



Cotton Comments

OSU Southwest Oklahoma Research and Extension Center
Altus, OK

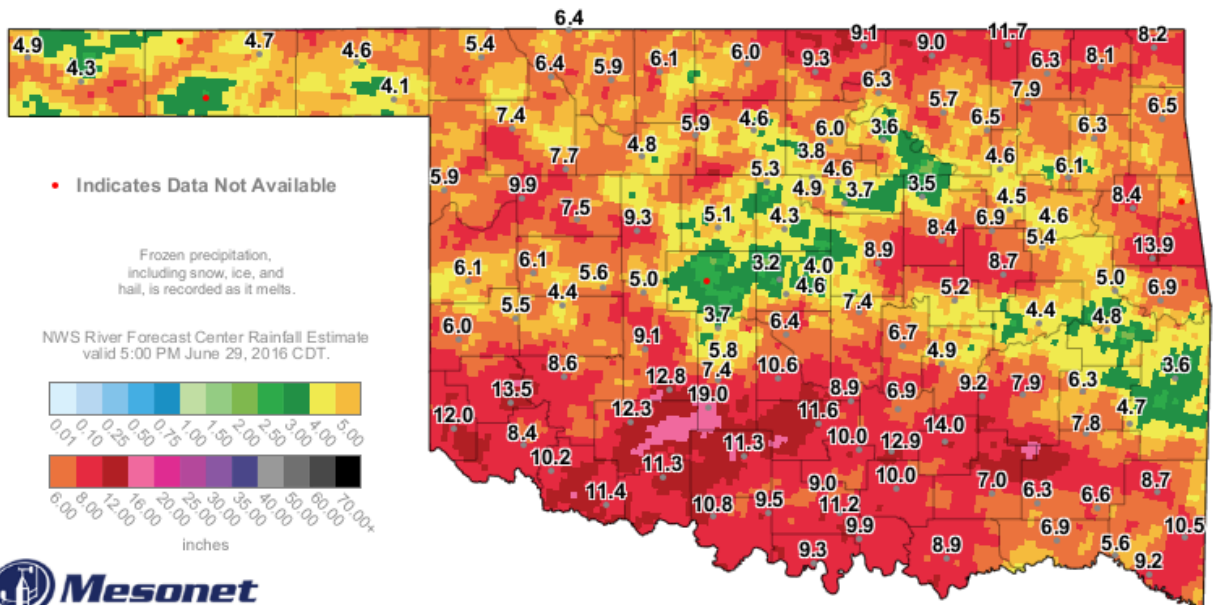


June 30, 2016

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Current Situation

The 2016 planting season has closed. A quick glance at the Oklahoma Mesonet's previous 60-day rainfall accumulation graphic shows that most major cotton producing counties have been blessed with abundant rainfall during that period. Jackson, Tillman, Harmon, Greer, and much of Kiowa have received between 8 and 13.5 inches. Beckham and Washita Counties have both had less, but many rainfall events have been timely with respect to planting date. For this time of year, the moisture situation is really good news.



60-Day Rainfall Accumulation (inches)

6:25 PM June 29, 2016 CDT
Created 6:29:20 PM June 29, 2016 CDT. © Copyright 2016

May temperatures encountered some significant swings, but overall, irrigated cotton planting began in earnest in a timely manner around May 10. Some fields were drier and needed precipitation, which occurred mid-month. There was a run of wet conditions which delayed planting of some fields until the last week in May and into early June. Planting of dryland fields, especially in much of Tillman County was pushed later into June, with some growers getting caught by locally high rainfall events.

As noted below in the IPM program field scouting update, cotton ranges at this time from recently planted dryland in the 5th leaf stage to 1/3 grown squares the early planted irrigated. Some very early planted fields are on track to have blooms by the end of the first week in July. Most irrigated acreage that I have seen is in good to excellent condition at this time.



Caddo Research Station, Fort Cobb, No-Till Cotton Official Variety Trial – June 29.

With the good to excellent rainfall that we have encountered in many counties, we are set up for great yield potential for our dryland. Once again we will have to have timely rainfall in July and August to have a “bell ringer” dryland crop. Most of our cotton protected by ground cover was in good to excellent condition, with large leaves and high growth rate.



June 28th brought a major thunderstorm event from the north which had winds approaching 70 mph in some places in western Oklahoma. This storm system resulted in “ragging up” of cotton in some locations. There is no doubt that small, unprotected cotton (without cover) was damaged in high-wind affected areas. It is unknown at this time the extent of this potential damage.

Plenty of alternate hosts that can harbor cotton insect pests are also growing across the landscape. Producers need to keep an eye on cotton growth stage and be ready to make topical applications for fleahopper pests. Cotton fleahoppers may be more problematic this year due to abundant alternate hosts in many areas.

Weed Control

Weed control has been an ongoing struggle for many producers. Hopefully with Roundup, Liberty, Warrant, Dual Magnum and Staple available for application, growers can win this battle. Shane Osborne’s discussions in last year’s newsletters are still pertinent. Those are included below.

Glyphosate Issues

Multiple locations within Oklahoma now have reports of glyphosate resistant Palmer amaranth. The best way to manage this is to use multiple herbicides with varying modes of action. Do NOT rely solely on glyphosate as your only weed control option in-season. It is recommended that producers try to incorporate at least two additional different modes of action besides glyphosate. If you already have confirmed resistance on your farm, then that should probably change to three modes of action besides glyphosate and this generally includes multiple overlapping residual herbicide applications beginning before planting and extending through bloom.

Page 18 of the Roundup Power Max label (in the section for Roundup Ready Flex cotton) provides a list of herbicide products that can be tank mixed and applied post emergence over-the-top (OT), and a list that can be tank mixed and applied using post-directed or hooded sprayers in Roundup Ready Flex cotton varieties. Page 18 also provides the maximum application rates for Roundup Ready Flex cotton. The total for all in-crop applications (from ground cracking through 60 percent open bolls) is 4 quarts per acre. Caution should be taken to not allow larger weed size to cause yield losses from early season competition. In order to provide optimal control and help prevent weed resistance, do not apply rates below label recommendations.

Staple Herbicide-Glyphosate Herbicide Tank Mix and Staple Alone

Significant label restrictions for rotational crops are noted when Staple applications are made. These crops include but are not limited to wheat; field corn, corn grown for grain or silage; grain sorghum; peanuts; soybeans. These restrictions do not apply for fields in continuous cotton production.

According to the label, in Oklahoma, Staple LX herbicide at 1.3 – 3.2 oz/acre can be added to the first OT application of glyphosate at 24-32 oz/acre (of 4 lb a.i./gallon glyphosate product) to enhance control of several annual weed species including hemp sesbania, morningglory (entireleaf, ivyleaf, pitted, scarlet/red), cutleaf evening primrose, prickly sida and Palmer amaranth (pigweed). For other glyphosate formulations, rates should be adjusted proportionally to the active ingredient content of the formulation.

For higher residual control, a single application of ONLY Staple LX can enhance morningglory control at rates of 2.6 to 3.8 fl oz/acre of product. The label states “Apply Staple LX at 2.6 to 3.8 fl oz product/A for control of the weeds listed in ‘Weeds Controlled’ section. Use the higher rate for arid growing conditions or where weed infestations are severe. All rates are broadcast. Use proportionately less for band applications. Weed size, spray volume, adjuvant and environmental conditions (temperature) at application are very important for effective control. For optimum burndown, try to avoid applications in low humidity and extreme heat. Rainfall or sprinkler irrigation (0.5 to 1”) after application is required for residual control. For more information refer to the Staple LX label and contact your DuPont representative.

Liberty 280 SL Herbicide on Liberty Link Cotton

More varieties containing the LibertyLink trait are available this year. These varieties have excellent full-season tolerance (both crop size and rate) to Liberty herbicide, but applications must cease at 70 days prior to harvest to comply with the designated pre-harvest interval (PHI).

Although this herbicide system (LibertyLink varieties and Liberty herbicide application) works well against many problem weeds including morningglory, it should be noted that there are two critical issues surrounding this system. One issue is weed size. Typically, most weeds should be targeted at very small size (see label for 80 plus specific broadleaf species and about 30 grass species and size restrictions). An additional 25 plus species can be either controlled or suppressed with the 29 oz/acre rate or by two sequential applications (see label for specifics).

The other important issue is thorough spray coverage. Since this is a contact herbicide, it is critical that outstanding spray coverage be obtained. The label states that “uniform, thorough spray coverage is important to achieve consistent weed control. Select nozzles and pressure that deliver MEDIUM spray droplets as indicated in the nozzle manufacturer’s catalogs and in accordance with ASAE Standard S-572.” It is NOT

recommended to use air induction, raindrop nozzles, or flood-jet tips. A minimum total spray volume of 15 gallons/acre is required. For dense weed/crop canopies, a spray volume of 20 to 40 gallons/acre is required for thorough coverage. Also, ground speeds should not exceed 10 mph. Ammonium sulfate at 17 lb/100 gallons of spray mix is also recommended.

The label also states that “For cotton tolerant to Liberty 280 SL herbicide, Syngenta’s Dual Magnum or DuPont’s Staple herbicide may be tank-mixed with Liberty 280 SL herbicide and applied over-the-top post-emergence to enhance weed control and/or provide residual control.”

Liberty 280 SL has a label which allows some application flexibility. If producers opt to use a 29 ounce/acre first application, then two additional sequential applications may be made at the 29 ounce/acre rate (for a total of 87 ounces/acre per season). The Liberty 280 SL label will allow producers to apply up to 43 oz/acre in a single first application, however this reduces the seasonally allowed total to 72 oz/acre (or only ONE more sequential 29 ounce/acre application, with noted rotational restrictions. Always read and follow label directions.

Dual Magnum Herbicide (S-Metolachlor)/Glyphosate Tank Mixes

Dual Magnum (Syngenta's brand of S-metolachlor) has a label for Touchdown or Roundup/Dual Magnum postemergence over-the-top tank (OT) mixes for use on Roundup Ready cotton. This product has a rotational restriction of 4.5 months for wheat, barley, oats, and rye. For alfalfa this time is 4 months. Refer to the label for specifics. Dual Magnum should be tank mixed with the supported labeled glyphosate product for residual control of pigweed, annual grasses and yellow nutsedge at 1 to 1.33 pt/acre. According to Syngenta personnel, OT tank mixes of Dual Magnum with glyphosate (Syngenta's Touchdown and Monsanto's Roundup brands) in Roundup Ready Flex cotton can be applied from emergence through the 100 day preharvest interval (PHI) as long as it's before August 1st. For Dual Magnum, a 100 day PHI for postemergence OT or 80 day PHI for post-directed applications is required. Dual Magnum plus glyphosate may be post directed anytime up to the PHI. Also, it is suggested that ammonium sulfate, spray adjuvants, surfactants, fertilizer additives, or other pesticides NOT be included in the spray mix as phytotoxicity/crop injury may occur with the Dual Magnum formulation. The label states that “postemergence OT applications of this tank mixture may cause temporary injury in the form of necrotic spotting to exposed cotton leaves which will not affect normal plant development. Potential for reduced weed control from supported glyphosate materials could exist in extremely hard water areas due to the exclusion of ammonium sulfate. Best results are obtained when the Dual Magnum is incorporated 24 hours after application using 0.5 to 1 inch of irrigation water. There is a premix formulation of glyphosate and S-metolachlor (Dual Magnum) available called Sequence. For specific questions concerning any of these applications contact your local Syngenta representative.

Warrant Herbicide

Warrant herbicide (acetochlor) is another option for residual control of small-seeded broadleaves and annual grasses (according to the label - pigweed species, carpetweed, purslane, prairie cupgrass, red sprangletop, witchgrass). It may be tank-mixed with glyphosate and applied postemergence over-the-top of Roundup Ready Flex cotton. Since Warrant only provides residual control (has no postemergence activity) the glyphosate is required to control weeds already emerged. Make sure that the glyphosate rate is appropriate for the weed species and size at application. This tank-mix should be made to 2-4 inch weeds and before the weed height and/or density becomes competitive with the crop. Although applications may be made once cotton has fully emerged until first bloom, the optimum application timing is when cotton is in the 2-3 leaf stage. It may be applied again when cotton is in the 5-6 leaf stage if directed to the soil. Rates range from 1.25 to 2.0 quarts per acre depending on soil type (consult label). Do not make postemergence surface applications using sprayable fluid fertilizer as the carrier because severe crop injury may occur. Some crop rotation restrictions also apply. Wheat can be planted 4 months after application, and the following season, most other agronomic crops we produce can be planted. See the Warrant label for more information.

Prowl H2O Herbicide

Prowl H2O herbicide may be applied as a broadcast over-the-top postemergence application in cotton for small-seeded broadleaf and annual grass control. Prowl H2O will not control weeds already emerged at the time of application, therefore the use of a postemergence herbicide treatment is required to control emerged weeds. Prowl H2O may be tank-mixed with Roundup PowerMax and applied over-the-top of Roundup Ready Flex cotton or tank-mixed with Liberty and applied over-the-top of Liberty Link cotton between the 4th and 8th leaf stages of growth. Adequate rainfall or overhead irrigation is required after application for herbicide activation. Wheat may be planted 4 months after an application of Prowl H2O, except under the following conditions: If less than 12 inches of rainfall or overhead irrigation was received between application and rotational crop planting, wheat should not be planted before 12 months after a spring application of Prowl H2O.

Plant Growth Regulators

With the vigorous growth and excellent cotton in nearly all areas, 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.

Mepiquat chloride (MC) reduces production of gibberellic acid in plant cells that in turn reduces cell expansion, ultimately resulting in shorter internode length. MC will not help the plants compensate for earlier weather or disease damage. It does not increase growth rate, it essentially reduces plant size by reducing cellular expansion. It may, under good growing conditions, increase fruit retention, control growth and promote earliness. MC should not be applied if crop is under any stresses including moisture; weather; severe spider mite, insect, or nematode damage; disease stress; herbicide injury including 2,4-D damage due to drift or from tank contamination; or fertility stress. Results from replicated testing indicates that a 5 to 20% reduction in plant height (compared to the control) can be obtained from 16 oz of 4.2% a.i. MC material applied in up to 4 sequential 4-oz/acre applications starting at match head square (MHS) and ending at early bloom. It is generally possible to reduce about one node from the growth of the main stem, which can result in about 3-5 days earlier cutout. **Low rate multiple applications beginning at MHS have generally provided more growth control than higher rate applications made at first bloom or later.** Results have shown that statistically significant increases in yields are generally not obtained, but excellent growth control is provided. Many times we don't see a lot of differences in performance of these products in terms of growth control.

Available Products

Mepiquat based products have been around for many years. Several PGRs based on the same active ingredient are now available. Refer to the product labels or contact Extension personnel or company representatives or to ensure you understand the correct use of these products.

Mepex, Mepichlor, Mepiquat Chloride and other generics
4.2% active ingredient (a.i.)/gallon or 0.35 lb/gallon a.i.

Mepex Gin Out

4.2% a.i./gallon or 0.35 lb/gallon a.i. with 0.0025% Kinetin (a cytokinin).
Cytokinins are plant hormones that promote cell division and growth and delay the senescence of leaves. This product has use guidelines similar to other MC materials.

Pentia

This product contains mepiquat pentaborate, which has a different molecular structure than MC. 9.6% a.i./gallon or 0.82 lb/gallon a.i. Typically Pentia has similar use rates when compared to 4.2% MC products.

Stance

Bayer CropScience's Stance product is an MC based PGR. It is a 4 to 1 ratio of MC and cyclanilide (0.736 lbs/gallon MC plus 0.184 lbs/gallon cyclanilide). Cyclanilide is an auxin synthesis and transport inhibitor. Auxins are generally referred to as compounds which have the capacity to induce cell elongation. The inhibition of auxins could reduce cell elongation and inhibit growth. Producers should be aware that the mepiquat chloride concentration in Stance is about twice as high as most of the other materials

we have become accustomed to applying, THEREFORE THERE IS A CORRESPONDING REDUCED RATE.

What to Expect From Application

Consistent yield increases have not been observed from any of the MC materials we have investigated. A good boll load will normally help control plant growth. Fields with poor early-season fruit retention, excellent soil moisture, and high nitrogen fertility status may be candidates for poor vegetative/fruitletting balance and should be watched carefully. Growers who have planted varieties with vigorous growth potential and have fields with excellent growing conditions may need to consider PGR application. For brush roll header stripper harvest, 28-32 inch tall plants optimize stripper-harvesting efficiency. If possible, target a maximum plant size of about 32 inches for varieties under high input irrigation (sub-surface drip or high capacity pivots). If plants get larger than 36 inches, harvest efficiency and productivity drop significantly. For spindle picker harvesters, larger plant size for high yielding cotton is not as much of a harvesting consideration.

Application Rates and Production Environment

Determination of application rates is generally more "art" than "science" for these products. Applications should begin when 50% of the plants have one or more matchhead squares (see specific product label for more information). It is best to make prebloom applications if conditions favor excessive growth for an extended time period. **Many varieties are being sold that tend to have aggressive growth potential. Growth control for these types will be maximized by timely MC applications beginning at the prebloom stage.** Also, monitoring high growth potential varieties and fruit retention will be important. If a high growth potential variety has been planted and has encountered low fruit retention, then the MC rate should be increased, especially under high water, fertility, and good growth conditions. **Some newer varieties may need aggressive management under high irrigation capacity and/or if heavy rainfall conditions are encountered. The situation that has arisen due to the release rate of new genetics is challenging – there are numerous new varieties being sold. Visit with your seed company representative to determine which new varieties should be watched closely for MC needs under field-specific conditions. They have the most experience with the newer varieties, especially under late planting conditions experienced in some areas.** Sequential applications can be adjusted to meet subsequent crop conditions and growth potential.

RB

Early Season Pest – Fleahopper

This year the crop is developing in some areas exceedingly well whereas a few fields seem to be "slow". Several factors are impacting these problem fields. Hopefully with the recent rainfall and normal temperatures will enhance cotton growth. Most scouting program fields indicated that thrips are no longer an issue because of growth stage (5th true leaf). Conversations with chemical distributors and consultants have indicated that

no problems are generally occurring. However, due to the lateness of planting of many dryland fields, those should be watched. As the crop reaches the squaring stage, the next pest to be concerned about is the cotton fleahopper.



Cotton Fleahopper

Since the introduction of Bt cotton and boll weevil eradication the cotton fleahopper has become the number one pest in Oklahoma. The cotton fleahopper usually feeds on young succulent weeds such as croton, goatweed, and horsenettle in early spring. These weeds also provide an overwintering site for eggs. As the weeds mature, adults migrate to cotton which is beginning to develop pinhead squares. Fleahoppers insert their sucking mouthparts into the small squares. These damaged squares later turn brown and are shed from the plant.



Photos courtesy Dr. David Kerns, LSU AgCenter.

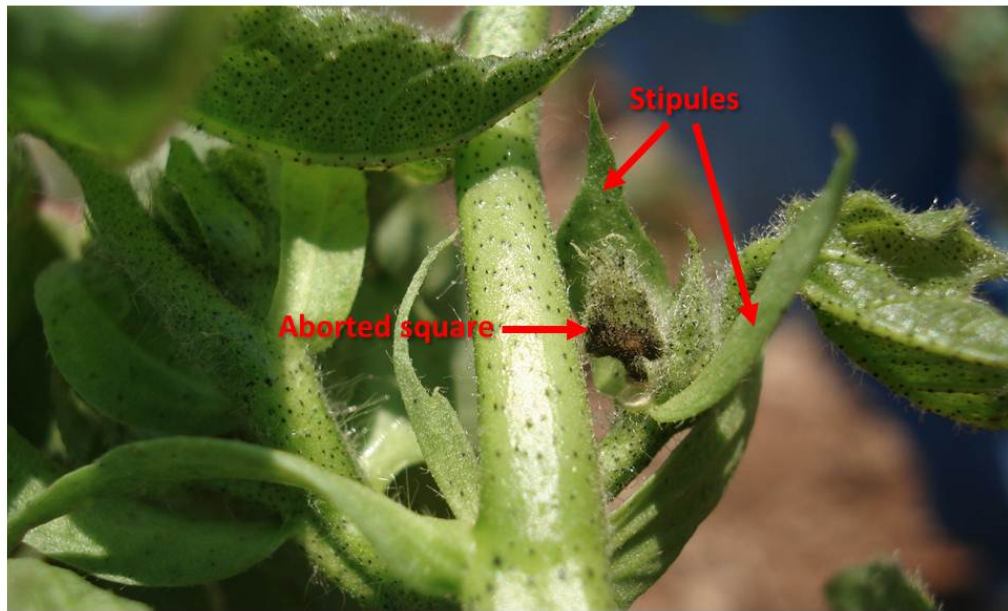


Photo courtesy of Shane Osborne

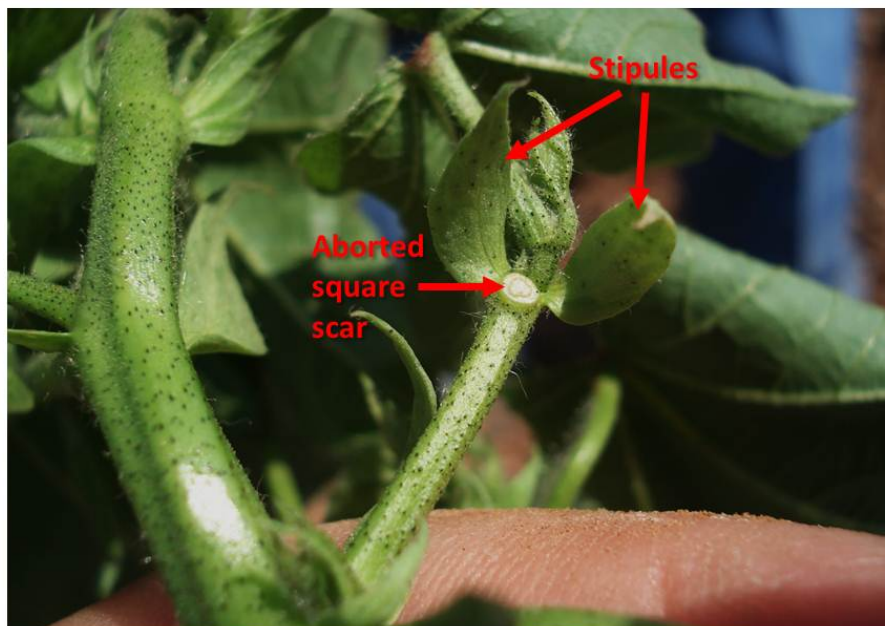


Photo courtesy of Shane Osborne



In addition to squares, the cotton fleahopper will also feed on other parts of the plant. If heavy infestations exist, new growth will be abnormal and whip-like in appearance. All stages of the life cycle will feed on the plant as long as it remains succulent. As cotton matures, these insects migrate to weeds or other host crops. In southwest Oklahoma, the highest population typically occurs in cotton in early August, although this is not generally a problem that late in the season.

The life cycle begins with the female placing her eggs into the plant tissue by means of an ovipositor. The eggs hatch in approximately 1 week, and small nymphs (which are similar to the adults, except for being wingless) undergo five molts before reaching the adult stage. Egg to adult takes approximately 3 weeks with six to eight generations per year. The cotton fleahopper adults are approximately one-eighth inch long, winged, and pale green in color. They are covered with small black spots and have four characteristic black spots near the wing tip. The nymphs are about one-twenty-fifth of an inch long, wingless, and pale green in color.

Numerous chemicals are registered for control of fleahoppers. In an ideal situation, fleahoppers should be controlled only when thresholds are exceeded in order to preserve beneficial insects since these will help control later occurring pests. Unless the cotton is extremely late, after July 25, control of cotton fleahoppers generally is not economical.

Spray decisions should be based on the squaring rate and level of cotton fleahopper infestation. Usually when cotton fleahoppers (adults and nymphs) reach or exceed 30 per 100 terminals and squaring rates begin to decline, treatment is justified. However, if cotton fleahopper numbers build slowly, fields can tolerate higher numbers before a reduction in squaring rate will occur. In most cases, fields will no longer be vulnerable to cotton fleahoppers once they begin to bloom.

Chemical control of cotton fleahoppers is a fairly easy to accomplish and several products provide good control. However certain chemicals may not be advantageous. Care must be taken to preserve beneficial arthropods that will help in controlling cotton aphids and spider mites. Flaring of these pests can be avoided by using products that are “softer” on beneficials.

The list of chemicals that control cotton fleahoppers includes Orthene (acephate), Bidrin, Intruder, Centric, Carbine, Lorsban, Steward, Lannate, Dimethoate, and various pyrethroids. Vydate has historically been a product of choice. However, due to manufacturing issues, it is not available at this time. Bidrin has a label allowing its use in cotton from emergence to prebloom, but you can't apply more than 3.2 oz/ac during this period. According to research conducted by Texas A&M AgriLife Extension at Lubbock, products least likely to flare secondary pests include Carbine, Bidrin, Steward and low rates of Orthene (acephate). Other insecticides such as Intruder and Centric won't flare aphids and are probably fine to use as well, but these have been implicated in flaring mites. Pyrethroids are typically **not** recommended for fleahopper control

because they tend to be very disruptive to beneficials and may flare aphids. Pyrethroids can also exacerbate bollworm challenges in non-Bt cotton.

In other pest news, sugarcane aphids have been confirmed in grain sorghum in Tillman, Kiowa, and Jackson counties. Thanks to consultants Jerry Stoll and Andy Harrison for notifying this office. Weekly scouting of all fields is required. Click on the following for a scouting guide provide by the Texas A&M Agrilife [Sugarcane Aphid Scouting Guide](#).

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, 2016

Location	Date of planting	Plant Stage	Insects	Comments
Blaine Irrigated Cotton Inc Enhanced Variety - Schantz	May 26	Matchhead squares	None Detected	Damage from recent wind event
Blaine Irrigated Dow Innovation - Schantz	May 26	Matchhead squares	None Detected	Damage from recent wind event
Caddo Irrigated OVT – OSU Caddo Research Station	May 26	Pinhead squares	None Detected	Fair
Harmon Irrigated RACE - Cox	May 27	Pinhead squares	None Detected	Good
Harmon Irrigated Bayer CAP – Horton	April 28	1/3 Grown squares	None Detected	Fair
Jackson Irrigated RACE – Darby	May 31	6 th True leaf	None Detected	Fair
Jackson Irrigated Dow Innovation - Darby	May 31	6 th True leaf	None Detected	Fair
Jackson Irrigated OVT – OSU SWREC	May 27	Pinhead squares	None Detected	Fair
Jackson Irrigated Dow Innovation - OSU SWREC	May 31	Pinhead squares	None Detected	Good
Jackson Dryland RACE - Abernathy	June 9	5 th True leaf	None Detected	Good
Jackson Irrigated Cotton Inc Enhanced Variety - Abernathy	May 27	Pinhead squares	None Detected	Good
Jackson Irrigated Entomology Trials – OSU SWREC	June 7	Pinhead squares	None Detected	Fair
Tillman Irrigated RACE - Nichols	June 6	6 th True leaf	None Detected	Damage from recent wind event
Tillman Dryland OVT - OSU Tipton Valley Research Center	June 8	6 th True leaf	None Detected	Damage from recent wind event

RACE – Replicated Agronomic Cotton Evaluation Trial (Oklahoma Cooperative Extension)

CAP – Cotton Agronomic Plot (Bayer CropScience)

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

Upcoming Meeting

July 13 – Carnegie Co-op Gin Summer Cotton Meeting

9:00 a.m. at the Carnegie Memorial Building

For more information contact:

Carnegie Co-op Gin – 580-654-1297 or David Nowlin – Caddo County Extension Educator – (405) 247-3376

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Randy Boman

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