

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

Cotton Insect Begins (well, almost)

Throughout the growing season we will try to keep producers, consultants and agents up to date on the “insect conditions” in North Carolina and how to manage situations before and as they arise.

Most cotton producers are probably fortunate that they put off planting until after this recent very cold spell. With generally good moisture conditions throughout most of the state, a series of warmer daytime and night temperatures would be welcome and get serious planting underway. Fortunately, we still have the prime planting window of the first three weeks in May ahead of us.

With serious cotton planting still about a week away for most cotton producers, cotton insects such as thrips will be not on anyone’s radar for another two or more weeks. Because we don’t expect anything exciting on the cotton insect front for at least the next few weeks, these updates will be on the short side until then. Between now and then, remember that by [Googling our Cotton Insect Corner](#) web site, you can access various kinds of cotton insect information, including images of pests and their damage, insecticide performance comparisons, insect scouting and management guidelines, all of our project’s applied research dating back to 1999 and other tips and advice for managing whatever unfolds in 2012.

We’ll try to provide weekly updates at this site, even when things are slow on the cotton insect front.

From: Hannah Burrack, Extension Entomologist

Unusual Greenhouse Tobacco Pests Appearing

Last month, I posted (<http://www.nccrops.com/?p=475>) about the potential for greater and more usual insect activity in tobacco greenhouses due to our warm winter and relatively mild spring. Spring has become less mild in the last few days, but interesting insects are cropping up in tobacco greenhouses in eastern North Carolina. Two unusual insect issues appeared recently in Wilson County.

Tobacco Splitworm

Distinctive tobacco splitworm mines were found in two tobacco greenhouses in Wilson County in the last two day (<http://www.ncsu.edu/project/tobaccoportal/pest-management/insects/tobacco-splitworm/>), along with what appear to be splitworm pupae. Neither of these greenhouses was near potato fields or gardens with potatoes, which are common early season hosts of tobacco splitworm (known as potato tuber moth when feeding on potato). They were, however, near weedy area or areas where weeds had recently been killed. Tobacco splitworm will also feed on horsenettle, nightshade, and other related weeds, so it is possible that the insects in the greenhouse migrated in from these areas. Damage was limited, but early splitworm activity in tobacco is of concern because these insects can increase their populations rapidly. This is a scenario where transplant insecticide applications may make sense if damage continues.



Damage due to tobacco splitworm larval feeding on seedling tobacco. Photo: Norman Harrell, Wilson County Extension Agent.



Tobacco splitworm pupa. Photo: Norman Harrell, Wilson County Extension Agent.

Black Cutworm

Splitworm damage is relatively easy to diagnose – if you see larvae present nothing else in tobacco looks like their leaf-mining feeding injury. The second type of injury Norman Harrell noticed was more surprising, and at first, more confusing. While visiting a tobacco greenhouse to out of concern for pythium root rot (<http://www.ces.ncsu.edu/depts/pp/notes/Tobacco/tcin008/Tb08Pythium.html>), Norman Harrell and the grower noticed several dead caterpillars in the float bed water.



Dead black cutworm larva from tobacco floatwater. Photo: Norman Harrell, Wilson County Extension Agent.



Cutworm damaged tobacco plants. Photo: Norman Harrell, Wilson County Extension Agent.

David Stephan at the North Carolina State University Plant Disease and Insect Clinic (<http://www.cals.ncsu.edu/plantpath/extension/clinic/>) confirmed that these larvae were black cutworms (<http://www.ncsu.edu/project/tobaccoportal/pest-management/insects/cutworms/>), which are occasional post transplant field pests in tobacco. Upon closer inspection, they found a few trays with plants characteristically cut near the soil line. It appears that the larvae were moving downward in search of a

place to pupate and drowned. Damage in this tobacco greenhouse was also limited, but early cutworm activity may translate to the field, so growers should be prepared to scout for damage following transplant. Cutworm damage typically begins on field edges and moves inward, and injury greater than 10% could result in economically significant losses and should trigger treatment. I generally do not recommend preventive treatment for tobacco cutworm because they are relatively uncommon and preventative treatments have a limited longevity.

I'd love to hear any additional reports of unusual insect activity in tobacco greenhouse and as we move into transplant. Keep your eyes peeled!

FRUIT AND VEGETABLES

From: Hannah Burrack, Extension Entomologist

What Causes Misshapen Strawberries?

Recently, I've gotten a few questions about misshapen strawberries. Misshapen or "wonky" strawberries can be caused by several things, but the two most common causes likely to occur in North Carolina are poor pollination and lygus bug injury. It's actually fairly straightforward to distinguish between these two types of injury.

Poor Pollination

Strawberries do not require, but benefit from, insect pollination, so weather conditions that limit insect activity and pollen movement typically precede when this type of misshapen fruit appears.



Misshapen strawberry fruit due to poor pollination (above) and a normal appearing fruit (below).
Photo: H. J. Burrack.



Strawberries damaged by lygus bugs. Photo: UC IPM Programs.

Poor pollination causes misshapen fruit because unfertilized seeds remain small and the fruit around them does not grow at the same rate as the fruit around fertilized seeds. On the image above, the top fruit has seeds of different sizes next to each other while the seeds on the bottom fruit are uniform.

Lygus Bug Injury

North Carolina Department of Agriculture & Consumer Services regional agronomist David Dycus mentioned via e-mail today that growers in Mississippi had recently expressed concern about misshapen fruit due to lygus bug feeding. Lygus bugs (also known as tarnished plant bugs) feed on strawberry seeds and fruit and can also cause misshapen fruit. Lygus feeding does result in variable seed size and can, therefore, be distinguished from poor pollination in strawberries. Typically, North Carolina growers do not experience extensive damage from lygus bugs, because they are active later in the year. This year, however, they may be active earlier (although, our warm spring has turned a little chillier), and it's worth keeping an eye for their damage. Lygus can be difficult to control, so if growers suspect they have damaging populations of lygus present, they should contact their county agent or myself for recommendations.

Other, non pest, insects can look like lygus bugs, include beneficial insects like big-eyed bugs (http://www.ipm.ucdavis.edu/PMG/NE/bigeyed_bugs.html) and non strawberry pests insects like false chinch bugs (<http://www.ext.colostate.edu/pubs/insect/05603.html>), and it's important to correctly identify pests. *BugGuide* has a nice identification guide (<http://bugguide.net/node/view/16892>) for *Lygus lineolaris* (the east coast species which feeds on strawberries).

Other Causes of Misshapen Berries

Insects and poor pollination are not the only causes of misshapen fruit in strawberries. Pathogens can damage fruit, mechanical injury can scar it, and abiotic factors can change fruit shape.

From: Emma Lookabaugh, Plant Disease and Insect Clinic

Be on the look-out! Garden diseases to watch for in May and June

With summer swiftly approaching, we are seeing quite a few more diseases out and about in the landscape and in the home garden. We wanted to take a few minutes and go over some common diseases you should look out for in your own vegetable garden.

Tomato Spotted Wilt Virus

A few days ago we received the second tomato spotted wilt virus sample of the season on greenhouse tomato. TSWV is a virus spread by at least 7 different kinds of insects called thrips. TSWV has a very broad host range that includes a variety of ornamental plants, along with tomatoes, peppers, tobacco, and peanuts. Early symptoms of this disease include cupping or bronzing of the foliage and pale ring-spots/mottling on the fruit. As the disease progresses, necrotic spots/lesions can be seen on the foliage, stems,

petioles, and fruit. Infected plants are usually severely stunted and new growth is often deformed. Infected plants will not recover and should be removed from the garden. Detailed information can be found <http://ncsupdicblog.blogspot.com/2011/06/attack-of-killer-tomato-spotted-wilt.html>:



Early TSWV symptoms on tomato. Photo: E. C. Lookabaugh.



Ringspot symptoms on pepper. Photo: E. C. Lookabaugh.



Symptoms on tobacco. Photo: E. C. Lookabaugh.



Fruit symptoms. Photo: F. J. Louws.

Septoria Leaf Spot of Tomato

Septoria leaf spot is a very destructive fungal disease of caused by the fungus *Septoria lycopersici*. Usually this disease shows up on the lower foliage after the first fruit set. Necrotic spots can be seen on the foliage. As the spots age, the centers turn gray and tiny black dots (fruiting bodies of the fungus) can be seen in the center of the spots. The fungus survives the winter on infected tomato debris or nearby weeds. Controlling this disease in the home garden can best be achieved by removing all crop debris at the end of the growing season or by tilling it under the soil. In commercial situations, control can be achieved through the use of resistant cultivars and fungicides.



Septoria foliar symptoms. Photo: E. C. Lookabaugh.

Southern Blight

Southern blight is a serious and frequent disease in the Piedmont and Coastal Plain regions of North Carolina. This disease is caused by the fungus *Sclerotium rolfsii*, which attacks many vegetable crops including tomato, bean, cantaloupe, carrot, pepper, potato, sweetpotato, watermelon, and several field crops such as peanut, soybean, and tobacco. This disease is easily recognized by the white fan-shaped growth of the fungus at the base of the plants. Over time, tiny round tan to brown sclerotia are formed on soil and infected plants. These sclerotia can survive in the soil for **MANY** years. Rotation is not very effective because this pathogen has more than 1,000 reported hosts. Corn and some other members of the grass family are not hosts and are safe to plant in problem areas. In gardens, planting on a raised bed filled with sterile soil is the best way to avoid contact with native soil that may contain the pathogen. The disease is more active in warm, wet weather and can be seen every year in North Carolina. Watch for a more comprehensive post on this disease coming soon!



Southern blight. Photo: Kurt Taylor.



Southern blight up close. Photo: F. J. Louws.

Southern Bacterial Wilt

Here in North Carolina, southern bacterial wilt is one of the most commonly diagnosed diseases of tomatoes in the home gardens and production fields. This disease is found throughout the Piedmont and

Coastal Plain regions of the state. It is caused by the soil-borne bacterial pathogen *Ralstonia solanacearum*, and is most commonly found on tomatoes, peppers, potatoes, tobacco and other members of the nightshade family. Brown discoloration of the vascular tissue in stems and leaves is a distinctive symptom of bacterial wilt. The discoloration is caused by bacteria colonizing the plant's vascular tissue, plugging it up. The plant loses its ability to conduct water, which results in yellowing and wilting, especially during the hottest part of the day. Infected plants quickly collapse and die. Diseased plants should be removed and susceptible species should not be planted back into infested areas. More detailed information on this disease can be found <http://ncsupdicblog.blogspot.com/2011/06/attack-of-killer-tomato-spotted-wilt.html>:



Complete collapse caused by bacterial wilt. Photo: F. J. Louws.



Vascular discoloration. Photo: M. J. Munster.

Root-knot Nematodes

Root-knot nematodes (*Meloidogyne sp.*) attack a wide variety of vegetable and field crops, including tomato, peanuts, spinach, carrots, and many others. Usually root-knot nematodes are more common in eastern North Carolina where we have more sandy soils. Symptoms are worse in hot, dry summers. The most obvious symptoms are galls and swellings on the roots and stunting and yellowing of the above-ground portion of the plants. Control can be achieved through the use of resistant cultivars and crop rotation.



Root-knot nematodes on tomato, notice galls on roots. Photo: F. J. Louws.



Female nematodes under dissecting scope. Photo: F. J. Louws.

ORNAMENTALS AND TURF

From: Steve Frank, Extension Entomologist

Azalea Lace Bugs and Hawthorn Lace Bugs

Azalea lace bugs (*Stephanitis pyrioides*) are one of the most damaging pests of evergreen azaleas. They overwinter as eggs in azalea leaves and begin hatching around now. Control is best targeted early in the season when nymphs are present for two reasons. First, nymphs are easier to kill than adults and if you kill nymphs before they mature and lay eggs you have a better chance of clearing up the infestation. Second, the longer azalea lace bugs are on your plant the more damage they do. On evergreen azaleas this damage sticks around for a long time so plants may be permanently damaged. So scout your azaleas and get those lace bugs cleared up before damage occurs. They have been active for a few weeks now. We first sent out a Twitter alert three weeks ago before *North Carolina Pest News* started for the year.

The other lace bug we found to be active this week is the hawthorn lace bug on cotoneaster. This is very damaging to one of the most common landscape plants. Again the damage is stippling and discoloration as for azalea lace bugs and control measures are the same. More pictures on our blog (<http://ecoipm.com/>). For more information and control options consult: <http://www.ces.ncsu.edu/depts/ent/notes/O&T/shrubs/ort039e/ort039e.htm>.



Damage to last year's leaves by azalea lace bugs that will mar the plant for seasons to come. Photo: S. D. Frank.



Damage to cotoneaster leaves from hawthorn lace bugs. Photo: S. D. Frank.

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.