FOCUS on South Plains Agriculture

Texas AgriLife Research and Extension Center at Lubbock
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Cotton Insects

Worms

Although much of our cotton has cutout hard and is quickly becoming non-attractive to worms, there is still enough suitable non-Bt cotton out there to worry about. I haven't seen much of an egg lay this week from Lubbock south but there have been some mixed populations of bollworms and beet armyworms north of Lubbock.

If beet armyworms are abundant along with bollworms, consider including Intrepid, Belt, Coragen, Demin, Diamond or Steward along with your pyrethroid (click here it view beet armyworm product efficacy data). Remember that beet armyworms are not voracious boll feeders and any squares they may take at this point will not produce a harvestable boll anyway, so treat only if you are seeing significant boll feeding and lots of worms.

If you are encountering fall armyworms your product of choice may differ. Currently we do not have much efficacy data on fall armyworms, but Diamond, Coragen and Belt should all have good activity. Data we recently collected near Loop in Gaines Co. suggests that the low rate (2 fl-oz) of Belt may not provide adequate control of fall armyworms or bollworms at 7 days post application. A data slide from the trial is presented here.

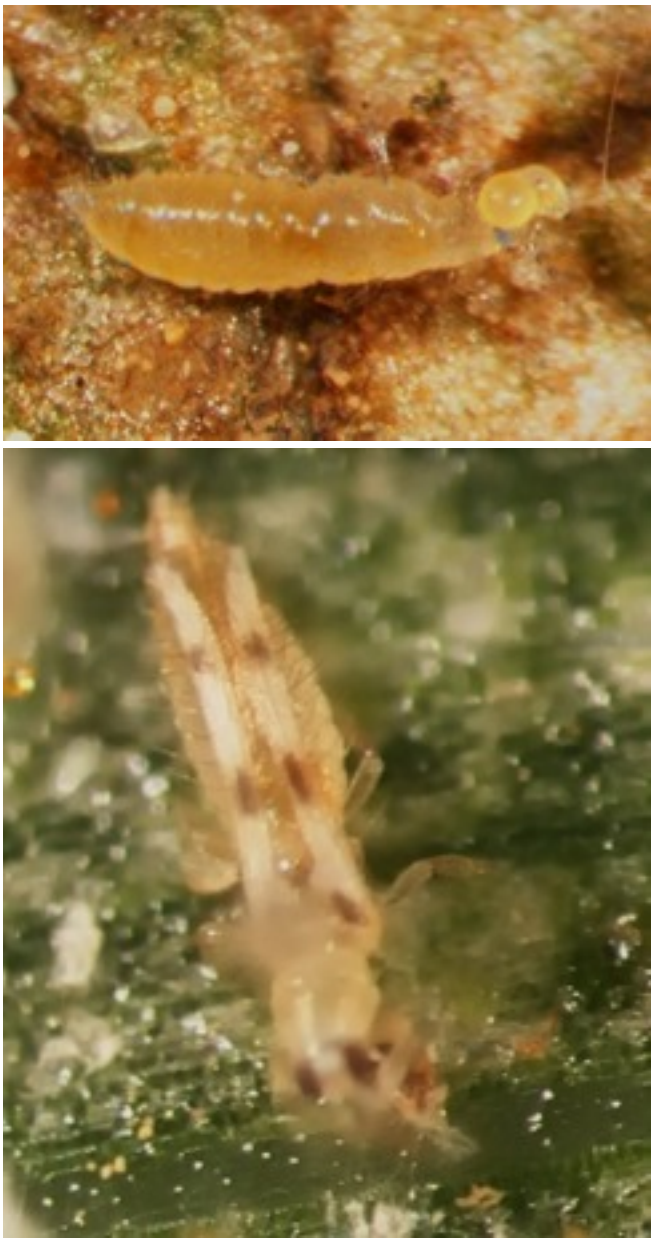
Likewise, the pyrethroids, as expected, were all weak against fall armyworms but did well against bollworms. However, if you mix Belt at 2 fl-oz + a pyrethroid (Mustang Max in this case), control of both bollworms and fall armyworms was excellent. These limited data suggest that there may be a synergistic relationship between Belt and the pyrethroid. If we would have

increased the rate of the pyrethroid mixed with the Belt, I suspect that we would have taken the few remaining bollworms out as well. Fall armyworms are much more voracious fruit feeders than beet armyworms, much closer to what you would expect from a bollworm.

Spider Mites

Moderate to high populations of spider mites are continuing to increase in some fields, but I am seeing high number of thrips feeding on these populations. Most of these thrips appear to be six-spotted thrips and western flower thrips. Along with the cooler temperatures we are experiencing I am hopeful that much of the mite problem may subside over the next week. However, do not rely too heavily on thrips and the weather. If your mite problem is currently at a treatable level and appears to be spreading it is advisable to go ahead and treat. The products that are looking good in our tests include: Oberon at 4 fl-oz and 8 fl-oz, Epi-Mek at 8 fl-oz and Portal at 1 pt. Brigade at 6.4 fl-oz had a very good knock down of the mite population, but by 19 days after treatment the mite population had recovered to that of the untreated.

Red colored mites are becoming more common as temperatures cool



An immature thrips (top) and adult six-spotted thrips eating mite eggs

Stink Bugs

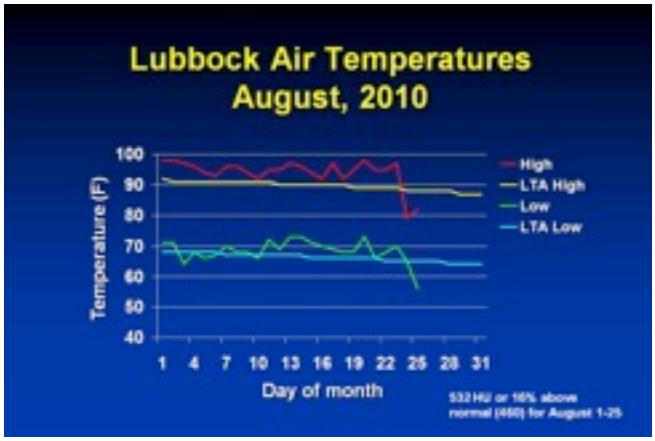
Stink bugs just won't go away. It seems like I find them in every field, not always at a a treatable level, but always there. The current recommended action threshold for stink bugs is 1 bug per 6 row-ft, however, if you have been running near threshold for over a week I would consider spraying them. Once the crop has reached 450 DD60s past cutout, treating for stink bugs should no longer be necessary. Currently, it appears that Orthene at 1 lb or Bidrin at 6-8 fl-oz appear to be providing

good stink bug control (click here to view a draft chapter on stink bugs from the Texas Cotton Insect Management Guide). DLK

Cotton Agronomy

Crop Update

The August 12 USDA report has Districts 1N and 1S at 3.78 million acres planted. Based on their estimates of abandonment, we are looking at about 3.645 million acres to harvest. Based on earlier thoughts, this may not be too far off. If so, this could be a record year for low abandonment. From this standing acreage, it is estimated that per acre lint yields will be 1005 lb/acre in 1N, 731 lb/acre in 1S. This in turn results in a crop of just under 6 million bales, which would be a record in terms of overall production in 1N and 1S. There is a lot of good irrigated cotton out there, and some decent dryland. However, much of the dryland is showing significant stress in many areas, particularly in 1S at this time. We certainly needed a good early August rain event across many of the dryland acres to help boost our production. We have a ways to go yet, but it is looking substantially better than last year's 3.5 million bales off of about 2.43 million acres in 1N and 1S. Remember, we failed about 800 thousand acres last year. However you look at the 2010 crop, it is certain that we are in much better shape than in 2009 in terms of standing acres. Let's hope we get a good finish to this crop. A good rain would certainly be welcomed.



Thus far, August has been rather hot with not a lot of rainfall across the region. Heat unit accumulation at Lubbock has been 16% above the 30-year long-term average from August 1 through 25.

Lubbock actually set a new record low temperature of 51 degrees on the morning of August 26. The low in the Muleshoe area was about 39 based on the Mesonet. I don't believe this will have a significant negative effect on the crop in that area, as soil temperatures were very warm and this temperature was not at this low for an extended period of time. The cooler temperatures will slow crop maturity somewhat, but hopefully we can get warmed up soon. We are rapidly moving into hard cutout in a lot of fields, with many irrigated fields at less than 5 nodes above white flower (NAWF) at this time.

Countdown After Cutout

Crop progress is good at this time, but we need to remain warm for the next 6 weeks if possible. Although we had excellent prospects for a high yielding dryland crop, it was diminished by lack of rainfall in many areas south of Lubbock. Much of the High Plains crop was planted fairly timely, but due to a cool spell at the beginning of July, crop development lagged somewhat. Based on data from several of our Extension cotton variety trials, many of the irrigated fields reached cutout in a timely manner. If we can get normal temperatures, we may have good maturity in most of this crop. The dryland crop will likely be a fairly mature one due to the stress we are observing at this time.

Thoughts concerning end of season management inspire me to encourage producers to consider the following. I really like to track nodes above white flower (NAWF) and the date where we reach "hard cutout." I define that as the date the crop reaches less than 4-5 followed by "blooming out the top." We can sometimes see irrigated crops stay around 5 NAWF for 2-3 weeks depending upon irrigation capacity and rainfall events. What we're interested in here is the date when the crop drops below 4-5 and then

goes to zero in a few more days. Based on long-term temperature data at Lubbock, we can still get about 850 heat units past this if it occurs before about August 15. Recording and then tracking heat units past this date can be beneficial, as many management considerations can be triggered using COTMAN. Insecticide terminations can be considered beginning at approximately 350 for Lygus and 450 heat units for bollworm egg lay and stink bugs after this date. Irrigation termination certainly varies from field to field based upon soil profile moisture and even with the type of system (drip vs. pivot or furrow) and boll load. Based on irrigation termination work conducted in Texas, producers should look seriously at using about 500 heat units past cutout. Along with the three usual crop termination decision techniques (percent open bolls, sharp knife technique to observe seed maturity in unopened bolls, nodes above cracked boll method), the 850 heat units past cutout crop landmark can also be a good tool for harvest aid application consideration.

Many fields have recently reached cutout (here defined as Nodes Above White Flower or NAWF=5 on a steep decline followed by "hard cutout"). COTMAN uses 850 heat units past bloom as a point at which a bloom can make a “normal” boll. In the High Plains, heat unit accumulations of 750 past bloom will probably make an "acceptable boll" that may not have "normal" lint production and may be lower quality (low micronaire).

We have developed a table that indicates where we are as of August 20 (Table 1). It is based on actual Lubbock 2009 heat units from August 1, and August 10, and from August 20 forward, it uses "temperature normals" (30-year long-term average) as projections for each day.

For example, the table shows that for a field that reached cutout on August 10, that bloom should be able to obtain 350 heat units (probably safe from lygus) by about August 28. The 450 total (probably safe from a bollworm egg lay), should occur around September 3. If we encounter "normal" heat units from August 25 forward, this boll should obtain good maturity (850 heat units) about October 20.

Based on some irrigation termination projects with COTMAN (see below), the possible irrigation termination date could occur sometime around September 7. One can tell that unless we have an outstanding fall, the cotton blooms on August 20th at Lubbock will encounter difficulty in making a "fully mature boll." In many years, we can begin seeing open bolls at about 1850 heat units after planting, and cotton planted around May 20 should be hitting about that now over much of the region. However, the significant cool spell in the early part of July may have delayed this somewhat, particularly if some early squares were lost due to environmental conditions such as water logged soils, cloudy conditions, early season square thieves, etc. I have seen some open cotton in the Idalou area.

Table 1. DD60 heat unit events based on date of cutout (5 NAWF on a steep decline) and actual Lubbock August 1-August 25, 2010 temperatures with subsequent long-term average values for the remainder of the season.

DD60 Heat Unit Accumulation	Date When Crop Achieved Cutout (5 NAWF)		
	Aug 1	Aug 10	Aug 20
+350 HU (safe from lygus)	Aug. 17	Aug. 28	Sept. 13
+ 450 HU (safe from bollworm egg lay & stink bugs)	Aug. 22	Sept. 3	Sept. 22
+ 500? (terminate irrigation if no rainfall?)	Aug. 25?	Sept. 7?	Sept. 28?
+ 850 HU (mature boll)	Sept. 20	Oct. 20	N/A

Total HU through Sept. 30	937	745	516
Total HU through Oct. 15	1023	832	603
Total HU through Oct. 31	1069	877	648

Late-Season Irrigation Issues

The value of continued center pivot irrigation after bolls begin to open is probably questionable, unless record high temperatures and high reference ET are encountered and the field has a depleted moisture profile and a late boll load. Generally, depending upon temperatures, we observe about 2-5 percent boll opening per day once bolls begin to open. This implies that if the last irrigation is made at a few percent open bolls, then it should take about 10 days to reach 30-60 percent open bolls. Recently, ET rates have been running about 0.2-0.25 inches/day. As we move into the boll opening growth stage of cotton, the crop coefficient decreases from about 1.0 at first open boll to about 0.8 at 30 percent open bolls and decreases rapidly after that. That implies that once we get to the boll opening phase, if reference ET is averaging 0.25 inches per day, the crop will use about 1.4 inches per week (0.25 x 0.8 x 7 days).

A rod probe, shovel or other tool may be useful in determining the amount of moisture remaining in profiles in fields. Water holding capacities of major High Plains soils are found in Table 2. Determining moisture by feel can be valuable also. For a good publication concerning this click here.

Table 2. Average available water holding capacities for typical High Plains soils.

Soil series	Dominant texture	Available water holding capacity, inches/foot
Amarillo fine sandy loam	sandy clay loam	1.8
Amarillo loamy fine sand	sandy clay loam	1.7
Arvana fine sandy loam	sandy clay loam	1.8
Brownfield fine sand	sandy clay loam	1.4
Portales fine sandy loam	sandy clay loam	1.6
Acuff loam	sandy clay loam	1.9
Olton loam	clay loam	2.0
Estacado clay loam	clay loam	1.6
Pullman clay loam	clay	1.8
Miles fine sandy loam	sandy clay loam	1.8
Ulysses clay loam	clay loam	1.6
Mansker loam	clay loam	1.8
Lofton clay loam	clay	1.9

Data from High Plains Underground Water Conservation District Number 1 and NRCS.

Using Plant Mapping/COTMAN

When using the COTMAN program funded by Cotton Incorporated and developed by the University of Arkansas, various investigators across the Cotton Belt have noted that irrigation termination at about 400-600 DD60 heat units past cutout (here defined as Nodes Above White Flower or NAWF = 5 on a steep decline with "hard cutout" following) has been reasonable in some areas. One lower yielding trial (about a bale/acre) conducted by Extension IPM agents at the AGCARES facility at Lamesa in 2003 indicated 600 DD60s optimized yield and net returns from

LEPA irrigation. A subsurface drip irrigation (SDI) project conducted on 1100 lb per acre cotton in the St. Lawrence area indicated that untimely early termination based on heat units past cutout resulted in yield losses. However, it was concluded that few benefits were noted by extending SDI irrigation past 500 HU after NAWF = 5. Most of the project reports published in the Beltwide Cotton Conference Proceedings and other publications lacked information on soil profile moisture status in the trials at the time the irrigation was terminated. We suggest producers use this as a guide. With center pivots, low amounts of irrigation (0.75-1 inch) can be applied if the cotton is severely stressed after initial termination. Some fields which have fairly depleted profiles may wilt soon once irrigation is interrupted. If the amount of wilting is unsuitable for the boll load, then the pivot can be passed over the field to apply an additional increment of water.

Yield Estimation

Although a very risky endeavor, I have had a few calls concerning how to estimate cotton yields. There is an Extension publication which deals with this issue. This publication takes a fairly simple approach and is "user friendly." For a more complicated and thorough treatment of the subject, click here to see an older publication generated by Dr. Will McCarty, former Extension cotton specialist from Mississippi State University. I obtained this from a MSU Web site a few years ago. This publication considers many more factors such as numerous row spacings, boll sizes, and two estimated lint percentage levels (35% and 38% picked lint percentages of the SEEDCOTTON). Dr. Jane Dever's Cotton Performance Tests publication available on the Lubbock Center Web site (click here to see several years of reports). In her tests one can find boll sizes and picked lint percentages for numerous varieties. In spite of considering more factors, yield estimation should be approached with trepidation.

The "old High Plains rule of thumb" indicates that it takes about 155,700 normal (average of 4.0 g seedcotton/boll = 1.4 g lint assuming a picked lint percentage for seedcotton of 35%) bolls are required to produce a 480-lb bale of cotton. This is equivalent to about 325 bolls per lb of lint. For 40-inch rows this calculates to 11.9 bolls per row-ft for a one bale/acre yield (155,700 bolls/13,068 row-ft per acre for 40-inch rows). This is very close to the "one boll per inch = one bale per acre" number that is many times used to estimate yields in 40-inch rows. For 30-inch rows this works out to 8.9 bolls per row- ft for a one bale/acre yield (155,700 bolls/17,424 row-ft per acre for 30-inch rows).

If we investigate Dr. Dever's recent High Plains variety tests, we can see that many of the boll size mean values across varieties are now in the range of 4.5 to 5.5 g seedcotton per boll, and picked lint percentages are also somewhat higher than they used to be. For immature (low micronaire) or drought-stressed dryland these values might not hold up. If we assume a boll size of 5 g seedcotton per boll and a picked lint percentage of 38, this provides a total of 114,695 bolls per acre to produce one bale, or about 239 bolls per pound of lint. For 40-inch rows, this works out to 8.8 bolls per row-ft (114,695/13,068) to produce a 480-lb bale of lint. For 30-inch rows this result becomes 6.6 bolls per row-ft (114,695/17,424). RKB

New Cotton Incorporated Cotton Harvesting Publications

Three new Cotton Incorporated cotton harvesting publications have become available. One covers stripper harvesting, another discusses picker harvesting and the third one concerns seed cotton storage. The picker and seed cotton storage documents contain information related to the new module building pickers from Case-IH and John Deere. There is also a new section on the Cotton Incorporated Web site concerning harvesting issues.

Mark Your Calendars: August and September Meetings

Fall crop tours have begun and we have several on the calendar, as well as some scheduled harvest aid meetings. Also, industry field days may also be of interest. Here are the ones of which I am aware. For specific information, call Extension agents or industry representatives for more details.

August 30 – Terry County End of Season/Harvest Aid Meeting
August 31 – Bailey County Crop Tour

September 1 – Dawson County Ag Tour
September 2 – Lamb County Crop Tour
September 3 – Moore/Sherman County Crop Tour
September 7 – Yoakum County Crop Tour
September 10 – Lubbock County Crop Tour
September 14 – Floyd County Crop Tour
September 15 – West Texas Agricultural Chemicals Institute Annual Meeting
For a copy of the program, click here
Note: It will be at a new location this year.
It will be held at:
Scottish Rite Temple (Learning Center)
1101 70th Street
Lubbock, TX

September 16 – Hale County Harvest Aid
September 17 – Swisher County Harvest Aid
September 21 – Dawson County Harvest Aid
September 21 – Briscoe County Crop Tour
September 21 – Randall County Crop Tour
September 22 – Lynn County Crop Tour

Industry Field Days:

Monsanto Technology Showcase Field Day,
Lorenzo, September 23
Americot/NexGen Field Day, Lubbock,
September 28
Bayer CropScience Field Day,
September 29 and 30

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