

FOCUS on South Plains Agriculture

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Cotton Insects

Thrips

For the most part we are out of the woods in regard to having to treat for thrips. Populations have plummeted across much of the South Plains, and most of the cotton is near or beyond the five leaf stage and is no longer considered susceptible to significant thrips damage. However, there are a few late planted fields around that still need to be monitored.

Cotton Fleahoppers

A good bit of the area's cotton crop is prime for cotton fleahopper damage. Many cotton fields are beginning to see pinhead sized squares, and thus it is time to watch for cotton fleahoppers. Fleahopper populations have been high throughout much of the rest of the state. Currently, the Blacklands is reporting unusually high fleahopper populations. We have not picked up many fleahoppers around Lubbock and north, but in Gaines County they are apparently abundant and there are fields there that may require treatment very soon.

During the first week of squaring, the economic threshold is 25 to 30 cotton fleahoppers per 100 terminals combined with less than 90 percent square set. In the second week of squaring, the economic threshold is 25 to 30 cotton fleahoppers per 100 terminals combined with less than 85 percent square set.





Cotton fleahopper adult and nymph

Starting with the third week of squaring up to first bloom, the economic threshold is 25 to 30 cotton fleahoppers per 100 terminals combined with less than 75 percent square set. However, for late planted cotton these thresholds may need to be adjusted towards a more aggressive approach, especially on dryland and low irrigation input crops where square compensation maybe difficult, and for high yield potential irrigated cotton north of Lubbock where fewer heat units may make compensation more difficult. See [Management of Late Season Cotton](#) for more details.

On irrigated cotton in the Lubbock area and south that has the time to make up for the loss of early squares, research conducted by Brant Baugh, Tommy Doederlein, Jim Leser, and Randy Boman has shown that a more conservative threshold maybe in order. Their work demonstrated that given favorable fall temperatures, cotton will compensate for the loss of the first position squares by adding second and third position squares that would normally shed when the first position square is retained.

Lygus

Lygus are still abundant in many of the flowering weedy areas, as well as in alfalfa. Additionally, very high populations have been found in fields of guayule. There are reports that the *Lygus* populations are the highest ever observed on the High Plains for this time of year. *Lygus* cannot be taken lightly and can quickly devastate a good square set, and should be monitored closely, particularly in areas where suitable habitat may produce robust populations, and near recently cut alfalfa. Watch out for the nymphs in particular; this is the stage that will cause the most damage, and if you are picking up quite a few nymphs and are near the treatment threshold, an insecticide application may be justified.



Lygus bug Adult



Lygus bug nymphs

During the first week of squaring, the economic threshold is one *Lygus* bug adult or nymph per 3 feet of row combined with less than 90 percent square set. In the second week of squaring, the economic threshold is one *Lygus* bug adult or nymph per 3 feet of row combined with less than 85 percent square set. In the third week of squaring, the economic threshold is one *Lygus* bug adult or nymph per 3 feet of row combined with less than 75 percent square set. After the third week of squaring, the economic threshold is two *Lygus* bug adults or nymphs per 3 feet of row with less than acceptable fruit retention. For sweepnet counts, a widely used threshold for *Lygus* is 15 bugs per 100 sweeps.

When considering late planted cotton, similar to what was previously mentioned for fleahoppers, a more aggressive approach maybe justified. See [Management of Late Season Cotton](#) for more details.

Saltmarsh Caterpillar

The saltmarsh caterpillar continues to be a common occurrence across the High Plains. Some fields adjacent to CRP lands and other weedy habitats have had large populations moving into them, and some have required treatment. For the most part, the populations we have seen moving into cotton have not caused a great deal of damage. Most of the caterpillars we have seen “on the

move”, are simply dispersing, looking for a place to pupate. What concerns me most about this pest is not necessarily the current generation, but what might happen when the next generation comes about in July. If our weedy habitats dry up, the larvae we are currently putting in the ground may look to cotton as replacement host when they emerge as adults. I am not so much worried about the Bt cotton varieties, but non-Bt cotton may be at risk. We will need to keep our eye out for saltmarsh moths and egg masses in the field.



Saltmarsh caterpillar adult (left) and eggs (right)

Pink Bollworm

Pink bollworm moth catches continue to be low in Gaines, Terry and Yoakum counties, but there are new concerns regarding pink bollworm in the eradication areas. There are reports of pink bollworms resistant to chlorpyrifos (Lock On or Lorsban) in Arizona, and Charles Allen, Program Director, Texas Boll Weevil Eradication Foundation, is reporting that there appears to be a slip in control with chlorpyrifos in West Texas.

Weird Pests

With such an unusual year in regard to rain and temperatures, it is not surprising that we are seeing some unusual happenings. I have observed a few banded winged whiteflies around in low numbers as well as what appears to be omnivorous leafrollers. Neither of these have occurred in numbers to be concerned with, but we should keep an eye on them, especially the

whiteflies, which have caused problems in late-season cotton in the past.

Aphids

Although we are only seeing a few aphids at this time, the potential for aphid problems is quite high in our late cotton. Because fruiting is so delayed, there may not be a sufficient boll load to draw down nitrogen levels in leaves at the time aphids become serious pests. This usually occurs beginning in August. Plants with higher nitrogen levels often have the heaviest aphid infestations. Prudent nitrogen fertility management can help mitigate this situation. Also, the avoidance of any unnecessary insecticide applications for other pests could delay the buildup of damaging aphid numbers.

A number of insecticides are known to "flare" aphids; most notably the pyrethroids. Damaging infestations of aphids during the bloom and boll filling stages can significantly reduce yields. Aphids present when cotton bolls open can deposit contaminating sticky honeydew on the lint. This can potentially cause problems at the spinning mill unless rainfall is obtained or overhead irrigation is used to reduce the sticky cotton potential. Recently we have been fortunate to have Intruder insecticide available for aphid management; this product has been highly efficacious. However, there have been some noted control problems with this product in Louisiana, and in 2007 some consultants in the Rio Grande Valley and the Lower Gulf Coast were reporting difficulty controlling aphids with Intruder. We do not yet know if the control problems were due to application rate error, poor coverage, or resistance, but it does raise some concern.

Managing Insects in Late Planted Cotton

Cool temperatures, excessive moisture, hail, and seedling diseases has resulted in stunted or late planted cotton, and considerable variation in cotton growth stages among fields in a general

area and often within some individual fields. Because of this, producers will not have it easy in applying standard management practices among fields such as these.

For high input fields with good irrigation, a more aggressive approach to insect management is probably justified for late cotton, particularly north of Lubbock where late season heat units may be hard to come by in the fall. Lost squares, especially those lost post-first bloom, may be very difficult to replace. Early season management consists of doing the right things that maximize square set and later boll protection. This would involve controlling cotton fleahoppers and early *Lygus* infestations to insure at least 90 percent retention of 1st position squares during the first week of squaring, and 80 percent thereafter until first bloom. This would take a very aggressive management approach for 3 plus bale per acre cotton, and would require a good understanding of insect induced versus environmental induced square loss. Acceptable fruit loss should be adjusted as realistic yield potential changes. If either fleahoppers or *Lygus* are approaching threshold levels, don't wait for square set to fall below an acceptable level. Once this occurs it may be difficult to recover yield from these squares since there is little time left to compensate for these losses unless we experience an open fall with some good late season heat units.

In lower input fields, the management decision is even more of a crap shoot than usual. Dryland and low irrigation input fields will have a tougher time making up lost fruit unless the weather cooperates. For the pre bloom stage, under dry conditions, preventing insect induced fruit loss may very well not pay off, since much of that fruit will shed anyway. However, under wetter conditions, a more aggressive approach may be justified, and any effort to preserve these squares could pay - depending on the environment. During the bloom period in dryland cotton, it will be important to prevent boll loss due to insects. It is difficult for dryland cotton to compensate for lost fruit during this period, and if we do not see an

open fall, retaining these fruit will be critical. Insect control decisions become very difficult once yield potential drops below 200-250 pounds per acre. DLK

Cotton Pests Around the State

Rio Grande Valley (reported by Manda Cattaneo, IPM Agent, Cameron, Hidalgo, and Wilbrey counties)

Whiteflies are spreading and nymphs are beginning to show up, thus prompting some insecticide applications. Bollworms/budworms continue to be found, some populations in non-Bt cotton have required treatment.

Middle Coastal Bend (reported by Stephen Biles, IPM Agent, Calhoun, Refugio, and Victoria counties)

Bollworm eggs and small larvae are showing up in non-Bt cotton. We are finding quite a few stinkbugs in soybeans and monitoring them to see if they move to cotton in significant numbers.

Southern Blacklands (reported by Dale Mott, IPM Agent, Milam and Williamson counties)

Cotton fleahoppers levels continue to persist across the area with levels ranging from 8 to 72 per 100 plants checked. Most fields have between 18 to 32 per 100 plants. Aphid populations have been on the decrease, and bollworm/budworm egg lays range from 0 to 10 per 100 plants.

Central Blacklands (reported by Marty Jungman, IPM Agent, Hill and McLennan counties)

Cotton has grown-off dramatically over the past week. The older cotton appears to be set fairly well with squares. Fleahoppers in a number of fields are at high levels. Producers will need to

monitor the younger cotton closely for fleahoppers and any older fields that have not set well.

Northern Blacklands (reported by Glen Moore, IPM Agent, Ellis and Navarro counties)

Cotton fleahopper are picking up, averaging 2 to 24 per 100 plant terminals. We have noticed that boll weevil sprays of malathion have suppressed fleahoppers. Aphids continue to build, especially in field treated for boll weevils. We are noticing early symptoms of the entomopathogenic fungi *Neozygite fresenii* beginning to affect some aphid populations.

Rolling Plains (reported by Ed Bynum, IPM Agent, Jones, Mitchell, Nolan, and Scurry counties)

We are currently on the look out for cotton fleahopper, but have not noted a great deal of activity. Additionally, grasshoppers are plentiful and we are monitoring them to see if they will move from weedy area into cotton. DLK

Cotton Agronomy

Crop Progress Overview

The last week has pretty much been "just what the doctor ordered" for High Plains cotton. We have seen a very significant growth spurt and turnaround for a lot of fields. Unfortunately, storms damaged some areas during the early part of the week. Overall, we are beginning to get some excellent growth out there in most fields. There is squaring cotton now in Gaines County and perhaps in some other areas. It is time to get the over-the-top herbicides out to "beat back" weed pressure. Reports we are hearing from researchers and producers indicate that we are seeing outstanding weed control in many fields. What a change compared to this time last year.

Typically the weeds this year are succulent and are not drought stressed, so control seems to be on track.

During the past week, temperatures have begun to track normal or slightly above normal ([View graphic of June temperatures](#)). Overall heat units from May 1 now total about 475, however we are still about 20% below normal ([View graphics of 2007 heat unit accumulation](#) and [2007 vs. 2004, 2005 and 2006 heat unit accumulations](#)). The good moisture situation ought to help keep the crop moving nicely. I hope we continue to get good rainfall later in July and August.

Management of Late Cotton in 2007

Dr. David Kerns and I have updated the [Management of Late Cotton in the High Plains](#). We have many fields that are significantly behind because of lagging development due to environmental or seedling disease damage, etc. This guide covers several areas including: Assessing Crop Potential (including comments on stands, and yield and quality potential), and Managing for Earliness (including comments on reducing the potential negative impacts of cultural practices, nitrogen application adjustments and catch up, irrigation; mepiquat chloride use, insect control issues, and appropriate harvest aid considerations).

Nitrogen Fertility in 2007

A one-bale per acre cotton crop will remove about 45 lb of actual N per acre, but due to inefficiencies in uptake and in the soil, about 50 lb N/acre are actually required. It is important to not over fertilize with N if reduced yield potential is anticipated. This is due to the fact that it makes late cotton more difficult to manage on the back side of the season. Some late-season insect problems, such as aphids, can be aggravated by high N status plants, and incidence of Verticillium wilt may be increased. Assess the yield potential of your specific fields and make N fertilization adjustments accordingly.

In fields that received preplant fertilizer treatments based on yield expectations for May planted cotton; no additional fertilizer will likely be needed. Exceptions could include fields in the "sandyland" regions where leaching of N may have occurred. Such fields along with those that were not late planted that have not been fertilized prior to planting could likely benefit from sidedress applications of N. Apply sidedress fertilizers as early as practical (but before bloom), and take care to minimize root pruning during application. If one has an N fertilizer recommendation program intended for a May planted crop, it is appropriate to reduce the amount applied.

Most High Plains soils typically provide sufficient N to produce about 200 pounds of lint. It takes about 10 lb of N to produce 100 lb of lint. If the yield potential is reduced by one-fourth to one-half of a bale per acre due to late planting or lagging development, then also reduce the actual N rate by 15 to 25 lb per acre. With our dryland soil profiles full of moisture at this time, it is likely that sidedressing of nitrogen will pay off in 2007. **A good rule of thumb is to apply 30 to 50 pounds of actual nitrogen to dryland fields. Benefits from low rates of foliar fertilizers are questionable.**

Producers should take note concerning nitrogen fertilization of fields which have had above normal precipitation. Many growers have had a difficult time getting N fertilizer applied. This is especially true for producers who normally apply their fertilizer through center pivots or drip irrigation systems. We have not been irrigating in many fields in June. It is time to get this crop fertilized. A knifing rig fitted with colters would be a good way to accomplish this fertilization. Apply the fertilizer to the side of the bed for low elevation spray (LESA) fields and place colters to the side of the bed into the "wet furrows" for low energy precision application (LEPA) systems. For alternate-furrow sub-surface drip irrigated fields, place the colters to the side of the bed in the furrow with the drip tape, being extremely careful not to damage the tape. Since

most drip tape has been placed 10-14 inches or so deep, placement of N fertilizer 4-5 inches deep should suffice.

A High Plains Crop Production Guide Series publication concerning nitrogen fertilizer management for cotton has been generated by Dr. Kevin Bronson and me; [Nitrogen Fertilization Considerations for High Plains Cotton](#). A Department of Soil and Crop Sciences cotton nitrogen fertility guide entitled [Managing Nitrogen Fertilization in Cotton](#) is also available.

Tank Cleanout Concerns

This time of year, I perennially get some phone calls and make field inspections concerning hormone-type herbicide damage on cotton. Typical phenoxy herbicide symptomology includes “strapping of leaves.”



Based on field research conducted by Dr. Wayne Keeling, the severity of yield decrease is related to the actual dose and the crop stage. Severe damage incurred when the crop begins to

fruit is more likely to reduce yield than when the crop is younger with less severe damage. Doses of sufficient level to continue “strapping” of newer leaves for weeks after application will probably significantly negatively impact yield.

Producers should be aware, especially in light of the “tank and hose cleaning ability” of some of the newer herbicides, that phenoxy residue in sprayers can be a real problem. ***My suggestion for our growers is that tanks, hoses, and sprayers which are used for applying phenoxy type herbicides be dedicated SOLELY to that purpose.***

If producers are unable to purchase separate tanks, hoses and/or sprayers, then it is imperative that several issues be addressed. Do not leave herbicides in tanks for an extended period of time. It is best to use “chemical resistant” hoses. Replace hoses when changing out tanks. The last thing a cotton field needs is for a phenoxy material (even at low concentrations) to get “pulled from the tank or hoses” and get sprayed on cotton – especially those fields with high yield potential (i.e. subsurface drip or high capacity pivots). If multiple herbicides are used in the sprayer, then I suggest that producers purchase various tank cleaning agents from their dealers and follow the directions, including cleaner concentration, religiously. If a tank/sprayer is to be used on cotton, I suggest that the tank be flushed out with clean water and the appropriate tank cleaner be mixed at the appropriate concentration. The producer should then spray the cleaning solution run through the booms and nozzles. Leave the booms in a horizontal position and let the cleaning solution sit in the tank at least overnight. This might help reduce some anxiety over phenoxy damage later. It doesn’t take very many lost bales of production to pay for an additional tank and hoses or sprayer, and we certainly don’t need to deal with this issue on cotton that is already behind in terms of development.

We have linked to a good [University of Missouri publication on cleaning sprayers](#). RKB

Small Grains Entomology

Wheat Head Armyworm Causing Discounts at Elevators

Some wheat arriving at elevators from Parmer County all the way to the top of the Panhandle and into Kansas is being discounted, sometimes heavily, for insect damaged kernels (IDK).



Damage caused by wheat head armyworm

The culprits here are wheat head armyworm larvae. Monti Vandiver, Extension IPM Agent in Farwell, has done extensive collections of larvae from wheat heads, and he is reporting that almost all of the larvae are wheat head armyworms. These larvae chew holes in the kernels at night, and this results in a discount at the elevator. I have heard reports of discounts reaching 50 cents per bushel north of I-40.

Wheat head armyworm is present at low numbers in most years, but is quite abundant this year. It appears that the dryland wheat now being harvested has heavy infestations in some areas,

and we are crossing our fingers that irrigated wheat, which might be a little farther behind in maturity, has weaker infestations.

These larvae feed at night and rest in the soil at the base of the plant during the day. Scouting in the day should be for damage, and feel free to dig up plants and look for the larvae. Expect to find higher numbers of larvae toward field edges, and expect harvested borders to receive a greater discount than grain taken from the center of the field.



Wheat head armyworm larva

The big question now is whether insecticide use makes sense. The short answer is, “probably not”, except for irrigated wheat that is

several weeks from harvest. Recall that most pyrethroid insecticides have at least a two week pre-harvest interval. Lannate has a 7 day PHI. Also, according to Carl Patrick, Extension Entomologist in Amarillo, it seems that the populations are cycling out now and the larval counts are going down in fields. If you are thinking about using an insecticide, check the pre-harvest interval and make sure there are still abundant treatable larvae in the field. There are no established economic thresholds for this pest.

Some people are asking how this infestation went undetected for the most part. The short answer is that dryland wheat is not often scouted. The longer answer is that it did not go entirely undetected; Carl Patrick covered it last Thursday in his newsletter.

Corn and Sorghum

Things are still quiet in corn and sorghum. We are still watching for first generation southwestern corn borers, but the numbers are low at present. Low numbers of whorl feeding pests such as fall armyworm and corn earworm are present.

This is shaping up to be a very good year. The one thing that troubles me a little is that I am not seeing many corn leaf aphids, and am therefore not seeing the beneficial insect species that usually move into the field with them. This means that those beneficials won't be around when and if spider mites start to build up as we move toward tassel. Serious mite problems in our part of the High Plains are usually dependent on the weather and on having enough beneficials around to defeat mite populations. It would be a good idea to check for spider mites, especially in the three weeks prior to tassel and the three weeks after tassel. Entomologists are usually the kind of people that get nervous when things seem to be going right. RPP

Pumpkin Entomology

Steve Davis, Extension IPM Agent in Crosby and Floyd counties issued an alert for squash bugs in pumpkins today. We have reprinted the following text from his newsletter.

“Pumpkin producers need to monitor fields closely beginning this week as squash bugs are reaching economic proportions. There is no established economic threshold, but some would say that 1 per field is too many. Approximately one third of Program pumpkin fields monitored this week have yielded as much as 60% infested plants with one or more adults/plant and an average of 1.25 egg masses per plant. These are the larger, more pest-attractive pumpkins, planted relatively early, that managed to survive most of the foul weather. More critical is the reduced stands that have been experienced due to weather parameters - reduced plant stands, an effectively reduced growing season (seems as if we are a month behind), and more insect pressure may make treatment decisions much easier this year.”

To read the full report and see some photos, go to the [Crosby/Floyd IPM newsletter](#).

Grain Sorghum Agronomy

Fertility Requirements for Grain Sorghum

Grain sorghum, like any other crop in the South Plains, has a couple of rules of thumb for key nutrient requirements. Much grain sorghum in recent years, especially when prices are low and sorghum is treated as a step-child, has received little fertility. This, along with too high seeding rates (see FOCUS, June 15th edition), often holds back sorghum production when conditions are otherwise favorable for even modest grain yield potential.

The following are two general rules of thumb for grain sorghum fertility:

2 lbs. of nitrogen (N) per 100 lbs. of production.
0.375 lbs. of P₂O₅ per 100 lbs. of production.

For dryland production, N is the focus and P is usually disregarded. Phosphorus becomes more important once yield potential passes 4,000 lbs./A.

So, for a 5,000 lbs. per acre grain sorghum crop, the N requirement is about 100 lbs. of actual N, or units of N, per acre. That target of 100 lbs. N/acre can be reduced by the level of soil N. If residual N fertility is good, then up to 20 lbs. of N per acre may be available from the soil and the subsequent N fertilizer requirement reduced to about 80 lbs. of N per acre. For the same 5,000 lbs. per acre, P requirement would be about 18 lbs. of P₂O₅ equivalent.

Timing of Fertilizer Application

Phosphorus is best applied preplant with incorporation in a fertilizer blend or perhaps by the traditional starter fertilizer method of placing starter fertilizer 2" to the side and 2" below the seed. P fertilizer placed on the surface without incorporation is of little benefit in the year it is applied.

Nitrogen is a mobile soil nutrient. With all the rain we have had, pre-plant N applications may have resulted in N being moved deeper down in the soil profile. For dryland grain sorghum production, collectively as a group of farmers across the South Plains, we would probably all be better off applying N preplant. Otherwise we find reasons to apply no N at all, and yield potential may suffer. With preplant applications, the least expensive form of N can be used and incorporation is more thorough.

However, producers may prefer to wait until they are sure their crop is established before they spend the money on N fertilizer. In this case, for one-time applications of N (knife rig, rolling coulters, etc.), be sure to minimize nipping off roots. Perhaps more importantly, ensure N is

applied within about 30-35 days of planting. This places the N in soil in advance of growing point differentiation, an important component of yield potential. This process initiates about 30-35 days after emergence, and over about a two-week period, the maximum number of potential spikelets on each head and the maximum number of potential seed per spikelet is determined. Later N applications will not affect this. Peak N uptake begins to occur as the sorghum plant progresses past the 10 leaf stage through about the end of boot stage.

If N can be applied through the pivot, it is still recommended that much if not most of the N be applied by the time of growing point differentiation. Some later N is acceptable, but it should still be applied by no later than boot stage.

What is my Projected Yield Potential?

Now that I have a rule of thumb for N requirement for grain sorghum, how should I gauge the yield potential? Tell me how much it will rain! Grain sorghum yield response to 1" of soil moisture or effective irrigation and rainfall is about 350-425 lbs. per 1" of water. However, it requires a certain amount of water to reach the point of initial grain production. In general, a low plant population stand of sorghum may use about 5" of water prior to grain production, a medium plant population uses about 6", and a high plant population sorghum crop uses about 7-8" of water prior to initial grain yield.

For 2007, where soil moisture conditions are excellent, up to 6" of water in the soil may be available to sorghum. Extension estimates that the 90-day median rainfall in the South Plains is about 6". Then add in projected irrigation.

For example, let's assume a soil profile of 5" of available water at planting, 6" of median rainfall for the sorghum growing season, and 6 inches of projected irrigation. This gives us a total of 17" of water. Hopefully, the plant population is not too high, and for this example a medium seeding rate would be appropriate.

Hence take a deduction of 6" of water use prior to production of grain.

(Soil water + median rainfall + projected irrigation – initial water for grain) X 400 lbs./A = Target grain yield potential

In this example: (5" + 6" + 6" – 6") X 400 lbs./acre = 4,400 lbs./acre yield. This field would have a potential N requirement of 88 lbs./acre.

Propazine Application Difficulties

Several farmers have reported difficulty spraying propazine. Some farmers have had to remove screens and/or exchange out to larger tips. Be aware of the potential problem in any further preplant or pre-emerge propazine applications. Hopefully, corrective action will be taken for the 2008 cropping season.

Announcements

Precision Ag Expo in Plainview, September 6

The Texas Plant Protection Association and many co-sponsors (including Texas A&M and Texas Tech) will hold the second annual Precision Ag Expo in Plainview at the Ollie Liner Center on September 6. We have provided a [link to the TPPA information page](#) for this meeting.

FOCUS on South Plains Agriculture

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