

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 Insect Lull for Most Producers

Although we are now in a warmer summer weather pattern, recent cool conditions and generally plentiful rainfall persisted this past week and appears to have temporarily suppressed adult thrips levels in many areas of the state. The downside, of course, is that this recent cool weather has also made late planted cotton more vulnerable to thrips damage due to slow seedling growth. We still have some late-planted cotton in the thrips susceptible 2 to 3 true leaf stage in scattered locations throughout the state and thrips may still be able to 'throw a significant body blow' to seedlings in these situations. However, a high percentage of our cotton planted during the first week in May is now in the 5 to 7 true leaf stage with initial squaring beginning in some areas. Much of our cotton is on the ugly side, having

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suffered through less than ideal planting and grow-off conditions along with thrips damage. Our cotton crop will hopefully look much better across the board by this time next week.

Plant Bug Outbreak?

Most cotton producers should be “enjoying” a lull between the end of the thrips season and the time when plant bugs could show up as a square loss issue. Due to our recent rainy weather, a large amount of field border, ditch bank, CRP land and other plant bug host vegetation is present. This vegetation could result in significant plant bug levels (at least by North Carolina standards), if we get the hot dry weather conducive for rapid drying of these plant bug hosts. During the pre-bloom period of squaring, assessing the need for treatment relatively straightforward because high upper square retention (80% or more) typically indicates that plant bugs are not an economic issue at that time. Conversely, square retention of less than 80% signals the need for sweep net sampling to determine if the treatment level of 8 plant bugs per 100 sweeps exists. In most years in North Carolina, square retention levels are often in the 95%-plus range. Once blooming begins, a drop (aka beat cloth) is the sampling device of choice for a combination of adult and especially immature plant bugs. Additionally, although usually not widespread consistent pests in North Carolina, cotton aphids and spider mites can be a real pain on some farms. Finally, every year brings its share of insect surprises. This year will be no different.

Kudzu Bug Update

A few more soybean fields have been treated during the past week for kudzu bugs, generally with bugs in the 3 to 5 per plant level with tiny immatures beginning to show up at low levels so far. At the Sandhills Station, Jeff Chandler reported 10 to 15 kudzu bugs per soybean plant in the perimeter rows and 5 to 10 bugs per plant in the interior of our large planting date test. This test will be treated today. As later soybean planting gets underway in the coming weeks, it will be interesting to find out if kudzu bugs have now peaked and thus will leave later planted soybeans alone until the expected late season flights, or if the current establishment of kudzu bugs on soybeans will continue. For additional and more comprehensive kudzu bug information, please read Dr. Reisig's most recent column posted at the NC Field Crops Blog (<http://www.nccrops.com/2012/06/08/should-you-treat-for-early-season-kudzu-bug/>).

Cotton and Soybean Scouting Schools and Tours

July 18: Bertie County at the Windsor Community Building, 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) for details.

We'll post additional schools at this site in the coming weeks. Scouting schools are planned, but not yet scheduled, for Northampton and Halifax counties. Dr. Reisig has also posted several field day and tours (<http://www.nccrops.com/2012/06/01/upcoming-scouting-schools-and-field-days/>) in coming months.

From: Dominic Reisig, Extension Entomologist

Should You Treat for Early Season Kudzu Bug?

Two weeks ago, Jack Bachelier gave our early season threshold recommendation for kudzu bug. He stated that “. . . 15 or fewer kudzu bugs per 15 sweeps would probably not result in economic damage.” I have heard of very few places in the state where these densities have been reached. Isolated cases of treatable situations have occurred in geographies as far spread as Lincoln, Moore, Johnston, Onslow and Beaufort Counties. Here are several reasons why we are standing by this threshold.

First, adults that you see in the field now are from those that overwintered from last year. These have migrated to soybean and are laying eggs. If you spray only adults, there is a chance that some eggs will hatch into nymphs that can cause you problems later. Based on the pattern of colonization that we have seen this year, the major migration of overwintering adults is probably over. We are expecting another migration later in the year (late July or early August) that will re-infest soybeans. This migration will likely put many more of our soybean fields at risk than those currently infested.

Secondly, soybeans can tolerate a lot of injury during the vegetative stages. Remember that the already conservative threshold for foliar feeding pests is 30% defoliation throughout the canopy until two weeks prior to flowering. Kudzu bugs are a stress inducing pest. That means that you have time to wait, watch, and see what is happening. Using the threshold listed above should avoid most of the injury that you can see in below.



Stem injury on soybeans from kudzu bug and kudzu bug nymphs. Image from A. Del Pozo-Valdivia.

Finally, it takes 6 to 8 weeks for kudzu bugs to develop from egg to adult. Because we think the migration from overwintering adults is largely over, this means that you can be confident that if you turn your back on a field for the weekend, you won't return to an out-of-control situation on Monday. We can't treat kudzu bugs like corn earworm or velvetbean caterpillar. Check fields weekly with a sweep

net to see what develops before making a treatment decision. Be sure to look for the nymphs as well as the adults.

Management Recommendations for Stink Bugs in Corn

Like clockwork, the last week of May and first week of June, calls start coming in about stink bugs in corn. Very few of these calls are generated from growers or scouts finding stink bugs in corn at significant levels. The majority have been generated at the chemical dealer level, recommending a tank mix of an insecticide and a fungicide.

Foremost, you should only treat for stink bugs if you reach threshold levels. These thresholds are based on experimental data and are already conservative. I have a high degree of confidence in them, as a result. Until V6, the economic threshold is four stink bugs per plant. Most our corn has passed this stage and stink bugs generally are not in corn until V6 anyway. The most susceptible time for stink bug injury in corn is when the ear is forming, during ear elongation, and during pollen shed. Treat at one stink bug per four plants during these stages. Finally, from the end of pollen shed to blister stage, you will see an economic benefit to treating corn if there is one stink bug for every two plants. Stink bugs feeding after blister stage can feed on kernels and have a loose association with increased levels of aflatoxin, but are more of a problem at these stages in southern states, like Georgia and Alabama, than North Carolina.

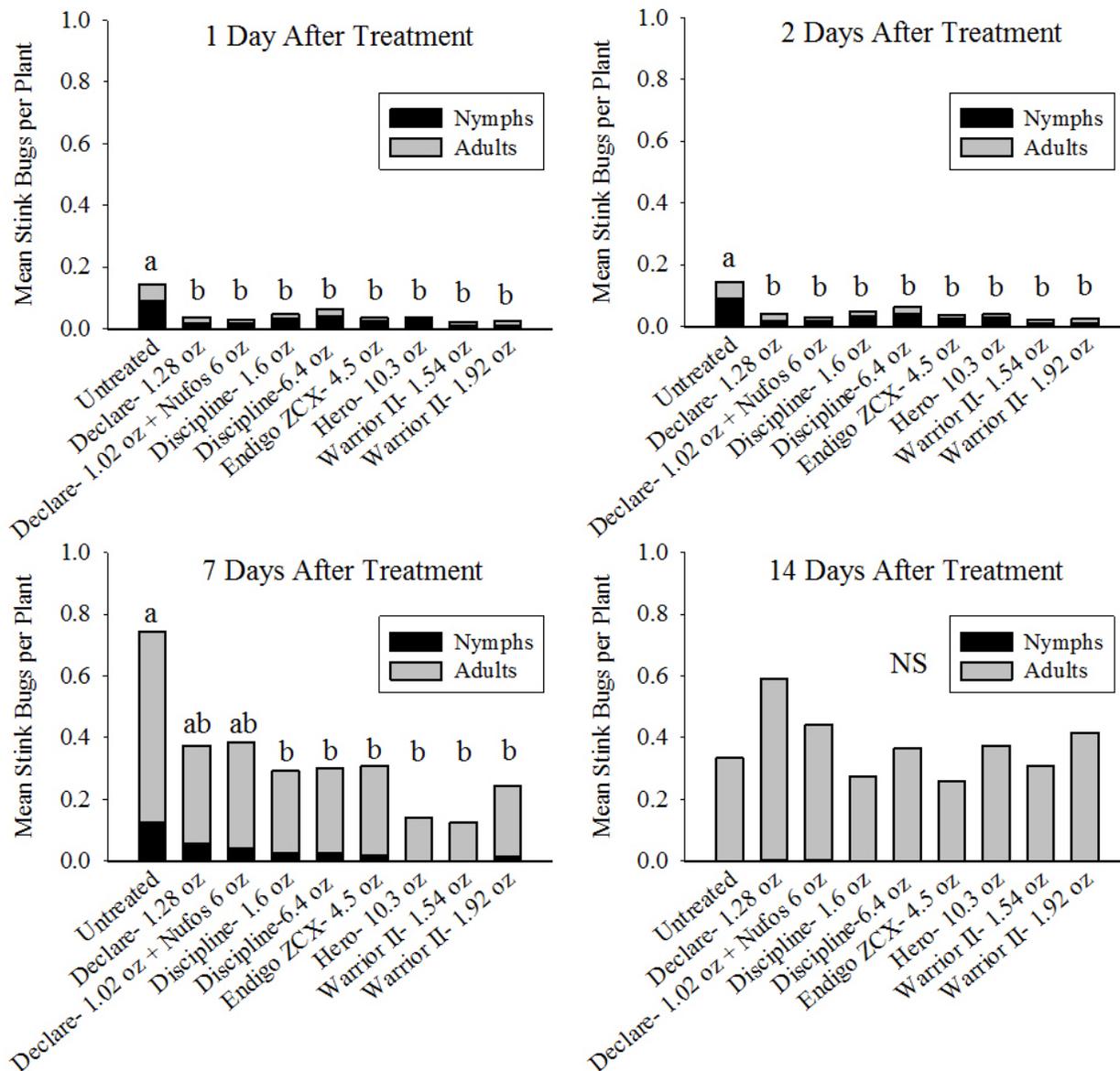
You might think that tank mixing an insecticide is cheap insurance, because it will kill any insects in the field and stop you from reaching threshold. This is untrue for two reasons.

1) Using a ground rig, at 10 gallons per acre to ensure good coverage, an insecticide will only be effective for one week. After this time, residual is gone and stink bugs can re-invade your corn (see diagram). Driving a ground rig over tasseling corn is not an option for most producers due to plant height and/or row spacing restrictions.

2) Aerial insecticide applications over tasseling corn are ineffective and have no impact on yield. This research was done using large plots in two locations (work published at <http://www.insectscience.org/11.168/>). Stink bugs can be killed using ground rigs because the insecticide can penetrate the canopy. Stink bugs often harbor where the leaf collar meets the stalk and in the whorls. Aerial applications at 3 to 5 gallons per acre dropping insecticide 50 feet above the canopy do not have the penetration power and coverage needed for the job.

The major stink bug species in corn, far and away, is the brown stink bug. Like the situation in cotton and soybeans, you might be able to kill 60 to 70% of them with a pyrethroid. This will only be the case if you treat by ground.

Remember that stink bugs are coming off of wheat, where the first generation has developed. This migration is beginning to happen now and will continue to take place over the next several weeks. With mobile stink bugs moving throughout the system and only a week's control guaranteed with ground applications, stink bugs should not be managed using an "automatic spray." You should only treat stink bugs if the threshold has been reached and if you can use a ground rig. Focus on high volume and pressure applications to penetrate the canopy and only expect about a week of control. Finally, remember that Orthene and Bidrin are not registered insecticides in corn.



Number of brown stink bugs per plant at one, two, seven, and 14 days after treatment. Image from D. Reisig.

FRUIT AND VEGETABLES

From: Hannah Burrack, Extension Entomologist

Spotted Wing Drosophila Fact Sheets from Penn State

The IPM team at Penn State University has put together several nice fact sheets on spotted wing drosophila (SWD) in the last several months. I particularly like the images of non SWD males in this fact sheet (<http://extension.psu.edu/vegetable-fruit/fact-sheets/spotted-wing-drosophila>) and the character summaries illustrated here (<http://extension.psu.edu/ipm/agriculture/fruits/spotted-wing->

[drisophila/drosophila-suzukii-male-character-summary/view](#)). I've used these images to illustrate SWD characters to participants in the SWD*VMN (<http://www.eddmaps.org/project/project.cfm?proj=9>) and extension agents monitoring for SWD.

SWD Fact Sheets for Summer 2012

I have started working on a series of updated spotted wing drosophila (SWD) fact sheets for Summer 2012, the first of which is a general fact sheet for caneberry (blackberry and raspberry) growers.



What is spotted wing drosophila (SWD)?

Spotted wing drosophila (*Drosophila suzukii*) is an invasive pest of soft skinned fruit which has been detected throughout the United States in the last three years. Female SWD preferentially lay their eggs in ripe and ripening fruit, unlike nearly all other *Drosophila* species. The resulting larvae feed on the fruit, causing direct damage, and may also be present at harvest, contaminating the product.

How can I identify SWD?

Adult SWD are small (2-3 mm) light brown flies. Male SWD have a distinctive spot on the end of either wing and dark bristles in bands around the base of the last segment on their front legs (called sex combs). Female SWD lack spots on their wings but can be distinguished by a relatively large, blade-like ovipositor (egg laying device) at the end of their abdomen.



Non SWD ovipositor (left) and SWD ovipositor (right). Note that these flies have been stored in ethanol. Normally, the ovipositor would be concealed just inside the abdomen.

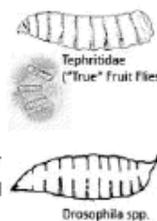


Non SWD wing (top) and male SWD wing (bottom). Not all small brown flies with spots on their wings are SWD. See here for links to images of non SWD flies which also have spots on their wings: <http://bit.ly/MfmKcy>

How can I determine if SWD is present on my farm?

You can monitor adult SWD with traps baited with either apple cider vinegar or a yeast and sugar slurry. See here for a step by step trapping guide: <http://bit.ly/KSK1x5> However, both of these lures are inefficient compared to ripe fruit, so they should only be used to determine SWD presence or absence in an area. Growers, extension agents, and researchers are also monitoring SWD throughout the southeast. You can find trap capture data, updated weekly, at the SWD Volunteer Monitoring Network (SWD*VMN) site: <http://bit.ly/MfsM9J>

Fruit should also be carefully monitored for SWD larvae. You can learn how to sample fruit here: <http://bit.ly/KNPJ4c> It is impossible to distinguish SWD larvae from other *Drosophila* species, so it is important that you only sample sound, otherwise marketable fruit. *Drosophila* larvae are up to 3 mm long, do not have legs or a clearly defined head, and are tapered on both ends. They have two dark "mouth hooks" at the front. It is possible that blueberry maggot or apple maggot larvae could be present in blueberries or apples respectively, but these "true fruit fly" (Tephritidae) larvae are larger than SWD and have a flat rear end. They will not be present in caneberries.



Spotted wing drosophila (*Drosophila suzukii*) biology and management in North Carolina caneberries

How do I manage SWD on my farm?

Ripening and ripe fruit are susceptible to SWD attack, but they do not appear to be attracted to unripe fruit. If adult SWD are present on your farm, aggressive management is warranted.

Aggressive management entails:

1. Excellent sanitation: fruit should be harvested frequently and completely. Any unmarketable fruit should be removed from the field and either frozen, "baked" in clear plastic bags placed in the sun, or hauled off site to kill or remove any larvae present.
2. Water management: leaking drip lines should be repaired, and overhead irrigation should be minimized.
3. Insecticide treatments: treatments should be applied at least every seven days and repeated in the event of rain. Effective insecticides with pre harvest intervals amenable to picking schedules should be selected, and insecticide modes of action should be rotated between each treatment. See here for a list of the registered insecticides in NC caneberries and their likely efficacy against SWD: <http://bit.ly/L3QhjW> There are some organic tools available for SWD, but they may be less persistent than conventional materials. Organic growers should also be careful to avoid exceeding maximum applications per season.
4. Regular fruit sampling: at least 100 fruit per block per harvest should be observed for infestation.

Growers should communicate with their marketer or wholesaler before beginning a new management program to ensure that pesticides registered for use in the United States are acceptable for all markets where their fruit is destined.

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Spotted wing drosophila research and extension efforts are supported by the North Carolina Tobacco Trust Fund Commission, Inc., the NC Department of Agriculture & Consumer Services Specialty Crop Block Grants Program, and the North Carolina Blueberry Council, Inc.



Look for more updated fact sheets for strawberries, blueberries, grapes, homeowners, and on trapping and larval sampling soon.

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.
