  
Whittenburg Crop Insurance  
McKenzie Insurance  
Moore-Haralson Agency PC  
Seminole Butane Co. Inc.  
State Farm Insurance.

### **Contributors:**

Bayer CropScience (provided seed for research)  
All-Tex Seed (provided seed for research)  
Americot, Inc. (provided seed for research)  
Monsanto (provided seed for research)  
Dyna-Grow (provided seed for research)  
Dow AgroSciences (provided seed for research)  
Syngenta (provided chemical for research)

## **Producers who planted, maintained, and harvested Research Trials**

Raymond McPherson  
Max McGuire  
Jud Cheuvront  
Chuck Rowland  
Shelby Elam  
Jimbo Grissom

Ricky Mills  
Gregory Upton  
Markus Crow  
Larry Nelson  
Tim Neufeld  
Michael Todd

## **Producers who participated in the IPM Scouting Program**

Shelby Elam  
Glen Shook  
Cody Walters  
Doyle Fincher  
Markus Crow  
Jimbo Grissom

Max McGuire  
Michael Todd  
Scotty Johnson  
Peter Froese  
David Dyck

## **Field Scout/Research Aides**

Jim Belt and Kamie Zamora

The field scout was responsible for the weekly monitoring and reporting of insect populations, disease status and crop development. They were also responsible with helping establish and collect data from research plots. Special appreciation is extended to the field scouts for their dedication.

**Special Thanks to the following Texas AgriLife Extension and Research Faculty  
for their Programming Support and Assistance**

Dr. Kevin Heinz.....	Head of Entomology Department, College Station
Dr. Charles Allen.....	IPM Coordinator, San Angelo
Dr. Chris Sansone.....	Assoc. Head of Entomology Department, San Angelo
Dr. Galen Chandler.....	Regional Program Director, Lubbock
Miles Dabovich.....	District Extension Administrator, Lubbock
Dr. David Kerns.....	Extension Entomologist, Lubbock
Dr. Pat Porter.....	Extension Entomologist, Lubbock
Dr. Jason Woodward.....	Extension Plant Pathologist, Lubbock
Dr. Terry Wheeler.....	Research Plant Pathologist, Lubbock
Dr. Randy Boman.....	Extension Agronomist, Lubbock
Dr. Mark Kelley.....	Extension Program Specialist, Lubbock
Dr. Calvin Trostle.....	Extension Agronomist, Lubbock
Dr. Todd Baughman.....	Extension Agronomist, Vernon
Dr. Peter Dotray.....	Extension Weed and Herbicide Science, Lubbock
Scott Russell.....	Extension Agent - IPM, Brownfield
Dr. Jackie Smith.....	Extension Ag Economist, Lubbock
Jay Yates.....	Extension Risk Management Specialist, Lubbock
Dr. Dana Porter.....	Extension Ag Engineering Specialist, Lubbock
Terry Millican.....	County Extension Agent – Ag, Seminole
Connie Lambert.....	EA-IPM-Secretary, Gaines County, Seminole

**Texas Pest Management Association**

The support and assistance of David Oefinger, Executive Director of Texas Pest Management Association, is greatly appreciated.

## 2009 Gaines County Integrated Pest Management (IPM) Program

*Manda Cattaneo, Extension Agent – IPM, Gaines County*

### Relevance

Gaines County is the number one cotton and peanut producer in the state of Texas, with approximately 254,587 and 39,531 planted acres of cotton and peanuts in 2009, respectively. These producers are being faced with increased crop production cost, increased scarcity of water, and increased plant disease prevalence. Water and economic development are two of the top three critical issues identified by the Texas Community Futures Forum for Gaines County. Additionally, the Gaines County IPM Steering Committee has identified crop water use and disease management as the main focus of the Gaines County IPM Program.

For these reasons, the Texas AgriLife Extension Service 2009 Gaines County IPM Program targeted cotton and peanut producers and agriculture industry representatives to work with and to provide education on current crop and pest management tools and techniques in order to maintain yields and net profit.

### Response

The Gaines County IPM Steering Committee (made up of producers, agriculture industries, and private consultants) is the fundamental local support unit for the program. This committee determines local priorities for the program including educational programming and applied research priorities. In cooperation with this steering committee, the Gaines County IPM Program developed the following activities to address these relevant issues:

- Compilation and dissemination of the “2008 Gaines County, Texas Cotton, Peanut, and Wheat Research Reports” book
- Presentation on “Gaines County IPM Program and 2008 Research Results” at the SandyLand Ag Conference (January 26)
- Two newspaper articles published in the Seminole Sentinel “The Keys to Growing a Peanut Crop” (March 15) and “Decent Crop Year Coming to End in Gaines County” (September 16)
- Gaines County IPM Newsletter (16 issues from February 2 thru October 27)
- Presentation on “Gaines County Integrated Pest Management (IPM) Program” at the Seminole Lions Club meeting (June 2)
- Weekly field scouting of IPM Program cotton and peanut fields to monitor crop development and monitor pest and beneficial populations (May thru September)
- Presentations during the Ag Tour (August 5)

Additionally, research trials were conducted on-farm to provide relevant, unbiased, and timely information to our local producers:

- Peanut Pod Rot research in cooperation with Dr. Terry Wheeler, Dr. Jason Woodward, and Scott Russell
- Evaluation of 11 cotton varieties under Irrigation, Limited Irrigation, and non-Irrigated Production
- Evaluation of 11 cotton varieties under Verticillium Wilt pressure in cooperation with Dr. Jason Woodward and Dr. Terry Wheeler



- Evaluation of 12 cotton varieties under Nematode pressure in cooperation with Dr. Terry Wheeler
- Evaluation of 4 Plant Growth Regulators in a limited irrigation field in cooperation with Scott Russell
- Evaluation of 2 varieties in combination with 4 at-planting nematicides, for nematode management in cooperation with Dr. Terry Wheeler, Dr. Jason Woodward, and Dr. David Kerns
- Evaluation of thresholds for early season thrips management in cooperation with Dr. David Kerns
- Evaluation of Valor Herbicide on peanut production in cooperation with Dr. Peter Dotray

An evaluation instrument (post survey approach) was utilized to measure programmatic impact. Twenty-one individuals responded to the survey (88% response rate). Of those responding 15 were producers (71%) and 6 agriculture industry representatives (29%).

## Results

**(100%) 21 of 21 individuals** said the Gaines County IPM Newsletter information helped them make better decisions about their farming practices, pest management, and variety selection.

**(87%) 13 of 15 producers** said they plan to take action or make changes based on information provided by the Gaines County IPM Newsletter.

**(93%) 14 of 15 producers** said they anticipate benefiting economically as a direct result of what they learned from the IPM Program. Seven growers responded with the following dollar values per acre:

<b>\$750 per acre</b> (1 individual)	<b>\$10 per acre</b> (1 individual)
<b>\$50 per acre</b> (1 individual)	<b>\$5 per acre</b> (1 individual)
<b>\$20 per acre</b> (2 individuals)	<b>\$2 per acre</b> (1 individual)

When asked what the most significant thing they learned or helped them the most:

**38% of respondents** said disease identification and management information.

**29% of respondents** said insect identification and management information.

**19% of respondents** said everything was very important and useful.

**19% of respondents** said results of cotton variety trials.

**19% of respondents** said the Gaines County IPM Newsletter county wide assessment.

**5% of respondents** said instant on-line availability.

**5% of respondents** said information on weed management.

**5% of respondents** said information on crop development according to heat units.

**5% of respondents** said the information provided by the scouting program.

**Table 1. The following percentages represent the number of individuals who said the Gaines County IPM Newsletter mostly or completely increased their knowledge of the following items:**

	<b># of Responses</b>	<b>Percent</b>
Peanut Disease Identification	18 of 20	90%
Peanut Disease Management	18 of 20	90%
Cotton Disease Identification	19 of 21	91%
Use of Tolerant/Resistant Cotton Varieties to Manage Cotton Diseases	19 of 21	91%
Weed Management	19 of 21	91%
Cotton Insect Identification and Management	19 of 21	91%
How Heat Units (H.U.) are Related to Crop Development	18 of 21	86%
How to Evaluate Crop Development and Whether or Not a Plant Growth Regulator Should be Applied	18 of 21	86%
How to Evaluate Crop Maturity Based on Nodes Above White Flower	19 of 21	91%
Description of Cropping Conditions in the Gaines County IPM Newsletter	20 of 21	95%

**Table 2. The following percentages represent the number of individuals who said the following items were mostly or very valuable to their operations:**

	# of Responses	Percent
Gaines County IPM Newsletter	21 of 21	100%
2008 Gaines County, Texas Cotton, Peanut, and Wheat Research Reports Book	20 of 21	95%
Cotton and Peanut Ag Tour	15 of 16	94%

Results indicate that Gaines County producers and agriculture industry representatives highly value the information provided by the Gaines County IPM Program. The following are testimonials from individual producers:

“Doing a great job!! Very impressed with quality of newsletter.”

“Perfect - keep up the good work.”

“It's perfect.”

The results of this survey are included in the 2009 Gaines County IPM Annual Report which is distributed to the Gaines County IPM Steering Committee, the Gaines County IPM Program Sponsors, and supporters. Future programming efforts will be based on these results and input provided by the Gaines County IPM Steering Committee. The steering committee assists in the interpretation and marketing of the Gaines County IPM Program to key stakeholders, agribusinesses, and the Commissioners Court.

## **Acknowledgements**

Other Texas AgriLife Extension Service Staff that assisted with our educational activities: Dr. Jason Woodward, Dr. Terry Wheeler, Dr. David Kerns, Dr. Randy Boman, Dr. Todd Baughman, Dr. Calvin Trostle, and Dr. Peter Dotray.

We would also like to thank the following producers for planting, maintaining and harvesting the Gaines County IPM Program on-farm research trials: Jimbo Grissom, Jud Cheuvront, Rick Mills, Gregory Upton, Max McGuire, Raymond McPherson, Michael Todd, Chuck Rowland.

We also appreciate the support of the following businesses who sponsored and the 2008 Gaines County IPM Program: Carter & Co. Irrigation Inc., Oasis Gin Inc., Ocho Gin Company, TriCounty Producers Gin, AG Aero, Nolen AG Services Inc., Ocho Corp. Crop Plus Insurance, Western Peanut Growers, Agrilience, Anderson Welding Pump and Machine, Birdsong Peanuts, City Bank in Lubbock, Crop Production Services, Inc., First United Bank, Five Points Gin, Gaines County Farm Bureau, Ten High Gin Inc., Valley Irrigation & Pump Service Inc., West Gaines Seed and Delinting Inc., West Texas Agriplex, Inc., Whittenburg Crop Insurance, McKenzie Insurance, Moore-Haralson Agency PC, Seminole Butane Co. Inc., State Farm Insurance.

Special thanks to the following individuals whose support and dedication made the Gaines County IPM Program a success: Connie Lambert-IPM Secretary; Jim Belt and Kamie Zamora-Gaines County IPM Program summer scouts; Gaines County Judge-Tom Keyes; and the County Commissioners: Danny Yoakum-Precinct 1; Craig Belt-Precinct 2; Blair Tharp-Precinct 3; Charlie Lopez-Precinct 4.

*Texas AgriLife Extension*  
*Improving Lives. Improving Texas*

## Educational Activities

Newsletters	
No. Issues Written.....	16
No. Non-Extension Clientele on Mailing List.....	111
No. Non-Extension Clientele on E-mail List.....	112
Total Non-Extension Clientele.....	223
TV Interviews.....	1
Peer Review Publications.....	1
Scientific Presentations/Posters.....	3
Newspaper Articles	
No. Prepared.....	4
No. Newspaper Carrying.....	3
Farm Visits.....	457
Scouts Trained.....	2
Consultants Trained.....	0
CEU Credits Offered.....	8
Pest Management Steering Committee Meetings.....	2
Presentations Made	
County Meetings.....	2
Field Days/Tours.....	1
Schools.....	2
Civic Clubs.....	1
4-H Clubs.....	0
Professional Meetings.....	1
No. Applied Research/Demonstration Projects.....	13
No. Involving Cotton.....	12
No. Direct Ag. Contacts.....	3,067
Other Direct Contacts.....	469

### **Funds Leveraged**

#### Grants and Contracts

No. Grants as Cooperator/Collaborator.....	1
No. Dollars Received for Your Use.....	\$12,971
Support Dollars you Generated to Support other Educational Efforts.....	\$15,150
Retail Value of “In-Kind” Contributions (See Appendix C).....	\$30,054
Total Dollars Generated for Your Program.....	<b>\$58,175</b>

**Gaines County IPM Program  
2009 Financial Report**

**Income**

Balance from 2008 <sup>1</sup>	\$26,249.85
Scouting Program Sponsors	\$9,650.00
Peanut Pod Rot Research	\$3,171.00
Irrigated Cotton Variety Trial West of Seminole	\$1,100.00
Dryland Cotton Variety Trial	\$1,200.00
Limited Irrigated Cotton Variety Trial at Loop	\$1,100.00
Verticillium Wilt Cotton Variety Trial	\$1,100.00
Variety & Chemical Management of Nematodes Trial <sup>2</sup>	\$1,000.00
Bayer CropScience CAP Trials <sup>3</sup>	\$4,000.00
Monsanto FACT Trials	\$5,000.00
Monsanto Boll Damage Survey	\$800.00
Transfer from 86 Account	\$2,150.24
Interest	\$37.42
<b>Total Income</b>	<b>\$52,058.51</b>

**Expenses**

Administrative Fees	\$3,543.15
Dues & subscriptions	\$403.44
Membership Paid	\$2,280.00
Bank and USB/Service Fee	\$10.00
Postage	\$195.10
Scout Payroll	\$5,804.35
Payroll Tax Expenses	\$548.40
Mileage for Scouts	\$2,664.93
Mileage for IPM Agent	\$8,310.77
Mileage for Directors	\$267.55
Telephone	\$1,428.22
Conference & Meetings	\$337.48
Auto Expenses	\$144.83
Miscellaneous	\$32.82
Office Supplies	\$878.14
Scouting Supplies	\$254.31
Public Relations	\$33.24
Maintenance and Repairs	\$138.29
Research /Demo Project	\$573.87
Transfer to 66 Account	\$2,150.24
<b>Total Expenses</b>	<b>\$29,999.13</b>

**Balance as of December 31, 2009** **\$22,059.38**

<sup>1</sup>\$23569.85 (Balance from 2008) + \$2680 (Payment in 2009 for a 2008 Project)

<sup>2</sup>\$500 received in 2010 for a 2009 Project

<sup>3</sup>\$4000 received in 2010 for a 2009 Project

## **2009 Gaines County Crop Production Review**

2009 started off with dry conditions and low commodity prices. This had growers deliberating over their planting intentions. Several growers expressed an interest in planting alternative crops such as soybeans, safflowers, sesame, and sunflowers. By the time planting season rolled around growers had decided to plant some safflowers but a majority of the acreage was planted to cotton and peanuts, which total 254,587 and 39,531 acres, respectively. This was a slight shift from the 2008 season in which we had 244,240 and 69,573 planted acres of cotton and peanuts, respectively.

### **February to March**

In February and March Russian Wheat Aphids were observed in several wheat fields throughout the county. Russian wheat aphids inject a toxin into the leaves while they are feeding. This toxin causes purple streaks on the wheat leaves. Several wheat fields were treated to control Russian Wheat Aphids.

### **End of May to mid-June**

By the end of May, most dryland fields had not received their much needed planting moisture and were dry planted. Parts of the county received a slow soaking rain in mid-June, which totaled between 1.5 and 4 inches. Unfortunately these rains did not come soon enough for the dryland cotton and hail storms took out a couple of fields throughout the county. On the plus side, these rains provided timely moisture for peanuts and irrigated cotton. Cotton stages were ranging from cotyledon to 11 true leaves, with a majority of the cotton around the 6 true leaf stage and starting to square. A field in western Gaines County had some plants that were starting to show signs of stress from the wilt diseases. We also started observing root-knot nematode galls on cotton roots in several fields. Peanuts were starting to bloom.

### **Late June**

Irrigated cotton and peanut crops had put on significant growth during the last two weeks of June. Cotton stages were ranging from 2 true leaves to 13 true leaves. More peanut fields were starting to bloom and some fields had started pegging. Some peanut fields had a low level of Rhizobium nodulation. Supplemental nitrogen needed to be applied in these fields, since it was too late to increase nodulation in the current crop. Bollworm eggs and damaged squares were being observed in non-Bt cotton fields throughout the end of June and beginning of July. However, beneficial insects were helping to keep most insect pests at bay.

### **Early July**

During the second week of July we started entering into the period of highest water demand, which is during the blooming period for cotton and blooming, pegging and pod fill for peanuts. Peanut disease reports were also starting to increase. Southern blight, caused by *Sclerotium rolfsii*, had been observed in several peanut fields in Western portions of the county. Aspergillus crown rot, caused by *Aspergillus niger*, had also been observed in some peanut fields. Fusarium wilt, caused by the soilborne fungus *Fusarium oxysporum* f. sp. *vasinfectum*, was being observed in several cotton fields. Development of Fusarium wilt requires wounding by the root-knot nematode (*Meloidogyne incognita*), which was also being observed in several cotton fields. Scattered fields in Gaines County were also exhibiting symptoms of a unique foliar disease. Bright yellow to orange colored lesion with a maroon border were being observed on the upper

leaf surface. On the lower leaf surface, yellow to orange structures (aecia) containing spores were being found. These symptoms were characteristic of Southwestern cotton rust, caused by *Puccinia cacabata*. While this disease commonly occurs in fields in the Trans Pecos area, it had not been reported on the Southern High Plains. Unlike other plant rusts (i.e. stem rust of wheat), the spores produced on infected cotton leaves cannot re-infect cotton. The epidemiology of this Southwestern rust is complicated; however, the presence of an alternate host, specifically grama grasses (*Bouteloua* spp.), are required for disease development in cotton. Efforts in locating infected grama grasses near fields exhibiting symptoms of Southwestern rust were unsuccessful.

### **Mid-July to the End of July**

In a 13 day period, from July 8 to July 20, we accumulated 296 Heat Units. This rapid accumulation of Heat Units and dry conditions caused plant stress in several fields. These stresses reduced main stem growth which resulted in less fruit and square production. As a result some cotton fields were headed towards an early cutout. However, significant rainfall on July 22 and 23 and cooler temperatures may have saved these fields from reaching cutout prematurely. By the end of July, a majority of the cotton fields were blooming and peanuts were pegging and forming pods. Verticillium wilt had been noted in several cotton fields and pod rot was starting to show up in some peanut fields. Severe wind storms had hit Gaines County. A few fields had severe wind damage; however, a majority of the fields had minimal damage. Insect pressure remained low.

### **Early August**

In the first week of August Nodes Above White Flower (NAWF) ranged from 3 to 8 with a majority of the cotton fields at 6 NAWF. Peanuts were continuing to peg and had small to large pods. Disease incidence had increased during the last couple of weeks. Pythium pod rot had been observed in several peanut fields. Sclerotinia Blight, caused by *Sclerotinia minor*, has also been observed in some peanut fields. Verticillium wilt continued to be observed in cotton fields. However, the Verticillium wilt incidence seemed less prevalent this year than the same time last year. Nematodes were very active in a lot of cotton fields. In addition to these diseases, we also observed limited amounts of Alternaria stem blight and Bacterial blight was identified in a small section of one field near Loop.

### **Mid-August**

In mid-August peanuts were forming small to large pods. Pod rots, Sclerotinia Blight, Southern Blight, Early Leaf Spot, and Verticillium wilt continued to be found in peanuts. Verticillium wilt pressure was increasing in cotton. Nodes Above White Flower (NAWF) ranged from 0 to 7 with a majority of the cotton fields at 4 to 5 NAWF. Cotton plants were starting to shed squares and small bolls. We observed a few non-Bt fields with economically damaging bollworm populations, however; we did not observe any economically damaging populations in Bt cotton. Lygus nymphs were observed colonizing some cotton fields.

### **End of August**

By the end of August, a majority of the cotton and peanut fields were exhibiting symptoms of stress caused by the dry and hot conditions that had prevailed for the last several weeks. A majority of the cotton fields had cutout and bolls were starting to open in several cotton fields. In non-Bt cotton, we were finding larger bollworm larvae ( $\frac{1}{2}$  inch to  $\frac{3}{4}$  inch) that were likely feeding in the bolls when insecticides were applied. These bollworms were feeding in bolls

lower in the canopy and could only be found if you were doing whole plant inspections. Along with the bollworms we also observed smaller populations of fall armyworms and beet armyworms. Most of the fall armyworms were observed feeding in the blooms. The beet armyworms were feeding on leaves, squares, small bolls and bracts. Fusarium wilt was being observed in several cotton fields. This is a little unusual since Fusarium wilt is *usually* observed prior to bloom. We were also starting to observe more Rhizoctonia pod rot along with Pythium pod rot in peanut fields.

### **Mid-September**

Despite the dry conditions during the start of the season, by mid-September we had ended up with a decent cotton and peanut crop load. Yields in most fields were directly related to the irrigation capacity. However, June and July's rains greatly benefited the crop by adding valuable soil moisture that helped to carry the crop a little further. The hot dry conditions during August sped up crop maturity at the cost of some yield loss. Cotton plants had shed excess squares and small bolls in the top 2 to 5 nodes. The plants only kept those bolls which it could carry or mature out. During the first two weeks of September we accumulated an average of 14 H.U. per day. Therefore crop maturity was not proceeding as quickly as it did during August. Insect pressure was light, with the exception of a few aphid populations in some cotton fields. Pod rots caused by the soil borne pathogen Rhizoctonia were being found in some peanut fields. Sclerotinia blight, Southern Blight, and Early and late leaf spot were also being observed in some peanut fields. At this point in the season growers needed to weigh the cost and determine if a fungicide application was justified since they would be digging peanuts within the next 2 to 3 weeks.

### **End of September**

The last part of September was marked with a cold front that slowed things down. Several were holding off and waiting for a warm spell before they applied cotton defoliant and started harvesting peanuts. A majority of the cotton fields had open cotton, but some fields still needed several days of warm sunny weather before they would be ready for defoliation.

During the month of September we caught a very low population of pink bollworms in a trap that was located approximately 10 miles east of the Gaines County Park. These low numbers did not represent a problem nor did they require an insecticide application. However, they did indicate that pink bollworms are present in the area and growers need to monitor their non-Bt fields.

### **End of October**

By the end of October, a majority of the peanut crop was harvested and cotton harvesting was progressing as fast as the weather would allow. Some rainfall events had slowed and delayed harvesting schedules. However, the wheat producers were thankful for the early winter rains.

**Seasonal Heat Unit (H.U.) records for cotton (DD60s), National Climatic Data Center**

						Avg. Monthly H.U.						Avg. Monthly Accumulated H.U.
Month	05	06	07	08	09		05	06	07	08	09	
May	307	437	194	319	310	313	307	437	194	319	310	313
June	565	598	427	626	549	553	872	1035	621	945	859	866
July	612	646	513	586	613	594	1484	1681	1134	1531	1472	1460
August	546	576	588	536	619	573	2030	2257	1722	2067	2091	2033
September	473	264	417	260	295	342	2503	2521	2139	2327	2386	2375
October	121	109	201	105	118	131	2624	2630	2340	2432	2504	2506
November	18	10	24	16	6	15	2642	2640	2364	2448	2510	2521

# 2009 Research Reports

**Disclaimer Clause:**

**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 University System is implied. Readers should realize that results from field experiments do not represent conclusive evidence that the same response would occur where conditions vary.**



### **Developing a Sampling Protocol and Economic Threshold for Pod Rot of Peanut**

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**Cooperators:** Mr. Jimbo Grissom and Mr. Tommy Mason

#### **Summary:**

The scouting protocol portion of this trial intensely monitored two area peanut fields by sampling 101 random locations weekly. At each location, the sample consisted of 1.5 row feet of peanut pegs and pods. Peg rot was first observed in the Gaines County field 6 July 2009; in the Terry County field 26 July. The incidence of pod rot increased in both field through mid-August, reaching highs between 8 and 10 percent. From late July through 10 August, pod rot was severe when present. However, the next week, when disease had peaked for the summer, pod rot was a mixture of severely rotted and superficially rotted pods. From that point forward, most of the new infections appeared superficial, and most of the severely rotted pods were from old infections. Fungicide applications were applied in the Mason Field, Terry County, based on the grower's practice or one of three thresholds. These thresholds were two to three percent infestation as a low threshold, four to five percent as a medium threshold and six percent for a high threshold. The grower based treatment and the medium threshold each received two chemical applications, while the low threshold received three treatments and the high threshold only received one treatment. Chemicals utilized in the treatments were Abound FL or Ridomil Gold plus Provost. Pod rot protection was best with the producer timed application (the earliest that went out) and the low threshold treatment. The delay in the first application was associated with poorer control. Plots were dug and inverted on 16 October. Plots were harvested on 28 October 2009. An analysis was done comparing the seven fungicide treatments with pod rot,

averaged from 29 July through 23 August, yield, percentage of extra large kernels, grade, percentage of damaged kernels, and value of the crop (minus fungicide costs) per acre. There were significant differences between treatments in some grade categories and in yield. However, when chemical costs were subtracted from the value per acre, there were no significant differences.

### **Objective:**

Pod rot of peanut is significant disease in the Texas South Plains. Producers and crop consultants have listed it as a major problem. Pod rot is difficult and time consuming to scout for, due to its clumped occurrence in fields. Producers who have a history of pod rot will make chemical treatments based on the calendar. The first objective of this project was to determine the optimal number of samples to collect in a peanut field to best describe the extent of peanut pod rot infestation. The second objective is to develop an economic threshold for peanut pod rot in the Texas South Plains region.

### **Materials and Methods:**

#### **Sampling Protocol**

Two fields with a history of pod rot were scouted at weekly intervals, starting on 6 July 2009 (Grissom field, Gaines County) and 15 July 2009 (Mason field, Terry County). At each sampled point, 1.5 ft. of row was dug, and if any pods or pegs were found with symptoms of rot, then all the pegs and pods were counted, and any pegs or pods with discoloration were transported back to the laboratory for counting and fungal isolation. The percentage of symptomatic pegs and pods was determined for each sampling location. As the peanuts shifted to having more pods than pegs, eventually only pods with symptoms were counted and pegs were not. Sampling continued through mid-September.

At the Grissom field, 101 points were selected at random each week within the 120-acre field for sampling. At the Mason field, seven chemical treatments were imposed over a 168-row study area. Within this area, there were three replications of each treatment. This field was planted in a circular row pattern, on one-fourth of the pivot (30 acres), therefore plot lengths were not the

same. A total of 101 random points were selected each week for evaluation in the test area, with a minimum of 3 to a maximum of 7 points within each 8-row plot. As the plots got longer, more points were sampled per plot.

### **Developing an Economic Threshold for Pod Rot of Peanut**

Chemical applications to aid in developing an economic threshold for pod rot of peanut were conducted on the Mason field in Terry County. Plots were eight rows wide and of varying lengths, due to the circular row pattern. The timing of chemical applications involved seven treatments, based on either a calendar application or a trigger based on the percent infected pods.

#### **The fungicide treatments were as follows:**

**AA:** Abound FL applied twice at the producer's normal time (based on a calendar schedule)

**RR:** Ridomil Gold EC + Provost applied twice at the producer's normal time (calendar schedule)

**AR:** Abound FL applied once and Ridomil Gold EC + Provost applied once (calendar schedule)

**LT:** Low threshold, RR applied 3 times based on a threshold of 1-2% pod rot

**MT:** moderate threshold, RR applied 2 times based on a threshold of 3-4% pod rot

**HT:** high threshold, Abound FL was applied one time, based on a threshold of 5-6% pod rot

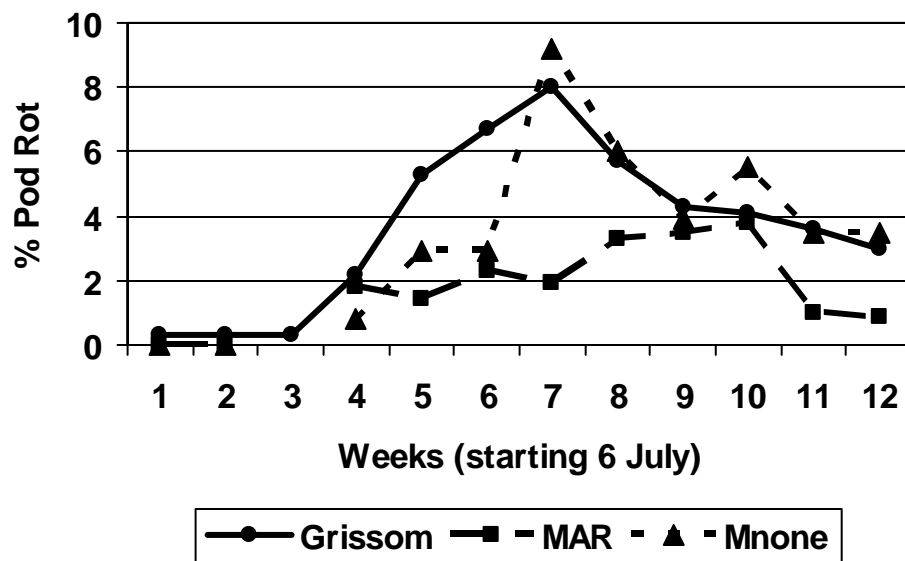
**N:** no fungicide applied.

### **Results and Discussion:**

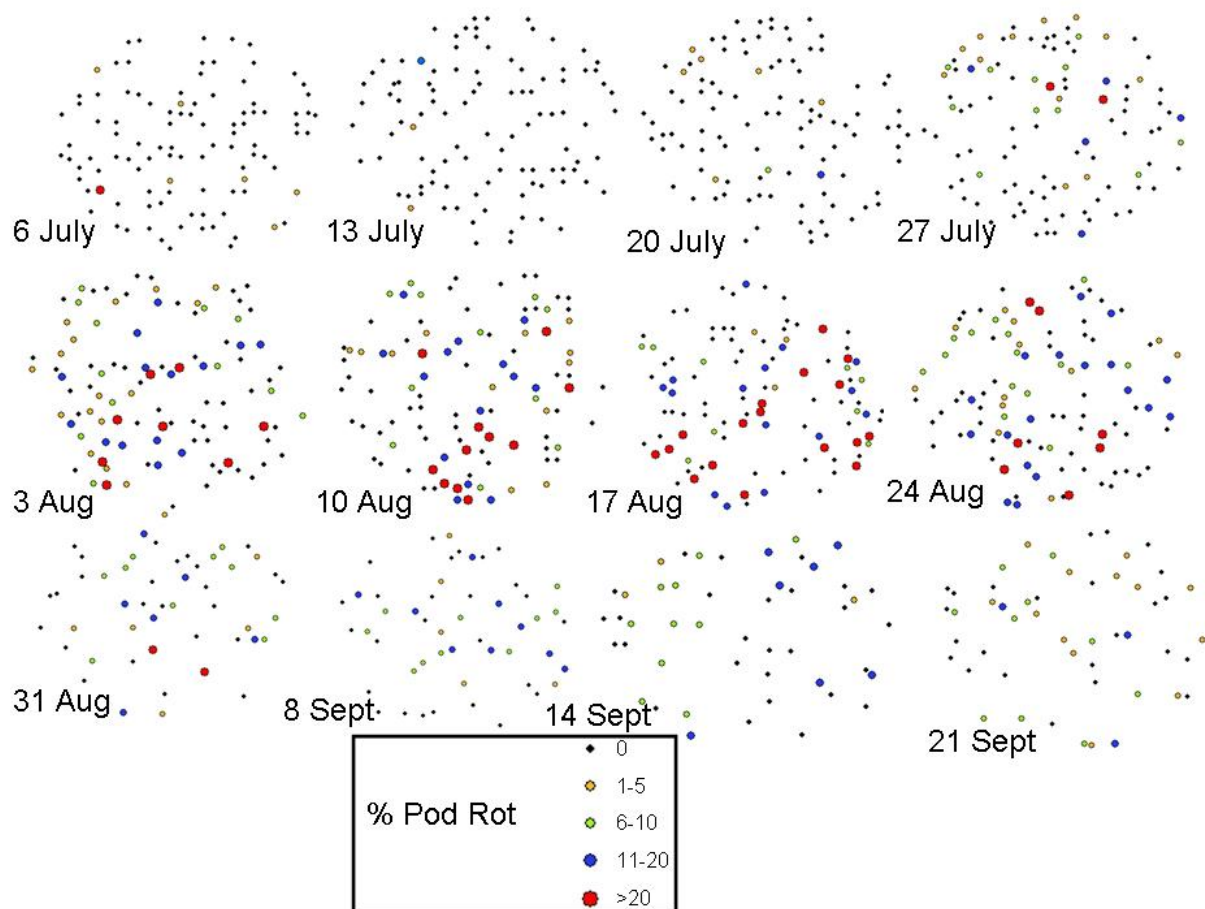
At both fields, pod rot began to increase during the week of the 27<sup>th</sup> of July and increased through the week of 17 August (*Fig. 1*). There was a dramatic change in symptoms during the week of 17 August. Prior to that sampling week, pod rot symptoms had been characteristic of *Pythium*, with a very black, soft rot, and every pod with symptoms was completely consumed by the rot. However, from 17 August onwards, in both fields, a percentage of pods were identified with a more superficial rot, often of a lighter color. *Rhizoctonia* was only isolated in low frequencies from the Mason field, and hardly ever from the Grissom field, so it is likely that the more superficial discolorations were caused by unsuccessful *Pythium* attacks. *Pythium* was isolated from rotted pods frequently during this study. The rating during the week of 17 August included both rotted and superficially rotted pods. However, after that week, two categories were created, and only those pods with significant rot were included in the pod rot category. Pod rot

decreased gradually from a high of 8% on 17 August to 3% by 21 September for the Grissom field (*Fig. 1*). Newly infected pods were identified weekly, but after 17 August, most of the rotted pods were due to old infections. All sampling points for the Grissom field are seen in *Figure 2*.

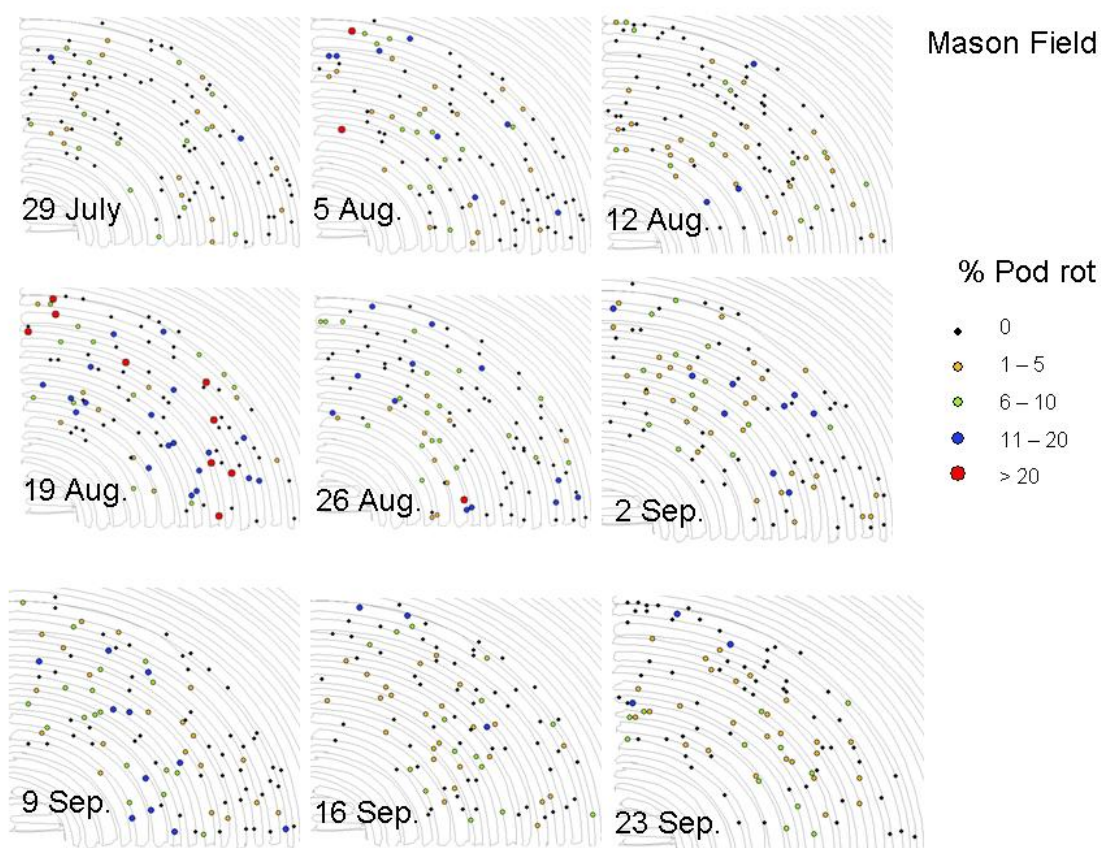
In the Mason field, there were seven different treatments that were mapped weekly. Mason A/R (Abound FL applied initially, followed by Ridomil Gold + Provost applied for the second application) was one of the most effective at reducing pod rot, while the treatment with no fungicide had more pod rot, particularly from 19 August through the rest of the season (*Fig. 1*). An analysis was done comparing the seven fungicide treatments with pod rot, averaged from 29 July through 23 August, yield, percentage of extra large kernels, grade, percentage of damaged kernels, and value of the crop (minus fungicide costs) per acre. Percent pod rot was higher for the no fungicide treatment and for the moderate and high thresholds than for the calendar applied treatments (*Table 1*). The low threshold had less pod rot than the no fungicide treatment, but was not significantly different than the other treatments (*Table 1*). The percent of extra large kernels was lowest for the no fungicide treatment compared with all but the high threshold treatment (*Table 1*). Grades were higher for the calendar treatment with Abound FL applied twice, than for the no fungicide treatment (*Table 1*). The percent damaged kernels was lower for the Abound FL calendar treatment applied twice than for the no fungicide and high threshold treatments (*Table 1*). Yield was higher for the calendar treatment with Abound FL, rotated with Ridomil Gold + Provost, and for the low threshold treatment compared to the no-fungicide treatment (*Table 1*). However, once fungicide costs were subtracted for each treatment, the gains in yield were offset by cost of products, and there were no treatment differences for value of the crop (dollars /acre) (*Table 1*). All sampling points are seen in *Figure 3*, once pod rot was found. Prior to 29 July, pod rot had not been seen.



**Figure 1.** Percent pod rot based on weekly sampling at the Grissom field (●), Mason field with Abound FL/Ridomil Gold + Provost (MAR) fungicide treatment (■), and Mason field with no fungicide treatment (none) (▲).



**Figure 2.** Location of sampling points at the Grissom field during the 2009 season, and amount of pod rot present at each point.



**Figure 3.** Location of sampling points during weeks when pod rot was identified at the Mason field in 2009.

**Table 1. Affect of fungicide treatment on pod rot, yield, and value of the crop/acre.**

<b>Treatment<sup>a</sup></b>	<b># of sprays</b>	<b>% Pod rot<sup>b</sup></b>	<b>% ELK<sup>d</sup></b>	<b>Grade</b>	<b>%DK<sup>e</sup></b>	<b>Yield Lbs/a</b>	<b>Fungicide Costs (\$/a)<sup>f</sup></b>	<b>Value<sup>g</sup> \$/acre</b>
AA	2	1.8 c <sup>c</sup>	43 a	70.4 a	0.4 b	5,653 ab	60.54	964
AR	2	2.0 c	42 a	69.8 ab	0.5 ab	5,851 a	67.29	984
RR	2	1.8 c	44 a	68.7 ab	0.7 ab	5,486 ab	74.04	910
LT	3	2.6 bc	43 a	69.6 ab	0.5 ab	5,876 a	111.06	948
MT	2	3.6 ab	42 a	69.6 ab	0.9 ab	5,769 ab	74.04	956
HT	1	3.5 ab	40 ab	69.5 ab	1.0 a	5,584 ab	30.27	966
None	0	3.8 a	35 b	66.8 b	1.0 a	5,346 b	0	917

<sup>a</sup>AA is Abound FL applied twice during the season based on calendar dates decided by the producer. AR was similar to AA, except Abound FL was applied on the first application and Ridomil Gold + Provost was applied on the second application. RR was similar to AR except Ridomil Gold + Provost was applied for both applications. LT stands for low threshold and Ridomil Gold + Provost was applied three times during the season when the pod rot threshold initially reached 1-2%, and then at least once every three weeks if pod rot was > 2%. MT was a moderate threshold, where Ridomil Gold + Provost were applied when pod rot initially reached 3-4%, and then a second application was made three weeks later when the pod rot was still around 4%. HT is high threshold, and Abound FL was applied when pod rot reached 5-6% initially. None indicates no fungicides for pod rot were applied.

<sup>b</sup>%Pod rot was combined across sampling dates from 29 July through 23 September.

<sup>c</sup>Letters that are different indicate that treatments were significantly different at  $P < 0.05$ .

<sup>d</sup>ELK = extra large kernels.

<sup>e</sup>DK = damaged kernels.

<sup>f</sup>Abound FL was applied at 24.6 oz/acre banded over 20-inch row spacing, with a cost of \$315/gallon. Ridomil Gold was applied at 8 oz/acre, at a cost of \$795/gallon, and Provost was applied at a rate of 10.7 oz./acre, at a cost of \$291.50/gallon.

<sup>g</sup>Value/acre is the (%ELK x \$0.35/ton) + (grade x \$4.949/ton) + (% other kernels x \$1.4/ton) – (\$3.40/ton if %DK = 2%) – fungicide costs/acre.

**Table 2. Percent pod rot for each fungicide treatment at the Mason field over time.**

Trt <sup>a</sup>	7/29	8/5 <sup>b</sup>	8/12	8/19	8/26	9/2	9/9	9/16	9/23
AA	1.0	4.0	1.0	7.9	1.4	0.5	0.6	1.1	0.5
AR	1.8	1.4	2.3	1.9	3.3	3.5	3.8	1.0	0.9
RR	0.7	4.1	1.5	4.4	1.3	1.9	2.6	1.3	1.8
LT	2.1	3.6	1.7	6.7	3.5	2.5	2.7	0.9	2.4
MT	3.0	2.7	2.1	7.5	5.1	3.5	4.5	4.1	3.1
HT	2.5	4.3	2.6	7.1	4.8	4.8	4.3	2.6	2.2
None	0.8	2.9	2.9	9.2	6.0	3.9	5.5	3.5	3.5

<sup>a</sup>AA is Abound FL applied twice during the season based on calendar dates decided by the producer. AR was similar to AA, except Abound FL was applied on the first application and Ridomil Gold + Provost was applied on the second application. RR was similar to AR except Ridomil Gold + Provost was applied for both applications. LT stands for low threshold and Ridomil Gold + Provost was applied three times during the season when the pod rot threshold initially reached 1-2%, and then at least once every three weeks if pod rot was > 2%. MT was a moderate threshold, where Ridomil Gold + Provost were applied when pod rot initially reached 3-4%, and then a second application was made three weeks later when the pod rot was still around 4%. HT is high threshold, and Abound FL was applied when pod rot reached 5-6% initially. None indicates no fungicides for pod rot were applied.

<sup>b</sup>*Pythium* was isolated from the majority of pods tested and from all samples with pod rot, but *Rhizoctonia* was isolated from three samples on 5 Aug, from 3 samples on 12 Aug., four samples on 19 Aug., three samples on 2 Sept., six samples on 9 Sept., four samples on 16 Sept., and two samples on 23 Sept.

**Table 3. Percent pod rot and frequency of pod rot from the Grissom field over time.**

Date	% Pod rot	% Samples With pod rot
7/6	0.3	6.9
7/13	0.3	3.0
7/20	0.3	7.9
7/27	2.2	29.7
8/3	5.3	50.5
8/10	6.7	48.0
8/17	8.0	43.6
8/24	5.7	50.5
8/31	4.3	48.0
9/8	4.1	48.0
9/14	3.6	44.0
9/21	3.0	52.0

\**Rhizoctonia* was isolated from 1 sample on 8/10, and from one sample on 9/21. *Sclerotium rolfsii* was isolated from one sample on 9/21. *Pythium* was isolated from rotted pods at all sampling times when rotted pods were found.

**Table 4. Timing of fungicide sprays at the Mason and Grissom fields.**

<b>Field</b>	<b>Treatment</b>	<b>Spray 1</b>	<b>Spray 2</b>	<b>Spray 3</b>
Grissom	Abound FI, followed by Ridomil	7 July	28 July	
Mason	Calendar sprays (AA, AR, RR)	25 July	19 Aug	
Mason	Low Threshold	31 July	29 Aug	10 Sept.
Mason	Moderate Threshold	7 Aug	10 Sept.	
Mason	High Threshold	19 Aug		

### **Acknowledgments:**

Texas ArgiLIFE would like to thank Mr. Jimbo Grissom and Mr. Tommy Mason for cooperation in this project. Thanks are also expressed to Syngenta and Bayer Crop Science for providing chemical for fungicide treatments. Funding for this research was provided by a grant through Texas Peanut Producers Board.

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## **Peanut Tolerance to Valor Herbicide Applied Preemergence at Seminole, TX, 2009**

Cooperator: Chuck Rowland

Manda Cattaneo - IPM Agent, Gaines County

Peter Dotray - Professor

Lyndell Gilbert - Technician II

### **MATERIALS AND METHODS:**

Plot Size:	24 rows by 200 feet, 4 replications
Soil type:	Sandy loam
Planting Date:	April 29
Variety:	Flavorrunner 458
Application Date:	Preemergence, May 5
Digging Date:	October 6
Harvest Date:	October 28

### **RESULTS AND DISCUSSION:**

Valor SX was registered for use in peanut in 2001. According to the Valor SX label, weeds controlled include kochia, common lambsquarter, several pigweed species including Palmer amaranth, golden crownbeard, and several annual morningglory species including ivyleaf morningglory. Valor SX may be applied prior to planting or preemergence. Preemergence applications must be made within 48 hours after planting and prior to peanut emergence. Applications made after plants have begun to crack or after they have emerged may result in severe injury. Splashing from heavy rains or cool conditions at or near emergence may also result in injury and even delayed maturity and yield loss. In 2009, several studies were conducted across the High Plains to gain experience and confidence with this relatively new peanut herbicide. At this location in west Gaines County (Mr. Chuck Rowland), Flavorrunner 458 was planted on April 29, and Valor SX at 3 ounces per acre (oz/A) was applied on May 5. Irrigation totaling 1 inch was applied (0.5 inches followed by 0.5 inches) immediately after the herbicide application. An untreated control was used for comparison purposes. Plant stand and peanut injury was evaluated on May 21 (16 days after application) and no difference was observed between the non-treated control and the Valor-treated plots (Table 1). Peanut canopy width was recorded on May 21, June 3, June 22, and September 9. No canopy width differences were noted between the Valor-treated and the non-treated control (Table 1). Peanuts were dug on October 6 and harvested with a small-plot peanut thrasher on October 28. Peanut yield following Valor SX at 3 oz/A was 6174 lb/A and was not different from the non-treated control (6367 lb/A). Grade was also evaluated and there was no difference when the Valor-treated were compared to the non-treated control. Results from this study and several others across the High Plains suggest that Valor is a safe option to peanut producers in our region. Although peanut injury has been observed in other states and in the High Plains when rates exceeded labeled recommendations, we feel that this herbicide is a good option for peanut growers for early-season weed control (4 to 6 weeks of soil residual activity).

Table 1. Peanut injury and yield as affected by Valor applied preemergence in Seminole, TX, 2009<sup>a</sup>.

Treatment	Rate	Prod.	Timing	Stand	Peanut Injury	Peanut Canopy Width				Yield	Grade
				May 21	May 21	May 21	Jun 3	Jun 22	Sep 9		
	lb ai/A	oz/A		Plants/3ft.	%	-----inches-----				lb/A	
Non-treated	---	---	---	10.2	0	4.5	5.6	15.9	39	6367	76
Valor SX	0.096	3	PRE	10.5	0	4.3	5.3	15.3	39.9	6174	76
CV				1.79	0.0	4.81	4.35	6.58	6.06	5.31	1.71
pValue				0.1273	1.0000	0.3004	0.1703	0.4500	0.6112	0.4715	1.0000
LSD <sub>(0.10)</sub>				NS	NS	NS	NS	NS	NS	NS	NS

<sup>a</sup>Abbreviations: NS, non-significant; PRE, preemergence



## **Developing an Action Threshold for Thrips in the Texas High Plains-2009**

**Cooperators: Tyler Black, Tim Black, Chuck Rowland, Bruce Turnipseed, Justin Crownover - Cotton Growers / Stephen Cox – Private Consultant / Texas AgriLife Extension Service**

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Extension Entomologist-Cotton, Research Entomologist-Cotton, Extension  
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Hockley/Cochran Counties, EA-IPM Crosby County**

### **South Plains & High Plains**

#### **Summary:**

In the Texas High Plains and most of the cotton growing areas of the United States thrips are a dominating pest during the pre-squaring stage of cotton. The most dominate thrips species affecting irrigated cotton fields on the Texas High Plains is the western flower thrips, *Frankliniella occidentalis* (Pergande). This was the third year conducting this study. The purpose of this study was to determine at what population density western flower thrips should be subjected to control tactics to prevent yield reduction and significant delayed maturity, to compare two action thresholds for thrips, and to determine whether there is a relationship thrips induced yield reduction and temperature. This study was conducted in irrigated cotton across the Texas High Plains. Based on limited data; it appears that when the daily maximum temperature is at or below 83° F for a 4-5 day period, the current action threshold of 1 thrips/true leaf appears to be too high and that a better threshold should probably be about 0.5 thrips/true leaf. When the daily maximum temperature is > 83° F, the current action threshold of 1 thrips/leaf appears to be acceptable or possibly too high when temperatures exceed 90° F.

#### **Objective:**

To determine at what population density western flower thrips should be subjected to control tactics to prevent yield reduction and significant delayed maturity, to compare two action thresholds for thrips, and to determine whether there is a relationship thrips induced yield reduction and temperature.

## Materials and Methods:

This study was conducted in irrigated cotton in Bailey County in 2007, in Bailey, Crosby, Gaines, Hale, Hockley and Lubbock counties in 2008, and in Gaines, Lubbock and Hale counties in 2009. In 2007-08, plots at all locations were 2-rows wide  $\times$  100-ft long, while in 2009 all plots were 4-rows wide  $\times$  100-ft. Plots were arranged in a RCB design with 4 replicates. The foliar treatment regimes are outlined in (Table 1). These treatments were simply a means of manipulating the thrips populations at different times in an attempt to focus on when thrips feeding is most damaging.

All foliar sprays consisted of Orthene 97 (acephate) applied at 3 oz-product/acre with a CO<sub>2</sub> pressurized hand boom calibrated to deliver 10 gallons/acre. Thrips were counted weekly by counting the number of larvae and adult thrips from 10 plants per plot. Whole plants were removed and inspected in the field. Each plot was harvested in entirety in 2007, using a stripper with a burr extractor, and a 1/1000th acre portion was harvested from each plot using an HB hand stripper from tests in 2008-09. Data were analyzed using linear regression models and PROC MIXED with means separated using an F protected LSD ( $P \leq 0.05$ ) (SAS Institute 2003).

## Results and Discussion:

In 2007, we only had one test site. At this location the thrips numbers were relatively low throughout the test period (Figure 1A). The thrips did not exceed the action threshold in the untreated plots until week 3. All of the treatment regimes that were sprayed during week 1 yielded significantly more lint than the untreated (Figure 1B), although the thrips populations were below 0.5 thrips/plant during this period (Figure 1A). Although both of the threshold treatment regimes were sprayed at the same time, and did not differ from each other, the threshold regime that did not depend on the occurrence of thrips larvae yielded significantly more than the untreated. The treatment regime sprayed on weeks 2 and 3 failed to produce significantly more lint than the untreated.

There was a significant correlation between yield and thrips density at week 2 or 1 true leaf stage (Figure 2A) and week 3 or 2 true leaf stage (Figure 2B). Week 3 exhibited the closest correlation with an  $R^2=0.97$  probably because it represents cumulative damage over the entire time period. On both graphs yield reduction appeared to level off at approximately 1 thrips per plant. At the 1 true leaf stage, the decline in yield appeared to lessen at approximately 0.5 thrips/plant (Figure 2A) while at the 2 true leaf stage yield reduction appeared to lessen at about 1 thrips per plant (Figure 2B). Regardless of growth stage, 0.5 thrips/true leaf appears to be the most suitable threshold in this test, which is 50% of the current recommended threshold.

For the 2008 tests, the data for thrips densities and yields were pooled across locations for presentation. Additionally, yields were normalized across locations to account for variation due to other factors. Overall thrips densities were higher in 2008 than in 2007, particularly during the first 2 weeks of development (Figure 3A). There were significant differences in the thrips populations among treatments during weeks 2 and 3. Invariably, plots receiving an insecticide application the previous week tended to have lower thrips numbers than those that were not treated. Despite higher thrips numbers, unlike 2007 there were no significant differences in yield across tests when pooled, or by test that could be attributed to thrips damage despite obvious injury due to thrips at several locations (Figure 3B). Similarly, regression analyses of the 2008 data could not detect any significant relationships between thrips density and yield.

The lack of impact of thrips on yield in 2008, despite higher thrips densities during the first few weeks of plant development (critical time period based on 2007), appears to be related to temperature and subsequent rapidity of plant growth (Table 2). Although sites such as Hale County in 2008 had temperatures similar to those experienced at week 1 in Bailey County in 2007, cool temperatures were short lived and subsequent temperatures were much warmer.

In 2009, thrips density at our test sites were lower than desired with the highest numbers being encountered at the Hale County site where thrips density approached 1.5, 1.75 and 0.4 thrips/plant during weeks 1, 2, and 3 respectively (Figure 4A). Additionally temperatures at Hale County were initially cool with lows and highs of 56 and 74 °F, but warmed considerably within a few days (Table 2). Although yield differences could not be detected among the various treatments, significant correlations for thrips density and yield were observed. The best correlation occurred at week 2 (Figure 4B). Based on this correlation, the highest yields were observed when thrips averaged approximately 1.5/plant. At week 2 the cotton was at the 2 true leaf stage and the recommended threshold at this time is 2 thrips/plant. Thus it appears that the recommended thrips threshold may be slightly too high under these circumstances.

When looking at thrips densities pooled across locations in 2009, the overall thrips density was lower than in 2008 (Figure 5A). These values were especially suppressed by data from the Gaines County site which had very low thrips numbers. Similar to 2008, we could not detect any differences in yield within sites or across sites, however, unlike 2008 significant correlations between pooled thrips density and pooled normalized yields were observed. When thrips density for week 3 and yield for 2009 are regressed, a highly significant correlation is observed (Figure 5B). This suggests that thrips populations at any one period in time during 2009 were too low to impact yield, but since week 3 represents an accumulation of damage over a 3 week period, a trend towards yield loss did occur. In this model, yield declines until thrips reach 0.5 to 1.0 thrips/plant. Due to the cumulative damage effect, it is difficult to identify a specific action threshold based on this data, but it appears that thrips populations should be maintained at least below 1 thrips/plant.

### **Acknowledgments:**

Appreciation is expressed to Cotton Incorporated, Texas State Support, and Plains Cotton Growers, Inc. for financial support of this project.

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<b>Table 1. Foliar treatment regime timings.</b>			
	2007	2008	2009
1) Untreated check	X	X	X
2) Automatic treatment on week 1	X	X	X
3) Automatic treatment on weeks 1 and 2 (only week 2 in 2008)	X		X
4) Automatic treatment on weeks 1, 2 and 3	X	X	X
5) Automatic treatment on week 2		X	X
5) Automatic treatment on weeks 2 and 3	X	X	X
6) Treatment based on the Texas AgriLife Extension Threshold <sup>a</sup>	X	X	X
7) Treatment based on the above threshold with 30% larvae	X	X	
<sup>a</sup> One thrips per plant from plant emergence through the first true leaf stage, and one thrips per true leaf thereafter until the cotton has 4 to 5 true leaves			

<b>Table 2. Test sites plant growth and climatic conditions.</b>				
<b>County</b>	<b>Week 1</b>	<b>Week 2</b>	<b>Week 3</b>	<b>Week 4</b>
	<b>Growth stage</b>	<b>Growth stage</b>	<b>Growth stage</b>	<b>Growth stage</b>
	<b>Avg Temp °F (min-max)</b>	<b>Avg Temp °F (min-max)</b>	<b>Avg Temp °F (min-max)</b>	<b>Avg Temp °F (min-max)</b>
<b>2007</b>				
Bailey	Cotyledon	1 true leaf	2 true leaves	4 true leaves
	52-79	54-82	57-82	56-86
<b>2008</b>				
Bailey	Cotyledon	2 true leaves	4 true leaves	6 true leaves
	68-100	61-93	62-97	62-90
Crosby	Cotyledon	2 true leaves	5 true leaves	--
	68-102	66-95	67-98	--
Gaines	Cotyledon	1 true leaf	2 true leaves	5 true leaves
	59-95	63-91	68-102	65-95
Hale	Cotyledon	1 true leaf	3 true leaves	5 true leaves
	56-74	58-93	57-93	60-94
Hockley	Cotyledon	2 true leaves	4 true leaves	6 true leaves
	67-103	64-95	67-100	63-90
Lubbock	Cotyledon	2 true leaves	4 true leaves	5 true leaves
	61-91	68-96	65-95	70-99
<b>2009</b>				
Gaines	Cotyledon	2 true leaves	4 true leaves	6 true leaves
	56-81	59-87	65-93	--
Hale	Cotyledon	2 true leaves	4 true leaves	5 true leaves
	56-74	58-88	61-93	--
Lubbock	Cotyledon	2 true leaves	4 true leaves	5 true leaves
	58-82	58-82	58-88	64-92

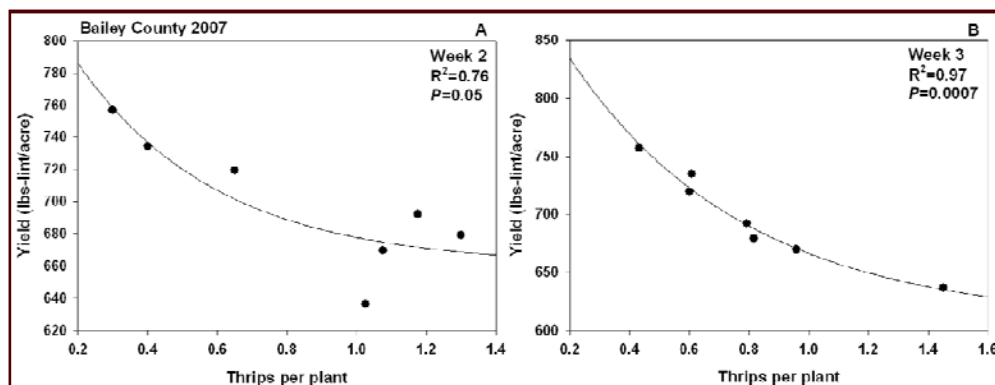
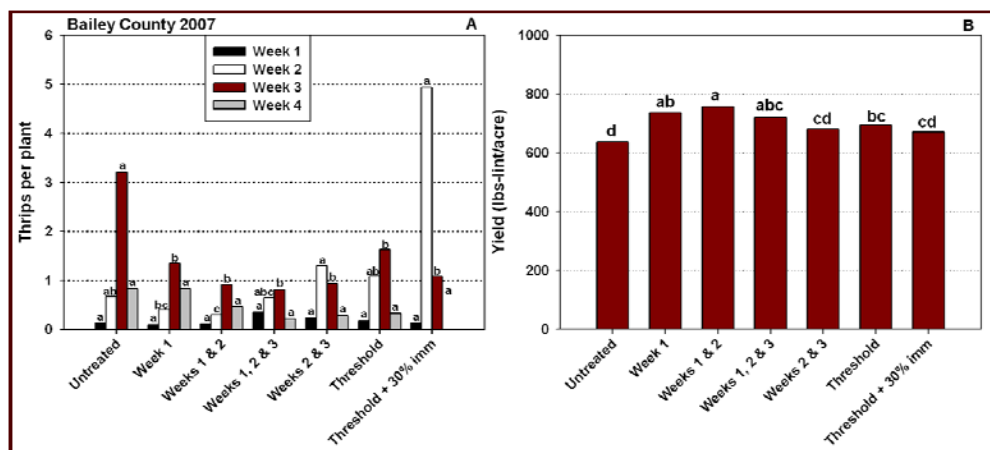


Figure 2. Linear relationship between thrips per plant and yield

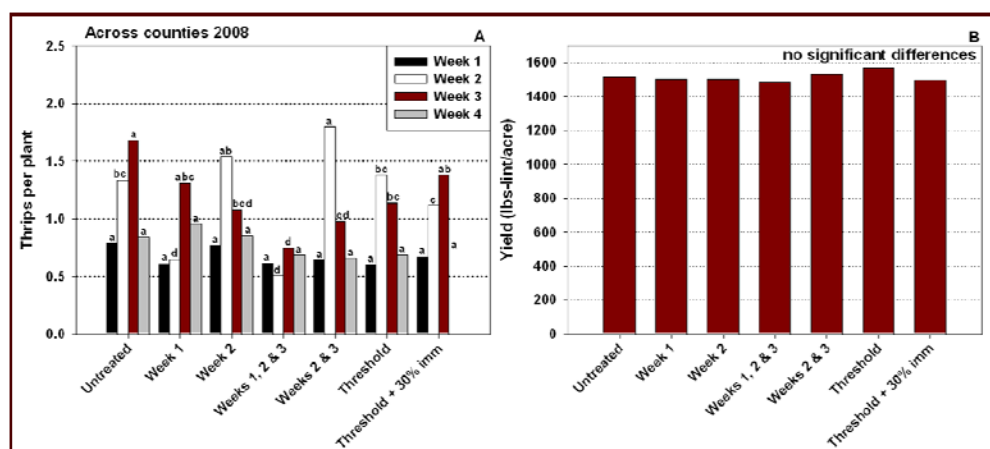


Figure 3. (A) Number of thrips per plant at various treatment regimes. (B) Yield of cotton exposed to various treatment regimes for thrips. Same colored bars capped with the same letter are not significantly different based on LSMEANS and a  $F$  protected (LSD,  $P < 0.05$ ).

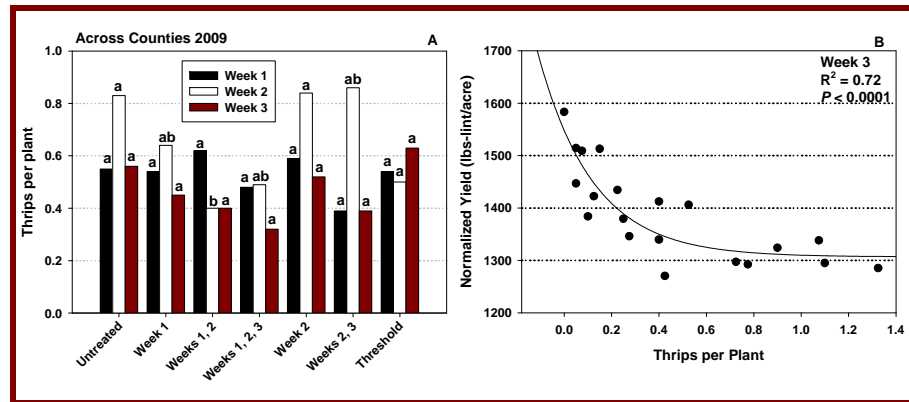


Figure 4. (A) Number of thrips per plant at various treatment regimes; same colored bars capped with the same letter are not significantly different based on LSMEANS and a  $F$  protected (LSD,  $P < 0.05$ ). (B) Linear relationship between thrips per plant and yield.

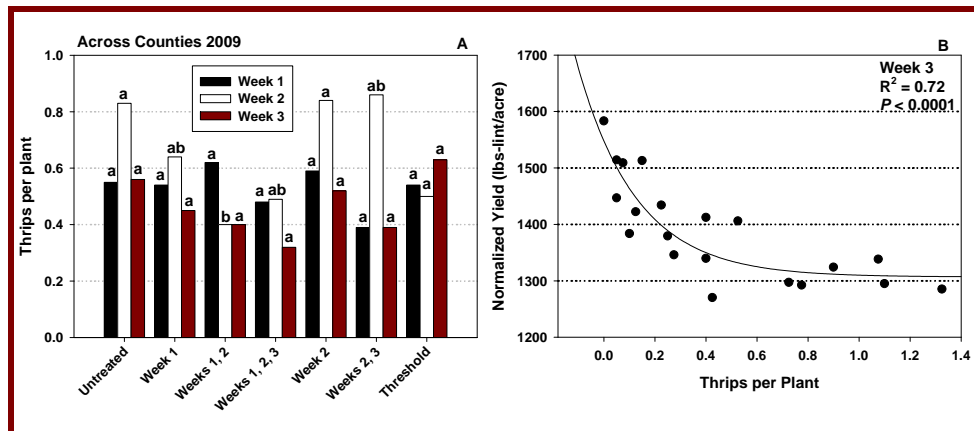


Figure 5. (A) Number of thrips per plant at various treatment regimes; same colored bars capped with the same letter are not significantly different based on LSMEANS and a  $F$  protected (LSD,  $P < 0.05$ ). (B) Linear relationship between thrips per plant and yield.



**Boll Damage Survey of Bt and Non-Bt Cotton Varieties  
in the South Plains Region of Texas 2007-09**

**Cooperators: Texas AgriLife Extension Service**

**David Kerns, Monti Vandiver, Emilio Nino, Tommy Doederlein, Manda Cattaneo,  
Greg Cronholm, Kerry Siders, Brant Baugh, Scott Russell and Dustin Patman  
Extension Entomologist-Cotton, EA-IPM Bailey/Parmer Counties, EA-IPM  
Castro/Lamb Counties, EA-IPM Lynn/Dawson Counties, EA-IPM Gaines County,  
EA-IPM Hale/Swisher Counties, EA-IPM Hockley/Cochran Counties, EA-IPM  
Lubbock County, EA-IPM Terry/Yoakum Counties and EA-IPM Crosby/Floyd  
Counties**

**South Plains**

**Summary:**

Late-season boll damage surveys were conducted in 2007, 2008 and 2009 to evaluate the amount of Lepidoptera induced damage in Bt cotton varieties relative to non-Bt cotton varieties. Additional, data was collected on the number of insecticide applications required for these varieties to manage lepidopterous pests, and the number of bolls damaged by sucking pests in 2009. Boll damage was light in 2007; however, more damaged bolls were found in the non-Bt fields (3.11%) than in the Bollgard (0.52%) and Bollgard II (0.25%) fields, but did not differ from the Widestrike fields (1.29%). Very few insecticide applications were made targeting bollworm in any of the 2007 survey fields and there were no significant differences among variety types. None of the Bt cotton fields were treated for bollworms, whereas 9% on the non-Bt field received a single insecticide application. Late season bollworm damage in 2008 was similar to 2007. All of the Bt cotton variety types had significantly fewer damaged bolls than the non-Bt varieties and none of the Bt varieties required insecticide applications for lepidopterous pests, but unlike 2007, more non-Bt cotton was treated for bollworm and/or beet armyworms in 2008 (41% of the fields received a single insecticide application). In 2009, none of the surveyed fields were treated for lepidopterous pests. Worm damaged bolls were 2.83, 0.13 and 0.40% in non-Bt, Bollgard II and Widestrike varieties respectively. There were no differences among the variety types in sucking bug damaged which averaged 1.96% across all varieties.

**Objective:**

The objective of this study was to compare the qualitative value of Bollgard II, Widestrike and Bollgard insect control traits in grower fields relative to each other and to non-Bt

cotton varieties.

## **Materials and Methods:**

In 2007, 2008 and 2009, boll damage surveys were conducted to quantify bollworm damage in late season Bt and non-Bt cotton varieties. Although the source of the damage is not certain, most of it is suspected to have come from cotton bollworms although beet armyworms were present in some fields in 2008, and fall armyworms were present in 2009. Two of the non-Bt were treated for a mixed population of bollworms and beet armyworms in Bailey County in 2008, and non-Bt field in Gaines County in 2009 contained about 20% fall armyworms and 80% bollworms. The survey was conducted late season because Bt levels in mature/senescent cotton tends to deteriorate relative to rapidly growing plants. Thus, late season would represent the time period when Bt levels would be less intensely expressed and damage would be more likely to occur.

Grower fields of non-Bt, Bollgard, Bollgard II and Widestrike cotton were sampled throughout the South Plains region of Texas (Table 1). Samples were taken after the last possible insecticide applications and before approximately 20% of the boll were open. Three distinct areas were sampled within each field, and 100 consecutive harvestable bolls were sampled from each location. Each field by variety type served as a replicate. Bolls were considered damaged if the carpal was breached through to the lint. The insecticide history in regard to insecticides targeting bollworms was recorded. In addition to bollworm damage, external Lygus and/or stinkbug damage to bolls was sampled for in most fields in 2009.

All data were analyzed using PROC MIXED and the means were separated using an F protected LSD ( $P \leq 0.10$ ).

## **Results and Discussion:**

In 2007, damage was very light across all of the field types. However, more damaged bolls were found in the non-Bt fields (3.11%) than in the Bollgard (0.52%) and Bollgard II (0.25%) fields, but did not differ from the Widestrike fields (1.29%) (Table 2). Damage in the Widestrike fields did not differ from the Bollgard and Bollgard II fields. The fact that Widestrike did not differ from the non-Bt fields does not appear to indicate a lack of efficacy, but probably indicates a lack of area wide bollworm pressure. Very few insecticide applications were made targeting bollworm in any of the 2007 survey fields and there were no significant differences among variety types. None of the Bt cotton fields were treated for bollworms, whereas 9% on the non-Bt field received a single insecticide application.

Late season bollworm damage in 2008 was similar to 2007. All of the Bt cotton variety types had significantly fewer damaged bolls than the non-Bt varieties (Table 3). There were no differences in boll damage among the Bt types. Similar to 2007, none of the Bt varieties required insecticide applications for bollworms, but unlike 2007, more non-Bt cotton was treated for bollworms and/or beet armyworms in 2008 (41% of the fields received a single insecticide application).

Bollworm populations were exceptionally light during 2009 with the exception of Gaines County. Both Bollgard II and Widestrike varieties suffered very low damage to boll feeding lepidopterous pest in 2009 and had significantly fewer damaged bolls than the non-Bt varieties (no Bollgard fields were sampled in 2009) (Table 4). There were no differences in damaged bolls between the Bt types, and there were no differences

among any of the varietal types in sucking bug damage. None of the fields sampled in the 2009 survey were treated for lepidopterous pests. Much of the South Plains had significant acreage of late-planted grain sorghum and corn, and these crops tended to act as trap crops, essentially preferentially attracting bollworms and fall armyworms away from the cotton.

Based on these data, Bt cotton appears to continue to be highly effective in preventing boll damage by lepidopterous pests in the South Plains region of Texas.

**Acknowledgments:**

Appreciation is expressed to the Monsanto Company for financial support of this project and the Plains Cotton Growers, Inc. for financial support of this project.

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Table 1. Number of fields sampled by county and Bt trait in 2007-09.

County	Non-Bt	Bollgard	Bollgard II	Widestrike
Year 2007				
Bailey	0	3	1	0
Castro	4	0	3	0
Dawson	1	3	2	4
Floyd	3	0	4	0
Gaines	0	0	0	1
Hale	7	0	6	3
Hockley	3	2	2	2
Lubbock	1	5	2	1
Parmer	2	1	0	1
Terry	1	0	3	4
TOTAL	22	14	23	16
Year 2008				
Bailey	5	0	5	0
Castro	6	0	6	1
Dawson	0	0	0	2
Gaines	4	0	3	10
Hale	3	0	2	1
Hockley	5	5	5	3
Lubbock	6	0	5	0
TOTAL	29	5	26	17
Year 2009				
Bailey	1	0	1	0
Castro	1	0	2	1
Crosby	1	0	1	0
Dawson	0	0	1	1
Gaines	2	0	2	2
Hale	1	0	1	0
Hockley	1	0	1	0
Swisher	1	0	1	0
TOTAL	8	0	10	4

Table 2. Percentage of damaged bolls and insecticide applications for non-Bt and various Bt technology varieties grown in the South Plains of Texas, 2007.

Variety type	n <sup>a</sup>	% damaged bolls <sup>b</sup>	Mean no. sprays per site <sup>c</sup>
Non-Bt	22	3.11 a	0.09 a
Bollgard	14	0.52 b	0.00 a
Bollgard II	23	0.25 b	0.00 a
WideStrike	14	1.29 ab	0.00 a

Means in a column followed by the same letter are not significantly different based on an F protected Mixed Procedure LSD ( $P \leq 0.10$ ).

<sup>a</sup>Number of fields sampled.

<sup>b</sup>Percentage of damaged bolls from three locations in each field, 100 bolls sampled per locations, 300 bolls per field.

<sup>c</sup>Mean number of insecticide applications targeting lepidopterous pests per site.

Table 3. Percentage of damaged bolls and insecticide applications for non-Bt and various Bt technology varieties grown in the South Plains of Texas, 2008.

Variety type	n <sup>a</sup>	% damaged bolls <sup>b</sup>	Mean no. sprays per site <sup>c</sup>
Non-Bt	29	3.16 a	0.41 a
Bollgard	5	0.53 b	0.00 b
Bollgard II	26	0.04 b	0.00 b
WideStrike	17	0.18 b	0.00 b

Means in a column followed by the same letter are not significantly different based on an F protected Mixed Procedure LSD ( $P \leq 0.10$ ).

<sup>a</sup>Number of fields sampled.

<sup>b</sup>Percentage of damaged bolls from three locations in each field, 100 bolls sampled per locations, 300 bolls per field.

<sup>c</sup>Mean number of insecticide applications targeting lepidopterous pests per site.

Table 4. Percentage of damaged bolls and insecticide applications for non-Bt and various Bt technology varieties grown on the South Plains of Texas, 2009.

Variety type	n <sup>a</sup>	% worm damaged bolls <sup>b</sup>	% sucking bug damaged bolls <sup>b</sup>	Mean no. sprays per site <sup>c</sup>
Non-Bt	8	2.83 a	3.83 a	0.00 a
Bollgard II	10	0.13 b	2.06 a	0.00 a
WideStrike	4	0.40 b	0.00 a	0.00 a

Means in a column followed by the same letter are not significantly different based on an F protected Mixed Procedure LSD ( $P \leq 0.05$ ).

<sup>a</sup>Number of fields sampled.

<sup>b</sup>Percentage of worm or sucking bug damaged bolls from three locations in each field, 100 bolls sampled per locations, 300 bolls per field.

<sup>c</sup>Mean number of insecticide applications targeting lepidopterous pests per site.



**Replicated Irrigated Cotton Variety Demonstration,  
Seminole, TX - 2009**

**Cooperator: Gregory Upton**

**Manda Cattaneo, Mark Kelley, Randy Boman, and Scott Russell  
EA-IPM Gaines County, Extension Program Specialist II - Cotton, Extension  
Agronomist - Cotton, EA-IPM Terry and Yoakum Counties**

**Gaines County**

**Summary:** Significant differences were observed for all yield and economic and most HVI fiber quality parameters measured. Lint turnout ranged from a low of 32.5% and a high of 36.9% for NexGen 3348B2F and Deltapine 0935B2F, respectively. Lint yields varied with a low of 1140 lb/acre (NG3348B2F) and a high of 1367 lb/acre (Phytogen 375WF). Lint loan values ranged from a low of \$0.5555/lb (NexGen 2549B2F) to a high of \$0.5698/lb (Deltapine 174F). Net value/acre among varieties ranged from a high of \$754.84 (Deltapine 174F) to a low of \$636.61 (NG2549B2F), a difference of \$118.23. Micronaire values ranged from a low of 4.0 for FiberMax 9160B2F and NexGen 2549B2F to a high of 4.6 for Deltapine 0924B2RF. Staple averaged 35.4 across all varieties with a low of 34.2 for Deltapine 0935B2F and a high of 36.5 for FiberMax 9180B2F and FiberMax 9160B2F. Percent uniformity ranged from a high of 82.5% for NexGen 3348B2F to a low of 80.7% for Phytogen 375WF. Strength values averaged 29.1 g/tex with a high of 31.2 g/tex for FiberMax 9180B2F and a low of 27.8 g/tex for Deltapine 0935B2F. These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection.

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

**Materials and Methods:**

**Varieties:** All-Tex Apex B2F, Deltapine 174F, Deltapine 0935B2F, Deltapine 0924B2F, DynaGro 2570B2F, FiberMax 9160B2F, FiberMax 1740B2F, FiberMax 9180B2F, NexGen 2549B2F, NexGen 3348B2F, Phytogen 375WF

Soil Texture and pH:	91% sand, 1% silt, and 8% clay; pH of 7.8
Experimental design:	Randomized complete block with 3 replications
Seeding rate:	3 seeds/row-ft in 40-inch row spacing
Plot size:	8 rows by variable length of field (1863 - 2625 ft long)
Planting date:	18 May in terminated wheat
Irrigation:	This location was under a center pivot
Irrigation & Rainfall:	Pre-bloom irrigation and rainfall totaled ~5.63 inches Bloom to harvest rainfall totaled ~8.15 inches
Insecticides:	No insecticides were applied
Weed Management:	1 pt of Caparol in early July and 3 applications of roundup in-season
Fertilizer Management:	200 lbs of 33-0-0-12
Plant Growth Regulators:	8 oz of pix early season
Harvest Aides:	1 qt of Prep and 2 oz of ET
Harvest:	Plots were harvested on 5 & 6-November using a commercial stripper harvester with field cleaner. Harvested material was transferred to a weigh wagon with integral electronic scales to determine individual plot weights. Plot yields were subsequently adjusted to lb/acre.
Gin turnout:	Grab samples were taken by plot and ginned at the Texas AgriLife Research and Extension Center at Lubbock to determine gin turnouts.
Fiber analysis:	Lint samples were submitted to the Texas Tech University - Fiber and Biopolymer Research Institute for HVI analysis, and USDA Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.
Ginning cost and seed values:	Ginning costs were based on \$3.00 per cwt. of bur cotton and seed value/acre was based on \$160/ton. Ginning costs did not include checkoff.
Seed and technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (4.0 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: <a href="http://www.plainscotton.org/Seed/PCGseed10.xls">http://www.plainscotton.org/Seed/PCGseed10.xls</a> .

## **Results and Discussion:**

Significant differences were observed for all yield and economic and most HVI fiber quality parameters measured (Tables 1 and 2). Lint turnout ranged from a low of 32.5% and a high of 36.9% for NexGen 3348B2F and Deltapine 0935B2F, respectively. Seed turnout ranged from a high of 52.7% for NG2549B2F to a low of 47.9% for Deltapine 174F. Bur cotton yields averaged 3636 lb/acre with a high of 3789 lb/acre for Deltapine 0924B2F, and a low of 3421 lb/acre for FiberMax 9180B2F. Lint yields varied with a low of 1140 lb/acre (NG3348B2F) and a high of 1367 lb/acre (Phytogen 375WF). Lint loan values ranged from a low of \$0.5555/lb (NexGen 2549B2F) to a high of \$0.5698/lb (Deltapine 174F). After adding lint and seed value, total value/acre for varieties ranged from a low of \$790.81 for NexGen 2549B2F to a high of \$918.58 for Dyna-Gro 2570B2F. When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of \$754.84 (Deltapine 174F) to a low of \$636.61 (NG2549B2F), a difference of \$118.23.

Micronaire values ranged from a low of 4.0 for FiberMax 9160B2F and NexGen 2549B2F to a high of 4.6 for Deltapine 0924B2RF. Staple averaged 35.4 across all varieties with a low of 34.2 for Deltapine 0935B2F and a high of 36.5 for FiberMax 9180B2F and FiberMax 9160B2F. Percent uniformity ranged from a high of 82.5% for NexGen 3348B2F to a low of 80.7% for Phytogen 375WF. Strength values averaged 29.1 g/tex with a high of 31.2 g/tex for FiberMax 9180B2F and a low of 27.8 g/tex for Deltapine 0935B2F. Elongation ranged from a high of 10.0% for Dyna-Gro 2570B2F to a low of 7.2% for FiberMax 9160B2F. There was no significant difference in leaf grades. Values for reflectance (Rd) and yellowness (+b) averaged 82.2 and 7.9, respectively. This resulted in color grades of mostly 11s and 21s.

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

## **Acknowledgments:**

Appreciation is expressed to Gregory Upton for the use of his land, equipment and labor for this demonstration. Further assistance with this project was provided by the Fiber and Biopolymer Research Institute, Texas Tech University. Furthermore, we greatly appreciate the Texas Department of Agriculture - Food and Fiber Research for funding of HVI testing.

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Table 1. Harvest results from the replicated irrigated cotton variety demonstration, Gregory Upton Farms, Seminole, TX, 2009

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 -----		
DP 174F	36.3	47.9	3714	1348	1780	0.5698	767.83	142.40	910.23	111.42	43.96	754.84 a
DG 2570B2F	36.1	50.6	3767	1360	1907	0.5633	766.00	152.59	918.58	113.00	50.78	754.81 a
PHY 375WF	36.5	48.6	3747	1367	1823	0.5567	760.75	145.84	906.59	112.42	50.76	743.41 a
DP 0935B2F	36.9	48.8	3680	1357	1795	0.5470	742.67	143.61	886.28	110.39	51.72	724.17 ab
FM 1740B2F	35.7	49.2	3676	1314	1808	0.5645	741.60	144.68	886.28	110.27	52.12	723.89 ab
AT Apex B2F	33.7	51.6	3713	1250	1916	0.5667	708.51	153.28	861.79	111.39	50.70	699.70 bc
DP 0924B2F	33.8	50.7	3789	1281	1919	0.5500	704.38	153.49	857.87	113.66	51.72	692.49 bc
FM 9160B2F	33.8	50.0	3546	1200	1773	0.5693	683.16	141.87	825.03	106.37	52.12	666.54 cd
FM 9180B2F	33.6	51.6	3421	1149	1764	0.5737	658.97	141.16	800.13	102.62	52.12	645.39 d
NG 3348B2F	32.5	52.1	3513	1140	1830	0.5687	648.50	146.44	794.94	105.39	51.12	638.43 d
NG 2549B2F	33.9	52.7	3436	1163	1812	0.5555	645.86	144.95	790.81	103.09	51.12	636.61 d
Test average	34.8	50.3	3636	1266	1830	0.5623	711.66	146.39	858.05	109.09	50.75	698.21
CV, %	3.8	1.6	2.7	2.7	2.7	1.7	3.4	2.7	3.2	2.7	--	3.6
OSL	0.0041	<0.0001	0.0006	<0.0001	0.0037	0.0363	<0.0001	0.0037	<0.0001	0.0006	--	<0.0001
LSD	2.2	1.4	168	59	84	0.0162	40.83	6.75	46.69	5.03	--	42.28

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.

\$160/ton for seed.

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

Table 2. HVI fiber property results from the replicated irrigated cotton variety demonstration, Gregory Upton Farms, Seminole, TX, 2009.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 <sup>nds</sup> inches	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
DP 174F	4.1	36.0	81.4	28.1	9.2	1.3	81.7	8.1	2.0	1.0
DG 2570B2F	4.4	35.0	81.0	28.7	10.0	1.0	82.1	8.1	2.0	1.0
PHY 375WF	4.3	35.0	80.7	28.2	8.8	1.0	81.9	8.4	1.7	1.0
DP 0935B2F	4.5	34.2	81.0	27.8	8.8	1.3	82.6	8.3	1.7	1.0
FM 1740B2F	4.4	35.3	80.8	29.2	8.3	1.3	82.8	7.4	2.0	1.0
AT Apex B2F	4.2	35.9	81.5	28.8	8.6	1.3	82.2	8.0	2.0	1.0
DP 0924B2F	4.6	34.7	81.5	29.0	9.2	2.0	81.2	7.7	2.7	1.0
FM 9160B2F	4.0	36.5	80.7	29.1	7.2	1.3	82.7	7.4	2.0	1.0
FM 9180B2F	4.2	36.5	82.2	31.2	7.9	1.0	83.9	7.5	1.7	1.0
NG 3348B2F	4.1	36.3	82.5	30.6	8.6	2.3	80.9	8.0	2.3	1.0
NG 2549B2F	4.0	34.5	81.8	29.9	9.8	2.3	82.0	7.9	2.0	1.0
Test average	4.3	35.4	81.4	29.1	8.8	1.5	82.2	7.9	2.0	1.0
CV, %	4.2	1.8	0.6	2.7	6.6	43.7	0.8	2.5	--	--
OSL	0.0140	0.0011	0.0011	0.0007	0.0005	0.1266	0.0028	<0.0001	--	--
LSD	0.3	1.1	0.8	1.3	1.0	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, <sup>†</sup>indicates significance at the 0.10 level, NS - not significant.



**Replicated Irrigated Cotton Variety Demonstration,  
Loop, TX - 2009**

**Cooperator: Ricky Mills**

**Manda Cattaneo, Mark Kelley, Randy Boman, and Scott Russell  
EA-IPM Gaines County, Extension Program Specialist II - Cotton, Extension  
Agronomist - Cotton, EA-IPM Terry and Yoakum Counties**

**Gaines County**

**Summary:** Significant differences were observed for most of the yield, economic and HVI fiber quality parameters measured. Lint turnout was significant at the 0.10 probability level and ranged from a low of 26.3% and a high of 31.3% for NexGen 3348B2F and Deltapine 164B2F, respectively. Lint yields varied with a low of 823 lb/acre (FiberMax 9160B2F) and a high of 1183 lb/acre (Deltapine 174F). Lint loan values did not significantly differ. Net value/acre among varieties ranged from a high of \$611.68 (Deltapine 174F) to a low of \$294.98 (NG3348B2F), a difference of \$316.70. Micronaire values ranged from a low of 3.2 for NexGen 2549B2F to a high of 4.4 for Deltapine 0935B2RF, Deltapine 164B2F, and Phytogen 375WRF. Staple averaged 35.2 across all varieties with a low of 33.0 for NexGen 2549B2F and a high of 36.4 for FiberMax 9160B2F. Strength values averaged 29.2 g/tex with a high of 31.0 g/tex for FiberMax 9180B2F and a low of 26.8 g/tex for All-Tex ApexB2F. Elongation ranged from a high of 9.5% for Dyna-Gro 2570B2F to a low of 6.4% for FiberMax 9160B2F. Leaf grades were relatively high with a range of 1 to 5, with a test average of 3.1. These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection.

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

**Materials and  
Methods:**

**Varieties:** All-Tex Apex B2F, Deltapine 174F, Deltapine 164B2F, Deltapine 0935B2F, DynaGro 2570B2F, FiberMax 9160B2F, FiberMax 9170, FiberMax 9180B2F, NexGen 2549B2F, NexGen 3348B2F, Phytogen 375WF

Field Soil Texture and pH:	93% sand, 3% silt, and 4% clay; pH of 7.9
Experimental design:	Randomized complete block with 3 replications
Seeding rate:	3 seeds/row-ft in 40-inch row spacing
Plot size:	8 rows by variable length of field (0.42 - 2.06 acre)
Planting date:	6 May in terminated wheat
Irrigation:	This location was under a LESA center pivot
Irrigation & Rainfall:	Pre-bloom irrigation and rainfall totaled ~6.71 inches Bloom to harvest rainfall totaled ~10.38 inches
Insecticides:	Temik was applied infurrow at planting at 3.5 lbs/acre
Weed Management:	Field was treated with Treflan at 1 1/3 pt broadcast pre-plant and 1 1/3 pt banded on at planting. 2 roundup applications during the season.
Fertilizer Management:	48 units phosphate and 120 units of Nitrogen
Plant Growth Regulators:	At pinhead square applied 2 oz Mepex
Harvest Aides:	First application: 1 pt of Def and 1 pt of Prep. Second application: 12.8 oz of Gramoxone
Harvest:	Plots were harvested on 20 October using a commercial stripper harvester. Harvested material was transferred to a weigh wagon with integral electronic scales to determine individual plot weights. Plot yields were subsequently adjusted to lb/acre.
Gin turnout:	Grab samples were taken by plot and ginned at the Texas AgriLife Research and Extension Center at Lubbock to determine gin turnouts.
Fiber analysis:	Lint samples were submitted to the Texas Tech University - Fiber and Biopolymer Research Institute for HVI analysis, and USDA Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.
Ginning cost and seed values:	Ginning costs were based on \$3.00 per cwt. of bur cotton and seed value/acre was based on \$160/ton. Ginning costs did not include checkoff.
Seed and technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (3 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: <a href="http://www.plainscotton.org/Seed/PCGseed10.xls">http://www.plainscotton.org/Seed/PCGseed10.xls</a> .

## **Results and Discussion:**

Significant differences were observed for most of the yield, economic and HVI fiber quality parameters measured (Tables 1 and 2). Lint turnout was significant at the 0.10 probability level and ranged from a low of 26.3% and a high of 31.3% for NexGen 3348B2F and Deltapine 164B2F, respectively. Seed turnout ranged from a high of 44.0% for FiberMax 9160B2F to a low of 39.9% for Deltapine 174F. Bur cotton yields were significant at the 0.10 probability level and averaged 3392 lb/acre with a high of 4013 lb/acre for Deltapine 174F, and a low of 2971 lb/acre for FiberMax 9160B2F. Lint yields varied with a low of 823 lb/acre (FiberMax 9160B2F) and a high of 1183 lb/acre (Deltapine 174F). Lint loan values did not significantly differ. After adding lint and seed value, total value/acre for varieties ranged from a low of \$449.12 for NexGen 3348B2F to a high of \$776.03 for Deltapine 174F. When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of \$611.68 (Deltapine 174F) to a low of \$294.98 (NG3348B2F), a difference of \$316.70.

Micronaire values ranged from a low of 3.2 for NexGen 2549B2F to a high of 4.4 for Deltapine 0935B2RF, Deltapine 164B2F, and Phytogen 375WRF. Staple averaged 35.2 across all varieties with a low of 33.0 for NexGen 2549B2F and a high of 36.4 for FiberMax 9160B2F. Percent uniformity did not significantly differ. Strength values averaged 29.2 g/tex with a high of 31.0 g/tex for FiberMax 9180B2F and a low of 26.8 g/tex for All-Tex ApexB2F. Elongation ranged from a high of 9.5% for Dyna-Gro 2570B2F to a low of 6.4% for FiberMax 9160B2F. Leaf grades were relatively high with a range of 1 to 5, with a test average of 3.1. Values for reflectance (Rd) and yellowness (+b) averaged 80.2 and 7.9, respectively. This resulted in color grades of 21s and 31s.

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

## **Acknowledgments:**

Appreciation is expressed to Ricky Mills for the use of his land, equipment and labor for this demonstration. Further assistance with this project was provided by the Fiber and Biopolymer Research Institute, Texas Tech University. Furthermore, we greatly appreciate the Texas Department of Agriculture - Food and Fiber Research for funding of HVI testing.

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Table 1. Harvest results from the replicated irrigated cotton variety demonstration, Ricky Mills Farms , Loop TX, 2009

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 -----		
DP 174F	29.5	39.9	4013	1183	1601	0.5477	647.93	128.09	776.03	120.38	43.96	611.68 a
DP 164B2F	31.3	46.0	3458	1081	1588	0.5698	616.35	127.08	743.43	103.73	50.82	588.88 a
DG 2570B2F	29.7	46.1	3402	1010	1567	0.5542	558.68	125.40	684.08	102.05	50.78	531.25 ab
PHY 375WF	30.2	42.0	3324	1004	1394	0.5572	559.05	111.55	670.60	99.73	50.76	520.11 ab
AT Apex B2F	27.1	42.5	3612	979	1534	0.5587	547.85	122.70	670.54	108.37	50.70	511.48 abc
DP 0935B2F	30.5	42.0	3344	1018	1406	0.5363	549.00	112.46	661.45	100.32	51.72	509.42 abc
FM 9170B2F	29.3	42.6	3170	928	1351	0.5652	524.09	108.09	632.18	95.10	52.12	484.95 abc
FM 9180B2F	27.1	44.7	3369	912	1506	0.5653	515.45	120.51	635.96	101.08	52.12	482.75 abc
FM 9160B2F	27.7	44.0	2971	823	1309	0.5335	438.72	104.70	543.42	89.13	52.12	402.17 bcd
NG 2549B2F	27.0	45.4	3212	866	1456	0.4642	402.15	116.48	518.63	96.36	51.12	371.15 cd
NG 3348B2F	26.3	45.7	3434	904	1571	0.3988	323.48	125.64	449.12	103.02	51.12	294.98 d
Test average	28.7	43.7	3392	973	1480	0.5319	516.61	118.43	635.04	101.75	50.67	482.62
CV, %	7.1	2.7	9.7	9.4	9.5	13.9	16.5	9.5	13.8	9.7	--	17.6
OSL	0.0774	<0.0001	0.0948	0.0058	0.1833	0.1955	0.0064	0.1836	0.0066	0.0948	--	0.0068
LSD	2.9	2.0	462	156	NS	NS	145.40	NS	149.44	13.86	--	144.77

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.

\$160/ton for seed.

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

Table 2. HVI fiber property results from the replicated irrigated cotton variety demonstration, Ricky Mills Farms , Loop TX, 2009.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 <sup>nds</sup> inches	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
DP 174F	4.0	35.6	80.3	28.1	8.8	3.7	79.5	7.8	3.0	1.0
DP 164B2F	4.4	35.6	80.8	29.3	7.9	1.7	81.7	7.8	2.0	1.0
DG 2570B2F	4.2	34.5	80.9	29.3	9.5	2.3	80.5	8.4	2.0	1.0
PHY 375WF	4.4	34.7	81.1	28.0	8.3	2.3	79.8	8.2	2.3	1.0
AT Apex B2F	4.2	35.2	80.4	26.8	8.5	2.7	80.6	8.2	2.3	1.0
DP 0935B2F	4.4	33.7	80.1	28.0	8.6	1.7	81.0	8.4	2.0	1.0
FM 9170B2F	3.8	36.1	80.8	30.9	7.4	3.0	81.6	7.3	2.3	1.0
FM 9180B2F	3.7	36.1	81.1	31.0	7.6	3.0	81.0	7.3	2.7	1.0
FM 9160B2F	3.7	36.4	81.3	30.3	6.4	4.3	80.3	7.5	2.7	1.0
NG 2549B2F	3.2	33.0	80.6	29.7	8.7	5.0	77.4	7.9	3.0	1.0
NG 3348B2F	3.7	35.9	81.3	29.3	8.1	4.7	78.6	7.8	3.0	1.0
Test average	4.0	35.2	80.8	29.2	8.2	3.1	80.2	7.9	2.5	1.0
CV, %	5.2	1.9	0.7	1.9	3.5	34.3	1.0	2.6	--	--
OSL	<0.0001	<0.0001	0.2297	<0.0001	<0.0001	0.0081	<0.0001	<0.0001	--	--
LSD	0.3	1.1	NS	0.9	0.5	1.8	1.4	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.



**Replicated Dryland Cotton Variety Demonstration,  
Seminole, TX - 2009**

**Cooperator: Jud Cheuvront**

**Manda Cattaneo, Mark Kelley, Randy Boman, and Scott Russell  
EA-IPM Gaines County, Extension Program Specialist II - Cotton, Extension  
Agronomist - Cotton, EA-IPM Terry and Yoakum Counties**

**Gaines County**

**Summary:** This location was initially LESA irrigated for stand establishment. No subsequent irrigations were applied. Significant differences were observed for all yield, economic, and HVI fiber quality parameters measured. Lint turnout ranged from a low of 31.4% and a high of 38.5% for Deltapine 164B2F and All-Tex EpicF, respectively. Lint yields varied with a low of 426 lb/acre (Deltapine 164B2F) and a high of 557 lb/acre (All-Tex EpicF). Lint loan values ranged from a low of \$0.5017/lb (FiberMax 1740B2F) to a high of \$0.5683/lb (Deltapine 164B2F). Net value/acre among varieties ranged from a high of \$285.92 (All-Tex EpicF) to a low of \$209.19 (FiberMax 9180B2F), a difference of \$76.73. Micronaire values ranged from a low of 4.0 for NexGen 3410F to a high of 4.8 for FiberMax 1740B2F. Staple averaged 34.2 across all varieties with a low of 32.0 for FiberMax 1740B2F and a high of 35.4 for Deltapine 164B2F. Percent uniformity ranged from a high of 81.1% for FiberMax 9160B2F to a low of 79.6% for FiberMax 1740B2F. Strength values averaged 29.1 g/tex with a high of 30.9 g/tex for FiberMax 9180B2F and a low of 27.4 g/tex for FiberMax 1740B2F. These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection.

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

**Materials and Methods:**

**Varieties:** All-Tex EpicF, Americot 1532B2F, Deltapine 174F, Deltapine 164B2F, Deltapine 0924B2F, DynaGro 2570B2F, FiberMax 1740B2F, FiberMax 9180B2F, FiberMax 9160B2F, NexGen 3348B2F, NexGen 3410F, Phytogen 375WF

Soil Texture and pH:	88% sand, 3% silt, and 9% clay; pH of 7.4
Experimental design:	Randomized complete block with 3 replications
Seeding rate:	2.5 seeds/row-ft in 36-inch row spacing
Plot size:	6 rows by variable length of field (757 - 2243 ft long)
Planting date:	1 June
Irrigation:	This site was irrigated twice using LESA center pivot irrigation to aid in stand establishment, and no further irrigation was applied.
Irrigation & Rainfall:	Pre-bloom irrigation and rainfall totaled ~5.47 inches Bloom to harvest rainfall totaled ~2.05 inches
Insecticides:	Applied 5.0lbs/acre Temik in-furrow at planting.
Weed Management:	7 oz of Cotton Pro and 7 oz of Diuron were applied on 5 June. 40 oz of Glystar was applied on 25 June. 36 oz of Glyphosate was applied on 11 August.
Fertilizer management:	20 Gallons per acre of 28-0-0-4 was coultured on in-between the rows at the end of June.
Harvest aids:	1 ½ pt of Boll Buster and 1 oz of Aim was applied on 23 October.
Harvest:	Plots were harvested on 10-November using a commercial stripper harvester with field cleaner. Harvested material was transferred to a weigh wagon with integral electronic scales to determine individual plot weights. Plot yields were subsequently adjusted to lb/acre.
Gin turnout:	Grab samples were taken by plot and ginned at the Texas AgriLife Research and Extension Center at Lubbock to determine gin turnouts.
Fiber analysis:	Lint samples were submitted to the Texas Tech University - Fiber and Biopolymer Research Institute for HVI analysis, and USDA Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.
Ginning cost and seed values:	Ginning costs were based on \$3.00 per cwt. of bur cotton and seed value/acre was based on \$160/ton. Ginning costs did not include checkoff.
Seed and technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (2.5 seed/row-ft) for the 36-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: <a href="http://www.plainscotton.org/Seed/PCGseed10.xls">http://www.plainscotton.org/Seed/PCGseed10.xls</a> .

## **Results and Discussion:**

Significant differences were observed for all yield, economic, and HVI fiber quality parameters measured (Tables 1 and 2). Lint turnout ranged from a low of 31.4% and a high of 38.5% for Deltapine 164B2F and All-Tex EpicF, respectively. Seed turnout ranged from a high of 54.7% for All-Tex EpicF to a low of 49.1% for FiberMax 9180B2F. Bur cotton yields averaged 1397 lb/acre with a high of 1520 lb/acre for FiberMax 1740B2F, and a low of 1320 lb/acre for Phytogen 375WF. Lint yields varied with a low of 426 lb/acre (Deltapine 164B2F) and a high of 557 lb/acre (All-Tex EpicF). Lint loan values ranged from a low of \$0.5017/lb (FiberMax 1740B2F) to a high of \$0.5683/lb (Deltapine 164B2F). After adding lint and seed value, total value/acre for varieties ranged from a low of \$298.17 for FiberMax 9180B2F to a high of \$368.77 for All-Tex EpicF. When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of \$285.92 (All-Tex EpicF) to a low of \$209.19 (FiberMax 9180B2F), a difference of \$76.73.

Micronaire values ranged from a low of 4.0 for NexGen 3410F to a high of 4.8 for FiberMax 1740B2F. Staple averaged 34.2 across all varieties with a low of 32.0 for FiberMax 1740B2F and a high of 35.4 for Deltapine 164B2F. Percent uniformity ranged from a high of 81.1% for FiberMax 9160B2F to a low of 79.6% for FiberMax 1740B2F. Strength values averaged 29.1 g/tex with a high of 30.9 g/tex for FiberMax 9180B2F and a low of 27.4 g/tex for FiberMax 1740B2F. Elongation ranged from a high of 11.6% for Dyna-Gro 2570B2F to a low of 9.0% for FiberMax 9160B2F. Leaf grades ranged from 1 to 3, with a test average of 1.6. Values for reflectance (Rd) and yellowness (+b) averaged 80.7 and 8.8, respectively. This resulted in color grades of mostly 11s and 21s.

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

## **Acknowledgments:**

Appreciation is expressed to Jud Chevront for the use of his land, equipment and labor for this demonstration. Further assistance with this project was provided by the Fiber and Biopolymer Research Institute, Texas Tech University. Furthermore, we greatly appreciate the Texas Department of Agriculture - Food and Fiber Research for funding of HVI testing.

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Table 1. Harvest results from the replicated dryland cotton variety demonstration, Jud Cheuvront Farms, Seminole, TX, 2009

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 -----		
AT EpicF	38.5	54.7	1447	557	791	0.5475	305.47	63.29	368.77	43.41	39.44	285.92 a
DG 2570B2F	35.1	51.5	1454	510	749	0.5408	275.99	59.94	335.93	43.61	47.02	245.30 b
FM 1740B2F	36.5	49.4	1520	555	750	0.5017	278.34	60.02	338.36	45.62	48.26	244.48 bc
NG 3348B2F	34.9	50.4	1448	504	730	0.5383	271.45	58.41	329.86	43.43	47.33	239.10 bcd
DP 174F	35.3	49.3	1333	471	657	0.5472	257.52	52.54	310.07	40.00	40.71	229.36 bcde
DP 0924B2F	34.1	51.0	1430	487	729	0.5348	260.35	58.34	318.69	42.89	47.89	227.91 bcde
NG 3410F	33.6	50.7	1351	453	685	0.5565	252.22	54.83	307.05	40.53	39.42	227.10 bcde
FM 9160B2F	34.8	50.1	1344	468	673	0.5507	258.23	53.81	312.04	40.32	48.26	223.45 cde
AM 1532B2F	32.8	51.8	1401	459	725	0.5543	254.29	58.03	312.32	42.04	47.33	222.94 de
PHY 375WF	36.0	49.9	1320	476	659	0.5253	249.89	52.69	302.58	39.61	47.00	215.97 e
DP 164B2F	31.4	53.5	1355	426	725	0.5683	242.32	57.96	300.28	40.65	47.05	212.58 e
FM 9180B2F	32.4	49.1	1357	440	667	0.5568	244.82	53.34	298.17	40.71	48.26	209.19 e
Test average	34.6	50.9	1397	484	712	0.5435	262.57	56.94	319.51	41.90	45.66	231.94
CV, %	3.9	3.6	3.9	3.8	3.9	1.7	4.6	3.9	4.4	3.9	--	5.5
OSL	0.0002	0.0250	0.0027	<0.0001	<0.0001	0.0250	0.0001	<0.0001	0.0001	0.0027	--	<0.0001
LSD	2.3	3.1	91	31	47	0.0152	20.51	3.76	24.03	2.74	--	21.49

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

CV - coefficient of variation.

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

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

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

Assumes:

\$3.00/cwt ginning cost.

\$160/ton for seed.

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

Table 2. HVI fiber property results from the replicated dryland cotton variety demonstration, Jud Cheuvront Farms, Seminole, TX, 2009.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 <sup>nds</sup> inches	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
AT EpicF	4.5	34.3	80.6	29.3	11.0	1.0	80.9	9.3	1.0	1.0
DG 2570B2F	4.5	34.1	80.7	29.5	11.6	1.0	79.7	9.5	1.3	1.0
FM 1740B2F	4.8	32.0	79.6	27.4	10.6	1.0	80.7	8.6	1.7	1.0
NG 3348B2F	4.4	33.8	80.9	29.4	9.8	2.7	80.0	8.5	2.0	1.0
DP 174F	4.4	34.4	80.4	28.2	10.6	1.3	79.9	8.8	2.0	1.0
DP 0924B2F	4.6	33.9	80.7	29.5	11.1	1.0	80.2	9.2	1.7	1.0
NG 3410F	4.0	34.7	80.8	30.2	10.0	3.0	79.2	8.7	2.3	1.0
FM 9160B2F	4.3	34.4	81.1	29.9	9.0	1.3	82.1	8.4	1.3	1.0
AM 1532B2F	4.3	34.6	80.7	27.4	10.7	1.7	81.5	8.8	1.0	1.0
PHY 375WF	4.6	33.4	80.2	28.4	10.6	2.0	80.3	9.2	2.0	1.0
DP 164B2F	4.3	35.4	80.5	29.7	9.7	1.0	81.5	8.7	1.3	1.0
FM 9180B2F	4.6	34.8	80.8	30.9	9.8	1.7	82.6	8.1	1.3	1.0
Test average	4.4	34.2	80.6	29.1	10.4	1.6	80.7	8.8	1.6	1.0
CV, %	2.1	1.0	0.5	1.9	2.9	44.6	0.7	3.4	--	--
OSL	<0.0001	<0.0001	0.0303	<0.0001	<0.0001	0.0153	<0.0001	0.0003	--	--
LSD	0.2	0.6	0.7	0.9	0.5	1.2	0.9	0.5	--	--

CV - coefficient of variation.

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

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



**Replicated Irrigated Cotton Variety Demonstration  
Under Root-Knot Nematode Pressure,  
Seminole, TX - 2009**

**Cooperator: Gregory Upton**

**Manda Cattaneo, Mark Kelley, Terry Wheeler, Randy Boman, and Scott Russell  
EA-IPM Gaines County, Extension Program Specialist II - Cotton, Research Plant  
Pathologist, and Extension Agronomist - Cotton, EA-IPM Terry and Yoakum  
Counties**

**Gaines County**

**Summary:** The varieties with the lowest nematode reproduction were NexGen 3348B2F with 2960 eggs, NexGen 2549B2F with 4000 eggs, Deltapine 174F with 4035 eggs, and All-Tex ApexB2F with 4311 eggs 500cm<sup>3</sup> soil. Significant differences were observed for all yield and economic parameters, and most of the HVI fiber quality parameters measured. Lint turnout ranged from a low of 28.7% and a high of 37.0% for All-Tex ApexB2F and Dyna-Gro 2570B2F, respectively. Lint yields varied with a low of 1009 lb/acre (FiberMax 9180B2F) and a high of 1396 lb/acre (Deltapine 174F). Lint loan values ranged from a low of \$0.5313/lb (NexGen 2549B2F) to a high of \$0.5727/lb (FiberMax 9160B2F). Net value/acre among varieties ranged from a high of \$766.41 (Deltapine 174F) to a low of \$559.05 (FiberMax 9180B2F), a difference of \$207.36. Staple averaged 35.26 across all varieties with a low of 33.1 for NexGen 2549B2F and a high of 36.6 for FiberMax 9160B2F. Percent uniformity ranged from a high of 82.5% for FiberMax 9160B2F and FiberMax 9180B2F to a low of 80.7% for Deltapine 0935B2F and All-Tex ApexB2F. Strength values averaged 30.3 g/tex with a high of 32.3 g/tex for FiberMax 9180B2F and a low of 28.6 g/tex for All-Tex ApexB2F. These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection.

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

## Materials and Methods:

Varieties:	All-Tex ApexB2F, Deltapine 174F, DynaGro 2570B2F, FiberMax 9160B2F, FiberMax 1740B2F, FiberMax 9180B2F, Stoneville 5458B2F, Deltapine 0924B2F, Deltapine 0935B2F, NexGen 2549B2F, NexGen 3348B2F, Phytogen 375WF
Soil Texture and pH:	93% sand, 1% silt and 6% sand; pH of 7.6
Experimental design:	Randomized complete block with 3 replications
Seeding rate:	3 seeds/row-ft in 40-inch row spacing
Plot size:	8 rows by variable length of field (833 - 2536 ft long)
Planting date:	19 May in terminated wheat
Irrigation:	This location was under a LESA center pivot
Irrigation & Rainfall:	Pre-bloom irrigation and rainfall totaled ~5.63 inches Bloom to harvest rainfall totaled ~8.15 inches
Insecticides:	No insecticides were applied
Weed Management:	1 pt of Caparol in early July and 3 applications of roundup in-season
Fertilizer Management:	200 lbs of 33-0-0-12
Plant Growth Regulators:	8 oz of pix early season
Harvest Aides:	1 qt of Prep and 2 oz of ET
Harvest:	Plots were harvested on 6 & 7-November using a commercial stripper harvester with field cleaner. Harvested material was transferred to a weigh wagon with integral electronic scales to determine individual plot weights. Plot yields were subsequently adjusted to lb/acre.
Gin turnout:	Grab samples were taken by plot and ginned at the Texas AgriLife Research and Extension Center at Lubbock to determine gin turnouts.
Fiber analysis:	Lint samples were submitted to the Texas Tech University - Fiber and Biopolymer Research Institute for HVI analysis, and USDA Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.
Ginning cost and seed values:	Ginning costs were based on \$3.00 per cwt. of bur cotton and seed value/acre was based on \$160/ton. Ginning costs did not include checkoff.

Seed and  
technology fees:

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

## Results and Discussion:

Nematode reproduction was measured by the number of nematode eggs per 500cm<sup>3</sup> soil (Table 1). The varieties with the lowest nematode reproduction were NexGen 3348B2F with 2960 eggs, NexGen 2549B2F with 4000 eggs, Deltapine 174F with 4035 eggs, and All-Tex ApexB2F with 4311 eggs.

Significant differences were observed for all yield and economic parameters, and most of the HVI fiber quality parameters measured (Tables 2 and 3). Lint turnout ranged from a low of 28.7% and a high of 37.0% for All-Tex ApexB2F and Dyna-Gro 2570B2F, respectively. Seed turnout ranged from a high of 53.3% for NexGen 2549B2F to a low of 44.6% for Deltapine 174F. Bur cotton yields averaged 3458 lb/acre with a high of 4034 lb/acre for Deltapine 174F, and a low of 3139 lb/acre for FiberMax 9180B2F. Lint yields varied with a low of 1009 lb/acre (FiberMax 9180B2F) and a high of 1396 lb/acre (Deltapine 174F). Lint loan values ranged from a low of \$0.5313/lb (NexGen 2549B2F) to a high of \$0.5727/lb (FiberMax 9160B2F). After adding lint and seed value, total value/acre for varieties ranged from a low of \$705.33 for FiberMax 9180B2F to a high of \$931.40 for Deltapine 174F. When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of \$766.41 (Deltapine 174F) to a low of \$559.05 (FiberMax 9180B2F), a difference of \$207.36.

Micronaire values did not significantly differ. Staple averaged 35.26 across all varieties with a low of 33.1 for NexGen 2549B2F and a high of 36.6 for FiberMax 9160B2F. Percent uniformity ranged from a high of 82.5% for FiberMax 9160B2F and FiberMax 9180B2F to a low of 80.7% for Deltapine 0935B2F and All-Tex ApexB2F. Strength values averaged 30.3 g/tex with a high of 32.3 g/tex for FiberMax 9180B2F and a low of 28.6 g/tex for All-Tex ApexB2F. Elongation ranged from a high of 11.7% for Dyna-Gro 2570B2F to a low of 8.8% for FiberMax 9160B2F. There was no significant difference in leaf grades. Values for reflectance (Rd) and yellowness (+b) averaged 82.8 and 7.9, respectively. This resulted in color grades of 11s and 21s.

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

## Acknowledgments:

Appreciation is expressed to Gregory Upton for the use of his land, equipment and labor for this demonstration. Further assistance with this project was provided by the Fiber and Biopolymer Research Institute, Texas Tech University.

Furthermore, we greatly appreciate the Texas Department of Agriculture - Food and Fiber Research for funding of HVI testing.

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**Table 1. Nematode reproduction from replicated nematode cotton variety demonstration, Gregory Upton Farms, Seminole, TX, 2009.**

<b>Entry</b>	<b>Nematode Reproduction Eggs per 500cm<sup>3</sup> soil</b>
DP 174F	4035
ST 5458B2F	8640
DG 2570B2F	7200
DP 0924B2F	11295
DP 0935B2F	11295
PHY 375WF	12800
FM 1740B2F	12040
FM 9160B2F	11480
NG 3348B2F	2960
NG 2549B2F	4000
AT Apex B2F	4311
FM 9180B2F	14560

Table 2. Harvest results from the replicated nematode cotton variety demonstration, Gregory Upton Farms, Seminole, TX, 2009

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 -----		
DP 174F	34.6	44.6	4034	1396	1798	0.5645	787.58	143.82	931.40	121.02	43.96	766.41 a
ST 5458B2F	33.8	51.1	3946	1333	2017	0.5607	747.27	161.31	908.58	118.38	52.12	738.07 a
DG 2570B2F	37.0	51.5	3539	1310	1823	0.5693	745.43	145.81	891.24	106.16	50.78	734.30 a
DP 0924B2F	33.1	51.5	3708	1226	1910	0.5667	694.82	152.81	847.64	111.24	51.72	684.68 b
DP 0935B2F	36.3	49.4	3448	1249	1704	0.5547	692.07	136.35	828.42	103.44	51.72	673.26 b
PHY 375WF	35.6	49.6	3218	1144	1596	0.5663	648.69	127.71	776.40	96.53	50.76	629.11 c
FM 1740B2F	36.0	50.1	3143	1131	1575	0.5463	618.97	126.02	744.99	94.28	52.12	598.59 cd
FM 9160B2F	33.4	50.7	3222	1077	1634	0.5727	616.68	130.70	747.37	96.67	52.12	598.58 cd
NG 3348B2F	33.4	53.0	3186	1063	1687	0.5725	608.49	134.94	743.42	95.57	51.12	596.73 cd
NG 2549B2F	32.3	53.3	3351	1081	1786	0.5313	573.74	142.85	716.59	100.53	51.12	564.94 d
AT Apex B2F	28.7	51.4	3562	1021	1830	0.5612	572.82	146.40	719.21	106.85	50.70	561.66 d
FM 9180B2F	32.2	52.1	3139	1009	1635	0.5695	574.51	130.82	705.33	94.15	52.12	559.05 d
Test average	33.9	50.7	3458	1170	1750	0.5613	656.76	139.96	796.72	103.74	50.86	642.12
CV, %	3.9	4.6	3.7	3.7	3.6	2.3	3.6	3.6	3.5	3.7	--	3.8
OSL	<0.0001	0.0200	<0.0001	<0.0001	<0.0001	0.0250	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001
LSD	2.3	4.0	214	73	106	0.0219	40.01	8.50	46.94	6.42	--	41.61

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

CV - coefficient of variation.

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

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

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

Assumes:

\$3.00/cwt ginning cost.

\$160/ton for seed.

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

Table 3. HVI fiber property results from the replicated nematode cotton variety demonstration, Gregory Upton Farms, Seminole, TX, 2009.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 <sup>nds</sup> inches	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
DP 174F	4.1	35.9	81.5	29.0	11.0	2.7	82.5	8.0	1.7	1.0
ST 5458B2F	4.1	35.1	81.1	31.6	10.0	3.0	80.9	8.6	2.0	1.0
DG 2570B2F	4.6	35.3	82.0	30.0	11.7	1.3	82.8	8.2	1.0	1.0
DP 0924B2F	4.2	35.2	81.9	30.6	11.0	1.7	82.8	8.1	1.3	1.0
DP 0935B2F	4.3	34.5	80.7	29.0	10.8	1.0	82.7	8.4	1.0	1.0
PHY 375WF	4.3	35.3	81.6	29.4	10.4	2.0	82.7	8.0	1.7	1.0
FM 1740B2F	4.5	34.1	80.8	30.0	10.3	1.3	83.8	7.7	1.0	1.0
FM 9160B2F	4.2	36.6	82.5	31.8	8.8	2.3	84.0	7.6	1.7	1.0
NG 3348B2F	4.3	35.8	82.2	31.5	10.0	2.0	81.6	7.6	2.3	1.0
NG 2549B2F	4.3	33.1	81.8	29.6	11.2	2.0	82.0	7.9	1.7	1.0
AT Apex B2F	3.9	35.7	80.7	28.6	10.9	2.0	83.4	8.0	1.3	1.0
FM 9180B2F	4.2	36.5	82.5	32.3	9.3	2.7	84.2	7.1	2.0	1.0
Test average	4.26	35.26	81.6	30.3	10.5	2.0	82.8	7.9	1.6	1.0
CV, %	5.5	1.6	0.9	2.1	3.8	43.7	0.8	3.0	--	--
OSL	0.1474	<0.0001	0.0471	<0.0001	<0.0001	0.2300	0.0001	<0.0001	--	--
LSD	NS	0.97	1.3	1.1	0.7	NS	1.1	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, <sup>†</sup> indicates significance at the 0.10 level, NS - not significant.



**Evaluation of Variety Tolerance and Chemical Management of Root-Knot  
Nematode  
Seminole, TX - 2009**

**Cooperator: Raymond McPherson**

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**Gaines County**

**Summary:**

The southern root-knot nematode, *Meloidogyne incognita*, is an economically important parasite of cotton in Gaines County, Texas. The objectives of this research were to evaluate the performance of ST 5458B2F and FM 9063B2F planted in conjunction with Aeris, Avicta Complete Cotton, Temik 15G at 3.5 lbs/ac, or Temik 15G at 5lbs/ac. Adult and immature thrips whole plant counts, *M. incognita* gall counts, second-stage juvenile and eggs counts per 500cm<sup>3</sup> soil, and plant height and number of node counts provided further information on the impact of root-knot nematodes. Plots were machine harvested and yield, gin turnout, fiber quality, and economics of treatments were determined. ST 5458B2F had significantly fewer galls per root and significantly fewer second-stage juveniles and egg counts per 500cm<sup>3</sup> soil than FM 9063B2F. Plants from plots treated with Temik 15G at 3.5 lbs and 5lbs had significantly fewer galls per root than plants from seed treated with Aeris, Avicta, and the untreated check. ST 5458B2F had significantly higher lint yield per acre than FM 9063B2RF which resulted in a significantly higher net value per acre. Net value of 5 lbs of Temik 15G was not significantly different from 3.5 lbs of Temik 15G, and Aeris. Based on these results, planting tolerant varieties was the most economical and effective method in the management of root-knot nematodes.

**Objective:**

The southern root-knot nematode, *Meloidogyne incognita*, is an economically important parasite of cotton in Gaines County, Texas. Higher populations of this pest tend to occur in sandier fields that have had consecutive cotton crops and very little rotation to a non-host, such as peanuts (Kirkpatrick, 2001). Management decisions are dependent on the level of nematode infestation and the estimated nematode-induced yield loss (Kirkpatrick, 2001). Planting partially resistant varieties is one of the most effective tools in managing this pest (Zhou et al., 2003). Seed treatments are another option for the management of nematodes. Therefore, cotton production may be optimized by planting partially resistant cotton varieties in conjunction with the use of seed treatments or Temik 15G. The objectives of study were

to evaluate the impact of two cotton varieties planted in conjunction with chemical treatments on southern root-knot nematode populations and the resulting effect on plant development, and to compare net returns between varieties, chemicals, and the interaction between varieties and chemicals.

### **Materials and Methods:**

Treatments:	See Table 1
Cropping History:	5 year crop history of cotton, peanuts, cotton, cotton, cotton
Field Soil Texture:	93% sand, 3% silt, and 4% clay
Experimental design:	randomized complete block design with 3 replications
Seeding rate:	3.8 seed/row-ft in 40-inch row spacing
Plot size:	8-rows wide and 400 ft in length
Planting date:	7 May in terminated wheat
Irrigation:	This location was under LESA center pivot
Irrigation & Rainfall:	Pre-bloom irrigation and rainfall totaled ~5.72 inches Bloom to harvest rainfall totaled ~9.16 inches
Weed Management:	8 oz of Trifluralin was banded on pre-plant. Roundup was applied twice during the season.
Fertilizer Management:	First application: 25 gallons of a 4-10-10 acid fertilizer Second application: 85 units of Nitrogen and 15 units of sulfur
Plant Growth Regulators:	No plant growth regulators were applied to this trial.
In-Season Data Collection:	The number of adult and immature thrips was counted by visually inspecting 10 whole plants per plot on 20 May, 27 May, 3 June, and 10 June. The number of galls caused by <i>M. incognita</i> was counted by visually inspecting 10 plant roots per plot on 10 June. Soil samples were taken on 16 July to count <i>M. incognita</i> second-stage juveniles (J2) and eggs per 500cm <sup>3</sup> soil. Plant height, number of nodes, and Nodes Above White Flower (NAWF) were counted on ten plants per plot on 14 August.
Harvest:	Plots were harvested on 19 October using a commercial stripper harvester with field cleaner. Harvested material was transferred to a weigh wagon with integral electronic scales to determine individual plot weights. Plot yields were subsequently adjusted to lb/acre.
Gin turnout:	Grab samples were taken by plot and ginned at the Texas AgriLife Research and Extension Center at Lubbock to determine gin turnouts.

Fiber analysis:	Lint samples were submitted to the Texas Tech University - Fiber and Biopolymer Research Institute for HVI analysis, and USDA Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.
Ginning cost and seed values:	Ginning costs were based on \$3.00 per cwt. of bur cotton and seed value/acre was based on \$160/ton. Ginning costs did not include checkoff.
Seed and technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (3.6 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://www.plainscotton.org/Seed/PCGseed10.xls">http://www.plainscotton.org/Seed/PCGseed10.xls</a> .

### Results and Discussion:

ST 5458B2F had significantly fewer galls per root than FM 9063B2F (*Table 2*). Temik 15G at 3.5 lbs and Temik 15G at 5 lbs had significantly fewer galls per root than AERIS, Avicta, and the untreated (*Table 3*). There was no significant interaction between variety and chemical, indicating that the response was consistent with both varieties. ST 5458B2F had significantly fewer egg per 500 cm<sup>3</sup> soil than FM 9063B2F (*Table 2*). There was no significant effect by chemical (*Table 3*) or by the interaction between variety and chemical.

Plant height did not significantly differ between FM 9063B2RF and ST 5458B2RF on 14 August (*Table 4*). However, FM 9063B2F had significantly more nodes per plant than ST 5458B2RF (*Table 4*). Plant height and number of nodes did not significantly differ between chemical treatments (*Table 5*). Nodes Above White Flower (NAWF) had a significant interaction between variety and chemical ( $P = 0.05$ ). Due to the variety by chemical interaction, NAWF data is reported as interaction means (*Table 6*).

ST 5458B2RF had significantly higher lint yield per acre and lint turnout than FM 9063B2F which resulted in a significantly higher net value per acre. However, FM 9063B2F had a significantly higher seed turnout per acre (*Table 7*).

Net value of 5 lbs of Temik 15G was not significantly different from 3.5 lbs of Temik 15G and AERIS (*Table 8*). However, AERIS did not significantly differ from Avicta, and Untreated (*Table 8*).

The untreated plots had significantly more adult thrips on 20 May and immature thrips on 3 June than the other treatments (*Table 12*). Avicta seed treatment immature thrips did not significantly differ from the untreated plots on 3 June (*Table 12*). On 10 June the 5 lbs Temik 15G had significantly more adult thrips than the other treatments (*Table 12*). Thrips were not a limiting factor since treatments never reached the thrips threshold of 1 per true leaf.

### Summary:

*Meloidogyne incognita*, is one factor that can significantly impact variety performance. FM 9063B2F had significantly more galls early-season and second-stage juveniles & eggs mid-season. This likely decreased crop potential and contributed to a lower yield at the end of the season. Therefore, based on this trial, planting tolerant varieties is the most economical

and effective method in the management of nematodes. Chemical management also resulted in some increased control of nematodes. However, differences in chemical control were not as clearly defined as the variety effect. More research is needed in order to determine optimal variety and chemical management for nematodes across years.

**Acknowledgments:**

Appreciation is expressed to Raymond McPherson for the use of his land, equipment and labor for this demonstration. Further assistance with this project was provided by the Fiber and Biopolymer Research Institute, Texas Tech University. Furthermore, we greatly appreciate the Texas Department of Agriculture - Food and Fiber Research for funding of HVI testing.

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Kirkpatrick, T. L. and C. S. Rothrock, ed. Compendium of Cotton Diseases, second Edition. APS Press, 2001.

Zhou, E. and J. L. Starr. 2003. A comparison of the Damage Functions, Root Galling, and Reproduction of *Meloidogyne incognita* on Resistant and Susceptible Cotton Cultivars. *Journal of Cotton Science*. 7:224-230.

Table 1. Treatments

ST 5458B2RF <sup>1</sup> Untreated
ST 5458B2RF <sup>1</sup> & Aeris seed treatment (insecticide & nematocide)
ST 5458B2RF & Avicta Complete Cotton seed treatment (insecticide, nematocide, and fungicide)
ST 5458B2RF <sup>1</sup> & 3.5 lbs/acre of Temik 15G <sup>2</sup>
ST 5458B2RF <sup>1</sup> & 5 lbs/acre of Temik 15G <sup>2</sup>
FM 9063B2RF <sup>1</sup> Untreated
FM 9063B2RF <sup>1</sup> & Aeris seed treatment (insecticide & nematocide)
FM 9063B2RF & Avicta Complete Cotton seed treatment (insecticide, nematocide, and fungicide)
FM 9063B2RF <sup>1</sup> & 3.5 lbs/acre of Temik 15G <sup>2</sup>
FM 9063B2RF <sup>1</sup> & 5 lbs/acre of Temik 15G <sup>2</sup>

<sup>1</sup> Trilex Advance (fungicide) seed treatment was applied to all seed (with the exception of the Avicta seed treatment plots)

<sup>2</sup> Temik 15G was applied in-furrow at planting. Temik boxes were calibrated prior to planting the trial.

Table 2. Average number of root galls caused by *Meloidogyne incognita* on 10 June and average number of *M. incognita* second-stage juveniles and eggs per 500 cm<sup>3</sup> soil on 16 July by variety

Variety	Average No. of Galls	Average No. of J2	Average No. of Eggs
FM 9063B2RF	30.5	639	5720
ST 5458B2RF	24.8	333	3298
Test average	26.2	486	4509
CV %	27.6	96.1	74.2
OSL	0.054	0.06	0.04

CV – coefficient of variation

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

Table 3. Average number of root galls caused by *Meloidogyne incognita* on 10 June and average number of *M. incognita* second-stage juveniles and eggs per 500 cm<sup>3</sup> soil on 16 July by chemical

Variety	Average No. of Galls	Average No. of J2	Average No. of Eggs
Untreated	35.6 ab	500	5460
Avicta	38.9 a	700	4760
Aeris	29.2 b	200	3120
3.5 lbs of Temik 15G	18.1 c	483	4253
5 lbs of Temik 15G	15.6 c	367	5180
Test average	26.2	486	4509
CV %	27.6	96.1	74.2
OSL	<0.0001	0.46	0.86

Means within the same column with the same letter are not significantly different

CV – coefficient of variation

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

Table 4. Average plant height and number of nodes on 14 August by variety

Variety	Average Plant Height (inches)	Average No. of Nodes
FM 9063B2RF	18.1	16.7
ST 5458B2RF	18.6	15.5
Test average	18.4	16.1
CV %	5.9	3.6
OSL	0.21	<0.0001
CV – coefficient of variation		
OSL – observed significance level, or probability of a greater F value		

Table 5. Average plant height and number of nodes on 14 August by chemical

Variety	Average Plant Height (inches)	Average No. of Nodes
Untreated	17.9	16.1
Avicta	17.7	16.0
Aeris	18.3	15.8
3.5 lbs of Temik 15G	19.6	16.7
5 lbs of Temik 15G	18.6	15.9
Test average	18.4	16.1
CV %	5.9	3.6
OSL	0.09	0.11
CV – coefficient of variation		
OSL – observed significance level, or probability of a greater F value		

Table 6. Average Nodes Above White Flower (NAWF) on 14 August for variety by chemical interaction means

Variety	Chemical	Average No. NAWF
ST 5458B2F	Untreated	2.4 ab
ST 5458B2F	Aeris	2.8 a
ST 5458B2F	Avicta	1.9 c
ST 5458B2F	3.5 lbs of Temik 15G	2.5 ab
ST 5458B2F	5 lbs of Temik 15G	2.5 ab
FM 9063B2RF	Untreated	2.6 a
FM 9063B2RF	Aeris	2.2 bc
FM 9063B2RF	Avicta	2.4 ab
FM 9063B2RF	3.5 lbs of Temik 15G	2.6 a
FM 9063B2RF	5 lbs of Temik 15G	2.6 a
Test average		2.4
CV %		11.9
OSL		0.0736
CV – coefficient of variation		
OSL – observed significance level, or probability of a greater F value		

Table 7. Harvest results by variety

Variety	Lint turnout -----%	Seed turnout -----	Bur cotton yield -----lb/acre-----	Lint yield -----	Seed yield -----	Lint loan value \$/lb	Lint value -----	Seed value -----	Total value -----	Ginning cost \$/acre-----	Seed and Technology cost -----	Net Value -----
ST 54548B2F	36.2	48.0	3183	1152	1529	0.5647	650.32	152.87	803.20	95.49	67.57	620.57
FM 9063B2F	33.3	50.8	2341	778	1188	0.5688	442.45	117.66	560.12	70.23	67.57	402.75
Test average	34.7	49.4	2762	965	1359	0.5668	546.39	135.27	681.66	82.86	-	511.66
CV %	3.7	2.32	8.9	8.4	9.0	2.03	8.8	9.49	8.8	8.9	-	10.42
OSL	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.30	<0.0001	<0.0001	<0.0001	<0.0001	-	<0.0001

CV – coefficient of variation

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

Assumes:

\$2.45/cwt ginning costs

\$150/ton for seed

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

Net Value was determined by subtracting ginning cost, seed and technology cost and treatment cost (\$19.57/acre, data not shown) from total value.

Table 8. Harvest results by chemical

Chemical	Lint turnout -----%	Seed turnout -----	Bur cotton yield -----lb/acre-----	Lint yield -----	Seed yield -----	Lint loan value \$/lb	Lint value -----	Seed value -----	Total value -----\$/acre-----	Ginning cost	Treatment cost	Net Value
5 lbs of Temik 15G	35.0	49.4	3023 a	1062 a	1490 a	0.5679	602.97 a	149.03 a	752.00 a	90.70 a	25.11	568.63 a
3.5 lbs of Temik 15G	35.2	50.0	2930 ab	1034 ab	1457 a	0.5636	583.48 ab	145.65 a	729.13 a	87.88 ab	20.16	553.52 ab
Aeris	34.7	49.4	2822 abc	979 ab	1384 ab	0.5583	544.21 bc	138.40 ab	682.61 ab	84.66 abc	17.33	513.06 abc
Untreated	34.4	49.2	2551 c	880 c	1248 bc	0.5711	502.05 c	124.80 bc	626.84 c	76.53 c	8.61	474.14 c
Avicta	34.5	48.7	2527 c	878 c	1228 c	0.5700	499.83 c	119.28 c	619.11 b	75.80 c	15.70	460.04 c
Test average	34.7	49.4	2762	965	1359	0.5668	546.39	135.27	681.66	82.86	-	511.66
CV %	3.7	2.32	8.94	8.4	9.0	2.03	8.8	9.49	8.8	8.9	-	10.42
OSL	0.87	0.42	0.01	0.002	0.005	0.39	0.006	0.004	0.005	0.01	-	0.01

Means within the same column with the same letter are not significantly different

CV – coefficient of variation

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

Assumes:

\$2.45/cwt ginning costs

\$150/ton for seed

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

Net Value was determined by subtracting ginning cost, seed and technology cost (\$67.57/acre, data not shown) and treatment cost from total value.

Table 9. HVI fiber property results by variety

Variety	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b
ST 5458B2F	4.7	36.0	80.5	30.0	8.0	2.1	80.3	8.1
FM 9063B2F	4.3	37.8	81.6	31.3	7.0	2.1	83.3	7.1
Test average	4.6	36.9	81.0	30.6	7.5	2.1	81.8	7.6
CV %	3.8	2.3	0.7	2.2	4.4	41.0	1.4	3.7
OSL	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	1.0	<0.0001	<0.0001
CV – coefficient of variation								
OSL – observed significance level, or probability of a greater F value								

Table 10. HVI fiber property results by chemical

Chemical	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b
5 lbs of Temik 15G	4.6	36.9	81.3	30.6	7.6 ab	2.0	81.4	7.6
3.5 lbs of Temik 15G	4.3	36.3	81.0	30.5	7.8 a	1.8	81.4	7.8
Aeris	4.6	36.8	80.7	30.4	7.6 ab	2.8	81.6	7.5
Untreated	4.6	37.0	80.8	31.0	7.2 b	2.0	82.3	7.7
Avicta	4.6	37.1	81.3	30.4	7.5 ab	1.7	82.2	7.5
Test average	4.6	36.9	81.0	30.6	7.5	2.1	81.8	7.6
CV %	3.8	2.3	0.7	2.2	4.4	41.0	1.4	3.7
OSL	0.06	0.61	0.29	0.61	0.05	0.26	0.63	0.49
Means within the same column with the same letter are not significantly different								
CV – coefficient of variation								
OSL – observed significance level, or probability of a greater F value								

Table 11. Average number of adult (A) and immature (I) thrips 20 May, 27 May, 3 June, and 10 June by variety

Variety	Date							
	20 May		27 May		3 June		10 June	
	A	I	A	I	A	I	A	I
FM 9063B2F	0.04	0.02	0.04	0.00	0.07	0.01	0.10	0.07
ST 5458B2F	0.05	0.01	0.06	0.01	0.07	0.08	0.06	0.11
Test average	0.04	0.01	0.05	0.00	0.07	0.04	0.08	0.09
CV %	172.6	374.3	146.3	600.0	117.4	146.1	95.2	124.9
OSL	0.67	0.35	0.52	0.33	0.84	0.006	0.14	0.32

CV – coefficient of variation

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

Table 12. Average number of adult (A) and immature (I) thrips 20 May, 27 May, 3 June, and 10 June by chemical

Variety	Date							
	20 May		27 May		3 June		10 June	
	A	I	A	I	A	I	A	I
Untreated	0.15 a	0.05	0.05	0.00	0.05	0.12 a	0.07 b	0.07
Avicta	0.05 b	0.00	0.02	0.00	0.08	0.08 ab	0.02 b	0.12
Aeris	0.02 b	0.00	0.07	0.00	0.08	0.03 cb	0.07 b	0.07
3.5 lbs of Temik 15G	0.05 b	0.01	0.08	0.00	0.10	0.00 c	0.07 b	0.13
5 lbs of Temik 15G	0.00 b	0.00	0.03	0.00	0.07	0.00 c	0.18 a	0.03
Test average	0.04	0.01	0.05	0.00	0.07	0.04	0.08	0.09
CV %	172.6	374.3	146.3	600.0	117.4	146.1	95.2	124.9
OSL	0.02	0.53	0.70	0.44	0.74	0.03	0.03	0.56

Means within the same column with the same letter are not significantly different

CV – coefficient of variation

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



**Replicated Irrigated Cotton Variety Demonstration  
Under Verticillium Wilt Pressure  
Seminole, TX - 2009**

**Cooperator: Max McGuire**

**Manda Cattaneo, Mark Kelley, Jason Woodward, Terry Wheeler, and Randy Boman**

**EA-IPM Gaines County, Extension Program Specialist II - Cotton, Extension Plant Pathologist, Research Plant Pathologist, and Extension Agronomist - Cotton**

**Gaines County**

**Summary:** Significant differences were observed for most yield and economic and HVI fiber quality parameters measured. Lint yields varied with a low of 1153 lb/acre (FiberMax 9180B2F) and a high of 1637 lb/acre (Deltapine 174F). Lint loan values ranged from a low of \$0.5327/lb (NexGen 2549B2F) to a high of \$0.5643/lb (Deltapine 174F). Net value/acre among varieties ranged from a high of \$896.76 (Deltapine 174F) to a low of \$616.91 (NexGen2549B2F), a difference of \$279.85. Staple averaged 36.4 across all varieties with a low of 34.1 for NexGen 2549B2F and a high of 37.7 for FiberMax 9170B2F. Strength values averaged 30.2 g/tex with a high of 32.3 g/tex for FiberMax 9170B2F and a low of 28.2 g/tex for Americot 1532B2F. Percent uniformity and values ranged from a high of 82.8% for FiberMax 9160B2F to a low of 80.3% for Deltapine 0935B2F. These data indicate that substantial differences can be obtained in terms of net value/acre due to variety and technology selection.

**Objective:** The objective of this project was to compare agronomic characteristics, yields, gin turnout, fiber quality, and economic returns of transgenic cotton varieties under Verticillium Wilt pressure in Gaines County.

**Materials and Methods:**

**Varieties:** All-Tex Patriot F, Americot 1532B2F, Deltapine 174F, Deltapine 164B2F, Deltapine 0935B2F, FiberMax 9160B2F, FiberMax 9170B2F, FiberMax 9180B2F, NexGen 2549B2F, NexGen 3348B2F, Phytogen 315F

Field Soil Texture and pH:	87% sand, 3% silt, and 10% clay; pH 7.7
Experimental design:	Randomized complete block with 3 replications
Seeding rate:	3.6 seeds/row-ft in 40-inch row spacing
Plot size:	8 rows by variable length of field (0.91 acres to 1.48 acres)
Planting date:	29 April in terminated wheat
Irrigation:	This location was under LESA center pivot
Irrigation & Rainfall:	Pre-bloom irrigation and rainfall totaled ~7.10 inches Bloom to harvest rainfall totaled ~8.70 inches
Insecticides:	Applied Temik at 3.5 lbs/acre in-furrow at planting
Harvest:	Plots were harvested on 8 & 9-October using a commercial stripper harvester with field cleaner. Harvested material was transferred to a weigh wagon with integral electronic scales to determine individual plot weights. Plot yields were subsequently adjusted to lb/acre.
Gin turnout:	Grab samples were taken by plot and ginned at the Texas AgriLife Research and Extension Center at Lubbock to determine gin turnouts.
Fiber analysis:	Lint samples were submitted to the Texas Tech University - Fiber and Biopolymer Research Institute for HVI analysis, and USDA Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.
Ginning cost and seed values:	Ginning costs were based on \$3.00 per cwt. of bur cotton and seed value/acre was based on \$160/ton. Ginning costs did not include checkoff.
Seed and technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (3.6 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://www.plainscotton.org/Seed/PCGseed10.xls">http://www.plainscotton.org/Seed/PCGseed10.xls</a> .

## Results and Discussion:

Significant differences were observed for most yield and economic and HVI fiber quality parameters measured (Tables 1 and 2). Lint turnout were significant at the 0.10 probability level and ranged from a low of 30.8% and a high of 35.3% for FiberMax 9180B2F and Phytogen 315F, respectively. There was no significant difference in seed turnout. Bur cotton yields averaged 3850 lb/acre with a high of 4801 lb/acre for Deltapine 174F, and a low of 3623 lb/acre for Phytogen 315F. Lint yields varied with a low of 1153 lb/acre (FiberMax 9180B2F) and a high of 1637 lb/acre (Deltapine 174F). Lint loan values ranged from a low of \$0.5327/lb (NexGen

2549B2F) to a high of \$0.5643/lb (Deltapine 174F). After adding lint and seed value, total value/acre for varieties ranged from a low of \$794.35 for NexGen 2549B2F to a high of \$1093.90 for Deltapine 174F. When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of \$896.76 (Deltapine 174F) to a low of \$616.91 (NexGen2549B2F), a difference of \$279.85.

Micronaire values were significant at the 0.10 probability level and ranged from a low of 3.7 for NexGen 2549B2F and NexGen 3348B2F to a high of 4.3 for Deltapine 164B2RF. Staple averaged 36.4 across all varieties with a low of 34.1 for NexGen 2549B2F and a high of 37.7 for FiberMax 9170B2F. Percent uniformity and values ranged from a high of 82.8% for FiberMax 9160B2F to a low of 80.3% for Deltapine 0935B2F. Strength values averaged 30.2 g/tex with a high of 32.3 g/tex for FiberMax 9170B2F and a low of 28.2 g/tex for Americot 1532B2F. Elongation ranged from a high of 8.9% for NexGen 2549B2F to a low of 6.6% for FiberMax 9160B2F. Although there was one 4 observed, leaf grades were 1s and 2s for most varieties. Values for reflectance (Rd) and yellowness (+b) averaged 81.9 and 8.0, respectively. This resulted in color grades of mostly 11s and 21s.

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

### **Acknowledgments:**

Appreciation is expressed to Max McGuire for the use of his land, equipment and labor for this demonstration. Further assistance with this project was provided by the Fiber and Biopolymer Research Institute, Texas Tech University. Furthermore, we greatly appreciate the Texas Department of Agriculture - Food and Fiber Research for funding of HVI testing.

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Table 1. Harvest results from the replicated Verticillium Wilt cotton variety demonstration, Max McGuire Farms, Seminole, TX, 2009

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 -----		
DP 174F	34.1	44.6	4801	1637	2141	0.5643	922.64	171.27	1093.90	144.02	53.12	896.76 a
DP 164B2F	31.9	47.7	4050	1292	1933	0.5740	741.88	154.65	896.53	121.50	61.40	713.63 b
FM 9170B2F	33.9	48.1	3830	1298	1840	0.5692	739.60	147.21	886.81	114.89	62.98	708.93 b
PHY 315F	35.3	48.7	3623	1280	1765	0.5632	721.16	141.17	862.32	108.68	53.10	700.55 bc
FM 9160B2F	33.4	47.8	3655	1221	1747	0.5748	702.02	139.73	841.74	109.64	62.98	669.12 bcd
AT PatriotF	31.8	50.5	3728	1187	1882	0.5727	679.80	150.57	830.37	111.84	51.46	667.07 bcd
AM 1532B2F	32.4	48.7	3656	1186	1780	0.5710	677.06	142.35	819.42	109.68	61.77	647.97 bcd
NG 3348B2F	31.6	48.9	3739	1183	1831	0.5640	667.71	146.50	814.21	112.16	61.77	640.28 bcd
DP 0935B2F	33.4	45.9	3665	1223	1683	0.5512	674.54	134.61	809.15	109.95	62.49	636.71 bcd
FM 9180B2F	30.8	48.4	3746	1153	1811	0.5737	661.12	144.90	806.01	112.37	62.98	630.66 cd
NG 2549B2F	31.4	48.8	3856	1209	1881	0.5327	643.92	150.43	794.35	115.67	61.77	616.91 d
Test average	32.7	48.0	3850	1261	1845	0.5646	711.95	147.58	859.53	115.49	59.62	684.42
CV, %	5.3	5.5	5.3	5.4	5.3	1.6	6.2	5.3	6.0	5.3	--	6.6
OSL	0.0964	0.4278	<0.0001	<0.0001	0.0018	0.0004	<0.0001	0.0018	<0.0001	<0.0001	--	<0.0001
LSD	2.4	NS	350	116	166	0.0155	74.72	13.30	87.68	10.51	--	77.48

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.

\$160/ton for seed.

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

Table 2. HVI fiber property results from the replicated Verticillium Wilt cotton variety demonstration, Max McGuire Farms, Seminole, TX, 2009.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 <sup>nds</sup> inches	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
DP 174F	4.1	37.1	82.0	30.0	7.9	2.7	81.3	8.1	2.3	1.0
DP 164B2F	4.3	37.2	81.9	30.3	7.3	1.0	83.3	8.2	1.0	1.0
FM 9170B2F	3.8	37.7	81.9	32.3	6.9	1.0	83.9	7.3	2.0	1.0
PHY 315F	3.9	35.4	81.1	29.1	8.1	2.0	81.1	8.5	2.0	1.0
FM 9160B2F	4.0	37.3	82.8	31.0	6.6	2.0	82.7	7.6	1.7	1.0
AT PatriotF	4.1	36.5	81.6	29.6	8.6	1.3	81.7	8.2	2.0	1.0
AM 1532B2F	4.0	36.1	81.9	28.2	8.6	2.0	82.2	8.1	1.7	1.0
NG 3348B2F	3.7	36.2	82.1	30.9	7.9	2.7	80.1	7.9	2.7	1.0
DP 0935B2F	3.8	35.0	80.3	29.0	8.5	1.7	82.3	8.4	1.3	1.0
FM 9180B2F	4.1	37.5	82.6	31.5	7.4	1.3	82.4	7.5	2.0	1.0
NG 2549B2F	3.7	34.1	82.6	29.8	8.9	4.0	79.6	8.0	2.3	1.0
Test average	4.0	36.4	81.9	30.2	7.9	2.0	81.9	8.0	1.9	1.0
CV, %	5.4	1.7	0.9	2.9	5.2	37.5	1.5	3.6	--	--
OSL	0.0672	<0.0001	0.0261	0.0005	<0.0001	0.0026	0.0143	0.0007	--	--
LSD	0.3	1.1	1.3	1.5	0.7	1.3	2.1	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.



**Replication Plant Growth Regulator Performance on Cotton Demonstration,  
Seminole, TX - 2009**

**Cooperator: Michael Todd**

**Manda Cattaneo, Scott Russell, Mark Kelley, and Randy Boman,  
EA-IPM Gaines County, EA-IPM Terry and Yoakum Counties, Extension Program  
Specialist II - Cotton, and Extension Agronomist - Cotton**

**Gaines County**

**Summary:** No significant differences were observed for all yield, economic, and HVI fiber quality parameters measured (Tables 1 and 2). These data indicate that substantial differences are not obtained in terms of net value/acre due to plant growth regulator selection.

**Objective:** The objective of this project was to evaluate the performance of commercially available plant growth regulators (PGR) on a medium to tall cotton variety, FiberMax 9160B2F, in Gaines County.

**Materials and Methods:**

Treatments: 4 fl oz of Mepex, 4 fl oz of Mepex GinOut, 4 fl oz of Pentia, 2 fl oz of Stance

Soil Texture and pH: 84% sand, 5% silt, and 11% clay; pH of 7.8

Experimental design: Randomized complete block with 3 replications

Seeding rate: 3.5 seeds/row-ft in 38-inch row spacing

Plot size: 8 rows by variable length of field (552 - 1115 ft long)

Planting date: 15 May in terminated wheat

Irrigation: This location was under a LESA center pivot

Irrigation & Rainfall: Pre-bloom irrigation and rainfall totaled ~9.81 inches  
Bloom to harvest rainfall totaled ~10.80 inches

Weed Management:	½ pt per acre Treflan banded on pre-plant and three application of Roundup in-season
Insecticides:	3 oz of Orthene applied early season
Fertilizer Management:	15 gallons of 10-34-0 preplant and 30 gallons of 28-0-0-5 in-season
Harvest Aides:	2 pts of Prep and 1 1/4 pt of Def
PGR applicaation:	The PGRs were applied on 7 July with flat fan nozzles and a spry volume of 10.4 gallons per acre.
Plant Mapping Results:	Plant height, number of nodes, and Nodes Above White Flower (NAWF) were counted on ten plants per plot on 24 July. There was no significant difference between treatments for these measurements.
Harvest:	Plots were harvested on 11-November using a commercial stripper harvester with field cleaner. Harvested material was transferred to a weigh wagon with integral electronic scales to determine individual plot weights. Plot yields were subsequently adjusted to lb/acre.
Gin turnout:	Grab samples were taken by plot and ginned at the Texas AgriLife Research and Extension Center at Lubbock to determine gin turnouts.
Fiber analysis:	Lint samples were submitted to the Texas Tech University - Fiber and Biopolymer Research Institute for HVI analysis, and USDA Commodity Credit Corporation (CCC) loan values were determined for each variety by plot.
Ginning cost and seed values:	Ginning costs were based on \$3.00 per cwt. of bur cotton and seed value/acre was based on \$160/ton. Ginning costs did not include checkoff.
Seed and technology fees:	Seed and technology costs were calculated using the appropriate seeding rate (3.0 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: <a href="http://www.plainscotton.org/Seed/PCGseed10.xls">http://www.plainscotton.org/Seed/PCGseed10.xls</a> .

## Results and Discussion:

No significant differences were observed for all yield, economic, and HVI fiber quality parameters measured (Tables 1 and 2). These data indicate that substantial differences are not obtained in terms of net value/acre due to plant growth regulator selection. It should be noted that no inclement weather was encountered at this location prior to harvest and therefore, no pre-harvest losses were observed. Additional multi-site and multi-year applied research is needed to evaluate varieties and technology across a series of environments.

**Acknowledgments:**

Appreciation is expressed to Michael Todd for the use of his land, equipment and labor for this demonstration. Further assistance with this project was provided by the Fiber and Biopolymer Research Institute, Texas Tech University.

Furthermore, we greatly appreciate the Texas Department of Agriculture - Food and Fiber Research for funding of HVI testing.

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Table 1. Harvest results from the replicated plant growth regulator cotton demonstration, Michael Todd Farms, Seminole, TX, 2009.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Net value
	----- % -----		----- lb/acre -----			\$/lb			----- \$/acre -----		
Mepex	34.0	50.2	3758	1279	1884	0.5662	724.35	188.42	912.77	112.73	800.04
Mepex_GinOut	33.9	49.6	3741	1271	1859	0.5605	712.30	185.84	898.15	112.23	785.92
Pentia	33.4	48.2	3671	1225	1768	0.5615	687.82	176.79	864.62	110.15	754.46
Stance	32.8	50.9	3636	1194	1849	0.5637	672.56	184.90	857.45	109.07	748.38
Untreated	32.7	49.3	3623	1184	1788	0.5662	670.24	178.84	849.09	108.70	740.38
<b>CV, %</b>	4.2	2.7	2.9	5.2	3.7	1.0	5.7	3.7	5.2	2.9	5.7
<b>OSL</b>	0.6885	0.2299	0.4647	0.3310	0.2766	0.6652	0.4174	0.2766	0.4222	0.4666	0.4482
<b>LSD</b>	NS	NS	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.

\$160/ton for seed.

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

**Table 2. HVI fiber property results from the replicated plant growth regulator cotton demonstration, Michael Todd Farms, Seminole, TX, 2009.**

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32 <sup>nds</sup> inches	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
Mepex	3.6	37.0	81.2	29.6	7.0	2.3	82.8	6.6	2.3	1.0
Mepex GinOut	3.6	36.8	81.9	29.9	7.0	1.7	82.5	6.6	3.0	1.0
Pentia	3.7	36.4	81.0	29.2	6.9	2.7	82.2	6.7	3.0	1.0
Stance	3.8	36.5	81.4	29.0	6.8	2.7	82.0	6.9	2.7	1.0
Untreated	3.7	36.7	81.3	29.4	7.0	2.3	82.6	6.7	2.7	1.0
<b>CV, %</b>	3.6	1.0	1.1	0.6	3.3	27.1	0.8	3.6	--	--
<b>OSL</b>	0.3815	0.3688	0.3442	0.3189	0.6303	0.3640	0.5897	0.4722	--	--
<b>LSD</b>	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, <sup>†</sup>indicates significance at the 0.10 level, NS - not significant.



**Deltapine Cotton Variety Trial  
Seminole, TX - 2009**

**Cooperator: Tim Neufeld**

**Manda Cattaneo, Extension Agent - IPM, Gaines County**

**Gaines County**

**Table 1. Harvest results from the Deltapine Irrigated Cotton Variety Trial (1 replication), Tim Neufeld Farms , Seminole, TX, 2009.**

Variety	Fiber Uniformity	Elongation	Fiber length	Micronaire	Fiber Strength	Fiber Color +B	Fiber Color RD	Lbs Lint / acre	Crop Value (\$/acre)
DP 0935 B2RF	84.9	6.8	1.110	5.52	30.4	7.0	77.0	2238	\$1,173.52
09R468B2R2 **	85.4	9.9	1.116	4.49	29.0	6.7	78.4	2156	\$1,132.26
09R621B2R2 **	83.2	8.7	1.150	4.75	30.2	7.0	79.5	2160	\$1,131.90
ST 5458 B2RF	84.5	7.9	1.055	5.24	32.3	6.9	77.2	2131	\$1,114.64
DP 1050 B2RF *	85.0	8.6	1.183	3.65	30.7	6.9	80.1	2017	\$1,056.43
DP 0949 B2RF	86.2	8.5	1.177	5.10	31.5	5.7	79.0	1878	\$ 991.41
09R564B2R2 **	83.6	9.0	1.182	4.26	30.1	6.6	80.9	1873	\$ 982.89
09R555B2R2 **	86.7	7.7	1.224	3.91	33.2	6.4	78.2	1726	\$ 908.88

\* Designates new Class of 10 Deltapine variety

\*\* Designates Deltapine experimentals that were not advanced into commercial varieties in 2010



**FiberMax Cotton Variety Trial  
Seminole, TX - 2009**

**Cooperator: Jud Cheuvront**

**Manda Cattaneo, Extension Agent - IPM, Gaines County**

**Gaines County**

**Table 1. Harvest results from the FiberMax Irrigated Cotton Variety Trial (1 replication), Jud Cheuvront Farms , Seminole, TX, 2009.**

Variety	Lint Yield (lbs/A)	Yield Rank	Percent Turnout	Mic	Staple	Strength	Unif	Loan Value* (¢/lb)	Value / A (\$/A)
FM 9170B2F	1750	1	40.5%	3.84	39	32.0	81.9	54.00	\$945
DP 0924 B2RF	1735	2	41.0%	4.00	36	29.4	83.4	53.75	\$933
FM 1740B2F	1703	3	42.8%	3.92	37	30.8	81.4	54.00	\$919
ST 4498B2RF	1651	4	40.6%	4.10	37	30.6	84.0	54.30	\$897
ST 5458B2RF	1627	5	40.4%	4.15	36	32.3	82.2	54.00	\$879
BCSX 1010B2F	1617	6	40.3%	4.01	37	31.9	82.0	54.00	\$873
FM 9160B2F	1614	7	40.7%	3.61	38	31.5	82.8	54.05	\$873
DP 0935 B2RF	1604	8	42.6%	4.04	36	28.8	81.5	53.55	\$859
ST 4288B2F	1576	9	38.6%	4.09	37	30.2	81.5	53.80	\$848
FM 9180B2F	1537	10	40.0%	4.26	37	31.7	82.4	54.00	\$830
ST 5288B2F	1530	11	41.1%	4.09	37	29.8	82.7	54.00	\$826

\* Loan Value based on 2009 CCC Loan Schedule using a uniform color grade of 41 and leaf grade of 4.



**FiberMax Cotton Variety Trial  
Seagraves, TX - 2009**

**Cooperator: Larry Nelson**

**Scott Russell, Extension Agent - IPM Terry and Yoakum Counties  
and Manda Cattaneo, Extension Agent - IPM Gaines County**

**Yoakum County**

**Table 1. Harvest results from the FiberMax Irrigated Cotton Variety Trial (1 replication), Larry Nelson Farms , Seminole, TX, 2009.**

<b>Variety</b>	<b>Lint Yield (lbs/A)</b>	<b>Yield Rank</b>	<b>Percent Turnout</b>	<b>Mic</b>	<b>Staple</b>	<b>Strength</b>	<b>Unif</b>	<b>Loan Value* (¢/lb)</b>	<b>Value / A (\$/A)</b>
ST 4288B2F	1935	1	35.5%	4.60	37	30.5	83.9	54.15	\$1,048
FM 9170B2F	1785	2	37.8%	3.84	39	33.9	82.5	54.20	\$967
ST 4498B2RF	1702	3	34.4%	3.32	38	32.6	83.0	52.30	\$890
FM 1740B2F	1690	4	37.1%	4.16	37	30.1	82.8	54.00	\$913
FM 9160B2F	1634	5	37.2%	3.95	37	31.7	83.1	54.20	\$886
DP 0935 B2RF	1631	6	38.3%	3.88	35	29.3	81.8	53.05	\$865
ST 5458B2RF	1628	7	34.5%	3.44	37	32.4	81.2	52.10	\$848
DP 0924 B2RF	1609	8	35.8%	3.61	37	32.0	83.5	54.15	\$871
FM 9180B2F	1598	9	36.1%	4.53	38	31.4	83.2	54.05	\$864
BCSX 1010B2F	1440	10	33.2%	3.40	37	30.7	82.3	52.10	\$750

\* Loan Value based on 2009 CCC Loan Schedule using a uniform color grade of 41 and leaf grade of 4.

# **Appendix A**

**2009 Gaines County IPM Newsletters**

*Educational programs of the Texas AgriLife Extension Service are open to all people without regard to race, color, sex, disability, religion, age, or national origin.*

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