FOCUS on South Plains Agriculture

Texas A&M University Agricultural Research and Extension Center at Lubbock
1102 E. FM 1294, Lubbock, Texas 79403
(806) 746-6101 http://lubbock.tamu.edu

Cotton Insects

Cotton Fleahoppers and *Lygus*

Much of the cotton across the South Plains is squaring, and the thus far the square set appears to be high; greater than 90%. However, cotton fleahoppers and *Lygus* can quickly rob a decent early square set, causing a delay in maturity and potential yield loss that maybe difficult to compensate for in late planted cotton. Fleahopper populations have been high throughout much of the state, and in western Gaines County, Clyde Crumley, IPM Agent, is reporting that some fields have over 75% of the plants infested. Elsewhere across the South Plains populations have been fairly low.

Both fleahopper adults and nymphs will feed on tender plant parts including new terminal growth and small squares. Their piercing, sucking mouthparts will penetrate small squares causing dessication from sap removal. Pinhead size squares are the most vulnerable to this "blasting" where squares turn brown and die.

Feeding damage may not appear for 1-3 days depending upon environmental conditions. Larger squares, flowers and bolls are not vulnerable to fleahopper feeding damage. Fleahoppers inject saliva when feeding, causing abnormal growth patterns in plants that sustain heavy damage. Shorter internodes, "suckering" and generally "crazy" cotton can result from loss of terminal dominance. Damage after five weeks of squaring rarely justifies treatment even for the higher yielding fields.

fleahopper damage

crazy cotton

Lygus are still very plentiful in weedy areas, but have yet to make a move to cotton. As long as the weeds remain succulent we may not see much movement, but as soon as things mature and dry out we need to watch out.

The goal on this late planted cotton is to protect early squares so that we can get this crop matured before the heat unit supply is shut off. We should try to retain about 90% of the first position squares produced in the first week, a total of 85% of all squares produced after two weeks, and at least 75% of all first position squares by the end of the third week. This should be the minimum objective at least for irrigated cotton. On dryland cotton it's a tougher call. Dryland and low irrigation input fields will have a tougher time making up lost fruit unless the weather cooperates. For the prebloom 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 big depending on the environment.

Aphid Concerns

Aphids can still be seen in spots throughout the area. Although these numbers are low, and we are probably weeks to a month away before anything significant develops, we need to keep an eye out for emerging problems, particularly in fields treated for fleahoppers or *Lygus* with pyrethroids, which may flare aphids.

cotton aphid

Physiologically, we could be setup for a bad aphid year. Late planted cotton and subsequent late fruiting, compounded by late fertilization due to wet conditions, will prime the cotton for supporting high aphid populations in August. With the high incidences of insecticide resistance observed in the 1990's, we are fortunate to have had a number of products become available in recent years that have demonstrated good aphid activity, including Centric, Intruder, and imidacloprid (Provado and Trimax Pro). More recently, Carbine has arrived on the scene and has shown good cotton aphid activity in other parts of the cotton belt, but has not yet been evaluated on the High Plains.

We had a scare earlier in the season in the Rio Grande Valley where some consultants were reporting difficulty controlling aphids with the neonicotinoids such as Intruder and Centric, and along Gulf Coast where Carbine was reported to be having some difficulties as well. The reason for the decrease in control with these products was never identified. It may have been due to poor coverage, inadequate rates or low spray volume, etc. Several trials were initiated in attempt to see what was happening with these populations, but these tests were inconclusive due to heavy rain events and population crashes. Fortunately, more recent reports from consultants along the Gulf Coast and in the Blacklands suggest that these products are still efficacious and that the control has been very good. Hopefully, the events observed earlier were just a fluke.

Bollworms, Pinkies and Saltmarsh Caterpillars.

We have been picking up quite a few bollworm adults in pheromone traps across most of the High Plains area. However, the number of eggs and worms in the field remains low, and rarely does pre-bloom cotton require treatment for bollworms. Pink bollworm trap catches in Gaines, Yoakum and Terry counties remains very low, and saltmarsh caterpillars are still out in mass. For more information on saltmarsh caterpillars, refer to previous 2007 issues of FOCUS.

Cotton Pests Around the State

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

We are finding large bolls in most fields and the crop is looking better. Aphids have increased in some fields but have remained below threshold. Bollworm/tobacco budworms larvae populations are still present in a majority of the conventional cotton fields and about 1/4 of the fields are above threshold levels. Whitefly populations are continuing to increase.

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

Many cotton fields are near or past cutout. Bollworm larvae continue to be found in non-Bt fields and some stink bug feeding has been found in cotton fields.

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

We are continuing to monitor for cotton fleahopper and Lygus. Aphid numbers are down and applications of Centric targeting fleahoppers has been noted to be cleaning up low aphid populations.

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

Cotton has grown-off rapidly. Percent square set in the older cotton is fair to good. The younger cotton has just started to put on squares and will need to be monitored for fleahoppers. Boll weevil punctured square counts range from 0-2%. Bollworm egg counts are starting to increase.

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

Cotton aphid numbers continue to increase in area fields following malathion treatments for boll weevil. This is a pest which will require close monitoring. I believe we are seeing some early symptoms of the epizootic fungus *Neozygites fresenii* on aphids, which could greatly reduce their numbers. Fleahopper numbers ranging from 3 to 24 per 100 plant terminals were observed in squaring cotton. *Lygus* populations remain light.

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

There still is not much insect activity. Thrips numbers have ranged from 0 to 0.24 thrips per plant. In a field near Nolan, cotton aphids were averaging 12 per leaf, but elsewhere aphids are less than 1 per leaf. Grasshoppers are present in fields, but densities have not caused much damage. In a field with cotton at the 5-6 true leaf stage, cotton fleahopper adults have been seen in the terminals and numbers averaged 15 per 100 terminals. The majority of natural enemies being found are lady beetle adults, minute pirate bugs, and spiders.

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

Cotton ranges in growth from cotyledons to 1/3 grown square stage. We are finding hot spots of aphids in our monitor fields. Fleahopper numbers ranged from 2-14 fleahoppers per 100 terminals.

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

Conchuela stink bugs are present in higher numbers around the area. Fleahoppers are of concern and are currently being closely monitored.

El Paso Valley (reported by Slavador Vitanza, IPM Agent, El Paso and Hudspeth counties)

Cotton fleahopper levels are very light at this moment and *Lygus* bugs are showing up in cotton fields; neither pest has warranted insecticide applications.

DLK

Cotton Agronomy

Crop Progress Overview

During the last week we have experienced additional rainfall in many areas, and a very high wind event 90 mph or so in Gaines County. Producers report that several center pivots were overturned. It is unclear at this time how the crop in that area may have been affected, but it could not have been good. Over the last week, we have experienced near normal to normal temperatures. Overall, we are still running about 18% below normal for cotton heat unit accumulation for a May 1 planting date at Lubbock.

Since we have substantial acreage out there that was planted or replanted around June 1 or so, June numbers are also of interest. At Lubbock, we are about 13% below normal for heat unit accumulation for the period June 1 through June 27 (View graphic of June temperatures and long term average vs. 2007 heat unit accumulation and graphic of 2007 vs. long term average rainfall and graphic of 2007 vs. 2004, 2005 temheat unit accumulation). We are forecast to have slightly below normal temperatures for the next week or so, plus more chances of rain. My biggest concern right now is if we ultimately get into a very extended hot, dry spell during July and August. Much of the cotton out there has "grown up" under wonderful moisture conditions, and may not have the good root system development. Because of this, I suggest that producers watch their fields and not get behind on irrigation needs – especially if it abruptly turns off hot and dry.

Many growers are busy completing over-the-top glyphosate applications on Roundup Ready fields. This all comes amidst continuing sand fighting, and getting herbicides out on Liberty Link and Roundup Ready Flex fields. Don't forget that it is time to get this crop fertilized. For comments on fertility management, see the June 22 issue of Focus.

Plant Growth Regulators

Questions concerning mepiquat-based (Pentia, Mepex, Mepichlor, Mepiquat Chloride, Mepex GinOut, Stance and others) plant growth regulators (PGRs) are being asked. Pricing of these materials vary significantly. Mepiquat chloride (MC) has been around now for years. Our results have shown that we usually do not get statistically significant increases in yields, but do get excellent growth control.

In 2006, Bayer CropScience began marketing a new mepiquat chloride based PGR. This product is called Stance. It is a 4 to 1 ratio of mepiquat chloride and cyclanilide (0.736 lbs/gallon mepiquat chloride plus 0.184 lbs/gallon cyclanilide). Cyclanilide is an auxin synthesis and transport inhibitor. Auxins are generally referred to as compounds which have the capacity to induce cell elongation. The inhibition of auxins could reduce cell elongation and inhibit growth. We have had the opportunity to work with this material over the last three years. **Producers should be aware that the mepiquat chloride concentration in Stance is about twice as high as most of the other materials we have become accustomed to applying. THEREFORE THERE IS A CORRESPONDING REDUCED RATE.** If you have specific questions concerning this product, visit with your local Bayer CropScience representative.

Pix, Mepex, Mepichlor, Mepiquat Chloride and other generics
4.2% active ingredient (a.i.)/gallon or 0.35 lb/gallon a.i.

Pix Plus
4.2% a.i./gallon or 0.35 lb/gallon a.i. with Bacillus cereus (BC) strain BP01 bacteria (reported to increase uptake of MC)

Pentia
Mepiquat pentaborate molecule (different structure than MC) 9.6% a.i./gallon or 0.82 lb/gallon

a.i. It has been reported that the physiological effect of Pentia is "hotter" oz for oz than MC, however, BASF's suggested use rates are essentially equivalent to Pix.

Mepex GinOut

4.2% a.i./gallon or 0.35 lb/gallon a.i. with 0.0025% Kinetin (a cytokinin). Cytokinins are plant hormones that promote cell division and growth and delay the senescence of leaves. This product has use guidelines similar to other MC materials.

Stance

Mepiquat chloride (8.4% or 0.736 lb a.i./gallon) with cyclanilide (2.1% or 0.184 lb a.i./gallon) It has a lower use rate than other mepiquat-based PGRs (2-3 oz/acre – see label). Has higher concentration of MC than other 4.2% or 0.35 lb a.i./gallon products

Cyclanilide is an auxin synthesis and transport inhibitor. Auxins are compounds which have the capacity to induce cell elongation. The inhibition of auxins could reduce cell elongation and inhibit growth.

Mepiquat chloride reduces production of gibberellic acid in plant cells that in turn reduces cell expansion, ultimately resulting in shorter internode length. MC will not help the plants compensate for earlier weather or disease damage by increasing growth rate. It may under good growing conditions increase fruit retention, control growth and promote earliness. MC should not be applied if crop is under any stresses including moisture; weather; severe spider mite, insect, or nematode damage; disease stress; herbicide injury; or fertility stress. Results from our replicated testing indicates that we typically observe from 5 to 20% reduction in plant height (compared to the control) from 16 oz of 4.2% a.i. MC material applied in up to 4 sequential 4 oz/acre applications starting at match head square and ending at early bloom. We have been able to "shave" about 1 node from the growth of the main stem at some locations, which can result in about 3-5 days earlier cutout. A good boll load will normally help control plant growth. Fields with poor early season fruit retention, excellent soil moisture, and high nitrogen fertility status may be candidates for poor vegetative/fruiting balance and should be watched carefully.

Growers who have planted picker varieties (many of which are more indeterminate than most of our stripper types) and have conditions resulting in high growth potential need to be concerned. Growth potential of some of these varieties is considerably greater than many of our stripper types. For brush roll header stripper harvest, 28- 32 inch tall plants optimize stripper harvesting efficiency. If possible, target a maximum plant size of about 32 inches for picker varieties under high input irrigation (drip or high capacity pivots). If plants get larger than 36 inches, harvest efficiency and productivity drop significantly.

Determination of application rates is generally more "art" than "science" for these products. Based on label information, applications must begin no earlier than 50% matchhead square. It is best to get a handle on excessive growth potential early if conditions favor excessive growth for an extended period of time. Herein lies the High Plains dilemma: It is unknown at the time this application is made how weather will affect the crop in July. Will we get 100+ degree temperatures, southwest winds at 30 mph at 10% relative humidity? If so, those conditions will limit plant growth in many fields with low irrigation capacity.

With all of the new varieties out there, I suggest you visit with your seed company representatives concerning the specific varieties you have planted in high-input fields concerning the amount of growth potential you might expect. We noted in 2004 and in 2005 that many fields did get growthy due to variety and the considerable rainfall we obtained. We usually see July weather turn hot and dry, which limits growth in many fields (even with “good” irrigation capacity). If mepiquat-based PGRs are used, data from

Extension field projects indicate that it is usually best to initiate low-rate multiple applications of these products, making adjustments for growing conditions as the season develops. The bottom line here is to manage each specific field that may have high growth potential. High fruit retention should help "tie the plants down" unless we encounter significant losses due to square thieves such as *Lygus* bugs and fleahoppers. Insect management will be very important this year due to the late crop in many areas. Watch picker varieties and fruit retention. If poor fruit retention is encountered and the cause addressed, then MC rate should be increased, especially under high water, fertility, and good growth conditions. One should target applications to fields with high growth potential.

Some picker varieties may need aggressive management under high irrigation capacity and/or if high rainfall conditions are encountered. The situation that has arisen due to the release of new genetics is challenging. In 2007, numerous new Roundup Ready Flex and Liberty Link cotton varieties were planted, and I think growers should be on point on this issue. Visit with your seed company representative to determine which new varieties should be watched closely for MC needs under field-specific conditions. Use MC to limit plant size. Sequential applications can be adjusted to meet subsequent crop conditions and growth potential.

Some decision tools are available, including the Pix Stik and Pentia Stik from BASF, which are used to measure the uppermost 5 nodes (down from the terminal which is counted as zero). The Pix Stik suggests use rates for various average internode lengths beginning at 50% matchhead square and in the absence of stress. For an average of 1.5 to 1.8 inches, 4-8 oz / acre are suggested. For average internode lengths greater than 1.8 inches, 8-16 oz / acre are suggested. Follow up assessments every 7-14 days are also suggested. Applications must begin no earlier than 50% matchhead square. RKB

Cotton Diseases

Nematodes, Fusarium Wilt and Verticillium Wilt Oh My

With the cool wet weather experienced early in the season, many fields were exhibiting symptoms of seedling disease (primarily Rhizoctonia and black root rot). Fortunately, the drier warmer conditions we have been experiencing over the past few weeks have slowed development of further seedling disease issues. However, we are currently seeing the onset of other problems. Several root-knot nematode samples were received from the region this week. Stands were thin and plants were stunted in severely infected areas. Galls were also quite evident on roots. Mid-season nematode management options are available; however, you should pay close attention to condition of root systems, especially, where black root rot may have been severe. The full benefit of a mid-season treatment may not be attained by plants with inadequate root systems.

In addition to root-knot nematode, samples of plants exhibiting symptoms Fusarium wilt have also been received this week. This disease has a relatively limited distribution, occurring primarily south and west of Lubbock. The fungus which causes Fusarium wilt causes little damage alone, but is much more severe in the presence of the root-knot nematode. We have little information regarding this disease; however, Dr. Terry Wheeler has shown that proper nematode management often results in a substantial yields increase in Fusarium wilt fields. Several trials are currently being conducted investigating the performance of cotton seed treatments and variety selection in fields infested with Fusarium wilt.

Dr. Wheeler has informed me that she is seeing the onset of Verticillium wilt this week in one of her earlier planted variety trials. This disease is caused by a soilborne fungus which infects the root system, and blocks water channels. As the disease progresses, foliar symptoms (yellowing between veins) become evident. If such

symptoms are visible, and examination of the vascular system reveals dark discoloration you are dealing with one of the wilt pathogens. Thus, field history is important in knowing which wilt disease you may be dealing with. If the field's history is unknown, symptomatic plants should be evaluated to confirm which pathogen you are dealing with, as future control will vary.

If you have any questions regarding any of the diseases discussed in this article or any other cotton disease issues please contact Jason Woodward at the Lubbock Center 806-746-6101. JW

Corn and Sorghum Entomology

Things Are Still Quiet

I have been checking corn and sorghum fields and have found very few insects. Rain washes eggs and small larvae from plants, and it appears that we are seeing a side benefit of the recent precipitation events. There are a few whorl feeding caterpillars present, but not enough to worry about. Stalk borers and mites are very hard to find. For now we will just watch and wait. RPP

Announcements

New Sorghum Insect Control Guide is Available

The new Version of Managing Insect and Mite Pests of Texas Sorghum (2007) is available. The new version has many revised economic thresholds and updated lists of suggested insecticides. Greg Cronholm, Extension IPM Agent in Hale and Swisher counties lead the effort to revise the publication, and he has done an excellent job.

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Editors

Michelle Coffman, Associate Editor
David Kerns and Patrick Porter, Co-editors

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Contributing Authors

Randy Boman, Extension Cotton Agronomist
David Kerns, Extension Cotton Entologist
Jason Woodward, Extension Plant Pathologist
Patrick Porter, Extension Entomologist

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