



North Carolina Pest News

Departments of Entomology and Plant Pathology

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In This Week's Issue . . .

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 and Weather

As always, our unfolding ‘cotton insect pest year’ will be influenced by present and upcoming weather patterns. Although most areas of the state presently have adequate moisture, our present and predicted upcoming extremely hot and dry conditions can significantly impact on insects and their potential damage, both positive and negative. In most years, insects on the front burner will be stink bugs, bollworms, plant bugs, spider mites (we like to claim these arthropods as insects) and cotton aphids.

Plant Bugs on Cotton

We have had some fields treated for a combination of square retention counts approaching or less than 80% along with adult plant bugs, probably recently assisted by the accelerated movement adult plant bugs from rapidly drying down non-cotton hosts to cotton. Producers should be advised to withhold treatment until both square retention drops to the range of 80% or less and 8 or more plant bugs per 100 sweeps are found. At this time of year in North Carolina, a high proportion of plant bugs found on cotton should be adults. Once cotton is approximately a week into blooming, the use of a black or dark-colored ground cloth is advised because the small bright green plant bug nymphs may become more prevalent and are more easily seen on a dark background. Black or dark ground cloths can be: 1) constructed (either 2.5 to 3 feet in length and unrolled to the appropriated row width between two stakes, such as tobacco “sticks”; 2) made by spraying readily available white ground cloths; or 3) purchased commercially from some vendors such as Great Lakes IPM, Inc. in both 2.5 and 3-foot lengths (<http://www.greatlakesipm.com/beatingsheets.html>).

If treatment is needed for plant bugs, the use of chloronicotinoids such as Centric, Admire Pro and Belay should be restricted to cases of exceeding the threshold by perhaps 1.5-fold or less. This class of insecticides may help lessen the need for subsequent sprays for cotton aphids and spider mites. The bigger guns such as Bidrin, Brigadier, acephate Transform and Endigo should be deployed in cases of higher plant bug levels and/or for subsequent sprays. The use of these latter materials has a greater negative impact on several beneficial insects, however, increasing the odds of having to treat later for aphids and spider mites.

Spider Mites on Cotton

Given that we have already received several reports building mite populations this past week and because this species often thrives in hot dry weather, cotton fields should be monitored for this pest. Although most immature and adults mites and their eggs will be on the undersides of leaves, initial mite infestations appear as light stippling from above. Because spider mites are tiny insects, their eggs and immature forms are best viewed under a hand lens. Worsening infestations are characterized by reddening or “bronzing”, then yellowing and finally by defoliation of primarily lower leaves. Our suggested threshold is “general leaf discoloration (chlorosis, bronzing, or both), plus live mites over most of the field and defoliation from mites in 25 percent or more of the field.” If rain is imminent, we

advise producers to delay treatment and reevaluate 3 to 4 days after the rain due to: 1) the potential development of a mite fungal pathogen; and 2) rainfall relieves cotton plants of much of the stress from mites under dry conditions. High volume (a minimum of 10 or more gallons of finished product per acre) and pressure (50 to 70 psi) are recommended for mite control.



Spider mite damage to cotton leaf. Image by Jack Bachelier.



More advanced mite damage. Image by Jack Bachelier.

Stink Bugs on Cotton

Some cotton is now beginning to bloom. Producers should be encouraged to assess internal damage to quarter-size bolls by approximately the end of the first week or early in the second week of bloom.

Remember that weeks 3 through 5 of the bloom period constitute the interval when cotton is most susceptible to yield-reducing boll damage. The more protective recommended 10% internal boll damage threshold recommended during this time period is also when scouting really pays for itself - and then some. Stink bug levels appear to be on the high side so far this spring and summer, although their potential damage to this year's cotton crop will be determined over the next 5 weeks, primarily based on this crop's attractiveness and susceptibility to brown and green stink bugs. Generally, the wetter the weather, the greater the potential damage from stink bugs. If we receive extended hot dry weather in the coming weeks, stink bug damage to cotton will likely be less due the increasingly unattractive plants. Most of us would opt for higher potential stink bug damage if it were associated with more generous rainfall patterns and higher potential yields.

Bollworms on Cotton

Based on the timing of heavy silking and ear development over most of the state's field corn, it would appear at this time that the bollworm moth flight should be about on schedule. The intensity of this flight will in part be determined by the percent of corn ears infested with earworms. As contrasted to conventional non-Bt cotton, if a bollworm threshold is met, our 2-gene WideStrike and Bollgard II varieties often reach the treatment threshold in the range of 7 to 10 days or so later than conventional varieties.

Upcoming Cotton/Soybean Combination Insect Scouting Schools (Kudzu Bug will be Covered)

July 18: Bertie County at the Cashie Convention Center (*note location change*), Windsor, NC beginning at 9:00 a.m. Indoor and outdoor components and lunch provided. Contact Richard Rhodes (richard_rhodes@ncsu.edu or 252-794-5317) for details.

July 20: Perquimans, Gates, and Chowan Scouting School. Contact Tim Smith (tasmith4@ncsu.edu or 252-482-6585) for details.

July 24: Northampton County. County Extension Office, 9495 Highway 305, Jackson, NC, beginning at 9:30 a.m. Contact Craig Ellison (craig_ellison@ncsu.edu or 252-534-2831) for details.

July 24: Halifax County. County Extension Center, 359 Ferrell Lane, Halifax, NC beginning at 2:00 p.m. Contact Arthur Whitehead (arthur_whitehead@ncsu.edu or 252-583-5161) for details.

July 26: Wilson, Nash and Edgecombe area scouting school, Elm City, NC, at the American Legion VFW Building, beginning at 4:00 p.m. Contact Norman Harrell (norman_harrell@ncsu.edu or 252-237-0111) for details.

Dr. Dominic Reisig has posted several additional field days and tours in the coming months (<http://www.nccrops.com/2012/06/01/upcoming-scouting-schools-and-field-days/>).

Save the Date: Cotton Field Day

This year's Cotton Field Day will be held at the Upper Coastal Plain Research Station near Rocky Mount on September 12, beginning at 12:30 p.m. with registration and exhibits, including field tours and concluding with a BBQ supper. More information will be forthcoming.

From: Dominic Reising, Extension Entomologist

Kudzu Bug First Generation In Full Swing - Next Migration Looms

Kudzu bug adult numbers have dropped precipitously in the past weeks, where we previously had an overlapping population of overwintering adults and new adults created from the first generation. Most of the population on both soybeans and kudzu is now composed of nymphs, a few of which have developed into adults. We expect more adults to come about from these nymphs over the coming weeks and are anticipating the second migration to begin soon in July. I strongly urge patience while this migration is taking place for several reasons.

1. Spraying the coming adults in this next migration too soon may result in a second or third treatment, as more adults migrate into the field. If you wait to spray until you see nymphs, you will avoid having to retreat and will preserve yield.
 2. Sprays have limited effect on the eggs. In order to kill the insect, the chemical must penetrate the egg shell, which protects the insect. Furthermore, most egg clutches are laid on the underside of leaves, which are not as exposed to the chemicals as the stems, where kudzu bug adults and nymphs are. Wait for nymphs to begin hatching out of the eggs to spray. There should be some residual to pick up those that haven't hatched quite yet. Eggs will hatch about a week after being laid.
 3. We are capturing the pyrethroid-tolerant tobacco budworm in pheromone traps in the Coastal Plain. Also, limited vial assay data from Ames Herbert, Virginia Tech University in Suffolk, Virginia, and from Rachel Suits, my student at Rocky Mount, indicates increased pyrethroid tolerance of corn earworm compared to previous years. We have documented just over 30% survivorship using the vial assay and Dr. Herbert has documented 40% survivorship. This is very high for this time in the season. Also remember that most of our corn earworms cycle two generations through corn before moving into kudzu. A good portion of our corn has been treated with insecticide as cheap insurance or for brown stink bugs, possibly exposing corn earworm to pyrethroids and selecting for tolerance later in the season. Finally, some soybeans in the state already have corn earworm and beet armyworm (also tolerant to pyrethroids) present. We need to treat for kudzu bug at the right time so that we do not create secondary flare-ups of pests such as corn earworm later in the season.
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Kudzu bug nymphs. Image from A. Del-Pozo Valdiva.



Kudzu bug eggs. Image from A. Del-Pozo Valdiva.

Kudzu Bug Insecticide Recommendations

This table of insecticides has been included as a guide based on trials conducted during 2010 and 2011 in Georgia and South Carolina. More confidence should be placed on chemicals that were included in multiple trials. Also, insecticides for which companies have received a supplemental kudzu bug label are highlighted in orange. I prefer the use of these chemicals, since these companies are more likely to stand behind their products in terms of control. Finally, consider rotating chemistries to reduce resistance and always follow the labeled instructions.

Table 1. Mean percent control, compared with untreated soybeans, and coefficient of variation across trials for various insecticides against kudzu bug. Information from P. Roberts, University of Georgia and J. Greene, Clemson University. Image from D. Reisig.

Insecticides Tested for Kudzu Bug in GA and SC, 2010-2011	Number of trials	Mean % Control (2-5 DAT)	CV
Hero	1	96	
Brigade	4	95	2
Karate+Orthene	1	94	
Endigo	9	92	3
Brigadier	2	91	0
Discipline	3	90	3
Sevin	3	90	1
Karate	8	89	4
Declare	3	85	5
dimethoate	1	84	
Cobalt	6	82	12
Mustang Max	4	81	9
Orthene	5	81	18
methyl parathion	1	80	
chlorpyrifos	4	75	4
Asana	2	72	18
Besiege	2	71	6
Stallion	1	69	
Tracer	1	68	
Larvin	2	66	33
Baythroid	8	65	10
Fastac	1	63	
Belay**	4	62	20
Rimon	1	56	
Leverage	5	53	45
Lannate	1	53	
Belt	3	41	37
Dimilin	4	31	13
Steward	2	19	100

= has received a supplemental label for kudzu bug

From: Steve Koenning, Extension Plant Pathologist, Ron Heiniger, Extension Corn Specialist, Crop Science, and Jim Dunphy, Extension Soybean Specialist, Crop Science

Current Status of Soybean Rust and Southern Rust on Corn: June 26, 2012

We are increasingly wary about the prospects for both Southern rust of corn and Asiatic soybean rust in 2012. Though it is still premature to apply fungicides for disease in most cases, we need to be prepared. The current weather in North Florida/South Georgia is extremely conducive to development of both diseases. Basically the shotgun is in the process of being loaded with all the rain rust will likely increase to levels that increase the chance of spread. Though tropical storm Debbie is unlikely to come this far North, if the current weather pattern continues, with moisture coming out of the Gulf and moving from Florida north we have a good chance for rust developing in North Carolina sometime in July.

It was announced last week that Southern corn rust is wide spread in the Coastal Plain of Georgia at this time. Pathologist Scott Monfort in South Carolina has found it on irrigated corn, though at low levels. This is very early in the year for an outbreak of Southern rust. Similarly soybean rust has been found on soybean in Jefferson, Gadsden and Leon Counties in Florida as well as on kudzu in three Georgia counties.

Spraying a fungicide to prevent Southern rust may be a little premature at this time, but consider the amount of acreage you may have to cover. You may need to start early to be timely. Please consult the *North Carolina Agricultural Chemicals Manual* for rates and fungicides. We have a good crop at this point that needs to be protected from Southern rust. So at the very least check your equipment and be prepared to make a fungicide application.

The current status of Southern rust, Asiatic soybean rust and various other spreading pests in the U.S. can found at <http://www.ipmpipe.org/>. Consult the *North Carolina Agricultural Chemicals Manual* for fungicides and rates (<http://ipm.ncsu.edu/agchem/agchem.html>).

More information is available at <http://www.ces.ncsu.edu/depts/pp/notes/Corn/corn002.html>.

Domark 230 ME is not listed in the *North Carolina Agricultural Chemicals Manual* at this time but is labeled at a rate of 4 to 6 ounces per acre.

When deciding to spray a fungicide, consider these factors in decision making:

1. When will the corn reach maturity – early maturing corn may escape infection and you might want to concentrate on the late maturing hybrids.
 2. Strobilurins provide excellent control of rust in general but their residual activity is short compared to the triazoles. Additionally, strobilurins have limited systemic movement in plants compared to triazoles such as Tilt, Folicur, Domark, Caramba and Proline (Proline is a component in Stratego Yld) have much better systemic activity, and are thus more forgiving of less than perfect application.
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3. Application costs may actually greater than fungicide costs in many instances, so consider using the higher fungicide rate which will provide more residual protection and increase the likelihood that you can get by with one application.

Vigilance is the key word for 2012! Most sentinel plots have been planted and we will have about 14 this year. Storms following a track similar to Beryl's could bring rust to North Carolina later in the year.

Resources for Soybean Rust in 2012

Some sources for more detailed information on Asiatic soybean rust and Southern corn rust are listed below:

USDA soybean rust web site: <http://www.sbrusa.net/>

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

Soybean Rust Management in Mid-Atlantic Region: <http://cipm.ncsu.edu/ent/SSDW/RustBulletin08.pdf>

Dual Applications of Fungicides on Corn

It has come to our attention that "North Carolina Research found 10+ bushel yield increases with the use of certain strobilurin fungicides." Neither Dr. Heiniger nor Dr. Koenning have verified this research. I am concerned about the efficacy of strobilurin fungicides on southern rust of corn. Though resistance in Southern rust to strobilurin fungicides (Headline, Flint, Evito or Quadris) has not been reported at this time, it is certainly something to be concerned about. If Southern rust is present, the use of a triazole fungicide in addition to a strobilurin, is highly recommended or else rely on the higher rate of a triazole fungicide (Caramba, Tilt, Folicur or Domark).

From: Jim Dunphy, Extension Soybean Specialist, Crop Science, and Steve Koenning, Extension Plant Pathologist

Soybean Rust Update: June 29, 2012

It was announced earlier today that Asiatic soybean rust was detected on soybean in a sentinel plot in Baldwin County, Alabama (near Mobile), and in a sentinel plot in Decatur County, Georgia (in the southwest corner of the state). We now have rust confirmed on soybeans in three counties in Florida, and in one county each in Texas, Alabama and Georgia. Considering all six sites, the closest rust to our North Carolina soybeans is approximately 370 miles from Charlotte, 615 miles from Elizabeth City, 435 miles from Fayetteville, 305 miles from Murphy, 485 miles from Raleigh, 540 miles from Washington, 450 miles from Wilmington, and 445 miles from Winston-Salem.

Although weather conditions the first half of June were favorable for the development of rust, there appears to be a somewhat limited source of rust spores available to be blown into North Carolina. The forecast for the first week of July is hotter and drier than ideal for rust development.

We do not recommend spraying soybeans with a fungicide to control Asiatic soybean rust if they are not yet blooming, if they are blooming but rust has not been confirmed within 100 miles, or if full sized seeds are present in the top of the plant (stage R6). Such pre-bloom applications have seldom improved yields, and repeated applications will likely be needed to provide season-long protection against rust. The higher labeled rates tend to provide more days of prevention, and may thus require fewer applications. The triazole fungicides, alone or in combination with a strobilurin fungicide, will probably provide better prevention of rust than a strobilurin alone. Be sure to check the fungicide label to see how many times it may be used in a season.

An exception to the above recommendation is if Asiatic soybean rust is found **on the farm** before bloom, spraying a fungicide to the rest of the fields on the farm is recommended.

The current status of soybean rust in the U.S. can be found at: <http://sbr.ipmPIPE.org/cgi-bin/sbr/public.cgi>.

ORNAMENTALS AND TURF

From: Steve Frank, Extension Entomologist

Notching on Redbuds by Bees

Leaf cutter bees in the family Megachilidae are actively notching out small pieces of leaves from redbuds and other trees. They also attract attention for tunneling into soft rotten wood and hollow or soft, pithy plants stems like roses. They make their nests in these hollow tubes and line them with leaf fragments. Leaf cutter bees are of much more of a benefit than a pest. Try to convince clients of this but also most insecticides are either not labeled for bees or ineffective since the bees do not eat the leaves. Many people are more concerned about the bees tunneling in their roses which can be prevented by sealing the ends of branches after pruning. Overall these are an important native pollinator that should be protected and even encouraged.



Notched leaf margins from leaf cutter bees. Photo: S. D. Frank.

More pictures: <http://ecoipm.com/>

Information sheet: <http://www.ext.colostate.edu/pubs/insect/05576.html/>

Catalpa Defoliation

I had a report this week that a catalpa tree on campus was completely defoliated by sphinx moth caterpillars. Caterpillars in general can make short work of trees when they really get going. Look for chewing damage and frass on leaves. If you find a few big caterpillars you could pick them off. It is probably late at least in Raleigh to implement much control since it sounds like they are about done. These big beautiful caterpillars become big beautiful moths. The adult 'hawk moths' hover around flowers feeding on nectar and are often mistaken for humming birds.



Photo: Herbert A. 'Joe' Pase III, Texas Forest Service, accessed from <http://bugwood.org/>.

From: Lee Butler, Extension Assistant, Plant Pathologist

Summer Solstice Welcomes Brown Patch

June is in full swing and so is brown patch in tall fescue lawns and landscapes. Brown patch, caused by the fungus *Rhizoctonia solani*, is the most common disease in tall fescue during late spring and throughout the summer months in North Carolina. Brown patch infections can start as early as April in some years with full blown outbreaks occurring by late May and early June in most years. As the name implies, symptoms are brown to tan areas of turf that are roughly circular patches that range from a few inches to several feet in diameter.

The two most common mistakes managers of tall fescue make are fertilizing too late or too much in late spring and over watering. Tall fescue should not be fertilized after the first of May, unless you are using ultra low rates (< 0.25 pound N/M) with iron for a color effect. The recommended amount of nitrogen on tall fescue per year is 3 to 4 pounds per 1,000 square feet. Most people will apply a pound or two in the fall and a pound or two in the spring. When in doubt, submit a soil test to ensure you're feeding your lawn the right nutrients at the correct amounts.



© 2008 Lane Tredway
Brown patch lesion on tall fescue leaf. Photo: Lane Tredway.

Watering should be done only as needed to prevent drought stress. When you do apply irrigation, do it deep and infrequent instead of watering every day. It is a common mistake for homeowners to set their irrigation system on a schedule and forget about it. Remember, fungi love water and if you over water, you're giving the advantage to the fungi, not the turfgrass. The ideal time to water your lawn is in the early morning hours before sunrise. Irrigating during late afternoon or early evening is the worst thing you can do because this extends the leaf wetness period, however brown patch will love you for it!



Symptoms of brown patch in tall fescue.

Need help knowing when and how much to water your lawn? Try out our online water management tool at the following link: <http://turf-ims.ncsu.edu/>.

For more information about brown patch, including control recommendations, please visit the following link: http://www.turffiles.ncsu.edu/Diseases/Brown_Patch.aspx.

Be sure to check out other posts from NC State Turf Pathology (<http://ncstateturfpathology.blogspot.com/>).

INSECT TRAP DATA

From: Alan A. Harper, Lenoir County

Light Trap Data from Lenoir County

June

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*****
                        Number of Adult Insects
*****
Date          HW    CEW    ECB    AW    AWC    GSB    BSB    TBW
*****
June 22       0     2     0     0     0     0     0     0
June 23       0     0     0     1     0     0     0     0
June 24       0     3     1     0     1     0     0     0
June 25       0     4     0     0     2     0     0     0
June 26       0     2     0     0     2     0     0     0
June 27       0     1     0     0     0     0     0     1
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Abbreviations: HW = hornworms; CEW = corn earworms; ECB = European corn borers; AW = true armyworms; AWC = armyworm complex; GSB = green stink bugs; BSB = brown stink bugs; TBW = tobacco budworms

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.