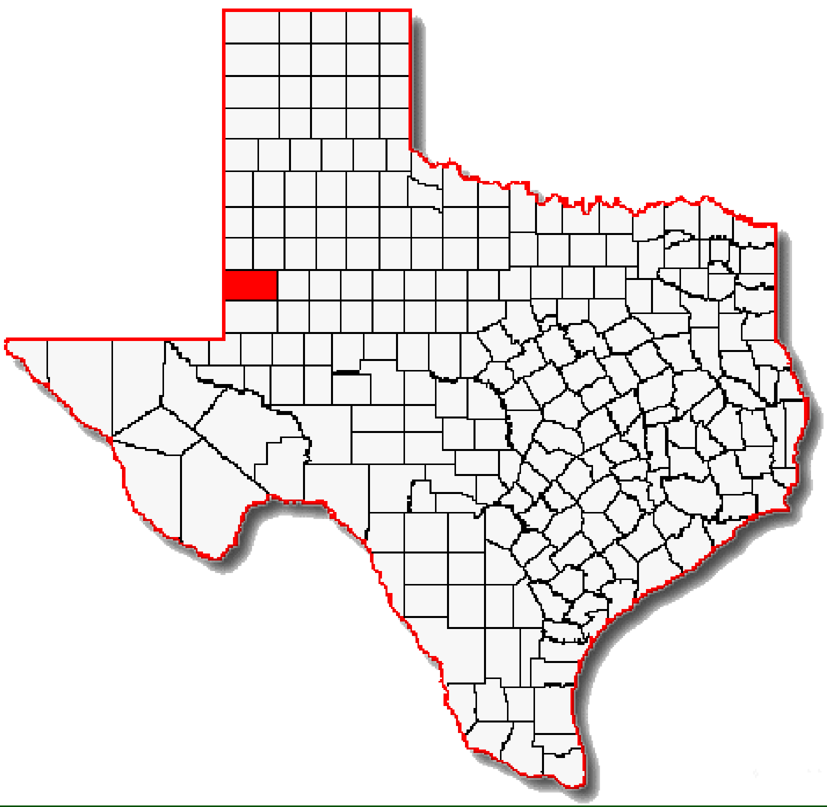
INTEGRATED PEST MANAGEMENT



Gaines County
IPM Program
2012

TEXAS IPM
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TEXAS A&M AGRILIFE EXTENSION

GAINES COUNTY

INTEGRATED PEST MANAGEMENT PROGRAM

2012 ANNUAL REPORT

Prepared by

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Gaines County

in cooperation with

Texas Pest Management Association

&

Gaines County IPM/TPMA 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 Anderson, Extension Agent – IPM, from the Texas AgriLife Extension Office in Seminole. Texas Pest Management Association (TPMA) provides the fiscal operations including paying salary, travel and liability insurance and workers compensation for the scouts as well as bookkeeping services. The local IPM/TPMA 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 5, 2012 and January 22, 2013 to determine local priorities, develop educational programs, identify our target audiences, and develop applied research and result demonstrations to address the local needs. In the fall of 2012, an evaluation instrument (post survey approach) was utilized to measure programmatic impact of the Gaines County IPM Program. Additionally, as a committee, we utilize the results from the evaluation to modify the IPM Program and increase applicability to our target audience.

In 2012 the Gaines County IPM Program ran a survey scouting program which encompassed cotton and peanuts. This survey scouting program was funded by twenty-three business/farm sponsors who brought in over $10,550. 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 360 growers, ginners, crop consultants and agriculture industry representatives. The Gaines County IPM Program also was the lead or cooperator on seventeen research trials to evaluate cotton variety performance, disease management, nematode management, and cotton irrigation practices. Results from these trials will be provided to the growers in a book titled “2012 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, blog postings, and newsletters.

Acknowledgements and Recognition

2012 IPM/TPMA Steering Committee

Shelby Elam	Jack Shanklin
Chuck Rowland	Raymond McPherson
Kurt Brown	Michael Todd
Jud Cheuvront	Weldon Shook
Scott Nolen	Roy Johnson

2012 Gaines County Commissioners Court

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Commissioner, Precinct 1	Danny Yocom
Commissioner, Precinct 2	Craig Belt
Commissioner, Precinct 3	Blair Tharp
Commissioner, Precinct 4	Biz Houston

2012 Gaines County IPM Program Sponsors and Contributors

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West Texas AgriPlex
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Doyle Fincher Farms
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Field Scout/Research Aides

Zamara Thibodeaux, Kimberly Garcia, and Michael Green

The field scouts were 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.

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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.

2012 Gaines County Integrated Pest Management (IPM) Program

Manda Anderson, Extension Agent – IPM, Gaines County

Relevance

Gaines County is the number one cotton and peanut producer in the state of Texas, with approximately 321,111 and 32,934 planted acres of cotton and peanuts in 2012, respectively. Water and economic development are two of the top three critical issues identified by the Texas Community Futures Forum for Gaines County. The number one top agriculture issue is agriculture profitability. The Gaines County IPM Program 2012 target audience is cotton and peanut producers, and agriculture industry representatives. By providing education on current crop and pest management tools and techniques, our goal is that the target audience will implement pest management strategies to maintain yields and net profit.

Response

Based on priorities identified by the Gaines County IPM Program Steering Committee and the 2011 IPM Program Evaluation, the following educational programs were developed and successfully implemented in 2012:

- ***2012 Gaines County, Texas Cotton and Peanut Research Reports*** **Book**
- **Author and Co-Author of 5 posters presented at the 2012 Beltwide Cotton Conference**
- ***2011 Gaines County IPM Program Research Trial Results*** **presentation at the SandyLand Ag Conference**
- **Two Interactive Presentations on Insects for Youth**
- **Gaines County IPM Survey Scouting Program**
- **9 editions of the *Gaines County IPM Newsletter***
- **Participated in 25 of the weekly IPM Radio Programs**
- **Interviewed for 7 newspaper articles published by the Seminole Sentinel and 4 articles published by Southwest Farm Press Daily.**
- **16 on-farm applied research trials**

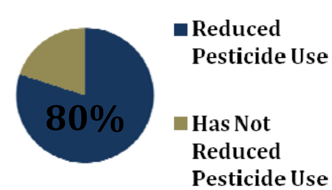
An **evaluation instrument** (post survey approach) was utilized to measure programmatic impact of the Gaines County IPM Program. Twenty-two individuals responded to the survey. Of those responding, 10 were producers (45%), 2 were private consultants (9%), 4 were agriculture retail representatives (18%), 4 were agriculture industry representatives (18%), 1 was a cotton ginner (5%), and 1 was a peanut company representatives (6%).

Results

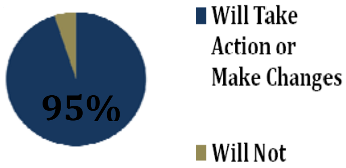
(100%) 10 of 10 producers said they anticipate benefiting economically as a direct result of what they learned from the IPM Program. The average IPM Program value, as indicated by the producers, was **$36.89 per acre**. The average farm size, as indicated by the producers, was 2742 acres. This would indicate that the IPM Program's value is **$101,152 for an average size farm**.

(100%) 10 of 10 producers said they selected varieties to plant on their farm based on the results from the Gaines County IPM Program research trials.

(80%) 8 of 10 producers said the Gaines County IPM Program research and education activities have resulted in lower pesticide use on their operations in recent years.

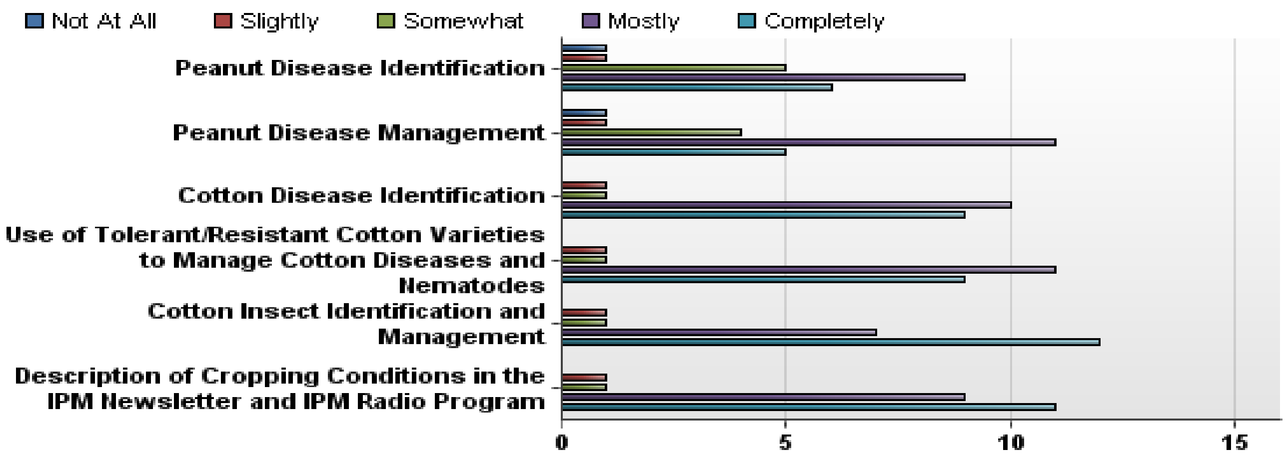


Producers reduced their pesticide applications by 34%.

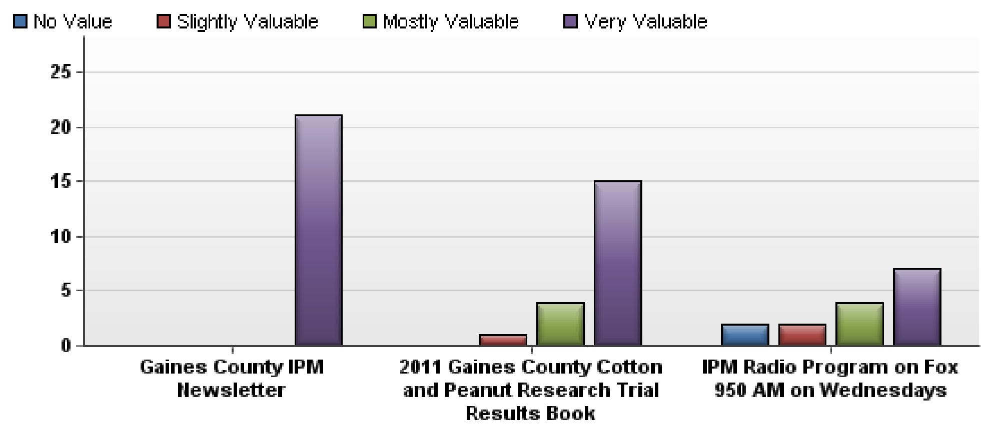


(95%) 20 of 21 respondents said they plan to take action or make changes based on information provided by the Gaines County IPM Program.

The number of respondents who said the Gaines County IPM Newsletter, grower meetings, research trial results, and radio program *completely, mostly, somewhat, slightly,* or *not at all* increased their knowledge of the following items:



The number of respondents who said the following items were *very valuable*, *mostly valuable*, *slightly valuable*, or *no value* to their operations:



Results indicate that Gaines County producers, agriculture industry & retail, peanut companies, and crop consultants highly value the information provided by the Gaines County IPM Program.

The following are testimonials from clientele:

"Thanks for continuing to help producers gain knowledge."

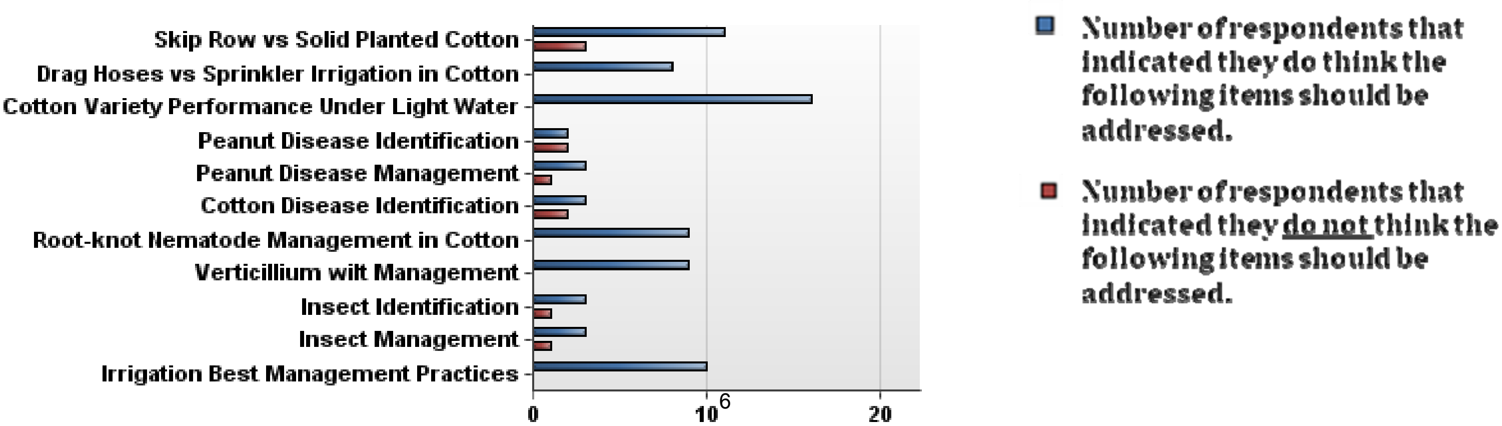
"Manda does a great job working with all the growers in her geography."

"All of it very informative, especially with the section on cotton that applies to us."

"All aspects were helpful and informative."

"Great Program."

Future Needs Identified by Clientele



Educational Activities

Newsletters	
No. Issues Written	9
No. Non-Extension Clientele on Mailing List	40
No. Non-Extension Clientele on E-mail List	249
Total Non-Extension Clientele	289
Articles in Local Growers Newsletters	2
Radio Programs	23
Articles in National Trade Journals	4
Peer Review Publications	1
Published Abstracts or Proceedings	5
Education Articles Published on website	13
Blog Postings	13
Scientific Presentations/Posters	5
Newspaper Articles	
No. Prepared	7
No. Newspaper Carrying	5
Farm Visits	574
Scouts Trained	48
CEU Credits Offered	13
Integrated Pest Management Steering Committee Meetings	2
Presentations Made	
County Meetings	2
Field Days/Tours	2
Regional Meetings	2
Schools	2
No. Applied Research/Demonstration Projects	17
No. Involving Cotton	16
No. Involving Peanut	1
No. Direct Ag. Contacts	10,436
Other Direct Contacts	440

2012 Gaines County Crop Production Review

A majority of the peanut and cotton fields where planted in late April and throughout the month of May. Gaines County was missed by several of the storms that passed through west Texas prior to planting. However, early May shower blessed parts of Gaines County with some much need rainfall. Rainfall totals ranged from 1.5 inches to as much as 4.5 inches. There was some hail mixed in with the rainfall and there were a few cotton fields hailed out. Gaines County was still a long ways from replenishing the depleted sub-soil moisture.

During the past couple of years we have seen an increase in the number of fields that are infested with wireworms. Wireworms are the soil dwelling larvae of click beetles. Problems with wireworms appeared to be greatest in fields following grain crops. Some growers were able to search in the soil and find some wireworms. Wireworms were feeding on the cotyledons prior to plant emergence. This was causing "shot" holes in the leaves. Wireworms were also feeding on the stem of the young plants. Most of the time they would feed on several areas of the stem and they did not chew the stem completely in half.

Hemileuca slosseri (Buckmoth) larvae were being found throughout Gaines County. The larva were pale yellow with tufts of black branched spines and a reddish head. They were being found in high numbers around homes, schools, barns, and Shinnery oak. The larvae's primary host is Shinnery oak (*Quercus havardii*).

The 2011 drought left several farmers skeptical of the weather and likelihood of making a bountiful crop in 2012. Thankfully the weather seemed to have taken a turn for the better and by June we had already surpassed the 2011 year-end rainfall totals. We still were a long ways from replenishing the full soil moisture profile. However, the rainfall that we received during the week of May 7, and on May 26 and June 4 had given us hope and a better outlook for the 2012 crop.

In early June peanuts were looking good and some of the earlier planted fields are starting to bloom. Cotton stages ranged from seed in the ground to squaring, with a majority of the cotton in the 2-4 true leaf stage. Most fields were benefiting from the rainfall. However, wind, hail, and blowing sand had damaged some young cotton plants. Wind damaged cotton was sometimes confused with thrips damage. Both caused the leaves to cup upwards. However, wind damaged leaves tended to have burnt edges. Whereas, thrips damaged leaves did not have the burned edges. Instead thrips feeding was causes deformation of the leaves. Thrips pressure remained relatively light in a majority of the fields. However, we had picked up some heavy populations in scattered fields.

In early June we were also seeing grasshoppers in pastures, CRP, and in corners of fields. However, we had not seen or heard of any damage from them. Weeds were the major concern at this time. With regards to resistant weeds, we had not confirmed any resistant weeds in Gaines County at this point. However, there were a couple of fields that we were investigating in Gaines County. At this time we were also picking up Beet Armyworms is some of the non-Bt fields. Worm sizes ranged from just hatched to 1/4 inch.

By mid to late June we were needing another good rainfall event soon to keep the dryland fields growing and to replenish our depleted soil moisture. Peanut plants were starting to bloom. Cotton stages ranged from cotyledon cotton to squaring cotton, with a majority of the cotton in the 4-8 true leaf stage. We were still picking up a few beet armyworms in non-Bt cotton. However, the survival rate of beet armyworms was really low. In non-Bt fields, we were only finding one worm per plant. Most worms were dying form natural causes (weather, beneficial insects, low humidity, cannibalism). We were also picking up stink bug eggs and a few beneficial insects (mainly spiders and big-eyed bugs). Other than that insect pressure was relatively light. Conversely, nematodes were starting to cause significant damage to the root system in some cotton fields and concerns of weed resistance/tolerance continued to be a hot topic.

By early July the earliest planted cotton and peanut fields were starting to bloom and form small pods, respectively. July 3 & 4 brought scattered showers to the county. Rain ranged from 0 to 1+ inches. The town of Seminole did not receive any rainfall. The whole county was in desperate need of a good soaking rainfall. Most dryland fields were hanging on and waiting for the next good rain. Due to spotty showers and varying pumping capacities, there werehuge differences in the irrigated crop stages and development. Cotton ranged from pre-squaring to blooming. Some peanut fields were pegging and starting to form small pods, while other peanut fields had not formed any pegs. Weeds were still the main concern at this time. We were starting to find light populations of cotton fleahoppers. We continued to find light populations of beet armyworms and boll worms in peanuts and non-Bt cotton. We were also finding an occasional cotton square borer. Beneficial insects (including spiders, big-eyed bugs, lacewings, and ladybird beetles) were relatively abundant and they were keeping most insect pests at bay.

In late July a majority of the fields had very low insect pest pressure. We were only picking up really light populations of the following insects in cotton: aphids, spidermites, bollworms, fall armyworms, and lygus. In peanuts we were picking up light populations of bollworms, fall armyworms, wireworms, grubworms, and southern corn root worm. We were still picking up relatively high populations of beneficial insects in most fields. The beneficial insects were likely one of the key players in helping to keep most insect pest at bay. Bollworm and Fall armyworm continued to be present in cotton and peanuts. Ages of worms range from one day old to 12 days old. Therefore, we were starting to see more of a continuous egg lay and overlapping generations. Several growers were battling heavy weed pressure that they were having trouble controlling with glyphosate. Verticillium wilt and Fusarium wilt had started to show up in some cotton fields. Peanuts were blooming, setting pegs, and forming small-medium pods. The cooler temperatures (in comparison to 2011) had helped with flower and fruit set. The fuller canopies had also helped to reduce temperatures and increase humidity in the canopy, which had created a more favorable environment for flowering, pollination, pegging and pod development. We were seeing some leaf spot in Spanish peanuts.

In early August, we were in desperate need of rainfall in order to supply the plants with moisture to help finish out the crop. We had already started to see some shedding of cotton squares and small bolls. This natural shedding process helps the plants to adjust their fruit load, which allows the plants to shift all of its effort into maturing the retained fruit and producing harvestable bolls. Several cotton fields were quickly approaching cutout. Those field that are at 4 - 5 Nodes Above White Flower (NAWF) were considered cutout. We did have some fields that had maintained 7 – 9 NAWF, however, these fields had above normal irrigation capacities. Peanuts were continuing to peg and form pods. We also had several fields with formed pods. The peanut crop looked significantly better than it did at this same time in 2011. The 2012 peanut crop had a much better start, which had resulted in larger canopies that are more conducive for peanut pollination and pegging. Verticillium wilt and Fusarium wilt incidence had increased in cotton fields. Insect pest pressure remained light. Beneficial insects numbers were still holding steady, despite there being very few pests to feed on. Weeds were still the main concern. Several hoe crews were helping to clean up weeds and some producers had also run a cultivator through the fields. Pod rot was starting to show up in more peanut fields. Most of the pod rot thus far had been caused by Pythium, but we were also picking up some pod rot caused by Rhizoctonia.

By mid-August a majority of the cotton had reached cutout and several fields had started to shed squares and small bolls. Cracked bolls had been observed in a couple of fields. Cotton stages ranged from 0-7 Nodes Above White Flower (NAWF), with a majority of the fields in the 2-4 NAWF. Overall, insect pest pressure was very light. We were finding very light populations of aphids, spider mites, bollworms, and armyworms. Beneficial insects (mainly spiders, green lacewings, and assassin bugs) were still hanging in there. August 13 storms brought barely measure rainfall to most of the county, with the except of the Loop area which received 2.5 inches of rain and Seagraves received 0.63 inches. For the most part, the peanut crop looked very good. We were still picking up light populations of “worms” in peanuts. We were also picking up more pod rot caused by Rhizoctonia and Pythium. We were observing salt damage in a couple of peanut fields. Salts were left behind as the irrigation water evaporated. This allowed for a buildup of salt in the root zone. Since we did not have any good flushing rains during the last two years, we had a double build up (2 years worth) of salts.

In late August two situations were being created out in the cotton fields. First were those fields that had previously reached cutout and then received above average rainfall, which resulted in regrowth. These fields would likely be harder to defoliate. Second were those fields that had received little to no rainfall. These fields were showing signs of excessive stress. The same scenario was being seen on those peanut fields which had not received any rainfall. A majority of our cotton crop had long past cutout (5 NAWF) and the plants had shed their remaining squares and small bolls. Peanut pod rot was the major concern in most peanut fields. Verticillium wilt was starting to show up in a few peanut fields. We were also continuing to see a significant impact of salinity in a couple of peanut fields. *Kurtomathrips morrilli* were confirmed in three cotton fields in Gaines County and they had been reported in other counties north of Gaines County.

From mid-August to mid-September the crop had been on a role coaster ride in regards to Heat Unit (H.U.) accumulation. We had some days that were really warm followed by days that were cool. In regards to rainfall, we had slowly added to our rainfall total for the year. However, rainfall continued to be very spotty within the county. Hail had also been mixed in with some of the storms. A cotton field west of Seminole was completely defoliated, while the adjoining peanut field had significant leaf loss. Kurtomathrips were still being found in cotton fields throughout Gaines County. Small areas of infestation were quickly spreading throughout the whole field within a weeks worth of time. This rapid spread throughout the field usually occurred right after the water was cutoff on the field. Leaf spot was a concern at this time. This cool wet weather was conducive for leaf spot development. Verticillium wilt was becoming more evident in peanut fields.

We were also seeing a lot of salinity issues in peanuts. The salts accumulated at the edge of the leaf, causing the leaf edges to become necrotic and die.

A majority of the crop was harvest in late October and November.

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

						Avg. Monthly H.U.						Avg. Monthly Accumulated H.U.
Month	08	09	10	11	12		08	09	10	11	12	
May	319	310	308	362	393	338	319	310	308	362	393	338
June	626	549	645	748	644	642	945	859	953	1110	1037	981
July	586	613	533	756	629	623	1531	1472	1486	1866	1666	1604
August	536	619	623	792	651	644	2067	2091	2109	2658	2317	2248
September	260	295	443	379	379	351	2327	2386	2552	3037	2696	2600
October	105	118	140	174	157	139	2432	2504	2692	3211	2853	2738
November	16	6	2	20	37	16	2448	2510	2694	3231	2890	2755

2012 Research Reports

Efficiency of Abound FL Application over Time in a Peanut Field

Terry Wheeler (Texas A&M AgriLife Research, Lubbock), Manda Anderson (Texas A&M AgriLife Extension Service, Seminole), Jason Woodward (Texas A&M AgriLife Extension Service, Lubbock), and Scott Russell (Texas A&M AgriLife Research, Brownfield).

Fungicide studies conducted from 2009 – 2011 to manage pod rot caused by *Pythium* and *Rhizoctonia*, were aimed at comparing early, calendar-based fungicide applications versus threshold based applications. The early, calendar-based applications had reduced pod rot compared with threshold based systems. However, it was possible that the earliness of the application was the reason for better disease control, since the first application was made before many pods were present. The objective of the test conducted in 2012 was to examine the effect of application timing (earliness) on disease control and on chemical residue present on foliage, soil, and pods. To accomplish this, each treatment occurred at a different week of the season, with the first application made on 9 July and the last application made on 17 August. There were six treatments with a single application made at a different time during the summer, a nontreated check, and a well-treated check where two applications were made (19 July and 17 August). Plots were intensively sampled weekly to rate for pod rot, starting on 16 July and continuing until the end of August. Samples were sent for chemical (azoxystrobin) concentration analysis of certain treatments on 17 and 31 July and 15 August. Plots (1,000 ft. long and 4 rows wide) were thrashed with a 4-row machine and harvest weight was taken via load cells under a peanut trailer. Three small samples were taken from each harvested plot to grade.

Chemical analysis. The producer made an infurrow, at-plant application with Abound FL. There was still Abound FL present in the soil at the first sampling date (17 July, Fig. 1).

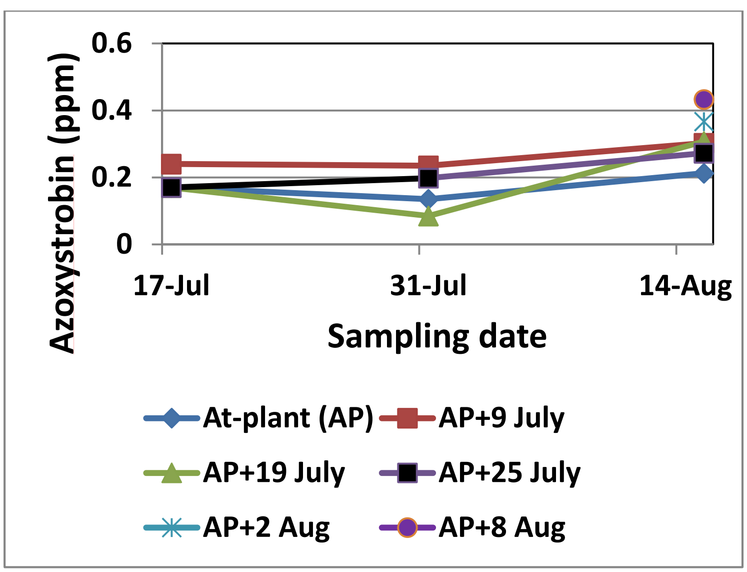


Figure 1. Concentration of fungicide in soil at three sampling times and six application times.

The fungicide was at similar concentrations in the soil throughout the sampling time and between all treatments, regardless of application time (Fig. 1). This indicates that some concentration of the fungicide remained from the at-plant application in the soil, and that subsequent applications during the growing season were not successful at increasing the concentration in the soil. The fungicide applications need to reach the soil to be able to control pod rot successfully. The only application that reached the soil was the one applied to the soil at planting.

Most of the fungicide remained on the plant foliage with the in-season applications (Fig. 2, Table 1). Unfortunately, Fig.2 clearly shows that an application was made over the entire test area between 31 July and 14 August, presumable by the producer. The nontreated check (◆) had a large increase in concentration (from 0 to 1.9 ppm) between the last two sampling times. A similar response was seen with the 9 July application (■) when the concentration was appropriately high at the first sampling date (17 July), and then dropped at the second sampling date (31 July), but inexplicably increased dramatically on the third sampling date. This only could have occurred if another application was made to those plots. Similarly, the concentration of azoxystrobin for applications made on 19 July and 25 July did not drop between the 31 July and 14 August sampling dates, as would have been expected. So, the objectives of the experiment will be more difficult to answer given the overtreatment that occurred in August.

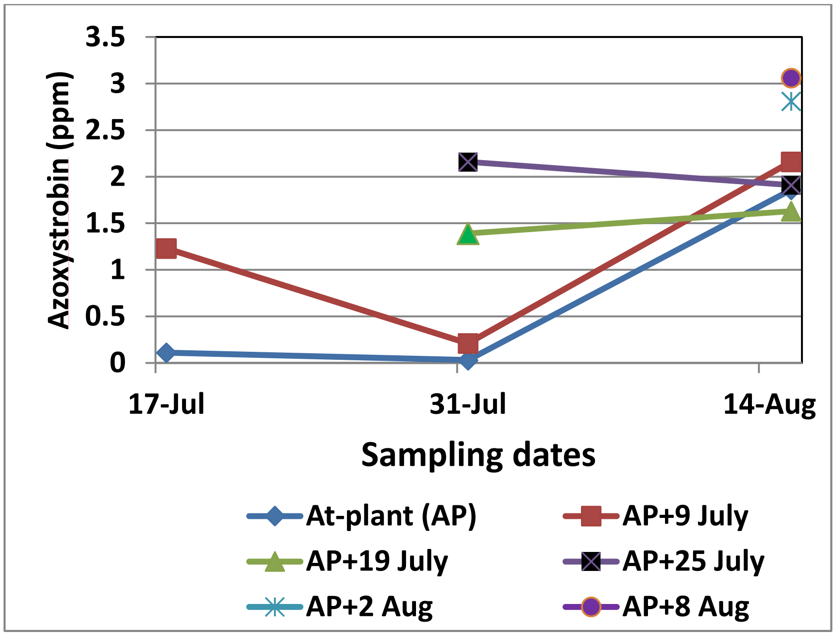


Figure 2. Concentration of fungicide on foliage at three sampling times and six application times.

Table 1. Percentage and concentration of azoxystrobin found on the foliage versus the pods.

Parameter	**Sampling date**	**Fungicide application date**					
		None	**9 July**	**19 July**	**25 July**	**2 Aug.**	**8 Aug.**
Foliage (F) ppm	17 July	0.1050	1.2325				
Pods (P) ppm	17 July	0.0125	0.1175				
% F/(F+P)	17 July	89.4%	91.3%				
Foliage ppm	31 July	0.0250	0.2075	1.3925	2.1600		
Pods ppm	31 July	0.0325	0.0386	0.0325	0.0375		
% F/(F+P)[a]	31 July	43.5%	84.3%	97.7%	98.3%		
% (F+P)[a]/(F+P)[b]	31 July	2.6%	11.2%	64.8%	100%		
Foliage ppm	15 Aug.	1.8600	2.1550	1.6250	1.9100	3.655	5.09
Pods ppm	15 Aug.	0.0650	0.0725	0.0925	0.1375	0.1025	0.1025
% F/(F+P)[a]	15 Aug.	96.6%	96.7%	94.6%	93.3%	97.3%	98.0%
% (F+P)[a]/(F+P)[b]	15 Aug.	37.1%	42.9%	33.1%	39.4%	72.4%	100%

[a]The foliage and pod concentrations were of the same application date.
[b]The foliage and pod concentrations were from the most recent application date to the sampling date (9 July on the 17 July sampling date; 25 July on the 31 July sampling date; 8 Aug., on the 15 Aug. sampling date).

The concentration of Abound FL in the soil remained constant for all the treatments and throughout all the sampling dates (or at least not significantly different), therefore it will be assumed that there was little contribution to the soil concentration by the fungicide applications made after planting. To examine how much of the application was staying on the foliage and how much was making its way to the pods, the concentration on the foliage was divided by the concentration on the foliage and pods, at the most recent application time to the sampling date. So, for the July 17 sampling date, there was 91% of the product on the foliage at 6 days after application. On the July 31 sampling date, there was 98.3% of the product on the foliage at 6 days after application. On the 15 August sampling date, there was 98% of the product on the foliage at 7 days after application. It appears that almost no product was making its way to the soil to protect the pods against *Rhizoctonia* and *Pythium* pod rot. The application of fungicide was made at 20 gal/acre and 30 psi.

In terms of how fast the fungicide was degrading on the foliage and pods, the July 31 sampling date provides the best information. There was a strong linear decline in fungicide concentration on the foliage over time (Fig. 3). The model predicted that immediately after application, the initial concentration was 2.88 ppm, and that the fungicide declined at a rate of 0.1217 ppm/day, or at a rate of 4.2%/day. There was very little fungicide left on the leaves by 3 weeks after application. It is not known if this decline would be typical with other strobilurin type fungicides meant to provide leaf spot protection. The situation on the pods was completely different, and there was no decline in concentration over time (Table 1), but there was also a very low concentration on the pods, probably below that necessary to give disease control.

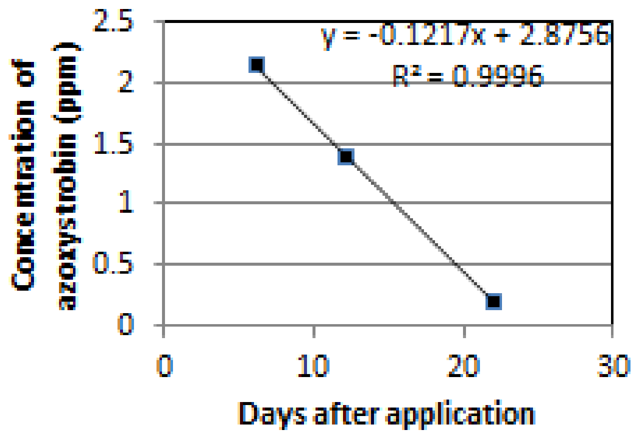


Fig. 3. Concentration of azoxystrobin on the foliage over time after fungicide applications.

Pod Rot over Time. Intensive sampling began on 11 July and terminated on 29 August, which was when the overtreatment with fungicide across the entire test area was discovered. There was no differences between treatments and pod rot at each sampling date, so they will be averaged to present the general dynamics of pod rot in this field during the sampling time (Fig. 4).

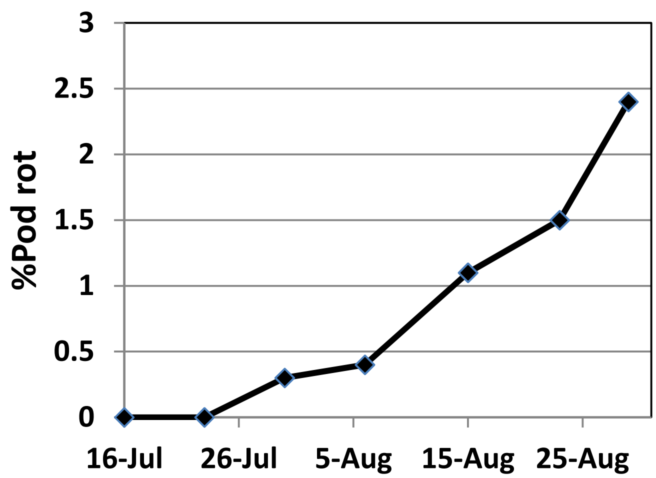


Figure 4. Pod rot over time in 2012.

In previous years, pod rot measurements over a number of weeks were analyzed to determine treatment differences, however, in 2012, there were only 1 or 2 measurements that were made when pod rot was present, and before the over-treatment occurred. So, even if the potential was there for treatment differences, there was not enough time to measure it definitely before the overtreatment was made. The primary fungus causing pod rot in 2012 was *Pythium* (Fig. 5), which is interesting because the dominant fungus in the other half of this circle in 2011 was *Rhizoctonia*.

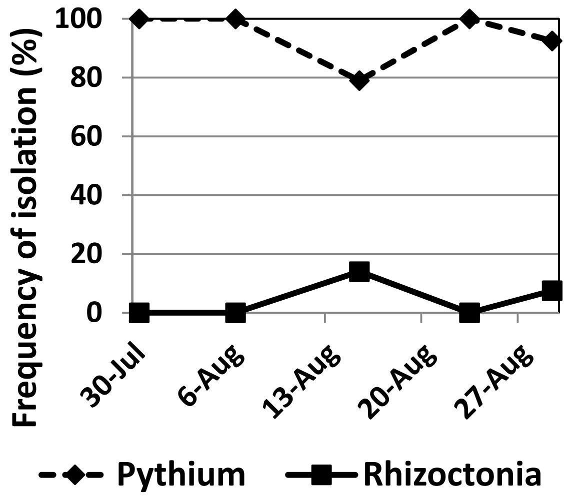


Figure 5. Frequency of *Pythium* and *Rhizoctonia* isolated from rotted pods in 2012.

Harvest. There were no treatment differences with respect to any of the measured parameters, including yield, grade, % damaged kernels, value ($)/acre (Table 2).

Table 2. Selected measurements taken from harvest in 2012.

Application Time	Yield (lbs/acre)	Value ($)/acre	Grade	% Damaged Kernels
None	5,779	1,008	71.1	0.5
July 9	5,514	969	71.3	0.8
July 19	5,513	969	70.8	0.6
July 25	5,600	991	71.6	0.4
Aug. 2	5,613	987	71.3	0.5
Aug. 8	5,573	979	71.9	0.6
Aug. 15	5,550	955	69.7	1.2
July 19 + Aug. 15	5,699	994	70.7	0.8

Conclusion

We did not achieve our original objective which was to determine if early applications of Abound FL would result in better pod rot control than later applications. However, we did determine that very little fungicide from all applications made it to the pods, so there was very little pod rot protection. The best way to improve pod rot control will require better applications, before we can determine the best time of the summer to make applications. The application volume of 20 gal/acre and 30 psi was not sufficient in 2012, which was a year when plants grew rapidly so foliage was thick, to allow fungicide to reach the soil. Future work should probably look at night time or early morning applications when foliage is positioned better to allow fungicide to reach the ground, and in increased water volume and pressure.

Agriculture and Natural Resources

Replicated LESA Supplemental (Limited) Irrigation Cotton Variety Research Trial - 2012

Cooperator: Cheuvront Farms

Manda Anderson, Extension Agent - IPM
Dr. Mark Kelley, Extension Agronomist – Cotton

Gaines County

Summary Significant differences were observed for all yield, economic, and some HVI fiber quality parameters measured. Lint turnout ranged from a low of 30.9% and a high of 36.2% for All-Tex Nitro-44 B2RF and Phytogen 499WRF, respectively. Lint yield varied with a low of 258 lb/acre (FiberMax 2989GLB2) and a high of 326 lb/acre (PhytoGen 499WRF). Lint loan values ranged from a low of $0.4738/lb (FiberMax 2989GLB2) to a high of $0.5355/lb (All-Tex Nitro-44 B2RF). Net value/acre among varieties ranged from a high of $134.62 (PhytoGen 499WRF) to a low of $81.71 (FiberMax 2989GLB2), a difference of $52.91. Micronaire values ranged from a low of 4.2 for All-Tex Nitro-44 B2RF to a high of 4.9 for FiberMax 2989GLB2. Staple averaged 32.4 across all varieties with a low of 30.6 for FiberMax 2989GLB2 and a high of 33.7 for All-Tex Nitro-44 B2RF. Strength values averaged 27.7 g/tex with a high of 30.5 g/tex for All-Tex Nitro-44 B2RF and a low of 24.1 g/tex for FiberMax 2989GLB2. These data indicate that differences can be obtained in terms of net value/acre due to variety and technology selection.

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

Materials and Methods

Varieties: All-Tex Nitro-44 B2RF, Deltapine 1044B2RF, FiberMax 2484B2F, FiberMax 2989GLB2, NexGen 1511B2RF, PhytoGen 499WRF

Experimental design: Randomized complete block with 3 replications

Seeding rate: 3 seeds/row-ft in 36-inch row spacing

Plot size: 6 rows by variable length of field (712ft to 1744ft long)

Planting date: 17-May

Soil Texture: Sandy

Irrigation: This location was under a LESA center pivot. This trial received approximately 9.1 inches of irrigation and rainfall throughout the growing season.

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

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

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

Ginning cost and seed values: Ginning costs were based on $3.00 per cwt. of bur cotton and seed value/acre was based on $250/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 36 row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://www.plainscotton.org/Seed/PCGseed12.xls

Results and Discussion

Significant differences were observed for all yield, economic, and some HVI fiber quality parameters measured (Tables 1 and 2). Lint turnout ranged from a low of 30.9% and a high of 36.2% for All-Tex Nitro-44 B2RF and Phytogen 499WRF, respectively. Seed turnout ranged from a high of 49.6% for FiberMax 2989GLB2 to a low of 46.5% for Deltapine 1044B2RF. Bur cotton yields averaged 863 lb/acre with a high of 911 lb/acre for All-Tex Nitro-44 B2RF, and a low of 754 lb/acre for FiberMax 2989GLB2. Lint yield varied with a low of 258 lb/acre (FiberMax 2989GLB2) and a high of 326 lb/acre (PhytoGen 499WRF). Seed yield ranged from a high of 425 lb/acre for All-Tex Nitro-44 B2RF to a low of 373 lb/acre for FiberMax 2989GLB2. Lint loan values ranged from a low of $0.4738/lb (FiberMax 2989GLB2) to a high of $0.5355/lb (All-Tex Nitro-44 B2RF). After adding lint and seed value, total value/acre for varieties ranged from a low of $169.01 for FiberMax 2989GLB2 to a high of $225.42 for PhytoGen 499WRF. When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of $134.62 (PhytoGen 499WRF) to a low of $81.71 (FiberMax 2989GLB2), a difference of $52.91.

Micronaire values ranged from a low of 4.2 for All-Tex Nitro-44 B2RF to a high of 4.9 for FiberMax 2989GLB2. Staple averaged 32.4 across all varieties with a low of 30.6 for FiberMax 2989GLB2 and a high of 33.7 for All-Tex Nitro-44 B2RF. Strength values averaged 27.7 g/tex with a high of 30.5 g/tex for All-Tex Nitro-44 B2RF and a low of 24.1 g/tex for FiberMax 2989GLB2. Elongation ranged from a high of 8.2% for NexGen 1511B2RF to a low of 5.6% for FiberMax 2484B2RF. Values for reflectance (Rd) and yellowness (+b) averaged 78.2 and 9.1, respectively.

Conclusions

These data indicate that differences can be obtained in terms of net value/acre due to variety and technology selection. During the 2012 growing season Gaines County experienced high temperatures and very little rainfall. The environmental conditions prior to and during the growing season were a limiting factor in the varieties performance overall. It should be noted that no inclement weather was encountered at this location prior to harvest and therefore, no pre-harvest losses were observed. Additional multi-site and multi-year applied research is needed to evaluate varieties and technology across a series of environments.

Acknowledgements

Appreciation is expressed to Cheuvront Farms for the use of his land, equipment and labor for this demonstration.

Table 1. Harvest results from the Supplemental (Limited) Irrigation Trial, Cheuvront Farms Farm, Seminole, TX, 2012.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Seed/technology cost	Net value
	-------- % --------		------------- lb/acre -------------			$/lb	-- $/acre --					
PhytoGen 499WRF	36.2	46.6	900	326	420	0.5302	172.92	52.51	225.42	27.01	63.79	134.62 a
NexGen 1511B2RF	36.2	46.9	891	322	418	0.4897	157.79	52.29	210.08	26.73	58.29	125.05 ab
All-Tex Nitro-44 B2RF	30.9	46.7	911	281	425	0.5355	150.63	53.17	203.80	27.32	60.17	116.31 bc
Deltapine 1044B2RF	32.4	46.5	892	289	415	0.5027	145.19	51.85	197.04	26.75	59.65	110.64 bc
FiberMax 2484B2F	34.4	47.2	829	285	391	0.5155	146.89	48.86	195.75	24.86	63.34	107.55 c
FiberMax 2989GLB2	34.2	49.6	754	258	373	0.4738	122.32	46.69	169.01	22.61	64.69	81.71 d
Test average	34.0	47.3	863	294	407	0.5079	149.29	50.89	200.18	25.88	61.66	112.65
CV, %	3.9	2.5	4.6	4.5	4.5	5.1	4.6	4.5	4.6	4.6	--	7.1
OSL	0.0034	0.0794†	0.0044	0.0006	0.0366	0.098†	0.0001	0.0372	0.0005	0.0043	--	0.0002
LSD	2.4	1.7	72	24	33	0.0383	12.46	4.18	16.63	2.15	--	14.50

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

Assumes:
$3.00/cwt ginning cost.
$250/ton for seed.
Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Table 2. HVI fiber property results from the Supplemental (Limited) Irrigation Trial, Cheuvront Farms Farm, Seminole, TX, 2012.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32nds inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
All-Tex Nitro-44 B2RF	4.2	33.7	79.7	30.5	7.1	2.7	78.3	9.0	2.0	1.0
NexGen 1511B2RF	4.6	30.8	78.3	26.6	8.2	2.0	76.9	9.5	2.3	1.3
Deltapine 1044B2RF	4.8	32.6	78.2	28.0	8.0	1.7	78.1	9.3	2.0	1.0
FiberMax 2484B2F	4.5	33.3	78.3	27.6	5.6	2.0	80.2	8.6	2.0	1.0
FiberMax 2989GLB2	4.9	30.6	77.2	24.1	5.6	1.7	78.3	9.0	2.0	1.0
PhytoGen 499WRF	4.5	33.5	79.3	29.6	7.8	1.3	77.0	9.5	2.0	1.3
Test average	4.6	32.4	78.5	27.7	7.1	1.9	78.2	9.1	2.1	1.1
CV, %	3.7	4.4	2.2	5.9	4.7	47.0	0.4	3.1	--	--
OSL	0.0047	0.08†	0.5755	0.0087	<0.0001	0.5809	<0.0001	0.0200	--	--
LSD	0.3	2.1	NS	3.0	0.6	NS	0.6	0.5	--	--

CV - coefficient of variation.

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

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

Replicated Dryland Cotton Variety Research Trial - 2012

Cooperator: Cody Walters

Manda Anderson, Extension Agent - IPM
Dr. Mark Kelley, Extension Agronomist – Cotton

Gaines County

Summary

Significant differences were noted for lint turnout and net value. Lint turnout averaged 22.2% with a high of 23.8% and low of 20.4% for Deltapine 1044B2RF and Stoneville 5458B2RF, respectively. After subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of $94.44/acre (Deltapine 1044B2RF) to a low of $63.50/acre (Phytogen 375WRF), a difference of $30.94.

Significant differences were observed among varieties for micronaire, elongation, leaf, and reflectance. Micronaire values ranged from a low of 3.0 for Stoneville 5458B2RF to a high of 3.9 for All-Tex Epic RF. Elongation averaged 7.0% across varieties with a high of 7.8% for Phytogen 499WRF and a low of 6.3% for Stoneville 5458B2RF. Color grade components of Rd (reflectance) and +b (yellowness) averaged 80.4 and 8.5, respectively.

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

Objective

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

Materials and Methods

Varieties: All-Tex Edge B2RF, All-Tex Epic RF, Deltapine 1044B2RF, Deltapine 1219B2RF, FiberMax 2989GLB2, PhytoGen 375WRF, PhytoGen 499WRF, and Stoneville 5458B2RF

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

Seeding rate: 2.5 seed/row-ft in 40 inch row spacings.

Plot size: 6 rows by variable length (1456 to 1713 feet)

Planting date: 28-May

Irrigation: 2.5” of irrigation were applied via LESA irrigation preplant with 14.5” of LEPA irrigation during the growing season for a total of 17” applied irrigation.

Rainfall: 7.73 inches of rainfall from 5-June to 1-October

Harvest: Plots were harvested on 14-November using a commercial stripper harvester without a field cleaner. Harvested material was transferred to a weigh wagon with integral electronic scales to record individual plot weights. Plot weights were subsequently converted to lb/acre basis.

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

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

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

Seed and Technology fees: Seed and technology costs were calculated using the appropriate seeding rate (2.5 seed/row-ft) for the 40-inch row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://www.plainscotton.org/Seed/PCGseed12.xls .

Results and Discussion

Significant differences were noted for lint turnout and net value (Table 1). Lint turnout averaged 22.2% with a high of 23.8% and low of 20.4% for Deltapine 1044B2RF and Stoneville 5458B2RF, respectively. After subtracting ginning, seed costs and technology fees, the net value/acre among varieties ranged from a high of $94.44/acre (Deltapine 1044B2RF) to a low of $63.50/acre (Phytogen 375WRF), a difference of $30.94.

Significant differences were observed among varieties for micronaire, elongation, leaf, and reflectance (Table 2). Micronaire values ranged from a low of 3.0 for Stoneville 5458B2RF to a high of 3.9 for All-Tex Epic RF. Elongation averaged 7.0% across varieties with a high of 7.8% for Phytogen 499WRF and a low of 6.3% for Stoneville 5458B2RF. Color grade components of Rd (reflectance) and +b (yellowness) averaged 80.4 and 8.5, respectively.

Conclusions

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

Acknowledgements

Appreciation is expressed to Cody Walters for the use of his land, equipment and labor for this demonstration.

Table 1. Harvest results from the Dryland Production Trial, Cody Walters Farm, Loop, TX, 2012.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Seed/technology cost	Net value
	-------- % --------		------------- lb/acre -------------			$/lb	-- $/acre --					
Deltapine 1044B2RF	23.8	39.9	924	220	369	0.5495	120.78	46.12	166.90	27.73	44.74	94.44 a
All-Tex Epic RF	22.8	38.2	957	218	366	0.5248	114.30	45.69	159.99	28.70	37.21	94.07 a
All-Tex Edge B2RF	21.4	39.2	1011	217	396	0.5492	119.00	49.53	168.53	30.32	44.39	93.82 a
PhytoGen 499WRF	22.4	37.0	989	222	366	0.5482	121.75	45.74	167.49	29.68	47.84	89.96 ab
FiberMax 2989GLB2	21.6	37.5	945	204	354	0.5282	107.61	44.30	151.91	28.35	48.51	75.05 abc
Stoneville 5458B2RF	20.4	38.7	995	203	385	0.5027	102.12	48.12	150.24	29.85	47.51	72.88 bc
Deltapine 1219B2RF	23.1	38.6	845	195	326	0.5143	100.27	40.74	141.01	25.36	44.74	70.91 bc
PhytoGen 375WRF	22.0	36.5	834	184	304	0.5353	98.36	37.98	136.34	25.01	47.84	63.50 c
Test average	22.2	38.2	937	208	358	0.5315	110.52	44.78	155.30	28.12	45.35	81.83
CV, %	4.2	5.5	11.1	11.3	11.2	4.8	11.1	11.2	11.1	11.1	--	17.3
OSL	0.0134	0.5117	0.3471	0.4499	0.1852	0.2832	0.1536	0.1846	0.2266	0.3452	--	0.0807†
LSD	1.6	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	20.30

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

Assumes:
$3.00/cwt ginning cost.
$250/ton for seed.
Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Table 2. HVI fiber property results from the Dryland Production Trial, Cody Walters Farm, Loop, TX, 2012.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
All-Tex Edge B2RF	3.7	35.7	79.0	29.4	6.3	3.0	82.0	7.6	2.3	1.0
All-Tex Epic RF	3.9	33.3	79.2	27.8	7.7	1.0	79.8	8.8	2.0	1.0
Deltapine 1044B2RF	3.8	34.8	80.2	28.4	7.8	1.3	81.8	8.1	2.0	1.0
Deltapine 1219B2RF	3.2	34.3	79.1	28.7	6.4	1.3	82.1	8.3	1.3	1.0
FiberMax 2989GLB2	3.4	35.3	79.1	29.8	6.6	1.7	78.9	8.4	2.3	1.3
PhytoGen 375WRF	3.2	35.5	80.5	28.1	6.7	1.3	81.0	8.8	1.3	1.0
PhytoGen 499WRF	3.5	34.7	80.9	29.4	7.8	1.7	80.4	8.4	2.0	1.0
Stoneville 5458B2RF	3.0	35.1	79.6	29.5	6.3	1.7	77.7	9.4	2.0	1.3
Test average	3.5	34.8	79.7	28.9	7.0	1.6	80.4	8.5	1.9	1.1
CV, %	9.0	3.0	1.6	4.4	8.6	39.4	1.7	9.3	--	--
OSL	0.0265	0.2022	0.5051	0.4579	0.0118	0.0571†	0.0149	0.2791	--	--
LSD	0.5	NS	NS	NS	1.0	0.9	2.5	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, †indicates significance at the 0.10 level, NS - not significant

Replicated LESA Irrigation Cotton Variety Research Trial Under Light Root-Knot Nematode Pressure - 2012

Cooperator: Scott Nolen Farms

Manda Anderson, Extension Agent - IPM
Dr. Jason Woodward, Extension Plant Pathologist

Gaines County

Summary

Significant differences were observed for all the yield, economic, and some HVI fiber quality parameters measured. Lint turnout ranged from a low of 29.29% and a high of 35.2% for All-Tex Nitro-44 B2RF and Deltapine 174RF, respectively. Seed turnout ranged from a low of 44.8% for All-Tex Nitro-44 B2RF and NexGen 1511B2RF to a high of 48.1% for All-Tex 106466B2RF. Bur cotton yields averaged 2618 lb/acre with a high of 2819 lb/acre for PhytoGen 499WRF, and a low of 2257 lb/acre for NexGen 4012B2RF. After adding lint and seed value, and subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of $500.37 (PhytoGen 499WRF) to a low of $382.63 (All-Tex 106466B2RF), a difference of $117.73.

Micronaire values ranged from a low of 4.5 for All-Tex Nitro-44 B2RF to a high of 5.2 for Stoneville 4288B2RF and NexGen 1511B2RF. Staple averaged 34.3 across all varieties with a low of 32.4 for NexGen 1511B2RF and a high of 35.9 for All-Tex Nitro-44 B2RF. Strength values averaged 29.3 g/tex with a high of 31.7 g/tex for All-Tex Nitro-44 B2RF and a low of 27.0 g/tex for All-Tex 106466B2RF.

Objective

The objective of this project was to compare agronomic characteristics, yields, gin turnout, fiber quality, and economic returns of transgenic cotton variety under light southern root-knot nematode pressure in Gaines County.

Materials and Methods

Varieties: All-Tex 106466B2RF, All-Tex Nitro-44 B2RF, Deltapine 1044B2RF, Deltapine 174RF, NexGen 1511B2RF, NexGe 4012B2RF, PhytoGen 367WRF, PhytoGen 499WRF, Stoneville 4288B2RF, Stoneville 5458B2RF

Experimental design: Randomized complete block with 3 replications

Seeding rate: 4 seeds/row-ft in 36-inch row spacing

Plot size: 6 rows by variable length of field (1153ft to 2278ft long)

Planting date: 18-May

Soil Texture: Sandy

Irrigation: This location was under a LESA center pivot. This trial received approximately 15.49 inches of irrigation and rainfall throughout the growing season.

Harvest: Plots were harvested on 20-October using a commercial stripper harvester. Harvest material was transferred into a weigh wagon with integral electronic scales to determine individual plot weights. Plot yields were adjusted to lb/acre.

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

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

Ginning cost and seed values: Ginning costs were based on $3.00 per cwt. of bur cotton and seed value/acre was based on $250/ton. Ginning costs did not include checkoff.

Seed and technology fees: Seed and technology costs were calculated using the appropriate seeding rate (4 seed/row-ft) for the 36 row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://www.plainscotton.org/Seed/PCGseed12.xls

Results and Discussion

Significant differences were observed for all the yield, economic, and some HVI fiber quality parameters measured (Tables 1 and 2). Lint turnout ranged from a low of 29.29% and a high of 35.2% for All-Tex Nitro-44 B2RF and Deltapine 174RF, respectively. Seed turnout ranged from a low of 44.8% for All-Tex Nitro-44 B2RF and NexGen 1511B2RF to a high of 48.1% for All-Tex 106466B2RF. Bur cotton yields averaged 2618 lb/acre with a high of 2819 lb/acre for PhytoGen 499WRF, and a low of 2257 lb/acre for NexGen 4012B2RF. Lint yield varied with a low of 738 lb/acre (All-Tex 106466B2RF) and a high of 943 lb/acre (PhytoGen 499WRF). Seed yield ranged from a high of 1294 lb/acre for Stoneville 4288B2RF to a low of 1080 lb/acre for NexGen 4012B2RF. Lint loan values ranged from a low of $0.4892/lb (NexGen 1511B2RF) to a high of $0.5635/lb (All-Tex Nitro-44 B2RF). After adding lint and seed value, total value/acre for varieties ranged from a low of $534.62 for All-Tex 106466B2RF to a high of $669.992 for PhytoGen 499WRF. When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of $500.37 (PhytoGen 499WRF) to a low of $382.63 (All-Tex 106466B2RF), a difference of $117.73.

Micronaire values ranged from a low of 4.5 for All-Tex Nitro-44 B2RF to a high of 5.2 for Stoneville 4288B2RF and NexGen 1511B2RF. Staple averaged 34.3 across all varieties with a low of 32.4 for NexGen 1511B2RF and a high of 35.9 for All-Tex Nitro-44 B2RF. Strength values averaged 29.3 g/tex with a high of 31.7 g/tex for All-Tex Nitro-44 B2RF and a low of 27.0 g/tex for All-Tex 106466B2RF. Elongation ranged from a high of 9.0% for Deltapine 1044B2RF to a low of 5.9% for NexGen 4012B2RF. Values for reflectance (Rd) and yellowness (+b) averaged 79.5 and 8.6, respectively.

Conclusions

These data indicate that differences can be obtained in terms of net value/acre and fiber quality under light southern root-knot nematode pressure. During the 2012 growing season Gaines County experienced high temperatures and very little rainfall. The environmental conditions prior to and during the growing season were a limiting factor in the varieties performance overall. It should be noted that no inclement weather was encountered at this location prior to harvest and therefore, no pre-harvest losses were observed. Additional multi-site and multi-year applied research is needed to evaluate varieties and technology across a series of environments.

Acknowledgements

Appreciation is expressed to Scott Nolen Farms for the use of his land, equipment and labor for this demonstration.

Table 1. Harvest results from the Cotton Variety Trial Under Light Root-Knot Nematode Pressure, Scott Nolen Farm, Seminole, TX, 2012.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Seed/technology cost	Net value
	-------- % --------		------------ lb/acre ------------			$/lb	---------------------- $/acre ----------------------					
PhytoGen 499WRF	33.5	45.3	2819	943	1277	0.5412	510.42	159.57	669.99	84.58	85.05	500.37 a
PhytoGen 367WRF	32.0	45.8	2786	892	1276	0.5495	489.90	159.48	649.39	83.59	85.05	480.75 ab
Deltapine 174RF	35.2	45.6	2533	892	1154	0.5270	470.33	144.29	614.62	76.00	69.94	468.69 abc
Stoneville 5458B2RF	33.4	46.2	2756	919	1273	0.5063	465.53	159.12	624.65	82.69	84.45	457.50 bc
Deltapine 1044B2RF	31.0	46.2	2689	834	1242	0.5260	438.56	155.30	593.86	80.68	79.53	433.64 cd
Stoneville 4288B2F	30.5	46.2	2802	854	1294	0.5158	440.28	161.81	602.09	84.06	84.45	433.58 cd
NexGen 1511B2RF	35.1	44.8	2551	896	1144	0.4892	438.07	142.95	581.03	76.54	77.73	426.76 cd
All-Tex Nitro-44 B2RF	29.2	44.8	2590	756	1160	0.5635	426.02	145.01	571.03	77.71	80.23	413.08 de
NexGen 4012B2RF	32.8	47.8	2257	741	1080	0.5427	401.86	134.95	536.81	67.71	75.45	393.65 de
All-Tex 106466B2RF	30.9	48.1	2392	738	1150	0.5297	390.91	143.72	534.62	71.76	80.23	382.63 e
Test average	32.3	46.1	2618	846	1205	0.5291	447.19	150.62	597.81	78.53	80.21	439.06
CV, %	3.0	1.9	4.7	4.9	4.7	4.0	4.8	4.7	4.8	4.7	--	5.7
OSL	<0.0001	0.0026	0.0002	<0.0001	0.0014	0.0189	<0.0001	0.0014	0.0002	0.0002	--	0.0003
LSD	1.7	1.5	212	71	98	0.0364	36.87	12.27	49.05	6.35	--	42.72

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

Assumes:
$3.00/cwt ginning cost.
$250/ton for seed.
Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Table 2. HVI fiber property results from the Cotton Variety Trial Under Light Root-Knot Nematode Pressure, Scott Nolen Farm, Seminole, TX, 2012.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
All-Tex 106466B2RF	4.8	33.4	79.9	27.0	6.7	1.7	80.5	8.3	2.0	1.0
All-Tex Nitro-44 B2RF	4.5	35.9	81.3	31.7	7.9	2.7	80.8	8.1	2.0	1.0
NexGen 1511B2RF	5.2	32.4	80.1	28.4	8.7	2.0	79.6	8.6	2.0	1.0
Deltapine 1044B2RF	5.1	34.5	80.5	30.4	9.0	1.7	80.2	8.1	2.3	1.0
Deltapine 174RF	5.1	34.6	79.6	28.3	7.9	2.0	79.3	8.6	2.3	1.0
NexGen 4012B2RF	5.0	34.7	80.9	30.5	5.9	1.7	79.6	8.8	2.0	1.0
PhytoGen 367WRF	4.8	34.3	80.8	29.4	7.8	1.7	79.9	8.8	2.0	1.0
PhytoGen 499WRF	5.0	35.2	82.8	31.2	8.4	3.0	78.8	8.6	2.7	1.0
Stoneville 4288B2F	5.2	34.2	80.5	27.5	7.4	1.7	79.2	8.7	2.3	1.0
Stoneville 5458B2RF	5.1	33.8	80.0	28.6	7.2	1.0	77.6	9.6	2.0	1.0
Test average	5.0	34.3	80.6	29.3	7.7	1.9	79.5	8.6	2.2	1.0
CV, %	1.6	2.7	1.6	4.4	5.5	49.9	1.1	2.4	--	--
OSL	<0.0001	0.0167	0.2195	0.0031	<0.0001	0.4260	0.0155	<0.0001	--	--
LSD	0.1	1.6	NS	2.2	0.7	NS	1.5	0.4	--	--

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

Texas A&M AgriLife Extension

Agriculture and Natural Resources

Replicated LESA Irrigation Cotton Variety Research Trial Under Moderate Root-Knot Nematode Pressure - 2012

Cooperator: Cheuvront Farms

Manda Anderson, Extension Agent - IPM
Dr. Jason Woodward, Extension Plant Pathologist

Gaines County

Summary

Significant differences were observed for most of the yield, economic, and HVI fiber quality parameters measured. Bur cotton yields averaged 3331 lb/acre with a high of 3903 lb/acre for Stoneville 4288B2RF, and a low of 3060 lb/acre for FiberMax 9160B2RF. Lint loan values ranged from a low of $0.5233/lb (Deltapine 1044B2RF) to a high of $0.5705/lb (Stoneville 4288B2RF). After adding lint and seed value, and subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of $844.68 (Stoneville 4288B2RF) to a low of $608.87 (Phytogen 499WRF), a difference of $235.81.

Micronaire values ranged from a low of 3.0 for Deltapine 1044B2RF to a high of 3.5 for Stoneville 4288B2RF. Staple averaged 36.4 across all varieties with a low of 35.0 for Stoneville 5458B2RF and a high of 37.5 for FiberMax 9160B2RF. Uniformity ranged from a high of 82.4 (FiberMax 9160B2RF) to a low of 78.8 (Stoneville 5458B2RF).

Objective

The objective of this project was to compare agronomic characteristics, yields, gin turnout, fiber quality, and economic returns of transgenic cotton variety under moderate southern root-knot nematode pressure in Gaines County.

Materials and Methods

Varieties: Deltapine 1044B2RF, FieberMax 9160B2RF, PhytoGen 367WRF, PhytoGen 499WRF, Stoneville 4288B2RF, Stoneville 5458B2RF

Experimental design: Randomized complete block with 3 replications

Seeding rate: 4 seeds/row-ft in 36-inch row spacing

Plot size: 6 rows by variable length of field (914ft to 1859ft long)

Planting date: 30-May

Soil Texture: Sandy

Irrigation: This location was under a LESA center pivot. This trial received approximately 12.15 inches of irrigation and rainfall throughout the growing season.

Harvest: Plots were harvested on 23-October using a commercial stripper harvester. Harvest material was transferred into a weigh wagon with integral electronic scales to determine individual plot weights. Plot yields were adjusted to lb/acre.

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

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

Ginning cost and seed values: Ginning costs were based on $3.00 per cwt. of bur cotton and seed value/acre was based on $250/ton. Ginning costs did not include checkoff.

Seed and technology fees: Seed and technology costs were calculated using the appropriate seeding rate (4 seed/row-ft) for the 36 row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://www.plainscotton.org/Seed/PCGseed12.xls

Results and Discussion

Significant differences were observed for most of the yield, economic, and HVI fiber quality parameters measured (Tables 1 and 2). Lint turnout was set at 36% for all varieties. Seed turnout ranged from a low of 47.1% for Phytogen 499WRF to a high of 50.1% for Stoneville 4288B2RF. Bur cotton yields averaged 3331 lb/acre with a high of 3903 lb/acre for Stoneville 4288B2RF, and a low of 3060 lb/acre for FiberMax 9160B2RF. Lint yield varied with a low of 1102 lb/acre (FiberMax 9160B2RF) and a high of 1405 lb/acre (Stoneville 4288B2RF). Seed yield ranged from a high of 1957 lb/acre for Stoneville 4288B2RF to a low of 1462 lb/acre for Phytogen 499WRF. Lint loan values ranged from a low of $0.5233/lb (Deltapine 1044B2RF) to a high of $0.5705/lb (Stoneville 4288B2RF). After adding lint and seed value, total value/acre for varieties ranged from a low of $787.07 for PhytoGen 499WRF to a high of $1046.24 for Stoneville 4288B2RF. When subtracting ginning, seed and technology fee costs, the net value/acre among varieties ranged from a high of $844.68 (Stoneville 4288B2RF) to a low of $608.87 (Phytogen 499WRF), a difference of $235.81.

Micronaire values ranged from a low of 3.0 for Deltapine 1044B2RF to a high of 3.5 for Stoneville 4288B2RF. Staple averaged 36.4 across all varieties with a low of 35.0 for Stoneville 5458B2RF and a high of 37.5 for FiberMax 9160B2RF. Uniformity ranged from a high of 82.4 (FiberMax 9160B2RF) to a low of 78.8 (Stoneville 5458B2RF). Elongation ranged from a high of 8.6% for Deltapine 1044B2RF to a low of 5.2% for FiberMax 9160B2RF. Values for reflectance (Rd) and yellowness (+b) averaged 81.1 and 8.1, respectively.

Conclusions

These data indicate that differences can be obtained in terms of net value/acre and fiber quality under moderate southern root-knot nematode pressure. During the 2012 growing season Gaines County experienced high temperatures and very little rainfall. The environmental conditions prior to and during the growing season were a limiting factor in the varieties performance overall. It should be noted that no inclement weather was encountered at this location prior to harvest and therefore, no pre-harvest losses were observed. Additional multi-site and multi-year applied research is needed to evaluate varieties and technology across a series of environments.

Acknowledgements

Appreciation is expressed to Cheuvront Farms for the use of his land, equipment and labor for this demonstration.

Table 1. Harvest results from the Cotton Variety Trial Under Moderate Root-knot Nematode Pressure, Cheuvront Farms Farm, Seminole, TX, 2012.

Entry	Lint turnout	Seed turnout	Bur cotton yield	Lint yield	Seed yield	Lint loan value	Lint value	Seed value	Total value	Ginning cost	Seed/technology cost	Net value
	-------- % --------		------------- lb/acre -------------			$/lb	-- $/acre --					
Stoneville 4288B2F	36.0	50.1	3903	1405	1957	0.5705	801.65	244.58	1046.24	117.10	84.45	844.68 a
PhytoGen 367WRF	36.0	47.5	3485	1255	1655	0.5357	672.07	206.90	878.97	104.55	85.05	689.36 b
Deltapine 1044B2RF	36.0	48.0	3257	1172	1563	0.5233	613.55	195.37	808.92	97.70	79.53	631.68 c
FiberMax 9160B2F	36.0	49.8	3060	1102	1523	0.5577	614.36	190.35	804.71	91.81	84.45	628.46 c
Stoneville 5458B2RF	36.0	49.7	3177	1144	1580	0.5323	608.93	197.54	806.47	95.32	84.45	626.69 c
PhytoGen 499WRF	36.0	47.1	3105	1118	1462	0.5407	604.35	182.72	787.07	93.15	85.05	608.87 c
Test average	36.0	48.7	3331	1199	1623	0.5434	652.48	202.91	855.39	99.94	83.83	671.62
CV, %	--	3.3	3.6	3.6	3.6	3.1	3.6	3.6	3.6	3.6	--	4.1
OSL	--	0.1660	<0.0001	<0.0001	<0.0001	0.054†	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001
LSD	--	NS	219	79	106	0.0249	42.99	13.35	56.33	6.56	--	49.77

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.
#DIV/0!
Note: some columns may not add up due to rounding error.

Assumes:
$3.00/cwt ginning cost.
$250/ton for seed.
Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Table 2. HVI fiber property results from the Cotton Variety Trial Under Moderate Root-knot Nematode Pressure, Cheuvront Farms Farm, Seminole, TX, 2012.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32^{nds} inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
Deltapine 1044B2RF	3.0	36.5	80.9	32.3	8.6	2.0	82.3	7.9	2.0	1.0
FiberMax 9160B2F	3.3	37.5	82.4	31.7	5.2	1.7	83.0	7.5	1.7	1.0
PhytoGen 367WRF	3.2	36.1	81.5	31.3	8.1	3.0	79.7	8.4	2.0	1.0
PhytoGen 499WRF	3.2	36.7	82.1	31.9	7.2	2.7	80.6	8.0	2.3	1.0
Stoneville 4288B2F	3.5	36.6	80.9	30.1	6.9	2.3	81.8	8.2	2.0	1.0
Stoneville 5458B2RF	3.3	35.0	78.8	31.4	7.0	2.7	79.2	8.8	2.0	1.3
Test average	3.3	36.4	81.1	31.4	7.2	2.4	81.1	8.1	2.0	1.1
CV, %	4.6	1.6	1.1	3.4	15.2	33.9	1.2	4.1	--	--
OSL	0.0222	0.0065	0.0064	0.2644	0.0420	0.4173	0.0040	0.0115	--	--
LSD	0.3	1.0	1.6	NS	2.0	NS	1.7	0.6	--	--

CV - coefficient of variation.

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

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

Alternatives to Temik 15G for Management of Root-knot Nematodes

By: Terry Wheeler (Texas AgriLife Research, Lubbock), Kerry Siders (Texas AgriLife Extension Service, Hockley/Cochran counties), Manda Anderson (Texas AgriLife Extension Service, Gaines county), Scott Russell (Texas AgriLife Extension Service, Terry/Yoakum counties)

Introduction: Root-knot nematodes infest at least 40% of the cotton acreage in the Southern High Plains. Prior to 2011, many cotton producers used Temik 15G (aldicarb) to manage nematode problems. Alternative methods of nematode control include: nematicide seed treatments (Aeris, Avicta), fumigation (Telone II, Vapam), crop rotation (peanut), and using partially resistant cultivars (Deltapine 174RF, Phytogen (PHY) 367WRF, Stoneville (ST) 4288B2F, and ST 5458B2F). A test was initiated in 2011 to examine the chemical and varietal components of nematode control at two sites, and was funded by the Plains Cotton Improvement Program. This project was continued in 2012 at four sites, and funded by the Texas Cotton State Support Committee.

Chemical treatments in all tests are:

1) None (no insecticide or nematicides)
2) Cruiser (insecticide only)
3) Avicta Complete Cotton (insecticide, nematicide, and extra fungicide protection)
4) Cruiser on seed, plus Vydate CLV (insecticide/nematicide) at the 4-5 leaf stage
5) Avicta Complete Cotton on seed, plus Vydate CLV
6) Temik 15G at 5 lbs/acre in the furrow at planting
7) Cruiser on seed and fumigation with Telone II (3 gal/acre) before planting.

Varieties in the test include Fibermax (FM) 9160B2F as a susceptible variety at all sites; PHY 367WRF as a partially resistant variety at Whiteface and Brownfield; and ST 5458B2F as a partially resistant variety at Brownfield, Lamesa, and Seminole.

All sites were planted with four row plots, 33-36 feet long, with a factorial arrangement of all treatments, in a randomized complete block design with six replications. Data collected included plant stand, galls/root at 35 days after planting, root-knot nematode density in August, and yield.

Results:

<u>Lamesa (LAM12):</u> The root-knot nematode pressure was low at this site early in the season, with an average of 1.7 galls for FM 9160B2F and 1.2 galls/root for ST 5458B2F (Table 1). There was no chemical effect on galls/root (Table 2), root-knot nematode density (Table 3), yield (Table 4), or net value (yield x loan value – chemical and variety costs) (Table 5). Buildup of the nematode population during the season was good, with an average of 9,446 root-knot/500 cm^3 soil for FM

9180B2F and 3,883 root-knot/500 cm^3 soil for ST 5458B2F (Table 1). The partially resistant ST 5458B2F yielded more (1,302 lbs of lint/acre) than FM 9160B2F (1,262 lbs of lint/acre, Table 1). However, the net value was higher for FM 9160B2F ($713/acre) than for ST 5458B2F ($687/acre) in 2012 (Table 1). The average values for all variety/chemical combinations for galls/root, root-knot nematode density, yield and net value for Lamesa are in Table 6.

Table 1. Effect of variety[1] on root galling, root-knot nematode (RK) density, lint yield, and value ($)/acre (lint yield x loan value) for six locations[2].

	Galls		RK/500 cm^3 soil		Lint yield		Yield x loan ($/a)	
Location	**S**	**R**	**S**	**R**	**S**	**R**	**S**	**R**
WF11	5.2 a[3]	4.0 a	9,538 a	1,090 b	1,115 b	1,241 a	1,026 b	1,131 a
WF12	1.4 a	0.3 b	4,418 a	615 b	700 b	742[4] a	381 b	401 a[1]
SEM11	13.3 a	10.0 b	23,777 a	8,147 b	804 b	1,002 a	721 b	865 a
SEM12	1.2 a	0.5 b	10,690 a	2,291 b	1,096 a	1,093 a	544 a	543 a
LAM12	1.7 a	1.2 b[4]	9,447 a	3,883 b	1,262 b	1,302 a[5]	713 a	687 b
BF12	7.0 a	3.3 c	14,295 a	6,851 b	556 b	606 a	284 b	308 a
		5.0 b		8,354 b		578 ab		278 b
Average	**5.3**	**3.5**	**12,351**	**4,462**	**870**	**938**	**565**	**602**

[1]The susceptible (S) variety was Fibermax 9160B2F. The partially resistant (R) variety was either (Stoneville 5458B2F or Phytogen 367WRF). At the BF12 site, both partially resistant varieties were tested, with PHY 367WRF as the top entry and ST 5458B2F as the bottom entry.
[2]There were two locations in 2011 (WF11= Whiteface 2011 and SEM11 = Seminole 2011), and four locations in 2012 (WF12, SEM12, LAM12 (Lamesa, 2012), and BF12 (Brownfield 2012).
[3]Different letters indicate significant differences between varieties within a location, at $P = 0.05$, unless otherwise indicated.
[4]$P \leq 0.054$.
[5]$P = 0.077$.

Table 2. Effect of nematicides on root galling at approximately 35 days after planting at six locations[2] tested in 2011 or 2012.

Chemical[1]	WF11	WF12	SEM11	SEM12	LAM12	BF12	Average
None	4.6 a[3]	0.7 a	13.8 a	1.6 a	1.9 a	5.5 a	4.7
Insecticide (I)	1.8 a	1.5 a	12.8 a	0.3 a	0.9 a	5.7 a	3.8
NST[1]	5.5 a	0.5 a	11.6 a	1.1 a	1.4 a	5.2 a	4.2
I + Vydate (V)	1.2 a	1.2 a	13.2 a	0.5 a	1.6 a	3.8 a	3.6
NST + V	4.7 a	0.6 a	13.1 a	1.0 a	1.6 a	4.4 a	4.2
Temik 15G	7.1 a	0.7 a	6.1 b	0.2 a	1.6 a	5.5 a	3.5
I + Telone II	4.2 a	0.6 a	5.3 b	0.8 a	1.2 a	5.4 a	2.9

[1]Insecticide was Cruiser, NST was Avicta Complete Cotton, which was a nematicide seed treatment (Avicta 500) that also included an insecticide (Cruiser) and fungicide combination (Dynasty). Vydate CLV (17 oz/acre) was included as an over-the-top banded nematicide at the 4-5 leaf stage. Temik 15G (aldicarb) was applied at 5 lbs/acre in the furrow at planting. Telone II (3 gal/a) was applied in the bed before planting (number of days varied with location) at a depth of 12 inches and then seed was treated with Cruiser to provide insect protection.
[2]There were two locations in 2011 (WF11= Whiteface 2011 and SEM11 = Seminole 2011), and four locations in 2012 (WF12, SEM12, LAM12 (Lamesa, 2012), and BF12 (Brownfield 2012).

[3]Different letters indicate significant differences between varieties within a column at P = 0.05.

Table 3. Effect of nematicides on root-knot nematode density/500 cm[3] soil in August at six locations[2] tested in 2011 or 2012.

Chemical[1]	WF11	WF12	SEM11	SEM12	LAM12	BF12	Average
None	10,390 a[3]	2,320 a	17,835 a	4,278 a	4,112 a	11,740 a	8,446
Insecticide (I)	5,240 a	3,510 a	12,315 a	3,932 a	8,035 a	14,200 a	7,872
NST	4,190 a	1,270 a	21,330 a	3,928 a	3,960 a	8,339 a	7,170
I + Vydate (V)	150 b	2,660 a	16,095 a	7,009 a	4,437 a	6,349 a	6,117
NST + V	6,480 a	2,930 a	18,240 a	11,300 a	10,703 a	8,052 a	9,618
Temik 15G	5,350 a	3,967 a	14,670 a	8,033 a	10,325 a	7,343 a	8,281
I + Telone II	5,280 a	960 a	11,700 a	6,952 a	5,083 a	12,810 a	7,131

[1]Insecticide was Cruiser, NST was Avicta Complete Cotton, which was a nematicide seed treatment (Avicta 500) that also included an insecticide (Cruiser) and fungicide combination (Dynasty). Vydate CLV (17 oz/acre) was included as an over-the-top banded nematicide at the 4-5 leaf stage. Temik 15G (aldicarb) was applied at 5 lbs/acre in the furrow at planting. Telone II (3 gal/a) was applied in the bed before planting (number of days varied with location) at a depth of 12 inches and then seed was treated with Cruiser to provide insect protection.
[2]There were two locations in 2011 (WF11= Whiteface 2011 and SEM11 = Seminole 2011), and four locations in 2012 (WF12, SEM12, LAM12 (Lamesa, 2012), and BF12 (Brownfield 2012).
[3]Different letters indicate significant differences between varieties within a column at P = 0.05.

Table 4. Effect of nematicides on lint yield (lbs/a) at six locations[2] tested in 2011 or 2012.

Chemical[1]	WF11	WF12	SEM11	SEM12	LAM12	BF12	Average
None	1,158 a[3]	726 a	857 a	1,126 a	1,229 a	598 a	949
Insecticide (I)	1,136 a	716 a	888 a	1,137 a	1,254 a	544 a	946
NST	1,201 a	736 a	850 a	1,101 a	1,285 a	579 a	959
I + Vydate (V)	1,214 a	735 a	981 a	997 a	1,299 a	558 a	964
NST + V	1,131 a	719 a	926 a	1,120 a	1,329 a	604 a	972
Temik 15G	1,123 a	674 a	886 a	1,078 a	1,266 a	588 a	936
I + Telone II	1,285 a	741 a	934 a	1,099 a	1,314 a	592 a	994

[1]Insecticide was Cruiser, NST was Avicta Complete Cotton, which was a nematicide seed treatment (Avicta 500) that also included an insecticide (Cruiser) and fungicide combination (Dynasty). Vydate CLV (17 oz/acre) was included as an over-the-top banded nematicide at the 4-5 leaf stage. Temik 15G (aldicarb) was applied at 5 lbs/acre in the furrow at planting. Telone II (3 gal/a) was applied in the bed before planting (number of days varied with location) at a depth of 12 inches and then seed was treated with Cruiser to provide insect protection.
[2]There were two locations in 2011 (WF11= Whiteface 2011 and SEM11 = Seminole 2011), and four locations in 2012 (WF12, SEM12, LAM12 (Lamesa, 2012), and BF12 (Brownfield 2012).
[3]Different letters indicate significant differences between varieties within a column at P = 0.05.

Table 5. Effect of nematicides on net value[1] ($/acre) at six locations[2] tested in 2011 or 2012.

Chemical[3]	WF11	WF12	SEM11	SEM12	LAM12	BF12	Average
None	1,059 a[4]	320 a	664 b	485 a	596 a	226 a	558
Insecticide (I)	1,031 a	306 ab	709 ab	482 a	602 a	205 ab	556
NST[1]	1,082 a	309 ab	638 b	457 ab	611 a	199 b	549
I + Vydate (V)	1,097 a	311 ab	783 a	407 bc	622 a	185 b	568
NST + V	1,013 a	295 ab	705 ab	460 ab	629 a	203 ab	551
Temik 15G	1,010 a	274 b	661 b	444 ab	599 a	197 b	531
I + Telone II	1,093 a	245 c	643 b	389 c	561 a	130 c	510

[1]Net value is the (yield (lbs of lint/acre) x loan value) – variety cost ($74.35/acre) – chemical cost. Chemical costs for Cruiser was $8.10/acre, Avicta Complete Cotton was $16.20/acre, Cruiser + Vydate CLV = $13.65/acre, Avicta Complete Cotton + Vydate CLV = $21.75/acre, Temik 15G = $17.50/acre, and Cruiser + Telone II = $82.80/acre.
[2]There were two locations in 2011 (WF11= Whiteface 2011 and SEM11 = Seminole 2011), and four locations in 2012 (WF12, SEM12, LAM12 (Lamesa, 2012), and BF12 (Brownfield 2012).
[3]Insecticide was Cruiser, NST was Avicta Complete Cotton, which was a nematicide seed treatment (Avicta 500) that also included an insecticide (Cruiser) and fungicide combination (Dynasty). Vydate CLV (17 oz/acre) was included as an over-the-top banded nematicide at the 4-5 leaf stage. Temik 15G (aldicarb) was applied at 5 lbs/acre in the furrow at planting. Telone II (3 gal/a) was applied in the bed before planting (number of days varied with location) at a depth of 12 inches and then seed was treated with Cruiser to provide insect protection.
[4]Different letters indicate significant differences between varieties within a column at $P = 0.05$.

Table 6. Measured variables at Lamesa in 2012 for each combination of chemical treatment and variety (Average of six replications).

Variety[1]	Chemical[4]	Plants /ft. row	Galls/ root	RK[2]/ 500 cc soil	Lbs of lint/acre	Net value[3] ($/acre)
FM	None	1.79	2.1	4,760	1,187	601
FM	Insecticide (I)	1.45	1.1	7,070	1,211	641
FM	NST	2.16	1.3	5,020	1,296	622
FM	I+Vydate (V)	1.89	1.7	6,827	1,293	632
FM	NST+Vydate	2.25	2.2	18,980	1,289	608
FM	Temik 15G	2.22	2.4	14,430	1,240	588
FM	I+Telone II	2.13	1.2	9,040	1,320	596
ST	None	2.09	1.7	3,463	1,270	603
ST	Insecticide (I)	1.96	0.7	9,000	1,298	581
ST	NST	2.15	1.6	2,900	1,273	642
ST	I+Vydate (V)	2.48	1.6	2,047	1,306	626
ST	NST+Vydate	2.36	1.0	2,427	1,368	590
ST	Temik 15G	2.32	0.8	6,220	1,293	533
ST	I+Telone II	2.23	1.2	1,127	1,309	596

[1]FM is Fibermax 9160B2F, ST is Stoneville 5458B2F.
[2]RK is root-knot nematode.
[3]Net value is the (yield (lbs of lint/acre) x loan value) – variety cost ($74.35/acre) – chemical cost. Chemical costs for Cruiser was $8.10/acre, Avicta Complete Cotton was $16.20/acre,

Cruiser + Vydate CLV = $13.65/acre, Avicta Complete Cotton + Vydate CLV = $21.75/acre, Temik 15G = $17.50/acre, and Cruiser + Telone II = $82.80/acre.
[4]Insecticide was Cruiser, NST was Avicta Complete Cotton, which was a nematicide seed treatment (Avicta 500) that also included an insecticide (Cruiser) and fungicide combination (Dynasty). Vydate CLV (17 oz/acre) was included as an over-the-top banded nematicide at the 4-5 leaf stage. Temik 15G (aldicarb) was applied at 5 lbs/acre in the furrow at planting. Telone II (3 gal/a) was applied in the bed before planting (number of days varied with location) at a depth of 12 inches and then seed was treated with Cruiser to provide insect protection.

Whiteface 2012 (WF12): The root-knot nematode pressure was low at this site this year, as seen with the low gall ratings (Table 1). There was a variety response to all measured variables, with the susceptible variety having more galls/root and higher density of root-knot nematode than the partially resistant PHY 367WRF (Table 1). PHY 367WRF had higher yield and better net value than the susceptible FM 9160B2F (Table 1). Chemical treatments did not affect root galls (Table 2), root-knot nematode density (Table 3), or lint yield (Table 4). However, the most profitable treatment was the nontreated check, while the fumigation treatment had the lowest net value and Temik 15G had the second lowest net value (Table 5). All variety/treatment combinations are presented in Table 7.

Table 7. Measured variables at Whiteface in 2012 for each combination of chemical treatment and variety (average of six replications).

Variety[1]	Chemical[4]	Plants /ft. row	Galls/ root	RK[2]/ 500 cc Soil	Lbs of Lint/acre	Net value[3] ($/acre)
FM	None	2.4	1.1	4,533	708	311
FM	Insecticide (I)	2.5	2.7	6,680	668	281
FM	NST	2.2	0.7	1,420	698	290
FM	I+Vydate (V)	2.4	2.1	5,120	710	299
FM	NST+Vydate	2.4	1.0	5,120	717	294
FM	Temik 15G	2.4	1.1	6,293	681	279
FM	I+Telone II	2.6	1.0	1,760	716	233
PHY	None	2.7	0.4	107	744	329
PHY	Insecticide (I)	2.5	0.4	340	764	331
PHY	NST	2.6	0.3	1,120	774	329
PHY	I+Vydate (V)	2.6	0.3	200	760	324
PHY	NST+Vydate	2.5	0.3	740	722	295
PHY	Temik 15G	2.7	0.4	1,640	668	270
PHY	I+Telone II	2.4	0.3	160	765	258

[1]FM is Fibermax 9160B2F, PHY is Phytogen 367WRF.
[2]RK is root-knot nematode.
[3]Net value is the (yield (lbs of lint/acre) x loan value) – variety cost ($74.35/acre for FM or $76.54 for PHY) – chemical cost. Chemical costs for Cruiser was $8.10/acre, Avicta Complete Cotton was $16.20/acre, Cruiser + Vydate CLV = $13.65/acre, Avicta Complete Cotton + Vydate CLV = $21.75/acre, Temik 15G = $17.50/acre, and Cruiser + Telone II = $82.80/acre.
[4]Insecticide was Cruiser, NST was Avicta Complete Cotton, which was a nematicide seed treatment (Avicta 500) that also included an insecticide (Cruiser) and fungicide combination

(Dynasty). Vydate CLV (17 oz/acre) was included as an over-the-top banded nematicide at the 4-5 leaf stage. Temik 15G (aldicarb) was applied at 5 lbs/acre in the furrow at planting. Telone II (3 gal/a) was applied in the bed before planting (number of days varied with location) at a depth of 12 inches and then seed was treated with Cruiser to provide insect protection.

Seminole (SEM12): Root-knot nematode pressure was light early in the season at this site, based on early season gall ratings (Table 1), but did build up adequately over the course of the season. Galls/root and root-knot nematode density was affected by variety (Table 1), where the susceptible variety had higher numbers than the partially resistant ST 5458B2F. Yield and net value (yield x loan value) was similar between both varieties (Table 1). Chemical treatment did not affect galls/root, root-knot nematode density, or yield (Tables 2-4). However, net value was highest for the non-nematicide treatments (untreated check and Cruiser seed treatment) and lowest for plots treated with Temik 15G or Telone II (Table 5). The individual variety/treatment combinations are presented in Table 8.

Table 8. Measured variables at Seminole in 2012 for each combination of chemical treatment and variety (average of six replications).

Variety[1]	Chemical[4]	Plants /ft. row	Galls/ root	RK[2]/ 500 cc soil	Lbs of Lint/acre	Net value[3] ($/acre)
FM	None	2.8	2.8	4,840	1,158	500
FM	Insecticide (I)	2.9	0.3	6,500	1,167	496
FM	NST	3.0	1.1	5,260	1,099	455
FM	I+Vydate (V)	2.8	0.7	12,720	977	397
FM	NST+Vydate	2.9	1.6	20,240	1,070	435
FM	Temik 15G	3.1	0.3	13,890	1,141	474
FM	I+Telone II	2.9	1.2	11,377	1,058	368
ST	None	2.9	0.4	3,717	1,094	470
ST	Insecticide (I)	2.9	0.4	1,363	1,108	469
ST	NST	3.2	1.1	2,597	1,103	458
ST	I+Vydate (V)	3.1	0.4	1,298	1,017	418
ST	NST+Vydate	3.0	0.5	2,360	1,170	486
ST	Temik 15G	3.1	0.2	2,177	1,015	413
ST	I+Telone II	2.8	0.4	2,527	1,140	410

[1]FM is Fibermax 9160B2F, ST is Stoneville 5458B2F.
[2]RK is root-knot nematode.
[3]Net value is the (yield (lbs of lint/acre) x loan value) – variety cost ($74.35/acre) – chemical cost. Chemical costs for Cruiser was $8.10/acre, Avicta Complete Cotton was $16.20/acre, Cruiser + Vydate CLV = $13.65/acre, Avicta Complete Cotton + Vydate CLV = $21.75/acre, Temik 15G = $17.50/acre, and Cruiser + Telone II = $82.80/acre.
[4]Insecticide was Cruiser, NST was Avicta Complete Cotton, which was a nematicide seed treatment (Avicta 500) that also included an insecticide (Cruiser) and fungicide combination (Dynasty). Vydate CLV (17 oz/acre) was included as an over-the-top banded nematicide at the 4-5 leaf stage. Temik 15G (aldicarb) was applied at 5 lbs/acre in the furrow at planting. Telone II (3 gal/a) was applied in the bed before planting (number of days varied with location) at a depth of 12 inches and then seed was treated with Cruiser to provide insect protection.

Brownfield (BF12): Root-knot nematode early season populations were not quite as low at Brownfield as at the other three sites in 2012, but they still were not as high as desirable to show response of nematicides treatments. Most variables measured were affected by variety (galls, root-knot nematode density, yield, and net value, Table 1). Chemical treatment did not affect galls (Table 2), root-knot nematode density (Table 3), or yield (Table 4). However, there was an interaction between variety and chemical treatment with respect to net value (Table 9). In all three varieties, net value was poorer for Telone II than most other treatments, due to the small yield response to this product and high cost of the product. Other differences were inconsistent between varieties. For example the seed treatment Cruiser plus Vydate was among the best treatments with FM 9160B2F, but was one of the poorer treatments for PHY 367WRF (Table 9).

Table 9. Measured variables at Seminole in 2012 for each combination of chemical treatment and variety (average of six replications).

Variety[1]	Chemical[4]	Plants /ft. row	Galls/ root	RK[2]/ 500 cc Soil	Lbs of Lint/acre	Net value[3] ($/acre)
FM	None	2.3	8.6	17,940	582	234 a[5]
FM	Insecticide (I)	2.2	7.8	23,700	486	181 bc
FM	NST	2.2	6.3	10,540	520	181 bc
FM	I+Vydate (V)	2.1	5.5	8,080	578	200 ab
FM	NST+Vydate	2.0	6.4	14,653	555	165 bc
FM	Temik 15G	2.3	8.2	8,590	572	197 ab
FM	I+Telone II	2.2	6.1	16,560	601	151 c
PHY	None	2.1	4.9	8,220	621	239 a
PHY	Insecticide (I)	2.3	4.1	4,500	568	222 a
PHY	NST	2.0	3.0	4,970	617	210 ab
PHY	I+Vydate (V)	1.8	2.6	3,167	549	177 b
PHY	NST+Vydate	2.0	2.7	4,783	644	228 a
PHY	Temik 15G	2.1	2.6	8,140	622	223 a
PHY	I+Telone II	2.0	3.3	14,180	624	158 c
ST	None	2.7	3.1	9,060	591	204 a
ST	Insecticide (I)	2.6	5.3	14,400	577	213 a
ST	NST	2.5	6.2	9,507	600	206 a
ST	I+Vydate (V)	1.9	3.2	7,800	548	176 a
ST	NST+Vydate	3.0	4.2	4,720	613	215 a
ST	Temik 15G	2.7	5.8	5,300	569	171 a
ST	I+Telone II	2.0	6.9	7,690	550	80 b

[1]FM is Fibermax 9160B2F, PHY is Phytogen 367WRF, ST is Stoneville 5458B2F.
[2]RK is root-knot nematode.
[3]Net value is the (yield (lbs of lint/acre) x loan value) – variety cost ($74.35/acre) – chemical cost. Chemical costs for Cruiser was $8.10/acre, Avicta Complete Cotton was $16.20/acre, Cruiser + Vydate CLV = $13.65/acre, Avicta Complete Cotton + Vydate CLV = $21.75/acre, Temik 15G = $17.50/acre, and Cruiser + Telone II = $82.80/acre.

[4]Insecticide was Cruiser, NST was Avicta Complete Cotton, which was a nematicide seed treatment (Avicta 500) that also included an insecticide (Cruiser) and fungicide combination (Dynasty). Vydate CLV (17 oz/acre) was included as an over-the-top banded nematicide at the 4-5 leaf stage. Temik 15G (aldicarb) was applied at 5 lbs/acre in the furrow at planting. Telone II (3 gal/a) was applied in the bed before planting (number of days varied with location) at a depth of 12 inches and then seed was treated with Cruiser to provide insect protection.
[5]Different letters indicate significantly different net values, within a variety (P=0.05).

Summary for 2012

Variety performance was weaker in 2012 than in 2011, which was probably due to much lower root-knot nematode populations early in the growing season. Partially resistant cultivars usually had higher yields in 2012 than the susceptible FM 9160B2F though not in every case. In 2011 the yield advantage of the partially resistant varieties to root-knot nematode was much higher than the susceptible variety. However, in 2012, the partially resistant variety had a higher yield in 3 of 4 sites, and similar yield in one site as the susceptible variety. In 2011, the partially resistant variety returned approximately $124/acre more than the susceptible variety (based yield x loan value). In a very weak nematode year (2012), the partially resistant variety returned approximately $4/acre more than the susceptible variety.

In general, chemical performance was poor to none in 2012, so the "best" treatment was to use no chemical control of nematodes or thrips. Fumigation with Telone II did not provide for much of a yield boost, and had a very high cost ($82.80/acre for fumigation plus Cruiser treated seed). This resulted in a lower net return than all other treatments, consistently. Probably with the low nematode pressure, fumigation would not have been cost effective, but also there have been problems in getting optimal application of fumigation. This product should go out in moist, but not wet soil, and the soil should not receive irrigation or rain for at least 48 hrs after application. We have made the applications either in dry soil (before prewatering), or in wet soil during the prewatering phase, so this treatment probably hasn't gotten a fair test. The other chemical treatments were applied adequately. Vydate CLV was a fairly consistent treatment in 2011, but did not look effective in 2012, though it may have been that early season nematode pressure was too low for Vydate CLV to act on anything. The only treatment that is "season-long" is resistant variety, and they were effective as seen with the significant reductions in galls/root and root-knot nematode density in August at all sites.

Agriculture and Natural Resources

Replicated Drag Hose vs Sprinkler Irrigation Cotton Research Trial - 2012

Cooperator: Shelby Elam Farms

Manda Anderson, Extension Agent - IPM

Gaines County

Summary Significant differences were observed for most of the yield, economic, and one of the HVI fiber quality parameters measured. After adding lint and seed value, and subtracting ginning, seed and technology fee costs, the net value/acre for the drag hose plots was $794.64, and $704.06 for the sprinkler plots, a difference of $90.58. Micronaire values were 4.8 for drag hose plots and 4.6 for the sprinkler irrigation plots.

Objective The objective of this project was to compare agronomic characteristics, yields, gin turnout, fiber quality, and economic returns of cotton under drag hose and sprinkler irrigation in Gaines County.

Materials and Methods

Variety: Deltapine 1044B2RF

Treatments: Sprinkler irrigation vs Drag Hose Irrigation (Sprinkler irrigation was utilized early season to get uniform stand establishment throughout the entire trial. Drag hoses were installed on 25-May on the drag hose plots).

Experimental design: 3 replications

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

Plot size: 4 rows by variable length of field (188ft to 606ft long)

Planting date: 14-May

Soil Texture: Sandy

Irrigation: This trial received approximately 8.21 inches of irrigation and rainfall throughout the growing season.

Harvest: Plots were harvested on 11-October using a commercial stripper harvester. Harvest material was transferred into a weigh wagon with integral electronic scales to determine individual plot weights. Plot yields were adjusted to lb/acre.

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

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

Ginning cost and seed values: Ginning costs were based on $3.00 per cwt. of bur cotton and seed value/acre was based on $250/ton. Ginning costs did not include checkoff.

Seed and technology fees: Seed and technology costs were calculated using the appropriate seeding rate (3.5 seed/row-ft) for the 40 row spacing and entries using the online Plains Cotton Growers Seed Cost Comparison Worksheet available at: http://www.plainscotton.org/Seed/PCGseed12.xls

Results and Discussion

Significant differences were observed for most of the yield, economic, and one of the HVI fiber quality parameters measured (Tables 1 and 2). Bur cotton yields averaged 3942 lb/acre with the drag hose plots making 4167 lb/acre, and the sprinkler plots making 3717 lb/acre. Lint yield was 1375 lb/acre for the drag hose plots, and 1224 lb/acre for the sprinkler plots. Seed yield for the drag hose plots was 1999 lb/acre, and the sprinkler plots were 1809 lb/acre. After adding lint and seed value, total value/acre for the drag hose plots was $982.28, and $878.19 for the sprinkler plots. When subtracting ginning, seed and technology fee costs, the net value/acre for the drag hose plots was $794.64, and $704.06 for the sprinkler plots, a difference of $90.58. Micronaire values were 4.8 for drag hose plots and 4.6 for the sprinkler irrigation plots.

Conclusions

These data indicate that differences can be obtained in terms of net value/acre when comparing sprinkler irrigation to drag hose irrigation. During the 2012 growing season Gaines County experienced high temperatures and very little rainfall. Additional multi-site and multi-year applied research is needed to evaluate irrigation types across a series of environments.

Acknowledgements

Appreciation is expressed to Shelby Elam Farms for the use of his land, equipment and labor for this demonstration.

Table 1. Harvest results from the Drag Hose Vs Sprinkler Irrigation, Shelby Elam Farm, Seminole, TX, 2012.

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 ---					
Drag Hose	33.0	48.0	4167	1375	1999	0.5325	732.38	249.90	982.28	125.00	62.63	794.64 a
Sprinkler	32.9	48.7	3717	1224	1809	0.5328	652.11	226.08	878.19	111.50	62.63	704.06 b
Test average	33.0	48.3	3942	1300	1904	0.5327	692.25	237.99	930.23	118.25	62.63	749.35
CV, %	1.5	1.9	3.3	3.3	3.2	3.1	3.3	3.2	3.2	3.3	--	3.5
OSL	0.8259	0.4581	0.0503†	0.0492	0.0617†	0.9825	0.0491	0.0617†	0.0518†	0.0503†	--	0.0521†
LSD	NS	NS	307	150	145	NS	79.45	18.13	72.04	9.19	--	62.85

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

Assumes:
$3.00/cwt ginning cost.
$250/ton for seed.
Value for lint based on CCC loan value from grab samples and FBRI HVI results.

Table 2. HVI fiber property results from the Drag Hose Vs Sprinkler Irrigation, Shelby Elam Farm, Seminole, TX, 2012.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32nds inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
Drag Hose	4.8	33.5	80.6	28.4	8.0	1.7	78.2	9.0	2.0	1.0
Sprinkler	4.6	33.7	80.6	28.6	8.3	1.7	78.0	8.9	2.7	1.0
Test average	4.7	33.6	80.6	28.5	8.2	1.7	78.1	9.0	2.3	1.0
CV, %	1.5	1.0	2.3	2.4	13.6	42.4	0.2	1.2	--	--
OSL	0.0742†	0.5286	1.0000	0.7586	0.7483	1.0000	0.3701	0.5286	--	--
LSD	0.2	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, †indicates significance at the 0.10 level, NS - not significant

Bayer CropScience Irrigated CAP Trial
Seminole, TX - 2012

Cooperator: Jud Cheuvront

Manda Anderson, Extension Agent - IPM, Gaines County

Planted: 17-May
Harvested: 12-November

Table 1. Harvest results from the Bayer CropScience Irrigated CAP Trial (1 replication), Cheuvront Farms, Seminole, TX, 2012.

Variety	Lint Yield (lbs/A)	Turnout	Mic	Staple	Strength	Unif	Loan Value* (¢/lb)	Value / A ($/A)
FM 2484B2F	2,089	0.369	4.03	39	30.9	83.0	57.45	$1,200
FM 2989GLB2	2,050	0.369	4.19	37	28.9	80.8	56.95	$1,168
BX 1347GLB2	1,977	0.355	4.37	39	29.0	83.2	57.10	$1,129
FM 1944GLB2-PV	1,962	0.344	3.62	39	33.1	81.6	57.25	$1,123
FM 9170B2F	1,949	0.368	3.67	38	31.0	83.2	57.40	$1,118
ST 4946GLB2*	1,798	0.375	3.99	38	31.2	83.6	57.55	$1,035
FM 1944GLB2	1,797	0.357	3.79	39	32.9	82.1	57.45	$1,032
FM 1740B2F	1,796	0.361	3.91	37	30.8	83.4	57.45	$1,032
ST 6448GLB2**	1,765	0.354	3.73	39	30.5	82.9	57.35	$1,012
ST 4288B2F	1,760	0.330	3.80	38	29.4	81.7	57.05	$1,004
FM 9180B2F	1,724	0.330	3.95	40	30.5	85.0	57.65	$994
ST 5458B2RF	1,718	0.356	4.28	37	26.3	81.7	56.95	$978

Loan Value calculated from 2012 CCC Loan Schedule using uniform color grade of 21 and uniform leaf grade of 3.

*Tested as BX 1346GLB2 **Tested as BX 1348GLB2

This trial received approximately 19.52 inches of irrigation and rainfall throughout the growing season.

Bayer CropScience Irrigated CAP Trial
Loop, TX - 2012

Cooperator: Ricky Mills

Manda Anderson, Extension Agent - IPM, Gaines County

Planted: 22-May
Harvested: 24-October

Table 1. Harvest results from the Bayer CropScience Irrigated CAP Trial (1 replication), Ricky Mills Farms, Loop, TX, 2012.

Variety	Lint Yield (lbs/A)	Turnout	Mic	Staple	Strength	Unif	Loan Value* (¢/lb)	Value / A ($/A)
BX 1347GLB2	1,145	0.299	4.19	38	26.5	82.2	57.05	$653
FM 2484B2F	1,063	0.300	3.72	39	31.5	83.6	57.55	$612
ST 4946GLB2*	1,007	0.315	4.06	37	32.1	82.7	57.45	$578
ST 4288B2F	1,000	0.265	4.07	39	32.1	83.7	57.55	$575
FM 9170B2F	978	0.292	3.71	38	32.2	81.9	57.35	$561
FM 1944GLB2	946	0.264	3.97	38	29.6	81.7	57.05	$540
ST 5458B2RF	923	0.302	4.59	35	27.5	80.7	55.75	$515
FM 1944GLB2-PV	889	0.277	4.06	39	31.4	82.9	57.45	$511
FM 1740B2F	868	0.307	3.98	36	28.5	81.5	56.75	$493
FM 2989GLB2	844	0.288	4.09	37	29.9	82.6	57.15	$482
ST 6448GLB2**	731	0.259	3.67	41	27.0	82.5	56.90	$416
FM 9180B2F	716	0.258	4.31	37	30.9	82.8	57.20	$409

Loan Value calculated from 2012 CCC Loan Schedule using uniform color grade of 21 and uniform leaf grade of 3.

*Tested as BX 1346GLB2 **Tested as BX 1348GLB2

This trial received approximately 13.21 inches of irrigation and rainfall throughout the growing season.

Phytogen Irrigated Innovation Trial
Seminole, TX - 2012

Cooperator: Froese Farms

Manda Anderson, Extension Agent - IPM, Gaines County

Planted: 21-May
Harvested: 8-November

Table 1. Harvest results from the Phytogen Irrigated Innovation Trial (3 replications), Froese Farms, Seminole, TX, 2012.

Variety	Lint Yield (lbs/A)	Percent Turnout	Mic	Length	Strength	Unif	Loan Value* (¢/lb)	Crop Value ($/A)
PHY 499 WRF	1354	0.342	3.5	1.14	32.5	82.5	0.5315	$720
PHY 499 WRF ACPB	1313	0.346	3.7	1.15	32.1	83.0	0.5387	$707
ST 5458 B2RF	1308	0.335	3.6	1.17	31.6	81.6	0.5247	$686
DP 1044 B2RF	1239	0.322	3.7	1.13	30.8	81.3	0.5365	$665
PHY 367 WRF	1210	0.316	3.7	1.15	31.7	82.5	0.5380	$651
PHY 375 WRF	1121	0.298	3.6	1.13	29.7	81.7	0.5288	$593

This trial received approximately 19.23 inches of irrigation and rainfall throughout the growing season.

Deltapine Irrigated FACT Trial
Seminole, TX - 2012

Cooperator: Tim Neufeld Farms

Manda Anderson, Extension Agent - IPM, Gaines County

Planted: 4-May
Harvested: 1-November

Table 1. Harvest results from the Phytogen Irrigated Innovation Trial (1 replications), Tim Neufeld Farms, Seminole, TX, 2012.

Entry	Brand	Product Name	Value / A ($/A)	Lint Yield (lbs/A)	Loan Value (¢/lb)	Staple	Length	Strength	Mic	Percent Lint Turnout	Unif
1	Monsanto	Experimental	$473.92	894	0.5300	33.6	1.05	28.9	4.8	38.0	79.4
2	Deltapine	DP 0912 B2RF	$472.04	882	0.5350	34.6	1.08	31.1	5.0	38.7	80.9
3	Deltapine	DP 1044 B2RF	$457.46	922	0.4960	33.6	1.05	28.5	5.4	37.1	79.9
4	Deltapine	DP 1359 B2RF *	$440.74	780	0.5650	35.8	1.12	31.6	4.8	38.6	81.3
5	Monsanto	Experimental	$438.32	787	0.5570	34.9	1.09	30.1	4.9	39.7	81.3
6	Deltapine	DP 174 RF	$432.94	844	0.5130	34.2	1.07	29.1	5.1	39.9	81.2
7	FiberMax	FM 1740 B2RF	$425.83	800	0.5320	34.9	1.09	28.5	5.2	39.1	82.3
8	Monsanto	Experimental	$420.36	792	0.5310	34.6	1.08	28.4	5.0	41.7	81.5
9	Monsanto	Experimental	$402.84	754	0.5340	34.9	1.09	30.9	5.0	41.3	81.0
10	Monsanto	Experimental	$398.50	775	0.5140	34.2	1.07	29.9	5.2	38.6	82.7
11	FiberMax	FM 9170 B2F	$380.92	671	0.5380	37.1	1.16	31.8	4.6	37.9	83.0
12	Deltapine	DP 1032 B2RF	$369.81	710	0.5210	34.9	1.09	27.4	5.3	38.7	82.9
13	Monsanto	Experimental	$345.54	623	0.5550	34.6	1.08	29.6	4.8	37.2	80.5
14	Deltapine	DP 1321 B2RF *	$293.70	519	0.5660	37.1	1.16	29.8	4.7	39.4	84.3
15	Monsanto	Experimental	$292.18	605	0.4830	33.0	1.03	28.4	5.5	40.5	80.4
16	Monsanto	Experimental	$289.79	542	0.5350	34.9	1.09	31.3	5.2	38.6	81.8
		TEST AVERAGE	**$395.93**	**744**	**0.5316**	**34.8**	**1.09**	**29.7**	**5.0**	**39.1**	**81.5**

Value Calculation based on $0.52/Lb(+/-) discounts/premiums from the 2011 USDA Loan Chart (Ranked by Value $/A). All plots were assigned a base color (31) and leaf grade (3).
Entries listed as "Monsanto" brand are experimental varieties, and not for sale.

* Indicates variety that has been advanced into commercial production. Key: 11R112B2R2 = DP 1321 B2RF; 11R124B2R2 = DP 1311 B2RF; 11R159B2R2 = DP 1359 B2RF

Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and year whenever possible.

This trial received approximately 20.6 inches of irrigation and rainfall throughout the growing season.

Deltapine Limited Irrigated FACT Trial
Seagraves, TX - 2012

Cooperator: Marcus Crow Farms

Manda Anderson, Extension Agent - IPM, Gaines County

Planted: 30-May
Harvested: 20-November

Table 1. Harvest results from the Phytogen Irrigated Innovation Trial (1 replications), Marcus Crow Farms, Seagraves, TX, 2012.

Entry	Brand	Product Name	Value / A ($/A)	Lint Yield (lbs/A)	Loan Value (¢/lb)	Staple	Length	Strength	Mic	Percent Lint Turnout	Unif
1	FiberMax	FM 1740 B2RF	$288.89	539	0.5360	33.9	1.06	29.0	5.0	32.0	81.4
2	FiberMax	FM 9170 B2F	$286.04	506	0.5650	35.5	1.11	32.1	4.4	37.8	81.7
3	Monsanto	Experimental	$267.04	507	0.5265	34.6	1.08	27.7	5.0	32.4	78.1
4	Monsanto	Experimental	$233.54	442	0.5280	33.6	1.05	26.8	4.1	30.6	78.9
5	Monsanto	Experimental	$226.02	441	0.5120	33.3	1.04	27.7	4.7	30.1	79.8
6	Deltapine	DP 0912 B2RF	$201.56	389	0.5180	33.0	1.03	29.4	4.9	33.3	81.2
7	Deltapine	DP 1044 B2RF	$199.67	362	0.5520	34.9	1.09	30.3	4.4	32.1	79.6
8	Deltapine	DP 1359 B2RF *	$195.67	355	0.5515	34.9	1.09	29.8	4.2	28.4	79.1
9	Deltapine	DP 174 RF	$193.40	341	0.5665	35.5	1.11	30.3	4.2	30.0	82.2
10	Monsanto	Experimental	$187.93	366	0.5135	32.6	1.02	28.2	4.2	28.2	79.2
11	Monsanto	Experimental	$183.23	377	0.4865	31.4	0.98	27.4	5.0	31.3	79.8
12	Deltapine	DP 1321 B2RF *	$177.33	346	0.5130	33.6	1.05	29.2	4.3	29.9	79.9
13	Monsanto	Experimental	$175.03	315	0.5550	34.9	1.09	29.7	4.9	28.6	81.7
14	Deltapine	DP 1032 B2RF	$173.29	341	0.5085	32.6	1.02	27.7	4.8	29.5	78.7
15	Monsanto	Experimental	$166.69	294	0.5665	35.8	1.12	31.4	4.1	29.3	80.4
16	Monsanto	Experimental	$157.02	303	0.5180	33.3	1.04	29.8	4.7	25.3	81.3
		TEST AVERAGE	**$207.02**	**389**	**0.5323**	**34.0**	**1.06**	**29.2**	**4.5**	**30.6**	**80.2**

Value Calculation based on $0.52/Lb(+/-) discounts/premiums from the 2011 USDA Loan Chart (Ranked by Value $/A). All plots were assigned a base color (31) and leaf grade (3).
Entries listed as "Monsanto" brand are experimental varieties, and not for sale.

* Indicates variety that has been advanced into commercial production. Key: 11R112B2R2 = DP 1321 B2RF; 11R124B2R2 = DP 1311 B2RF; 11R159B2R2 = DP 1359 B2RF

Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and year whenever possible.

This trial received approximately 5.95 inches of irrigation and rainfall throughout the growing season.

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Appendix A

2012 Gaines County IPM Newsletters

May 11, 2012

Texas IPM Partners With Nature

AgriLIFE EXTENSION Texas A&M System

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Gaines County IPM Newsletter

Volume V, No. 1

IPM Radio Program—Every Wednesday 12:30 to 2:00 on AM 950

As you are getting geared up for this season, be sure to tune in to the IPM Radio Program every Wednesday from 12:30 to 2:00 on AM 950. The Integrated Pest Management (IPM) Agents from Bailey, Parmer, Crosby, Floyd, Hockley, Cochran, Terry, Yoakum, Lynn, Dawson, and Gaines Counties discuss current pest pressures, crop stage and development, and upcoming meetings.

Gaines County Integrated Pest Management Blog — http://agrilife.org/gainesipm/

Be sure and subscribe to the blog if you would like to receive a notification when there is a new post. Subscribing is easy… just enter your email address in the subscription box on the right hand side of the blog page. You will then receive an email asking you to confirm your subscription.

On-line Resources — http://gaines.agrilife.org/

http://gaines.agrilife.org/ Gaines County IPM Newsletters and 2011 Gaines County Research Trials Results

http://lubbock.tamu.edu/focus-newsletter/ - Focus on South Plains Newsletter and 2011 South Plains Research Trial Results

http://ipm.tamu.edu/ Texas IPM Program and Links to other IPM websites

http://peanut.tamu.edu/ Peanut Progress Newsletter and Results from the 2011 Peanut Research Trials

http://www.tpma.org/ Texas Pest Management Association website. Click on "IPM in Texas" for a link to other IPM Newsletters from around the state

Newsletter Renewal—For those of You Receiving a hardcopy in the Mail

If you are interested in receiving this newsletter in the mail during 2012, please fill out the attached subscription form and return it to the Gaines County IPM Office.

To assist us in reducing costs, **if you have internet access, please provide your email address** and we will e-mail you the newsletter.

Benefits of having your newsletter sent through e-mail are: pictures and graphs will be in color, easy to store on your computer, no papers to mess with, click-able links to other internet sites, and sooner access. If you are not sure how to use e-mail but have access to a computer give us a call and we will help you.

If you are already receiving the newsletter by e-mail, no response is required.

General Situation

Up to this point, we have missed all of the storms that have passed through west Texas. However, on Monday and Thursday our luck changed and Gaines County was blessed with some much need rainfall. Rainfall totals have ranged from 1.5 inches to as much as 4.5 inches. There was some hail mixed in with the rainfall and there were a few cotton fields hailed out. We are still a long way from replenishing the depleted sub-soil moisture. However, this past weeks rainfall will help with seed germination in most fields. Unfortunately, that includes weed seed germination. Timely and properly applied herbicides will help to reduce early season weed pressure. Early season weed control is essential in order to avoid competition for water and nutrients between crops and weeds. Severe early season competition can cause crop stand and yield loss. Early emerging weeds will have a much larger impact on yield than weeds that emerge later in the growing season.

As cotton starts emerging, scout weekly for thrips. The effectiveness of a thrips application all depends on the timing of the application. If considerable damage occurs prior to treatment, then you may have missed your opportunity to have the most effect with an insecticide. The current action threshold is one thrips per true leaf through the fifth true leaf stage.

Wireworms Feeding on Cotyledon Leaves Prior to Emergence

During the past couple of years we have seen an increase in the number of fields that are infested with wireworms.

Wireworms are the soil dwelling larvae of click beetles. Problems with wireworms appear to be greatest in fields following grain crops. Search in the soil to figure out whether or not wireworms are present. Growers should consider using seed treatments if they have wireworms in their fields. Use a seed treatment containing imidacloprid (Gaucho 600, Aeris, and generics such as Macho 600), thiamethoxam (Cruiser, Avicta Complete) or clothiadan (Poncho/Votivo), or an in-furrow insecticide such as Thimet. Temik is not highly effective on wireworms.

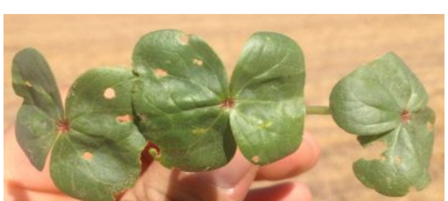
Wireworms feed on the cotyledons prior to plant emergence. This causes "shot" holes in the leaves.

Wireworms can also feed on the stem of the young plants. Most of the time they will feed on several areas of the stem and they may not chew the stem completely in half.

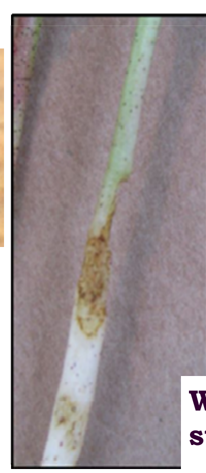
Conditions that adversely affect wireworms are cold winters, irrigation or rainfall during the winter or early spring that flood fields. We have not had these types of adverse conditions during the last couple of winters. This could be part of the reason that we are seeing an increase in the number of fields infested with wireworms.

Plants that emerge rapidly will have a better shot at getting through the window when they are most susceptible to wireworm damage and other early season pests (such as thrips). This adds further backing to the fact that we should plant when we have the most favorable conditions.

Wireworm



"Shot" Holes in Leaves. ***Photo Courtesy of Kurt Brown***



Wireworm feeding damage on stems

Hemileuca slosseri (Buckmoth) larvae are being found throughout Gaines County. The larva are pale yellow with tufts of black branched spines and a reddish head. This has been found in high numbers around homes, schools, barns, and Shinnery oak. The larvae's primary host is Shinnery oak (*Quercus havardii*).

Buckmoth larvae

Dr. Mark Muegge, Texas AgriLife Extension Service, Entomologist out of Fort Stockton, provided the following information. Larvae usually complete feeding in late May to early June, but being as warm as this spring has been probably caused eggs to hatch earlier than normal. Larvae pupate in leaf litter under the host plant and don't emerge as adults until early November. The length of the adult flight season is not well known, but my guess would be to the end of November. Interestingly, moths emerge from pupae in early morning with mating occurring during morning to afternoon. All this takes place very close to the ground, presumably because of general windy conditions. Eggs are laid and overwinter till spring when warm temps induce egg hatch. Also, the tufts of spines on the caterpillar are urticating and can cause welts that can last up to a week in those susceptible to the toxin. So take care in handling larvae. The adult moths of most species are attractive, unfortunately Hemileuca slosseri is not one of them. Wing coloration is nearly absent.

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Gaines County IPM Newsletter Renewal

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Gaines County IPM

Attention: Manda Anderson

101 S. Main Rm 111

Seminole, TX 79360

Please feel free to call me if you have any questions. Thank you!

Manda Anderson 432-788-0800

June 8, 2012

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Gaines County IPM Newsletter

Volume V, No. 2

General Situation

Last years drought left several farmers skeptical of the weather and likelihood of making a bountiful crop in 2012. Thankfully the weather seems to have take a turn for the better and we have already surpassed last years rainfall totals. We are still a long ways from replenishing the full soil moisture profile. However, the rainfall that we received during the week of May 7, and on May 26 and June 4 have given us hope and a better outlook for the 2012 crop.

Peanuts are looking good and some of the earlier planted fields are starting to bloom.

Cotton stages range from seed in the ground to squaring, with a majority of the cotton in the 2-4 true leaf stage. Most fields are benefiting from the rainfall. However, wind, hail, and blowing sand have damaged some young cotton plants. Wind damaged cotton is often confused with thrips damage. Both can cause the leaves to cup upwards. Additionally, wind damaged leaves tend to have burnt edges. Whereas, thrips damaged leaves will not have the burned edges. Instead thrips feeding causes deformation of the leaves. Make sure thrips are present before you make an insecticide application.

Figure 1. Sand blasted leaves

We are seeing grasshoppers in pastures, CRP, and in corners of fields. However, we have not seen or heard of any damage from them.

Weeds are the major concern at this time. With regards to resistant weeds, we have not confirmed any resistant weeds in Gaines County. However, there are a couple of fields that we are investigating in Gaines County. Please see the section title "Weed Management."

Thrips

Thrips pressure remains relatively light in a majority of the fields. However, we have picked up some heavy populations in scattered fields. These fields were already showing signs of thrips damage, therefore they had already surpassed the action threshold. Thrips are slender, straw colored insects about 1/15 inch long, with piercing and sucking mouthparts. Adults are winged and capable of drifting long distances in the wind. Thrips attack leaves and leaf buds and cause silvering of the lower leaf surface and deformed leaves. Thrips can migrate in heavy numbers from adjacent weeds or crops, especially small grains, and cause significant damage within a few days. The decision to apply insecticide should be based on the number of thrips present and the stage of plant development. The number of thrips per plant to use as a treatment level increases as plants add more leaves. The action threshold is one thrips per true leaf. For example, if you have 3 true leaves, then your action threshold would be 3 thrips. Treatment is rarely justified once the plants reach 5 true leaves.

Figure 2. Deformed leaves caused by thrips feeding on the young tender leaves

Weed Management

At this time, Texas AgriLife Extension Service has not confirmed weed resistance in Gaines County. However, there are a couple of fields in Gaines County that we are investigating (*See Picture 3*). If producers have weeds that do not die within a reasonable amount of time, then they need to take immediate action: use of hard cold steel, a nice sharp hoe, additionally applications of glyphosate, or other herbicides.

Things to look for when trying to determine if you have resistant weeds: Did some plants of the same species die while other plants of the same species are sill alive? Were the live plants emerged when you applied the herbicide? Were the weeds already past the susceptibility stage when the herbicide was applied? Where the weeds activitely growing at the time of application, so as they were able to take in the herbicide?

Time is our limiting factor right now and producers are having a hard time keeping up with the new flushes of weeds.

***Figure 3.* This is a field that we are investigating, because the producer has already applied two applications of glyphosate and this strip of weeds did not die.**

We collected soil from this area and sent it to Dr. Peter Dotray, Extension Weed Specialist. Dr. Dotray will apply glyphosate at varying rates to the seedlings that emerge from the soil that we collected. STAY Tuned...we will send out the results.

Being proactive in areas with suspected weed resistance will lead to less headaches and ulcers in the coming years. Below are some pictures of fields where yellow herbicides were applied prior to planting or at planting. The effectiveness of yellow herbicides is obvious. The yellow herbicides were very effective in preventing weed emergence. We recommend the use of yellow herbicides and hopefully everyone will see that it is well worth the time, money, and effort to apply yellow herbicides next year.

***Figure 4.* The applicator ran out of yellow herbicides and did not refill the tank to complete this field. You can see to the row where the yellow herbicides where applied and where they were not applied.**

***Figure 5.* The farmer applied yellow herbicides in a band at planting. In comparison, there are relatively few weeds where he applied the band of yellow herbicide, as compared to the furrows, which did not receive an application of yellow herbicides.**

Beet Armyworms

John Klepper, local crop consultant, has picked up Beet Armyworms is some of the non-Bt fields that he is scouting. Worm sizes range from just hatched to 1/4 inch.

Figure 6. Beet army-worm egg mass

Beet armyworm eggs are laid on both sides of the leaf in masses covered by a whitish, velvety matrial. Young beet armyworms "web up" and feed together on leaves, but eventually disperse and be-come more solitary in their feeding habits. Early-season infestations feed on leaves and terminal areas. Occasionally they destroy the terminal, causing extensive lateral branch development and delayed maturity. Larvae skeletonize leaves rather than chewing large holes in them.

Figure 6. Newly hatched beet army-worms feeding together on a leaf.

If you would like to become a sponsor of the 2012 Gaines County TPMA Scouting Program, please contact Manda Anderson at 432-788-0800 or by email at mganderson@ag.tamu.edu. Thank You!

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June 22, 2012

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Gaines County IPM Newsletter

Volume V, No. 3

General Situation

This past weekend's showers brought very little rainfall to Gaines County. We need another good rainfall event soon to keep the dryland fields growing and to replenish our depleted soil moisture. Peanut plants are starting to bloom. Cotton stages range from cotyledon cotton to squaring cotton, with a majority of the cotton in the 4-8 true leaf stage.

We are still picking up a few beet armyworms in non-Bt cotton. However, the survival rate of beet armyworms is really low. Beet armyworms lay their eggs in a mass of 25-75 eggs. The adult moth then covers the eggs with scales from her body (See *Figure 1*). In non-Bt fields, we are only finding one worm per plant, which suggest that 95 to 99% of the worms are dying form natural causes (weather, beneficial insects, low humidity, cannibalism).

Figure 1. Beet armyworm egg mass

We are also picking up stink bug eggs and a few beneficial insects (mainly spiders and big-eyed bugs). Other than that insect pressure has been relatively light this week.

Figure 2. Stinkbug eggs

Figure 3. Big-eyed bug. Photo by Bart Drees

Conversely, nematodes are starting to cause significant damage to the root system in some cotton fields and concerns of weed resistance/ tolerance continues to be a hot topic.

Southern root-knot nematode

Root-knot nematodes have started to take their toll on cotton. We have observed stunting associated with root-knot nematode infestations. *Figure 4* shows the roots of a stunted plant and several nematode galls on the root. In comparison, *Figure 5* is a healthy cotton root. It is easy to see why nematodes can jeopardize yields and why nematode management should be a top priority.

We highly recommend the use of tolerant/ resistant varieties (PHY 367WRF, ST 5458B2RF, ST 4288B2RF, or DP 174RF) in fields with a history of nematode damage. Nematode damage is likely to be less severe when you plant one of these varieties because the plant's resistance limits nematode reproduction. You may still see some nematode damage in fields that were planted to one of these varieties, however, the damage on these varieties is likely to be less severe than if the field had been planted to a susceptible variety. If you are seeing nematode damage, then the thing to do at this point would be to give those plants all they need in order to reduce the amount of stress on the plants.

Figure 4. Root-knot nematode galls on cotton roots

Figure 5. Healthy Roots of a Cotton Plant

Concerns About Possible Weed Resistance/Tolerance…What to look for in your field

The days of getting by with a glyphosate only weed management system are long behind us. We have to start using a wide diversity of weed management tactics, such as, residual herbicides, burn down herbicides, plowing, hoeing, hand removal, etc…

Just because you have been diligent about using a variety of weed management tactics in your fields, doesn't mean that you will not have any issues show up in your fields. This has to be a community wide effort because pollen can travel in the wind.

Most of the time, resistance will start in a small area of the field (usually an irregularly shaped patch of a single weed species). Resistance can be brought about through back-to-back applications of glyphosate year after year. If a single plant becomes resistant to the herbicide and reproduces, then its seed can be scattered forming a small patch of resistant weeds. One pigweed can produce 150,000 to 200,000 seed.

If you have applied glyphosate twice at a lethal rate and the pigweed is not dying, but the other weeds within that area are dying, then this indicates that there is not a sprayer/coverage issue, instead you may have pigweed that is showing signs of resistance to glyphosate. Immediate action should be taken to remove these weeds (hoeing, plowing, hand removal) in order to prevent them from reproducing. Additionally, we highly recommend the application of a residual herbicide at this time to prevent more pigweed from emerging. Your herbicide program from this point forward should include herbicides with multiple modes of action and mechanical weed control.

Below are pictures from two fields that we are monitoring to determine if resistance is developing.

Figure 6. The producer applied yellow herbicides in a band at planting. After emergence he applied glyphosate and had several pigweed that showed signs of resistance to glyphosate. Notice how effective the yellow herbicide banded application was in preventing weed emergence within the row. These weeds are not resistant to yellow herbicides. Just think about how clean the field would have been if he had done a broadcast application of the yellow herbicide.

Figure 7. This field had several pigweeds (Palmer amaranth) that died from the glyphosate application, however, there were also several weeds that were slightly damaged from the glyphosate and other weeds that are still actively growing. We would expect to see this type of segregation of the weeds in a field where resistance is developing.

Figure 8. Since there were some misses when glyphosate was applied, the producer decide to use a different weed management tool…cold hard steal.

Concerns About Possible Weed Resistance/Tolerance…What to look for in your field

Figure 9. This producer did not apply any yellow herbicides. He has applied 3 applications of glyphsates this year. The weeds are not actively growing, but they are not dead.

Figure 10. The pigweeds are yellow, which indicates that there was glyphosate taken up into the plants, however, the glyphosate did not kill the plants.

Proper Application and Proper Incorporation of Pre-Plant Yellow Herbicides

Keep in mind that yellow herbicides work effectively but they can also be damaging to crops if they are not incorporated properly and applied at the correct rates.

Figure 12. **The tractor that was applying the yellow herbicide slowed down as he was approaching the edge of the field causing the yellow herbicide to be applied at a higher rate, which resulted in a poor stand of cotton.**

Figure 13. **Damaged Cotton Roots**

Rhizobium Nodulation in Peanuts

Below is a table that can be used to rate your nodulation levels at 5 to 6 weeks after planting. If early nodulation is good, you can expect it to continue to increase toward peak nodulation (usually August), but if early nodulation is poor it probably isn't going to improve. Minimal or nonexistent *Rhizobium* nodulation points toward the need for supplemental nitrogen to achieve desired yields.

***Table 1.* Early season *Rhizobium* nodulation rating for peanuts.**

Nodules per Plant	Early Season Nodulation Rating	Management Consideration
More than 20	Excellent	This field will likely have excellent late-season nodulation. Therefore, a response from supplemental (mid-season) nitrogen is doubtful.
16 to 20	Very Good	Late-Season nodulation should also be strong. Therefore, you should reduce your mid-season nitrogen application.
11 to 15	Good	Will produce a good crop but may consider some reduction in your mid-season nitrogen application.
6 to 10	Fair	We would like to see higher nodulation than this. Therefore, a mid-season nitrogen application is a good bet.
Less than 5	Poor	These nodules may be from Rhizobium that are not specific for peanuts. A mid-season nitrogen application is essential. Try to determine why the nodulation was poor in this field.

If you would like to become a sponsor of the 2012 Gaines County TPMA Scouting Program, please contact Manda Anderson at 432-788-0800 or by email at mganderson@ag.tamu.edu. Thank You!

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July 7, 2012

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Gaines County IPM Newsletter

Volume V, No. 4

General Situation

The earliest planted cotton and peanut fields are starting to bloom and form small pods, respectively.


July 3 & 4 brought scattered showers to the county. Rain ranged from 0 to 1+ inches. The town of Seminole did not receive any rainfall. The whole county is in desperate need of a good soaking rainfall that lasts for several days. Most dryland fields are hanging on and waiting for the next good rain.

Due to spotty showers and varying pumping capacities, there are huge differences in the irrigated crop stages and development. Cotton ranges from pre-squaring to blooming.

Some peanut fields are pegging and starting to form small pods, while other peanut fields have not formed any pegs.

Weeds are still the main concern at this time.

We are starting to find light populations of cotton fleahoppers. The action threshold for fleahoppers is 25-30 per 100 terminals along with a poor square set.

Fleahopper adult (top) and nymph (bottom)

Scentless plant bug (top) should not be confused with a Lygus bug (bottom)

We continue to find light populations of beet armyworms and boll worms in peanuts and non-Bt cotton. We are also finding an occasional cotton square borer. Beneficial insects (including spiders, big-eyed bugs, lacewings, and ladybird beetles) are relatively abundant right now and they are keeping most insect pests at bay.

Since a majority of the cotton is squaring, we need to keep a close eye out for fleahoppers, lygus, bollworms, and other square damaging pests.

I would like to thank the Gaines County TPMA/IPM Steering Committee for their help in determining our local priorities and developing the following research trials.

I also would like to thank the following producers for planting the 2012 Gaines County IPM Program Research Trials.

Research Trial	**Farm**
Cotton Variety Trial Under Nematode Pressure	Scott Nolen Farms
Long Season Variety Trial Under Limited Water	Cheuvront Farms
Cotton Variety Trial Under Verticillium Wilt Pressure	Froese Farms
Cotton Production Under Drag Hose vs Sprinkler Irrigation	Shelby Elam Farms
Cotton Variety Trial Under Dryland Production	Cody Walters Farms
Use of Seed Treatments & Vydate C-LV for the Management of Nematodes	Raymond McPherson Farms
Use of Seed Treatments, Varieties, and Vydate C-LV for the Management of Nematodes	Otis Johnson Farms (Dr. Terry Wheeler lead researcher)
Cotton Variety Trial Under Fusarium Wilt Pressure	Cheuvront Farms (Dr. Jason Woodward lead researcher)
Bayer CropScience Irrigated CAP Trial	Ricky Mills Farms
Bayer CropScience Irrigated CAP Trial	Cheuvront Farms
Bayer CropScience Irrigated GLT CAP Trial	Chuck Rowland Farms
Monsanto Irrigated FACT Trial	Tim Neufeld Farms
Monsanto Irrigated FACT Trial	Marcus Crow Farms
Phytogen Innovation Trial	Froese Farms
Peanut Pod Rot Research	Otis Johnson Farms (Dr. Terry Wheeler & Dr. Jason Woodward lead researcher)

Above is a picture of the drag hose vs sprinkler irrigation demonstration trial. Due to the excessive heat, lack of rainfall, lower pumping capacities, and windy days, the Gaines County IPM Steering Committee felt that drag hoses should be looked at as an option for more efficient water management.

Plant Growth Regulators

A majority of the cotton fields will likely not need a Plant Growth Regulator (PGR) application this year. However, there are a few cotton fields that have above normal pumping capacities and they are starting to show signs of excessive growth (long internodes).

The internode (the portion of stem between the nodes) is very sensitive to environmental and plant conditions, making the length of the internodes a reliable indicator of plant growth. A long internode indicates favorable conditions and the potential for excessive growth. A short internode shows that the plant was stressed when the internode was developing.

Plant growth regulators (PGR) are used to limit vegetative growth and produce a more compact plant. Since PGRs reduces plant growth, do not apply it if the plants are already under stress.

Determining whether or not a field needs a PGR application is difficult. There are several factors that need to be taken into consideration. First, is there excessive growth present and is this a variety that has high growth potential (visit with your seed company representative to determine which varieties should be watched closely for PGR needs)? Second, applications should begin when 50% of the plants have one or more matchhead squares (see specific product label for more information). Third, it is best to get a handle on excessive growth potential early if conditions favor excessive growth. Fourth, will the conditions for excessive plant growth be present for an extended period of time, or will mother nature apply a natural PGR (high temperatures and no rainfall)? July and August have been known to be pretty brutal on the High Plains.

In 2008 & 209 we conducted Plant Growth Regulator (PGR) trials in Gaines County. Neither of these trials showed an increased yield with the use of PGRs, however, one of them should a difference in plant height (the results from these trials can be viewed at http://gaines.agrilife.org/publications/cotton/).

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July 25, 2012

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Gaines County IPM Newsletter

Volume V, No. 5

General Situation

A majority of the fields have very low insect pest pressure. We are only picking up really light populations of the following insects in cotton: aphids, spidermites, bollworms, fall armyworms, and lygus. In peanuts we are picking up light populations of bollworms, fall armyworms, wireworms, grubworms, and southern corn root worm. Lorsban 15G is labeled for southern corn root worm, however, it is generally considered a preventative treatment. Once the larvae begin feeding, insecticide treatment is fairly ineffective. There is no rescue treatment for corn root worm.

Southern corn root

We are still picking up relatively high populations of beneficial insects in most fields. The beneficial insects are likely one of the key players in helping to keep most insect pest at bay.

Bollworm and Fall armyworm continue to be present in cotton and peanuts. Ages of worms range from one day old to 12 days old. Therefore, we are starting to see more of a continuous egg lay and overlapping generations. The continuous egg lay makes scouting tricky. We can quickly go from a light population to above economic thresholds and then we will have several ages of worms, with the larger worms being harder to kill. Fields need to be scouted more frequently to determine when economically damaging populations are present. However, we don't want to be to quick to pull the trigger because small worms can be killed by beneficial insects or mother nature. If an insecticide is warranted then we need to be prepared to scout for and possibly treat for secondary pests. Remember that peanuts can with stand a lot more worm pressure than cotton. Spanish and Valencia peanuts can tolerate 6-8 worms per foot of row. Whereas, runners and Virginias have more foliage area and can tolerate 10-12 worms per foot of row. Treat worms only when necessary, because you will likely flare secondary pests (ie., spidermites and aphids).

Weed Management

As we continue to battle or try to prevent herbicide resistance from developing, we need to use all the tools available. **If you have applied glyphosate twice and it has not been effective in managing the weeds, then it is time to use mechanical or physical means to remove the weeds and apply a pre-emergent residual herbicide.** Adding residual herbicides will reduce the risk of developing herbicide resistances because it prevents seeds, produced by the tolerant weeds, from germinating.

Seed produced by a weed that was not killed by two applications of glyphosate

Cotton Agronomy

As we reach peak bloom in cotton we should have all of our fertilizer out. Carrying out fertilizer applications much later could result in plants that are harder to defoliate come harvest time.

Several producers are considering the use of plant growth regulators. If the length of the top internodes average greater than 1.5" then a plant growth regulator may be justified. Plant growth regulators are not recommended in fields that are already under some kind of stress, including stresses incurring due to drought or disease presence (root-knot nematode, Verticillium wilt, Fusarium wilt, etc...)

Root-knot Nematode

Examine the roots closely for nematode galls. Galls are easier to detect if roots are dug rather than pulled from soil, because galled roots break off easily when plants are pulled. Root-knot nematodes inhibit root function, by reducing the plants ability to utilize water and nutrients. The plant stunting and leaf discoloration typically associated with certain nutrient deficiencies may be evident in root-knot nematode infected plants.

Verticillium wilt and Fusarium wilt

Verticillium wilt and Fusarium wilt have started to show up in some cotton fields. Both of these diseases cause the leaves to become discolored and a darkening of the vascular system (cut into the stem length wise to check for vascular discoloration). Therefore, it is hard to determine which disease is present.

The leaves on a plant infected with Fusarium will have chlorosis that starts on the margins of the leaf and these areas eventually turn necrotic. Whereas, leaves on a plant infected with Verticillium wilt will have chlorosis that starts between the veins before becoming necrotic.

Another clue is whether or not root-knot nematodes are present. Fusarium wilt is associated with fields infested with root-knot nematodes. Whereas, Verticillium wilt may or may not be associated with root-knot nematode infestations. Therefore, if there are no signs of root-knot nematodes on the cotton roots, then the plants are likely infected with Verticillium wilt.

There are no in season cures for these two diseases. The best management tool for these two diseases is to plant varieties that are less susceptible to the respective disease. Varieties that have are partially resistant to Verticillium wilt may be very susceptible to Fusarium wilt or vise versa. We have several tests this season that are looking at variety performance under Fusarium and Verticillium wilt pressure. These results will be presented at the fall meetings. For now, it is extremely important that you note which fields are infested with Fusarium wilt and which fields are infested with Verticillium wilt. This will help you with your seed selection in 2013.

Peanut Blooming, Pollination, and Pegging

Peanuts are blooming, setting pegs, and forming small-medium pods. The cooler temperatures (in comparison to last year) have helped with flower and fruit set. The fuller canopies have also helped to reduce temperatures and increase humidity in the canopy, which has created a more favorable environment for flowering, pollination, pegging and pod development. **More frequent irrigations at this time will also help to increase the humidity in the canopy.** Peg penetration into the soil requires adequate moisture. Once active pegging and pod formation have begun, it is recommended that the pegging zone be kept moist, even if adequate moisture is present in the soil profile. Failure of pegs to penetrate soil and develop pods can result from low relative humidity and high soil temperatures. Therefore, it is extremely important to supply additional moisture during pegging, even if deeper soil moisture is adequate.

The high humidity and moist conditions which create a favorable environment for pollination and pegging, also creates a favorable environment for disease development.

Leaf Spot

We have had reports of leaf spot in Spanish peanuts. Initial symptoms of leaf spot generally occur in the lower canopy and consist of small chlorotic flecks on the leaf surface. As the disease progresses lesions become evident throughout the canopy. Chemical burns can often be confused with leaf spot. Early leaf sot usually has a prominent yellow halo. There are numerous products labeled for leaf spot control. For further information on peanut diseases please refer to the Texas Peanut Program website: http://agrilife.org/peanut/

Pod Rot

Over the last couple of years, Dr. Terry Wheeler, Dr. Jason Woodward, Scott Russell and I have conducted extensive research on scouting for pod rot and timing of fungicide applications. We compared calendar based applications to applications based on threshold levels. **Pod rot tended to be lower in plot where the producer made earlier applications based on their experience (called calendar applications) and before pod rot had been found, then delaying application for a low threshold to trigger.** Growers generally make initial calendar pod rot fungicide applications at 60 to 75 days after planting. Getting the fungicide to the target site (pegging and pod development zone) is an important factor in pod rot management. For further details on the results from our pod rot research, please click on the following link http://gaines-agrilife-org.wpengine.netdna-cdn.com/files/2012/02/PodRotReport-2011dataonly.pdf

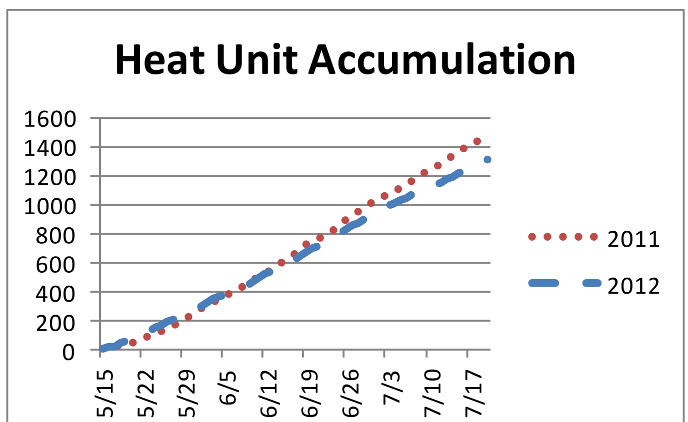
Comparisons between the 2011 and 2012 Growing Season

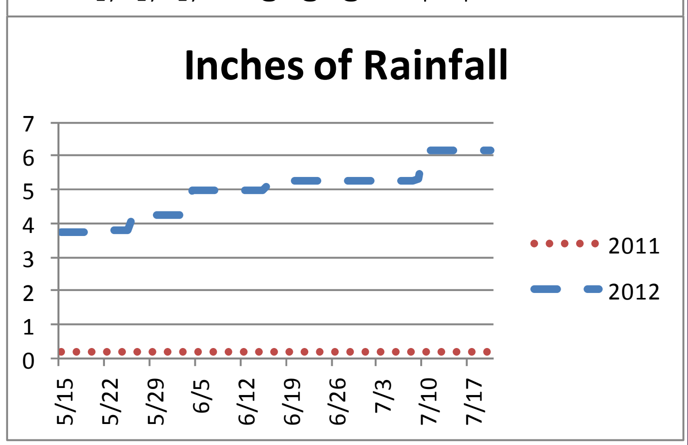
The weather is the driving force behind most of the other difference we are observing. We all know that last year was extremely dry and we had record heat. But how different was it from this year. The first table looks at Heat Unit accumulation from May 15 to July 20. During this time period we accumulated 1,480 and 1,306 in 2011 and 2012, respectively.

The differences in rainfall totals speak for themselves. However, like always the rain storms are spotty and there are some areas of the county that have received less rainfall and some areas that have received more rainfall in 2012. This along with pumping capacities has lead to the greatest differences observed in crop stage and development.

Very few fields showed signs of Verticillium wilt in 2011. Whereas, this year we are already starting to see signs of plants being infected with Verticillium wilt. This alone is a good indication that conditions are much more conducive for disease development in 2012.

July 17, 2011 is when we identified our first field infested with Kurtomathrips. Thankfully, this rare pest has not shown up in 2012. This pest flourished in the extreme hot dry conditions that were present in 2011. Hopefully, we will not see this pest in 2012, since we have more moderate temperatures and a little more rainfall.





Glyphosate Trial

I mixed up a 2% solution of glyphosate and applied it at a low (white flag), medium (yellow flag), high (orange flag), and very high rate (blue flag).

I applied these rates on small weeds (3-4 inches) and large weeds (3-4 feet tall). I also drenched several large weeds, until the spray was dripping off the plant (pink flag).

The large weeds had already received two applications of glyphosate, at the rates of 40 and 50 oz. Below are pictures taken when the glyphosate was applied and pictures taken one week after application.

All rates killed the small weeds. But the large weeds showed very little signs of injury or indication they were going to die.

(**Large Weed Pictures on Page 5)**

Small weed plots prior to application

Small weed plots one week after application

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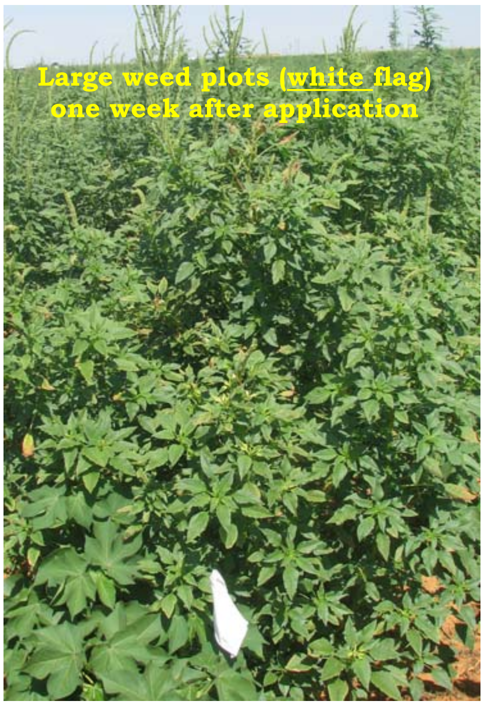
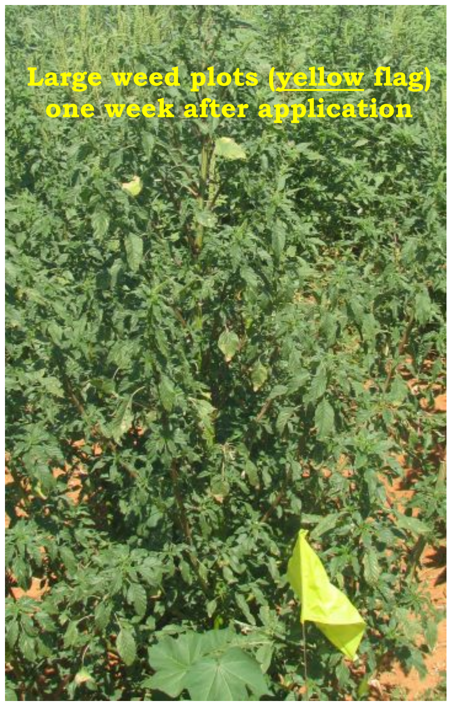
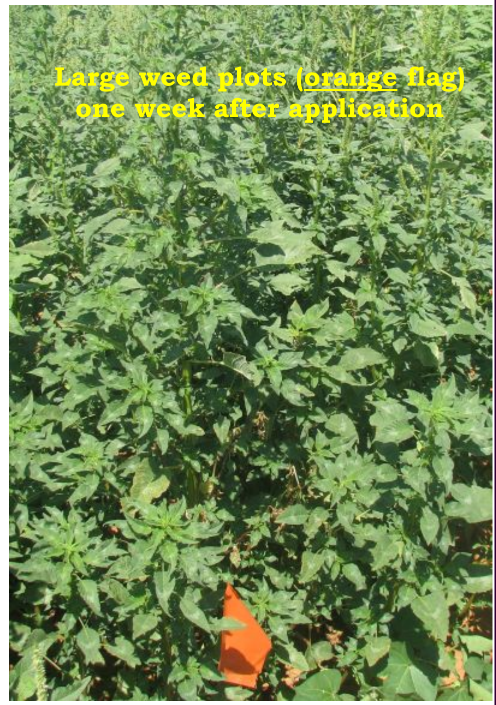
Large weed plots prior to application



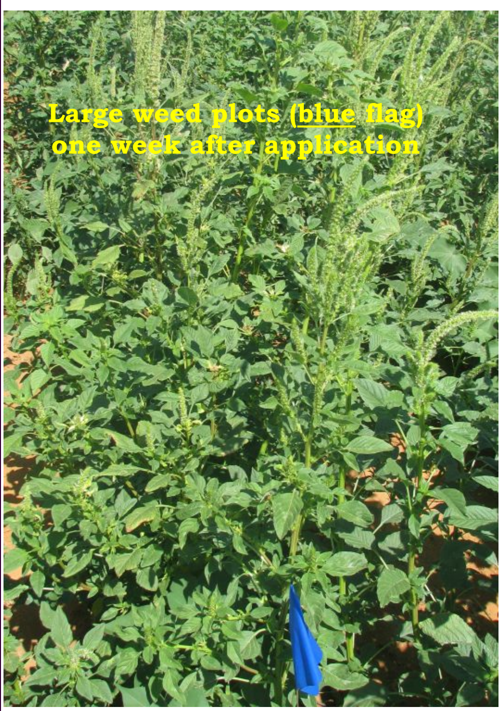
Large weed plots (white flag) one week after application



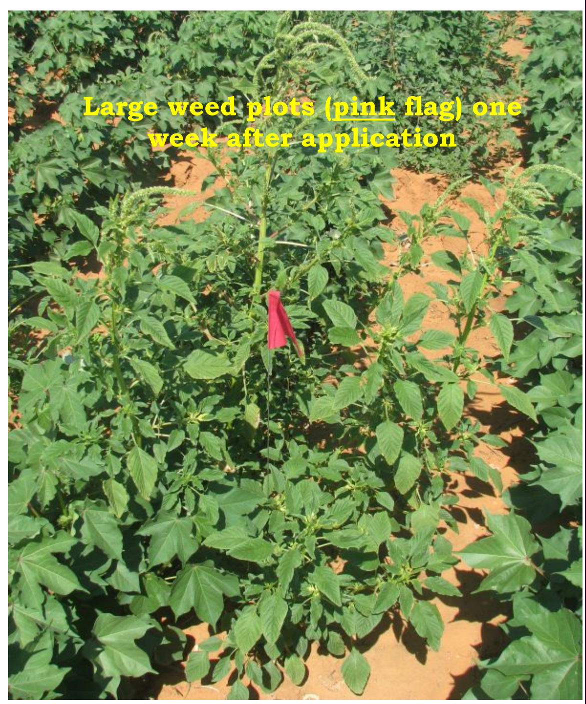
Large weed plots (yellow flag) one week after application



Large weed plots (orange flag) one week after application



Large weed plots (blue flag) one week after application



Large weed plots (pink flag) one week after application

August 2, 2012

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Gaines County IPM Newsletter

Volume V, No. 6

General Situation

We are in desperate need of rainfall in order to supply the plants with moisture to help finish out the crop. We have already started to see some shedding of cotton squares and small bolls. This natural shedding process helps the plants to adjust their fruit load, which allows the plants to shift all of its effort into maturing the retained fruit and producing harvestable bolls. Several cotton fields are quickly approaching cutout. Those field that are at 4 - 5 Nodes Above White Flower (NAWF) are considered cutout. To determine NAWF, simply find your uppermost 1st position white flower and count the number of nodes above that flower. We do have some fields which have maintained 7 – 9 NAWF, however, these fields have above normal irrigation capacities.

We still have a few more weeks of blooming before the cut off for a white bloom to be able to make it to a mature open boll. It takes approximately 800 to 850 Heat Units for a white flower to develop into an open boll. In 2010, we accumulated 836 H.U. from August 15 to October 15. Therefore, if conditions are similar to 2010 (depending on fall temperatures), then a white flower on August 15 would likely make it to a mature open boll around October 15.

Peanuts are continuing to peg and form pods. We have also seen several fields with formed pods. The peanut crop looks significantly better than it did at this same time last year. The 2012 peanut crop had a much better start, which has resulted in larger canopies that are more conducive for peanut pollination and pegging.

Verticillium wilt and Fusarium wilt incidence has increased in cotton fields. Insect pest pressure remains light. Beneficial insects numbers are still holding steady, despite there being very few pests to feed on. Weeds are still the main concern. Several hoe crews are helping to clean up weeds and some producers have also run a cultivator through the fields.

Pod Rot

Pod rot is starting to show up in more peanut fields. Most of the pod rot thus far has been caused by Pythium, but we are also picking up some pod rot caused by Rhizoctonia. Pods infected with Pythium usually have greasy dark brown-black lesions and pods may have a wet loose white fungus mat. Whereas, pods infected with Rhizoctonia have a drier dull dark brown lesion.

Dr. Jason Woodward, Extension Plant Pathologist-State Peanut Specialist covered peanut pod rot management in the most recent issue of Peanut Progress. Peanut Progress can be found on the web at the following website http://agrilife.org/peanut/current-peanut-progress-newsletter/

Pythium pod rot on the left.
Rhizoctonia pod rot on the right.

Solenopsis mealybug or cotton mealybugs

Immature cotton mealybug. Size ~ 3mm

Over the past two weeks we have been finding cotton mealybugs in a couple of cotton fields in the east central part of Gaines County. There was no noticeable damage to the plants. However, this is a major pest in many parts of the world. They start on the root and then move to the foliage. The adults are about 5mm long. Give me a call or bring some samples by my office if you find some in your fields. At this time we are not recommending that any insecticides be applied, we would just like to closely monitor this pest.

Nodes Above White Flower (NAWF)

In the July 1991 edition of *Physiology Today Newsletter*, the author describes the relationship between NAWF and the plants energy reserve. "NAWF reflects this reserve horsepower a plant has because excess energy is channeled into additional terminal growth. The amount of terminal growth that has occurred during the time period from first appearance of pinhead square in the terminal until the fruit reaches bloom is simply the number of nodes above the white bloom. If the boll load consumes almost all of the nutrients provided by the roots and leaves, or if stress reduces the nutrient supply, then little exces supply will be available for continued terminal growth. Under these conditions, the NAWF will lessen as the squares in the top of the plant develop into bloom. On the other hand, if the boll load is slight and the plant is amply feed with water and nutrients, then the excess supply of nutrients for production of new nodes in the terminal will be large. Under these conditions, the NAWF will stay large or even increase."

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August 14, 2012

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Gaines County IPM Newsletter

Volume V, No. 7

Cotton General Situation

A majority of the cotton has reached cutout during the last couple of weeks and several fields have started to **shed squares and small bolls**.

Cracked bolls have been observed in a couple of fields. Cotton stages range from 0 to 7 Nodes Above White Flower (NAWF), with a majority of the fields in the 2-4 NAWF. Knowing when a field reaches cutout (5 NAWF) will help you with your end of the season management.

Heat Unit (H.U.) Accumulation since July 23, July 30, and August 6

Date Cutout	H.U. Accumulation
July 23	535
July 30	382
August 6	206

At 350 H.U. after the white flower, the inner layer of the bur wall hardens making it hard for insects to feed on the developing boll. Fields that have accumulated 350 H.U. since cutout are safe from lygus damage and a bollworm egg lay. However, cotton that is still blooming is still very attractive to bollworms and as long as we have soft bolls that are susceptible to worm feeding and blooms and small bolls present to get a bollworm population going, we should take necessary steps to prevent bollworms from developing damaging populations.

Overall, insect pest pressure has been very light this year. Currently, we are finding very light populations of aphids, spider mites, bollworms, and armyworms. Beneficial insects (mainly spiders, green lacewings, and assassin bugs) are still hanging in there.

Monday (August 13) morning storms brought barely measure rainfall to most of the county, with the except of the Loop area which received 2.5 inches of rain and Seagraves received 0.63 inches.

Peanut General Situation

For the most part, the peanut crop looks very good. We are still picking up light populations of "worms" in peanuts. We are also picking up more pod rot caused by Rhizoctonia and Pythium. When applying fungicides, one of the most important factors in pod rot management is to get the product down to the pegging zone. This can be done by chemigation, or increasing the carrier volume, increasing droplet size, and/or irrigating right after the fungicide is applied. Fungicides can be quickly absorbed into the leaf, therefore, every effort should be made to get the product down into the pegging zone.

We are still in the high demand period when peanuts are developing and they should not be moisture stressed. In several fields we have small pods that will take time and water to reach full maturity. We want to push the plants as hard as we can to properly fill the load that we have developed. For pod development we are looking at 3-4 weeks from the time the peg enters the soil till the time it reaches full size. Although the pod has reached full size, kernel development has barely begun. Mature, harvestable pods require 60 to 80 days of development. Therefore, we are reaching the final stages of the season where we can have enough time develop a mature pod. Efforts need to be directed at maturing the current crop load instead of setting more blooms. For that reason, it is time to slow down the pivots and give the field a deeper soaking irrigation.

Salinity Issues in Peanuts

We have observed salt damage in a couple of peanut fields. Salts are left behind as the irrigation water evaporates. This allows for a buildup of salt in the root zone. If the salinity concentration in the soil is high enough, the plant will wilt and die, regardless of the amount of water applied. We need a good flushing rain to start leaching the salts below the root zone. Producers can have their water tested to determine the salinity levels in their water. Also, since we have not had any good flushing rains during the last two years, we have a double build up (2 years worth) of salts. Therefore, growers should also have their soil tested to get the full picture. The best indicator of the extent of salt problem is a detailed salinity analysis. The test measures the pH, electrical conductivity (EC), and water soluble levels of the soil. EC is a measure of the amount of dissolved salts in the paste of soil and water. Although, there is nothing we can do about the salt damage this year, knowing your salinity levels in your irrigation and soil levels will help you with your crop selection next year (keep in mind that peanuts are more susceptible to salinity issues than cotton).

Salty irrigation water can cause major problems in crop production. Salts compete with plants for water. Even if a saline soil is water saturated, roots are unable to absorb water and plants show signs of stress. Foliar applications of salty water commonly cause **marginal leaf burn** and in severe cases can lead to premature defoliation that creates yield and quality loss.

Toxic ions include elements like chloride, sulfate, sodium, and boron. Sometimes, even though the salt level is not excessive, one or more of these elements may become toxic to plants. Many plants are particularly sensitive to boron. In general, it is best to request a water analysis that lists the concentrations of all major cations (calcium, magnesium, sodium, potassium) and anions (chloride, sulfate, nitrate, boron) so that levels of all elements can be thoroughly evaluated.

Cotton boll development

The following is information obtained from Cotton Physiology Today August 1994 Newsletter.

Boll growth begins with pollination of the white flower at early to mid-morning. The boll grows rapidly after fertilization following an S-shaped curve, with the most rapid growth occurring between 7-18 days, and **full size reached in about 20-25 days**. A similar pattern of increase occurs for boll length, diameter and volume but dry weight increases until the boll is mature. **Boll development is often divided into three overlapping phases: the enlargement phase, the filling phase and the maturation phase.**

During the first three weeks (the enlargement phase) maximum boll size, maximum seed size and maximum fiber length are established. The maturation period from white flower to open boll is strongly influenced by temperature. The rapid achievement of full size followed by a lengthy maturation period during fall is a source of confusion and potential management mishap. Producers may delay harvest in the hop of realizing yields from top bolls that are full but immature.

Many preparatory events occur leading up to the time the flower bud opens. By this time the cells on the surface of the unfertilized seed, which will become fibers, already have been determined.

During the elongation phase, the individual lint cells elongate to about 25,000 or more times their original length before the secondary wall forms.

At the same time the fibers are expanding, the seed also is increasing in size. The periods of elongation of the fiber and expansion of the seed correspond to the enlargement of the boll wall, **so maximum length of the fiber is reached in about 20 days. Thus maximum boll volume, seed size and fiber length are determined during the first three weeks of development. Severe water stress during expansion can reduce size.**

The second half of boll development is characterized by accumulation of dry weight on the framework that developed during the first half. **While fiber length, and to some extent uniformity, is determined during early boll development, micronaire, maturity and strength are determined primarily thereafter. Premature defoliation and boll opening also can lower maturity.**

Boll opening is a process under the control of hormones. Ethylene is primarily responsible for triggering the process of boll opening. Ethylene is the active ingredient in such crop management compounds as Prep. High auxin produced by the developing seed counters the action of ethylene and prevents premature opening, but as the boll reaches maturity, auxin level drops and ethylene increases. Cells in a specialized layer in each suture of a boll enlarge and produce enzymes that dissolve their cell walls. Cracking along these sutures allows water to escape and the boll contents and bur wall begin to dry. A unique network of vascular strands causes the inner part of the bur wall to be more rigid than the outer part. Because of this, the outer part of the wall shrinks more than the inner upon drying, causing the wall to bend outward to give the characteristic bur of the open boll. Any factor that affects maturation of the capsule wall, such as boll age, carbohydrate stress or disease can lead to poor boll opening.

The final event in the development of cotton fiber occurs during drying after boll opening.

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Gaines County IPM Newsletter

Volume V, No. 8

General Situation

Parts of the county received rainfall over the past week, however, these showers have been very spotty and parts of the county have received little to no rainfall. Two situations are being created out in the cotton fields. First are those fields that have receive above average rainfall over the last month. I am starting to see regrowth in those fields that had previously reached cutout. These fields will likely be harder to defoliate. Second are those fields that have received little to no rainfall. These fields are showing signs of excessive stress and I would caution growers on cutting off the irrigation water to quickly. The lack of subsoil moisture may require us to carry out irrigation a little longer than usual in order to prevent any yield reduction. The same scenario can be used on those peanut fields which have not received any rainfall.

A majority of our cotton crop has long past cutout (5 NAWF) and the plants have shed their remaining squares and small bolls. This natural shedding process helps the plants to adjust their fruit load, which allows the plants to shift all of its efforts into maturing the retained fruit and producing harvestable bolls.

Heat Unit (H.U.) Accumulation since July 23 & 30, and August 6, 13, & 20

Date Cutout	H.U. Accumulation
July 23	723
July 30	571
August 6	394
August 13	226
August 20	88

Those fields that cutout on or prior to August 6 should be safe from most insect pests.

Peanut pod rot is the major concern in most peanut fields. This wet weather is more conducive for pod rot development. Since, harvest is on the horizon, producers need to pay special attention to pre-harvest intervals. Fungicides can vary greatly in the number of days required between an application and harvesting. Please refer to product labels for specific pre-harvest intervals.

Verticillium wilt is starting to show up in a few peanut fields. We are also continuing to see a significant impact of salinity in a couple of peanut fields.

Kurtomathrips morrilli

Adult and immature Kurtomathrips Photo courtesy of Dr. David Kerns

Cotton leaf infested with Kurtomathrips

Kurtomathrips morrilli were first found in Gaines County infesting cotton on July 17, 2011. We were all hoping that this pest would not show up in 2012, since we did not have the extreme weather conditions that prevailed in 2011. However, during this past week we have confirmed *Kurtomathrips* in three fields in Gaines County and they have been reported in other counties north of Gaines County.

Below is an excerpt the following publication: **Kerns, D.L. and M.G. Anderson. *Occurrence, Impact, and Management of Kurtomathrips morrilli: A New Pest of Cotton on the Texas High Plains.* Journal of Cotton Science. InPress 2012.**

Decision making:

Kurtomathrips morrilli is an unusual pest of cotton that appears to occur under hot, dry conditions affecting primarily water-deficit stressed cotton. Although this is the first report of this pest damaging cotton in Texas, it is highly probable that this is an endemic species that has simply remained undetected. It is likely that dryland cotton grown in the south plains region of Texas has been affected by this pest in the past, but has gone unnoticed because most dryland cotton is not regularly scouted and since this pest impacts primarily water-deficit plants. Therefore, damage, defoliation and death may be mistakenly attributed solely to the lack of water. Additionally, most dryland cotton suffering severe water-deficit conditions probably does not have the yield potential to economically justify protecting from *K. morrilli.* However, under conditions similar to those experienced in 2011, irrigated cotton grown under water-deficit conditions may be worth protecting. When making the decision to treat or not to treat consider the following:

What stage of growth is the cotton?

1. **Check boll maturity.** If the bolls are mature (cutting the boll open and seeds have well defined cotyledons and seed coat versus those which are watery seeds) they may not be significantly damaged by the defoliation. If there are numerous bolls to mature, treatment may be justified. Make sure these immature bolls have the potential to yield enough to cover insecticide and the application expenses.
2. **Choose the right insecticide.** *K. morrilli* do not appear difficult to control with a number of insecticides including acephate, acetamaprid, imidacloprid and thiamethoxam. The most commonly used insecticides in the 2011 *K. morrilli* outbreak were imidacloprid and acephate. These were the insecticides of choice primarily because they were inexpensive, yet effective.
3. **Consider cost saving methods.** Consider multi target applications to save costs. If *K. morrilli* is present and an over the top herbicide application is scheduled, the addition of a relatively inexpensive, yet effective insecticide may save an application trip through the field solely targeting thrips. Spray field edges where *K. morrilli* is abundant and does not appear to be spreading into the field.
4. **What is the weather forecast?** *K. morrilli* appears adversely sensitive to cool temperatures and precipitation. If these conditions are predicted in the immediate future and you have field edges infested, then an insecticide application may not be necessary.

Late-Season Weed Management - West Texas

By Peter Dotray And Wayne Keeling in the August 23, 2012 edition of FOCUS on South Plains Agriculture

Many fields have received timely herbicide applications this season. Some of these fields are still clean and a few are in need of a layby treatment to control the last “new” flush of small weeds.

Even in fields where poor weed control has been observed, it is important to continue to try to control weeds for harvest efficiency and reduce weed seed production that will affect future cotton crops. Growers should not ignore weeds that have escaped previous control measure and the financial investment made today will pay off in the 2013 crop and beyond. In 2011, several fields were investigated where Palmer amaranth was not controlled following several applications of glyphosate. Results from these tests indicated that glyphosateresistant Palmer amaranth where present in several of these fields. In 2012, numerous fields in a least five counties have been reported withstanding multiple glyphosate applications, suggesting that that some level of resistance is likely present. Suspect fields are much more widespread than what was observed in 2011. One common theme in several of these fields was lack of any residual herbicide in a glyphosate-based weed management program.

Growers with weeds, whether they are herbicide resistant or not, should remove escaped plants because each female plant has the capability of producing over a half-million seed. A successful long-term strategy for effective control of Palmer amaranth should center on a “zero tolerance” approach. In this approach, the goal late-season is to remove escaped weeds from the field to reduce additional seed development for 2013. Additionally, large weeds growing through the cotton canopy have already reduced yield potential and will cause problems at harvest if not removed.

Producers are encouraged to look at their fields and surrounding areas and destroy all plants that are suspicious for herbicide resistance by any effective means available, which could include hand hoeing, cultivation, spot-spraying, or using hooded sprayer applications with effective burndown herbicides. This will limit the production of additional resistant seed and help prevent the problem from becoming more widespread next year. In small cotton, there may still be the possibility of cultivation or broadcast or hooded applications, but in larger cotton with lapped middles, spot spraying or hand removal might be the best option.

Be aware that weed seeds can travel with equipment from one area of the field to another and from field to field. If you have fields where you suspect resistant weeds may be present, do not transport equipment from a weedy field to a clean field without carefully cleaning the equipment. If you have a custom harvester moving into one of your fields, make sure it has been cleaned first. When considering fields at the same crop maturity, the harvesting order should be from cleaner fields to weedier fields. Transport of hay could serve as a means of resistant weed seed dissemination. Effective late-season weed control in 2012 will assist in effective weed management for the future. This is also an excellent time to start planning on how to best utilize a soil residual herbicide in your 2013 weed management program. Effective weed management starts with a dinitroaniline herbicide. The use of soil residual herbicides at-planting will help to control difficult-to-control weeds that escape PPI herbicides and are a challenge for postemergence herbicides. There are several herbicides that may be applied with glyphosate in tank-mix at the first over-the top timing and several other soil residual herbicides are available for use at layby. Consider overlapping residual herbicides for effective resistance management in 2013.

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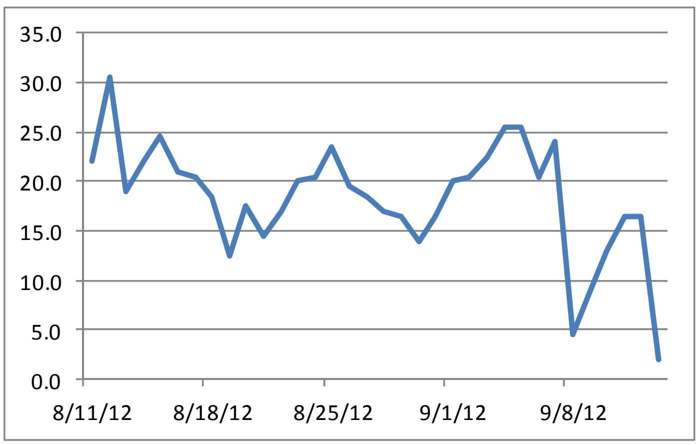
Gaines County IPM Newsletter

Volume V, No. 9

General Situation

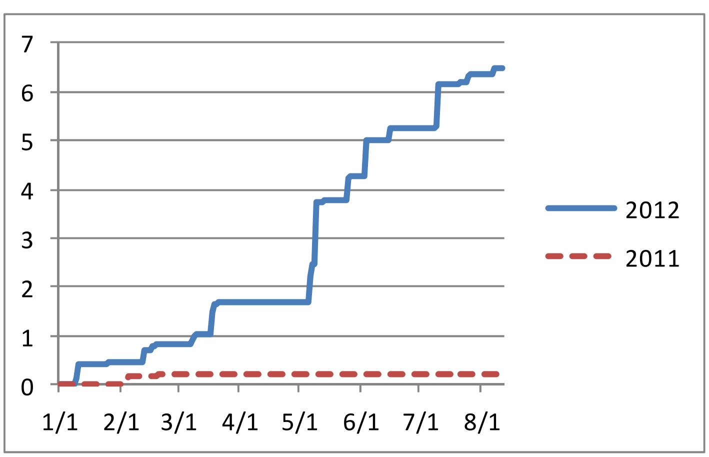
Over the last month, the crop has been on a role coaster ride in regards to Heat Unit (H.U.) accumulation. The graph below shows the number of H.U. per day.

Number of H.U. Accumulated Per Day



In regards to rainfall, we have been slowly adding to our rainfall total for the year. However, rainfall continues to be very spotty within the county. For example during last nights storms, areas of the county received over 1 $^{1}/_{2}$ inches of rain, while other areas had traceable amounts of rain.

Accumulated Rainfall Totals for 2011 & 2012



Hail has also been mixed in with some of the storms. A cotton field west of Seminole was completely defoliated, while the adjoining peanut field had significant leaf loss.

Cotton defoliated by Hail

Hail damaged peanuts.

Kurtomathrips morrilli

Kurtomathrips are still being found in cotton fields throughout Gaines County. Small areas of infestation are quickly spreading throughout the whole field within a weeks worth of time. This rapid spread throughout the field usually occurs right after the water is cutoff on the field. However, this cool wet weather will likely negatively impact Kurtomathrips populations and we should start to see a decline in Kurtomathrips populations.

Leaf Spot in Peanuts

Leaf spot is a concern at this time. This cool wet weather is conducive for leaf spot development. Leaf spot can often be confused with herbicide spray. Farmers have been diligent about using spider sprayers to spot spray weeds in peanut fields. Often the herbicide spray can hit the leaves and can cause spotting on the leaves that looks similar to leaf spots. Look for spores within the lesion to confirm that it is leaf spot. Before applying fungicides, check the label for pre-harvest intervals.

Verticillium wilt & Salinity Issues In Peanuts

Verticillium wilt is becoming more evident in peanut fields. Verticillium wilt clogs the vascular system of the peanut plants.

In the picture above, the three peanut petioles on the right have clogged vascular systems, confirming that they are infected with Verticillium wilt. The peanut petiole on the left does not have a clogged vascular system, confirming that that plant is not infected with Verticillium wilt.

We are also seeing a lot of salinity issues in peanuts. The salts accumulate at the edge of the leaf, causing the leaf edges to become necrotic and die.

Sclerotinia blight In Peanuts

Sclerotinia blight is characterized in early stages by non-persistent small white tufts of cottony-like fungal growth at leaf axils on the stems near the ground line. The fungus spreads rapidly during cool (65-70 degree) wet weather. Later stages of the disease show up as bleaching and severe shredding of the stem accompanied by the production of many small, black, irregular-shaped sclerotia that resemble mouse droppings in size, shape and color. Before applying fungicides check the label for pre-harvest intervals.

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