

Volume 25, Issue 23

Vegetable Crops

Why are Twospotted Spider Mites Such

<u>Problems Lately?</u> - Jerry Brust, IPM Vegetable Specialist, University of Maryland; jbrust@umd.edu

This has been an odd season, like most of them I guess, with lots of rain when we normally have drought and cool temperatures when we normally have heat. We have had problems this year with striped cucumber beetles, hornworms, leafhoppers, squash bugs and, surprisingly, with twospotted spider mites, Tetranychus urticae (TSSM). Normally we expect to see heightened problems with this mite come mid-July through August because it is hot and dry and the mite thrives in this environment. But this year we have had much cooler temperatures with heavy rains -- all the things that should greatly reduce TSSM populations. But when visiting watermelon or tomato or cucumber, eggplant, you name it fields I have still found spider mites. In some fields the mites are in numbers causing vield reducing injury (Fig. 1). This is astounding with the environmental conditions we have had. In other fields the mites are in moderate to low densities, but ready to surge given the opportunity.

TSSMs have been suppressed it seems with miticide sprays but have not been reduced enough that they still aren't causing some problems. Some growers blame the miticide, but the miticides being used are effective, they just don't seem to be very effective. There are a few

September 1, 2017

possibilities that may be reducing the effectiveness of the miticides. One possibility is in many fields growers are adding the miticide to their regular spray program for other pests. The regular program includes pyrethroids. Pyrethroids have a wide-spectrum of insect control and are useful when there may be several pests to be controlled such as several worm species, stink bugs, squash bugs, cucumber beetles, etc. But it is not good to put them into a regular weekly spray program as they can exacerbate TSSM, thrips and aphid populations. Save the pyrethroids for when you do face several pests at the same time and use them then. If you really need to have a weekly insecticide spray program try at least to rotate the mode of action (MOA) of the insecticide that is used. Growers who rotate or use insecticides sparingly or use organic insecticides seem to have far fewer problems with TSSMs than growers who use weekly sprays of pyrethroids.

The other possibility is that TSSMs are really a complex of species that are extremely variable in their biology, but are called one species known as the twospotted spider mite. Much controversy exists as to the taxonomic placement of TSSMs, as there are approximately 65 synonyms included under this one species. So it should not be too surprising that we see from time to time outbreaks of this 'species' when we would not expect it. Whether there is a shift in the 'type' of TSSM we have in our area or not would be difficult to tell for sure. There are other possible explanations as to why TSSMs are a becoming such problems: poor spray coverage, not enough spray pressure or gallonage used, putting the miticide out too late, etc. But these

types of problems have always been with us and it has been in just the last 4-5 years that the TSSM has become an increasingly large problem in our vegetable fields that needs to be examined. This is something I hope to do over the next few seasons.



Figure 1 Twospotted spider mite feeding in tomato.

Top picture: moderate to low damage. **Bottom picture:** yield reducing feeding.

Last Trapping Day for UD Program will be August 31 - Bill Cissel, Extension Agent -

Integrated Pest Management; <u>bcissel@udel.edu</u>

Announcement: The last trapping day for the UD Insect Trapping Program will be August 31!

The last trapping day for the 2017 season will be August 31. I would like to thank everyone that participated in the pilot trapping program, checking a black light and pheromone trap on their farm twice a week and sharing their trap catch data with us. If you are interested in trapping on your farm next year, please contact me at <u>bcissel@udel.edu</u>.



Fruit Crops

<u>Plasticulture Strawberry Planting and Fall</u> <u>Growth Considerations Revisited</u> -Gordon Johnson, Extension Vegetable & Fruit Specialist; <u>gcjohn@udel.edu</u>

The next 10 days are the optimum period for planting strawberries in the plasticulture system. The variety Chandler, which has the most acreage in our region, is very sensitive to planting date. For highest yields, Chandler should be planted by September 20. Sweet Charlie and Camarosa should be planted 7-10 days earlier than Chandler for best yields. Most other June bearing type strawberry varieties should be planted by September 20 for best spring yields. Day neutral varieties such as Albion and San Andreas are less sensitive to planting date but should be planted by the third week in September for the best early spring yields.

Strawberry establishment in the plastic bed takes 3-4 weeks. During establishment, the goal is to have plants root as quickly as possible in the soil and start to send out new growth. This requires attention at planting. Most Delmarva growers are using plugs. Plant so that the plug is at the level of the soil or is just covered with a small amount (1/8") of soil but avoid getting soil into the crown of the plant. Deep planting will result in reduced stands and weak plants due to rotting in the crown area. Shallow planting (where part of the plug is out of the ground) will result in plugs desiccating and reduced stands. Soil should be firm around the plug and water provided at planting. It is advantageous to overhead irrigate several times, even with water provided by drip lines, to reduce plant shock. It is also hard to wet beds completely with the drip system in sandy soils thus affecting establishment.

Rooting also requires adequate bed soil temperature. Raise high beds, the higher the better to allow for good drainage. Lay plastic making sure there is a firm crowned bed. The goal is to have the plastic tight against the soil to allow for good heat transfer. Loose plastic will have poor heat transfer and can reduce fall growth. Beds with depressions that allow water to accumulate can lead to disease problems in strawberries.

The goal coming out of the establishment period is to have 3 or more fully green leaves on the plant. After establishment, plants will send out new growth and develop branch crowns during October and November. The goal by late fall is to have 2-3 branch crowns form from the mother plant. Crown growth occurs when temperatures are above 50°F. Flower buds are also initiated during this time. Often, growers receive plugs or plants later than September 20. For later plantings, low tunnels offer an opportunity to maintain temperatures above 50°F for a longer period achieving this goal. Early row covers may also be used to achieve this goal - research has shown that early row covers may not increase crown number but can increase flower bud initiation in the fall. While planting too late can reduce spring yields, planting too early risks too

many crowns being developed, especially in Chandler, leading to smaller unmarketable berries (Sweet Charlie and Camarosa are less prone to this problem as is Albion). That is why we don't plant in late August on Delmarva

Plant size in the fall is also critical for high yields the following spring. Plants should be about 8 inches in diameter going into winter. Sugars produced in leaves are translocated into the crowns of the plant where they are converted into starch for winter storage. This starch is then used in the spring at greenup. Inadequate starch storage will also lead to lower yields in the spring. Plants should also go into winter with enough leaves to help insulate the crown.

Agronomic Crops

<u>Continue to Scout Soybeans for Stinkbugs</u> -Bill Cissel, Extension Agent - Integrated Pest Management; <u>bcissel@udel.edu</u>

We have three stink bug species that are considered pests of soybeans. They include the green stink bug, brown stink bug, and the invasive brown marmorated stink bug (BMSB). All three species feed on soybean pods and seed using their piercing-sucking mouth parts. Feeding injury to soybeans in the early stages of pod development, R3 to R4 (beginning pod to full pod), can result in aborted pods or underdeveloped flat pods. Feeding injury to larger seed, between R5 and R6 (beginning seed to full seed) results in shriveled, deformed or even aborted pods.



Flat pod



Seed injury

Stink bug feeding injury has also been shown to cause delayed plant development, often referred to as "stay green syndrome". In response to stink bug feeding, soybeans will delay development in an effort to produce more seed to compensate for what has been lost. As a result, the portions of the field with heavy stink bug infestations remain green while the remainder of the field dries down.



Stay green syndrome

Recognizing stink bug adults is fairly easy with just a little practice. The most common mistake is confusing the native brown stink bug with the invasive BMSB. The easiest way to distinguish between these two species is by looking at the antennae. If the antennae are stripped black and white, you know that it's a BMSB because that is the only species we have that has banded antennae. The other feature that can be used to distinguish between the two species is the color of the abdomen. Brown stink bugs have a yellowgreen colored stomach compared to BMSB which have a cream or tan colored stomach. It's important to be able to distinguish our native stink bug species (green and brown) from the invasive BMSB because they have different

infestation habits which can change our management strategy. Research conducted in the Mid-Atlantic States has also determined that BMSB feeding injury on soybeans is slightly more damaging compared to our native species.

Identifying nymphs can be a little more challenging and the most common mistake is to misidentify stink bug nymphs as beetles because of their shape. Stink bugs nymphs also do not necessarily resemble the adults but looking at the mouth parts can be used to distinguish beetles, which have chewing mouth parts, from true bugs with piercing-sucking mouth parts. When scouting, it is important to count nymphs and adults because both life stages attack soybeans.



Green Stink Bug Adult



Green Stink Bug Nymph



Brown Stink Bug Adult



Brown Stink Bug Nymph



Brown Marmorated Stink Bug Adult



Brown Stink Bug Nymph

The threshold for our native stink bug species in soybeans is 5 per 15 sweeps. The threshold for BMSB is 3-5 per 15 sweeps. In many fields, the complex of stink bug species will include a mix

of BMSB, green, and brown stink bugs. When a mixture of species is present, the threshold is 5 per 15 sweeps. All thresholds should include the total number of adults and medium to large nymphs.

Sampling full season soybeans can be a challenge because the plants are usually tall and difficult to navigate. Stink bugs have a strong startle response and drop from the plant when disturbed. An alternative sampling method to sweep net sampling is performing a timed, 2 minute visual count. This is a preferred method to sweep net sampling because it is not only safer for the sampler (i.e. less likely to become entangled in soybean plants) but is also more accurate. The threshold that has been developed for BMSB in soybeans using the visual 2 minute count is 3-5 medium to large nymphs and adults.

Here is a Youtube video discussing how to sample for brown marmorated stink bugs in soybeans using the timed, 2 minute visual count: <u>https://www.youtube.com/watch?v=KpFfMQZOT</u> <u>1w</u>

Brown marmorated stink bugs differ from our native species in that they have a behavioral habit of only infesting the outer edges of soybean fields. This habit provides an opportunity to concentrate control efforts on the edges of soybean fields by performing an edge only treatment if BMSB is the only species present. Based on research conducted in the mid-Atlantic, this approach has been found to be an effective management strategy to control BMSB in soybeans. Below is a graph showing a typical distribution of BMSB in soybeans. Based on the graph, the highest populations of BMSB are concentrated on the field edge, typically the first 30-50 ft into the field. However, be sure you are also sampling the interior portions of the field because our native stink bug species do not share this same infestation habit and are often distributed throughout the entire field.



Here is a link for more information discussing the Biology and Management of Brown Marmorated Stink Bugs in Mid-Atlantic Soybeans: <u>https://pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/ENTO/ENTO-168/ENTO-168-pdf.pdf</u>



General

<u>Guess the Pest!</u> - Bill Cissel, Extension Agent -Integrated Pest Management; <u>bcissel@udel.edu</u>

The correct answer to Guess the Pest Week #21 is soybean looper. Click on the Guess the Pest logo below to participate in this week's Guess the Pest! Guessing correctly will automatically enter you into a raffle for \$100 gift card at the end of the season and one lucky winner will also be selected to have their name entered into the raffle five times. For Guess the Pest # 22, we will also be giving away <u>A Farmer's Guide To</u> <u>Corn Diseases (</u>\$29.95 value) to one lucky participant.



http://www.plantmanagementnetwork.org/book /cornfarmersguide/

Guess the Pest Week #21: Answer is Soybean Looper



Soybean looper (note color variation)

In Delaware, we have two species of loopers that occasionally cause economic damage to soybeans by feeding on soybean foliage, the soybean looper and the cabbage looper. Distinguishing between the species is difficult but soybean loopers typically have black true legs and black spots on their bodies (relying on this to distinguish between species is not always reliable). Soybean loopers do not overwinter in our area and moths migrate north on wind currents. Soybean looper larvae are tapered with an enlarged abdomen and have two pairs of fleshy abdominal pro-legs (do not count the pair of legs on the last abdominal segment). They move by rearing up on their fleshy pro-legs, arching their bodies and holding their heads up in the air. Sometimes they will be found resting in this position.



Soybean Looper

They can often be confused with green clover worms which have three pairs of abdominal prolegs. Green clover worms will also wiggle violently when disturbed.



Green Clover Worm

Distinguishing between soybean loopers and green clover worms is important because soybean loopers are not effectively controlled with pyrethroids. The threshold for soybean loopers during soybean pod-fill stage is 15% defoliation.

Please refer to our Soybean Insect Management Recommendations for chemical control options: <u>http://cdn.extension.udel.edu/wp-</u> <u>content/uploads/2012/05/18063934/Insect-</u> <u>Control-in-Soybeans-2017-final.pdf</u>

Guess the Pest Week #22





What is this insect?

To submit your guess click the Guess the Pest logo below or go to: <u>https://docs.google.com/forms/d/e/1FAIpQLSfU</u> <u>PYLZnTRsol46hXmgqj8fvt5f8-</u> <u>JI0eEUHb3QJaNDLG_4kg/viewform?c=0&w=1</u>



Announcements

Fall Pasture Walk

Thursday, September 7, 2017 6:00 - 8:00 p.m. Woodside Creamery 378 North Star Rd, Newark, DE 19711

Come and see how Woodside Creamery uses pasture to effectively feed the dairy herd. Learn how to identify weeds and how to control them in a pasture setting. In addition, the topic of integrated pest management on forage fields will be discussed. Hear how to take a proper soil sample and how to pick out the right fence charger for your operation. NRCS will give an update on the programs available for pasture planting. Experts will be on hand to answer specific questions.

The meeting is free and everyone interested in attending is welcome. If you have special needs in accessing this program, please call the office two weeks in advance.

Credits: Nutrient Management (1) Pesticide credit(1)

6:00-6:05

Welcome and Introductions

Dan Severson, University of Delaware Cooperative Extension

6:05-6:20

Tour of Pastures and Pasture Management Jim Mitchell, Woodside Farm Creamery

6:20-6:35

Soil Sampling Techniques and How to Properly Submit Your Sample Karen Gartley, University of Delaware Plant and Soil Science Research Manager

6:35-7:00

Weed Identification and Control in Pastures Quintin Johnson, University of Delaware Cooperative Extension

7:00-7:15

Update on Natural Resource Conservation District Programs Brooke Jones, NRCS District Conservationist

7:15-7:35

Integrated Pest Management in a Pasture Setting Bill Cissel, University of Delaware Cooperative Extension

7:35-7:50

Choosing the Right Fence Charger for your Operation

Dan Severson, University of Delaware Cooperative Extension

7:50-8:00

Wrap up and Evaluations

Dan Severson, University of Delaware Cooperative Extension

To register or request more information, please call our office at (302) 831-2506. Mark your Calendar and call to register by Friday, September 1!

Thank you and see you there. Dan Severson, Susan Garey

New Castle County Fall Equine Program

October 10, 2017 New Castle County Extension Office 461 Wyoming Road Newark, DE 19716

6: 00 p.m. Global Worming: How to Prevent Dewormer Meltdown in the 21st Century

Dr. Rose D. Nolen-Walston, University of Pennsylvania School of Veterinary Medicine

6:40 p.m. New Castle County Conservation District Programs for Equine Operations

Mr. Kevin Donnelly, New Castle Conservation District Coordinator

6:55 p.m. Break

7:05 p.m. **Preparing Your Pasture for Winter: Fall Fertilization and Weed Control**

Ms. Susan Garey, University of Delaware Cooperative Extension

7:30 p.m. **Preparing an Animal Waste Management Plan for Your Farm**

Ms. Sydney Riggi, University of Delaware Cooperative Extension

7:55 p.m. Paperwork

8:00 p.m. Adjourn

Nutrient Management CEUs are pending

DSU Woodland Workshop Series

Please register for any or all of these workshops by contacting Megan (302) 857-6438 or emailing <u>mpleasanton@desu.edu</u>. (Please note that these workshops are not all at the same location.) You must register to attend these free workshops.

Chainsaw 101

Saturday, September 23 10:00 a.m. – noon 915 Kenton Rd. Dover DE 19904

This workshop will show you the do's and don'ts when it comes to chainsaw operations. You will learn safety tips as well as general chainsaw maintenance techniques. The class will be taught by Sam Topper from the Delaware Department of Agriculture's Forest Service.

Selecting and Harvesting Firewood

Thursday, October 26 3:00 – 5:00 p.m. 142 Simmental Meadows Ln, Marydel, DE

During this workshop, you will learn what trees to choose for harvest and which to let grow. You will also learn techniques for harvesting and selecting firewood for sale. This class will be taught by a Delaware Department of Agriculture Forest Service Representative.

Tree Trimming

Thursday, November 9 10:00 – noon 884 Smyrna Leipsic Rd, Smyrna DE 19977

This workshop will teach you the importance of proper tree trimming. The first half of the class will be instructions on how to make a proper cut and the second part will be a demonstration outside.

Building Wood Duck Boxes

Thursday, December 14 6:00 -8:00 p.m. 884 Smyrna Leipsic Rd Smyrna DE 19977

Build them and they will come. During this session you will learn the importance of wood ducks and why we should promote the species. You will be able to build and prepare a wood duck box and take it home with you free of charge.

Small Ruminant Field Day: Reproduction

Saturday, September 16, 2017 9:00 a.m. – 3:00 p.m. DSU Hickory Hill Farm 2065 Seven Hickories Rd, Dover, DE 19904 Registration: 9:00 - 10:00am Program: 10:00am - 3:00pm Cost: \$15 (Lunch included)

AGENDA

Morning Session

Basic Small Animal Reproduction Reproduction: Pros and Cons of AI Nutrition: Basics for Small Ruminants Buck and Ram Selection & Management

<u>Afternoon Session</u> (1 hour each, pick 2) Pasture Walk Mobile Meat Processing Lab Hoof Trimming

Register using the link below by September 2, 2017 https://www.surveymonkey.com/r/HZPQW3K

To request more information or for assistance due to disabilities, contact:

Kwame Matthews, Ph.D. - 302-857-6540, kmatthews@udel.edu

Susan Garey - 302-730-4000, <u>truehart@udel.edu</u>

Dan Severson - 302-831-8860, severson@udel.edu

Large Animal Emergency Rescue Training

October 7 or 8, 2017 8:00 a.m. – 4:00 p.m. University of Delaware Equine Science Program UD Webb Farm, Farm Road, Newark

Do you know what to do in a large animal emergency? Are you prepared with equipment, know who to call, what to do? Whether you are a public safety official, a first responder, a veterinary professional, or an equestrian, this course is essential to prepare you for an emergency. You will learn how to move large animals safely and quickly in cases of disaster or injury, while preventing potential injuries to the humans involved. The course offers classroom instruction and hands-on scenarios using our specialized equipment and equipment that may be readily available to first responder departments.

A one-day clinic is being offered to educate first responders, horse owners or anyone interested in learning basic large animal rescue techniques instructed by Roger Lauze, the Equine Rescue and Training Coordinator for MSPCA. Fair Hill NRMA's new rescue trailer, donated by the Volunteer Mounted Patrol, will be utilized for the training. The cost for the full day of training is \$10 per person. Please bring your own lunch and drinks.

Registration is limited to 40 participants per day so please register early. Dress appropriately for the weather as you will be hands on after classroom work. Please bring leather gloves and safety helmet.

For more information, contact Amy Biddle, Department of Animal and Food Sciences, <u>asbiddle@udel.edu</u> or (302) 831-2642.

To register mail or email **registration form** to Amy Biddle. Pre-registration must be received by September 30, 2017 <u>https://cdn.extension.udel.edu/wp-</u> <u>content/uploads/sites/12/2017/08/25133805/LAERTfor</u> <u>m2017.pdf</u>

Cut Flower Tour on the Eastern Shore

Tuesday, September 12, 2017

Commercial Cut Flower Farm Tours at:

Honeybee Farm

Cordova, MD Smokey Cat Lavender Farm Federalsburg, MD Seaberry Farm Federalsburg, MD

Lunch and short Extension talks are part of the afternoon session at Seaberry Farm. For details of the program, get the brochure at https://extension.umd.edu/files/docs/programs/ipmnet/17Sep12C.pdf

Cost is \$30 before September 8th; \$35 after this date. Lunch is not guaranteed after September 8th. Please note that no refunds will be given after September 8, 2017.

For more information on the program: (301) 596-9413 or sklick@umd.edu

Organized by University of Maryland

Delaware Beekeepers Association's Open Hive Event

Saturday, September 23, 2017 8:30 a.m. – 12:00 p.m. Delaware State University Outreach and Research Center 884 Smyrna-Leipsic Road Smyrna, DE 19977

Please join us for educational lectures, demonstrations and a first-hand look inside a real honeybee hive. Get your first exposure to these important and fascinating insects!

(Rain Date September 24, 2017)

RSVP: Kathy Hossler, DBA President, <u>dbapresidenthossler@gmail.com</u>

Or for more information about DSU's beekeeping program, contact Jason Challandes, <u>jchallandes@desu.edu</u> or 302-388-2241

Cooperative Extension Education in Agriculture, 4-H and Home Economics, Delaware State University, University of Delaware and United States Department of Agriculture cooperating, Dr. Dyremple B. Marsh, Dean and Administrator. It is the policy of Delaware Cooperative Extension that no person shall be subjected to discrimination on the grounds of race, color, sex, disability, age, or national origin.

2017 Dickeya and Pectobacterium Summit November 9, 2017

The Potato Association of America meetings were held last week in Fargo, ND. Interesting items of note were:

• Scottish scientists (including Ian Toth and Gerry Saddler) recommend regulating *Dickeya dianthicola* as A2 quarantine pest. They also recommend a zero tolerance for all Dickeya spp. on potatoes in Scotland.

• Work from North Dakota and Maine presented changes in dormant tuber tests that increased Dickeya recovery (reduced the false negatives) by as much as 30 percent.

• There is a new Pectobacterium species reported from Maine that affects plants in the field and tubers in storage.

• There may be some progress in chemical control of the pathogens (and NO, it is not phosphorous acid, Tanos, or anything else applied to the foliage!!!)

Sound interesting? Valuable? These, and other speakers will all be presenting on these and other topics at the Dickeya and Pectobacterium summit in Bangor on November 9, 2017.

This is an opportunity to hear the latest information that you, as a grower, need to know about these pathogens and diseases.

There is still room at the upcoming Dickeya and Pectobacterium Summit:

https://extension.umaine.edu/agriculture/programs/dick eya-and-pectobacterium-summit/

Weather Summary

Carvel Research and Education Center Georgetown, DE

Week of August 24 to August 30, 2017

Readings Taken from Midnight to Midnight

Rainfall:

1.41 inch: August 29

Air Temperature:

Highs ranged from 82°F on August 24 to 69°F on August 29.

Lows ranged from 65°F on August 29 to 56°F on August 28.

Soil Temperature:

75.2°F average

Additional Delaware weather data is available at <u>http://deos.udel.edu/</u>

Weekly Crop Update is compiled and edited by Emmalea Ernest, Associate Scientist - Vegetable Crops with assistance from Don Seifrit.

University of Delaware Cooperative Extension in accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Reference to commercial products or trade names does not imply endorsement by University of Delaware Cooperative Extension or bias against those not mentioned.