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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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In This Week's Issue . . .

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

ANNOUNCEMENTS AND GENERAL INFORMATION

Welcome to the 2011 *North Carolina Pest News*

Welcome to the first issue of *North Carolina Pest News* for 2011. North Carolina Pest News is a newsletter published in electronic form by the Departments of Entomology and Plant Pathology at North Carolina State University, and contains up-to-date information on the status of disease and insect pests in North Carolina from Extension specialists in the two departments. Steve Toth, Extension Entomologist and Integrated Pest Management Coordinator, is the editor of the newsletter.

From now until the middle of September, new issues of *North Carolina Pest News* will be available every Monday morning at 8:00 a.m. via electronic mail to county Extension agents, University specialists, and others. By Monday afternoon, the newsletter will be available on the Internet at http://ipm.ncsu.edu/current_ipm/pest_news.html.

We hope that *North Carolina Pest News* will meet your individual needs for information on the occurrence of diseases and insect pests in North Carolina. Please direct any suggestions or comments to Steve Toth (steve_toth@ncsu.edu).

FIELD AND FORAGE CROPS

From: Jack Bacheler, Extension Entomologist

Expectations for Thrips Control in the Absence of Temik

Temik is no longer being produced

With the recent announcement from Bayer CropScience that Temik 15G (actually the active ingredient aldicarb) will no longer be produced, a number of cotton producers have been scrambling - either for the limited supplies available or for what to expect from alternatives, primarily seed treatments. For much of the winter, the announced schedule of the Temik phase-out (December 31, 2014 as the last Bayer sales date, December 31, 2016 as the last sales date by distributors, and August 31, 2018 as the final date of producer use) was interpreted by us and by producers as having Temik available through this phase-out period. In some areas, *Temik may still be available to producers from dealers and distributors, but more often than not, availability is limited and based on 2010 purchases.* Estimates are often in the range of 40% Temik availability compared with 2010.

What are my main alternatives?

For thrips control and yield, in our replicated tests Temik 15G at the 5.0 product rate (0.75 pound of active ingredient per acre) has been a little better(economically, when all is said and done) than one of the seed treatments (Gaucho Grade, Cruiser, Avicta Complete or Aeris) plus a foliar spray at the first true leaf stage. According to our latest survey of independent consultants, last year Temik alone was used on 54% of the consulted acreage; an additional 17.5% of this acreage was planted to Temik (most often 5 pounds) plus a seed treatment. According to our plant pathologist, Dr. Steve Koenning, Aeris and Avicta Complete, which contain each contain a different nematicide (thiodicarb and abemectin,

respectively) in addition to the thrips-active insecticide are roughly equivalent to 4 to 5 pounds of Temik 15G for nematodes. For higher levels of nematodes, 7 pounds of Temik or Telone II are generally recommended.

In approximately a decade of testing by our project, the seed treatments have preformed similarly. Additionally, in essentially all of our tests, the protection from thrips damage provided by seed treatments seldom exceeded 3 weeks. Our producers have averaged treating for thrips with a foliar spray on more than 83% of their cotton acreage averaged over the past three years. The proportion of cotton acreage needing a foliar spray following Temik has been approximately 67% averaged over the same time period.

Other at-planting options for thrips control

1. Acceleron seed treatment will be offered to producers purchasing Deltapine seed in 2011. This seed coat should perform in a par with the above seed treatments for thrips control as Acceleron shares the same active ingredients and amounts used in Gaucho Grande (thrips only) and in their thrips plus nematode versions - one similar to Aeris (imidacloprid plus thiodicarb) and another similar to Avicta Complete (thiamethoxam plus abemectin). Our project and the project of Dominic Reisig, Extension Specialist, North Carolina State University will be evaluating all of the standard and new seed treatments and various foliar spray options for thrips control this spring.

2. Thimet 20G insecticide is labeled for cotton and is applied like Temik as a granular, in-furrow insecticide. A low rate of 3.3 pounds of product per acre is recommended for a short window of thrips control (i.e., planting after May 20 when cotton can often more quickly outgrow thrips injury). The maximum rate of 8.2 pounds of product per acre is probably better suited for the high thrips levels and longer periods of slow seedling “grow-off” and the resulting periods of plant vulnerability to thrips injury. In our past testing of this product, Thimet sometimes showed less residual control of thrips than Temik. This product may cause phytotoxicity, particularly under cool wet conditions and should not be used following diuron-containing herbicides such as Karmex and Direx. With Temik and seed treatments dominating the market for the past decade or more Thimet has not been evaluated in North Carolina recently. If a producer elects to use Thimet, we would recommend trying it on limited acreage in 2011. Thimet does not control of nematodes.

3. In-furrow acephate spray: An in-furrow at-planting spray of 1.0 pound of active ingredient of acephate (Orthene and other brand names) also provides some control of thrips, although its effectiveness against our often high thrips levels may be marginal. This approach has received only limited testing in North Carolina and thus is not currently recommended until further testing.

4. Foliar applications only for thrips control: Although foliar sprays with materials such as acephate are taken up by cotton seedlings, even multiple applications often result in poor thrips control.

Prioritizing Temik use

Cotton producers who have purchased Temik in limited quantities are advised to prioritize its use. Temik should be reserved for fields with a history of high thrips levels, early-planted fields and conventional till fields. Late-planted fields and reduced tillage fields are often less susceptible to thrips damage.

Late-planted cotton

Although thrips damage can vary greatly from year to year, as a general rule cotton planted after about April 18 often has a more narrow window of vulnerability to thrips damage due to faster seedling "grow-off", particularly if the major cotton-damaging adults thrips flights are on the decline by the time cotton reaches about the first true leaf stage.

All clear

In almost all cases, 5 true leaf stage cotton with adequate moisture typically is safe from further damage from thrips, irrespective of planting date.

From: Dominic Reisig, Extension Entomologist

2011 May be a Light Year for Cereal Leaf Beetle

Wheat is on schedule in North Carolina and cereal leaf beetle adults (Fig. 1) are out. However, it may be a "light" year for cereal leaf beetle compared to last. This is similar to what has been seen in South Carolina. Out of around 75 fields that we are sampling around the state, we have not observed a single field above the threshold level of 25 eggs per larvae per 100 tillers. This is in contrast to last year, where eggs were found in high numbers in the second week of April (Fig. 2).

We've seen a few cereal leaf beetle eggs (Fig. 3) in the southern Piedmont, mainly south of Interstate 40. There are some larvae (Fig. 4) in the southern and central Coastal Plain, but none have turned up farther north. Now is the time to begin vigilant scouting of fields, even if a previous application of insecticide were made (e.g., an application of insecticide tank-mixed with foliar nitrogen application). Remember to hold off treatment until is reached threshold (25 eggs per larvae per 100 tillers) and the number of larvae exceeds that of eggs.

Fig. 1. Cereal leaf beetle adult.

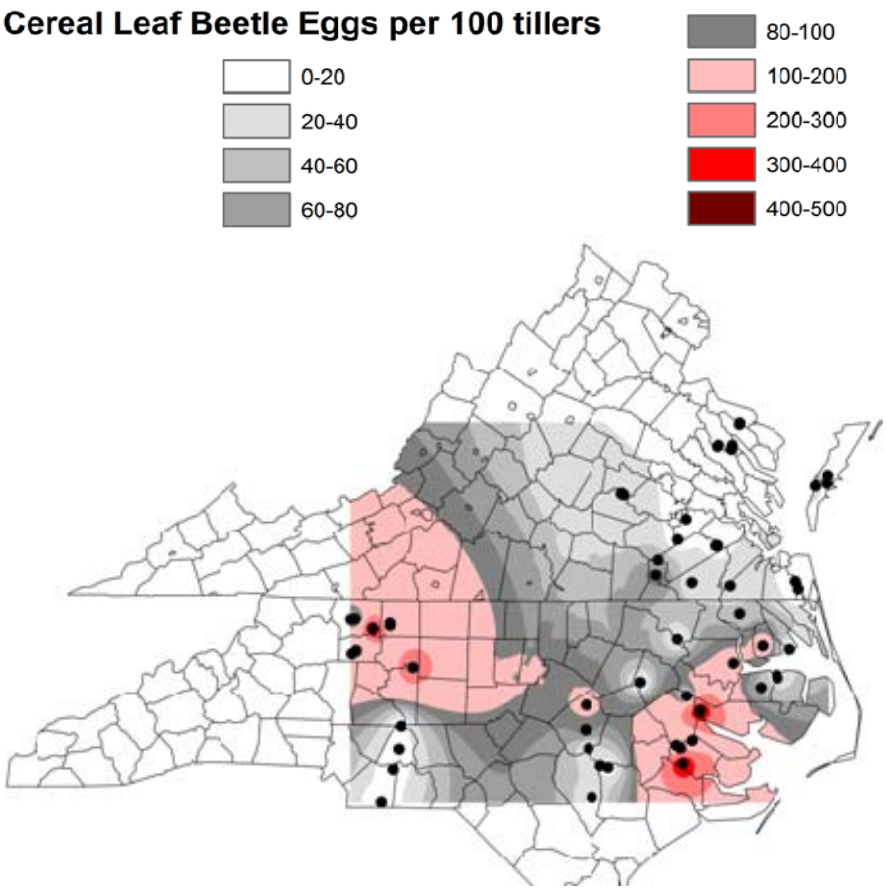

Fig. 2. Spatial interpolation of cereal leaf beetle eggs during the week of April 6-12, 2010.

Fig. 3. Cereal leaf beetle eggs.

Fig. 4. Fourth instar cereal leaf beetle larva.

From: Steve Koenning, Corn, Cotton, and Soybean Specialist, Plant Pathology, Jim Dunphy, Soybean Specialist, Crop Science, Ron Heiniger Corn Specialist, Crop Science, and Keith Edmisten, Cotton Specialist, Crop Science

Seed Treatments for Corn, Cotton, and Soybean Nematode Control

A number of seed treatments that claim to aid in nematode management are rapidly emerging. Naturally we are beginning to field a number of questions about these treatments and hope to provide answers. Before we start, however, some definitions are needed:

1. Fungicide – Any seed treatment will almost always contain a fungicide and usually two or three to control post- and pre-emergence damping off. The basic fungicide chemistry differs little between one company and another. They are designed to control the same two to three soil borne diseases. They rarely affect nematodes or insects.

2. Neonicotinoid insecticide – Thiamethoxam in Cruiser, imidacloprid in Gaucho, and clothianidin in Poncho are common examples of insecticides used on cotton and soybean. These systemic insecticides have averaged about three weeks of protection against thrips. North Carolina State University testing has generally not shown a positive growth response to neonicotinoids in the absence of insects. They have little if any activity against nematodes.

3. Polymer – A polymer is a complex chemical that is used in seed treatments to insure that the pesticide additives as well as other materials adhere to the seed and allow for easier and safer handling, as well as insuring that seed flows through equipment.

4. Colorant – A colorant is a dye added to the polymer to identify the components of the additives (will likely vary by company).

5. Biological – A number of bacteria, actinomycetes, and some fungi that may be added to enhance disease and or nematode control. They may be stand-alone treatments for “organic” agriculture or be adjuncts to traditional chemical control agents. Many are bacteria in the genus *Bacillus*. Bacilli are the preferred type of biological because they form spores which are relatively stable and resistant to degradation over time. A strain of *Bacillus subtilis* is the active ingredient in Kodiak and *Bacillus fermis* is the active ingredient in Votivo. Another biological is known as Messenger or N-Hibit when used as a seed treatment. This is the Harpin protein that stimulates plant defense mechanisms to protect against attacking pathogens. This Harpin protein was discovered through its ability to protect against bacterial plant pathogens, its efficacy against fungal or nematode pathogens is less clear.

6. Avicta or Abamectin is an organic fermentation product that comes from a soil inhabiting actinomycete (*Actinomyces avermitilis*). Since this is a biological there are various strains which may be more or less potent as toxins to the mites insects, or nematodes. Overall, these Ivermectins are extremely toxic to nematodes at very low doses with very little mammalian toxicity. They are, however, nearly insoluble in water and are not systemic, so activity is limited in soil.

7. Aeris is a carbamate insecticide (thiodocarb – also marketed as the insecticide Larvin). It has good nematicidal activity and limited systemic activity.

We have evaluated a number of nematicidal materials on corn, cotton, and soybean. The most extensive North Carolina research was supported by the North Carolina Soybean Producers Association Check Off program. The results were disappointing. It's not that they didn't work, just that they didn't work as well as we had hoped. At the rate they will be applied to seed, there likely will be no negative effects (phytotoxicity or stunting, and we don't foresee negative interactions with herbicides). Next, we must consider the crop and species of nematode involved.

Cotton

In the case of cotton, both Aeris and Avicta have been approximately equivalent to 5 to 7 pounds per acre of Temik for nematode control. Neither product controls thrips, thus on cotton they should be used in combination with insecticidal seed treatments (Cruiser or Gaucho) or a systemic insecticide to control thrips, such as Temik in furrow. Avicta may be weaker on reniform nematode than some other products.

Corn

A limited number of tests with Avicta on corn have generally resulted in increases in yield roughly equivalent to that achieved with Counter for root-knot, Columbia lance, and stubby root nematode.

Soybean

Trials on soybean have shown yield increases equivalent to those achieved with Temik for root-knot nematode. Yield increases with seed treatments for soybean cyst nematode (the most common problem) have not been statistically significant. That does not mean that they will not improve soybean yield. We have seen yield increases on the order of 1/2 to 5 bushels per acre, but the increases have not been consistent over locations and conditions. One to two bushel yield increases are more common, but in no trial have we seen that these products actually control nematodes. None of these products have had any impact on the numbers of nematodes we find.

Control vs. Management

Are we controlling pests (pathogens, weeds and insects) with our practices or pesticides? The answer is a definite **NO!** At best, we manage pests. Control implies elimination of the pest or completely removing adverse effects of the pest. At best, we suppress plant pest populations and this allows us to produce a crop profitably. These materials are more properly considered aids to pest management. In the case of nematicidal seed treatments, they may act more as repellants that allow us to improve growth under nematode pressure in order to improve yield potential.

Summary

When one considers the number of potential compounds and possible combinations that can be applied to seed, we obviously we cannot evaluate them all. This said, evaluating claims is a difficult task at best. What is a grower, agent, or consultant to do?

1. Have a soil sample processed by North Carolina Department of Agriculture & Consumer Services Agronomic Testing in order to determine if a nematode problem exists.

2. Evaluate the product literature provided and compare to competing claims. Since these nematode control measures will probably come with other pesticides that may or may not be needed, this may become an expensive nematicide.

3. Consider potential yield increases; it's easier to make a profit on better land than on poor land.

4. Even a small yield increase with current prices can improve profitability.

5. If possible, evaluate the results yourself if you have a yield monitor. Order some treated and untreated seed and place one in one hopper to see if there is a visible difference in treatment (Note: perceived growth increases or lack thereof do not mean a yield increase).

6. Remember, for the most part these treatments are good, but are not guaranteed to improve profits. Seed treated by a reputable dealer is the way to go. You can treat your own seed, but there is enough art and science involved that you are unlikely to beat the big guys.

From: Steve Koenning, Extension Soybean Specialist, Plant Pathology, Christina Cowger, Plant Pathologist, USDA/ARS, and Randy Weisz, Extension Specialist, Crop Science

Current Status of Soybean Rust

On March 15, soybean rust was reported from Florida for the first time in 2011 on kudzu in Miami-Dade County. Soybean rust has been confirmed from a February 12, 2011 collection from a research station in Isabela, Puerto Rico. Soybean rust has also been detected in Cuba (at Guantanamo Naval base) and in Mexico. Extremely cold weather this winter that extended into the extreme south of the U.S. may have eradicated the disease from much of the U.S. mainland. Soybean rust has, however, been recently detected in Cuba (at Guantanamo) and in Puerto Rico. The potential for spread from these regions at this time seems remote. Sentinel plots have been planted and scouted in Mississippi and Alabama with no rust detected at this time.

Prospects for Soybean Rust in North Carolina in 2011

Rust spread very little in 2010, due in large part to the severe cold in the winter of 2010 and a relatively dry, especially in the late season, growing season. In 2011, we can expect a late start for rust spread. The potential for an epidemic, however, is more related to spring and summer conditions. Watch for tropical storm events that bring moisture from the south. We learned last year that rust can and will make large jumps distance wise over a relatively short period of time.

Current Status of Wheat Diseases in North Carolina

Powdery mildew is active in parts of the Coastal Plain of North Carolina at this time, and measures for management may be needed on susceptible varieties. Generally if 5 to 10% of the entire wheat leaf surface is covered with mildew lesions, a fungicide is warranted. Head scab of wheat is not a concern at the moment because the weather has generally been too cool. However, for the next month scab risk should be monitored frequently at the web site below especially if there is rain. It will only pay to apply a fungicide for scab if risk levels are elevated (lots of red, or red and yellow) on the map and if fungicide is applied at flowering. Growers should identify the varieties they have planted in order to determine their susceptibility to head scab at the following website:
http://www.smallgrains.ncsu.edu/_SmartGrains/No28VarietySelection2010.pdf.

What should I spray?

A number of fungicides are available for management of foliar diseases in small grains. The number of products available may make decisions difficult. Stobilurin fungicides such as Headline, Quadris, and Evito are excellent products for management of Stagonospora blotch (SNB, also known as Septoria) and also do a good job if applied in a timely manner for control of powdery mildew and leaf rust. Triazole fungicides (Tilt, Folicur, Proline, Prosaro (a combination of Folicur and Proline), and Caramba) are less efficacious for Stagonospora blotch, but generally are better materials for powdery mildew and leaf rust. For this reason a number of combination materials are available to manage Stagnospora as well as mildew and rust. These include StategoYield, Quilt, and Twinline. A problem occurs when you must include a third class of disease – head scab – which may be made worse by using a strobilurin fungicide. A second consideration is that Folicur (tebuconazole, there are generics), which is a fair to good product for head scab, can only be applied to small grains at 4 ounces during a growing season. Thus, if you elect to use Folicur for management of mildew and or rust, you cannot use Prosaro or Folicur for head scab later in the season. You will be restricted to Proline or Caramba for head scab suppression. Proline and Caramba are likely to be more expensive than Folicur or Prosaro.

Whether and when to spray

Scouting is recommended in order to determine if there is a need to apply one of these materials. The threshold for each disease that should trigger a decision to apply a fungicide is given in the *Small Grain Production Guide* (see article below). In general, it is better to initiate spraying at the onset of disease to obtain best management of the disease epidemic. A problem may occur, however, if the small grains cannot be sprayed as soon as need be. If small grains do not receive a timely application of fungicide (a week or more after scouting has determined the need for an application) it may be too late to adequately manage disease. Thus, a higher rate of fungicide (if the label permits), a combination fungicide, and or a second application may be needed if favorable weather for disease development continues. At this time, if powdery mildew is present then a fungicide should probably be applied. If the potential for head scab increases later in the season, fungicides for head scab must be applied at flowering and preferably with ground equipment to attain maximum coverage of the heads. Fungicides applied before or significantly after flowering will not protect against head scab. Do not assume that a flag leaf fungicide application will prevent head scab.

Resources for Small Grains Information for 2011

For information on pest management for small grains in 2011, see the following sites on the Internet:

North Carolina Agricultural Chemical Manual: http://ipm.ncsu.edu/agchem/agchem.html

Small Grains Production Website: http://www.smallgrains.ncsu.edu/NCSmallGrains/Home.html

U.S. Wheat and Barley Scab Initiative Risk Forecasting Website: http://www.wheatscab.psu.edu/

FRUIT AND VEGETABLES

From: Anthony P. Keinath, Professor, Vegetable Pathologist, Clemson University Coastal Research and Education Center and Frank Louws, Professor, Department of Plant Pathology and Director, Center for IPM, North Carolina State University

2011 Watermelon Spray Guide Available On-line

The revised South Carolina Watermelon Spray Guide for 2011 is available on-line at: http://www.clemson.edu/psapublishing/PAGES/PLNTPATH/IL86.pdf.

This recommendation is based on collaborative experiences in the Southeast and is provided in North Carolina in the absence of a dedicated vegetable Extension plant pathologist.

An important revision for 2011 is the pre-harvest interval (PHI) of 7 days for tebuconazole, which limits use of this active ingredient during harvest. In addition, we are recommending that growers do not make more than three applications of Group 3 fungicides per season to reduce the risk of resistance developing to DMI fungicides in the gummy stem blight fungus. This limit is on the tebuconazole label, although it is not on the labels of Group 3 fungicides mixed with other active ingredients.

From: Frank Louws, Professor, Department of Plant Pathology and Director, Center for IPM

Mancozeb Tolerances for Broccoli, Cabbage, Lettuce and Peppers

On April 6, 2011, mancozeb fungicide received tolerances for broccoli, cabbage, lettuce (head and leaf) and peppers. Dow AgroSciences LLC requested these tolerances under the Federal Food, Drug, and Cosmetic Act (FFDCA). Mancozeb on these crops will help fill a void due to the loss of maneb. There is an open comment period and more information can be obtained at: http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OPP-2005-0307-0007.

This procedure will open up the possibility for national and then state-based labels.

From: Hannah Burrack, Extension Entomologist

What to Watch For - Strawberry Clipper Weevils

I spent the morning of Friday, April 1 visiting a strawberry grower in Lee County, North Carolina who had noticed the first damage from strawberry clipper weevil (*Anthanomus signatus*) in his field on Thursday. Because his farm has a history of strawberry clipper, the grower had been scouting every other day and observed that damage went from zero to several clipped buds per plant in the 2 days since he last scouted.

Strawberry clipper weevil females (Fig. 5) lay their eggs in developing flower buds of strawberry, blackberry, raspberry, dewberry, and red bud. Female beetles then chew through the pedicel, which supports the flower bud. This causes the bud to drop from the plant (Fig. 6). The larvae develop in the dropped flower bud over the course of 3 to 4 weeks. Adults emerge in midsummer, briefly feed on pollen and then overwinter. There is only one annual generation of strawberry clipper. Beetles overwinter in wooded areas, so fields located near the woods or rows closest to the woods often experience the greatest clipper injury.

Fig. 5. Mating strawberry clipper weevils. Image by Tom Murry (BugGuide).

Fig. 6. Clipped strawberry buds. Image by Hannah Burrack.

Rain in Lee County in Thursday had knocked many of the damaged buds off the strawberry plants, but there were still many plants with multiple clipped buds. I collected several damaged buds to take back to the lab and examine for eggs (Fig. 7) or larvae (Fig. 8). On Friday, all I found were eggs, but by Monday, the buds contained quickly developing larvae.

The grower had treated the night before with Sevin XLR, a relatively "safe" pesticide to bees when dry. No pesticide is completely safe for bees; therefore, I do not recommend pesticide use during bloom if at all avoidable. If pesticides (insecticides, fungicides, herbicides, or others) are necessary when flowers are present in fields, they should be applied in the evening, after bees are done foraging, to allow for the longest drying time possible before bees become active again. The grower left 3, 15 foot sections near the edge of the field untreated for me to observe over the next few weeks. I placed yellow sticky traps to

determine if we could trap beetles walking into the field and counted the damage on 10 plants per row. Of the 30 plants I observed, 11 had at least 1 clipped bud (Fig. 9), and damage ranged from 1 to 5 buds per plant.

Fig. 7. Stawberry clipper egg inside strawberry blossom. Note oviposition hole to the upper left of the egg. The female weevil will chew a hole through the sepal and petals and then deposit the egg inside the flower. Females lay 1 egg per flower. Image by Hannah Burrack.

Fig. 8. Strawberry clipper larva after 4 days in a 28 degree C (82 degree F) growth chamber. I was surprised to see how rapidly they had grown over the weekend! Image by Hannah Burrack.

Fig. 10. Recently clipped bud. Image by Hannah Burrack.

The big question in this case is whether treatment was necessary to prevent further strawberry clipper damage. Insecticides have been demonstrated to reduce adult clippers, and therefore the number of clipped buds. Research on the impact of clipper in New York (English-Loeb *et al.*, 1999) found that all strawberry varieties tested compensated well for early season clipper damage, or in the words of the authors, damage to primary and secondary buds. Only damage in late season (tertiary) buds resulted in a significant yield loss because the plant was not able to mature additional fruit. A closely related species has been studied in Europe in perennial strawberry plantings (Aasen and Trandem, 2006), where yield does appear to be improved when insecticides targeted to clippers are applied. I am not aware of any studies on compensation on Chandler, Camarosa, or Sweet Charlie, the strawberry varieties most

commonly grown in North Carolina, so we cannot necessarily say if they will behave similarly to those observed in New York (Earliglow, Kent, Jewel, and Seneca). However, I think it seems likely that our varieties can and will compensate for early season clipper damage. For this reason, I believe that the thresholds currently recommended by entomologists in Virginia (0.6 clipped buds per foot) or New York (2 clipped buds per meter) are certainly conservative enough to prevent economic loss and are probably more conservative than necessary. Further work is needed on compensation in our key strawberry varieties as well as strawberry clipper biology in North Carolina.

Strawberry Clipper Update

I returned to the Lee County farm I visited on Friday, April 1, to check sticky traps (Figs. 11-13) and count any additional damage. Also visiting were Seth Holt, Lee County agriculture agent, David Dycus, North Carolina Department of Agriculture & Consumer Services regional agronomist, and Brenda Gwynn, the new Lee County horticulture agent. The sticky traps I placed at the end of the rows nearest to the woods caught 3 clipper weevil adults, which is a promising result.

Fig. 11. Yellow sticky trap placed at the end of a strawberry clipper damaged field in Lee County. Image by Hannah Burrack.

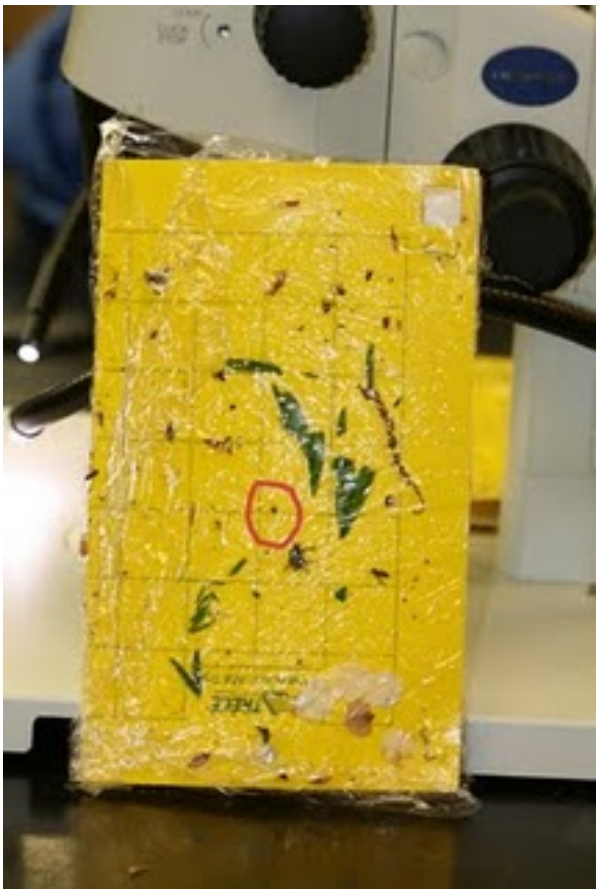

Fig. 12. Yellow sticky trap with a strawberry clipper weevil (among other insects) in center, circled. Image by Hannah Burrack.

Fig. 13. Strawberry clipper from sticky trap, up close. Image by Hannah Burrack.

Clippers were also readily distinguished from other weevils on the traps. If traps can detect strawberry clipper movement from their overwintering sites in the woods into fields, perhaps they can be used to time scouting efforts and insecticides treatments (if necessary). The four of us also counted damaged plants in the 3 untreated row ends the grower left. Damage had increased since last week. Twenty-one of the 31 plants observed had at least one clipped bud, and damage ranged from 1 to 6 clipped buds per plant. In the treated parts the rows, 11 of 13 plants observed at least one clipped bud. This suggests that the treatment applied last week is no longer effective and that clippers remain active. I replaced traps and will be returning next week to check them and assess damage. My goal is to determine how long the clippers remain active and if the sticky traps continue to catch adults.

Even though flower buds continue to be clipped, I am uncertain that the plants will experience economically significant yield loss from damage at this time of year on young, unopened buds. Before leaving on April 8, we made plans to conduct an on farm trial at these locations next spring designed to determine if aggressive clipper treatment will significantly improve yield.

ORNAMENTALS AND TURF

From: Steve Bambara, Extension Entomologist

Early Spring Insects

Just to catch you up over the past few weeks, you've probably already noticed the ground nesting bees. Some of the early species are andrenids, but other species will be popping up through the spring. These can upset home owners, but they are not a sting threat. For more information, see *Ornamentals and Turf Insect Note No. 100* at http://www.ces.ncsu.edu/depts/ent/notes/O&T/lawn/note100/note100.html.

Carpenter bees are very active. Males are marking off territory and looking for females. These bees are good pollinators. They can be very distracting if boring into your porch or deck. It’s time to practice your tennis serve. For more information, see *Residential, Structural and Community Pests Insect Note No. 4* at http://www.ces.ncsu.edu/depts/ent/notes/Urban/carpenterbees.htm.

Tent caterpillars seem late, but the temperatures have been up and down. These hairy caterpillars web the crotches of cherry trees and crabapples, primarily. For more information, see *Ornamentals and Turf Insect Note No. 62* at http://www.ces.ncsu.edu/depts/ent/notes/O&T/trees/note61/note61.html.

Minute Cypress Scales

The minute cypress scale may be tiny in size, but it can be a headache if you're trying to grow Leyland Cypress. It may also infest other hosts such as arborvitae, juniper and similar evergreens. The minute cypress scale, *Carulaspis minima*, is a small armored scale with a circular to oval cover (Fig. 14). It has a brown papery appearance with a yellow center. The scales can be found on needles and bark, where they cause yellowing and dieback. This scale overwinters on the needles, and the crawlers hatch in late spring. A recently received specimen at the Plant Disease and Insect Clinic at North Carolina State University (http://www.cals.ncsu.edu/plantpath/extension/clinic/) showed eggs still unhatched, so there is a little time in most regions before the crawler stage. For additional information on insect pests of the Leyland Cypress, see *Ornamentals and Turf Insect Note No. 133* on the web at http://www.ces.ncsu.edu/depts/ent/notes/O&T/specificplants/note133/note133.html.

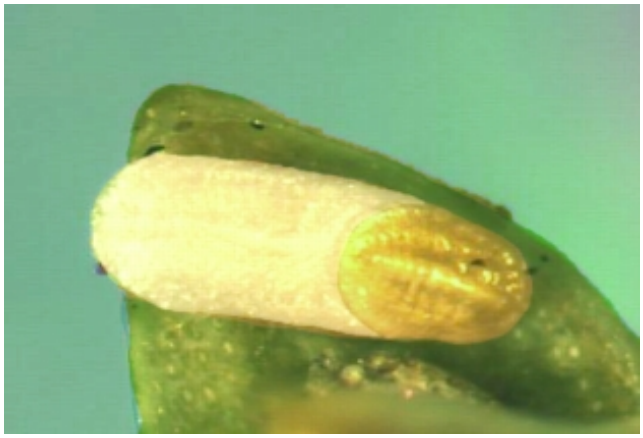

Fig. 14. Minute cypress scale. Image by James R. Baker.

From: Steven Frank, Extension Entomologist

Boxwood Leafminers are Active!

The boxwood leafminer is the most commonly reported pest of boxwoods in North Carolina. Accidentally introduced from Europe, this small fly seems to prefer American boxwood, although English and Japanese boxwoods are also susceptible. Boxwoods infested with this leafminer develop blisters on the lower leaf surface. Infested leaves are usually smaller, off-color and drop sooner than healthy leaves. Heavily infested boxwoods usually have sparse foliage and poor color.

Adult leafminers are active right now. The flies can be found hovering around boxwoods looking for places to lay eggs. A number of insecticides can be used to prevent the flies from landing and laying eggs or to kill the maggots that mine the leaves and cause damage. More information can be found at http://www.ces.ncsu.edu/depts/ent/notes/O&T/shrubs/ort016e/ort016e.htm.

Ornamental Pest Alerts on Twitter

I am offering a new pest alert system this year via Twitter. Twitter is a social networking service that allows short messages to be sent to anyone who signs up to receive them. The advantage of Twitter over electronic mail for this purpose is that Tweets arrive on grower smart phones or cell phones while they are in the field working rather than on their office desk in the evening.

I am monitoring landscape and nursery pest activity by degree day calculations and scouting, then "tweet" when I find that pests are active or will soon be active. My Twitter name is *@OrnaPests*. Sign up for Twitter (super easy) then choose to follow *@OrnaPests* to receive these valuable alerts.

From: Barbara.Shew, Mike Munster, and S. Butler, Department of Plant Pathology, and David.Stephan, Steve Frank, and Steve Bambara, Department of Entomology

Red Bay Ambrosia Beetles and Laurel Wilt Found in North Carolina

The North Carolina State University Plant Disease and Insect Clinic, in communication with U.S. Department of Agriculture and North Carolina Department of Agriculture & Consumer Services, has corroborated the presence of red bay ambrosia beetle in North Carolina. This tiny exotic beetle was first detected in North Carolina this March, in Bladen County, by the North Carolina Forest Service.

The red bay ambrosia beetle, *Xyleborus glabratus*, and the fungus *Raffaelea lauricola*, together constitute an insect/disease threat (Fig. 15). The beetle (Fig. 16) transmits the fungus which causes the disease known as laurel wilt (Fig. 17). The combination is generally fatal to red bay, which is an important maritime forest species and is also sometimes found in the landscape. The decline of red bay may have secondary implications for some animals and other plant species. Other plants in the laurel family are also susceptible to the fungus. This is the same disease complex that is seriously threatening the avocado industry in Florida.

Fig. 15. Dead red bay. Image by James Johnson (http://bugwood.org/).

Fig. 16. Red bay ambrosia beetle. Image by Mike Thomas (http://bugwood.org/).

Fig. 17. Laurel wilt disease symptoms. Image by Bud Mayfield (http://bugwood.org/).

This native Asian ambrosia beetle was first detected in the U.S. in Georgia in 2002 and is spreading slowly along the southeastern and Gulf coasts.

We will continue to bring you more information as it develops. For more details, see *Ornamental and Turf Insect Note No.161* (http://www.ces.ncsu.edu/depts/ent/notes/O&T/trees/note161/note161.html) and the links located within it.