

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.

**Stephen J. Toth, Jr.,
editor**

Dept. of Entomology,
North Carolina State
University, Box 7613,
Raleigh, NC 27695

(919) 513-8189 Phone
(919) 513-1114 Fax
steve_toth@ncsu.edu

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ANNOUNCEMENTS AND GENERAL INFORMATION

Fresh Market Tomato and Vegetable Field Day on August 4

The Fresh Market Tomato and Vegetable Field Day, sponsored by the North Carolina State University's College of Agriculture and Life Sciences, will be held on Thursday, August 4, 2011 at the Mountain Horticultural Crops Research Station in Mills River, North Carolina. For more information, including a schedule of events and directions to the station, go to: http://www.cals.ncsu.edu/agcomm/writing/Field_Days/Tomato_%2711_e-postcard.pdf.

FIELD AND FORAGE CROPS

From: Jack Bacheler, Extension Entomologist

Stink Bugs on Pre-blooming Cotton

This week, we have received several reports of brown stink bugs on pre-blooming cotton. In areas of the state where wheat is grown, wheat is often a key crop in the development of brown stink bugs which then move into other crops just about the time when wheat is harvested. Corn is a major recipient of these brown stink bugs coming out of wheat. With drought conditions over much of North Carolina, stink bugs appear to be abandoning dry corn and moving into other crops such as cotton. Is this a concern? Research conducted at Louisiana State University showed that, even with stink bugs caged on cotton in high numbers, little or no plant damage or square loss occurred on pre-blooming cotton. Even when blooming begins, cotton can tolerate up to 50% boll damage during the first week of bloom and up to 30% damage during the second week of bloom. Our general recommendation is to avoid stink bug treatments on pre-blooming cotton. In addition to being of questionable value, essentially all "stink bug-active" insecticides increase the potential for subsequent spider mite or cotton aphid outbreaks.

Plant Bugs on Cotton

Like stink bugs, plant bugs can also occur in moderate to high levels in corn. Perhaps also because of drying down wild hosts and corn, plant bug damage in the form of reduced square retention appears to have picked up this week in several areas of the state. In North Carolina, it still pays to make initial decisions about whether to sample for live plant bugs based on the retention of upper squares of approximately 1/3 inch in length. As we have said before, a square retention rate of more than 80% confirms that the cotton plant is keeping all of the squares needed for maximum yield potential. If square retention drops to less than 80%, a sweep net is the preferred sampling device for determining if threshold levels of adult and immature plant bugs are present. Because plant bugs are far more attracted to lush areas of cotton fields, be sure to obtain sweep net counts from representative cotton fields.

If one elects to use a chloronicotinoid insecticide such as Centric or Belay to control plant bugs, expect approximately 30 to 40% control with Centric and perhaps approximately 70+% control with Belay. However, the degree of control varies by location and circumstance. Despite this marginal control of plant bugs, the upside for using this class of chemistry is that it does not appear to facilitate outbreaks of cotton aphids or spider mites. Although the use of insecticides such as Orthene can sometimes increase

the odds of subsequent sprays for cotton aphids and/or spider mites, control with these materials is often in the 80 to 90% range. We were just advised that **the more recent Bidrin label for cotton specifies that this product cannot be used on squaring cotton**, but only on pre-squaring cotton and following bloom initiation.

Other Insects on Cotton

Expect the major bollworm moth flight from field corn to begin around July 8 to July 15 in southern North Carolina. As was the case in 2010, our generally hot, dry weather patterns could be conducive to the movement of migratory species such as soybean loopers and beet and fall armyworms into our state. However, the two gene Bt technology will generally keep damage from late season caterpillars to low level, with the possible exception of cotton fields that have been treated for stink bugs with a “disruptive” insecticide such as Bidrin or Orthene. If these sprays coincide with heavy bollworm egg lay, economic damage from bollworms can occur.

From: Dominic Reisig and Jack Bachelier, Extension Entomologists

Kudzu Bug Confirmed in 34 North Carolina Counties

Kudzu bug (a.k.a. bean plataspid, *Megacopta cribraria* Fabricus, Fig. 1) was first confirmed in 19 North Carolina counties this week (Fig. 2) thanks to a gargantuan sampling effort by Jack Bachelier and Dan Mott, Department of Entomology, North Carolina State University. Most of the recent finds have been from kudzu, but it is found on a variety of legumes, with soybean as its main agronomic host.

Kudzu bug moved into soybean fields in South Carolina this week, some of which were flowering. We should expect to see this insect on soybeans in our state very soon. So far, kudzu bug has been relatively easy to kill with insecticides (except with neonicotinoid insecticides), but will often reinvade. A preliminary economic threshold, based on Georgia data, is one bug per sweep with large nymphs present, or three bugs per plant with large nymphs present. This is the threshold that we will be using in our state until more information is gathered. Like stink bugs, this insect seems to invade the field edges first, so be sure to scout entire fields.



Fig. 1. Kudzu bug adults (in the two pictures on the left) and nymphs (picture on the right). Images from J. Greene.

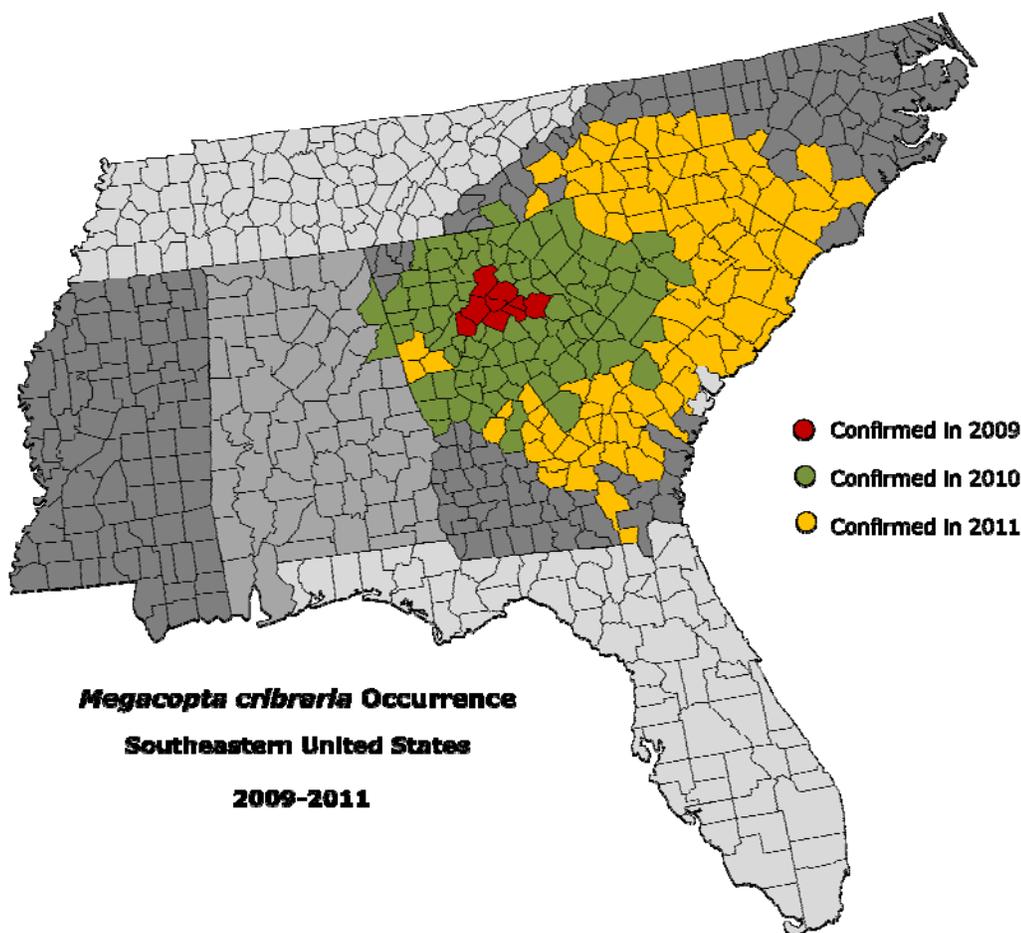


Fig. 2. Confirmed kudzu bug distribution. Image from Wayne Gardner.

We are tracking this pest and would appreciate your contacting Dominic Reisig by electronic mail (dominic_reisig@ncsu.edu) or telephone (252-793-4428 x133) if you find this pest in a non-confirmed county. If you could also provide GPS coordinates, **as well as the plant on which it was found**, it would enhance our ability to respond to this new threat. Please use caution not to spread this pest from field to field if you find this pest.

From: Barbara Shew, Extension Plant Pathologist

Peanut Fungicide Programs and Disease Advisories Starting Soon

Peanuts in well-rotated fields (3 or more years out of peanuts) should receive their first foliar fungicide applications at R3, very early pod stage. R3 usually occurs between about July 7 and 10. The first spray can be delayed 2 weeks (R3+2) on the cultivar Bailey, which has some resistance to leaf spots. For all cultivars, continue sprays every two weeks or according to leaf spot advisories. Most fields will benefit from a July application of a foliar fungicide that also controls southern stem rot. See the *North Carolina Agricultural Chemicals Manual* (<http://ipm.ncsu.edu/agchem/agchem.html>) for specific products and rates.

It is very important to scout early for Sclerotinia blight since timing the first spray to match the earliest disease outbreaks usually gives the best control. In most years, scouting should begin around July 4. Be particularly careful to scout if we have a cool and humid or rainy spell within the next 2 to 3 weeks.

We will begin sending out leaf spot and Sclerotinia advisories on July 1. Please contact Barbara Shew at barbara_shew@ncsu.edu if you want to receive advisories by electronic mail.

FRUIT AND VEGETABLES

From: Kelly Ivors and Frank Louws, Extension Plant Pathologists

Cucurbit DOWNY Mildew Fungicide Recommendations for 2011

This year, cucurbit downy mildew was first confirmed in North Carolina on June 17. So far, it has been identified on cucumber in Alamance, Hertford and Sampson counties; however, it's been found in Charleston County, South Carolina for a few weeks now. See the *Cucurbit Downy Mildew Forecast* at <http://cdm.ipmpipe.org/>. Growers, agents, homeowners, and other interested people can sign up to receive e-mail or text message alerts when new outbreaks of downy mildew are reported to the system. Follow the *CDM Alert System* link on the left-hand side of the page.

Fungicides will be required to manage yield losses from cucurbit downy mildew. Two different programs should be utilized this year; the first program is for prevention and should be followed before downy mildew is found in your county. The second program should be adopted after downy mildew has been found in your county or field, and involves more effective, but expensive, products. Refer to the tables below for explanations on these two programs. Additional information can be found on page 196 of the *SE U.S. 2011 Vegetable Crop Handbook* at <http://www.thegrower.com/south-east-vegetableguide>.

Growers should consider the following in developing a spray program to manage cucurbit downy mildew, caused by *Pseudoperonospora cubensis*. Ranking of efficacy for fungicides to control downy mildew: Presidio = 4.5; Ranman = 4.5; Tanos = 3.5; Previcur Flex = 3.5; Gavel and mancozeb = 2.5; and Bravo = 2.

Presidio, Ranman and Previcur Flex are best tank mixed with a protectant such as mancozeb or chlorothalonil. Highly effective products tend to be expensive. The Presidio label requires this product to be tank mixed with another fungicide with a different mode of action if applied as a foliar spray - chlorothalonil or mancozeb are the best options. One important consideration is that products have different preharvest intervals (PHI). A product with a PHI greater than 1 day such as mancozeb (PHI = 5 days) cannot be used when growers harvest two or more times per week. Another important consideration is fungicide resistance management, hence growers should alternate sprays with fungicides in different groups so that the pathogen does not develop insensitivity to the chemical. To date, Previcur Flex has performed modest in North Carolina trials, but has failed in Georgia trials possibly due to resistance.

Trade name	Efficacy rank*	Active ingredient(s)	Fungicide group	PHI
Presidio	4.5	fluopicolide	43	2 day
Ranman**	4.5	cyazofamid	21	0 day
Tanos	3.5	famoxadone+cymoxanil	11+27	3 day
Previcur flex	3.5	propamocarb	28	2 day
Gavel	2.5	zoxamide+ mancozeb	22+M	5 day
Dithane/Manzate/Penncozeb	2.5	mancozeb	M	5 day
Bravo/Equus	2.0	chlorothalonil	M	0 day

* 5 = excellent control; 1 = poor control.

** When disease pressure is severe, an organosilicone surfactant should be tank mixed with Ranman.

If spraying as a **preventative** when disease has not been identified in the county, use either: [Tanos + mancozeb or chlorothalonil] **or** [Previcur Flex + mancozeb or chlorothalonil] **or** [Gavel] on a 7 day schedule, rotating among them when possible.

Once downy mildew has been identified in the county or field, use either: [Presidio + mancozeb or chlorothalonil] **or** [Ranman + mancozeb or chlorothalonil] on a 7 day schedule, rotating every other week with one of the above **preventative** combinations.

Additional Notes

The lower use rates are effective when tank mixed with a protectant. Under high pressure or high disease risk, growers should adopt higher use rates (e.g., up to 4 ounces for Presidio and 2.75 fluid ounces for Ranman).

Special for Watermelons

Chlorothalonil has been known to cause some sun scald and other issues when applied to nearly mature watermelon fruit. Hence, chlorothalonil is not recommended as a tank mix partner for sprays on watermelon during fruit development.

Cucurbit POWDERY Mildew Fungicide Recommendations for 2011

The best products for controlling powdery mildew on cucurbits are:

Trade name	Efficacy rank*	Active ingredient(s)	Fungicide group	PHI
Quintec	5.0	quinoxyfen	13	3 day
Procure	5.0	triflumizole	3	0 day
Flint	4.0	trifloxystrobin	11	0 day

These products can be used in a spray program in combination with the above recommended downy mildew products for controlling both powdery and downy mildew. Since the downy and powdery mildew pathogens are not closely related, fungicides that are effective against downy mildew do not have very good efficacy against powdery mildew, and vice versa.

ORNAMENTALS AND TURF

From: Christine Nalepa and Whitney Swink, Research Specialists, North Carolina Department of Agriculture & Consumer Services

Hemlock Borers Collected by the Native Wasp *Cerceris fumipennis* in the North Carolina Mountains

The Beneficial Insects Laboratory of the North Carolina Department of Agriculture & Consumer Services has been using the solitary wasp *Cerceris fumipennis* (Fig. 3) as a biosurveillance tool to monitor for the Emerald Ash Borer and other pest Buprestidae throughout the state (<http://www.cerceris.info/>). The wasps nest on the hard-packed sandy soil typical of baseball and softball diamonds. They forage for buprestid beetles in the canopy, bringing them back to the nest to feed their offspring. The pest survey consists of intercepting *Cerceris* females at the nest when they return from foraging trips, and collecting and identifying the beetles they carry.

In recent weeks *Cerceris* surveys in the mountains of the state indicate that the wasps are bringing in large numbers of hemlock borers (*Melanophila fulvoguttata*) (Fig. 4), a pest of eastern hemlock (*Tsuga canadensis*), throughout its natural range. Hemlock borers are secondary pests that can reach significant levels in hosts weakened by hemlock woolly adelgids and other pests (see the June 11, 2010 issue of the *North Carolina Pest News* at http://ipm.ncsu.edu/current_ipm/10PestNews/10News9/pestnews.pdf).



Fig. 3. *Cerceris fumipennis* carrying a buprestid beetle collected from the canopy. Photo by Michael Bohne (<http://www.cerceris.info/images/gallery/>).



Fig. 4. Hemlock borer. Image from the Pennsylvania Department of Conservation and Natural Resources - Forestry Archive (<http://www.insectimages.org>).

The *Cerceris* surveys suggest that hemlock borers may be at or near outbreak levels in some locations of the North Carolina mountains. *Melanophila fulvoguttata* to date has been collected in seven sites, in the cities of Andrews, Asheville, Franklin, Murphy, and Bryson City. In the latter, 97% (57 of 59) of the beetles collected from the wasps were hemlock borers. Specimens have been deposited in the North Carolina State University Insect Museum.

From: Steve Bambara, Extension Entomologist

Where are the Green June Beetles?

We know that Mary had a little lamb, a little pork, a little jam. And she probably also had green June beetles (Fig. 5). Expect to see them soon. They rarely do harm to landscape plants and do not harm people. They can be handled without fear. There are possible control measures available for larvae in turf and pasture (later in the season). I have rarely ever seen this justified in residential turf (unless your backyard used to be a pasture). Grubs are sometimes a problem in pastures and heavy manure-applied fields because they like the decaying organic matter. Adults are sometimes a problem in fruit trees and grapes. Adult populations should start to decline after two weeks and they should be gone after three to four weeks. Patience 25W* (a.i. time) is the best recommendation and can be applied without environmental concern. No, that's not a new pesticide, it's called **waiting**. For more information on green June beetles, see the following insect notes available on the web:



Fig. 5. Green June beetle adult. Image by James R. Baker.

<http://www.ces.ncsu.edu/depts/ent/notes/O&T/lawn/note67/note67.html>
<http://www.ces.ncsu.edu/depts/ent/notes/forage/gjbnote02/note02.htm>

* Wait 25 days

Yellowjackets Building

Yellowjacket nests start from scratch each spring, as they do not reuse old nests. I've seen more yellowjackets out foraging recently. I've had one contact who reported disturbing a nest and being stung twice. If this episode had been a few weeks from now, I'm sure the number of stings would have been much greater. The nests are probably at their largest around the end of July. Wasps and yellow jackets are great predators of other flying insects and caterpillars.

Be aware of the potential for yellowjacket nests around shrubs and when mowing the lawn. Undisturbed "natural" areas in the landscape are good spots for them. They generally nest in the ground in loose-rooted areas at the base of shrubs and trees or below-ground rotted wood. Once-containerized plants that are now in the landscape often have voids where the media has degraded away. If the nest poses a stinging threat to humans or pets, control may be appropriate. Spray an aerosol hornet and wasp insecticide directly into the entrance hole at night. Don't use gasoline for a bunch of reasons! (Besides, it is too expensive.) Yellowjacket traps that are sold in stores (or homemade) have not been shown to be effective in North Carolina, though they make great conversation pieces in the yard.

Return of Oak Blotch Leafminers?

This week we received a report of an infestation of oak blotch leafminers in a Wake County neighborhood. The last outbreak I recall was about five years ago. Caterpillars of a small moth in the

genus *Cameraria* mine in the leaves primarily of white oak (oak leaves with rounded lobes) leaving brown blotches (Fig. 6). These blotches start small and may increase to the size of a dime or larger. There can be many blotches per leaf. There are several species of these moths that may attack oak leaves. Some of the caterpillars are gregarious and there may be several caterpillars in each blotch mine.

Now that the caterpillars are a bit larger, the mines are quite noticeable and the silvery blotches will begin to turn brown. A severe infestation can cause most of the leaf area to turn brown by mid-summer. Leaves may drop prematurely. Two or three generations could be possible per season.

Control by insecticides is not effective and not practical. Trees are not likely to be killed. These caterpillars are present every year, but it may be worse this year in some places. This insect overwinters as a larva in the leaf. Collecting and destroying fallen leaves may be a good idea this year. Oak trees often shed their leaves over a long period of time and may not drop them all until spring. If you are in an area surrounded by woods or neighbors with oak trees, there may be a plentiful supply of new caterpillars next year. Hopefully, the normally plentiful supply of parasitoid wasps will keep numbers lower.



Fig. 6. Oak blotch leafminer damage. Image by Steve Bambara.



Fig. 7. Cicada killer wasp with prey. Image by James R. Baker.

Cicada Killer Wasps

The cicada killer wasps (Fig. 7) are beginning to emerge. Adult cicadas are caught and stung by this wasp, then dragged back to the nest. The most noticeable feature is often the large amount of soil excavated and mounded outside the burrow. Once in the nest, the female wasp lays her eggs on the cicada. Soon the egg hatches and the larva feeds on the cicada. When mature, the wasp larva pupates and another generation of wasps emerges to carry on the life cycle. This is one of our most "showy" wasps and the sight and sound of these coming and going is impressive. These wasps can be regarded as beneficial or neutral. They are also downright interesting. *Ornamentals and Turf Insect Information Note No. 63* (see <http://www.ces.ncsu.edu/depts/ent/notes/O&T/lawn/note63/note63.html>) has additional information on the biology and control of cicada killer wasps, but I prefer the entertainment aspect of them.

INSECT TRAP DATA

From: Dominic Reising, Extension Entomologist

Light Trap Data from Tidewater Research Station (Washington County)

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*****
                        Number of Adult Insects
*****
Date          CEW    TBW    ECB    AW    SBL    BSB    GSB
*****
June 22             9     0     0     0     0     0     1
June 24             5     0     0     0     0     2     2
*****
    
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Abbreviations: CEW = corn earworms; TBW = tobacco budworms; ECB = European corn borers; AW = armyworms; SBL = soybean loopers; BSB = brown stink bugs; GSB = green stink bugs

Pheromone Trap Data from Tidewater Research Station, Tyrrell County and Upper Coastal Plains Research Station

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*****
                        Tidewater      Tyrrell Co.      UCPRS
*****
Date          CEW    TBW      CEW    TBW      CEW    TBW
*****
June 9             -     -        11     2         6     7
June 15            0     4         1     5         0     0
June 22            -     9         7     6         7     2
*****
    
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Abbreviations: CEW = corn earworms; TBW = tobacco budworms

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.