

North Carolina Pest News

Departments of Entomology and Plant Pathology



Volume 28, Number 8,
May 31, 2013

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 Insects

Thrips building late: With cotton ranging from just emerging to the beginning of some thrips-safe 5 true leaf seedlings, our thrips adventure is either just beginning, close to ending, or somewhere in between. The return to generally warm to hot weather has caused significant drying down of thrips hosts in many areas of the state is resulting in moderate to high adult thrips levels moving into cotton.

For producers fortunate enough to have a combination of warm temperatures along with good soil moisture, cotton is growing off well and the window of seedling vulnerability to thrips damage should be relatively short. At our thrips tests in Rocky Mount, however, cold weekend low temperatures, dry conditions and moderate thrips levels have contributed to blackened buds

and deformed new developing true leaves in all of our seed treatments at approximately 3 weeks after planting. If these were not thrips tests, all entries would have been treated today or earlier this week.

Wilson County Tsunami: In our Wilson County large-scale (approximately 1,500-foot rows per plot), April 6-planted thrips at-planting strategy test with Extension agent Norman Harrell and producer Thad Sharp, we are comparing: 1) Avicta-treated seed; 2) Avicta seed plus an in-furrow Admire Pro (9.0 oz product per acre); and 3) untreated seed only, for plant growth and thrips damage. As can be seen in Figure 1, the untreated check seedlings showed significant bud damage and deformed initial true leaves on May 29. In the untreated check plants, **19 adult and 213 immature thrips per 5 plants** were found via the washing technique.



Wilson County thrips test – plots with untreated cotton seed. 213 immature thrips per 5 plants. May 29 image by Dan Mott.

In the seed treatment only plots, although showing better initial growth than with untreated seed, first true leaf distortion is clearly evident (Figure 2). In these plots, 18 adults and 22 immature thrips were found per 5 plants. **Although 22 immature thrips per 5 seedlings is about a 10-fold reduction in immature thrips compared with the untreated check, the 18 adult thrips found will translate into very high numbers of immature thrips in the coming week.**



Wilson County thrips test – plots with Avicta-treated cotton seed. 22 immature thrips per 5 plants. May 29 image by Dan Mott.

The Admire Pro plus treated seed plots (Figure 3) generally showed much more advanced initial true leaf growth, although some thrips damage from adult feeding was even present in these plots. Amazingly, although the plots in this combination treatment had 11 adult thrips (still a high number and somewhat damaging in their own right), **zero immature thrips per 5 plants were found.**



Wilson County thrips test – plots with Avicta-treated cotton seed plus Admire Pro in-furrow. Zero immature thrips per 5 plants. May 29 image by Dan Mott.

If the cotton seedlings in both Figures 1 and 2 had been in grower fields, a foliar spray would have been advised – probably last week. If the past two years are a guide, the thrips-impacted seedling growth between these treatments will be far more evident by this time next week.

Late thrips buildups? Based on the presence of high levels of migrating adult thrips and the build-up of immature thrips, the potential for damage in the coming week or more is probably high in unprotected cotton. Hopefully, predicted widespread showers across much of our state in the coming week will give our young crop a big boost in helping the cotton to more quickly progress to the thrips-safe 5 true leaf stage. Conversely, extended hot dry weather could delay our getting past the thrips season.

From: Dominic Reisig, Extension Entomologist

Thinking Ahead to Corn Earworm Management in Soybeans

As distributors begin to stock up insecticide inventory for the season, it is a good time to lay out a management strategy for corn earworm control in soybeans. This has been our most consistent soybean insect pest, sprayed on the majority of our acres in most years. I am predicting that this year's pressure will be similar to last year, which is to say relatively light. Below are my suggestions going forward:

1. Although soybeans should be scouted throughout the season (think kudzu bug), begin scouting for corn earworms on soybeans that are flowering. These are very attractive places for moths to lay eggs. Scout at several places in the field, using a drop cloth rows above 30 inches and a sweep net for narrow row or drilled soybeans.
2. There are **very few cases** where corn earworms impact flowering soybeans. Recent research was conducted by a student working under me, Rachel Suits. This work, supported by the North Carolina Soybean Producers Association, proved that flowering soybeans can tolerate at least 2-3x the corn earworm threshold levels of podding soybeans. In fact, we were not able to create a situation in the field where corn earworm could cause a yield loss in flowering soybeans. Therefore, the threshold for flowering soybeans is likely much higher than in podding soybeans.

I have heard that some folks would like to eliminate corn earworm while plants flower to protect pods from larger worms that developed in the flowering stages. This is not a good idea since the worms tend to be very small (first and second instar) during flowering and will hide in the blooms, making control difficult. Also, sprays impact natural enemies that can come in and reduce

developing populations of corn earworm. The worst infestations of corn earworm, beet armyworm, and loopers that I saw last year were in fields where pyrethroids were sprayed automatically at flowering.

Scout during flowering to see how populations are developing. You can then be ready to spray during podding stages (R4 and greater), when soybeans are susceptible to yield loss.

3. The threshold for corn earworm is online and can be accessed using a **recently updated threshold calculator** (<http://www.ces.ncsu.edu/plymouth/ent/cewthresholdcalc.html>). This threshold is specifically for podding soybeans (R4-R7). It also is accessible from mobile devices and can be used in the field. This threshold is already conservative and there should be no need to adjust it. This is set **below** the break-even point where the cost of control is equal to the damage the worms are doing.
4. If you have reached threshold, you should spray. Keep an eye on blog posts for reports of pyrethroid-resistant moths in the system. Populations of these are spotty and not widespread across the state. If significant resistance is found, you should not spray a pyrethroid (common chemical names include beta-cyfluthrin, bifenthrin, lambda-cyhalothrin, zeta-cypermethrin). Furthermore, if you have a control failure with a pyrethroid, do not spray with a pyrethroid again or with a pre-mixed product that does not contain a chemical effective against corn earworm. Don't forget that sometimes what we think is "corn earworm" might actually be tobacco budworm, a similar looking species that is difficult to control with pyrethroids.

Other chemicals you should consider are the diamides, like Belt and Prevathon. Syngenta has a new registration for Besiege, which is a pre-mixed product containing the active ingredient of Prevathon plus a pyrethroid (lambda-cyhalothrin, aka Karate). Blackhawk (Tracer) offers a unique chemistry class, the spinosyns, and is highly effective against corn earworm. Finally, in every trial that I've had it and at every rate (as low as 6.7 oz per acre), Steward, which is also a unique type of chemistry, has been the most effective or among the most effective chemical for corn earworm, even at lower rates.

Each product has advantages or disadvantages. For example, the residual of the diamides is very good, but may not be a concern since only one generation of corn earworm a year generally develops in soybeans. However, in some years (like 2010) we can have multiple infestations, as well as late-season pests, like soybean loopers and fall armyworms. These products are excellent choices in these situations. Above all, **rotate chemistry and only spray at threshold.**

FRUIT AND VEGETABLES

From: Emma Lookabaugh, Plant Disease and Insect Clinic, Chris Gunter, Extension Vegetable Production Specialist, and Barbara Shew, Extension Plant Pathologist

No Joke: Tomatoes are Cracking Up

Tomatoes are cracking up after the recent rains, but growers are not amused. Recently, we've seen in an increase in the amount of tomato surface cracking. Tomato cracking is an abiotic disorder of tomato fruits that is associated with growing conditions. When tomatoes are left on the vine too long or during periods of rapid fruit growth, the tomato epidermis (or skin) does not have enough elasticity to

compensate for the sudden growth. Eventually the skin splits and bursts.



Tomato. Photo: Debbie Roos.

There are two main types of growth cracks: 1) radial cracking, which is splitting of the skin from the stem scar towards the blossom end, and 2) concentric cracking, which is splitting of the skin in a circular pattern around the stem. Radial cracks occur during humid, hot weather. Concentric cracks occur during rapid fruit growth associated with rainy weather following a period of dry weather. The earlier growth cracks occur during fruit development, the more damaging they are. Growth cracks can provide the perfect entry point for secondary fruit rotting organisms.



Tomatoes. Photo: Debbie Roos.

The most important means of controlling growth cracking is maintaining a steady, adequate supply of water or irrigation flow, especially during hot, dry conditions. Avoid over and under irrigating. Mulching also will help prevent dramatic fluctuations in soil moisture. Be especially wary if weather was cool and overcast followed by sunny, hot, and dry periods, and then high humidity and rainfall. Keeping foliage healthy and disease free is also critical. If the fruit lacks leaf cover, cracking can be more of a problem. Remove mature fruit right after heavy rains to prevent cracking. Follow recom-

recommendations from Cooperative Extension about plant nutrition, because high nitrogen and low levels of potassium can contribute to fruit cracking. Some varieties are more prone to cracking and can show cracking when the fruit are still green. Even varieties that show some resistance to cracking in the green stage may crack once the fruit starts turning red. Plum varieties like 'Heinz' and 'Marglobe' crack less than cherries and the larger fruited varieties like "Better Boy." If you have a history of tomato cracking in your tomatoes, you may try switching to one of these varieties, 'Daybreak', 'Jet Star', 'Pink Girl', 'Monte Carlo', 'Mountain Fresh', 'Mountain Spring', and 'Spitfire.' New varieties are released regularly, so check with your local Cooperative Extension agent for latest variety recommendations for tomatoes.

ORNAMENTALS AND TURF

From: Steve Frank, Extension Entomologist

Hawthorn and Azalea Lacebugs

Azalea and hawthorn lacebugs started hatching last week. Now we see a mix of adults and nymphs. Hawthorn lacebugs feed on pyracantha, serviceberry, and cotoneaster. Azalea lacebugs feed primarily on azaleas. Both cause stippling damage visible on the top of leaves and leave fecal spots on the bottom of leaves. For more information on lacebug management, see *Ornamental and Turf Insect Information ENT/ort-39* at <http://www.ces.ncsu.edu/depts/ent/notes/O&T/shrubs/ort039e/ort039e.htm>. Imidacloprid will kill both pests, but should be used on plants that are flowering or that will flower soon due to negative effects on pollinators (http://www.xerces.org/wp-content/uploads/2012/03/Are-Neonicotinoids-Killing-Bees_Xerces-Society1.pdf).



Young lacebugs on *Pyracantha* leaves. Photo: S. D. Frank.

Woolly Apple Aphids

This week we noticed woolly apple aphid infestations on pyracantha bushes around campus. These aphids produce cottony fluff along the branches. When you brush away the fluff (really it is wax the aphids produce) you will see hundreds of pink or grey aphids crawling around. Woolly apple aphids have been out for a month or so, but are becoming very noticeable now. Infestations for multiple years produce large leafless patches on bushes. The aphids cause galls to form on branches and branches become black from sooty mold. Soap or oil should provide some control. Additional aphid management information: <http://www.ces.ncsu.edu/depts/ent/notes/O&T/flowers/note38/note38.html>



Dead patch in a pyracantha bush covered in wax, sooty mold, and galls. Photo: S. D. Frank.

Flea Beetles

Redheaded flea beetles, *Systema frontalis*, have become a serious pest of nursery stock over the past several years. They are an especially damaging pest because they feed on roots and leaves. They overwinter as eggs in the soil. Larvae hatch in spring and begin feeding on roots. The larvae are elongate and creamy-white. Heavy infestations may reduce root mass or girdle plants. Adult redheaded flea beetles are small, shiny black, beetles with reddish to dark colored head and long antennae. They are about 1/16 of an inch long and, as the name suggests, jump when they are approached. There are at least two generations in Delaware and may be more in North Carolina.

We found adults and adult feeding damage this week. The favored hosts are *Itea*, hydrangea, forsythia, and knockout roses. Adult management has been frustrating for growers who find



Redheaded flea beetle on a rose leaf.

that even frequent insecticide applications do not reduce adult abundance and damage to acceptable levels. Part of this has to do with not controlling larvae since even if you kill all the adults present in a crop (which you won't) more adults are emerging from the soil every day. Research thus far in Delaware and grower reports indicate that Talstar, Safari, and Flagship provide good efficacy as foliar applications, but do not have long residual activity.

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.