



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

Seedcorn Maggot

Seedcorn maggot first generation adults are active. If planting in a field that has had recent cover crop incorporation, a seed treatment may be warranted.

Cole Crops

Continue scouting for imported cabbageworm and aphids. Worm thresholds are based on plant growth stage. During the seedling and early transplant stage, treat when 20% of plants are infested. Prior to cupping or early head initiation, thresholds are 30%. Adjuvants to help spread droplets and stick them to the waxy cuticle will help improve coverage and efficacy. Aphid thresholds are based on % of infested plants or % infested leaves. If more than 10% of plants are infested, a treatment may be advisable, or if 20% of leaves have aphids. Cabbage aphids are generally not as problematic at the beginning half of the season, in part because coming hot weather reduces their reproduction.

Aphids

Melon aphids are active in various crops, including cucurbit transplants. This spring has also been favorable to pea aphids in alfalfa. If you have vegetables for which aphids are especially problematic, such as spinach, be sure to scout them carefully.

Corn Earworm Management in Sweet Corn Needs Assessment Survey

Dr. Kelly Hamby, Associate Professor/Extension Specialist with the Department of Entomology at University of Maryland, is leading a team of researchers who have developed a survey to prioritize research and extension efforts for improving corn earworm management in sweet corn throughout the Northeast. We appreciate your participation in this survey and will use results to develop a grant proposal targeting federal funds to address these needs.

Survey link:

https://ume.qualtrics.com/jfe/form/SV_9vRh1xHnDp4KEaa

How to Disinfect Stakes Before Reuse - Gordon Johnson, Extension Vegetable & Fruit Specialist; gcjohn@udel.edu

Many growers reuse stakes used in supporting crops such as tomatoes and peppers. Bacterial and fungal diseases have been shown to survive on wooden stakes and can be a source of new infections. Plant diseases survive on plant debris and soil on the surface of stakes and can also survive on the interior of stakes due to the porous nature of the wood. Therefore, where wooden stakes are reused, it is recommended that they be disinfected.

Before disinfecting, all crop debris and soil should be removed from stakes by brushing or washing or a combination. Dirt and debris can protect pathogens and de-activate disinfectants.

Disinfecting Options

1. Soak stakes in a disinfectant solution for a minimum of 20 minutes (30 minutes preferred). Stakes should be completely submerged so solution surrounds each stake. Use weights to hold stakes under water. Options include:

a) Chlorine bleach (5.25% sodium hypochlorite or higher) is commonly used as a disinfectant. Use bleach at a rate of 0.5% (=1 part bleach + 9 parts water). For more concentrated bleaches reduce rates accordingly. Use in a well-ventilated area. Soak stakes for 30 minutes. Chlorine bleach is effective; however, it is short-lived after mixing in water, with a half-life of only 2 hours, and it is inactivated by organic matter so additional bleach will need to be added or new solutions made up frequently. It is crucial to maintain the pH of the bleach solution within the 6.0 to 6.5 range, as effectiveness decreases at lower and higher pH levels.

b) Quarternary ammonium disinfectants like Green-Shield is more stable than bleach after diluting with water. Use at a rate of 0.5 fluid ounce per of Green-Shield in 1 gallon water.

c) Hydrogen dioxide, hydrogen peroxide and peroxyacetic acid products such as an OxiDate or SaniDate can also be used to disinfect stakes (some are organic certified). Check the labeled rate for the formulation you choose.



Tomato stakes soaking in a disinfecting solution.

2. Apply heat to stakes to kill pathogens present. This can be done with a commercial kiln, seed dryer, or pasteurizer. Heat should reach a minimum of 140° F for at least 30 minutes.

Pathogens are eliminated from wooden stakes with exposure to $\geq 220^{\circ}\text{F}$ for ≥ 15 minutes.



A steam pasteurizer that is used for soils can also be used to disinfect stakes.

New Rootstock Protects Watermelons Against Fusarium and Root Knot Nematodes

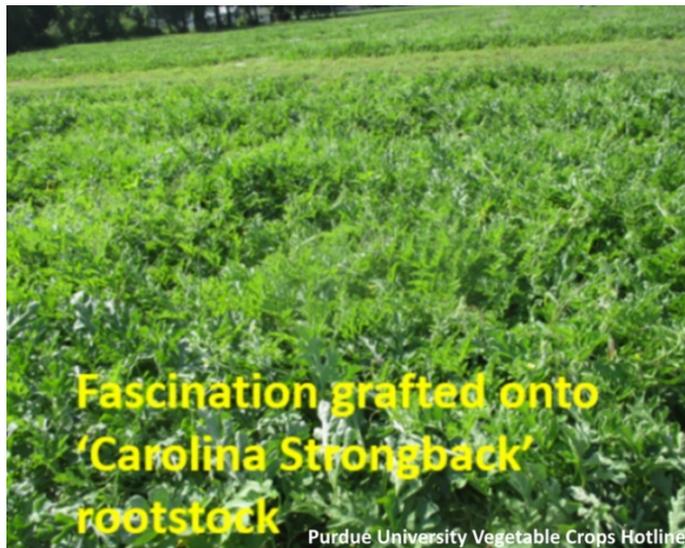
-Gordon Johnson, Extension Vegetable & Fruit Specialist; gcjohn@udel.edu

Delmarva watermelon growers have challenges from two soil borne pests, Fusarium Wilt, and Southern Root Knot nematodes. Current management practices include long rotations with non-hosts, soil applied fungicides and soil applied nematicides.

There is now another tool that growers can use to manage these pests where both pathogens are present -- grafting watermelon plants onto "Carolina Strongback" rootstock.

Carolina Strongback was bred by USDA-ARS scientists and was tested by Clemson University researchers in South Carolina. It is a cross between several wild watermelon citron lines and was released in 2019. According to the USDA-ARS "Selected for its grafting qualities and seed production, Carolina Strongback material can be used by seed companies, vegetable grafting companies and watermelon growers as a rootstock for growing susceptible watermelon cultivars in soils infested by the watermelon Fusarium wilt pathogen (races 1 and 2) and (southern) root-knot nematodes".

This rootstock was used in 2020 with grafted seedless watermelons in many locations and performed well. We expect increased availability in the future.



Beet and Spinach Leafminers Active - Jerry Brust, IPM Vegetable Specialist, University of Maryland; jbrust@umd.edu

Spinach and beet leafminers have been around in low numbers for the past few weeks but have increased rapidly in the last 5-6 days. These leaf miners are found in beets, swiss chard and spinach but I usually find them more in swiss chard than spinach. Both of these leafminers are a type of blotch leafminer, creating irregularly shaped mines. These flies attack crops and weeds in the plant family Chenopodiaceae, which includes chard, beets, and spinach and the weed lamb's quarters. Both fly species are very similar, but the spinach leafminer may also feed on Solanaceous crops such as peppers.

Adults are small flies about 1/3 inch in length and gray to brown. Larvae are whitish and cone-shaped. Flies of both species overwinter as pupae in the soil. In April and May, flies emerge and lay easily seen bright white eggs in groups of 4-8 on the underside of leaves (Fig. 1). Eggs hatch and larvae begin feeding between leaf tissues creating mines (Fig. 2). As the larvae feed and develop, they create areas of dead tissue where they have fed. These areas are opaque at first and then later turn brown (Fig. 3). Once inside the leaf tissue larvae are difficult to control. The larvae are active for about two to three weeks, before dropping to the ground and pupating in the soil. The entire life cycle is

30-40 days. There are three to four generations per season. Once the summer is over, leafminers will overwinter as a puparium in the soil emerging in early spring the next year to start the cycle again.

If you have seriously infested spinach or swiss chard now and you plan to make additional plantings of these crops this season it should be done in a different area of the field because of pupae still in the soil. Once the spinach or chard is planted in a new area a row cover or chemicals can be used to protect the plants and keep the leafminer flies that will emerge from the previous infested sites from laying eggs. Because these leafminers feed mostly on one crop group and some weeds that include chickweed, pigweed and lamb's quarters, weed control and crop rotation are important management tools.

Chemical controls such as dinotefuran, thiamethoxam and spinetoram (spinetoram also has translaminar activity and if combined with an adjuvant is more effective against larvae) are foliar and soil controls for use in spinach. Chemical controls for leaf miners in other crops are more limited, so check the [2020-2021 Mid-Atlantic Commercial Vegetable Production Recommendation](#) guide and always follow label instructions. For organic production spinosad (Entrust) with horticulture oil can provide good control especially if used at or before egg laying and has only minor impacts on natural enemies. Neem oil can be used to prevent egg laying but is not as effective as spinosad. As always thorough coverage is necessary for good control which includes getting the material to the underside of the leaf.



G Brust, University of Maryland
Figure 1. Leafminer eggs are white and laid on underside of leaves



G Brust, University of Maryland

Figure 2. Leafminer eggs have hatched and larvae are mining between leaf layers



G Brust, University of Maryland

Figure 3. As larvae grow their damage becomes more pronounced

Fruit Crops

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

The week of April 21-28 saw our first captures of male San Jose scale in pheromone traps in all three orchards in which we have traps. Trap captures are used to set a 'biofix' to begin accumulating degree days. First generation crawlers emerge between 300-350 degree days, base 50. This is generally around 30 days after male trap capture. If you had San Jose scale spotting on 1% or more of fruit last season, control measures are recommended. Exact timing can be achieved by monitoring for crawlers using dark double-sided tape on

infested branches twice per week. Crawlers are bright yellow.

Spotted Wing Drosophila Updated Efficacy Chart - David Owens, Extension Entomologist, owensd@udel.edu

Extension entomologists working with spotted wing drosophila, and specifically a group spearheaded by Ash Sial at the University of Georgia, have made updates to insecticide efficacy rankings against SWD. You can find the rankings here: <https://swdmanagement.org/wp-content/uploads/2021/05/SWD-rankings-document-2021.pdf>. Pay attention to products and mode of action class for efficacy and rotation. Not all members of a MOA perform equally well.

Primocane Blackberries - Gordon Johnson, Extension Vegetable & Fruit Specialist; gcjohn@udel.edu

Originally, commercially available blackberries were floricanes types, that is, they fruit on last year's canes. Over the last decade, the University of Arkansas has released a number of primocane blackberries that are commercially viable. Primocane blackberries fruit on current season canes, allowing for blackberry production from mid-summer through frost. In subsequent years they have the potential for two-season fruiting - in early summer on overwintered canes and as a late summer and fall crop on current season primocanes - as much as 6 months of production.

What is exciting about primocane blackberries is that they offer extended production potential into the fall. They also offer flexibility in production as they can be treated as a two-season fruiting crop summer and late summer-fall (overwintered and primocane production) or single season (primocane only) production late summer-fall. Blackberries are generally well adapted to Delmarva conditions but will shut down if temperatures stay in the 90s for extended periods. Primocane blackberries will be flowering and fruiting much of the time in the cooler late summer and fall.

Some recommended Primocane Blackberries for trial on Delmarva:

Thornless

Prime-Ark Horizon
Sweet-Ark Ponca
Sweet-Ark Caddo
Prime-Ark Traveler
Prime-Ark Freedom

Thorny

Prime-Ark 45

Variety descriptions can be found at this site:

<https://aaes.uada.edu/fruit-breeding/blackberries/>



Prime Ark Freedom Blackberry - the original thornless primocane release with large berries well adapted to U-pick in Delaware.

Low to Moderate Levels of Two Spotted Spider Mites in Strawberries - Jerry Brust, IPM Vegetable Specialist, University of Maryland; jbrust@umd.edu

I visited some strawberry fields over the last few days in Maryland and while most of the fields were on plastic, some were matted row production. Overall, I found low levels of mites in most of the fields, with a few hot spots. There was only one species of mite found: the two spotted spider mite, *Tetranychus urticae*. Overwintering female two spotted spider mites are an orangish-red (Fig. 1) and most of the mites that can be seen with a naked eye will appear reddish in color. Spider mites overwinter in the soil or leaf litter, although they may remain somewhat active in high tunnels through the winter.

I found mite eggs in several locations. The light yellowish eggs are pearl-like in appearance and are attached to the underside of leaves or stems (Fig. 2). Feeding damage by mites that occurs before fruiting can cause the most yield loss, but after the first strawberry harvest plants can tolerate much greater rates of infestation. Growers should check their strawberries for mites now, especially if you have them in a high tunnel. If you find mites you will need more than 5 per leaflet (1/3 of a leaf) to justify the expense of a miticide application.

The most difficult thing to achieve for good mite control is getting adequate spray coverage. Many of the spray applications do a good job of covering the top of the leaves but do a poor job of reaching the underside of the trifoliolate. The underside area of the leaf that usually sees very little chemical deposition is in the 'palm' of the leaf. This is the area where mites can still be found even after a few sprays and need to be carefully checked a few days after an application. Good coverage is essential. One grower uses a backpack fogger-atomizer sprayer and applies two sprays of 1% (by volume) horticultural oil 7-10 days apart. The grower achieved excellent spray coverage on the underside of leaves and consequently excellent control of mites. By using two applications about one week apart it is possible to control not only the adults and nymphs, but the eggs as well. Oil is a good management tactic to use at this time of year as the plants are small and any phytotoxic response from using the oil is a low risk. An added benefit of the oil is that it is rather inexpensive.

I would like to see more growers use something like oil now and save the other chemicals for later in the season when plants are larger and there is a flare up of mites or other pests. Using oils now will also greatly reduce any development of mite resistance to other chemicals over the course of the season. If miticides are needed there are many excellent miticides available such as Agri-Mek, Acramite, Portal, etc. that can be found in the [2020/2021 Mid-Atlantic Commercial Vegetable Recommendations](#) guide.

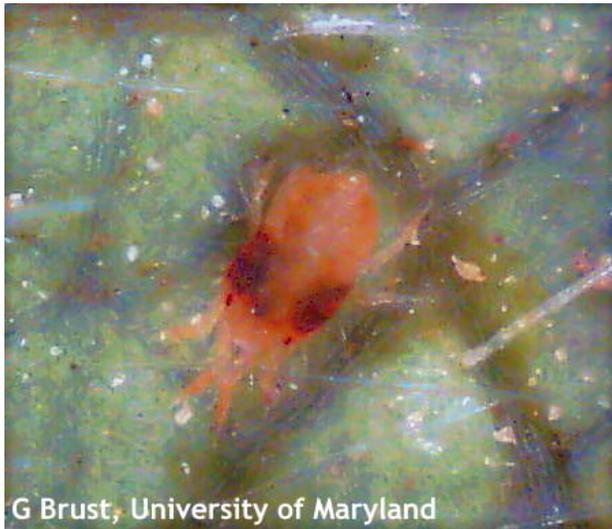


Figure 1. Overwintered two spotted spider mite female with orangish-red coloration.

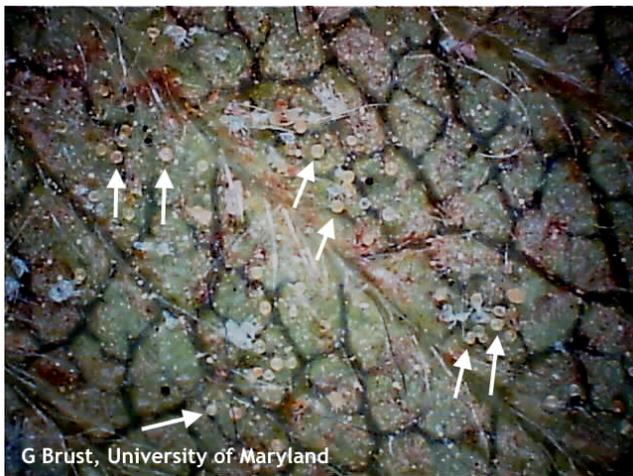


Figure 2. Many two spotted spider mite eggs (arrows) on back of a leaflet

Agronomic Crops

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

Slugs

Last week was good weather for crop emergence and limited slug activity. However, this week's forecast cooler weather, along with recent rains or forecast rains will make fields more favorable for slug injury. Be watching soybean closely this week.

Growing Degree Days through May 3rd - 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

While it may not seem much warmer than it was in 2020, having steady days above 50°F has provided much faster emergence than last year. In 2020 we were getting about 10 growing degree days (GDD) per day, while now we are seeing 15-20. The threshold for emergence is about 100-120 GDD, which we have reached for most fields planted between April 15 and April 22nd (Table 1). In 2020, we had only reached half of that (60-90 statewide) over the same time period.

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

County	April 15	April 22	April 29
New Castle	131	113	70
Kent	160	130	82
Sussex	155	132	85
2020 Comparison			
New Castle	61	61	58
Kent	74	67	63
Sussex	89	88	81

We have observed corn emerging in 6-7 days for fields planted April 27th at the Carvel Research Center, instead of the typical 10 days this time of year. This sharp increase in temperatures occurred statewide around April 26th (Figure 1). Up until that point, Kent County had been a little warmer than Sussex, but our typical trends are starting to fall out, with Sussex warming up in the last week. There doesn't look to be a change in the trend over the next week, so expect corn to pop within 6-7 days, and make sure any necessary pre-emergence applications are made.

We have had sparse and smaller rainfall events, so soil moisture has been falling (Figure 3 - through May 3rd). Our topsoil has enough moisture for germination, but keeping checking and make sure your corn doesn't suffer with these ideal temperature conditions.

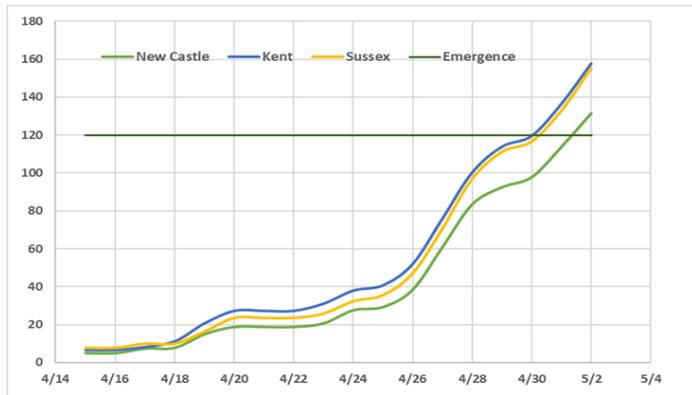


Figure 1. Accumulated Growing Degree Days in each County Since April 15th.

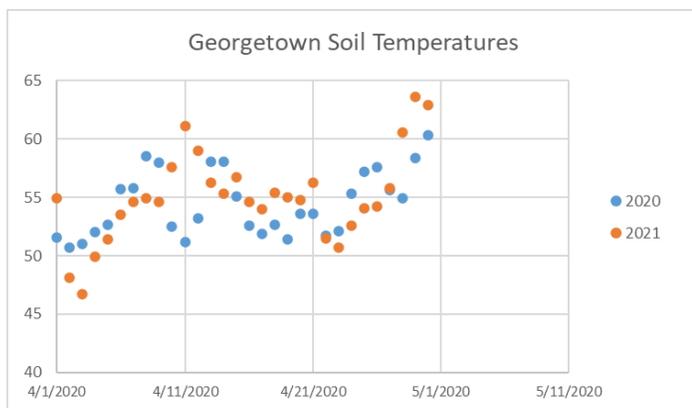


Figure 2. Soil temperatures in Georgetown over the last month.

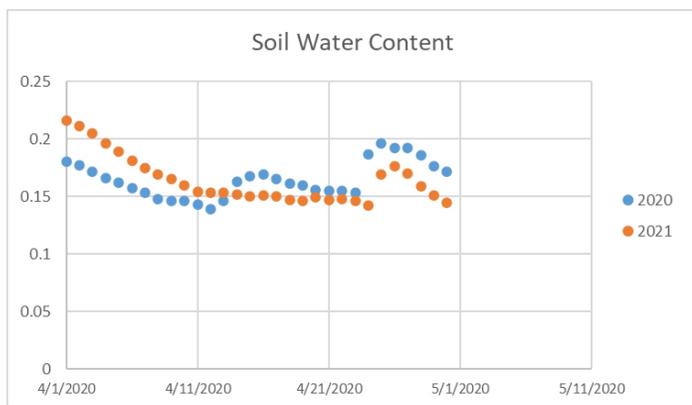


Figure 3. Soil Moisture in Georgetown over the last month.

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

Most barley is at the end of anthesis and I am beginning to see wheat heads emerge. Although there was rain this week, our region remains at low risk in the Fusarium Risk Tool (Figure 1). We will continue to keep a watchful eye over the next week or two as wheat flowering occurs across the state.



Figure 1. FHB Risk Model for May 6, 2021

If you are planning for wheat fungicide application, scout frequently looking for yellow anthers in the center of the wheat head to signal that flowering has begun (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. The North Central Regional Committee on Management of Small Grain Diseases has released their 2021 fungicide efficacy ratings for the most common small grain diseases (Table 1). The full publication can be found at <https://cropprotectionnetwork.org/resources/publications/fungicide-efficacy-for-control-of-wheat-diseases>

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
	Tebuconazole 22.6%			G	VG	VG	VG	VG	E	VG	NL	35 days
11	Picoxystrobin 17.9%	Approach Prima SC	3.4 – 6.8	VG	VG	VG	VG	E	VG	--	NR	45 days
	Cyproconazole 7.17%			VG	VG	VG	VG	E	VG	--	NR	45 days
11	Trifloxystrobin 13.7%	Delaro 325 SC	8.0	G	VG	VG	VG	VG	VG	VG	NL	Feekes 10.5
	Prothioconazole 16.0%			G	VG	VG	VG	VG	VG	VG	NL	35 days
7	Pydiflumetofen 13.7%	Miravis Ace SE	13.7	VG	VG	VG	VG	VG	VG	VG	G ⁵	Feekes 10.5.4
	Propiconazole 11.4%			VG	VG	VG	VG	VG	VG	VG	G ⁵	Feekes 10.5.4
7	Fluxapyroxad 2.8%	Nexicor EC	7.0 – 13.0	VG	VG	E	E	E	E	VG	NL	Feekes 10.5
	Pyraclostrobin 18.7%			VG	VG	E	E	E	E	VG	NL	Feekes 10.5
3	Propiconazole 11.7%	Priaxor	4.0 – 8.0	G	VG	VG	E	VG	VG	G	NL	Feekes 10.5
	Fluxapyroxad 14.3%			G	VG	VG	E	VG	VG	G	NL	Feekes 10.5
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
	Propiconazole 11.7%			VG	VG	VG	VG	E	E	VG	NL	Feekes 10.5.4
11	Trifloxystrobin 32.3%	Stratego YLD	4.0	G	VG	VG	VG	VG	VG	VG	NL	Feekes 10.5
	Prothioconazole 10.8%			G	VG	VG	VG	VG	VG	VG	NL	35 days
7	Benzovindiflupyr 2.9%	Trivapro SE	9.4 – 13.7	VG	VG	VG	VG	E	E	VG	NL	Feekes 10.5.4
	Azoxystrobin 10.5%			VG	VG	VG	VG	E	E	VG	NL	Feekes 10.5.4
3	Propiconazole 11.9%	Topguard EQ	4.0 – 7.0	VG	NL	VG	VG	E	E	VG	NL	Feekes 10.5.4
	Azoxystrobin 25.30%			VG	NL	VG	VG	E	E	VG	NL	35 days
	Flutriafol 18.63%	VG	NL	VG	VG	E	E	VG	NL	35 days		

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).

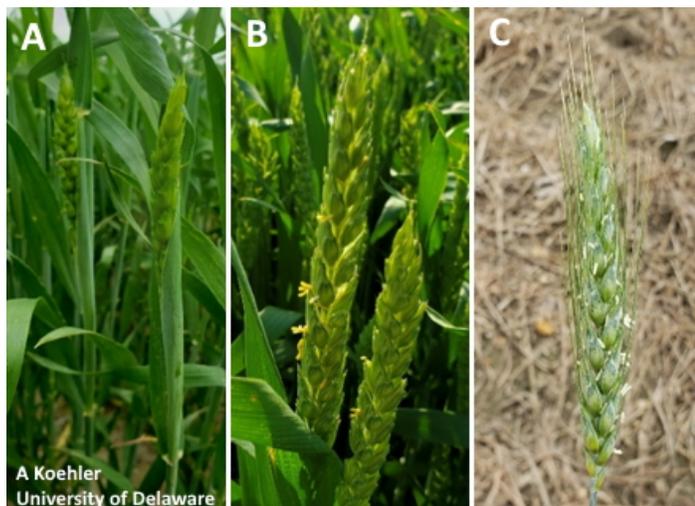


Figure 2. (A) Feekes 10.3; (B) anthesis, Feekes 10.5.1 (yellow anthers beginning flowering); (C) 4 days after anthesis (white anthers post flowering).

General

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

Trap captures for black cutworm have increased considerably over last week. While this does not mean a given field will have a problem, it does indicate that there is risk for cutworm on further late terminated cover crops and provides us a good indicator of when to begin scouting for cutworm cutting.

True armyworm is generally low, except for northern Kent/southern New Castle County. Trap capture is high, and is in the range of Kentucky trap counts during their previous outbreak year. While this suggests that this area may be at risk for armyworm in wheat, armyworm has many other hosts and does not necessarily indicate a problem will develop. Further complicating management strategies is pre harvest interval. Most, but not all, pyrethroids have a 30 day pre harvest interval.

Location	Number of Nights	Total catch TAW	Total Catch BCW
Willards, MD	7	2	60
Salisbury, MD	7	0	4
Laurel, DE	7	10	39
Seaford, DE	7	2	43
Sudlersville, MD	7	11	16
Harrington, DE	7	7	93
Smyrna, DE	6	621	83
Middletown, DE	7	103	56

Guess The Pest! Week 5 Answer: Radiation Frost - David Owens, Extension Entomologist, owensd@udel.edu

Mr. John Hockmuth logged a good guess for last week's condition as anthracnose. There is an anthracnose that affects sycamore trees, especially in cool, wet years. Anthracnose can keep sycamores from leafing out and giving the tree a gnarly appearance. Upper canopy twigs seem to be less affected. You can read more about this disease here:

<https://www.purduelandscapereport.org/article/sycamore-anthracnose-dont-let-the-rains-get-you-down/>. However, the other condition that is a more immediate concern to the foreground blueberry bushes is a late freeze.

This from Dr. Emmalea Ernest:

It might be a stretch to call freezing weather a pest, but it certainly can wreak havoc when fruit crops are flowering in the spring. The site pictured experienced a low of 25°F in the early morning hours of April 23, 2021. The freeze damage to the bottom, but not the top of the London planetree (a species with frost sensitive leaves) shows the effect of a **radiation frost** event; these tend to happen on clear, calm, low humidity nights. Radiation frosts create a temperature inversion with colder air temperatures near ground level and warmer temperatures in a layer 40-70 ft off the ground. Based on the height of the freeze damage to the London planetree it looks like this inversion layer was about 40 ft from ground level.

When radiation frosts are predicted, tree fruit growers can use helicopters or wind machines to mix warmer air from the inversion layer with the

cold air near the ground to keep the air around the trees above critical temperatures for damage. Smaller plants, like strawberries, can be protected from radiation frosts with row covers.



E Ernest, University of Delaware

The other type of frost/freeze event, an **advective frost**, occurs when a mass of cold air moves into a region accompanied by wind. It is much more difficult to protect tree fruit from an advective frost. Low growing crops can sometimes be protected from advective frosts with row covers. Frost protection techniques and critical temperatures for various crops have been covered in several past WCU articles linked below, but fingers crossed for no more freezes this spring!

[Freezes, Frost and Frost/Freeze Protection](#)
[Cold Damage in Fruits](#)
[False Spring Concerns - Again](#)
[Fruits and Freeze Damage During Flowering](#)

As a side note, the April 23 freeze did not cause discernable damage to the blueberries but did significant damage to nearby peaches and Asian pears.

Guess The Pest! Week 6 - 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!

In this picture of a barley field, there are two other grasses heading out on the left-hand side of the photo. What are they?



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



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/>

Cool Cell Pad Maintenance Workshop

With hot summer months just around the corner, it's time to brush up the basics of evaporative cooling systems and earn some nutrient management credits in the process. Join us Monday, May 10 or Tuesday, May 11 for our two featured speakers.

Speakers

Challenges in Maintaining Evaporative Cooling Systems

Eric Spell, SWASH™

- Common issues that affect cool cell pad performance
- Understanding effects of hard water, how scale build up occurs and tips to combat it
- Best practices to extend the life of pads

The Importance of Pad Maintenance

Isaac Singletary, Munters

- Effects of pad maintenance on house temperatures, pressure, fan performance, and tunnel velocity
- Impact of cooling systems on bird comfort and performance
- Pad maintenance best practices

Two Dates/Locations

Monday, May 10 10:00 a.m. – 12:00 p.m.
Caroline County 4-H Park - Williams Pavilion
8230 Detour Road, Denton, MD 21629

Register now!

[Click here](#) to register for the May 10 event.

Attendance is limited so don't wait!

Tuesday, May 11 10:00 a.m. – 12:00 p.m.
Winter Place Park & Equestrian Center
6737 Blue Ribbon Road, Salisbury, MD 21804

Register now!

[Click here](#) to register for the May 11 event.

Attendance is limited so don't wait!

A boxed lunch will be served following the event. Nutrient Management credits will be available. Registration is limited to the first 33 people. We will follow Maryland COVID-19 guidelines, so please wear masks over your nose and mouth, and do not attend if you have any cold-like symptoms. If you register and

cannot attend, please let us know as soon as possible so we can open up the event to others.

COVID-19 Vaccination Opportunities in Delaware

COVID-19 vaccination is currently available to Delawareans ages 16+ 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 Shoher, 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

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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

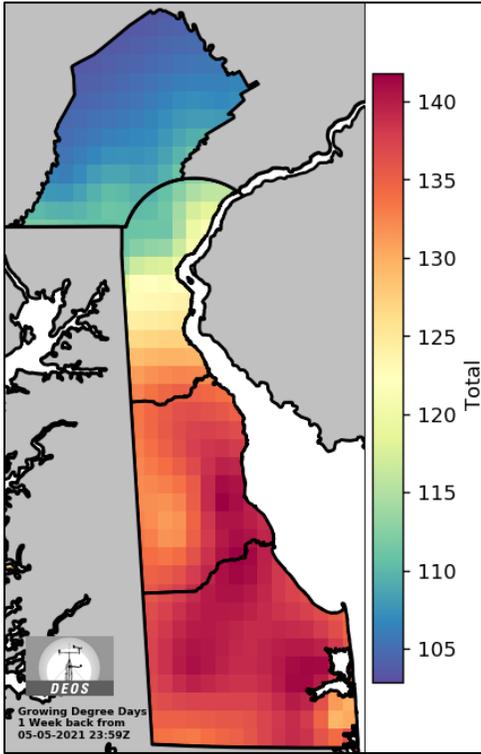
Emmalea Ernest, Scientist, University of Delaware Cooperative Extension Vegetable & Fruit Program
Many vegetable crops experience yield loss or quality problems when exposed to heat stress. The UD Extension Vegetable and Fruit Program has been testing varieties for heat stress tolerance for several years 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](#).

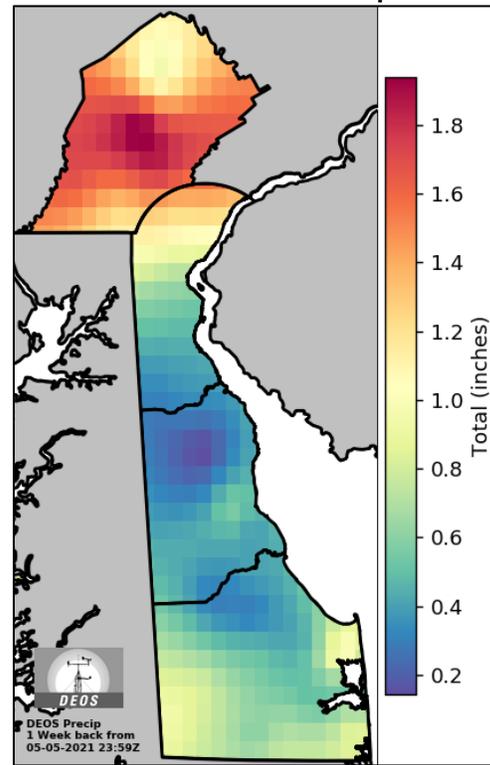
This event is hosted by NOFA-New Jersey and is the result of the Climate Adaptation Fellowship, supported by the United States Department of Agriculture NIFA (Award #2017-68002-26728)

New Weather Summary!

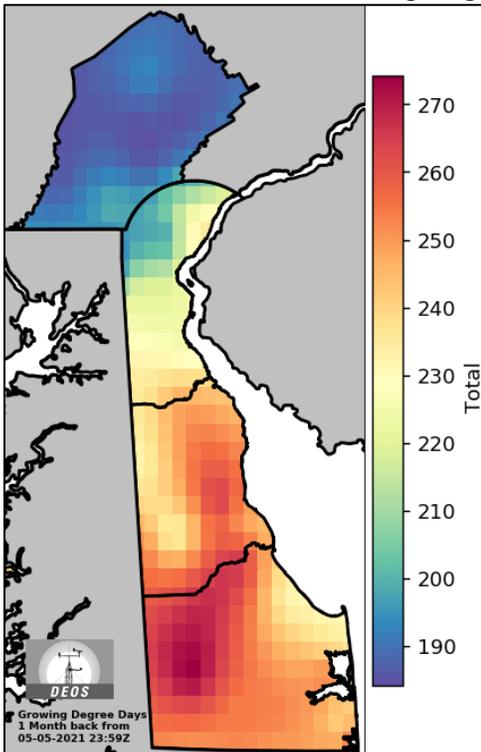
1 Week Accumulated Growing Degree Days



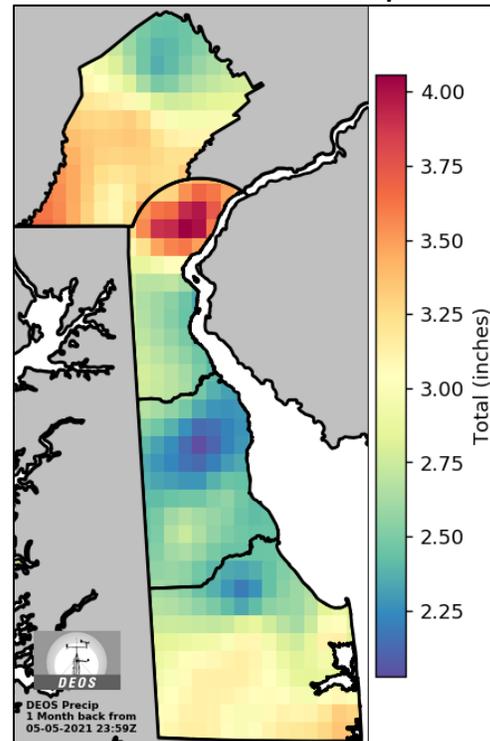
1 Week Accumulated Precipitation



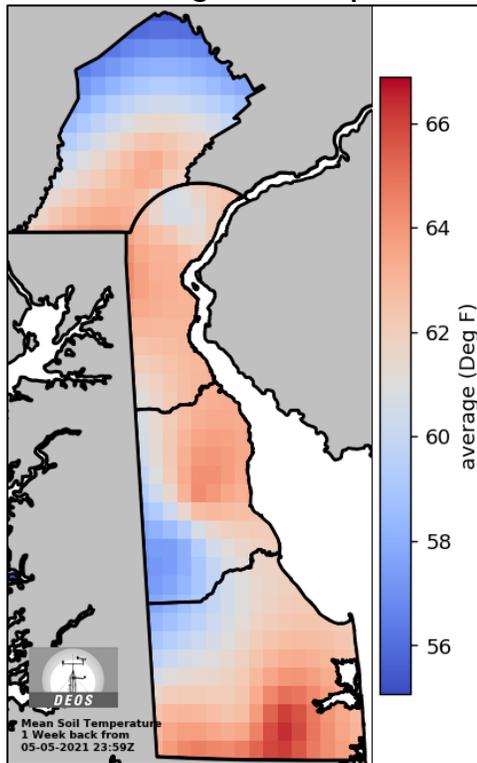
1 Month Accumulated Growing Degree Days



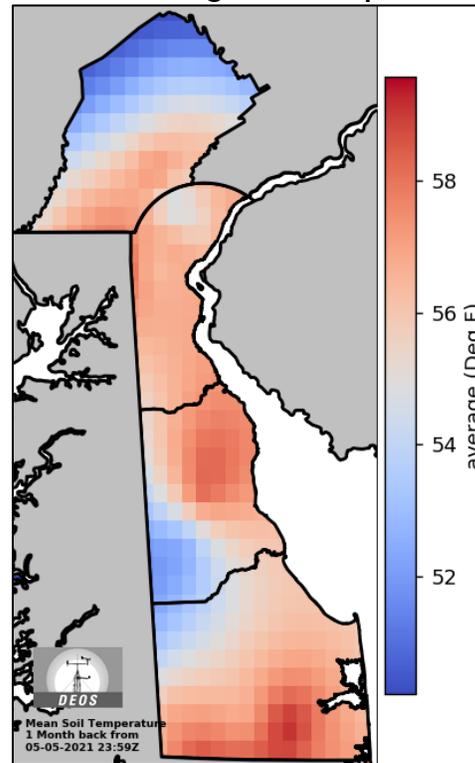
1 Month Accumulated Precipitation



1 Week Average Soil Temperature



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, Associate Scientist - Vegetable
Crops***

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