

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

Insects and Soggy Cotton

Excessive moisture has been and continues to be an issue in much of North Carolina's cotton acreage, impacting both the cotton crop itself as well as complicating field access for needed inputs like herbicides, growth regulators and nitrogen. The short term outlook doesn't look any better. Unfortunately, most of our cotton insect pests don't mind this excessive moisture a bit. All of the succulent wild and cultivated host vegetation could translate into a more prolonged insect season, especially in view of our generally late cotton crop that could be attractive to pests for a longer period. With our generally weak root systems in many areas of the state, we will also be more susceptible to drought if conditions turn dry.

Plant Bug Update

Some areas of the state report low square retentions rates, though in some cases with plant bug levels only about half or less of the 8 per 100 sweep threshold recommended for pre-blooming cotton. This appears to be more common in fields with saturated soils, with square loss due at least in part to excessive moisture. In other areas, mostly in the far eastern region of our cotton production area, plant bugs are prevalent - sometimes to the tune of 2-fold or more the threshold level. Once cotton has begun to bloom, a 2.5 foot black beat cloth (either purchased or homemade) is the sampling device of choice. The black background is better for spotting the small bright green nymphs than the white sweep net (see video - <http://www.youtube.com/watch?v=XRnZhLczZJ0&feature=youtu.be>). Like stink bugs, plant bugs are often more abundant in lusher, more rapidly growing fields or field areas. Beat both rows into the center of the ground cloth between the rows, using a threshold of 2 to 3 plant bugs per sample.

Stink Bugs Coming to a Cotton Field Near You?

Stink bugs also appear to be particularly abundant on both wild and cultivated hosts such as field corn, with brown stink bugs presently being particularly common. Despite some persistent anecdotes to the contrary, remember that stink bugs, especially the adults, are not regarded as a significant pest of cotton until the first appearance of new bolls during the initial week of bloom, as documented in this research article: <http://ipm.ncsu.edu/cotton/insectcorner/PDF/Stink.Bug.Damage.to.pre.flowering.cotton.pdf>. Even during the first week of bloom when young bolls are scarce, our suggested threshold is 50% internal warts or damage. This would be a particularly good year to scout carefully and frequently for stink bugs and to make use of the dynamic threshold that varies by week of bloom.

Stink Bug App Now Available!

We have a new web-based stink bug decision aid app posted on our *Cotton Insect Corner* web site: <http://ipm.ncsu.edu/cotton/insectcorner/sbapp2/index.html>. This app is also located as the first icon on the second column on the main web page. More comprehensive than the field decision aid card, this app

contains images of our common stink bug adults along with their nymphs and their damage symptoms, scouting steps, a listing of the dynamic threshold, instructions for building your own field card and links to additional information.

Spider Mites

Although spider mites most often thrive under dry conditions, we have had several calls this week about building mite levels from wet areas of the state (I guess that doesn't rule out much). In one case, the light stippling leaf dots and reddening had progressed to the point of lower leaf defoliation with mites on most plants. That's not a bad definition of a threshold level of mites.

Cotton and Soybean Scouting Schools

Dominic Reisig and I are scheduling annual soybean/cotton scouting "schools". Each school will cover both cotton and soybean insect ID, biology, crop damage, scouting procedures and the use of correct thresholds. There will be both an indoor and a field component of these schools. The present line-up is:

July 12: Onslow County area. Onslow County Extension Center, 4014 Richlands. 9:30 to noon. Contact Melissa Huffman (melissa_huffman@ncsu.edu or 910-455-5873) for details.

July 16: Greene County area. Ruritan Center, 3659 Highway 903, Maury, NC. 9:30 to 11:30 a.m. Contact Roy Thagard, Jr. (roy_thagard@ncsu.edu or 252-747-5831) for details.

July 18: Bertie County area. Windsor Community Center, 201 S. Queen Street, Windsor, NC. 9:30 to 11:30 a.m. Contact Richard Rhodes (richard_rhodes@ncsu.edu or 919-794-5317) for details.

July 19: Northampton County. Extension Center, 9495 NC Highway 305, Jackson, NC. 9:30 to 11:30 a.m. Contact Craig Ellison (craig_ellison@ncsu.edu or 252-534-2831) for details.

July 19: Halifax County. Halifax Extension Center, 359 Ferrell Lane, Halifax, NC. 1:30 to 3:30 p.m. Contact Arthur Whitehead (arthur_whitehead@ncsu.edu or 252-583-5161) for details.

From: Dominic Reisig and Jack Bacheler, Extension Entomologists, and Alejandro Del Pozo-Valdiva, PhD Student, Department of Entomology

Insecticides for Plant Bugs

I've received many calls about the presence of nymphs in soybeans that are not being picked up in the sweep net. This is not surprising, since populations of nymphs in nearby fields can be anywhere from mostly large to mostly small. Small nymphs are green, round, and are less likely to land in the net except in dense (read treatable!) populations. Entomologists are aware that the sweep net "undersamples" nymphs compared to adults. The sweep net threshold, then, is calibrated for this undersampling. You will begin to pick more nymphs up as they become larger. Moreover, there are some things you can do to improve your sampling technique for this insect as discussed below.



Older instar kudzu bug nymphs. Montgomery County, NC. June 9, 2013. Photo from B. Fritz.

As an aside, if you have a field where you are going to apply herbicide or fungicide **and kudzu bugs are present at levels you think might hit one nymph per sweep in the future** (above photo represents a several nymphs per sweep situation), you might want to tank mix in the insecticide to eliminate the nymphs. Keep in mind that small nymphs are not causing as much damage as large nymphs and the soybean plant has an amazing ability to compensate. Kudzu bug reduces number of seed and seed size, but not pod number. Therefore it might pay to wait and see what happens. Also remember that a spray at R2 or R3 will kill all beneficial insects, potentially flaring worm populations. Our first major corn earworm moth flight and egg lay into soybeans generally happens in the end of July/beginning of August. It almost **never pays to tank mix and insecticide automatically** hoping to kill pests that are there. You will kill what is there, but you will also set yourself up for future problems.

Full-season soybeans are all large enough to sweep for kudzu bug. Double-cropped beans planted in stubble are difficult to sweep, but are not attractive to kudzu bug as seedlings. Sweeping is still an excellent technique to estimate the abundance of small nymphs, which blend in with soybean stems and are difficult to see. By the time nymphs are large enough to see up and down the stem, yield may already be compromised. You should be able to prevent this by spraying when you hit the **one nymph per sweep** threshold. Keep in mind that most fields will have kudzu bugs at some level. As discussed in the first paragraph, even if you can see insects when you peel back the canopy, you might not have a threshold-level population or you might start picking them up as they get older. Kudzu bugs take a long time to develop relative to other insects, so this will not happen overnight. Some tips for using the sweep net are to:

- 1) Take 15 to 20 sweeps per sample away from field edges. Ideally, keep the same number of sweeps per sample and per field to compare them.

- 2) Try to get the net as low as possible between sweeps to hit the middle portion of the plant. More than a half of the insects are located this section of the plant. I like to imagine that I'm stripping the bugs off the main stem, which hopefully buries my net pretty deep in the canopy.
- 3) Sweep at a comfortable pace that you can maintain throughout the sampling bout.
- 4) Kudzu bug is more active from 11 a.m. to 2 p.m., resting near the bottom of the plant in quiescent times in the morning and late afternoon and evening. To facilitate capture and reduce the chance of underestimate adult population, scout during the midday period above.
- 5) Look closely at the bottom of the sweep net because nymphs cluster in this section of the net.

For both visual samples and sweeping, you can check field edges to see if the bugs are present. However, this, insect congregates much more heavily on these edges. The insect is also attracted to structures with height, often aggregating on taller plants, fence posts, or volunteer corn plants in a field. Treatment decisions should be based on field interiors of average sized plants. Start sampling at least 50 feet into the field, being sure to visit several parts of the field.

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

Current Status of Soybean Rust in North America: July 12, 2013

Asiatic soybean rust was confirmed this week in a soybean sentinel plot in Pearl River County (Poplarville, Mississippi), which is located in southwest Mississippi. The incidence was low, though the infected leaf had numerous pustules. This does not put rust any closer to our North Carolina soybeans, although the recent find of rust in Elmore County, Alabama, put rust closer to soybeans in the western part of our state. The closest confirmed rust to our North Carolina soybeans is approximately 355 miles from Charlotte, 620 miles from Elizabeth City, 445 miles from Fayetteville, 220 miles from Murphy, 485 miles from Raleigh, 550 miles from Washington, 460 miles from Wilmington, and 415 miles from Winston-Salem, North Carolina.

We do not recommend spraying soybeans that have not started blooming with a fungicide to control Asiatic soybean rust. Such pre-bloom applications have seldom improved yields. Once soybeans start blooming, we would recommend spraying **if** rust has been confirmed within 100 miles of the field.

Soybean rust occurrence and northward movement has been greater, for this time of year, than in past years. Though rust has not spread far northward at this time, most of our moisture has come from the Gulf of Mexico and traveled across areas where rust is active. There is a slight possibility that rust has spread more than we know at this time.

Other Soybean Foliar Diseases

On another note, frogeye leaf spot has been confirmed in the state already, and the wet weather we've been experiencing is conducive to its development. It has been long enough since we've had a serious outbreak of this disease that we have quite a few good varieties that are susceptible to the disease (42 of

the 90 varieties in the “Top Ten” list in the January 2013 version of *North Carolina Soybean Variety Information* (CS-SB-25). The same publication has a list of varieties with resistance to the disease. The disease can limit photosynthate production and yields enough that we recommend scouting for the disease now, even though it usually does not show up this early.

Other diseases that may impact soybean with extended wet weather include target spot on susceptible varieties, Anthracnose, and brown spot.



Frogeye leafspot caused by *Cercospora sojina*.

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

Resources for Soybean Rust in 2013

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

USDA Soybean Rust website: <http://www.sbrusa.net/>

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

Plant Disease and Insect Clinic Update

Corn, cotton, small grain and soybean disease samples submitted by county agents are still free of charge in 2013.

ORNAMENTALS AND TURF

From: Steve Frank, Extension Entomologist

News About Neonicotinoid Insecticides

Neonicotinoids include products such as imidacloprid (Merit, Marathon, various homeowner products made by Bayer), dinotefuran (Safari), acetamiprid (TriStar), and thiamethoxam (Flagship). All the chemicals in this group are systemic and move to plant issue once applied. This includes nectar and pollen. These products have been under scrutiny lately due to their negative effects on pollinators. See this report: <http://ecoipm.files.wordpress.com/2012/07/neonicbees.pdf>

Recently there was a large bee kill in Oregon apparently due to misapplication of a neonicotinoid to a flowering linden tree. Labels typically state "Do not apply to flowering plants or when pollinators are present" or something similar. In response the Oregon Department of Agriculture has temporarily restricted use of dinotefuran while it investigates the incident. More information about this incident is in a recent article: <http://www.nurserymanagementonline.com/oda-restricts-dinotefuran-use.aspx>

It is important to correctly use all insecticides by professionals and homeowners.

RESIDENCES, STRUCTURES AND COMMUNITIES

From: Mike Waldvogel, Extension Entomology

Rains Send Pests Heading to High Ground

The recent heavy rainfall across much of the state will force a lot of common pests (and a few unusual ones) out of their typical habitats and also contribute to surges in populations of others.

Millipedes

Millipedes continue to gain momentum and people's attention. In past years, millipede invasions were triggered primarily by very dry conditions. This year, we have the opposite situation. The critters are trying to keep their thousand legs somewhat drier so they're hiking to higher ground. (NOTE: Millipedes don't actually have 1,000 legs; it's closer to that more scientifically accurate determination of "right many legs".)

Buildings on slab construction may face more problems in that the millipedes have a somewhat shorter trek up the exterior surface of the slab (or exterior wall if it's a supported slab) and gain entry into the homes and commercial buildings. Of course, they can simply crawl under the door! Millipedes are prolific climbers and often make their way up to the second floor and even the roof of a house.

Quite commonly, you will find millipedes (alive or dead) along the walls indoors. If you pull back the carpeting, you will often find more millipedes underneath and you now have to contend with them as well as figure out how to tack the carpeting back down so it looks as good as when it was first laid out

professionally. Millipedes do not survive very long indoors, but typically they outlast the patience of the frustrated callers to whom you've been preaching patience.

You'll also find that they invade other areas where moisture tends to accumulate, usually crawlspaces, basements and garages. Homeowners often find piles of dead millipedes outdoors along walls and on driveways, such as you can see in the picture at <http://insects.ncsu.edu/Urban/millipedes.htm>.

I've talked to many pest control companies about millipede control and I get the usual mix of "this works" and "this hasn't worked". The problem is that I hear the same chemicals mentioned in both categories. In drier years, I typically attribute this disparity to differences in spray volume applied to a site. Dry mulch or soil surfaces tie up a lot of the chemical and it doesn't have an impact on the millipedes. In contrast for this year, the problem is more likely that the chemical is being diluted or displaced by heavy rains.

If homeowners want to try to treating their property themselves, then given the amount of soil moisture we have around the outside of homes, granular insecticides (such as those made by Bayer Advanced, Ortho or Spectracide) might be good choices. Avoid applying granulars if the grass is wet from rain or dew because the chemical is likely to get stuck up on the foliage and not reach the soil where it belongs.

Under drier conditions, I would suggest using a garden hose sprayer in order to get the necessary coverage and volume. If there is a thick layer of dry mulch around the house at that might, it needs to be pulled back at least 3-feet so the soil underneath can be treated. Most treatment areas consist of about 3 to 5 feet around the house, plus about 2 feet of the foundation wall as well. Any of the common outdoor insecticides that you find at the common retail and garden center can be used. Again, the most common (but not only) brands are Bayer, Ortho and Spectracide. Some people use dust formulations (e.g., dust formulations of Sevin or permethrin) to make barriers around the outside of their homes. You get a lot of dead millipedes, but my concern is for homes/yards with children and pets that might come into contact with these chemicals.

As for indoors, that's somewhat of a losing battle if you try a conventional baseboard sprays. You'll see dead millipedes, but there is a good chance that they would have died regardless of any chemical simply because it's too dry indoors. Vacuuming up dead millipedes is the best approach and will get people into shape for the fall invasion of Asian lady beetles, kudzu bugs and brown marmorated stink bugs.

"Scuds"

Those of you on the coast may have gotten calls from people that see piles of dead "bugs" that turn red like boiled shrimp and then darken. What they're seeing are amphipods or "scuds" which are tiny crustaceans that live in very moist areas. When we get very dry or very wet weather, these little critters are on the move and will end up on patios, car ports, doorways, etc. They usually don't invade homes but the piles of them outdoors either gross out or aggravate people. Of course, you can really irritate them by telling them to wait until the millipedes show up! Spraying for scuds doesn't do anything. They'll still die on the pavement whether you spray them or not. So, get out the broom and sweep them back into the grass or landscaping.

Rodents

Burrow and cavity nesting rodents including Norway rats and cotton rats may get displaced by flooding in some areas. "High ground" for them may be areas around or potentially in homes and businesses (Norway rats are more likely to take up residences indoors than cotton rats). I strongly discourage the use of baits indoors (including attics and crawlspaces) for rodents. There's an urban legend that rats eat poison baits and will go outdoors to find water. More likely, the rodent will get sick and simply die in 2 to 3 days of consuming the bait and if it does so indoors, you'll know it when the odor and flies appear. Also, baiting outdoors needs to be done very carefully to make sure that wildlife, pets and kids don't accidentally consume carelessly placed baits. Baiting outdoors should use bait boxes or make sure that baits are placed into active rodent burrows. When baiting outdoors, also make sure that you check the surrounding area for poisoned rats which should be removed immediately to make sure that pets and/or wildlife do not eat them (and become ill from the rat poison). Note that baits are not to be used for cotton rats around residences. Snap traps are a better choice, but they need to be checked daily.

Flies

Deer flies and horse flies have been painfully noticeable the last few weeks. Deer flies are about 1/2 inch in size with greenish-yellow bodies and smoky-colored wings. They are often encountered along hiking trails, narrow lanes and roads and at the edges of woodlands. They are numerous and annoying along the coast and near their breeding and natural feeding sites such as flood plains of swamps, streams and rivers and around ponds, salt marshes, and beaches. The flies are aquatic or semi-aquatic in breeding habits, laying their eggs in clusters on objects, such as plant stems and leaves, near the water. Adults are prominent now through August. Because of their breeding sites not easily identified, control of the larvae is not really feasible. Repellents are less successful at stopping them as compared to repelling mosquitoes.

Review our publication: <http://insects.ncsu.edu/Urban/horsefly.htm>

Biting Midges (no-see-ums)

Even as water recedes (or soaks into the soil), pockets of very wet decaying vegetation are likely to be a source of no-see-ums in the next few weeks. Note that these are not the mosquito-like non-biting chironomid midges that breed lakes and ponds. A quick approach to dealing with them is (where possible) to remove piles of decaying material such as mats of seaweed washed up onto the shore along coastal areas. Spray programs similar to those for mosquitoes are largely ineffective as more adult midges will invade the area once the pesticides diminish. Personal protection using repellents is a better choice if you're going to be outdoors in areas with high populations of biting midges.

Check our web publication: <http://insects.ncsu.edu/Urban/b-midge.htm>

Mosquitoes

You may hear stories about a "new" mosquito species that flies during the day and is wreaking havoc in some areas, notably the northeastern U.S. This is old news to us in the Old North State because they're talking about the Asian tiger mosquito. As I've mentioned previously, mosquito populations will spike in the ensuing weeks following heavy rains. Urge people to be proactive and eliminate by "Tipping and

Tossing" standing/stagnating water found in clogged drainage ditches and gutters, flower pots on open decks/porches, used tires and other objects such as empty paint cans and other containers. Flush out bird baths and pet water bowls. Water that cannot be eliminated can be treated with products such as "Mosquito Dunks" that contain a bacteria that is toxic to mosquitoes and some flies, but not other insects, fish, wildlife and people. Other conventional pesticides can be applied to mosquito resting areas such as shrubs and lawns. Some people use fogging equipment to treat their yards. I'm not real keen on "Do-It-Yourself" area fogging. While this does knock down mosquito populations, realize that fogs easily drift to adjoining properties and so it's prudent for people to make sure that their neighbors don't object (particularly those people that may have vegetable gardens or bee hives adjacent to your treatment site). Also, make sure with any outdoor applications (fogs or liquids) that you treat when wind speeds are low (preferably 3 mph or lower), keep everyone out of the target area, and cover or remove children's toys, pet food/water bowls, and barbecue grills. And, bear in mind again that mosquitoes do not have any real understanding of property lines. So, one person's treasure trove of "collectibles" (collecting water in this case) can become the neighborhood mosquito nightmare.

Use repellents when for outdoor work and recreation activities. There are a number of products available. Avoid home remedies and "urban legend" products such as using "Bounce" dryer sheets (for which there is no scientific data to back up those claims of repellency). Apply repellents only to exposed skin (not covered by clothing). For children, use repellents with low concentrations of chemicals and always apply the products to small children (don't let them treat themselves).

View: <http://insects.ncsu.edu/Urban/biting.htm> and <http://insects.ncsu.edu/Urban/repellents.htm>

As mosquito populations increase particularly in central and eastern North Carolina, horse owners should consider protecting their horses against eastern equine encephalitis. There is no post-infection cure for the disease and animals may die within 72 hours of manifesting symptoms. There is a preventive vaccine available for horses (not for humans) and so equine owners may want to talk to their veterinarian about it.

The North Carolina Department of Agriculture & Consumer Services Veterinary Division has information available on its website: <http://www.ncagr.gov/vet/FactSheets/EEE.htm>.

Fire Ants

Fire ants originated in areas of South America where rivers flood. Our rains will not phase them; they are waiting out the receding waters and mounds will be active again (if they're not already).

Check out: <http://insects.ncsu.edu/Urban/ifa.htm>

Tick-Borne Diseases

Last week I sent pest information about common pest problems in and around homes at this time of year plus reminded our clientele about ticks. Most of you have probably heard that the Centers for Disease Control and Prevention (CDC) recently confirmed that the death of six year old Buncombe County child was due to Rocky Mountain Spotted Fever (RMSF).

When most people think of ticks and tick-borne diseases, they focus their attention on Lyme Disease which is more prevalent in the northern states, but certainly is on the rise in North Carolina and can have severely debilitating effects if it is not diagnosed promptly. However, this recent incident is a sad reminder about the prevalence of RMSF in North Carolina. In 2012, we had 584 cases of the RMSF with the peak occurring in June and July. The American dog tick is the primary vector (transmitter) of RMSF. The blacklegged tick is the primary vector of Lyme Disease in North Carolina.

Many people may be inclined to try outdoor chemical treatments and that is certainly their option (if the weather cooperates). They need to bear in mind that tick management requires a thorough (NOT excessive) application of the chemical. Unlike with mosquitoes where the goal is to treat foliage where the mosquitoes are resting, ticks are often down on the soil and so the chemical application needs to cover the soil. With that in mind, your best options are going to be a garden hose sprayer attachment or a granular insecticide. Both need to be done when the grass is not excessively wet (the granules can get caught in the wet grass and not reach the soil surface where they're needed). Keep in mind - you may "control" the tick population in the treated areas of your yard, but this does nothing to address the ticks in the weedy overgrown areas that remain untreated and may be home to rabbits, feral cats (not likely both at the same time), etc.

This is a good time to reiterate the good practices for protecting yourself from ticks and **all** of the tick-related diseases.

- Go take a hike, but if you do, stick the open paths. If you feel the need to be adventuresome and head into the surrounding brush, you may subsequently feel some adventuresome ticks on you as well.
 - Whether you're outdoors for work or recreation, keeping ticks off of you is important. One way is to wear light-colored clothing to make it easier to spot ticks making the ascent up your leg and preferably wear long pants and tuck the pant legs into your socks. People seeing you in your yard or on a hiking trail may think you look like a dork, but they may think that even if you don't have your pants legs tucked into your socks. Whether you wear shorts or long pants, apply a repellent to your socks and pants or in the case of shorts, only to **exposed** parts of your skin.
 - Check yourself (and children) over carefully after working or playing outdoors.
 - If you do find a tick that's feeding on you, remove it carefully with a pair of tweezers. If possible, keep the tick for identification (suggest that they keep it in a small jar filled with rubbing alcohol).
 - Just because you find a tick on you, doesn't mean it's been feeding, particularly if it's still wandering around. Ticks attach their heads to your skin with a type of "cement" and then the feast begins.
 - Also, just because the tick is identified as American dog tick or the blacklegged tick does not mean that is actually infected with RMSF or Lyme Disease. People may rush to their doctor to get a blood test done. However, at this early stage a blood test isn't helpful because the tests rely on detecting antibodies that develop in response to the pathogen and it can take several weeks for the antibody levels to reach detectable numbers. Also, some healthy people who have been exposed to RMSF may already have detectable levels. For that reason, blood tests are usually done twice, a few weeks apart, to look for a significant rise in antibody levels (indicating a likely infection rather than just a previous exposure).
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Remind people that 20% or more of the people infected with the Lyme Disease pathogen do not develop the classic "bull's eye" rash that they just saw after doing a Google search. The CDC also reports that 10% of people infected with RMSF do not develop the characteristic rash that we read about (and of course, rashes on children or adults can have many other non-disease causes). The best approach is to circle the date of the "tick encounter" on the calendar and if you develop flu-like symptoms, severe headaches or joint pain within the next 3 to 14 days, contact your physician immediately and mention the tick incident. Most doctors will take the cautious route and prescribe antibiotics which when taken early on usually take care of the problem.

Check out: <http://insects.ncsu.edu/Urban/ticks.htm>

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 1      ----- Put up light trap -----
June 2      0      0      0      0      0      7      0      0
June 3      0      1      1      0      0      10     0      0
June 4      0      0      0      0      0      5      0      0
June 5      0      0      1      0      0      2      0      0
June 6      0      0      0      0      0      0      0      0
June 7      0      0      0      0      0      3      1      0
June 8      0      0      0      0      0      3      0      0
June 9      0      0      1      0      0      12     1      0
June 10     0      0      0      0      0      4      0      0
June 11     0      0      0      0      0      0      0      0
June 12     0      0      0      0      0      2      0      0
June 13     0      0      0      1      0      4      1      0
June 14     0      0      0      0      0      0      0      0
June 15     0      0      0      0      0      0      0      0
June 16     0      0      1      0      0      0      1      0
June 17     0      0      0      0      0      1      0      0
June 18     0      0      0      0      0      0      1      0
June 19     0      0      0      0      0      0      0      0
June 20     0      0      0      0      0      0      0      0
June 21     0      0      2      0      1      0      0      0
June 22     0      0      0      0      0      1      0      0
June 23     0      0      0      0      0      0      0      0
June 24     0      0      0      0      0      0      0      0
June 25     0      0      0      0      0      1      0      0
June 26     0      0      0      0      0      0      0      0
June 27     0      0      0      0      1      0      0      0
June 28     0      0      0      1      0      0      0      0
    
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June 29 0 0 0 0 0 0 0 0
 June 30 0 0 0 0 0 2 0 0

July

Number of Adult Insects

Date	HW	CEW	ECB	AW	AWC	GSB	BSB	TBW
July 1	1	0	0	0	0	3	0	0
July 2	0	0	0	0	0	0	0	0
July 3	0	0	0	0	0	3	2	0
July 4	0	0	0	0	0	6	0	0
July 5	0	0	1	0	1	4	2	0
July 6	0	0	0	0	0	5	0	0
July 7	0	0	0	0	0	1	0	0
July 8	0	0	0	0	0	0	0	0
July 9	0	0	0	0	0	0	1	0
July 10	0	0	0	0	0	1	0	0
July 11	0	0	0	0	1	1	1	0
July 12	0	0	0	0	0	0	0	0

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

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