

## *IPM NEWSLETTER*

### *Update for Field Crops and Their Pests*

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**This will be the last weekly issue of the IPM Newsletter, although additional updates may be sent on as needed. Also, this is the last week moth traps will be run.**

#### **Cotton Crop Update and Defoliation (Larry Steckel, Assistant Professor)**

This has been some year for cotton management. It has not been uncommon this past week to find a field being sprayed with defoliant and not a ¼ mile away another cotton field being sprayed for worms. The Tennessee Ag-Statistics Service reports that 12% of our cotton has at cracked bolls compared to 11% last year and a five year average of 18%. Though there has been some defoliation applications made this week, most cotton fields will be treated the first couple weeks of September. Here are a few things to consider as we enter the defoliation window:

1. Diesel is very expensive this fall. A few more dollars worth of defoliant and boll opener could save a second trip with the sprayer or picker.
2. Spray coverage is key. Chism conducted research that showed greater defoliation could be achieved with hollow cone and flat fan nozzles than with drift control nozzles. His results definitely pointed out that a few dollars invested in changing out those drift reduction nozzles to flat fans or hollow cones can greatly increase the chance of a once-over harvest from a one-shot defoliation application. This is another way to save on the fuel bill.
3. Regrowth could be a real issue this year particularly in the drier areas south of I-40. Warm, moist conditions along with residual nitrogen could set us up for a lot of juvenile growth. If picking will occur quickly, a regrowth material will probably not be needed. However, if many acres are defoliated in front of your pickers, consider adding something for regrowth. Regrowth preventing materials such as Dropp, FreeFall or Ginstar will curtail new growth.
4. North of I-40 where the cotton tends to be more rank producers may want to consider a two pass defoliation plan. Two shot defoliant applications were very successful last year where the cotton was rank. It is best to make up your mind before hand about a two shot application and not after unsatisfactory results from the first application. The goal of the first application is not to completely defoliate rather set the crop up for the second shot. The first shot should not be too hot as to stick leaves but should open the canopy to allow better penetration of the follow up application.

## **Types of Defoliant**

Defoliants can be categorized as either herbicidal or hormonal. Aim, ET and a newly labeled compound Resource are herbicidal type defoliants that injure the leaf causing it to produce ethylene which promotes abscission and leaf drop. Def and Folex actually could be placed into either category but are typically considered herbicidal type defoliants. Dropp, FreeFall, FirstPick, Finish and Prep (other ethephon products) are hormonal defoliants that result in increased ethylene synthesis in the plant which promote an abscission zone formation in the boll walls and leaf petioles. Hormonal type defoliants bypass herbicide injury and as a result are much less likely to stick leaves.

## **Common Herbicidal Defoliants:**

**Def 6 and Folex 6:** These phosphate-type materials have been the standard defoliant in Tennessee for many years. Their performance is essentially equal and they are effective over a broad range of environments. Minimum temperature for optimum performance is 55-60 F. These materials do not inhibit regrowth or appreciably improve boll opening. Activity improves with increased maturity of the crop. Leaf removal with these products is usually rapid and addition of surfactants offers benefit only under adverse conditions.

**Aim:** Aim has excellent activity in desiccation of juvenile growth, but does not inhibit regrowth. In mature cotton, and/or cool conditions, Aim activity has been shown to be similar to Def or Folex. In situations in which two applications are necessary, Aim has performed well. Aim will do a great job of desiccating morningglories and pigweeds. Under hot conditions or with rank cotton growth excessive desiccation has been shown with Aim. In these situations reduced rates should be used.

**ET:** ET is a herbicidal defoliant similar to Aim. ET has performed well when used in sequential applications. ET is labeled for tank-mixes with ethephon products and rates should be adjusted for temperature. ET requires the addition of a crop oil concentrate or NIS.

## **Common Defoliants and Boll Opening Materials:**

**Dropp 4 SC, FreeFall:** These thidiazuron products require 24-hour rainfree period and are also sensitive to cool weather. Dropp should not be applied when the average 24-hour temperature is predicted to be below 60 F for two to three days after application. Dropp will strongly inhibit regrowth when applied under favorable conditions. If Dropp is applied under less than favorable conditions the addition of COC (1pt/A) may enhance activity.

**Finish 6 Pro:** Finish contains ethephon and the synergist cyclanilide which aids in defoliation. Finish is an excellent boll opener and can be a stand-alone product in cooler conditions on well-cutout cotton. Finish also exhibits a limited level of regrowth control. Finish is typically a faster boll opener than ethephon.

**FirstPick:** FirstPick is a new formulation of a product most have heard of called CottonQuik. It contains the boll opener ethephon and a synergist different from the one found in Finish. It is an excellent boll opener. FirstPick can also be a stand alone product on well-cutout cotton. In rank cotton or in cases where regrowth is likely, the addition of Dropp, Freefall, Def, Folex, Aim or ET is recommended.

**Table 1. DD-60 Accumulation (TASS and NWS data)**

<u>Location</u>	<u>4/17/06- 8/27/06</u>	<u>4/23/06- 8/27/06</u>	<u>5/1/06- 8/27/06</u>	<u>5/8/06- 8/27/06</u>	<u>5/15/06 8/27/06</u>	<u>5/22/06 8/27/06</u>	<u>5/28/06 8/27/06</u>
Ames Plantation	2034	1947	1908	1859	1837	1799	1674
Brownsville	2100	2013	1969	1920	1893	1843	1717
Covington	1933	1854	1821	1777	1755	1708	1585
Dyersburg	2084	1998	1953	1901	1879	1823	1698
Huntingdon	1878	1803	1762	1728	1713	1684	1579
Jackson	1987	1907	1864	1820	1798	1758	1644
Memphis	2209	2113	2072	2014	1986	1940	1799
Milan	1893	1819	1782	1743	1727	1690	1679

**Table 2. DD-60 Accumulations for NAWF 5 Calculations**

<u>Location</u>	<u>7/16/06- 8/27/06</u>	<u>7/23/06- 8/27/06</u>	<u>7/30/06- 8/27/06</u>	<u>8/6/06- 8/27/06</u>	<u>8/13/06- 8/27/06</u>
Ames Plantation	802	641	501	329	159
Brownsville	794	627	492	326	157
Covington	736	580	458	301	145
Dyersburg	766	606	472	313	151
Huntingdon	745	583	457	298	143
Jackson	771	609	468	316	155
Memphis	862	690	540	353	173
Milan	750	594	461	301	148

\*Assumes NAWF 5 occurred on July 16, July 23 etc.

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

**Cotton:** Insect control will be wrapped up in the vast majority of fields by the end of this week. We need to ask some tough questions before making additional applications to any late maturing cotton fields. There is a high probability that any thumb-size bolls (those < 10 days old) will not survive to harvest before a frost occurs. At this time of year, these smaller bolls are often scattered in green spots or on a few plants. How much are you willing to spend to protect these small bolls? Forget worrying about plant bugs from this point forward. And at the least, insect treatment thresholds for bollworms or tobacco budworms should be increased considerably after this week. It will be hard to justify treatments unless populations exceed 8-10 larvae per 100 plants.

The bollworm flight has diminished, but there were enough bollworm and tobacco budworm moths around this week to keep things interesting in some later maturing fields. Most of this action was in the northern counties or along the big river. I've heard and seen eggs counts as high as 70% in Lake County. This egg lay was heavily concentrated in late maturing cotton. More mature fields in the same area had low egg counts. Fortunately, most of these acres are Bt cotton. Some of these same fields are also home to fall armyworm larvae

Some of the above fields were Bollgard II, and I would not spray unless surviving worms were being found. But considering the pressure, I felt it was a "no brainer" to spray some of the later maturing

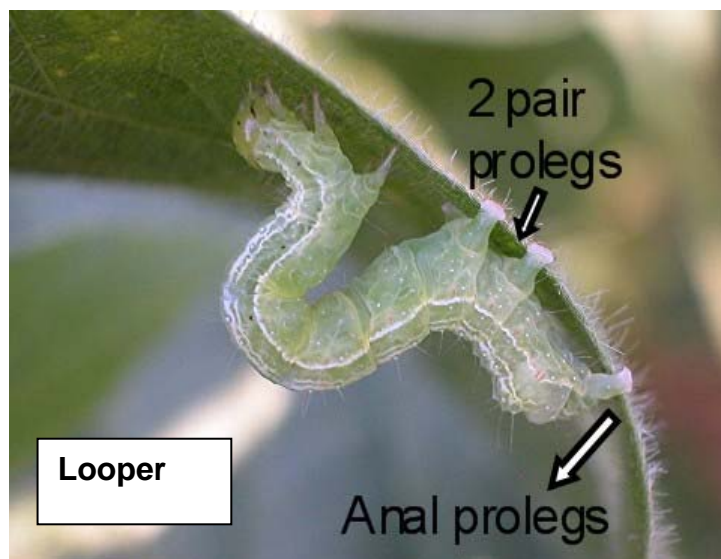
Bollgard fields. Looking at the DD60 table above, you can estimate that about 250 DD60s have accumulated since August 10<sup>th</sup>. August 10<sup>th</sup> represents the average last effective bloom date based on historical data of first frost in West Tennessee. Most of the fields experiencing heavy egg lays were not at NAWF=5 until after this date or later. So even being conservative and using this date as a cutoff, we need to protect fruit from bollworms for another 100 DD60s (about one week depending on the temperature). The concern is not protecting thumb-sized bolls which are less than 7-10 days old (they have limited or no value). Rather, the idea is to keep larvae from getting bolls that are 2-3 nodes further down the plant. A pyrethroid insecticide used at a mid rate is suggested if treatment is needed.

**Soybeans:** Corn earworms (a.k.a., bollworms) are being found in some group V beans. The moths are attracted to blooming beans, and the larvae start showing up soon after. Areas still experiencing a bollworm flight in cotton should also be on the lookout in their soybeans. Unlike most caterpillars in soybean, corn earworms feed extensively on pods. Treatment is recommended when 10-15 larvae are found per 25 sweeps. Getting good control with pyrethroid or other insecticides, especially of larger larvae, is easier on soybeans than on cotton. In cotton, large larvae spend most of their time protected inside bolls. Keep in mind that 80% of the feeding damage caused by most caterpillars is done during their last week of life. Because relatively big larvae are “killable” in soybeans, treatment may be justified even if you are late finding the larvae.

Some high counts of soybean loopers are being picked up, and I had a report of “gobs” of larvae from some fields in Tipton County. Of course, most the loopers are being found in group V beans. Our standard treatment threshold for defoliating pests is when 20-25% defoliation has occurred and beans are filling pods. When sufficient numbers of larvae are present to cause this level of defoliation, a better approach is to treat before they cause this much leaf loss occurs. About 19 soybean looper larvae per 25 sweeps will ultimately cause about 25% defoliation. Green cloverworm is our other common defoliating caterpillar. It takes about 38 green cloverworm larvae per 25 sweeps to cause the same level of defoliation. Why the difference? Two reasons: 1) loopers eat a little more leaf tissue per larvae than do green cloverworms, and 2) loopers are lower in the plant and do not dislodge into a sweep net as readily as cloverworms.

Distinguishing between green cloverworms and soybean loopers is important for one main reason. Green cloverworms are much easier and cheaper to control than are soybean loopers. Relatively low rates of pyrethroid insecticide give good control of green cloverworms. Pyrethroid insecticides are, at best, inconsistent for control of soybean loopers and are not recommended. Recommended insecticides for soybean loopers include Intrepid, Tracer, Steward and Larvin. All are effective and all are poor in controlling stink bugs. Suggested rates are listed in the [Soybean Insect Control Guide](#).

Both kinds of larvae have a general green color and both may “loop” like an inch worm while crawling. However, there are several things that make it pretty easy to tell the difference (see below).



### Green cloverworm larvae

- Three pair of prolegs on abdomen (not counting anal pair)
- Body similar width from head to tail
- Often wriggle wildly when prodded

### Soybean looper larvae

- Two pair of prolegs on abdomen (not counting anal pair, see picture)
- Tapered from head to tail (small head, wide butt)
- Don't wriggle

Treatments for saltmarsh caterpillars have not been uncommon even though larvae are more common than usual this year. I have had 2-3 calls about the larvae dying off in mass numbers. There is a fungal disease that can quickly wipe out infestations of saltmarsh caterpillars. Infected larvae are brittle and crumble when touched. This disease can prevent an insecticide application. There are several diseases that can cause similar die-off in looper populations. Consider holding off on insecticide treatment when infected larvae are being observed in a field.

It is interesting that when we have a “worm year,” it seems to generally apply to several pests and crops: southwestern corn borers in corn, tobacco budworms in cotton, bollworms in cotton and soybeans, fall armyworms in pastures, loopers in soybeans, etc...

**General Comments:** As far as insects are concerned, I'm not sure if this year will be remembered for the lack of “bugs” or the abundance or “worms.” If it were not for Bt cotton, I think the answer would be painfully obvious. What sticks out most in my mind is the variation: variable rainfall, variable insect pressure, and variable yield.

I would like to thank those folks that call in with updates and questions. This helps keep me up to date on current problems encountered across the state. I would also like to thank the commodity groups (i.e., Cotton Incorporated, Soybean Promotion Board) and industries that support our programs. Within a few weeks, much of our testing results will be posted on the internet. Insecticide testing data from Tennessee and surrounding states is made available for your use at: <http://www.utextension.utk.edu/fieldCrops/MultiState/MultiState.htm>.

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

*How much will it cost to pick my cotton a second time?* With the increase in equipment, labor and diesel cost, that is really not a question that has been asked the last year or so. However, as producers start planning their defoliation and boll opening treatments, it probably wouldn't hurt to review those costs. Below are second picking tables depending on the whether a 4-row picker or 6-row picker is used. Included are the costs for the accompanying module builder, and boll buggy. When making a decision on whether to second pick it is important to examine the variable or cash costs of repairs, diesel, and labor. The fixed or ownership cost of equipment although important, is not as critical to recover as the variable or cash cost. From the table below, a 4-row picker picking at 4 mph would incur variable cost of \$45.06 per acre. To just recover that cost, a producer would need to pick 82 lbs. of cotton at \$.55 lb. That is about one bale to 6 acres. A 6 row picker at 4 mph would have variable cost of \$36.65 and it would take 67 lbs. per acre or one bale to 7 acres to recover its cost. Cost per acre will vary with the speed of the picker.

Instead of asking the cost of second picking the appropriate question may be *Will it be more economical to apply a second defoliation/boll opening treatment rather than second pick my crop?* If that second treatment can get the majority of the crop open and available to pick and is cheaper than the second picking cost, then the answer is yes. Note that the second defoliation/boll opening treatment

including application cost would need to be less than \$45.06 for a 4 row system and \$36.65 for a 6 row system at the above speeds. Use the tables below in helping you make that decision. If I can assist you, please give me a call.

<b>2006 -- Second Picking of Cotton with 4 Row Cotton Picker</b>			
<b>Pounds of Cotton Lint/Acre to Breakeven Over Variable Cost</b>			
Picker Speed (MPH)	3	4	5
Variable Cost per Acre (a)	\$60.09	\$45.06	\$36.05
<u>Price (\$)</u> <u>Lint/Lb</u>		<u>Lbs/Acre</u>	
.40	150	113	90
.45	134	100	80
.50	120	90	72
.55	109	82	66
.60	100	75	60
.65	92	69	55

<b>2006 -- Second Picking of Cotton with 6 Row Cotton Picker</b>			
<b>Pounds of Cotton Lint/Acre to Breakeven Over Variable Cost</b>			
Picker Speed (MPH)	3	4	5
Variable Cost per Acre (a)	\$48.87	\$36.65	\$29.32
<u>Price (\$)</u> <u>Lint/Lb</u>		<u>Lbs/Acre</u>	
.40	122	92	73
.45	109	81	65
.50	98	73	59
.55	89	67	53
.60	81	61	49
.65	75	56	45

(a) Includes variable cost for 4 or 6 row cotton picker, boll buggy, and module builder. Please note that if fixed costs (depreciation, interest) were included lbs/acre would be doubled. Need to at least cover variable costs (fuel, repairs, labor). For share rented ground, take pounds per acre X [1 + share rent]. Ex. 1/4 rent, 0.50 cotton at 4 MPH = 73 x 1.25 = 91 lbs. to breakeven over variable costs. Diesel fuel cost is based on \$2.30 gallon.

**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 18, ending 8-29-06)**

Trap location	Tobacco Budworm	Corn Earworm (Bollworm)	Beet Armyworm	Southwest. Corn Borer
Hardeman (Bolivar)	4	0	3	---
Fayette (Whiteville)	0	0	0	---
Fayette (Somerville)	0	3	---	0
Shelby (Millington)	13	14	0	---
Shelby (Ag Center)	*	*	---	---
Tipton (Covington)	5	9	*	---
Tipton (West)	7	43	---	0
Haywood (West)	3	5	2	---
Haywood (Brownsville)	4	10	---	---
Madison (Exp. Stn.)	12	3	25	20
Madison (North)	0	17	---	---
Crockett (Alamo)	0	7	0	---
Crockett (Maury City)	13	0	---	---
Dyer (Dyersburg)	0	9	0	---
Dyer (Newbern)	0	0	---	30
Lake (Ridgley)	7	29	0	---
Gibson (Kenton)	6	25	---	---
Gibson (Milan Exp Stn.)	0	19	34	20
Carroll (West)	1	7	4	---
Lauderdale (Goldust)	36	50	53	---

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

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