



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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See current and archived issues of the *North Carolina Pest News* on the Internet at: http://ipm.ncsu.edu/current_ipm/pest_news.html

FIELD AND FORAGE CROPS

From: Jack Bacheler, Extension Entomologist

Cotton Insect Update

Thrips "Season" over for most: Thrips beat some folks up (cotton seedlings, that is) pretty bad this year, with most damage hitting producers who used a seed treatment but didn't respond quickly enough when the seed treatment residual ran out early after only about 2 or 2½ weeks of residual activity following a stretch of warm very dry weather. This weather pattern served to dry down thrips weed hosts surrounding cotton fields, resulting in large incoming adult flights that were on the late side but into generally late cotton. Add in some herbicide injury and heavy rainfall, and many cotton

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field got off to a rough start. It's nice to see our present good moisture conditions and warm weather – at least for many.



Heavy thrips damage to seed-treated cotton, additionally battered by heavy rainfall. Image by Al Cochran.

Chill: With the thrips season over (or almost past) for most North Carolina cotton growers, we often have a period when insects leave us alone. Hopefully that will be the case this year. We have only had a few calls about spider mites and plant bugs – so far nothing yet treatable has been brought to our attention. Judging from a random sampling of cotton field drive-bys, weed management looks like significant challenge for many.

Big year for plant bugs? Based on a few corn field assessments and some ditch bank sweepings, we seem to have more than our usual level of plant bugs so far this season. A large eastern North Carolina consultant (not overweigh – just many grower clients), notified us with the same observation on corn. Many wild flowering weeds are good early hosts for plant bugs. Once these hosts and corn silks dry down, adult plant bug movement into cotton can materialize quickly.

Square retention assessments: With some cotton fields now squaring, square retention monitoring should be underway in those fields. Weekly checks of upper square retention is the most efficient way to assess if plant bugs can either be ruled out as an economic concern *at that time* or if sweeping for the adults and nymphs is needed. An upper square retention rate of 80% or more usually indicates that plant bugs are not present at damaging levels. If upper square retention is less than 80%, we recommend sweeping 6 to 8 or 10 locations in the field away from the edge, looking for live adult and immature plant bugs (see *Cotton Information*, page 126-127 for more details - http://ipm.ncsu.edu/cotton/insectcorner/PDF/Cotton2013_guide.pdf). In most years in North Carolina, square retention is very high – often in the mid-90s. A threshold of 8 or so plant bugs per 100 sweeps usually indicates that a spray is needed at that time (see *related North Carolina Field Crop Blog* article by Dominic Reisig - <http://www.nccrops.com/>). Remember that when cotton is approximately 1 week into blooming, a 5-foot black beat cloth is a more accurate sampling device than the sweep net for plant bug, especially immatures. We'll discuss this sampling option in the coming weeks.

Call or e-mail us: It'll be interesting to find out what we all see in the way of cotton aphids, spider mites and plant bugs in the coming weeks. We'll try to keep you posted. Please feel free to send us your observations in the coming weeks.

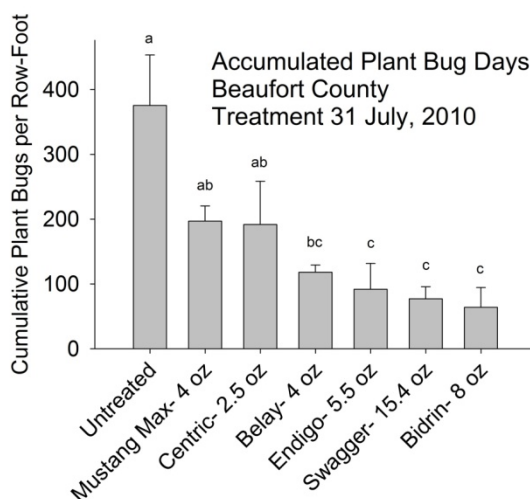
Cotton/Soybean Scouting Schools: Beginning with the next issue of *North Carolina Pest News*, we will begin posting upcoming cotton/soybean scouting schools. Indoor and outdoor training will be offered for both crops. Presently we plan to have schools in Onslow, Greene and Bertie counties during the week of July 15-18. The details of these, and hopefully other schools, will follow.

From: Dominic Reisig, Extension Entomologist

Insecticides for Plant Bugs

With cotton squaring and flowering weeks away, it is a good idea to think about treatment options for plant bugs. Generally the neonicotinoid-class insecticides perform well early in the season before flowering and often at lower rates. These include products such as Admire Pro, Belay, Centric, Intruder, Trimax Pro, etc. The advantage to using these products is that they generally do not flare secondary pests, such as spider mites, and may preserve some, but not all, beneficial insects. In general, a product that is killing a plant bug will likely kill related beneficial insects such as minute pirate bug and insidious flower bug, damsel bugs, assassin bugs, and big-eyed bugs. However, these products are still much less harsh on the system than pyrethroid and organophosphate-class insecticides.

Later on in the season, neonicotinoid insecticides generally do not work as well. However, Belay seemed to perform in a plant bug trial during 2010. That being said, I am recommending that you **do not spray** a pure neonicotinoid product more than once a season (common examples of Admire Pro, Belay, Centric, Intruder, Trimax Pro are listed above) or a mixed product more than twice a season (common examples include Brigadier, Endigo, and Leverage 360). Aphid resistance to neonicotinoids is on the rise and was confirmed in Eastern North Carolina in 2012. All cotton seed treatments targeting thrips are neonicotinoids and pre-mixed product use in cotton is widespread. Hence, the increase in neonicotinoids in cotton is increasing aphid resistance to these products. Therefore, to counteract this resistance I am recommending that you rotate insecticides.



Cumulative plant bugs per row foot 14 days after treatment. Image by D. Reisig.

Here is an example of a spray plan. For the first plant bug spray pre-bloom, at squaring or first flower, consider using a stand-alone neonicotinoid product (common examples include Admire Pro, Belay, Centric, Intruder, Trimax Pro). If plant bugs are still a concern later on, or require a second spray, first check to see that aphids are not common in the field. If they are, you should not use a neonicotinoid again. Switch to a product like Carbine or Transform. Remember that aphids first occur in field “hot-spots”. So you might not see a population and resistance developing until it is full-blown. Be sure to scout these fields intensively. If aphids are not a concern, you should still not use a stand-alone neonicotinoid product for a second spray, but should switch to one of the pre-mixed products or an organophosphate/carbamate-only product (e.g., Bidrin, Orthene or Vydate). Many of these products are also effective against stink bugs; eliminating stink bugs can be beneficial during the period of boll formation. The downside to these products is that they kill beneficial insects and put you at risk for bollworm and spider mites.

From: Hannah Burrack, Extension Entomologist

Mid Summer Tobacco Insect Update

Caterpillars Large and Small

So far this year, tobacco budworm (<http://tobacco.ces.ncsu.edu/tobacco-pest-management-insects-tobacco-budworms/>) numbers of in our research plots at both Kinston and Rocky Mount have remained below threshold (<http://tobacco.ces.ncsu.edu/tobacco-pest-management-insects/>) (less than 10% of plants infested). However, this week we’ve noticed lots of egg laying activity at Kinston so more are on their way. While this is good news for those of us doing research on budworm control, scouting activity should focus on determining if economically significant populations of this pest are present.



Notice the small, black specks of caterpillar frass’ (droppings) as a sign of recent feeding by this young budworm at Kinston, NC. Photo: Demetri Tsiolkas.

Two weeks ago, we found our first hornworms (<http://tobacco.ces.ncsu.edu/tobacco-pest-management-insects-tobacco-and-tomato-hornworm/>) at our plots at Kinston, and last week, we found them at our Rocky Mount plots. We have found both species of hornworms, tobacco and tomato, in our plots at Kinston, but only tobacco hornworms, so far, at Rocky Mount. However, we found only a handful of hornworms in each 3 acre research plot, so we are still very much below the 10% threshold level, as is typical at this time of year.



The tomato hornworm (above) has a blue horn on its tail end, and the tobacco hornworm (below) has a red horn. Photos: Demetri Tsiolkas.

Natural Enemies

While keeping tabs on the pest insects present in our experiments, we did notice some beneficial insects at work as well.



Ladybug larvae hatching at Kinston, NC. In addition to eating aphids, they feed on young caterpillars. Photo: Demetri Tsiolkas.



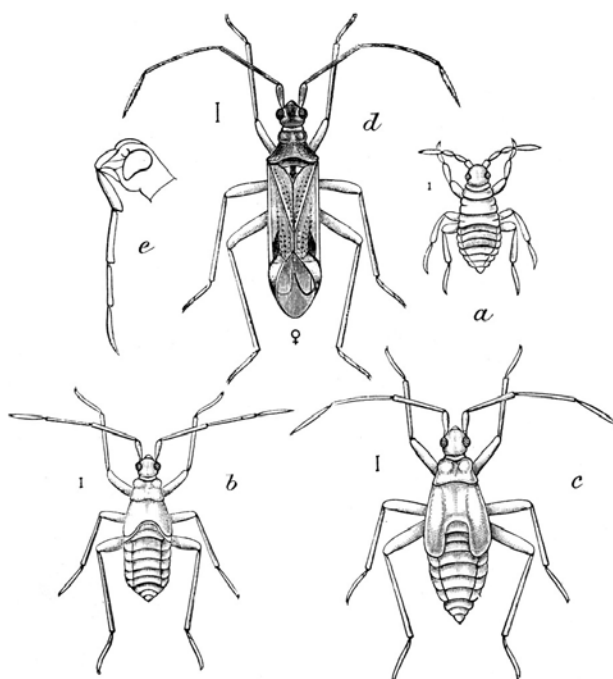
The spined soldier bug can also feed on budworms at Kinston, NC. Spined soldier bugs are in the same family as pest stink bugs, but they can be distinguished by pronounced “points” on their shoulders. Photo: Demetri Tsiolkas.

Natural enemies of caterpillar and aphid pests are common in southeastern tobacco fields, and they can often reduce or maintain pest populations below threshold on their own. Therefore, it's important to continue to monitor insect pests before making management decisions.

Written by Aurora Toennisson, Research Association, Specialty Crops Laboratory, Department of Entomology.

Suckfly Biology

Tupiocoris notatus (Distant) (Hemiptera: Miridae) is commonly known as the “suckfly” and it is a leaf-feeding, sap-sucking bug with a wide distribution in the southern United States. *T. notatus* has been recorded as a tobacco pest in the southeastern U.S. since the late 1800, and in some accounts of Florida farmers, it was described as “the most serious insect with which they have to contend” (Quaintance, 1898). Currently, the suckfly is considered a minor pest that may periodically become abundant on flue-cured tobacco in the late season. Both nymphs and adults damage the leaf by feeding on leaf cell contents, causing leaf chlorosis and can cover leaves with a black, gummy excrement, which may seriously affect the curing process. The adults are 3-4 mm long (about 1/8 inch), light brown color and highly mobile. Females have a wider abdomen and their long ovipositor, or egg laying device, can be observed under magnification. Females insert their elongated, paddle-shaped eggs (0.6-0.7 mm long) into the leaf veins (Van Dam and Hare, 1998). Males look similar to females, but are skinnier and their abdomens are flatter, particularly in lateral view. The nymphs emerge 3-5 days after oviposition (at 28 °C). There are four or five nymphal stages (Quaintance, 1898; Howard, 1900), which altogether last about 2 weeks. Nymphs are usually yellowish green in color with reddish eyes and are also highly mobile. The current scientific name of this pest is *Tupiocoris notatus*; however, it has also been described as *Dicyphus minimus* and *Cyrtopeltis notatus* in other publications. It is possible that the umbrella term “suckfly” covers several similar species that can occasionally attack tobacco, since reports of others closely related species in wild relatives of tobacco and other solanaceous plants are known.



Life stages of *Tupiocoris notatus*. Image via Quintance (1898).



Tujiocoris notatus on plant. Photo via [A. Kessler](#).

Threshold and Management

If necessary, suckflies may be controlled with insecticides on late-planted tobacco. Treatment should begin when 25 percent or more of the plants show readily visible signs of infestation (e.g., excrement and suckfly nymphs on underside of leaves). For specific chemical recommendations, consult the current [North Carolina Agricultural Chemicals Manual](#).

Organic Management

There is currently no information on organic control of this pest in the field, but we have controlled this pest in the greenhouse with the use of insecticidal soaps. Since eggs are buried inside the leaf, multiple applications may be needed to achieve adequate levels of control.

Written by Alejandro Merchan, Graduate Research Assistant, Specialty Crops Entomology Laboratory, Department of Entomology.

FRUIT AND VEGETABLES

From: Lina Quesada-Ocampo, Extension Plant Pathologist

Potato Late Blight Alert

Late blight was found on tomatoes on the Eastern shore of Virginia on June 20, 2013. Also, the *Plant Disease and Insect Clinic* (<http://www.cals.ncsu.edu/plantpath/extension/clinic/>) at North Carolina State University also received pictures of a potato sample from Watauga County, North Carolina that appears to be infected with late blight. However, this is an unconfirmed report and we are waiting for a physical sample to verify. Potato and tomato are susceptible to this disease, and can be significantly defoliated within days if environmental conditions favor the pathogen.

Active scouting and immediate action to protect potato crops in North Carolina from late blight is recommended, since we have been experiencing wet and cool weather that is conducive to disease. For more information about potato late blight and how to control it see factsheets in English and Spanish (http://projects.cals.ncsu.edu/veggiepathology/disease_factsheets) produced by Dr. Lina Quesada-

Ocampo (<http://plantpath.cals.ncsu.edu/faculty/lina-m-quesada-ocampo>) at Department of Plant Pathology (<http://plantpath.cals.ncsu.edu/>). Control recommendations are also available in the USAblight website (<http://www.usablight.org/>), where you can also register to receive text and/or e-mail alerts when new disease outbreaks are reported.

For tomato late blight information and control recommendations, please refer to the alert released by Dr. Kelly Ivors (<http://plantpath.cals.ncsu.edu/faculty/kelly-l-ivors>) and the related factsheet for tomato late blight (http://www.ces.ncsu.edu/wp-content/uploads/2013/06/Tomato_late_blight_ki.pdf).

If you think you have late blight in your potatoes please contact your local Extension agent (<http://www.ces.ncsu.edu/local-county-center/>) and send photos and/or physical samples to the *Plant Disease and Insect Clinic*. If late blight is confirmed in your samples by an expert, please send a report at the USAblight website to alert other growers.

Control strategies are provided in the factsheets for commercial growers. Homeowners can use gardening fungicides that contain chlorothalonil as an active ingredient. Organic growers can use copper-based products to slow down disease progression.

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



Late blight symptoms on potato leaf. Photo: North Carolina State University Plant Disease and Insect Clinic.

From: Kelly Ivors, Extension Plant Pathologist

Tomato Late Blight Alert

Late blight of tomato, caused by *Phytophthora infestans*, is knocking on the doors of our state border. On Thursday, June 20, 2013, the clinic received pictures from an Extension agent of what appears to be

classic symptoms of late blight on potato from Watauga County, North Carolina. The clinic has yet to receive a physical sample for confirmation. Given the fact that this disease has been confirmed in Maryland, Virginia, West Virginia, Tennessee and possibly Kentucky, in addition to the recent wet and cool weather that is conducive for the pathogen's growth and spread, we are concerned the disease will be soon arriving to North Carolina, if it's not already here.

Without proper preventative measures, late blight can completely defoliate and destroy a crop within one to two weeks. The disease can be severe on tomatoes grown in the mountains of North Carolina, as well as in late plantings in the piedmont.

For more information about tomato late blight and how to control it see a tomato late blight factsheet produced by Dr. Kelly Ivors at the Department of Plant Pathology. Control recommendations are also available in the USAblight website, where you can also register to receive text and/or email alerts when new disease outbreaks are reported.

For potato late blight information and control recommendations please refer to the alert (<http://plantpathology.ces.ncsu.edu/2013/06/pest-news-potato-late-blight-alert/>) released by Dr. Lina Quesada-Ocampo and the related factsheets in English and Spanish.

ORNAMENTALS AND TURF

From: Steve Frank, Extension Entomologist

Japanese Beetles Adults

I have a couple reports from around North Carolina and even reports that they are emerging in Maryland. So I guess they are trickling out, but populations seem to have gotten lower and lower in the past several years. For three years in a row we have had severe droughts during the time Japanese beetles are ovipositing. They need moist soil so their eggs do not dehydrate and so tiny young larvae can borrow into the soil. Droughts have restricted successful reproduction to only well irrigated areas.

So keep an eye out and remember a few key things. Japanese beetle traps do not offer any protection to landscape plants and may actually attract more beetles on to your property so hang them in your neighbor's yard. Likewise, treating a lawn for Japanese beetle grubs will not reduce defoliation of plants on that property since beetles fly in from great distances. Long-term protection for landscape and nursery plants can be achieved a neonicotinoid insecticide such as imidacloprid (e.g., Merit, Marathon II) or acetamiprid (Tri-Star). A new product with extremely low vertebrate toxicity, but good efficacy for a number of pests including Japanese beetles is Acelepryn (chlorantraniliprole). For more information on the biology and management of adult Japanese beetles in nurseries and landscapes consult the insect note at <http://www.ces.ncsu.edu/depts/ent/notes/O&T/flowers/note147/note147.html>.

INSECT TRAP DATA

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 1    ----- Put up light trap -----
June 2      0       0       0       0       0       7       0       0
June 3      0       1       1       0       0      10       0       0
June 4      0       0       0       0       0       5       0       0
June 5      0       0       1       0       0       2       0       0
June 6      0       0       0       0       0       0       0       0
June 7      0       0       0       0       0       3       1       0
June 8      0       0       0       0       0       3       0       0
June 9      0       0       1       0       0      12       1       0
June 10     0       0       0       0       0       4       0       0
June 11     0       0       0       0       0       0       0       0
June 12     0       0       0       0       0       2       0       0
June 13     0       0       0       1       0       4       1       0
June 14     0       0       0       0       0       0       0       0
June 15     0       0       0       0       0       0       0       0
June 16     0       0       1       0       0       0       1       0
June 17     0       0       0       0       0       1       0       0
June 18     0       0       0       0       0       0       1       0
June 19     0       0       0       0       0       0       0       0
June 20     0       0       0       0       0       0       0       0
June 21     0       0       2       0       1       0       0       0
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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

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.