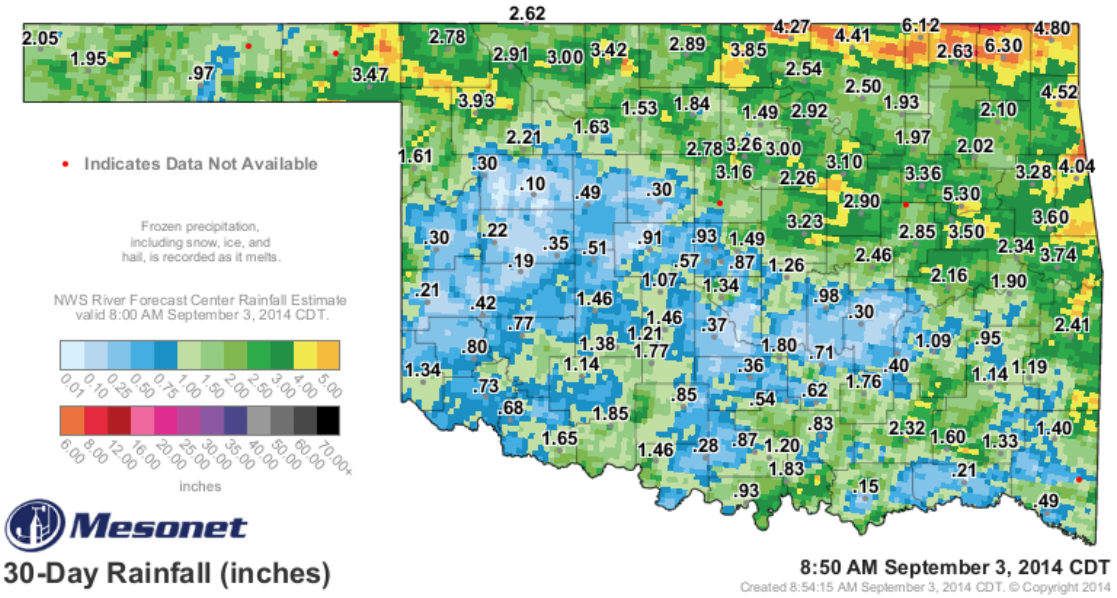
Cotton Comments

OSU Southwest Oklahoma Research and Extension Center
Altus, OK

September 4, 2014 Volume 4 Edition 6

Crop Update

Lack of timely August rainfall has resulted in considerable moisture stressed cotton in many areas of western Oklahoma. In the far southwestern corner of the state, August was a brutal month and many fields have crashed. With the crop entering the bloom stage in mid-July in many fields, crop stress by mid-August was an issue. The Mesonet graphic (see below) for rainfall in the state over the last 30 days provides a summary. When considering the marginal at-plant profile moisture, and in spite of good June and July precipitation in many areas, it can be seen that the far southwestern corner has not obtained enough August rainfall to carry a previously good to excellent rainfed crop across the finish line. Even though we had substantial rainfall in the southwest corner in June and July, the nearly 30-day August dry run, high heat and winds resulted in highly stressed cotton by the third week. The irrigated crop is progressing very well where adequate irrigation capacity and water quality are available. The additional rainfall in some of these areas has provided an opportunity for good to excellent yields. One concern many producers have, especially in the Caddo/Blaine/Custer counties irrigated area, is adequate heat units to mature a somewhat late but generally well-set crop.



Results from IPM Extension Assistant Jerry Goodson's monitoring of program fields indicate that all fields have now encountered cutout (nodes above white flower or NAWF of 5 or less). These data also indicate "hard cutout" (blooming through the terminal or NAWF=0) has occurred in numerous fields.

Field Surveys in Oklahoma - Week Ending September 5, 2014

Location	Date of planting	Plant Stage	Insects	Comments
Beckham Irrigated RACE - Damron	May 20	1.25 NAWF	None detected	Good
Caddo Irrigated Cotton Inc Enhanced Variety - Schantz	May 20	0.00 NAWF	Terminated	
Caddo Irrigated Bayer CAP - Schantz	May 21	0.00 NAWF	Terminated	
Caddo K Trial – Schantz	May 21	1.50 NAWF	None detected	Fair
Caddo Irrigated Dow Innovation Schantz	May 31	1.75 NAWF	None detected	Good
Caddo Irrigated Americot ACRE- Schantz	May 31	1.50 NAWF	None detected	Good
Caddo Irrigated OVT – OSU Station	June 3	2.75 NAWF	None detected	Good
Harmon Irrigated Cotton Inc Enhanced Variety - Cox	May 21	1.00 NAWF	Terminated	
Harmon Irrigated Bayer CAP - Horton	April 30	0.00 NAWF	Terminated	
Jackson Irrigated RACE - Darby	May 21	0.00 NAWF	Terminated	
Jackson Irrigated OVT - Altus Station (no water)	June 2	0.00 NAWF	Terminated	
Jackson Dryland RACE - Abernathy	June 13	0.75 NAWF	None detected	Fair
Jackson Irrigated Weed Control Trials - Altus Station (no water)	June 4	0.00 NAWF	Terminated	
Tillman Irrigated RACE - McCullough	May 15	0.00 NAWF	Terminated	
Tillman Irrigated Trials – Bio Thrips McCullough	May 14	0.00 NAWF	Terminated	
Tillman Dryland RACE - Fischer	June 5	0.00 NAWF	Terminated	
Tillman Dryland No-Till (Tipton Station)	June 6	0.00 NAWF	Terminated	
Tillman Dryland OVT - (Tipton Station)	June 4	0.00 NAWF	Terminated	
Washita Dryland RACE - Davis	June 4	0.00 NAWF	Terminated	

RACE – Replicated Agronomic Cotton Evaluation Trial (Oklahoma Cooperative Extension)
CAP – Cotton Agronomic Plot (Bayer CropScience)
OVT – Official Variety Trial (Oklahoma Agricultural Experiment Station, Altus, Tipton, Fort Cobb)

The table below summarizes accumulated heat units and cotton crop evapotranspiration (ET) for the Mesonet sites listed. These data are based on a May 20th planting date through September 3rd. Daily ET values over the last two weeks indicate that crop demand has been high (0.4 inches/day) to extreme (greater than 0.5 inches/day) driven by above normal temperatures and high winds. Producers with irrigation should note that for a May 20th planting date, over the past week crop water use has ranged from about 1.8 inches near Fort Cobb to up to 2.4 inches near Tipton.

	For May 20 planting date			
	DD60 heat	3-day	7-day	14-day
Location	unit accumulation	accumulated ET	accumulated ET	accumulated ET
	heat units	inches		
Altus	2184	1.15	2.24	5.07
Tipton	2231	1.32	2.45	5.74
Hollis	2141	1.17	2.19	5.09
Erick	1973	1.25	2.24	5.19
Ft. Cobb	1967	0.93	1.82	4.35

Using COTMAN Concepts

We have reached the breaking point for all counties in Oklahoma with respect to the latest possible cutout dates when considering the Bollman component of COTMAN. COTMAN is a cotton management program developed with Cotton Incorporated Core funding. This funding supported cooperative research conducted by several land-grant institutions across the Cotton Belt. This program assumes that 850 cotton heat units past blooming are necessary to produce a reasonably mature boll.

When using 60 degrees (F) as the developmental threshold, cotton heat units (also called DD60 heat units) are defined as:

(daily high temperature + daily low temperature) divided by 2 = average temperature

Then take the average temperature – 60 = daily cotton heat units

The accumulation of heat units from a certain date can provide useful information. The COTMAN latest possible cutout date is defined as the last date on which 850 heat units can be obtained before daily heat units diminish to zero because of cool temperatures. Long-term weather data are used to compute this and two probabilities or risk levels are provided. The first is the date at which in 85% of the years, in the long-term weather data set submitted, that 850 heat units past bloom could be obtained. The second is the date at which 850 heat units past bloom could be obtained in 50% of the years. The COTMAN team at the University of Arkansas computed the 50% probability date to be

August 20th for the 1948-2007 time period. The 85% probability date for Altus was August 13th. Therefore, one can see that the window for setting bolls has closed in the area. It may be possible to retain a considerable amount of fruit after the COTMAN cutout dates, but the probability of obtaining high quality cotton diminishes for these bolls. Ultimately these bolls may open and produce lint, but it will likely be of marginal quality and may reduce the overall micronaire of the crop. Micronaire is essentially a confounded measure of both fiber fineness and maturity, and is the fiber property used by the USDA-Agricultural Marketing Service to estimate fiber maturity. Steep discounts may be encountered in the market if micronaire values are 3.4 or less.

The 2014 growing season has provided an abbreviated blooming period in many fields due to somewhat late planting and later first bloom. Once a cotton field blooms in the top (or the terminal) nearly all of the possible yield potential is set. Even if substantial rainfall occurs soon in "hard cutout" fields, the cotton will take some time to recover and to initiate another round of mainstem node production in the terminal and new squares. These new pinhead squares would take about 20 days or so to produce a bloom. This indicates that any new flower production would be well beyond the Altus COTMAN 50% probability date of August 20, indicating that there is a low likelihood of obtaining mature bolls.

For a copy of the COTMAN Bollman cutout dates for various locations across the Cotton Belt (including Altus), click here.

Irrigation Termination Considerations

NAWF counts in some irrigated program survey fields have reached the COTMAN definition of cutout (NAWF = 5) triggering the heat unit countdown for irrigation termination. In contrast, hard cutout, as I define it, can be described as "cotton blooming in the terminal." All fields "bloomed out the top" should be watched for potential irrigation termination within 500 heat units or so after "blooming out the top." When using the COTMAN program various investigators across the Cotton Belt have noted that irrigation termination at about 400 to 600 DD60 heat units past cutout (here defined as NAWF = 5 on a steep decline toward hard cutout or blooming in the top) has been reasonable. However, 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 irrigation was terminated.

One low yielding trial (about a bale per acre) conducted by Extension IPM agents at the Texas A&M AgriLife AGCARES facility at Lamesa in 2003 indicated that irrigation termination at 600 DD60s past the date the crop had 5 NAWF optimized yield and net returns from LEPA irrigation.

A sub-surface drip irrigated (SDI) project conducted by Texas A&M AgriLife Extension Service personnel on 1,100 lbs per acre cotton in the St. Lawrence area indicated that untimely early termination based on heat units past cutout resulted in yield losses.

However, based on their study it was concluded that few benefits were noted by extending SDI irrigation past 500 HU after NAWF = 5.

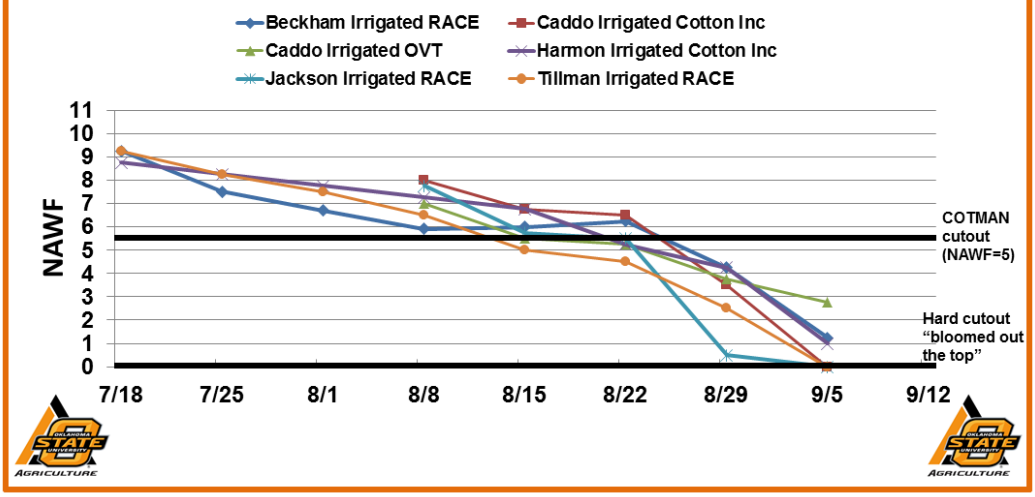
Using heat units after cutout is a good general guide, but growers should be looking at each field's yield potential and soil profile moisture status. The value of continued center pivot irrigation and SDI after bolls begin to open is probably questionable, unless extremely high temperatures and high evapotranspiration are encountered and the field has a moisture depleted soil profile and a late boll load. Generally, we observe about 2 to 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. The last irrigation should provide just enough plant available moisture to retain and mature all the bolls that have a reasonable chance of producing lint of acceptable quality under normal growing conditions. Normally a boll will be retained once it reaches 10 to 14 days after bloom. The goal is to avoid excessive moisture stress at least until the final bloom to be taken to the gin becomes about a 10 to 14 day old boll. This will reduce the likelihood of small bolls shedding due to water stress. After that, late bolls can handle more stress.

Field Observations

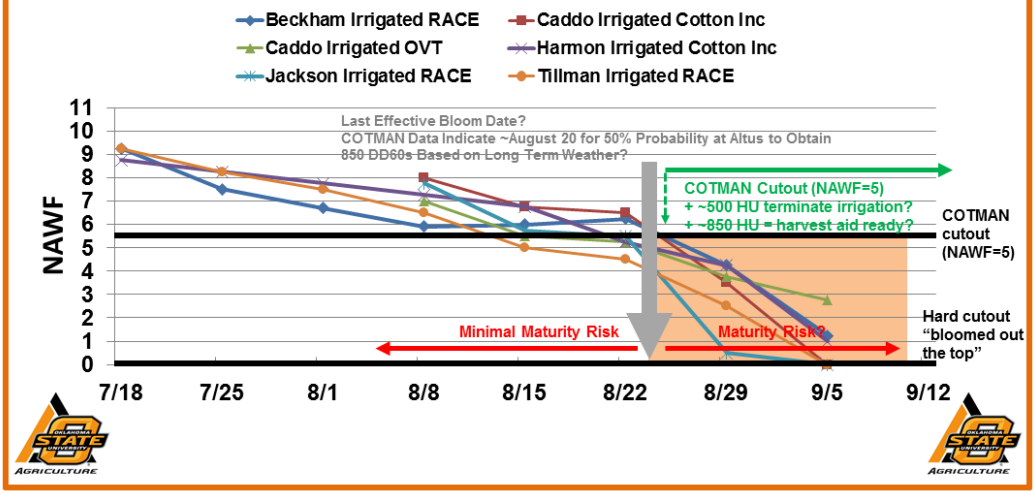
Based on field observations, essentially all irrigated fields reported below (see first graph below) encountered NAWF=5 within the week or so. This has occurred in a fairly timely manner when considering the COTMAN cutout date for Altus. From this point forward, DD60 heat units past cutout can be calculated, and various management options can be tracked and considered. When considering management options, the heat unit thresholds for various crop issues are listed below. For a graphical representation of how this can be visualized with NAWF tracking data, see the second graph below.

DD60 Heat Unit Accumulation Past NAWF = 5
Date of NAWF=5 + 350 DD60s – safe from lygus bugs
Date of NAWF=5 + 450 DD60s – safe from stink bugs and bollworm egg lay if non-Bt variety
Date of NAWF=5 + 500-600 DD60s – terminate irrigation if soil profile is depleted
Date of NAWF=5 + 850 DD60s – possible harvest aid application considerations

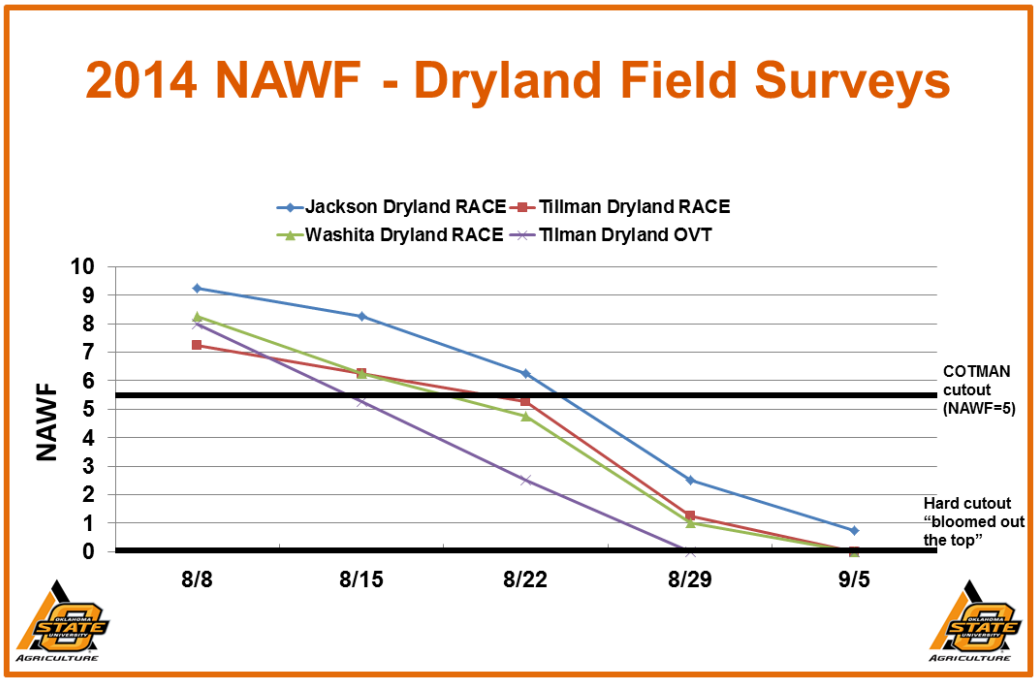
2014 NAWF - Irrigated Field Surveys



2014 NAWF - Irrigated Field Surveys



NAWF data for dryland fields are reported below. These fields were all blooming by the week of August 8th. High NAWF (all greater than 7) indicate that yield potential at first bloom was good to excellent for all fields. Continued timely rainfall would have resulted in good to excellent yields in these fields. However, the hot, dry, and windy conditions resulted in high moisture stress, and significantly reduced yield potential.



Public Comment Period Open for XtendFlex (Triple Stacked) Herbicide Tolerant Cotton – Closes September 25

Input from the public concerning the of Monsanto's dicamba/glufosinate tolerant cotton is being solicited. The dicamba/glufosinate herbicide tolerance trait will be stacked with Roundup Ready Flex technology and the trade name will be XtendFlex. The USDA-Animal and Plant Health Inspection Service (APHIS) has announced that the comment period opened on August 11th and closes after 45 days on September 25th.

Comments may be submitted to USDA-APHIS online. The website address for this is:

http://www.regulations.gov/#!submitComment;D=APHIS-2013-0043-0067

For information from Monsanto concerning this, go to:

http://www.roundupreadyplus.com/supportdicamba

In addition, the USDA-APHIS is holding a virtual public meeting on September 11, 2014 from 5 to 8 pm EDT to receive comments on a draft Environmental Impact Statement (DEIS) as part of its review to determine whether to deregulate genetically engineered (GE) cotton resistant to the herbicides glufosinate and dicamba, and soybean resistant to dicamba. The DEIS analyzes the potential environmental impacts of these GE cotton and soybean varieties developed by Monsanto Company.

Participation instructions for the virtual meeting and all associated documents can be found online at http://www.aphis.usda.gov/APHISVirtualMeetings/.

Don't forget – the comment period closes September 25th.

RB

Insect Update

After conversations with various consultants and conducting field surveys in six counties this week, the insect outlook is as follows: Light infestations of pests continue. Most fields are either close to cut out or past cutout.

Stink Bugs

Stink bugs in Oklahoma cotton were not a concern until the advent of Bt varieties. Transgenic Bt cotton resulted in fewer insecticide applications for control of lepidopterous pests and soon after, stink bugs occasionally noted as damaging pests. Although not typically found in economically damaging populations in most southwestern Oklahoma fields, some areas do have issues.

Green Stink Bug

Conchuela Stink Bug

Brown Stink Bug

Photo courtesy http://stinkbugsguide.net/

The following information was taken from the Online Texas A&M AgriLife Extension Cotton Insect Management Guide, which is available here: http://cottonbugs.tamu.edu/fruit-feeding-pests/stinkbugs/

This website also provides action thresholds and chemical control suggestions for this pest. Stink bugs are shield-shaped, flat and vary in size around 3/8 to 5/8-inch in length, and are about one-half as wide as their length. While the adult brown stink bug is light brown in color, the green and southern green stink bugs are bright green and similar in appearance. They can be distinguished from one another by color of the bands on their antennae. The southern green stink bug has red bands while the green stink bug has black bands. The conchuela stink bug adult is dark brown to black with a red border and a red spot on the tip of the abdomen. The harlequin bug is primarily a pest of mustards and cole crops and will occasionally attack cotton. Adult stink bugs may live for several weeks. Stink bugs get their name from the foul smelling substance they exude from glands on their thorax. This chemical smell is meant to deter predators and warn other stink bugs of danger. This scent gland also plays a role in females attracting mates.

The reason stinkbugs appear to concentrate in one part of the field and not others is due to the female's egg laying habits. A single female may lay 300 to 600 eggs, laid in clusters of 30 to 80 eggs. Egg clusters appear as rows of pale-green, pink or white barrels laid primarily on the underside of leaves. Eggs will typically hatch in 2 to 4 days under ideal conditions, but may require up 2 weeks when temperatures are cool.

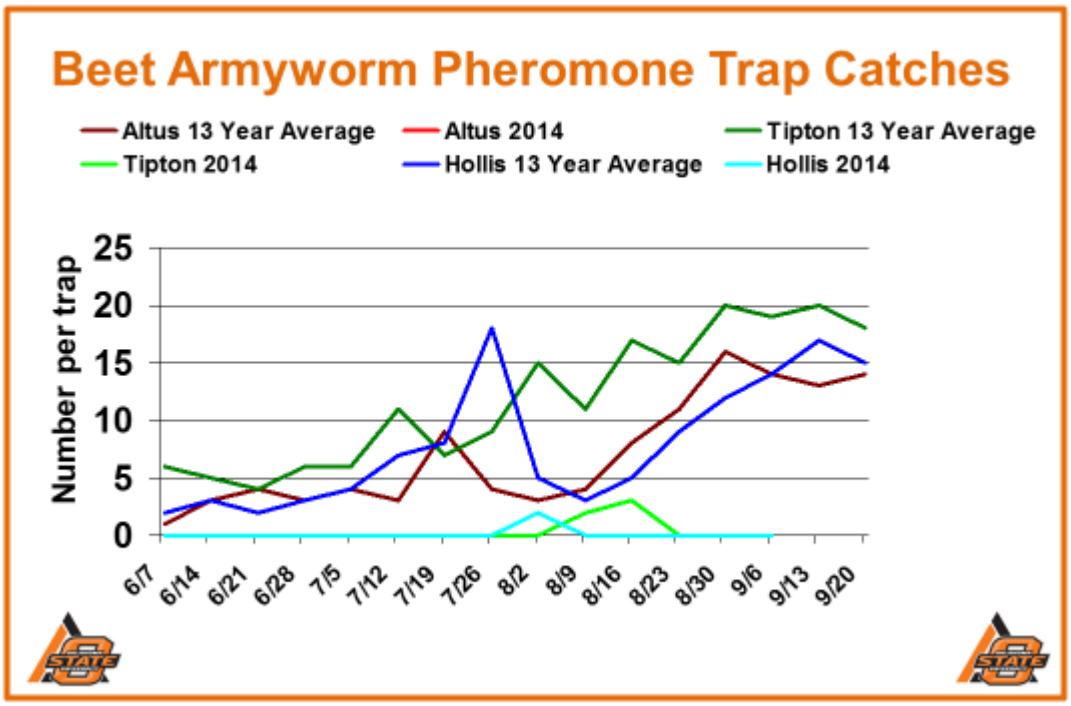
Hatching southern green stink bugs
Photo courtesy Texas A&M AgriLife Extension

Stink bugs have piercing-sucking mouthparts and damage cotton by piercing bolls and feeding on the developing seeds. Their feeding activity usually causes small bolls to abort but can result in dark spots about 1/16-inch in diameter on the outside of larger bolls where feeding occurred. (These dark spots do not correlate well with the wart formation on the inside of the boll to be used in scouting.) There may be several spots on a boll without internal feeding. The external lesions are associated with wart-like growths on the inner carpal wall where penetration occurred. Seed feeding may result in reduced lint production and stained lint near the feeding site. Stink bugs are also known to facilitate the infection of boll rotting organisms. Because of their size, adults and fourth and fifth instar nymphs have the greatest potential for damaging bolls.

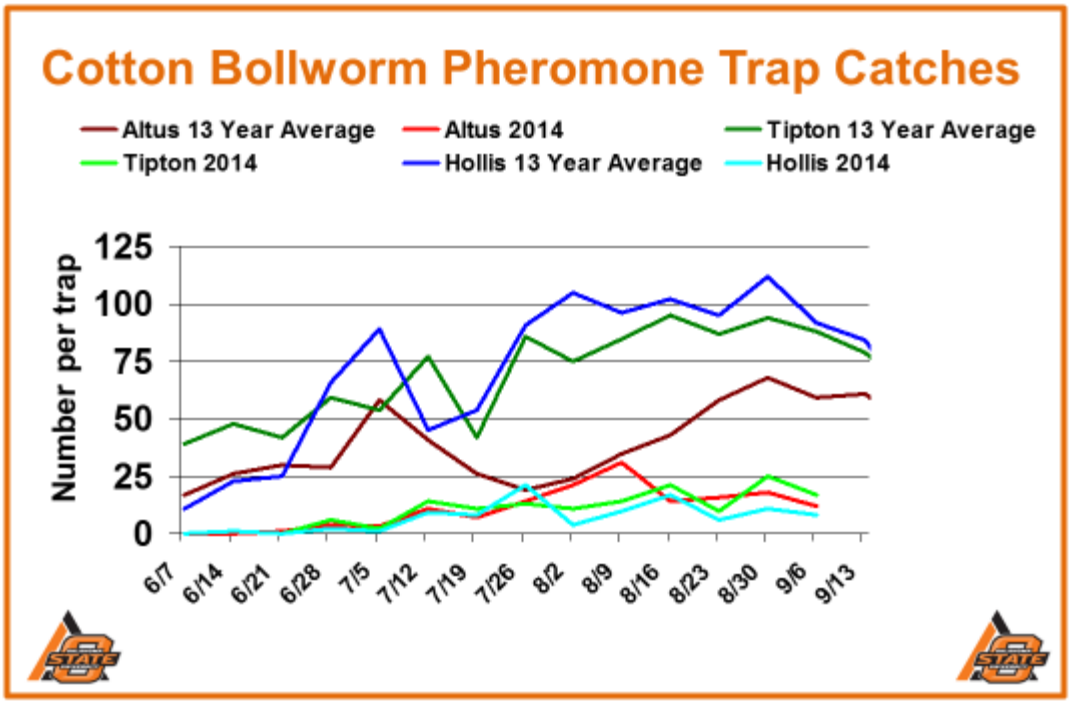
Oklahoma generally only has green and brown stink bugs that can cause economical damgage in some areas. However all stink bugs are found in Oklahoma. Many products used to control stink bugs can be disruptive to beneficial arthropods, therefore, contact Extension personnel if a question arises.

Moth Activity

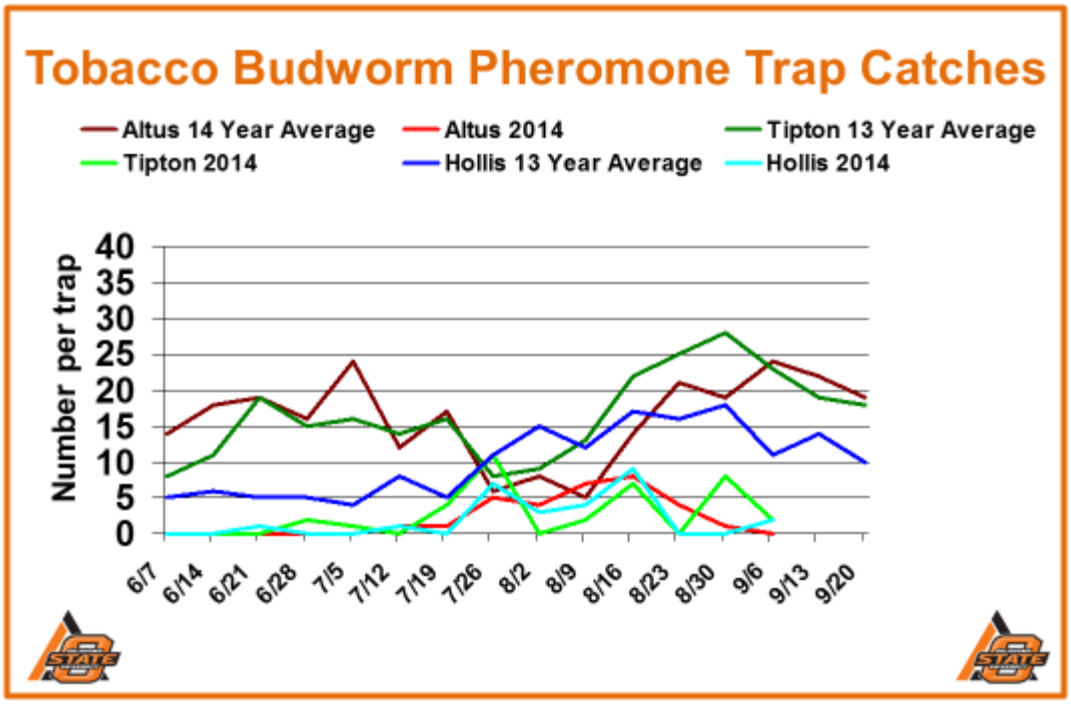
Moth activity still remains at near all-time lows.



Beet armyworm moth



Cotton bollworm moth



Tobacco budworm moth

JG

Upcoming Meetings / Field Days

September 11, 8:00 a.m. - Carnegie Co-op Fall Cotton Tour - Schantz Farm 8:00 a.m.
Click here for the press release

September 17, 9:00 a.m. - Harmon County Cotton Tour – Kelly Horton, Bayer CAP Trial, Tony Cox Irrigated Cotton Inc Enhanced Variety Trial

September 23, 4:00 p.m. Peanut and Cotton Field Tour - Caddo Research Station, Fort Cobb

4:00 Peanut Hull Blasting and Maturity Assessment
4:00 XtendFlex Cotton Germplasm Observation – Personnel from Monsanto/Deltapine and Americot/NexGen will be present to discuss technology and germplasm
5:30 Tour Peanut and Cotton Research and Demonstration Plots
Tour Stops:

1) Peanut Variety Development - Kelly Chamberlin and Rebecca Bennett, USDA/ARS
2) Peanut Weed Control - Todd Baughman, OSU
3) Peanut Disease Control - John Damicone, OSU
4) Cotton Agronomy and Variety Performance - Randy Boman, OSU
5) 7:00 Dinner and Sponsor Acknowledgements

September 25, 9:00 a.m. - Jackson County Cotton Tour - Drew Darby Farm Irrigated RACE Trial

September 30, 9:00 a.m. - Washita/Beckham Cotton Tour – Danny Davis Dryland RACE Trial, Jack Damron Irrigated RACE Trial

October 2, 8:30 a.m. Tillman County Cotton Tour - John McCullough Irrigated RACE Trial

Industry Meetings

Dow AgroSciences – Enlist Field Days
These will feature 2,4-D herbicide tolerant cotton and new PhytoGen varieties

For Consultants: 1:30 p.m. September 16th Dow AgroSciences PhytoGen Enlist Technology Center – Lubbock, TX. Dinner will be served at 5:00 p.m. If planning to attend, please RSVP by sending an email to Scott Fuchs at SWFuchs@dow.com

Click here for consultant day brochure and directions

For Growers: 1:30 p.m. September 17th, Dow AgroSciences PhytoGen Enlist Technology Center - Lubbock, TX. Dinner will be served at 5:00 p.m. If planning to attend, please RSVP here: http://events.signup4.com/TechCtrGrower2014 or by sending an email to Scott Fuchs at SWFuchs@dow.com

Click here for grower day brochure and directions

Monsanto Field Days

These will feature XtendFlex dicamba tolerant technology, varieties, spray requirements, weed control systems, water use plots, and Root-knot nematode resistant varieties and management

For Consultants, 10:00 a.m. – 1:00 p.m. September 17th, Steve Chapman Farm, Lorenzo, TX, with lunch served

For Growers, 9:00 a.m. – 2:00 p.m. September 18th, Steve Chapman Farm, Lorenzo, TX, with lunch served

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Editor

Randy Boman

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