Texas Cooperative EXTENSION
The Texas A&M University System
http://lubbock.tamu.edu/focus

FOCUS on Entomology

For South Plains Agriculture

VOLUME XLIII, NO. 12 **Bollworms hit Southern Rolling Plains. See page 5** September 3, 2004

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NEWSLETTER CONTRIBUTORS

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COTTON INSECTS

Heat units are becoming critical for insect management and insecticide termination. Recent persistent cloudy, cooler weather and associated rain showers have slowed boll development and increased insect survival. This will extend the time of insect damage vulnerability compared to the long-term average figures presented below and by Randy Boman. It has been warmer the last 8 years. **REMEMBER THAT!!** Producers should be aware that it takes 350 heat units (HU) past white flower to have a relatively safe boll from *Lygus* damage. It takes 450 HUs to produce a "bollworm safe boll" and at least 600 HUs for a boll to be "safe" from pink bollworm attack. These are relative numbers that I believe can be influenced by variety and irrigation. This means that an August 1 flower was not safe from Lygus until August 24th, a bollworm until August 29th and won't be safe from pink bollworms until no earlier than September 8th. This applies to cotton in the Lubbock area. Flowers from August 15th on do not need insect protection because their chance of making a contribution to yield or net dollars (because of fiber quality loss) will be minimal. August 5th and 10th flowers are projected to be safe from Lygus on 8/27 & 9/3, bollworms on 9/4 & 9/10 and pink bollworms on 9/14 & 9/21, respectively. This and more heat unit information follows in Randy Boman's COTTON AGRONOMY column.

Bollworm infestations fanned out across the area the last 10 days or so. These have been spotty and mostly light to moderate in intensity. Most of these infestations have averaged less than 25,000 caterpillars per acre and the great majority has actually been below 10,000 per acre. Much of the higher activity was north and west of Lubbock implicating maturing corn as a primary source. Timely planted fields should have been able to weather almost all these infestations. Once cotton is into "hard cutout" (0-4 nodes above white flower—NAWF), small bollworms have a tough time becoming established. Even our more favorable survival weather can't change this. In fact, many timely planted fields will appear to affect even the larger worms, slowing their development and making them more lethargic. I believe a combination of plant maturity and shortening day length is causing this change. It even affects egg survival.

But later planted fields, especially up north, will have taken the brunt of this latest egg laying activity. The risk is high with these fields as far as making the late protected bolls into harvestable lint. If producers base crop management decisions on long-term weather records then the probability of making money on September *Lygus* or bollworm treatments is low. If however you chose to use temperature records for the last 8 years, then the picture looks brighter, but certainly more risky.

There is no reason on earth to control bollworm infestations consisting of around 5,000 small worms per acre. With average mortality occurring during the first 3-4 days of their life, this bollworm level would cause no more than $5.00 of damage per acre, probably less. The cost of an aerial application of a pyrethroid would run about $8.00 or more per acre, this just wouldn't cost out. It would even be tough to justify treatment of an infestation of around 10,000 small bollworms per acre with what we know about bollworm mortality in our area. I would certainly wait until worms are at 3-4 days old before making an application decision. Five day or older worms are probably going to damage your harvestable crop if there are enough of them (5,000 per acre).

You can control these larger worms with pyrethroids but because they are generally more "tucked away" in flowers and bolls, it is harder to get the insecticide to them for control. Coverage will be critical and should be dealt with through increased spray volume. Remember, we are no longer interested in protecting squares, flowers or bolls that are less than 2 weeks old. They simply will not make a harvestable boll that will make enough of a contribution to yield to warrant protection.

There have been increasing numbers of beet armyworms found in our fields but their numbers still remain very low and unimportant to caterpillar control decisions. Moth catches have been running a little higher than last year but certainly much lower than in 2000 when beet armyworms were a problem in some fields.

Aphid infestations are increasing following insecticide applications for pink bollworms, bollworms and *Lygus*. When spraying pyrethroids for bollworms, pink bollworms or Lygus, be aware of the potential for aphid flaring. This would also hold true for other insecticides that eliminate aphid predators and/or parasites. But pyrethroids are especially bad because they also increase aphids' reproductive rates. Aphid predators and parasites have been quick to jump on these developing infestations but sometimes not quick enough. Lady beetles have been the most common predator but syrphid fly larvae and lacewings have been seen. Some aphid mummies have also been observed. These are the results of parasitic wasp activity.

Most undisturbed aphid infestations have remained in the terminal area on later planted cotton and in squares and flowers. Only when they move onto leaves are we concerned with aphids and associated yield losses. But as I reported in last week's FOCUS, I think we are beyond the danger of aphids affecting yield. From here on out it will be more an issue of sticky cotton. But with our rainfall pattern this year, this should not be a problem. It certainly isn't a problem right now even though earlier planted fields have increasingly more numbers of open bolls.

***Lygus* are increasing,** especially in the later planted fields north of Lubbock. This is a normal pattern that we have observed over the years. This movement is probably a consequence of both recent weed control efforts by producers and high numbers residing in these and other undisturbed hosts. Applications of pyrethroids for bollworms will control these *Lygus* as well. The threshold level is still *2 Lygus* per 3 row feet (or about 15 per 100 whole plants examined). These treatment levels are based on drop cloth (beat sheet sampling). Whole plant counts are tedious but provide similar results but the faster beat bucket method severely underestimates wingless nymphs. Orthene at 12 ounces per acre has proven to be very effective in treatments we have made to our infested research fields. Lygus will only be damaging for the 1st three weeks following bloom. After that, bolls are safe. Larger bolls may exhibit external damage lesions but will not have internal injury due to lack of penetration.


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Pink bollworms remain a concern in Gaines County and the surrounding area. This concern will increase as longer distance flights will bring **moths to traps** a considerable distance out from this area over the next 4-8 weeks. The Texas Boll Weevil Eradication Foundation will be putting out their traps next week with one trap per field per section. This should give us a better snapshot of the late season pink bollworm moth distribution than the few traps we are able to run. We will use all this trap information to define the higher risk areas where Bollgard cotton varieties would be recommended for the 2005 planting.


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Moth catches will be even less indicative of field activity from this point on than they were even during the early boll period. We should be using trap catches alone only for early preventative sprays. Boll examinations are labor intensive but give the most reliable assessment of damage potential for pinkie control decisions. Late planted or late developing fields are at risk now and need to be watched closely over the next few weeks. While the areas with of damaging infestations increased this year, their distribution expansion was not as dramatic as we observed with boll weevils once they hopped up into the High Plains. I hope this slower spread pattern continues in future years. But don't assume that pink bollworms won't make it into your area in the future. Look how these assumptions panned out for the boll weevil!


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Boll weevil watch. Trap catches continued to increase in the Permian Basin zone but none were caught in the other 5 High Plains zones. Weevils haven't been caught in the Northern High Plains zone for over two months or the Southern High Plains/Caprock zone for about 8

weeks. No weevils have been caught in the Northwest Plains zone all year. Seven weeks of trapping have yielded no weevils in the Panhandle zone. After we clean up the St. Lawrence zone and the contaminated Southern Rolling Plains, Rolling Plains Central, Western High Plains and Permian Basin zones, west Texas will be virtually weevil free. **JFL**

COTTON AGRONOMY

Over the last several weeks, lower temperatures, cloud cover, and occasional thunderstorms have been encountered. For a May 1 planting date at Lubbock, we now have accumulated a total of about 1,974 heat units (HUs) through the end of August. We are now right on top of the long term average (LTA) **HU accumulation** for the entire season. As a whole, August ended up with only 84% of our LTA. This is a very significant swing compared to what we have been accustomed to over the last 8 years. During that period of time, August has been averaging about 11% above the LTA. That equates to a 27% swing.

Heat unit accumulation at Amarillo has not fared well either, and currently the total from May 1 through the end of August is 1634 HUs. August heat units at Amarillo were only 83% of the LTA. If we can get our average temperatures for September and October, we can end up with a near normal heat unit accumulation for the growing season at Lubbock for a total of around 2400 for the season. Amarillo can end up just shy of 2000 heat units if LTA temps for September and October are obtained.

Cotton continues to cutout across the region, and we are now most certainly beyond any bloom possibly making a productive boll. A lot of fields have had additional rainfall, and many producers have stopped pivots. I suggest that if we get into some highly stressful September temperatures, crank up and put out 0.5 to 0.75 inches to keep the cotton from folding up completely, but do dry out the profile if possible.

We are most certainly in for an interesting finish for a significant portion of this year's crop. The good news is that we do have some open bolls showing up in some early May planted fields. Harvest aid strategies can potentially be significantly affected by our subsequent weather. What a cliffhanger for lots of fields. Hang on!

Countdown after cutout. Over the last several days, many fields have recently reached cutout (here defined as NAWF=5). COTMAN uses 850 HUs past bloom as a point at which a flower can make a "normal" boll. In the High Plains, HU accumulations of 750 past white flower will probably make an "acceptable" boll that may not have "normal" lint production or may be lower quality (low micronaire).

We have developed a table that indicates where we are as of August 31. It is based on actual Lubbock 2004 heat units from August 1 through August 31, and from that point forward, it uses the 30-year long-term average for each day. For example, the table shows that for a field that reached cutout on August 1, a bloom was able to obtain 350 heat units by about August 24. The 450 total occurred on August 29. This boll should obtain good maturity (850 heat units) about October 5. For cutout at August 10, we obtained 350 heat units by September 3, and hit 450 heat units on September 10. Using the long-term average temperatures to project later heat units, the 850 total will not be obtained, but will "run out of

season" and have about 783 heat units by the end of October. For an idea of how this August's temperatures have affected crop progress, compare this to the 2003 data from the August 29th issue of **FOCUS**.

DD60 Heat Unit Accumulation	Date When Crop Achieved Cutout (5 NAWF)				
	Aug 1	Aug 5	Aug 10	Aug 15	Aug 20
+350 HU (safe from *Lygus*)	Aug 24	Aug 27	Sep 3	Sep 7	Sep 12
+ 450 HU (safe from bollworm egg lay)	Aug 29	Sep 4	Sep 10	Sep 15	Sep 21
+ 850 HU (mature boll)	Oct 5	Oct 24	n/a	n/a	n/a
Total HU through Sept. 30	820	733	652	593	530
Total HU through Oct. 15	907	820	739	680	617
Total HU through Oct. 31	952	865	783	725	661

DD60 heat unit events based on date of cutout (5 NAWF) and actual Lubbock August 1-August 31, 2004 temperatures with subsequent long-term average values for the remainder of the season.

Late season hail damage. We are continuing to get hail associated with various thunderstorms. Some estimates of various events now total around 50,000 acres affected, but with perhaps some 10-15,000 destroyed or very badly damaged. This is always a difficult management challenge. I addressed this last year in a publication entitled Assessing Hail Damaged Fields. Supplemental to last year's comments are two reports that were generated after various harvest aid treatments were evaluated on late-season hailed on cotton. Tommy Doederlein (Dawson/Lynn County Extension IPM agent) was instrumental in getting these projects established and completed. These two projects (60% defoliated & 100% defoliated) were small plot, and were machine harvested with a plot stripper. Overall, I think the maturity of the cotton, the degree of defoliation, and the producer's goals should all factor into the decision process.

Harvest aid guide and pricelist. The 2004 version of the High Plains harvest aid guide and pricelist are now available. Only minimal changes have been made to a section in the tables. **RB**

BOLLWORMS HIT SOUTHERN ROLLING PLAINS

A second wave of bollworms was reported to be cycling through Southern Rolling Plains cotton acreage. Small caterpillar infestations as high as 15,000 per cotton acre were observed. This number can cause economic losses sufficient to warrant prevention with a pyrethroid spray. High rates are advised, as these worms will most likely be tucked away in blooms, behind bloom tags and in small bolls. Coverage will be an issue. Many fields in this area have excellent yield potential but young bolls with high vulnerability to bollworm damage. This cotton is still trucking along and not at cutout. **This same wave of bollworm activity could find its way into the adjacent southern acreage of the High Plains.** Our late dryland crop is particularly vulnerable. **JFL**

UPCOMING EVENTS

Sept. 7 – West Texas Ag Chemicals Conf.
Sept. 10 – Lubbock Co. Crop Tour – 775-1680
Sept. 13 – Yoakum Co. Crop Tour – 456-2263
Sept. 14 – Cochran Co. Crop Tour – 266-5215
Sept. 14 – Dawson Co. Crop Tour – 872-7539
Sept. 15 – Lynn Co. Crop Tour – 561-4562
Sept. 16 – Terry Co. Crop Tour – 637-4060
Sept. 17 – Helms Farm Tour, Halfway – Jim Bordovsky, 889-3315

COTTON INSECT PHOTO CREDITS

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FOCUS on Entomology newsletter, is published by
Texas Cooperative Extension
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Lubbock, TX 79403

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