

IPM NEWSLETTER

Update for Field Crops and Their Pests

No. 12

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Cotton Crop Update (Larry Steckel, Assistant Professor)

The multi-million dollar rain last weekend was a real blessing. It came at a good time for the cotton which is now growing at a rapid pace. The cotton crop has persevered through a series of tough early growing conditions and has finally gotten its legs and is looking good in many areas I have driven through. We really have two crops this year in Tennessee. We have an early planted crop that accounts for about 20% of our acres which was planted from mid-April to early May. The second crop which accounts for the majority of the acres was planted from mid-May to about May 34. The Tennessee Ag Statistics Service reports that 39% of the cotton is squaring compared to a five year average of 41%. The agronomic calls of the week have been on flood damage and lightning injury. These problems in the big scheme of things are good to have when compared to very dry conditions just 7 days ago. The rain last weekend has enabled many weeds to emerge in most fields. Hooded sprayers are running in full force. With the rapid cotton growth the chances of getting a hood back through some of the early planted fields is not likely. Therefore those early planted fields should probably have a good residual herbicide added to the glyphosate.



Lightning Injury to Cotton

DD-60 Accumulation (TASS and NWS data)

<u>Location</u>	<u>4/17/06- 6/11/06</u>	<u>4/23/06- 6/11/06</u>	<u>5/1/06- 6/11/06</u>	<u>5/8/06- 6/11/06</u>	<u>5/15/06 6/11/06</u>	<u>5/22/06 6/11/06</u>	<u>5/28/06 6/11/06</u>
Ames Plantation	692	605	566	517	495	457	332
Brownsville	741	654	610	561	534	484	358
Covington	676	597	564	520	498	451	328
Dyersburg	757	671	626	574	552	496	371
Huntingdon	606	531	490	456	441	412	307
Jackson	676	596	553	509	487	447	333
Memphis	775	679	638	580	552	506	365
Milan	628	554	517	478	462	425	314

Plant Growth Regulators (Scott Stewart, IPM Specialist)

My two cents worth -- Many folks are considering their first plant growth regulator (mepiquat chloride, Mepex., Pix, etc.) application. There are generally two approaches -- the splitters and the lumpers. I'm a lumper, putting out all of the "Pix" in one or two applications. Other folks will spoon-feed PGRs in low doses. Both methods accomplish the goal of managing plant height and reducing vegetative growth. My approach is either a single application of 16-20 oz/acre near first bloom or an application of 4-8 oz around the third week of squaring followed by a second one of 12-16 oz, again at about first bloom. Chism Craig had a similar philosophy. I tend to use the second approach for better growing conditions, stronger ground or for more "growthy" varieties. I'm a firm believer in putting PGRs out earlier rather than later. It takes much higher doses to affect larger plants and, no matter how much you apply, you can never shrink plants. There has been a pile of research on using mepiquat chloride in cotton. Almost all these data show that applying more than 20-28 oz/acre for a season is not cost effective, and 20-28 oz is sufficient to manage plant growth and earliness for the vast majority of cotton in Tennessee. Of course, other strategies may do the same thing, and some people just like their cotton to look a certain way. I like to keep it simple stupid, and I like my cotton white.

Cotton Weed Control (Larry Steckel)

Post 5 Node Over The Top Applications.

Many growers have a few acres of Roundup Ready Flex cotton. When sending folks out to spray these fields with Roundup take an extra minute to be sure they are going to the correct field. Spraying 8-12 leaf non-flex cotton with Roundup can cause serious yield loss. The question does come up how many pounds can I lose by mistakenly spraying glyphosate on big RR cotton. The answer is difficult as it depends on many factors including variety, cotton maturity at time of application, weather, etc. In our research lint yield loss from post 5 leaf glyphosate applications on RR cotton has ranged from 0 to 400 lbs/A. There are no quick and easy tests to identify Roundup Ready cotton from Roundup Ready Flex cotton. The best answer is if in doubt apply the glyphosate post-direct or with a hood.

Envoke just received two changes to its label here in Tennessee. Envoke is now labeled to be mixed with either Roundup WeatherMax or Roundup OriginalMax and applied over the top of Roundup Ready Flex cotton. The labeled Envoke rate for this application is 0.10 to 0.15 oz/A. The other change is that Envoke can now be tank mixed with mepiquat chloride applications and applied over the top of all cotton. As many of you know Envoke over the top of cotton will shorten internodes. We have seen in research that a 0.15 oz/A Envoke application is equivalent to 8 oz/A of mepiquat chloride. Therefore if you want to apply a 16 oz/A of pix to your cotton and you want to tank mix Envoke as well apply only 8 oz/A of pix with the Envoke.

One other comment on Envoke is that malathion should not be applied within 24 hours before or after an Envoke application. Severe stunting can occur if this happens. We had a few fields last year where malathion was sprayed by Boll Weevil Eradication shortly after Envoke was applied. If my phone calls are any judge there is a fair amount of Envoke going out this spring. A quick conversation with your Boll Weevil supervisor in areas where they are spraying would probably be a good idea before applying Envoke.

Insect Issues (Scott Stewart and Russ Patrick, IPM Specialists)

Tarnished plant bugs are really the only insect causing concern this week. Reports of infestations are all over the map. This is the time of year when most of the plant bugs are concentrated in the bigger cotton. Plant bugs feed on squares, and they tend to pile in fields that have the most food. This pattern will become less obvious as all the cotton begins to square more vigorously. However, we can take advantage of this now by concentrating insecticide applications where the plant bugs are found. **Remember:** the recommended treatment threshold for plant bugs increases from 8 to 15 insects per 100 sweeps (or from 1 to 2 per six feet of row) during the third week of squaring. If you have five nodes above the first fruiting branch, then you are in the third week of squaring. The reason the threshold increases is because bigger plants put on new squares more rapidly, and hopefully, you already have a good number of squares on the plant. Thus, it takes more plant bugs to knock off 10-20% of the squares during the third week of squaring than it does earlier. Always remember to adjust your threshold based on square retention. After the first two weeks of squaring, I'm much more inclined to live with 10-15 plant bugs per 100 sweeps when square retention is excellent.

Is Trimax Pro or Centric better? This is a loaded and frequently asked question. My first response is "it depends on the rate." The data is clear that, in terms of active ingredient per acre, Centric provides better plant bug and aphid control than Trimax. However, Trimax Pro and generic alternatives are cheaper, and dollar for dollar, the contest is much closer. Based on some prices I was quoted this week, 1.35 oz of Trimax Pro costs about the same as 1.5 oz of Centric. I expect those rates to have similar efficacy on plant bugs. There are some other products I have not even talked about (e.g., Carbine and Intruder). Hooded herbicide applications with insecticides banded over the row are beginning. This is a great approach to cut your insecticide bill and still maintain a good insecticide rate. For 50% banded rates for an acre, I suggest a minimum of 0.6-0.7 oz/a of Trimax Pro, 0.75 oz/a of Centric, 0.55 oz/a of Intruder, or 1.3 oz/a of Carbine. A supplemental label for Trimax Pro has or will soon be approved that allows a higher use rate (up to 1.8 oz).

I've had several calls this week about whether 0.9-1.0 oz of Trimax Pro or 1.25 oz of Centric is enough (broadcast rates). The answer is yes if you don't really have a significant plant bug infestation and no if you do. These low-end rates do not provide consistent control. I've also had calls about some insecticides improving "plant health" even in the absence of insects. This has been tested over and over again, and I'm doing it again this year. Use insecticide to control insects. I can't be any plainer than that.

*The most expensive insecticide application is the one that doesn't work when it is needed.
Use a reliable rate!*

The second most expensive one is the one that was not needed in the first place.

Residual control of plant bug insecticides is over sold. This is not to say residual control is not important, but claims of 10-14 day residual are highly exaggerated. When asked, I usually tell folks that the neonicotinoids such as Centric or Trimax Pro will provide 4-5 days of effective residual control when applied at high rates, and less when we cut rates (as we often do). I put some data in one of last year's newsletters to make this point ([Issue 17](#)). The OP insecticides (e.g., Orthene, Bidrin) and Vydate have less residual, yet all these compounds will provide effective control will use correctly. The most effective treatments are those made when insect pests are present. The point -- if you are relying on residual to control insects that may move in 4-5 days after application, you will be disappointed.

Surfactants. How much or should I add? This is another subject that can cause some hard feelings. My standard answer -- you are generally better off adding insecticide than spending the same money on surfactants. Unlike some herbicides, there is scant data that surfactants improve insecticide performance (at least when applied by ground). In contrast, there are many examples of higher insecticide rates improving control and residual (especially when starting with relatively low rates to begin with). Keep in mind that many glyphosate products and some other herbicides already contain surfactants, so tank mixes of glyphosate and insecticides will often contain a surfactant. If a herbicide requires a surfactant, the surfactant should not hurt insecticide performance when tank mixed.

Stink Bugs in Soybean and Cotton. I've seen some heavy, treatment level infestations of green stink bugs in soybean. Predictably, the stink bugs are highly concentrated in the Group III beans that are already setting pods. However, I've had a calls (and seen some fields myself) with more than a few green stink bugs in soybean and cotton prior to flowering. I'm not over-excited about spraying stink bugs before fruit are present (since that is when the damage is done). I'm not quite sure what these guys are doing in the fields so early, but it may indicate we are in for an interesting year with stink bugs.



The mystery eggs being reported from cotton in last week's newsletter, mostly found in Fayette and Hardeman counties, turned out to be granulated cutworms (not loopers, budworms or bollworms). This is the same critter that was being found in much of Mississippi. This insect is no real threat to our cotton, and the best I can tell, their eggs are not being found anymore. So hopefully, we won't have problems confusing granulated cutworm eggs with those of bollworm or tobacco budworm.

Traps for **southwestern corn borer** moths were nil this week, indicating we are smack in between the first and second generation. Heavy, first-generation infestations have been observed in much of the early-planted non-Bt corn grown in the northern counties of West Tennessee (Obion, Dyer, Weakley, Gibson). It is too late to spray the first generation, but the second generation is on the horizon, and we need to watch the moth traps closely. The second generation moth flight is expected to start in 2-3 weeks, and based on the first generation, it is going to be a big one. The later non-Bt corn will be at high risk in the above areas and maybe elsewhere. Treatment for the next generation will be justified in some fields. Of course, these applications will likely have to be made by air. The good news -- they can do a decent job if they are well timed. The bad news -- it will require a little scouting to get the timing right.

Section 18 for use of Mustang Max to control armyworms in pastures. We hope to get a label by August 1. Last year, fall armyworms caused some problems when fall-planted grasses such as wheat began to emerge. We will let you know if we get the label.

Area Cotton Report for Northwest Tennessee (Gene Miles, Area Crop Specialist, Week of 6/19)
Growing conditions have improved in the area because of recent rains except where flooding occurred. Some of the more mature cotton plants in the area have reached the 13th node and have 14 total fruiting positions.

Square retention is very important in determining plant bug damage. Square retention where observed this week was averaging 89 percent. If square retention drops below 80 percent prior to first bloom and plant bugs are present, treatment should be considered even if numbers are below threshold. Adult clouded plant bugs were observed this week. Plant bug numbers range up to 0.8 per 6 row feet and/or 12 per 100 sweeps. Stink bug populations are increasing this week (primarily green) and numbers range up to 0.5 per 6 row feet.

Large numbers of stripped blister beetles were observed in cotton this week causing no economic damage. This insect usually aggregates in swarms to feed and mate. Stripped blister beetles prefer pigweed as a host crop and can attack soybeans. Beneficial insect counts this week range up to 6.2 per 6 row feet.

Proper Timing of Fungicides on Soybeans (Angela Thompson, Extension Soybean Specialist)

A soybean plant is capable of producing more than 16 nodes at maturity, regardless of whether it is an indeterminate (Group 3 or 4) or a determinate bean (Group 5 and beyond). A variety that is short due to genetics, is planted in June or July or subjected to water stress will produce less growth. Since we really cannot afford to apply a foliar fungicide more than once for disease protection, we need to time that application when beans have accomplished much of their vegetative growth and are at R3 in order to maximize effectiveness of the fungicide spray.

Do Group 3's and 4's Develop Differently from Group 5's???

A Group 5 soybean grows vegetatively (about 10-12 weeks if full season) producing the trifoliolate nodes it will have for the year, generates a flowering structure on the top of the plant and blooms from the top towards the bottom. Determining the growth stage of a Group 5 bean is simple because all vegetative nodes are there when flowering starts, and there is a single time period that a Group 5 bean is at R3.

Indeterminate beans start blooming about 4-6 weeks after emergence and continue to add new nodes, while also blooming and making pods, until some trigger shuts vegetative growth down. Because the wide window of flowering overlaps with vegetative growth, indeterminate soybeans can actually be at R3 more than one time in the season! A fungicide spray on indeterminate beans should be timed when beans have much of their vegetative growth (you can count at least 12 trifoliolate nodes preferably 15) and be at R3 in order to protect as much of that plant as possible.

What is a node??

After the first node (unifoliolate leaves that are opposite on the stem), a node is a location on the main stem with a fully developed trifoliolate. Trifoliolate nodes will be alternating (not opposite) on the stem. Later on, branches can develop where the trifoliolate leaf attaches to the stem. To count trifoliolate nodes, you should look for two sets of opposite scars near the soil line, one where cotyledon leaves were and one where



unifoliate leaves are or were. Next, count the alternating trifoliates (in plants with several trifoliates you may have to count the scar where bottom leaves have shed) to the top of the plant. The last fully developed trifoliolate (unrolled and is at least half the size of the trifoliolate below it) at the top is the last trifoliolate node on the plant at that time.

The definition of reproductive stages is the same for Group 3, 4 and 5 beans. The following is a reminder about growth stages and why Group 3 and 4 beans can be tricky to stage.

R1 starts with one bloom anywhere on the main stem. On Group 3's and 4's the bloom first appears about 4-6 weeks after planting when a plant has about 4 trifoliates and is smaller than knee high. The later into the season that soybeans are planted the quicker they will start blooming. The first bloom on Group 5's occurs at the top of the plant up to 12 weeks after planting when the plant has developed the nodes it will have at maturity.

R2 is considered full bloom. A plant is at R2 when a bloom is found on one of the top 2 nodes with a fully developed trifoliolate leaf. With Group 3 and 4 soybeans, R2 can occur when a soybean has as few as 8 nodes. The important thing to remember is that with rainfall and good growing conditions, this plant will continue to add new nodes for a period of time, so R2 becomes a fuzzy, moving target.

R3 is early pod formation. A soybean plant is at R3 when tiny (3/16" pods) can be found on any one of the top 4 nodes with a fully developed trifoliolate. Group 3 or 4 beans can have tiny pods when plants have as few as 8 nodes. Under stress, growth slows down and pods can be found 'at the top' of the plant. However, when water comes, new growth is produced with more nodes and flowers and pods on the new growth. Like R2, R3 can also be a fuzzy moving target until we get into July. The important thing to remember is to allow indeterminate beans to get as much growth as possible so that when we spray an indeterminate bean at R3 with 15 trifoliolate nodes, that fungicide spray will be protecting the majority of pods retained on that plant.

Fungicide Choices

Folks with early planted soybeans who decide to spray, should be focused on timing a spray for Frogeye Leaf Spot which will also provide protection from rust should it make it into our area. Protectant/preventative products like Headline or Quadris work very well against Frogeye Leaf Spot and will also provide protection from soybean rust. Combination products like Headline SBR or Quilt may also be considered. Remember do not add any adjuvant to Headline SBR to avoid leaf burn. Triazole-only products like Domark, Tilt, etc. are not necessary at this time since we are not treating for rust.

Farm Management Update (Chuck Danehower, Area Specialist –Farm Management)

Earlier in the year, I had several discussions with producers on the merits of owning their own spray rig vs. custom application. There are several factors to consider, some of which are not financial, but can have a big impact on profitability. Whether a producer owns his own spray rig or has it custom applied, **timing** (the ability to spray when it is needed) can be the # 1 factor. Another factor is **accuracy**. With older sprayers, producers have commented that they spray 10% more chemical in overages and overlapping. Newer sprayers and ones adapted with *precision ag stuff* such as GPS, light bars, etc., can reduce that overage to 2% - 5% thus saving some money on chemicals. In making a comparison of owned vs. custom, it also depends on the number of acres sprayed and what **labor** is available to do the spraying particularly on owned equipment. In some cases, an additional person has to be hired to do the spraying on owned equipment. Custom rates for spraying are around \$5.00 acre +/- \$.50 acre. The number of acres sprayed and/or a commitment for acres may allow you some

negotiating points. Based on the UT Crop Budgets, a self propelled sprayer with a 90 foot boom used for 130 hours per year would cost \$2.21/acre, at 100 hours per year \$2.39/acre (Fixed & Variable Cost). However, if an additional person has to be hired to run the sprayer, that cost could go to \$3.53/acre on 130 hours, and \$4.14 on 100 hours of use per year. Each situation is unique, if I can assist you in making these types of decisions, please give me a call at 731-635-9551 or email at scdanehower@utk.edu.

Boll Weevil Eradication Update (Ron Seward, TN Boll Weevil Eradication Program Manager)

Trapping and capture information is included for the period June 08 – 14 (cycle 9). A total of 1173 boll weevils were trapped. This is a 14% decrease from last week and a 46% decrease from this cycle last year.

Ninety-five percent of the capture was from Shelby-Tipton counties. The percent of fields with zero weevil captures ranged from 85% in Brighton work unit to 98% in both Brownsville and Dyersburg. Three single weevils were captured within the 1:20 trapping area. One in Hardeman county from a field which had a few last season and two from Fayette county in field unit 3129.

No aerial applications of malathion were made during cycle 9.

Tennessee Pheromone Moth Trapping Summary - Trapping efforts are funded in large part by the Tennessee Cotton Incorporated State Support Program.

Numbers of Moths per Week (Week 8, ending 6-21-06)

Trap location	Tobacco Budworm	Corn Earworm (Bollworm)	Beet Armyworm	Southwest. Corn Borer
Hardeman (Bolivar)	0	0	0	---
Fayette (Whiteville)	*	0	0	---
Fayette (Somerville)	0	0	---	0
Shelby (Millington)	13	21	0	---
Tipton (Covington)	0	1	0	---
Tipton (West)	0	0	---	0
Haywood (West)	0	1	0	---
Haywood (Brownsville)	0	0	---	---
Madison (Exp. Stn.)	3	3	0	0
Madison (North)	0	1	---	---
Crockett (Alamo)	0	2	0	---
Crockett (Maury City)	0	0	---	---
Dyer (Dyersburg)	0	4	0	---
Dyer (Newbern)	0	5	---	0
Lake (Ridgley)	0	7	0	---
Gibson (Kenton)	0	13	---	---
Gibson (Milan Exp Stn.)	0	0	0	0
Carroll (West)	0	2	0	---
Lauderdale (Goldust)	03	6	0	---

An asterisk (*) indicates trap was missing, knocked down or not run.

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