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For South Plains Agriculture

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IN THIS ISSUE

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COTTON INSECTS

Storms have continued to roam across the area much like a determined predator, seeking out any cotton that has escaped earlier attacks. This has made thrips management somewhat a nightmare. Yes, thrips still need your attention in some fields, especially where cotton was planted real late without the benefit of a seed treatment or furrow treatment with an insecticide. But even earlier planted, surviving cotton with significant weather damage may benefit from a treatment for thrips. Don't give up on thrips management until cotton is recovering and responding to warm weather conditions again.

You can often tell if thrips are tucked away in the terminal leaf by its color. If that latest, tightly wrapped leaf takes on a grayish cast, more than likely one or more thrips will be found through careful dissection. Most adults and exposed immatures have been blasted from plants with multiple rain, wind and hail events.

Even a single thrips in some instances can cause problems. Don't underestimate this tiny pest. Late planted or delayed cotton is already going to have an uphill battle to capture enough heat units before the temperature door is slammed shut in October. We need to give these plantings a jump-start (earliness) to hopefully avoid running out of time at season's end.

Speaking of earliness---both fleahoppers and early *Lygus* bugs can rob you of your earliest squares, causing a delay and potentially a yield loss that cannot be compensated for with what appears to be a shortened growing season for us. While field reports do not indicate much activity from either of these pests in the more advanced High Plains cotton, we must be vigilant to avoid any unpleasant surprises.

Both fleahopper and *Lygus* bug immatures are wingless and very tiny after emerging from their respective eggs imbedded in plant tissue. The difference between these two pests? Fleahoppers develop into 1/8th inch long adults

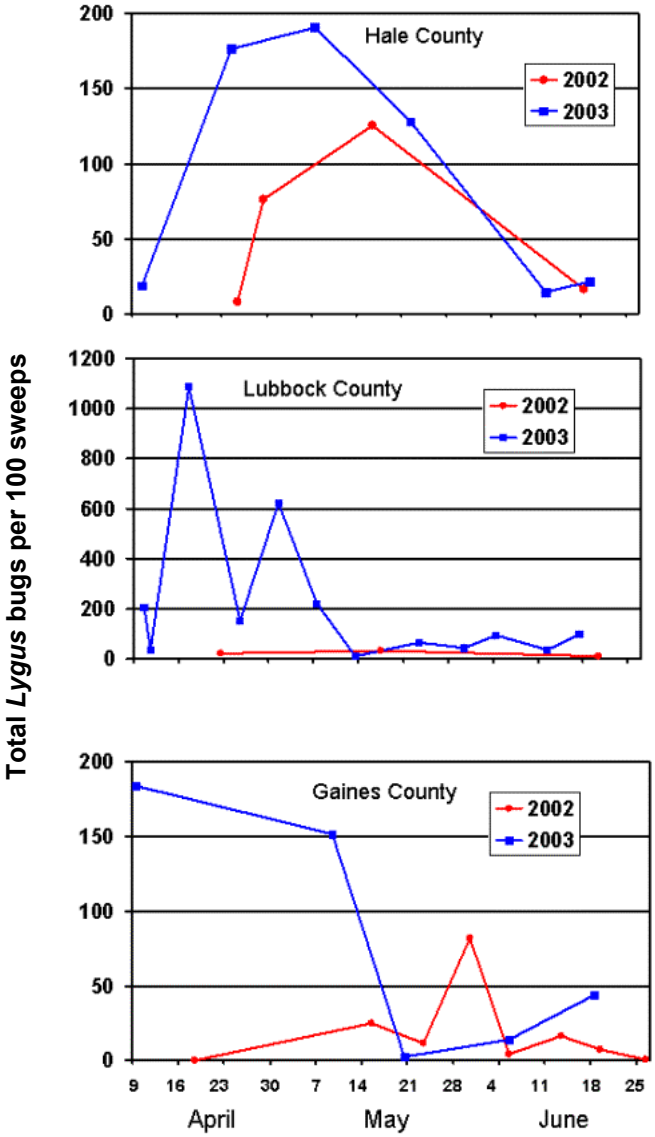
while *Lygus* grow to ¼ inch winged adults. Look at pictures in the first 2003 issue of FOCUS to compare these two insects. Both of these insects can damage and cause the shed of tiny squares the size of pinheads. The difference is that *Lygus* can also feed and damage larger squares, flowers and smaller bolls.

The goal of course is to protect early squares so that we can get this crop matured before the heat unit supply is shut off. Your goal should be 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 your minimum objective at least for irrigated cotton. I would probably back off of this approach in the first week with dryland fields and wait unit there were enough fruiting points to make a difference with my hopefully single application.

Because cotton is out there in all different stages and some of it is pretty beat up, it will be more difficult to make blanket recommendations for plant bug pests as well as later pest problems. Staging ragged up cotton will also be difficult so rely on node counts, not leaf counts.

As I reported last week, *Lygus* bug numbers are high this year based on surveys of several non-cotton hosts at sites in Gaines, Lubbock and Hale counties. Dr. Megha Parajulee's (research entomologist with Texas A&M at Lubbock) data for 2002 and 2003 is compared in the graphs above. *Lygus* numbers are running higher in all 3 counties in 2003 compared to 2002 with Lubbock recording the most. Based on 2002 data and extrapolation with 2003 data, it would appear that *Lygus* numbers in weeds (and alfalfa) are and have been generally higher from Lubbock north than in Gaines County. You must remember however that high numbers in weeds does not necessarily mean high numbers in cotton. With the recent onslaught of summer storms, alternate *Lygus* bug hosts have been kept lush and green and attractive to these pests. Don't expect any movement real soon.

Sweeping roadside alfalfa.



Number *Lygus* collected from hosts other than cotton.

Overwintered boll weevils were flushed out following all of our rains. No weevils were caught again this past week in the NWP zone but 1 weevil was caught in the WHP zone, 6 in the NHP zone and 12 in the SHP zone. But the big news was the 499 weevils caught in the PB zone. As I have stated repeatedly, we are paying this year for mistakes that were made last year in this zone.

This latest flush of overwintered boll weevils was a surprise to me considering how far we are into June. Treatments have begun across all but the NWP zone with 131 acres treated out of 788,000 in the WHP zone, 1,623 accumulative total (1,222 this past week) in 526,000 PB zone acres, 497 acres out of 534,000 acres in the NHP zone and 1,039 acres out of 1,134,000 SHP zone acres.

In spite of this increased trapping activity, overall program results look very good. Once we get the weevil situation back under control in the PB zone, the High Plains as a whole will be almost at the point of closing the door on weevils.

Average accumulative number of boll weevils caught per trap through the week ending June 2.

Zone	2003	2002	2001	2000
Northwest Plains	0	0.0001	0.025	0.1848
Western High Plains	0.00002	0.0004	0.0328	0.759
Permian Basin	0.0033	0.0001	0.028	0.282
Northern High Plains	0.00002	0.0073	-------	-------
Southern High Plains	0.00003	0.0028	-------	-------

We have initiated a trapping program to determine if and when *Helicoverpa armigera* (old world bollworm) are present in our High Plains agricultural system. This involves 50 T-P traps, two in each of 25 counties from Sweetwater to Dumas. This same trap is also used to monitor our native bollworm (also known as corn earworm). Our bollworm is found in North and South America whereas the old world bollworm distribution covers a much larger area encompassing Africa, Asia, Australia, eastern Pacific and the Middle East. Both species feed on similar plants including cotton, corn, soybeans, sorghum and sunflowers. This potential pest is on the Homeland Security list (for Texas) along with 6 other insects and diseases. Texas Department of Agriculture is getting funding through USDA-APHIS CAPS programs to do surveys for these pests.

Checking a T-P trap.

So why is it important to monitor for this particular pest since we already have our own bollworm? This pest is probably the most important crop pest in these other countries and might be more of a threat to our crops than our native bollworms. There is evidence it has some resistance to BT (Bollgard cottons?) and may be more difficult to manage with our existing insecticides. The reason Homeland Security is involved is to protect our food and fiber supply from any intentional introduction of damaging exotic pests. We don't expect to find this pest in our area but early detection would allow for a cheaper eradication process. One last point---it is next to impossible to distinguish these two pests from each other.

A statewide pyrethroid resistance-monitoring program was initiated this year for bollworms. This was touched upon in the

second issue of FOCUS. Because there have been several instances of unexplained control problems with pyrethroids in the High Plains for the last several years, consultants have been asking for this monitoring program. Lubbock County IPM Agent Brant Baugh and I also observed reduced control of bollworms in a carefully controlled insecticide screening research trial last year. Coverage may be an issue, but we need to gather data to resolve this issue once and for all. Traps are in place from the Lower Rio Grande Valley to the Farwell area in an effort to capture the full spectrum of bollworms in the state. There has not been any trend toward lesser control with pyrethroids in other areas of the state. **JFL**

COTTON AGRONOMY

Still going, going, gone…What can I say? It just won't stop. The region experienced another tough week on the storm side, as we had more bad weather come through the area. We've had so many storms across the region; I've now lost count. Hale County was hit hard last Thursday and Friday. The cotton around Olton took a big hit, and reportedly up to 50 center pivots were turned over north of Highway 70. More rain hit many of the very sick fields north of Lubbock and provided a "mercy killing" to some of them. Dirk Aaron, Hale County Extension Agriculture Agent, reported an anticipated 265,000 acres planted to cotton, of which about 85% are irrigated. Estimates are as high as 85% of these planted acres (225,000) were adversely affected by hard rains, high winds and disease. It has also been estimated that 50% of planted acres are lost (132,500). This acreage will not go back to cotton, but most will plant sorghum, soybeans, or sunflowers.

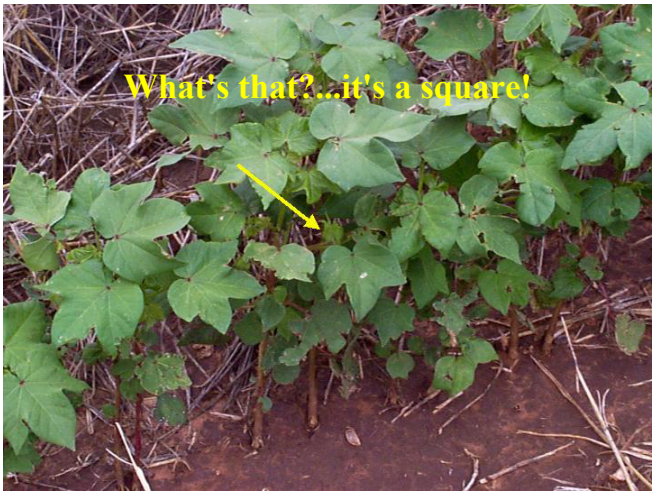
Emilio Nino, Extension Agent-IPM for Castro/Lamb counties, reports that there are still a few places where cotton can be found in those counties. He also reports that areas east of Hart and south of Dimmitt along Hwy 385 have cotton fields that are growing quite well. He also reports that fields have heavy wind and hail damage but should pull through. This is only a sampling of the misery being reported by our Extension agents.

The area west of Lubbock (and perhaps more) received some hail from a storm that hit in the early morning hours of June 26. Cotton west of Erskine outside Loop 289 got pummeled for about 15-20 minutes with pea to marble sized hail. No doubt we lost another significant number of acres. Rainfall amounts were also sizeable in Lubbock County, with up to 2 or so inches reported. Many producers are wearing out their sand fighting equipment while covering their ground, and as they make great progress tying the land down, here comes another round. I'm looking for the producer who wins the sand-fighting contest of 2003. I remember that back in 1997 one producer called and told me he had covered some of his fields up to 11 times.

As I said a few weeks ago, the situation is in flux, and is still in flux as the planting window for grain sorghum begins to close over much of the region. Many producers still have to make some difficult decisions as to whether to keep a very late, ailing, low vigor cotton crop or cut their losses and go to an alternate crop. We will get a "best guess" concerning the size of the remaining crop and the replanted acres for the next newsletter. I hope the Texas Boll Weevil Eradication Foundation can help with this. This is the worst startup for a year that I've experienced. Many observers are indicating that this is definitely the worst year since 1992 when the High Plains planted 3.2 million acres, harvested 1.5 million and produced 1.4 million bales of cotton. The overall situation is such that we will need a good dryland crop this year in order to keep our production from falling through the floor.

Overall, we did have some good growing conditions for the week, especially coming over the weekend and some cotton was actually attempting to turn around. Some damaged cotton was looking much better. However,

nearly all cotton in the region, except that in terminated small grains cover is running weeks behind schedule. We're coming up on July, and many damaged or replanted fields are still weeks away from bloom. With the lateness of this crop, we will badly need things to go our way through the month of September and probably into early October. Temperatures for the week were helping crop growth, at least until Thursday, when the Lubbock forecast was a high of 71, with temperatures not expected to climb into the 90s until Monday – with a chance of additional precipitation every day through next Tuesday. Lubbock's heat unit accumulation was above normal for the last week (145 for June 19-25, 2003, vs. 129 for the long-term average). From June 1, we are now at 371 for 2003 vs. 418 for the long-term average.

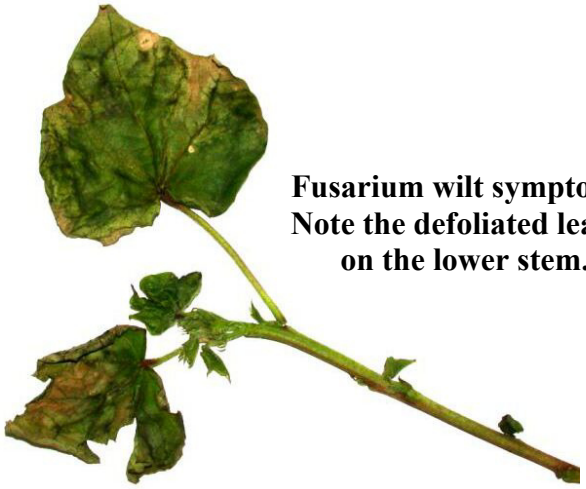


All is not lost, however – there is some good cotton out there. I took a trip across portions of the region, and saw some very good-looking fields out there – especially those planted in terminated small grains cover. This was the year that multiple rows of small grains have thus far paid off. One field in Dawson County even had large squares nearly ready to bloom. Much of the dryland crop is up and off to a very good, although late start. It looks much better south of Lubbock than it did back on May 23 when the sand was blowing and we were facing another dryland disaster in that area. I have recently seen many a field of small dryland cotton with excellent stands. Maybe the silver lining will be a good dryland crop.

When will we finally get into our "summer doldrums"? RB

PLANT DISEASE SITUATION

Fusarium wilt on cotton. With the rainfall that has occurred in June, conditions are present which may lead to Fusarium wilt on cotton. There is a second type of wilt, called Verticillium wilt, which will not show up until later in the season when flowers are present (mid July would be the earliest). The symptoms for Fusarium wilt at this time are: wilting of the plants, and defoliation from the bottom of the plant moving up. The vascular system has some brown discoloration. These plants will either completely defoliate, or show some yellowing of the leaves and die in several weeks. The severity of disease is entirely related to susceptibility of the variety. If you have not noticed wilt in previous years, or only slight problems, but you experience severe problems this year, then it is related to the variety planted. Root-knot nematode can make wilt more severe, however, variety is still the most important factor. There is no control for this disease other than planting more tolerant varieties and using some sort of nematode control at planting (such as Temik 15G). Therefore, if you observe disease symptoms over a large area of a field early over the next few weeks, you may want to stop spending



Fusarium wilt symptoms. Note the defoliated leaves on the lower stem.

money on that field. The plants will probably go ahead and die, leading to little or no yield. If wilt shows up later in the season, losses will not be as severe.

Peanut Pod rot. We saw increasing levels of pod rot on peanuts during 2002. For those producers who expect substantial pod rot in their fields this year, we recommend that the first application of fungicide be applied approximately 60 days after planting, with a second application at 90 days after planting. For Pythium pod rot there are only two products that are active, Ridomil and Abound FL. Abound FL can be applied in various ways including with a banded spray over the plants or by chemigation. Ridomil Gold EC **must be applied through chemigation.** Ridomil can also be applied as a granular. Ridomil should not be sprayed over the top of the plants, because the plant foliage absorbs the fungicide rapidly, and then it is not available to protect the pods or pegs. Ridomil only protects against Pythium pod rot. It does not protect against Rhizoctonia pod rot or southern blight. Other fungicides or additional fungicides should be applied if those diseases are also present. **TW**

CROP WATER ISSUES

Crop water use. Evapotranspiration (ET, crop water demand) estimates for the South Plains are accessible on the South Plains ET Network website at: http://lubbock.tamu.edu/irrigate/weatherdata.html. Texas Panhandle and South Plains ET estimates are accessible on the North Plains ET Network website at: http://amarillo2.tamu.edu/nppet/station.htm. Some of these estimates are summarized below; crop water demand estimates for additional crops are available from the network. These crop water demand estimates reflect expected maximum water use for well-watered (non-stressed) crops.

Average daily estimated crop water demand for the week of June 19 to June 25, 2003 (Inches per day)

Location	Reference ET	Corn	Cotton
		6 Leaf - Tassel	Emerged – 1st Square
Halfway	0.26	0.22 – 0.33	0.13 – 0.26
Lamesa	0.34	0.29 – 0.43	0.17 – 0.34
Lubbock	0.32	0.27 – 0.40	0.16 – 0.32

Average daily estimated crop water demand for the week of June 19 to June 25, 2003 (Inches per day)

Location	Reference ET	Peanuts	Sorghum
		Flower-Peg	Emerged – 5 Leaf
Halfway	0.26	0.15 – 0.26	0.11 – 0.18
Lamesa	0.34	0.24 – 0.34	0.14 – 0.23
Lubbock	0.32	0.22 – 0.32	0.13 – 0.23

Water management. Highly variable rainfall amounts have fallen on portions of the South Plains during the last week. A line of thunderstorms early Thursday morning delivered more hail and some very high intensity rainfall, leading to localized flooding.

When precipitation falls (or irrigation is applied) at intensities greater than the soil's permeability (particularly in sloped areas of the field) excess water will of course be lost to runoff. Low areas of the field may become flooded. Application of water impoundments (such as furrow dikes) and contour tillage (in sloped fields) help to retain water at the point of application, thereby reducing runoff and improving the overall *effective precipitation* and water distribution uniformity. Cover crops, crop residues and other soil-improving practices help to maintain relatively high soil permeability, also reducing runoff losses. Water retained on upper portions of a field will reduce the contribution to flooding in lower areas of the field. It will also be better distributed for storage in the soil profile to meet crop water demand later in the season.

We are generally concerned about maximizing benefit from the limited rainfall we get in the South Plains. If you need information about drainage options for flood-prone areas in a field, there are engineering standards on the topic available from the American Society of Agricultural Engineers and the USDA Natural Resources Conservation Service. **DP**

COTTON RESEARCH BRIEFS

Irrigation management and insect activity in cotton. We evaluated the influence of irrigation application rates and irrigation application methods on cotton insect infestation levels in 2002 in Gaines County. Cotton pests, including *Lygus* bugs and cotton fleahoppers, and beneficial arthropods were sampled. Three irrigation application rates, 50%, 75% and 100% evapotranspiration (ET) replacements, were evaluated. The two irrigation application methods evaluated were low energy precision application (LEPA) system and low elevation spray application (LESA) system.

Despite low *Lygus* bug activity, average *Lygus* numbers were significantly higher in 75% and 100% ET replacement plots than in 50% ET replacement plots. The cotton fleahopper numbers followed the same trend as *Lygus*. Abundance of predaceous bugs (minute pirate bug, damsel bug, assassin bug, etc.) increased with increase in ET level. Green lacewing numbers were higher at 75% ET level, but the numbers were similar between 100% and 50% ET levels. Total beneficial arthropods (all predators combined) were also higher in 75% and 100% ET plots compared with that in 50% ET plots.

Lygus abundance was significantly affected by irrigation method, with LEPA irrigation method supporting significantly higher abundance of *Lygus* compared with the LESA irrigation method. We speculate that the overhead spray irrigation method (LESA) negatively affected the recolonization of *Lygus* on the upper canopy that resulted in lower bug activity in the cotton canopy. Cotton fleahoppers showed the same trend as *Lygus*. Total beneficial arthropod number was higher in LEPA irrigated plots compared with that in LESA irrigated plots. The predaceous bugs and green lacewing dominated the trend of total predator abundance.

It appeared that both the pest species and beneficial arthropods were more abundant in LEPA compared with LESA irrigated plots indicating that overhead spray of water decreased insect colonization in the cotton canopy. Insect populations were higher at moderate and full irrigation plots compared with that in deficiently irrigated plots. This study is repeated this year to evaluate year-to-year variation in these trends. **MP**

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