

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.

**Stephen J. Toth, Jr.,
Editor**

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

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

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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

Results of an On-line Survey of *North Carolina Pest News* Readers

In the fall of 2012, an on-line survey of *North Carolina Pest News* readers was conducted to determine the use and value of the newsletter. A total of 36 individuals responded to the on-line survey. Twenty-two percent of the survey respondents were county Extension agents, 17% Master Gardeners or other volunteers, 11% landscapers, nursery managers or golf course superintendents, 8% farmers or farm managers, 6% agricultural consultants, 6% North Carolina Department of Agriculture and Consumer Services

personnel, 6% pesticide industry representatives, 3% land-grant university Extension specialists and researchers, and 3% pesticide dealer or distributor. The majority of survey respondents (86%) read the newsletter every week, while the remainder read the newsletter less often.

Approximately 94% of the survey respondents reported that they read the *North Carolina Pest News* to increase their knowledge of current diseases and insect pests, 39% sent electronic or printed copies of selected sections or articles to other persons (*i.e.*, clients, co-workers, friends, etc.), 25% of respondents sent electronic or printed copies of the entire newsletter to other persons, 22% incorporated selected sections or articles into their own publications (newsletters, pest alerts, etc.), and 11% placed links to the newsletter from their Internet site.

When asked to indicate which sections of the newsletter they read, 67% of survey respondents reported that they read the announcements and general information section, 58% the field and forage crop section, 67% the fruits and vegetables section, 72% the ornamentals and turf section, 47% the residences, structures and communities section, and 47% the insect light trap data. Rating the usefulness of the *North Carolina Pest News*, approximately 61% of the survey respondents reported that the newsletter was “extremely useful”, 31% “very useful” and 6% “somewhat useful”.

Comments offered by survey respondents provided insight into the use and value of the *North Carolina Pest News* to readers. Examples of comments include:

“I would like to see more variety of alerts in Fruits and Vegetables, Ornamentals and Turf, and Residences, Structures and Communities. I feel like the importance of including many of these alerts is overlooked. There are plenty of pests in these categories that are not included and would be helpful if they were. Maybe contact some Entomology, Plant Pathology and Horticulture specialists to contribute.”

“As a Master Gardener I like receiving the Pest News through the Cooperative Extension, though I am not sure I get it every week and usually it features information limited to Ornamentals and Turf, so I am unfamiliar with other aspects of the newsletter. If possible, would like to see some pictures of diseases, insects, etc. embedded in the newsletter.”

“This is a wonderful informative way to reach a lot of people with different interest from professionals to homeowners. I am a crop consultant and I depend on the information as a very useful tool in staying up to date on what is happening in the state and as a way to keep my clients updated on changing situations as they arise. Keep up the good work and thank you.”

“I am always bragging to my friends in other places about the service that I receive from the Agricultural Extension division here in Chatham County. I find these Pest News e-mails timely, informative and very useful to me as a grower and seller of plants and plant products here in the Piedmont. Keep up the good work!”

The editor would like to thank everyone who participated in the on-line survey last fall. The results of this confidential survey help the editor and contributors to the *North Carolina Pest News* document the usefulness of the newsletter to the readers and improve its quality in the future.

FIELD AND FORAGE CROPS

From: Jack Bacheler, Extension Entomologist

Cotton Planting Underway

With cotton planting now just underway, although producers have already decided on their initial insect management approach (almost all plan to use treated seed), a number of thrips decisions will be made during the next 4 to 6 weeks, primarily targeting the need, rate and timing of foliar sprays, and the outside possibility of early spider mites and/or cotton aphids.

Thrips Tips

When planning for the upcoming thrips season, a few suggestions come to mind:

1. **Thrips damage:** Several thrips species, especially tobacco thrips, and their damage are a major annual headache for most cotton producers in the Upper Southeast. On tobacco, peanuts, tomatoes and some other crops, tobacco thrips can vector tomato spotted wilt virus (TSWV), at times resulting in severe damage and crop loss, even with modest thrips feeding. Although cotton is not susceptible to TSWV, it is nevertheless extremely susceptible to mechanical damage from thrips, particularly in the cotyledon to 2 or 3-true leaf stage. This feeding can result in maturity delays and high yield losses.
2. **Thrips levels and planting dates:** As most cotton producers have found from experience, thrips levels and damage potential can vary from year to year and from field to field. Additionally, when thrips levels are high and cotton is growing slowly (which happens in both cool and in hot dry weather), the potential for damage to seedlings is greatest due to limited uptake of insecticide. This high damage potential is often most common in cotton planted during the last week in April through the first week of May. As a general rule, cotton planted further into May is exposed to warmer average temperatures, resulting in more rapid seedling grow-off and less time in the thrips-susceptible, early stages of development. For the most part, we have been able to get by with treated seed only (no follow-up foliar spray) with cotton planted from May 15 to 25.
3. **At planting options:** In applied research trials conducted in North Carolina in 2012, all of the chloronicotinoid cotton seed treatments (Avicta Complete Pac, Poncho/VOTiVO/Aeris and Acceleron) have provided very similar levels of control and yields. If one reads their product labels, these products tend to have similar or identical insecticides and rates.

One bright spot last season was the high thrips activity and persistence of an in-furrow application of imidacloprid (in this case, Admire Pro) plus a seed treatment (in this case Avicta Complete). Although more expensive initially when one considers the added chemical cost, extra tanks and spray rigging, initial results suggest that in many cases, this tactic could provide growers with a one-time at-planting option for “season long” (*i.e.*, getting seedling to the 5 true leaf stage) control of thrips. Admire Pro applied alone (without treated seed) provided thrips control equivalent to a seed treatment alone. A number of producers are trying this option this year on part of their cotton acreage. This approach will be evaluated in replicated tests throughout the Southeast this season.

4. **Foliar treatment options for thrips:** Based on evaluations of liquid foliar insecticide options for thrips control conducted in North Carolina and Virginia in 2012, it's safe to say that pyrethroids are not the insecticide class of choice: the candidate pyrethroid (Karate at 1.28 oz product per acre) only provided an average of 22% thrips (almost all tobacco thrips) control. Lannate (74%) and Vydate (77%) provided intermediate control, while dimethoate (90%) and acephate (93%) provided the best control. A high (and very expensive) rate of Benevia gave 98% control, but we just learned last week that this product will not be labeled for cotton. Darn! Compared with the now-rare Temik 15G, the common combination of a seed treatment and a follow-up foliar spray increases the odds of having to deal with subsequent spider mite and/or cotton aphid outbreaks. Fortunately, we do not contend with economic levels of either pest in North Carolina compared with most other areas of the Cotton Belt, such as the Midsouth and parts of Texas.

Optimal Conditions for Early Cotton?

In my too-long-career-to-tell here at North Carolina State University, I don't think I have witnessed a year of perfect weather for both optimal cotton seedling growth and for ease of thrips control – that is, continuously warm, calm weather with highs in the 80's, lows in the high 60's and about an inch of rain a week for 6 consecutive weeks. On the plus side, however, even with rough-looking early stands, heavy thrips damage does not appear to cause as much yield loss in recent years as was the case 10 or 20 years ago, based on replicated thrips trials at Rocky Mount. I wonder if our newer cotton varieties compensate better for early damage than past varieties?

From: Dominic Reisig, Extension Entomologist

Aphid Recommendations for Wheat

Aphids are now present in wheat. Some questions are popping up since their numbers are higher than usual. We have four species that are commonly found in wheat. I have mostly seen English grain aphid this year, which is consistent with previous years. Although all of these aphids transmit barley yellow dwarf virus, virus transmission is more of a concern in the fall. In the spring, we generally worry about the yield-robbing loss of sugars, amino acids, etc. that the aphids remove from the phloem while feeding.

Aphids move to wheat from overwintering locations as winged individuals. These colonizers then give live birth to many more non-winged aphids in a very short amount of time. Aphids can reproduce very rapidly. They also can be controlled with predators, such as ladybird beetles, and parasites. So it is critical that you scout so that aphid populations do not get away from you and so that you can see if there are any biological control agents helping you out.

Thresholds for sprays vary by growth stage of the wheat, but can be found at <http://www.ces.ncsu.edu/plymouth/ent/wheataphidsthreshold.html>.



Winged aphid. Image from Scott Bauer, USDA Agricultural Research Service, Bugwood.org.



No, that's not an alien. It's a ladybird beetle (ladybug) larva eating an aphid that has been parasitized. Notice the swelling and brown coloration of the aphid. These aphids have tiny wasps developing inside them that will hatch and infect other aphids. That is unless a ladybird eats them! Image from David Cappaert, Michigan State University, Bugwood.org.

FRUIT AND VEGETABLES

From: Hannah Burrack, Extension Entomologist

Spotted Wing Drosophila Monitoring Recommendations for 2013

Strawberries are just beginning to ripen in central North Carolina, so last week, we placed spotted wing drosophila (SWD, *Drosophila suzukii*) traps in our research plots at the Horticultural Crops Research Station in Clayton, North Carolina. Eagle eyed observers will noticed some differences in the traps in the photo above and those we placed in our SWD plots [a few years ago](#).

Shading traps placed in strawberries

What's easily visible above is that our traps have "hats". We added these hats because work from other labs suggested that SWD like shade and that leaving traps uncovered in strawberry plantings may catch fewer flies. In a [multistate comparison](#) of SWD traps conducted in 2011, a trap with a "hat", referred to as the Haviland trap, caught more flies than other trap types in a range of different crops. Hats are likely not necessarily in crops with shaded areas or where traps can be hung directly from host plants, like blueberries, cherries, and caneberries.



Spotted wing drosophila traps in strawberry plots at the Horticultural Crops Research Station, Clayton, North Carolina. Photo by: Hannah J. Burrack.



A Haviland-type SWD trap with a "hat". In this case, the hat is meant to keep rain out. The Haviland trap performed well in a [comparison of SWD traps](#) during 2011. Photo: Hannah J. Burrack.

Bait recommendations

In previous years, we have used apple cider vinegar (ACV) as the primary bait in [our SWD](#) traps and for the [SWD*VMN](#) because early experiences suggested that it was easier to work with compared to a yeast and sugar slurry (the other bait we tested). However, these early experiences were based on changing the baits less frequently than every week. When baits are changed weekly, yeast and sugar lures appear to catch more flies and may catch flies earlier than ACV. Therefore, for 2013, we're suggesting that SWD trappers consider using yeast and sugar lures rather than ACV.

In order to make the yeast and sugar bait, follow the steps below:

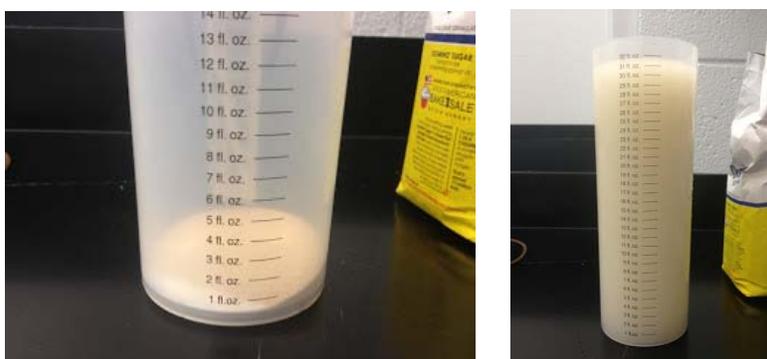


Ingredients for yeast and sugar slurry: yeast and sugar! Photo: Hannah J. Burrack.

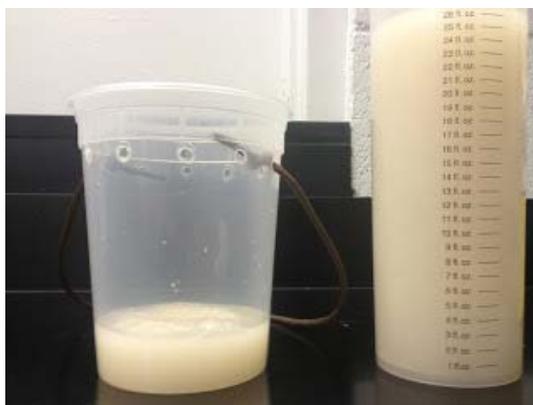
1. Collect the bait ingredients, active yeast and plain sugar.



2. Combine 4 Tbsp sugar with 2 Tbsp yeast.



3. Add 32 fl oz of water to the dry ingredients and stir till the mixture is suspended. **Do not store premixed bait in a sealed container.** It is actively fermenting (which is what attracts flies) and can explode. It's easiest to mix bait as it's needed rather than premixing.



4. Fill traps with 150 ml of bait (or just over 5 fl oz) each. Traps should be check and baits changed weekly. The odors associated with these non preserved baits change over time, and after one week, they are likely less attractive to SWD.

A few other helpful hits for using yeast traps:

- Many other insects find fermenting yeasts attractive. Traps should have small entry holes, no more than 3/16 large. Otherwise, larger insects such as beetles, filth flies, and moths will clog traps.
- Trap contents can be poured into a container for transport back to the office or lab rather than counted in the field.
- Do not discard used bait in the field. We do not want to make our fields any more attractive to SWD than they already are!
- Kitchen sieves can be used to filter flies, but flies in yeast baits may need to be rinsed after filtering to see wings, legs, and ovipositors (key ID characteristics) clearly.

It's very likely that our bait recommendations will change for next year, based on experiments that are planned or already underway. SWD is an invasive species, meaning it's new to North Carolina, and many other areas. Therefore, many of our monitoring and management recommendations are subject to change. We are all learning a lot of new information, as quickly as we can!

For the time being, we have not changed our trap recommendations. We are still suggesting using 32 oz plastic containers for 2013, although this recommendation is also subject to change, especially if commercially available traps become available that out perform homemade traps.

ORNAMENTALS AND TURF

From: Steve Frank, Extension Entomologist

Rose Aphids

This week I found a lot of aphids on some rose bushes near my house in Raleigh. I have not yet determined whether they are rose aphids, *Macrosiphum rosae*, but it doesn't matter a lot to folks managing them. This seems early to have such a large population of aphids but there they are. Aphids can be managed with horticultural soaps or oils or with a number of different insecticides in the aphid fact sheet. One of the most common is imidacloprid but research shows that systemic neonicotinoids like imidacloprid can be harmful to pollinators that ingest pollen and nectar. So consider other options before drenching plants with these insecticides.

More information can be found at <http://www.ces.ncsu.edu/depts/ent/notes/O&T/flowers/note38/note38.html>.



Aphids covering a rose bud. Photo: S. D. Frank.

Oak Eriococcin Scale Active

Oak Eriococcin, *Acanthococcus quercus*, is not very well known. Not much research has gone into understanding its biology or control. It is in the family Eriococcidae which includes several felt scales including Azalea bark scale. This scale is quite common around Raleigh and is very apparent this time of year. As the name implies its primary hosts are oak trees. I find it primarily on willow oaks along streets. The oaks on Hillsborough Street (near North Carolina State University campus) are literally covered top to bottom. The scale produce cottony white egg masses that are often in the crotches of twigs. Very little efficacy data is available but there are reports that imidacloprid and other treatments for soft scale work for these as well. Even horticultural oil may be an effective treatment this time of year right after egg hatch. More information can be found at <http://www.ces.ncsu.edu/depts/ent/notes/O&T/shrubs/note156/note156.html>.



Willow oak trunk infested with Oak Eriococcin scale and close up of scale ovisacs in the crotch of twigs. Photos: S. D. Frank.

Cankerworm Update

I have written about cankerworms already, but this year has been bad and I am getting a lot of calls and e-mails about them. At this point, you can expect the cankerworms to hang around for another week or two then disappear. They have defoliated some trees on campus and covered others with dense webbing. Cankerworms do not create webbed nests the way tent caterpillars and webworms do. The webbing is just a tangle of thousands of threads from which the caterpillars dangle. Above are pictures to assist pest managers or Extension agents with calls or complaints so you can see what folks are experiencing.

More information can be found at <http://ecoipm.com/research/cankerworm-project-home/>.



Defoliated tree covered in silk threads from cankerworms. Photo: S. D. Frank.



Holly bush covered in caterpillars and silk. I don't think cankerworms could possibly eat holly but they have tangled it up pretty well. Photo: S. D. Frank.

From: Emma Lookabaugh, Plant Disease and Insect Clinic, and Barbara Shew, Extension Plant Pathologist

Be on the Lookout for Cedar Apple Rust

Most of us who live in the triangle are hoping for rains to wash away the yellow film of pollen coating our cars, houses, and sidewalks. Spring rains also jump start the most bizarre life-stage of cedar apple rust, a common disease that affects apple trees (and crab apples) and eastern red cedar trees.

The cedar apple rust pathogen (*Gymnosporangium juniperi-virginianae*) requires two hosts and four spore stages to complete its complex life cycle. On cedar trees, the most obvious signs of infection are firm brown galls, which are about the size of a golf ball and are usually found scattered on the tree's branches and twigs. After a heavy rain, the galls produce striking bright orange gelatinous horns, which are composed of millions of spores called teliospores. In dry periods, the horns can be seen as short spikes covering the galls. If you find a gall with dried horns, cut it out of the tree, place it in a glass of water and watch over the next few hours as the horns expand.



Galls on cedar. Photo: H. D. Shew.



Gall with dry telial horns. Photo: H. D. Shew.

The cycle of wetting and drying can continue several times during the spring, and in each cycle the teliospores germinate and give rise to another spore type, called basidiospores. These basidiospores are forcibly discharged into the air and are wind-blown to nearby apple trees.

Apple leaves and fruit are most likely to be infected when they are wet and temperatures range from 46 to 75° F. Yellow to orange spots are produced on the upper surface of the apple leaves one to two weeks after infection. The spots on leaves may be raised or swollen and infected fruit may be slightly distorted. Small black dots within the lesions signal the production of the next spore type, the pycniospores (also called spermatia). One to two months later, fringed cup-shaped structures (aecia) appear on the underside of the apple leaves and these contain aeciospores, yet another spore type.

The aeciospores are windblown to cedar trees in late summer to early fall, where they germinate and infect to produce galls. The galls produce teliospores in the second year after infection, completing the life cycle. *G. juniperi-virginianae* survives in the gall tissue for only two years. After its second year, the spore producing year, the pathogen dies in the gall tissue. On apples, the pathogen survives only a few months, just long enough to produce the aeciospores that infect cedar trees.

Cedar apple rust causes only minor damage to cedar trees from twig dieback. Damage to apple is more significant and can result severe defoliation and fruit blemishes. Since this pathogen requires both hosts to complete its life cycle, control can be achieved by eliminating one host from the surrounding area, although oftentimes eradication is not feasible or desirable. Additional control measures include the use of disease-resistant apple cultivars, properly timed fungicide applications on apple, and removal of cedar galls before spring rains.



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

Check out this cool video of telial horns expanding (Video: Arlene Mendoza-Moran):
http://www.youtube.com/watch?v=-lZ_twBLr3Q&feature=player_embedded#t=0s

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.
