



Cotton Comments

OSU Southwest Oklahoma Research and Extension Center
Altus, OK

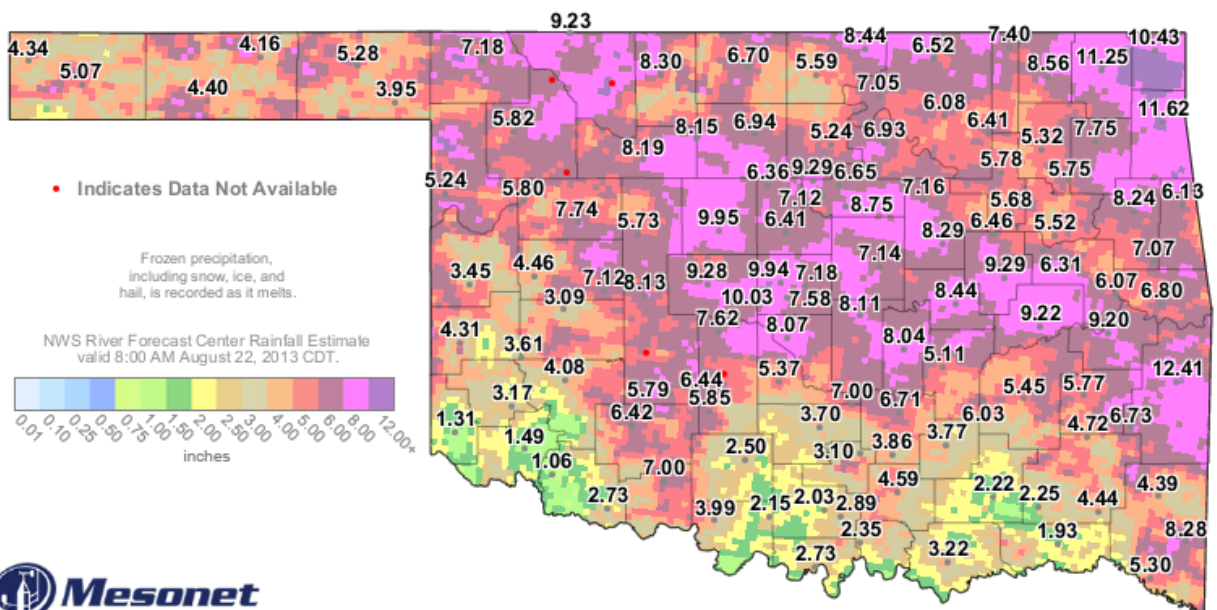


August 22, 2013

Volume 3 Edition 8

Crop Update

Rainfall during the month of August has been beneficial to the cotton crop in many areas. However, in the far southwestern corner of the state, we are still struggling. With the crop entering the bloom stage in mid- to late July in many areas, the rainfall either significantly improved prospects or if it was not obtained, crop stress was an issue. The Mesonet graphic for rainfall in the state over the last 30 days really summarizes this very well. When considering the marginal at-plant profile moisture, it can be seen that the far southwestern corner has not obtained the rainfall to enable a dryland crop to produce substantial yield. It's interesting to note that over the last 30 days, the Panhandle has received more rainfall than the southwestern corner of the state. Other areas in the cotton producing counties have shown a marked improvement. 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 really 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 planted but well-set crop.



30-Day Rainfall (inches)

9:05 AM August 22, 2013 CDT

Created 9:09:00 AM August 22, 2013 CDT. © Copyright 2013

Results from IPM Extension Assistant Jerry Goodson's monitoring of program fields indicate that as of this week, some dryland fields bloomed with few NAWF. This indicates low yield potential, and will hit "hard cutout" (bloom through the terminal) soon.

Field Surveys in Oklahoma - Week Ending August 23, 2013

Location	Date of planting	Plant Stage	Insects	Comments
Beckham Irrigated RACE - Damron	May 21	4.25 NAWF	None	Growth Progress Good
Blaine Irrigated Bayer CAP - Schantz	June 11	4.75 NAWF	3 Bollworm Damage Squares	Growth Progress Good
Caddo Irrigated OVT - OSU Station	May 23	4.50 NAWF	1 Bollworm Damage Squares	Growth Progress Good
Caddo Irrigated Dow Innovation 1st planting - Schantz	May 29	4.25 NAWF	None	Growth Progress Good
Caddo Irrigated Dow Innovation 2nd planting - Schantz	June 6	5.25 NAWF	None	Growth Progress Good
Custer Irrigated Cotton Inc Enhanced Variety - Schantz	May 21	5.25 NAWF	None	Growth Progress Good
Harmon Irrigated Cotton Inc Enhanced Variety - Cox	May 17	4.75 NAWF	None	Hail damage from 8-16 storm event
Harmon Irrigated Bayer CAP - Strawn	June 4	5.50 NAWF	None	Growth Progress Fair
Harmon Irrigated Bayer CAP - Horton	May 16	3.50 NAWF	None	Growth Progress
Kiowa Irrigated Topguard - Anderson	May 24	3.25 NAWF	2 Stinkbugs	Growth Progress Good
Jackson Irrigated RACE - Darby	May 16	4.75 NAWF	None	Growth Progress Fair
Jackson Irrigated OVT - Altus Station (no water)	June 4	2.25 NAWF	None	Growth Progress Poor
Jackson Irrigated Monsanto FACT - Altus Station (no water)	June 5	2.50 NAWF	None	Growth Progress Poor
Jackson Irrigated Weed Control Trials - Altus Station (no water)	June 6	4.75 NAWF	None	Growth Progress Poor
Tillman Irrigated RACE - McCullough	May 23	5.25 NAWF	None	Growth Progress Good
Tillman Dryland RACE - Fischer	June 14	3.50 NAWF	Grasshoppers	Growth Progress Poor
Tillman Dryland Topguard - Fischer	June 13	2.25 NAWF	None	Growth Progress Poor
Tillman Dryland Monsanto FACT - (Tipton Station)	June 11	3.00 NAWF	None	Growth Progress Poor
Tillman Dryland OVT - (Tipton Station)	June 11	1.25 NAWF	None	Growth Progress Poor
Washita Dryland RACE - Davis	June 4	6.25 NAWF	None	Growth Progress Good

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. The 3-day ET accumulations indicate that crop demand has been moderate and driven by somewhat below normal or near normal temperatures. Producers with irrigation should note that for a May 20th planting date, over the past week crop water use has ranged from about 1.5 inches near Fort Cobb to up to 2.05 near Altus.

Location	For May 20 planting date			
	DD60 heat unit accumulation	3-day accumulated ET	7-day accumulated ET	14-day accumulated ET
	heat units	----- inches -----		
Altus	2009	1.00	2.05	4.28
Tipton	2022	1.00	2.03	4.31
Hollis	1953	0.98	2.00	4.19
Erick	1748	0.80	1.67	3.59
Ft. Cobb	1715	0.70	1.52	3.19

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 is closing 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 2013 growing season has provided an abbreviated blooming period in many fields due to somewhat late planting and moisture stress (few nodes above white flower or NAWF at first bloom). Because of later planting for many irrigated cotton fields, the bloom period for some fields will be reduced by up to 2 weeks or so compared to last year's crop.

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 "bloomed 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.

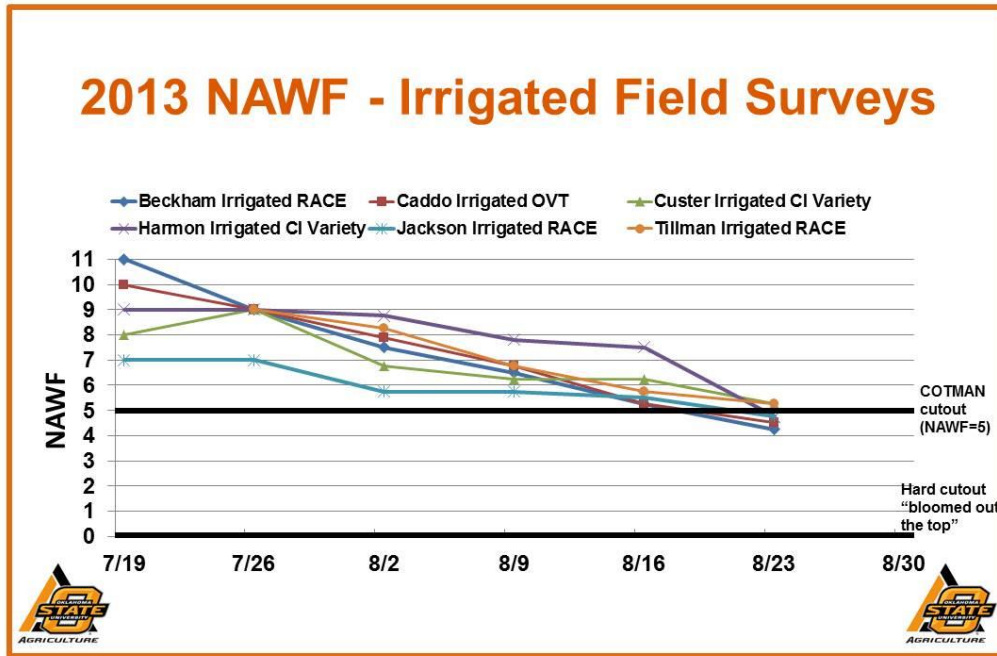
The last irrigation should provide just enough plant available moisture to retain and mature all the bolls that have a reasonable chance of producing lint of acceptable quality under normal growing conditions. Normally a boll will be retained once it reaches 10 to 14 days after bloom. The goal is to 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. For a boll set on August 10th, excessive moisture stress should be avoided at least through the end of the month, unless rainfall can offset irrigation requirements.

Field Observations

Based on field observations, essentially all irrigated fields reported below encountered NAWF=5 this week. This has occurred in a fairly timely manner when considering the COTMAN cutout date for Altus. From this point forward, heat units past cutout can be calculated, and various management options can be tracked and considered.

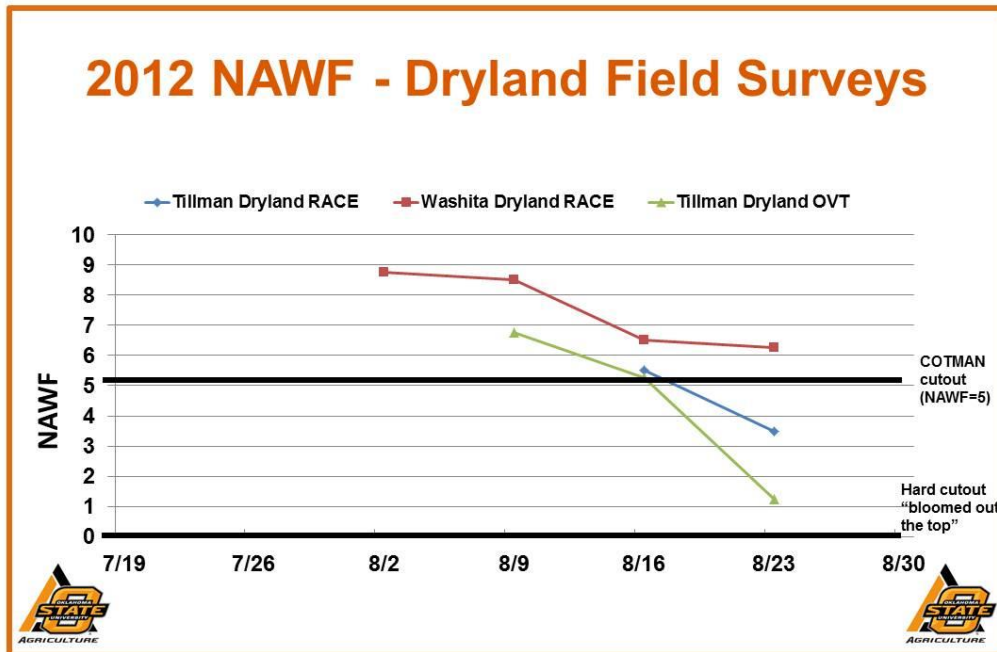
DD60 Heat Unit Accumulation Past NAWF=5
Date of NAWF=5 + 350 DD60s – safe from lygus bugs
Date of NAWF=5 + 450 DD60s – safe from bollworm egg lay if non-Bt variety
Date of NAWF=5 + 500-600 DD60s – terminate irrigation if soil profile is depleted
Date of NAWF=5 + 850 DD60s – possible harvest aid termination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

2013 NAWF - Irrigated Field Surveys



NAWF data for dryland fields is reported below. The Washita County RACE trial, although blooming late, has significant yield potential due to recent rainfall events. The Tillman County dryland fields both entered first bloom later, and due to moisture stress had fewer NAWF at first bloom. These fields missed badly needed rainfall events and the yield potential will be low.

2012 NAWF - Dryland Field Surveys

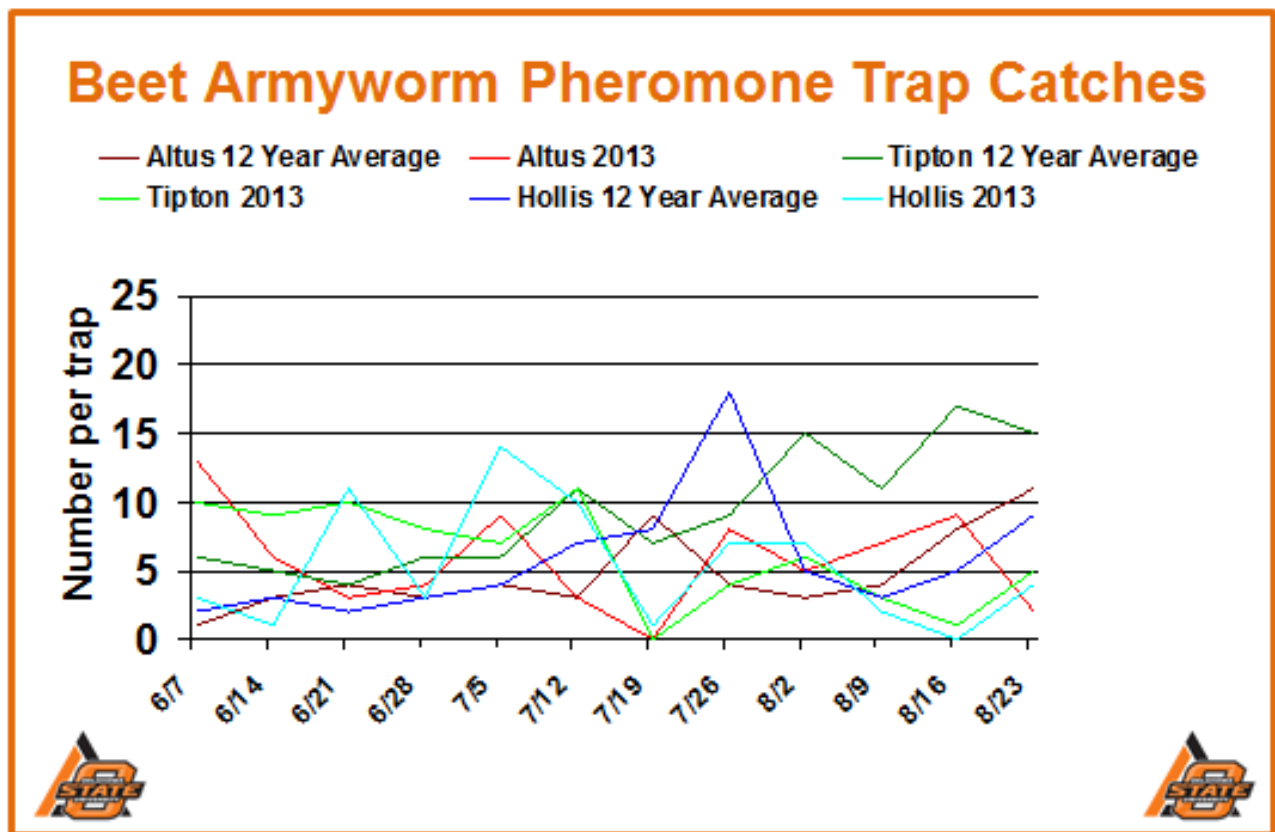


Insect Update

After conversations with various consultants and conducting field surveys in nine counties this week, the insect outlook is as follows: Light infestations of pests continue. Most fields are nearing cutout but dryland areas in Jackson and Tillman counties are at or nearing hard cutout. Grasshopper populations are decreasing. Bollworm activity was observed in Blaine and Caddo counties where beneficial arthropod populations were adequate for control. Stinkbugs were observed in fields in eastern Tillman County and also in Kiowa County. Populations are still light but field monitoring must continue until harvested bolls are considered safe. Leaf-footed bugs which were observed in some field edges earlier were not found in fields this week.

Moth Activity

Moth activity still remains below the long term average except for a spike in Tobacco budworm moths the week of the August 16. The trap count was 42 – about seven times higher than 12 year average. However, this week the count returned to below the long-term average.

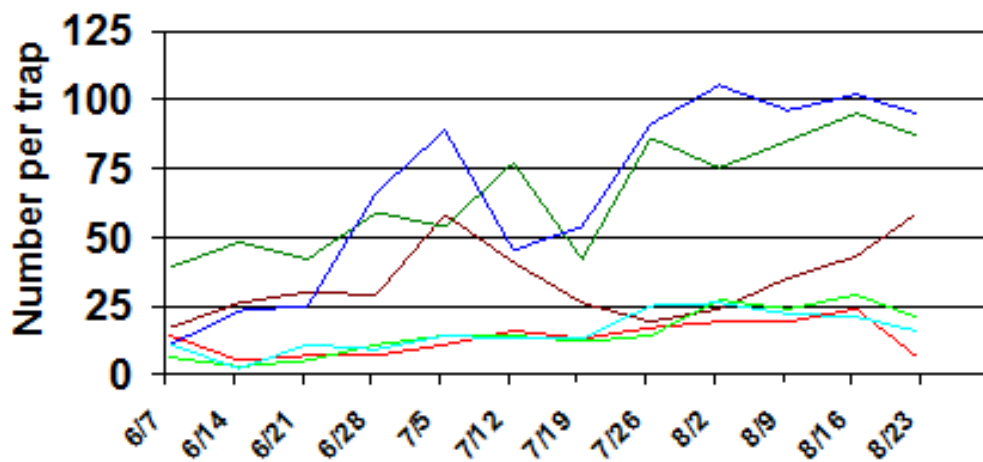




Beet armyworm moth

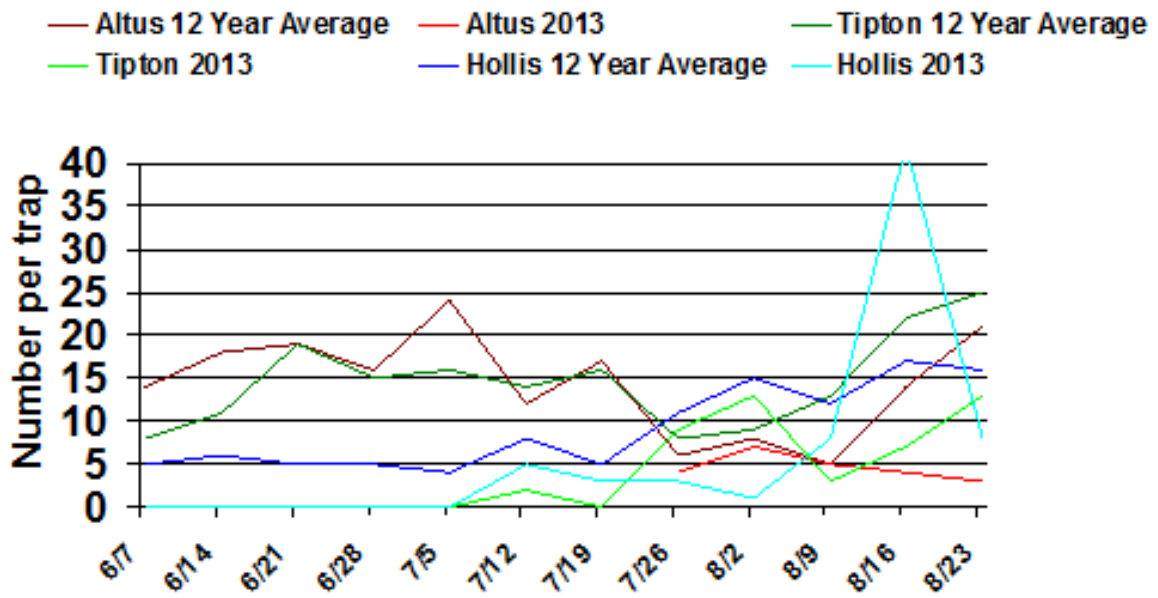
Cotton Bollworm Pheromone Trap Catches

— Altus 12 Year Average — Altus 2013 — Tipton 12 Year Average
 — Tipton 2013 — Hollis 12 Year Average — Hollis 2013



Cotton bollworm moth

Tobacco Budworm Pheromone Trap Catches



Tobacco budworm moth

JG

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