

# IPM NEWSLETTER

## Update for Field Crops and Their Pests

No. 23

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Past newsletters and other information can be found at [UTcrops.com](http://UTcrops.com)

Bookmarks: [Cotton update](#) [Corn harvest](#) [Soybean update](#) [Soybean herbicide restrictions](#) [Insect issues](#) [Moth traps](#)

**Announcement:** Soybean Field Day, Milan, August 31 (8 AM - Noon). It is especially focused on soybean diseases, insects, weeds and irrigation. I know everyone is busy with their own field work and harvesting demonstrations. However, this is the best time to learn in the field with hands-on-teaching. So, bring your best hand lens. This day is for everyone including producers, agents, seed companies, chemical companies, chemical dealers and distributors, researchers and any one interested in growing soybeans. Additional details are available at: <http://www.utextension.utk.edu/fieldCrops/upcomingevents.html>.

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

The Tennessee agricultural statistics agency reports that 96% of the crop is setting bolls compared to 93% last week, 99% last year, and ahead of the 5 year average of 96%. Cotton condition is rated as 1% very poor, 12% poor, 36% fair, 44% good and 7% excellent. I think that these numbers are very optimistic. My personal opinion from driving around and from phone calls this week is that most of our cotton has some open bolls and is poor condition.

I have started calculating heat units past cutout in a table below. This will help determine when to terminated insecticide sprays and when to apply defoliant. Once a crop is 350 heat units past cutout we typically can stop insecticide sprays for most pests without suffering economic losses. Also, at 850 heat units past cutout, we can begin to think about defoliation.

**DD 60 Accumulation (TASS and NWS data).** For each location Accumulated DD60's are calculated starting with six different planting dates up to the date of the newsletter release. For example 4/20-8/1 would indicate DD60's accumulated for cotton planted on April 20 up to August 1.

### DD60 Accumulation Since Planting.

Location	4/20-8/15	4/27-8/15	5/4-8/5	5/11-8/15	5/18-8/15	5/25-8/15
Brownsville	1931	1883	1831	1760	1658	1613
Dyersburg	2004	1899	1899	1794	1719	1660
Fayetteville	2049	2002	1939	1850	1772	1703
Memphis	2362	2322	2226	2105	2015	1930
Milan	1835	1788	1736	1634	1564	1522

## DD60 Accumulation Since Cutout (NAWF=5).

Location	8/1-8/15	8/8-8/15	8/15-	8/22-	8/29	9/5-
Brownsville	356	181				
Dyersburg	368	186				
Fayetteville	372	191				
Memphis	409	218				
Milan	337	170				

### When to defoliate?

Node Above Cracked Boll (NACB). A NACB of 4 is usually safe for defoliation. However, low plant populations (less than two plants per foot of row) may need a NACB count of 3 to be safe. Low plant populations result in a less evenly distributed crop with high numbers of bolls set on vegetative branches and outer positions of fruiting branches. To use NACB, find the uppermost first position cracked boll and count upwards on the plant to the uppermost harvestable boll. Once the NACB has been determined, cut the uppermost harvestable boll to inspect the lint and seed. If the boll is mature then defoliation is safe. If the uppermost harvestable boll is immature, wait until NACB of 3.

Sharp Knife Technique. The sharp knife technique should be used to validate all methods of defoliation timing. Choose the uppermost boll that has a chance of contributing to yield. Make a cross section of the boll with a sharp knife. Bolls are generally safe when they are difficult to cut and a cross section of the seed reveals folded cotyledons, absence of jelly and darkened seed coats.

Percent Open Boll Technique. Most producers use the 50% open rule. This is fine if actual % open boll is actually calculated. The drive-by approach usually leads to the crop being well beyond 50% open when defoliant is applied. I suggest using a combination of the above techniques to time defoliation to crop maturity.

**What defoliant(s) to use?** Drought-stressed cotton often has thick cuticles and leathery leaves that inhibit the uptake of many defoliant. The potential for regrowth is often high due to unused nitrogen remaining after premature cutout. The uptake of Dropp or Freefall appears to be slightly inhibited in drought-stressed cotton and higher rates may be needed. Leafless and Ginstar both deliver a liquid form of thidiazuron and limited research suggests that their uptake may be less affected by drought-stressed cotton than Dropp or Freefall. Tank mixtures with Def or Folex as well as the addition of silicone surfactants or ammonium sulfate has been shown to increase the uptake of Dropp or Freefall on drought stressed cotton. However, use caution when applying higher rates or adjuvants in warmer weather as desiccation and stuck leaves may result. In high temperatures, combinations of herbicidal-type defoliant may desiccate leaves. Regrowth is often a problem if rainfall occurs following application. Regrowth can be a concern with applications of Def or Folex alone or tankmixed with ethephon depending on moisture conditions and temperature following application

Defoliant can be categorized as having either herbicidal or hormonal activity. Def, Folex, Harvade, Aim, ET, and Blizzard are herbicidal-type defoliant that injure the plant, causing it to produce ethylene in response to this injury. The ethylene promotes abscission and leaf drop. If these defoliant are applied at rates too high for the temperature, they kill the leaf too quickly before ethylene can be produced, which is a concern for current conditions. This results in desiccation or "leaf stick" instead of the desired defoliation (leaf drop). Dropp, FreeFall, Finish, FirstPick, and Prep are hormonal

defoliant that result in increased ethylene synthesis by the plant. Prep releases ethylene, which stimulates further ethylene synthesis in the plant, resulting in abscission zone formation in the boll walls and leaf petioles. Dropp is a type of hormone called a cytokinin. Although cytokinins promote leaf health in most plant species, in cotton and related species such as velvetleaf, cytokinins promote ethylene synthesis and act as a defoliant. Because these hormonal-type defoliant bypass herbicidal injury, they are not as likely to cause desiccation (leaf stick) as herbicidal defoliant.

Re-growth is a concern if we get rainfall. Right now I would focus on a one shot program with emphasis on leaf drop and boll opening. Prep is an excellent, economical choice to get the job done. The addition of Finish or FirstPick with Prep will help with leaf drop. Herbicidal type products are best left in reserve for the time being and save them to come back as a second shot to drop leaves and control re-growth if necessary. Keep in mind that if

***Use pattern and expected activity for defoliant and desiccants.***

Harvest Aid <sup>1</sup>	Labeled Broadcast Rate/Acre	Max. Use per Season	Mature leaves	Juvenile growth	Re-growth prevention	Boll opening
Def 6	16-24 oz	24 oz	Excellent	Fair	Poor	None
Folex 6	16-24 oz	24 oz	Excellent	Fair	Poor	None
Harvade 5F	8-10 oz	14 oz	Excellent	Fair	Poor	None
Lintplus	20 oz	36 oz	Excellent	Fair	Poor	None
Ginstar	6.4-16 oz	16 oz	Excellent	Excellent	Excellent	None
Leafless	10-12 oz	20 oz	Excellent	Excellent	Excellent	None
Aim	1.0-1.6 oz	3.2 oz	Excellent	Excellent	Poor	None
ET	1.5-2.0 oz	5.5 oz	Excellent	Excellent	Poor	None
Dropp SC	1.6-3.2 oz	9.6 oz	Excellent	Excellent	Excellent	None
Freefall	0.1-0.2 # product	0.6 # product	Excellent	Excellent	Excellent	None
Finish 6 Pro	21-42 oz	42 oz	Excellent	Poor	Fair	Excellent
FirstPick	96-112 oz	112 oz	Excellent	Poor	Poor-Fair	Excellent
Glyphosate <sup>3</sup>			Fair	Fair	Excellent	None
Ethephon	21-42 oz	42 oz (2 #ai)	Fair	Poor	Poor	Excellent

**Desiccants**

Gramoxone Inteon	11-21	21	Fair	Excellent	Poor	Fair
Sodium	4.5 # ai	N/A	Fair	Fair	Poor	None

<sup>1</sup> Addition of spray adjuvants may enhance defoliation during cold temperatures or when leaves are tough from drought stressed conditions. However, adjuvants may increase leaf desiccation during the early season when temperatures are warm.

<sup>2</sup> Expected temperature ranges are estimates only and may or may not be exact. Other conditions, including temperature, moisture and crop status will play a role in product performance.

<sup>3</sup> Non-Roundup Ready or Roundup Ready Flex varieties only.

**Corn Harvest Update (Angela Thompson, Extension Corn Specialist and Chuck Danehower, Area Specialist – Farm Management)**

Drought conditions have pushed corn harvest slightly ahead of normal. Corn will normally dry down at a rate of around 0.5 percent grain moisture per day. The hot, dry, low humidity conditions we are experiencing has accelerated the rate of grain drydown to as much as 1.0 percent per day, but concern exists over the long term standability of drought stressed corn. Fields that sustained significant drought damage should be harvested timely (early!) to minimize lodging from weakened stalks. Harvesting weaker fields first should help save on lodging losses.

Where drying equipment is available, corn should be dried quickly to 15% moisture (12-13% for long term storage) to minimize disease problems. Wet grain should not be held in wagons or trucks longer than 6 hrs. Place higher moisture corn in a holding bin using forced air to keep it cool if drying facilities are not immediately available.

In drought stricken areas where grain moisture is dropping like a rock, harvesting at higher moistures may not be an issue this season. For irrigated corn and a few areas where moisture was more adequate, the specific question has been at what moisture level should I start corn harvest to avoid losing money from a moisture dock? There is not a concrete answer to that question. It depends on each individual producer's situation. Producers with large acreages will have to begin harvest at some moisture level above what is actually desired in order to combine the entire crop. Near the end of harvest, most corn is at or below 15% grain moisture. Making the decision on what moisture level to begin corn harvest depends on several factors such as:

**Acres of corn as well as other crops to combine??** If you have more acres of crop than you can combine easily over a period of 2 to 3 weeks, you will need to harvest at higher moisture or have some custom combined. If you are planning on planting wheat behind corn, factor that in the decision.

**Are you drying your corn down or hauling straight to the elevator??** Check with your local grain handler. Some elevators are saying they will not take wet corn even at a discount at this time. That may make the decision for you. If you have your own dryer, then harvesting in the low 20% then drying down to 15% can be economical. With propane at \$1.60/gallon it takes roughly \$0.20/bushel of energy cost + variable costs of labor handling, and repairs to dry corn from 20% down to 15% moisture. At \$3.25 bushel corn, the extra bushels or weight will offset the drying cost. The same can not be said for hauling wet corn to the elevator – if they will take it. You will be looking at a \$.32 - \$.37 per bushel moisture dock (depending on the calculation – not all are the same).

**Bt or Non-Bt??** Typically, in a corn borer year, the Bt corn has better stalk strength and is able to sustain harvest time delays and rain/wind events. With the dry weather, the concern is that stalks in general have been weakened and may not hold up as well. Inspect your corn field and look for corn borer damage, disease damage, poor root system, and heavy ear in relation to stalk. Splitting the stalk and looking inside will tell you if you're likely to have standability problems. These are issues that could cause your corn to go down and make a field a candidate for harvesting at higher moisture.

An excel spreadsheet is available that compares the different discount methods to each other as well as on-farm drying cost. If you would like a copy, email Chuck Danehower at [scdanehower@utk.edu](mailto:scdanehower@utk.edu) or call 731-635-9551. We would be glad to fax or mail you a printed copy.

### **Soybean Update (Angela Thompson, Extension Corn and Soybean Specialist)**

Dry conditions have helped to rapidly defoliate April planted Group 3 varieties and some harvest has started. As with corn, soybean seed moistures are going down very quickly compared to what we are used to so check seed moisture now on anything planted in April or early May. April planted bean yields reported so far have not been too sporty-- mid thirties-- in fields with season-long drought stress. I am hoping for better numbers as we get more fields harvested. In severely dry areas, particularly areas with charcoal rot, harvest should begin as early as possible to reduce seed loss due to shattering. Harvesting early may mean collecting a few more green beans in the load, but will save some yield losses from shattering.

**Baling Soybeans for Hay.** June and later planted beans are really struggling right now. At more risk are the wheat beans that have thrown off a high percentage of blooms and have little moisture to fill

Pods that are on the plants. In light of this and the general shortage of hay, producers in some areas are cutting soybeans for hay. Soybeans that would make a good candidate for hay are those that are tall and still retaining most leaves. Soybeans sprayed with Headline can be fed for hay in as little as 21 days after application. There is no waiting period for Quadris treated soybeans. For other pesticides used on the crop, please check label information for forage/hay restrictions. Many commonly used insecticides do not allow feeding of soybean as forage or hay (e.g., Karate and Mustang Max).

Ed Burns, Franklin County Extension, shared his experiences with me on this topic as they have dealt with severe drought for the second year in a row. I am passing his insights along:

1. Stage of harvest has minimum impact on feed value. R3-R6 is where you will maximize quality and quantity. Earlier growth stages will not affect protein and TDN content much but will have more digestible fiber, because stems are not as tough.
2. Yield will depend on how thick beans are planted and how tall plants are at cutting and that can be all over the board. I know of no information indicating yield. The trick with soybeans is capturing leaves, because this is where the nutrients are.
3. Harvest with a conditioning mower that will crimp the stem and break the joints. If you use a tedder, you will beat the leaves off and you will end up with poor quality stem hay. Capturing the leaves is the trick, and it can be tricky to make high quality hay -- too wet and it will mold and rot -- too dry and you lose a lot of leaf. A good conditioner that breaks the stem to allow the moisture to escape is essential. If hay gets a little dry, try baling at night when it may come back in case. Don't over dry the soybean hay!! Some growers are cutting and drying on the first day and baling the second day to retain enough moisture to keep leaves in the bale.
4. If utilizing a lot of beans for hay, producers may want to look at a hay preservative which will help reduce mold growth.
5. Finally, do not expect this hay to keep well outside and uncovered, the stems make for a very porous bale.

### **Soybean Herbicide Feeding Restrictions (Larry Steckel, Weed Specialist)**

There are some soybean growers exploring the possibility of cutting and baling late planted soybeans rather than harvest them for grain. Feeding restrictions for some commonly used soybean herbicides need to be considered in these cases as just a couple of the many herbicides used on soybeans are registered to be then fed to livestock. However, two frequently used herbicides on soybeans in Tennessee, Roundup OriginalMax and FirstRate, both have a 14 day waiting period before treated soybeans can be fed to livestock. Therefore, most soybeans in Tennessee should be able to be baled for hay and fed to livestock without illegal residues. Forage, feeding and grazing restrictions for some of the more commonly used herbicides in soybeans are as follows:

<b><u>Herbicides</u></b>	<b><u>Restriction</u></b>
Classic	Do not feed
FirstRate	14 days
Flexstar/Reflex	Do not feed
Fusilade	Do not feed
Poast	Do not feed
Roundup OriginalMax	14 days
Roundup WeatherMax	14 days
Select	Do not feed
Sequence (Dual Magnum+glyphosate)	30 days
Synchrony XP	Do not feed
Touchdown Total	25 days
Valor	Do not feed

## Insect Issues (Scott Stewart, IPM Specialist)

**Cotton.** Almost all cotton fields are past the point of concern for most insect pests. The few calls I am getting are about bollworms in later, mostly irrigated, cotton. These kinds of fields are a magnet for late season pests. This includes stink bugs and fall armyworm. I've also had a call about a 15-20% infestation of bollworms in an irrigated field of Bollgard II cotton. *Remember* - Bollgard II and WideStrike cotton are not immune to bollworm. I would rarely recommend treating these newer Bt technologies based just on the presence of eggs, but fields should be treated using a pyrethroid insecticide anytime 6-10 larvae per 100 plants are found. Pay special attention under bloom tags and in pink blooms.

I will probably not write again about cotton insects this year. In summary, it was another light year for cotton insect pests for most areas of the state. However, intense thrips pressure on seedling cotton was common in many fields. Western flower thrips were much more common than usual, and because this species is more difficult to control, seed treatments did not perform as well as in recent years. Early season plant bug populations were very low, and the August bollworm flight is too late to cause much concern except to the latest fields. This late bollworm flight is at least partly explained by the "Easter freeze." The freeze forced the replanting of many corn fields, and thus, delayed the bollworm (a.k.a. corn earworm) flight. Stink bugs and/or plant bugs numbers reached treatment level in most fields during late July and August. Even though plant bug and stink bug numbers were not excessive, it is clear that some are waiting too long to treat (waiting for the bollworm flight that never came, or timing their oversprays based on a calendar date and not insect sampling??). However, outside of treatments needed for thrips control, a few fields never required an insecticide application. Perhaps the biggest nuisance this year was spider mites. I appreciate all the phone calls, questions and updates. This helps keep me apprised of current problems across the state.

**Soybean.** Despite the drought, I'm seeing and hearing about more fields having treatable numbers of stink bugs. Brown stink bugs represent a fair share, if not the majority, of stink bugs in many fields this year (immature pictured right). Brown stink bugs are more difficult to control than green stink bugs. One solution is to use higher than normal rates of a pyrethroid insecticide when treating for brown stink bugs (e.g., Baythroid XL, Karate, Mustang Max or Prolex). Other options are to use acephate (0.75 lb/acre) or methyl parathion (20-24 oz/acre).



I've also had several calls about high green cloverworm numbers with some soybean loopers in the mix. Green cloverworm (pictured right) is one of the easiest soybean pests to control. We typically recommend spraying when fields exceed 20% defoliation. However, you should consider treatment anytime populations exceed 150 larvae per 100 sweeps (fewer if already approaching 20% defoliation). Low pyrethroid rates, Intrepid (2-3 oz/a), Tracer (1 oz/a), acephate (0.75 lb/a), Steward (6 oz/a), Lannate LV (16-24 oz/a), Larvin (16 oz/a), methyl parathion (16 oz/a) and some other insecticides will normally provide excellent



control. If going after a combination of stink bugs and green cloverworm, expect good control with a pyrethroid insecticide, acephate (0.75 lb/a), Lannate LV (24 oz/a) or methyl parathion (20-24 oz/a).  
*Photo courtesy of University of Georgia.*

What about loopers? They cause a wrinkle because pyrethroid insecticides are not very effective in controlling soybean loopers. If loopers and stink bugs are present in significant numbers, some options to consider are Lannate LV (24 oz/a), Acephate (1 lb/a) or one of several tank mixes. These tank mixes would include combinations of a looper product (Intrepid, Larvin, Tracer or Steward) with a stink bug product (methyl parathion, acephate or a pyrethroid). All of these options will also control green cloverworms. You should consider treatment anytime you average 75 loopers per 100 sweeps or when a field reaches 20% defoliation.



Is it too dry to treat for insect pests?? The real question is -- has my soybean yield potential dropped so much that that I should quit? Although insects become a secondary problem in droughty times like these, my recommendation is to continue managing the crop for insect pests based on our threshold guidelines. If the field has enough potential to justify harvest, then it is worth protecting. I look at it this way -- a stink bug it probably going to feed on the same amount of seed regardless of whether the field has a 20 or 60 bushel potential.

#### **Area Report for Northwest Tennessee (Gene Miles, Area Crop Specialist, Week of August 12<sup>th</sup>).**

Cotton: Dry, hot weather continues to plague row crop production in the area. Selected more mature plants from the Delta in early planted cotton (April 21) are averaging 53 percent total fruit retention and 31 percent open or cracked bolls. It is generally safe to defoliate when 50-60 percent of the bolls are opened and the youngest bolls are mature.

As cotton fields continue to reach and pass physiological cut out, there is less chance for tarnished plant bug numbers to increase because of lack of an available food source. Plant bug numbers reported from Dyer and Lauderdale county IPM scouts and private consultants range up to 3.8 per 6 row feet and/or 23/100 sweeps. The high stink bug count being reported this week is 0.2 per 6 row feet. When checking for bollworms/budworms damage, dried bloom tags should be removed from bolls that are being checked and observed for worm damage. Dried bloom tags are also favorable sites to observe bollworm/budworm eggs. Bollworm/budworm damage being reported from IPM scouts and private consultants range up to 4% eggs, 2 worms greater than 1/4 inch long per 100 plants (terminals in Bt cotton), and 7% damaged fruit in Bollgard cotton. Spider mites are being observed at the medium level, and beneficial counts range up to 12.0 per 6 row feet.

Soybeans: Green cloverworm numbers are picking up this week probably because of hot, dry weather conditions is preventing a naturally occurring fungus that attacks this pest. Private consultants are reporting 112 cloverworms/100 sweeps. The threshold is considered to be 38/25 sweeps of 150/100 sweeps. If 20% defoliation is occurring in soybeans in the bloom to pod fill stage because of green cloverworms or combinations of foliage feeding insects, treatment should be considered. Corn earworms are being reported at 6/100 sweeps and stink bugs at 5/25 sweeps in soybeans in the bloom to mid-pod fill stage of growth.

**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 15, Ending 8-15-07)**

<b>Trap Location</b>	<b>Tobacco Budworm</b>	<b>Corn Earworm (Bollworm)</b>	<b>Beet Armyworm</b>	<b>Southwestern Corn Borer</b>
Hardeman (Bolivar)	0	21	2	---
Fayette (Whiteville)	0	4	0	---
Fayette (Somerville)	0	0	---	0
Shelby (Millington)	8	22	0	---
Tipton (Covington)	1	0	0	---
Tipton (North)	4	49	---	0
Haywood (West)	0	3	1	---
Haywood (Brownsville)	0	7	---	---
Madison (North)	4	34	---	---
Madison (Exp. Stn.)	10	65	38	181
Crockett (Alamo)	2	2	1	0
Crockett (Maury City)	9	13	---	---
Dyer (Bogota)	2	15	0	---
Dyer (Newbern)	0	3	---	0
Lake (Ridgley)	0	54	0	---
Gibson (Kenton)	0	0	---	---
Gibson (Milan Exp Stn.)	4	1	5	8
Carroll (West)	1	0	0	---
Lauderdale (Goldust)	1	7	42	---

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

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Scott D. Stewart (editor), Extension Cotton IPM Specialist

