

## **IPM NEWSLETTER**

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

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#### **Late Herbicide Applications on Large Palmer Amaranth in Soybeans (Larry Steckel, Weed Specialist).**

Phone calls continue to come in on glyphosate not controlling Palmer amaranth in soybeans. In some of these cases the growers sprayed glyphosate once and figured they missed some weeds, then resprayed and by the time they assess the control the Palmer is 2 feet tall. The question then is can a PPO herbicide like Flexstar, Ultra Blazer or Cobra control these large Palmer amaranths. The answer is no! These herbicides will severely burn the Palmer amaranth but regrowth will occur. The most consistent control of Palmer with a PPO herbicide is when it is no taller than 3 to 4" tall. A few growers have been fortunate enough to obtain good control on these escaped Palmer amaranth with an ALS inhibitor like Classic. In most cases however, the ALS herbicides have been complete misses. It has been our experience that roughly 70% of the Palmer amaranth in the state is ALS resistant.



Palmer amaranth in soybean field after 2 applications of Roundup PowerMax.

Some growers/consultants are chopping, pulling up, disking up or applying Gramoxone Inteon to small areas where there is Palmer amaranth in soybeans and cotton. I think this is a great idea as a little effort now could save a grower a lot of money in herbicide next year.

#### **Insect Management (Scott Stewart, IPM Specialist).**

**Cotton:** It has certainly been busier than last year. The good news is that yield potential is also considerably better in many areas. The next 10 days is a critical insect management window, and all fields should be scouted thoroughly at this time. Pay special attention for bollworms, stink bugs and plant bugs.

Bollworm moths are finally starting to show up. The moth traps did not show a big increase last week but keep in mind that traps show the flight for the previous week, not the current one. We are checking some traps daily and have seen a big jump this week. Bollworm larvae are often found in blooms and under pink and dried bloom tags that remain stuck to bolls. On Bt cotton, treat using synthetic pyrethroid insecticides when four or more “surviving” larvae are found per 100 plants. It is usually best not to count freshly hatched larvae when making a treatment decision (give the Bt technology a chance to work). Remember that the same treatment threshold applies to Bollgard II and WideStrike fields. These technologies are improved but not immune to bollworm. *Picture: bollworm egg on dried bloom tag.*



*Picture: bollworm egg on dried bloom tag.*

For the few fields of non-Bt cotton, note that we have had tobacco budworm moths around much of the year. Assume that at least some of the larvae being found in non-Bt fields are tobacco budworms. This has already been observed this year. Pyrethroid insecticides will not provide effective control of tobacco budworm larvae. Use the same threshold as above for Bt cotton (4<sup>+</sup> larvae/100 plants) but definitely count the tiny larvae when making treatment decisions. It is very important to time insecticide applications against hatching eggs and small larvae when dealing with budworms. Pay attention to moths being seen in fields. Assume that at least one-half the larvae are tobacco budworms if you see even a couple of budworm moths. Insecticides recommended for tobacco budworm are available at [http://www.utextension.utk.edu/fieldCrops/cotton/cotton\\_insects/pubs/PB1768-Cotton.pdf](http://www.utextension.utk.edu/fieldCrops/cotton/cotton_insects/pubs/PB1768-Cotton.pdf). A tank mixture of 1.5-2.5 oz/acre of Tracer plus a mid rate pyrethroid insecticide is my first choice for control. You'll need the higher rates of Tracer if larvae are bigger (> ¼ inch). *Picture: tobacco budworm moth*



Stink bug pressure has been variable but pretty high in some fields. Stink bugs are not insects that you can scout from the windshield. It requires close examination to determine if treatment is needed. This includes doing drop cloth or boll damage ratings (or both). Do not delay treatment when a field averages one stink bug per drop cloth. I do not often make boll damage assessments because it primarily targets stink bugs and we also have to look for other pests such as plant bugs. However, treatment is recommended if internal signs of feeding on thumb sized bolls reaches or exceed 20%. I use boll damage mostly in borderline situations to be sure there is not too much injury occurring. This technique also captures boll injury from plant bugs, especially clouded plant bugs. *Picture: feeding wart and stained lint caused by stink bug*



Spider mites remain a nagging problem in some fields, although rain has helped out in spots. The results of a spider mite test that was rated last week are shown below. As I mentioned in the last newsletter, bifenthrin (e.g., Brigade, Discipline, Fanfare) gave about 80% control of mites after three days. However, you can also see the advantage to using true miticides. Dicofol, Oberon, and Zephyr or Zoro (e.g., abamectin) all did much better than bifenthrin in the long run, providing excellent control after seven days; whereas spider mites were resurging in plots treated with bifenthrin. This is why two

applications at about a five day interval are often recommended when using bifenthrin. It is also why using true miticides is recommended when spider mite populations are high.

**Spider Mite Trial in Cotton - Applied 7/18/2008, Crockett Co., 12.4 GPA, FF80015**

Insecticide (Rate)	Mites per 10 Leaves (3 Days After Treatment)	Mites per 10 Leaves (7 Days After Treatment)
Untreated	130 a	121 a
Oberon (4 oz/a) + NIS (0.25%)	30 b	9 c
Oberon (8 oz/a) + NIS (0.25%)	34 b	5 c
Oberon (4 oz/a) + NIS (0.25%) + UAN 28% (1.5 qt/a)	24 b	4 c
Oberon (8 oz/a) + NIS (0.25%) + UAN 28% (1.5 qt/a)	10 b	3 c
Zoro (8 oz/a, abamectin) + Horticultural Oil (1%)	23 b	1 c
Zoro (4 oz/a, abamectin) + Horticultural Oil (1%)	27 b	4 c
Zephyr (4 oz/a, abamectin) + Horticultural Oil (1%)	12 b	3 c
Dicofol (32 oz/a) + NIS (0.25%)	20 b	4 c
Discipline (5 oz/a, bifenthrin) + NIS (0.25%)	27 b	79 b

Numbers not followed by the same letter are significantly different (P < 0.05, LSD).

NAWF Rules. The number of fruiting branches or nodes above white flower is a measure of crop maturity. Cotton fields where the average plant has five or fewer nodes above the first position white flowers are said to be in cutout. White flowers present at cutout represent the last bolls which will likely contribute to yield. Once a field reaches cutout (NAWF=5), it takes about 18-21 days (350-400 DD60s) before the crop is relatively safe from attack by plant bugs, stink bugs, bollworm or tobacco budworm larvae. Thus, insecticide applications targeting these pests can be terminated about 18-21 days after cutout is reached. Well watered fields may stay at or near NAWF=5 for a week or two, and in this case, you should not start the clock until the number of NAWF drops below 5. This rule does not apply to all pests. Spider mites are a good example. Fields should be protected from defoliation from spider mites until NAWF5 + 700 DD60s (my best guess). You can read more above NAWF, DD60s and crop management rules at [http://www.utextension.utk.edu/fieldCrops/cotton/cotton\\_insects/NAWF.htm](http://www.utextension.utk.edu/fieldCrops/cotton/cotton_insects/NAWF.htm).

**Area Report for Northwest Tennessee (Gene Miles, Area Crop Specialist).** Hopefully, recent rains have helped improve overall crop growing conditions in the area. Amounts of rainfall being reported range up to 1.5 inches. Cotton fields being monitored through the Dyer and Lauderdale county IPM programs are reaching nodes above white flower (NAWF) equal 5 or physiological cut out. Nodes above white flower 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 average 5 on the 25 plants selected, then you have reached physiological cut out. Large, more mature plants monitored this week are averaging 12 visible first position fruiting positions and have 83% first

position fruit retention. Plant bug numbers range up to 2.8 per 6 row feet and/or 42/100 sweeps. Stink bug numbers seem to be increasing this week with private consultants reporting counts up to 0.9 per 6 row feet. Also, consultants are reporting aphid “mummies” caused by a small parasitic wasp (*Lysiphlebus testaceipes*) reducing aphid populations this week. Bollworm and tobacco budworm activity is light with one worm greater than 1/4 inch per 100 terminals being reported in Bt cotton and 1% fruit damage in conventional cotton. Spider mite infestations range from light to heavy in spots. Beneficial counts range up to 12.0 per 6 row feet.

**Soybean:** Stink bug populations are all over the board, showing how important it is to scout fields individually. Stink bugs are not that hard to deal with if fields are scouted and treated accordingly. Do not assume a single insecticide application is all that will be needed, especially in late maturing fields. Other than stink bugs, there is nothing too noteworthy going on. There were high populations of three cornered alfalfa hoppers in some fields earlier this season, and girdling injury on main stems is common in many fields. I expect to get a lot of calls about plants breaking over in the next few weeks, but there is nothing we can do about this now because this injury occurs when plants are less than one foot tall.



Most fields have low populations of green cloverworm which are causing only mild defoliation. There is still some confusion about distinguishing green cloverworms from loopers. This is important because soybean loopers are potentially more damaging and also more difficult to control. Small green cloverworm larvae



also move in a looping manner, but green cloverworms have three pairs of prolegs (not counting the pair on the last, tail abdominal segment). This is clearly visible in the picture on the right and is also easily seen with a hand lens on smaller larvae. Soybean and cabbage loopers have two pair of prolegs (pictured left). Prior to mid August, most the caterpillars in a soybean field are usually green cloverworms.

**Corn:** In non-Bt corn, check fields for stalk tunneling caused by southwestern corn borer. Harvest the most heavily infested fields first to minimize losses cause by lodging or tunneling of ear shanks (which sometimes causes ears to break off). SWCB traps are going back up, showing the third generation is occurring. Fortunately, only very late maturing non-Bt fields will be at risk to this generation.

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

**A Few Corn Pollination Problems Reported.** I have been checking some fields with poor pollination in corn. There are even more instances of smaller than typical ear size. Many of these areas missed the June rains that fell in southern counties. We are not as bad off as in 2007, but with the dry and hot conditions experienced in many areas in late June and July, it is not surprising. Combined moisture and temperature stress before tassel emergence can reduce ear length. Stress during the corn reproductive period can reduce grain yield by affecting pollination and kernel fill. At the time of tassel emergence, silks start emerging from the base of the cob to the tip of the cob (base of ear pollinates first and tip pollinates last). Pollen shed lasts over a period of 7 to 10 days and normally more than enough pollen grains are produced to pollinate all silks in a field. Dry weather can delay silk growth and the time of emergence. The result is that sometimes pollen is shed before silks have fully emerged. Temporary heat and moisture stress may affect only a specific section of silks on the

ear, and the majority of the cob pollinates normally. In severe cases, the ears have no grain. The most serious pollination problems are showing up on hill ground. Just about all areas still need some rain to fill out the corn and put something in our soybean pods.

**Grain Sorghum Fungicide Labeled.** Up until now, we have not had an option for treating grain sorghum for leaf diseases. Syngenta announced last week that Quadris was labeled for use in cotton and grain sorghum in Tennessee and a few other states. Dr. Newman has not tested a fungicide on sorghum, but for any producer who wants to try some this season, he suggests using the 6 oz/Acre rate when sorghum is at 50% head bloom. Rain during heading/ flowering can lead to head mold diseases and the Quadris should help reduce that problem while preventing leaf diseases such as Gray leaf spot or Anthracnose. A good adjuvant such as Nonionic Surfactant at 1 Qt/100 gal OR Crop Oil at 1 gallon/100 gal can improve performance. Tank mixing the Quadris with a midge or worm insecticide will save a trip over the field.

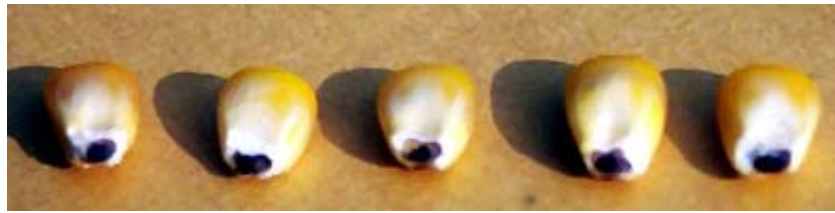
**Asian Soybean Rust Update.** Scattered reports are circulating about new ASR finds in the southeast. On 28 July, soybean rust was confirmed in soybean production fields in Cameron County, Texas. On 25 July, soybean rust was detected on leaves collected from a soybean sentinel plot in Baldwin County in Alabama. This is the first report of rust on soybeans in Alabama this year. The disease was observed on kudzu in Mobile County earlier this year. With the recent finds in Texas and Alabama, pathologists continue to monitor the situation for increase in incidence or rate of spread but rust seems to be slower to appear compared to last year. Louisiana is experiencing drier weather compared to last year and there are no reports of rust on soybean in Louisiana or Mississippi at this time. Other states like Tennessee with dry conditions continue to scout soybean sentinel plots. All PCR results for soybeans in Tennessee have been negative for soybean rust.

Producers with soybean fields that caught some rain and where yield potential looks pretty good may want to consider a fungicide for our standard foliar diseases timed with any necessary stinkbug sprays that are going out now. Please use a strobilurin product for best control of our typical foliar diseases. Triazole-only products are rust fungicides and are a weak substitute based on current UT data.

**Terminating Irrigation in Corn.** Producers who had access to irrigation this year are looking forward to a good corn crop. Our earliest corn is getting close to black layer or 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 too 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.



(Photo courtesy of MS State University)

When silking dates aren't known, 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, take the top of the ear (tip end) and look at the cross section 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 some time to dry to desired moisture before harvest.



(Photo courtesy of MS State University)

### **Soybean Fungicides (Melvin Newman, Professor, Extension Plant Pathologist)**

Many soybean producers are now spraying their soybeans with a foliar fungicide. The best time to spray for late season diseases is at the R3 stage of growth. Under some conditions, when soybean prices are really good; a second application might be beneficial.

Since soybean rust is not a threat at this time, all that is needed for control of late season diseases is an EPA approved Strobilurin fungicide such as Headline or Quadris with a surfactant such as NIS or a COC. A premix or tank mix of a Strobilurin plus a Triazole fungicide is also effective as long as there is an adequate amount of Strobilurin in the mix. When making a second application, it is wise to use a tank mix or a premix of Strobilurin plus a Triazole. This would help reduce the chances of a built-up of resistant fungi to the Strobilurin fungicides.

Using just a Triazole for late season diseases such as Brown Spot, Frogeye Leaf Spot and Anthracnose would not be the best choice for maximum control. Basically, the Triazoles are best used for soybean rust control. Triazoles are necessary when there is a high risk for soybean rust. The risk of rust is very low at this time.

Downy Mildew is now being reported on some susceptible soybean varieties. This disease usually does not cause severe damage. However, seed quality can be reduced by this disease in some years. Foliar fungicides have not shown much control of this disease. We have very limited data on the current fungicides for control of Downy Mildew. But, we are putting in some tests this year to get more data.

For more information on soybean diseases, disease resistant varieties and fungicides check the [utcropl.com](http://utcropl.com) web site.

**Farm Management Update (Chuck Danehower, Area Specialist - Farm Management).**

**Reminder** - 7<sup>th</sup> Annual Mid-South Agricultural Finance Conference on **August 6**. It will be held at the University Center, UT Martin, starting at 8 a.m. and adjourning at 3 p.m. Featured speakers are Dr. David Kohl, Dr. Matt Roberts, and Robert Egerton. Dr. Kohl will be addressing effective management practices, risk factors to look for, and how to protect, strengthen your balance sheet and reduce risk. Dr. Roberts, who also spoke at this year's Grain Conference, will look at the future of commodity prices and land values. Matt will focus on the opportunities and threats for crop and livestock producers and lenders. Mr. Egerton, who is president of the Eastern Region Commercial Agribusiness Division for Cobank, will address the availability and cost of agricultural loans in 2009. More information on this very educational conference can be found at <http://www.utm.edu/staff/banking/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.

**Tennessee Pheromone Moth Trapping Summary** - Trapping efforts are funded in large part by the Tennessee Cotton Incorporated State Support Program. Some County Extension Agents are also reporting additional trap counts for SWCB moths at corn variety test locations. Thanks to them and Bob Williams for these data.

**Numbers of Moths per Week (Week 13, Ending 7/29/08)**

Trap Location	Tobacco Budworm	Corn Earworm (Bollworm)	Beet Armyworm	Trap Location	Southwestern Corn Borer
Hardeman (Bolivar)	0	0	0	Fayette (Whiteville)	0
Fayette (Whiteville)	0	0	---	Tipton (Covington)	0
Fayette (Somerville)	0	0	0	Madison (Exp. Stn.)	*
Shelby (Millington)	0	0	0	Gibson (Exp. Stn.)	37
Tipton (Covington)	3	9	---	Dyer (Newbern)	46
Tipton (North)	4	8	2	Dyer (Samaria Rd)	290
Haywood (West)	7	0	0	Dyer (Fuller Rd)	72
Haywood (Brownsville)	3	1	0	Dyer (Welch Rd)	100
Madison (North)	0	4	---	Obion (Central)	575
Madison (Exp. Stn.)	2	39	0	Obion (Northeast)	477
Crockett (Alamo)	1	0	0	Gibson (Sims north)	72
Crockett (Maury City)	5	4	0	Gibson (Sims south)	35
Dyer (Bogota)	0	12	0	Gibson (King)	35
Dyer (Newbern)	15	7	---	Gibson (Idlewild)	9
Lake (Ridgley)	6	59	3	Gibson (Race Track)	64
Gibson (Kenton)	8	9	0	Gibson (Gibson)	57
Gibson (Exp. Stn.)	5	2	0	Lake (Hoecke)	414
Carroll (West)	0	4	0	Lake (Isom)	54
Lauderdale (Goldust)	3	19	2	Weakley (South)	
				Weakley (North)	
<b>Total</b>	<b>62</b>	<b>177</b>		Haywood (Hwy 19)	28

An asterisk (\*) indicates trap was missing or knocked down.

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