

IPM NEWSLETTER

Update for Field Crops and Their Pests

No. 20

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

The Tennessee agricultural statistics agency reports that 75% of the crop is setting bolls compared to 38% last week, 60% last year, and ahead of the 5 year average of 56%. Cotton condition is rated as 0% very poor, 8% poor, 27% fair, 49% good and 16% excellent with continued above average square and small boll retention.

Lack of moisture is nearing a critical level for much of our crop. Many dry-land fields are nearing cutout (NAWF=5) if they are not already there. The question of the week has surrounded mepiquat (Pix) applications to cutout cotton. First a few points to remember. The larger the cotton plant, the more mepiquat is required to prevent rank growth. Applications should be avoided in drought stressed or extremely short cotton. The average last effective white bloom date (date when a bloom can still mature into a harvestable boll in average years) for most of west Tennessee is near August 10. Protection of bolls from bugs and worms should be higher on the priority list. However, if a producer wants to tank-mix mepiquat with an insecticide spray, data does not clearly indicate a direct yield or quality increase from the addition of late season mepiquat. In fields that have a history of rank growth, mepiquat can reduce whips and make the crop appear more uniform. While this can help prevent boll rot (if conditions are favorable), defoliation and harvest, it will not lead to a yield increase. So, will mepiquat help yield? No. Will mepiquat reduce boll rot and make defoliation easier? Maybe. Can mepiquat hurt yield? In most cases no, but as mentioned before drought stressed and short cotton may be adversely impacted. The short answer is I would **not** recommend late season mepiquat for **all** fields.

DD 60 Accumulation (TASS and NWS data).

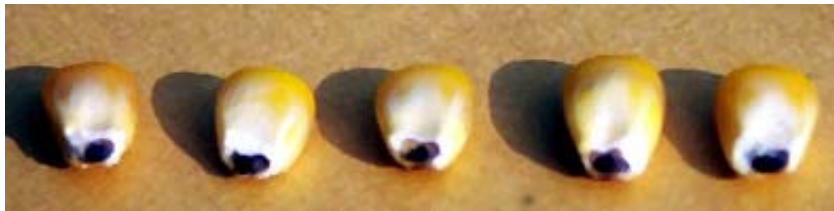
Location	4/20-7/26	4/27-7/26	5/4-7/26	5/11-7/26	5/18-7/26	5/25-7/26
Brownsville	1437	1389	1337	1266	1164	1119
Dyersburg	1501	1452	1396	1291	1216	1157
Fayetteville	1548	1501	1438	1349	1271	1202
Memphis	1804	1764	1668	1547	1457	1372
Milan	1372	1325	1273	1171	1101	1059

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

Terminating Irrigation in Corn. Producers who had access to irrigation this year are looking forward to a great corn crop. Our earliest corn is still probably one to 2 weeks away from physiological maturity so some information about when to terminate irrigation is pertinent at this time.

Adequate water is most critical at pollination/silking. Grain fill is the second most critical time to provide supplemental watering in a dry year. It is vital that adequate water be available as needed until physiological maturity or 'black layer' formation to avoid any late season yield losses. Early termination of irrigation will prohibit kernels from reaching full potential size and weight and some data indicate 15% or more yield loss when irrigation is terminated early in hot, dry conditions. After dent, corn requires less than one inch per week to maintain kernel development until maturity.

Black layer forms about 60 days after silking when a thin layer of cells die where the kernel attaches to the cob, turning a dark brown color. This process separates the kernel from the cob and the plant stops sending sugars into the kernels. Irrigation is no longer needed. You can sometimes see the black layer by breaking a cob in half and gently scraping kernel tissue at the base (cob end) of the kernel.



If you don't have the silking dates at hand, and your eyesight isn't what it should be to find the black layer, you can use the starch or 'milk' layer of kernels to estimate when black layer will be reached. The milk layer indicates the progression of sugar conversion to hard starch from the top towards the base (cob end) of the kernel. It usually takes about 20 days for the line to progress from the top to base. Break a cob in half and look at the cross section of the top half of the ear (flat side of kernels) for the milky line. A milk line about half way down the kernel indicates black layer should be reached in another 10 days. At black layer, seed moisture is still high (>30%) requiring time to dry to desired moisture before harvest.



Insect Issues (Scott Stewart, IPM Specialist)

Cotton. It continues to be a relatively quiet insect year in most areas, but there are threshold numbers of plant bugs and/or stink bugs in some fields, particularly the more mature cotton and in fields near the Mississippi River. In non-Bt cotton, some fields are being treated for 4-8% worms. In Bollgard cotton, a few bollworm/tobacco budworm eggs are being found, but only a few fields currently have treatable larval numbers. Based on moth traps and seeing moths in fields, it looks like bollworm flight will kick off in earnest this coming week. This flight is moving from south to north, but budworms are also still in the mix in some locations.

The number one question of the week has been “should I go ahead and clean up my fields?” The answer, of course, is situation dependent. Some fields have very low pest populations and don’t need cleaning. Other fields are running 3+ plant bugs per drop cloth and scattered stink bugs, and these fields are due for an application. Many fields are running one-half threshold. Spraying plant bugs or stink bugs when populations are below threshold is not necessarily a complete waste of money. It can knock down building populations and possibly prevent a later spray that would have been needed anyhow. But it is possible that some fields will not need sprayed in a light insect year. Another downside of spraying too early is that bug populations may rebuild and/or bollworms can show up later -- thus it takes two applications when one may have been enough. You should “ride” a field that is below threshold for plant bugs or stink bug” for another week in hopes that a single application will coincide with the impending bollworm flight. But do not wait for bollworms to show up if a field is already at threshold for plant bugs and stink bugs.

Last week, I made some suggestions about insecticide selection, particularly for Bollgard fields. I’ll continue to push the tank mixes of a pyrethroid insecticide with Bidrin, Orthene, Vydate, Dimethoate or Diamond on Bollgard cotton. These tank mixes perform well on our typical pest complex present at this time of year. These same choices are also appropriate for Bollgard II or WideStrike cotton even though we are less concerned about bollworms with these technologies.



What about non-Bt cotton? Again, the same tank mixes are appropriate providing overall worm numbers are low (< 8%) AND bollworm is the primary caterpillar present. Based on previous moth catches and field infestations earlier this year, you should assume a mixture of bollworm and tobacco budworm will be present in non-Bt fields (at least in the southern half of West Tennessee). Do not ignore tobacco budworm moths that are observed in fields. What are possible tank mixes for budworm/bollworm and plant bugs or stink bugs in non-Bt cotton? A few suggestions are below, but your choice will depend upon what one pest is the primary target. The key point is that pyrethroid insecticides by themselves will not provide effective control of tobacco budworm. Also, the best tobacco budworm insecticides provide little control of plant bugs or stink bugs, and they are not as consistent controlling bollworms as a pyrethroid.

Tank mix options for non-Bt cotton

- Tracer (2 oz/a) + acephate (0.5 lb/a)
- Tracer (1.5 oz/a) + mid-rate pyrethroid
- Steward (11 oz/a) + acephate (0.5 lb/a) or mid rate pyrethroid
- Denim (10 oz/a) + acephate (0.5 lb/a) or mid rate pyrethroid
- Acephate (1.0 lb/a) better to add a low rate of a pyrethroid if many worms are present

- Larvin (24 oz/a) or Lannate (24 oz/a) or Curacron (12-16 oz/a) + acephate (0.5 lb)
- Larvin (24 oz/a) or Lannate (24 oz/a) or Curacron (12-16 oz/a) + low rate pyrethroid

Spider mites continue to be present in some fields. Last week I showed the results of a spider mite trial that was rated four days after treatment (see below). As expected, we saw an improvement in control with some products, especially Acramite and Oberon, after eight days. Brigade was still performing well.

Spider mite numbers 4 and 8 days after treatment (10 GPA, 30 PSI, FF 80015).

Insecticide (rate per acre)	Mites per 5 leaves (4 days after treatment)	Mites per 5 leaves (8 days after treatment)
Brigade 2E (5 oz)	24.3 c	8.3 b
Acramite 4SC (16 oz)	34.8 c	11.8 b
Oberon 4SC (4 oz)	40.5 c	7.5 b
Kelthane 4E (32 oz)	55.5 bc	31.3 b
Zephyr 0.15E (4 oz)	56.3 bc	25.3 b
Dimethoate 4E (8 oz)	76.5 ab	44.5 ab
Untreated check	107.8 a	75.8 a

Means followed by the same letter do not significantly differ (P < 0.05, LSD).

Zoro 0.15EC has recently received a Section 24(c) label for the control of spider mites in Tennessee. The active ingredient in this product is abamectin, the same as Zephyr 0.15EC. The use rates of Zoro (4-16 oz/acre) are also the same as Zephyr.

Aphids have not been very common to date, but I have gotten a couple of calls this past week. Few if any fields currently require treatment, but this could change (especially once we start spraying for other pests). I would recommend the following treatments for aphid control: Intruder (0.8 oz/a), Centric (1.5 oz/a) or Carbine (1.8 - 2 oz/a). Trimax Pro (1 - 1.25 oz/a) is another option, although it is less consistent on aphids than the other products. Bidrin and dimethoate may provide some suppression but their performance is very erratic. The best choice may depend on what other pests are in the field.



Nodes above white flower (NAWF) = 5 is cutout. The flowers present in the field at NAWF5 represent the last bolls which are likely to be harvested. Many fields are currently at NAWF 4 to 6. Once a field hits NAWF = 5, it is typically about 18-21 days from when insecticide applications for plant bugs, stink bugs and bollworm can be terminated. Fields are essentially safe from these pests once the last harvestable bolls have accumulated 350-400 DD60s, which is about 18-21 days at normal summertime temperatures. There are a couple of things to remember.

- Fields should be managed for all insect pests until they hit NAWF5 + 350-400 DD60s
- The rule does not necessarily apply if the field has not been managed for insects up to NAWF5 + 350DD60. In short, do not leave a raging insect infestation in the field just because you hit the magic date.
- This rule does not apply to all pests. Spider mites, for example should be controlled as needed until NAWF5 + 600-700 DD60s. The same is true of defoliating pests such as loopers or beet armyworms.

Soybean. The earliest beans are approaching R6, and the treatment threshold for stink bugs at this time increases to 9 per 25 sweeps. Dectes stem borer appear to be common this year. Unfortunately, there are no silver bullets for controlling this pest or predicting which fields will be most affected. By the time you find adults (left), it is quite possible that egg laying has already occurred and insecticides will not control hatching larvae found inside leaf petioles. The adults are also long lived, so spraying may not prevent re-infestation. The truth is that anything I would tell you would be based on guesswork. My best recommendation - do not treat specifically for the pest except for unusual circumstance.



Area Report for Northwest Tennessee (Gene Miles, Area Crop Specialist, Week of July 23rd).

Cotton: Hot dry weather is pushing cotton plants to maturity this week. Selected more mature plants that were at NAWF = 7 last week reached physiological cut out this week (NAWF=5). These same plants are averaging 17 nodes, 46 fruiting positions and 87% total fruit retention.

Growth stages of cotton fields being monitored this week through Dyer and Lauderdale county IPM associations range from bloom to NAWF=5. Producers that treated combinations of spider mites, stink bugs and plant bugs with bifenthrin (Brigade 2, Discipline 2, Fanfare 2, Capture) are reporting good results. Plant bug numbers being reported this week from private consultants and county IPM association scouts range up to 5.0 per 6 row feet and/or 37/100 sweeps. Stink bug numbers are increasing with the high count being reported 1.2 per 6 row feet. The threshold is one or more per 6 row feet. When checking for percent damage in Bt and conventional cotton, 100 fruiting bodies (squares, blooms and bolls) should be observed from top, middle and lower areas of the plants per 20 to 40 acres. Also, number of bollworm/tobacco budworms should be determined by looking in squares in top twelve inches of plant (terminals) in 100 plants per field. IPM scout reports this week show 4 bollworm/budworm eggs per 100 plants (terminals), 1% fruit damage, and two worms greater than 1/4 inch per 100 terminals in Bt cotton. Beneficial counts range up to 13 per 6 row feet.

Soybeans: Group IV soybeans have reached the R3 growth stage and recommended fungicides are being applied. Stink bug numbers in Group IV soybeans in the bloom to mid-pod fill growth stage are low (0.5 per 25 sweeps). The threshold is considered to be 3 per 25 sweeps. Percent defoliation being reported from bean leaf beetles is less than 5%. The threshold is considered to be 20 percent defoliation from bloom to pod fill.

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

How much does an overspray on Bt cotton cost? In last week's IPM newsletter, Dr. Stewart discussed oversprays and their place in cotton production. His comments included this phrase *The key for maximizing profits is to time your "overspray(s)" based on scouting. Don't just spray because it is "that time of year". If you are too early or too late, you will not get the best bang for your buck. As with production practices this time of year, producers need to apply them when there is economic justification – when the practice will either increase yield or protect yield to pay for the practice.*

The table below gives a summary of the cost of overspray chemicals listed in last week's IPM newsletter. I surveyed local suppliers in West Tennessee and took an average of the cost. I was unable

to obtain a cost for every chemical listed last week as an overspray. Check with your supplier for their cost as well if there is a recommended pesticide not listed that you would prefer to use.

Costs of Pyrethroid Tank Mix Combinations in \$/Acre (material only)

Pyrethroid (\$/Ac)	Acephate (\$3.25)	Bidrin (\$2.77)	Dimethoate (\$2.03)	Vydate (\$3.78)
Ammo (\$3.51)	\$6.76	\$6.28	\$5.54	\$7.29
Asana (\$4.88)	\$8.13	\$7.65	\$6.91	\$8.66
Baythroid (\$4.58)	\$7.83	\$7.35	\$6.61	\$8.36
Brigade (\$7.20)	\$10.45	\$9.97	\$9.23	\$10.98
Karate (\$2.46)	\$5.76	\$5.23	\$4.49	\$6.24
Mustang Max (\$4.97)	\$8.22	\$7.74	\$7.00	\$8.75

Example of material cost for tank mix – Ammo (\$3.51) + Acephate (\$3.25) is \$6.76 acre.

The average material cost per acre is \$7.55 (\$4.60 pyrethroid + \$2.95 tank mix). This ranges from \$4.49 to \$10.98 per acre for material only. When the custom application cost of \$6.00 acre is added, the average cost of oversprays is \$13.55 acre, with the range of \$10.49 to \$16.98. If a producer uses their own sprayer, the application would most likely be less. Spraying at the right time and on a timely basis is the key. Regardless of your yield prospects, producers need to be watchful of their cost of production and apply oversprays only when needed and economically justified.

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 12, Ending 7-25-07)

Trap Location	Tobacco Budworm	Corn Earworm (Bollworm)	Beet Armyworm	Southwestern Corn Borer
Hardeman (Bolivar)	0	3	6	---
Fayette (Whiteville)	0	1	0	---
Fayette (Somerville)	0	0	---	0
Shelby (Millington)	18	26		---
Tipton (Covington)	0	0	0	---
Tipton (North)	0	85	---	0
Haywood (West)	0	10	0	---
Haywood (Brownsville)	0	0	---	---
Madison (North)	0	1	---	---
Madison (Exp. Stn.)	5	20	11	21
Crockett (Alamo)	0	4	0	0
Crockett (Maury City)	14	12	---	---
Dyer (Bogota)	2	8	0	---
Dyer (Newbern)	0	11	---	0
Lake (Ridgley)	2	0	0	---
Gibson (Kenton)	0	6	---	---
Gibson (Milan Exp Stn.)	0	1	6	16
Carroll (West)	0	2	0	---
Lauderdale (Goldust)	0	6	2	---

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

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

