



Cotton Comments

OSU Southwest Oklahoma Research and Extension Center
Altus, OK

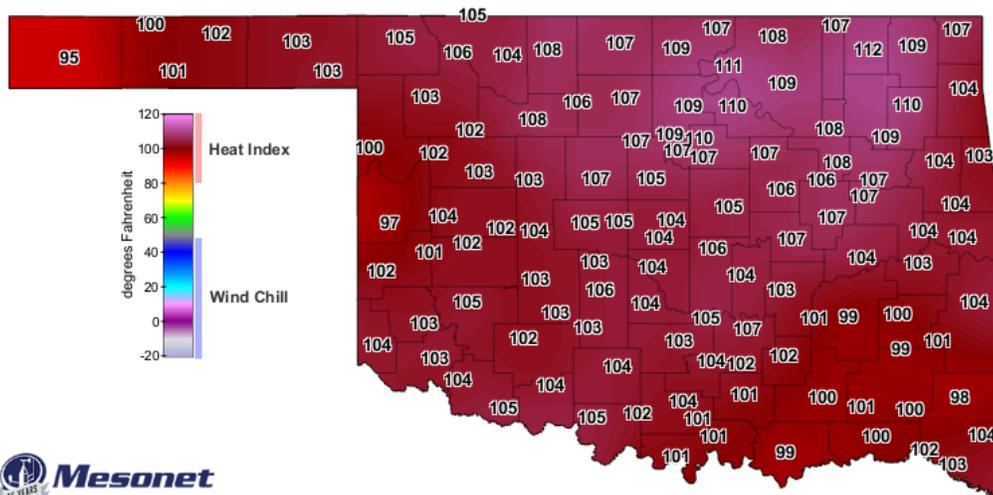


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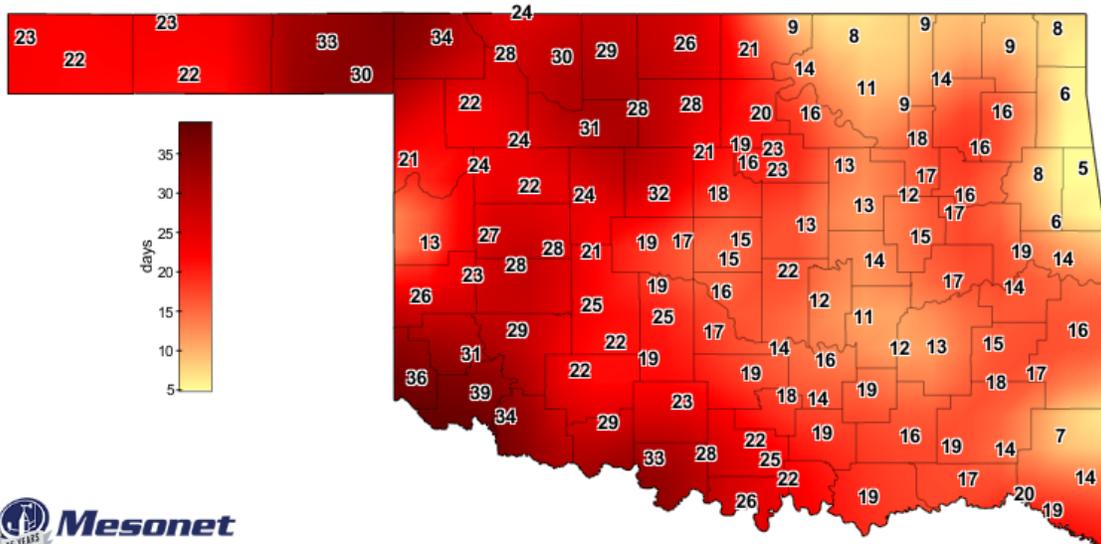
2019 Current Situation

Summer has finally arrived in Oklahoma with a vengeance.



Today's Maximum Wind Chill / Heat Index (°F)

1:50 PM July 17, 2019 CDT
Created 1:55:53 PM July 17, 2019 CDT. © Copyright 2019



Days With Maximum Air Temperature ≥ 90 °F

January 1, 2019 through July 17, 2019
Created 5:25:04 AM July 18, 2019 CDT. © Copyright 2019

Crop Conditions

This year cotton crop where adequate moisture is occurring is responding extremely well to the more seasonal temperature. Blooms are now being observed in the southern tier counties. Fleahoppers are still numerous in Tillman county where some fields had to have control sprays for the third time. In the rest of the State numbers are nonexistent to moderate. Aphids have been reported along the I 40 corridor and in Jackson and Tillman county. Grasshoppers have been doing severe damage to outside rows in the southern part of the state. Thanks to everyone who have reported these events.

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

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 immune 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.
 - Pyrethroids 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.

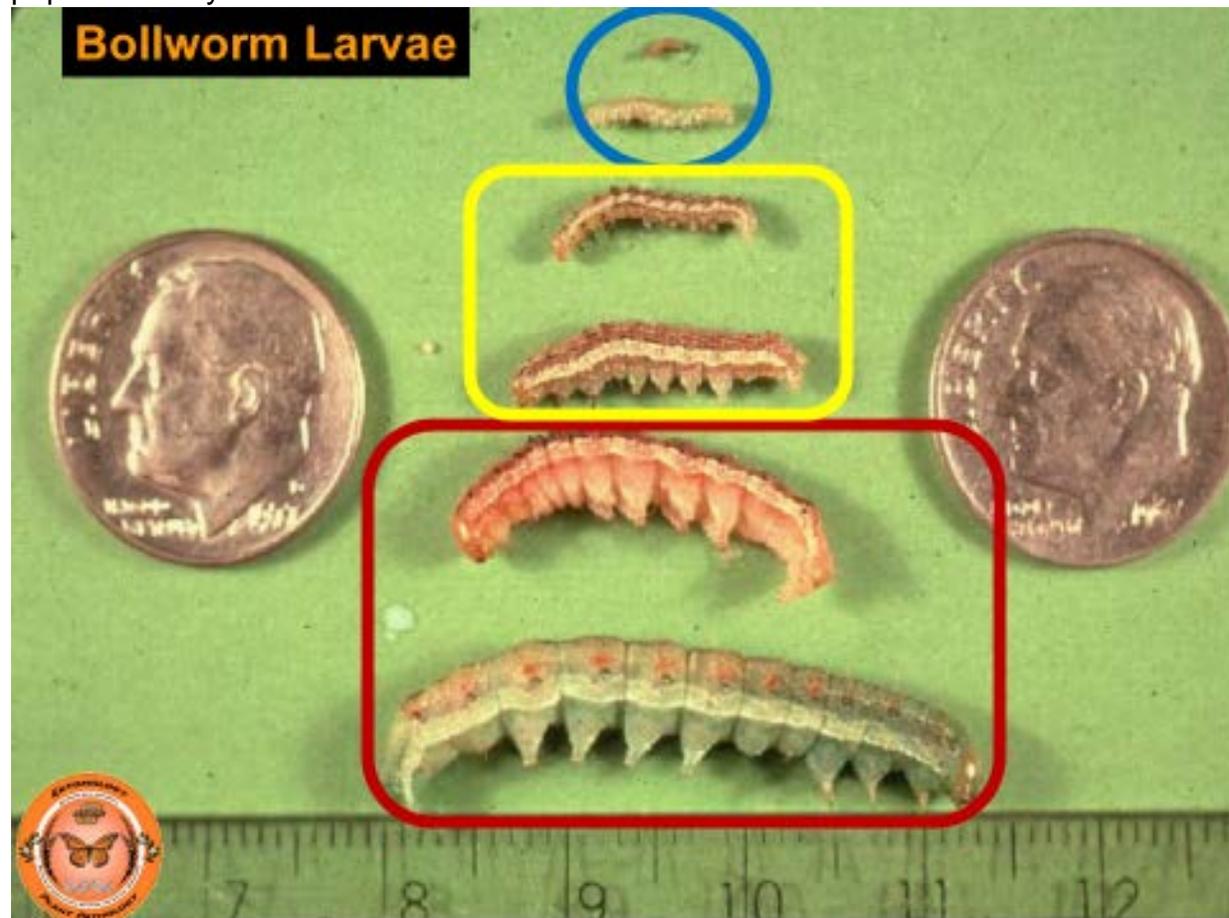
This can be what happens when weekly scouting is not performed. This was a field near San Angelo, Texas in 2016.

Near San Angelo – TwinLink Estimated 93% Loss



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.

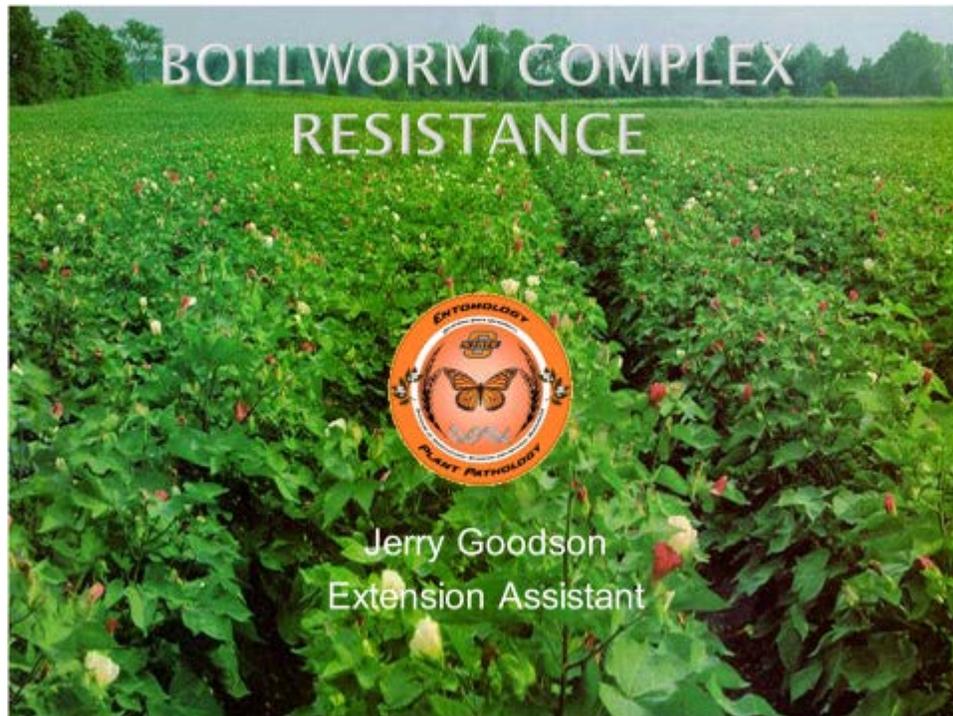
Which is cheaper??

A Bollworm Spray Event

Technology Alone	Technology plus Prevathon®	Technology Plus Pyrethroid
\$6.42/acre Transgenic cost	\$6.42/acre Transgenic cost	\$6.42/acre Transgenic cost
	14 ozs/ace + application(\$7) \$22.30	Cheapest lowest rate \$9.81
	3 weeks residual beneficial population not effected	Aphid control application \$14.50* (Could Take Two)
		Spider mite control application \$14.50
	\$6.42 + \$22.30	\$6.42 + \$9.81+\$14.50 +\$14.50
\$ 6.42	\$ 28.42	\$45.23

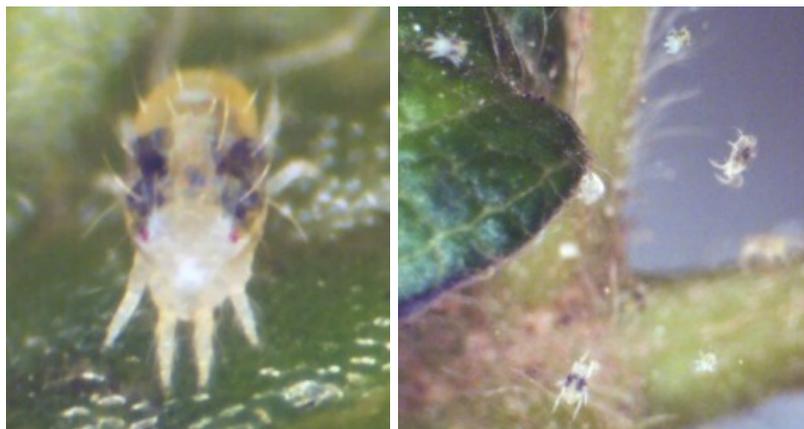


For a presentation of Bollworm Complex Resistance at 2018 Winter Crop School please click on image.



If using Pyrethroids 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

Phenoxy Damage



Early season phenoxy herbicide damage in cotton.

Reports of severe phenoxy herbicide damage has occurred in several counties of Oklahoma. Contrary to “coffee shop talk” not all cotton varieties are immune from phenoxy. Pasture and wheat applications that go off target are still responsible for the damage that occurs. The use of non-labeled chemicals on phenoxy tolerant varieties is just as lethal. Oklahoma State staff can advise that damage has occurred and certain options on how the crop can be managed after the event but ALL regulatory and investigation procedures are with Oklahoma Department of Agriculture and Forestry.

Yield effects from this type of damage are difficult to quantify. The amount of injury is rate dependent, but any injury can cause a delay in blooming. If the maturity is delayed substantially, a significant negative impact on yield is usually observed. If this happens to an already late planted crop, it can be disastrous if an early freeze is encountered. Many times phenoxy herbicide injury in cotton can be from a single “drift event”. If so, then the new leaves in the terminal will not show continued damage (“leaf strapping”) and fruit development may not be ruinously interrupted. Fields that experience high single dose events or multiple sustained doses of phenoxy herbicide over time (perhaps from multiple “drift events”) may have “leaf strapping” and fruiting impact for several weeks. Yield reduction will be significant in this scenario. The only thing that can be done is to manage the crop as best as possible and watch the fruit retention. This is a difficult situation, and each field (or even areas of a field) can be different based on the nature of the drift event, cotton growth stage, future growth potential (soil moisture level), etc.

Critical observations include:

- 1) When will the oldest remaining unaffected squares potentially bloom?
(what calendar date)
- 2) What is the square retention on the plants?
- 3) What is the last effective bloom date (calendar date) to produce a reasonably mature boll for the area?
- 4) What is the soil moisture level?
(to drive yield potential).

If your field is damaged the following is from the Oklahoma Department of Agriculture and Forestry. <http://www.oda.state.ok.us/cps/pesticidecomplaints.htm>. Also a spray drift brochure has been created. Click here [Oklahoma Spray Drift Risk brochure](#).

Pesticide / Herbicide Complaint Procedure

The Oklahoma Department of Agriculture is the lead state agency for regulating pesticides. This responsibility includes investigating complaints of alleged pesticide / herbicide misuse. Typical complaints concern termite treatments, drift from lawns, right-of-way or agricultural applications.

How to File a Complaint

Anyone wishing to file a complaint needs to complete the (click on following to download) [PESTICIDE COMPLAINT STATEMENT](#) and submit it to Mike Vandeventer. Once the complaint is received it will be given a complaint number and assigned to a field inspector. You will receive confirmation that the complaint was received with the name of the inspector and the complaint number.

The Investigation

The inspector will contact you within the next three to four days to schedule the inspection. The inspection will include a narrative report, photos and samples as needed to document a misuse or violation. The inspector does not estimate monetary losses that may have occurred as a result of the incident. He will also try to identify any possible source or cause.

All possible sources will be contacted to determine if they were involved or not. Once the investigation is completed by the Compliance Administrator you will be notified of the final action taken.

Copies of the Report

The investigation report is subject to the Oklahoma Open Records Act. A copy of the report will be provided upon written request. Requests should reference the complaint number and be sent to:

Office of General Council
Oklahoma Department of Agriculture, Food & Forestry
Pesticide Compliance Administrator
2800 N. Lincoln Blvd.
Oklahoma City, OK 73105

The following is the use of certain chemicals in Oklahoma restricted zone.
Thanks to Mike Vandeventer for providing this information.

35:30-17-24.1. Restricted use areas

(a) Applications of products containing 2,4-D esters or dicamba as an active ingredient to agricultural lands shall not be made in Greer, Harmon, and Kiowa counties between 12:01 a.m. of May 1 of each calendar year through 11:59 p.m. of October 15 of each calendar year except in accordance with the provisions of this section.

(b) Applications of products containing 2,4-D, dicamba, picloram, triclopyr, or clopyralid as an active ingredient to agricultural lands shall not be made in Jackson and Tillman counties between 12:01 a.m. of May 1 of each calendar year through 11:59 p.m. of October 15 of each calendar year except in accordance with the provisions of this section.

(c) Any person intending to apply any of the herbicides listed in subsection (a) or (b) in the counties and during the times prohibited shall adhere to the following procedure:

(1) The person shall notify the Department of the intent to apply herbicides listed in subsection (a) or (b) prior to the application on a form provided by the Department.

(2) The person shall file a report with the Department on a form provided by the Department no later than seven (7) working days after the last application date provided in the original notification of the herbicide use.

(d) Failure to comply with this section shall be a violation.

(e) All records and notifications required by this section shall be in addition to any records required to be maintained by a commercial applicator pursuant to other rules.

(f) The provisions of this section shall not apply to applications of 2,4-DB.



Mid-season phenoxy herbicide damage in cotton.

2019 Dicamba Training

Applicators planning to use specific dicamba herbicides labelled for the Roundup Ready Xtend Crop System™ for soybeans and cotton must complete U.S. Department of Agriculture-approved dicamba training before spraying these products this year.

“Whether you’re a certified applicator or driving the application equipment you have to be trained,” said Todd Baughman, Oklahoma State University Cooperative Extension summer crop weed specialist. “Even if you went through training last year, you’re still required to go through the Oklahoma Department of Agriculture, Food and Forestry approved training this year.”

Only the ODAFF, Extension and the three major manufacturers – Monsanto, DuPont and BASF – are authorized to provide the training. To be certified please contact your local extension office.

Oklahoma now has a 24C label for Engenia and Xtendimax in dicamba-tolerant cotton and soybean.

To view the 24C labels please click on [Engenia](#) or [Xtendimax](#).

The following was contributed by:

Todd A. Baughman Professor of Weed Science Oklahoma State University

Highlights for 24C for Engenia and Xtendimax in dicamba-tolerant cotton and soybean:

Applications may be made up to 90 days after planting on dicamba-tolerant cotton.

Applications may be made up to 60 days after planting and/or the R1 growth stage, whichever occurs first on dicamba-tolerant soybean.

Applications are permitted any time of the day (sunrise to sunset) as long as there are no temperature inversions at the field level.

DO NOT apply more than two postemergence applications per year.

Restricted Use Pesticide: For sale to and use ONLY by Certified Applicators. Noncertified applicators are prohibited from applying these products.

Training Requirement: Prior to the use of these products, certified applicators must complete mandatory dicamba training approved by the Oklahoma Department of Agriculture, Food & Forestry (ODAFF). For more information on training, contact ODAFF at: pesticide@ag.ok.gov.

Applicators need to have a copy of the full federal label along with a copy of the 24C label in their possession if applications are made under the conditions of the 24C label (24C labels for both attached).

For further questions Todd can be reached at
Institute for Agricultural Biosciences
3210 Sam Noble Parkway Ardmore, OK 73401
Cell: 940.613.1275
Phone: 580.224.0623
E-Mail: todd.baughman@okstate.edu

Oklahoma Boll Weevil Eradication Organization

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 **\$37,218,599** to eradicate and provide a maintenance program.

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 acres for past five years

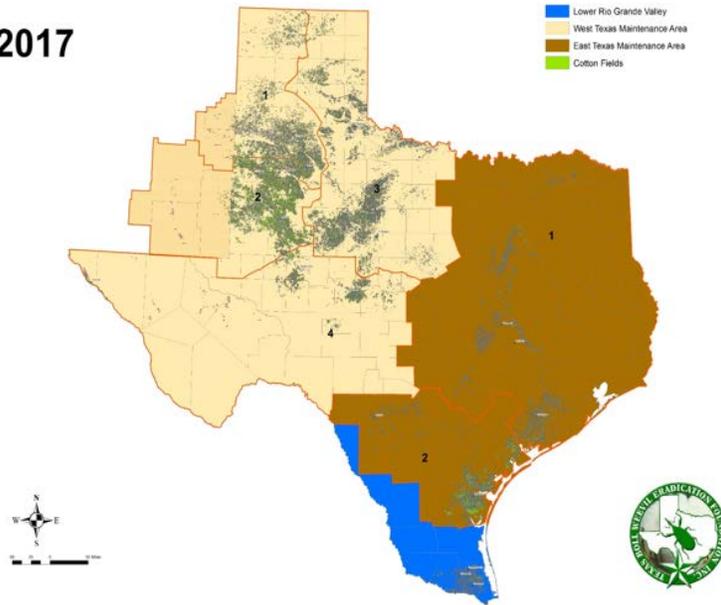
<u>Year</u>	<u>Acres¹</u>
2014	237,523
2015	216,678
2016	299,302
2017	568,434
2018	756,397

¹ Oklahoma Boll Weevil Eradication Organization

OBWEO is preparing for the upcoming 2019 cotton season. It is our responsibility to ensure the continued success of this program. With all the talk of a significant increase in cotton acres, there are some important issues with respect to OBWEO that you need to be aware of. 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.

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 t equipment 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.

2017



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.

Harvey Schroeder Executive Director Oklahoma Cotton Council has relaunched his Oklahoma Cotton web site.

Please click on emblem to visit it.



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:

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www.ntokcotton.org

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