WEEKLY CROP UPDATE
UNIVERSITY OF DELAWARE COOPERATIVE EXTENSION

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Vegetable Crops

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

Peppers
Continue scouting your peppers for beet armyworm and other fruit feeding worms.

Cucurbits
Continue scouting for worms that could damage rinds. Beet armyworm are active in my melons at Carvel, as well as second generation cucumber beetle. Diamides like Exirel or Harvanta are excellent worm products and will stop cucumber beetles from feeding for a time. Continue scouting pumpkins for aphids. While there are no established thresholds for aphids, if you start seeing honeydew on plastic or on fruit and beneficial insect activity is low, you may want to consider a treatment. Aphids also transmit several mosaic viruses which can cause fruit to have unusual skin features or texture as well as green splotches.

Sweet Corn
It is finally starting to cool down, if the 10-day forecast is to be believed. Spray schedules will not have to be tightened due to temperatures. This past week, we harvested sweet corn at Carvel and had a fair number of fall armyworm in ears in addition to corn earworm. The moth lays eggs on foliage as well as the silks, and larvae developing as the tassel gets pushed out will go to the ear. Be sure to scout tassel-push corn carefully. Fall armyworm is also difficult to control with pyrethroids, just like corn earworm. Earworm trap counts have fallen in most locations, but do not relax your guard, especially if you have silking corn. Thursday trap captures are as follows:

Trap Location	BLT – CEW	Pheromone CEW
	3 nights total catch	
Dover	1	77
Harrington	1	21
Milford	1	102
Rising Sun	1	67
Wyoming	0	56
Bridgeville	1	55
Concord	2	36
Georgetown	0	37
Greenwood	1	
Laurel	2	71
Seaford	2	8
Millsboro	7	31

Spinach
Beet webworm is active. Up until now it has largely been feeding on pigweeds. Spinach is in the same plant family and moths find it just as attractive for oviposition. The same goes for beet armyworm. Bt products can be used if worms are small. Keep in mind they have very short residual activity. Radiant, Proclaim, Avaunt, Intrepid and diamides like Coragen, Exirel and Harvanta are all labeled for the worm complex. Intrepid is a growth regulator and should target small worms. Diamides will cause rapid feeding cessation. Diamides and Radiant

may also help with leafminers, while the diamides (except Coragen) are also labeled for aphids.

General
Pennsylvania has been dealing with extremely high populations of yellow striped armyworm recently. While this worm does not seem to be as active in southern Delaware as usual, folks in Kent and New Castle may want to keep a sharp eye out for them. They feed on a wide array of crops, but are often found in tomatoes. I have also had them destroy cabbage transplants set out to harden off.

Soil Pests a Problem in Sweet Potatoes

– *Jerry Brust, IPM Vegetable Specialist, University of Maryland*; jbrust@umd.edu

Samples of sweet potatoes from southern Maryland and the Eastern Shore have shown feeding damage from either wireworms or white grubs. Wireworms bore shallow holes into the surface of sweet potato roots. Multiple species of wireworm can attack sweet potato. Wireworms are the immatures of click beetles and are cylindrical, yellowish-orange with brown heads and tail. They are smooth and relatively hard. Final instar wireworms are generally 1/2 to 3/4 of an inch long. The adults, which do not feed on sweet potato are small to medium sized beetles that are flat and reddish-brown to dark-brown. Wireworms produce small 1/8-inch circular holes in the roots (Fig. 1). Because the immature stage can last two or more years in the soil; if you have a wireworm problem now you will probably have it in the coming year in that field. To know whether or not you have wireworms in a new field you can screen for them in the fall or early spring using bait stations (a mixture of corn and wheat) placed in the soil 3 to 4 inches deep and removed and inspected for larvae 10 to 14 days later.

White grubs are the immature stages of May and June beetles. White grubs bore large shallow holes into sweet potato roots that result in large feeding sites of half an inch or more in diameter (Fig. 2). Grubs are relatively large (up to 1 inch), dirty white, C-shaped larvae with brown head capsules and three pairs of true legs near the head and no prolegs. These pests overwinter in the soil. Adults are active primarily in May and June and lay eggs in the soil with a preference for grasses, pastures, or weedy fields. White grub larvae can be present in the soil prior to planting if you plant into fields that are high in organic matter or were weedy.

Of course there is nothing to be done now about controlling the damage. Because these soil pests can be so long lived in the damaging stage, how extensive the feeding damage is in an area and how large of an area is damaged will need to be noted. Large damage areas or extensive feeding damage to small areas will mean not to go back into this field for a couple of years with sweet potatoes. If other fields are of concern the bait stations can be used to see if insecticides are needed in the field for the next sweet potato crop. Control of wireworms and white grubs that are present in a field that is going into sweet potato is through the use of soil-applied insecticides before or during planting. The 2020-2021 Mid-Atlantic Commercial Vegetable Production Recommendations guide has instructions on these treatments.

Figure 1. Wireworm damage to sweet potato

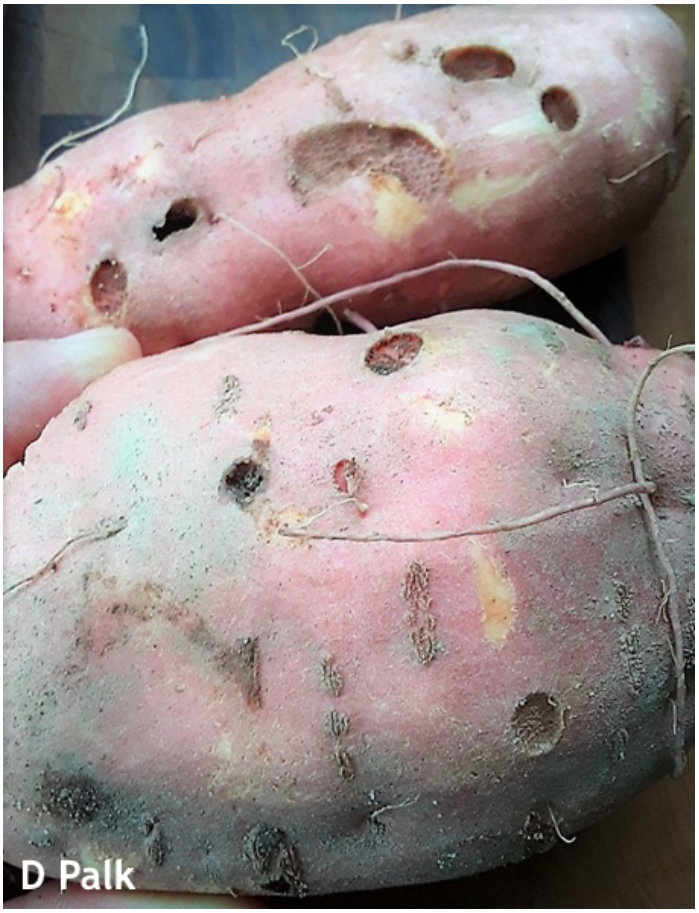


Figure 2. White grub feeding damage to sweet potato

Fruit Crops

Strawberry Plasticulture Plug Planting: Ways to Increase Chances for Success - *Kathy Demchak, Sr. Extension Associate, Penn State Univ; Dr. Mahfuzur Rahman, Assoc. Professor and Plant Pathology Extension Specialist, West Virginia Univ.; and Bob Rouse, Emeritus Faculty and former Fruit and Vegetable Specialist, Univ. of Maryland*

The plant material used to make strawberry plug plants is usually well-traveled by the time it gets to your fruit production farm. Chances are it has been in situations where it could "pick up some unwanted things" along the way.

The propagation process involves growing mother plants in open fields or nurseries to multiply them and/or produce tips through runnering. During this time plants are exposed to pests and diseases from the surrounding environment. The step where plugs are produced from tips/cuttings is relatively short, requiring 4-6 weeks. Harvested runner tips are placed in clean plug trays filled with a soilless planting mix, and trays are then placed under intermittent mist, usually on the ground outdoors after covering it with horticultural landscape fabric. While new infection during the plug production stage is possible, the likelihood is relatively low. Thus, if the tips are pest and disease-free, plug plants are likely to be healthy, too. The plants are exposed to even more pests and pathogens after they get to your fruit production farm, not only from the soil in your field, but also from the surrounding landscape and crops and for an extended period of time. So, what can you do to help get your plantings off to a good start, and keep them as healthy as possible?

First, check your plants when you first get them to identify any problem plants. If any plants appear to be weak, cut through a few of them, and look for signs of discoloration in the crown. If crowns are still solid white, chances are that the problem was just drought stress. Reddish or reddish-brown tissue is an indication of anthracnose crown rot, phytophthora crown rot, or a Pestalotiopsis, a new "warm-weather" disease that we need to watch for, which can cause fruit to rot or leaf spots/blight in addition to crown rot.

For most of us, it is difficult to tell these diseases apart, but other symptoms may be present that can provide additional clues to assist in diagnosis. Keep in mind that if you are checking crowns in the spring, you will need to add "winter injury" to the list of the possibilities. Look for the presence of dark elongated sunken lesions on petioles and runner stems, which may indicate plants have an infection from the anthracnose fruit rot-causing fungus. If that infection spreads to the crown, you may see blackening of the crown after making a longitudinal cut. With Phytophthora, entire outer leaves are likely to turn brown and die as they would with severe drought stress. With Pestalotiopsis, which can also kill plants, rather non-descript leaf spots may be present; these

leaf symptoms can easily be confused with leaf blotch or Phomopsis leaf blight, but in general are less acutely V-shaped. This publication from the University of FL provides much more info along with photos of symptoms:

https://www.researchgate.net/publication/336813040_Is_Pestalotiopsis_a_new_threat_to_Florida_strawberry_production

Cultivar can also provide a clue as to which of the above diseases is most likely. 'Chandler' is especially susceptible to both anthracnose fruit rot and crown rot. If you have both 'Chandler' and 'Sweet Charlie', and 'Sweet Charlie' is more severely affected, consider Phytophthora as the likely culprit, as 'Sweet Charlie' is very susceptible if conditions are right for infection. Phytophthora has also been isolated from 'Flavorfest' crowns in the past. 'Sweet Charlie' was affected by Pestalotiopsis in other states, but we don't know the relative susceptibility of various cultivars.

All of this info together is not enough to serve as proof of which of these three crown-rotting diseases is present, but can provide a direction for stop-gap treatments you can take (see below) while you contact your supplier or an extension educator, or send a sample to a disease clinic for a more definite diagnosis. Due to the cryptic (asymptomatic) nature of anthracnose infections, your plant supplier may be unaware of any potentially infected plants; however, early communication may be helpful to both of you, and your supplier may have some suggestions for preventative measures you can take.

Second, avoid planting suspicious plants as much as possible. Often, it is a good idea to order 10% or so more plants than you actually need to avoid feeling the pressure to plant everything. Otherwise, you may pause and question whether you should put suspicious plants in the ground, and then plant them anyway. You can use any healthy extra plants later as replacements if needed. If you must use plants of questionable health, planting them in one corner of the field may facilitate taking special care of them. This is also less detrimental than having questionable plants scattered throughout the field where they can serve as potential sources of infection for surrounding healthy plants.

Third, while planting, make sure the planting depth is correct and soil is firmed around the crown. Make sure that anyone involved in planting understands this and its importance. The soil level should be at mid-crown. If the plant is too shallow and roots are showing, the roots will dry out and the plant won't grow well. If too deep, soil will cover the growing point and rots will set in. Have someone check plants that were set and correct any issues. Plants at the wrong depth or without good root-to-soil contact simply will not grow as well as they should.

Fourth, either immediately before or right after planting, trim off any dead or dying leaves or runners. Take note of any dark sunken lesions that may be present especially on runners and leaf petioles since this may be a sign of anthracnose organism(s). There are other causes of tissue death including leaves just getting shaded out while in trays, or runners or petioles getting pinched between trays or cooked if on the edge of a tray. However, if you notice these symptoms on plants in the center of a tray, a disease organism is a more likely cause.

Fifth, make any fungicide applications that are needed. In the past, we generally hadn't recommended Fall fungicide applications. However, the very hot temperatures this summer combined with the need to mist plants frequently resulted in conditions that were perfect for development of certain diseases. If phytophthora has been a problem in the past on your farm, or if you are growing varieties that may be susceptible to phytophthora, an application of mefenoxam (Ridomil Gold SL and others) or metalaxyl (MetaStar 2E) through the drip system 15 days after planting is warranted, as are follow-up foliar applications of fosetyl-Al (Aliette WDG) or a phosphite product (Phostrol, Prophyte, etc.) 2 to 3 weeks later.

If anthracnose crown rot or Pestalotiopsis is suspected, captan and Switch both have good efficacy, and should be applied 2 or 3 times during the fall being sure to get good coverage into the crown area. Quadris Top also has some

efficacy on Pestalotiopsis. As we are seeing more resistance in anthracnose population against QoIs (category 11 fungicides), it is logical not to use QoI products in the Fall, but you may reconsider that depending on the risk relative to potential infection on your plug plants. It is more important than ever to select your fungicide sprays wisely and rotate among chemistries to avoid control failure. Follow your state's regulations regarding whether products can be used for diseases that are not on the label as long as the use pattern is followed; some states (such as PA) allow this, while others do not.

Lastly, keep the plantings well-watered, and make sure your planting is protected from deer during the fall. Apparently 'Chandler' strawberry plants are one of the tastiest things around. In one of our variety trials, deer nibbled each of our 'Chandler' plots to nothing, passing by "eastern" varieties in the process.

With all of these steps in place (along with following other standard recommendations before and after planting), you will know you've done everything you could to get your planting off to a good start.

'Chandler' plug plants in nursery just prior to shipment.

Agronomic Crops

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

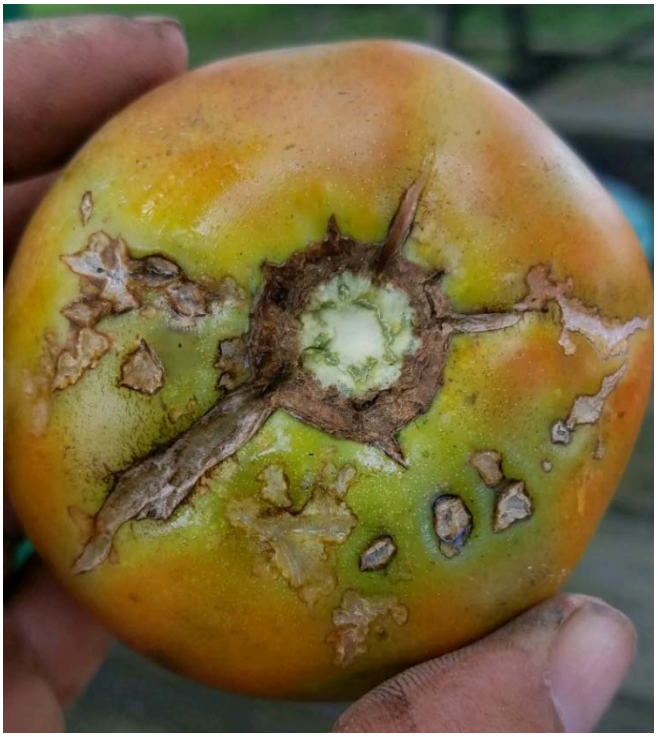
Sorghum
Continue scouting late sorghum for earworm and sugarcane aphid. Sugarcane aphid activity is high right now and a little bit earlier than last year. Fortunately, our September is forecast to be much cooler than last year's and soil moisture will help the plants tolerate more aphids than last year. There are two thresholds used for sugarcane aphid: 40 – 100 per leaf or 30% infested plants with localized areas of honeydew present. I only recommend Transform or Sivanto for sugarcane aphid. Sivanto can be applied at sub-label rates and still achieve excellent control.

Soybean
Continue scouting for corn earworm and stink bugs. Stink bug thresholds are 5 bugs per 15 sweeps. Thresholds for seed production or for edible soybean are half that of grain. Some double crop fields in a widely scattered area around Sussex and southern Kent had threshold levels of worms show up late last week. Most are still small, but a sizeable proportion are approaching medium size. Scout your double crop fields. If you have worms, they will be getting harder to control soon. While scouting for worms, take note of defoliation. R5 defoliation threshold is 15%. Green cloverworm activity took a hit recently due to diseases in the worms, but in some fields they are still abundant. Soybean looper continues to be active in fields, though I have not heard of any fields with large populations. Diamides are somewhat inconsistent with soybean looper. If you have both earworm and a few looper, products like Prevathon or Besiege may do well.

General

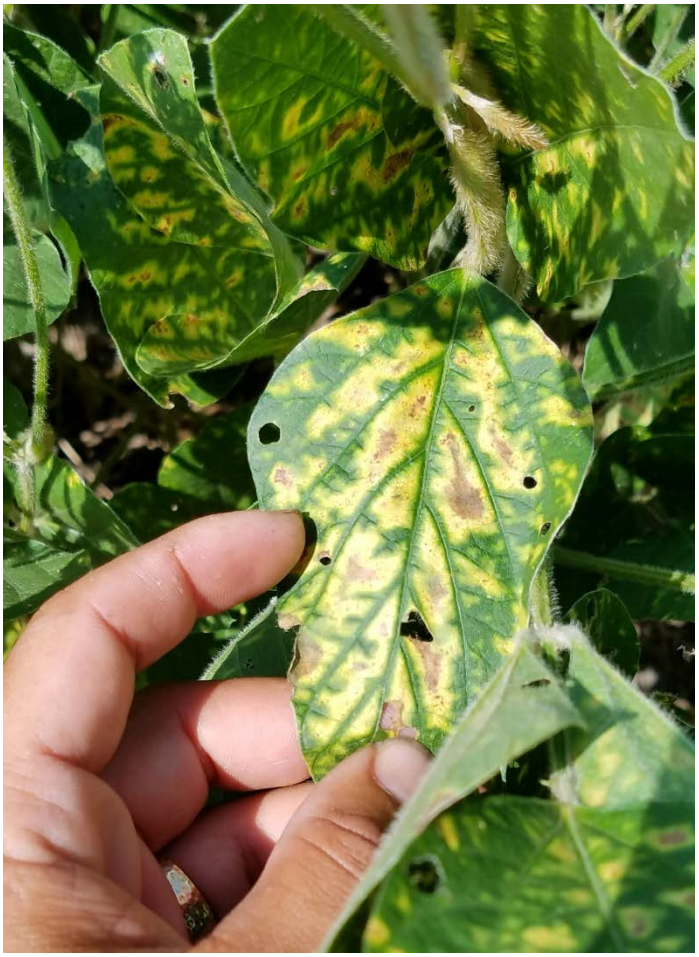
Guess the Pest! Week 22 Answer: Bacterial Spot – *David Owens, Extension Entomologist,* owensd@udel.edu

I apologize for not putting the photo of last week's pest picture on the google form. This one was tricky, and caused me to scratch my head for a bit because I wanted to call it worm damage (being from a worm trial and all) but worms tend to cause very regular round holes in fruit or, in the case of hornworm, large etching around the shoulder. Fortunately, Gordon was around to put me straight. The tomato damage was caused by bacterial spot, and it has been particularly bad recently. Dr. Jerry Brust wrote about bacterial spot in an earlier edition of the WCU this year: https://sites.udel.edu/weeklycropupdate/?p=15616.



Guess the Pest! Week 23 – *David Owens, Extension Entomologist,* owensd@udel.edu

While looking for soybean looper and earworm, you spot some foliage that just doesn't look right. It's too early for senescence. What might be going on here?



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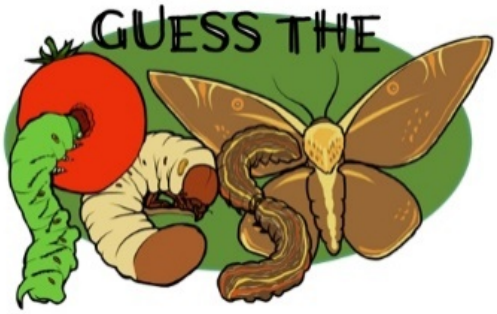

Announcements

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 27 to September 2, 2020

Rainfall:
0.23 inch: August 28 1.19 inch: August 29
Air Temperature:
Highs ranged from 92°F on August 27 to 79°F on August 30.
Lows ranged from 74°F on August 28 to 59°F on August 31.
Soil Temperature:
78.8°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.