Cotton Comments

OSU Southwest Oklahoma Research and Extension Center
Altus, OK

July 5, 2013 Volume 3 Edition 5

Crop Situation Update

The June 2013 USDA-NASS report indicated that Oklahoma cotton acreage is about 150,000 acres, which is down over 50% compared to 2012's plantings. In 2012, 330,000 acres were planted, which was down about 20% from 2011's 415,000 planted acres. The drought and crop price competition situation have resulted in a serious financial impact to the Oklahoma cotton industry. Across the U.S. Cotton Belt, 2013 acreage is down significantly. The Southeast's acreage dropped 8%, the Mid-South dropped 36%, and in the Southwestern states (Texas, Oklahoma, and Kansas), cotton acreage has dropped about 15%.

This year's crop continues to make progress in areas where adequate moisture has been available. Continuing D3 and D4 category drought has resulted in difficult production issues for growers in the far southwestern corner of the state. The status of Lake Lugert (15% of capacity) is very concerning in southwestern Oklahoma. Due to persistent drought the watershed has provided no inflow, and no irrigation water will be provided to producers in 2013. According to the Mesonet, Altus received 1.35 inches of rainfall in June with the largest single event resulting in 0.55 inches of precipitation. The Tipton area received somewhat higher precipitation at 2.01 inches in June, with the largest event on June 17 producing 0.71 inches. The Hollis area received 2.59 inches in June, with two events resulting in 0.78 inches (on June 8th) and 0.71 inches (on June 17th). The Erick Mesonet Station reported a total of 2.42 inches of June precipitation, with 1.71 inches obtained on June 17th. The Fort Cobb Mesonet Station reported a June total of 4.69 inches, with 2.28 inches obtained on June 17th. Because of these timely rainfall events, considerable cotton acreage was able to get established, however, with the high temperatures and winds during the last 10 days of June, much of the emerged cotton is under duress at this time. The good news is that thus far in July, due to a cold front, high and low temperatures have been below normal.

Most producers have initiated irrigation where groundwater is available. For those who have not initiated irrigation, it is now time to start. The dryland crop will need some rainfall soon in order to stay on track. The no-till cotton in many areas should hold up longer than conventional till because of better initial profile moisture. The later planted dryland in some areas may have a chance if subsoil moisture is present to carry crop until a rainfall event occurs. This must come soon. What this means for crop watchers is that the Lugert-Altus Irrigation District is in dire straits, a large percentage of irrigated cotton in other areas is off to a somewhat late start, and most dryland has emerged. As

we unfortunately discovered during the Great Drought of 2011, a substantial portion of our groundwater-based irrigation is only supplemental to rainfall.

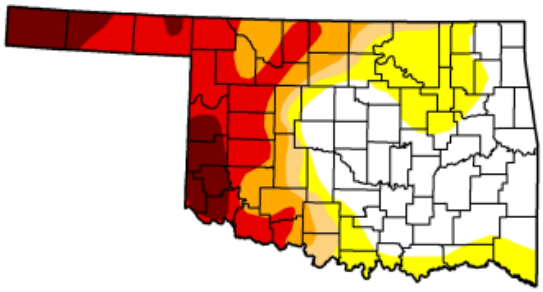
U.S. Drought Monitor

Oklahoma

July 2, 2013
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	38.46	61.54	42.17	36.89	26.45	8.69
Last Week (06/25/2013 map)	46.86	53.14	42.09	36.76	26.35	8.69
3 Months Ago (04/02/2013 map)	0.00	100.00	99.30	80.68	52.97	9.90
Start of Calendar Year (01/01/2013 map)	0.00	100.00	100.00	100.00	94.89	37.06
Start of Water Year (09/25/2012 map)	0.00	100.00	100.00	99.98	95.33	42.09
One Year Ago (06/26/2012 map)	0.32	99.68	48.03	17.00	3.90	0.00



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://droughtmonitor.unl.edu

Released Wednesday, July 3, 2013
Matthew Rosencrans, NOAA/NWS/NCEP/Climate Prediction Center

IPM Extension Assistant Jerry Goodson has been on the road over the last several weeks performing scouting and observations on crop progress. As mentioned in a previous newsletter, nodes above white flower (NAWF) at first bloom is an indicator of crop yield potential. Because of cool conditions in early May, many fields were planted somewhat later than usual. We will have many irrigated fields nearing the bloom stage over the next couple of weeks, and NAWF will provide considerable insight with respect to crop yield potential. This week's summary of surveyed counties and fields is presented below.

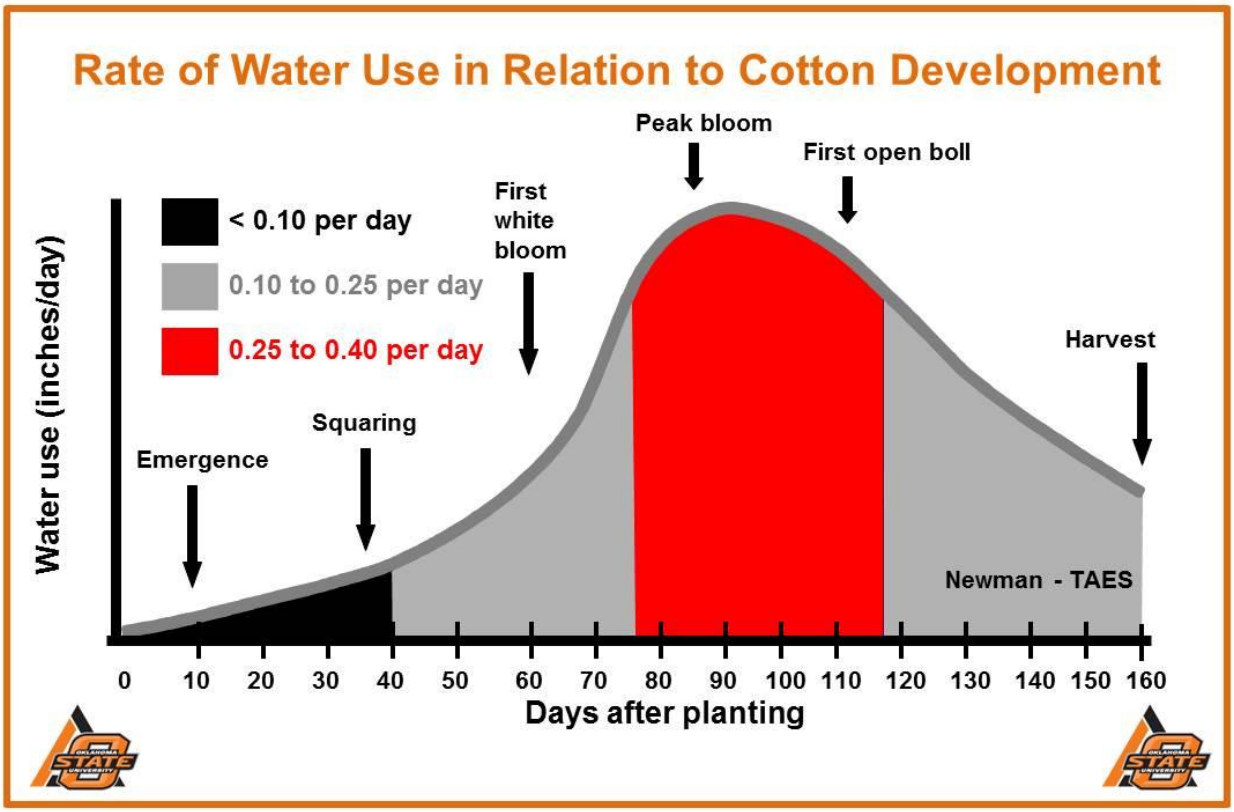
Field Surveys in Oklahoma - Week Ending July 5

Location	Date of planting	Plant Stage	Insects	Comments
Beckham Irrigated RACE - Damron	May 21	1/3 Grown squares	None detected	Growth Progress Good
Blaine Irrigated Bayer CAP - Schantz	May 29	6th True Leaf	None detected	Growth Progress Good
Caddo Irrigated OVT – OSU Station	May 23	Matchhead squares	Grasshoppers in field margins	Growth Progress Good
Caddo Irrigated Dow Innovation 1st planting - Schantz	May 29	Matchhead squares	Grasshoppers in field margins	Growth Progress Good
Caddo Irrigated Dow Innovation 2nd planting - Schantz	June 6	6th True Leaf	Grasshoppers in field margins	Growth Progress Good
Custer Irrigated Cotton Inc Enhanced Variety - Schantz	May 21	1/3 Grown squares	Grasshoppers in field margins	Growth Progress Good
Harmon Irrigated Cotton Inc Enhanced Variety - Cox	May 17	1/3 Grown squares	None detected	Growth Progress Good
Harmon Irrigated Bayer CAP - Strawn	June 4	5th True Leaf	None detected	Growth Progress Fair
Harmon Irrigated Bayer CAP - Horton	May 16	Matchhead squares	None detected	Growth Progress Fair
Kiowa Irrigated Topguard - Anderson	May 24	Matchhead squares	None detected	Growth Progress Fair
Jackson Irrigated RACE - Darby	May 16	Matchhead squares	None detected	Growth Progress Good
Jackson Irrigated OVT - Altus Station (no water)	June 4	3rd True Leaf	<1 Thrips per plant	Growth Progress Fair
Jackson Irrigated Monsanto FACT - Altus Station (no water)	June 5	2nd True Leaf	<1 Thrips per plant	Growth Progress Fair
Jackson Irrigated Weed Control Trials - Altus Station (no water)	June 6	3rd True leaf	<1 Thrips per plant	Growth Progress Poor
Tillman Irrigated RACE - McCullough	May 23	Matchhead	None detected	Growth Progress Good
Tillman Dryland RACE - Fischer	June 14	5th True Leaf	None detected	Growth Progress Good
Tillman Dryland Topguard - Fischer	June 13	4th True Leaf	<1 Thrips per plant	Growth Progress Good
Tillman Dryland Monsanto FACT - (Tipton Station)	June 11	5th True Leaf	None detected	Growth Progress Fair
Tillman Dryland OVT - (Tipton Station)	June 11	4th True Leaf	<1 Thrips per plant	Growth Progress Fair
Washita Dryland RACE - Davis	June 4	5TH True Leaf	None Detected	Growth Progress Fair

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)

Crop Water Use Patterns

Seasonal water use for adequately watered cotton is probably about 24 inches in southwestern Oklahoma. Figure 1 illustrates the typical seasonal water use pattern for cotton produced in the Texas High Plains region, and this should be reasonably similar in our area.



From planting to square initiation (a period of about 40 days) evapotranspiration (ET) is generally less than 0.1 inches per day. Plant water requirements are low due to the limited leaf area. Most of the water used is extracted from the top foot of soil. The bulk of the water loss during this period is due to evaporation.

Water use (ET) increases to 0.1 to 0.3 inches per day during the square to early bloom stage (40 to 75 days after planting). At this stage leaf canopy and roots develop rapidly, and transpiration exceeds evaporation. Moisture extraction occurs mainly from the top 2 feet of soil although the taproot and some feeder roots extend to deeper depths if unimpeded.

From early bloom to the opening of the first bolls (usually 75 to 120 days after planting), ET values of 0.25 to 0.35 inches per day are common. At this stage, plants have attained their maximum leaf canopies and root densities. Moisture may be extracted from deeper in the entire soil profile, if available. ET values may exceed 0.4 inch per day during the peak bloom period. During the extreme stress of the summer of 2011, some days had crop ET values that approached 0.55 inches per day.

Following the opening of the first bolls until crop termination, ET generally declines from about 0.25 inches per day to as little as 0.1 inch per day. Actual water use will vary with the condition of the plant, soil moisture status and general growing conditions. If regrowth occurs during periods of ample moisture and warm temperatures, ET levels can increase dramatically, thereby rapidly depleting soil moisture reserves which otherwise could be utilized by subsequent crops.

Stress Sensitive Periods

Fruit production, retention and shedding are closely related to availability of soil moisture. Production is optimized with an available moisture status that allows uninterrupted development of fruiting positions while avoiding excessive vegetative development on the one hand, or fruit shedding on the other. High moisture stress during the peak flowering period can have a pronounced negative effect on yield. However, stress either early or late in the blooming period also result in significant yield reductions. Severe moisture stress should be avoided throughout the crop development period. Early irrigations may be justified to maintain adequate but not excessive vegetative growth. Late season water stress may be acceptable or even desirable because it hastens cut-out and results in shedding of fruit that would not normally mature and potentially contribute to low micronaire if a cooler than normal fall is encountered.

Irrigation Issues

Many producers with groundwater resources (center pivot, furrow or drip) have initiated irrigation. Crop evapotranspiration (combined losses of water due to evaporation and crop transpiration) models can generally do a good job of predicting crop water use. The Mesonet provides a good tool that can be useful to estimate crop ET. It can be found on the AgWeather page. First go to:

Oklahoma Mesonet Irrigation Planner

Then, click on Change Site (select the nearest Mesonet Station to the field in question). Then select Cotton. Then select Planting Date, and input the planting date for the field in question). Then click on Get Data. A page with a table will be generated. This table will provide a quick estimate of daily crop ET, accumulated ET, rainfall, accumulated rainfall, and the water balance. The modeled crop ET for each day is listed in one column and Accumulated Evapotranspiration total in inches will be listed in another.

For most producers, the sometimes difficult decision of “when to initiate irrigation” will not have to be made this year. For those fields with adequate irrigation capacity and efficient delivery systems (pivots, sub-surface drip), the Irrigation Planner can be of great value to determine how much water to apply. It should be noted that the pumping capacity and efficiency of a particular system needs to be considered.

Irrigation systems vary in terms of application efficiency and can be negatively impacted by adverse environmental conditions. High temperatures and high winds can reduce application efficiencies for all systems with the exception of well managed sub-surface drip. Center pivot spray irrigation with short drops under high wind conditions will have lower efficiency than a system with longer drops which deliver water closer to the crop canopy. When determining how much irrigation water to apply, several factors must be considered. One is irrigation capacity. Higher capacity irrigation wells allow producers to apply more water in less time. Some “catch up” is possible if the system “gets behind.” With lower irrigation capacity, it will be necessary to keep the system applying water to meet crop requirement. This requires knowledge of the irrigation system capacity, nozzle package and groundspeed travel of the pivot. These are vitally important in order to fine tune irrigation application rates to meet crop ET demand without over or under applying water.

Crop ET demand (which can be reasonably estimated by the Mesonet site described above) will increase substantially once the squaring stage is reached and will continue through late boll set then will diminish once open bolls appear. Another factor is irrigation system type. Application efficiency information provided by Jim Bordovsky, Research Engineer with Texas A&M AgriLife Research at Halfway indicates that flood/furrow typically ranges from 40-80%, center pivot sprinkler/spray ranges from 65-90%, center pivot low energy precision application (LEPA) ranges from 85-95%, and sub-surface drip ranges from 85-99%. An important consideration is water quality. High salinity water can adversely affect crop performance, if it is the sole source of water input for the crop. The amount of accumulated soil salinity (because of the current extended drought) can vary with local rainfall therefore it is difficult to determine the potential effects.

If using a spray system make sure to use nozzle applicators that generate large droplet sizes. This should reduce evaporation losses during application. Apply as high a quantity as possible without generating unacceptable runoff. Apply at least 1 inch per application in order to get even a "minimum" amount of water into the soil. This amount can be applied using a system with slightly less than 3 gpm per acre on a 120-acre center pivot. Temperatures of 100 degrees, high winds, and low relative humidity can result in ET values of up to 0.5 inch/day.

For a handout concerning ET replacement for varying center pivot pumping capacities and delivery efficiencies, click below:

Cotton ET Replacement for 60 Acre Pivot Irrigation Capacities and Efficiencies
Cotton ET Replacement for 120 Acre Pivot Irrigation Capacities and Efficiencies

Normal cotton development indicates that a mainstem node should develop on the plant every 3 days and with excellent conditions (good plant health, water) perhaps every 2.7 days.

RB

The table below presents accumulated heat units and cotton crop evapotranspiration (ET) for the Mesonet sites listed. These data are based on a May 20th planting date.

	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	950	0.54	1.33	2.80
Tipton	952	0.55	1.32	2.77
Hollis	917	0.54	1.27	2.61
Erick	813	0.51	1.14	2.43
Ft. Cobb	790	0.45	1.08	2.28

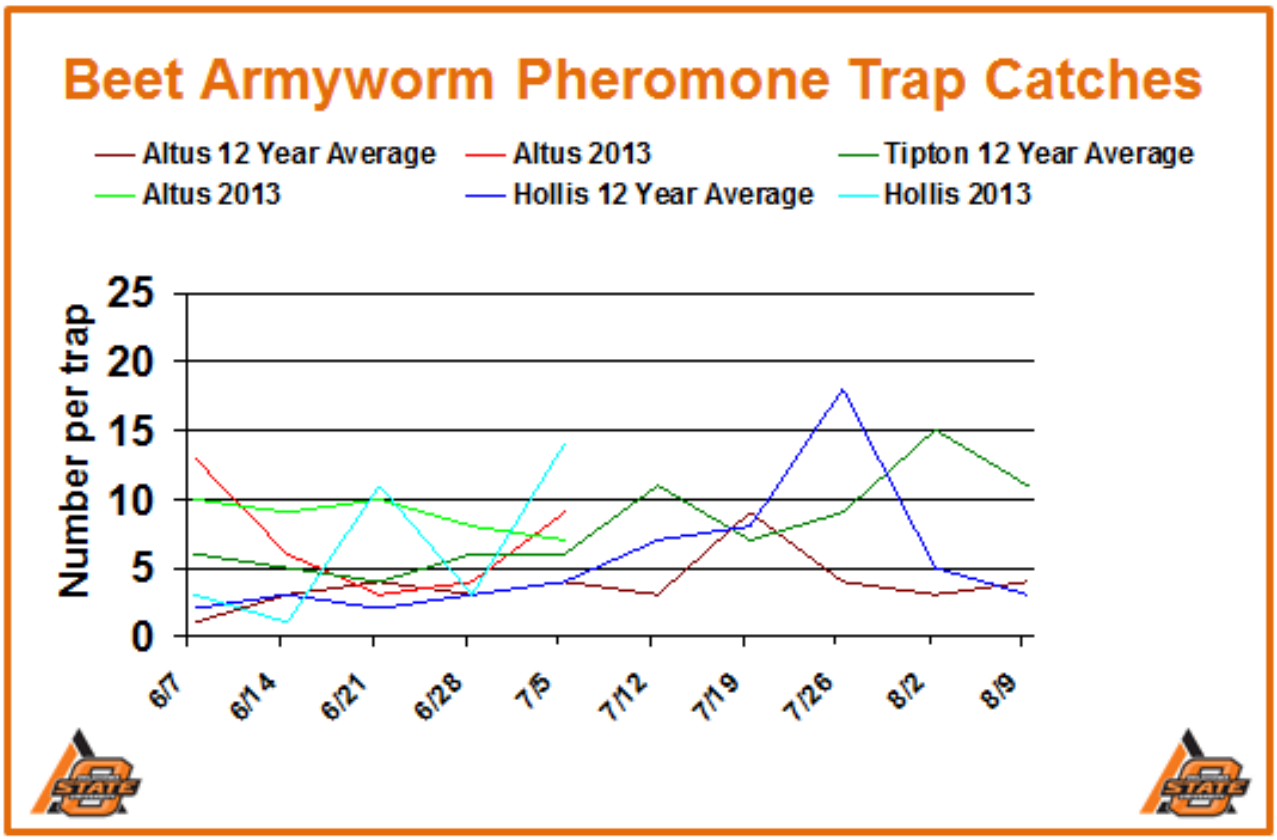
Caddo Research Station Official Variety Test – Planted May 23rd, currently about 7-10 days from bloom.

Insect Update

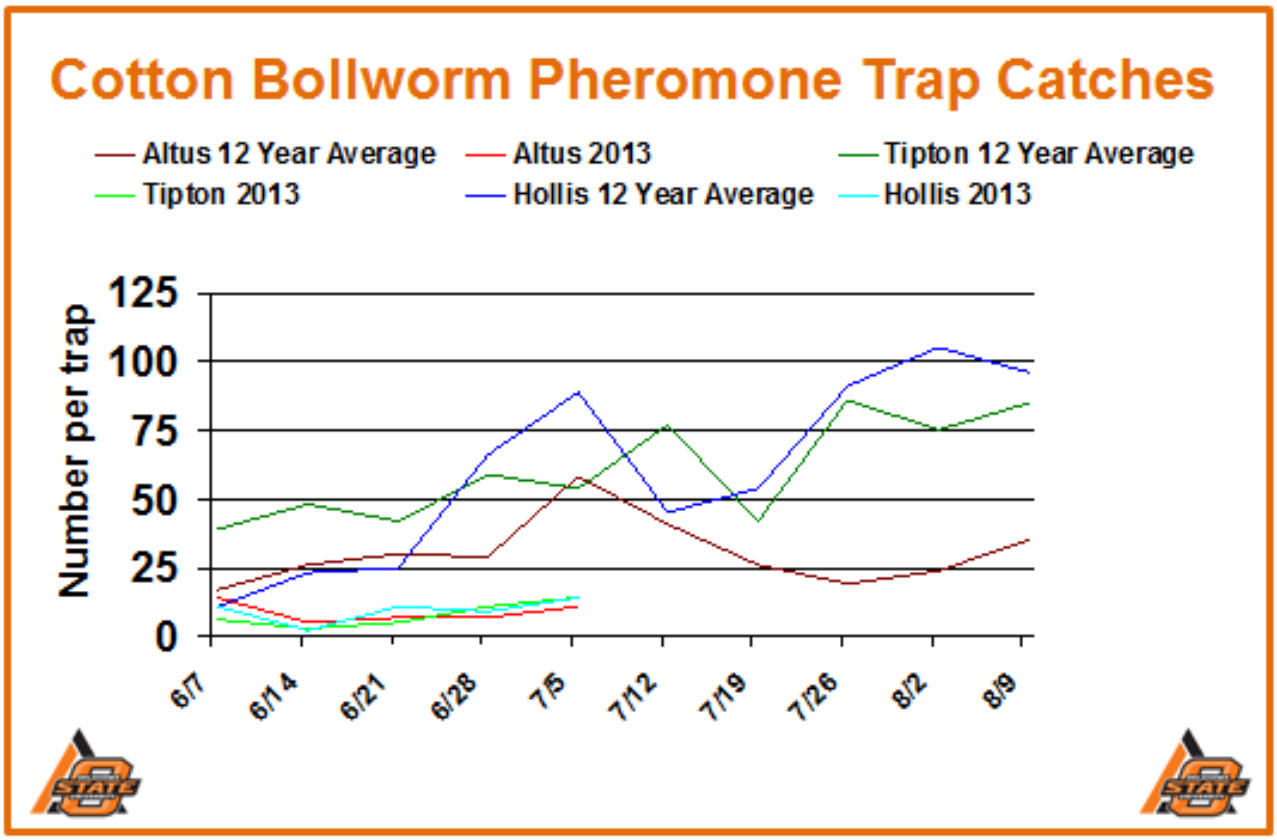
After conversations with various consultants and conducting field surveys in nine counties this week, the insect outlook is as follows: Light infestations of pests continue. Grasshoppers were observed in field margins in some areas. Grasshopper control is always best when the nymph stage is targeted and control is harder to achieve as the pest molts and matures. If questions arise, please contact this office and we can discuss the best strategy for the specific situation. The crop is fast getting past where thrips are a concern. If the crop is not yet blooming, cotton fleahoppers can still be economically damaging. The weather and beneficial arthropod populations are doing an excellent job of keeping pests in check. If you have any questions, please contact Extension personnel.

Moth Activity

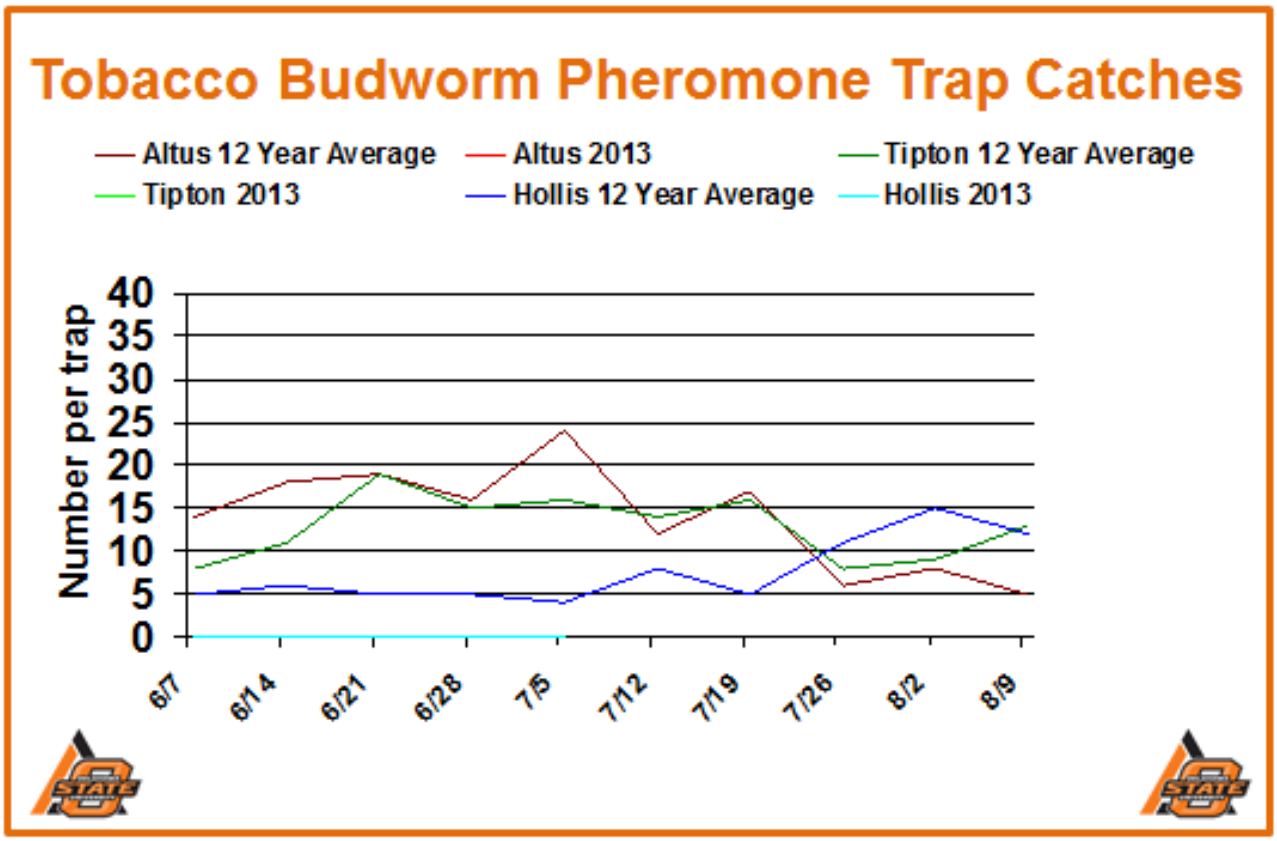
All moth traps are below the 12-year average. No activity was observed in surveyed fields. No Tobacco budworm moths have been trapped as July 5.



Beet armyworm moth



Cotton bollworm moth



Tobacco budworm moth

JG

Upcoming Meeting

A producer meeting will be held in Caddo County at Merlin Schantz's Headquarters on July 22, 2013 9:30 AM. This is located northwest of Hydro. Please contact this office or the Caddo County Extension Office for further details.

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Editor

Randy Boman

SEND US A COMMENT BY EMAIL

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