

# IPM NEWSLETTER

## Update for Field Crops and Their Pests

No. 18

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### Cotton Progress Report (Dr. Chris Main, Extension Cotton and Small Grains Specialist)

The Tennessee Agricultural Statistics Service reports cotton condition as 13% excellent, 62% good, 23% fair, 2% poor, and 0% very poor. 52% of the crop is setting bolls compared to 37% last week, 70% last year and 75% for the five year average. In general we still have excellent yield potential even in our June 5<sup>th</sup> planted cotton. The re-plants that occurred after June 5<sup>th</sup> are questionable, but still have some potential. Rainfall has been a blessing. Until Tuesday (7/28), rain has fallen mainly at night as to not affect pollination. The Tennessee crop is split into to main groups, an early crop planted in late April and a late crop planted in late May to early June. Several calls have come in concerning the late crop. The following comments are designed to shed some light on late season concerns.

**Yield potential, gin turnout and fiber quality.** Starting in 2008 I initiated a variety by planting date trial to access variety differences due to planting date. Six cotton varieties were planted over six different planting dates. Date #1 is early in April when we have a reasonable chance of obtaining a stand (65F soil temperature), then on our first recommended planting date (April 20<sup>th</sup>) and every two weeks until mid-June. Table 1 below lists the yield of all six varieties for all planting dates. Generally yield potential is maintained from mid-April until the third week of May. The two June planting dates yielded on average ~200 pounds (18%) less. While this seems like a lot of loss all six varieties still yielded over 850 pounds.

**Table 1.** Yield of six cotton varieties planted on six different dates.

VARIETY	4/17/2008	4/21/2008	5/5/2008	5/19/2008	6/1/2008	6/15/2008
	Lint (lb/ac)					
DP 0935 B2RF	1229	1178	1163	1137	1115	876
FM 1740 B2RF	1368	1208	1263	1571	1042	1427
PHY 315 RF	1292	1253	1164	1233	1177	1026
PHY 375 WRF	1583	1203	1481	1638	1099	1168
ST 4554 B2RF	1253	1274	1226	1513	1107	926
ST 5327 B2RF	1429	1262	1320	1251	985	1112
<b>Average</b>	<b>1359</b>	<b>1230</b>	<b>1270</b>	<b>1391</b>	<b>1088</b>	<b>1089</b>

Gin turnout was maintained across all planting dates between at 37-41%. Micronaire decreased with the June 15<sup>th</sup> planting date (Table 2). Lower micronaire was likely due to accumulation of fewer DD60's as indicated in Table 3.

**Table 2.** Micronaire of six cotton varieties planted on six different dates.

	4/17/2008	4/21/2008	5/5/2008	5/19/2008	6/1/2008	6/15/2008
<b>VARIETY</b>	<b>Micronaire</b>					
DP 0935 B2RF	4.4	4.4	4.9	4.7	4.2	3.5
FM 1740 B2RF	4.5	4.3	4.6	4.5	4.5	3.9
PHY 315 RF	4.5	4.4	4.5	4.3	4.3	3.6
PHY 375 WRF	4.3	4.3	4.4	4.3	4.2	3.7
ST 4554 B2RF	4.6	4.6	4.6	4.8	4.7	3.9
ST 5327 B2RF	4.2	4.5	4.4	4.5	4.2	3.5
<b>Average</b>	<b>4.4</b>	<b>4.4</b>	<b>4.6</b>	<b>4.5</b>	<b>4.4</b>	<b>3.7</b>

**Table 3.** Harvest date and total DD60 accumulation in 2008.

<b>Planting Date</b>	4/17/2008	4/21/2008	5/5/2008	5/19/2008	6/1/2008	6/15/2008
Harvest Date	9/20/2008	9/20/2008	9/27/2008	10/10/2009	10/20/2009	11/1/2009
Total DD 60's	2344	2337	2335	2341	2224	1948

**Maturity monitoring.** Certain notions about cotton maturity tracking don't hold true in a late planted crop. Reproductive development is maintained according to the traditional view. A new fruiting branch develops about every three days. A new square is produced on a fruiting branch approximately every 6 days. Typically, 21 days are needed from square development till bloom. Physiological maturity in cotton is termed 'cutout' and is defined as occurring when carbohydrate supply from photosynthesis is equal to carbohydrate demand by fruiting structures. Typically the node above white flower measurement (NAWF) is used to determine 'cutout'. In many situations a NAWF = 4 or 5 is considered to indicate 'cutout'. The widely accepted idea that no more harvestable fruit is set after this magical 'cutout' date does not always hold true. Many times you can enter what a colleague of mine in North Carolina terms 'suspended cutout', a situation where the crop maintains NAWF = 5 for multiple weeks or moves up and down from NAWF = 5, to NAWF = 3, to NAWF = 6. Typically there is an environmental reason (rainfall events) for this 'suspended cutout'. Time to 'cutout' is affected by many factors, environment (weather), NAWF at 1<sup>st</sup> bloom, boll load, nutrient management, and remaining DD60's.

Planting date can affect maturity in strange ways. I like to use last effective bloom dates (LEBD) to demonstrate these effects. In many years an early maturing variety in a dry-land situation will 'cutout' and have a LEBD of August 1<sup>st</sup> while the same variety in an irrigated situation may have a LEBD of August 15<sup>th</sup>. In last year's planting date trial reference in the previous section we had LEBD that spread out over 32 days (Table 4). Ranges presented indicate differences due to different variety maturity (early, early-mid, mid-full).

**Table 4.** Last Effective Bloom Date (LEBD) for six planting dates 2008.

<b>Planting Date</b>	4/17/2008	4/21/2008	5/5/2008	5/19/2008	6/1/2008	6/15/2008
LEBD	7/28 – 8/2	7/28-8/2	8/5-8/10	8/11-8/14	8/21-8/25	8/30-9/3

Keep in mind that during 2008 we were able to accumulate DD 60's until October 15 which allowed the later bolls to develop. Typically it takes 850 DD 60's after white flower to mature a boll. If this was the case with late planted cotton then the LEBD for the June 16<sup>th</sup> planted cotton in 2008 would have been August 11<sup>th</sup> (which coincides with our typical LEBD). The June 16 planted cotton did not have a bloom until August 18<sup>th</sup> -22<sup>nd</sup> and still yielded over 800 lbs of lint (Table 1) and set on average 4 more

nodes of 1<sup>st</sup> position fruit after August 12<sup>th</sup>. The moral of this story, don't give up on the late planted crop there is still excellent potential.

**Physiological fruit shed and plant growth regulators.** With this week's forecast for rainfall and continued cloudy conditions you can expect to see some fruit shed. This is a response to two factors, a high fruit retention percentage, and prolonged cloudy weather. Generally small squares and bolls will shed before large fruiting forms. As the next scouting cycle begins pay particular attention to fruit shed and be prepared to manage excessive growth with a plant growth regulator. Typically when we go into August some fruit shed occurs due to boll load and stress (drought and temperature) and we do not worry about re-growth. However, ample rain and cool temperatures this summer combined with fruit loss could lead to excessive vegetative growth. Management with a mepiquat based product is successful when a concentration of 10 parts per million is reached with-in the plant tissue. With larger cotton a higher application rate of mepiquat will be required, 16 oz of mepiquat or 3-4 oz of Stance should be sufficient to manage growth for the remainder of the season. As an update, in an earlier newsletter I stated that the maximum seasonal use rate of mepiquat was 1.5 pints. That was incorrect; it is 1.5 QUARTS (or 48 oz). Sorry for any confusion this may have caused. Additionally the maximum labeled use rate of mepiquat is 24 oz/ac for a single application.

### **Fungicides in Cotton (Dr. Melvin Newman, Professor and Plant Pathology Specialist)**

There are several fungi that can cause leaf spots and boll rots in cotton. The most common diseases in Tennessee are *Alternaria* leaf spot, *Stemphylium* leaf spot, *Ascochyta* blight and *Fusarium* boll rot. They are usually worse in wet years and can reduce lint yields. Researchers have tried for many years to control boll rots and leaf spots with various fungicides but with limited results. Recently, with in the past few years a new class of very effective fungicides has been developed called strobilurins. These fungicides have shown good control of foliar diseases in corn, wheat, soybeans and many other crops along with significant yield increases under disease conditions. Two that are cleared for application for disease control in cotton are Headline and Quadris.

In recent University trials, involving nine states and 40 trials over the last five years there has been no significant yield increase with any fungicide used. However, in 2008 tests plots in Tennessee showed significant reduction in the severity of *Alternaria* leaf spot but still no yield increase was produced. There was a slight indication that later applications (28 days after first bloom) were better than earlier applications. Since more research is needed before recommendations can be made, we will again conduct tests this year at The Research and Education Center at Milan, TN to see if there might be an increase in yield with the recent rainy weather.

Cotton fields with low soil potassium levels, low pH, dry soil or nematode infestations would probably have more leaf spot disease and would stand a better chance of increasing yields with a foliar fungicide. Over the years, when wet weather was a problem and boll rots were severe, growth regulators that were used to reduce rank growth gave the best results.

### **Weed Control (Larry Steckel, Weed Specialist)**

There have been a number of folks ask about using a rope wick applicator as a last ditch way of controlling glyphosate-resistant (GR) Palmer amaranth. I hate to rain on anybody's creative ideas but I do not believe it will work. The main problem with this is that glyphosate is the most effective herbicide one could find to run through a rope wick applicator. Contact type herbicides like Gramoxone Inteon or Flexstar would not be effective in a rope wick. Other herbicides like dicamba or 2,4-D are systemic and they are the main herbicides folks ask about. The problem is that I have sprayed as much as 32 oz/A of dicamba tankmixed with glyphosate in one treatment and in another

study 32 oz/A of 2,4-D mixed with glyphosate and in both cases applied it to 2 to 3' tall GR Palmer amaranth. I did not control them! My colleagues Alan York in North Carolina and Stanley Culpepper in Georgia have reported similar results. So I cannot imagine one could pack enough dicamba or 2,4-D in a rope wick applicator to do any good on the 2 to 3' Palmer that are in our fields. Moreover, soybeans are liable to see some injury if they even get a whiff of dicamba from a rope wick.

It is not uncommon to see chopping crews out in fields taking out small Palmer pigweed patches. I think this is a great idea as some work now on these small areas of Palmer could save a lot of money in that field over the next few years. I have seen though that chopped or pulled up Palmer is not so easily killed. Palmer chopped just above the soil line can regrow from auxiliary buds. Palmer pulled up in moist soil can re-root and keep on growing. A follow up a few days after the chopping crew has gone through would be a good idea to assure the Palmer has not grown back.

### Insect Considerations (Scott Stewart, IPM Specialist)

**Cotton.** It remains relatively quiet in most areas but with increasing reports of plant bugs (and a few stink bugs thrown in). Don't be lulled asleep. Get out your drop cloths and I'll bet you'll see plant bug numbers are on the rise in many areas. Much of the cotton is a couple of weeks behind schedule and the plant bugs are too. We currently have some plant bug insecticide trials in Jackson with very large populations of nymphs. The take home message from these tests is that insecticide tank mixes are providing the most consistent control of tarnished plant bugs. Many of the mixtures we are testing are a pyrethroid insecticide + Bidrin (2-4 oz), Diamond (4-6 oz) or Acephate (8 oz). However, we have also gotten pretty good control with straight applications Bidrin (6 oz/a), Orthene (12 oz/a) and bifenthrin products at rates of 5-6 oz/acre (e.g., Fanfare, Brigade, Hero). Diamond + Bidrin or Diamond + Acephate have also provided good control. I prefer the mixes, but if you were just going to run one insecticide, I would choose the following and not compromise on the rates: 6 oz Bidrin, 12 oz Orthene/Acephate, 12 oz Vydate, or 5-6 oz Brigade, Fanfare, Hero or other bifenthrin products. I am hearing about 1:40 rates (3.2 oz/a) of straight bifenthrin (Brigade, Fanfare, etc.). This rate is too low to provide consistent control of plant bugs.

Managing late planted cotton and keeping the insect control budget to a minimum is a little like trying to have your cake and eat it too. It can be done, but realistically, late planted cotton will have more insect problems. In June planted fields, the decision to try and make a late crop was made at planting. Assuming we get some heat, late planted fields have good yield potential. It is a little premature to cut-n-run on your investment. There is still opportunity in most fields to get by with 1-3 well timed insecticide applications after flowering begins. This is where boll weevil eradication and Bt cotton pay dividends. Our primary targets will be plant bugs and stink bugs. Use recommended treatment thresholds and insecticides (including the mixtures discussed above). Keep one eye out for bollworms and fall armyworm in late cotton, particularly in non-Bt and Bollgard cotton. Expect WideStrike to provide excellent control of fall armyworms. Bollgard II will not be quite as good on fall armyworms (but is usually adequate). For bollworms, the opposite is true where Bollgard II is better than WideStrike (but both are better than the original Bollgard technology).



**Soybean.** Fall armyworms (pictured left) have been reported in a few late planted soybean fields. The larvae are starting on grasses and then being forced onto soybean when glyphosate is sprayed. The larvae will feed on foliage or pods. If there are many larvae on the grass then consider adding insecticide when spraying your glyphosate. The good news is that the "grass strain" of fall armyworm is easy to

kill with insecticides (e.g., a mid rate pyrethroid works well). *P.S. - This means you should also be paying attention to pastures for this pest.*

Other than fall armyworms, there are few reports of insect problems. Most of the insecticides being applied are going out with fungicide (needed or not). *Remember – insecticides do not increase yields - they only prevent yield loss when pests are present.* Don't burn through your ammunition before the enemy attacks. We have plenty of late soybean fields late may need insecticide. I hear at least weekly that the insecticide costs only \$3 (the approximate cost of a midland pyrethroid rate). My common response is ... "are you only spraying one acre." Insecticide costs can add up quickly. Also remember that \$3 is the cost only if the application is piggybacked with something else. Application costs are more than \$3/acre.

Concentrate your scouting on stink bugs, especially from R3 – R7. Use your sweep net and a treatment threshold of 12/100 sweeps prior to R5 or 36/100 sweeps after R5. Below are some pictures to refresh your memory. It looks like many of our early maturing soybean fields will get by without the need for an application.



Green Stink Bug Adult



Green Stink Bug Eggs



Green Stink Bug Nymphs



Hatching Egg Mass of Green Stink Bug



Brown Stink Bug Adult



Brown Stink Bug Nymph



Brown (left) vs. Green Stink Bug (right) Nymphs

**Corn.** This will be my last installment about corn. The southwestern corn borer (SWCB) flight is slacking off. The moth flight will not disappear because the third generation will start overlapping this one. However, it is getting late to be making insecticide applications to non-Bt corn. Suggestion – Start thinking about harvest. Non-Bt fields that have been infested with corn borers are at greater risk of lodging and ear drop. Harvest these fields first. It is not hard to identify infested fields. Just examine stalks for tunneling holes sometime during the next few weeks. Heavily infested fields will have tunneling injury on 20% or more of the stalks, but it is not that uncommon to see this number above 50%.

**Regional Report (Hayden E. “Gene” Miles, Area Extension Specialist, Northwest Tennessee)**

Cotton. All areas are reporting some rainfall this week which is promoting plant growth. Growth stages reported from producers, consultants, and IPM scouts in the area range from 13<sup>th</sup> node to boll set stage. Some cotton fields are still not blooming this week and are averaging above 80 percent square retention. More mature cotton plants in the Delta are averaging 13 1<sup>st</sup> positions and have 84 percent 1<sup>st</sup> position fruit retention. Plant bug numbers being reported from producers, consultants and IPM scouts this week range up to 18/100 sweeps and/or 7.2/6 row feet. Stink bug populations seem to be on the increase in more mature fields this week with one field reaching the threshold of 1 per 6 row feet. Treatment is also recommended if 20 percent or more thumb-sized bolls have internal feeding warts and/or stained lint indicating stink bug injury. IPM scouts and private consultants are also reporting cotton fields reaching NAWF=5 or physiological cutout this week. NAWF equals 5 can be determined by selecting a minimum of 25 representative plants across the field. Count down from the upper most node (extended leaf size of quarter) until you reach the 1<sup>st</sup> position white flower. When the number of nodes above the 1<sup>st</sup> position white flower averages 5 on the 25 plants selected then you have reached

physiological cutout. IPM scouts are reporting one field of Bt cotton this week having 4 percent bollworm/budworm damage (threshold - 2%) and 3 percent eggs. The high beneficial count for the week is 10.4 per 6 row feet.

Soybeans. Private consultants and IPM scouts are reporting stink bug counts this week at 2/100 sweeps and/or 0.4 per 3 row feet in soybeans in the bloom to mid-podfill stage of growth. The threshold is considered to be 12/100 sweeps and/or 1 per 3 row feet.

### **Farm Management (Chuck Danehower, Area Specialist - Farm Management)**

**Reminder** - 8<sup>th</sup> Annual Mid-South Agricultural Finance Conference on **August 5**. More information on this very educational conference can be found at <http://www.utm.edu/agconference/> or by calling 731-881-7324 or emailing Dr. Tom Payne at [tpayne@utm.edu](mailto:tpayne@utm.edu). The registration fee for producers is \$75.

**More on ACRE** The ACRE deadline for sign up this year is August 14 at your FSA office. Very few farms in Tennessee have signed up. Nationwide, it has been reported that a little over a thousand farms out of 1.3 million had signed up for ACRE. However, the sharp drop in grain and soybean prices this summer has prompted many farmers to look closer at the program. This can be a confusing program to explain and as I said last week, don't let the appearance of complexity scare you away from exploring this program. ACRE was designed to be a revenue safety net, not a substitute for crop insurance. Farms participating in ACRE will give up 20% of their Direct Payment, any Counter Cyclical Payments, and 30% of the loan rate.

Let's look at what producers will give up to participate in ACRE. First, **20% of Direct Payments** - in Tennessee, on the average that amounts to \$3.46 per base acre on wheat, \$3.63 per base acre on corn, \$1.32 per base acre on soybeans, and \$6.39 per base acre on cotton. Amounts will vary depending on direct payment yields. **Counter Cyclical Payments** - it is difficult to accurately project prices over the life of ACRE, but at this time, cotton is about the only crop that looks to have a counter cyclical payment. If corn, soybeans, or wheat prices drop enough to generate a counter cyclical payment, then that may also contribute to an ACRE payment. Lastly, **30% of loan rate** - this in itself will probably be enough of a deterrent to cotton producers to consider ACRE. It could also affect grain & soybean producers who utilize the loan program with their stored grain. It may not affect their net price, but could affect cash flow. A reduction in loan rate would also affect LDPs should prices go below loan rates. Hopefully, prices won't get that low, but it could happen. Like counter cyclical payments, if LDPs were to come into play, the ACRE payment would probably also be affected. There are a lot of **ifs** in deciding on ACRE and that is what makes the decision difficult.

Even if there is a state ACRE payment, producers will have to fall below their farm's guarantee to receive a payment. It looks like there will be a wheat ACRE payment for 2009, although it will be next year before it is officially determined. Wheat producers with only a grain or soybean base should look closely at ACRE. The ACRE payment could offset the loss in Direct Payments over the life of ACRE. Corn and soybeans will probably depend on whether the national average price drops more than the July projection. Most likely, it will be lower. On the other side is state yield, and with plenty of moisture, we most likely will have above average yields. Again, makes the decision even more difficult. The ACRE decision can't be made on just one year, but it does help the justification if there is a payment the first year.

If we can assist you in making the ACRE decision, contact your UT Extension office or Area Farm Management Specialist.

Tennessee Pheromone Moth Trapping Summary - Trapping efforts are funded in large part by the Tennessee Cotton Incorporated State Support Program. Thanks to the County Extension Agents who are also running southwestern corn borer traps.

**Numbers of Moths per Week (Week 13, Ending 7-29-09)**

Trap Location	Tobacco Budworm	Corn Earworm (Bollworm)	Beet Armyworm	Trap Location	Southwestern Corn Borer
Hardeman (Bolivar)	0	11	0	Fayette (Whiteville)	0
Fayette (Whiteville)	0	3	---	Tipton (Covington)	0
Fayette (Somerville)	0	4	0	Madison (WTREC)	32
Shelby (Millington)	2	3	0	Crockett (Maury C.)	22
Tipton (Covington)	0	21	---	Obion (Midway)	39
Tipton (North)	0	19	0	Obion (Crockett)	92
Lauderdale (Goldust)	0	32	0	Obion (Union City)	21
Haywood (West)	0	0	0	Obion (Obion)	32
Haywood (Brownsville)	0	6	---	Lake (Owl Hoot)	7
Madison (WTREC)	0	82	21	Lake (Croanville)	26
Madison (North)	0, 1 snake	38	0	Lake (New Markham)	47
Crockett (Alamo)	0	3	0	Dyer (Newbern)	50
Crockett (Maury City)	2	12	0	Dyer (Craig Rd)	46
Dyer (Dyersburg)	0	18	0	Dyer (Hwy 104 E)	27
Dyer (Newbern)	0	28	3	Dyer (Parker Rd)	76
Lake (Ridgley)	0	34	0	Weakley (Ore Sprg.)	*
Gibson (Kenton)	0	151	0	Weakley (Greenfield)	*
Gibson (Milan REC)	2	0	0	Weakley (Bean's S.)	*
Carroll (Coleman Farm)	0	4	0	Gibson (MREC)	64
<b>Average per Trap</b>	<b>0.33</b>	<b>25</b>	<b>2</b>	Gibson (Rutherford)	52
An asterisk (*) indicates the trap was missing, knocked down, or no report was received.				Gibson (Strawberry)	*
				Giles (Tarpley Shop)	*
				Giles (Agnew)	*
				Henry (Tosh Farms)	194
				Lincoln (Molino)	16
				Lincoln (Camargo)	42
				Lincoln (Meridianvil.)	8
				<b>Average per Trap</b>	<b>37</b>

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