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FOCUS on Entomology

For South Plains Agriculture

VOLUME XLV, NO. 2 **FINALLY! RAIN ON THE PLAINS.** June 23, 2006

IN THIS ISSUE

NEWSLETTER CONTRIBUTORS

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COTTON INSECTS

Cotton continues to suffer through a hot, windy and dry summer reminiscent of 1998. These conditions have ragged up plants in fields that actually have been able to emerge to a stand. The ragged appearance has made evaluations for insect damage such as thrips and fleahoppers extremely difficult. But on the plus side, square retention has remained generally high in fields that have been squaring for a couple of weeks. If you do have a field with square set problems, make sure you find enough insect pests before you pull the trigger and spray. Hot winds and blowing sand can cause insect-damage like symptoms. As I remember 1998, we had few pest problems because of the heat. In fact I thought insects were suffering from heat stroke and needed to carry water bottles to keep out of danger. I do remember problems with false chinch bugs (none reported this year so far) but none with beet armyworms until mid July.

I did get an inch of rain Wednesday night at the house but the area as a whole got 0.5 or less rainfall, depending upon where you live. Rain is predicted for Thursday and Friday. Maybe between all three days we can get enough to help. Otherwise our 100 degree temperatures and winds will pretty much eliminate any surface moisture. The dryland crop is suffering or not even up to a stand.

Say adios to thrips problems for the majority of fields. If fields were planted in a timely manner and irrigation is keeping up fairly well with plant water demands, our continuing hot weather will be "pushing" plants fast enough so that thrips can cause little if any significant damage. Once plants are squaring (5-8th true leaves depending upon cultivar and environment) thrips are no longer a concern. Late planted fields and fields under moisture stress are also exempt from thrips problem concerns.

Thrips damage

There have been very few fleahoppers or Lygus bugs found in area cotton fields to date and square retention has been high (85-100%). Most Lygus bugs have been found in fields adjacent to alfalfa fields or ditches were alfalfa is growing. Fleahoppers have many preferred hosts including silverleaf nightshade (whiteweed), evening primrose, and horsemint or lanceleaf sage. Maybe like 1998, fleahoppers and Lygus will be mostly non-pests. But just in case, go to: "Cotton Fleahopper Management Tips" in the FOCUS Crop Production Guide Series for more information on fleahoppers. Don't expect most problems with Lygus until later in the season, like late July or August.

Blasted square, damaged pinhead-size square

In most years, once feahoppers move into a field, it takes a generation before there are enough to treat. There are a lot of fields treated each year for fleahoppers to correct square retention problems when in fact there are not enough present to cause the "problem". Fleahoppers tend to stay in fields they initially infest. Lygus on the other hand are highly mobile as winged adults and can move in and out of a field daily, frustrating the efforts of a cotton scout trying to figure out what's going on.

Adult fleahopper

Square retention can only be determined through plant monitoring, getting down on your knees and counting squares and squaring positions. Many folks don't like doing this but monitoring crop progress is one of the keys to successful cotton production. SQUAREMAN, a component of COTMAN, developed by the University of Arkansas with Funding primarily by Cotton Incorporated is a neat little program that assists in this monitoring effort and more importantly, interpretation of results. Go to http://www.uark.edu/depts/cotman for more information if interested.

Our treatment suggestion for fleahoppers is 25-30 fleahopper adults or nymphs per 100 plants. This translates out to 12,500-15,000 per acre on a 50,000 per acre plant stand. The Lygus bug threshold in pre-bloom cotton is 1 per 3 row feet or about 4,400 per acre. Nymphs and adults count the same but I would have great difficulty spraying a field for Lygus bugs unless nymphs were present. Acceptable square set during this period would be around 80%.

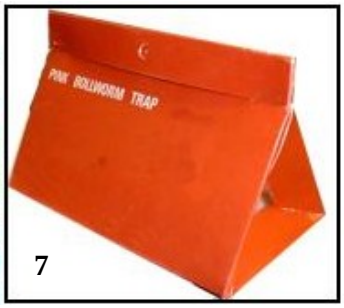
Insecticides used for fleahoppers and Lygus bugs have considerable overlap but rates are often higher for Lygus. These include: Address and Orthene; Bidrin; and Dimate and Dimethoate. Trimax and Provado are good fleahopper materials but not favored for Lygus. Vydate is good for both pests with similar rates recommended. Pyrethroids as a group and Stewart round out the materials most recommended for Lygus bug control. As you can see there is an extensive list with lots of rate differences. For more management information on fleahoppers specifically and on west Texas cotton insects in general, including a list of recommended insecticides, go to: Managing Cotton Insects in the High Plains, Rolling Plains and Trans Pecos Areas of Texas, 2005 (E-6) and Suggested Insecticides for Managing Cotton Insects in the High Plains, Rolling Plains and Trans Pecos Areas of Texas, 2005 (E-6A).

Beet armyworms are not a factor yet but could become one if favorable conditions persist—dry, hot weather patterns with skippy stands and lower natural enemy numbers. Just

so you know what to look for I have included a few pictures.

Large BAW

Overwintering pink bollworm moths continue to emerge as some cotton is squaring. The trapping program coordinated by Scott Russell (IPM Agent for Terry and Yoakum counties) continues to capture pinkies in all but Hale and Swisher counties. Emergence should be about 50% over by now. Any fields with matchhhead to pencil eraser size squares would be vulnerable to pink bollworm damage and infestation is planted to a Bt cultivar. To my knowledge, most of the areas that have a history of significant pinkie activity have most of their irrigated cotton planted to Bt cultivars. Dryland cotton is rarely infested by pink bollworms. The 5 per night trap average required to trigger an application in non-Bt fields has only been tripped in Upton and Gaines counties as a county average. We only place one trap per location rather than the recommendation of one per 30 acres in each field since we are conducting an area-wide monitoring program, not a field-by-field monitoring program.



Emergence of moths from our overwintering cage study is at about 0.3% compared to about 2.3% last year. This is almost an 8X reduction. Survival has been poor this winter. At least there is some good news to report! See, Pink Bollworm Management Tips I**,** for more information.

Boll weevil eradication watch. Boll weevil numbers have come up somewhat the last two weeks but sprayed acreage in the west Texas area still remains just above a total of 3,000 acres. A look at the two following tables clearly indicates that weevil numbers are down significantly from last year, a result of a successful 2005 program and high overwintering mortality. Continuing hot, dry conditions will further dampen boll weevil increases. The Lower Rio Grande Valley is in its first year of a full season program with few problems thus far. Weevil numbers are up somewhat following a moratorium on spraying during the month of May. This moratorium was a requirement negotiated with Valley producers to allow natural enemies to rebound prior to the appearance of caterpillar pests. It doesn't look like progress has been set back much although weevils can be found in some program fields. As former chair of the TBWEF Technical Advisory Committee, I have to feel real good about the program statewide. **JFL**

Average number of boll weevils caught per trap inspection and sprayed acreage through June 5. Number of boll weevils caught for the week ending June 11, 2006.

High Plains Zone	Average for 2005	Average for 2006	Accumulative Sprayed acres	Total weevils caught this week
Permian Basin	0.0807	0.0007	180	22
Western High Plains	0	0.00001	0	0
Southern High Plains	0.00002	0	0	0
Northern High Plains	0	0	0	0
Northwest Plains	0	0	0	0
Panhandle	0	0	0	0
St. Lawrence	0.9042	0.0029	1,184	57

Average number of boll weevils caught per trap inspection and sprayed acreage through June 5. Number of boll weevils caught for the week ending June 18, 2006.

High Plains Zone	Average for 2005	Average for 2006	Accumulative Sprayed acres	Total weevils caught this week
Permian Basin	0.0611	0.0006	1,351	116
Western High Plains	0	0.00001	0	0
Southern High Plains	0.00003	0	0	0
Northern High Plains	0	0	0	0
Northwest Plains	0	0	0	0
Panhandle	0	0	0	0
St. Lawrence	1.235	0.0022	1,729	192

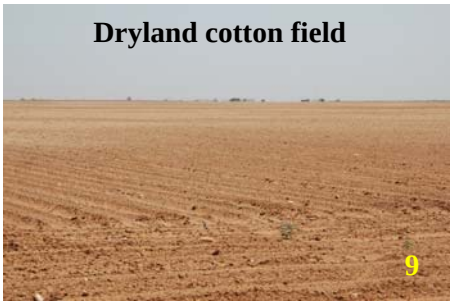
COTTON AGRONOMY

The last two weeks have again been very hot and dry across the region. Last time, I submitted that many producers are encountering the most difficult start since 1998. I still believe that is the case for many south of Lubbock.

Lubbock's calculated DD60 heat units for 1998 for the period of May 1 through June 21 totaled 820. For the same period in 2006, we have obtained 895. The heat unit accumulation for 2006 from May 1 through June 21 for 2006 is 41% above "normal." Thus far at Lubbock since May 1, we have had 13 days of 100 degrees or greater temperatures and 30 days of 95 degrees or greater. For the same period of time in 1998, we had 12 days of 100 degrees or greater. We do have some cooler conditions and some rain chances forecast for the next several days, but as of this writing the 2006 High Plains dryland crop "cliffhanger" continues.

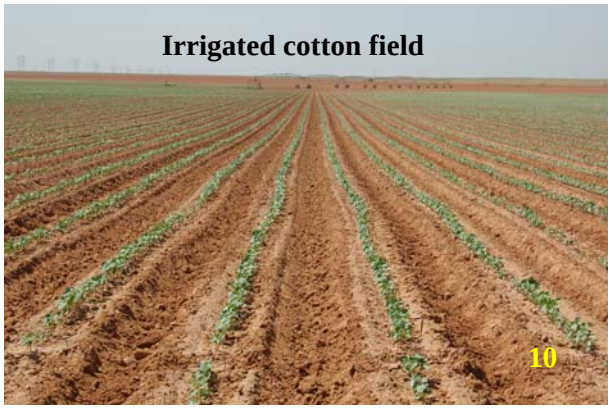
Dryland assessment. We are beginning to assess and release non-emerged dryland cotton fields that had the June 5th insurance planting date. June 10th final planting date counties will be eligible for adjustments after June 26th. I believe the most seriously drought affected counties in Texas Agricultural Statistics Reporting District 1S include: Andrews, Bailey, Cochran, Dawson, Gaines, Glasscock, Hockley, Howard, Lynn, Martin, Midland, Terry, and Yoakum. Parts of Crosby County are also in bad shape. In the record shattering 2005 year, these counties planted over 1.43 million acres of dryland cotton and produced over 1.64 million bales on about 1.39 million acres harvested (an abandonment of about 3%). Based on current crop conditions, I still believe we are destined to fail perhaps 1 million acres in these counties in 2006. Many dryland fields in District 1N are also in poor to very poor condition or non-emerged at this time.

Dryland cotton field



Some very high winds in Hale and Lubbock counties, and a few tenths of an inch of rain were obtained across portions of the South Plains Wednesday night. I don't believe for most dryland producers this will result in significant benefit based on the amounts and distribution across the area. To see the June rainfall for much of the region, go to the West Texas Mesonet Web site located here: http://www.mesonet.ttu.edu/Jun06rain.htm

Irrigated assessment. The irrigated crop is generally making good progress across the region where ample water is available (irrigation capacity) and is being applied. The key here is the pumping expense due to high

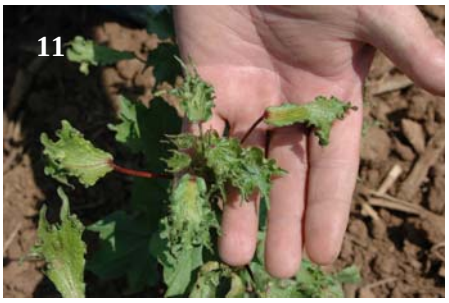


Irrigated cotton field

energy costs. Although much of our irrigated crop is making good progress, the pumping cost will severely reduce producer profitability unless ample rainfall is received during the critical months of July and August. Many producers with fields in severe drought areas have been watering consistently since planting trying to keep the crop moving. We did this in 1998 also, and ultimately produced a good irrigated crop with difficult profitability, and energy costs were substantially less that year.

Managing nitrogen fertility in High Plains cotton. Dr. Kevin Bronson and I have generated a High Plains Crop Production Guide Series publication concerning nitrogen fertilizer management for cotton.

Tank cleanout concerns. I have had some calls over the last week 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 impact yield.



Phenoxy damage

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 that 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. A good University of Missouri publication on cleaning sprayers is available.

Herbicide application issues. Drought stress and dusty leaves are making many weeds difficult to kill this year. Glyphosate on Roundup Ready and Roundup Ready Flex Varieties: Monsanto personnel provided me some management tips (based on what they are seeing in the field) for producers using Roundup Original Max or Weather Max on Roundup Ready cotton. It is suggested that 22 oz/acre of Roundup Original Max Weather Max be used for all over-the-top applications (this is the maximum labeled rate). The Roundup Ready Flex varieties can be sprayed with up to 32 oz/acre of these materials. Use 17 lbs of dry spray grade ammonium sulfate per 100 gal of spray mix (or an equivalent rate of liquid spray grade AMS) with Roundup. If temperatures are forecast to be over 100 degrees, then it is suggested to spray from daylight to about 11 a.m. From the weed control standpoint, it is suggested to refrain from spraying in the heat of the day. Applications made above 95 degrees may result in reduced weed control. Reduction of ground speed to 10 mph or less may also be of benefit. Keep spray volume at 10 gallons/acre, and use good pressure to produce fine droplets. Producers and applicators should use a nozzle type that gives good coverage (flat fan, flat fan XR, flat fan DG, Turbo teejet). This is especially critical for Russian thistle, where coverage is key for effective control. Avoid using air induction nozzles for Roundup applications. Roundup Ready cotton varieties can only be sprayed over-the-top with Roundup until the 5th true leaf is quarter-sized or yield loss may be encountered. Here we go again, "boxed in" due to weather. With this window rapidly closing in Roundup Ready cotton fields, producers need to be covering acres quickly, but drought-stressed weeds and suggestions for not spraying during the heat of the day are making applications and weed control difficult.

Ignite 280 on Liberty Link Varieties: Suggestions for optimizing weed control when using Ignite 280 SL were covered in the June 9 issue. Limiting spraying of Ignite 280 during the heat of the day (as addressed above for glyphosate materials) may also be considered. The good news with Liberty Link varieties is that we have a full season window of application, up to the 70-day preharvest interval. **RB**

COTTON DISEASES

Dr. Terry Wheeler, research plant pathologist at Lubbock, has conducted extensive control studies on both root knot and reniform nematodes and in fact has six tests out this year in partnership with Extension IPM Agents. She promises to have a report out on the 2006 studies in the next issue of FOCUS to be released two weeks from now. **JFL**

COTTON ENTOMOLOGY RESEARCH PROGRAM

The Texas Agricultural Experiment Station (TAES) Cotton Insect Research (Dr. Parajulee) and Texas Cooperative Extension (TCE) Cotton Insect Extension (Dr. Leser) projects have been operationally merged into a **Cotton Entomology Program** to improve the research-extension partnership and provide timely information on cotton pest management to the Texas High Plains producers. During the last 4-5 years, several applied research projects have been conducted and generated extensive amount of biological information on several insect pests. Most notable projects included, 1) Economic evaluation of Bollgard cotton, 2) Area-wide survey of *Lygus* bugs to determine the non-cotton host source of *Lygus* and to

understand the role of roadside weeds on *Lygus* infestations in adjacent cotton, 3) Role of natural enemy predators in suppressing bollworms and cotton aphids, 4) Trap monitoring bollworm, tobacco budworm, and beet armyworm moths in the Texas High Plains, and 5) Seasonal dynamics patterns and refinement of sampling procedures for thrips and cotton fleahoppers. Several of these projects have been completed and information presented at the local meetings and also published in scientific journals.

Due to the retirement of Dr. Leser and delay in hiring of this position, cotton insect applied research for 2006 season has been somewhat short changed. Nevertheless, several of the research projects traditionally managed by the Extension entomologists are now overseen by me. Extension IPM Agents continue to partner with these projects. The following research projects are most of the studies underway for the 2006 growing season.

1. *Cotton aphid population dynamics as affected by nitrogen fertility levels.* This study is at the Texas A&M Helms Farm near Halfway under the drip irrigation system. Five levels of nitrogen (0, 50, 100, 150, and 200 lbs per acre plus the residual nitrogen present in each treatment plot) are being evaluated.
2. *Cotton aphid suppression ability of the convergent lady beetle*. The fourth year of a large field-cage study will evaluate the role of convergent lady beetles in cotton aphid suppression in cotton. Different aphid-to-predator ratios will be used to determine what would be considered a "predator threshold." Laboratory studies have been accomplished to quantify the predation efficiency of key cotton arthropod predators. Temperature effect on predation efficiency has also been examined in the laboratory. A decision-rule system will be developed based on laboratory and cage studies.
3. *Investigating host plant sequence of Lygus in the Texas High Plains*. This project consists of surveying *Lygus* abundance and seasonal activity patterns in Hale, Lubbock, and Dawson counties throughout the year to establish the host plant sequence, and to examine the source of overwintering *Lygus*. The three-year data so far suggest that >30 non-cotton host plant species can support *Lygus*. Data from previous years suggested that alfalfa and Russian thistle are the two most dominant hosts for Lygus. The 2006 survey will be conducted at weekly intervals throughout the year. In addition, a laboratory study will be conducted to perform two-choice (cotton vs. single non-cotton host such as alfalfa) as well as multi-choice (cotton vs. multiple non-cotton hosts simultaneously) bioassays to evaluate the preference of *Lygus* for host colonization. Subsequent studies will be conducted to quantify the reproductive fitness in those selected hosts. A field study is being conducted to evaluate the seasonal activity patterns of *Lygus* in four dominant non-cotton hosts (sunflower, alfalfa, Russian thistle, and pigweed) and cotton planted in adjacent field plots.
4. *Quantify the role of roadside weed management, particularly the mowing of alfalfa, on Lygus population dynamics in adjacent cotton*. Specific objective of this project is to examine the role of mowing on *Lygus* movement to adjacent cotton. Because TxDOT did not allow conducting this test along the roadside, alfalfa patches have been established along cotton fields at Texas A&M research farms in Lubbock and Halfway. Three treatments (mowing at two phenological stages, county-directed mowing with no regard to cotton growth phenology, and an un-mowed control) will be evaluated. *Lygus* will be monitored in adjacent cotton beginning at squaring. Sampling in cotton will be conducted at 5, 25, and 50 rows into the cotton from adjacent alfalfa to quantify whether the *Lygus* movement from an adjacent preferred weed host affects only the field boundary or the interior field.

5. *Cropping systems research*. These studies include: a) evaluating the interaction of cotton cultivars and three irrigation levels on arthropods in a terminated-wheat/cotton system at the AG-CARES Farm near Lamesa and b) evaluating arthropod population dynamics in a subsurface drip irrigation as affected by conservation tillage at the AG-CARES Farm near Lamesa.

6. *Compensation of cotton to insect-induced square loss*. Field plot experiments will be conducted to quantify the yield compensation in irrigated cotton at varying levels of insect-induced fruit losses. Different infestation levels of cotton fleahoppers (pre-bloom stage) and *Lygus* nymphs (pre-bloom and early bloom stages) will be evaluated for their fruit loss potential and the ability of cotton to compensate for that loss. Yield compensation to *Lygus*-induced fruit loss will be evaluated under both a limited irrigation and under high input drip irrigation.

7. *Developing a treatment threshold for western flower thrips in cotton*. This study will evaluate 7 treatments including a) untreated control, b) foliar application of Orthene for Week 1, c) Week 1-2, d) Week 1-3, e) Week 2-3, f) when thrips density is 1 per leaf, and g) when thrips density is 1 per leaf with 30% immatures. This will allow effective timing of foliar insecticide applications when at-planting treatments are not used. This study is being conducted at Lubbock and Muleshoe sites.

8. *Seasonal abundance patterns of bollworm, tobacco budworm, and beet armyworm moths in the Texas High Plains*. Pheromone trapping of bollworm, tobacco budworm, and beet armyworm moths will be continued in Lubbock County for the 2006 growing season.

9. *Pink bollworm overwintering study and area-wide trap monitoring*. We began a study in the fall of 2004 to develop some management strategies for the High Plains and to delineate the distribution of pink bollworm infestations and their spread. The severity of the pink bollworm infestation was much reduced in 2005, but we are continuing to examine the winter survival and overwintering emergence patterns for 2005-2006 winter/spring. This is Dr. Leser's continuing project, but Scott Russell (Terry/Yoakum IPM Agent) oversees the project while Dr. Parajulee provides technical service and other resources until Dr. Leser's position is filled.

10. *Insecticide screening*. New insecticides and rate studies have been conducted each year since 1978 under the direction of Dr. Leser. These have been cooperative projects with the IPM Agents. These continue in 2006 with the IPM Agents under the technical supervision of Dr. Parajulee. **MNP**

UPDATED ALTERNATIVE CROP OPTIONS GUIDE

Texas Cooperative Extension has updated and released the 6th annual addition of "Alternative Crop Options after failed cotton and late-season crop planting for the Texas South Plains." Request a copy from your local Extension Office, download from http://lubbock.tamu.edu, or contact Extension Agronomist Calvin Trostle at 806-746-6101. The guide contains information for late season planting of more than 8 crops for the Texas South Plains, seeding rates, last recommended planting dates, and contact information for contracts prices of crops such as guar or blackeyed peas. **CT**

COTTON INSECT PHOTO CREDITS

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