

North Carolina Pest News

Departments of Entomology and Plant Pathology



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In This Week's Issue . . .

CAUTION !

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

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FIELD AND FORAGE CROPS

From: Jack Bacheler, Extension Entomologist

Late Season Pests Still a Concern for Many

Our major point of emphasis during the next three or so weeks will be the differential impact of late season pests on crops based on attractiveness and maturity. Our late corn earworm moth flight will be increasingly attracted to later, bigger ranker cotton fields with more immature susceptible bolls and to open-canopied, flowering soybean plants. The same trend should unfold with stink bugs and cotton, though stink bugs will tend to be more attracted to soybean fields during pod fill. In the case of kudzu bugs, the highest levels still appear to be in taller earlier planted fields while late planted beans, especially following wheat, seem to have lower levels of kudzu bugs so far.

We now have a number of cotton fields which are cutting out to the point of being unattractive and susceptible to both stink bug and bollworm injury. This is a two-edged sword, however. On the plus side, the less attractive mature fields are becoming increasingly tolerant of potential caterpillar and stink bug damage. On the minus side, both bollworm moths and stink bugs readily fly to later maturing cotton fields that are still susceptible to damage. These late fields can harbor significant concentrations of pests, even when the general overall populations are low to moderate. However, we expect earworm moths and stink bug levels to be moderate to high throughout a wide range of the state during the two or three weeks or so.

In cotton fields that have been blooming for 8 weeks or more, the stink bug internal boll damage treatment threshold is at least 50%. Even though we still recommend assessing quarter-sized bolls for damage, most bolls on these plants are no longer susceptible to stink bug injury; thus, the higher suggested thresholds at this time of year as the bloom period progresses.

High Late Season Earworm and Tobacco Budworm Levels?

As was the case in 2010 and in 2011, we appear to be experiencing a larger flight of August to mid-September earworm moths than was the case with our earlier so-called "major flight". As of this writing, this late flight has been active in Scotland County for approximately a week, with a 3-day light trap count of almost 500 moths this past Monday, August 13, at the Johns location. This is the highest light trap count so far this year in North Carolina. In the next week to 10 days, expect possible higher levels of these earworm moths in many cotton and soybean fields throughout the state.

Another complicating management factor is that tobacco budworms are being found in both soybean and peanut fields, making control with pyrethroids ineffective in these situations. Tobacco budworm moth levels appear to be on the high side this year, both here and elsewhere. I assessed a "worm" sample from a peanut field last week that contained 60% tobacco budworms. Additionally, remember that some populations of podworms show some pyrethroid tolerance (or the ability to survive pyrethroids) and pyrethroids do not provide acceptable control of loopers and beet and fall armyworms. Therefore, Dominic Reisig now recommends that producers consider either using a pyrethroid alternative such as Belt, Steward or Tracer (Blackhawk) or a pyrethroid combination, such as a pyrethroid plus one of the aforementioned caterpillar materials, a pyrethroid plus acephate, etc.

However, remember that Belt, Steward and Blackhawk alone do not provide adequate control of stink bugs.



Walk-in light trap cage with high earworm moth levels. Image by Jack Bachelier, North Carolina State University.

Importance of Kudzu Scouting Emphasized

I have been in several soybean fields during the past week in which the levels of kudzu bug adults and nymphs were many times the suggested threshold of 15 nymphs per 15 sweeps around field perimeters. In 6 of 8 cases (assessing only fields with high reported levels of kudzu bugs), sweeps taken from field interiors had sub-threshold levels of nymphs. We realize that visual observations of kudzu bug nymphs and adults may reveal many more kudzu bugs than with sweeping. However, the above presently-suggested threshold was based on sweep net sampling which is not expected to obtain all of the nymphs on a plant, but to obtain a sub-sample of nymphs that indicate a treatable population. Although possibly changing weekly in the direction more soybean fields requiring treatment, treatment has not been justified in the vast majority of our soybean fields at this point. In a number of soybean fields, the levels of kudzu bug nymphs have been lower than what we would have expected so far based on the hefty levels of adults and egg masses. This situation could change in the coming weeks. On the plus side, some early planted and/or group IV and V beans fields have reached or are approaching the R7 “kudzu bug” safe stage. Growers are again urged to observe patience with moderate to high adult levels of kudzu bugs and instead to concentrate on finding threshold levels of nymphs in field interiors. The below photo shows the pendulum sweep method in which the scout brings the sweep net down into the plant canopy. This method is more effective in detecting kudzu bug nymphs down on soybean plant stems than sweeping across the upper canopy parallel to the ground.



Sweeping down into plant canopy is more effective for detecting kudzu bug nymphs. Image by Mike Toews, University of Georgia.

From: Jim Dunphy, Extension Soybean Specialist, Crop Science, and Steve Koenning, Extension Soybean Pathology Specialist

Soybean Rust Update: August 14, 2012

It was announced that Asiatic soybean rust has been confirmed on soybean samples collected in Lee and Macon counties, Alabama, on August 9, 2012. That puts rust closer to our western part of the North Carolina (Raleigh and west), but not the eastern part of the state. The closest rust to our North Carolina soybeans now is approximately 310 miles from Charlotte, 560 miles from Elizabeth City, 390 miles from Fayetteville, 185 miles from Murphy, 405 miles from Raleigh, 505 miles from Washington, 400 miles from Wilmington and 375 miles from Winston-Salem, North Carolina.

We do not recommend spraying soybeans with a fungicide to control Asiatic soybean rust if they are not yet blooming, if they are blooming but rust has not been confirmed within 100 miles, or if full sized seeds are present in the top of the plant (stage R6). Such pre-bloom applications have seldom improved yields, and repeated applications will likely be needed to provide season-long protection against rust. The higher labeled rates tend to provide more days of prevention, and may thus require fewer applications. The triazole fungicides, alone or in combination with a strobilurin fungicide, will probably provide better prevention of rust than a strobilurin alone. Be sure to check the fungicide label to see how many times it may be used in a season.

An exception to the above recommendation is if Asiatic soybean rust is found **on the farm** before bloom, spraying a fungicide to the rest of the fields on the farm is recommended.

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

ORNAMENTALS AND TURF

From: Steve Frank, Extension Entomologist

Japanese Maple Scale in the Nursery and Landscape

Japanese maple scale, *Lopholeucaspis japonica*, is active now and much of the summer. It is a small, oyster-shaped, armored scale introduced to the U.S. from Asia. Japanese maple scale is found in several eastern U.S. states, including CT, DE, GA, KY, MD, NC, NJ, PA, RI, TN and VA, as well as Washington D.C. Japanese maple scale has a wide host range that in addition to maples (e.g., Japanese maples, red maples, paperbark maples, and sugar maples), includes *Amelanchier*, *Camellia*, *Carpinus*, *Cercis*, *Cladrastis*, *Cornus*, *Cotoneaster*, *Euonymus*, *Fraxinus*, *Gledistia*, *Ilex*, *Itea*, *Ligustrum*, *Magnolia*, *Malus*, *Prunus*, *Pyracantha*, *Pyrus*, *Salix*, *Stewartia*, *Styrax*, *Syringa*, *Tilia*, *Ulmus*, *Zelkova* and others.

Although the lifecycle of this pest has not been fully examined, two generations a year are expected in the mid-southern U.S. First generation crawlers emerge in mid-May, and the second generation in early August. Management efforts are complicated by the extended crawler emergence that results in first and second generational overlap. Thus, the most recent sample we received had every stage - egg to adult - present at the same time.

Adult scales and crawlers are very small and most readily observed on bark of dormant deciduous host plants, but can also be found on foliage. The waxy coating on the body of male Japanese maple scales is white and females, eggs, and crawlers are lavender. The most work on this scale has been done by Paula Shrewsbury and Stanton Gill at the University of Maryland. Paula Shrewsbury recently gave webinar as part of the National IPM Webinar Series run by Kelly Ivors and I. Archived presentations can be found at: <http://ecoipm.com/ipm-webinar/ipm-webinar-archive/>. See more information on Japanese maple scale and other maple pests in our new book: <http://ecoipm.com/extension/extension-resources/>.



Japanese maple scales. Photo: Brian Kunkel, University of Delaware, from <http://www.insectimages.org>.

A link to the University of Maryland fact sheet is:

<http://ipmnet.umd.edu/nursery/docs/JapaneseMapleScale-UMD2011.pdf>.

Ants Increase Pest Abundance

As you know from family picnics, ants are voracious scavengers of sweets. Although this results in many household problems it can also increase outdoor pest problems. Aphids, mealybugs, soft scales and other sap-suckers drink lots of phloem and excrete the excess as honeydew. Ants will often 'tend' these insects and gather each drop of honeydew as it is produced. Ants protect the pests from predators so they can preserve this abundant food source. Many researchers have found that pests become much more abundant when tended by ants and fire ants in particular. Thus if you see a trail of ants going up a tree chances are there are scales or some other pest they are tending. Often by blocking the ants with tangle foot or using fire ant bait you can eliminate the pests. As soon as ants do not protect the pests, natural enemies hammer them.



Ants tending mealybugs on cherry laurel. Photo: S. D. Frank.



Ants tending cottony cushion scales on cherry laurel. Photo: S. D. Frank.

RESIDENCES, STRUCTURES AND COMMUNITIES

From: Mike Waldvogel, Extension Entomology

West Nile Virus in North Carolina

Many of you probably saw or read reports about increased incidences of West Nile Virus across the U.S. with the notable exception of a few states including North Carolina. However, Wayne County has reported a death attributed to West Nile Virus. Only about 1% of people who become infected develop severe illness and many people may not become sick at all. In cases of people who do develop symptoms (which takes 3 to 14 days), many of them may not attribute it to the virus until it becomes

severe. Among people that develop severe illness (i.e., excluding those individuals who exhibit minimal or no symptoms), the mortality rate ranges from about 3% to 15% with the rate being highest among the elderly. In the Wayne County case, the person was reported to be 84 years old. In a media interview, his wife thought that he may have gotten bitten by a mosquito while working out in his garden.

West Nile Virus occurs far less frequently in people in North Carolina as compared to other nearby states and it is far less frequent here than other mosquito-borne diseases such as Eastern Equine Encephalitis (EEE) and LaCrosse Encephalitis (LAC). EEE is more common in eastern North Carolina while LAC is found primarily in western North Carolina. Birds are the “amplifying hosts” for West Nile Virus which basically means that infected mosquitoes transmit the virus to birds which are in turn bitten by other mosquitoes which acquire the virus and spread it to even more birds. The most common species of birds that become infected with the virus include (but not restricted to) crows and jays. Some mosquito species feed primarily on birds but the species that will readily feed on both birds and mammals are the ones that pose the risk of spreading the disease to people. The mosquito species that transmit West Nile Virus tend to breed in wastewater collection areas and stagnating catch-basins. You can also find them breeding where water collects after storms and begins to stagnate with the abundant organic matter present. So, one obvious approach for residents is to make sure that they clear stagnating water sources on their property. It doesn’t matter if this water is on a 1,000 acre farm or on a 0.1 acre home lot, water that collects and stagnates has the potential to become a mosquito breeding site. Across most of North Carolina, the Asian tiger mosquito remains our most common pest species and it will exploit similar pools of stagnating water on the ground and in man-made objects.

As I mentioned a few weeks ago, substantial rainfall (as we have seen recently in many areas) is inevitably going to lead to a rise in mosquito activity and the first response by individuals should focus on disrupting those breeding pools rather than worrying about what to spray in their yard. These were some of the particular points I mentioned previously, but they're worth noting again:

- Bird baths - simply flush with a garden hose and you flush out the mosquito larvae in the process. Plus, the birds will appreciate the fresh water. For horse owners with water troughs near stalls or out in pastures, one option is to use a product such as "Mosquito Dunks" which contain the bacteria *Bacillus thuringiensis israelensis* which kills the mosquito larvae (not the adults). Although, you can use them in outdoor water bowls for pets, it is far simpler (and better for your animals) if you “tip and toss” the water from the bowl and replenish it with fresh water **daily**.
- Old cans, tires, etc. - empty them and get rid of them (legally, not simply tossed along the highway to become someone else’s problem).
- Outdoor flower pots - empty the water from the dishes/trays underneath them. Your plants have plenty of water without the overflow. This also helps reduce fungus gnat problems in the plant soil.
- Remove all of that built-up debris from your gutters. The water and decaying material attract mosquitoes.
- Rain barrels - if you collect water from your gutters or some other system, make sure the barrel is screened to keep out debris and mosquitoes

-
- Tarps that cover your boat, grill, firewood, etc. also collect pockets of water that can remain for 1 to 2 weeks.
 - The bed of that '57 Ford pickup that you've been "restoring" for the last 25 years can collect water particularly if the tailgate faces uphill in your yard.
 - Kids' pools - if they're not being used by kids, they're probably being used by the mosquitoes (and maybe some toads) - empty them. The same thing applies to pools (in ground or above ground) that aren't maintained (e.g., pools on abandoned or foreclosed properties).
 - Drainage ditches - they're meant to collect storm water temporarily. Keep them free of debris so that water flows and has time to filter into the soil.
 - Decorative fish ponds can be a source of mosquitoes if they contain a lot of vegetation that provides hiding places for the mosquito larvae. "Mosquito Dunks" are an option here.
 - Tree holes - when limbs fall off trees, the remaining hole in the trunk can collect water. Flush that out or put a small piece of a mosquito dunk into it.

Another critical matter - personal protection. The majority of mosquito-borne disease incidences, whether they're human or equine, are due to a lack of personal protection. Horse owners need to spend the time and money to get their horses vaccinated against EEE. For us two-legged creatures, we simply need to take precautions when we're outdoors for work or recreation. If it's too uncomfortable to wear long-sleeved shirts and long pants, then cover all **exposed** areas of the skin with an insect repellent (see <http://insects.ncsu.edu/Urban/repellents.htm>). A few other important points about using repellents:

- Do not put repellent on skin that will be covered by clothing.
- Children spend a lot of time outdoors, particularly when school is not in session. The greater the amount of time spent outdoors can increase the likelihood of getting bitten by a mosquito (and potentially a higher likelihood of being bitten by an infected mosquito). Before applying a repellent to a child, read the label carefully to make sure that it contains concentration appropriate for use on children.
- When using repellents on children - you should apply the product to your hands and then rub it on their arms, legs, neck, etc. If you allow your child to rub repellent on their arms and legs, they need to wash their hands immediately afterwards because they will inevitably forget and either rub their eyes or stick their fingers in their mouths.

I've had a number of people ask about mosquito treatments. Some people want a "do-it-yourself" approach using liquids applied to mosquito resting areas (shrubs, etc.) or using a "yard fogger" similar to what you may have seen being used in Dallas, Texas. These are a matter of personal choice but particularly with the foggers you need to exercise caution. If you have watched the spraying in Texas, notice that the applicators are wearing personal protective equipment. If you elect to use a backpack or handheld fogger, make sure you protect yourself from accidentally inhaling the chemical, getting it in your eyes or mouth, or contaminating your skin and/or clothing. Always direct the chemical **downwind**. Also, remember that when you spray along your property line, you will have some drift

and so you should check with your neighbor to make sure they don't object to chemical drifting into their yard and possibly contaminating a vegetable or herb garden with a chemical that isn't labeled for those plants. Likewise, be aware that if you spray during the day and there are plants in bloom, you are likely to kill some pollinators (honey bees and others). Also, if you do treat your yard with a liquid or fog, make sure you cover or remove children's toys, grills, furniture, etc. If you treat children's yard toys (like swings and other playground-type equipment) to kill resting mosquitoes, you need to hose them down before you let kid's play on it.

The other question is about companies that offer mosquito treatments, usually in the form of spraying yards for mosquitoes that are resting on grass and shrubs or more elaborate spray systems installed on the house (or in the yard) and are set to trigger at specific times. This is also a matter of personal preference. However, I've had a number of people tell me that when they ask the company what product they're applying, the response is a somewhat vague "It's a natural chemical" or "It's totally safe for people and pets". Bluntly put - I don't care what it is. A **reputable** company should tell you what they are about to apply on **your** property. If they're still vague about what they're using, I suggest you shop around for another company. Also, if a company offers to treat your property for mosquitoes, make sure they hold the appropriate pesticide applicator license issued by the North Carolina Department of Agriculture & Consumer Services. Anyone representing the company should have an ID card and can provide the license number for someone in the company. If you have any questions, call the NCDA&CS (919-733-3556 or 919-733-6100).

One other point that I mentioned a few weeks ago - mosquitoes have no concept of property lines. They are simply out there looking for a blood meal whether it's you or your neighbor. Mosquito "control" may be a matter of spraying chemicals to reduce the population below nuisance levels. On the other hand, mosquito **management** is what is often needed. It is a long-term proactive project that requires a community effort in order to succeed.

We have information on mosquito control on the web at <http://insects.ncsu.edu/Urban/mosquito.htm>.

Orb-weaving Spiders

At this time of year, many of the orb-weaving spiders have very prominent webs in shrubs and near porch lights or other areas that attract flying insects. One of the more noticeable spiders is the *Argiope aurantia*. This spider is often called the "black and yellow garden spider". It often constructs its conspicuous large web near gardens. You may also hear people call it the "writing spider" because the zig-zag pattern in the middle of the web supposedly looks like writing.

The spider's color, size and web are what usually grab people's attention as they are tending their gardens. The female is large, reaching about 1 1/8" in body length. As with many spiders, males are typically smaller than the females. As the spiders become more conspicuous, you may get calls with questions such as:

What spider is it? (described above)

Are the spiders dangerous? Not to humans . . . Actually, they eat more than moths, basically feasting on whatever gets snared in their webs. Like most spiders, they are venomous (which is how they

subdue ensnared prey), but the colors do not have some meaning that they are extremely poisonous or that they are more inclined to bite you while you're working in your garden or mowing. They are not aggressive and will not attack you.

What should I do about the spider? Ignore it; it is doing you a favor by eating things you really don't want eating your garden. It will disappear in a few weeks when it's time for some other pests to attract your attention.

INSECT TRAP DATA

From: Andrew Baucom, Agricultural Extension Agent, Union and Stanly Counties

Light Trap Data from Anson, Stanly and Union Counties

```

*****
                        Number of Adult Insects
*****
                Union S      Union N      Stanly N      Anson W
                *****      *****      *****      *****
Date            CEW  GR    CEW  GR    CEW  GR    CEW  GR
*****
July 16         4   21     -   -     -   -     -   -
July 18         3   20     -   -     -   -     14  3
July 20         6   15     -   -     0   3     11  8
July 23        11  28     -   -     0   3     38  11
July 25        23  35     -   -     1   2     42  6
July 27        25  23     -   -     2   2     54  4
July 30        14  11     -   -     1   0     31  8
August 1       17   5     -   -     0   0     27  0
August 3       9   7     -   -     0   0     5   0
August 6      12   4     -   -     6   1     8   2
August 8      18   3     -   -     1   1     31  0
August 10     20   5     -   -     0   2     27  2
August 13     75  17    279  0     4   2     34  2
August 15     55  10   289  0     1   0     30  1
August 17     70   7   195  0     2   0     34  0
*****

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CEW = corn earworm moths; GR = green stink bugs

Union County-South; Stanly County-North; Anson County-West

From: Richard W. Rhodes, County Extension Director, Bertie County

Light Trap Data from Bertie County

```

*****
                                Indian
                                Woods
                                *****
                                *****
Date          Windsor   Hexlena   Indian
              BW   GSB    BW   GSB    Woods   GBS
*****
July 22      10    9     -   -     -     -
July 23       3   14     -   -     -     -
July 25       1    3     -   -     -     -
July 29      25    3     -   -     -     -
July 30      18    0     -   -     2     0
July 31      15    2     -   -     -     -
August 1     10    0    11    0     3     0
August 2      8    0    10    0     0     0
August 3      7    2     9    0     -     -
August 4      -    -     -   -    12     0
August 5     29    2     -   -     5     0
August 6     23    4     -   -     -     -
August 7     20    2    13    0     -     -
August 8     17    0     4    0     -     -
August 9      -    -     5    0     -     -
August 10    62    8     -   -     5     -
August 11    17    3     -   -     -     -
August 12    14    6     7    0     -     -
August 13    23    2     -   -     9     0
August 14    32    1     -   -     -     -
August 15    62    8     5    0    37     0
*****
    
```

BW = bollworms; GSB = green stink bugs

Indian Woods: Liberty Hall Farms

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 9         2    2     0    2     0
July 12        2    2     1    0     0
July 16        0    0     0    0     0
July 20       41    3     2    0     1
July 23       25    3     0    0     2
July 25       34    2     0    0     1
July 26       40    2     0    0     0
July 27      106    2     1    2     0
    
```

July 30	48	2	1	2	0
August 1	55	0	0	2	1
August 3	37	0	1	0	0
August 6	42	0	1	0	1
August 8	31	1	0	0	0
August 10	37	2	0	0	0
August 13	22	1	0	0	1
August 15	44	2	0	0	0
August 16	31	0	0	0	1
August 17	32	0	0	2	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: Colby S. Lambert, Agricultural Extension Agent, Cumberland County

Light Trap Data from Cumberland County

Number of Adult Insects

Date	THW	CEW	GSB	BSB
July 11	4	11	1	1
July 13	0	5	1	0
July 20	0	30	6	0
July 23	0	47	9	1
July 26	0	41	3	0
July 27	0	57	7	2
July 30	1	63	1	0
August 2	0	42	4	0
August 6	0	15	3	3
August 9	1	27	3	0
August 13	6	80	3	0
August 15	1	39	2	1

THW = tobacco hornworms; CEW = corn earworms;
 GSB = green stinks bugs; BSB = brown stink bugs

Trap located in Godwin at Cumberland/Harnett County Line
 at Lewis Farms off of Highway 301

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 9          -   -   -         3   1   1         -   -   -
July 11         -   -   -         8   1   3         -   -   -
July 13         -   -   -         9   0   0         -   -   -
July 16         -   -   -        17   0   5         -   -   -
July 18         -   -   -          -   -   -         -   -   -
July 20         -   -   -        10   0   1         -   -   -
July 23         9   0   1         9   0   2         -   -   -
July 25        18   0   2          -   -   -         0   0   2
July 27        10   0   2        16   0   6         1   0   3
July 30        19   0   0        10   0   4         0   0   2
August 1       15   0   0         4   0   0         0   0   2
August 3       9   0   0         1   0   0         0   0   0
August 6       17   0   1         4   0   2         0   0   0
August 8       7   0   1         5   0   2         0   0   4
August 10      8   0   1         4   0   2         1   0   0
August 13     12   0   0        23   0   0         0   0   1
August 15     19   0   0        14   0   3         -   -   -
August 17     15   0   0          -   -   -         -   -   -
*****
    
```

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

From: Upper Coastal Plains Research Station, Edgecombe County

**Light Trap Data from Edgecombe County -
 Upper Coastal Plains Research Station**

```

*****
Date            CEW
*****
July 24         3
July 25         2
July 31        19
August 1         3
August 2         1
August 7        16
August 8         3
*****
    
```

Abbreviations: CEW = corn earworms

Locations: South East of Rocky Mount

From: Arthur Whitehead, Jr., County Extension Director, Halifax County

Light Trap Data from Halifax County

```

*****
                                Dawson
                                Crossroad
                                *****
                                Hobgood
                                Weldon
                                *****
Date          CEW  STB    CEW  STB    CEW  STB
*****
July 23      0   2     -   -     -   -
July 30      0   2    15   1     -   -
August 3     0   0     2   0     4   0
August 6     0   0     5   0    33   0
August 8     -   -     -   -     -   -
August 10    -   -     -   -     -   -
August 13    0   1     0   0    101  -
August 15    -   -    48   0    75   0
*****
    
```

Abbreviations: CEW = corn earworms; STB = stink bugs

From: Alan A. Harper, Lenoir County

Light Trap Data from Lenoir County

June

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*****
                                Number of Adult Insects
                                *****
Date          HW    CEW    ECB    AW    AWC    GSB    BSB    TBW
*****
June 22      0     2     0     0     0     0     0     0
June 23      0     0     0     1     0     0     0     0
June 24      0     3     1     0     1     0     0     0
June 25      0     4     0     0     2     0     0     0
June 26      0     2     0     0     2     0     0     0
June 27      0     1     0     0     0     0     0     1
June 28      0     0     0     0     0     0     0     0
June 29      0     2     0     0     0     0     0     0
June 30      0     1     0     0     1     0     0     0
*****
    
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July

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*****
                                Number of Adult Insects
                                *****
Date          HW    CEW    ECB    AW    AWC    GSB    BSB    TBW
*****
July 1        0     2     0     1     1     0     0     0
July 2        0     2     0     1     1     0     0     0
July 3        0     1     0     0     0     0     0     0
    
```

July 4	1	0	1	2	1	0	0	0
July 5	-----			Light unplugged	-----			
July 6	-----			Light unplugged	-----			
July 7	0	0	0	3	6	1	0	1
July 8	0	0	0	2	4	0	0	0
July 9	0	1	0	5	3	0	1	0
July 10	0	0	0	2	1	0	0	0
July 11	0	2	0	1	1	0	0	0
July 12	0	1	0	4	7	0	0	0
July 13	2	4	0	13	4	0	0	0
July 14	-----			Light unplugged	-----			
July 15	0	7	0	11	6	1	0	0
July 16	0	6	0	6	2	1	1	1
July 17	0	4	1	2	4	0	2	0
July 18	0	8	0	1	3	2	1	0
July 19	0	5	0	4	3	0	0	1
July 20	0	5	0	0	0	0	0	0
July 21	0	11	0	1	3	1	0	0
July 22	0	36	0	0	0	0	0	1
July 23	0	25	0	1	3	2	0	3
July 24	0	41	0	1	4	4	0	0
July 25	0	29	0	1	7	0	0	0
July 26	1	55	1	1	2	3	0	4
July 27	0	16	0	6	1	1	2	0
July 28	0	35	0	5	2	2	4	0
July 29	0	32	0	2	6	0	0	0
July 30	0	20	0	0	2	0	0	0
July 31	0	17	0	0	1	0	0	0

August

Number of Adult Insects

Date	HW	CEW	ECB	AW	AWC	GSB	BSB	TBW
August 1	0	15	0	1	1	0	0	0
August 2	0	5	0	1	0	0	0	0
August 3	0	12	0	0	2	0	0	1
August 4	0	7	0	0	2	2	0	0
August 5	0	14	0	0	0	2	0	0
August 6	0	9	0	3	1	2	0	1
August 7	0	2	0	0	0	4	0	0
August 8	0	1	0	1	1	1	0	0
August 9	0	4	0	1	1	2	1	1
August 10	0	2	0	1	1	11	1	0
August 11	0	2	0	0	1	0	0	0
August 12	0	3	0	0	1	0	1	0
August 13	1	8	0	4	0	5	8	0
August 14	0	5	0	4	1	8	1	0
August 15	0	5	1	2	2	6	1	0
August 16	1	17	0	3	2	2	0	0
August 17	0	17	0	1	3	2	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: Craig Ellison, Agricultural Extension Agent, Northampton County

Light Trap Data from Northampton County

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*****
                          Number of Adult Insects
*****
Woodland   Conway   Galatia   Seaboard   Gaston   W. Gaston   Jackson
*****   *****   *****   *****   *****   *****   *****
Date   CEW GR BR   CEW GR BR   CEW GR BR   CEW GR BR   CEW GR BR   CEW GR BR   CEW GR BR
*****
July 18   - - -   - - -   - - -   - - -   - - -   - - -   9 16 -
July 20   - - -   - - -   - - -   - - -   - - -   - - -   30 14 -
July 23   - - -   - - -   26 24 0   75 0 0   - - -   - - -   14 11 4
July 25   - - -   - - -   26 3 0   44 6 0   - - -   - - -   37 8 3
July 27   - - -   - - -   30 4 0   10 5 0   12 0 0   - - -   24 16 0
July 30   - - -   - - -   29 1 0   25 3 0   11 0 0   - - -   17 10 1
August 1   - - -   - - -   24 1 0   22 4 0   2 0 1   - - -   5 1 0
August 3   - - -   - - -   6 - -   12 0 0   - - -   - - -   6 1 0
August 5   - - -   - - -   7 0 0   12 0 0   - - -   - - -   58 3 0
August 7   1 4 0   - - -   7 0 0   14 7 0   - - -   - - -   58 2 0
August 10  2 0 0   - - -   4 0 0   12 8 0   - - -   - - -   64 8 0
August 13  2 0 0   5 2 0   19 0 0   60 5 0   - - -   - - -   84 2 0
August 15  1 0 0   16 4 0   9 0 0   45 6 0   - - -   - - -   70 3 0
August 17  - - -   - - -   - - -   - - -   - - -   - - -   37 3 0
*****
    
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CEW = corn earworms; GR = green stink bugs; BR = brown stink bugs

Locations: Woodland, Conway, Galatia, Seaboard, Gaston, West Gaston and Jackson
 Monitored by: L. Culpepper, K. Edwards, Ben Harris, T. Flythe, D. Grant
 and B. Bryant

From: Mac Malloy, Agricultural Extension Agent, Robeson County

Light Trap Data from Robeson County

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*****
                          Number of Adult Insects
*****
Date           THW      TBW      GSB      BSB      FAW      BW
*****
July 25         2        -        1        1        -        -
July 27         -        2        5        1        -        5
July 30         -        -        -        -        -        2
August 1        -        -        -        -        -        5
August 3        -        -        -        -        -        -
August 6        -        1        1        2        1        2
August 8        -        -        -        -        -        1
    
```


August 10	1	-	2	6	-	-
August 13	-	-	-	2	1	1
August 15	-	1	3	4	-	11
August 17	1	1	2	-	3	15

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

Location: Lumber Bridge; Collected by: Forbis Farms

From: Scotland County Extension Center

Light Trap Data from Scotland County

Number of Adult Insects

Date	Gibson				Johns				Laurinburg			
	BW	GSB	BSB	FAW	BW	GSB	BSB	FAW	BW	GSB	BSB	FAW
July 18	27	9	0	0	-	-	-	-	-	-	-	-
July 20	52	10	2	0	-	-	-	-	54	3	0	0
July 23	54	13	1	0	436	7	0	0	89	3	0	0
July 25	16	3	0	0	189	4	1	0	21	2	1	0
July 27	34	15	0	0	173	4	1	0	37	2	1	0
July 30	21	3	0	0	85	3	0	0	26	0	1	0
Aug. 1	18	1	0	0	35	0	0	0	18	0	0	0
Aug. 3	21	2	1	0	10	0	0	0	7	0	0	0
Aug. 6	30	4	0	0	-	-	-	-	17	0	1	0
Aug. 8	48	2	0	0	63	0	0	0	28	0	0	0
Aug. 10	86	8	3	0	-	-	-	-	33	1	0	0
Aug. 13	367	4	0	0	493	3	1	0	117	1	1	0
Aug. 15	138	5	0	0	297	2	1	0	304	0	0	0

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

From: John Sanderson, Agricultural Extension Agent, Wayne County

Light Trap Data from Wayne County

Number of Adult Insects

Goldsboro

Date	GSB	BSB	CEW	HW
July 4	0	4	0	0
July 6	1	3	0	1

July 9	3	6	0	4
July 11	1	0	3	5
July 13	0	0	2	8
July 16	8	1	27	1
July 18	1	1	15	1
July 20	4	2	7	1
July 25	3	2	26	0
July 27	9	6	37	0
July 30	2	2	59	0
August 1	4	11	13	0
August 3	3	2	8	0
August 6	4	3	7	0
August 10	16	7	4	1
August 13	13	4	66	6
August 15	8	7	74	3

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

Cooperator: Gerald and Willie Howell Farm (Goldsboro)

From: Norman E. Harrell, Agricultural Extension Agent, Wilson County

Light Trap Data from Wilson County

Number of Adult Insects

Date	Kenly		Fountain		Pender's	
	CEW	GSB	CEW	GSB	CEW	GSB
July 16	5	0	-	-	-	-
July 18	3	2	-	-	-	-
July 20	2	3	5	1	-	-
July 23	7	4	18	11	-	-
July 25	5	9	8*	3	0	0
July 27	6	11	14	11	2	0
July 30	14	2	19	8	2	0
August 1	3	0	8	3	1	0
August 3	1	0	8	2	0	0
August 6	2	2	17	8	0	0
August 8	3	1	13	1	3	0
August 10	1	2	7	2	2	0
August 13	4	2	7	3	4	0
August 15	7	0	17	5	5	0
August 17	11	0	31	0	0	0

CEW = corn earworms; GSB = green stink bugs

*= problems with blacklight bulb

Locations: Kenly, Fountain and Pender's Cross Roads

Monitored by: Norman Harrell, Barbara Smith and Adam Gardner

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.