NC STATE UNIVERSITY COLLEGE OF AGRICULTURE & LIFE SCIENCES

North Carolina Pest News

Departments of Entomology and Plant Pathology

Volume 27, Number 4, May 4, 2012

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 . . .

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FIELD AND FORAGE CROPS

From: Jack Bacheler, Extension Entomologist

Brief Cotton Insect Update

We still don't have much to report this week on the cotton insect front, though serious cotton planting is now underway in North Carolina, with generally fair to good moisture levels and warm to hot daytime temperatures. However, much of our acreage is drying quickly.

With a warm winter and early spring, tobacco thrips appear to be early and perhaps on the high side so far, although we're a week or more away from getting a handle on the possible impact of thrips on cotton seedlings this spring. In a few past years, we have found as many as 15 thrips per seedling prior to the initial expansion of the cotyledon leaves. This may be one of those years.

Here are a few points to keep in mind over the next few weeks.

1. In North Carolina, expect greater potential thrips problems in cotton planted before approximately May 10 than in cotton planted after that time. Slower seedling growth with earlier plantings typically accounts for most of this damage.
2. In replicated tests conducted in thrips-prone areas of North Carolina, cotton planted after approximately May 15 often does well without a foliar application following a seed treatment. This is due to quicker seedling grow-off and declining migrating adult populations that often occur about the time when these late-plated seedlings are at their most vulnerable 1st true leaf stage.
3. If a foliar application is need following a seed treatment (most often the case in North Carolina), an application just before or during the first true leaf stage is far more effective against thrips than one applied during the second true leaf stage or later.
4. Unfortunately, both extended hot dry weather and cool wet conditions can limit the uptake of at planting insecticides, including seed treatments, granular insecticides, and in-furrow sprays.
5. On the other hand, warm moist conditions favoring rapid seedling growth shorten the time of seedling vulnerability to potential thrips damage.

Hopefully by this time next week or early in the following week, we'll have a clearer picture of how our 2012 "thrips season" is shaping up.

From: Dominic Reisig, Extension Entomologist

Sugarcane Beetle Activity Has Increased

We have been monitoring sugarcane beetle adult emergence using light traps in Plymouth. Although we captured sugarcane beetle as early as late March (http://www.nccrops.com/2012/03/23/sugarcane-beetle-adults-are-active/), some of these were later identified as rice beetle (http://www.nccrops.com/2012/04/18/distinguishing-between-rice-and-sugarcane-beetle/), which is not a major pest of crops in North Carolina. Sugarcane beetle, however, can be a pest of crops grown in North Carolina, including corn, cotton, and strawberry. It is also becoming a more common problem on turf grass. Our trap catches of sugarcane beetle have picked up dramatically. Adult movement from a day to day basis appears to be correlated with warm nights.

Please refer to http://www.nccrops.com/2012/03/23/sugarcane-beetle-adults-are-active/ for a depiction of sugarcane beetle injury on corn and for management recommendations. There are no remedial management methods that will work. In other words, if you didn't do something at planting for this pest, you will not be able to do anything now to prevent it. Identifying this beetle and its associated injury is important, since it should influence what sort of insecticide seed treatment you might use next year.

Sugarcane beetle injury to corn seedling. Image from A. Catchot.

Sugarcane beetle injury to cotton. The adults burrow below the soil line and chew the main stem. They then lay eggs in the soil. Larvae are not pests of crops, but feed on organic matter in the soil. Image from D. Reisig.

Thrips on Eastern North Carolina Cotton

Thrips adults are active and colonization of emerged cotton is underway. I identified adults from cotton planted on March 21 and on April 13. All adults were tobacco thrips, with the exception of a single

soybean thrips. In addition, there were a significant number of nymphs on the March-planted cotton, but almost exclusively adults on the April-planted cotton.

This is consistent with the pattern of colonization that I think may happen in cotton, with tobacco thrips as the earliest colonizing species. Nymphs that were present on March-planted cotton and had developed from eggs laid by the colonizing adults. Ninety-five percent of thrips found on the April-planted cotton were adults, meaning that the first generation was just getting underway. Western flower thrips, if present, probably colonize cotton a bit later in the season. Both Jack Bacheler and I will be sure to alert you if western flower thrips are found, or if problems arise with acephate failures.

Remember that cotton should be scouted from emergence to the five leaf stage. Our threshold is two immature thrips per plant, with 25% of the plants showing injury symptoms. Knowing what you do from this blog post and the pattern of colonization, be sure to hold off on a spray until the immatures are present.

Cotton seedling injured by thrips. Image from D. Reisig.

FRUIT AND VEGETABLES

From: Allan Thornton, Extension Associate

Southern Blight in Sweetpotato Plant Beds

Southern blight (also known as the Sclerotial blight) caused by the fungus *Sclerotium rolfsii* has been recently identified in sweetpotato beds in Sampson County. The symptoms are a sudden wilt, death of sprouts and melt down of storage roots. The extent of damage thus far ranges from a few plants to small tire size dead spots. Given this emerging situation, growers are encouraged to scout their beds and take appropriate action. Provided below is a description of the disease and current disease management recommendations.

Economic importance, host range and distribution

Southern blight caused by the fungus *S. rolfsii* is a serious fungal disease affecting a wide variety of both food crops and ornamental plants. At least 500 species in 100 families are susceptible to *S. rolfsii*. The hosts include sweetpotato, soybean, corn, bean, peanut, cotton, tomato, bell pepper, potato, wheat, cucumber, tobacco and other crops. It occurs in sweetpotato almost exclusively in plant production beds and may be very destructive under warm and humid conditions that stress plants thus making them susceptible to the pathogen.

Causal organism

The fungus *S. rolfsii* is characterized by the production of rapidly growing white mycelium and the yellow to brown mustard seed-like sclerotia that serve as survival structures and are produced on the mycelium.

An infected plant showing yellowing of leaves and the characteristic brown granular sclerotia of the fungus *Sclerotium rolfsii.* Image by Zvezdana Pesic-Van Esbroeck.

White mycelia of the Southern blight pathogen *S. rolfsii* on the surface of plants. Image by Zvezdana Pesic-Van Esbroeck.

White mycelia and brown sclerotia of *S. rolfsii* on sweetpotato storage roots. Images by Allan Thornton and Zvezdana Pesic-Van Esbroeck, respectively.

Disease cycle

The fungus *S. rolfsii* overwinters as a sclerotium, which is a dense mass of hyphae with a hard outer shell. When warm (82 to 86 degrees F), humid conditions are present the sclerotia "germinate" and grow on senescent leaves on the soil surface, then they invade seed roots and the developing sprouts. On the seed roots *S. rolfsii* causes a soft rot, when it invades the developing sprouts at the point they emerge from the seed root it causes them to wilt and die. The sclerotia are produced on the mycelium on both seed roots and plant stems. The pathogen survives in the soil for several years in plant residues in the upper 4 inches. It spreads by the mycelium growing on the soil surface, by sclerotia, surface water or by mechanical means.

Disease management

Site selection. Choose a well-drained site for the plant bed that has not had sweetpotatoes for at least 3 to 4 years. It is also important to be sure that *S. rolfsii* has not been a problem on the rotational crops.

Plant handling. Cut plants in beds 1 inch above the soil line. Do not pull plants. Use disease-free planting stock.

Removal of bed covers. If covers are left in place too long after the plants emerge, the leaves of emerging sprouts may be seriously injured by excess heat and serve as a source of nutrients for the pathogen.

Deep plowing. The sclerotia do not survive when buried at least 8 inches into soil with a breaking plow.

Solarization. Prior to establishing seedbeds, the soil may be covered with black polyethylene sheets for a 6 week period during the hottest months of the year. The topsoil layers become very hot, effectively controlling the fungus.

Chemical control. Dipping roots prior to bedding, or to a lesser extent, spraying roots laid out in beds with a protectant fungicide such as dichloran (Botran) can reduce the incidence of Southern blight. The fungicide acts primarily by protecting the points where sprouts emerge from seed roots, which are a favored site for infection. The fungicide is less effective when the fungus infects sprouts closer to the soil line. Drenching the beds with Quadris at 15.4 ounces per acre using a minimum of 35 gallons of water may provide some suppression of Southern blight in plant beds. Soil fumigation with chloropicrin can aid in reducing inoculum and Southern blight incidence.

ORNAMENTALS AND TURF

From: Steve Frank, Extension Entomologist

Gloomy Scale Crawlers are Active

Gloomy scale, *Melanaspis tenebricosa*, is an armored scale that is found on maples and other tree species. It becomes very abundant on landscape maples and can cause branch dieback and tree death in some cases. It is not unusual to find trees with nearly 100% of their trunk covered in scale. Street trees

are particularly prone to gloomy scale. I have never found one that didn't have it! Crawlers of this scale are active now and can be seen on bark and under scale covers. Control of this scale is complicated because crawlers emerge over 6 to 8 weeks so it is impossible to treat all the crawlers at once with horticultural oil or other contact insecticide. This is as opposed to scale such as euonymus scale in which all crawlers are produced within a narrow window of 2 weeks or so. However, horticultural oil can still be applied to kill gloomy scale because it will kill some adults also. We have found even a single application dramatically reduces scale abundance. Several systemic products are available to provide longer control of even late stage scales. These include Safari, TriStar, and Distance though it is important to note that imidacloprid (Merit) is not effective on armored scale. More information on armored scale control can be found here (http://www.ces.ncsu.edu/depts/ent/notes/O&T/shrubs/note157/note157.html). Our home page (http://ecoipm.com/) has more information on our gloomy scale research program and a recent blog post. To see an overview of gloomy scale on urban trees watch our short video (http://www.youtube.com/watch?v=1Fg-ZPkJwRA&feature=youtu.be).

Gloomy scale on a maple branch. Photo: Steve Frank.

Lecanium Scale Crawlers!

Oak and European fruit lecanium scale are one of the largest soft scales in our area. Scale ovisacs are brown and rounded reaching 6 mm in diameter. This is the most noticeable stage and is present right now. As members of the soft scale family Coccidae, lecanium scales produce honeydew that can cause sooty mold on oaks or plants below. Oak lecanium scale primarily infests oaks trees. However, European fruit lecanium can infest many tree species including oaks. They are impossible to tell apart

without a microscope (even then it is hard). Large populations can reduce growth and vitality especially in newly planted trees.

Lecanium scale ovisac on willow oak. Photo: S. D. Frank.

Eggs are present now under adult scale covers and crawlers are beginning to hatch. The crawler stage should be targeted for best efficacy. On trees small enough to treat foliage horticultural oil can be used. On larger trees a systemic such as dinotefuran can be applied as a drench or trunk injection. This scale is not easily eradicated and optimal control measures are still unclear. It is attacked by many parasitoids and predators that can reduce scale abundance if protected from insecticides. A short video by graduate student Emily Meineke describes the scale biology (http://www.youtube.com/watch?v=tD6I7P6BdKU). She is conducting research (http://ecoipm.com/research/urban-ecology/) to understand why lecanium scale outbreaks on urban trees.

From: Emma Lookabaugh, Plant Disease and Insect Clinic

April Showers Bring May Flowers . . . and DISEASES!

Last week, we told you about diseases to watch for in your home vegetable garden. In this post, we will tell you about some diseases to watch for in the home landscape. We have already seen these diseases active around campus and you can probably find them hanging out in your own back yards.

Septoria Leaf Spot on Black Eyed Susan

Septoria Leaf Spot on Rudbeckia. Photo: M. J. Munster.

Last week we wrote about Septoria leaf spot on tomato. A different species of *Septoria*, *Septoria rudbeckiae*, attacks black eyed Susan and other members of the genera *Rudbeckia* and *Ratibida*. This species of Septoria will not cause disease on tomatoes! Symptoms on Rudbeckia begin as small, dark-brown lesions that enlarge as the disease progresses. As the lesions age, small black dots (fruiting structure of the fungus) can be seen in the lesions. Spores are released in late spring and early summer and are spread by splashing water. Lower leaves are usually infected first. To manage this disease, avoid the use of overhead watering and practice good sanitation. Remove fallen leaves at the end of the season to reduce inoculum levels for the following year. Improve air circulation in your beds by spacing plants out. Chemical control can be achieved through the use of preventative fungicides. Products containing chlorothalonil or mancozeb are recommended.

Hollyhock Rust

Hollyhock rust is caused by the fungus *Puccinia malvacearum*. This very destructive disease often limits the use of hollyhocks in the Southern landscape. Symptoms of rust infection begin as light yellow to orange spots on the upper leaf surface. Brown pustules develop on the underside of the leaves and erupt to reveal bright orange rust spores. These spores are windblown to healthy leaves and infection begins again. Disease increases rapidly because hollyhock rust can infect over and over again. The plants become very unsightly as the infected leaves start to die and fall off. Typically, rusts are highly host-specific. This particular rust infects hollyhocks and other members of the mallow family. Control rust by limiting leaf wetness. Avoid overhead watering and space plants to improve air circulation and promote leaf drying. Rust can overwinter in plant debris so sanitation is important. Remove infected leaves in early spring and remove infected stalks and lower leaves at the end of the season. Plant debris should be buried or burned. Removing nearby susceptible plants, like rose of Sharon and mallow weeds, is important to prevent new sources of inoculum. Chemical control can be achieved through the use of products containing chlorothalonil or myclobutanil. Some seed catalogues list rust-resistant hollyhocks but we do not know of any trial results in this area. Ultimately, you may be forced to forgo planting hollyhocks.

Hollyhock Rust. Photo: M. J. Munster.

Hollyhock Rust. Photo: M. J. Munster.

Powdery Mildews on Euonymous, Gerbera Daisy, Dogwood and Rose

Right now, several powdery mildews are active in the landscape. Be on the look-out for powdery mildew on euonymous, gerbera daisies, dogwoods, and roses. Control of powdery mildews can be achieved through sanitation and pruning during dormancy. Take care not to over-fertilize since succulent leaves are more susceptible to infection. The best control is host resistance so try to plant resistant varieties whenever possible. Several active ingredients provide effective chemical control of powdery mildews, but control requires applications on continuous 7 to 14 day intervals. Repeated sprays with the same fungicide can select for fungicide-resistant strains of powdery mildew. For more detailed information about powdery mildews, click here (http://ncsupdicblog.blogspot.com/2011/05/my-plants-have-little-sugar-coating.html) to read our earlier blog post.

Powdery Mildew on Euonymous. Photo: M. J. Munster.

Powdery Mildew on Gerbera Daisy. Photo: M. J. Munster.

Powdery Mildew on Rose. Photo: M. J. Munster.

Powdery Mildew on Dogwood. Photo: B. B. Shew.

Azalea and Camellia Leaf Gall

Azalea leaf gall is caused by the fungus *Exobasidium vacinii*. This disease is common and widespread in the spring and often attacks new leaves and flower buds. On azalea, infected leaves become thickened, curled, fleshy and pale green to white, forming galls. Infected azalea flowers are usually pale pink. In later stages of disease, white powdery spores cover the surface of infected tissue. A different species of *Exobasidium* is very common on new growth of sasanqua camellia. On camellia, entire leaves are swollen and distorted and extensive swelling causes the leaf epidermis to split, revealing the white spores beneath. Spores of *Exobasidium* are windblown or splashed to healthy leaves or flower buds. New infections are not evident until gall-like swellings form the following year. Eventually affected leaves and flowers turn brown, become hard, and fall to the ground. This disease is favored by cool, wet weather. Although unsightly, infected plants are not usually seriously damaged. This disease can be problematic in a greenhouse setting where humid conditions promote sporulation and disease spread. The best control is sanitation. Pick or prune off diseased tissue as soon as swelling starts. Be sure to remove infected tissue before the fungus starts producing spores to prevent new infections next year. Burn or bury the swollen tissue. Often disease is not severe enough to warrant chemical control. When possible, try planting resistant varieties. Susceptible varieties of azalea include White Gumpo, Rosebud,

Mother's Day, and China Seas. Resistant varieties include Amonena, Gloria, Coral Bells, Glacier, Formosa, and Aphrodite. *Exobasidium vacinii* can also infect blueberries and is responsible for the "green spot" symptom on fruit and leaves. See Bill Cline's post on *Exobasidium vacinii* infections of blueberry (http://ncblueberryjournal.blogspot.com/2011/07/exobasidium-fruit-and-leaf-spot.html) for more information.

Leaf Gall on Azalea. Photo: H. D. Shew.

Leaf Gall on Camellia. Photo: H. D. Shew.

Leaf Gall Symptoms on Camellia. Photo: H. D. Shew.

Leaf Gall Symptoms on Camellia. Photo: B. B. Shew.

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.