Cotton Comments

OSU Southwest Oklahoma Research and Extension Center Altus, OK

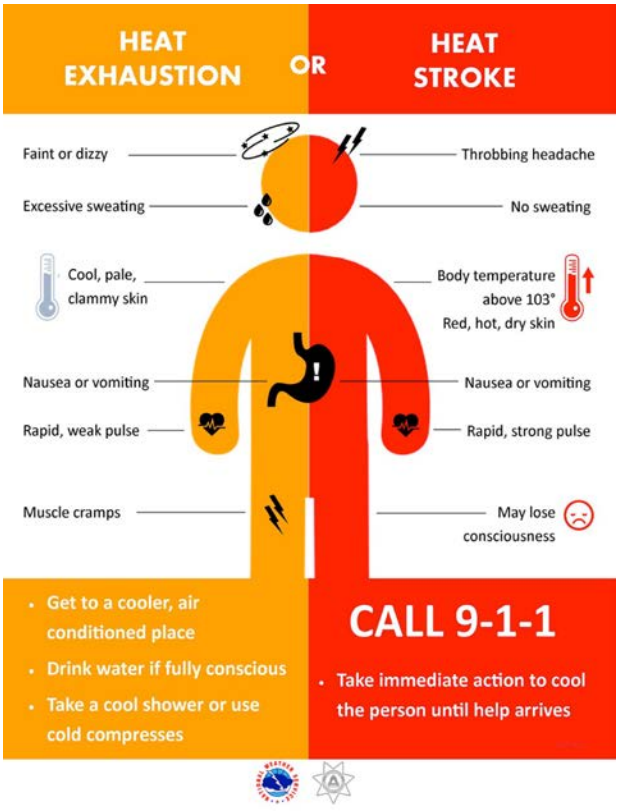
July 9, 2020 Volume 10 No. 8

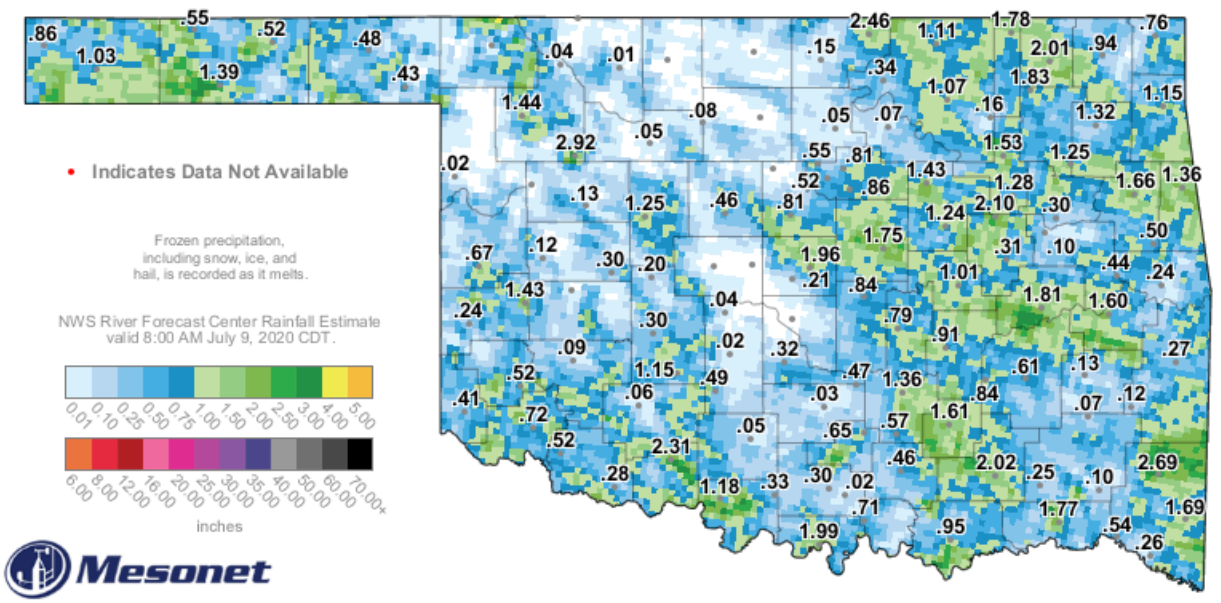
Current Situation

Beneficial rains fell across the region last week, this year's crop responded extremely well. The first bloom of the season was reported this week. The first bloom usually triggers the first plant growth regulator (PGRS) applications. Excessive heat is in the forecast, so I caution that each field needs to be evaluated beforehand and rates should be adjusted on this year's conditions not on past year's rates This will would be excellent time to consult your seed representative for his/her advice on this matter.

No pest have been reported this week.

After emergence scouting of the field must start and continue on a weekly basis until termination of the crop.





7-Day Rainfall Accumulation (inches)

9:00 AM July 9, 2020 CDT

Next Seven Days

Weather Forecast Office
Norman, OK
Issued Jul 9, 2020 5:38 AM CDT

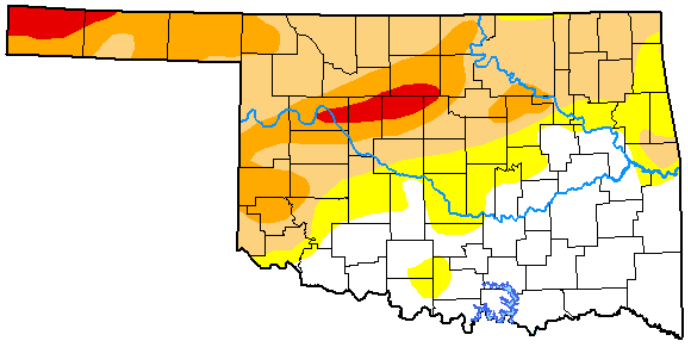
	Thu	Fri	Sat	Sun	Mon	Tue	Wed
Forecast	20-40%		20%	20%	20%	20%	
	ELEVATED	ELEVATED	ELEVATED	LOW	LOW	LOW	LOW
Impacts	Severe Storms	Hot	Hot Isolated strong storms late				
PM Highs	103 WWR, 96 PNC, 99 OKC, 101 SPS, 96 DUA	99 WWR, 95 PNC, 99 OKC, 101 SPS, 97 DUA	106 WWR, 105 PNC, 105 OKC, 105 SPS, 101 DUA	96 WWR, 95 PNC, 97 OKC, 102 SPS, 99 DUA	101 WWR, 99 PNC, 99 OKC, 104 SPS, 98 DUA	107 WWR, 105 PNC, 104 OKC, 107 SPS, 99 DUA	101 WWR, 104 PNC, 101 OKC, 103 SPS, 98 DUA
AM Lows	76 WWR, 75 PNC, 76 OKC, 77 SPS, 76 DUA	73 WWR, 73 PNC, 75 OKC, 77 SPS, 76 DUA	77 WWR, 76 PNC, 77 OKC, 77 SPS, 76 DUA	72 WWR, 73 PNC, 74 OKC, 77 SPS, 76 DUA	72 WWR, 71 PNC, 73 OKC, 75 SPS, 75 DUA	77 WWR, 77 PNC, 78 OKC, 79 SPS, 77 DUA	79 WWR, 80 PNC, 79 OKC, 79 SPS, 77 DUA

@NWSNorman

weather.gov/norman

U.S. Drought Monitor

Oklahoma



July 7, 2020

(Released Thursday, Jul. 9, 2020)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	33.10	66.90	51.27	21.29	3.74	0.00
Last Week *06-30-2020*	34.87	65.13	43.03	15.39	4.46	0.10
3 Months Ago *04-07-2020*	95.47	4.53	3.35	2.27	0.00	0.00
Start of Calendar Year *12-31-2019*	76.45	23.55	10.47	3.64	0.00	0.00
Start of Water Year *10-01-2019*	71.94	28.06	11.08	1.01	0.00	0.00
One Year Ago *07-09-2019*	99.98	0.02	0.00	0.00	0.00	0.00

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

Author:
David Miskus
NOAA/NWS/NCEP/CPC

droughtmonitor.unl.edu

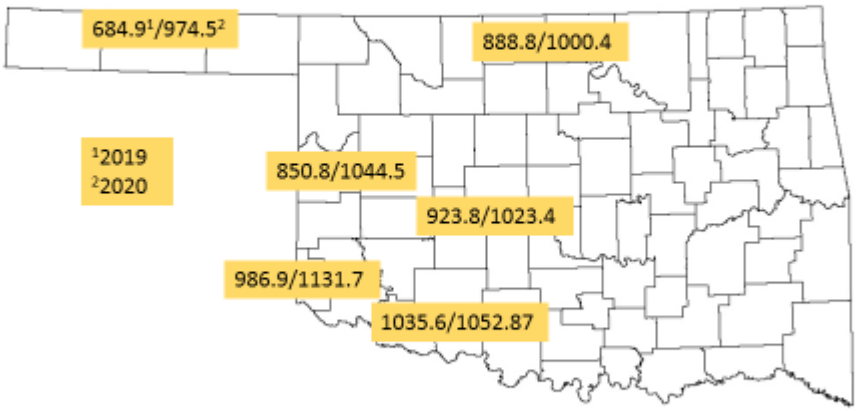
Growing degree days

Cotton Growth Timetable

Stage of Growth	GDD	Days
Emergence	50 - 60	3 - 4
Pinhead Square	425 - 500	25 - 45
First Bloom	725 - 825	41 - 67
Open Boll	1575 - 1925	102 - 127
Defoliation	2150 - 2300	120 - 140

2020 Growing Degree days for select locations May 1 to July 8

State wide average 157.74 more degrees units 2020 compared to 2019



To calculate growing degree days for specific fields and planting dates please click here: Oklahoma Mesonet Degree Heat Unit Calculator-Cotton

The standard calculation for cotton DD60 heat units is:

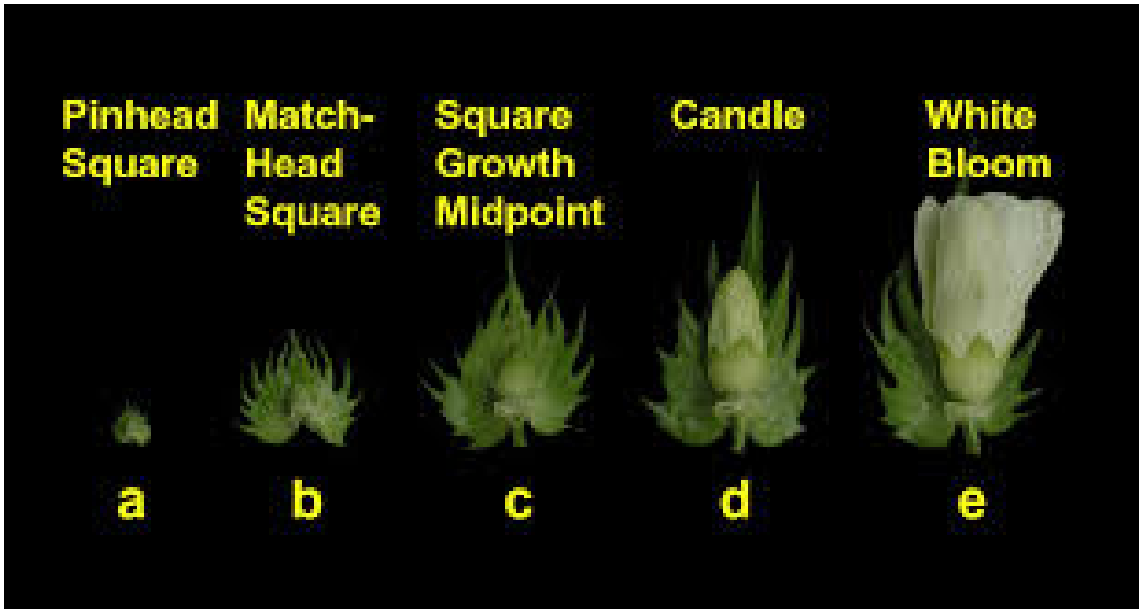
((maximum air temperature, F° + minimum air temperature, F°) / 2) - 60 = DD60 heat units

Essentially, the average air temperature for the day is determined and the 60 degree F° developmental threshold for cotton is subtracted. The DD60s for each day are then totaled.

Oklahoma State University Field Surveys

This office conducts field surveys is six counties (Jackson, Caddo, Greer, Harmon, Tillman and Washita) on a weekly bases these include producer fields, Extension trials, official variety test sites in southwestern Oklahoma. These fields have different planting dates and varieties with various traits. The plant stage varies as July 9, 2020 from 2nd truleaf to square growth midpoint. .

The most dominate plant stage as of July 9 for these trials: **Square Growth Midpoint**



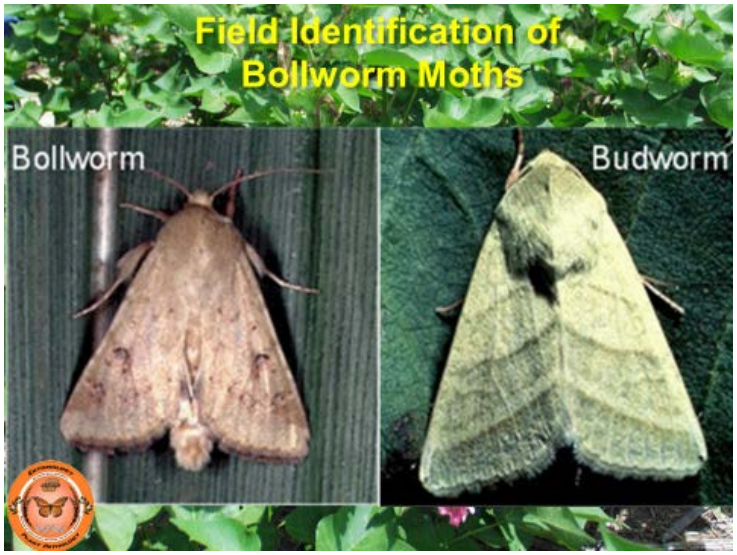
Courtesy of Texas A&M AgriLife

The cotton pest of most concern as of July 9 for these trials: **Bollworm complex and Cotton Aphids**

Courtesy of UT Crop News

Bollworm Complex

As more and more fields enter the bloom stage the Bollworm complex will become the pest that need to be monitored. The general scenario is to find live worms but no damage squares OR find damage squares and no live worms. This indicates that the technology is working where there is live worms and damage squares means the technology is overwhelmed. **The economic threshold is 6% damaged squares with live worms present in Bt cotton.** We need to once again caution about using **pyrethroids even with a combination of aphicide** to control bollworms. This is not because they will not do the job but it is due to the likely aphid infestation that can later occur. Pyrethroids are just too harsh on beneficial arthropods to be viable. It is not the aphids in the field at the time of application one has to worry about – it is the subsequent aphids that move into the field to recolonize it. Adult aphids are always on the move.



Bollworm injury in Bt varieties has been increasing in the past years. This makes scouting for this pest crucial. **The economic threshold is 6% damaged squares with live worms present in Bt cotton. Please click on Cotton Comments Volume 7 edition 6 July 14, 2017 for further explanation.**

Dr. David Kerns (Professor and Statewide IPM Coordinator with Texas A&M AgriLife Extension Service at College Station) and the midsouth entomologists working group developed the economic threshold for the bollworm complex in Bt cotton. It is 6% damaged squares with live worms present in Bt cotton. The following slides are courtesy of Dr. Kerns.

Why do we sometimes see unexpected injury in Bt cotton from bollworms?

- Field data demonstrates ALL current Bt cottons can experience unacceptable injury
  - Obvious differences in efficacy among technologies
- Possible contributing factors in Bt efficacy
  - Varietal expression
  - Plant maturity and health
  - Environmental conditions
  - Where eggs are laid
  - Resistance
  - High pest pressure

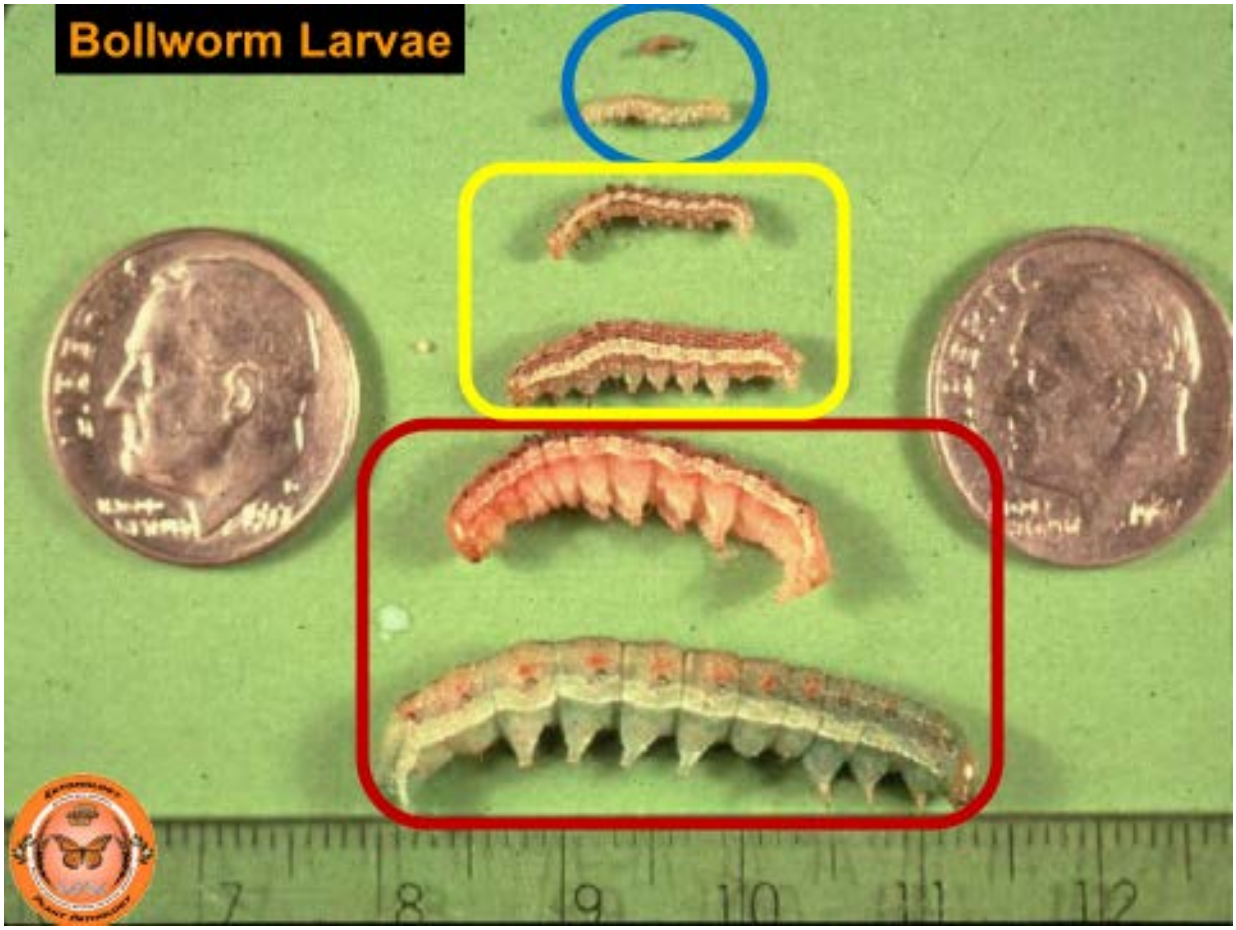
Conclusions

- No Bt cotton variety or technology is immume to unacceptable bollworm injury.
- Scout your cotton.
- Give the technology a chance to work.
- Based control decision on fruit injury with the presence of live larvae.
- Fruit injury threshold ranges from 3.54-10.33% injured fruit depending on price of cotton and crop yield expectation; 6% is a good middle of the road threshold.
- Make sure you know which worm you are dealing with; Bollworm or Fall Armyworm.
- Do not let the worms get big and into the bolls.
- Select the right insecticide.
  - Pyrethoids are inexpensive but resistance is an issue in many area.
  - Pyrethroids are weak on FAW.
  - Prevathon or Besiege are highly effective and usually provide about 3 weeks control.
  - Pyrethroids and to a lesser extent Prevathon/Besiege are not as efficacious on deep canopy larvae.

This can be what happens when weekly scouting is not performed. This was a field near San Angelo, Texas in 2016.

Slides courtesy of Dr. Kerns, Texas A&M AgriLife Extension Service

A fine line has to be drawn of what constitutes bollworm slippage and letting the technology work. The following slide shows relative size of bollworm larvae and when chemical control measures need to be considered. Larvae in the blue ring should be susceptible to the Bt technology. Larvae in the yellow rectangle can generally be controlled by chemical sprays for bollworm larvae which fit into the red rectangle, we jokingly say that two bricks must be used for control. Typically these worms are too big to control with insecticides and they are nearing the time when they drop to the soil and pupate and “cycle out” of the cotton.



Slide courtesy of Dr. Miles Karner

A control spray is warranted in Bt cotton when the bollworm population exceeds the economic threshold of 6% square damage plus live worms present. Then the chemical choice becomes critical. Pyrethroid insecticide resistance has been noted in most areas of the Cotton Belt.

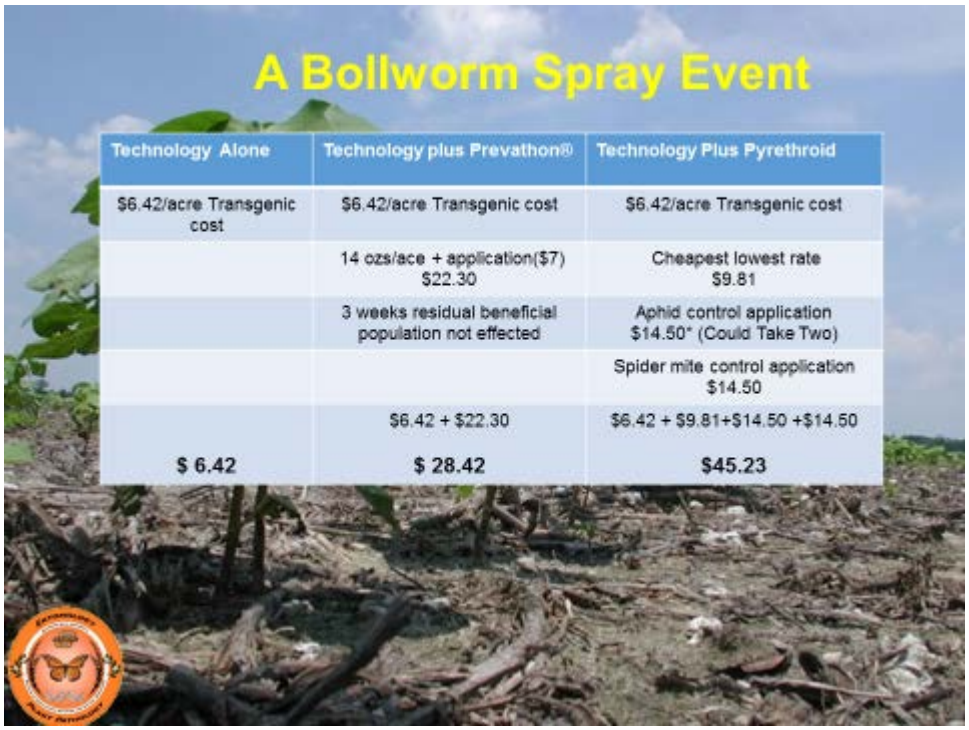
A broad spectrum insecticide can kill the targeted pest. Secondary pests can become a problem due to the destruction of beneficial arthropods which normally keep the secondary pests in check. The cost of one insecticide product versus another may be a factor when choosing which chemical to use. However, the potential consequences may far outstrip the initial savings one might encounter.

If a bollworm control spray event needs to occur, two options are possible. One is with a far cheaper product and one may be with a more expensive product. The broad spectrum insecticide may be initially cheaper, but destroy the beneficial population. Then the field has no biological “friendlies” to assist in holding back secondary pest populations.

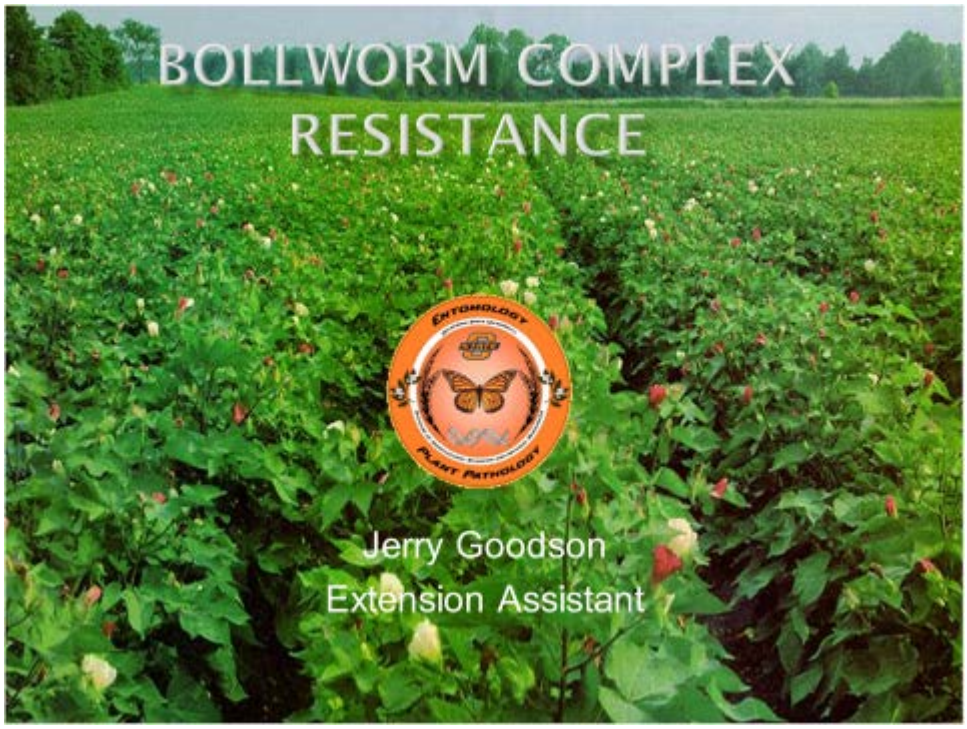
In the long run the more expensive product may be a better choice if it is less harsh on beneficial arthropods. This retains the biological “friendlies” which are then available to reduce the potential of secondary pest outbreaks.

The gamble is with the absence of beneficial insects, some of the secondary pests may need to be controlled with insecticides. One can see that the costs can add up as noted in the slide below. Loss of beneficial arthropods can cascade into an aphid flare up which would then require one or possibly two applications to control. The next possible pest could become spider mites, which again will require more product and application for control.

Which is cheaper??

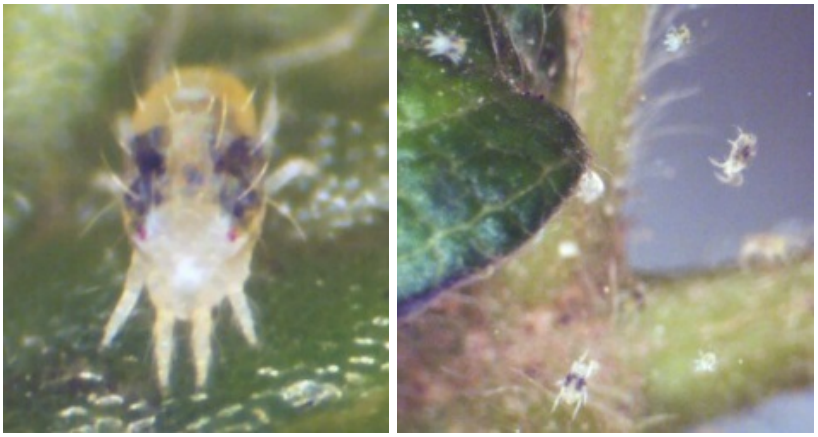


For a presenation of Bollworm Complex Resistance at 2018 Winter Crop School please click on image.



If using Pyrethoids the following two pest generally follow.

Spider Mites



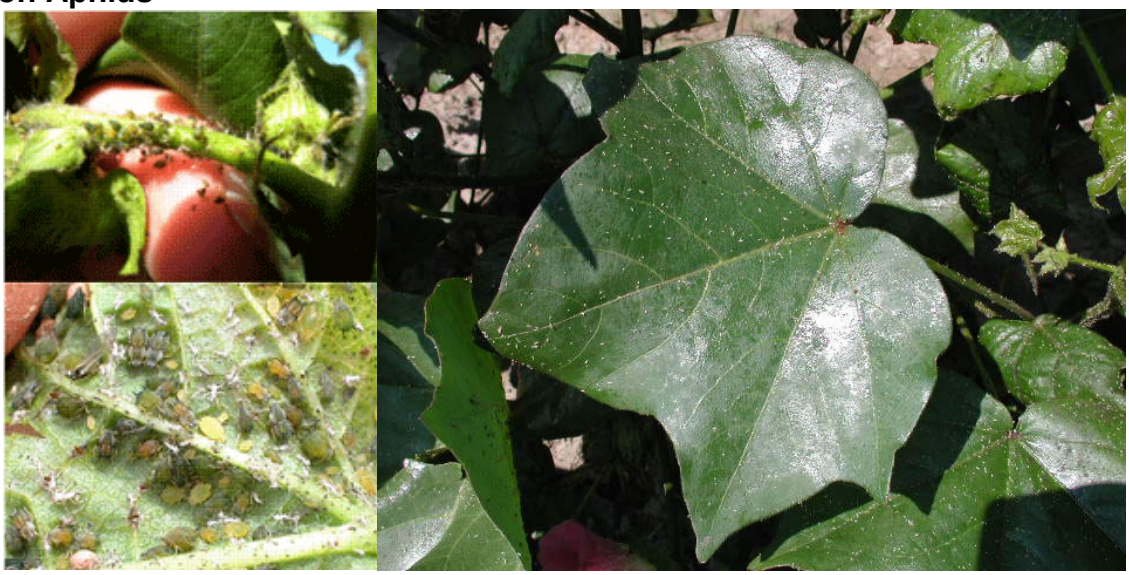
Spider mites often attack cotton when insecticides have removed beneficial arthropod populations which normally keep this pest in check. Infestations are generally aided by hot, dry weather. In most cases, infestations will be localized in a field.

Spider mites damage cotton by feeding on the plant juices and the foliage will turn a reddish or yellowish color under a heavy infestation. Mites are small in size and are generally found on the underside of the leaves. A close inspection is necessary to determine if mites are present. Before considering control measures please contact this office.

For a complete guide to spider mites, click here:

Texas A&M AgriLife Extension Spider Mite Management Guide

Cotton Aphids



Photos Courtesy of Texas A&M AgriLife Extension

Cotton aphids are small, soft-bodied insects commonly referred to as “plant lice”. Aphids occasionally occur on cotton in such high numbers that control measures should be implemented. Build ups are localized and usually occur after the use of insecticides that are harsh on beneficial arthropods, including pyrethroid types. The insects are found on the underside of leaves and along the terminal stem, causing misshapen leaves with a downward curl and stunted plants. The insect damages cotton directly by sucking juices from the plant and indirectly by secreting honeydew. The honeydew is sticky and can lower the grade of lint. Sticky cotton may result in significant problems during the spinning process at mills. A sooty mold can develop on the aphid honeydew and discolor the lint. For more information on aphids, please click on the following link.

Texas A&M AgriLife Extension Aphid Management Guide

One chemical not mentioned in the above guide is Sivanto™ from Bayer CropScience. It is also labeled for control of cotton aphids. The product rate of 5 to 14 fluid ounces per acre is noted on the label.

Due to the high probability of beneficial arthropod control of cotton aphids, if this pest is found, any potential control measures should be carefully considered. If you have any questions concerning aphid populations, call this office.

Beneficial Arthropods

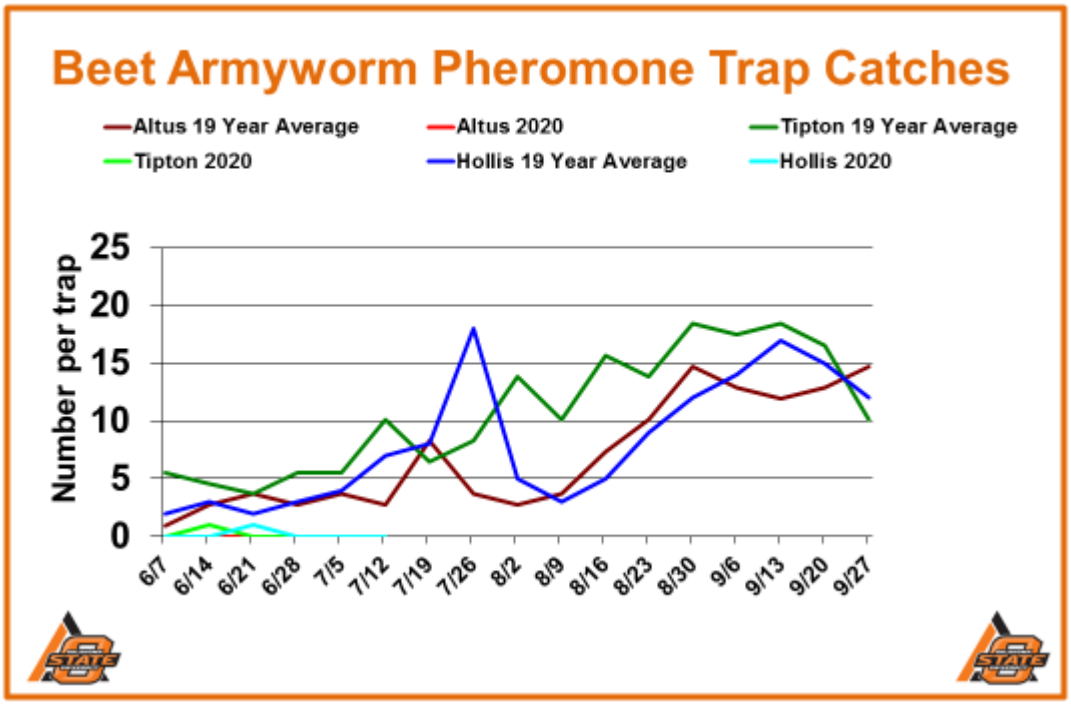
Preservation of beneficial arthropods becomes crucial to curb future potential outbreaks of cotton aphids and spider mites. The main beneficial predators are Ladybug larvae and Lacewing larvae. The Lacewing larvae tends to be more aggressive and more of an effective predator. Beneficial's population generally will lag ten days behind the initial infestation of aphids.


Lady Beetle larva

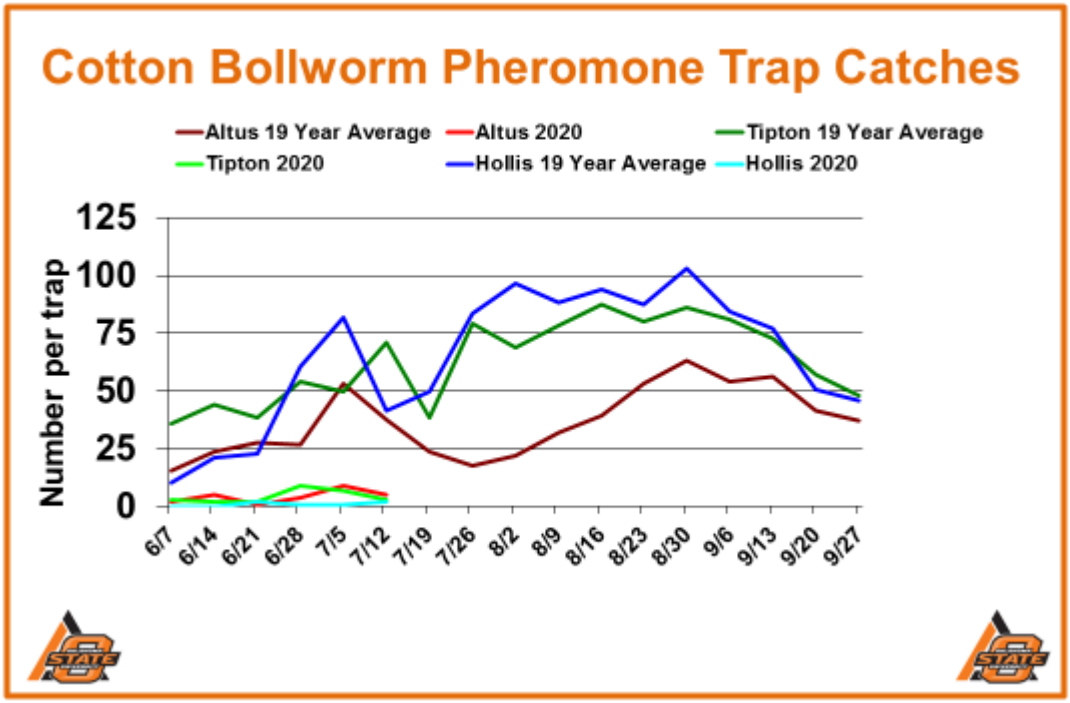

Lacewing larva

Moth Trap Counts 2020

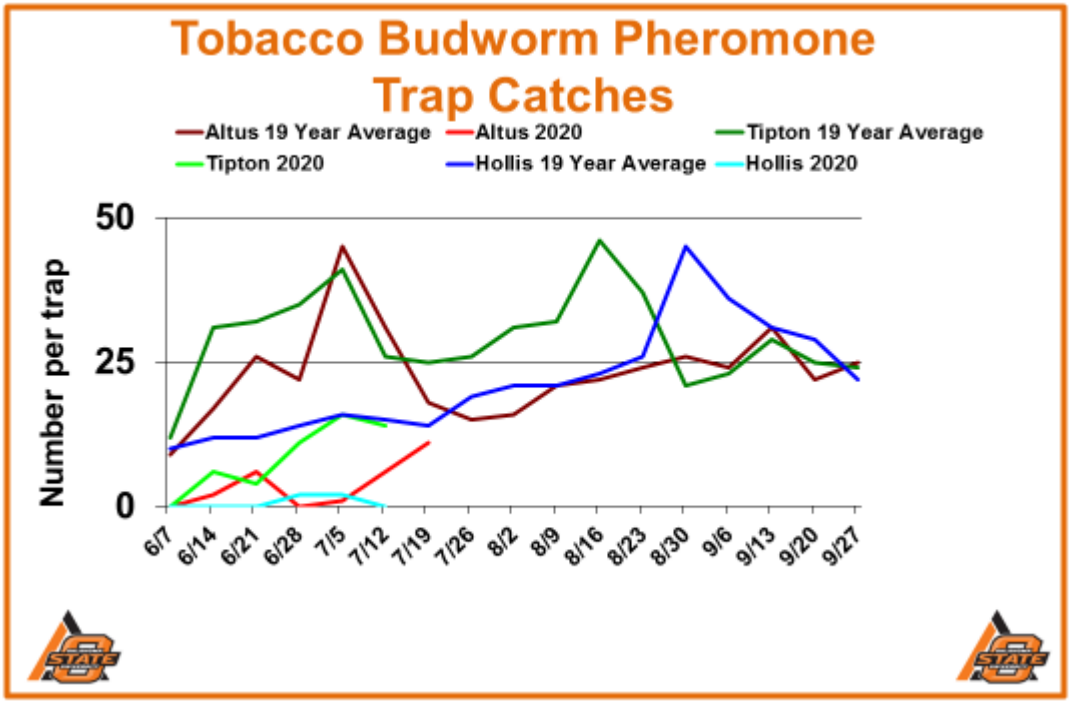
Moth numbers have been the low this year. All field reports have stated that no moth activity has been observed.



Beet armyworm moth
Photo courtesy of University of Georgia



Cotton bollworm moth
Photo courtesy of University of Georgia



Tobacco budworm moth
Photo courtesy of University of Georgia

Fall Armyworm Trap Results 2020

Date Week ending	Jackson	Tillman	Harmon	Caddo
6/7	0	2	0	1
6/14	0	5	0	2
6/21	3	0	0	2
6/28	1	2	0	4
7/4	2	3	2	2
7/11	0	0	0	8

Jackson OSU Southwest Research and Extension Center
Tillman OSU Southwest Agronomy Research Station
Harmon Harmon Near Gould
Caddo Caddo Research Station

Photos courtesy Oklahoma State University

Oklahoma Boll Weevil Eradication Organization

New web page address click here: OBWEO

Brenda Osborne, Director of the Oklahoma Boll Weevil Organization, based at Altus, provided the information below. Eradication of the boll weevil across most of the U.S. Cotton Belt, and in the state has been very successful and is a major contributing factor to the continued profitability of cotton production. It has been a long, difficult, and expensive task to rid our state and most of the Cotton Belt of this invasive species that for such a long time negatively impacted our production. Since 1998 the producers of Oklahoma has spent over **thirty seven million** dollars to eradicate and provide a maintenance program.

Cotton acres for the past five years

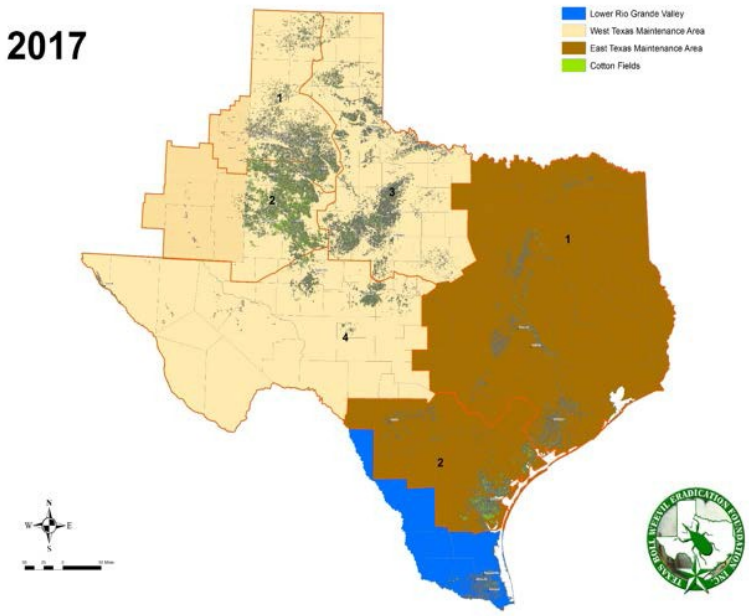
Year	Acres[1]
2015	216,678
2016	299,302
2017	568,434
2018	756,397
2019	603,014

[1] Oklahoma Boll Weevil Eradication Organization

OBWEO is preparing for the upcoming 2020 cotton season. It is our responsibility to ensure the continued success of this program. If you have been growing cotton for the past 3-5 years, we know where those fields are located. ***However, if you are a new producer or have not grown cotton in several years, we need you to provide the legal descriptions of these new cotton fields***.

There is a Boll Weevil Assessment for harvested cotton acres. The current assessment is $2.50 per harvested acre. This assessment is reviewed annually. The trapping density this year is one trap per 640 acres. In areas where planted cotton acreage density is high, not all fields will actually have a trap near it. In other areas that are more isolated, each field will need a trap.

There is still a difficult fight with this insect pest in south Texas, and we all need to do our part in keeping this pest from resurfacing in our state. Cotton harvesting equipment entering Oklahoma from two eradication areas in Texas has to be certified as boll weevil free prior to movement into our state. Please contact TBWEF before departure from these two areas. This will allow TBWEF to inspect the equipment. A USDA-APHIS phytosanitary certificate is issued and is required before equipment can be transported from these areas. These ONLY include the Lower Rio Grande Valley Eradication Zone (blue area on the map below) or the East Texas Maintenance Area (brown area on the map below). This is critical to meet USDA- APHIS requirements and prevent the re-infestation of boll weevils into eradicated areas. It is illegal to move non-certified cotton harvesting equipment from these areas into the state of Oklahoma.



Texas Boll Weevil Eradication Foundation: 325-672-2800
After Hours and Weekends: 325-668-7361

Contact John Lamb at the Frederick office at 580-335-7760 or cell 580-305-1930 for the following counties: Tillman, Cotton, Comanche, Atoka, Bryan, and Stephens.

Contact Brenda Osborne at the Altus office at 580-477-4287 or cell 580-471-79632 for all other counties.

Upcoming Cotton meeting

The Cotton Comments Newsletter is maintained by Jerry Goodson, Extension Assistant. If you would like to receive this newsletter via email, send a request to:

jerry.goodson@okstate.edu

Jerry Goodson
Extension Assistant
16721 US Hwy. 283
Altus, Oklahoma
(580) 482-8880 office
(580) 482-0208 fax

www.cotton.okstate.edu

www.ntokcotton.org