

# North Carolina Pest News

Departments of Entomology and Plant Pathology



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## CAUTION !

*The information and recommendations in this newsletter are applicable to North Carolina and may not apply in other areas.*

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See current and archived issues of the *North Carolina Pest News* on the Internet at: [http://ipm.ncsu.edu/current\\_ipm/pest\\_news.html](http://ipm.ncsu.edu/current_ipm/pest_news.html)

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## **ANNOUNCEMENTS AND GENERAL INFORMATION**

### **Northeast Ag Expo Field Day**

Northeast Ag Expo Field Day is on July 25, 2013 starting at 7:45 a.m. at Roberts Brothers, Inc., 169 N. Gregory Road, Shawboro, North Carolina. Registration information is at <http://www.ncneagexpo.com/>.

## **FIELD AND FORAGE CROPS**

From: Jack Bacheler, Extension Entomologist

### **Late Cotton Crop**

It looks like our more recent sunny hot weather has just begun to help cotton escape from the grips of our prolonged very wet period. Cotton in most areas I've been this past week has a lot of catching up to do – perhaps too much in some cases. To add insult to injury, this late crop will likely be susceptible to late season insects for a considerable period going forward.

### **Plant Bugs**

We think that the movement of plant bugs from wild hosts and corn into cotton may increase during the coming weeks if our present hot dry weather continues. Perhaps an additional consideration with plant bugs this year is the low total number of squares for mid-July in many fields. Here we're not talking about low square retention rates, but the limited square development given how far this crop is behind. This makes keeping available squares on the plants more important than in most other years when moderate levels of square loss could be tolerated. This year, it could be more important than most to protect squares and young bolls from insects, including plant bugs, stink bugs and bollworms.

### **Stink Bugs**

We have a number of cotton fields that are on the lush side due to prolonged wet weather, with squares and young bolls few and far between. In our cotton scouting school in the Greene County area this week, brown stink bugs seemed to be quite abundant. This would not be the year or time to overlook stink bug damage to young bolls. We feel that using the dynamic threshold, which stresses a 10% internal damage threshold for quarter-sized bolls during weeks 3 through 5 of the bloom period, will keep stink bug damage low and also not waste unnecessary insecticide applications. You can find much more detailed information about stink bug identification, damage symptoms, scouting procedures, threshold use and much more by reading and using our new stink bug decision app (<http://ipm.ncsu.edu/cotton/insectcorner/sbapp2/index.html>). The development of this app was supported by funding from our North Carolina Cotton Producers State Support Committee via Cotton Incorporated. The use of this app, like any stink bug scouting procedure, requires scouts to make at least weekly boll assessments for internal damage to receive the most benefit from this app.

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## Bollworms – Where Are You?

Dominic Reisig, Extension Entomologist, conducted some corn ear assessments this past week. Corn earworm infestation levels on ear tips in these assessments were very low compared with other years. Additionally, it appears that the progress of this generation is more than a week behind schedule, thus hopefully delaying our major corn earworm moth flights into cotton, soybean and other crops this year – perhaps one small plus in an otherwise tough year agronomically. Finally, light trap counts in Scotland County indicate that our major bollworm moth flight has not begun in southern North Carolina as of this past Wednesday.

## Other Cotton Pests

Calls about spider mites have subsided somewhat, but mites still seem to be hanging around, even if mostly at low levels. This seems like good plant conditions for cotton aphids, with at least one population in eastern North Carolina being difficult to control with chloronicotinoids. If control difficulties are found after treating with Admire Pro, Centric, Belay or Intruder, alternatives such as Carbine and Transform have different modes of action and should be used for possible subsequent sprays. Remember that aphids are nice juicy essentially immobile targets for biocontrol in North Carolina, so if the rounded aphid mummies or the fungus is found, an insecticide will probably not be needed in many cases.

From: Dominic Reisig, Extension Entomologist

## Earworm (Bollworm) Populations Low in Corn: What Does That Mean?

My lab has searched for corn earworm (aka bollworm in cotton) from over 1,000 ears of corn this week. These were from hybrids that contained no *Bt* genes, single *Bt* genes, and a few were from hybrids with multiple *Bt* genes and decent efficacy (Optimum Intasect, and Genuity VT Double Pro, for example). Some folks have commented on the lack of earworms in sweet corn compared to previous years. I happened to have a trial planted in the same location in 2012 and 2013 only four days apart, with the same hybrid, sampled on the same date (April 18). In 2012, a non-*Bt* variety had 28% ears that were infested on this date, some of which had already completed development in the ear. In contrast, this year, the same non-*Bt* variety had only 8% infested ears, with smaller-sized caterpillars on average.

So in general, it appears that **we will have fewer bollworms leaving corn for cotton and soybeans in late-July and August**. This is another reason (in addition to others covered at <http://www.nccrops.com/2013/05/28/thinking-ahead-to-corn-earworm-management-in-soybeans/>) to forgo automatic insecticide applications. There shouldn't be much to kill!



Corn earworm feeding in the tip. Photo from D. Reisig.

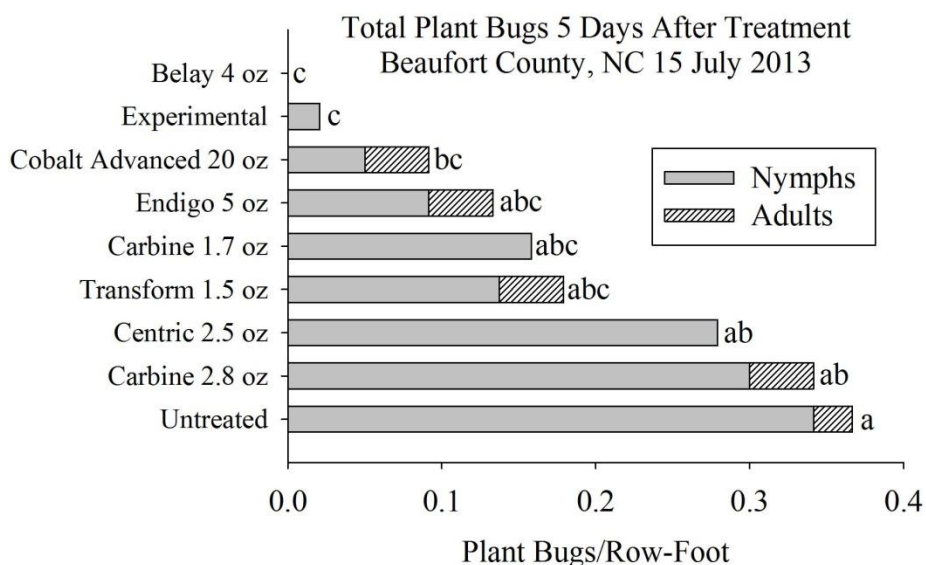
There are several modifications we may need to make to our general scouting plans in both cotton and soybeans.

Corn earworm moths pupate under the soil. Timing of their emergence can be influenced by moisture. Sometimes when conditions are dry for a while, a rain event can trigger a massive moth emergence. Based on our weather patterns this summer, a mass moth emergence doesn't seem likely. I **predict a smaller emergence, but maybe one that is more sustained and a bit later than normal.** Depending on where you are in the state, this might take place as early as next week (if you're in southern North Carolina) or into August if you're farther north.

Cotton is developing slower than usual and soybeans are still being planted. This will extend our season and give the corn earworms time to "catch up". This is a multi-generational pest throughout the year. So even though few are produced in corn, more may be produced in our crops or even wild hosts (think of all the weeds we have this year!). **I would be more concerned about this pest as time goes on, especially in late cotton and beans.** If we continue on in a wet pattern, expect fewer problems. If conditions dry somewhat, expect more.

### 2013 Early-Season Plant Bug Insecticide Results

Recommendations for plant bug insecticides have been covered previously (<http://www.nccrops.com/2013/06/22/insecticides-for-plant-bugs/>). The results to the left represent an early-season application applied above threshold. Five days after treatment, densities had dropped below threshold (0.5 bugs per row foot), but differences were apparent. Square retention hovered between 80 to 90%. The neonicotinoid Belay was excellent. The surprise was the neonicotinoid Centric, which generally is better earlier in the season. A fair bit of this insecticide has been sprayed already this year, so it's probably best to steer clear of this until early season next year.



Graph from D. Reisig.

Carbine and Transform are new classes of chemistry for our system. Both are the only options for situations where aphids have developed resistance to neonicotinoids. Cobalt Advanced and Endigo are co-packs. Cobalt is an organophosphate/neonicotinoid mix, while Endigo is a pyrethroid/neonicotinoid mix.

From: Jim Dunphy, Extension Soybean Specialist, and Steve Koenning, Extension Plant Pathologist

### **Soybean Rust Update: July 18, 2013**

The recent confirmation of Asiatic soybean rust on soybeans in Autauga and Escambia counties in Alabama, and Jackson and Amite counties in Mississippi, do not put rust any closer to our North Carolina soybeans, although the Autauga County finding came close for the western part of North Carolina. The closest confirmed rust to our North Carolina soybeans remains approximately 355 miles from Charlotte, 620 miles from Elizabeth City, 445 miles from Fayetteville, 220 miles from Murphy, 485 miles from Raleigh, 550 miles from Washington, 460 miles from Wilmington, and 415 miles from Winston-Salem, North Carolina.

We do not recommend spraying soybeans that have not started blooming with a fungicide to control Asiatic soybean rust. Such pre-bloom applications have seldom improved yields. Once soybeans start blooming, we would recommend spraying **if** rust has been confirmed within 100 miles of the field.

The current status of soybean rust in the U.S. can always be found at <http://sbr.ipmpipe.org/cgi-bin/sbr/public.cgi>.

## **FRUIT AND VEGETABLES**

From: Lina Quesada-Ocampo, Extension Plant Pathologist

### **Do You Know How to Diagnose Cucurbit Downy Mildew in Different Cucurbit Crops?**

Cucurbit downy mildew has now been reported in Wayne, Nash, Johnston, Franklin, Sampson, Wake, Martin, Hertford, Wilson, New Hanover, Lenoir, Edgecombe, and Rowan counties. Hosts in North Carolina reported to be infected so far include cucumber, cantaloupe, butternut squash, giant pumpkin and watermelon. All cucurbits can be severely affected by this foliar disease.

For more information about the disease and how to control it see our factsheets in English and Spanish ([http://projects.cals.ncsu.edu/veggiepathology/disease\\_factsheets](http://projects.cals.ncsu.edu/veggiepathology/disease_factsheets)) in our lab website (<http://projects.cals.ncsu.edu/veggiepathology/>). Control recommendations are also available in the cucurbit downy mildew IPM pipe website (<http://cdm.ipmpipe.org/index.php>), where you can also register to receive text, email and/or phone alerts when new disease outbreaks are reported. If you think you have cucurbit downy mildew in your cucurbits please contact your local Extension agent (<http://www.ces.ncsu.edu/local-county-center/>) and send photos and/or physical samples to the Plant Disease and Insect Clinic (<http://www.cals.ncsu.edu/plantpath/extension/clinic/>).



While symptoms in cucumber are very characteristic, symptoms in other cucurbits may be harder to identify because lesions are irregular in shape instead of being angular and bound by veins, which is commonly observed in cucumber. A good way to determine if you have cucurbit downy mildew is to check the underside of the leaf for dark (brown, gray, black) sporulation with a 20x hand lens. Sporulation is typically easier to see when conditions are cool and humid, for example, early in the morning. Do not confuse cucurbit downy mildew with powdery mildew. Powdery mildew has white sporulation on the topside of the leaf. Cucurbit downy mildew has dark (brown, gray, black) sporulation on lesions on the backside of the leaf. See below some photos of cucurbit leaves infected with cucurbit downy mildew to help you when scouting. We also regularly post vegetable disease photos in our lab's Facebook (<https://www.facebook.com/QuesadaLabNCSU>) page.

Follow us on Twitter (<https://twitter.com/QuesadaLabNCSU>) and Facebook for more veggie disease alerts.



**Cucurbit downy mildew symptoms on cucumber leaf. Photo: Dr. Lina Quesada, NCSU Vegetable Pathology Lab.**



**Cucurbit downy mildew symptoms on backside of cucumber leaf. Photo: Dr. Lina Quesada, NCSU Vegetable Pathology Lab.**



**Close-up of cucurbit downy mildew symptoms on cucumber leaf. Note angular lesions bound by leaf veins. Photo: Dr. Lina Quesada, NCSU Vegetable Pathology Lab.**



**Close-up of cucurbit downy mildew symptoms on backside of cucumber leaf. Note dark sporulation on some lesions. Photo: Dr. Lina Quesada, NCSU Vegetable Pathology Lab.**



**Cucurbit downy mildew symptoms on cantaloupe leaf. Photo: Dr. Lina Quesada, NCSU Vegetable Pathology Lab.**



**Cucurbit downy mildew symptoms on backside of cantaloupe leaf. The white sporulation is not cucurbit downy mildew. Photo: Dr. Lina Quesada, NCSU Vegetable Pathology Lab.**



**Close-up of cucurbit downy mildew symptoms on cantaloupe leaf. Photo: Dr. Lina Quesada, NCSU Vegetable Pathology Lab.**



**Close-up of cucurbit downy mildew symptoms on backside of cantaloupe leaf. Photo: Dr. Lina Quesada, NCSU Vegetable Pathology Lab.**



**Cucurbit downy mildew symptoms on watermelon leaf. Photo: Dr. Lina Quesada, NCSU Vegetable Pathology Lab.**



**Cucurbit downy mildew symptoms on backside of watermelon leaf. Photo: Dr. Lina Quesada, NCSU Vegetable Pathology Lab.**





**Close-up of cucurbit downy mildew symptoms on watermelon leaf. Photo: Dr. Lina Quesada, NCSU Vegetable Pathology Lab.**



**Close-up of cucurbit downy mildew symptoms on backside of watermelon leaf. Photo: Dr. Lina Quesada, NCSU Vegetable Pathology Lab.**



**Cucurbit downy mildew symptoms on gourd leaf. Photo: Dr. Lina Quesada, NCSU Vegetable Pathology Lab.**



**Cucurbit downy mildew symptoms on backside of gourd leaf. Photo Dr. Lina Quesada, NCSU Vegetable Pathology Lab.**



**Close-up of cucurbit downy mildew symptoms on gourd leaf. Photo: Dr. Lina Quesada, NCSU Vegetable Pathology Lab.**



**Close-up of cucurbit downy mildew symptoms on backside of gourd leaf. The white sporulation is not cucurbit downy mildew. Photo: Dr. Lina Quesada, NCSU Vegetable Pathology Lab.**





**Cucurbit downy mildew symptoms on squash leaf. The white sporulation is not cucurbit downy mildew. Photo: Dr. Lina Quesada, NCSU Vegetable Pathology Lab.**



**Cucurbit downy mildew symptoms on backside of squash leaf. The white sporulation is not cucurbit downy mildew. Photo: Dr. Lina Quesada, NCSU Vegetable Pathology Lab.**



**Close-up of cucurbit downy mildew symptoms on squash leaf. The white sporulation is not cucurbit downy mildew. Photo: Dr. Lina Quesada, NCSU Vegetable Pathology Lab.**



**Close-up of cucurbit downy mildew symptoms on backside of squash leaf. The white sporulation is not cucurbit downy mildew. Photo: Dr. Lina Quesada, NCSU Vegetable Pathology Lab.**

## **ORNAMENTALS AND TURF**

From: Steve Frank, Extension Entomologist

### **Mimosa Webworms**

In Raleigh we are seeing the initial webbing created by mimosa webworms. These are annual pests of mimosa trees which many people including me consider pests in their own right. However, if you are one of the many folks who love mimosa trees sans messy caterpillar webbing then it is time for action. The best way to prevent heavy infestations and extensive webbing is to prune out the nest when they are small (now). Moths overwinter as adults so reducing the abundance of caterpillars in your tree could

help reduce infestations next year. Most insecticides available for caterpillar control will also control mimosa webworm, but remember that contact is difficult since they live in water proof bags so rely on stomach poisons for best control.

More information on caterpillars can be found at:

<http://www.ces.ncsu.edu/depts/ent/notes/O&T/shrubs/note07/note07.html>



Mimosa webworms.

## RESIDENCES, STRUCTURES AND COMMUNITIES

From: Mike Waldvogel, Extension Entomology

### Mosquito-borne Diseases

On July 4, I sent an e-mail about the rains increasing some pest problems. Some problems are nuisance pests (such as millipedes), but others such as mosquitoes pose a greater problem particularly with the possibility of diseases such as Eastern Equine Encephalitis (EEE), LaCrosse Encephalitis, and West Nile Virus. As I suggested in that e-mail, it would be prudent for horse owners to get their animals vaccinated.

Some of you may have already seen yesterday's reports that Brunswick County had its first confirmed equine fatality from EEE (<http://www.wect.com/story/22877714/states-first-case-of-eee-this-year-confirmed-in-brunswick-county>).

Despite the name, the disease affects not just horses but people as well. Unlike some other disease-causing viruses of medical importance, you can't get EEE from contact with an infected person or horse. Mosquitoes become infected when they bite an infected bird and those mosquito species then feed on other birds thus increasing the reservoir of virus in the bird population during the course of the summer. Other mosquito species that bite these same birds act as "bridges" by dining again on horses or people who now become infected.

Children and the elderly are the biggest concern and so we need to urge our clients to take appropriate protective measures and use insect repellents (see <http://insects.ncsu.edu/Urban/repellents.htm>). We still recommend the usual measures of emptying rain-filled containers and other objects as well as unclogging gutters, drainage ditches, etc. However, mosquitoes that can transmit EEE will also breed in floodwaters and salt marshes and for that reason personal protection is critical. Many of these mosquitoes are active at dawn and dusk and so altering activity times can help (but are not a guarantee against mosquito bites). Again, we also urge horse owners to consult with the veterinarian about vaccinating their animals against these mosquito-borne diseases.

I would also add that people with dogs that spend a great deal of time outdoors need to make sure they are keeping up their pet's monthly heartworm medications since some of the same mosquito species that are increasing in numbers can also transmit dog heartworm.

## INSECT TRAP DATA

From: Mike Carroll, Agricultural Extension Agent, Craven County

### Light Trap Data from Craven County

```

*****
                        Number of Adult Insects
                        *****
Date          BW    GSB    BSB    FAW    THW
*****
July 8        ----- Date Initiated -----
July 11        3     1     0     0     1
July 12        2     0     0     0     0
July 15        8     1     0     0     1
July 16        7     0     0     0     1
July 17        8     0     0     0     1
July 19        8     0     0     1     0
*****

```

BW = bollworms; GSB = green stink bugs; BSB = brown stink bugs;  
FAW = fall armyworms; THW = tobacco hornworms

Location of trap: Cove City  
Cooperators: R & W McCoy Farms and Cove City Fertilizer

From: Arthur R. Bradley, Jr., County Extension Director, Edgecombe County

### Light Trap Data from Edgecombe County

*****									
Number of Adult Insects									
*****									
West Edgecombe                      Coakley                      Lawrence									
*****									
Date	CEW	BS	GS	CEW	BS	GS	CEW	BS	GS
*****									
July 5	-	-	-	2	3	7	-	-	-
July 8	-	-	-	1	2	20	-	-	-
July 10	-	-	-	0	0	6	-	-	-
July 12	0	1	1	2	0	6	-	-	-
July 15	0	0	0	3	0	0	-	-	-
July 17	-	-	-	4	1	8	-	-	-
*****									

Abbreviations: CEW = corn earworms;  
BS = brown stink bugs; GS = green stinks bugs

From: Alan A. Harper, Lenoir County

### Light Trap Data from Lenoir County

June

*****									
Number of Adult Insects									
*****									
Date	HW	CEW	ECB	AW	AWC	GSB	BSB	TBW	
*****									
June 1	----- Put up light trap -----								
June 2	0	0	0	0	0	7	0	0	
June 3	0	1	1	0	0	10	0	0	
June 4	0	0	0	0	0	5	0	0	
June 5	0	0	1	0	0	2	0	0	
June 6	0	0	0	0	0	0	0	0	
June 7	0	0	0	0	0	3	1	0	
June 8	0	0	0	0	0	3	0	0	
June 9	0	0	1	0	0	12	1	0	
June 10	0	0	0	0	0	4	0	0	
June 11	0	0	0	0	0	0	0	0	
June 12	0	0	0	0	0	2	0	0	
June 13	0	0	0	1	0	4	1	0	
June 14	0	0	0	0	0	0	0	0	
June 15	0	0	0	0	0	0	0	0	
June 16	0	0	1	0	0	0	1	0	
June 17	0	0	0	0	0	1	0	0	
June 18	0	0	0	0	0	0	1	0	
June 19	0	0	0	0	0	0	0	0	
June 20	0	0	0	0	0	0	0	0	
June 21	0	0	2	0	1	0	0	0	



June 22	0	0	0	0	0	1	0	0
June 23	0	0	0	0	0	0	0	0
June 24	0	0	0	0	0	0	0	0
June 25	0	0	0	0	0	1	0	0
June 26	0	0	0	0	0	0	0	0
June 27	0	0	0	0	1	0	0	0
June 28	0	0	0	1	0	0	0	0
June 29	0	0	0	0	0	0	0	0
June 30	0	0	0	0	0	2	0	0

\*\*\*\*\*

### July

\*\*\*\*\*

#### Number of Adult Insects

Date	HW	CEW	ECB	AW	AWC	GSB	BSB	TBW
July 1	1	0	0	0	0	3	0	0
July 2	0	0	0	0	0	0	0	0
July 3	0	0	0	0	0	3	2	0
July 4	0	0	0	0	0	6	0	0
July 5	0	0	1	0	1	4	2	0
July 6	0	0	0	0	0	5	0	0
July 7	0	0	0	0	0	1	0	0
July 8	0	0	0	0	0	0	0	0
July 9	0	0	0	0	0	0	1	0
July 10	0	0	0	0	0	1	0	0
July 11	0	0	0	0	1	1	1	0
July 12	0	0	0	0	0	0	0	0
July 13	0	0	0	0	0	0	0	0
July 14	1	0	0	0	0	0	0	0
July 15	0	0	0	0	0	0	0	0
July 16	0	0	0	0	0	1	0	0
July 17	0	0	0	0	0	2	1	0
July 18	0	0	0	0	0	0	0	0
July 19	0	0	0	0	0	0	0	0

\*\*\*\*\*

Abbreviations: HW = hornworms; CEW = corn earworms; ECB = European corn borers; AW = true armyworms; AWC = armyworm complex; GSB = green stink bugs; BSB = brown stink bugs; TBW = tobacco budworms

From: Melissa E. Huffman, Agricultural Extension Agent, Onslow County

### Light Trap Data from Onslow County

\*\*\*\*\*

#### Number of Adult Insects

Date	Bollworms	Green Stink Bugs	Fall Armyworm	Tobacco Hornworm
July 1	0	0	0	0
July 3	0	0	0	0

July 5	0	0	0	0
July 8	0	0	0	0
July 10	0	2	0	0
July 12	0	1	0	0
July 15	0	0	0	0

\*\*\*\*\*

Trap Location: Richlands; Cooperator: Richlands Farm, Inc.  
 Insect counts are from a single black light trap located  
 approximately 1 mile east of Richlands.

From: Scotland County Extension Center

### Light Trap Data from Scotland County

\*\*\*\*\*

Number of Adult Insects

\*\*\*\*\*

	Gibson				John's				Laurinburg			
	*****				*****				*****			
Date	BW	GSB	BSB	FAW	BW	GSB	BSB	FAW	BW	GSB	BSB	FAW
July 17	-	-	-	-	11	14	34	0	-	-	-	-
July 19	4	6	5	0	-	-	-	-	-	-	-	-

\*\*\*\*\*

BW = bollworms; GSB = green stink bugs;  
 BSB = brown stink bugs; FAW = fall armyworms

From: Dominic Reisig, Extension Entomologist

### Light Trap Data from Tidewater Research Station

\*\*\*\*\*

Number of Adult Insects

\*\*\*\*\*

Date	CEW	TBW	AW	SBL	BSB	GSB
July 5	0	0	0	0	0	0
July 8	0	0	0	0	0	0
July 10	0	0	0	0	1	1
July 12	0	0	0	0	1	3
July 15	0	1	0	0	6	2
July 17	0	0	0	0	2	8
July 19	0	1	0	0	6	3

\*\*\*\*\*

Abbreviations: CEW = corn earworms; TBW = tobacco budworms;  
 AW = armyworms; SBL = soybean loopers; BSB = brown stink bugs;  
 GSB = green stink bugs

From: Tyler Whaley, Agricultural Extension Agent, Wayne County

### Light Trap Data from Wayne County

```

*****
                        Number of Adult Insects
                        *****
                        Goldsboro
                        *****
Date                   GSB    BSB    CEW    HW
*****
July 14                -      2      -      -
July 15                5      6      -      -
July 17                9     19      -      -
July 19                -      6      -      -
*****

```

GSB = green stink bugs; BSB = brown stink bugs; CEW = corn earworms; HW = hornworms

Cooperator: Willie Howell Farm (Goldsboro)

*Recommendations for the use of chemicals are included in this publication as a convenience to the reader. The use of brand names and any mention or listing of commercial products or services in this publication does not imply endorsement by North Carolina State University, North Carolina A&T State University or North Carolina Cooperative Extension nor discrimination against similar products or services not mentioned. Individuals who use chemicals are responsible for ensuring that the intended use complies with current regulations and conforms to the product label. Be sure to obtain current information about usage regulations and examine a current product label before applying any chemical. For assistance, contact an agent of North Carolina Cooperative Extension.*