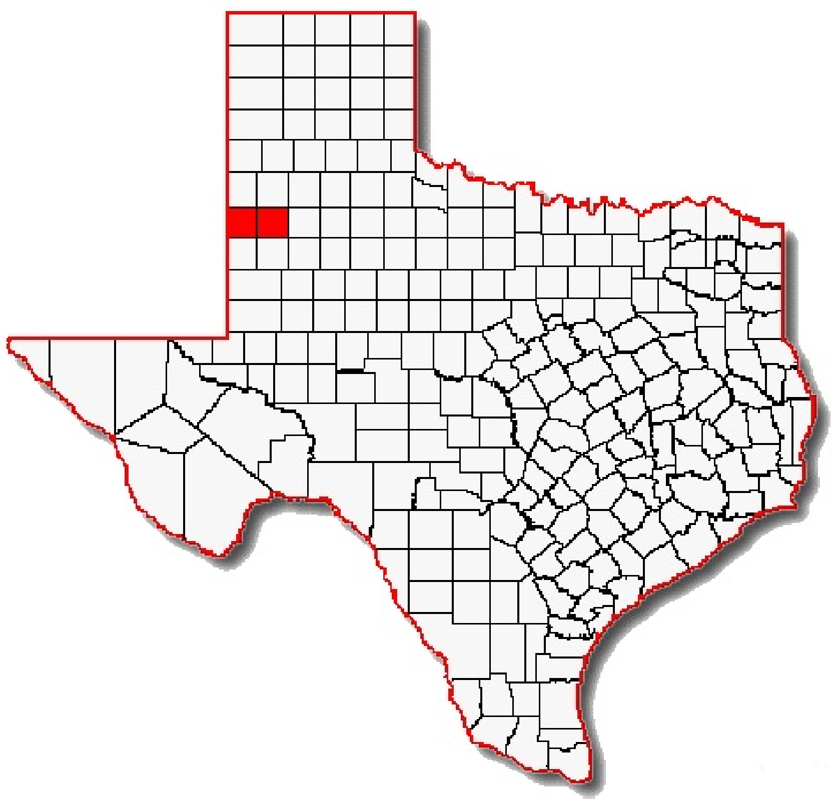
Texas A&M AgriLife Extension

INTEGRATED PEST MANAGEMENT



Hockley & Cochran
IPM Program
2013

Texas IPM
Partners with Nature

Hockley and Cochran Counties Pest Management Program

2013 Annual Report

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Sherri Clements, TPMA State President
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Bryan Bentley
Wes Bradshaw
Sammy Harris
Bruce Lawrence
Gene Polasek
Tony Streety
Larry Smith

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WITH PEST AND CROP SUMMARY

The Hockley - Cochran IPM Steering Committee functions as a program area committee for both counties. There are representatives on the committee from each county as well as a crop consultant representative which has a customer base in both counties. The committee met in 2013 to organize and conduct the Extension IPM Program, field scouting program, provide direction for applied research and other educational efforts as IPM applies. The committee also gave direction to for long-term plans and evaluation. The scouting program at times dominates the business of the committee as they are responsible for determining program size and scope, associated fees, and details for employing field technicians.

Fourteen individuals farms with 42 fields were involved with the scouting program in 2013. A total of 5332 acres were scouted. This acreage included irrigated cotton, peanuts, and grain sorghum. The scouting program participants were assessed a scouting fee of $6.00 for irrigated land per acre. Fields were visited every week by the IPM Agent and a verbal (phone, text message, or face to face) scouting report was provided to producers the same day. The field inspections included: insect pest and beneficial populations; weed and disease's noted; and crop stage and growing conditions. Discussions also included irrigation and fertility management; growth regulator use; and other agronomic considerations.

Miranda Johnson was employed as summer IPM Intern. She assisted with all research and demonstration projects from spring planting until near fall harvest.

2013 Pest and Crop Summary

The 2013 crop production year will be remembered for the continuation of a severe drought since the fall of 2010. This drought has been historical in terms of low rainfall, high temperatures, and persistent high velocity winds. Following are excerpts from the ***West Plains IPM Update*** newsletter which describe the conditions throughout the season.

May 3, 2013

All areas of Hockley and Cochran Counties are in need of a good soaking rain. Most areas have not had measurable precipitation since mid to late February. Needless to say we are entering into the third year of drought. Also on our minds are these unusually late freezing temperature events which have occurred almost weekly the past month. This has caused havoc trying to produce a wheat crop for grain (*see attached document from Dr. Clavin Trostle*) and concern for some acres of already planted corn and grain sorghum. However, spring is here and planting season is upon us. Pre-irrigation continues on many acres while some land preparation still needs to be completed. The winds combined with dry conditions continues to make for another challenging start. These are challenging times with low incidence of rainfall, declining water resources, high input costs, weed resistance, and a few other issues. **Things are still in our favor because the sun will shine, it will rain some day and we have the best farmers in the world on the job**. So we count our blessings.

May 30, 2013

Planting has been at full steam for producers in Hockley and Cochran Counties. Most are nearing completion of their irrigated cotton acres. Some have begun planting dryland cotton acres as the planting deadline looms in the not too distant future. Planting moisture ranges from still good to non-existent. Subsoil moisture is generally not good across most of the area. Peanuts are at crack and coming to a stand; grain sorghum and corn has been up and battling all the elements for the last month; and cotton ranges from still in the bag to 2 true leaves. No major insect issues have been noted. However, thrips need to be watched very closely on acres which were unprotected at-plant or are in close proximity to wheat or other small grains. One thrips per leaf is the threshold up to 4 true leaves. Use foliar acephate or dimethoate.

The County Ag Agents, Jeff Molloy in Cochran and Wes Utley in Hockley, and I have several applied research and demonstration projects already planted. Here is a list of some of those projects:

Extension RACE Cotton Variety @ Mike Henson's near Arnett; Extension cotton variety trial Ropes with Brad Johnson; DP FACT Cotton Variety @ Scott Fred near Whiteface; FM CAPS Cotton Variety @ Tony Streety near Smyer and a dryland CAPS + a seeding rate study with David & Anthony Albus @ Oklahoma Flat; Phytogen Cotton Variety @ Gene Polasek near Levelland; Cotton seed treatment trial and Nematode Mgmt trial @ Duane Cookston near Whiteface; a seeding rate study @ Brent Patterson near Morton; a seed treatment and foliar thrips study at Lance Borlands near Ropesville; a verticillium wilt cotton variety screen at Larry Smiths near Ropesville; and a at-plant preemergence herbicide evaluation in cotton at Duane Cookston near Whiteface. Other projects are planned.

Thanks so very much to these cooperators and the ag-industry companies.

I mentioned the preemergence herbicide project we have at Cookston's. I rated these plots yesterday, which was 9 days after treatment. I want to share some of this data with you.

At-plant Pre-emergent Herbicide in Cotton	**% Weed Control (mostly Russian thistle) 9 DAT**
Dual Magnum 1.15 pt/A	60 b
Direx 1.6 pt/A	96 cd
Cotoran 1 Qrt/A	98 d
Cotoran 1.5 pt/A	92 cd
Caparol 1.2 pt/A	86 c
Warrant 1.5 Qrt/A	50 b
Prowl H2O 1Qrt/A	88 cd
Check	0 a

<u>June 14, 2013</u>

Cotton ranges from seed just placed in the ground to 7 true leaf cotton. A look back to last year at this same time we were averaging 8 true leaves and squaring cotton.

As of scouting today I am still seeing thrips in some fields, but not as bad as a week ago. Do not turn your back on them until a field has reached at least 4-5 true leaf stage and the plant has recovered from the storm of last week. So keep checking and spray as needed. Hopefully you have caught up on sandfighting, rotary hoeing, and planting those last few acres to maybe change our attention to weeds, nematodes, and fertility real soon. Those are the issues which should become priority. You noticed I did not mention plant growth regulators. I would recommend a wait and see attitude on PGR's for a few more days. Let us see if and how much rainfall we see out of this chance over the next 24 hours. The exception would be those you definitely know need that PGR in up-front.

In my inspection of fields with a history of southern root-knot nematode I am seeing root cyst damage from this soil borne pest. This would indicate either no use of at-plant nematicide or that those products used at-plant are no longer providing protection. Vydate C-LV at 17 oz per acre has provided excellent protection against yield loss. Timing is critical though. An application should be made as early as 3-4 true leaf stage. If you have questions about the use of Vydate give me a call. FYI I do have a study this year looking at both 8.5 oz and 17 oz rates of Vydate in multiple applications at Sammy Harris Farms near Ropesville. Should be good information.

Weed control has been put on the back burner while we get things tied down. So as we get back to weeds keep in mind the presence of pigweed (*A. Palmeri*) which can be resistant to glyphosate. Do not shave rates; make sure your application equipment is calibrated; add a residual herbicide such as Staple or Dual when appropriate.

Peanuts are doing well where not damaged from blowing sand. Little thrips damage but nothing which one should be concerned. No blooms yet. Begin checking for nodulation.

Grain sorghum is doing well. Weeds been a top priority. I have seen a few corn leaf aphids for beneficials to feed on. Very limited whorl feeding from worms.

<u>June 24, 2013</u>

Varied amounts of rain, from a 025" out west to over 5 inches in parts of north eastern Hockley County have been received over the past week. Some very high winds and hail accompanied these rain events. Crop damage has been widespread. Not to minimize what has occurred to many producers receiving crop damage, but all and all this damage has come with much needed rainfall. Many decisions will need to be made depending on how crop insurance adjustments go. I do believe a stand of cotton will yield as long as it is a consistent stand of more than 19,000 plants (1.5 plants per foot) and it is squaring. Anything less than this now is questionable.
It is very quiet in respect to insect pests. I am not finding much on the cotton plant. With all the weed pressure from recent rains I do expect the weeds will be an initial host for some insect pests. These pests may then turn their attention to cotton when interest runs out on the weeds.

Cotton ranges from 3 true leaves to near 1/3 grown squares on 10 total node cotton. Square set is good (+90%) in those scouting fields which are squaring (70%). No insect induced square losses have been noted to date.

Most **peanuts** have started to bloom. No is a critical time to evaluate nodulation on peanuts. Less than 5 nodules is poor and you will need to fertilize. Ten nodules is good, more than 15 is excellent and should be able to supply needed N. Weeds are priority for most. Many are wanting to cultivate, which is a very good idea before peanuts run and or peg. Just be careful not to pitch soil to the crown of the plant. I have seen this in several acres where blowing may have been a concern. Just remember this soil covering the crown can increase incidence of pathogens in that area.

My priority list for this week:

Fertility -where are you at in reaching your realistic yield goal? Seize the moment to fertilize.

Weed control - get it started and get it done. Control volunteer plants also.

Plant map - what is the plant telling you? You may need a plant growth regulator sooner than later with good moisture, heat and fertility.

Insect scouting - never let your guard down, watch Lygus and fleahoppers closely. Anticipate shot-hole feeding in early milo.

Cotton root-knot nematodes - based on numbers and damage from last year do you need to get Vydate out right now or sooner. Do not apply too late as this may flare aphids!

July 4, 2013

The weather pattern continues this week with some scattered and some general rainfall. Most of the rains have fallen nearer the state line this last week. Moderate temperatures have also prevailed, providing some respite from last weeks heat. If you are interested in tracking heat units try this link: http://www.weather.com/outdoors/agriculture/growing-degree-days/79336
Be sure to update to your location, and the base DD's (60 for cotton).

COTTON

Based on the IPM Scouting Program cotton fields the average number of total nodes is 12 (range 7 to 14); the 1st fruiting branch at 7 (range 5-9); 89% (range 80-100%) square retention of 1st positions; node length is 0.7" (range of 0.5"-1.3"), and plant populations average 39,200 per acre (range 19,000 to 53,000). I have not seen a first bloom so far but do anticipate that I will by July 8th. Based on average plant mapping data and assuming going into bloom with 8 nodes above white flower, we should generally begin bloom around July 16th. I suspect a majority of the acres in Hockley county will not begin blooming until around July 24. With a last effective bloom date of August 20, that still gives us near a full month for effective blooming. So prospects are good if you begin bloom by July 24. If your late cotton does not begin blooming until August 7, that only gives you 2 weeks of bloom. That could be a problem. Recall that effective bloom period is that time when we can, with some certainty, say that a bloom will make a harvestable boll.

Cotton pests are generally quiet at the present. No fleahoppers have been noted in cotton fields only in margins on whiteweeds. No lygus, aphids or mites have been seen either. One beet armyworm hit was found on Monday, but no worms. Weed control has been the order of the day for the past several days. Please be careful of herbicide drift as we have many acres of grain sorghum.

PEANUTS
Peanuts are doing very well under current conditions. Most all fields are well into bloom and are setting pegs. Weed control still remains as pest priority number one. If you do cultivate please be careful not to pitch any soil to the crown. Pay attention to crown and foliar disease possibilities.

GRAIN SORGHUM
Sorghum ranges from still in the bag to almost boot stage. Limited whorl feeding by larvae pest has been noted. The only leaf pest has been an occasional corn leaf aphid, which is just fodder for beneficials. Again be respectful of other crops as you apply herbicides. And be mindful of possibilities of tank contamination issues.

July 17, 2013
The rain has been a true blessing this week. But with rain comes clouds and with clouds reduced solar accumulation. This in turn should cause cotton to shed small squares. These three days of cloudy weather should start to impact fruit retention within the next few days. I expect to see at least a 5-20% loss of squares. Fortunately most all cotton fields have retained better than 80% of the squares up to this point. There is usually a lag time of 5 to 7 days or more sometimes from when a stress, such as cloudy weather, occurs until its effects are actually seen on the cotton plant. In this case of cloudy weather impacting cotton it is due to a shortage of carbohydrates being produced by the plant during photosynthesis. This shortage of carbs, or energy for the plant, has to cause something to be given up. It is the square which is shed so that the rest of the plant can survive.
Okay, so we will probably see square shed in cotton, however I am not seeing much else in the way of cotton pests. So because we will be seeing natural square shed one must scout to make sure that additional fruit loss does not occur from insect pests in each individual field. This is the when, why, and how a professional consultant earns his/her keep. A couple other mentions in cotton from this weeks scouting observations: I anticipate Verticillium and Fusarium wilts to become more prevalent this next week; some fields severely impacted by southern root-knot nematodes may make a bit more progress this week with the addition of rainfall; the lack of fertilizer is showing in some fields; and plant growth regulators may be more necessary this next week in many fields as well. I hesitate to mention needing fertilizer and growth regulators in the same sentence, so I must explain. Those of you who do not have the fertilizer out that you intended because delay from rain or lack of opportunity to pump it through the irrigation water need to go with plan B for this scenario (surely you had a plan B). This moisture may not have increased the prospect (yield) for many (because of cloudy/cooler weather, square losses) but rather may only allow us to realize our original yield expectations. Be careful not to over fertilize.
The growth regulators may be needed by those who have done an good job of maintaining fertility and matching that with their irrigation capacity. This moisture may have caused one or because of variety to exceed the growth needs. Hence a PGR is needed to balance this vegetative growth with reproductive growth and possibly help on retention of squares and young bolls.
Another point on this current weather event. Many cotton fields (40%) are going into bloom with only 6-7 nodes above white flower. I would prefer that this value be 8-9 nodes above white

flower. The fewer nodes above white flower (NAWF) could indicate a short bloom period and not capturing the full time allowed to set bolls through the third week of August. Hopefully this rain and break in temperatures will cause the plant to hold at this 6-7 NAWF for a couple of weeks before it closes in on 5 NAWF or physiological cut-out.
Please be aware of any pigweed remaining after a glyphosate application, and have them removed.

In **grain sorghum** I am not not seeing much in the way of pest here either. The beneficials are present and most likely taking out anything which lights in the field. This rain has given much hope for many acres of dryland.

Peanuts are nearing an age, and with current weather, when risk is increasing for disease. See a good article written by Dr. Jason Woodward in July 2010 on pod rot. Weeds continue to be a challenge in many fields this year.

<u>July 29, 2013</u>
I am very encouraged by the rains we have had in July. In Levelland we received 3.70 inches during the month of June, with the majority of that on June 19-20th. Now in July we have received 3.36 to date, with 3.2 just in the last 14 days. As I write this newsletter we have a slight chance of rain through tonight. Though we have had a couple of cooler days, in general July temperatures have been good in terms of heat units. For most it has relieved a tremendous amount of irrigation demands and has flushed salt and other undesirable minerals deeper in the soil profile. Dryland acres are doing well for the most part, but will need continued moisture in August and September.

I will start with **grain sorghum** since it is relatively easy to summarize right now. I spent a good amount of time this morning in grain sorghum and did not find much but 1 headworm/20 heads in one field. No spider mites or aphids , but yet still some ladybugs. A few grasshoppers noted but little damage. Birds seem to be doing more damage on maturing heads than anything. No midge have been found to date. Continue to watch closely for headworms. I would however encourage producers to monitoring all these pests on a regular basis. Call if questions.

Peanuts are doing very well. So far an excellent pod set has been noted in all scouting fields in Cochran county. Larvae feeding on foliage has been seen in many fields but damage has been limited to foliage and none found on pegs or pods. The foliage damage has not been seen in sufficient amount to cause concern yet. Leaf spot, pepper spot, and limited pod rot have been noted. We will have all fields treated with a preventative fungicide by next week. Weeds continue to be challenging. 2,4D-B is product of choice now. Please call if questions.

Cotton ranges from 1/3 grown square (not yet blooming) to 5 nodes above white flower (physiological cut out). My ideal plant right now would have 1st position bolls developing at nodes 7-10, with a white flower at node 11, and then 6 nodes above white flower. This plant will reach physiological cut-out the first week of August and be blooming out the top the third week of August. This takes full advantage of the growing season while allowing time for maturing this fruit to contribute to quantity and quality.

My IPM intern and I are hard pressed to find cotton aphids, lygus, or any other pest for that matter.   I am sure that some of these pests are lurking in weedy field margins and other habitats. We are getting reports well to the south of us of bollworm and other Lepidoptera pest activity. I would encourage all to increase their scouting for these pest over the next month especially in non-Bt cotton varieties.

August 5, 2013

Cotton ranges from just beginning to bloom with as many as nine nodes above white flower (NAWF) to past physiological cutout with 2 NAWF.   Looking at the IPM scouting program fields as a representation of the area cotton crop, we see that 25% of the fields have reached physiological cutout (< or = 5 NAWF) this week. For those fields we need approximately 400 more heat units (HU) to be safe from most insect damage. With the current weather trend of +20 heat units per day, those fields which have reached cutout should be safe around August 25 - 29th (400 HU divided by 20 HU/day = 20 days, added to the 5th thru the 9th of August). The remaining 75% of the cotton acreage has such a wide range of maturity levels and is difficult to say when it will be safe. I would approach these later maturing fields from this angle. We historically say that August 15th is the last effective bloom date, or that date which a boll can be formed, have time to mature, and contribute to yield. Now that is not to say that a boll can not be formed after the 15th of August but the odds of it contributing to yield and especially quality drop off precipitously after the 15th. Therefore, if we continue with this weather pattern into September, and are accumulating 20 HU/day we can add 20 days to this date of August 15. This would give us a target of September 4 for the latest those late fields would need to be monitored for possible insect infestations.

The point being is that NAWF is an important gauge of maturity and can help project time needed to be safe from insects and especially manage irrigation.

Insect activity has been extremely light this season. Yet, do not let this lull you into complacency. Just today I found several pockets of cotton aphids. I am not overly concerned about this but it does cause me to warn you on these fields where late or excessive nitrogen has gone out to keep close watch for aphids to increase. In most cases though as the plant matures and its physiology changes, aphids have a more difficult time in maintaining populations. Continue to monitor non-Bt cotton varieties as reports of bollworm activity is getting closer. I am finding many moths working fields throughout the day. To-date however, we are not picking up anything significant. One thing which you may have noticed over the last several days and will continue to see over the next several is fruit being shed from the cotton plant. This shed is not insect induced. But rather an adjustment in the fruit load, which has been in excess of 90% since squaring began. So the plant is unable to retain more than approximately 65% of fruit. So hopefully any fruit coming off is either second or third position small squares and from the upper portions of the plant, and that is the fruit I am seeing coming off.

Grain sorghum needs to be monitored very closely for greenbugs, mites, and headworms. No widespread issue of concern here just that each field can be so different from one turnrow to the next. So check the underside of leaves, particularly next to the midrib for aphids and mites, and shake sorghum heads in a bucket to dislodge worms from the head. Id those worms and get an average number per head. If you need assistance with decision making on whether to treat or not give me a call 638-5635 or 894-3150.

August 12, 2013

Since the last newsletter **cotton** insect pests have remained fairly quiet. Many fields are reaching that point of maturity when many insect pests cannot cause economic damage. So this being said, I would say that most cotton needs to be watched for another 10 days. The insect to be mindful of through open cotton is cotton aphids and cotton bollworms on conventional non-Bt or Widestrike cotton varieties. I have been finding cotton aphids in area fields as well as armyworm and bollworm moth flights have been fairly heavy over the last week. Late cotton which still has 4 or more nodes above white flower will need to be monitored through the first week of September.

The spotty rains over the last several days throughout Hockley and Cochran counties will help some in irrigation management and possibly irrigation termination over the next couple of weeks. If you have questions give me a call.

Weed pressure has not let up with these rain showers. In fact, I suspect over the next few weeks as we finish out the season, residual herbicides play-out, and we hopefully receive more rain that weed pressure in general will intensify. I would continue to pay particular attention to Palmer amaranth or pigweed which is resistant to glyphosate. Do your best in limiting these pigweed from going to seed and adding more resistant plants to the seedbank. It will be imperative that you make note of pigweed resistant fields now and plan accordingly to tackle this problem in 2014 with a good base herbicide program of a yellow preplant incorporated herbicide.

Peanuts are still doing very well, but will need time to finish out what could be a very good crop. Flowering has slowed if not completely stopped in some fields. This is not necessarily a bad thing, as long as the pegs present form a harvestable pod. Risk factors for disease have increased with threat of rain and higher humidity, plus heavy irrigation. Foliage feeders have increased slightly this week, but none exceeding threshold. Irrigation will need to continue for awhile unless good rains are received.

Grain Sorghum has been making good progress under irrigation. Headworms (a.k.a. corn earworm, cotton bollworm) and various armyworms have been highly variable from field to field. Watch for midge on later planted milo.

August 18, 2013

Other than the central portion of Hockley County which only received about a 0.25" of rain fall, most all other areas of Hockley and Cochran Counties received over an 1" up near 3" all tolled through last week. This could not have come at a better time, unless it had been the week before of course. Dryland cotton and late milo were struggling. In terms of dryland cotton it will help stick a couple more bolls and help fill those. In grain sorghum, many of those acres are at or near head development. This moisture should take us down the road a ways. In irrigated crops it definitely continued to help in the health of the soil, but just as important was to help give wells a rest and checkbooks. Most acres of pivot irrigated acres will need to run for another couple of weeks on cotton. Late grain sorghum, peanuts and drip cotton will need to run into September depending on further rainfall and temperatures. Some of the early planted grain sorghum could be harvested here in the next 2-4 weeks.

Insect wise, see the article on next page about an unfamiliar moth which many are seeing now from Gaines County north to the Dalhart area. Other insects continue to remain hard to find. Cotton aphids have played out in most situations; not finding much in way of worms in grain sorghum, cotton or peanuts; have seen a few Conchuela stink bugs in grain sorghum; and no Lygus or mites found this last week. So do not let your guard down for awhile longer especially on late grain sorghum. I feel it has still plenty of time to make.

Pigweed and weeds in general continue to be a major challenge this year. Try to do what you can at this point in the growing season. Weeds still rob the crop of moisture, space, and nutrients. However, it will become more of an issue of adding more seed (especially resistant pigweed) to the seed-bank or hampering harvest.

Watch peanuts closely for foliar, pod and crown disease development. With temperatures moderating some, cooler nights, irrigation and morning dews all contributing to the proper conditions for disease development.

August 23, 2013

Not much has changed over the last week in **cotton** other than the physiological state of the cotton itself. However, I would still not let your guard down for awhile longer, especially in cotton which has late growth of squares and blooms, non BT cotton, or may have excessive nitrogen levels. Some fields, the earliest planted, are close to a point of maturity that most insects are of no consequence. This being said, most cotton will need to be monitored for at least another 10 days maybe through the first week in September for later cotton. Cotton aphids would be one insect which could develop up through boll opening. I doubt if this will be the case though.

Weeds continue to be a concern for some either after a recent shower or irrigation. Be careful in your enthusiasm to kill these weeds. First ask if these weeds are just cosmetic at this point, or will their seed production haunt you in the future (i.e. morningglory, marestail) or cause you harvest problems. I would class many of the careless weed situations right now as purely cosmetic. I hate to say that knowing that many of those pigweed could very well be resistant to glyphosate. But most of that has already gone to seed and to attempt removal would be impractical. So save your money for a good harvest aid program and be prepared to go “old school” on weeds starting this winter. Good luck.

Peanuts are generally doing well, but will need these warm temps to continue to finish out well. Stay on top of leaf spot, pod rot, and other diseases. Understand the risk factors for disease have been high the past several days. Irrigation will need to continue for awhile unless rain is received. My suggestion on irrigation right now is frequency not volume. Many fields have good moisture below surface, however, if we do not keep the canopy and soil surface environment moist then those last pegs trying to form a pod will have a difficult time.

<u>Grain sorghum</u> has been making good progress where rains or irrigation have been received. Headworms, midge, greenbugs and spider mites most be monitored closely on this post boot milo. I have not been finding too much other than a few stink bugs but conditions are right for problems. Chris Locke, an area crop consultant called the other day finding mites and headworms near Morton.

<u>August 30, 2013</u>

Reviewing my scouting notes from this - week the primary issue in **cotton** is how to manage the water from here on out. If we knew what the temperature and rain potential were going to be over the next 2-4 weeks it would be much easier to plan this thing out from a long range stand-point. However, we do not know what those two important factors will be with out certainty except maybe for the next 3-5 days. So that being said, here is my approach for you to consider. On drip cotton if you have not already begun to start easing off I would suggest at least by September 6 shutting down for a couple days; then back on September 9; on 4 days; off 4 days; on 3; off 5; on 2; and then most likely leave off. By this time bolls should be of sufficient age that any water stress will not cause quality or quantity losses. Again, temperature and rain may alter this plan, but you get the idea.

On pivot irrigated cotton I would try to stay with the water through this current heat this weekend anyway. On Monday 9th evaluate weather and determine if more may be needed. Understand that only after a boll is 20 days old should it experience wilting from mild water stress as long as it fully recovers that same evening and for certain by the next morning. So we set our last harvestable bolls on or near August 20, these bolls are now 10 days old. We need them to be stress free another 10 days or Sept 9. So do the best you can. I've seen more fields not reach there full potential because missed opportunity through irrigation in late August into September. This is especially true when we do not have much or any subsoil moisture to live on. No insect pests of importance were noted this last week. I will continue to check cotton for another week or two.

Peanuts are still making goobers right now so do not back off water there for at least another 7-10 days, then possibly can start backing off, but not off. No insect pests, be vigilant of diseases.

Late **grain sorghum** is the crop which needs to be scouted closely for headworms now. It has been a field by field call. Some I have looked at have well over threshold while another is just now developing and needs to be monitored frequently. On the next page I have a good article by Dr. Pat Porter on managing headworms.

<u>September 6, 2013</u>

The **cotton** has made good progress with generally +90 degree temperatures and clear skies. In fact, we have averaged +18 heat units per day for the last 30 days. As I have stated before "we make cotton in August." Scattered rains were received over the southeast portion of Hockley

County this last Tuesday morning early. Reports of 1.6" just east of Arnett. For most of us though it has been a very dry month. There is a slight chance of rain this next week with possibly more moderate temperatures. I mention the forecast because that is what we have to keep our eye on very closely as we water into September. Pray for open sunny weather with an occasional gentle rain. We all know though that we can have some weather events which can undo all the hard work we have applied to our crops. Now I do not mean a hail-out, I'm talking regrowth, delayed maturity etc. So this said, and to my point...I usually say that I would rather err on the side of being dry than too wet. However, in a drought period as we are still in, we must continue to irrigate to allow young bolls time to mature to a point before moisture stress occurs. Those last harvestable bolls are anywhere from 10-15 days old. I would like to see no or limited water stress for another 5-10 days.
As far as pests are concerned I am not seeing much in cotton. Some saltmarsh catepillars and few aphids. Cotton fields which reached physiological cut-out (5 nodes above white flower) before August 10 have accumulated more than 400 heat units, and are safe from most insects other than cotton aphids. I will continue to watch scouting program fields through September 20 and alert you if the need arises.

In **grain sorghum** the worms are the primary concern still. Some fields have needed to be treated for head worms. I am hoping pressure will lighten over the next few days, but continue to keep watch for awhile longer.

In **peanuts** seeing a resurgence of leaf spot and pod rot. Try to protect vines and pods for a few more weeks till harvest.

September 13, 2013

Well the weather continues to provide us with a good sunshine and heat units. In fact, so much so that many have continued to irrigate where they can. I do believe this is the correct thing to do on many of these cotton acres as to not allow too much stress to set in before it is mature enough to handle it. Other wise I know the full potential will not be realized in those fields. I would say after this weekend though, especially if we receive rain, that a majority of this water can be cut off. On late grain sorghum and the peanut water will most likely need to continue for a while longer. Peanuts can be cycled off and on or reduce volume and frequency just enough to prevent severe wilt and to allow pods to continue progressing in size. In grain sorghum, similar to corn, it needs to have moisture available through black layer or when the tip of the kernels has turned black indicating maturity. That is not to say irrigation will need to continue if we do receive rain and/or temperatures moderate more for less evaporative losses.

Cotton is mostly pest free and safe from insect pests. Grain sorghum must still be monitored for headworms; and peanuts need to be watched closely for leafspot and pod rot if the weather turns wet over the next few days.

Cotton is not quite ready for harvest aids yet, but that will be the next big push in a few weeks. For more information on cotton harvest aids go to:
http://lubbock.tamu.edu/files/2013/09/2013_Harvest_Aid_Guide.pdf

Have a safe and bountiful harvest.

September 18, 2013

So normally by this time of season I am preparing to put out cotton harvest aids, and not checking cotton for insects. However, I have been out looking at peanuts and milo for pests and up until now trying to encourage producers to keep irrigation water going in cotton. I was called out to a field of non Bt cotton yesterday in the heart of the two counties; and walked into something which got my attention real quick. This particular cotton patch has CRP grass on both the north and east sides. Saltmarsh caterpillars have been moving around erratically over the last few weeks.

Especially out CRP mixed with some weeds. This particular patch of cotton really took it hard in terms of defoliation for a good distance adjacent to these CRP fields. As of yesterday you could find both saltmarsh and woolly bear caterpillars throughout the whole field. It was sprayed today with a pyrethroid. We'll see how it does. By the way in this same field, on south half is a Bt variety which has no damage. So if you have this possible situation of a non Bt cotton variety near rangeland, CRP, or even weedy fallow ground I would suggest you check it.

2013 Hockley IPM Agent Activity

Newsletters	
No. Issues Written	24
No. Non-Extension Recipients	8192
No. Extension Recipients	1460
Total Newsletter Recipients	9652
Articles in Local Growers Newsletters	10
No. Newsletters Carrying Articles	8
No. Recipients	30,000
Radio Programs	60
AgriLife News press releases	2
Articles in State/National Trade Journals	4
No. Subscribers	105,000
Published Abstracts & Preceedings	5
Extension Publications	1
Newspaper Articles	10
Circulation	31,500
No. Newspapers Carrying	9
Farm, School or Site Visits	747
Scouts or Practitioners Trained	38
Agricultural Consultants Trained	35
TDA Ag CEU Credits Offered	31
No. of People Trained	152
Non-Ag or Non-TDA CEU Credits Offered	14.25
No. of people trained	25
IPM Steering Committee Meetings	4
No. of Committee Members Present	31
Presentations and Participants:	
No. AG County, multi-Co. meetings & tours	29
Participants at AG Meetings/Tours	271
No. Other Educational Meetings for Adults	10
Participants at Other Ed. Meetings	106
No. Educ. Prog. for Youth (school, 4H, etc.)	16
Participants at ed. Programs for youth	512
No. Research/Demo. Proj. Initiated	17
No. Direct Ag Contacts (includes phone & e-mail)	13098
Other Direct Contacts (includes phone & e-mail)	6150

Making a Difference

2013 Integrated Pest Management in Hockley and Cochran Counties
Kerry Siders, Extension Agent – Integrated Pest Management, Hockley and Cochran Counties

Relevance

Cotton is important to both Hockley and Cochran Counties with 400,000 acres planted annually and accounting for an average of $160 million in agriculture income from 2008-2010. The IPM Steering Committee in Hockley and Cochran Counties has determined that it is important that educational efforts continue to be applied to assist cotton producers with the management technologies for insect, weed, and disease pests, and other production issues.

Response

The IPM Education efforts are directed by the Hockley and Cochran Counties IPM Steering Committee. This committee has been responsible for the review of past efforts, future needs as they apply to IPM, prioritize efforts, plan efforts, implement efforts, and assist with evaluation of efforts. Texas A&M AgriLife Extension Service has delivered the following educational opportunities to address this relevant issue:

- West Plains Ag Conference held during December of 2012, 75 in attendance, topics discussed included insect, weed and disease pests of cotton, grains, and peanuts.
- Contribute to both oral and poster presentations at the 2013 Beltwide Cotton Conferences in San Antonio, Texas. Poster presentation on Vydate use in cotton.
- West Plains IPM Update from January through November, 22 issues to 394 recipients via e-mail
- Radio reports with High Plains Radio Network Levelland (KLVT) and Fox Radio Ag Talk 950 Lubbock on pest management issues year round, 61 programs
- Cotton turn-row meetings during early season (4) with producers (38)
- Established 6 cotton variety trials which demonstrated new experimental lines
- Evaluated cotton varieties for verticillium wilt and a replacement for Temik study in cooperation with Dr. Wheeler, AgriLife Research
- Evaluated seed treatment products for cotton thrips.
- Evaluated foliar fertilizer/growth enhancer in cotton.
- Evaluated Vydate at various rates and multiple applications in cotton for management of cotton root-knot nematode
- Provided daily IPM education to 12 cotton producers through scouting, scouting report, report interpretation, management suggestions, and management evaluation for insects, weeds, disease, and other agronomic consideration from April through November
- Soil sampling for cotton root-knot nematode in scouting fields for management recommendations

The Texas Pest Management Association, Plains Cotton Growers Association, Texas A&M AgriLife Research, Texas Tech University, Texas Department of Agriculture, US Department of Agriculture NRCS, Levelland Chamber of Commerce, National Weather Service, and many supporters from the local agricultural industry contributed greatly to these educational endeavors.

6. If you answered "yes" above, please estimate your percentage reduction in pesticide use?

#	Answer		Response	%
1	Click to write Choice 1	34% average	12	100%
	Total		12	100%

7. How likely are you to adopt production practices which are consistent with sound IPM?

#	Question	Very Unlikely	Unlikely	Undecided	Likely	Very Likely	Total Responses	Mean
1	Manage pests based on IPM principals	0	0	0	7	8	15	4.53
2	Utilize established treatment thresholds	0	0	1	5	9	15	4.53
3	Adopt new pesticides	0	0	2	6	7	15	4.33
4	Adopt new varieties/technologies	0	0	2	6	7	15	4.33

8. Please estimate the dollar value per acre the IPM Program has had in recent years on your farm by crop.

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	Cotton	20.00	67.00	$37.33	11.63	12
2	Grain Sorghum	0.00	28.00	$11.27	10.40	11
3	Peanuts	0.00	50.00	$15.09	21.26	11
4	Other	0.00	29.00	$3.80	9.30	10

9. Please estimate the total value of the West Plains IPM Program in $/acre considering all crops and educational activities.

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	Total $ Value of IPM Program	8.00	50.00	$36.08	12.38	13

10. If you answered the above question, please estimate how many acres it represents?

#	Answer		Response	%
1	Click to write Choice 1	33,800 acres total	13	100%
	Total		13	100%

Based on #9 and #10 from above we can calculate that **$1,219,504** *($36.08/acre value X 33,800 acres)* is the total dollar value to just those producers responding to the evaluation.

In summary, and based on the above points, it is apparent that the IPM Program has had a positive impact on the production system, the profitability of the producers and the economic and environmental viability of the area served.

Results

A post evaluation was developed on the on-line Qulatrics program. The link to the on-line evaluation was opened on November 6 via e-mail to 50 random participants of the IPM program and recipients of the West Plains IPM Update. The evaluation was then closed on November 26. Sixteen of the 50 responded, for a 32% response rate.

The following is a summary of those evaluation responses.

1. Does IPM (scouting; identifying weeds, insects & disease; applying thresholds; cost vs. benefit) reduce risks associated with crop production?

#	Answer		Response	%
1	Yes		16	100%
2	No		0	0%
	Total		16	100%

2. Does IPM maintain or increase yields while reducing input costs, resulting in increased net profit?

#	Answer		Response	%
1	Yes		16	100%
2	No		0	0%
	Total		16	100%

3. IPM Program (scouting, newsletter, radio, personal contact w/ Kerry Siders) improves your awareness of appropriate pest management tatics and timing?

#	Answer		Response	%
1	Yes		16	100%
2	No		0	0%
	Total		16	100%

4. How valuable are the following components of the IPM Program in Hockley and Cochran Counties?

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	Unbiased Research	39.00	100.00	81.50	20.39	16
2	West Plains IPM Update newsletter	50.00	100.00	87.56	17.89	16
3	Scouting Program	40.00	100.00	79.50	22.83	16
4	Group Meetings	19.00	100.00	68.44	31.93	16
5	Total Program Value	39.00	100.00	87.81	18.64	16

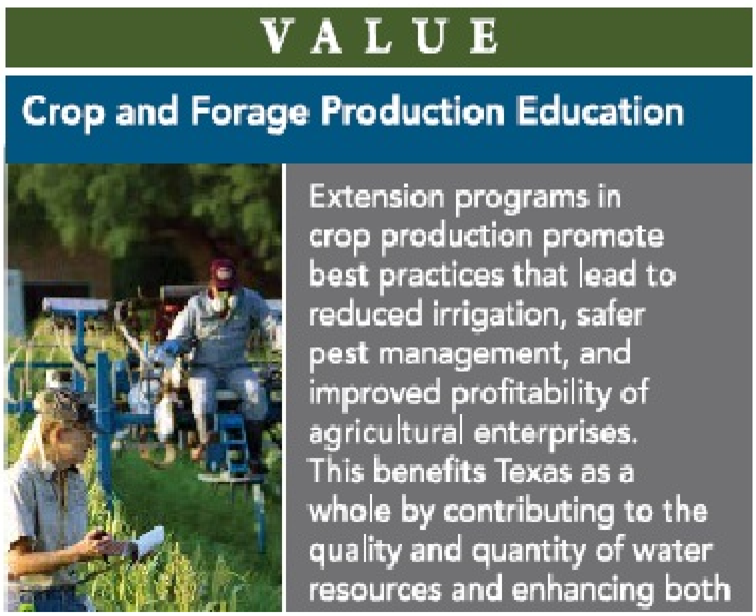
5. Has the IPM Program resulted in lower pesticide use in your operation in recent years?

#	Answer		Response	%
1	Yes		15	100%
2	No		0	0%
	Total		15	100%

The Cochran/Hockley IPM Steering Committee members are: Chris Locke, Sherri Clements, Duane Cookston, Sammy Harris, Wes Bradshaw, Bruce Lawrence, Tony Streety, Gene Polasek, and Larry Smith . Thank you to each one of these folks for their valuable input and direction into the IPM program.

Plans are to continue this long-term educational program for producers in Hockley and Cochran Counties. Current and future technologies based on Integrated Pest Management principles to improve profitability and sustainability, as well as protect the environment will benefit all Texans.

These efforts will be interpreted to the IPM Committee, the Commissioners Courts, local media, Chambers of Commerce, agricultural industry personnel, and elected officials.



Herbicide Resistance Education in Hockley and Cochran Counties, 2013

Kerry Siders, Extension Agent – Integrated Pest Management, Hockley and Cochran Counties

Relevance

The control of weeds in crops is paramount in maintaining good crop yields by limiting weed/crop competition for space, nutrients, water, light, and hampering harvest procedures. The use of glyphosate and glyphosate tolerant cotton has become a standard weed control system here in Hockley and Cochran Counties of Texas. With the advent of glyphosate resistant Palmer Amaranth, a.k.a. pigweed, this system and cotton production have become compromised.

Response

The Texas A&M AgriLife Extension Service IPM Program in Hockley and Cochran Counties developed an educational program which would help producers recognize the problem, develop a plan to manage the problem, and then limit the spread of the problem. The following educational opportunities to address this issue included:

- West Plains Ag Conference on December 11, 2012 where there was 75 in attendance; Dr. Peter Dotray and I discussed weed control in a glyphosate resistance situation.
- Thirteen radio programs were devoted to weed resistance and management from January through October 2013 on local KLVT Radio, and Ag Talk on Fox Radio 950. There were over 2500 listeners for each program.
- West Plains IPM Update newsletter articles in 6 issues of 16 discussed the weed situation, management suggestions, and mitigation. Four hundred and twenty received each of these issues.
- Applied research/demonstration of eight at-plant herbicides. These herbicides provide residual control of weeds early-season which would replace the need for early applications of glyphosate. This helps limit further development of resistance in weeds. These plots were visited by some 200 growers based on cooperators estimate.
- Attend the "Friday Morning Meetings" of Plains Cotton Growers in May, June and July to provide an update of the West Plains growing area on weed resistance and management. There were on average 40 people from all aspects of influence in the cotton industry present.
- Conducted seven producer educational gatherings as "turn-row", gin, and crop tour meetings in which I gave weed control updates, and management suggestions. There were 83 producers in attendance at these meetings.

An evaluation was sent out via Qualtrics on October 3, 2013 to 50 clientele. These clientele were selected because they either attended an educational meeting or received the West Plains IPM Update newsletter. The survey was closed on October 17 with 15 responses. Response rate was 30%.

Results

The retrospective post evaluation instrument helped in the measurement of the use of important tools to help in mitigating herbicide resistance, specifically pigweed resistance to glyphosate.

1. What percent of your cotton fields did you have to deal with pigweed (Palmer amaranth) which was not controlled by glyphosate in a Flex or Gly-Tol cotton system?

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	% Resistant Fields	5.00	100.00	50.00	32.91	15

2. Did you utilize a preplant incorporated yellow herbicide?

#	Answer		Response	%
1	Yes		11	73%
2	No		4	27%
	Total		15	100%

Statistic	Value
Min Value	1
Max Value	2
Mean	1.27
Variance	0.21
Standard Deviation	0.46
Total Responses	15

3. Did you utilize an at-plant herbicide?

#	Answer		Response	%
1	Yes		10	67%
2	No		5	33%
	Total		15	100%

Statistic	Value
Min Value	1
Max Value	2
Mean	1.33
Variance	0.24
Standard Deviation	0.49
Total Responses	15

4. Did you utilize a cultivator for weed control?

#	Answer		Response	%
1	Yes		12	86%
2	No		2	14%
	Total		14	100%

Statistic	Value
Min Value	1
Max Value	2
Mean	1.14
Variance	0.13
Standard Deviation	0.36
Total Responses	14

5. Did you utilize hand-hoeing for weed control?				
#	Answer		Response	%
1	Yes		13	87%
2	No		2	13%
	Total		15	100%

Statistic	Value
Min Value	1
Max Value	2
Mean	1.13
Variance	0.12
Standard Deviation	0.35
Total Responses	15

6. Did you utilize Texas A&M Extension Service education programs to learn about weed resistance and it's management? Which ones? Check all that apply.				
#	Answer		Response	%
1	Newsletter - West Plains IPM Update		13	93%
2	Radio reports - Local KLVT and/or Ag Talk 950		4	29%
3	Grower meetings - West Plains Ag Conference, Turnrow meetings		3	21%
4	Direct contact with IPM Agent - Kerry Siders		5	36%

Statistic	Value
Min Value	1
Max Value	4
Total Responses	14

7. What topics, as they pertain to weed resistance, do you feel you still need more information on? Check all that apply.				
#	Answer		Response	%
1	Use of herbicides		11	92%
2	Use of tillage		6	50%
3	How resistance develops		6	50%
4	Other___________		0	0%

Statistic	Value
Min Value	1
Max Value	3
Total Responses	12

To summarize these results: producers had to deal with pigweed which was not controlled by glyphosate on 50% of their cotton fields; 73% of producers used a preplant incorporated yellow herbicide; and 67% indicated they used an at-plant herbicide. The respondents indicated that 86% of them used a cultivator for weed control; and 87% used hand-hoeing for weed control. The West Plains IPM Update newsletter (93%) was most frequented for information on weed resistance, while direct contact with Kerry Siders was 36%, Radio was used 29% of time for education on weed resistance, and face to face meetings was used 21% of the time for this purpose. Producers indicated that they still need more information on the use of herbicides (92%), use of tillage and how resistance develops by 50% of them each respectively. If the use of these tools continues to be adopted then the percent of acres infested with resistance weeds will not increase but rather hold and decrease over time.

Plans are to continue this educational effort in 2014.

VALUE

Crop and Forage Production Education

Extension programs in crop production promote best practices that lead to reduced irrigation, safer pest management, and improved profitability of agricultural enterprises. This benefits Texas as a whole by contributing to the quality and quantity of water resources and enhancing both agricultural competitiveness and rural economies.

SURVEY OF SOUTHERN ROOT-KNOT NEMATODES IN HOCKLEY AND COCHRAN COUNTIES' IPM SCOUTING PROGRAM FIELDS

COOPERATORS

IPM Scouting Program Participants

COORDINATORS

Kerry Siders, Extension Agent-IPM, Hockley and Cochran Counties

Hockley and Cochran Counties

SUMMARY

Nematodes are soil-borne organisms which attack plant roots (in this case, cotton roots) and have a parasitic relationship with their hosts. The southern root-knot nematode enters the feeder roots, taps into the vascular system of the cotton roots, and feeds on the nutrients in the plant, hence acting as a sink for soil nutrients. This process also inhibits or 'clogs" the plant's vascular root tissues, preventing even excess flow. Nematodes are more important pests in irrigated fields and are more noticeable in dry years. Nematodes are also connected to increased incidence of seedling and plant vascular diseases. Treatment of nematodes can be costly if high populations exist. The alternative is rotation with non-host crops (ie. Peanuts), which may or may not be possible due to irrigation capabilities and economical reasons. Due to dry conditions in the fall of 2013 and other circumstances, soil sampling for detecting infestations of nematodes in cotton was delayed until mid-December. Forty-eight samples were taken from 32 fields enrolled in the IPM scouting program. Random soil samples were processed at the Texas A&M AgriLife Research Station in Lubbock. Results indicated that 53% of the 48 samples contained some level of root-knot nematodes (does not include lesion, stunt, spiral, or dagger nematodes). The range of root-knot nematode counts per 500 cm3 of soil ranged 0 to a high of 5,600 root-knot nematode adult/mobile stage. A level of +200 root-knot nematodes per 500 cm3 is considered the treatment threshold. Counts had most likely fallen off by this time of the season and under represent what is actually present. There would reasonable concern for any fields where nematodes were found.

OBJECTIVE

To demonstrate the presence or absence of root-knot nematodes in Hockley and Cochran Counties' IPM Program fields, as well as to demonstrate the process of sampling and making treatment recommendations for management.

MATERIALS AND METHODS

Thirty-two of the IPM-program fields were selected. One to 3 composite samples (depending on field size) were made from 20 core samples collected from each field on December 13-16. The samples were protected from heat and light so as not to deteriorate the sample material. The samples were then processed at the Texas A&M AgriLife Research Station in Lubbock.

Nematodes were extracted from the samples by a rinse method and collected from a known volume. The nematode samples were then counted under a microscope, noting type of nematode (root-knot) and number. Management plans were then developed for each field, based on the composite samples.

RESULTS AND DISCUSSION

Seventeen of 32 fields had some level of cotton root-knot nematode population. Losses from root-knot nematodes in Hockley and Cochran Counties are difficult to estimate because of various factors which influence infestations. We can say that nematodes are widespread, require treatment with soil-applied nematicides, and can lead to other costly concerns, such as diseases and non-host rotation which may not provide the economic returns of cotton. In order to be sure what level of infestation is present in individual fields, and to make treatment recommendations, producers must take soil samples and submit them to a soil lab for analysis. See Table 1 for the incidence of root-knot nematode infestations over the last several years in Hockley and Cochran Counties.

Management recommendations will be made to these participating growers. The degree of management will be directly related to the severity and history of the infestation. I have now 17 years of historical data of individual fields and general areas in both Hockley and Cochran Counties. For the most severe situations the discussion about possible rotation will be included, especially for a producer which has the opportunity to grow peanuts as an example. Second, will be a discussion of the use of Telone II, a preplant applied soil fumigant. This has not been a common practice in High Plains of Texas, yet based on local studies is very effective. Then we will discuss cotton varieties which can tolerate damage or even resist damage such that they can yield through this stress of CRK nematode. The next level of protection will be using a seed treatment such as Avicta Complete Pack, or Aeris seed treatments. These help in maintaining moderate populations but do not stand up under extreme nematode conditions. Finally the use of foliarly applied Vydate C-LV will be suggested beginning as early as 2-3 true leaf stage cotton at 8.5 to 17 oz per acre every 7 days for 2-3 applications.

ACKNOWLEDGMENTS

Thanks to Paxton Pugh for collecting the soil samples. Thanks to the IPM Scouting Program participants for their cooperation. Most importantly, thank you to Dr. Wheeler for running the lab analysis of the soil samples.

Table 1. Results of cotton root-knot nematodes sampling in Hockley and Cochran Counties, Texas 1997-2013.

Year	Percent of fields sampled with cotton root-knot nematode
1997	82%
1998	82%
1999	74%
2000	88%
2001	63%
2002	83%
2003	92%
2004	64%
2005	82%
2006	77%
2007	88%
2008	72%
2009	89%
2010	91%
2011	100%
2012	90%
2013	53% (late sampling)
Average	81%

COTTON ROOT-KNOT NEMATODE MANAGEMENT ON HIGH PLAINS OF TEXAS USING MULTIPLE APPLICATIONS OF VYDATE

COOPERATORS

Sammy Harris

COORDINATOR

Kerry Siders, Extension Agent - IPM, Hockley and Cochran Counties

Hockley County

INTRODUCTION

Nematodes are an economically important plant parasitic pest of cotton throughout most of the cotton growing areas of the United States. On the Texas High Plains, the southern root-knot nematode, *Meliodogyne incognita*, is the predominate nematode species of the population infesting cotton. In irrigated cotton where nematode populations are historically high (usually areas where sandier soils are most prevalent) many growers opt to utilize a partial nematode tolerant cotton variety since the loss of Temik. The use of foliar applied Vydate has provided protection from nematodes when it was used alone or in combination with Temik. Partial nematode tolerant cottons have yield loss when not protected chemically by nematicides as demonstrated when Temik was available. The need for additional control has encouraged the use of Vydate CLV following plant stand establishment.

OBJECTIVE

To determine the efficacy of foliar applied Vydate at two rates and multiple applications for control of southern root-knot nematode based on final cotton lint yields in Hockley County, Texas.

MATERIALS AND METHODS

Field trials were conducted in Hockley County, near Ropesville, Texas. Based on fall 2012 soil sampling 28,920 eggs, and 4,700 root-knot juveniles were present per 500 cm^3 of soil from the study field. Cotton FiberMax FM2484 B2F was planted on May 7 on 40-inch rows and irrigated using a drip irrigation system. Plots were 8-rows wide × 175-feet long. Plots were arranged in a randomized complete block design with 3 replications. Foliar applications of Vydate CLV were applied with a self-propelled sprayer (Fig. 3) calibrated to deliver 17 gallons per acre. Vydate CLV applications were made on 11, 18 and 25 June 2013 at Ropesville. A detailed list of treatments are outlined in Table 1.

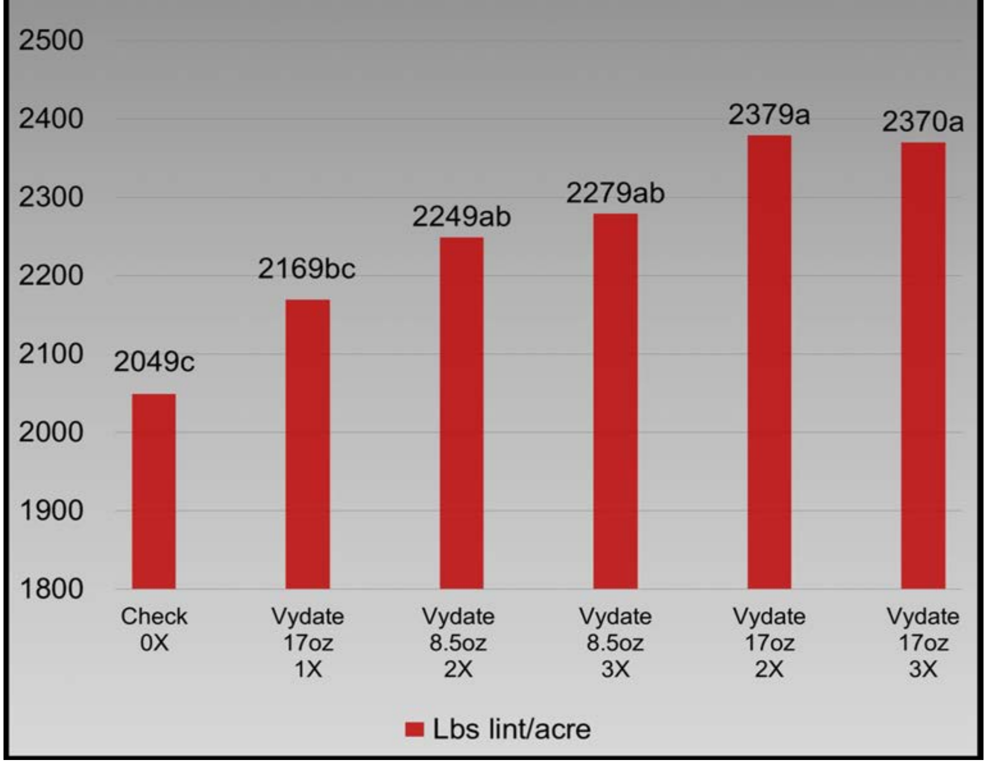
Table 1. Treatment regimes for southern root-knot nematode Ropesville, Texas. 2013
1) Untreated check
2) Single foliar application of Vydate CLV 17 oz at 3-4 true leaf cotton stage on 11 June (28 days from emergence)
3) Foliar application of Vydate CLV 8.5 oz at 3-4 true leaf cotton stage on June 11, followed by Vydate CLV 8.5 oz 7 days later on 18 June
4) Foliar application of Vydate CLV 8.5 oz at 3-4 true leaf cotton stage on June 11, followed by Vydate CLV 8.5 oz 7 days later on 18 June, and followed by Vydate CLV 8.5 oz 7 days later on 25 June
5) Foliar application of Vydate CLV 17 oz at 3-4 true leaf cotton stage on June 11, followed by Vydate CLV 17 oz 7 days later on 18 June
6) Foliar application of Vydate CLV 17 oz at 3-4 true leaf cotton stage on June 11, followed by Vydate CLV 17 oz 7 days later on 18 June, and followed by Vydate CLV 17 oz 7 days later on 25 June

Study field was scouted weekly to minimize the impact of insect pests such as thrips and plant bugs. No additional insecticides were needed. Plots were harvested on 2 November 2013 using a John Deere 8-row stripper. Cotton from whole plots were weighed on field platform scales, grab samples taken, ginned and turnouts determined. Cotton lint yield data was analyzed using complete factorial and the means were separated using an F protected LSD ($P \leq 0.05$).

RESULTS

All treatments except the single 17 oz aplication of Vydate (2169 lbs lint/acre) provided significantly (P=0.05) higher cotton lint yields than the untreated check (2049 lbs lint/acre) (Fig. 4) . Vydate C-LV applied foliar to 3-4 true leaf stage cotton with two 8.5 oz applications 7 days apart provided 2249 lbs. lint/acre. When applied at same time the 8.5 oz followed by 8.5 oz, and another 8.5 oz 7 days later it yielded 2279 lbs. lint/acre. When 17 oz was applied twice the cotton yield was 2379 lbs. lint/acre, which was not numerically different from the 17 oz rate applied three times (2370 lbs. lint/acre). All multiple applications were not significantly different from each other. The value of Vydate for southern root-knot nematode control for both years is shown in Table 2.

Figure 4. Average yield (lbs-lint/acre) of cotton subjected to Vydate treatments targeting southern root-knot nematode. Ropesville, TX 2013



The check is the base of comparison with $0.00 value. Vydate at 17 oz achieved a numeric $53.17 advantage over the check. The 8.5 oz applied 2-3 times had a $97 to $107 advantage over the check respectively. The 17 oz applied 3-2 times had a $156 to $137 advantage over the check respectively.

Table 2. Value of Vydate treatments on southern root-knot nematode 2013, Hockley County, Texas.

Treatments	Cost of Treatment[1]/acre	Value[2] of Yield Change/acre over Check	Value of Treatment[3] Per acre
Check	$0.00	$0.00	**$0.00**
Vydate 17 oz	$14.03	$67.2	**$53.17**
Vydate 8.5 oz , fb 8.5 oz 7 DAT	$14.03	$112.00	**$97.97**
Vydate 8.5 oz, fb 8.5 oz 7 DAT, fb 8.5 oz 7 DAT	$21.05	$128.80	**$107.75**
Vydate 17 oz, fb 17 oz 7 DAT	$28.05	$184.80	**$156.75**
Vydate 17 oz, fb 17 oz 7 DAT, fb 17 oz 7 DAT	$42.09	$179.76	**$137.67**

[1]Cost based on 2013 local price.
[2]Value is based on cotton loan price average for TX Southern High Plains for 2013 at $0.56
[3]Value of treatment is difference in Cost of treatment minus Value of Yield Change.

SUMMARY

Based on this year's study, managing southern root-knot nematodes using multiple applications of foliar applied Vydate C-LV starting at 3-4 true leaf stage of cotton growth provides an opportunity to achieve best cotton lint yields. All Vydate treatments were significantly better than the check except a single application of 17 oz. Two and three applications of Vydate @17 oz beginning at the 3-4th true leaf stage followed by 7 days between applications was best; followed closely by the two and three applications of Vydate @ 8.5 oz at 3-4 true leaf with 7 days between applications. The multiple Vydate C-LV treatments provided a gain of $97.97 to $156.75 over check.

ACKNOWLEDGEMENTS

Thanks to Case Medlin with DuPont for financial support. Thanks to Sammy Harris for his cooperation and good sense of humor. Thanks also to Dr. Terry Wheeler, Texas A&M AgriLife Research Plant Pathology, Lubbock for technical assistance.

2013 MANAGEMENT OF ROOT-KNOT NEMATODES WITH CHEMICALS AND PARTIALLY RESISTANT VARIETIES

COORDINATORS

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INTRODUCTION

In August of 2010, Bayer CropSciences made an announcement that they were going to cease production and discontinue the label of Temik 15G starting in 2014. Producers would be able to use the product for a few years after that, but the end was in sight. Then in the spring of 2011, as their Temik production plant was ready to reopen after extensive repairs, they announced they were going to stop producing Temik immediately. Supplies of Temik 15G were short in 2011 and for most people not available after that. There were no immediate answers for most producers that have to manage root-knot nematode, especially those that used very susceptible varieties to that nematode.

OBJECTIVE

This project was initiated in 2011 to address the remaining tools available for producers to use in cotton production and included preplant soil fumigation with Telone II, nematicide seed treatments, post-emergence applications of Vydate CLV, and partially resistant varieties to root-knot nematode.

MATERIALS AND METHODS

At each test site, there was a partially resistant (Stoneville [ST] 5458B2RF and/or Phytogen [PHY] 367WRF) and susceptible (FiberMax [FM] 9160B2F) variety. These varieties were typically all tested with the following chemical options: 1) none; 2) Cruiser treated seed (for thrips control); 3) AVICTA Complete Cotton (for nematode, thrips, and seedling disease control); 4) Cruiser treated seed + Vydate CLV applied around the 4th leaf-stage with 17 oz/acre banded; 5) AVICTA Complete Cotton + Vydate CLV applied around the 4th leaf-stage with 17 oz/acre banded; 6) Temik 15G applied at planting at 5 lbs/acre infurrow; and7) Telone II applied preplant at 3 gal/acre + Cruiser treated seed. The cost of each of the 7 chemical treatments were valued at ($/acre): 0; 8.10; 16.20; 13.65; 21.75; 17.50; and 82.80, respectively for treatments 1-7. The cost of FM 9160B2F and ST 5458B2F was valued at $77.08/acre and for PHY 367WRF at $73.82/acre.

Plots were 33-36 feet long and four rows wide, where the middle two rows were harvested and the outside two rows used for other data collection. There were six replications and all 14 treatment combinations were arranged in a randomized complete block design. Data collected included stands; galls/root at 35-45 days after planting; root-knot nematode density in late August or early September; and yield.

RESULTS

Results for 2013: There were four test sites, but only three were taken to harvest.

Whiteface: This site had a moderate population density of root-knot nematode and Fusarium wilt was also present. Galls/plant were affected by both varieties and chemicals. FM 9160B2F had more galls/root (15) than did PHY 367WRF (10). For the susceptible FM 9160B2F, the non-nematicide treatments (none, Cruiser, Cruiser + Vydate CLV) had more galls/root than did the plots fumigated with Telone II (Table 1). For plots with PHY 367WRF, none of the chemical treatments had significantly fewer galls than the nontreated check (Table 1). Reproduction of root-knot nematode was higher with FM 9160B2F (7,543 root-knot/500 cm^3 soil) than with PHY 367WRF (1,433 root-knot/500 cm^3 soil). Chemical treatments had very little impact on this parameters, with a reduction in root-knot nematodes seen with fumigation relative to the nontreated check (Table 1), but only with FM 9160B2F. No chemical differences were seen with PHY 367WRF on root-knot nematode reproduction. Lint yield was higher for PHY 367WRF (821 lbs of lint/acre) than for FM 9160B2F (746 lbs of lint/acre). On FM 9160B2F, lint yield for the unprotected check was not significantly different than with any of the chemical treatments. Similarly with PHY 367WRF, lint yields for the unprotected check were not significantly different than for any other chemical treatments (Table 1). Net return, which included the lint yield x loan value, minus the chemical and variety costs, was higher for PHY 367WRF ($340/acre) than for FM 9160B2F ($315/acre). The nontreated check had among the highest returns for both varieties, relative to the other chemical treatments. So overall, the variety component, planting a partially resistant variety, had much better impact on root-knot nematode than did any of the currently available chemical treatments.

Table 1. Effect of root-knot nematode on various chemicals[a] and varieties[b] at the Whiteface site.

Chem	Galls/root		RK/500 cm³ soil		Lbs of Lint/acre		Net Return ($/acre)[c]	
	FM	PHY	FM	PHY	FM	PHY	FM	PHY
1	20 ab[d]	9 ab	8,220 a	2,257 a	777 ab	825 abc	356 a	366 a
2	17 ab	15 a	9,440 a	3,620 a	698 b	747 c	304 b	316 b
3	13 bc	12 ab	5,183 a	543 a	790 a	809 bc	347 ab	341 ab
4	21 a	10 ab	16,720 a	903 a	735 ab	796 c	319 ab	336 ab
5	13 bc	7 b	9,480 a	1,167 a	761 ab	775 c	325 ab	317 b
6	11 bc	6 b	2,380 ab	830 a	767 ab	887 ab	333 ab	381 a
7	8 c	11 ab	1,380 b	713 a	690 b	907 a	224 c	326 b

[a]Chemial (CHEM) treatments 1-7 were:) none; 2) Cruiser treated seed (for thrips control); 3) AVICTA Complete Cotton (for nematode, thrips, and seedling disease control); 4) Cruiser treated seed + Vydate CLV applied around the 4th leaf-stage with 17 oz/acre banded; 5) AVICTA Complete Cotton + Vydate CLV applied around the 4th leaf-stage with 17 oz/acre banded; 6) Temik 15G applied at planting at 5 lbs/acre infurrow; and7) Telone II applied preplant at 3 gal/acre + Cruiser treated seed.
[b]Varieties were FiberMax 9160B2F (FM) and Phytogen 367WRF (PHY).
[c]Net Return was calculated by multiplying the yield x loan value minus the chemical and variety costs listed in the introduction.
[d]Different letters within a column indicate that treatments are significantly different at P=0.05.

Seminole: This site had high root-knot nematode pressure. It was not possible to fumigate the soil preplant at this site. Instead, two new partially resistant varieties were tested with Aeris seed treatment against the other varieties that were included with treatments 1-6 (ST 5458B2F and FM 9160B2F). Root galls were higher for FM 9160B2F (32 galls/root) than for ST 5458B2F (19 galls/root) (Table 2). When the other two partially resistant varieties were included in the comparison using only the nematicide treated seed, then FM 9160B2F had more galls (38/root) than all the partially resistant varieties and ST 4946GLB2 had the fewest galls (10, Table 3). FM 9160B2RF had higher densities of root-knot nematode (18,773/500 cm^3 soil) than ST 5458B2F (6,007/500 cm^3 soil) when comparing across all chemical treatments. However, when comparing across all varieties and just the nematicide treated seed, then there were no significant differences between varieties (Table 3), though numerically all of the partially resistant varieties had lower root-knot nematode densities than the susceptible variety. There was no effect of chemical treatment on root-knot nematode density for either FM 9160B2F or ST 5458B2F (Table 2). Yield was higher for ST 5458B2F (887 lbs of lint/acre) than for FM 9160B2F (718 lbs of lint/acre), when averaged across all chemical treatments. When comparing all four varieties with just the nematicide seed treatments, lint yield was higher for ST 5458B2F and ST 4946GLB2 than for FM 9160B2F (Table 3). None of the nematicide treatments had significantly higher yields than the nontreated check for either variety (Table 2). Net value was higher for ST 5458B2F ($389/acre) than for FM 9160B2F ($322/acre). The yield x loan value was higher for ST 5458B2F than for FM 9160B2F and intermediate for ST 4946GLB2 and FM 2011GT, when averaged across just the nematicide treated seed treatment (Table 3). There was no differences in net value for FM 9160B2F across chemical treatments (Table 2). For PHY 367WRF, no nematicide treatment was better than the nontreated check, though there were some differences between some of the nematicide treatments. Interestingly, the combination of Cruiser treated seed + Vydate CLV had a higher net value than combining a nematicide seed treatment with Vydate CLV (Table 2). This test demonstrates that even though you can get excellent early season control with a treatment (Temik 15G in this case), the environment is not always there to turn that advantage into lbs of lint. However, it does appear that the control exerted by partially resistant varieties is more likely to be converted into yield increases than for chemical treatments, even when they are successful on reducing galls.

Table 2. Effect of root-knot nematode on various chemicals[a] and varieties[b] at the Seminole site.

Chem	Galls/root		RK/500 cm^3 soil		Lbs of Lint/acre		Net Return ($/acre)[c]	
	FM	ST	FM	ST	FM	ST	FM	ST
1	37 a	27 a	20,120 a	3,980 a	694 a	923 ab	321 a	421 ab
2	42 a	18 a	23,860 a	8,180 a	698 a	836 bc	315 a	366 bc
3	38 a	26 a	17,080 a	6,427 a	700 a	884 bc	308 a	384 abc
4	32 a	17 a	15,820 a	5,513 a	725 a	1,006 a	325 a	452 a
5	39 a	25 a	17,020 a	4,400 a	743 a	796 c	327 a	331 c
6	3 b	3 b	18,740 a	7,540 a	750 a	875 bc	335 a	378 abc

[a]Chemial (CHEM) treatments 1-7 were:) none; 2) Cruiser treated seed (for thrips control); 3) AVICTA Complete Cotton (for nematode, thrips, and seedling disease control); 4) Cruiser treated seed + Vydate CLV applied around the 4th leaf-stage with 17 oz/acre banded; 5) AVICTA Complete Cotton + Vydate CLV applied around the 4th leaf-stage with 17 oz/acre banded; 6) Temik 15G applied at planting at 5 lbs/acre infurrow; and7) Telone II applied preplant at 3 gal/acre + Cruiser treated seed.
[b]Varieties were FiberMax 9160B2F (FM) and Stoneville 5458B2F (ST).
[c]Net Return was calculated by multiplying the yield x loan value minus the chemical and variety costs listed in the introduction.
[d]Different letters within a column indicate that treatments are significantly different at P=0.05.

Table 3. Effect of root-knot nematode on varieties at Seminole, when treated with a nematicide seed treatment.

Variety	Galls/ root	Root-knot/ 500 cm^3 soil	Lbs of Lint/acre	Lint yield X Loan value ($/acre)
Fibermax 9160B2F	38 a[a]	17,080 a	700 c	308 b
Fibermax 2011GT	18 bc	9,680 a	760 bc	337 ab
Stoneville 4946GLB2	10 c	12,547 a	826 ab	372 ab
Stoneville 5458B2F	26 b	6,427 a	884 a	384 a

[a]Different letters within a column indicate that treatments are significantly different at P=0.05.

Lamesa: This site had moderate nematode pressure. FM 9160B2F had more galls/root (13) than did PHY 367WRF (7). There were no chemical treatment differences in root galling (Table 4). Root-knot nematode density was higher for FM 9160B2F (10,886/500 cm^3 soil) than for PHY 367WRF (5,025/500 cm^3 soil). There were no chemical treatment differences with respect to root-knot nematode population density. Lint yield was higher for PHY 367WRF (1,683 lbs of lint/acre) than for FM 9160B2F (1,430 lbs of lint/acre). There were no chemical treatment differences for FM 9160B2F, however, with PHY 367WRF, plots treated with Temik 15G had higher yields than all other treatments except for Cruiser+Vydate (Table 4). PHY 367WRF had a higher net value ($853/acre) than did FM 9160B2F ($707/acre). There were no differences in net value between the different chemical treatments for FM 9160B2F, however with PHY 367WRF, Temik 15G treated plots had higher yield than all other treatments except Cruiser + Vydate (Table 4).

Table 4. Effect of root-knot nematode on various chemicals[a] and varieties[b] at the Lamesa site.

Chem	Galls/root		RK/500 cm^3 soil		Lbs of Lint/acre		Net Return ($/acre)[c]	
	FM	PHY	FM	PHY	FM	PHY	FM	PHY
1	13 a	3 a	9,160 a	9,440 a	1,399 a	1,610 bc	712 a	834 b
2	14 a	12 a	11,320 a	11,720 a	1,430 a	1,598 bc	722 a	820 c
3	15 a	14 a	10,860 a	2,380 a	1,451 a	1,590 c	725 a	807 c
4	17 a	6 a	10,280 a	2,900 a	1,359 a	1,791 ab	676 a	923 ab
5	13 a	5 a	11,540 a	1,913 a	1,377 a	1,630 bc	678 a	824 b
6	5 a	5 a	10,780 a	3,620 a	1,469 a	1,882 a	734 a	970 a
7	13 a	4 a	12,260 a	3,200 a	1,527 a	1,682 bc	701 a	792 c

[a]Chemial (CHEM) treatments 1-7 were:) none; 2) Cruiser treated seed (for thrips control); 3) AVICTA Complete Cotton (for nematode, thrips, and seedling disease control); 4) Cruiser treated seed + Vydate CLV applied around the 4[th] leaf-stage with 17 oz/acre banded; 5) AVICTA Complete Cotton + Vydate CLV applied around the 4[th] leaf-stage with 17 oz/acre banded; 6) Temik 15G applied at planting at 5 lbs/acre infurrow; and7) Telone II applied preplant at 3 gal/acre + Cruiser treated seed.

[b]Varieties were FiberMax 9160B2F (FM) and Phytogen 367WRF (PHY).

[c]Net Return was calculated by multiplying the yield x loan value minus the chemical and variety costs listed in the introduction.

[d]Different letters within a column indicate that treatments are significantly different at P=0.05.

MANAGEMENT OF ROOT-KNOT NEMATODE WITH CURRENTLY AVAILABLE PRODUCTS AND VARIETIES - SUMMARY 2011-2013

COORDINATORS
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INTRODUCTION

Management of root-knot nematode in cotton was substantially affected by the decision to stop production of Temik 15G by its principle manufacturer in 2011. The remaining commercially available tools to manage root-knot nematodes included: soil fumigation (Telone II), nematicide seed treatments (AVICTA or AERIS), post-emergence nematicide application (Vydate CLV), and partially resistant cultivars to root-knot nematodes.

OBJECTIVE

Small plot field studies were conducted on a total of nine sites from 2011 – 2013 to examine the effects of each of these tools alone or in combinations, on early season gall reduction, late season nematode population density, yield, and value ($)/acre. Value per acre was calculated as the (lint yield x loan value +$0.20/lb) – chemical and variety costs/acre.

RESULTS

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

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

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

[a]1=Gaines Co. in 2011; 2=Cochran Co. in 2011; 3=Gaines Co. in 2012; 4=Cochran Co. in 2012; 5=Dawson Co. in 2012; 6=Terry Co. in 2012; 7=Gaines Co. in 2013; 8=Cochran Co., in 2013; 9=Dawson Co. in 2013.
[b]Value/acre = (lbs lint/acre x (loan value + $0.20/lb))-(seed costs + chemical costs/acre).
[c]Sus = susceptible variety= Fibermax 9160B2F, Res = partially resistant variety (either Stoneville 5458B2F or Phytogen 367WRF).
[d]Letters that are the same between Susc and Res cultivars for an attribute are not significantly different at $P \leq 0.05$.

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

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

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

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

[a]1=Gaines Co. in 2011; 2=Cochran Co. in 2011; 3=Gaines Co. in 2012; 4=Cochran Co. in 2012; 5=Dawson Co. in 2012; 6=Terry Co. in 2012; 7=Gaines Co. in 2013; 8=Cochran Co., in 2013; 9=Dawson Co. in 2013.
[b]Values that are within a column followed by the same letter are not significantly different for galls/root at $P \leq 0.05$.

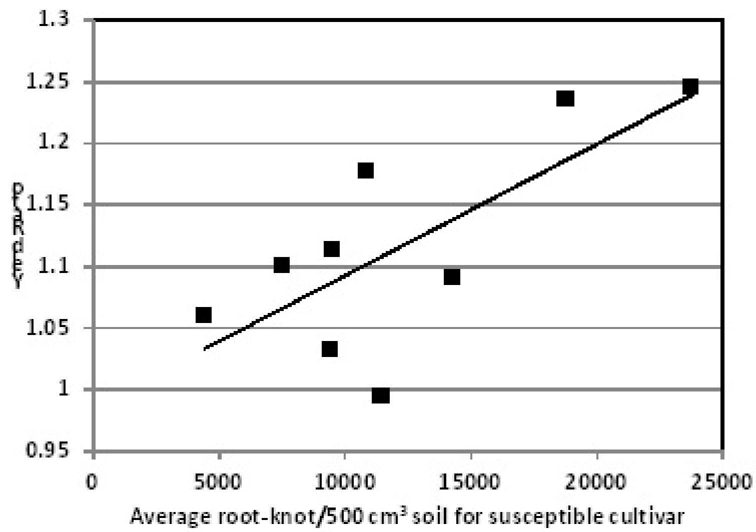


Figure 1. Relationship between the average root-knot nematode population density (RK) for the susceptible variety at a site and the ratio of the average lint yield for the partially resistant variety and the susceptible variety at each of nine sites. Each data point represents the % increase in yield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

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

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

[a]1=Gaines Co. in 2011; 2=Cochran Co. in 2011; 3=Gaines Co. in 2012; 4=Cochran Co. in 2012; 5=Dawson Co. in 2012; 6=Terry Co. in 2012; 7=Gaines Co. in 2013; 8=Cochran Co., in 2013; 9=Dawson Co. in 2013.

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

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

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

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

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

[a]1=Gaines Co. in 2011; 2=Cochran Co. in 2011; 3=Gaines Co. in 2012; 4=Cochran Co. in 2012; 5=Dawson Co. in 2012; 6=Terry Co. in 2012; 7=Gaines Co. in 2013; 8=Cochran Co., in 2013; 9=Dawson Co. in 2013.

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

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

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

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

[a]Value ($)/acre was (lint yield/acre x (loan value + $0.20/lb)) – chemical costs/acre – seed cost/acre.

[b]1=Gaines Co. in 2011; 2=Cochran Co. in 2011; 3=Gaines Co. in 2012; 4=Cochran Co. in 2012; 5=Dawson Co. in 2012; 6=Terry Co. in 2012; 7=Gaines Co. in 2013; 8=Cochran Co., in 2013; 9=Dawson Co. in 2013.

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

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

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

EVALUATION OF INSECTICIDE OVERSPRAYS FOR CONTROL OF BOLLWORMS IN TEXAS TRANSGENIC BT COTTON

COORDINATORS
Stephen Biles, Clyde Crumley, Rick Minzenmayer, Dale Mott, Roy Parker, Kerry Siders, and Monti Vandiver

ABSTRACT

A project was initiated to determine if insecticide application for bollworm control can prevent yield losses associated with cotton bollworm feeding on Bt cotton. An additional objective was to see if yield was affected by the insecticide application in the absence of the insect pest. Five treatments were applied at seven locations across Texas in 2012 and 2013. Insect survival was very low to non-existent in the research plots. No yield differences were found between treatments. While the research was unable to evaluate the effects of treating surviving worm populations on Bt Cotton.

OBJECTIVES

Determine if any benefit is gained by treating Bt cotton for caterpillars. Secondly, determine if yield is enhanced by insecticide alone without pest present.

INTRODUCTION

Field scouting across the cotton belt has found Bt cotton to provide adequate control of cotton bollworm. However, some caterpillars survive on the Bt cotton and have the potential to cause yield losses. This can be a greater problem in fields where very high egg lay occurs which would theoretically results in greater survivorship.

State Extension cotton pest management guides provide instruction for managing bollworms in Bt cotton. These thresholds use insect counts only for worms larger than ¼ inch in length.

A project was initiated to determine if insecticide application for bollworm control can prevent yield losses associated with cotton bollworm feeding. An additional objective was to see if yield was affected by the insecticide application in the absence of the insect pest.

MATERIALS AND METHODS

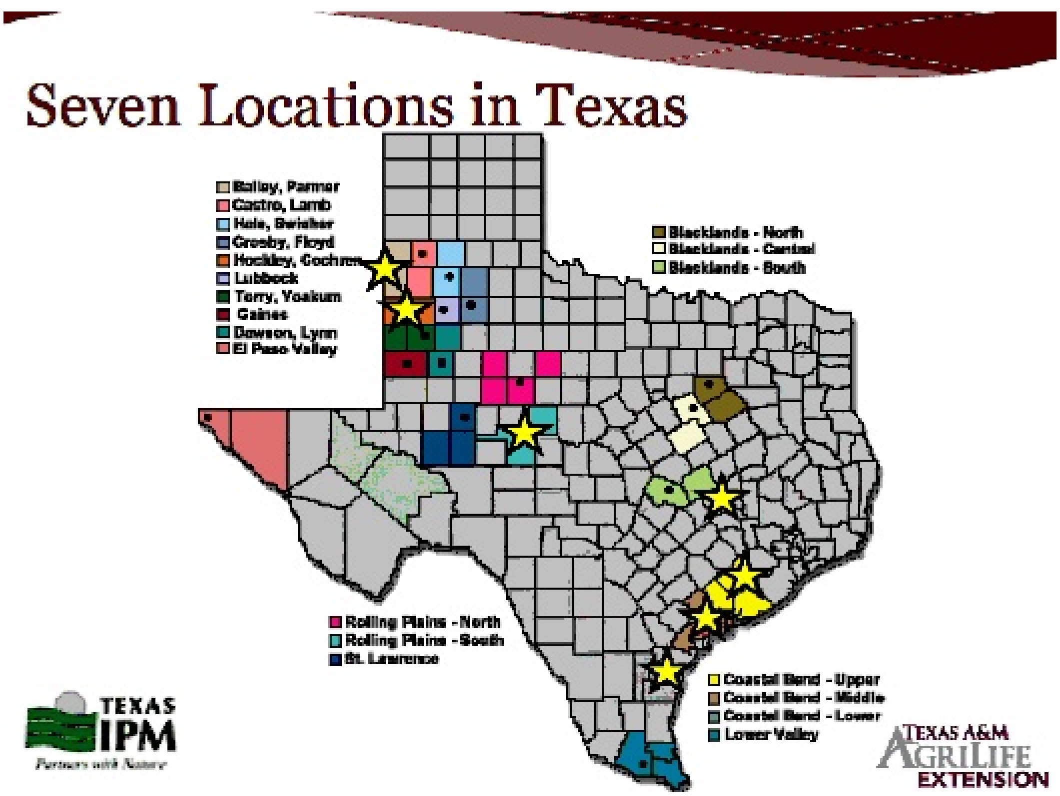
Design: Randomized Complete Block – 4 replications

Locations: Port Lavaca, TX, (production field)
Corpus Christi, TX (production field)
Wharton, TX, (production field)
College Station, TX, (research farm)
Ballinger, TX, (production field)
Levelland, TX, (production field)
Muleshoe, TX, (production field)

Bt Varieties: 2012 - 4 Bollgard II and 5 Widestrike cotton varieties
2013 - 4 Bollgard II and 3 Widestrike cotton varieties

Treatments: Untreated
Prevathon (14 oz/a)
Belt + Mustang Max (2 + 3.6 oz/a)
Besiege (8 oz/a)
Mustang Max (3.6 oz/a)

Data Analysis: Whole plant inspections for worm survival and feeding injury of 10 plants / plot at 3, 7, 14 and21 DAT
Lint Yield normalized to percent of untreated control.



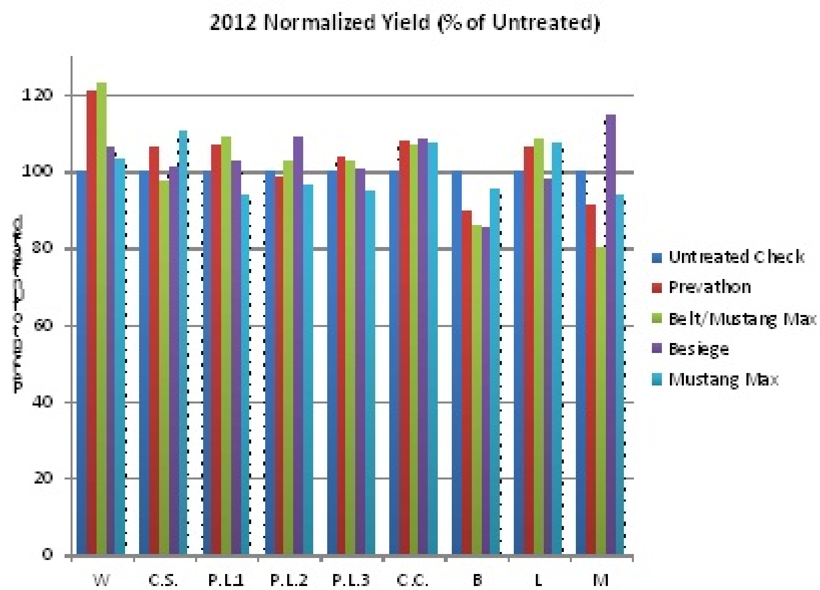
RESULTS

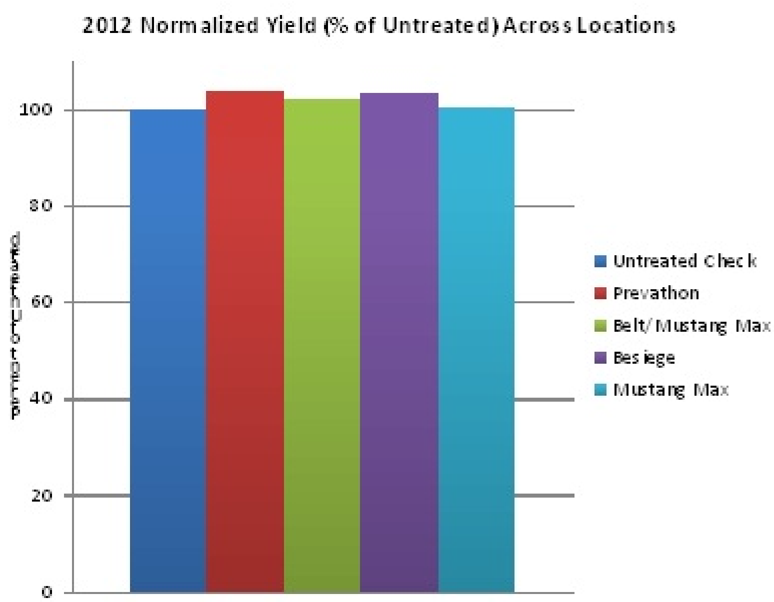
2012

Few bollworms and minimal feeding injury was detected in the trial areas. The highest worm population in East Texas and Coastal Bend tests was 2.5 small worms per 100 plants. No worms found in West Texas . One Coastal Bend location found Cotton square borers at population below 13 per 100 plants.

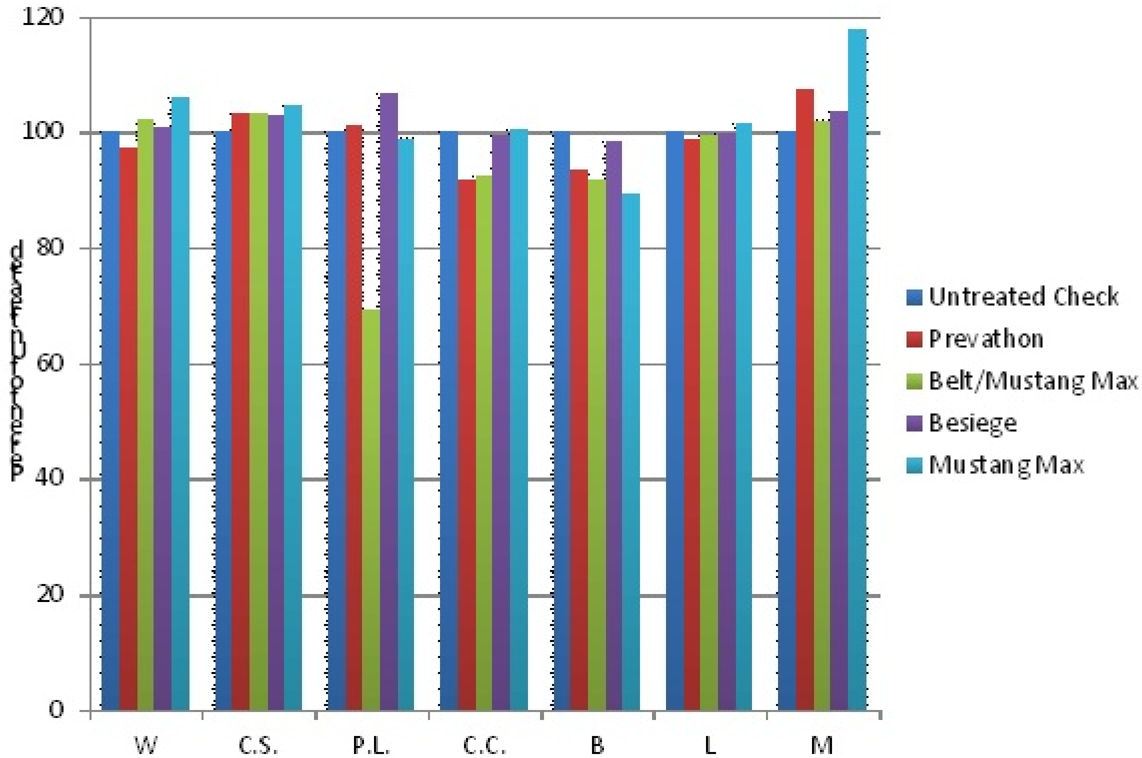
2013

Bollworms and minimal feeding injury was detected in the trial areas. College Station trial was only test site to find a large worm where one worm was found larger than ½ inch long. This treatment had 8.5% feeding injury on fruit but the feeding was not a cause of significant fruit loss. Few worms found in South and West Texas.

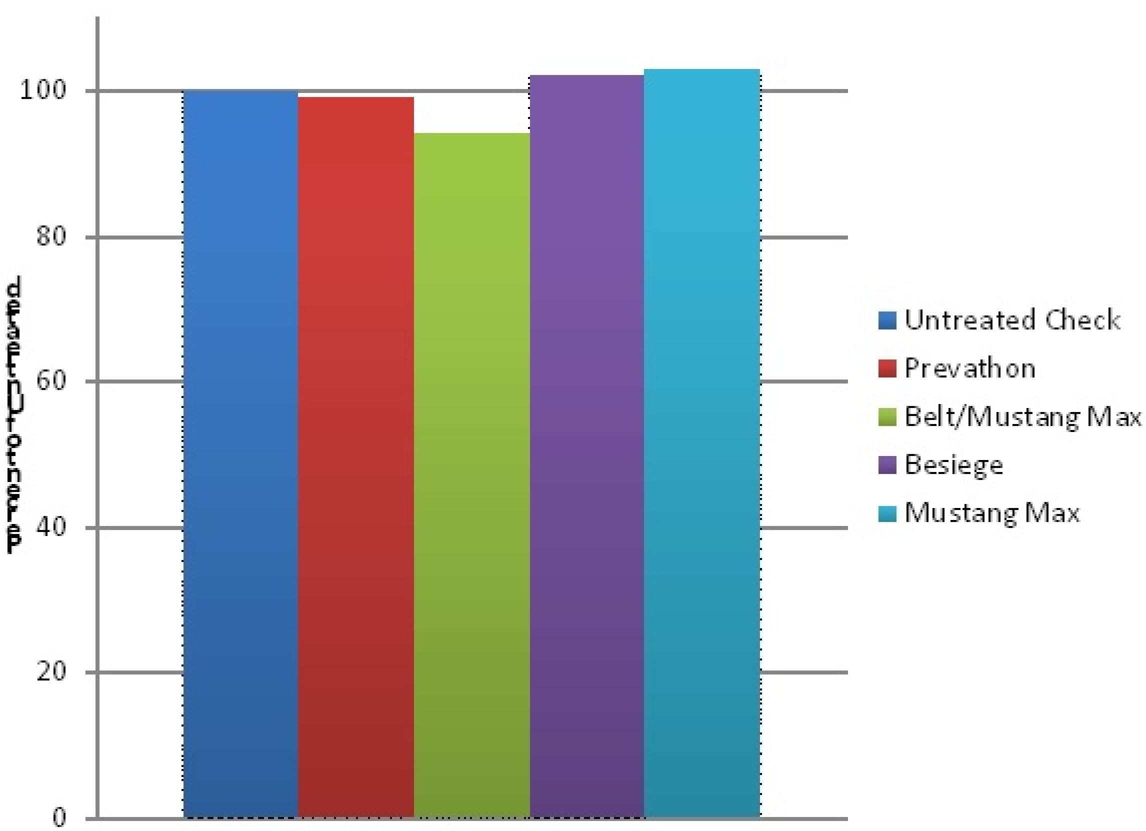




2013 Normalized Yield (% of Untreated)



2013 Normalized Yield (% of Untreated) Across Locations



SUMMARY

The result of this research was unable to determine if any benefit was gained by treating Bt cotton for caterpillars because few caterpillars were found in the test areas.

There was no effect on yield when the insecticide was applied in absence of caterpillar pests. Yield differences occurred were found as individual locations but the results were not consistent across locations. When data was combined it did not show yield response to insecticide pplication.

ACKNOWLEDGEMENTS

Our thanks is extended to Cotton Incorporated for funding this project and to the cotton producers who allow us to put research trials on their farms.

EVALUATION OF COTTON VARIETIES

COOPERATORS

Mike & Jacob Henson, Scott Fred, Brad Johnson, Tony Streety and Gene Polasek

COORDINATORS

Kerry Siders, Extension Agent - IPM, Hockley and Cochran Counties, Wes Utley, County Extension Agent - Agriculture, Hockley County and Jeff Molloy, County Extension Agent - Agriculture, Cochran County

Hockley and Cochran Counties

OBJECTIVE

To evaluate the cotton varieties which are or could potentially be commercially available to producers.

MATERIALS AND METHODS

Cotton varieties are provided from the major seed companies to evaluate for yield in our production area. These projects are planted, monitored during growing season, and then harvested for yield data.

RESULTS & DISCUSSION

The following pages contain five variety demonstrations. The first is a Monsanto FACT trial conducted at Scott Freds just north of Whiteface; The second is an Extension RACE trail at the Mike Henson Farm just east of Arnette; the next is another Extension variety trial at the Brad Johnson Farm north of Ropesville; a Bayer CAPS Trial at the Tony Streety Farm just southwest of Smyer; and finally a Phytogen Innovation Trial southeast of Levelland at Gene Polasek Farm.

ACKNOWLEDGMENTS

Thank you to all the cooperators and to the seed companies for providing the seed and financial support.

2013 Cotton Individual Plot Yield Report

MONSANTO

Cooperator:
Scott Fred
Levelland, TX
Hockley County

Planted:5/28/2013	Tillage: N/A
Harvested: 11/01/2013	Soil Texture: Clay Loam
Row Width: 40 inch	Irrigation: Drip

Entry	Brand	Product Name	Crop Value ($/Acre)	Lint Yield (Lbs/Acre)	Loan Price per Lb	Staple (32nds)	Length (inches)	Strength (g/tex)	Micronaire	% Lint	% Uniformity
1	Delta Pine	DP 1321 B2RF	$ 591.70	1117	52.95	34.9	1.09	30.6	4.5	39.4	81.4
2	Fibermax	FM 9170 B2F	$ 507.33	952	53.30	35.5	1.11	30.7	4.1	39.8	79.9
3	Delta Pine	DP 0912 B2RF	$ 502.39	947	53.05	34.9	1.09	29.5	4.0	38.2	81.4
4	Monsanto	13R341B2R2	$ 475.19	892	53.25	35.8	1.12	29.5	4.0	36.1	79.6
5	Delta Pine	DP 1441 RF*	$ 459.60	884	52.00	36.5	1.14	31.0	3.3	37.1	80.2
6	Delta Pine	DP 1454NR B2RF**	$ 456.25	862	52.95	35.2	1.10	27.8	3.9	36.0	80.5
7	Delta Pine	DP 1044 B2RF	$ 446.72	849	52.60	34.6	1.08	28.7	3.8	34.9	79.1
8	Monsanto	12R224B2R2	$ 446.31	844	52.90	35.8	1.12	29.2	3.5	33.9	78.8
9	Fibermax	FM 1944GLB2	$ 428.36	798	53.70	36.8	1.15	31.1	3.5	34.9	80.8
10	Monsanto	12R242B2R2	$ 421.19	789	53.35	35.8	1.12	28.3	3.5	35.8	81.5
11	Monsanto	12R249B2R2	$ 376.71	734	51.30	35.8	1.12	28.2	3.3	36.4	79.0
TEST AVERAGE			$ 464.70	879	52.85	35.6	1.11	29.5	3.8	36.6	80.2

Value Calculation based on $0.52/Lb(+/-) discounts/premiums from the 2013 USDA Loan Chart (Ranked by Value $/A). All plots were assigned a base color (41) and leaf grade (4).

Entries listed as "Monsanto" brand are experimental varieties, and not for sale.

* DP 1441 RF=12R244R2

** DP 1454NR 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.

TEXAS A&M AGRILIFE EXTENSION

Table 1. Harvest results from the Hockley County Sub-surface Driip Irrigated RACE Trial, Mike Henson Farm, Ropesville, TX, 2013.

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

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

CV - coefficient of variation.

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

LSD - least significant difference at the 0.05 level, †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 Hockley County Sub-surface Driip Irrigated RACE Trial, Mike Henson Farm, Ropesville, TX, 2013.

Entry	Micronaire	Staple	Uniformity	Strength	Elongation	Leaf	Rd	+b	Color grade	
	units	32nds inch	%	g/tex	%	grade	reflectance	yellowness	color 1	color 2
Croplan Genetics 3787B2RF	4.2	35.7	81.3	28.2	10.8	1.0	78.2	9.3	2.0	1.0
Deltapine 1219B2RF	3.8	36.5	80.0	30.4	9.6	1.3	78.5	8.9	2.0	1.0
FiberMax 2011GT	4.1	36.4	80.8	30.3	8.6	1.7	77.1	8.2	3.0	1.0
FiberMax 2484B2F	4.0	37.9	80.4	30.4	8.2	2.0	79.2	8.1	3.0	1.0
NexGen 1511B2RF	4.4	35.0	80.9	30.1	11.3	1.7	76.9	8.9	2.7	1.0
NexGen 3348B2RF	3.7	35.6	81.6	30.2	9.4	2.0	76.5	8.7	3.3	1.0
PhytoGen 367WRF	4.0	35.2	80.6	29.4	10.4	1.0	76.2	9.4	2.7	1.0
PhytoGen 499WRF	4.2	35.6	82.3	31.1	10.9	2.0	76.0	8.9	3.0	1.0
Stoneville 4946GLB2	4.3	35.3	81.0	30.7	10.7	1.7	76.6	9.3	2.7	1.0
Test average	4.1	35.9	81.0	30.1	10.0	1.6	77.2	8.9	2.7	1.0
CV, %	2.6	1.2	0.8	2.8	3.1	43.6	0.9	1.7	--	--
OSL	<0.0001	<0.0001	0.0155	0.0255	<0.0001	0.4726	0.0003	<0.0001	--	--
LSD	0.2	0.7	1.1	1.4	0.5	NS	1.2	0.3	--	--

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

TEXAS A&M AGRILIFE EXTENSION

Brad Johnson Extension Replicated Variety Trial 2013 Ropesville, Texas

Variety	MIC	LENGTH	UNIF.	STRENGTH	ELON.	Rd	+b	CGRD	LEAF	LOAN	Lint Yield	$/acre value
FM 2484	3.8	1.21	81.2	32.2	7.8	78.6	7.7	31-1	1	0.5750	1673	961.98
FM 2989	4.0	1.17	82.0	32.1	7.7	78.8	7.9	31-1	2	0.5745	1698	975.5
PHY 499	4.3	1.14	82.7	33.1	9.2	77.8	8.6	31-1	3	0.5680	1670	948.56
DP 1044	4.6	1.11	81.5	31.7	8.0	75.5	8.2	31-2	2	0.5715	1695	968.69
ST 4946	4.6	1.09	81.6	32.3	10.6	76.2	9.0	31-3	2	0.5600	1593	892.08
FM 2011	4.5	1.13	81.5	31.6	11.0	78.5	8.7	21-2	1	0.5780	1650	953.7

2013 CAP Trial

Tony Streety Farms – Smyer, TX
Conducted by Kerry Siders, Texas AgriLife

Planted – 05/17/2013
Harvested – 11/15/13
Drip irrigated trial
Sales Rep – Keith Waters, 806-778-8339
Agronomist – Kenny Melton, 806-786-5088

CAP TRIAL
COTTON AGRONOMIC PERFORMANCE TRIAL

Variety	Lint Yield	Turnout	Mic	Staple	Stren	Unif	Loan Value	Lint Value/A
ST 5458B2RF	2,075	0.356	4.1	38	30.8	81.1	57.25	$1,188
FM 1320GL*	2,023	0.374	3.7	37	29.0	80.4	57.20	$1,157
ST 4946GLB2	2,002	0.364	3.6	39	31.8	83.6	57.35	$1,148
BX 1445GLB2	1,909	0.367	3.6	42	29.9	84.2	57.25	$1,093
FM 2484B2F	1,876	0.330	3.4	43	31.9	84.6	55.75	$1,046
ST 4747GLB2**	1,812	0.313	3.5	39	28.0	81.7	56.95	$1,032
FM 1944GLB2	1,788	0.333	3.5	39	31.1	81.4	57.25	$1,024
FM 9250GL	1,710	0.340	3.2	39	31.8	81.3	53.85	$921
FM 2989GLB2	1,702	0.336	3.6	39	29.3	83.5	57.15	$973
FM 9180B2F	1,695	0.327	3.7	38	30.5	82.2	57.30	$971
FM 2011GT	1,662	0.361	3.9	39	29.6	83.7	57.30	$952

Loan Value calculated from 2013 CCC Loan Schedule using uniform color grade of 21 and leaf grade of 3.
***Tested as BX 1320GL; **Tested as BX 1347GLB2**

FiberMax cotton

Bayer CropScience

Stoneville

2013 CAP Trial

Tony Streety Farms – Smyer, TX
Conducted by Kerry Siders, Texas AgriLife

Planted – 05/17/2013
Harvested – 11/15/13
Drip irrigated trial
Sales Rep – Keith Waters, 806-778-8339
Agronomist – Kenny Melton, 806-786-5088

CAP TRIAL
COTTON AGRONOMIC PERFORMANCE TRIAL

Variety	Seed Cotton Yield (lbs/A)	Seed Turnout (%)	Seed Yield (lbs/A)	Ginning Cost / cwt	$ / Ton Seed	Seed Value /A	Net Value /A
ST 5458B2RF	5828	0.525	3062	$3.25	$265	$216	$1,404
FM 1320GL*	5413	0.480	2597	$3.25	$265	$168	$1,325
ST 4946GLB2	5500	0.614	3377	$3.25	$265	$269	$1,417
BX 1445GLB2	5200	0.512	2662	$3.25	$265	$184	$1,277
FM 2484B2F	5683	0.485	2756	$3.25	$265	$181	$1,226
ST 4747GLB2**	5799	0.490	2839	$3.25	$265	$188	$1,220
FM 1944GLB2	5364	0.636	3410	$3.25	$265	$277	$1,301
FM 9250GL	5036	0.540	2717	$3.25	$265	$196	$1,117
FM 2989GLB2	5065	0.530	2682	$3.25	$265	$191	$1,163
FM 9180B2F	5190	0.493	2558	$3.25	$265	$170	$1,142
FM 2011GT	4601	0.490	2256	$3.25	$265	$149	$1,101

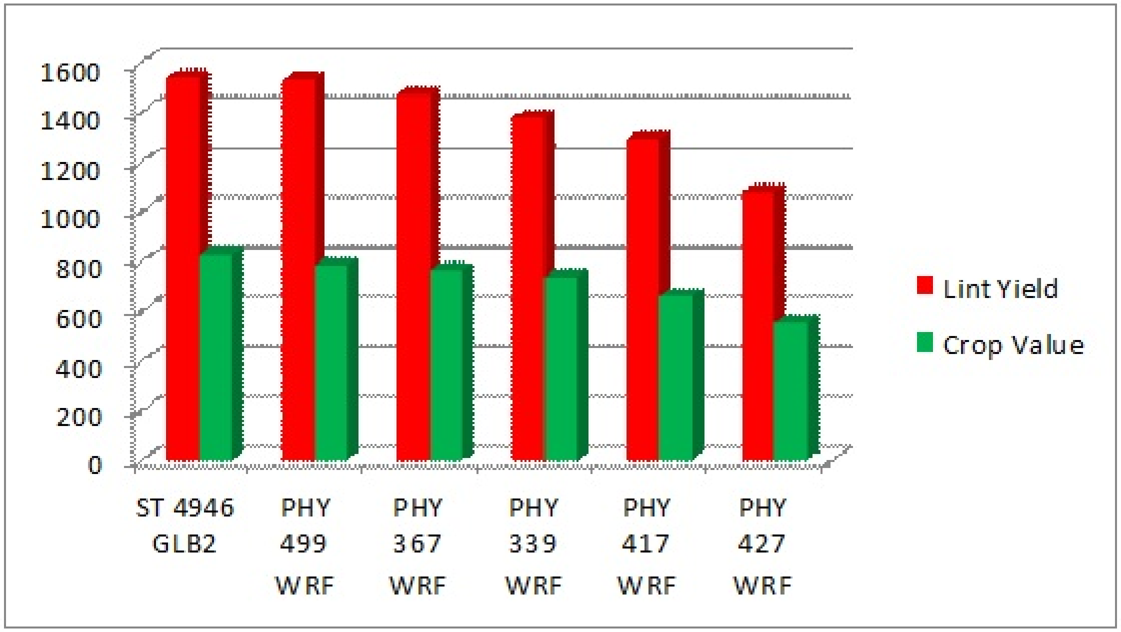
*** Tested as BX 1320GL; ** Tested as BX 1347GLB2**

FiberMax cotton   Bayer CropScience   Stoneville

Lint Yields and Fiber Properties from the PhytoGen Replicated On-Farm Innovation Trial Conducted in Hockley Co., Texas. 2013.

Variety	Lint Yield	Turn Out	Length	Unif.	Strength	Mic	Loan	Crop Value
ST 4946 GLB2	1540	0.35	1.18	82.6	31.6	3.6	0.5378	$828
PHY 499 WRF	1531	0.34	1.17	81.9	31.4	3.3	0.5133	$786
PHY 367 WRF	1471	0.33	1.18	82.4	30.3	3.3	0.5197	$763
PHY 339 WRF	1377	0.34	1.18	82.1	29.9	3.7	0.5363	$739
PHY 417 WRF	1291	0.34	1.16	81.1	29.7	3.2	0.5125	$663
PHY 427 WRF	1080	0.30	1.16	82.0	30.6	3.3	0.5133	$555

Variety	Lint Yield	Crop Value
ST 4946 GLB2	1540	$828
PHY 499 WRF	1531	$786
PHY 367 WRF	1471	$763
PHY 339 WRF	1377	$739
PHY 417 WRF	1291	$663
PHY 427 WRF	1080	$555



Texas A&M AgriLife Extension

2013 VARIETY TESTING IN VERTICILLIUM WILT FIELDS

Coordinator
Dr. Terry Wheeler, Texas A&M AgriLife Research, Lubbock

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

Variety	Plants/ ft	%Wilt on 8/29	%Defol- iation	Lbs lint/a	Turn out	Yield x Loan ($/a)	Loan ($/lb)
FM 2484B2F	2.9	12	23	2170	0.3071	1241	0.5720
FM 2322GL	1.8	9	23	2149	0.3440	1225	0.5700
FM 2989GLB2	2.5	18	29	2132	0.2930	1221	0.5725
FM 9170B2F	2.6	12	29	2012	0.3021	1161	0.5773
FM 2011GT	2.6	19	38	2037	0.3118	1156	0.5678
CT 13545B2RF	2.7	19	24	1979	0.2983	1143	0.5773
NGX 3306	2.9	23	45	1997	0.2968	1126	0.5640
DP 1219B2RF	2.6	12	22	1945	0.2998	1122	0.5770
FM 9180B2F	2.7	21	28	1951	0.2846	1114	0.5710
ST 4747GLB2	2.6	14	34	2054	0.2946	1107	0.5390
FM 1944GLB2	2.6	22	41	1872	0.2937	1073	0.5733
PHY 4433-27	2.5	34	72	1409	0.2675	1063	0.4893
AT Nitro-44B2RF	2.8	21	22	1928	0.2989	1052	0.5455
DP 1212B2RF	3.1	19	68	1948	0.2932	1045	0.5363
PHY 499WRF	2.7	36	63	1902	0.2989	1037	0.5453
NG 4111RF	2.6	16	35	1795	0.2972	1031	0.5745
DP 0912B2RF	2.9	16	58	1781	0.3038	1001	0.5618
FM 9250GL	2.8	14	39	1834	0.2876	996	0.5433
NG 1511B2RF	2.5	23	53	1816	0.3008	990	0.5450
FM 1320GL	2.2	18	60	1717	0.3049	962	0.5603
CG 3428B2RF	2.4	22	56	1649	0.3151	950	0.5758
AT EdgeB2RF	3.1	24	53	1825	0.2762	948	0.5195
PHY 4433-25	2.8	23	64	1708	0.2944	944	0.5193
NG 3348B2RF	2.2	13	28	1719	0.2816	915	0.5323
NGX 2322B2RF	2.6	18	40	1599	0.2807	912	0.5705
PHY 3080-1	2.6	25	48	1696	0.2911	887	0.5568
NG 2051B2RF	2.7	21	39	1623	0.2542	870	0.5358
AM 1532B2RF	2.7	24	54	1591	0.2749	869	0.5460
CG 3156B2RF	2.7	35	62	1667	0.2955	864	0.5185
CT 13363B2RF	2.7	33	54	1558	0.2758	863	0.5540
AM 1504B2RF	2.1	25	44	1440	0.2668	806	0.5600
PHY 339WRF	2.9	13	34	1848	0.3140	690	0.5753
MSD(0.05)	0.4	13	15	199	0.021	104	0.025

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

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

Variety	Micro- naire	Length	Unif- ormity	Strength	Elong- ation	Rd	+b	Leaf
AM 1504B2RF	3.70	1.115	82.90	29.25	10.35	79.85	8.35	2.5
AM 1532B2RF	3.55	1.175	81.40	29.90	9.40	78.10	7.85	2.5
AT EdgeB2RF	3.50	1.175	81.20	32.50	9.00	75.95	7.05	4.0
AT Nitro-44B2RF	3.80	1.235	81.95	34.20	9.25	76.90	7.60	4.0
CG 3156B2RF	3.65	1.075	79.30	27.20	8.60	78.90	7.60	3.0
CG 3428B2RF	4.35	1.180	81.90	29.20	9.95	79.45	8.50	2.0
CT 13363B2RF	3.40	1.195	82.90	32.40	9.55	77.25	7.75	2.5
CT 13545B2RF	3.80	1.170	81.25	33.00	9.10	79.70	8.30	2.0
DP 0912B2RF	4.05	1.110	81.80	31.50	9.55	78.65	8.00	3.0
DP 1212B2RF	3.95	1.190	82.85	31.30	9.85	76.10	8.15	4.5
DP 1219B2RF	4.25	1.155	80.50	31.75	8.95	78.25	8.40	1.5
FM 1320GL	3.85	1.115	80.95	30.95	10.00	78.55	7.75	3.0
FM 1944GLB2	4.00	1.175	81.10	30.35	7.80	79.40	7.55	2.0
FM 2011GT	3.75	1.140	81.40	29.60	8.70	78.40	7.40	2.5
FM 2322GL	4.45	1.170	81.46	30.95	7.50	77.05	7.80	2.5
FM 2484B2F	3.75	1.230	82.55	31.35	8.20	80.10	7.25	2.5
FM 2989GLB2	3.70	1.160	80.85	30.55	7.60	79.90	7.55	2.5
FM 9170B2F	3.70	1.210	81.45	31.20	8.05	81.00	7.50	1.5
FM 9180B2F	3.95	1.195	82.20	30.40	8.80	78.50	7.40	2.5
FM 9250GL	3.50	1.210	82.30	31.40	7.35	77.70	7.30	3.5
NG 1511B2RF	3.95	1.140	81.05	31.50	10.25	75.85	7.90	4.0
NG 2051B2RF	3.90	1.110	79.90	27.85	8.45	75.55	7.25	3.5
NG 3348B2RF	3.65	1.160	82.35	31.50	8.85	75.45	7.95	3.5
NG 4111RF	4.00	1.155	82.05	33.00	9.30	77.10	8.60	1.5
NGX 2322B2RF	3.90	1.160	82.15	30.45	8.90	77.75	7.95	2.5
NGX 3306	3.70	1.210	83.35	32.25	10.25	78.95	8.40	3.0
PHY 3080-1	4.15	1.135	82.50	30.00	11.10	75.65	8.15	3.5
PHY 339WRF	3.95	1.185	82.95	32.60	9.60	80.05	7.85	2.0
PHY 4433-25	3.10	1.145	81.45	31.20	10.25	78.15	7.85	3.5
PHY 4433-27	2.95	1.120	81.50	31.10	9.75	77.25	7.65	3.0
PHY 499WRF	4.10	1.140	82.35	32.00	10.15	76.00	7.95	4.0
ST 4747GLB2	3.75	1.205	81.20	29.35	7.65	77.05	6.60	3.5
MSD(0.05)	0.63	0.043	1.84	1.38	0.71	2.42	0.39	1.9

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

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

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

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

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

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

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

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

Variety	Plants/ft	%Wilt on 8/24	%Defol-iation	Lbs lint/a	Turnout	Yield x Loan ($/a)	Loan ($/lb)
FM 2484B2F	2.99	19	30	1752	0.395	936	0.534
ST 4747GLB2	2.49	21	32	1547	0.384	822	0.532
FM 2011GT	2.64	26	36	1445	0.370	792	0.548
FM 2322GL	1.94	16	22	1404	0.421	786	0.560
PHY 339WRF	2.63	40	25	1320	0.379	739	0.560
FM 9180B2F	2.74	30	34	1321	0.338	735	0.557
FM 2989GLB2	2.71	21	39	1372	0.362	733	0.534
NG 4111RF	2.47	28	40	1296	0.369	713	0.551
PHY 367WRF	2.94	36	52	1222	0.377	682	0.558
DP 1212B2RF	2.92	39	65	1204	0.358	670	0.557
DP 1321B2RF	2.97	29	60	1212	0.372	667	0.551
FM 1944GLB2	2.15	24	31	1175	0.372	665	0.566
DP 1219B2RF	2.44	26	33	1157	0.377	649	0.561
FM 9250GL	2.65	15	36	1218	0.356	644	0.529
DP 1311B2RF	2.74	19	25	1173	0.397	643	0.548
DP 0912B2RF	2.18	36	45	1188	0.379	639	0.538
NG 1511B2RF	2.44	27	51	1180	0.391	636	0.539
NG 3348B2RF	2.44	23	36	1193	0.357	630	0.529
PHY 3080-1	2.59	30	38	1173	0.364	617	0.526
AM 1532B2RF	2.34	30	41	1101	0.356	610	0.554
NG 4010B2RF	2.39	31	45	1069	0.347	605	0.566
NG 2051B2RF	2.76	29	47	1098	0.317	595	0.543
CT 13545B2RF	2.93	36	46	1099	0.369	591	0.538
FM 1320GL	1.72	21	35	1069	0.372	590	0.552
CG 3156B2RF	2.75	40	61	1196	0.374	585	0.489
NGX 2322B2F	2.49	26	40	1061	0.354	579	0.546
PHY 4433-27	2.49	33	62	1137	0.352	570	0.502
CT 13125B2RF	2.45	40	64	1129	0.364	567	0.502
CT 13363B2RF	2.02	42	48	1018	0.373	566	0.557
CT 13663	2.76	45	54	1080	0.340	548	0.507
AT EdgeB2RF	2.74	41	58	1119	0.330	537	0.480
AM 1504B2RF	1.75	37	34	925	0.342	473	0.511
MSD(0.05)	0.40	17	9	217	0.023	115	0.048

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

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

Variety	Micro-naire	Length	Unif-ormity	Strength	Elong-ation	Rd	+b	Leaf
AM 1504B2RF	3.37	1.06	80.05	27.60	8.55	78.55	8.20	2.5
AM 1532B2RF	3.40	1.11	81.30	28.25	8.60	78.65	8.50	1.5
AT EdgeB2RF	3.27	1.09	80.30	29.15	7.45	76.20	7.35	5.0
CG 3156B2RF	3.24	1.06	80.05	28.25	7.55	78.40	7.55	4.0
CT 13125B2RF	2.82	1.11	80.50	30.10	8.90	78.90	8.15	2.5
CT 13363B2RF	3.31	1.18	81.40	31.60	8.45	79.45	7.95	2.5
CT 13545B2RF	3.20	1.12	80.60	32.65	7.55	80.00	8.35	2.0
CT 13663	3.33	1.07	80.65	29.60	8.95	77.30	7.95	4.0
DP 0912B2RF	3.98	1.06	81.20	29.30	8.40	77.55	8.30	2.5
DP 1212B2RF	3.54	1.12	81.20	31.15	9.55	77.10	8.10	3.0
DP 1219B2RF	3.45	1.12	80.70	31.20	7.45	80.45	8.45	1.0
DP 1311B2RF	3.85	1.07	81.60	28.80	8.85	78.65	7.80	2.0
DP 1321B2RF	3.55	1.08	82.10	31.10	9.60	76.75	8.30	2.5
FM 1320GL	3.60	1.09	81.55	30.70	8.35	78.75	8.30	2.0
FM 1944GLB2	3.64	1.14	80.65	30.55	6.70	81.70	7.40	1.5
FM 2011GT	3.39	1.12	81.65	30.50	7.35	78.00	7.45	3.0
FM 2322GL	3.85	1.15	80.90	29.95	6.65	79.00	7.65	2.5
FM 2484B2F	3.45	1.21	81.70	31.95	6.90	80.10	7.35	3.5
FM 2989GLB2	3.48	1.09	80.55	29.90	7.20	79.00	7.90	2.5
FM 9180B2F	3.44	1.16	81.45	31.70	7.45	80.15	7.60	2.5
FM 9250GL	3.31	1.12	80.40	29.70	7.10	78.85	7.50	3.5
NG 1511B2RF	3.65	1.07	81.60	30.80	9.55	77.35	8.55	2.5
NG 2051B2RF	3.44	1.10	80.35	28.75	7.25	78.25	7.60	3.5
NG 3348B2RF	3.28	1.13	81.90	31.25	7.90	78.00	7.90	3.0
NG 4010B2RF	3.59	1.11	81.80	31.45	8.00	78.20	8.50	2.0
NG 4111RF	3.53	1.09	81.80	32.60	8.65	77.35	8.70	2.5
NGX 2322B2F	3.32	1.13	81.20	30.15	7.60	78.45	8.20	2.0
PHY 3080-1	3.37	1.10	81.40	29.75	8.50	77.30	8.65	3.5
PHY 339WRF	3.50	1.15	82.05	32.00	8.65	79.30	7.65	2.5
PHY 367WRF	3.57	1.12	82.95	31.95	9.10	75.85	8.10	2.5
PHY 4433-27	3.02	1.11	81.25	30.55	8.10	78.25	7.90	4.0
ST 4747GLB2	3.70	1.12	79.80	27.90	6.50	76.55	7.15	3.5
MSD(0.05)	0.33	0.035	1.97	2.16	0.54	1.7	0.42	1.83

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

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

Variety	Plants/ft	%Wilt on 7/31	%Defol-iation	Lbs lint/a	Turnout	Yield x Loan ($/a)	Loan ($/lb)
NG4111RF	2.7	37	48	1965	0.287	1111	0.5658
FM2484B2F	3.2	23	30	1910	0.278	1025	0.5370
FM 2322GL	1.7	38	30	1746	0.317	1016	0.5820
FM2011GT	2.9	27	50	1774	0.298	984	0.5545
ST 4747GLB2	2.6	34	46	1884	0.297	979	0.5195
DP1321B2RF	3.4	27	73	1675	0.299	909	0.5430
FM9180B2F	3.1	34	42	1632	0.259	904	0.5543
NGX3306	3.5	36	47	1594	0.288	897	0.5628
PHY339WRF	3.3	33	42	1623	0.279	877	0.5400
FM 1320GL	1.6	49	57	1512	0.295	873	0.5775
ATNitro-44B2RF	3.1	31	40	1692	0.263	847	0.5008
FM9250GL	2.7	31	57	1512	0.273	825	0.5458
PHY3080-1	2.4	32	55	1457	0.281	820	0.5630
NG1511B2RF	2.8	37	63	1415	0.295	803	0.5675
DP1044B2RF	3.2	32	36	1590	0.258	800	0.5035
FM2989GLB2	2.8	37	41	1470	0.260	791	0.5383
NG3348B2RF	2.3	28	35	1472	0.251	785	0.5335
PHY4433-27	2.6	38	64	1473	0.277	784	0.5325
FM1944GLB2	2.7	36	45	1501	0.249	772	0.5143
DP1219B2RF	2.7	33	38	1526	0.261	767	0.5025
DP1311B2RF	1.8	54	36	1465	0.263	764	0.5215
PHY367WRF	2.9	35	68	1432	0.267	748	0.5225
DP0912B2RF	2.5	35	60	1340	0.275	715	0.5335
NG2051B2RF	2.9	37	51	1293	0.238	703	0.5435
CT13883	2.9	36	57	1332	0.254	684	0.5133
CG3156B2RF	3.1	40	67	1272	0.281	674	0.5300
PHY375WRF	3.0	31	76	1259	0.261	651	0.5173
CT13125B2RF	2.9	33	74	1196	0.276	609	0.5093
AM1532B2RF	2.6	41	53	1109	0.245	591	0.5328
AM1504B2RF	1.8	45	47	1076	0.246	543	0.5047
CG3428B2RF	1.4	54	54	977	0.251	506	0.5178
CT13513RF	2.1	55	67	932	0.251	499	0.5350
MSD (0.05)	0.3	14	13	137	0.023	73	0.0600

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

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

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

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

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

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

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

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

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

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

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

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

Variety*	RelWilt	Rank Wilt	RelDef	Rank Defol.	Relyield	Rank Yield	RelValue	Rank Value
FM 2484B2F	0.428	3	0.390	2	0.978	1	0.968	1
BX 1445GLB2	0.708	34	0.499	12	0.959	2	0.968	2
NG 4111RF	0.597	16	0.538	16	0.874	4	0.885	3
FM 9170B2F	0.401	1	0.438	6	0.871	5	0.868	4
FM 2322GL	0.409	2	0.325	1	0.847	7	0.853	5
ST 4747GLB2	0.503	5	0.531	14	0.905	3	0.846	6
FM 2011GT	0.536	9	0.631	25	0.869	6	0.840	7
FM 9180B2F	0.647	23	0.496	10	0.845	8	0.839	8
NGX 3306	0.671	28	0.618	23	0.832	10	0.824	9
FM 2989GLB2	0.525	7	0.505	13	0.836	9	0.808	10
PHY 339WRF	0.628	20	0.462	9	0.809	13	0.800	11
DP 1311B2RF	0.680	30	0.423	4	0.819	12	0.794	12
NG 4012B2RF	0.572	13	0.572	18	0.782	17	0.787	13
DP 1321B2RF	0.637	22	0.920	48	0.799	15	0.785	14
FM 1944GLB2	0.592	15	0.499	11	0.769	19	0.753	15
CT 13545B2RF	0.697	33	0.536	15	0.765	20	0.753	16
FM 9250GL	0.469	4	0.625	24	0.784	16	0.743	17
DP 1212B2RF	0.713	36	0.954	50	0.781	18	0.739	18
AT Nitro-44B2RF	0.565	12	0.425	5	0.807	14	0.738	19
DP 1044B2RF	0.525	8	0.414	3	0.820	11	0.734	20
FM 1320GL	0.659	25	0.688	31	0.742	23	0.723	21
DP 1219B2RF	0.552	10	0.441	7	0.742	22	0.712	22
PHY 3080-1	0.684	31	0.697	32	0.730	27	0.710	23
NG 4010B2RF	0.696	32	0.635	26	0.711	30	0.709	24
NG 1511B2RF	0.665	26	0.797	41	0.725	28	0.705	25
NG 3348B2RF	0.517	6	0.458	8	0.752	21	0.701	26
DP 0912B2RF	0.710	35	0.765	36	0.724	29	0.694	27
PHY 499WRF	0.807	43	0.793	40	0.736	25	0.685	28
ST 4946GLB2	0.679	29	0.767	37	0.738	24	0.674	29
PHY 375WRF	0.632	21	0.874	45	0.703	33	0.674	30
NGX 2322B2RF	0.611	19	0.551	17	0.687	36	0.672	31
NG 2051B2RF	0.602	17	0.595	20	0.705	32	0.668	32
PHY 565WRF	0.608	18	0.591	19	0.696	35	0.647	33
AT EdgeB2RF	0.819	44	0.820	43	0.735	26	0.645	34
AM 1532B2RF	0.719	37	0.705	33	0.651	42	0.638	35
NG 5315B2RF	0.843	46	0.681	30	0.636	48	0.634	36
ST 6448GLB2	0.765	39	0.603	21	0.676	38	0.633	37
CG 3156B2RF	0.873	48	0.882	46	0.698	34	0.631	38
CG 3787B2RF	0.794	40	0.791	39	0.644	45	0.630	39
PHY 4433-25	0.668	27	0.781	38	0.710	31	0.627	40
CT 13363B2RF	0.957	51	0.752	35	0.645	44	0.627	41
CG 3428B2RF	0.806	42	0.743	34	0.637	47	0.617	42
PHY 4433-27	0.798	41	0.924	49	0.681	37	0.612	43
PHY 367WRF	0.564	11	0.843	44	0.667	39	0.611	44
CT 13883	0.649	24	0.666	28	0.661	41	0.601	45
CT 13663	0.868	47	0.808	42	0.662	40	0.600	46
DP 1252B2RF	0.935	50	0.680	29	0.596	49	0.595	47
CT 13125B2RF	0.721	38	1.000	51	0.650	43	0.593	48
DP 1359B2RF	0.577	14	0.642	27	0.640	46	0.582	49
AM 1504B2RF	0.823	45	0.610	22	0.576	50	0.541	50
CT 13513RF	0.931	49	0.898	47	0.484	51	0.463	51

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

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