FOCUS on South Plains Agriculture

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http://lubbock.tamu.edu/focus

Cotton Agronomy

Crop Update

The High Plains has generally experienced above normal high and low temperatures for the first half of June. Heat unit accumulations at Lubbock total 205 DD60s from June 1-12 vs. 185 for the long-term average. Based on the data from the CottonHeatUnits.com website, at Lubbock we are 140 heat units above our long term average from May 1 to June 12, or 29% above average. In terms of precipitation for the year (Jan 1 to June 12), we are currently 3.4" below average. However, at the time of this writing, we received 1.15" of rainfall at the Texas AgriLife Research and Extension Center overnight, which will put us a bit closer to the long term average. The system that brought this precipitation appeared on radar to be widespread and may have provided much needed moisture to a large portion of the region.

For the most part, the cotton stands that have been established appear to be in fair to good condition with a few exceptions in areas where wind damage has occurred over the past few days or where seedling disease is present. Growth stages of these crops range from just emerged or emerging to very early squaring. During my travels to the eastern part of the region (Crosby/Floyd Counties) earlier in the week, I determined that two dryland variety trial locations we planted had received some moisture following dry planting and were beginning to emerge.

With high temperatures forecast in the 90s for the next ten days and cotton reaching the squaring stage, crop water requirements for these fields will quickly reduce soil moisture, which may reach critical levels in areas that missed out on recent rain events. Although there are a couple chances of showers in the ten-day forecast that may provide some relief, producers should watch their fields closely and not get behind on irrigation.

Plant Growth Regulators

Questions concerning mepiquat-based (Pix, Pix Plus, Mepex, Mepichlor, Mepiquat Chloride, Mepex GinOut, Stance, and others) plant growth regulators (PGRs) are being asked. 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 by increasing growth rate. 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; or fertility stress. Results from our replicated testing indicates that we observed from 5 to 20% reduction in plant height (compared to the control) 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. We have been able to "shave" about 1 node from the growth of the main stem at some locations, which can result in about 3-5 days earlier cutout. Low rate multiple applications beginning at MHS have generally provided more growth control than later higher rate applications made at first bloom or later.

Our results have shown that we usually do not get statistically significant increases in yields, but do get excellent growth control. Many times we don't see a lot of differences in performance of these products when comes to growth control.

Mepiquat chloride (MC) based products have been around for many years. Several plant growth regulators (PGRs) based on the same active ingredient are now available. Pentia is a formulation of mepiquat pentaborate - a different molecular structure than MC. Nufarm's Mepex Gin Out product contains the same amount of MC active ingredient as others, but contains an additional PGR. Refer to the product labels or contact local representatives 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.

Pentia
Mepiquat pentaborate molecule (different from MC)
9.6% a.i./gallon or 0.82 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.

Stance
Bayer CropScience's Stance product is a mepiquat chloride based PGR. It is a 4 to 1 ratio of mepiquat chloride and cyclanilide (0.736 lbs/gallon mepiquat chloride plus 0.184 lbs/gallon cyclanilide). Cyclanilide is an auxin synthesis and transport inhibitor. Auxins are generally referred to as compounds that 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. If you have specific questions concerning this product, visit with your local Bayer CropScience representative.

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/fruiting balance and should be watched carefully. Growers who have planted varieties with vigorous growth potential and have fields with excellent growing conditions need to be concerned. 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 picker varieties under high input irrigation (drip or high capacity pivots). If plants get larger than 36 inches, harvest efficiency and productivity drop significantly. With the greater number of spindle picker harvesters working in the region, plant size for high yielding cotton is not as much of a harvesting consideration. Pickers can handle higher yielding, taller plants with much greater ease than stripper harvesters, especially when the stalks are still alive (or “green”). However, if weather

constraints at harvest time delay harvesting after freezing weather, the large brittle plants can still result in picker harvesting difficulties.

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 get a handle on excessive growth potential early if conditions favor excessive growth for an extended period of time. Herein lies the High Plains dilemma: It is unknown at that time as to how weather will affect the crop in July and on into early August. Will we get 100+ degree temperatures, southwest winds at 30 mph at 10% relative humidity? If so, those conditions will limit plant growth in many fields with low irrigation capacity. Watch high growth potential varieties and fruit retention. If a high growth potential variety has been planted and has encountered low fruit retention, then MC rate should be increased, especially under high water, fertility, and good growth conditions. One should target applications to fields with high growth potential. 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 and availability of new genetics is challenging. Visit with your seed company representative to determine which new varieties should be watched closely for MC needs under field-specific conditions. Use MC to limit plant size. Sequential applications can be adjusted to meet subsequent crop conditions and growth potential. MSK

Nitrogen Fertility

With cotton reaching squaring, some producers may be in the process or planning to apply fertilizer to their crops. With this in mind, I have included an excerpt from the June 18, 2010 FOCUS on South Plains Agriculture Newsletter authored by Dr. Randy Boman.

> 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. Our current recommendations in the Texas High Plains are to apply 50 lb N per bale of yield goal. It is important to not over fertilize with N if reduced yield potential is anticipated. 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 harvest aid performance. Some late-season insect problems, such as aphids, can be aggravated by high N status plants, and incidence of Verticillium wilt may be increased. There is good evidence that 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 yielding drip irrigated field really needs more than about 150 lbs N/acre for yields up to four bales/acre. Assess the yield potential of your specific fields and make N fertilization adjustments accordingly. Much of the dryland is in good to excellent condition. Apply sidedress fertilizers as early as practical (but before bloom), and take care to minimize root pruning during application. It takes about 10 lb of N to produce 100 lb of lint. If the yield potential is reduced by one-fourth to one-half of a bale per acre due to late planting or lagging development, then also reduce the actual N rate by 15 to 25 lb per acre. A good rule of thumb is to apply 30 to

50 pounds of actual nitrogen to dryland fields that are emerged and have good soil moisture. Benefits from low rates of foliar fertilizers are questionable.

A knifing rig fitted with coulters would be a good way to accomplish N fertilization. Apply the fertilizer to the side of the bed for low elevation spray (LESA) fields and place coulters to the side of the bed into the "wet furrows" for low energy precision application (LEPA) systems. For alternate-furrow subsurface drip irrigated fields, 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.

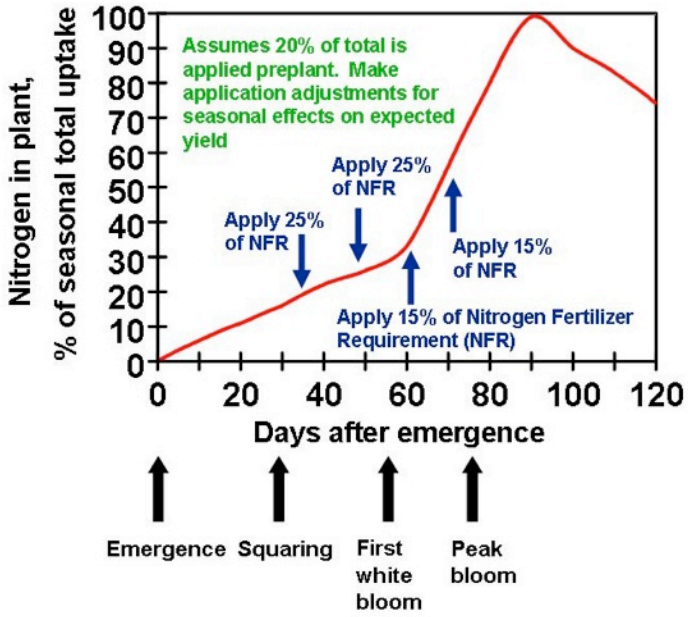
Many producers may be tempted to cut fertilizer use by a certain percent or to use a gallon per acre of this or gallon per acre of that to replace a sound fertilizer program. The cotton plant has a physiological need for nutrients. These nutrients have to come from somewhere if good to excellent yields 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 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 yields will be adversely affected. Soil sampling and testing was discussed during the winter Extension meetings, and I hope that our producers who are cutting back on fertilizer use have solid justification to do so (a soil test report that indicates that there is considerable fertility in the "checking account").

The amount of organic residue of the previous crop is also important and will potentially adversely affect nitrogen availability. If the previous crop was grain sorghum or if cotton was planted into terminated small grains cover then producers should consider increasing nitrogen fertilizer rates by around 20-30 pounds per acre in order to have adequate nitrogen for the cotton crop due to microbial immobilization of crop residue.

Fertigation of UAN (32-0-0) is a practical application method in the High Plains, especially in center pivot and subsurface drip irrigated fields. This results in lower application cost. One should consider whether a LEPA system with drop hoses is used vs. a spray system. 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 the last several years at the Lamesa AG-CARES facility and Halfway Helms Farm using alternate furrow LEPA irrigation. Figure 1 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.

Several N related publications are available on the Lubbock website at http://lubbock.tamu.edu/programs/crops/cotton/fertility/ .

Figure 1. Relationship between nitrogen in cotton plants (expressed as a percentage of total seasonal uptake) and days after emergence



Cotton Disease Update

Several seedling disease samples have been submitted over the past two weeks in which I have isolated Rhizoctonia. The warmer conditions we have experienced over the past few days should limit new infections from occurring. With warmer weather, actively growing plants are capable of recovering from superficial infections; however, plants that are severely infected may have a tougher time. This is especially true for plants that have girdled or collapsed stems and a high demand for water (due to hot temperatures, high winds, and vegetative growth). There have also been reports of black root rot, caused by Thielaviopsis basicola, from throughout the High Plains. Similar to last year, the incidence of black root rot is high. Unlike seedling disease caused by Rhizoctonia, plants exhibiting black root rot seldom die. Rather they appear extremely stunted. Infected plants may lack lateral roots (which may be similar to Rhizoctonia or Pythium); however, secondary roots will be produced following warmer temperatures. Although, seedling disease pressure appears to be decreasing, it is important to know the condition of the root systems as we approach squaring. Plants with shallow root systems may not be able to acquire

adequate water during this stage. We are conducting numerous studies this year evaluating cotton seed treatments. Preliminary results from the National Cottonseed Treatment Program are found in the accompanying table.

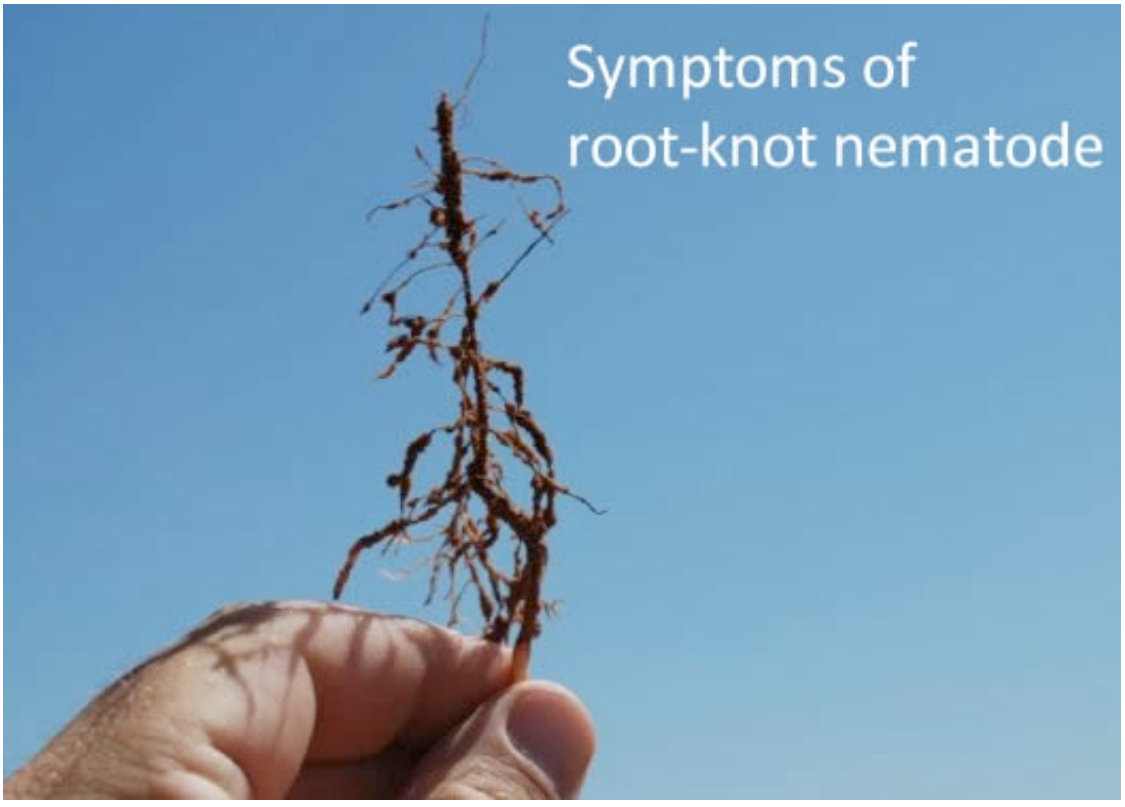
Other disease issues to be on the look-out for are Root-knot nematodes and Fusarium wilt. Symptoms of root-knot nematodes consist of a decline in cotton plants, reduced vigor, stunting and later a reduction in bolls. The appearance of small, galls (or knots) on the roots can be used in the diagnosis of root-knot nematode. Resulting symptoms that appear on the foliage may resemble nutrient deficiencies, due the fact that the nematode is disrupting the root system and negatively affecting the plants ability to absorb water and nutrients. Damage caused by root-knot nematode is generally more sever in sandier areas of the field. Seldom do plants completely die; however, other stress conditions, such as drought, blowing sand, or insect infestations may exacerbate nematode damage. The potential for nematode damage is linked to soil populations of the nematode. With the loss of Temik 15G, nematode management options are more limited. Seed applied nematicides, such as Avicta Complete Cotton and the Aeris Seed Applied System should be considered in fields with low to moderate nematode pressure. Foliar applications of Vydate C-LV can also be used for nematode management. Typically, initial applications of Vydate are made when cotton is at the second to fifth true leaf stage with a sequential application being made 7 to 14 days later; however, studies are currently underway examining alternative application timing of Vydate C-LV in the absence of Temik. Spray equipment should be configured to produce large droplet when applying Vydate C-LV in hot and dry conditions. Always read and follow label instructions when using pesticides. You can find a copy of the Vydate C-LV at the following link http://www.cdms.net/LDat/ld661054.pdf. Nematode management in fields severely infested should include multiple tactics, including crop rotation, the use of partially resistant varieties, seed applied nematicides and possibly chemical treatments. Non-host and poor host crops such as peanut and sorghum, respectively, do not support nematode reproduction which will negatively affect populations. Benefits to using the partially resistant varieties DeltaPine 174 RF, Phytogen 367WRF, Stoneville 4288B2F and Stoneville 5458B2F are increased yield and a reduction in nematode reproduction. While chemical options are limited, there is renewed interest in the use of the pre-plant fumigant Telone. Other nematicides are also being evaluated throughout Texas and other cotton producing states.

In addition, to the direct damage nematode can cause, wounds created by nematode feeding can provide locations of entry for other pathogens, such as the fungal pathogen Fusarium oxysporum f. sp. vasinfectum, causal agent of Fusarium wilt. This disease is becoming an increasingly important disease throughout southern cotton production areas of the South Plains. Recent rainfall, in conjunction with high temperatures, favors the development of Fusarium wilt. Symptoms can be observed on young cotton (4-5 true leaves) and may progress throughout the growing season. The disease can be diagnosed by the wilting of the plant, yellow or brown areas can be observed on the margin of leaves. Eventually, plants will die resulting in large patches void of cotton. Such areas typically correspond to areas of heavy sand, due to the relationship with the root-knot nematode. The inspection of infected stems will reveal a discoloration of the vascular system. Another symptom of Fusarium wilt is collar rot, which appears as dark, superficial lesions at the soil surface. This symptom is similar to the soreshin symptom observed with Rhizoctonia, thus laboratory isolations may be needed for conformation. It is important to correctly identify fields infested with Fusarium oxysporum f. sp. vasinfectum as management options are limited to the use of at plant nematicides and partially resistant varieties. Field trials

are being conducted to evaluate the performance of commercially available varieties and advanced breeding lines in fields with a history of Fusarium wilt. Results from previous studies can be accessed through the following links http://lubbock.tamu.edu/files/2011/11/DiseaseRecommendations.pdf. If you have any questions regarding cotton disease diagnosis or management, contact Jason Woodward @ 806-632-0762, or via e-mail jewoodward@ag.tamu.edu. JW

Seed treatment	**Rate (oz/cwt)**	**Stand counts (plants/ft)**
1. Baytan 30 + Allegiance FL + Vortex FL	0.5 + 0.75 + 0.08	3.51 a
2. Baytan 30 + Allegiance FL + Vortex FL + Evergol	0.5 + 0.75 + 0.08 + 0.32	3.22 e
3. Vortex + Allegiance FL + Spera + Evergol	0.08 + 0.75 + 1.8 + 0.32	3.26 de
4. Vortex + Allegiance FL + Spera+ Evergol + Trilex	0.08 + 1.13 + 1.8 + 0.32 + 0.64	3.22 de
5. Apron XL + Maxim 4FS + Systhane 40WP + Dynasty CST + Nusan	0.32 + 0.08 + 0.84 + 4.13 + 2.0	3.41 a-e
6. Baytan 30 + Allegiance FL + Vortex FL + Nusan	0.5 + 0.75 + 0.08	3.48 a-c
7. Apron XL + Maxim 4FS + Systhane 40WP + Apron XL + Maxim 4FS + Dynasty	0.32 + 0.08 + 0.84 + 0.32 + 0.08 + 1.53	3.47 a-d
8. Apron XL + Maxim 4FS + Systhane 40WP + Apron XL + Maxim 4FS + Dynasty + A16148C	0.32 + 0.08 + 0.84 + 0.32 + 0.08 + 1.53 + 0.32	3.53 a
9. Apron XL + Maxim 4FS + Systhane 40WP + Apron XL + Maxim 4FS + Dynasty + Systhane 40WP + Bion	0.32 + 0.08 + 0.84 + 0.32 + 0.08 + 0.84 + 0.03	3.45 a-e
10. RTU BaytanThiram + Allegiance FL	3.0 + 0.75	3.29 a-e
11. Vitavax-PCNB + Allegiance FL	6.0 + 0.75	3.43 a-e
12. RTU-PCNB	14.5	3.35 c-e
13. Allegiance FL	1.5	3.42 a-e
14. Nontreated	- - -	3.42 a-e


Symptoms of black root rot
(photo credit: Craig Rothrock, University of Arkansas)


Symptoms of
root-knot nematode

Insects

Cotton Insect Report

Dr. Megha Parajulee, the Cotton Research Entomologist at Lubbock, reports hrips activity was high during the last two weeks in Lubbock County, with densities surpassing economic thresholds in all our test plots at the Lubbock Center farm. Combination of foliar application of Orthene and some rain showers reduced the thrips densities to much below economic threshold in several fields that we scouted this morning. At the Lubbock Research farm, average thrips densities are <0.5 thrips per plant with average plant age of 3-leaf stage. We also scouted for thrips at Halfway/Helms farm and found no thrips in any of the fields we monitored this morning. No other pest insects were observed in our sampling this morning at Lubbock or Halfway areas. MP

Dustin Patman, IPM Agent in Crosby and Floyd counties, says, "Insect pressure remains very light. Thrips numbers have been very low but should continue to be scouted for in younger cotton especially the cotton that was just recently planted."

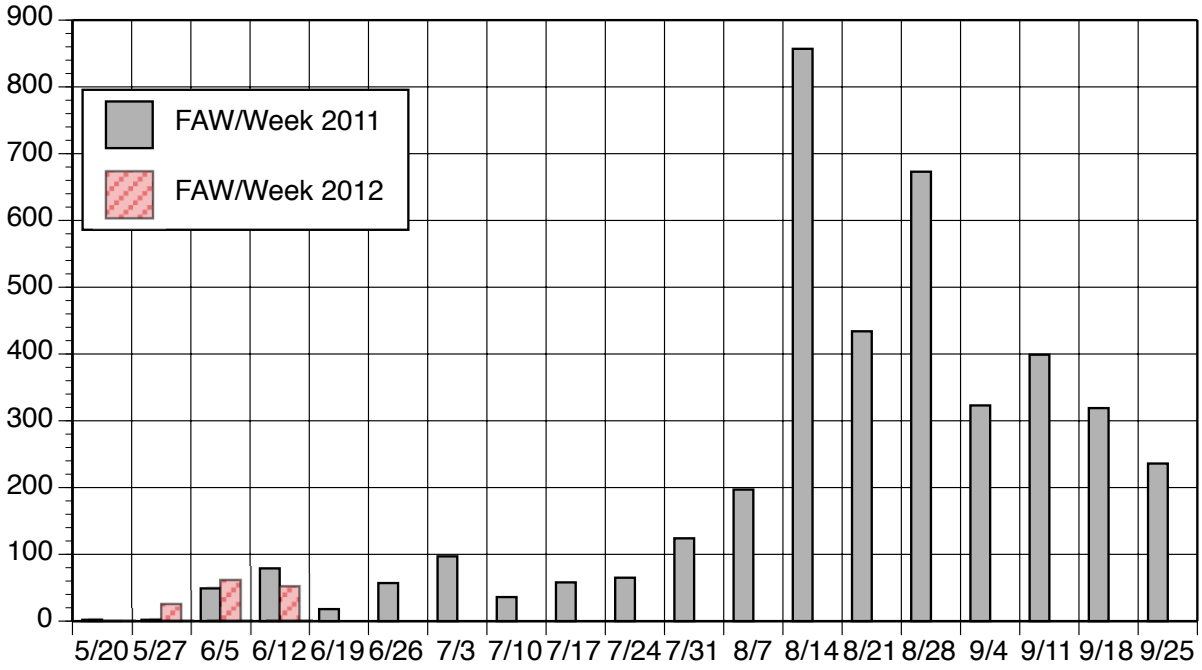
Monti Vandiver, IPM Agent in Bailey and Parmer counties, reported in his newsletter, "Thrips pressure in cotton has declined recently likely due to scattered showers and warmer weather. An economic infestation has been observed in an occasional field. A good number of fields have developed sufficiently that yield loss due to thrips is unlikely and many more will in the next few days. Once cotton develops five true leaves it is considered to be safe from thrips

damage. **Several fields have started squaring so will need to be monitored closely for square robbing pests, most notably the cotton fleahopper in early square development**.

Moth Counts

Fall armyworm traps near the Lubbock Research Center indicate a relatively low but sustained flight over the last two weeks. We are finding sporadic damage, especially in older corn and sorghum. We have been catching something like 400 **corn earworm (cotton bollworm)** moths per week in traps near Olton, and approximately 150 per week in traps near Muleshoe. These numbers are high for this time of year. Together, fall armyworm and corn earworm represent a threat to whorl stage corn and sorghum. Manda Anderson, IPM Agent in Gaines County, is reporting **sporadic beet armyworm egg laying in cotton**. RPP

Fall armyworm moths per trap per week, Lubbock, Texas. 2011 and 2012.



Hailout/Replant/Late Plant Guide

The 11th[th] annual edition of Texas AgriLife Extension Service' "Alternative Crop Options after Failed Cotton and Late-Season Crop Planting for the Texas South Plains" has been updated for 2012. Compiled by Extension agronomist Calvin Trostle, the guide is a 'first things' approach to what you need for assessing hail damage and stands in current crops, and what your replant

options are. Tips for planting dates, seeding rates, herbicides already applied, and contractor contact information are noted throughout the document.

The document is available on the main page at http://lubbock.tamu.edu, through county Extension offices, or by calling the Texas AgriLife Research & Extension Center at Lubbock. Late-season guidelines are provided for the following crop in the South Plains region:

Grain sorghum	Sunflower
Sesame	Black-eyed peas and other pea, pinto & bean crops
Guar	Soybeans
Summer annual forages including sorghum/sudan, hybrid pearl millet, and forage sorghum	
Peanuts	Corn & corn silage

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Useful Web Links

Water Management Website, TAMU, Irrigation at Lubbock, IPM How-To Videos, Lubbock Center Homepage, Texas AgriLife Research Home , Texas AgriLife Extension Home, Plains Cotton Growers

County IPM Newsletters

Castro/Lamb, Dawson/Lynn, Crosby/Floyd, Gaines, Hale/Swisher, Hockley/Cochran, Lubbock, Parmer/Bailey, Terry/Yoakum