Hockley and Cochran Counties Pest Management Program

2009 Annual Report

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Sherri Clements, TPMA Representative
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Kevin Silhan
Ricky Davidson
Duane Cookston
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TABLE OF CONTENTS

2009 HOCKLEY - COCHRAN IPM PROGRAM HIGHLIGHTS WITH PEST AND CROP SUMMARY

The Hockley - Cochran IPM Steering Committee functions as a program area committee for both counties. There are four 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 2009 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 scouts.

Ten individuals farms with 31 fields were involved with the scouting program in 2009. A total of 2800 acres were scouted. This acreage included irrigated and dryland cotton, and irrigated grain sorghum. The scouting program participants were assessed a scouting fee of $5.50 for irrigated and $4.00 for dryland per acre. Fields were visited every week and a scouting report from Ashley Davidson and Michelle Curran were given to producers the same day. Scouts attended Scout School in Lubbock as well as in-office training as needed. The scouts field inspections included: insect pest and beneficial populations; weed and disease's noted; and crop stage and growing conditions. Visitation with the producer concerning the field report was done by the IPM Agent when a situation presented an educational opportunity and pest warranted some action by the producer. In September soil samples were taken by Willie Marc Payne from most all scouting program fields for southern cotton root-knot nematode analysis.

2009 Pest and Crop Summary

The 2009 crop production year will be remembered for a dry windy spring, good mid summer moisture and an extremely dry and cool late summer. Below are excerpts from the ***West Plains IPM Update*** newsletter which describe the conditions throughout the season.

May 1, 2009

Most all areas of Hockley and Cochran Counties are in need of a good soaking rains. Though some isolated areas have received some recent rainfall, most like the Levelland area have not had measurable precipitation over 0.5 inch since last fall. Fire danger remains high on rangeland and other areas with dry grass and other fuels. However, spring is here and planting season is just around the corner. Pre-irrigation continues on many acres while some land preparation still needs to be completed. The freeze damage to wheat, a month ago now, was devastating to early planted wheat. Though later planted wheat did not completely escape the freeze damage the dry conditions have made it difficult to keep up with water demands. These are challenging times with high input costs, uncertain farm bill ramifications and 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.

June 3, 2009

Cotton ranges from 3 true leaves to still in the bag. The rain received Tuesday evening may be what many were waiting for to go ahead and get the remaining acres of dryland planted. Generally that which is up is doing well. The scouts have started checking fields and are finding thrips in most all fields. Those treated with an at-plant insecticide on seed or in-furrow are holding down damage and reproduction of thrips. Some of those areas which did receive a decent shower of more than 4/10" seem to have slowed thrips development as well. I will warn those producers who do not have protection from thrips that they need to monitor closely and be prepared to treat. Products such as Orthene, dimethoate, or Bidrin are labeled for use. Threshold is the number of thrips in excess of the number of true leaves. As an example if more than 2 thrips on average are being found in a field with 2 or fewer true leaves on average than that field has reached threshold. Once cotton reaches the 4-5 true leaf stage thrips become less important. We have not noted other insect pests yet. It will not be a surprise though if we were to find insect pests such as loopers, beet armyworms, or bollworms to mention a few. Not to alarm you, just letting you know that these pests are always ready to take advantage of an opportunity that you or Mother Nature gives them.

In general **peanuts** are doing well. Weeds are the primary pest in peanuts right now. Based on weed species and size, make a plan and get it sprayed. We have another Valor herbicide trial this year. It is at the Rusty Trull Farm near Morton. We are seeing very good weed control and very little impact on stand. From last years trial we saw no impact on yield.

Postemerge products include: paraquat, Basagran, 2,4-DB, Dual Magnum, Frontier, Storm, Pursuit, Ultra Blazer, Poast Plus, Classic, Cadre, or Select. Each of these have specific uses alone or in combination. There are restrictions, rotation considerations, and other limitations. However, these are good herbicides and surely can help manage most problems we have. Understand that the longer you wait to control weeds, the fewer options you have and the more expensive they become. This holds true for most all crops.

June 12, 2009

Cotton ranges from just planted to squaring 8 leaf cotton plants. Rain on Wednesday the 10th brought a unexpected blessing for many acres of dryland. Many acres of cotton was planted dry or had been planted a few weeks ago, had germinated, and was very near running out of moisture. Hopefully the moisture met in the middle so that this crop can root on down into fair moisture below. Many producers were trying to straighten out the situation created from last weeks storms. Suffice to say this time of year is always a bit ugly. Many producers are preoccupied with replanting and sand-fighting. However, very quickly they will be getting back to managing weed, nematode, fertility issues.

The scouts and I are finding very few insect pest this week. Thrips are not as severe as a week or two ago. Most cotton which we are checking is 3-5 leaf cotton and is beginning to out pace thrips damage. In my inspection of fields with a history of southern root-knot nematode I am beginning to find 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 playing out. Vydate C-LV at 17 oz per acre has provided excellent protection against yield loss especially following the use of Temik. Timing is critical though. An application should be made on the heals of when Temik's effectiveness is lessening. If you have questions about the use of Vydate give me a call.

Peanuts are doing well. Some thrips damage but nothing which one should be concerned. I am starting to see blooms in many fields.
Grain sorghum is also doing well. Weeds are a top priority right now. I have seen a few yellow sugar cane aphids, but no significant numbers. Very few whorl feeding worms have been noted.

June 23, 2009
Varied amounts of rain, from not much out on the state line to over 3 inches on the east side of Hockley County were received over the weekend. Some wind and very little hail accompanied these rain events. Most of this last rain fell nicely where it would soak in. For most producers this was good timing. Crop damage has been almost impossible to track from week to week from area to area.

It is very quiet in respect to insect pests. The scouts and I are not finding much on the cotton plant. Even thrips numbers on young 0-3 true leaf cotton have declined dramatically since the rain. I have seen some pests on weeds which may turn their attention to cotton when interest runs out on the weeds. A few fleahoppers can be seen in weedy areas; an occasional adult Lygus as well.

Cotton ranges from cotyledon to 1/3 grown square. Square set is good (+90%) in those scouting fields which are squaring (20%). No insect induced square losses have been noted to date.

Most **peanuts** have been blooming now for a couple of weeks. No insect or disease pests have been noted to date. 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.

Most producers are still trying to straighten out some of this mess. Many acres have been planted to **grain sorghum.**
A document which I think you will find helpful is Dr. Brent Beans' **Quick Guide to Weed Control in Grain Sorghum** at:
http://lubbock.tamu.edu/sorghum/pdf/sorghumweedcontrolguide09.pdf

My priority list for this week is:

Fertility -where are you at in reaching your realistic yield goal?
Irrigation -let the moisture from the rain carry us for a while, but be ready to start watering, probably just before July 4.
Weed control - get it started and get it done
Plant map - what is the plant telling you? You may need a plant growth regulator sooner than later with this good moisture.
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?

July 1, 2009

The weather pattern continues this week with some scattered and general rainfall and moderate temperatures. In general the rain has been a welcome blessing. It will help the irrigated acres and for certain the dryland acres. If you are interested in tracking heat units try this link: http://www.weather.com/outlook/agriculture/growing-degree-days/

To date it appears that we are doing okay on heat unit accumulation for Levelland compared to the average.

COTTON

Based on the IPM Scouting Program cotton fields the average number of total nodes is 10 (range 5 to 13); the 1st fruiting branch at 7 (range 5-8); 97% (range 88-100%) square retention of 1st position; node length is 0.78" (range of 0.3"-1.5"), and plant populations average 41,000 per acre (range 23,000 to 58,000). I have not seen a bloom so far but do anticipate that by July 6 I will. Based on average plant mapping data and going into bloom with 8 nodes above white flower, we should generally begin bloom around July 18th. This also means that 50% of the acres could bloom before this date and 50% will bloom after this date. I suspect a majority of the acres in Hockley county will begin blooming around July 22-26. This is later than what we would like to see. However, with a last effective bloom date of August 20, that still gives us almost four weeks of effective blooming. So prospects are good.

Cotton pests are very quiet at the present. Plant growth regulators (PGR's) and weed control has been the order of the day for the past several days. Under current conditions, cotton producers need to consider those varieties which need help from a PGR in balancing vegetative growth with reproductive growth.

Cotton fleahopper numbers continue to remain very low. Lygus adults are very hard to find this week. A few colonies of cotton aphids have been noted this week. Beneficial insect and spider numbers are low. No bollworm eggs or larvae were found this week in scouting fields.

PEANUTS

Peanuts are doing very well under current conditions. Most all fields are well into bloom and are beginning to set pegs. Weed control still remains as pest priority number one. Only concern this week has been the yellowing or light green color. This would be due to the cloudy/rainy weather. Remember, iron chlorosis occurs as interveinal chlorosis, not complete leaf chlorosis. Once the sun comes back out they will green back up. This is a normal situation on chalky soils after a rain or even irrigation. So be careful not to spend too much on trying to correct this. You can't buy sunlight. Do pay attention to crown and foliar disease possibilities.

GRAIN SORGHUM

Sorghum ranges from still in the bag to boot stage. Limited whorl feeding by larvae pest has been common. Also limited are aphids in general - greenbugs, yellow sugar cane aphids and cornleaf aphids. Beneficial insect and spiders are present in most fields with numbers dependent on limited food source.

July 10, 2009

Peanuts continue to bloom with pegging beginning or going strong. Irrigation is critical at this point in peanuts. No insect pests have been noted in peanuts. I have seen some small brown beetles in many peanut fields near the crown. No feeding or other damage has been associated with these insects. These are a scarab beetle which is probably associated with crop residue. Weeds continue to be challenging. There are excellent herbicides labeled for peanuts. Just remember though that the options become fewer and more costly as the season progresses.

Cotton ranges from 6 leaf stage to 15 true leaves with 8-9 squares. I have begun to see an occasional bloom in early planted or volunteer cotton. Generally, it will be after July 15 before we really see cotton beginning to bloom.

Cotton insect pests remain very quiet. In the IPM Scouting Program the scouts and I have not noted anything of real importance. Hence beneficials are light in number as well. I still anticipate a fairly normal bollworm year - some chronic numbers scattered across the area from now through first part of August then an acute run from mid to late August. We can anticipate some aphid issues as we move into August as well. Those will probably be associated with fields that end up with excessive nitrogen. I mention this now so that as we do go into bloom through peak bloom the first week of August that we can wrap-up all fertilizing activities based on realistic yield goals.

Weeds seem to be the most dominate pest again this week. A long varied list of weed species noted throughout both counties. If you need help identifying a weed and coming up with a control plan give me a call. Remember, these weeds serve as host to many of our cotton pests. You know there are some farms which seem to do a good job of keeping field margins clean of weeds. To many this may seem as a waste of time and only for show. In my 20 years of checking fields as an Extension Agent I have observed that those showy farms typically have less insect problems. It is because they have eliminated many of the primary insect hosts before they become a host and subsequently move to the crop. So it looks good, it cost a little in labor, chemical, and diesel. However, it may be cheaper than a spray bill for a few hundred acres.

Grain sorghum planted in late April and early May is heading or very close to doing so. Monitor head worms by shaking grain heads into a bucket. When we consider the average value of grain sorghum and expected cost of treatment, the economic threshold is about 1.5 headworms per sorghum head. Some insecticides to consider for management include: Baythroid 2E @ 1.3 – 2.8 ozs./ac. or (1 gal. to 98 – 46 acres), Karate 1E @ 2.56 – 3.84 ozs./ac. or (1 gal. to 50 – 33 acres), Warrior 1E @ 2.56 – 3.84 ozs./ac. or (1 gal. to 50 – 33 acres), Mustang Max @ 1.75—4.0 fl. oz/ac. or (1 gal. to 73—32 acres) and Asana XL @ 5.8—9.6 fl. oz/ac. or (1 gal. to 22—13 acres).
For more detailed information go to: http://agrilifebookstore.org/ Search for B-1220, and view PDF. Page 22 has a very good discussion of headworms, their thresholds and management. Corn leaf aphids have been noted in area fields, helping beneficial numbers build. BE CAREFUL WITH HERBICIDE DRIFT, milo is very sensitive to Roundup.

July 21, 2009

Most of you are aware of the storms which rolled through our area over the weekend, unless you are still in the mountains. A majority of Hockley and Cochran counties faired well through the storms. However, the area around Morton, especially to the north, were devastated by extreme winds and hail. Keep them in your prayers. Not sure if it will help much but this link: http://lubbock.tamu.edu/cotton/pdf/cropreplantoptions09.pdf discusses practical last planting dates for many of our options. We have past most of those dates now. Waiting for a wheat crop may be the best thing. Please call if you would like to run some of this by me.

Insect activity has picked up somewhat. In **grain sorghum** this week, very light whorl feeding, causing the typical shot hole feeding damage, has been noted. Corn leaf aphids have also been noted scattered throughout area fields. This is giving beneficial insects something to feed upon and build their numbers. Sorghum fields which have headed need to be scouted for head worms. See last issue, #6, for details on headworm management.

Peanuts have been noted with a few foliage feeders. Nothing near threshold in terms of foliage damage and no damage to developing pods have been found. Pepper spot and leaf spot have been found scattered through some fields. I would recommend a foliar fungicide at this time, especially with the current weather pattern.

Cotton continues to make progress. Some progress has been slow. I want to be optimistic about the prospects of everyone having good cotton yield potential. Let us look at an average cotton plant right now: 15 total nodes; first fruiting node at 7^{th} node; two first position bolls; +90% retention of bolls and squares; six nodes above uppermost 1^{st} position white flower; and is 18" tall for a 1.2" height to node ratio. This is a very good plant physiologically. This is an average so 50% of cotton fields are more advanced, while 50% are not as advanced. Many fields are looking like it may be this week before first bloom. This is not entirely a bad thing, just that we have about four more weeks of effective bloom period or that time in which a bloom can realistically make a harvestable boll. But as usual, I will remind you that **WE WILL MAKE COTTON IN AUGUST!**

Fleahoppers are not of much concern in blooming cotton. Lygus are still not easily detected in fields or even margins. I suspect as cotton gets larger and develops more bolls then we may see increased activity. Cotton aphids are also very few and far between.

July 29, 2009

I am very encouraged by these recent rains. Although, I know some hail has come with this rain. In Levelland we received 5.52 inches during the month of June, with the majority of that after the 15^{th}. Now in July we have received 3.2 to date, with 2.9 in the last 10 days. As I write this newsletter we have a good chance of rain through the end of the week. 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 some irrigation pressure. Dryland acres are doing well for the most part.

I will start with **grain sorghum** since it is relatively easy to summarize right now. A few Greenbug and spider mite colonies have been noted feeding on the lower leaves in area sorghum patches. Beneficial insects and spiders are present and helping hold things in check. No midge have been found to date. Headworms need to be monitored very closely on older post boot fields. I would encourage producers to begin monitoring these pests on a regular basis.

Peanuts are doing considerably well. So far an excellent pod set has been noted in most fields in Hockley and Cochran counties. 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. With this weather pattern preventative fungicides are recommended.

Cotton ranges from 1/3 grown square (not yet blooming) to four nodes above white flower (past 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.

The scouts 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 cotton bollworm activity. I would encourage all to increase their scouting for this pest over the next month especially in non-Bt cotton varieties. A discussion on bollworm management and other considerations can be found on the next page.

August 7, 2009

Cotton ranges from just beginning to bloom with as many as nine nodes above white flower (NAWF) to past physiological cutout with 4 NAWF. Looking at the IPM scouting program fields as a representation of the area cotton crop, we see that 15% of the fields have reached physiological cutout (< 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 23 - 27th (400 HU divided by 20 HU/day = 20 days, added to the 3rd thru the 7th of August). The remaining 80% 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 are low. 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. The scouts and I are still occasionally finding isolated colonies 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 change, aphids have a more difficult time in maintaining populations. Continue to monitor non-Bt cotton varieties as reports of bollworm activity is getting closer. 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.

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 894-2406.

<u>August 14, 2009</u>

Scattered showers to begin this week for some, and low 90 degree temperatures for all is adding up to a relatively good finish for most. As we move into the next 10 to 14 days the decision on irrigation termination will need to be made. In general I would say that most everyone needs to be prepared to keep the water going on pivots until the last week of this month, unless rains set in and provide at the least 0.25" per day. Obviously, siderolls and row-water irrigation should be complete very soon if not already; drip will begin tapering off over the next 4 weeks.

A majority of the cotton crop in Hockley and Cochran counties has an average of 3.8 nodes above white flower (NAWF) with a range of 2-6 NAWF. Based on actual heat unit accumulations, from our own National Weather Service observer data, we have been averaging 19.6 heat units per day the last 7 days. This is optimum range for heat unit accumulation. Therefore, the plant is maturing from one node to the next along the main stem every 3 days. In other words if the 16^{th} node is blooming today it will take 60 more heat units for the 17^{th} node to bloom. If you are racking up 20 HU per day that is only 3 days. This is also dependent on solar quality. Cloudy days will slow the process as well. I also want to remind you that we are at or very near the period of time when the likelihood of a bloom developing into a harvestable boll is a very low. I suspect that the last boll has now been set this week. I say this because eighty percent of the fields I have visited this week I have seen most all fruit less than a 4 day old boll being shed from the plant. So do not blame it on worms, or some other lack of management. Also, this is not a bad thing as it allows those 1^{st} position bolls, which by the way have been retained at very high percentile this year, to achieve maximum weight.

<u>**Cotton bollworms**</u> still have not developed into a threat. Although reports to the south of us have reported some activity and some local fields have pushed to near 3,000 small worms per acre we still have not found treatable levels of cotton bollworms. Conditions weather wise and crop wise are very ripe for problems. So keep scouting, especially those fields with more than 4

nodes above white flower. Fields which are " bolled out the top" will not be as attractive to egg laying moths.

August 21, 2009
Not much has changed over the last week in **cotton** other than finding a few more very light aphid numbers, a bit more Lygus activity nearer alfalfa fields, and sub threshold numbers of cotton bollworms. This activity has primarily been noted in cotton which has late growth of squares and blooms, non BT cotton, or may have excessive nitrogen levels.   That is not to say that we have wholesale problems or that we even need to be treating fields. What I am saying though that it only brings to attention how quiet it has been all summer on the insect front and we finally have just a little something to look at. Some fields, the earliest planted, are close to a point of maturity that many of these 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 can cling on through till 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. The seed production from these few weeds is a mere drop in the bucket compared to what is already present in the soil, and they probably will not slow harvest. I know money is tight, and we really need to make sure we have sufficient amount available to put out a good harvest aid treatment.

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. Another 30 days and some peanuts could be dug.

Grain sorghum has been making good progress where rains or irrigation have been received. A few headworms can be found and may need attention. No midge or greenbugs noted this week. Spider mites have increased in some areas.

cotton. That is a realistic scenario.
How can we use this to better our management? Okay, so dream with me here. We will plant to a stand 3 plants per foot or 39,208 plants per acre on every acre, consistently. We water, fertilize, control weeds, manage insects, utilize PGR's, etc. consistently and timely across the whole field. We use a variety which will set fruit at node six and quit at node 13. It will have 2 bolls on node 6, 3 bolls on nodes 7 and 8, 2 bolls on nodes 9-11, and finally 1 boll on nodes 12 and 13. This is a total of 16 bolls. Now that seems like a lot, but it is very possible if managed properly and consistently. These bolls are also of a good size taking 300 bolls to make a pound of lint. So now let us calculate the yield: (39,208 X 16) / 300 = 2091 pounds of lint per acre.

Wow. That is +4 bale cotton. Ladies and gentlemen we are producing that right now. You say who? No names. Sure it is on mostly drip, but it is also being done on pivot irrigation. Okay do not think for a moment that I am saying that this is what you need to be doing is producing 4-5 bale cotton. In fact, some who may be doing this have reached a point of diminishing returns when their primary goal is just high yield. My point here is that excellent, profitable yields are achieved by **consistency**. A consistent stand, consistent and necessary inputs, and finally achieving a consistent fruit load. What kills my calculations when a producer asks me to calculate yield for them are the inconsistent stand and inconsistent boll load**. If you want to better your profit margin through production be consistent, timely, and precise.**

In **GRAIN SORGHUM** the worms are the primary concern still. Very few fields have needed to be treated for head worms. Just a mention what has been working well on a mix of worms, aphids, and concern for mites and midge has been Karate or Warrior plus Lorsban. A product out there which one might consider is Cobalt, which is a premix of the previous mentioned chemicals. The beneficial insect and arachnid numbers have been sufficient to help in reducing most of these pest populations.

This will be the last weekly issue. I will hold the last few issues for harvest time to provide you with cotton harvest aid information.

2009 EDUCATIONAL ACTIVITIES

The Extension Agent-IPM seeks to provide educational programs to all clientele in Hockley and Cochran Counties. The following is a brief overview of the year's educational activities.

Newsletters:
- No. Issues Written __15_____________
- No. Non-Extension Clientele on Mailing List __85______
- No. Non-Extension Clientele on E-mail List ___208_____

Radio Programs ___15_________
TV Interviews ____2__________
Newspaper Articles:
- No. Prepared _20_________
- No. Newspapers Carrying __2________

Farm Visits __957_____
Scouts Trained _2_________
Consultants Trained _1________
CEU Credits Offered _24______
Pest Management Steering Committee Meetings ____3_______
Presentations Made:
- County Meetings ___64_____
- Field Days/Tours ___5______
- Multi-County/Regional Meetings ___5______
- Schools ____3____________
- 4-H Clubs ___10_____
- Professional Meetings __2_____
- No. Master Gardener meetings__0_____ No. contacts__1933____

No. Applied Research/Demonstration Projects ___23_____
- No. Involving Cotton ___20_____
- No. Involving Peanuts ___1____

No. Direct Ag Contacts _8457______
Other Direct Contacts _2358_

AgriLIFE EXTENSION
Texas A&M System

Cotton IPM Education on the West Plains - 2009

Relevance. Cotton is the most important agricultural commodity in Hockley and Cochran Counties, valued at over 150 million dollars annually. The use of integrated pest management (IPM) for the production of cotton is critical for the protection of the environment, sustain-ability and profitability. The use of IPM is a national priority for agriculture and has been directed locally by the IPM Steering Committee of the Texas AgriLife Extension Service since 1996. This educational effort has been directed to all cotton producers in Cochran and Hockley Counties, representing some 400,000 acres, with emphasis on those participating in the IPM Scouting Program.

Response. The Cotton IPM Education efforts are directed by the Hockley and Cochran Counties IPM Steering Committee. This committee consists of four individuals involved in agricultural production from each county and then one professional crop consultant with a significant clientele base in both counties. This committee has been responsible for the review of past efforts, future needs as they apply to cotton IPM, prioritize efforts, plan efforts, implement efforts, and assist with evaluation of efforts. Texas AgriLife Extension Service has delivered the following educational opportunities to address this relevant issue:

- Poster presentation at the 2009 Beltwide Cotton Conferences in San Antonio on cotton root-knot nematode work for the previous three years, 4200 in attendance,
- West Plains Cotton Conference in January, gave presentations on cotton pests and pesticide laws and regulations, with 77 attending
- Cotton Production Series with Spade Coop in Anton, March, April & September, 193
- in attendance
- Cotton Production Update with IPM Scouting Program participants (10) May through October
- West Plains IPM Update Newsletter from April through October, 15 issues to 370 recipients via mail and electronic delivery
- Radio reports with High Plains Radio Network on cotton issues year round, 17 programs
- High Plains Scout School in Lubbock with 75 in attendance in May, local scouts attend; I present Weed identification and recognizing herbicide damage presentation
- Cotton Harvest Aid meetings at Buster's Gin, Cochran Farm Show, Spade Coop, and Hockley Farm Expo with 134 in attendance in September and October
- Established six cotton variety trials which demonstrated new experimental lines
- Evaluated 32 cotton lines for verticillium wilt tolerance with Dr. T. Wheeler, TAES
- Evaluated cotton variety and Temik for cotton root-knot nematode management
- Provided daily IPM education to 10 cotton producers through scouting, scouting report, report interpretation, management suggestions, and management evaluation for insects, weeds, disease, and other agronomic considerations
- Evaluated and demonstrated cotton harvest aid products at two locations in September and October

For more information contact:
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Mail: 1212 Houston St., Ste. 2

The Texas Pest Management Association, Plains Cotton Growers Association, Texas AgriLife Research, Texas Tech University, Texas Department of Agriculture, Texas Boll Weevil Eradication Foundation, US Department of Agriculture NRCS, and many supporters from the local agricultural industry contributed greatly to these educational endeavors.

A retrospective-post evaluation with components of the standard Cotton IPM Evaluation was used. There were 46 evaluations sent to e-mail newsletter list, 7 scouting program participants, and 18 from the hard copy newsletter list on October 27, 2009. Of those 3 (6.5 %) were returned from the e-mail list, 3 (42.9 %) from the scouting program, and 6 (33.3%) from the hard copy newsletter list. The overall response was 17 % (12 of 71).

Results.

IPM EVALUATION SURVEY FOR HOCKLEY/COCHRAN COTTON 2009

Do you regularly monitor or have your crop monitored for pests and natural enemies?

No 17%

Yes 83% If Yes, what % of acres are monitored? 64%

Management practice / decision	**BEFORE YEAR 2004**			**In 2009**		
	NO	**YES**	**If YES, what % of acres**	**NO**	**YES**	**If YES, what % of acres**
Soil sample for nematodes	75	*25*	17 %	*58*	*42*	40 %
Use nematode tolerant varieties	*75*	*25*	67 %	*58*	*42*	30 %
Use verticillium tolerant varieties	*64*	*36*	75 %	*73*	*27*	48 %
Base fertility on soil analysis	*18*	*82*	71 %	*18*	*82*	84 %
In-season tillage for weeds	*0*	*100*	96 %	*0*	*100*	89 %
Dealt with Horseweed	*73*	*27*	43 %	*36*	*64*	46 %
Use yellow herbicide preplant	*0*	*100*	98 %	*0*	*100*	95 %

Does Integrated Pest Management (IPM) reduce your risks associated with crop production?

No 0% *Yes* 91% *Unsure* 9%

- If Yes, please explain how in the space provided.

Provides good information. Helps reduce some inputs and spending only where we have to. It makes me aware of what I need to keep an eye on. It helps eliminate potential problems. I treat fields on a threshold basis. I am better informed.

Do you consider natural enemies when making pest management decisions?

Never 0% *Seldom* 0% *Sometimes* 17% *Often* 33% *Always* 50%

Does IPM usually maintain or increase yields while reducing input costs resulting in increased net profits?

No 0%

Yes 100% -if yes, by an average of what dollar amount/acre? $ 31

If you were to assign a figure to represent the value of the IPM Program to your operation including monitoring crop development, pest and natural enemies, conducting applied research and demonstrations and providing educational programs, what would the value per acre be?

68 $ per acre

Has the IPM program been instrumental in your decision to adopt new technology on your farm? *No 0% Yes 91% Unsure 9%*

- *If yes, which new technology and how did it help?*

Verticillium; Nematode Tolerant Varieties; Fertility / Irrigation; Using Bollguard seed and other seed such as Roundup Ready, also harvest aids; Current information; Harvest aids, weed control, cotton varieties; Bollgard seed; I would not have implemented minimum till and no till practices if it were not for IPM Program; Planting Flex and B2 cotton variety; Reduced tillage = Less cost (diesel, labor, equipment)

Key Points

- ***Eighty-three percent (10 of 12) indicate that they now regularly monitor or have their cotton crop monitored for pests and natural enemies, as compared to 70% in 2006***
- ***Ninty-one percent (10 of 11) of those responding indicated that IPM reduced their risks associated with crop production***
- ***Ninty-one percent (10 of 11) of those responding indicated that the IPM program had been instrumental in their decision to adopt new technology on the farm***
- ***All respondents (11 of 11) indicated that IPM usually maintains or increases yields while reducing input costs resulting in increased net profits by an average of $31 per acre. Which is up from $25.83 in 2006***
- ***When asked to assign a figure to represent the value of the IPM Program to their operation including monitoring crop development, pest and natural enemies, conducting applied research and demonstrations and providing educational programs, they indicated $68 per acre. This value is up from $47.50 per acre in 2008 and $32.14 in 2006***

In summary and based on the above points, it is apparent that the IPM Program in Hockley and Cochran Counties has had a positive impact on the production system, the profitability of the producers and the economic and environmental viability of these counties' in general.

The Cochran/Hockley IPM Steering Committee members are: Chris Locke, Mike Thetford, Sherri Clements, Rex Carr, Duane Cookston, Gerron Jeffcoat, Bryan Bentley, Kevin Silhan, and Ricky Davidson. 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 cotton 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.

Educational programs of Texas AgriLife Extension are open to all people without regard to race, color, sex, disability, religion, age, or national origin. Texas AgriLife Extension is a member of the Agricultural Program of the Texas A&M System. Texas AgriLife Experiment Station Issued in furtherance of Cooperative Extension Work in Agriculture and Home Economics, Acts of Congress of May 8, 1914, as amended, and June 30, 1914, in cooperation with the United States Department of Agriculture. Ed Smith, Director, Texas AgriLife Extension, The Texas A&M System.

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

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

David Kerns, Megha Parajulee, Ed Bynum, Monti Vandiver, Manda Cattaneo, Kerry Siders and Dustin Patman
Extension Entomologist-Cotton, Research Entomologist-Cotton, Extension Entomologist, EA-IPM Bailey/Parmer Counties, EA-IPM Gaines County, EA-IPM Hockley/Cochran Counties, EA-IPM Crosby County

South Plains & High Plains

Summary:

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

Objective:

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

Materials and Methods:

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

All foliar sprays consisted of Orthene 97 (acephate) applied at 3 oz-product/acre with a CO_2 pressurized hand boom calibrated to deliver 10 gallons/acre. Thrips were counted weekly by counting the number of larvae and adult thrips from 10 plants per plot. Whole plants were removed and inspected in the field. Each plot was harvested in entirety in 2007, using a stripper with a burr extractor, and a 1/1000th acre portion was harvested from each plot using an HB hand stripper from tests in 2008-09. Data were analyzed using linear regression models and PROC MIXED with means separated using an F protected LSD ($P \leq 0.05$) (SAS Institute 2003).

Results and Discussion:

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

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

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

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

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

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

Acknowledgments:

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

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Table 1. Foliar treatment regime timings.			
	2007	2008	2009
1) Untreated check	X	X	X
2) Automatic treatment on week 1	X	X	X
3) Automatic treatment on weeks 1 and 2 (only week 2 in 2008)	X		X
4) Automatic treatment on weeks 1, 2 and 3	X	X	X
5) Automatic treatment on week 2		X	X
5) Automatic treatment on weeks 2 and 3	X	X	X
6) Treatment based on the Texas AgriLife Extension Threshold[a]	X	X	X
7) Treatment based on the above threshold with 30% larvae	XX		

[a]One thrips per plant from plant emergence through the first true leaf stage, and one thrips per true leaf thereafter until the cotton has 4 to 5 true leaves

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

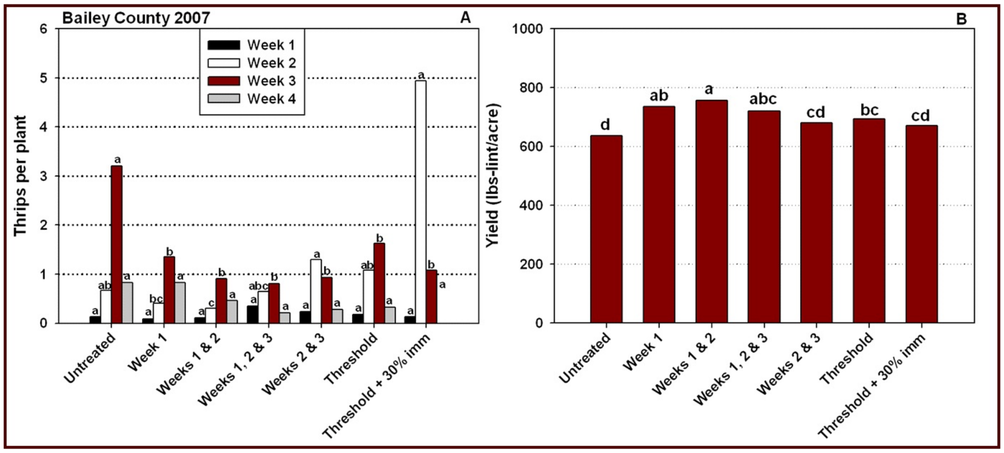

Figure 1. (A) Number of thrips per plant at various treatment regimes. (B) Yield of cotton exposed to various treatment regimes for thrips. Same colored bars capped with the same letter are not significantly different based

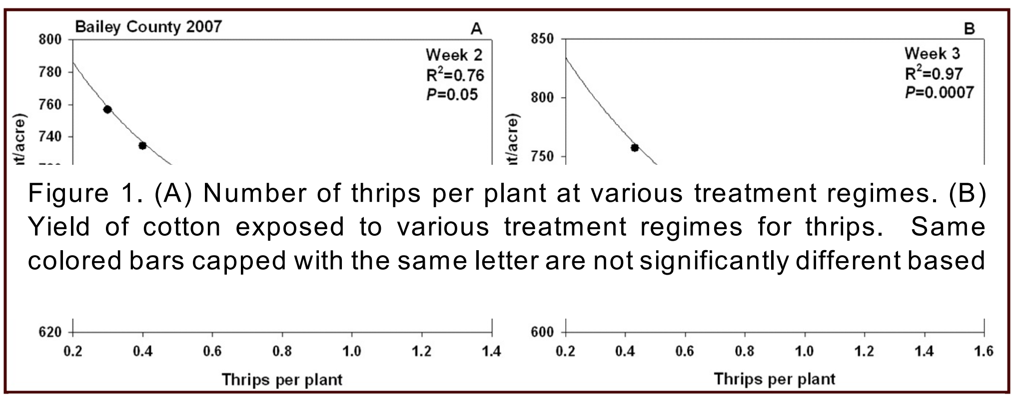

Figure 2. Linear relationship between thrips per plant and yield

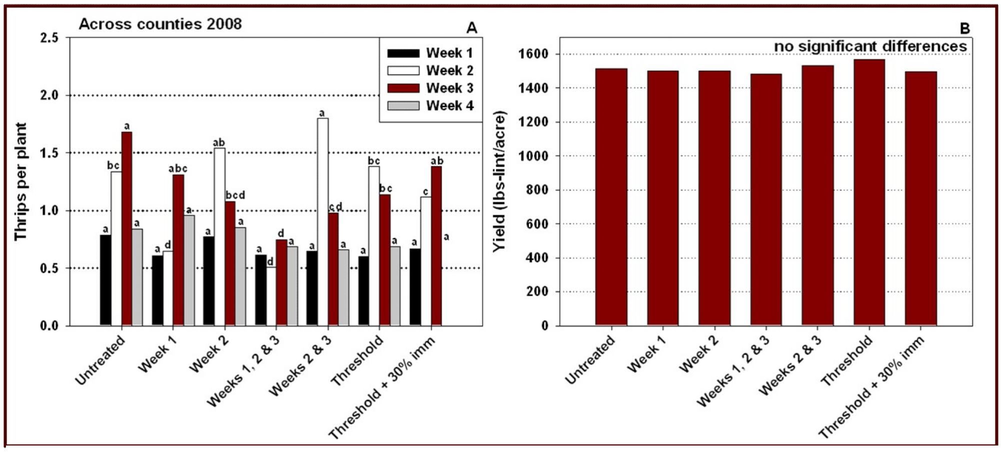

Figure 3. (A) Number of thrips per plant at various treatment regimes. (B) Yield of cotton exposed to various treatment regimes for thrips. Same colored bars capped with the same letter are not significantly different based

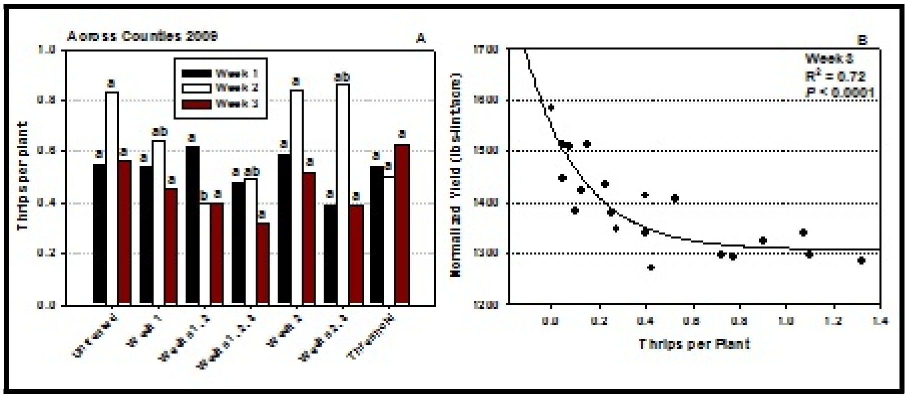

Figure 4. (A) Number of thrips per plant at various treatment regimes; same colored bars capped with the same letter are not significantly different based on LSMEANS and a *F* protected (LSD, *P* < 0.05). (B) Linear relationship

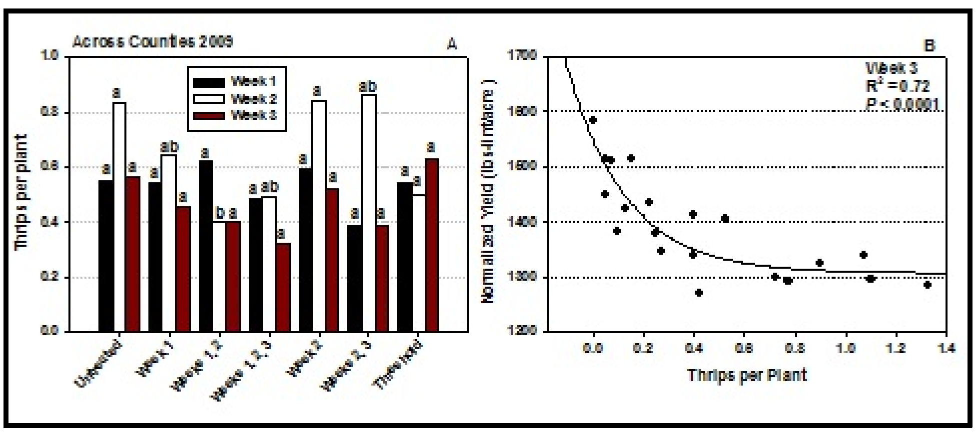

Figure 5. (A) Number of thrips per plant at various treatment regimes; same colored bars capped with the same letter are not significantly different based on LSMEANS and a *F* protected (LSD, *P* < 0.05). (B) Linear relationship between thrips per plant and yield.

AgriLIFE EXTENSION
Texas A&M System

Development of a Binomial Sampling Plan to Estimate Thrips Populations in Cotton to Aid in IPM Decision Making

Cooperators: Bryan and Kevin Bentley, Cliff Bingham, Richard Boozer, Klint Forbes, Chad Harris, Jerry and Aaron Vogler, Eric Seidenberger, Rodney Gully, Ricardo Aburto – Cotton Growers / Texas AgriLife Extension Service

David Kerns, Mark Muegge, Megha Parajulee, Monti Vandiver, Warren Multer, Emilio Nino, Dustin Patman, Scott Russell and Kerry Siders
Extension Entomologist-Cotton, Extension Entomologist, Research Entomologist-Cotton, EA-IPM Bailey/Parmer Counties, EA-IPM Glasscock, Reagan and Upton Counties, EA-IPM Castro/Lamb Counties, EA-IPM Crosby County, EA-IPM Terry/Yoakum Counties, EA-IPM Hockley/Cochran Counties

South Plains, High Plains and Permian Basin

Summary:

Thrips are problematic throughout much of the U.S. cotton belt and can negatively impact early-season cotton if curative action is not taken. In this study we compare two different methods (visual and cup) for sampling thrips on seedling cotton, and using these sampling methods we began the process of developing a binomial sampling plan. This study was conducted in a variety of locations across the Texas High Plains and far west Texas in commercial cotton fields. The sample data collected from both methods of sampling were used to determine how many cotton leaves were infested to mean thrips density relationship needed to develop the binomial sample plan using the following formula ($P(I)=1-e^{-m[LN(amb-1)/(amb-1-1)]}$). Taylor's power law effectively modeled the thrips sample data from both sample methods. Taylor's coefficients suggest that thrips nymphs tend to be more clumped than adult thrips, but neither appear to be highly clumped. This may be an artifact of small sample unit size. The relationship between the P(I) cotton leaves and thrips mean density was also modeled well by using the method of Wilson and Room (1983). The relationship was similar for both sample methods and thrips age classes, thus both sample methods should perform equally well. However, additional data is needed to determine the relative cost reliability of each sample method and develop sample plans. This will be completed in 2010.

Objective:

To determine how many cotton leaves were infested to mean thrips density relationship needed to develop the binomial sample plan using the following formula ($P(I)=1-e^{-m[LN(amb-1)/(amb-1-1)]}$) and determine which of the two sampling methods (visual or cup) was more effective.

Materials and Methods:

This study took place in a number of commercial cotton fields located across far west Texas and the Texas High Plains. Western flower thrips were sampled in each cotton field in an area at least 60 rows x 200 ft that was left untreated by foliar and/or preventative treatments for thrips.

Thrips at each location were counted from individual plants on a weekly basis from crop emergence to the 5 true leaf stage. Fifty sampling bouts per field were conducted for each sampling method. Each sampling bout consisted of three plants from the same location within the field.

The two sampling methods evaluated were conducted using two destructive sample methods (Figure 1); a visual and a 16oz plastic cup sampling method. Individual plants were removed from the soil by gently grasping the cotton stem at the soil line and pulling straight up. Then the cotton plant was either subjected to visual or the cup sample method. Visual inspection was accomplished using a sharpened pencil to pry apart folded or creased leaf tissue to expose hidden thrips then adults and nymphs were counted and recorded. The cup method was employed by inserting the cotton plant into the cup and shaken vigorously for several seconds to dislodge any thrips on the plant into the cup. Adult and nymph thrips dislodged into the cup were counted and recorded, then discarded.

Sample data from both methods was used to determine the proportion cotton leaves infested to mean thrips density relationship (Wilson and Room 1983) needed for development of the binomial sampling plan. With enough data, a binomial sequential sampling plan will be developed following procedures developed by Wilson and Room (1983a,b). The relationship of the mean and proportion of thrips infested cotton leaves will be determined by:

$$P(I)=1-e^{-m[LN(amb-1)/(amb-1-1)]}$$

where P(I)=the proportion of thrips infested leaves, a and b are parameters from Taylor's power law (1961), and m=the mean density at which a management decision is needed.

The variance component k of the negative binomial distribution will be determined:

$$k = m/(am^{(b-1)}-1)$$

where a and b are parameters from Taylor's power law (1961) and m is the threshold.

The threshold used in this study is 1 thrips per true leaf and is a nominal threshold as an economic threshold has yet to be established for western flower thrips in cotton.

Results and Discussion:

Taylor's power law effectively modeled the mean/variance relationship for total thrips for both sample methods, thrips age classes and pooled across age classes (Table 1). Interestingly, Taylor's a-coefficient was less than 1 regardless of age class or sample method. Wilson (1994) regards Taylor's values that are less than 1, as artifacts of curve fitting or random sample variability, which is likely the reason here. Regressing the observed P(I) cotton leaves on the estimated P(I) cotton leaves illustrate how well the method of Wilson and Room (1983a,b) modeled the relationship between mean adult and nymph thrips density and proportion thrips infested cotton leaves (Figure 1 A & B). This was true for both sampling methods, although the cup sample method appeared to provide a better fit than the visual sample method as evidenced by the greater variability explained by the model for the cup sample method relative to the visual sample method. This may have occurred because of the potential for greater sampler error associated with the visual method.

The effect of age class on thrips aggregation was evident for both sample methods. Immature thrips tend to hide in the terminals of the cotton plant and are less mobile than winged adults, thus it was not unexpected to find that nymphs, regardless of sample method, exhibited a more aggregated distribution than adults (Figure 2 A & B). Wilson and Room (1983a) reported similar findings for *Heliothis* spp. age classes. The estimated P(I) for the nominal ET of 1 thrips per leaf derived using the binomial model of Wilson and Room (1983a, b) for the cup and visual sample methods was 0.77 and 0.74 respectively. These values were determined from the pooled thrips data, although using adult thrips would provide similar results.

These preliminary results indicated that further analysis is needed to determine if pooling across thrips age classes should be used to determine the upper decision line for the SPRTs developed.

Acknowledgments:

Appreciation is expressed to Cotton Incorporated CORE Projects and in part by Plains Cotton Growers, Inc.

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

Table 1. a and b of Taylor's power law and coefficient of determination.			
Thrips age classes and Pooled age classes	a	b	R_2
Cup Sample Method			
Adult	0.6035	1.366	0.958
Nymph	0.7349	1.290	0.928
Pooled	0.6231	1.379	0.937
Visual Sample Method			
Adult	0.6873	1.397	0.963
Nymph	0.9436	1.3840	0.912
Pooled	0.7711	1.490	0.950

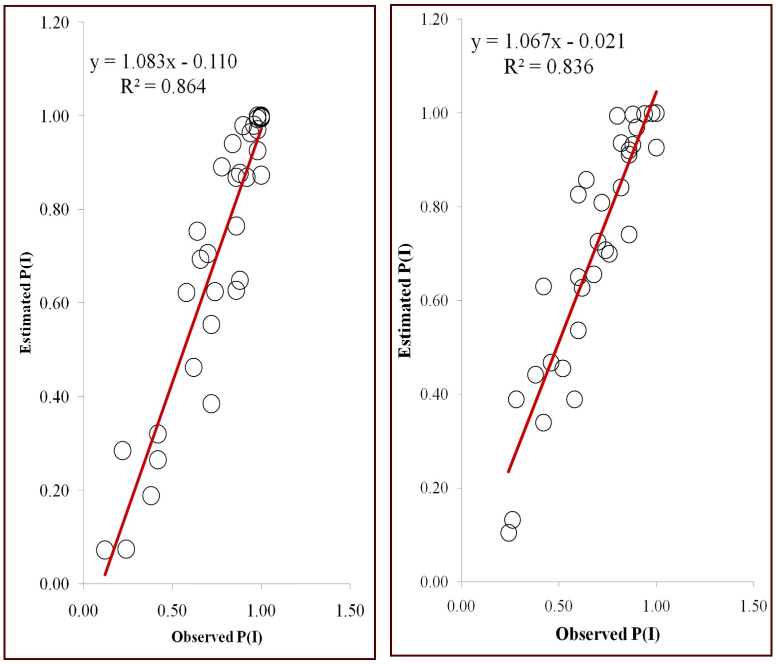

Figure 1. A) Cup sample method total thrips: relationship between observed and estimated P(I) cotton leaves; B) Visual sample method total thrips: relationship between observed and estimated P(I) cotton leaves.

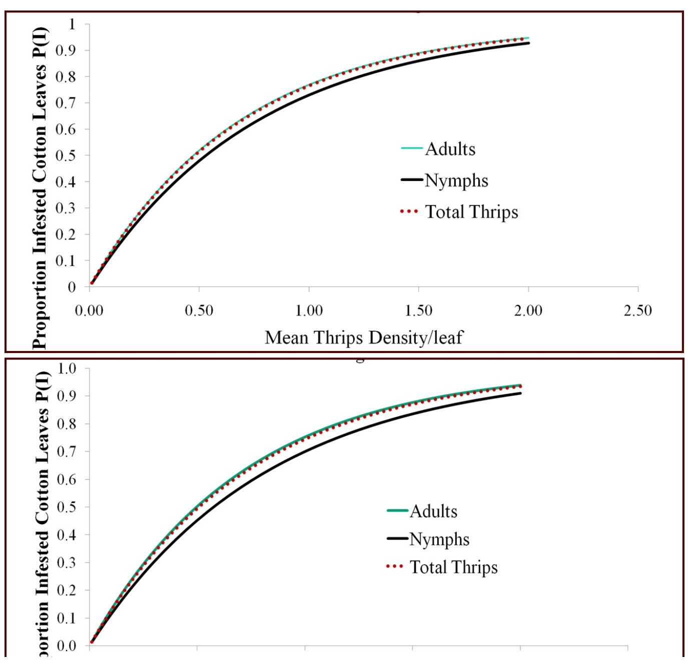

Figure 2. A) Cup sample and B) Visual sample methods: proportion of infested cotton leaves as a function of density for different thrips

AgriLIFE EXTENSION
Texas A&M System

Potential of Diamond Insecticide for Lygus Management in the Texas High Plains, 2009

Cooperators: Glenn Farms, Cotton Grower / Dana Palmer, Private Consultant / Texas AgriLife Extension Service

David Kerns, Dustin Patman, Brant Baugh, Kerry Siders, Bo Kesey
Extension Entomologist-Cotton, EA-IPM Crosby/Floyd Counties, EA-IPM Lubbock County, EA-IPM Hockley Counties and Extension Program Specialist-Cotton

Hockley County

Summary:

Pretreatment counts showed no significant differences among treatments in the Lygus populations. Post-treatment observations at 7 DAT showed a sharp decline in Lygus densities across all treated plots, while the densities increased in the untreated plots dropped to 4 per 6 ft-row. All treatments showed significant decreases in Lygus populations at 7 DAT. At 14 DAT, all of the treatments had fewer Lygus than the untreated, but Diamond + Acephate was the only treatment that had no Lygus. However, Diamond + Acephate did not significantly differ from Acephate alone, Diamond + Carbine, or Diamond at 9 or 12 fl-oz. Carbine and Diamond at 6 fl-oz appeared weak, but the rate of Carbine tested (1.7 oz) is considerably lower than the recommended rate for Lygus (2.3 oz). The low rate was tested to determine if there was an additive effect when combined with a low rate of Diamond (6 fl-oz). These data suggest that combining the two low rates of Diamond and Carbine may be a viable strategy for managing mixed populations of adult and immature Lygus. Based on external Lygus feeding stings, all of the treatments had fewer stings than the untreated 7 DAT. Treatments containing Acephate had the fewest stings but did not statistically differ from Diamond at 9 fl-oz, Carbine or Diamond + Carbine. Based on simple linear regression, when sampling dime sized bolls, one might expect to find about 17 damaged locules per 100 stings. When looking across several similar studies relationships between external damage and yield were evident. Although the R^2 was much lower than desired, it appears that notable yield reduction may occur when 100 bolls average 1 sting per boll. This suggests that a Lygus treatment action threshold may be developed utilizing external damage as the determining factor. Approximately 100 stings would equate to 16-17 damaged locules per 100 bolls.

Objective:

This test was designed to evaluate the efficacy of Diamond (novaluron) insecticide alone or mixed with adulticidal insecticides for managing late season infestations of Lygus, to quantify external and internal damage on bolls, and impact on yield.

Materials and Methods:

This study was conducted west of Wolfforth, TX, in Hockley Co. Cotton 'FiberMax 9063B2F' was planted on May 15, 2009, and irrigated using sub-surface drip irrigation. The test was a RCB design with 4 replicates. Plots were 4 rows × 60 ft in length. Treatments are listed in Table 1.

The Lygus populations were estimated by drop cloth method (3 ft x 2 ft) and expressed as mean density/6 ft-row (Figure 1). Bolls of approximately 10 to 20-mm diameter (~150 to 200 HU maturity) were collected at random from each plot for damage assessment. Lygus population counts were made at 0, 7, 14 and 21 DAT, and boll samples were collected at 0 and 7 DAT.

Pre-treatment observations on Lygus densities and boll samples were taken on August 20, 2009. Fifteen bolls were collected from each plot to assess external and internal damage. The samples were collected in Ziploc bags and stored in a refrigerator until damage observations were recorded. The insecticide application was made on August 20 using a four nozzle CO_2 pressurized hand boom sprayer with a discharge rate of 10 gallons/acre.

The external damage assessment was made by counting the number of feeding punctures using a 10× magnifying lens (Figure 2a). For internal damage, bolls were cut cross sectional with two cuts, one at about one third and next at two thirds from the tip (Figure 2b). The number of locules damaged were counted and recorded as internal damage.

The plots were harvested on November 10 using an HB hand stripper. A 1/1000th acre section was harvested from the middle two rows of each plot. Samples were ginned at Texas AgriLife Ginning Facility in Lubbock.

Data were analyzed using PROC MIXED and means separated using protected LSD ($P \leq 0.05$). The relationship between external and internal damage, and yield and external damage was made using linear regression analyses. Data from other Lygus tests were included in these analyses for a more robust data set.

Results and Discussion:

Pretreatment counts taken on August 21 (0 DAT) showed no significant differences among treatments in the Lygus populations (Figure 1a). At this time, Lygus were averaging 12.26 per 6 ft-row, well above the action threshold of 4 per 6 ft-row.

Post-treatment observations at 7 DAT showed a sharp decline in Lygus densities across all treated plots, while the densities in the untreated plots dropped to 4 per 6 ft-row (Figure 1b). The Lygus population continued to drop across all plots at 14 and 21 DAT indicating that the initial infestation was probably a solitary event originating from a nearby alfalfa field that had been recently cut (Figures 2a & b).

At 14 DAT, all of the treatments had fewer Lygus than the untreated, but Diamond + Acephate was the only treatment that had no Lygus. However, Diamond + Acephate did not significantly differ from Acephate alone, Diamond + Carbine, or Diamond at 9 or 12 fl-oz. Carbine and Diamond at 6 fl-oz appeared weak, but the rate of Carbine tested (1.7 oz) is considerably lower than the recommended rate for Lygus (2.3 oz). The low rate was tested to determine if there was an additive effect when combined with a low rate of Diamond (6 fl-oz). These data suggest that combining the two low rates of Diamond and Carbine may be a viable strategy for managing mixed populations of adult and immature Lygus.

Based on external Lygus feeding stings, all of the treatments had fewer stings than the untreated 7 DAT (Figure 3a). Treatments containing Acephate had the fewest stings but did not statistically differ from Diamond at 9 fl-oz, Carbine or Diamond + Carbine. The damage relationships among treatments were similar for internal injury or the number of damaged locules per 100 bolls (Figure 3b). As expected there is a very close relationship between external stings and internal damage. Based on simple linear regression, when sampling dime sized bolls, one might expect to find about 17 damaged locules per 100 stings (Figure 4).

Yield differences could not be detected in this test, possibly because of stand issues in some plots associated with hail events early in the season (Figure 5a). However, when looking across several similar studies relationships between external damage and yield were evident. Although the R^2 was much lower than desired, it appears that notable yield reduction may occur when 100 bolls average 1 sting per boll (Figure 5b). This suggests that a Lygus treatment action threshold may be developed utilizing external damage as the determining factor. Based on Figure 7, 100 stings would equate to 16-17 damaged locules per 100 bolls.

Acknowledgments:

Appreciation is expressed to Plains Cotton Growers for financial support of this project.

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Table 1. Insecticides evaluated rates, classification and MOA.

Insecticide	Active Ingredient	Rate applied (per acre)	Classification	Mode of Action
Diamond 0.83 EC		6 fl-oz		
Diamond 0.83 EC	Novaluron	9 fl-oz	Benzoylurea	Chitin biosynthesis inhibitor
Diamond 0.83 EC		12 fl-oz		
Carbine 50 WG	Flonicamid	1.7 oz	Flonicamid	Feeding blocker
Acephate 97	Acephate	0.75 lbs	Organophosphate	Acetylcholine esterase inhibitor
Diamond 0.83 EC + Carbine 50 WG	Novaluron + Flonicamid	6 fl-oz + 1.7 oz		
Diamond 0.83 EC + Acephate 97	Novaluron + Flonicamid	6 fl-oz + 0.75 lbs		
All treatments included Dyne-Amic non-ionic surfactant at 0.375% v/v				

Figure 1. Lygus populations at 0 DAT (a) and 7 DAT (b). Bars capped by the same letter are

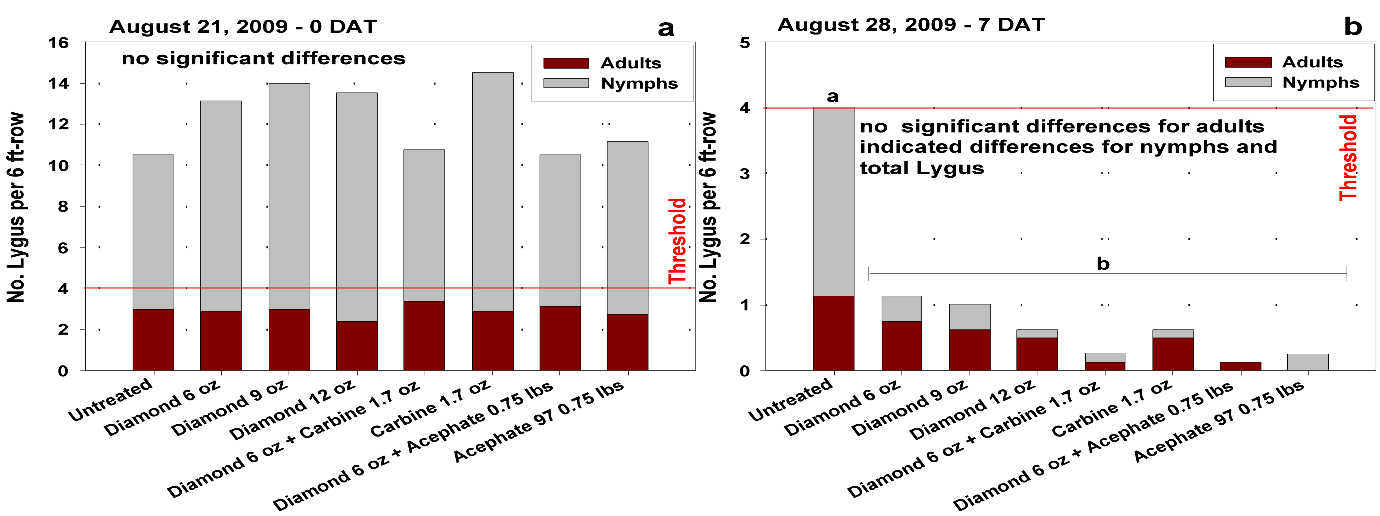


Figure 2. Lygus populations at 14 DAT (a) and 21 DAT (b). Bars capped by the same letter are not significantly different based on PROC MIXED and means separated using protected LSD ($P \leq 0.05$).

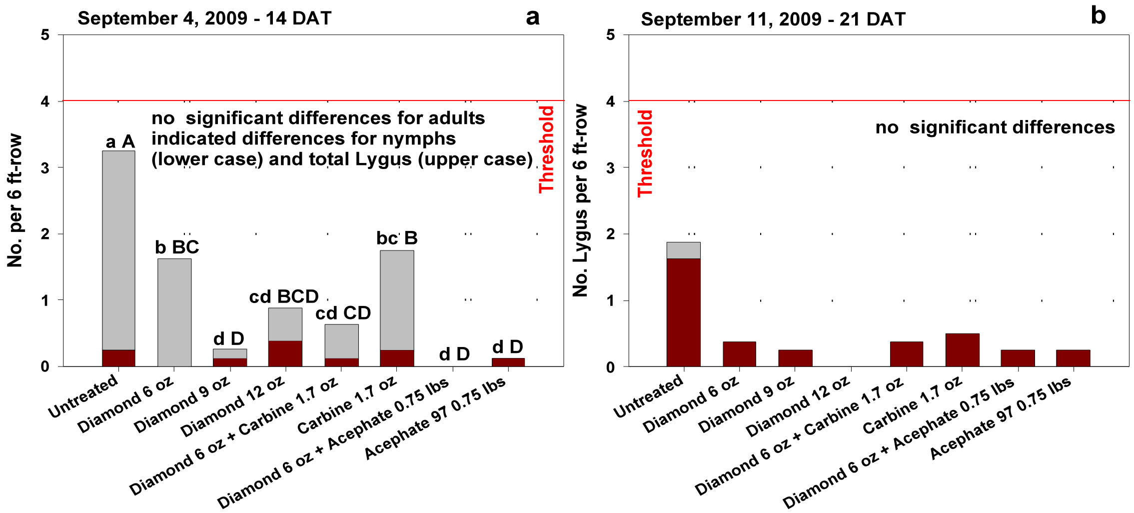


Figure 3. Impact of insecticides on preventing external Lygus stings (a) and internal damage (b) to bolls. Same colored bars capped by the same letter are not significantly different based on PROC MIXED and means separated using protected LSD ($P \leq 0.05$).

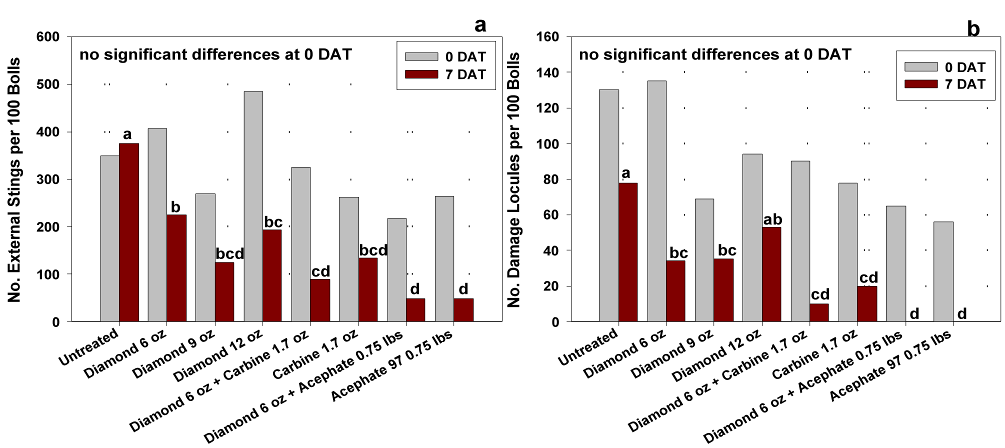


Figure 4. Relationship between the external and internal Lygus damage to dime sized (10-20 mm diameter) bolls.

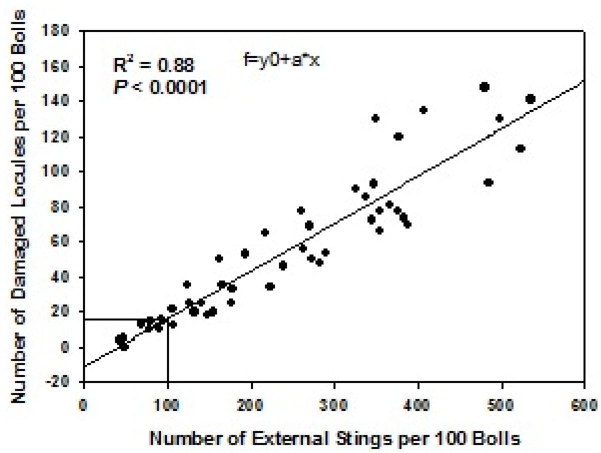
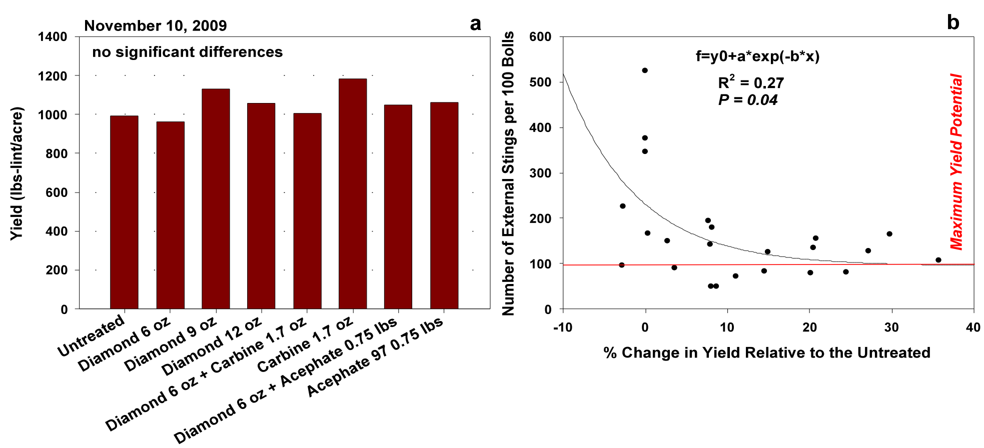


Figure 5. Yield (a) and the relationship between external damage and maximize yield through protection from Lygus (b).



Evaluation of Imidacloprid/Spirotetramat Pre-Mix for Control of Western Tarnished Plant Bug in Cotton, 2009

Cooperators: Glenn Farms, Cotton Grower / Dana Palmer, Private Consultant / Texas AgriLife Extension Service

Kerry Siders, David Kerns
EA-IPM Hockley/Cochran Counties, Extension Entomologist-Cotton

Hockley County

Summary:

On 26 Aug (pretreatment count), the Lygus population was averaging 11.50 per 6 ft-row across all plots, and no statistical differences were detected among treatments for nymphs, adults or total Lygus. At 5 DAT all of the insecticide treatments had fewer adults and total Lygus than the untreated, while Baythroid was the only treatment to differ from the untreated for nymphs. Additionally, Baythroid contained significantly fewer total Lygus than either rate of SP 102000022560 (pre-mix of imidacloprid + spirotetramat). By 9 DAT the Lygus population had decreased across all plots and there were no significant differences among treatments for nymphs. However, the Baythroid-treated plots contained fewer adults and total Lygus than any other treatment. SP 102000022560 at 6 fl-oz did not differ from the untreated at 9 DAT, while the 8 fl-oz rate had significantly fewer adults than the untreated. Overall, Baythroid was the most efficacious treatment evaluated while SP 102000022560 provided marginal, short lived control.

Objective:

The objective of this test was to evaluate a new insecticide SP 102000022560 (pre-mix of imidacloprid + spirotetramat) for Lygus control relative to a standard.

Materials and Methods:

This test was conducted in a commercial cotton field near Wolfforth, TX. FiberMax 9063B2F was planted on 15 May on 40-inch rows, and irrigated using a drip irrigation system. The test was a RCB design with four replications. Plots were 4-rows wide × 60 ft in length. Insecticides were applied with a self propelled Lee Spider sprayer calibrated to deliver 19 gpa through 8002E nozzles (2 per row) at 30 psi. Insecticides were applied to the all four rows of each plot on 26 Aug. Western Tarnished Plant Bug (WTPB) populations were estimated on 26 and 31 Aug, and 4 Sep utilizing a 36-inch x 40-inch black drop cloth. Drop cloths were laid between the rows and approximately 1.5 row-ft of cotton were shaken onto the drop cloth from each row; four drop cloth samples were taken per plot. Data were analyzed with ANOVA, and means were separated using an F-protected LSD ($P \leq 0.05$).

Results and Discussion:

On 26 Aug (pretreatment count), the WTPB population was averaging 11.50 per 6 ft-row across all plots, and no statistical differences were detected among treatments for nymphs, adults or total WTPBs. At 5 DAT all of the insecticide treatments had fewer adults and total WTPBs than the untreated, while Baythroid was the only treatment to differ from the untreated for nymphs. Additionally, Baythroid contained significantly fewer total WTPB than either rate of SP 102000022560 (pre-mix of imidacloprid + spirotetramat). By 9 DAT the WTPB population had decreased across all plots and there were no significant differences among treatments for nymphs. However, the Baythroid-treated plots contained fewer adults and total WTPBs than any other treatment. SP 102000022560 at 6 fl-oz did not differ from the untreated at 9 DAT, while the 8 fl-oz rate had significantly fewer adults than the untreated. Overall, Baythroid was the most efficacious treatment evaluated while SP 102000022560 provided marginal, short lived control. Insecticide handling properties were good and no phytotoxicity was detected.

Acknowledgments:

Appreciation is expressed Bayer CropScience for financial support of this project.

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Treatment/ formulation	Rate amt product/acre	WTPB per 6 ft-row								
		26 Aug (pre-treatment)			31 Aug (5 DAT)			4 Sep (9 DAT)		
		nymphs	adults	total	nymphs	adults	total	nymphs	adults	total
Untreated	--	5.50 a	5.63 a	11.13 a	3.88 a	5.50 a	9.38 a	0.63 a	3.13 a	3.75 a
SP 102000022560 SC + UAN 28%	6.0 fl-oz + 2.5% v/v	6.00 a	6.13 a	11.38 a	2.63 a	2.13 b	4.75 b	0.63 a	3.00 ab	3.63 a
SP 102000022560 SC + UAN 28%	8.0 fl-oz + 2.5% v/v	5.25 a	5.75 a	11.75 a	2.50 ab	2.25 b	4.75 b	0.38 a	1.75 b	2.13 a
Baythroid XL	2.6 fl-oz	5.88 a	5.88 a	11.75 a	0.00 b	0.13 b	0.13 c	0.00 a	0.00 c	0.00 b

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

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

Cooperators: Texas AgriLife Extension Service

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

South Plains

Summary:

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

Objective:

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

Materials and Methods:

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

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

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

Results and Discussion:

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

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

Bollworm populations were exceptionally light during 2009 with the exception of Gaines County. Both Bollgard II and Widestrike varieties suffered very low damage to boll feeding lepidopterous pest in 2009 and had significantly fewer damaged bolls than the non-Bt varieties (no Bollgard fields were sampled in 2009) (Table 4). There were no differences in damaged bolls between the Bt types, and there were no differences among any of the varietal types in sucking bug damage. None of the fields sampled in the 2009 survey were treated for lepipoterous pests. Much of the South Plains had significant acreage of late-planted grain sorghum and corn, and these crops tended to act as trap crops, essentially preferentially attracting bollworms and fall armyworms away for the cotton.

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

Acknowledgments:

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

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

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

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

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

Means in a column followed by the same letter are not significantly different based on an F protected Mixed Procedure LSD ($P \leq 0.10$).
[a]Number of fields sampled.
[b]Percentage of damaged bolls from three locations in each field, 100 bolls sampled per locations, 300 bolls per field.
[c]Mean number of insecticide applications targeting lepidopterous pests per site.

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

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

Means in a column followed by the same letter are not significantly different based on an F protected Mixed Procedure LSD ($P \leq 0.10$).
[a]Number of fields sampled.
[b]Percentage of damaged bolls from three locations in each field, 100 bolls sampled per locations, 300 bolls per field.
[c]Mean number of insecticide applications targeting lepidopterous pests per site.

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

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

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

[a]Number of fields sampled.

[b]Percentage of worm or sucking bug damaged bolls from three locations in each field, 100 bolls sampled per locations, 300 bolls per field.

[c]Mean number of insecticide applications targeting lepidopterous pests per site.

YEAR: 2009

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 economical. A survey was initiated in September for detecting infestations of soil nematodes in cotton. Ninteen fields were selected from those enrolled in the IPM scouting program. Random soil samples were processed at the Texas AgriLife Research Station in Lubbock, results indicated that 17 of the 19 fields contained some level of nematodes. The range of root-knot nematode counts per 500 cm3 of soil was 0 to a high of 29,280 eggs and 1700 root-knot juveniles. A level of +200 root-knot nematodes per 500 cm3 is considered the treatment threshold.

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: Ninteen 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. The samples were protected from heat and light so as not to deteriorate the sample material. The samples were then processed at the Texas 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 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 Figure 1 for an example of a recommendation for nematode management based on soil sampling. See Table 1 for the incidence of root-knot nematode infestations over the last several years in Hockley and Cochran Counties.

ACKNOWLEDGMENTS: Thanks to Willie Marc Payne for their assistance in soil collection. 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.

Figure 1. Example of cotton root-knot nematode analysis, and correspondence to producers giving recommendations for management in Hockley and Cochran Counties, Texas, 2009

1212 Houston St., Ste 2, Levelland, TX 79336

February 26, 2010

Dear ________:

In regards to the soil samples which were taken from your IPM scouting field(s) in September of 2009 and assayed for cotton root-knot nematodes:

Ropes Place
Recommendation: Above threshold. Consider Temik 15G at 5 lbs/acre plus Vydate 17 oz at 30 days after plant, and tolerant variety as ST 4288.

Sundown Farm
North 1/3: 15,960 eggs and 4,800 root-knot juveniles.
Middle 1/3: 16,920 eggs and 2,400 root-knot juveniles.
South 1/3: 3,480 eggs and 600 stunt nematodes.
Recommendation: Again, a severe situation, well above threshold. Consider the same as above.

If you have any questions concerning this sampling or management suggestion, feel free to call me at (806)894-2406.

Sincerely,

Kerry Siders
Extension Agents - IPM

Table 1. Results of cotton root-knot nematodes sampling in Hockley and Cochran Counties, Texas 1997-2009.

Year	Percent of fields sampled with cotton root-knot nematode	Percent of fields sampled requiring treatment
1997	82%	82%
1998	82%	59%
1999	74%	52%
2000	88%	58%
2001	63%	52%
2002	83%	60%
2003	92%	56%
2004	64%	54%
2005	82%	58%
2006	77%	73%
2007	88%	78%
2008	72%	72%
2009	89%	89%
Average	80%	65%

YEAR: 2009

FIBERMAX COTTON VARIETY TRIALS

COOPERATOR
David Pearson, Pug Lyon, Larry Smith, and Tony Streety

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

Hockley and Cochran County

Table 1. Larry Smith drip irrigated variety trial near Levelland.

Trial	Variety	Lint Yield (lbs/A)	Yield Rank	Percent Turnout	Mic	Staple	Strength	Unif	Loan Value* (¢/lb)	Value / A ($/A)
2009 Smith-Hockley Co.	FM 1740B2F	2290	1	37.0%	3.45	37	28.4	82.7	51.85	$1,187
2009 Smith-Hockley Co.	FM 9170B2F	2234	2	35.2%	2.98	39	29.2	82.6	47.00	$1,050
2009 Smith-Hockley Co.	DP 0924 B2RF	2187	3	36.1%	3.42	37	29.8	83.8	52.20	$1,142
2009 Smith-Hockley Co.	ST 4498B2RF	2156	4	35.3%	3.22	38	29.0	83.5	50.30	$1,085
2009 Smith-Hockley Co.	ST 5458B2RF	2129	5	34.7%	2.96	39	28.8	82.1	46.80	$996
2009 Smith-Hockley Co.	ST 4288B2F	2075	6	31.6%	3.14	38	26.6	81.4	50.00	$1,037
2009 Smith-Hockley Co.	FM 9180B2F	2030	7	32.4%	3.28	40	30.1	84.2	50.55	$1,026
2009 Smith-Hockley Co.	FM 9160B2F	2015	8	33.5%	3.21	39	29.3	83.9	50.30	$1,013
2009 Smith-Hockley Co.	DP 0935 B2RF	1926	9	34.7%	3.37	36	29.8	82.3	51.90	$1,000
2009 Smith-Hockley Co.	BCSX 1010B2F	1907	10	32.5%	3.06	37	28.2	81.8	50.00	$954

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

Table 2. David Pearson center pivot irrigated variety trial near Sundown.

Trial	Variety	Lint Yield (lbs/A)	Gin Turnout	Mic	Length (in.)	Unif	Stren (g/tex)	Loan Value* (¢/lb)	Value/A ($/A)
2009 Pearson-Hockley Co	FM 9180B2F	1952	33.5%	3.6	1.18	83.1	30.5	54.05	$1,055
2009 Pearson-Hockley Co	FM 1740B2F	1928	34.9%	3.5	1.08	79.3	28.0	50.40	$972
2009 Pearson-Hockley Co	DP 0924 B2RF	1923	32.4%	3.1	1.14	81.3	27.8	50.00	$961
2009 Pearson-Hockley Co	ST 5458B2RF	1809	32.4%	3.4	1.14	79.4	28.6	50.90	$921
2009 Pearson-Hockley Co	ST 4288B2F	1796	30.9%	3.7	1.16	81.5	28.5	53.40	$959
2009 Pearson-Hockley Co	FM 9170B2F	1779	31.3%	3.0	1.20	82.1	29.4	50.00	$890
2009 Pearson-Hockley Co	ST 4498B2RF	1705	31.1%	3.1	1.12	80.9	28.2	50.00	$853
2009 Pearson-Hockley Co	DP 0935 B2RF	1620	30.4%	2.7	1.12	79.3	27.8	43.45	$704
2009 Pearson-Hockley Co	ST 5288B2F	1592	27.9%	3.0	1.16	80.8	27.6	50.00	$796
2009 Pearson-Hockley Co	FM 9160B2F	1561	28.8%	2.9	1.20	81.9	28.8	46.80	$730

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

Table 3. Tony Streety dryland variety trial near Levelland.

Trial	Variety	Lint Yield (lbs/A)	Gin Turnout	Mic	Length (in.)	Unif	Stren (g/tex)	Loan Value* (¢/lb)	Value/A ($/A)
2009 Streety-Hockley Co	ST 5288B2F	357	36.3%	3.7	1.04	81.3	27.1	50.15	$179
2009 Streety-Hockley Co	ST 4498B2RF	243	35.9%	3.6	1.01	78.9	25.4	46.90	$114
2009 Streety-Hockley Co	FM 9160B2F	234	39.5%	3.6	1.06	79.9	26.8	52.00	$122
2009 Streety-Hockley Co	BCSX 1010B2F	232	37.0%	3.6	1.02	78.4	25.6	49.15	$114
2009 Streety-Hockley Co	ST 4288B2F	227	38.6%	3.7	1.05	80.6	28.1	52.00	$118
2009 Streety-Hockley Co	DP 0924 B2RF	222	34.6%	3.7	1.07	80.6	27.9	52.00	$115
2009 Streety-Hockley Co	FM 9170B2F	215	33.6%	3.6	1.06	81.5	28.6	52.00	$112
2009 Streety-Hockley Co	FM 9180B2F	208	33.6%	3.7	1.07	81.1	27.8	52.15	$108
2009 Streety-Hockley Co	ST 5458B2RF	206	35.1%	3.4	1.01	79.2	25.4	45.15	$93
2009 Streety-Hockley Co	DP 0935 B2RF	206	35.6%	3.8	1.05	79.9	27.8	52.15	$107
2009 Streety-Hockley Co	FM 1740B2F	200	34.2%	3.4	1.03	79.5	25.9	49.25	$98

* Loan Value based on 2009 CCC Loan Schedule using a uniform color grade of 41 and leaf grade of 4.
Dryland Trial
Planting date June 15, 2009

YEAR: 2009

COTTON VARIETY SCREENING WITH AND WITHOUT TEMIK TRIAL FOR COTTON ROOT-KNOT NEMATODE

COOPERATORS
Tracey Griffiths

COORDINATORS
Dr. Terry Wheeler, Research Pathologist
Kerry Siders, Extension Agents

MATERIALS AND METHODS:

Planted: 18 May
Stand counts: 24 June
Dug roots for gall rating: 24 June
Sampled soil for root-knot: 18 September
Harvested: 19 and 20 November
Plot dimensions: 2-rows wide, 35 ft. long
Design: Split plot, with variety as the main plot and Temik 15G (0 vs 5) as the subplot, in a randomized complete design with four replications.

RESULTS AND DISCUSSION:

The only parameter measured that was significantly affected by the interaction between variety and Temik 15G rate was root galling. So, the varieties are presented separately for +/- Temik 15G. Otherwise, the average across both +/- Temik is presented. The use of Temik 15G did results in a $23.61 increase in value/acre, which also included the cost of the product.

The top valued varieties were NexGen 2549B2RF, which is considered susceptible to root-knot nematode and Stoneville 4288B2F, which is considered a partially resistant variety (Table 1). Top yielding varieties included NexGen 2549B2RF, Stoneville 4288B2F, Stoneville 5458B2F, Deltapine 0935B2RF, and Phytogen 367WRF (Table 1). However, the loan value was relatively poor for some of these varieties (Table 2). Loan value was positively correlated with fiber micronaire, uniformity, and strength.

Table 1. Affect of variety on value of the crop, yield, plant stand, galls/root and nematode population density.

Variety[a]	$/acre[b]	Lbs lint /acre	Galls/root		RK[d]	Plants/ Ft. row
			T[c]=0	T=5		
NG 2549B2RF	929 a[e]	1,965 a	26 ab	21 a	693 abc	3.2
ST 4288B2F	895 ab	1,883 abc	17 bc	7 b	781 bc	3.3
FM 9180B2F	863 bc	1,828 bcd	34 a	16 ab	3,096 ab	3.2
ST 5458B2F	830 cd	1,863 abc	27 ab	11 ab	1,770 ab	3.1
FM 9160B2F	824 cd	1,808 b-e	18 bc	12 ab	5,854 ab	2.9
DP 0935B2RF	808 cde	1,915 ab	26 ab	11 ab	2,244 ab	3.1
PG 367WRF	804 de	1,853 abc	17 bc	11 ab	809 c	3.3
ST 5288B2F	790 de	1,797 cde	22 b	8 b	3,891 ab	3.0
DP 0920B2RF	783 def	1,718 def	21 b	16 ab	4,910 ab	3.1
PG 375WRF	781 def	1,852 bc	24 ab	12 ab	5,550 a	2.9
NG 1556RF	761 efg	1,459 h	19 b	15 ab	3,124 ab	3.2
DP 174RF	733 fgh	1,708 ef	7 c	10 b	450 c	3.2
AT Epic RF	718 gh	1,635 fg	16 bc	14 ab	3,428 abc	3.2
AT Apex B2RF	683 h	1,585 g	27 ab	17 ab	1,885 ab	3.1
AT Orbit RF	613 i	1,391 hi	16 bc	13 ab	1,444 ab	3.1
DP 141B2RF	538 j	1,329 i	18 bc	13 ab	4,360 ab	2.8

[a]NG=NexGen, ST = Stoneville, FM = Fibermax, DP = Deltapine, PG = Phytogen, AT = All-Tex.
[b]$/acre = (lint yield/acre x loan value) – cost of seed and technology fees/acre – cost of Temik 15G. Seed and technology fee values were obtained from the Plains Cotton Grower's web site NK"http://www.plainscotton.org"http://www.plainscotton.org Temik 15G applied at 5 lbs/acre was estimated at $17.50/acre.
[c]T = Temik 15G applied in lbs/acre.
[d]RK is root-knot nematode/500 cm^3 soil, sampled on 18 September. Mean separation was applied to log10 transformed values.
[e]Means followed by different letters are significantly different at $P = 0.05$, based on the Waller-Duncan k-ratio t-test.

Table 2. Affect of variety on fiber properties.

Variety[a]	Loan $/lb	Mic[b]	Length	Unif[c]	Strength	Elon[d]	Leaf	Rd	+b
NG 2549B2RF	0.512	3.18	1.083	82.0	29.90	8.65	3.75	80.1	7.4
ST 4288B2F	0.517	3.08	1.143	80.1	29.80	8.03	3.00	81.4	8.0
FM 9180B2F	0.515	2.85	1.158	80.9	31.78	7.33	2.25	83.0	6.9
ST 5458B2F	0.488	2.93	1.108	78.7	29.58	7.55	3.00	80.1	7.9
FM 9160B2F	0.499	2.80	1.178	81.9	31.40	6.78	1.75	83.4	6.9
DP 0935B2RF	0.463	2.65	1.088	78.1	27.65	8.05	2.00	81.4	8.9
PG 367WRF	0.475	2.55	1.148	79.7	29.25	8.33	2.50	81.1	8.3
ST 5288B2F	0.483	2.85	1.123	79.4	28.50	7.88	3.25	81.9	7.0
DP 0920B2RF	0.501	2.90	1.115	79.5	26.75	8.45	2.25	81.9	7.5
PG 375WRF	0.463	2.55	1.118	79.3	27.23	7.88	2.00	81.5	7.9
NG 1556RF	0.567	3.58	1.133	82.7	33.50	7.93	2.00	80.1	8.2
DP 174RF	0.469	2.53	1.130	79.0	27.00	8.58	1.75	80.1	8.6
AT Epic RF	0.479	2.75	1.103	79.2	27.38	9.10	2.00	82.2	8.2
AT Apex B2RF	0.479	2.55	1.135	79.7	27.45	8.53	1.25	83.1	7.5
AT Orbit RF	0.488	2.60	1.158	80.2	28.93	8.63	2.25	83.4	7.5
DP 141B2RF	0.462	2.33	1.155	77.4	27.88	7.70	2.50	82.1	7.8

[a]NG=NexGen, ST = Stoneville, FM = Fibermax, DP = Deltapine, PG = Phytogen, AT = All-Tex.
[b]Mic = micronaire
[c]Unif = uniformity
[d]Elon = elongation

YEAR: 2009

COTTON VARIETY SCREENING FOR COTTON ROOT-KNOT NEMATODE

COOPERATORS
Wes Bradshaw

COORDINATORS
Dr. Terry Wheeler, Research Pathologist
Kerry Siders, Extension Agents

OBJECTIVE

To evaluate cotton varieties for tolerance to southern root-knot nematode.

MATERIALS AND METHODS

Cotton varieties were planted on May 20th at the Wes Bradshaw Farm west of Ropesville. Test treatments were randomized, and replicated 3 times. Plots were 80 inches by 40'. The test was harvested on 19 November.

RESULTS AND DISCUSSION

See Tables 1 and 2 for results.

Table 1. Affect of root-knot nematode on variety performance at a site near Ropesville.

Cultivar	$/acre[a]	Lbs of lint Per acre	Plants/ Ft. row	RK on 23 Oct.
Deltapine 0912B2RF	620 a	1,234 a	2.3 c-i	1,695
Stoneville 4288B2F	594 ab	1,174 ab	2.6 a-g	930
Phytogen 367WRF	551 bc	1,114 a-d	2.9 ab	120
Stoneville 4498B2F	549 bc	1,155 abc	2.3 b-i	630
Fibermax 9160B2F	539 bcd	1,105 bcd	3.0 a	1,950
NexGen 3348B2RF	523 cde	1,082 b-e	2.7 a-f	995
NexGen 3410RF	513 c-f	1,076 b-e	2.8 abc	1,350
Fibermax 9170B2F	502 c-g	1,056 b-e	2.8 a-e	875
Phytogen 425RF	495 c-h	1,032 c-g	2.8 a-d	1,020
Deltapine 104B2RF	478 d-i	1,025 d-g	2.6 a-g	390
Deltapine 09R550B2R2	463 e-j	1,020 d-g	1.6 j	4,315
NexGen 2549B2RF	455 f-k	1,048 c-f	2.6 a-g	565
All-Tex Epic RF	449 f-l	991 d-h	2.1 g-j	560
Phytogen 375WRF	447 g-l	969 e-i	2.8 a-f	1,020
Fibermax 9180B2F	433 h-m	880 h-k	2.9 ab	1,170
NexGen F015B2RF	423 i-n	916 hij	2.2 f-i	1,530
Americot 1550B2RF	423 i-n	992 d-h	2.7 a-g	1,150
All-Tex Patriot RF	417 i-n	889 h-k	2.2 e-i	620
NexGen 1556RF	414 i-p	844 jkl	2.5 a-h	3,630
Stoneville 4554B2RF	399 j-q	893 h-k	2.2 d-i	690
Americot 1532B2RF	396 k-q	886 h-k	2.1 g-j	745
NexGen 3273B2RF	396 k-q	925 f-j	2.3 c-i	655
Deltapine 0920B2RF	386 l-r	865 ijk	2.3 b-i	1,395
Stoneville 5288B2F	369 m-s	874 h-k	2.3 b-i	1,980
AFD 5065B2F	368 m-s	800 jkl	2.6 a-g	220
Deltapine 0935B2RF	362 n-s	855 ijk	2.2 f-i	1,380
NexGen 712B2RF	353 o-s	814 jkl	2.4 b-i	940
Deltapine 09R798B2R2	351 p-s	851 ijk	2.1 g-j	1,840
BCSX 1010B2F	345 q-s	831 jkl	1.9 ij	1,015
NexGen 3538RF	340 q-s	725 l	2.0 hij	495
Deltapine 09R999B2R2	323 r-s	774 kl	1.6 j	515
Deltapine 09R643B2R2	305 s	778 kl	1.6 j	695

[a]$/acre = (lint yield/acre x loan value) – cost of seed and technology fees/acre. Seed and technology fee values were obtained from the Plains Cotton Grower's web site http://www.plainscotton.org

Table 2. Affect of cultivars on fiber properties for a test near Ropesville.

Cultivar[a]	Loan Value ($/lb)	Mic.	Length	Unif.	Strength	Elon.	Leaf	Rd	+b
AFD 5065B2F	0.535	3.30	1.140	81.4	28.80	9.10	2.5	81.7	7.6
AM 1532B2RF	0.524	3.10	1.140	80.7	27.30	8.25	2.0	80.9	8.1
AM 1550B2RF	0.795	2.90	1.080	79.6	26.40	8.85	2.5	82.0	8.0
AT Epic RF	0.510	3.00	1.095	80.6	28.05	9.65	1.0	80.6	8.7
AT Patriot RF	0.533	3.25	0.150	81.7	28.60	9.10	2.0	81.1	7.6
BCSX 1010B2F	0.499	2.90	1.125	80.7	28.45	7.65	1.5	82.2	8.1
DP 104B2RF	0.532	3.30	1.130	82.2	30.70	9.10	3.0	82.5	7.4
DP 09R550B2R2	0.522	3.10	1.145	80.7	29.95	7.95	1.0	80.7	8.2
DP 09R643B2R2	0.480	2.80	1.105	80.1	26.50	9.75	3.0	81.2	8.3
DP 09R798B2R2	0.494	2.90	1.150	81.9	29.15	9.90	3.5	80.3	8.3
DP 0912B2RF	0.559	3.75	1.100	81.8	29.45	9.00	2.5	78.9	8.3
DP 0920B2RF	0.526	3.20	1.130	80.7	27.15	9.10	3.0	80.2	7.9
DP 0935B2RF	0.504	2.80	1.125	80.7	29.55	8.25	1.0	82.0	8.8
DP 09R999B2R2	0.506	2.75	1.150	81.2	28.15	9.50	1.0	81.9	8.5
FM 9160B2F	0.551	3.35	1.150	81.6	30.60	7.10	2.0	83.3	6.9
FM 9170B2F	0.541	3.25	1.180	81.9	30.25	7.45	2.5	82.6	7.0
FM 9180B2F	0.571	3.70	1.170	82.2	30.80	8.05	1.5	82.1	7.0
NG 1556RF	0.558	4.00	1.110	83.4	32.90	7.85	3.5	78.8	8.2
NG 2549B2RF	0.799	3.00	1.075	82.4	29.10	9.25	2.5	81.1	8.0
NG 3273B2RF	0.502	2.95	1.130	80.0	27.50	8.20	1.5	82.3	7.5
NG 3348B2RF	0.546	3.40	1.115	82.1	29.80	8.75	1.5	79.4	7.9
NG 3410RF	0.530	3.00	1.170	81.4	31.50	7.95	3.0	79.9	8.0
NG 3538RF	0.547	3.20	1.175	82.7	32.95	7.25	1.5	81.2	7.4
NG 712B2RF	0.518	3.10	1.145	81.5	30.35	8.40	1.0	79.7	8.9
NG F015B2RF	0.538	3.25	1.140	81.7	31.00	8.00	2.0	80.5	8.5
PG 367WRF	0.556	3.60	1.135	82.0	29.75	9.20	3.0	80.1	8.5
PG 375WRF	0.531	3.20	1.115	81.1	27.25	8.55	2.0	81.7	7.5
PG 425RF	0.536	3.60	1.130	83.0	30.35	9.35	4.5	79.4	8.0
ST 4288B2F	0.565	3.75	1.115	81.1	28.00	8.55	2.0	78.7	8.5
ST 4498B2F	0.536	3.20	1.130	82.0	30.65	9.70	2.5	79.6	8.8
ST 4554B2F	0.525	3.15	1.120	81.4	30.70	10.10	2.5	77.9	8.7
ST 5288B2F	0.501	3.00	1.120	79.7	26.75	8.50	3.0	80.3	7.1

[a]The cultivar abbreviations were:AT=All-Tex, AM=Americot, DP =Deltapine, FM = Fibermax, NG = NexGen, PG = Phytogen, ST =Stoneville.

YEAR: 2009

COTTON HARVEST-AID DEMONSTRATIONS

COOPERATORS
Ronnie Stanley and Bobby Neal

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

SUMMARY: Quality and quantity of cotton lint can deteriorate if harvest is not begun shortly after maturity of the crop is reached. Each year, field situation and other factors are different and varied results from harvest aids are expected. Cotton harvest-aid materials were applied on September 30 to cotton with a yield potential of 1000-1500 lbs/acre at the Ronnie Stanley and the Bobby Neal Farms near Levelland and Whiteface respectively. Table 1 and 2 contains the 7 and 14 days after treatment ratings. You will find that all treatments did and excellent job of defoliation and boll opening. Results can generally be anticipated/predicted based on the condition of the cotton and weather when it is sprayed, and then knowing what the weather pattern could be 4-5 days following.

OBJECTIVE: To demonstrate and compare the effectiveness of cotton harvest-aid treatments for 200.

MATERIALS AND METHODS: Treatments were applied in 17 gallons of water per acre using 2 nozzles per row by a self-propelled sprayer traveling at 4 mph to individual plots which were 8 rows (13.33') by 500'. Treatments were initiated when cotton had reached fewer than 4 nodes above the uppermost cracked boll. Ratings were taken 7 and 14 days after treatment for percent defoliation, percent desiccation, percent green leaves, percent open boll, and a regrowth rating.

ACKNOWLEDGMENTS: I would like to express appreciation to Bobby and Ronnie for their cooperation with this demonstration.

Results of cotton harvest-aid treatments at Ronnie Stanley Farm, Levelland, Texas, 2009.

Treatment Name	Rate	Green Leaf % 10/7/08 7 DAT	Dessicate % 10/7/08 7 DAT	Defoliate % 10/7/08 7 DAT	% Open Boll 10/7/08 7 DAT	Re-growth 10/7/08 7 DAT	Green Leaf % 10/14/08 14 DAT	Dessicate % 10/14/08 14 DAT	Defoliate % 10/14/08 14 DAT	Open Boll% 10/14/08 14 DAT	Re-growth 10/14/08 14 DAT
Prep Def NIS	24 oz/ac 16 oz/ac 0.5% v/v	18	0	82	98	0	2	0	98	99	0
Prep ET COC	32 oz/ac 1.5 oz/ac 1% v/v	22	0	78	99	0	1	1	98	100	0
Prep ET COC	24 oz/ac 2 oz/ac 1% v/v	5	11	84	99	0	0	2	98	99	0
Prep Ginstar NIs	24 oz/ac 8 oz/ac 0.5% v/v	29	0	71	97	0	2	0	98	99	0
Finish ET COC	21 oz/ac 1.5 oz/ac 1% v/v	16	0	84	99	0	1	0	99	100	0
Prep Gramoxone NIS	32 oz/ac 6 oz/ac 0.5% v/v	52	0	48	99	0	7	0	93	100	0
Check	--	82	0	18	78	0	50	0	50	84	0

DAT = Days after treatment on September 30, 2009. 17 gal/acre, 4 nodes above cracked boll, 12:30 pm.
COC=Crop Oil Concentrate
NIS=90% Non-ionic Surfactant
Regrowth (0-4) 0=none 4=not harvestable due to regrowth

AgriLIFE EXTENSION
Texas A&M System

Results of cotton harvest-aid treatments at Bobby Neal Farm, Whiteface, Texas, 2009.

Treatment Name	Rate	Green Leaf % 10/7/08 7 DAT	Dessicate % 10/7/08 7 DAT	Defoliate % 10/7/08 7 DAT	% Open Boll 10/7/08 7 DAT	Re-growth 10/7/08 7 DAT	Green Leaf % 10/14/08 14 DAT	Dessicate % 10/14/08 14 DAT	Defoliate % 10/14/08 14 DAT	Open Boll% 10/14/08 14 DAT	Re-growth 10/14/08 14 DAT
Prep Def NIS	24 oz/ac 16 oz/ac 0.5% v/v	10	0	90	80	0	8	0	92	85	0
Prep ET COC	32 oz/ac 1.5 oz/ac 1% v/v	3	5	92	87	0	3	1	96	94	0
Prep ET COC	24 oz/ac 2 oz/ac 1% v/v	3	3	94	85	0	2	0	98	92	0
Prep Ginstar NIs	24 oz/ac 8 oz/ac 0.5% v/v	28	0	72	83	0	12	0	88	88	0
Finish ET COC	21 oz/ac 1.5 oz/ac 1% v/v	2	2	96	91	0	0	1	99	97	0
Prep Gramoxone NIS	32 oz/ac 6 oz/ac 0.5% v/v	22	0	78	88	0	3	0	97	96	0
Check	--	88	0	12	65	0	74	0	26	69	0

DAT = Days after treatment on September 30, 2009. 17 gal/acre, 4.7 nodes above cracked boll, 3 pm.
COC=Crop Oil Concentrate
NIS=90% Non-ionic Surfactant
Regrowth (0-4) 0=none 4=not harvestable due to regrowth

AgriLIFE EXTENSION
Texas A&M System

YEAR: 2009

PEANUT TOLERANCE TO VALOR HERBICIDE APPLIED PREEMERGENCE

COOPERATOR
Rusty Trull

COORDINATOR
Peter Dotray, Lyndell Gilbert; Professor; Technician II Texas AgriLife Extension
Kerry Siders, Extension Agent - IPM, Hockley and Cochran Counties

Cochran County

OBJECTIVE
To evaluate Valor herbicide applied preemergence to peanuts and weeds for injury to peanuts.

MATERIALS AND METHODS

Plot Size:	5 rows by 600 feet, 3 replications
Soil type:	Loamy sand
Planting Date:	April 30
Variety:	Valencia
Application Date:	Preemergence, May 4
Digging Date:	October 19
Harvest Date:	October 28

RESULTS AND DISCUSSION
Valor SX was registered for use in peanut in 2001. According to the Valor SX label, weeds controlled include kochia, common lambsquarter, several pigweed species including Palmer amaranth, golden crownbeard, and several annual morningglory species including ivyleaf morningglory. Valor SX may be applied prior to planting or preemergence. Preemergence applications must be made within 48 hours after planting and prior to peanut emergence. Applications made after plants have begun to crack or after they have emerged may result in severe injury. Splashing from heavy rains or cool conditions at or near emergence may also result in injury and even delayed maturity and yield loss. In 2009, several studies were conducted across the High Plains to gain experience and confidence with this relatively new peanut herbicide. At this location in Cochran County (Mr. Rusty Trull), a valencia market type was planted on April 30 and Valor SX at 2 ounces per acre (oz/A) was applied on May 4. Irrigation totaling 1 inch was

applied following the Valor application to activate the herbicide. Peanut stand was recorded May 27, June 3, and June 10 (7, 14, and 21 days after ground crack), and there was no difference in peanut stand when Valor-treated plots were compared to the non-treated control (Table 1). Peanuts were dug October 19, allowed to air dry on the soil surface, and harvested with a small-plot peanut thrasher on October 28. Peanut yield from the Valor-treated plots was 5725 lb/A, which was not different from the non-treated control (4981 lb/A). Peanut grade was also evaluated and there was no difference when the Valor-treated was compared to the non-treated control. Results from this study and several others across the High Plains suggest that Valor SX is a safe option to peanut producers in our region. Although peanut injury has been observed in other states and in the High Plains when rates exceeded labeled recommendations, we feel that this herbicide is a good option for peanut growers for early-season weed control (4 to 6 weeks of soil residual activity).

Table 1. Peanut stand and yield as affected by Valor applied preemergence in Levelland, TX, 2009[a].

Treatment	Rate	Prod.	Timing	Peanut Stand May 27	Peanut Stand Jun 3	Peanut Stand Jun 10	Yield	Grade
	lb ai/A	oz/A		---------Plants/3ft.--------			lb/A	
Non-treated	---	---	---	3.1	5.4	5.6	4981	63
Valor SX	0.064	2	PRE	2.7	4.7	5.4	5725	66
CV				5.64	1.86	8.92	22.84	5.77
pValue				0.1208	0.0153	0.6221	0.5337	0.4296
$LSD_{(0.10)}$				NS	0.2238	NS	NS	NS

[a]Abbreviations: NS, non-significant; PRE, preemergence

Hockley Co., Texas Irrigated Sorghum Hybrid Trial, 2009

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With a 13-million bushel grain sorghum market in Hockley Co., increased information on grain sorghum hybrids producers in the surrounding area is needed. Eight hybrids suitable for late-season irrigated production in Hockley Co. (medium-long and medium maturity) were chosen among several seed companies. Due to the late planting date some long-season hybrids were replaced with shorter maturity hybrids as Extension's recommended cutoff date for medium-long maturity hybrids in the area is June 25 (and June 30 for medium hybrids). Danger of frost and even a freeze as early as October 2 and especially October 10-11 raised concerns about the potential of this trial to reach full maturity, and helped us realize the risks of planting the medium-longs maturity hybrids in this trial as late as we did. However, grain maturity appeared to be essentially complete for all hybrids although test weight was slightly lower by 1-2 lbs./bu than what we normally observe in similar trials.

Location: Rick Slaughter farm, ~15 miles NW of Levelland (2 miles SW of Pep)
Soil Type: Acuff loam
Previous Crop: Wheat (harvested ~June 10, 2009)
Land Preparation: No-till, grain sorghum seeded with a drill.
Row Width: 20"
Plot Size: 7 rows X 50'
Entries/Reps: 8 hybrids, 4 plots each
Test Design: Randomized complete block
Planting Date: June 27, 2009
Seeding Rate: 65,200 seeds/A (~4.5 lbs./A)
Fertilizer: 120 lbs N (32-0-0)
Herbicide: Roundup 32 oz./A preplant, Buctril 8 oz + Atrazine 16 oz./A post emerge
Insecticide: None
Rainfall: ~11" (June-Oct., based on TTU Mesonet site 1 mile NE of Morton)
Harvest Date: November 12, 2009
Harvest Area: 3 rows X ~50' with a small combine
Trial Average Yield: 6,409 lbs./A; yield corrected to 14% moisture
Trial Yield C.V.: 10.5%

Discussion

This irrigated field's management has shifted to minimum till and no till to reduce production costs and maintain significant residue on the surface.

Hybrid selection for this trial was initially medium-long to long based on a projected planting date in mid-June up to June 20. Due to delayed planting we took out all full-season hybrids and replaced with medium maturity. As noted above Extension's recommended cut-off date for planting a medium-long maturity hybrid in Hockley Co. is June 25. As we learned in the exceptionally late plantings and early freeze in 2008, these planting dates can be tested in rare years, and we acknowledge that being in the northwest corner of Hockley Co. we are close to both Cochran and Lamb Counties where our recommended cut-off date for medium-long maturity hybrids in June 20, (5 days earlier).

Indeed strong concerns about potential frost and freeze occurred on Oct. 2 (35 F), Oct. 10-11 (33 F), and Oct. 23 (34 F). This could have been particularly detrimental to medium-long hybrids, but no significant crop damage appeared although low temperatures likely did curtail some yield potential or possibly reduce test weight. Extension's last recommended planting date for a medium-long maturity hybrid at this site is June 25, but being in far northwest Hockley Co. early planting is likely a good target.

Plant populations in this field were sufficient (resulting from a seeding rate of ~4 lbs./A, or about 60,000 seeds/A) to produce good yields, and Extension data reports yields above 8,000 lbs./A for similar populations. Due to the rural location of the test we were not able to record half bloom data in this trial.

Based on other Texas AgriLife trials several of these hybrids tested over several years and locations have demonstrated strong performance in irrigated (Pioneer 84G62, Asgrow A571) and dryland (NC+ 7C22SP, Frontier 303C). For this trial, slightly longer maturity did not increase yield. Pioneer 84G62 has been a standard in the minds of many producers due to its outperformance in many irrigated fields, and it performed well here ranking third. As noted above we were concerned about this and the other two medium-long hybrids reaching maturity due to the Oct. 10-11 cold morning temperatures.

This trial will be repeated in subsequent years to generate a multi-year report for Hockley Co.

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For further information about this report, contact Kerry Siders.
For further information about other grain sorghum hybrid trials in West Texas, contact Calvin Trostle, or visit the Texas AgriLife Research Crop Testing webpage at http://varietytesting.tamu.edu
For further information about grain sorghum production in your area contact your local ag. extension agent or Calvin Trostle, and visit the grain sorghum page at http://lubbock.tamu.edu

UNITED SORGHUM CHECKOFF PROGRAM

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Hockley Co., Texas Irrigated Sorghum Hybrid Trial, 2009

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Cooperator: Richard Slaughter
Location: Hockley Co., ~15 miles NW of Levelland
Planting Date: 6/27/2009
Harvest Date: 11/12/2009

Seed Drop: 65,200 seeds/A (~4.5 lbs./A)
Applied Fertilizer: 120 lbs N (32-0-0)
Rainfall: 11.1" (June-Oct., TTU Mesonett 1 mi. NE of Morton)
Replications: 4

Company	Hybrid	Company Rated Maturity	Plants/ acre	Average Height (inches)	Days to half bloom	Average Test Wt. (lbs./bu)	(14% H2O) Yield (lbs./A)‡
Pioneer	85G46	Medium	47,500	54	N	58.3	7,152
Frontier	F303C	Medium	47,700	53	o	55.7	6,934
Pioneer	84G62	Medium-long	47,000	53	t	55.3	6,877
NC+	7C22SP	Medium	47,900	56	R	53.4	6,586
Pioneer	85Y40	Medium	43,600	54	e	56.6	6,092
Sorghum Partners	NK7633	Medium-long	44,000	52	c	54.0	6,005
Asgrow	A571	Medium-long	46,200	56	o	55.6	5,884
DeKalb	DKS 44-20	Medium	52,300	54	r	54.8	5,765
		Average	*47,000*	*54*	d	*55.5*	*6,409*
					e		
		P-Value	0.6797	0.6247	d	0.0002	0.0008
		§Fisher's Protected Least Significant Diff. (0.10)	NS	NS		1.7	652
		Coefficient of Variation (%CV)	13.0	5.1		3.3	10.5

‡Numbers in a column followed that differ by more than the PLSD are not significantly different at the 95% confidence level.

See the accompanying text summary for a discussion of the trial results. Strong concerns about potential frost and freeze occurred on Oct. 2 (35 F), Oct. 10-11 (33 F), and Oct. 23 (34 F). This could have been particularly detrimental to medium-long hybrids, but no significant crop damage appeared although low temperatures likely did curtail some yield potential or possibly reduce test weight. Extension's last recommended planting date for a medium-long maturity hybrid at this site is June 25, but being in far northwest Hockley Co. early planting is likely a good target.

For additional West Texas grain sorghum hybrid trial results and grain sorghum production information contact your county ag. Extension agent or Calvin Trostle, or visit http://varietytesting.tamu.edu or the sorghum webpage at http://lubbock.tamu.edu

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Hockley Co., Texas Dryland Sorghum Hybrid Trial, 2009

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With a 13-million bushel grain sorghum market in Hockley Co., increased information on grain sorghum hybrids producers in the surrounding area is needed. Twelve hybrids suitable for dryland production in Hockley Co. (medium maturity and shorter) were chosen among several seed companies. Due to the late planting date some hybrids were replaced with shorter maturity hybrids as Extension's recommended cutoff date for medium maturity hybrids in the area is June 30 (and July 5 for medium early hybrids). Four additional medium maturity hybrids were included in this test with the provision that results would not be reported if we concluded that late planting hurt performance. However, field crop appearance and grain test weights appeared sufficient to report results although yields were slightly lower.

Location: All-Tex Seed Co. farm, F.M. 300, southwest Levelland
Soil Type: ?
Previous Crop: Cotton
Land Preparation: Conventional tillage, cotton seeded in May, but failed; sorghum replanted after rod weeding.
Row Width: 40"
Plot Size: 4 rows X 33'
Entries/Reps: 12 hybrids, 4 plots each
Test Design: Randomized complete block
Planting Date: July 6, 2009
Seeding Rate: ~33,000 using a plate planter (plates dropped 3-5 seeds per cell, and stands achieved as many seedlings per 'clump' which was thinned manually to 2-3 plants per clump, seedlings usually within 3-4 " of each other)
Fertilizer: 40 lbs. N/A (as urea) applied by hand in early July, which was incorporated by rain two days later
Herbicide: ?
Insecticide: None
Rainfall: June (accumulating deep soil moisture), 4.8"; July 3.4"; , August, 0.2"; September, 0.6"; October, 1.0" ; seasonal rainfall, June-October, 10.0".
Harvest Date: November 13, 2009
Harvest Area: 2 rows X ~25' with a small combine
Trial Average Yield: 3,937 lbs./A; yield corrected to 14% moisture
Trial Yield C.V.: 11.2%

Results & Discussion

This trial was initially targeted for planting about 10 days earlier (appropriate for medium maturity hybrids) but was delayed due to soil moisture planting concerns. Medium maturity hybrids were kept in the trial to compare results versus shorter maturity hybrids. Many of the hybrids included here are typical recommended hybrids from each company for these production conditions and later planting dates. Dekalb DKS 44-20, Pioneer 85G46 & 85Y40, and NC+ 7C22 were retained from the original set of hybrids that targeted a late June planting.

Noting the least significant difference of 489 lbs./A, the top seven yielding hybrids are not statistically different from each other. Both Sprint lines are early maturity hybrids as classified by the company, but bloom dates suggested these hybrids were comparable to other medium-early hybrids.

Plant populations are artificially lower than normal due to the use of a plate planter that deposited seed into the seed furrow in clumps hence clusters of seedlings emerged. These clusters were thinned to 2-3 plants per cluster. In spite of the lower plant population excellent yields averaging 3,937 lbs./A were still achieved. This reinforces Extension's longstanding position that high plant populations are not needed to achieve good yields.

This test was fertilized after planting and received a timely rainfall to dissolve and incorporate the nitrogen. We believe this fertilization enhance yields.

This test will be repeated in Hockley Co. in 2010.

Texas AgriLife Extension Service thanks the United Sorghum Checkoff Program for funding and All-Tex Seed Company, Levelland, TX for providing the land and planting equipment and donating staff time to plant this trial.

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For further information about this report, contact Chris Edens

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Cooperator: All-Tex Seed Co.
Location: Levelland, TX
Planting Date: 7/6/2009
Harvest Date: 11/13/2009

Seed Drop: ~33,000 seeds/A
Applied Fertilizer: 40 lbs. N as urea, before emergence (rained 2 days later)
Rainfall: 10.0" (4.8 accumulated in June prior to planting)
Replications: 4

Company	Hybrid	Company Rated Maturity	Plants/ acre	Average Height (inches)	Days to half bloom	Average Test Wt. (lbs./bu)	(14% H2O) Yield (lbs./A)‡
Pioneer	86G32	Medium-early	14,300	43	56	55.0	4,362
NC+	6B10	Medium-early	14,300	38	58	56.0	4,301
Sorghum Partners	NK4420	Medium-early	15,700	40	59	58.1	4,244
Pioneer	85G46	Medium	11,200	42	60	59.2	4,200
Dekalb	DKS-37-07	Medium-early	11,800	43	58	55.1	4,083
Triumph	TR452	Medium	13,700	44	59	57.1	4,079
NC+	6B50	Medium-early	12,500	41	57	54.3	3,830
Richardson	Sprint II	Early	12,600	44	56	55.2	3,774
Richardson	Sprint W	Early	10,800	43	58	57.3	3,685
NC+	7C22	Medium	13,600	46	60	56.9	3,659
Dekalb	DKS 44-20	Medium	12,600	41	61	56.2	3,576
Pioneer	85Y40	Medium	12,900	45	61	58.3	3,352
		Average	*13,000*	*42*		*56.4*	*3,937*
P-Value			0.0078	0.001		0.0002	0.0019
§Fisher's Protected Least Significant Diff. (0.10)			2,400	3		2.0	489
Coefficient of Variation (%CV)			15.4	6.8		3.2	11.2

‡Numbers in a column followed that differ by more than the PLSD are not significantly different at the 95% confidence level.

See the accompanying text summary for a discussion of the trial results. Medium maturity hybrids were reported in this late-planted trial contingent upon satisfactorily reaching maturity.

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