



Cotton Comments

OSU Southwest Oklahoma Research and Extension Center
Altus, OK



June 30, 2017

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Crop Update

The 2017 cotton planting window is now closed for the state. Overall, it has been a fairly challenging start for many producers, but we believe the overall crop is in good condition. We now have cotton ranging in development from cotyledon stage up through the late squaring stage. Earlier planted irrigated cotton is progressing rapidly toward bloom. Producers with earlier planted irrigated cotton have been or will soon be cranking up irrigation systems. The Lugert-Altus Irrigation District released irrigation water last week, but the weekend's excellent rainfall resulted in a stand-down for a few days. In many dryland fields, the recent rainfall has been beneficial to fill in stands after high winds dried out soil in the seed zone behind the planters. Some areas that have not received a behind-the-planter rainfall are struggling to obtain good stands. Producers are continuing weed control operations, shaping beds for furrow irrigation, and early season insect management.

The USDA-National Agricultural Statistics Service released the 2017 Planted Acreage Report today. According to NASS, they are projecting 470,000 planted cotton acres in the state in 2017. For the state, this is a 55% increase compared to last year's planted acres, which were 305,000. Total upland cotton acres in the U.S. were estimated at just under 12 million, up about 20% compared to 2016. If we have a good to excellent production season in the state, the bale volume could once again challenge ginning infrastructure.

We have producers who are new to cotton and some who have planted cotton for the first time in many years. Boll weevil eradication 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 challenging 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. We all need to do our part in keeping this pest from resurfacing in our state. Some new cotton producers may be unaware of this ongoing program. It is important for producers who are not familiar with this program to contact the Oklahoma Boll Weevil Organization to make sure their new fields are properly identified and trapped. **For more on this see the section near the end of this newsletter.**

Plant Growth Regulators – Updated Handout

With the excellent cotton in some areas where adequate moisture has been encountered, it will be important to be on point concerning the use of plant growth regulators. Mepiquat-based (such as Pix Plus, Mepex, Mepichlor, Mepiquat Chloride, Mepex GinOut, Stance, and others) plant growth regulators (PGRs) have been around for many years. Companies are constantly enhancing formulations, but the main active ingredient in nearly all of these products is mepiquat chloride. A stand-alone publication has been updated which includes a list of newer varieties, their growth habits, and potential PGR management concerns.

[Click here for Cotton Plant Growth Regulators – Producer Handout](#)

Plant Monitoring

A considerable amount of cotton has begun to square and normally it takes about 21 days for a pinhead square to develop into a bloom. Retaining early fruit is an important component of managing for earliness. During the pre-bloom period, we like to see at least 75-85% square retention. Hopefully well maintained fields will retain nearly 100% of pre-bloom squares. Monitoring fruiting is an important management consideration. First position fruit is very quickly counted, and is generally adequate for “getting a handle on the crop” (see Figure 1). It will be important to check fields for nodes above white flower (NAWF) at early bloom to assess the yield potential and vigor at that time. At early bloom, up to 80% of the harvestable crop will be on the plant in the form of squares and blooms. We like to see at least 85% square retention going into the first week of bloom. Plant mapping can be used to help monitor the progress of the crop and determine some important crop factors.

Important plant mapping data at early bloom are:

1. Total 1st position squares present and missing: (retained squares / total square sites = % square retention). Square retention goal is 75 - 85% 14 days after early bloom.
2. Total 1st position bolls present and missing: (retained bolls / total boll sites = % boll retention)
3. Nodes above white flower (NAWF). To determine NAWF see Figure 2.

Nodes above white flower at first bloom gives an indication of crop vigor and yield potential. Typically, NAWF should be high at first bloom and then decrease as the boll load ties down the plant, and mainstem node production rate slows or ceases. Greater than 8 NAWF could be considered excellent, 6-7 – reduced yield potential possible unless adequate irrigation is quickly initiated or rainfall is obtained, 4-5 or less - cutout imminent on more determinate varieties. Some fields that are stressed for moisture may have a short bloom period due to few NAWF at early bloom, unless timely rainfall

or irrigation is obtained. It will be important to track NAWF averages weekly for each field, as key management decisions later in the season can be assisted if the hard cutout date is known.

Figure 1. Early bloom plant mapping using first position fruiting sites.

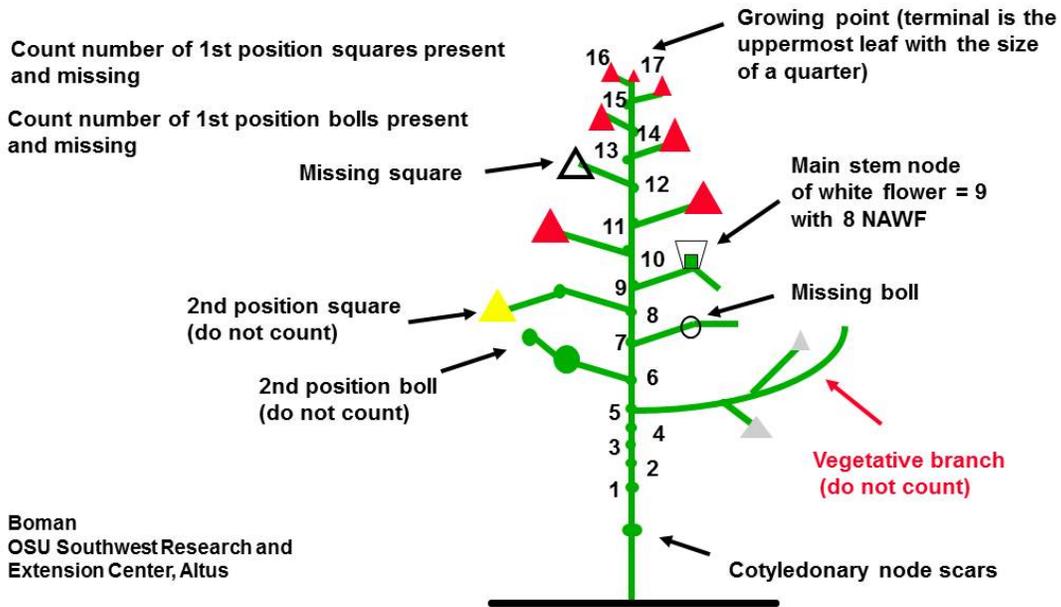
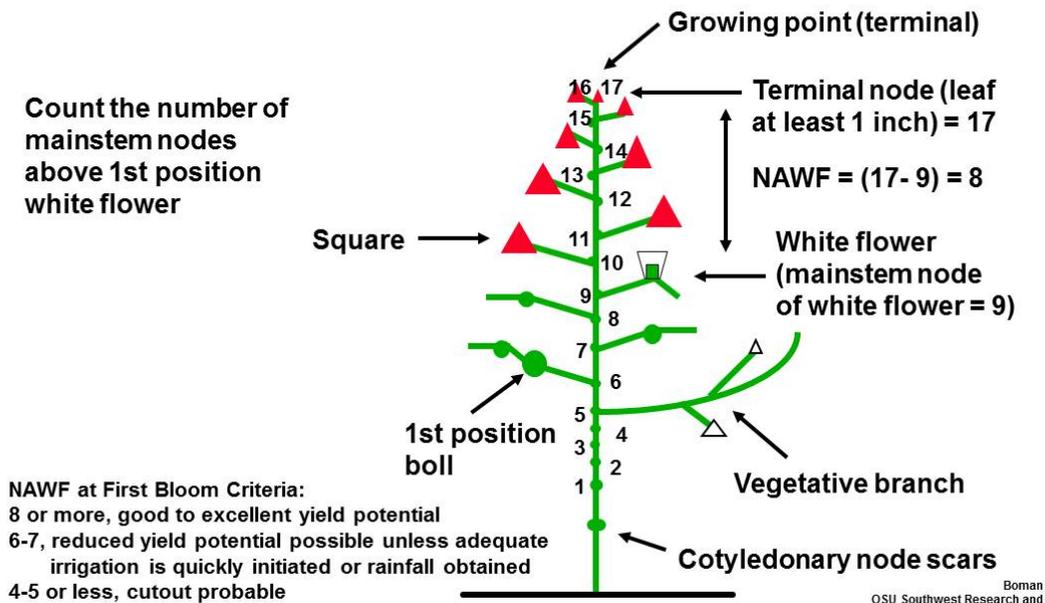


Figure 2. Nodes above white flower at early to mid-bloom.



[Click here for a publication on Monitoring Cotton Pre-Bloom Fruiting In Oklahoma.](#)

[Click here for a publication on Monitoring Cotton Post-Bloom Fruiting in Oklahoma. \(This publication discusses the importance and utility of tracking nodes above white flower.\)](#)

[Click here for a Nodes Above White Flower Tracking Form.](#)

Nitrogen Fertility

A one-bale per acre cotton crop will remove about 45 lb of actual N per acre, but due to inefficiencies in uptake and in the soil, about 50 lb N/acre are actually required. Recently, the OSU recommendations have been reduced from 60 lb N per bale of yield goal to 50 lb N per bale. For a copy of the OSU Fact Sheet where this is discussed and justified, use the link below.

[Click here for Cotton Yield Goal – Nitrogen Rate Recommendation PSS2158](#)

It is important to not over fertilize with N. This is due to the fact that it makes late cotton more difficult to manage on the back side of the season and may complicate earliness and harvest aid performance. Some late-season insect problems, such as aphids, can be exacerbated by high N status plants, and incidence of Verticillium wilt may be increased. Excessive N in general can also result in delayed maturity with corresponding decreases in maturity of the fiber (micronaire). I seriously doubt that any high capacity irrigated field really needs more than about 175 total lbs N/acre for yields up to four bales/acre. That amount would also include any preplant residual nitrate-N to the 18-24 inch depth as well as from irrigation water. If irrigation water contains 10 ppm nitrate-N and 12 acre-inches are applied, this will provide 27 lbs N/acre to the crop during irrigation. Producers with alluvial aquifers such as the high nitrate Tillman Terrace should have their irrigation water tested and adjust fertilizer N rates accordingly. For a handout on the amount of N supplied by various irrigation amounts and water nitrate-N concentrations, use the following link.

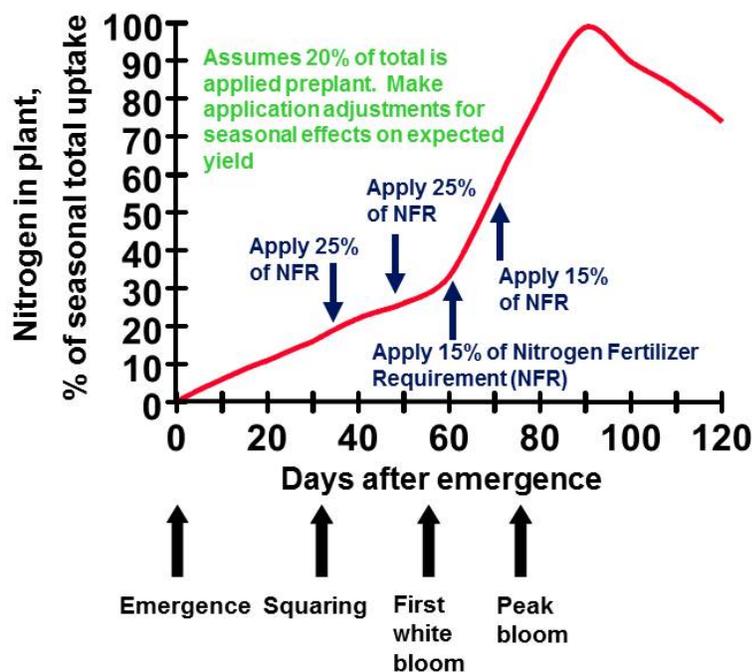
[Click here for Nitrogen Amount in Irrigation Water](#)

The amount of organic residue of the previous crop is also important and will potentially adversely affect nitrogen availability. In no-till fields with a large amount of crop residue the N rate should be increased by 20 to 30 lbs of N per acre when fertilizer is surface applied. This will compensate for the N tied up in the residue due to immobilization. For those producers who have dryland cotton with optimism for good yield potential, fertilization should be performed soon. One way to accomplish this is to sidedress urea-ammonium nitrate (UAN - fluid 32-0-0) fertilizers as early as practical (but prior to bloom), and take care to minimize root pruning during knife application about 4-5 inches deep about 8 inches or so off to the side of the row. Applications could also be made in the furrow, but it is important to recognize that crop rooting will have to extend quite a

ways toward the furrow for uptake. If 32-0-0 is dribbled in the furrow, make sure to keep the fertilizer off the young plants, as fertilizer burn damage can be expected. Solid urea (46-0-0) can be broadcast applied. Rainfall or irrigation will be required to provide activation of any fertilizer application. If no rainfall occurs, no fertilizer uptake can be expected.

Fertigation of 32-0-0 is a practical application method especially in center pivot and subsurface drip irrigated fields. This results in lower application cost. If a pivot rigged with spray nozzles has marginal water quality and extremely hot, dry conditions are encountered, then some salt burn may be encountered on foliage. To obtain maximum utilization of applied N, the total amount of N should probably be injected between first square and peak bloom. This type of N management fertigation scenario has been used and validated for several years at the Texas A&M System research facilities at Lamesa AG-CARES and Halfway Helms Farm using alternate furrow LEPA irrigation. Figure 3 shows a typical N uptake curve for cotton and corresponding crop development stages. Suggestions for applications of approximate percentages of total N are also shown.

Figure 3. N fertigation strategy.



A knifing rig fitted with coulters would be a good way to accomplish N fertilization in fields with center pivots if fertigation injectors and tanks are not available. Apply the fertilizer to the side of the bed for fields with center pivots. For producers who are not injecting N fertilizer into their sub-surface drip irrigation systems, place the coulters to the side of the bed in the furrow with the drip tape, being extremely careful not to damage the tape. Since most drip tape has been placed 10-14 inches or so deep, placement of N fertilizer 4-5 inches deep should suffice.

Many producers may be tempted to cut fertilizer use by a certain percent or to use a gallon per acre of this or gallon per acre of that to replace a sound fertilizer program. Benefits from low rates of foliar fertilizers are questionable unless there is indeed a micronutrient deficiency and the product applied contains the deficient element. The cotton plant has a physiological need for nutrients. These nutrients have to come from somewhere if good to excellent yields are to be expected. If one does the math concerning what some of the "gallon per acre" products can supply, then it is fairly easy to determine that these products will not meet the full nutritional needs of the crop. And they could be very expensive when comparing the "program price" with how many pounds of N the same money could buy using conventional fertilizers. If good to excellent yields are obtained after cutting back on a recommended fertilizer management program, then the producer is actually "writing checks on the checking account" in the soil. If no deposits are made over time, then a shortage of fertility will occur and yield will be adversely affected.

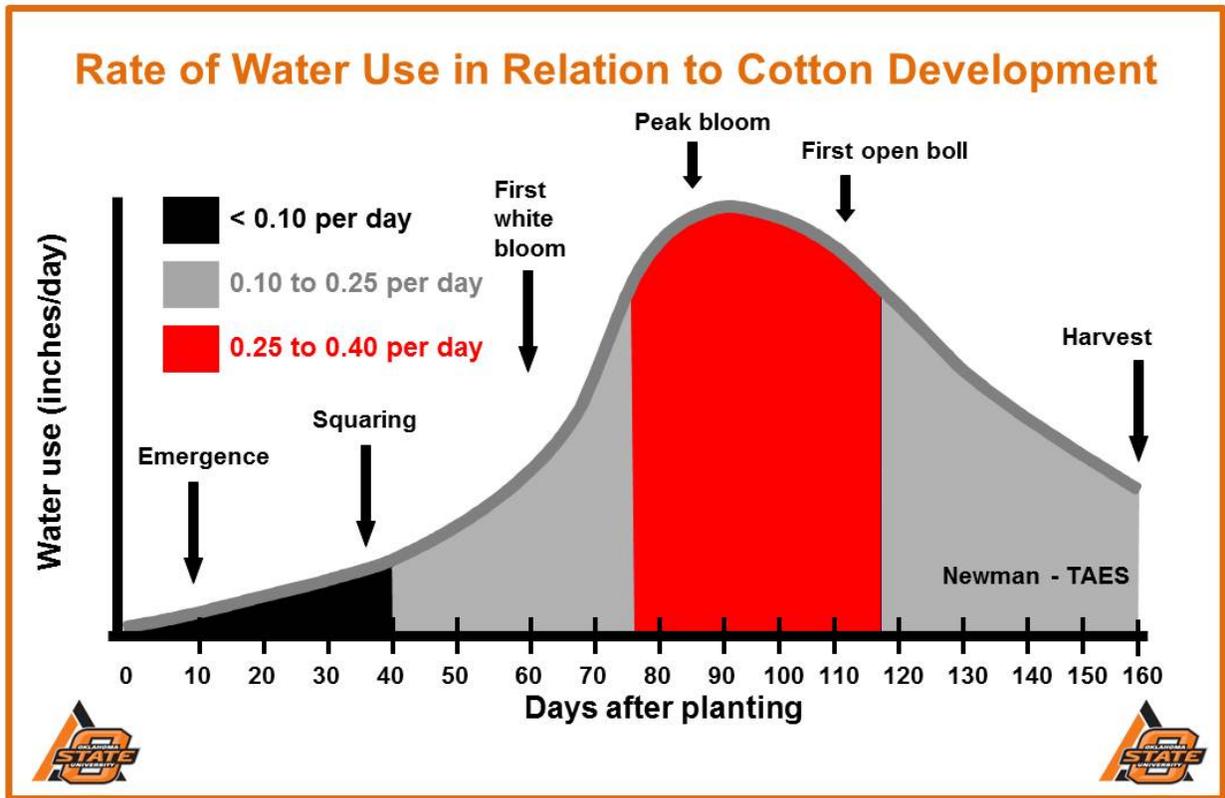
Irrigation Requirement

Many producers 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. A while back Dr. Jason Warren and I assembled a factsheet which provides considerable information pertaining to cotton irrigation management and concerns.

[Click here for PSS-2406 Understanding Cotton Irrigation Requirements in Oklahoma.](#)

Crop Water Use Patterns

Seasonal water (combined rainfall and irrigation) 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.

Crop Evapotranspiration

Crop ET 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 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. 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 the specific 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. Saline irrigation water may require the application of a “leaching fraction” to reduce soil salinity. This means that irrigation in excess of crop ET (“over irrigation”) would be necessary to reduce salinity accumulation in the profile. The amount of accumulated soil salinity in our area has likely been reduced by good rainfall over the past two years. Flushing of the bad constituents through the profile has likely been accomplished in many affected fields that had issues during the past several drought years. Hopefully water quality has improved due to recent shallow aquifer recharge.

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. 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](#)

RB

Insect Update

The growth rate is very good in cotton fields that have adequate moisture. Fleahopper control sprays should be initiated if the pinhead square stage has been reached. In areas where fleahoppers are a traditional problem a second application should be scheduled 10 days after first application. In new areas or areas where fleahoppers have not been widespread, scouting for the pest should be sufficient and control applications made if the insects are present. Heath Sanders reported high number of green stink bug nymphs in cotyledon cotton following recently harvested canola. Aphids are still being reported in some fields. Weekly scouting must be continued until termination of the crop.

Stink Bugs

Stink bugs in Oklahoma cotton were not a concern until the advent of Bt varieties. Transgenic Bt cotton resulted in fewer insecticide applications for control of lepidopterous pests and soon after, stink bugs were occasionally noted as damaging pests. Although not typically found in economically damaging populations in most southwestern Oklahoma fields, some areas do have issues.



Green Stink Bug

Photo courtesy <http://stinkbugsguide.net/>



Conchuela Stink Bug



Brown Stink Bug

The following information was taken from the Online Texas A&M AgriLife Extension Cotton Insect Management Guide, which is available here:

[Texas A&M AgriLife Extension Stink Bug Management Guide](#)

This website also provides action thresholds and chemical control suggestions for this pest. Stink bugs are shield-shaped, flat and vary in size around 3/8 to 5/8-inch in length, and are about one-half as wide as their length. While the adult brown stink bug is light brown in color, the green and southern green stink bugs are bright green and similar in appearance. They can be distinguished from one another by color of the bands on their antennae. The southern green stink bug has red bands while the green stink bug has black bands. The conchuela stink bug adult is dark brown to black with a red border and a red spot on the tip of the abdomen. The harlequin bug is primarily a pest of mustards and cole crops and will occasionally infest cotton. Adult stink bugs may live for several weeks. Stink bugs get their name from the foul smelling substance

they exude from glands on their thorax. This chemical smell is meant to deter predators and warn other stink bugs of danger. This scent gland also plays a role in females attracting mates.

The reason stink bugs appear to concentrate in one part of the field and not others is due to the female's egg laying habits. A single female may lay 300 to 600 eggs, in clusters of 30 to 80 eggs. Egg clusters appear as rows of pale-green, pink or white barrels laid primarily on the underside of leaves. Eggs will typically hatch in 2 to 4 days under ideal conditions, but may require up to 2 weeks when temperatures are cool.



Hatching southern green stink bugs

Photo courtesy Texas A&M AgriLife Extension

Stink bugs have piercing-sucking mouthparts and damage cotton by piercing bolls and feeding on the developing seeds. Their feeding activity usually causes small bolls to abort but can result in dark spots about 1/16-inch in diameter on the outside of larger bolls where feeding occurred. These dark spots do not correlate well with the wart formation on the inside of the boll to be used in scouting. There may be several spots on a boll without internal feeding. The external lesions are associated with wart-like growths on the inner carpal wall where penetration occurred. Seed feeding may result in reduced lint production and stained lint near the feeding site. Stink bugs are also known to facilitate the infection of boll rotting microorganisms. Because of their size, adults and fourth and fifth instar nymphs have the greatest potential for damaging bolls.

Oklahoma generally only has green and brown stink bugs that can cause economic damage in some areas. However all stink bugs are found in Oklahoma. Many products used to control stink bugs can be disruptive to beneficial arthropods, therefore, contact Extension personnel if a question arises.

Cotton Aphids



Photos courtesy of University of Arkansas

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](#)

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 now to curb future potential outbreaks of cotton aphids and spider mites. Click on the following link to better understand the role of beneficials to control cotton aphids.

[University of Arkansas Aphid Threshold and Putting Beneficial Insects to Work](#)

Also take into account the presence of other beneficial insects.



Lady Beetle larva



Lacewing larva

EPA Bifenthrin Review

Recently, we were alerted by John Sandbakken with the National Sunflower Association concerning an EPA review of bifenthrin insecticide. He stated:

July 7th, 2017 is the new deadline for making comments to EPA on the benefits that ALL pyrethroid & bifenthrin insecticides bring to your operation. To make your efforts easier, please go to: www.defendbifenthrin.com and click on the tab for growers, retailers, CCA's, Consultants' and more to either use the pre-formatted letter or list your own experiences with pyrethroid benefits for responsible pest control. Honest, individual comments are the best. The whole process will take no longer than 5 minutes. Some benefits you probably have seen are listed below:

- 1) Pyrethroids are highly effective and cost efficient*
- 2) Bifenthrin is essential for integrated pest management*
- 3) Flexible applications such as in-furrow, foliar and pre-emerge*
- 4) Broad-spectrum insect control*
- 5) Labeled for multiple crops and uses*
- 6) Low use rates*
- 7) Minimal applicator and handler toxicity concerns*
- 8) Growers rotate bifenthrin with other insecticides to prevent insect resistance*

If you have questions concerning insect control issues, please call the OSU Southwest Research and Extension Center or contact your local OSU County Extension Educator.

JG

Field Surveys – Week Ending June 30, 2017

Location	Date of planting	Plant Stage	Insects	Comments
Blaine Irrigated Cotton Inc Enhanced Variety - Schantz	May 26	Match head squares	None detected	Good
Blaine Irrigated Dow Innovation - Schantz	May 26	Match head squares	None detected	Good
Caddo Irrigated OVT – OSU Caddo Research Station	May 30	Pinhead – Match head squares	None detected	Good
Jackson Irrigated DT RACE – Darby	May 15	Match head squares	None detected	Good
Jackson Irrigated Bayer CropScience APT	May 24	Pinhead squares	None detected	Good
Jackson Irrigated OVT – OSU SWREC	May 24	Match head squares	None detected	Good
Jackson Dryland DT RACE - Abernathy	June 7	4 th true leaf	None detected	Fair - Good
Jackson Irrigated Cotton Inc Enhanced Variety - Abernathy	May 9	1/3 grown squares	None detected	Good
Jackson Irrigated Innovation-Abernathy	May 10	1/3 grown squares	None detected	Good
Jackson Irrigated PhytoGen Innovation Trial – OSU SWREC	May 24	Match head squares	None detected	Good
Jackson Irrigated Entomology Trials – OSU SWREC	May 8	1/3 grown squares	None detected	Good
Tillman Irrigated DT RACE – Nichols	May 12	1/3 grown squares	None detected	Good
Tillman Dryland OVT – OSU Tipton Valley Research Center	June 13	2 nd true leaf	None detected	Fair
Tillman Dryland DT RACE - White	June 12	2 nd true leaf	None detected	Good

DT RACE – Dicamba Tolerant - Replicated Agronomic Cotton Evaluation Trial (Oklahoma Cooperative Extension)

OVT – Official Variety Trial (Oklahoma Agricultural Experiment Station, Altus, Tipton, Fort Cobb)

APT – Agronomic Performance Trial

Attention New Cotton Producers: Oklahoma Boll Weevil Eradication Organization Concerns for 2017 Season

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 challenging 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. Some new cotton producers may be unaware of this ongoing program. John Henderson, Director of the Oklahoma Boll Weevil Organization, based at Altus, provided the information below.

The Oklahoma Boll Weevil Eradication Organization (OBWEO) is preparing for the upcoming 2017 cotton season. It is our responsibility to ensure the continued success of this program. With all of 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 the past several years, we need you to provide to us the legal descriptions of these new cotton fields.

There is a boll weevil eradication assessment for harvested cotton acres. This assessment will be determined in September of 2017. For reference purposes, this assessment was \$2.50 per harvested acre in 2016.

The trapping density this year is one trap per 320 acres. In areas where planted cotton acreage density is high, not all fields will actually have a trap near it. In other areas where individual fields may be more isolated, these fields will need to be trapped.

For the following counties including Tillman, Cotton, Comanche, Atoka, Bryan, and Stephens, please contact John Lamb at 580-335-7760 (office) or 580-305-1930 (cell).

For all other counties in the state of Oklahoma, contact John Henderson at 580-477-4287 (office) or 580-471-7962 (cell).

For any other questions contact Brenda Osborne at 580-471-7963 or Amanda Montgomery at 580-550-0050.

Upcoming Meeting

July 6 - Carnegie Co-op Gin In-Season Management Meeting. For more information contact Jeannie Hileman at 580-654-1142 or David Nowlin, Caddo County Extension Educator at 405-247-3376.

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Editor

Randy Boman

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