Cotton Comments

OSU Southwest Oklahoma Research and Extension Center
Altus, OK

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New Cotton Season Starts!

We start the 2019 cotton season with the 2018 cotton season still not over. Cotton gins are still operating in Oklahoma and Kansas. We generally start the new season with a discussion of the past season but with not all the bales ginned we have to bypass a "summary" this year. The growth of cotton aces in Oklahoma is remarkable. The 2019 crop should following this trend.

Cotton acres for past five years

Year	Acres[1]
2014	237,523
2015	216,678
2016	299,302
2017	568,434
2018	756,397

[1] Oklahoma Boll Weevil Eradication Organization

New Growers

New producers or those who haven't raised cotton in several years should do a thorough job of planning their crop strategies prior to planting. As 2018 illustrated how the crop gets harvested and where it's going be ginned is critical. Before you start the season you need to plan where you are going to end the season

Changes at Southwest Research and Extension Center Altus, Oklahoma

Every year changes occur, this year is no exception. We would like to welcome two new members to the Oklahoma State University Cotton Team. Mike Schulz, Station Superintendent, and Emily Landoll, Assistant Station Superintendent of the Southwest Research and Extension Center located in Altus, Oklahoma.

Mike Schulz Emily Landoll

Along with Dr. Seth Byrd they have initiated several new improvements to the Altus station already. One project includes drip irrigation being installed on the center. Several other projects are in the planning station. We feel very fortunate to have both join the OSU staff.

2019 Dicamba Training

Applicators planning to use specific dicamba herbicides labelled for the Roundup Ready Xtend Crop SystemTM 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.

Insecticide Seed Treatments for Thrips Control

Now is the time to decide on whether to use a seed treatment or wait to control thrips by foliar spray application if damaging populations develop. There are pros and cons to both options. Seed treatments are easy to use and relatively safe to handle. In-season chemical control application timing is critical and weather plays a part. One of the “pros” of waiting is that added expense only occurs if a damaging population occurs and a

decision is made to treat. Also cotton has a great ability to compensate for early damage in Oklahoma growing conditions. If you decide to wait for foliar application, this will be discussed in later newsletters.

There are a number of seed treatments on the market which include Gaucho Grande, Cruiser, Avicta Complete Cotton, and Aeris. The length of control is dependent upon growing conditions and thrips pressure. Additional follow-up thrips control can sometimes be warranted after using any of the below listed seed treatments.

- **Gaucho Grande, Acceleron I, and generics** (imidacloprid, a systemic neonicotinoid insecticide) are weak against western flower thrips, our primary species in Oklahoma. If onion thrips are the only species they provide acceptable control. The length of control for western flower thrips lasts about **7 days**[1].

- **Aeris** (imidacloprid and thioidicarb). The added thiodicarb increases western flower thrips control and provides some nematode control. Thrips control generally lasts **14-18 days**[1].

- **Cruiser** (thiamethoxam) is another systemic neonicotinoid but extends control of western flower thrips. The length of thrips control is generally about **14-18 days**[1].

- **Avicta Complete Cotton and Acceleron N** both contain multiple products including upgraded fungicides. Length of western flower thrips control is about **18-21 days**.[1].

[1] Dr. David Kerns Professor, IPM Coordinator, and Extension Specialist Department of Entomology Texas A&M University, College Station, TX provided the length of control for each treatment.

For all of the above treatments 21 days is the maximum length of control. A cotton plant may still sustain thrips damage until up to the fourth true leaf stage. In some years, because of varying growing conditions, this is adequate. In other years the crop may not reach this stage after 21 days, and thus may not be adequate. Therefore, it may be important to keep cotton growth and development rate and foliar thrips control products in mind.

Successful Planting Strategy

The following was provided by Dr. Randy Boman. Next to variety selection, most likely the next very important decision a producer makes is when to plant. The single most important issue to recognize is that cotton seedlings can be damaged by cool, wet soils. Depending upon the region of the U.S., many producers typically begin planting based the calendar date. However, the long-term optimum planting window for most states is determined based on field trials and average soil temperatures. Although soil

temperatures can sometimes be high outside of this window, many times they can drop, especially if precipitation is obtained and a cold front pushes through the region.

The optimum temperature for cotton germination is near 85 degrees F°. Cooler temperatures can lead to poor stands or stand failures if the correct conditions align. Under cool temperatures the physiological processes involved in germination can be very slow which can in turn result in slow growth and perhaps increased susceptibility to various seedling disease pathogens.

It is suggested that planting be delayed until 1) mid-morning temperatures in the rooting zone exceed 60 degrees F° at a 6-inch planting depth, and 68 degrees F° at the 2-inch depth; 2) the five-day forecast indicates dry conditions and at least 25 DD60 heat units; and 3) the five-day forecast projects low temperatures above 50 degrees F°.

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. If one has faith in the local forecast, then the projected high and low for the following several days can be used to calculate DD60s.

Table 1. The outlook for planting for various five-day forecast predictive DD60 accumulations.

Predictive DD60 Accumulation for Five Days Following Planting	Outlook for Planting
<10	Very poor
11-15	Poor
16-25	Marginal
26-50	Good
>51	Very good

Source: To download Cotton Physiology Today, Planting and Replanting Decisions, April, 2007 click here.

If it is recognized that equipment constraints and large acreages generally require producers to plant during less than optimum conditions, they should realize that seed quality and seeding rate become very important. The seeding rate can be adjusted on the planter. However, with transgenic seed prices and technology fees being expensive, increasing the seeding rate is not a palatable option for most producers. Therefore, seed quality becomes very important.

The Texas Cool Germination test was developed to specifically test cotton seed under cool soil temperature conditions. This germination data is NOT required on the state seed tag, but many seed companies will provide this information if asked. The state seed tag reports Standard Germination data and it is performed in a different manner. It is usually guaranteed on the seed tag at a minimum of 80%. Texas Cool Test data are obtained from a test conducted at 64 degrees Fº with seedlings counted after 7 days. Higher Cool Test data indicate higher vigor under temperature stressed conditions. If the Cool Test data for a specific lot of cotton seed is known, then potentially more vigorous seed lots can be identified. This can be used to determine the planting sequence and possible planting date. Producers should begin planting with higher vigor seed under cooler temperatures, and finish up with lower vigor seed under warmer temperatures.

Planting conditions for rapid germination and emergence include:

1) high quality seed with good to excellent Cool Germination Test data (>60%)
2) a favorable 5-day forecast
3) minimum air temperature of at least 50 degrees Fº, and maximum air temperature of at least 80 degrees
4) plant into a firm, moist seedbed about 1 inch deep but not more than 2 inches deep

Imbibitional Chilling Injury

Cool temperatures can adversely affect cotton seedlings. If excessively cool temperatures are encountered during the seed hydration phase, imbibitional chilling injury may occur. Imbibitional chilling injury occurs when cotton seed is subjected to cold conditions during the first 2-3 days after planting, or during the period of time when the seed is imbibing moisture from the surrounding soil. If seeds imbibe cool water too rapidly, embryo cells may be injured or killed due to membrane disruption. Cotton seed contains lipids which must be converted to energy during germination. The cell

membranes must properly develop. Cool temperatures can also result in overall slowing of the metabolic processes during germination. Soil temperatures of 50 degrees F° or below around the seed can damage seedlings during this time. Soil temperatures near 40 degrees F° or less may kill or severely injure the seedling.

The three seedlings below were subjected to chilling temperatures during the imbibition phase. During the first six hours of imbibition, the damaged seedlings were exposed to a temperature of 40 degrees F°. After the chilling period they were moved to a chamber set at 86 degrees F° for two to four days. The curling, shortening and thickening of the roots are typical of imbibitional chilling injury. The chilling during this phase of imbibition injures and typically kills the root tip meristematic tissue. This results in cessation of normal taproot growth. Subsequently, lateral roots develop to compensate for this loss. Typically these seedlings may survive and produce productive plants if additional stresses such as water deficit or disease are not encountered.

Cotton seedlings exhibiting chilling injury

The two seedlings below show normal root development. When the two groups are compared it may be noted that seedlings injured by chilling are often short with thickened hypocotyls and radicles, dead root tips, and show some signs of lateral root growth.

Normal cotton seedlings

Mesonet Soil Temperatures

Soil temperatures for cotton planting are very important and the Oklahoma Mesonet provides valuable information. It should be noted that the Mesonet 5-cm soil depth is equivalent to 2 inches, and the 10-cm depth is equivalent to 4 inches. Dry soils will warm up faster than moist soils. It is a good idea to have your own soil thermometer so you can check your own specific field situation.

To see the state map of 3-day average 4-inch bare soil temperatures, go to:
Mesonet 3-day 4-inch bare soil temperature map

To see the state map of current 4-inch bare soil temperatures, click here:
Mesonet Current 4-inch bare soil temperature map

Seeding Rate

Stand components consist of both uniformity and density. Uniformity of planting seed in the row is affected by planter type. The newer vacuum planters are extremely effective at controlling vertical distribution of the seed in the seed furrow and horizontal spacing down the row. These modern planters typically provide excellent seed to soil contact capability, which results in an increased likelihood of an individual planted seed being able to germinate. Seeding rate or density is controlled by producer. The newer vacuum planters coupled with the generally higher seed quality today than what we many times encountered in the past, have allowed most producers to successfully

reduce seeding rates. However, because of the cost of transgenic varieties in addition to cost of premium insecticide/fungicide/nematicide seed treatments, many producers are pushing the agronomic minimum and living on the edge, with little margin for error, so to speak. Many seeding rate trials have been conducted in southwestern Oklahoma and the Rolling and High Plains regions of Texas over the last several years. Results all point to the fact that seeding rates can be pushed to a lower level than what was generally accepted 10-15 years ago, however, the producer must have extreme faith in the planter and its adjustment, field-specific planting situation, seed quality, and environmental conditions after planting. From a crop insurance perspective, it is difficult to agronomically justify less than 2 seeds/row-ft in 40-inch rows (about 26,000 seeds/acre) as a best management practice in dryland cotton production.

Cotton has a remarkable capacity to compensate yield across a fairly wide range of plant populations. Recent seeding rate studies have indicated that within the FINAL plant stand range of 1.5 to 4.5 plants per row-ft. in 40-inch rows, lint yield can remain reasonably unaffected. However, how a producer gets from a seed drop rate to a final plant stand can be a treacherous journey. Assuming that good soil conditions are present, and an excellent vacuum planter is used to control seed distribution both down the row and in planting depth, a range of 2-4 seed per row-ft. in 40-inch rows (about 26,000 to 52,000 seeds/acre) is probably acceptable. Under dryland conditions, the low end may be targeted. If poor planting conditions (such as low seed quality, marginal soil moisture in the seeding zone, a large amount of crop residue which may affect seed to soil contact, lack of precision planting equipment, or poor forecast conditions) exist, it may be more important to increase the seeding rate. If a low seeding rate is used, the producer must have high confidence in the seed quality and planter precision/adjustment.

Oklahoma Boll Weevil Eradication Organization

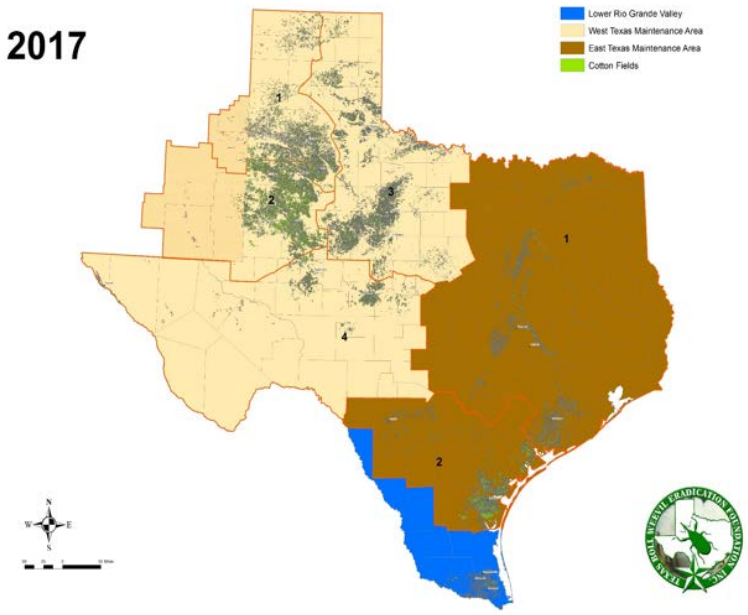
Brenda Osborne, Director of the Oklahoma Boll Weevil Organization, based at Altus, provided the information below. Eradication of the boll weevil across most of the U.S. Cotton Belt, and in the state has been very successful and is a major contributing factor to the continued profitability of cotton 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. 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.

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.



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.

Oklahoma Cotton Denim Ball April 27, 2019

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