Vegetable Crops

Vegetable Crop Insect Scouting - David Owens, Extension Entomologist, owensd@udel.edu

Cucurbits
Continue scouting for squash bugs and aphids in fields treated earlier for squash bug or squash vine borer. Check under leaves for egg masses or for young nymphs. Treatment thresholds are one egg mass per plant, and to wait to spray until eggs hatch. Of course, if you see an egg mass’ worth of nymphs running around, you may want to spray them.

Lima Beans
Scout for soybean looper. Unlike in soybean, loopers will eat small lima bean pods in addition to foliage. Corn earworm may also be present in fields. Moth counts have been high recently and the most attractive places for moths to visit now are fields with flowers. Pyrethroids will not provide adequate control of either species. Lannate, Radiant, Avaunt eVo, Intrepid and diamide containing products such as Coragen, Exirel, and Besiege should do well against earworms. Diamides though can be less consistent with loopers. The earworm threshold is 1 larva per 6 row ft. Soybean looper probably should be included in this threshold as well.

Sweet Corn
Moth counts are very high. We have completed our vial bioassays for 2020. Most recently, we have tested 55 moths and have had 35% survive cypermethrin. You should not rely on pyrethroids alone in a spray program. At some point next week, temperatures are forecast to dip below 82 degrees, meaning it would take eggs 3 days to hatch. Spray schedules should be tightened a day when temperatures are above this mark and can be a ‘normal schedule’ when temperatures cool.

Thursday trap capture is as follows:

<table>
<thead>
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<th>Trap Location</th>
<th>BLT - CEW</th>
<th>Pheromone CEW</th>
</tr>
</thead>
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<tr>
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<td>Rising Sun</td>
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<tr>
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<tr>
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<td>Millsboro</td>
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</tr>
</tbody>
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Planting Small Grains for Spring Vegetable Windbreaks - Gordon Johnson, Extension Vegetable & Fruit Specialist; gcjohn@udel.edu

Small grain windbreaks are a useful tool when planting early warm season vegetables such as watermelons or tomatoes the following spring. Small grain crops planted in early fall will...
overwinter and then elongate and head in the spring. Depending on the crop used and when they were planted in the fall, they can reach 3-5 feet in height by the end of April. Small grain windbreaks serve two main functions: 1) they provide protection against wind that can desiccate or physically injure transplants and young plants and reduce sandblasting in sandy soils and 2) they help retain heat by reducing convective heat losses of wind passing over plant beds. Small grain windbreaks are particularly useful where vegetables are grown on plastic mulch. They also can serve as a winter cover crop.

Rye has been the preferred windbreak because tall types are still available and it elongates early in the spring. While barley is also early, tall varieties are not generally available. Wheat and triticale are intermediate and later.

Windbreaks are planted in every drive row, between every 2-3 beds or between every bed. Maximum protection and earliness are achieved when windbreaks are used between each bed and black plastic mulch is used for beds. Orientation of windbreaks so they are planted East-West is preferred to reduce shading.

Setting up windbreaks can be done in several ways. A simple method is to plant the field solid with the small grain and then till planting strips using a narrow tillage device (tractor mounted rototiller or multiple passes with a narrow field cultivator) in the spring before it puts on much growth. Tilling bed strips is best done in March. Alternatively, a non-selective herbicide can be used to kill strips in the late winter or early spring and then tilled later. Another method is to set up grain drills to plant 2 or 3 rows of small grain and then block the seed meters to skip the area where the beds will be in the spring. This allows more flexibility in the spring for tilling beds because there is less vegetation to manage. A third method we have tried in demonstrations at our UD Georgetown research station is to plant bed areas with a winter killed cover crop and then rye in the windbreak areas. This is done by dividing up and blocking certain seed meters on the drill. We use a drill with both small grain seed box and a small seed box. We plant forage radish with the small seed box in the area we want to have the bed and block of the other seed meters and do the opposite for the rye in the larger seed box.

It is best to plant windbreaks earlier in the fall to get good fall tillering. The last week in September or first week in October is ideal for most of Delaware and mid to upper Delmarva. Rye can be planted later but will then be delayed in the spring by several days and tillering may be reduced. You should plant at standard rates or higher (120 lbs/acre equivalent or more) for the most effective windbreaks. Higher seeding rates should be considered when planting late.

Feeding Damage by Blister Beetles - Jerry Brust, IPM Vegetable Specialist, University of Maryland; jbrust@umd.edu

Normally at this time of year when I talk about any insect problems in crucifers I talk about harlequin bugs that feed by sucking out plant juices and inject toxins into the plant. But I have seen several fields and even some high tunnels with blister beetles feeding and defoliating several different vegetables such as tomato (including the fruit), leafy greens, crucifers, spinach and especially swiss chard (Fig. 1). Blister beetles begin feeding on the edges of leaves eventually leaving only stems (Fig. 1). The presence of blister beetles now is not unusual as they are often found in large clusters in late summer-early fall. They can arrive in large groups, seemingly overnight and can do a great deal of damage in a short period of time.

Adults are large, oblong beetles with relatively large heads, long ‘necks’ and usually with some stripes (but not always) (Fig. 2). Striped blister beetles are shades of gray or brown with yellow stripes running lengthwise on their wing covers (Fig. 2B). The ash-gray blister beetle is gray, the black blister is completely black, and the margined blister beetle is black with a grayish band around the edge of each wing cover (Fig. 2A). Blister beetle abdomens usually extend past their leathery wings. Striped blister beetles hide beneath plants during the hotter periods of the day, becoming active when temperatures are more suitable for them. If disturbed when on plants beetles will immediately fall to the
ground and run. Adults begin laying eggs in late spring or early summer and continue through most of the season. A female can lay one to two hundred eggs just beneath the soil surface and eggs hatch within a couple of weeks.

If you look up blister beetles most of the literature deals with the beetles as a threat to horses and livestock. The beetles secrete and contain within them a blistering agent called cantharidin. Cantharidin is toxic if ingested and it persists in beetles long after they are dead. Humans who ingest the beetle can suffer severe damage to the urinary tract and gastrointestinal lining.

Pyrethroids can be used to control blister beetles on most vegetable crops. Pyrethroids will reduce the damage, but there is often a 7-day pre-harvest interval (phi) with some of the chemicals depending on what the crop is. So be sure to check the label to find the correct phi for the particular product you are using on the particular crop you are using it on. It should be noted that once established, beetles are difficult to eliminate completely.

Organic growers have an even more arduous task of managing them. Row covers will keep this pest as well as harlequin bugs off your plants. However, if row covers are not used then I often see diatomaceous earth (DE) recommended for beetle control. If it rains DE does not work very well and overall, I have not had much luck with it controlling the beetles. Spinosad alone or mixed with other products such as neem or kaolin clay have been found to reduce feeding damage in 24-48 hours. Having large numbers of grasshoppers near your vegetable fields over the years can increase blister beetle numbers greatly in the general area because the larvae feed on grasshopper eggs.
COVID-19 Safety Tips for Agritourism Operations - Michelle Infante-Casella, Agriculture & Natural Resources Agent, Gloucester Co., NJ, Rutgers University, minfante@njaes.rutgers.edu

This article was originally published in the Rutgers Plant and Pest Advisory https://plant-pest-advisory.rutgers.edu/covid-19-safety-tips-for-agritourism-operations/

Continued community transmission of COVID-19 presents challenges to many businesses, including on-farm agritourism operations. The Rutgers Cooperative Extension Agritourism Working Group developed farm assessment resources titled, Considerations for Agritourism Operations During the COVID-19 Pandemic, to assist producers with agritourism activities as part of their on-farm marketing strategies. Considerations listed are designed to help operators evaluate business and management strategies that align with State executive orders and federal/state/local safety guidelines enacted to reduce possible transmission of COVID-19.

Key considerations include:

● Remain apprised of/and compliant with executive orders issued by the Governor to reduce COVID-19 transmission, including those establishing limits on public indoor and outdoor gatherings, as well as requirements for face coverings and social distancing;

● Monitor guidelines issued by the Centers for Disease Control and Prevention (CDC) and State/local authorities to reduce community transmission of COVID-19;

● Clearly communicate farm rules and visitor expectations—prior to arrival and during farm visits—through website and social media posts, promotional materials, staff instruction, and farm signage;

● Ensure that all farm staff undertake a daily screening for symptoms of COVID-19 and avoid coming to work if they are symptomatic, have tested positive for the virus, or have been in close contact with anyone who has tested positive for COVID-19;

● Train employees on all personal and farm safety protocols developed to minimize risks of COVID-19 transmission;

● Organize agritourism activities and manage visitor flows to maintain adequate social distancing on the farm. This includes carefully evaluating farm/attraction capacity limits, identifying areas of anticipated high visitor volume (e.g., parking areas, restrooms, sales areas, foodservice, attraction entrances and exiting areas, etc.), and taking measures to reduce pedestrian “bottlenecks,” large congregations, and cross-flow contact when guests are entering/leaving areas;

● Instruct employees and visitors to wear appropriate face coverings;

● Provide adequate and appropriately stocked/maintained hand washing and hand sanitizer stations in key areas (e.g., sales areas, outside restroom facilities, foodservice areas, key thoroughfares, entrances/exits, etc.);

● Establish regular cleaning and disinfection procedures for frequently touched surfaces or objects;

● Construct physical barriers, if needed, to reduce potential contacts between staff and visitors (e.g., Plexiglass partitions in sales areas);

● Explore options for pre-registration to control visitor volumes and pre-payment or touchless payment options to reduce contact between staff and visitors; and

● Discourage unnecessary customer handling of farm products prior to purchase.

This resource and other tools to help agritourism operators evaluate and strengthen the management of their operations, identify safety concerns and manage liability are available at the New Jersey Agricultural Experiment Station’s agritourism resource site: http://agritourism.rutgers.edu/training/
Fruit Crops

Watch for Mites Before and After Planting

Strawberries - Kelly Hamby, Associate Professor and Extension Specialist, Department of Entomology, University of Maryland, kahamby@umd.edu

Cyclamen mites (Phytonemus pallidus) and spider mites (usually twospotted spider mites, Tetranychus urticae) can become a problem soon after planting in strawberries. Because these mites may come into fields on contaminated transplants, transplants should be carefully inspected for mites before planting. If conditions are favorable, mite numbers can rapidly increase to levels of concern.

Cyclamen mites are very rarely a problem for Mid-Atlantic strawberries. They overwinter as adult females in the crown of the plant and are usually found along the midvein of young leaves that are starting to unfold. They are not visible to the naked eye and require 20x magnification by a hand lens or dissecting microscope to see (Figure 1). Heavily infested leaves become stunted and crinkled (Figure 2). It is difficult to manage cyclamen mites, so planting transplants that are free of mites is critical.

Spider mites (Figure 3) are much more common, and are particularly favored by hot, dry weather. Inspect transplants for spider mites prior to planting, and also scout fields a few weeks after planting by selecting a random sample of at least 10 leaflets per acre to count mites on the underside of leaves. Plants can be treated before or after transplant if mites are found. Twospotted spider mite feeding is particularly damaging in the first 2 to 5 months following transplanting. Therefore, treatment is recommended if early spring populations reach 5 or more mites per leaflet (1/3 of a leaf).

Tolerance to mite damage increases as the plants begin to fruit. Practices that favor vigorous plants, such as vernalization of transplants and appropriate fertilization (excessive nitrogen favors spider mite outbreaks) minimizes damage from spider mites.
mites and an egg are circled. Orange mites are nonreproducing overwintering females.

References and Further Resources:

Agronomic Crops

Agronomic Crop Insect Scouting - David Owens, Extension Entomologist, owensd@udel.edu

Hemp
Corn earworm can be found in flower buds. EPA has approved a couple of products that have worm efficacy: Gemstar, Surtivo Ultra, Crymax and Spear Lep. The first two products are viruses. They are most effective on small larvae, and are sensitive to UV light, so if you use them, spray late in the day. Spear Lep’s label requires the addition of a low rate of B.t.k (like Crymax) for efficacy. Bt is going to be most effective on small worms, 3rd instar or smaller. Use a good amount of water carrier and pressure to reach the worms that are hiding in and underneath of flowers. The full list of EPA approved insecticides for hemp can be found here: https://www.epa.gov/pesticide-registration/pesticide-products-registered-use-hemp

Soybeans
Continue scouting for defoliators, podworms, and stink bugs. Defoliator thresholds are 10-20% defoliation through R6, the full pod stage. While most defoliators present are green cloverworm, soybean loopers are widely present. Green cloverworm tends to feed in the upper canopy, but soybean loopers tend to start in the middle canopy, so be sure to push plants back to assess the entire canopy. Green cloverworm can be controlled by pyrethroids, while soybean looper cannot. Although earworms have been relatively quiet, continue scouting double crop fields for them. Double crop fields may still have flowers present, which is going to attract egg laying females. I was putting in some ballpark figures for earworm thresholds in NCSU’s calculator: https://www.ces.ncsu.edu/wp-content/uploads/2017/08/CEW-calculator-v0.006.html) and it looks like 1.75 to 2.5 earworm in 15 sweeps will justify a treatment.

Sorghum
Several sorghum fields we have been looking at are moving into the hard dough stage. This is good. These fields should be safe from sugarcane aphid yield damage. As these fields dry down, sugarcane aphids are going to leave them. Scout any late fields! This aphid can reproduce extremely quickly and natural enemies often do not keep up, especially in fields that did not have corn leaf aphid prior to flowering. Thresholds for flowering sorghum to soft dough are 30% infested plants with honeydew present in localized areas. The latest fields may exceed that threshold. The only two effective products are Transform and Sivanto. Sivanto can be applied at 4 fl oz per acre, Transform at 0.75 oz.

Corn Disease Update - Alyssa Koehler, Extension Field Crops Pathologist; akoehler@udel.edu

We are reaching the end of the season and past the point that new foliar lesions should be detracting from corn yields. However, I did want
to update that a new corn disease has made an appearance across many fields in Sussex County over the past week. I have been observing lesions in the upper canopy that resemble young grey leaf spot lesions, but when the leaf is flipped over and held up to the light, a gray center, prominent margin, and yellow halo can be observed (Figure 1). Under the microscope we observed crescent shaped spores characteristic of the pathogen that causes Curvularia leaf spot (Figure 2). The range of Curvularia leaf spot in the US has been expanding in recent years. While there have not been any reports of extreme yield loss from Curvularia in the US, the impact of this disease is not yet fully understood. We will work with this pathogen in the lab to molecularly verify species and conduct greenhouse inoculation screenings this winter. Curvularia leaf spot starts as small tan lesions. These lesions have a brown/maroon border often surrounded by a yellow halo that is particularly noticeable with back lighting (Figure 3). Symptoms can be observed at any stage, but I did not start observing this disease until R4/R5 in the fields I have scouted. We will continue to keep an eye on this disease for the 2021 growing season and care should be taken to not confuse these lesions with young grey leaf spot. Data from other states has shown fungicides to lack efficacy for Curvularia leaf spot and there are not currently any fungicides that list Curvularia on their label. Excessive dew and sporadic rainfall favor the development of this disease.

Figure 1. Corn leaves with grey leaf spot and Curvularia leaf spot. Left image top side of leaf, right image underside backlit with sun.
Figure 2: Spores of Curvularia leaf spot pathogen

General

Guess the Pest! Week 21 Answer: Palmer Amaranth - David Owens, Extension Entomologist, owensd@udel.edu

Congratulations to Bob Leiby and Claire, among many others, for correctly identifying the photo as Palmer amaranth. This was one of the most-guessed quizzes on the year. Obviously it stirs quite a bit of hatred. But I did want last week to be a bit more light-hearted. How? The photo is of a male Palmer on the left and a female Palmer on the right. The female is bad news. The male Palmer is one of the only pollen sources around for honeybees right now, (at least until goldenrod, boneset, and asters are in bloom), and this plant had dozens of bees collecting it. Bees do not visit female plants. So as I was trimming the Palmer down in my watermelon field so I could spray bugs and keep the farm manager happy, I tried to leave a few of the male Palmer. The female in the photo got whacked. Remember, Save the bees! Save the weeds!
Guess the Pest! Week 22 - David Owens, Extension Entomologist, owensd@udel.edu

This week, we started harvesting our late tomato trial to evaluate insect injury. We came across a tomato that doesn’t seem to quite fit what we expect out of bug injury. Besides the cracking, what is causing this these round brown damage areas?

https://docs.google.com/forms/d/e/1FAIpQLSfU PYLZnTRsol46hXmqqj8fvt5f8- JI0eEUHb3QJaNDLG_4kg/viewform?c=0&w=1

Announcements

Fall Pasture Management Webinar
Wednesday, September 9, 2020   8:00-10:00 p.m.
Online

While summer may be almost over and the main grazing season is concluding, the fall is one of the best times of the year to evaluate the condition of your pastures and complete some pasture management tasks that will pay dividends the next grazing season. Join Dr. Jarrod Miller, Extension Agronomy Specialist and Susan Garey, Extension Agent Animal Science for the University of Delaware for the final program in our Webinar Wednesday Pasture and Hay series as we discuss topics such as assessing your pasture, fall fertility and soil testing, overseeding, stockpiling of forage, weed control and grazing management going into winter. Spend some time now before it gets cold preparing your pasture for spring growth. Delaware nutrient management continuing education credits are available for this webinar.

Register online at: https://www.pcsreg.com/fall-pasture-management-by-zoom Registration is free but required to receive the Zoom link.

Sponsored by Delaware Cooperative Extension, a joint effort between Delaware State University and the University of Delaware

Extension302 Podcast

Episode 8: Optimize your health during quarantine!

Have you stopped working out and eating well during quarantine? UD Family and Consumer Science Extension Agents, Gina Crist and Diane Oliver, share their tips and tricks to maintaining your health when your usual routine is disrupted.

To listen, go to:
https://www.udel.edu/academics/colleges/canr/cooperative-extension/about/podcast/
Future Harvest Beginner Farmer Training Program Accepting Applications

Future Harvest is now accepting applications for its 2021 Beginner Farmer Training Program (BFTP) which provides free, year-long training in sustainable agriculture to the next generation of Chesapeake region farmers.

The Beginner Farmer Training Program combines a comprehensive classroom curriculum with hands-on learning at some of the region’s most successful farms that employ practices that are profitable, protect land and water, and build healthy communities. It offers three tailored levels of training designed to meet the needs of beginning farmers at different stages in their careers, from entry-level to advanced. Each level is designed with scheduling flexibility to allow new farmers to further their training while maintaining their own farms or other work, and to facilitate the need for one-on-one guidance and mentorship. The program serves new farmers in urban, suburban, and rural settings, across the Chesapeake region: MD, VA, DC, WV, and DE.

To make the program accessible to a broad range of aspiring farmers, enrollment in the BFTP is free. Trainees receive a host of additional benefits: a complimentary annual Future Harvest membership and free access to field days throughout the year, online and in-person classroom series, and admission to the organization's annual winter conference.

The deadline for applications is Friday, October 16, 2020. There are a limited number of spots available (due to 2020 trainees returning to complete programming that was interrupted by Covid), so applicants are encouraged to include as much detailed information about themselves and their farming interests and experiences as possible.

Further application information can be found at www.futureharvestcasa.org. For questions about the program or application process, please contact BFTP Director, Sarah Sohn: sarah@futureharvestcasa.org

Weather Summary

Carvel Research and Education Center Georgetown, DE

Week of August 20 to August 26, 2020

Rainfall:
0.01 inch: August 20
0.08 inch: August 22

Air Temperature:
Highs ranged from 89°F on August 24 and August 25 to 80°F on August 20.
Lows ranged from 74°F on August 24 to 61°F on August 21.

Soil Temperature:
79.5°F average

Additional Delaware weather data is available at http://www.deos.udel.edu/data/

Weekly Crop Update is compiled and edited by Emmalea Ernest, Associate Scientist - Vegetable Crops. Aisha Hoggard assists with web posting.

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