

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

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ANNOUNCEMENTS AND GENERAL INFORMATION

Online Survey of the *North Carolina Pest News* Readers

Please take a few minutes to complete the online survey of *North Carolina Pest News* readers regarding the use and usefulness of the weekly newsletter. The editor and authors of the *North Carolina Pest News* plan to use the information collected through the survey to document the usefulness of the newsletter to our readers and improve its quality in the future. The information in the survey is anonymous and confidential.

To complete the online survey, go to the following web page: http://www.ipmpipe.org/survey_ncpn/

Enter the following password: pestnews

Click on the login button.

Once you have accessed the online survey questionnaire, please enter your answers to each question. You can change your answers by clicking on another selection. Once you have entered and are satisfied with your answers to the survey questions, click on the "Submit" button at the end of the questionnaire. Once you have clicked on the "Submit" button, your answers will be entered into a database with the answers of others that have completed the survey.

You can complete the survey online until Friday, September 28, when the site will be taken offline.

Thank you in advance for spending your valuable time completing the online survey and your interest in the *North Carolina Pest News*.

FIELD AND FORAGE CROPS

From: Jack Bacheler, Extension Entomologist

Cotton Insect Threat in Decline

When one looks at the variability in light trap catches for bollworm moths and the huge differences in cotton field maturity across the state, you almost get a sense of what the blind folks were talking about when each was describing a different part of an elephant. Although light trap counts appear to be down (hopefully for the count) in southern North Carolina, moth levels in our upper counties were all over the map though mostly on the low to moderate side. The light trap in Jackson in Northampton County had a two night count of 294 moths this past Wednesday, August 29, while a trap not far away in Woodland yielded only a single moth. Most two- to three-day counts are in the single or low to middle double digits. Across the state, in general our cotton crop on average is certainly later than the last two rather droughty years, although many fields are beyond the point of additional economic injury from insects. When cotton fields are still somewhat susceptible to bollworm injury with mostly large speckled bolls and a possible top crop, we often encourage producers and scouts to use at least triple our regular threshold of 3 second stage or larger bollworms to around 8 to 10 per 100 fruit. When one gets to the point at which bolls are present all the way to the top and non-terminal squares and blooms are absent, further economic damage is not likely, particularly if no current infestation is present.

In all but the latest maturing cotton, finding a stink bug threshold of over 50% or more internal boll damage in 1-inch bolls will be unusual. Many of our cotton fields have big boll loads lapping the middles, so possible Hi-Boy damage is another consideration. However, be sure to assess late-maturing cotton fields with good potential top crops for stink bug damage to quarter-sized bolls, but remember to use the high threshold.

In addition to *North Carolina Pest News*, we provide weekly electronic cotton insect update tapes and transcripts at our *Cotton Insect Corner* web site under *Cotton Insect Hotline Tapes* (<http://ipm.ncsu.edu/cotton/insectcorner/>), and as smart phone updates at Pest Patrol by texting “PESTPAT9” to “97063” and replying to “Y” to receive text alerts, or just simply by call Extension Teletip at 1-800-662-7301, then press “2” for the cotton update. We will likely provide 3 more updates before saying farewell until next spring, but will continue to post items of interest at the *NC Crops Blog* (<http://www.nccrops.com/>) as developments warrant.

Podworm and Stink Bug Threat to Soybean Remains

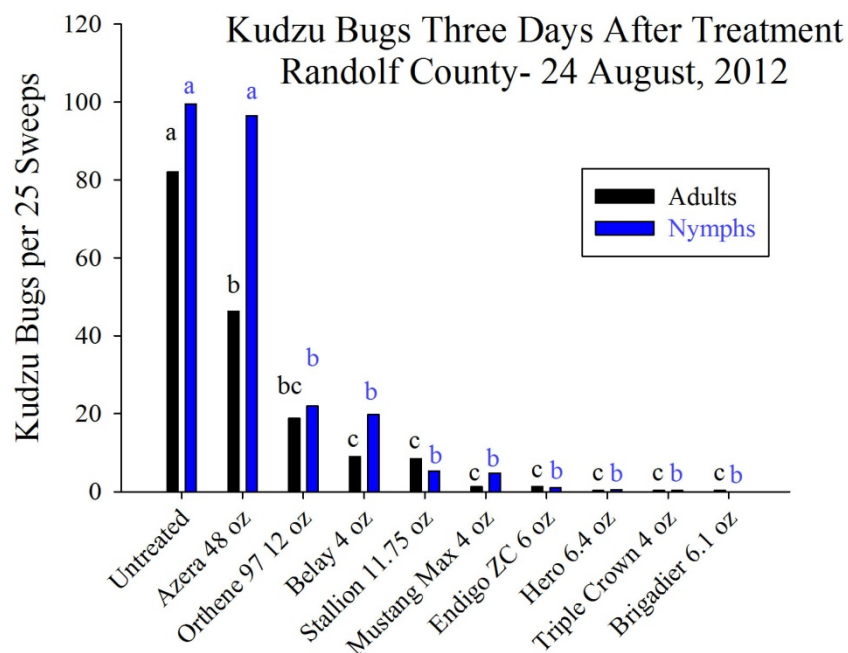
While September is a time when most cotton fields are no longer vulnerable to insect damage, this month can be a different story for soybean producers. Our generally high 2012 levels of green and brown stink bugs can translate into possible damage to soybean fields that are still filling out pods - that's much of our acreage. In tests at Rocky Mount, where several planting date and maturity groups were evaluated for insect damage, stink bugs have remained well below threshold levels; this has also been the case at all of our kudzu bug test sites. Of course this might not be the case in other areas.

In our kudzu bug insecticide screening test in Randolph County, the nymph levels in the untreated plots averaged 103.5 per 25 sweeps, or approximately 4 per sweep at 7 days after treatment, in line with the 3-day evaluation. This is more than 4 times the threshold of 1 nymph per sweep or 15 per 15 sweeps, and suggests that other fields in this part of the state and elsewhere may also be at threshold. A number of treatments containing either bifenthrin or lambda-cyhalothrin showed between 99 and 100 % control of nymphs and similar control of adults. On the return trip to Raleigh, only one field out of the 6 where I stopped to sweep was close to the suggested threshold. This morning's assessment of a second kudzu bug insecticide screening test near LaGrange in Lenoir County yielded similar results, with all insecticides providing more than 98% control except for Orthene and Belay at the 3-day check (Azera was not included in this test). A more comprehensive data base of kudzu bug insecticide efficacy comparisons can be found:

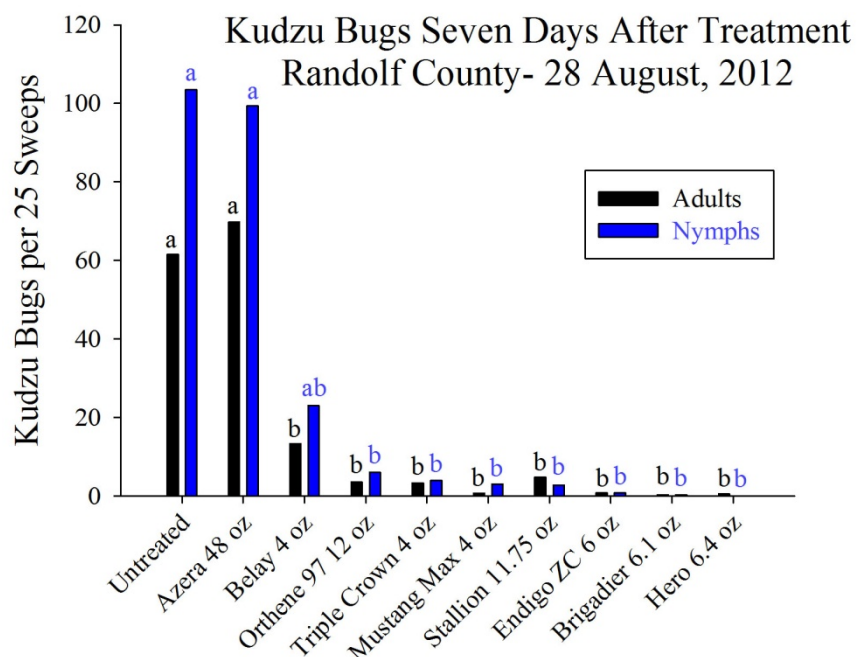
<http://www.nccrops.com/2012/06/29/kudzu-bug-insecticide-recommendations/>.

Producers are strongly encouraged to sweep field interiors. Many soybean fields will be below nymph threshold and can quickly be ruled out, while others may contain high enough levels of nymphs and to justify treatment.

Finally, podworms are still a potential threat to later planted beans that are still blooming and stinks bugs can still pose a threat at any time during pod fill. At a minimum, higher risk soybean fields should be assessed regularly until pod fill.



**Efficacy of selected insecticides against kudzu bugs in soybeans,
Randolph County at 3 days after treatment.**



**Efficacy of selected insecticides against kudzu bugs in soybeans,
Randolph County at 7 days after treatment.**

From: Dominic Reisig, Extension Entomologist

Managing Bean Leaf Beetle in Soybean - Pod Feeding Threshold

Bean leaf beetle is more common in the eastern part of our state. There are generally two to three generations of the insect. Hence, we can see them while beans emerge all the way to when beans dry down. Bean leaf beetle has not been incredibly abundant this year, but is present in our system, sometimes at economic levels. Our threshold for bean leaf beetle is 30% defoliation throughout the plant two weeks prior to blooming (R1) and 15% defoliation two weeks prior to blooming until the pods have filled (R7-R8). As a guide to assessing defoliation, refer to: <http://www.nccrops.com/2012/07/06/guide-to-assessing-percent-defoliation-in-soybeans/>. Remember to assess defoliation throughout the entire canopy.

Later in the season (R5-R7), bean leaf beetle can sometimes scar pod walls, resulting in damage to the seed, or clip pods. This type of injury is possible in North Carolina, but it is rare that there are economic cases (that is cases where the cost of management is less than the damage caused by the bean leaf beetle). An exception might be in seed production fields. We do not have a threshold for pod scarring or clipping in North Carolina. However, pod thresholds have been developed and promoted in the Midwest. Unfortunately, these pod thresholds are not adjusted for soybeans at \$16 per bushel and are not adapted to our system. My best guess at a pod threshold for this insect in North Carolina for **this year only** is **20 bean leaf beetles per 15 sweeps with at least 5% injured/clipped pods in R5-R7 soybeans**. You would need more insects and more injury to justify a spray if beans were worth less. Seed producers should spray at half this amount.



Pod and seed injury from bean leaf beetle. Image from Mike Gray, University of Illinois.



Pod injury from bean leaf beetle. Image from Kelly Cook, University of Illinois.

A screening test was initiated in 2010 in the Tidewater region for bean leaf beetle (results at <http://www.ces.ncsu.edu/plymouth/ent/pics/BLBcumdays.jpg>). This population had not been exposed directly to pyrethroids for several years because of declining efficacy. The field had been treated previously in 2010 with two applications of acephate for insect pest management. From the results, we inferred that bean leaf beetle tolerance to pyrethroids could be reversed, but that over-reliance on a single insecticidal chemistry is detrimental (i.e., acephate was now relatively ineffective against bean leaf beetle, while pyrethroids were effective). Note that all insecticides used in this experiment may not

be registered. Always consult a label before application. General principles of IPM should be following, which include using multiple management tactics and the judicious use of insecticides.

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

Soybean Rust Update

On August 27, Asiatic soybean rust was confirmed closer to North Carolina's soybeans with the announcement that rust has been confirmed in Autauga, Dallas, Fayette, and Hale counties in Alabama, Lowndes and Noxubee counties in Mississippi, and Toombs and Washington counties in Georgia.

On August 30, Asiatic soybean rust was confirmed closer to most of North Carolina's soybeans with the announcement that rust has been confirmed in Dorchester County, South Carolina. This is this year's first confirmation of rust in South Carolina, and puts rust approximately 145 miles from Charlotte, 330 miles from Elizabeth City, 160 miles from Fayetteville, 165 miles from Murphy, 215 miles from Raleigh, 260 miles from Washington, 170 miles from Wilmington, and 205 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>.

From: Steve Koenning, Extension Plant Pathologist, and Keith Edmisten, Cotton Extension Specialist

Cotton Disease Update: Leaf Spots on Cotton

Leaf spot on cotton is especially common throughout North Carolina. Ninety-five percent of what has been seen is "early cut-out" and is related to the fact that we have an excellent crop that has used most if not all of the available potassium. A variety of fungi can be found in these spots including *Alternaria*, *Cercospora*, *Stemphyllium* and *Colletotrichum*. Fungicides can control these diseases, but rarely result in improved lint yield or quality. Furthermore, fungicides usually do not impact boll rot fungi. Target spot is relatively rare and not found in sufficient quantity to rate resistance to this fungus.

Corynespora leaf spot or target spot of cotton was first identified as a possible problem in Georgia in 2005. Subsequent observations of target spot were reported in Alabama and Georgia in 2011, and in South Carolina, North Carolina, and as of August 26, 2012 in Virginia. The disease typically starts in the lower canopy where it causes 0.25 to 1 inch reddish-brown target spots with light and dark brown concentric bands or rings. Other fungi that can be associated with these spots include

Target spot (*Corynespora cassicola*) has been verified on cotton in eastern North Carolina. It does not appear to be widespread across the state at this time, although it is fairly common in some areas that have received excessive rain. Rank cotton appears to be more vulnerable to this fungus and you may see considerable early defoliation. Warm humid conditions favor the development of this disease. Experts in the cotton industry are divided as to whether this is truly a disease or more of a response to environmental conditions that have resulted in rank cotton in some areas. Similarly, cotton professionals do not all agree that this is a problem that can or should be controlled.

Quadris and Headline are strobilurin type fungicides that can be applied to cotton and should provide control for ten days to two weeks. The efficacy of other fungicides on cotton for control of this disease is not known, but many triazole fungicides have not proved to be very effective against this disease.

The decision to make a fungicide application is difficult. Below are some guidelines that may help:

In many cases the apparent defoliation that is evident in many fields may be as much a result of shading in rank cotton, perhaps more so than disease. Some of these fields may actually benefit from some early defoliation as this may reduce boll rot.

Fungicide applications at this time in the growing season are unlikely to reduce boll rot significantly, especially in rank cotton.

Late maturing susceptible varieties may benefit more from a fungicide than early maturing varieties.

On some varieties this disease will actually aid in defoliation, whereas fungicide applications may make defoliation more difficult.

If it turns hot and dry, the benefits of fungicide applications will likely be minimal.

FRUIT AND VEGETABLES

From: Bill Cline, Extension Plant Pathologist

Flea Beetle Damage

Flea beetle damage has been observed on unsprayed blueberry plots at the North Carolina State University Horticultural Crops Research Station in Castle Hayne. Feeding is mostly on new succulent shoots that have emerged following post-harvest summer pruning (hedging), so these are next year's bearing shoots that need to retain their leaves in order to set flower buds for the 2013 crop. Much of the damage is cosmetic, but where shoots are completely defoliated, or the shoots themselves are eaten, yield will be reduced in 2013.



Flea beetle damage.



Flea beetle damage.

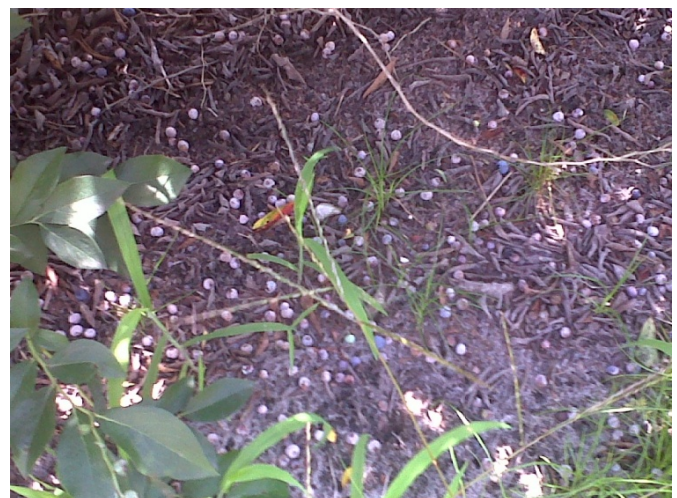
For more information on insect pests of small fruits, see Hannah Burrack's excellent blog <http://ncsmallfruitsipm.blogspot.com/>.

Mummy Berry on 'Brightwell'

Mummy berry disease was widely reported during the 2012 season in North Carolina, including the first really severe outbreak of the fruit infection phase on 'Brightwell' rabbiteye blueberry in the coastal plain. Usually the primary phase of the mummy berry disease causes severe leaf infections on rabbiteyes, but little or no secondary infection of fruit, at least in the coastal plain (rabbiteye fruit infection is more common in western North Carolina). North Carolina State University research specialist Benny Bloodworth took these pictures in late June in Bladen County.



Infected berries (at center) turn pinkish-white, shrivel and drop.



Abundant mummies on the ground under heavily infected 'Brightwell'.

Mummies that fall to the ground are filled with fungal tissue and serve as the overwintering structures for the fungus. In spring, the infected berries (mummies) on the ground produce a specialized cup mushroom that releases spores, and the disease cycle begins again. Destroying or burying the mummies helps to reduce disease carryover from one year to the next.

ORNAMENTALS AND TURF

From: Steve Frank, Extension Entomologist

Lacebugs Other Than Azalea Lacebugs

Numerous additional lacebugs were discovered in the landscape this week. These lacebugs have been around most of the year, but the damage is becoming especially apparent. Sucking insects damage plant cells and as the cells die necrotic spots and stippling become more apparent. This can be exacerbated by plant stress and drought. Lacebugs and damage on service berry and oak were discovered this week. Of course, sycamore and cotoneaster always incur damage from the sycamore and hawthorn lacebugs, respectively. A pyracantha plant on campus was especially loaded down with hawthorn lacebugs. Upon closer look, fire ants tending aphids on the tips of the branches were seen. Often ants that are tending aphids will kill all other herbivores that would compete with the aphids and predators that would kill the aphids. In this case the ants didn't seem to be tending the lacebugs, but were also not destroying them. The lace bugs were definitely benefiting from not having predators around though!



Lacebugs on pyracantha. Most of the insects present are nymphs. The characteristic cast skins and fecal drops are evident. Photo: S. D. Frank.



Lacebug damage on serviceberry. Notice characteristic stippling damage. Photo: S. D. Frank.

Scales on Liriope

At least six species of scales can be found on liriope. Most of the time scales do not cause extensive damage. Whatever building you are located, it probably has liriope planted outside and that liriope probably has scale. However, plants in stressful environments or nurseries may be more susceptible to infestations that could degrade plant aesthetics. The armored scales most common on liriope are hard to distinguish, but cause small yellow spots where they feed. Often they are at the base of leaves out of site of you and predators.



Armored scale on liriope. Photo: S. D. Frank.



Scales and yellow spots on the opposite side of leaves with scales. Photo: S. D. Frank.

From: Mike Munster, Ornamental Pathologist, Plant Disease and Insect Clinic

Rose Rosette on the Rise

Those of you living in the Raleigh, North Carolina, area may have read the article in the *News and Observer* on Saturday, August 25, 2012 about the removal of several rose bushes from the Raleigh Rose Garden and from a traffic circle on Hillsborough Street. The reason: they had been diagnosed with rose rosette. This disease has been known in North America for decades, but it has become more common in our area over the last two years. Only roses are affected.

Symptoms and Diagnosis. Symptoms of rose rosette can vary depending on the variety of rose involved. They include elongated flexible shoots, proliferation of shoots leading to “witches’ brooms”, excessive development of thorns (soft or not), leaf deformation, retention of juvenile red coloration in shoots, flower abnormalities, decreased cold hardiness, and plant death. There is a molecular test that can be used to confirm the presence of the virus that causes rose rosette, but we do not currently offer that service at the North Carolina State University Plant Disease and Insect Clinic. Instead the diagnosis is based on symptoms and can range from definitive (when the “hyperthorniness” is seen) to tentative. Not all symptoms may be present in any given plant. In particular, shoot proliferation and leaf deformation can be misleading, since they can be caused by exposure to low doses of the herbicide

glyphosate. If you observe these two symptoms alone, do some sleuthing to see if drift might have occurred.

Cause and Spread. Rose rosette was only recently proven to be caused by a virus, but it has long been known to be transmitted by the microscopic eriophyid mite *Phyllocoptes fructiphilus*. These are not the same as the more familiar spider mites. Small size makes up for their lack of wings, and these mites can be carried about on air currents, perhaps by other insects. There is some experimental evidence that rose viruses can move through natural root grafts, but no published studies have looked specifically at rose rosette transmission via this mechanism. The risk of spreading the virus on pruning shears appears to be very low, but it is a good general practice to sanitize knives and shears frequently during pruning operations anyway. Of course propagating from infected plants or grafting onto infected rootstocks would be very likely to result in infected roses.

Management. The jury is still out on how to best manage rose rosette, so the following recommendations are provisional. This could be called the "RSVP" approach: removal, spacing, vigilance, and patience.

Removal. Since viruses become systemic in their hosts, pruning may not be sufficient. If a bush has only one affected cane, pruning that cane as close to the ground as possible *might* get ahead of the infection, but we have no data to show that this is effective. Removal of infected plants is the safer course of action. Plants should be bagged before digging or as soon thereafter as possible, to reduce the chance that the mites will scatter on the wind and carry the virus to nearby roses. Remove enough of the roots so that the infected plant does not re-sprout. Also remove any nearby (within 100 to 150 meters) weedy multiflora roses that may be serving as a reservoir of the virus. The virus and mites should die quickly after plants are chipped, so properly composted municipal mulch should not be a source of the disease. As a precaution, vehicles used to transport diseased plants should be closed or covered.

Spacing. Given the mobility of the mites and the possibility of root grafts, plant roses far enough apart that roots or branches don't touch. Fragments of small roots left in the soil after plant removal should pose no risk. As long as there are no other infected roses nearby, replanting can be done immediately.

Vigilance. Examine any new plants (purchase, trade, or gift) to be sure they are symptom-free. That does not guarantee that they are healthy, since symptoms can take from 17 days to 9 months or longer to show up. Keep an eye on established plantings, too. Finally, keep a close watch on areas where diseased plants were removed, to be sure they do not sprout again.

Patience. As plant pathologists and entomologists continue to do experiments over the next several years, we'll be in a better position to know what works and what doesn't. Breeding also takes time. Perhaps some of the resistance in our native species like *Rosa setigera* and *Rosa carolina* can be brought into cultivated types.

What about spraying? There is no effective chemical treatment for plants infected with rose rosette or any other virus. According to Steven Frank in the North Carolina State University Department of Entomology, there is no evidence to suggest that pesticide applications directed at the mites will reduce the spread of rose rosette. It is certainly no substitute for removing an infected plant from the landscape.



Leaf and flower deformation (L); Red coloration, shoot elongation and hyperthorniness (R).



Witches' broom and leaf distortion.



Bed of roses in which several bushes have canes with symptoms of rose rosette.



Excessive thorniness and flexibility.

From: David Orr, Extension Entomologist

Grub-Killing Wasps For Your Lawn

The large colorful hunting wasps, *Scolia dubia* (Order: Hymenoptera; Family Scoliidae) may look intimidating, but are harmless to you unless you grab one and force it to sting in self defense. Adults are most numerous late in summer (usually August) and are present now on flowers (see August 17 post for

example) and hovering over lawns in search of food for their young. Their larval food is actually grubs, primarily green June beetle larvae that feed on and damage grass roots in lawns.



Scolia dubia adult. Photo: David Orr,
North Carolina State University.



Green June beetle adult and green June beetle larva. Photo: Clemson University -
USDA Cooperative Extension Slide Series, <http://www.bugwood.org>.

The adult grub-wasps dig into the soil when they “smell” (anyone who has seen holes made by skunks in their lawn knows this is possible) a grub, sting it to paralyze it, then lay an egg on it. The paralyzed grub is then helpless to defend against the hatched grub-wasp larva that will consume this fresh food supply until it is fully grown. The grub-wasp larva then pupates in the soil, ready to emerge as an adult the following summer. If there are enough of these wasps in your yard, they can help reduce the numbers of grubs in your lawn, providing natural control of pests (http://www4.ncsu.edu/~dorr/What%20is%20Biocontrol/natural_control.html).

Here's a video of a grub-wasp feeding on nectar:

http://www.youtube.com/watch?v=cD9sxsDvNz8&feature=player_embedded



INSECT TRAP DATA

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
August 20	58	6	260	0	3	1	42	0
August 22	33	3	263	0	2	0	39	0
August 23	32	4	120	0	2	0	30	0
August 27	21	3	270	0	2	0	31	0
August 29	22	2	80	0	1	0	32	0
August 31	18	1	70	0	9	1	18	2

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

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*****
                                Indian
                                Woods
                                *****
                                *****
                                *****
Date      Windsor  Hexlena  BW  GSB  BW  GSB  BW  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   0
August 2     8     0    10   0   0   0   0
August 3     7     2     9   0   -   -   -
August 4     -     -     -   -   12  0   0
August 5    29     2     -   -   5   0   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   0
August 14   32     1     -   -   -   -   -
August 15   62     8     5   0   37  0   0
*****

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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

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*****
                                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
August 20	141	0	0	4	0
August 22	35	0	0	2	0
August 27	70	1	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
August 20	7	96	3	0
August 22	5	56	2	0
August 24	3	85	1	0
August 27	1	62	3	1
August 29	1	51	2	0
August 31	0	26	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	0	0	0
August 17	15	0	0	-	-	-	0	0	0
August 20	65	0	0	68	0	0	1	0	2
August 22	36	0	0	37	0	0	13	0	1
August 24	28	0	0	28	0	1	-	-	-
August 27	25	0	0	7	0	1	-	-	-
August 29	22	0	0	2	0	1	-	-	-
August 31	9	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
*****
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Abbreviations: CEW = corn earworms; STB = stink 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 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

July

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
August 18	0	36	0	2	0	1	0	1
August 19	0	34	0	1	1	0	0	0
August 20	0	15	0	2	0	0	0	0
August 21	0	42	0	2	0	0	0	0
August 22	2	57	0	6	1	1	0	1
August 23	0	68	1	4	0	0	0	1
August 24	2	44	0	5	1	0	0	2
August 25	0	41	1	4	0	0	0	0
August 26	0	21	0	4	0	0	0	1
August 27	0	33	0	0	0	0	2	0
August 28	0	25	0	0	0	0	0	0
August 29	0	38	0	0	1	0	0	0
August 30	0	2	0	1	0	1	0	0
August 31	0	16	0	0	1	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: Craig Ellison, Agricultural Extension Agent, Northampton County

Light Trap Data from Northampton County

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	-	-	-	15	4	0	8	0	0	20	0	0	-	-	-	-	-	-	37	3	0
August 20	-	-	-	10	3	0	27	5	0	35	2	0	-	-	-	-	-	-	102	4	0
August 22	0	0	0	18	2	0	8	0	0	44	0	0	-	-	-	-	-	-	84	3	0
August 24	1	0	0	14	2	0	49	3	0	65	2	0	-	-	-	-	-	-	69	4	0
August 27	5	0	0	15	4	0	24	2	0	25	0	0	-	-	-	-	-	-	84	1	0
August 29	1	1	0	18	1	0	69	11	0	17	2	0	-	-	-	-	-	-	294	7	3
August 31	-	-	-	12	0	0	35	0	0	31	0	0	-	-	-	-	-	-	142	2	2

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

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
August 20	1	-	5	-	2	24
August 22	1	-	3	1	1	31
August 24	2	-	1	1	-	28

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

	Gibson				Johns				Laurinburg			
	*****				*****				*****			
Date	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
Aug. 17	52	0	0	0	220	0	2	0	38	0	0	0
Aug. 20	132	1	0	0	312	1	0	0	308	1	0	0
Aug. 22	101	1	0	0	472	2	0	0	252	0	0	0
Aug. 24	72	0	0	0	-	-	-	-	268	0	1	0
Aug. 27	24	0	0	0	172	0	0	0	21	0	0	0
Aug. 29	49	2	0	0	-	-	-	-	66	1	0	0
Aug. 31	54	0	0	0	127	0	0	0	39	0	1	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 8               2      1     14      0
August 10              16      7      4      1
August 13              13      4     66      6
August 15               8      7     74      3
August 17               3      1     61      3
August 20               2      1     98      6
August 22               3      0     54      2
August 24               1      1     57      2
August 27               1      -     18      2
August 29               3      1     23      2
August 31               2      1     11      0
*****

```

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						

	Kenly		Fountain		Pender's	
	*****		*****		*****	
Date	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
August 20	19	0	41	5	2	0
August 22	21	0	97	2	10	0
August 24	10	3	83	9	5	0
August 27	8	3	61	0	4	0
August 29	7	2	61	4	3	0
August 31	2	0	39	4	2	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.