

# North Carolina Pest News

Departments of Entomology and Plant Pathology



Volume 26, Number 6,  
May 20, 2011

## 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 Bachelier, Extension Entomologist

### Thrips Levels Variable, But Generally Not Bad

With the planting of cotton beginning from mid-April and continuing through this week, thrips levels and damage are “all over the map”, though so far on the low side compared with recent years. The three main factors in determining thrips damage right now are: 1) planting date; 2) cotton growth; and 3) the level of migrating thrips.

In areas that have not received adequate rainfall and because of our recent cool weather, cotton growth has been slow. In this situation, even a low to moderate level of thrips can damage these slow-growing susceptible seedlings, particularly as the activity of the seed treatment runs out at about three weeks after planting. If the predicted warmer weather (beginning this weekend) is supplemented by adequate to good moisture, this combination would certainly speed up the growth of seedlings to the “thrips-safe” five true leaf stage.

On cotton planted three weeks ago or more recently, seed treatments appear to be holding up well for the most part. For example, in a Plymouth test, at 2½ weeks after planting, all of the treatments (Avicta Complete, Aeris, Acceleron, VOTiVO, the at-planting granular insecticide Thimet as well as the untreated check) all had an average of less than one adult and less than ¼ immature thrips per plant. In Wilson County (in an April 22-planted replicated seed treatment and in-furrow insecticide test supervised by agent Norman Harrell), we were somewhat surprised to find less than two adults and ½ immature thrips per plant following all treatments. This picture could change markedly in the coming week, however.

Conversely, I also have received a few telephone calls from county Extension agents in the northeastern tier of counties who report immature thrips reestablishment following an initial foliar spray in early planted cotton (generally, the last 7 to 10 days in April). We hope that these situations are the exception and not an indication of an upcoming flight of difficult-to-control western flower thrips. The odds of having to deal with western flower thrips (as opposed to the more common tobacco thrips) appear to be more favorable following a week or more of warm to hot dry weather. This species also seems to impact cotton a little later than tobacco thrips. In an average year (whatever that is), most cotton fields are not adversely impacted by western flower thrips.

Examination of seedlings for both the presence of crinkled leaves, damaged buds and immature thrips is our best bet to time possible foliar sprays, although a foliar spray is more often the rule than the exception following a seed treatment. Remember that after an initial spray, cotton leaves already crinkled and bugs already damage will not overcome these symptoms, so the finding of additional immature thrips should be met prior to any additional sprays.

Between now and our “thrips-safe” five true leaf stage expect the levels of thrips to “pick up” over the next two or possibly three weeks.

From: Dominic Reisig, Extension Entomologist

### **Sugarcane Beetle Not Such a Sweet Pest on Corn**

The sugarcane beetle is a relatively large beetle (Fig. 1) that can be a sporadic pest of corn. This year seems to be a particularly bad year across the Southeastern U.S. as it has been reported across the mid-South, in Virginia, and in the Piedmont region of North Carolina. We may see it crop up in more eastern portions of the state, but injury will likely be less severe if a high rate of a neonicotinoid insecticide (Cruiser 1250, Poncho 500, or Poncho 1250 - based on data from Angus Catchot, Mississippi State University) was applied to the seed. Higher rates of insecticides are generally applied to the seed in the east to manage other seedling insect pests.

The sugarcane beetle can damage corn up to 24 inches in height (Fig. 2). It is a single generation pest. In North Carolina, adults emerge from overwintering and begin to move into corn fields in April. The adults are very powerful diggers (we have a report from Rowan County of an adult chewing through a Styrofoam cup) and will feed below the soil surface (Fig. 3). Eggs are deposited below the soil and the resulting larvae will feed on decaying organic matter. Adults emerge in August or September and will leave fields to hibernate.



**Fig. 1.** Sugarcane beetle adult (size is around 1/2 inch). Image from Tara Smith, Louisiana State University.



**Fig. 2.** Sugarcane beetle-damaged corn seedling. Image from Tara Smith, Louisiana State University.



**Fig. 3.** Sugarcane beetles feed below the soil surface. Image from Scott Stewart, University of Tennessee.

You can probably guess from the life cycle that this is a difficult pest to react to because it feeds underneath the soil. Severe injury could occur if a lower rate of a seed treatment were used (Cruiser 250, Cruiser 500 or Poncho 250), and/or if the seed treatment wasn't combined with an at-planting insecticide such as Lorban, Counter, or bifenthrin sprayed in-furrow, and/or if a high density of beetles simply overwhelms your preventative measures. Researchers from Louisiana State University tested Capture, Lorsban, and Baythroid after sugarcane beetle had begun to injure corn. Although seedling injury was reduced, it was still significant and yield was still lost as a result of this pest. As a result, economics may dictate that you need to replant the stand. If you chose to replant, do so with a higher seed treatment rate of, if you can't get seed with these higher rates, use one of the at-planting insecticide treatment options.

From: Hannah Burrack, Extension Entomologist

## What to Watch For: Tobacco Budworms

### Tobacco budworm populations developing

Tobacco budworm (*Heliothis virescens*) larvae (Fig. 4) are beginning to show up in North Carolina tobacco fields. At our research plots at the Upper Coastal Plain Research Station, Rocky Mount last week, we found several infested plants, and on May 16 at the Lower Coastal Plain Research Station, Kinston, plots were between 0 to 10% infestation in most of our trials. The vast majority of the larvae present were recently hatched 1st instars, although a few second instars were also present. This means that egg laying occurred fairly recently and that growers will likely begin to see tobacco budworm larvae in their fields soon. In fact, a consultant called Loren Fisher and I last week to report that he and his staff were seeing budworm larvae in fields in eastern North Carolina. Populations in these fields were near treatment thresholds (10%). As always when I discuss treatment thresholds for tobacco budworm, it is important to understand that these thresholds are **very** conservative, meaning that yield loss has rarely been documented due to budworm feeding, even at much higher infestation rates than 10%.

### Natural enemies present

Also present in large numbers at the Lower Coastal Plain Research Station on May 16 were large number of red-tailed wasps (*Camponotus sonorensis*) (Fig. 5) in search of young tobacco budworm larvae to parasitize. The wasps were so common that it was almost easier to follow them from plant to plant than to search for the newly hatched larvae in buds. The large numbers of parasitic wasps also suggests that many of the larvae we saw this week may not make it to adulthood.



Fig. 4. First instar tobacco budworm larva in eastern North Carolina tobacco. Image from Loren Fisher.



Fig. 5. *Camponotus sonorensis* wasp searching for young tobacco budworm larvae. Image by Hannah Burrack.

### Management

For those growers whose fields have tobacco budworm populations at greater than 10% infestation in small plants, have not observed parasitic wasps, and plan to treat, there are several insecticides available (see the *North Carolina Agricultural Chemicals Manual* for specific recommendations). Some North

Carolina growers have used Coragen (a newer insecticide from DuPont) as a transplant water treatment for preventative control of tobacco budworm. Because there is relatively limited data against tobacco budworm using this application method of Coragen, I cannot say how effective or long lasting its activity may be. It also important to note the size of tobacco budworm larvae feeding on transplant water Coragen treatments. First instar larvae may not have fed on enough tissue to kill them, so growers should hold off on making foliar treatments until second instar larvae are present. Caterpillars eat the vast majority of the leaf tissue they will consume as large larvae, so the injury caused by a first instar as it develops to a second will not be significant. However, if growers who used Coragen in the transplant water for tobacco budworm control have second instar larval populations above a 10% infestation level and need to apply a foliar, rescue treatment, they should select a different mode of action material, such as Tracer/Blackhawk (spinosad), Denim (emamectin benzoate), Orthene (acephate), or methomyl (Lannate). Growers who have used Coragen in the transplant water should not apply Belt or Coragen as their first foliar treatment following transplant.

## FRUIT AND VEGETABLES

From: Mark Abney, Extension Entomologist

### Thrips on Cucurbits

There have been a number of telephone calls recently from consultants and county Extension agents in eastern North Carolina regarding thrips on squash and watermelon seedlings. It appears that most of these are tobacco thrips, *Frankliniella fusca*, and in at least some cases, immature stages were observed. In most cases when the weather is warm and conditions for growth are favorable (as they are now in many places), cucurbits will outgrow thrips damage, and no treatment will be needed. Thrips movement is likely to continue for several more weeks, with a fourth generation of the pest expected in mid June. Only limited thrips reproduction on cucurbits is likely, and re-infestation of adults following treatment can be expected. The temptation to treat thrips on cucurbits is great, and may be warranted if immature stages are present and plants appear stunted. However, if plants are growing rapidly, and only adult thrips are present, insecticide applications are probably not economical.

### Squash Bugs

It is the end of May, and our first report of squash bugs has just arrived. This insect has not presented a major challenge for commercial growers in the past, but last year a number of fields in North Carolina and Georgia were infested. Adult and immature squash bugs will hide beneath plastic mulch making scouting and control more difficult. It only takes 1 or 2 squash bugs to kill a newly emerged or transplanted seedling. In a trial at the Horticultural Crops Research Station in Clinton, North Carolina in 2010, a variety of insecticides were tested against squash bug adults and large nymphs. Foliar applications of Lambda-cyhalothrin and methomyl, and soil applications of the neonicotinoids imidacloprid, dinotefuran, and thiamethoxam all provided good control of the pest.

Squash bugs are one of the most common pests of cucurbits in home gardens, and options for control are more limited. It is important to control populations before infestations become large, and young nymphs are much easier to kill than large nymphs and adults. Organic producers have even fewer control options,

and prevention is critical. In small plantings, hand removal can be effective but it becomes impractical when there are many plants and bugs are numerous.

## ORNAMENTALS AND TURF

From: Steve Bambara, Extension Entomologist

### Spiny Witch-Hazel Gall Aphids on Birch

Spiny witch-hazel gall aphids, *Hamamelistes spinosus*, cause bumpy ridges on the leaves of birch (Fig. 6). The overwintering eggs are laid on witch-hazel in June and July. These eggs hatch the following spring and the new aphid nymphs crawl to the flower buds to feed; if the plant does not have flower buds, these aphids die! Feeding on the flower buds induces the plant to form a spiny gall. A second generation of winged aphids develops inside the galls, then leaves and flies to birch. These winged aphids give birth to a scale-like generation which settles and hibernates on birch until the following spring. As the buds break, the scale-like aphids feed on the leaves and induce the birch to form corrugated galls. Winged aphids that migrate back to witch-hazel or wingless aphids called accessory females develop inside these galls.



Fig. 6. Spiny witch-hazel gall aphids on both sides of birch leaf. Image by James R. Baker.

The winged aphids which migrate back to witch-hazel give birth to a generation of wingless males and females. These wingless aphids mate, and the females lay eggs for overwintering. The special accessory females produce additional generations of winged aphids which migrate to witch-hazel to give birth to males and females that lay eggs for overwintering. Thus, this aphid requires two full years to complete its cycle of life stages. Pesticides should be applied at bud break in early spring to prevent gall

formation. It is probably too late this year for effective control. This must be done every year unless the witch-hazels can be found and eliminated. The alternation of hosts is well known for other aphids (woolly apple aphid on apple and elm, woolly alder aphid on maple and alder, and green peach aphid on peach and many other hosts), but the spiny witch-hazel gall aphid seems to have the most complicated life cycle. For information on general aphid management, see *Ornamentals and Turf Insect Information Note No. 38* at <http://www.ces.ncsu.edu/depts/ent/notes/O&T/flowers/note38/note38.html>.

### Lesser Canna Leafroller Derby

Canna plantings seem to be fewer than in the last few years. If your cannas (Fig. 7) have been heavily attacked by the lesser canna leafroller in the past, it may be time to treat. As leaf whorls begin to open, attack by the leafroller becomes more likely.

Early larvae may appear as leaf miners. This pest is more prominently recognized in the fall as the second generation damage becomes more noticeable and that's when Extension agents and landscapers are more likely to receive telephone calls regarding this pest.

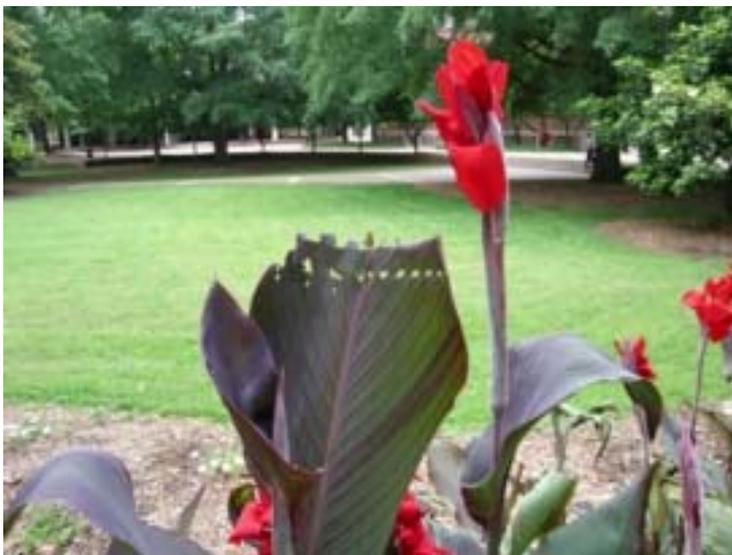


Fig. 7. Lesser canna leafroller damage. Image by Steve Bambara.



Fig. 8. Whorled leaves tied together. Image by James R. Baker.

These small caterpillars are related to European corn borers, pickleworms, coneworms and sod webworms. Lesser canna leafrollers overwinter as larvae in the leaves and stems of canna and the moths emerge to mate and lay eggs after the new growth emerges in the spring. When the larvae hatch, they feed within the new, rolled leaves. Older larvae can tie the edges (Fig. 8) of older leaves together and roll the leaf like a Cuban cigar! Canna growers should remove all the old, dead growth in the canna bed at the end of the season, after frost. It may be possible to reduce the leafrollers to the point where pesticides are not needed. Canna seems to be the only host plant for this pest, so if the plants are isolated from other cannas, sanitation may be sufficient pest management.

*Bacillus thuringiensis* (B.t.) insecticides are effective for this pest, especially early. Canna keepers are encouraged to spray the pesticide mixture directly down into the rolled leaves so that the pesticide can

penetrate into the shelter around the caterpillars. A stronger product such as Orthene may control this pest by spraying several times at 10-day intervals. A surfactant may be helpful. For more information on lesser canna leafrollers, *Extension Publication AG-136* is available on the following web site: <http://ipm.ncsu.edu/AG136/cater12.html>.

### Cottonwood Leaf Beetles

The cottonwood leaf beetle, *Chrysomela scripta*, feeds on the leaves of poplar, willow, and alder throughout North Carolina. Overwintering adults emerge and lay eggs (Fig. 9). Larvae feed in groups on the new leaves and tender bark. The young larvae skeletonize the leaves. As they grow, the older larvae separate and consume entire leaves except for the midrib. When mature, the larvae pupate on the leaves, stems, trunk, or nearby objects (Fig. 10). There are several generations per year and sometimes trees are seriously defoliated.



Fig. 9. Cottonwood leaf beetle eggs, adult and larvae. Image by James Solomon.



Fig. 10. Cottonwood leaf beetle pupae on leaf. Plant Disease and Insect Clinic image.

Sevin or a foliar pyrethroid insecticide should be effective for control. Many leaf beetles also respond to imidacloprid foliar spray or soil drench. More information may be found in *Ornamentals and Turf Insect Information Note No. 24* at <http://www.ces.ncsu.edu/depts/ent/notes/O&T/flowers/note24/note24.html>.

### Fungus Gnats by the Yard

If Adam and Eve had talked to this snake instead, life might have turned out differently. Darkwinged fungus gnat maggots display an exceptional mass migration perhaps in search of a new food source. The maggots stick together and slither along in a ribbon sometimes as much as an inch wide and a yard long so that the mass of larvae resembles a snake (Figs. 11 and 12). This is a startling sight, but it is perfectly harmless behavior. Go to <http://www.youtube.com/knownogravity#p/a/u/0/4yI7g1JKc9I> to see a video of this phenomenon by M. Flint.



Fig. 11. Darkwinged fungus gnat maggot "snake". Image by M. Flint.



Fig. 12. Darkwinged fungus gnat larval mass. Image from Kim Fleming (<http://www.flickr.com/>).

Darkwinged fungus gnats are native insects that normally go unnoticed because they inhabit decaying organic matter outdoors and because they are usually not particularly abundant in the overall landscape. Sometimes fungus gnats emerge in large numbers and are noticeable because they congregate around the house or on plants in the yard. Except for being a nuisance, fungus gnats in the yard are harmless. We received a nice report of this behavior last week. *Ornamentals and Turf Insect Information Note No. 29* (<http://www.ces.ncsu.edu/depts/ent/notes/O&T/flowers/note29/note29.html>) provides information on fungus gnats as plant pests in the greenhouse.

From: Steven Frank, Extension Entomologist

### Boxwood Spider Mites Active on Boxwoods

On May 18, I participated in the Landscape Field Day at the J.C. Raulston Arboretum at North Carolina State University in Raleigh. We led insect safaris to show landscapers different pests to watch. One station was about boxwoods. Although boxwood leafminer adults have come and gone (larvae are in new leaves), the boxwood spider mites, *Eurytetranychus buxi*, were active. These are brownish tetranichid mites similar in form to other spider mites such as the two-spotted spider mite. As far as we know, boxwoods are their only host. Like other mites, boxwood spider mites cause stippling damage which, on an evergreen plant, will last as long as the leaves do. Light infestations can be managed with insecticidal soap or oil applied to the undersides of leaves. Otherwise, a number of miticides are available. For more information on miticides, see *Ornamentals and Turf Insect Information Note No. 77* at <http://www.ces.ncsu.edu/depts/ent/notes/O&T/trees/ort077e/ort077e.htm>.

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## RESIDENCES, STRUCTURES AND COMMUNITIES

From: Mike Waldvogel and Charles Apperson, Extension Entomologists

### Mosquitoes - It's Time to Become a Big Tipper

Rain and warmer weather are closely followed by increases in mosquito activity particularly with the Asian tiger mosquito. Most people still think of swamps, ponds, etc. as the source of the mosquitoes that show up in their yards. However, in most residential areas the source is more likely to be all of those small and inconspicuous water sources that are prime mosquito breeding sites. So, before people start planning a chemical assault on their yards as the solution to their mosquito problems, they should start with the simpler and more long-term approach of eliminating "collectibles". We don't mean souvenirs; we're talking about all of those objects that collect and retain rainwater.

- Bird baths - simply flush them out with a garden hose. The birds will also appreciate the fresh water. For horse owners with water troughs near stalls or out in pastures, one option is to use a product such as "Mosquito Dunks" which contain the *Bacillus thuringiensis israelensis* and are labeled for use in animal watering containers. Although you can use them in water bowls for dogs, it is far simpler (and better for the animals) if you "tip and toss" the water and replenish it with fresh water.
  - Old cans, tires, etc. - empty them and get rid of them.
  - Outdoor flower pots - empty the water from the dishes/trays underneath them. Your plants have plenty of water without the overflow. This also helps reduce fungus gnat problems.
  - Remove all of that built-up debris from your gutters. The water and decaying material attract mosquitoes.
  - Tarps covering boats, your grill, etc. collect pockets of water that can remain for 1 to 2 weeks.
  - The bed of that '57 Ford pickup that you've been restoring for the last 15 years can collect water particularly if the tailgate faces uphill in your yard.
  - Kids' pools - if they're not being used by kids, they're probably being used by the mosquitoes. Same thing applies to pools (in ground or above ground) that aren't maintained (such as on properties in foreclosure).
  - Drainage ditches - they're meant to collect water **temporarily**. Keep them free of debris so that water flows out.
  - Decorative fish ponds can be a source of mosquitoes if they contain a lot of vegetation which provides hiding places for the mosquito larvae. "Mosquito Dunks" are an option here.
  - Tree holes - when limbs fall off trees, the remaining hole in the trunk can collect water. Flush that out or put a small piece of a mosquito dunk into it.
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Many people ask about treating shrubs in their yard. Mosquitoes **may** be resting there during the day, but whether it "controls" a mosquito problem is debatable. Similarly, people using outdoor foggers will definitely kill mosquitoes, but depending on the time of day/evening that they use it, they may be missing the peak activity. Two other issues about using outdoor foggers are important. First, safety is critical. Make sure you're standing upwind from the direction the fog is being applied and wear appropriate protective equipment to prevent the fog from getting into your eyes and lungs or on your skin. Second, know where the fog is going. Some of your neighbors may not want chemicals drifting onto their property (particularly if they're outside eating at the time!). The same applies to the automated misting systems that some people have installed on their homes.

One other point to remember - mosquitoes have no concept of property lines. Mosquito management takes a neighborhood effort to be truly effective. We have information on mosquito control on the web at <http://insects.ncsu.edu/Urban/mosquito.htm>.

*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.*

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