



WEEKLY CROP UPDATE

UNIVERSITY OF DELAWARE COOPERATIVE EXTENSION

Volume 29, Issue 8

May 14, 2021

Vegetable Crops

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

Cucurbits

Scout for aphids and for **striped cucumber beetles**. Striped cucumber beetles have not yet been observed in fields, but they typically appear near Memorial Day in our area. With warm weather forecast towards the middle to end of next week, conditions will be good for cucumber beetle activity. Pay special attention to cantaloupe fields and other muskmelons, as these crops are susceptible to **bacterial wilt**. Male beetles emit an aggregation pheromone when they begin feeding and defecating on the plant. This pheromone brings more beetles in, leading to a 'feeding frenzy'. Free moisture on the leaf washes the bacteria responsible for wilt into the plant. Aggregations may be intense enough to defoliate plants. Aggregations also tend to be a little spotty, meaning you need to scout the field in multiple locations so as to not miss them.

Solanaceous Crops

While **Colorado potato beetle** has been active for some time, field migration has slowed recently due to cool weather. Once temperatures reach into the 80s again, be on the lookout for migrating beetles. Also start scouting potatoes for **leafhoppers**. Action thresholds are ½ to 1 adult per sweep or 1 nymph per 10 leaves. **Flea beetles** are also active on

transplants. They leave a characteristic small shot hole injury to the leaves.

Pollination in Watermelons - Gordon Johnson, *Extension Vegetable & Fruit Specialist*; gcjohn@udel.edu

Honeybees

A female watermelon flower will need around 500-1000 pollen grains to be fertilized effectively. This will require a minimum of 8 visits by a honeybee for seeded watermelons. In seedless watermelon more visits will be required. The pollen produced by seedless watermelons is not viable. To fertilize seedless watermelon, pollen must be transferred from viable male flowers in standard or special pollinizer seeded types to triploid seedless female flowers. Because bees foraging in seedless watermelon plantings carry a mix of viable and non-viable pollen, more pollination visits (16 to 24) by honeybees are needed to set fruit.

First planted watermelons will be flowering in late May in Delaware and Maryland. Honeybees should be placed when the first female flowers appear to achieve good crown sets without defects (i.e. prominent lobes or hollow heart). Placement should be made before 10% of plants are in bloom.

The crown set in watermelon is fruit that set on one of the first 8 nodes of the plant. This is often the most profitable, especially early in the season. Poor crown sets in watermelon can occur

when there is poor weather during early flowering. Honeybee flights are reduced significantly in rain and when winds are 15 mph or greater. Cloudy weather also reduces bee activity. Honeybees also do not fly much below 55° F, so on cold mornings, as we often have in June, bee activity will not pick up until later in the morning. Unfortunately, female watermelon flowers open early in the morning, are most receptive before 10 am, and then close in the afternoon.

In addition, in early mornings and during poor weather, bees usually visit plants closest to the hives. As the temperature rises or the weather improves, the bees will forage further from the hive. This means that in bad weather watermelons closest to the hives will have the best set and furthest from the hives will have reduced set.

Another problem that causes crown set reduction is the loss of pollinizer plants due to unfavorable weather conditions during or after planting. This means that pollen will be limiting. Research has shown that where pollen is limiting, fruit numbers will be reduced with distance from a pollen source. In fields with limited pollen, expect reduced fruit set or reduced fruit size in areas where pollinizers are missing.

Watermelon growers can manage crops for improved pollination and fruit set with honeybees by:

- Increasing the number of honey bee hives for early watermelon crops. A minimum of one strong hive per acre is recommended in general and 2 hives per acre can be justified for early planted fields.
- Placing hives in several locations in a field rather than just on one edge. While bees will fly over a mile, the best pollination activity is closest to the hives. Hives placed within the field will provide more bee visits to the crop compared to edge placements. Place hives in groups of 4-8 in good locations throughout the field to have even distribution of bees.
- Having ample sources of pollen by planting pollinizers at a minimum ratio of one pollinizer per every 3 seedless plants. Use the most effective pollinizers as shown by local trials. In-

row pollinizers should have limited competitiveness with the seedless melons.

Bumble Bees

Compared to a honey bee, bumble bees are about 10 times more efficient as a pollinator due to their size, the speed at which they transfer pollen, the efficiency with which they gather pollen within various crops, and their increased endurance to fly in adverse weather for longer periods of time. The bumble bee also has the ability to buzz pollinate the flower for pollen, a pollination technique not seen in honeybees. Buzz pollination occurs by bumble bees vibrating the flower by pumping their wings at a certain frequency, to dislodge pollen. Bumble bee foraging activity starts earlier and ends later in the day than managed honeybees and they forage in lower temperatures. Because of these characteristics, fewer bees are needed to achieve the same crop pollination and commercial colonies only have about 200 bees each (800 per quad).

When assessing bumble bee activity, flag out 10 areas in your field and observe each area on three different days during bloom. These observations should last one minute under sunny, windless conditions, between 9 a.m. and noon. Approach each plot with care so as not to disturb the foraging bees. Stand about three feet from the crop to avoid blocking the flight path of the bees. Count and record the number of bumble bees at each flag, then calculate the average for your observations. You should have an average one bumble bee per ten flags (0.1 bees per flag) to have adequate pollination.

Bumble bee colonies should be shaded and can be placed along shaded field edges. However, if there are other wildflowers nearby, they will also work in those areas, reducing their field effectiveness. Therefore, when placing bumble bees in watermelons or other flowering vegetable or fruit fields needing pollination, it is recommended that bumble bee quads be placed in the field middles under a shade canopy to have more foraging in the target field. Bumble bees should be placed far from honeybee hives to avoid honeybee pollen theft from bumble bee nests.

Tipburn in Brassica Crops and Lettuce -
Gordon Johnson, Extension Vegetable & Fruit Specialist; gcjohn@udel.edu

Cauliflower, cabbage, Brussels sprouts, Chinese cabbage (Napa cabbage) and lettuce are susceptible to tipburn. This problem can cause severe economic losses. Tipburn is a breakdown of plant tissue inside the head of cabbage, Chinese cabbage and lettuce, individual sprouts in Brussels sprouts, and on the inner wrapper leaves of cauliflower. It is a physiological disorder which is associated with an inadequate supply of calcium in the affected leaves, causing a collapse of the tissue and death of the cells. Calcium deficiency may occur where the soil calcium is low or where there is an imbalance of nutrients in the soil along with certain weather and soil nutrient conditions, such as high humidity, low soil moisture, high potassium or high nitrogen all of which can reduce calcium availability. Secondary rot caused by bacteria can follow tipburn and heads of cauliflower can be severely affected. Some cabbage and cauliflower cultivars are relatively free of tipburn problems. Tipburn ratings for cabbage are given in the Mid-Atlantic Commercial Vegetable Production Recommendations. Lettuce grown in high tunnels and greenhouses can also have tipburn problems. Growing conditions including high humidity, lack of air movement, and poor root system development can lead to tipburn problems in lettuce. The disorder most frequently occurs as the head is beginning to reach maturity. The inner part of the head has locally humid conditions and less airflow due to the presence of the outer, wrapper leaves.

Controlling tipburn starts with managing liming so that soil pH is above 6.0. Limit ammonium forms of nitrogen and ensure an adequate and even supply of water. Adjust planting date so that head maturation occurs during cooler temperatures. Plant a cultivar that is less susceptible to the disorder. In hydroponic growing systems, maintain calcium levels in growing solutions at 90 ppm and have good air circulation. In general, calcium foliar sprays have not been shown to be effective for controlling tipburn incidence.



Severe tipburn in cabbage.



Tipburn in greenhouse lettuce.

Fruit Crops

Fruit Drop in Tree Fruits -*Gordon Johnson, Extension Vegetable & Fruit Specialist; gcjohn@udel.edu*

Fruit trees commonly set more fruit than they will carry and chemical, mechanical, or hand thinning is done to reduce fruit loads, increase fruit size, and limit alternate year bearing. Natural fruit drop also occurs and is often called “May Drop” or “June Drop”. This is often accompanied by some leaf drop, especially in stone fruits.

Natural fruit drop is a result of unfertilized or poorly fertilized seeds, cold injury, competition between fruits, or shading. Poor pollination may

Agronomic Crops

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

be a result of cold, rainy weather during bloom in self-fertile fruits such as peaches or poor insect pollinator activity during flowering in insect pollinated fruits such as apples. In stone fruit, some fruit that is not fertilized will remain on the plant for 25-50 days after bloom and then will drop before pit hardening starts.

Another wave of natural fruit drop occurs in late May or early June. This fruit drop is due to competition between fruit for sugars stored and produced by the tree. A tree can only carry a certain load of fruit and will naturally drop smaller and weaker fruit during this period. However, thinning should have been accomplished before this competitive fruit drop occurs. Having fruit remain on the plant until natural competitive drop will use up food reserves in the plant and reduce the size potential of remaining fruit. Fewer cells will have been produced by the fruit remaining on the plant and therefore fruit size will not be recovered.

Another cause of fruit drop is cloudy weather during the period 5 to 7 weeks after bloom. A continuous 4-day period of cloudy days during this period will also cause fruit to drop. In addition, defoliation due to disease such as peach leaf curl, chemical injury such as copper fungicide damage, or severe storms can cause fruit drop during this critical period.



G. Johnson, University of Delaware

Nectarine with too many fruits requiring thinning. A tree can only carry a certain load of fruit and will naturally drop smaller and weaker fruit during this period.

Alfalfa

Now that the first cutting is proceeding, start thinking about scouting regrowth in the coming weeks for **potato leaf hopper**, which typically appears towards the end of May. Stubble treatments are rarely necessary, as cut alfalfa stimulates adults to seek 'greener pasture.' Resistant varieties have glandular trichomes that glue nymphs down and trap them; these varieties may have as much as 75% fewer leafhopper than non-resistant varieties. There are also non-yellowing varieties which still need to be scouted for as they will suffer leafhopper damage even without the visual after-the-fact symptoms. High aphid populations continue to be reported in some fields, in these fields it is best to cut earlier rather than spray.

Field Corn

Begin scouting fields next week for **cutworm** damage. By the end of next week we will be approaching degree days for 4th instar black cutworm to be active and begin cutting plants.

Soybean

Some of the early planted soybeans are now emerging out of the ground. Keep a sharp eye out for soybean stand reducing pests. This past week, damage was observed from both **slugs** and **seedcorn maggot**. SCM is favored by recent incorporation of organic matter such as cover crop or previous crop residue. Feeding injury will show up as runty plants that are well behind and smaller than neighboring plants. Affected cotyledons might not fully emerge out of the soil. Stems often swell and turn a grayish color with poor root development. Slug feeding however will look like regular gouges taken out of the cotyledons and the stems. Unlike SCM, slugs are favored by no-till, high soil surface residue. There are no rescue treatments for SCM. For slugs, rescue treatments of Ferrox and Deadline are available, but unless pellets are broadcast no later than the first signs of seedling emergence and feeding injury, they may be too late. Baits perform best when several days of dry

weather follow, giving the slug time to dehydrate. A third seedling pest to begin scouting for on the earliest planted soybean is **bean leaf beetle**. Thresholds are high, 2 beetles per plant with greater than 40% defoliation. It is very unusual to see this level of bean leaf beetle activity.

Wheat

Scout for **armyworm** in wheat, especially in New Castle County to Smyrna. Reminder - all pyrethroids except Mustang have a 30 day pre harvest interval. Thresholds are 1-2 worms per row ft. Armyworm tends to hide during the day under residue. Barley thresholds are a little lower, 1 per row ft. **Cereal leaf beetle** larvae were observed in a couple of fields in very low numbers.

Cooling Effect Over the Last Week -

Jarrod O. Miller, Extension Agronomist, jarrod@udel.edu; Cory Whaley, Sussex Co. Extension Ag Agent, whaley@udel.edu; Jake Jones, Extension Agriculture Agent, Kent County, jgjones@udel.edu; Dan Severson, Agriculture Agent, New Castle County, severson@udel.edu

After a rapid increase in growing degree days and steady temperatures in late April, there has been a significant cooling effect over the last week. Fields planted in late April should still have emergence (Table 1/Figure 1), but we may find fields planted early May taking up to 10 days to emerge. Soil temperatures are following a very similar pattern to last year (Figure 2), with temperatures dropping off in early May, although 2021 remains a little warmer.

Table 1: Accumulated Growing Degree Days Based on Planting Date (Emergence = 120)

Planting Date	New Castle	Kent	Sussex
Apr 15	192	225	231
Apr 22	173	198	207
Apr 29	131	149	160
May 6	20	26	32

While temperatures have cooled off, soil moisture has been steadily dropping since late April, at least at our Georgetown research plots. This should mean plenty of planting time in drier field conditions, and with warmer temperatures to come, corn and soybean planting may remain ahead of schedule this year.

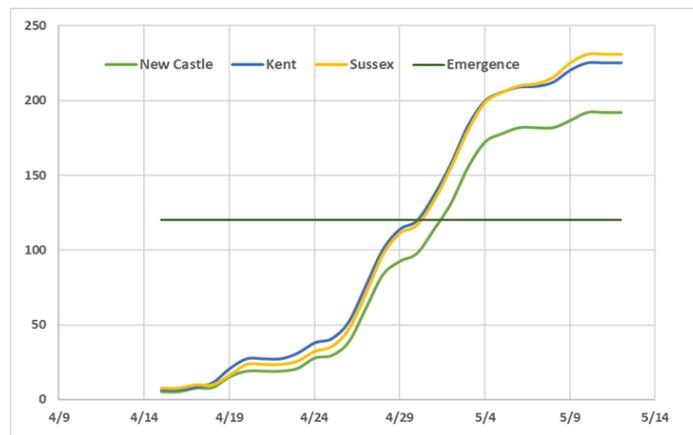


Figure 1. Accumulated Growing Degree Days in each County Since April 15th.

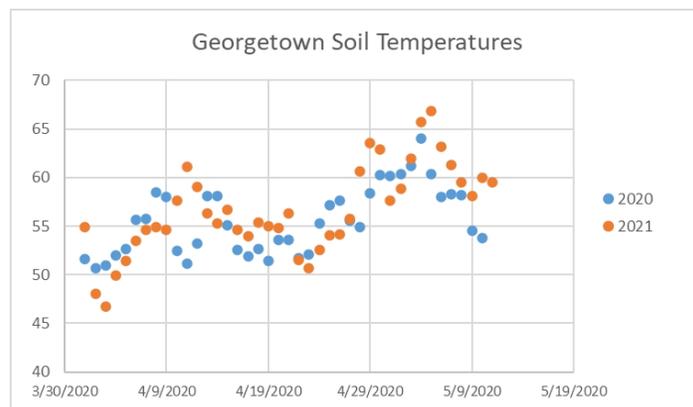


Figure 2. Soil temperatures in Georgetown over the last month.

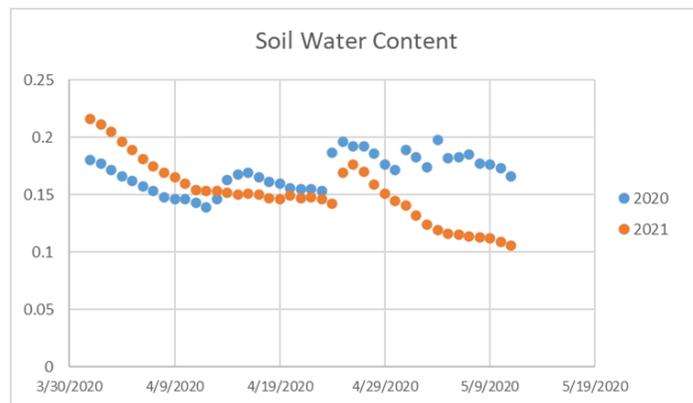


Figure 3. Soil Moisture in Georgetown over the last month.

Pythium Root Rot in Corn - Alyssa Koehler,
Extension Field Crops Pathologist;
akoehler@udel.edu

Over the past few years, wet spring conditions have favored corn pre and post emergence damping off caused by the oomycete pathogen, *Pythium*. Symptoms of *Pythium* Root Rot can include stunted, slower growing plants, to severely infected, dead plants (Figure 1). Infected plants typically have brown, rotted roots and mesocotyl (Figure 2).



Figure 1. Corn seedlings with post-emergent damping-off caused by *Pythium* spp.

As root systems continue to develop, seedlings can survive mild to moderate *Pythium* infections, but final yield is often impacted. Over 2019 and 2020, we have been working on surveying *Pythium* species present in corn and looking at the season long effects of disease. To date, over 15 species have been identified, with *Pythium graminicola* being most common. Seed treatments with oomycete activity can provide some protection within 10-14 days after planting, and can be helpful for improving seedling emergence and reducing pre-emergent damping off. *Pythium* species differ in optimal temperatures for growth and can have varying responses to fungicides. Research is currently underway to screen many of the identified species for fungicide efficacy to products currently on the market and recently launched. In addition to lab and greenhouse screening, field trials were started in 2020 to examine the season long effects of seedlings that are infected. Unfortunately, plants that are infected early generally maintain reduced root systems throughout the season, with ears that are poorly formed (Figure 3). In some cases, infected plants were completely barren with no ear formed. Across all observation sets, yield estimates for

Pythium infected plants were approximately 84 bu/acre while the healthy plants averaged 219 bu/acre. Ongoing trials in 2021 aim to see if any in season management approaches can help to mitigate yield losses that stem from these early season effects.

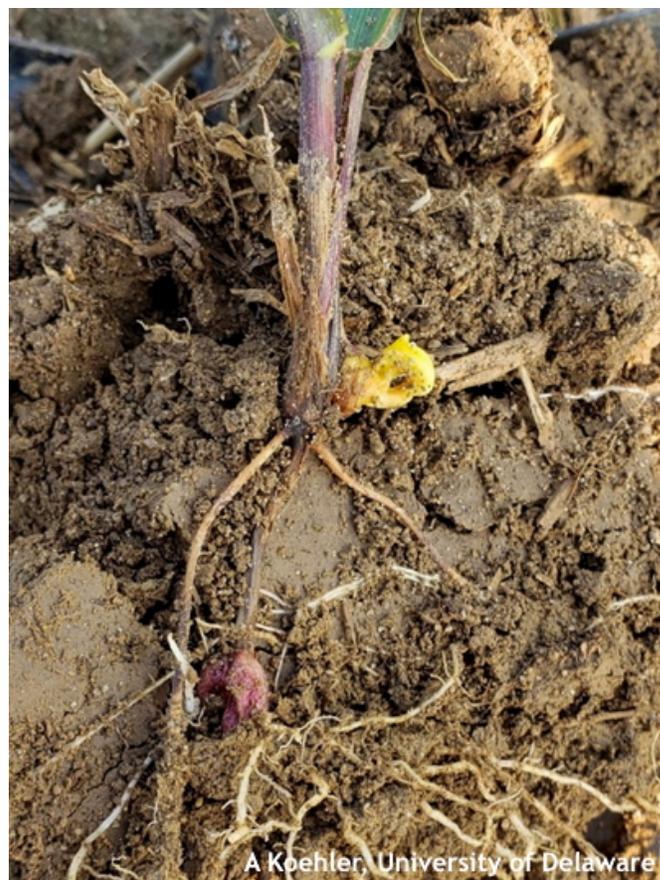


Figure 2. Corn seedling with necrotic, brown mesocotyl following infection by a *Pythium* spp.



Figure 3. Photos from paired field trial of *Pythium* infected (top) v. healthy corn plant (bottom). Differences were observed in root weights, stalk diameters, kernel counts, and yield estimates across all sets.

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

Across much of Sussex and Kent counties, wheat is now at flowering. In the Fusarium Risk Tool, our region remains at low risk (Figure 1). If you are planning for wheat fungicide application, yellow anthers in the center of the wheat head are the signal that you have reached Feekes 10.5.1. Once around 50% of heads are flowering, fungicides (Caramba, Miravis Ace, Prosaro) are most effective when applied within a 4-5 day window. Anthers can remain attached after flowering, but become a pale white (Figure 2). Fungicide products should be applied at the manufacturers recommended rate with nozzles that are angled 30-45° from horizontal (30 degrees is better than 45). Nozzles angled both forward and backward or twinjet nozzles that spray in two directions give better contact with the head and increase fungicide efficacy. For ground sprays, fungicides should be applied in at least 10-15 gallons of water per acre; aerial applications are recommended at 5 gallons per acre.



Figure 2. From left to right Feekes 10.3, Anthesis, Feekes 10.5.1 (yellow anthers beginning flowering), 4 days after anthesis (white anthers post flowering).

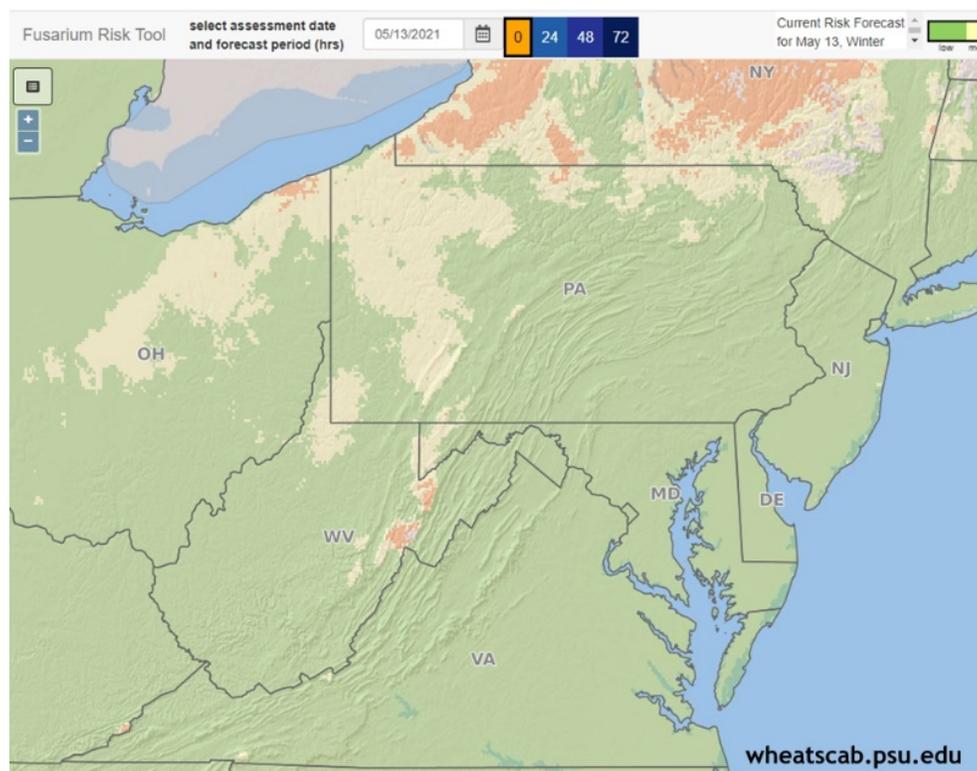


Figure 1. FHB Risk Model for May 13, 2021

Table 1: Fungicide Efficacy for Control of Wheat Diseases (CPN-3002-W)



Fungicide mode of action groups:
 Group 11 QoI Strobilurins
 Group 3 DMI Triazoles
 Group 7 SDHI Carboxamides

Efficacy categories:
 P=Poor; F=Fair; G=Good; VG=Very Good; E=Excellent;
 NL = Not Labeled for use against this disease; NR=Not Recommended;
 U = Unknown efficacy or insufficient data to rank product

Efficacy of Fungicides for Wheat Disease Control Based on Appropriate Application Timing (03/2021)

	Active ingredient (%)	Product/Trade name	Rate/A (fl oz)	Powdery mildew	Stagonospora leaf/glume blotch	Septoria leaf blotch	Tan spot	Stripe rust	Leaf rust	Stem rust	Head scab ⁴	Harvest restriction
11	Picoxystrobin 22.5%	Approach SC	6.0 – 12.0	G ¹	VG	VG ²	VG	E ³	VG	VG	NL	Feekes 10.5
	Pyraclostrobin 23.6%	Headline SC	6.0 – 9.0	G	VG	VG ²	E	E ³	E	G	NL	Feekes 10.5
	Azoxystrobin 22.9%	Quadris 2.08 SC	4.0 – 12.0	G	VG	VG	E	E	E	G	NL	Feekes 10.5.4
3	Metconazole 8.6%	Caramba 0.75 SL	10.0 – 17.0	VG	VG	--	VG	E	E	E	G	30 days
	Tebuconazole 38.7%	Folicur 3.6 F, multiple generics	4.0	NL	NL	NL	NL	E	E	E	F	30 days
	Prothioconazole 41.0%	Proline 480 SC	5.0 – 5.7	--	VG	VG	VG	VG	VG	VG	G	30 days
	Prothioconazole 19.0%	Prosaro 421 SC	6.5 – 8.2	G	VG	VG	VG	E	E	E	G	30 days
	Tebuconazole 19.0%	Prosaro 421 SC	6.5 – 8.2	G	VG	VG	VG	E	E	E	G	30 days
	Propiconazole 41.8%	Tilt 3.6 EC, multiple generics	4.0	VG	VG	VG	VG	VG	VG	VG	P	Feekes 10.5.4
11	Trifloxystrobin 22.6%	Absolute Maxx SC	5.0	G	VG	VG	VG	VG	E	VG	NL	35 days
3	Tebuconazole 22.6%											
11	Picoxystrobin 17.9%	Approach Prima SC	3.4 – 6.8	VG	VG	VG	VG	E	VG	--	NR	45 days
3	Cyproconazole 7.17%											
11	Trifloxystrobin 13.7%	Delaro 325 SC	8.0	G	VG	VG	VG	VG	VG	VG	NL	Feekes 10.5 35 days
3	Prothioconazole 16.0%											
7	Pydiflumetofen 13.7%	Miravis Ace SE	13.7	VG	VG	VG	VG	VG	VG	VG	G ⁵	Feekes 10.5.4
3	Propiconazole 11.4%											
7	Fluxapyroxad 2.8%	Nexicor EC	7.0 – 13.0	VG	VG	E	E	E	E	VG	NL	Feekes 10.5
11	Pyraclostrobin 18.7%											
3	Propiconazole 11.7%											
7	Fluxapyroxad 14.3%	Priaxor	4.0 – 8.0	G	VG	VG	E	VG	VG	G	NL	Feekes 10.5
3	Pyraclostrobin 28.6%											
11	Azoxystrobin 13.5%	Quilt Xcel 2.2 SE, multiple generics	10.5 – 14.0	VG	VG	VG	VG	E	E	VG	NL	Feekes 10.5.4
3	Propiconazole 11.7%											
11	Trifloxystrobin 32.3%	Stratego YLD	4.0	G	VG	VG	VG	VG	VG	VG	NL	Feekes 10.5 35 days
3	Prothioconazole 10.8%											
7	Benzovindiflupyr 2.9%	Trivapro SE	9.4 – 13.7	VG	VG	VG	VG	E	E	VG	NL	Feekes 10.5.4
11	Azoxystrobin 10.5%											
3	Propiconazole 11.9%											
11	Azoxystrobin 25.30%	Topguard EQ	4.0 – 7.0	VG	NL	VG	VG	E	E	VG	NL	Feekes 10.5.4 35 days
3	Flutriafol 18.63%											

Indicates product with mixed fungicide classes

¹Efficacy categories: NL=Not Labeled; NR=Not Recommended; P=Poor; F=Fair; G=Good; VG=Very Good; E=Excellent; -- = Insufficient data to make statement about efficacy of this product.
²Product efficacy may be reduced in areas with fungal populations that are resistant to QoI fungicides. ³Efficacy may be significantly reduced if solo QoI products are applied after stripe rust infection has occurred. ⁴Application of products containing QoI fungicides may result in elevated levels of the mycotoxin deoxynivalenol (DON) in grain damaged by head scab. ⁵Based on application timing at the beginning of anthesis (Feekes 10.5.1).

General

True Armyworm and Black Cutworm Trap Report - David Owens, *Extension Entomologist*, owensd@udel.edu

Moth counts declined dramatically this week due in part to cooler weather. Many thanks to Maryland Extension agents Emily Zobel and Maegan Perdue and UD Extension entomologist emeritus Joanne Whalen.

Location	Number of Nights	Total Catch TAW	Total Catch BCW
Willards, MD	7	1	3
Salisbury, MD	7	1	1
Laurel, DE	7	---	12
Seaford, DE	7	2	10
Sudlersville, MD	7	0	0
Harrington, DE	7	3	31
Smyrna, DE	7	58	4
Middletown, DE	7	17	13



Guess The Pest! Week 7 - David Owens, *Extension Entomologist*, owensd@udel.edu

Get out your field guides and practice your pest management knowledge by clicking on the GUESS THE PEST logo or following this link: <http://www.udel.edu/008255> and submitting your best guess. For the 2021 season, we will have an “end of season” raffle for a scouting toolkit for one lucky winner, and five winners will be sent a small jar of locally produced honey. Remember, you can’t win if you don’t play!

What is going on with this melon transplant?



Guess The Pest! Week 6 Answer: Italian Ryegrass and Roughstalk Bluegrass - David Owens, *Extension Entomologist*, owensd@udel.edu

Congratulations to Chris Burkhart and others for correctly identifying the grasses as Italian ryegrass and roughstalk bluegrass. All who guess correctly will be entered for an end of season jar of honey and a scouting toolkit.

This from Dr. Mark VanGessel:

Both Italian ryegrass and roughstalk bluegrass are often present at barley planting so “start clean” use glyphosate at planting or use tillage (although vertical tillage is often not sufficient to kill either species). There are no herbicide options for in-crop control of roughstalk bluegrass. For Italian ryegrass, an “Axial product” will provide good control, although there are populations on Virginia and in southern Maryland that are resistant to Axial.

Go to <http://www.udel.edu/008255>
to Guess the Pest!



COVID-19 Vaccines: Our Shot to Stop the Pandemic- Kali Kniel, Professor of Microbial Food Safety, University of Delaware, kniel@udel.edu

It is late springtime, when the sun is shining, and the soil temperatures are rising. A variety of crops are being harvested, while others are being planted; yet as a society we are still struggling with COVID-19 in many ways. An important strategy to reduce disease and get back on track to “normal” life is through vaccination. Let’s get some facts straight regarding COVID-19 vaccine effectiveness and safety. *This is our shot to stop the COVID-19 pandemic.* Having access to three different vaccines is a remarkable act of science. But these new vaccines are actually built upon decades of scientific findings and research; hard work that farmers can truly appreciate. Scientists have been researching other coronaviruses that cause critical illness for decades before the emergence of the new coronavirus that is causing the COVID-19 pandemic. This previous research on other coronaviruses and vaccines is in part what allowed the rapid development of vaccines in 2020. Since the onset of the COVID-19 pandemic the world has witnessed remarkable mobilization of resources, skills, and dedication from vaccine researchers. This type of collaboration allowed us to have the highly the effective vaccines we have today.

Vaccines train our immune systems to react and protect us from viruses or bacteria that could cause disease. We are fortunate that the virus that causes COVID-19, has a spike protein located on the virus outer surface that is a perfect target for use in vaccine development. I am sure you have seen this spike protein in various images. This means that upon

vaccination, our immune systems will respond by making appropriate immune cells that will have memory of this protein and fight those virus particles in the future. Development of this memory by our immune system typically takes a few weeks. Additionally, for some vaccines the first dose may not provide as much immunity as possible, so a second dose is required to build a more complete immunity. In a way, this is like hearing a story for the second time, I don’t know about you, but it helps me to remember something when I hear it again.

Medical and scientific experts from around the world have extensively reviewed the manufacturing procedures and effectiveness of all currently used COVID-19 vaccines. In the United States at this time, there are two vaccines that use mRNA to deliver the instructions for the spike protein, made by Pfizer and Moderna; and one vaccine, from Johnson & Johnson that uses another virus to deliver the instructions. The recent pause we experienced with the J&J vaccine provides evidence of the close regulation and review of this vaccination process. I feel extremely confident in the safety of the vaccines that we have available to use today.

The ways that these three vaccines are manufactured, offers multiple advantages in a pandemic-response because they are highly flexible, efficient in design and easier to manufacture in large amounts. The process to create the mRNA vaccines is built on previous experiences and as soon as the genetic sequence of the new coronavirus was determined in January 2020, scientists were at their benches strategizing how to use the spike protein to develop a vaccine. These vaccines contain simple instructions to make the coronavirus spike protein. This blueprint is either stored in a single piece of genetic material (mRNA) surrounded by tiny fat particles that allow it to enter our cells; or with the J&J vaccine, a virus that cannot cause disease carries these instructions. I realize that this may sound surprising, but these vaccines save lives, protect us from severe illness, and will allow us to get back to “normal”. The reported protection for both mRNA vaccines is generally greater than 90%, which is outstanding. I am looking forward

to summer festivals and sporting events, and we can all celebrate these good times if we all do our part and get vaccinated. Next week, we will address other questions, like should my workers get vaccinated?

Master Your Mind: Emotional and Physical Health Connections - *Maria Pippidis, Extension Educator Family & Consumer Sciences; pippidis@udel.edu*

May is Mental Health Month. Tufts University has produced this great video that explains the connections between the brain and body.

You get upsetting news and suddenly feel sick to your stomach. You're nervous about a big meeting and you begin to sweat, your heart races. Examples of the mind-body connection are endless. Particularly helpful for those living with chronic illness or other health challenges, this dynamic session provides strategies that employ the mind to lessen chronic pain, reduce depression associated with physical ailments, improve health outcomes, and more. You'll learn about the latest research findings and gain techniques to help you feel your best, both mentally and physically.

To watch the video [click here](https://my.kgalifeservices.com/la_webinars/master-your-mind-emotional-and-physical-health-connections?org_code=tuftsu)
https://my.kgalifeservices.com/la_webinars/master-your-mind-emotional-and-physical-health-connections?org_code=tuftsu

USDA Invests \$92.2 Million in Grants for Local, Regional Food Producers Affected by the Pandemic

The U.S. Department of Agriculture (USDA) announced the availability of \$92.2 million in competitive grant funding under the 2018 Farm Bill's Local Agriculture Market Program (LAMP). The LAMP grants are funded through the Farmers Market program as part of USDA's Pandemic Assistance for Producers Initiative. USDA launched this initiative in March to address shortfalls and disparities in how assistance was distributed in previous COVID-19 assistance packages, with a specific focus on strengthening

outreach to underserved producers and communities and small and medium agricultural operations. These grants support the development, coordination and expansion of direct producer-to-consumer marketing, local and regional food markets and enterprises and value-added agricultural products.

“We have an opportunity to transform our nation’s food system with a greater focus on resilient, local and regional food systems,” said Agriculture Secretary Tom Vilsack. “These grants will help maximize opportunities for economic growth and ingenuity in local and regional food systems to kickstart this transformation. LAMP grants have a history of generating new income sources for small, beginning, veteran and socially disadvantaged farmers and creating new market opportunities for value-added and niche products.”

USDA encourages projects that assist underserved local and regional agricultural businesses, producer networks and associations, and local and tribal government in responding to COVID-19 disruptions and impacts. Funding is not contingent upon applicants directly addressing these issues.

The Biden-Harris Administration is committed to ensuring equity across the Department, removing barriers to access, and building inclusive programs for the agricultural sector. For grants intending to serve smaller farms and ranches, new and beginning farmers and ranchers, socially disadvantaged producers, veteran producers, and/or underserved communities, USDA encourages applicants engage and involve those beneficiaries when developing projects.

Increasing Local Food Access Through Direct and Intermediary Producer-to-Consumer Markets

USDA will award \$76.9 million (\$22.5 million in the 2018 Farm Bill, \$47 million provided as emergency funding through the Consolidated Appropriations Act of 2021 and \$7.4 in annual appropriations) to FMLFPP. Projects under the Farmers Market Promotion Program support direct-to-consumer markets like farmers markets and CSAs. Projects under the Local Food Promotion Program supports indirect-to-

consumer markets like food hubs and value-added product incubators.

Building Robust and Resilient Local and Regional Food Economies

USDA will award \$15.3 million (\$5 million in the 2018 Farm Bill and \$10.3 provided as emergency funding through the Consolidated Appropriations Act of 2021) to RFSP to fund public-private partnerships that build and strengthen viability and resilience of local or regional food economies. Projects focus on increase the availability of locally and regionally produced agricultural products and alleviating unnecessary administrative and technical barriers. Projects can cover the planning and design of a local and regional food economy as well as implementing or expanding an existing one.

Application and Grant Eligibility

Applications undergo external expert peer review and the process is highly competitive. All grants require matching funds from community partners or stakeholders. The amounts and match amounts vary by program and are specified in the RFAs.

Applications must be submitted electronically through www.grants.gov by 11:59 p.m. Eastern Time on the due dates established in the respective Request for Applications (RFA's). Any grant application submitted after the due date will not be considered unless the applicant provides documentation of an extenuating circumstance that prevented their timely submission of the grant application. Read more in [AMS Late and Non-Responsive Application Policy](#) (PDF, 431 KB).

For more information about grant eligibility and previously funded projects, visit the [FMPP webpage](#), [LFPP webpage](#) or [RFSP webpage](#) or contact us at USDAFMPPQuestions@usda.gov, USDALFPPQuestions@usda.gov, or IPPGGrants@usda.gov.

Technical Assistance

AMS offers RFA webinars for new applicants to help walk them through the RFA while also providing helpful hints on what has made past recipients successful. Additionally, Frequently

Asked Questions are posted on the [AMS Grants website](#), and grants management specialists are standing by to answer any incoming questions and emails during regular business hours.

USDA touches the lives of all Americans each day in so many positive ways. In the Biden-Harris Administration, USDA is transforming America's food system with a greater focus on more resilient local and regional food production, fairer markets for all producers, ensuring access to safe, healthy and nutritious food in all communities, building new markets and streams of income for farmers and producers using climate smart food and forestry practices, making historic investments in infrastructure and clean energy capabilities in rural America, and committing to equity across the Department by removing systemic barriers and building a workforce more representative of America. To learn more, visit www.usda.gov.

Announcements

Pesticide Safety Exam Reviews

Beginning in March the Delaware Department of Agriculture Pesticide Section will provide a Pre-Certification Pesticide Core Exam Review. This review will provide essential information, covering laws, equipment, personal safety and more to help you prepare for the core certification exam.

The core exam is for private pesticide applicators and a prerequisite for all commercial pesticide applicators.

2021 Pesticide Exam Dates

Wednesday, June 23, 2021

Wednesday, August 11, 2021

Wednesday, September 29, 2021

Wednesday, November 17, 2021

Schedule for Exam/Review Dates

Core Exam Review: 9 – 11:30am

Lunch Break

Pesticide Testing for ALL: 1 – 4pm

You may choose to test in the afternoon of the review or on another testing date.

Sign up is free!

Log into your account on dda.force.com/pesticide then click on Exam Registrations.

For more information on this training course and testing please contact Amanda Strouse at amanda.strouse@delaware.gov or 302-698-4575.

Extension302 Podcast

Episode 18: Cicada Mania!

With Dr. Brian Kunkel and Dr. David Owens

You've heard rumors about the impending Brood X emergence...but what is Brood X, and what does that mean for us here in Delaware?

To listen, go to:

<https://www.udel.edu/academics/colleges/canr/cooperative-extension/about/podcast/>

COVID-19 Vaccination Opportunities in Delaware

COVID-19 vaccination is currently available to Delawareans ages 12+ at numerous sites throughout the state. Some sites require an appointment and others offer walk-in hours. Information about vaccine sites and appointments is online at

<https://coronavirus.delaware.gov/vaccine/where-can-i-get-my-vaccine/>.

Mental Health First Aid Training

What is this training about?

The Mental Health First Aid training is an 8 hour evidence based program that introduces participants to risk factors and warning signs of mental illnesses, builds understanding of their impact, and overviews common ways to help and find support. Using interactive educational methods, you'll learn how to offer initial help in a mental health crisis and how to connect with the appropriate level of care. You will also receive a list of community healthcare providers and national resources, support groups, and online tools for mental health and addictions treatment and support.

What is the training format?

The course will be offered in two parts. The first part is offered online in a self-study format, takes about 2

hours, and needs to be completed before the live session. The second part will be offered live and virtually via a Zoom connection. This session will be held from 9am-3pm. You will receive the link for the self-paced session and Zoom info for the live session after you have registered. You need to register by the dates listed below to be able to attend the schedule live Zoom training date.

Why attend?

In Delaware our agriculture community is facing many stressors. Those who are in the position to consult and aid them need to know the signs, symptoms and strategies to best serve them. Farm family members also need to know how best to help their loved ones. This training is being taught by instructors from the Delaware Mental Health Association.

A certificate of completion is provided to attendees who attend all 8 hours of the training.

There are four dates for the Zoom session. Seating is limited. Please choose only one:

Mental Health First Aid Zoom Sessions with Registration Links

Friday, June 11, 2021 9 a.m.–3 p.m.

Register by May 15

<https://www.pcsreg.com/mental-health-first-aid-training-june-21>

Friday, July 30, 2021 9 a.m.–3 p.m.

Register by June 30

<https://www.pcsreg.com/mental-health-first-aid-training-july-2021>

Friday, September 24, 2021 9 a.m.–3 p.m. Register by August 24

<https://www.pcsreg.com/mental-health-first-aid-training-sept-2021>

Friday, October 5, 2021 9 a.m.–3 p.m. Register by September 5

<https://www.pcsreg.com/mental-health-first-aid-training-oct-2021>

This training is underwritten by the Sustainable Coastal Communities Project, Delaware Farm Bureau and University of Delaware Cooperative Extension. These organizations are equal opportunity providers.

University of Delaware's Spring Twilight Crop Update

Thursday, June 10, 2021 6:00-8:15 p.m.
Online via Zoom

Join your fellow producers and the UD Agriculture Extension team with a timely virtual update of this year's current production practices and topics as well as timely issues. Delaware nutrient management and pesticide credits will be available.

Please pre-register and a Zoom link will be sent to you the day before the meeting.

<https://www.pcsreg.com/university-of-delaware-2021-spring-twilight-crop-update-session>

AGENDA

Welcome and Introductions 6:00-6:05

Dan Severson, University of Delaware Cooperative Extension

Weed and Cover Crop Update 6:05-6:25

Mark VanGessel, University of Delaware Cooperative Extension Weed Specialist

2021 Insect Pest Outlook 6:25-6:45

David Owens, University of Delaware Extension Entomologist

Nutrient Management Update 6:45-7:05

Amy Shober, University of Delaware Extension Nutrient Management Specialist

Agronomy Update 7:05-7:25

Jarrod Miller, University of Delaware Extension Agronomy Specialist

Plant Pathology Update 7:25-7:45

Alyssa Koehler, University of Delaware Plant Pathologist Specialist

Plant Diagnostic Update 7:45-8:05

Jill Pollok, University of Delaware Plant Diagnostician

Conclusion and Evaluations 8:05-8:10

Dan Severson, University of Delaware Cooperative Extension

This program is brought to you by University of Delaware Cooperative Extension, a service of the UD College of Agriculture and Natural Resources, a land-grant institution. 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.

This institution is an equal opportunity provider. If you have special needs that need to be accommodated, please contact the office two weeks prior to the event.

Climate Adaptation Strategies Part One: Growing Degree Days and Heat Tolerant Varieties

Monday, May 17, 2021 6:00-7:15 p.m.
Online via Zoom

Using Growing Degree Days

Art DeGaetano, Professor Earth and Atmospheric Sciences Director, NOAA Northeast Regional Climate Center

Climate Smart Farming, a program from Cornell University, has introduced a suite of tools to help farmers adapt to Climate Change. One of these tools estimates Growing degree days (GDD), or heat units. GDDs are used to estimate the growth and development of certain crops and pests during the growing season. Corn growth, for example, follows very closely the accumulation of average daily temperatures during its lifetime. The 3 main applications of GDD are planning succession plantings, long term monitoring for selecting varieties and insect scouting. Two other applications are anticipating fruit tree phenology (for disease and insect scouting) and also predicting % weed emergence.

Using Heat Tolerant Varieties

Emmalea Ernest, Scientist, University of Delaware Cooperative Extension Vegetable & Fruit Program
Many vegetable crops experience yield loss or quality problems when exposed to heat stress. The UD Extension Vegetable and Fruit Program has been testing varieties for heat stress tolerance for several years and have identified heat tolerant snap beans, tomatoes, lettuce, sweet corn, broccoli, cauliflower and Brussels sprouts. Emmalea will discuss the physiological stages most susceptible to heat stress and

the heat tolerant varieties that have worked well in Delaware.

Register [here](#).

This event is hosted by NOFA-New Jersey and is the result of the Climate Adaptation Fellowship, supported by the United States Department of Agriculture NIFA (Award #2017-68002-26728)

Vegetative Buffers Demo Days

By using native plants, Delmarva poultry growers can:

- capture dust
- shade chicken houses
- deter Canada geese
- absorb excess nutrients before they reach local waterways
- reduce maintenance costs & time

We are inviting poultry growers out to see vegetative BMPs (best management practices) installed on two independent growers' properties. There will be two opportunities for poultry growers to come see what they can do to save time and money while supporting pollinators.

Nutrient management credits available.

Tasty lunch provided.

Event held rain or shine.

Two Dates/Locations

Thursday, June 3, 2021 11:00 a.m.-1:00 p.m.

Minh Ma's Farm

11686 San Domingo Road, Sharptown, MD 21837

Wednesday, June 9, 2021 11:00 a.m.-1:00 p.m.

Terry Baker's Farm

26073 Hidden Acres Lane, Millsboro, DE 19966

Due to COVID-19 registration is limited and required.

Register at:

www.NanticokeRiver.org/Chicken

or call the Delmarva Chicken Association:

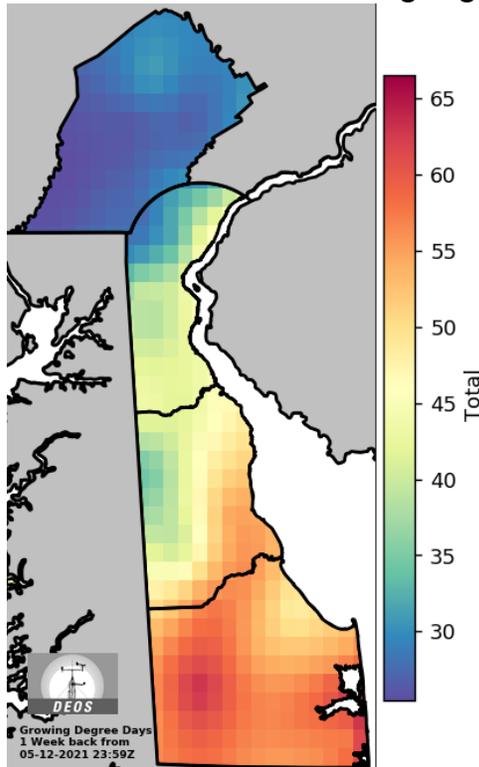
302-856-9037

Biosecurity boots will be provided. Please be sure to adhere to any biosecurity practices before and after visiting the farm.

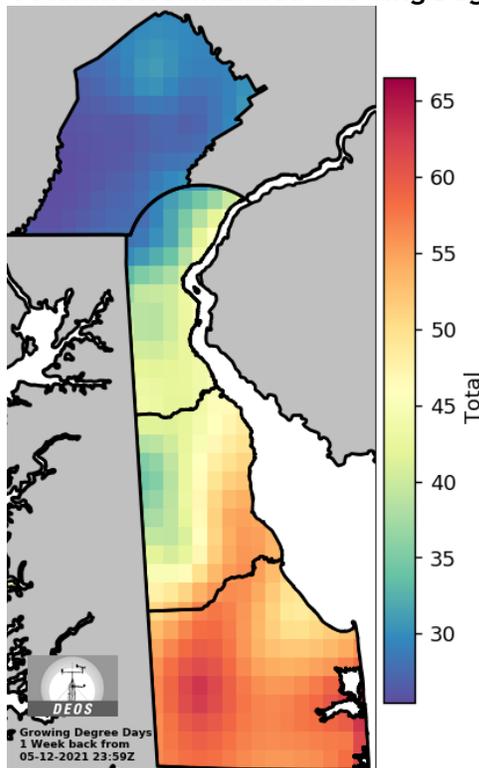
Funding provided by the Chesapeake Bay Trust, Delaware Department of Natural Resources and Environmental Control, and National Fish and Wildlife Foundation.

New Weather Summary!

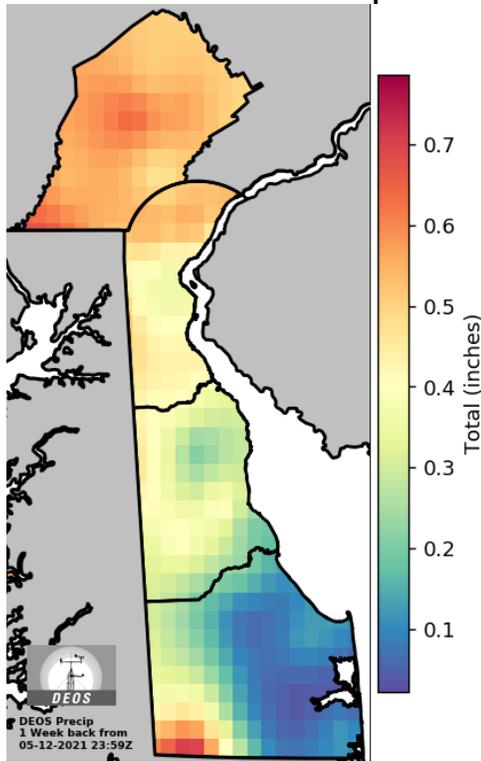
1 Week Accumulated Growing Degree Days



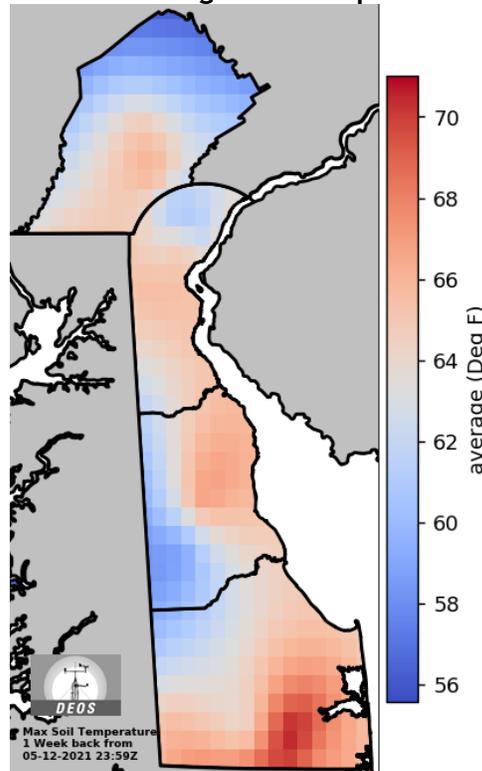
1 Month Accumulated Growing Degree Days



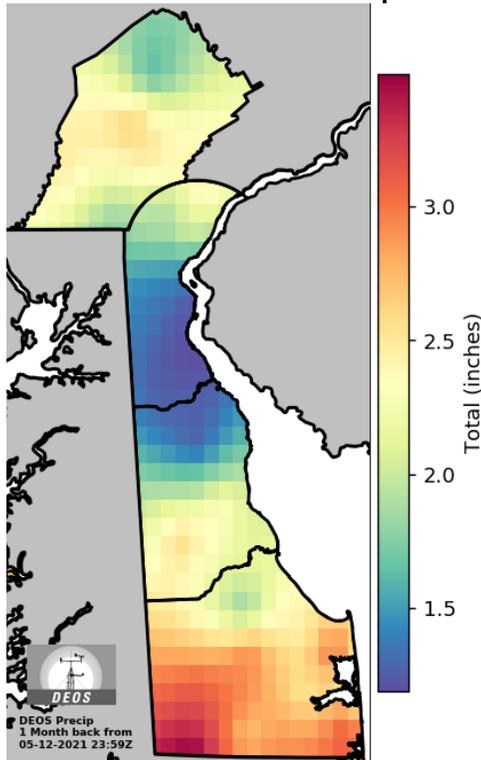
1 Week Accumulated Precipitation



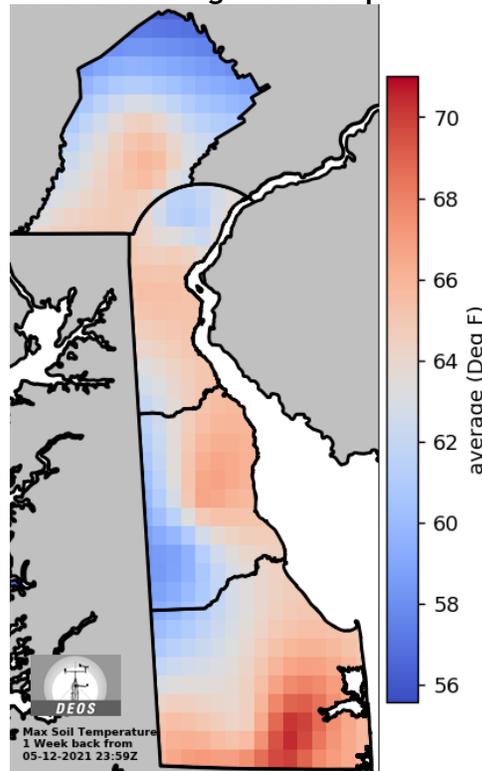
1 Week Average Soil Temperature



1 Month Accumulated Precipitation



1 Month Average Soil Temperature



These weather maps are generated from DEOS weather station data and are part of a new Ag Weather website that is under development. Your feedback is welcome!
Thanks!! Emmalea (emmalea@udel.edu)

***Weekly Crop Update is compiled and edited by
Emmalea Ernest, Scientist - Vegetable Crops***

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.