

FOCUS on South Plains Agriculture

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Cotton Insects

Cotton fleahoppers abundant in many areas
Lygus: huge numbers in some places
Remember aphids when choosing Lygus insecticides
Cotton pests around the state

Cotton Agronomy

Crop progress overview
Fertilizer questions being asked

Cotton Market Update

Market volatility could be ahead

Corn Insects

Southwestern corn borer flight pending
Spider mite update

Sorghum/Peanut Agronomy

Nitrogen deficiency
Sorghum: Follow up on propazine application problems
Late season planting window is closing

Pesticide Update

Cobalt insecticide now labeled

Cotton Insects

Cotton Fleahoppers

Cotton fleahoppers have been present in fairly high numbers in many fields for several weeks and most recently have been most troublesome north and west of Lubbock. Some fields are seeing as many as 90 fleahoppers per 100 plants. Where treated with insecticides, control appears to be good. Most populations have been primarily adults, but nymphs are beginning to show up more regularly.

As mentioned in previous issues of FOCUS, the decision to apply insecticide for fleahoppers should be based on the number of fleahoppers present, the squaring rate, and the percent square retention. 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. 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. This being said, our generally late crop will require a more aggressive management style if average yields are to be expected. There is a great deal of cotton that has yet to produce a bloom, especially in the northern areas. Long-term weather records would indicate that some of this cotton will be lucky to have 1 to 3 weeks of blooms available for harvest. Short-term weather patterns would provide a more fa-



avorable outlook with 3 to 5 weeks available to produce harvestable fruit. What the fall will bring is anybody's guess. The risk is yours to take, but in a year like this it is probably not a good idea to let square retention drop below 80%.



Cotton fleahopper nymph (top) and adult (bottom)

Lygus

Lygus appear to be on the move and some fields have experienced high infestations. In a number

of fields west of Lubbock and in the Levelland area, we have been picking up 12 to 44 *Lygus* per 100 sweeps. **These are huge numbers.** These populations have been almost 100% adults, but a few fields have some nymphs. Kerry Siders, IPM Agent in Hockley and Cochran counties, is reporting that *Lygus* have become extremely numerous and appear to be causing significant square loss with some fields having only 50% square set; **do not under estimate the damage potential of this pest.**

When *Lygus* feed on squares they are typically trying to feed on the developing anther sacs. Whereas smaller *Lygus* nymphs do not have long enough mouthparts to effectively feed on squares >8mm in length (.31 inches), the adults and large nymphs can easily feed on large squares, and research from California has shown that the adults prefer to feed on squares relative to other cotton plant tissue. California research has shown the strongest correlations with square loss to be with large nymphs and adult *Lygus*. Contrary to what has been demonstrated in California, researchers in Arizona are suggesting that the nymphs may be causing the most damage. Obviously, we have a great deal of work to do regarding *Lygus* damage in cotton. After a square has been fed on by a *Lygus* it will usually shed, although this may take several days depending on square size. Large squares will sometimes not shed, but the resulting bloom will be visibly deformed and the anthers will be damaged resulting in what is known as a "dirty bloom". This may result in poor pollination and deformed bolls.

When scouting for *Lygus*, concentrate on areas of the field next to weedy corners, CRP land, or recently cut alfalfa. This is where you will usually pick up the initial infestation. Additionally, concentrate on such areas where they exist on the southern or western edge of the cotton. On the Texas High Plains, *Lygus* appear to primarily move for south to north and west to east.



Lygus adult on a square



Lygus damage to anthers results in a “dirty bloom”

Lygus will typically disperse from their host into cotton early in the morning, 1 hour be-

fore sunrise, and in the evening, 1 hour after sunset. Female *Lygus* go through a short non-reproductive period before mating and laying eggs. Eggs are laid on stems and in the notch between the petiole and stem, and will hatch in 7-10 days depending on temperature. They will go through 5 instars, which will take 14-20 days before molting to an adult.

[View graphic of lygus life cycle](#)

There are a variety of techniques we can use to sample for *Lygus* including: beat sheets, sweep nets, beat buckets, and KISS samplers. All of these techniques are viable methods, but personally I prefer a sweep net since it is easy to carry, use, and is fast. Research has shown that sweep nets are highly effective for sampling adults, but less so for picking up nymphs. Beat sheets tend to be better for sampling nymphs. However, sweeping can be extremely variable depending on the technique used. If you are using a sweep net do not use a butterfly net. These are not sturdy enough for vigorous sweeping. Use a 15-inch diameter heavy duty canvas sweep net. Sweep two rows at a time as you walk between the rows, making sure to hit the plants low down and making a full 180° arc. Just hitting the tops of the plants is inadequate. Remember, larger *Lygus* prefer the larger squares, and will thus most often be lower in the plant canopy. The sweeping technique should be fairly vigorous, and you should probably be able to take only 25 sweeps per set due to the accumulation of leaves in the net.

When counting *Lygus*, go through the samples slowly. The *Lygus* will rapidly rise to the top of the net and fly. Also, avoid mistakenly counting scentless plant bugs as *Lygus*. *Lygus* can be distinguished from scentless plant bug in that *Lygus* tend to be golden to yellowish-green in color while most of the scentless plant bugs currently found in cotton tend to be light brown in color and have a silvery tint. Also, the scentless plant bug has a more pronounced and wider head

relative to its thorax than does *Lygus*. Scentless plant bugs are not known to cause damage in cotton, but little information is available for this insect.



Adult scentless plant bug (top) and adult Lygus hesperus (bottom)

The decision to treat for *Lygus* based on the Texas Cooperative Extension publication E-6A publication, "[Managing Cotton Insects in the High Plains, Rolling Plains and Trans Pecos Areas of Texas, 2007](#)", is as follows. 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. After peak bloom, begin treatment when drop cloth counts exceed two *Lygus* bug adults or nymphs per 3 feet of row and plants have failed to retain squares and set bolls normally during the first 4 to 5 weeks of fruiting.

However, when using a sweep net to sample for *Lygus*, a well accepted threshold is 12-15 *Lygus* per 100 sweeps.

***Lygus* management and aphids**

Aphids are widespread and can be found in just about every field. Most populations are low, but there are a few fields where the aphids are building to levels that raise concern. With the early abundance of aphids, insecticide choice for managing *Lygus* could be critical this year. Where aphids are present, broad-spectrum insecticides should be avoided when possible, especially the pyrethroids which have been shown to flare aphids. However, we currently do not have many alternative choices. For *Lygus* control, the primary product that is soft on beneficial insects yet promises to offer good *Lygus* control is Carbine. Unfortunately, we do not have any replicated data on how this product will perform on *Lygus* on the Texas High Plains. Efforts are underway to remedy this problem. Never-the-less, a number of consultants have been using Carbine for *Lygus* management in our area and thus far have not reported any problems. If using Carbine, keep in mind that this product does not act like the other products you have used for *Lygus* control. Carbine does not kill the insect outright, but affects its feeding. *Lygus* can become intoxicated by Carbine either by contact or through ingestion. Carbine has translaminar activity, and will move into the leaf for rain fastness, but is not translocated. Once a *Lygus* has been exposed to a lethal dose of Carbine, feeding stops almost im-

mediately and the bug starves to death, which will take 2 to 5 days depending on temperature and humidity. Small nymphs should die more quickly than large nymphs and adults. Under our current conditions, it will probably take 3 to 4 days before substantial mortality is observed. If you are unsure if a population has been intoxicated, you can collect the *Lygus* in question and place them in a ventilated jar with some fresh green beans (be sure to wash them first). Do not expose the jar to hot conditions, but place it in an air conditioned room, and wait to see how long it take the *Lygus* to die. If you use a pyrethroid for *Lygus* control, hopefully you'll have time for the beneficial insects to repopulate the field before the aphid population explodes; but be prepared to come back in a few weeks to control the aphids. Carbine does have aphid activity, however, I have been in one field that was treated with Carbine at 1.4 oz/ac, yet still had some live aphids present after 6 days, but these aphids could very well have been be dying. DLK

Cotton Pests Around the State

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

Bollworm egg counts averaged 0.5 eggs per plant in a field north of Mercedes and 0.6 in a field east of Sebastian. Small (1st, 2nd, and 3rd instar) bollworm/tobacco budworm larvae averaged 60 per 100 plants in a field northeast of Combes. Tobacco budworm trap catches averaged 21, 76, and 79 per day north of Weslaco, north of Combes, and north of the Sugar Mill respectively. Bollworm trap catches remained low.

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

We are finding bollworms and stinkbugs. Some fields have been above threshold, but nodes above white flower averages range from 2-6. Thus, some of the fields have been cut out for a while and are nearly out of the damage window for bollworms.

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

Fruit loss has really added up over the past few weeks and the cotton is going to begin setting more fruit. For the most part, we are dealing with large, growthy plants with poor fruit loads to keep them in check. Fleahoppers continue to be found in moderate numbers, and aphids are light to moderate. Bollworm/budworm eggs are ranging from 2 to 14 per 100 plants. Stinkbugs have been light.

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

Cotton continues to grow-off quickly. The wet conditions have caused a significant amount of bloom and small boll shed. The insect of most concern at this point is the cotton bollworm. Bollworm egg counts range from 4-41 percent. Bollworm larvae counts range from 0-20 percent. Non Bt cotton will range from 4-20 percent. Most fields of non Bt cotton have bollworm larvae above economic threshold (10 larvae per 100 plants). We have seen several fields of BollGard I cotton with larvae numbers between 10 to 16 percent. There will probably be additional fields of BollGard I to be treated for bollworms as we go into next week. Producers should pay special attention to monitoring for bollworms under bloom tags in BollGard I cotton. Peak bollworm egg lay occurred on July 9.

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

Fleahopper numbers ranging from 6 to 24 per 100 plant terminals were observed in early squaring cotton this past week, and aphid number remain light. Bollworm activity has increased over the past few days. Egg numbers have ranged from 4 to 15 per 100 plants. Larval numbers are highly variable, but range from 0 to 11 per 100 plants in non-Bt (refuge) cotton. In Bollgard cotton larval numbers have ranged from 0 to 2 per 100 plants.

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

Cotton across the area range from cotyledon to 1/3 grown squares, but more fields are beginning square initiation. Fleahopper numbers in our program fields are ranging from 2.5 to 40 per 100 plants with 60% to 94% square set. Last week the majority of the fleahoppers were adults, but this week nymphs (about 1/3 of the population) are also being found in the cotton terminals.

Southern Rolling Plains (reported by Richard Minzenmayer, IPM Agent, Runnels and Tom Green counties)

The older cotton is kicking in gear and progressing much better than the younger cotton. Cotton fleahopper numbers ranged from 12 to 33 fleahoppers per 100 terminals and square sets ranged from 59 to 88%. Square sets are generally lower than what we would like to see right now. The current weather condition is a major contribution to this problem.

St. Lawrence Valley (reported by Warren Multer, IPM Agent, Glasscock, Reagan, and Upton Counties)

Most area cotton ranges from 4 true leaves to 1/2 grown squares. The field of April planted cotton has begun to bloom. We are in the critical stage for cotton fleahoppers at this time which is

the 1st 3 weeks of squaring. Fleahoppers ranged from 0-30 per 100 plants and square sets ranged from 72%-100%. DLK

Cotton Agronomy

Crop Progress Overview

Over the last two weeks substantial rainfall has been obtained across many counties of the High Plains. Violent thunderstorms have continued to pound fields in some areas. Parts of Crosby County and counties to the east have experienced very high wind events, high rainfall and some hail. Portions of Lynn and Gaines counties, among others have had similar situations. Many fields are still 10-20 days away from blooming due to accumulated effects of the growing season.

Most regions are still in good condition relative to soil moisture, and we continue to have substantial rainfall chances in the forecast for much of the region; [Lubbock rainfall for 2007](#). The month of June ended up being about 15% below normal for heat unit accumulation at Lubbock; [Lubbock cotton HU accumulation 30-yr average vs 2007](#), and [Lubbock cotton HU accumulation 30-yr average vs 2004-2007](#). The air temperatures for Lubbock have been: for [June](#) and [July 9](#). For a May 1 planting date (of which we have few fields planted that early) we are 17% below normal at Lubbock. Other areas, specifically the higher elevations are way behind that. We should begin blooming at the AG-CARES facility at Lamesa soon, as we are around 900 heat units since planting there. Personal observations and many producers with whom I have visited indicated that many fields may still be two weeks away from first bloom.

Since my last contribution to the newsletter, it has been reported by NASS (National Agricultural Statistics Service) that the High Plains (Districts 1N and 1S) collectively planted about 3 million acres in 2007. Last year's number was

about 3.9 million acres. Most of the acres were replaced by corn and sorghum. As suspected, the biggest reduction in acreage compared to last year was in District 1N, with about 530,000 acres planted vs. 995,000 last year, a 47% reduction. District 1S planted 2.883 million acres in 2006, and is down about 14% in 2007 at 2.490 million acres. Most of the acres diverted from north of Lubbock are from high production fields, so I suspect we will be off about a million bales this year. Only time will tell what the 2007 crop will produce.

Fertilizer Questions Being Asked

Most questions that I have recently been asked deal with getting fertilizer applied. Pricing of nitrogen (N) fertilizer has been a hot topic. Anhydrous ammonia (82-0-0) prices indicate that a pound of N is costing about 29 cents. Contrast that with urea-ammonium nitrate (UAN solution, 32-0-0) prices of about 49 cents per pound of actual N, and one has a real dilemma. Many irrigated producers are still looking to fertilize for at least a 2 bale/acre yield goal or up to 100 lb N/acre (since it takes about 50 lb N/bale of yield goal), depending upon how much N was previously applied. The price differential/acre is substantial at about \$29/acre for anhydrous ammonia vs. about \$49/acre for UAN.

Since very few producers have begun to irrigate due to good soil moisture conditions, and since many producers have moved to fertigation practices for N applications, many are behind in terms of getting N applied. I think the most important considerations before using anhydrous ammonia are worker safety and the quality of application. Producers should follow handling protocols for anhydrous ammonia, and make sure that their employees are properly instructed in the handling of this fertilizer material. Also, the last thing we need on a late crop is to get some crop damage further set backs due to poor ammonia application. Generally, with the soil moisture we have in many fields, there should be little free ammonia escap-

ing from the injection zones if proper application depth and injection knives are utilized. The issue here is to prevent any loss of free ammonia behind the knife. Once injected into the soil, ammonia (NH_3) rapidly converts to NH_4 and then requires bacterial conversion first to NO_2 and further to NO_3 (the form most readily utilized by the plant). There can be somewhat of a lag time (perhaps a few days) as ammonia converts to NO_3 . With our soil temperatures this conversion process should be relatively rapid. Scientific literature suggests that there is some uptake of the NH_4 form by cotton. Agronomic performance of the ammonia fertilizer source is comparable to other N sources, assuming appropriate application protocols are followed. The bottom line is that producers should get fields fertilized with N as soon as possible. For more comments on this year's N fertilization concerns, see the June 22 issue of FOCUS. RKB

Cotton Market Update

From a life of contract low on May 14th of 51.60 cents, the December cotton futures contract has been in a steep climbing pattern to life of contract highs in recent days. Because of reduced acres planted and expected reduced production, strong exports and heavy fund buying, the most recent contract high is over 16 cents higher than the May low. Even though there are some technical reasons for the market to correct (3 gaps and a very high RSI), the combination of mildly bullish fundamentals and the presence of funds, seem to be keeping the market headed up for now.

The main purpose of this note is to make sure producers are aware that the market could fail as it moves toward 70 cents and could correct to a much lower level if crop conditions were to improve by the time the USDA August Supply and Demand report is released a month from now. The August report is the first survey-based report and often is a very pivotal date in the cotton market.

Producers who were listening to Dr. Carl Anderson on May 15th when he recommended the purchase of 56 cent December calls to hedge against the loss of at least part of the counter cyclical (CC) payment, realize that turned out to be very good advice. The fortunate few, who actually took his advice, should probably take the profit out of the position and consider that as part of their CC payment. As of Wednesday, July 11th, the 56 December call was trading at over 1100 points (11 cents)! Getting out of the position Dr. Anderson suggested would have resulted in a gain of over 9 cents and surely covers any reduction in the CC payment.

The current market is offering producers an opportunity to set a floor price on the current crop above loan for the first time in many months. Producers should be giving some consideration to purchasing puts to set a floor at 4 to 5 cents above loan. For example, in the next few days, March 64 or 65 cent puts could likely be purchased for 2 cents. Assuming a negative 6 cent basis for base grade, you would be setting a floor price at about 4 to 5 cents over loan.

If you have old crop bales still in the loan, you probably should reevaluate that situation. With the current market, you should be at no worse than a zero equity position compared with a negative equity position earlier.

JS and JY

Corn Insects

Southwestern corn borer flight pending

Greg Cronholm, IPM Agent in Hale and Swisher counties, monitors southwestern corn borer development. His data from yesterday indicate that 42.8% of the SWCB are now in the pupal stage, 17.1% are in the pre-pupal stage, 28.6% are in the fifth instar, and 11.4% are in the fourth instar. It is time to gear up for scouting second gen-

eration SWCB. We generally scout the zone from two leaves above the ear leaf to four leaves below the ear leaf, and this is sufficient to let us find about 80 percent of the larvae that are present. We have produced a [7.5 minute video on scouting for second generation SWCB](#). Insecticide applications should be timed for hatching eggs and small larvae. Larger larvae tunnel into plants and are difficult to control with insecticides. As mentioned in last week's FOCUS, if an insecticide application needs to be made for SWCB, choose a non-pyrethroid such as Intrepid or Tracer that will not flare spider mites.

Spider mite update

Spider mites are relatively abundant in a (very) few fields, and one of the fields I scouted yesterday had Banks grass mites that had moved up to the ear leaf. **However, almost all fields are not near treatment levels.** The recent rains have helped keep populations in check, but I also saw plenty of healthy colonies yesterday. Miticide options were discussed in the July 6 edition of FOCUS.

Sorghum/Peanut Agronomy

Iron Deficiency Symptoms in Peanuts, Grain Sorghum—An Annual Occurrence

In the past several weeks several callers have inquired about yellowing in peanuts and also in grain sorghum. These questions surface annually in June into early July. For a detailed discussion of Fe deficiency, pictures, and management strategies, review the Iron section of the [July 2, 2004 edition of FOCUS](#).

In West Texas and eastern New Mexico, iron typically becomes limiting in crop production when soil pH is very high, e.g. caliche soils, or when soils become temporarily water logged. For all crops—peanuts, grain sorghum, etc.—Fe

deficiency symptoms are on the younger leaves with green veins in the leaf and yellow in between. Iron is not mobile within the plant. Most crops here in the High Plains tend to grow out of the condition to some extent as the rooting volume expands and conditions dry out. However, crops on highly caliche soils will remain chlorotic throughout the season, and growth restriction can be severe for both peanut and grain sorghum.

In contrast to iron deficiency, nitrogen deficiency shows up more on older leaves because nitrogen is mobile within the plant. Some fields this year, particularly on peanuts, have had a lighter green cast, in part I believe do to downward movement of soil nitrogen. Nitrogen fixation should catch up with the light green condition at some point, provided you have good *Rhizobium* nodulation.

My preference for correcting iron deficiency, when merited, is iron (ferrous) sulfate [1 lb. per 5 gallons; 5-10 gallons/A for smaller plants and 10-15 gallons/A for larger plants] and a sticking agent rather than expensive iron chelates. Ferrous ammonium sulfate can also be used. Spray coverage is important. On several fields I have seen in past years, however, I was never convinced that spraying the iron actually helped even when 3-4 applications were made. With warm weather and expanding root volume, mild iron deficiency gradually disappears. Again, for further information consult the issue of FOCUS noted above.

Grain Sorghum

Follow Up on Propazine Application Problems—What We Learned

I reported in the June 20th edition of FOCUS about producer spraying difficulties using propazine, or Milo-Pro, from Albaugh. A couple of factors may explain most of the difficulties producers experienced. First, the label recommends you use a coarser screen, 50-mesh, whereas some producers still had 100-mesh screens in their lines. Second, Albaugh suggests

that spray pressures need to be up to 60 psi to ensure the finer talc-like particles pass through the system. Maintaining strong agitation in the tank minimizes potential problems for propazine clogging screens and tips. Finally, from producer experience, when you mix propazine up it needs to be sprayed soon. Leaving it in the tanks overnight in extreme cases is asking for trouble.

Few fields should receive propazine the rest of the season as most planting is complete and the sorghum is up.

Window for Late-Season Planting Options is Closing

A few scattered reports indicate a little more grain sorghum will be planted. For Lubbock Co. and other central South Plains counties, the last recommended planting date is July 10 for early maturity grain sorghum, but 5 days later for Lynn, Dawson, Gaines, and off the caprock to the east and southeast. Producers who still intend to plant need to ensure that they have shorted grain sorghum maturity. Sunflower has similar last recommended planting dates as well, although this crop can mature under cooler conditions than grain sorghum. Once mid-July arrives, limited planting of summer annual forages like sorghum/sudan or hybrid pearl millet can still produce good yields and there is not risk associated with the seed maturity as needed in other crops.

Pesticide News

Cobalt insecticide recently labeled

Cobalt ([click here for label](#)) is a premix of chlorpyrifos (active ingredient in Lorsban) and *gamma*-cyhalothrin (a pyrethroid). Cobalt is labeled on alfalfa, Brussels sprouts, corn, sorghum, soybeans, cotton, sunflowers, tree nuts and wheat for control of a number of pest species. DLK

FOCUS on South Plains Agriculture

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