Vegetable Crops

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

Sweet Corn
Spider mites occasionally cause problems in sweet corn, particularly if large numbers are developing on the ear leaf at the beginning of silking or earlier. There are no hard and fast thresholds for sweet corn. There are three options, the first is Zeal but it has a 21-day PHI. Oberon is another option with a shorter PHI, but it tends to be less effective against large populations. The third option is two applications of bifenthrin. Spider mites tend to be flared up by other pyrethroids, so caution is advised. At any rate, it is going to have very short residual and only work on mobiles, thus two applications would be necessary if it is going to blunt mites.

With frequent pyrethroid applications, watch out for aphids flaring up. Three species may be present. Other states are reporting high populations of corn leaf aphid, for which the inclusion of Lannate in a spray program can be helpful. CLA is rectangular and blue green. Bird cherry oat aphid is the second species that builds up in sweet corn, and while it is relatively easy to control in other corps, can be problematic in sweet corn. Melon aphids tend to be yellow and are much less susceptible to Lannate. Assail can be applied at low rates with a 1 d PHI or at its full sap beetle rate with a longer PHI. I personally recommend the full rate targeting sap beetles.

Watch out for fall armyworm in whorl stage and tassel push sweet corn. We recently evaluated a non-replicated strip trial 3 days after application. We examined up to 25 damaged whorls for armyworm presence, live worms, and dead worms. Assuming the percentage of damaged whorls was equal across all treatments at the time of application, Intrepid Edge and Avaunt were the best at reducing Fall armyworm, followed by Besiege, and last by Lannate + Warrior. Intrepid Edge can be used in silk sprays for corn earworm, but tank mix a pyrethroid with it!

Corn earworm populations in pheromone traps appear to be slightly lower than last week, but blacklight trap counts are a bit higher. One of our sites began catching high numbers in pheromone traps this week. With high temperatures, and an increase in pyrethroid challenge survivorship, consider tightening spray schedules a day following a pyrethroid application or following a heavy rainfall event. I do not think this tightening is necessary following a Besiege or an Elevest treatment. Over the last 5 seasons, Hero at its high rates have outperformed all other pyrethroids applied alone, followed by beta cyfluthrin and bifenthrin, with lambda cyhalothrin being the least effective pyrethroid (3-day spray schedules). You can read a short summary of spray trials and recommendations here:
A final note: locations with higher brown marmorated stink bug catches may be at risk for some stink bug injury. If you have experienced stink bug damage before or are near a location with higher brown marmorated stink bug injury, add bifenthrin in your spray rotation. I am including the blacklight stink bug captures below to illustrate this point, but these counts can be found on our website at Thursday trap captures are as follows: http://agdev.anr.udel.edu/trapsb/trap.php.

<table>
<thead>
<tr>
<th>Location</th>
<th>Blacklight Trap</th>
<th>Pheromone Trap</th>
<th>Green Stink Bug</th>
<th>Brown Stink Bug</th>
<th>Brown Marmorated</th>
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</thead>
<tbody>
<tr>
<td>Dover</td>
<td>2</td>
<td>32</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Harrington</td>
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<td>54</td>
<td>12</td>
<td>1</td>
<td>0</td>
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<tr>
<td>Milford</td>
<td>2</td>
<td>14</td>
<td>5</td>
<td>11</td>
<td>6</td>
</tr>
<tr>
<td>Rising Sun</td>
<td>3</td>
<td>43</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Wyoming</td>
<td>2</td>
<td>18</td>
<td>3</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Bridgeville</td>
<td>2</td>
<td>10</td>
<td>9</td>
<td>5</td>
<td>19</td>
</tr>
<tr>
<td>Concord</td>
<td>2</td>
<td>32 (M-W)</td>
<td>8</td>
<td>38</td>
<td>14</td>
</tr>
<tr>
<td>Georgetown</td>
<td>3</td>
<td>38</td>
<td>25</td>
<td>8</td>
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</tr>
<tr>
<td>Greenwood</td>
<td>1</td>
<td>56</td>
<td>141</td>
<td>65</td>
<td>22</td>
</tr>
<tr>
<td>Laurel</td>
<td>5</td>
<td>56</td>
<td>22</td>
<td>11</td>
<td>4</td>
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<tr>
<td>Whaleyville</td>
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<td>---</td>
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<td>66</td>
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<tr>
<td>Lewes</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>66</td>
<td></td>
</tr>
<tr>
<td>Newark</td>
<td>34</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Cucurbits**

Spider mites are still a threat given the hot weather. For crops expected to finish up by Labor Day, there are three options: do nothing, move bees off the field and treat with Agri-Mek, or use a bee safe miticide. If populations are low and plants have a good canopy, they should be able to set and size up the last fruits. For crops going into later September or even early October, you may want to keep mite maintenance up.

Rindworm is still a threat. Beet armyworm populations are increasing in the area, among other species. Examine fruit for smooth, even, wide rind scars.

Begin treating young summer and winter squash for squash vine borer again. We have another flight period that should be active now. A regular pyrethroid application to the vines will protect plants from damage. Watch out for flaring aphids though! Aphid populations tend to increase greatly in August.

Finally, squash bugs are very active right now. Include a pyrethroid or Assail into a maintenance program should clear them up.

**Fruiting Vegetables**

Scout for beet armyworm defoliation in peppers and for stink bug injury to developing fruit. Concentrate fruit scouting to areas near wood lines or field corn where stink bug populations are likely to be greater. Continue scouting for Spider mite damage in tomato and eggplant. Heavy mite populations were observed in eggplant this week. Thresholds in eggplant are 4-8 mites per leaf. Continue scouting for Colorado potato beetle, especially in eggplant.
Planting Dates for Fall or Early Spring Biofumigation Using Mustard

Emmalea Ernest, Extension Fruit & Vegetable Specialist; emmalea@udel.edu

Biofumigation is a technique for managing soil-borne pathogens. The biofumigation process involves growing specific cover crops (mustard or sorghum species), then mowing the cover crop and incorporating the green cover crop material into the soil. The chopped cover crop material releases compounds into the soil that kill certain plant pathogens and nematodes. In this region, growers have been interested in using biofumigant mustards for managing Fusarium, Phytophthora capsici and root-knot nematodes (RKN). There is ample evidence that mustard biofumigation is effective for reducing RKN. There is some evidence that biofumigation is effective for Fusarium and P. capsici control.

The standard recommendation for Delmarva has been to plant biofumigant mustards in the early spring, but the timeline for spring biofumigation does not allow for planting until late May or June. In 2022 and 2023, I measured biomass production in mustard planted in late summer and early fall to determine recommended planting dates for fall mustard biofumigation. In 2023 I also had September and October mustard plantings that overwintered. In 2022 ‘Caliente Rojo’ mustard that was planted on August 8, 15 and 22 produced sufficient biomass to complete the biofumigation process in September or October. A planting made on September 5 did not produce adequate biomass in time for effective fall biofumigation (Figure 1).

Another constraint on fall biofumigation is soil temperature. Recommendations from other regions suggest that biofumigation is not as effective at soil temperatures below 50 °F. In southern Delaware, average daily soil temperature falls below 50 °F in mid-November (Figure 2).

Based on my experiences in 2022 and 2023, I recommend planting between August 1 and

<table>
<thead>
<tr>
<th>Planting Date</th>
<th>Biofumigation Timing</th>
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<tbody>
<tr>
<td>Aug 8</td>
<td>late September</td>
</tr>
<tr>
<td>Aug 15</td>
<td>mid October</td>
</tr>
<tr>
<td>Aug 22</td>
<td>late October</td>
</tr>
<tr>
<td>Sep 5</td>
<td>early December (too late)</td>
</tr>
</tbody>
</table>

**Figure 1.** Fall 2022 biofumigant mustard planting on September 26. August 8 planting is at early flowering and ready to mow and incorporate. The September 5 planting on the far left did not produce sufficient biomass in time for effective fall biofumigation.

**Figure 2.** Average daily soil temperatures for September through December at Georgetown, Delaware in 2019-2022.
August 22 if you want to biofumigate in the fall. For overwintering, mustard should be planted in late September or early October. Avoid early September planting dates as the plants become too mature to overwinter, but are not ready for incorporation until soils are too cold for effective biofumigation. To promote production of adequate biomass, fertilize with at least 50 lbs/acre of nitrogen. Overwintered plantings will need additional nitrogen in late winter to promote spring growth. Ammonium sulfate is the recommended nitrogen source, since it also supplies sulfur, which the mustard plants need to produce the active compounds necessary for biofumigation.

Agronomic Crops

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

Soybeans
We started surveying full season soybean for stink bug this week. Defoliator populations appear to be low. The greatest populations of stink bugs we found were in the Greenwood area. Pay attention to field edges bordered by woods, field corn, or woody shrubs/small trees. One field we visited near Greenwood was 3-4 times over the 5 bugs per 15 sweep thresholds along the woody edge. However, stink bug populations dropped below threshold about 150 feet from the woody edge. Thus, a large field might not need to be completely treated.

Sorghum
Begin scouting for white sugarcane aphids (now also referred to as sorghum aphid). This aphid typically arrives in our area between late July and early August and can cause yield loss as late as soft dough. Thresholds from flowering to dough stage are 30% infested plants with localized areas of honeydew and established aphid colonies. If a field needs to be treated for aphids, Sivanto Prime and Transform are the best materials.

Fruit Crops

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

Brown marmorated stink bugs are increasing in our blacklight traps. I do not have any BMSB pheromone traps out this year, but it may be worthwhile to include a bifenthrin application.

Scout vineyards for spotted lanternfly now through the end of September. I observed an adult SLF on my home grapes this past week. Large populations can quickly fly into vineyards and remove large quantities of sap. Thresholds are 10 or more SLF per vine. Recommended insecticides include pyrethroids (watch pre harvest intervals! They vary between 1 and 30 days), Dinotefuran, thiamethoxam, and malathion.

Climate Change in the Apple Orchard: Sunburn and Blight
Chris Walsh and Kathy Hunt, Department of Plant Science and Landscape Architecture, University of Maryland, khunt@umd.edu

An unusually cool, wet spring, followed by hot, dry summer weather, has affected apple fruits and apple trees.

Sunburn and abnormal red color development were seen on early ripening varieties at the UMD orchard in Keedysville. Sunburn on the cheek of an early-ripening red variety is shown in Figure 1. While the red blush looks normal on this photo, red color in some other early-ripening apples appeared orange or muddy brown. Hopefully, the color will turn brighter with cooler weather, but there’s not a lot of time left before early varieties ripen and are ready for picking. Talking with growers and farm advisors from Virginia to the Hudson Valley, apples will likely be picked seven to ten days ahead of ‘normal.’

If you are concerned by the prospect of an early apple harvest, consider applying AVG. This plant
growth regulator, marketed as ReTain™, delays the onset of ethylene biosynthesis, allowing apple harvest to be delayed for one to two weeks. If this is of interest, be sure to read the ReTain label carefully to determine the proper concentration and timing for your orchard.

With the hot dry weather, springtime shoot blight is now quite easy to spot. In a trial block at Keedysville, we did not apply streptomycin to control blight. In addition, no attempt was made to prune out blighted shoots. Figure 2 shows a tree which was quite susceptible to blight. In that Figure, the tree had more than 50 blighted shoots.

Fireblight susceptibility is important to consider when planting new orchards. Growers need to identify and plant blight-resistant blocks that can produce good quality, flavorful fruit to combat the future effects of climate change.

General

Farm Business Structures Fact Sheet
Nate Bruce, Farm Business Management Specialist, nsbruce@udel.edu

Farm business taxes can vary depending on the selected business structure. Each business structure has pros and cons that are sometimes difficult and tedious to navigate. University of Delaware Cooperative Extension has developed a quick reference guide that discusses the pros and cons of each commonly used business structures by agricultural producers. This guide is best utilized as a starting point for later discussions with accountants and lawyers. The fact sheet is attached and also posted on the University of Delaware Cooperative Extension Farm Business Management Website here:


First in Flowers Field Tour
Drew Harris, Kent County Ag Agent, raharris@udel.edu

Growing flowers can be a rewarding yet challenging journey for those willing to try their hand at this specialty crop. First in Flowers has taken initiative to promote locally grown flowers in Delaware. On July 25th First in Flowers held a farm tour at Spectrum Farms in Felton, DE. The event was attended by several local flower growers and those who are just starting their journey in the specialty crop sector. The day was filled with discussions on utilizing different management techniques, maximizing space, and examining a variety of flowers being grown in Delaware. Growing flowers in Delaware has a bright future with plenty of opportunity ahead.
Guess The Pest! July 26 Answer
David Owens, Extension Entomologist, owensd@udel.edu

Congratulations to Bob Leiby for correctly identifying the plant stages in last week’s GTP challenge. Why were they included? R4 soybean - full pod. This stage is most susceptible to stink bug and corn earworm damage. Corn earworm though flies into flowering beans - R2-R3 to lay eggs. R6 soybean - full seed. This is when stink bugs begin doing less on yield impact but more on quality. It is also when defoliation thresholds begin increasing again. We are almost there. Black Layer in corn - physiological maturity.

First in Flowers next event will be a workshop for Crop Planning for Flower Farmers on October 24th, 1 to 4pm at the UD Paradee Center. If you are interested in starting your flower farming journey and want to stay updated on First in Flowers events and programs use the following link. https://www.firstinflowersde.com/

Photo credits: Manitobapulse.ca (A and B) and Jarrod Miller (C)

Guess The Pest! August 2nd
David Owens, Extension Entomologist, owensd@udel.edu

This week, as part of our soybean insect pest survey, we observed discolored leaves in one field. What is causing this? Enter your guess here: https://docs.google.com/forms/d/1oz5yCm8xifZtDlvZ-vPbd8a0GR-V6H9dbb9fhAyzzY/edit.
**Announcements**

**Carvel Field Crop Tour**
Wednesday, August 7, 2024, 3:30-5:00 p.m.
University of Delaware
Carvel Research & Education Center
16483 County Seat Highway, Georgetown, Delaware 19947

Mark your calendars to join us for the 2024 Carvel Field Crop Tour at the University of Delaware Carvel Research and Education Center in Georgetown on Wednesday, August 7th.

The tour will take place at the Thurman Adams Jr. Agricultural Research Farm on County Seat Highway west of Georgetown at 3:30 p.m. and end at 5:30 p.m., culminating with a BBQ dinner. Highlights of the wagon tours will include the latest research on agronomic, vegetable, and fruit crops.

Delaware Pesticide and Nutrient Management credits will be available.

*Please RSVP by Friday, August 2nd for attendance and meal planning, contact Karen Adams*

_E: adams@udel.edu_

_P: 302-831-3328_

**Delaware Grain Marketing Club Meeting**
Thursday, August 8, 2024 6:00-8:00 p.m.
University of Delaware
Paradee Center
69 Transportation Road, Dover, DE

We will be having our 2024 3rd Quarter Grain Marketing Club Meeting on August 8th at the Kent County Extension Office in Dover. The monthly USDA report will be released on the following day. Historically, the August report moves markets. Topics will include a market update prior and monthly report expectations and also an update from the Mountaire grain merchandiser team.

*To register, please contact Lisa Collins.*

_E: lcollins@udel.edu_

_P: 302-831-3402_

*Please contact Nate Bruce nsbruce@udel.edu with any questions.*
Fresh Market Vegetable Research Field Day  
Tuesday, August 13, 2024  5:30-7:30 p.m.  
University of Delaware  
Carvel Research and Education Center  
16483 County Seat Highway, Georgetown, DE

University of Delaware Extension Specialists will showcase research projects related to fresh market vegetable production. A box dinner will be served at the start of the meeting.

Presenters:
Emmalea Ernest, Extension Vegetable & Fruit Specialist  
Mark VanGessel, Extension Weed Scientist  
David Owens, Extension Entomologist  
Alyssa Betts, Extension Plant Pathologist

Crops to be covered include sweet corn, peppers, lettuce, snap beans, squash and watermelon.

Topics include shade cloth use, variety evaluations, insect and disease management, weed management in plasticulture systems, using and calibrating backpack sprayers, herbicide carryover and rotation considerations.

Pre-registration is required. Please call 302-831-3328 or email adams@udel.edu to RSVP by Friday, August 9.

DSU Small Grower Bus Tour to New Jersey  
August 14-15 2024

The Small Farm Program in the College of Agriculture Science and Technology at Delaware State University will be hosting an Agricultural Enrichment Tour to New Jersey on August 14 and 15th 2024.

The goal of the trip is to help farmers, in Delaware and beyond, to gain insights on ways to improve or expand their production systems and to manage their enterprises profitably and sustainably. The Agri tour will introduce small and limited resource farmers and gardeners to farm innovation, production and marketing techniques, specialty crops, livestock production, agri-solar technology and value-added products.

The participants will interact with university researchers, extension specialists, and other farmers. The bus will visit a myriad of sites. Participants will observe crops farms/farmers market, livestock farms, a winery, a business incubation center and an agrivoltaic center. Some of the sites have an agritourism segment associated with their operations. Addition items or farms may be observed on this tour.

The flyer attached provides the contact and registration information for the tour.

For more information please contact Andy Wetherill at 302-650-7620 at E-mail awetherill@desu.edu or John Clendaniel at 302-857-6425 at E-mail jclendaniel@desu.edu

Is It Time to Give Your Pasture and Forage Management Strategies a Hard Look?  
Wednesday, August 28, 2024, 6:00 p.m. to 8:15 p.m.  
University of Delaware Paradee Center  
69 Transpiration Circle, Dover, DE

Registration is limited to 20

Topic will include:
Things You Can’t Change on Your Farm and How Technology Can Help: Soils and Environmental Conditions

Cost of Establishing Forages and Cost Considerations Including Pesticides and Fertilizers

Forage Selection

Soil Sampling and Forage Management After Drought

To register, contact Sydney Riggi or Drew Harris.
E: Sydney@udel.edu, raharris@udel.edu
P: 302-730-4000

Marl Pit Farm Tailgate Session
Thursday August 29, 2024, 5:00 -7:00 p.m.
UD Cooperative Extension Research Demonstration Area
617 Marl Pit Road, Middletown DE 19709

Join your fellow producers and the UD Extension team for an in-person discussion of this year’s current production issues. Other topics will include nutrient management, pest management and weed management. This session will inform producers of timely topics observed and occurring in 2024.

Please bring a chair as seating is limited.

Pesticide and Nutrient Management Credits will be available.

The meeting is free, and everyone interested in attending is welcome.

To request more information, please call Nick Adams at (302) 476-1136.

2024 Beginning Farmer Program
Wednesdays & Saturdays September-December
University of Delaware, Fischer Greenhouse
533 S. College Ave, Newark, Delaware 19716

The Delaware Beginning Farmer Program is for new and beginner farmers working in small-scale vegetable and/or fruit production. Through hands-on training, demonstrations, workshops, field trips and farm tours, as well as self-study, growers will spend an entire season learning and growing with Delaware Cooperative Extension, and other invited agriculture industry professionals.

Although not limited to the following topics, this training will explore the fundamentals of soil fertility and health, basic crop production, integrated pest management, food safety, and business planning and development.

This training will also provide an excellent networking opportunity. Sessions are covered by one affordable registration fee of $75. Sessions are held at the University of Delaware Cooperative Extension office and Fischer Greenhouse on the University of Delaware campus.

Sessions are held at Fischer Greenhouse on the College of Agriculture and Natural Resources' campus in Newark, unless otherwise noted.

- Wednesday, September 11, 6-8 pm
  Course Orientation, Soil Basics
- Saturday, September 14, 9-11 am
  Greenhouse Production/Tour
- Wednesday, September 25, 6-8 pm
  Variety Selection
- Wednesday, October 9, 6-8 pm
  Small Farm Business Planning
- Saturday, October 12, 9-11 am
  Field Trip to Against the Grain Farm at William Penn Farm
- Wednesday, October 23, 6-8 pm
  Weed Identification and Management
- Wednesday, November 6, 6-8 pm
  Integrated Pest Management: Insect and Disease Pests
- Saturday, November 9, 9-11 am
  Plant Diagnostic Clinic, UD Fresh to You
Nitrogen Decision Making Simulation
Online Activity

Are you a Corn Farmer in DE, MD, or PA interested in learning more about in-season nitrogen modeling tools? Are you willing to participate in a 30-minute, farmer-friendly computer simulation where you can earn cash (up to $150) and a Nutrient Management Credit (1 credit for either MD or DE farmers) for using N model outputs to make management decisions on a virtual farm?

The Universities of Delaware, Maryland and Penn State are inviting you to participate today! Visit https://shorturl.at/DeTMJ to start your simulation or scan the QR code on our flyer to start!

After your online participation you will receive an electronic gift card within one week. Your responses are anonymous, and your information will not be shared outside the project team.

Contact Aisha Emory at ahoggard@udel.edu or (302) 831-6243 if you have any questions or if you prefer to participate at a in person session.

Watermelon and Pumpkin Grower Biofumigation Study Survey
Online Activity

Watermelon and pumpkin growers, we are seeking survey responses to evaluate your familiarity with using biofumigation to reduce phytophthora and root-knot nematodes in these crops. We would like to hear about your experiences with this topic. The survey should take no more than five minutes to complete. Here is the link to the survey: https://delaware.ca1.qualtrics.com/jfe/form/SV_02i7KXdpzDhbgsS

Contact Nate Bruce at nsbruce@udel.edu or 302-362-7616 if you have any questions.

Grain Marketing Producer Survey
Online Activity

Grain marketers, the University of Delaware, in collaboration with the Universities of Kentucky and Nebraska Lincoln, seeks your input on how you make grain marketing decisions on your own operation. The survey will help inform us to understand the risks and factors involved in making these decisions. In addition, data will be used to help us refine outreach education on grain marketing. Your individual survey responses will remain confidential as data will be aggregated. The survey will take 10 minutes or less to complete. Below is both a link to the survey and a QR code.

Link to Qualtrics survey: https://delaware.ca1.qualtrics.com/jfe/form/SV_0JpiRk4gHsN2yHQ

QR Code:

Contact Nate Bruce at nsbruce@udel.edu or 302-362-7616 if you have any questions.
Weather Summary

1 Week Accumulated Growing Degree Days

1 Month Accumulated Growing Degree Days

1 Week Accumulated Precipitation

1 Month Accumulated Precipitation