

# WEEKLY CROP UPDATE



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## Vegetable Crops

**Vegetable Crop Insect Scouting** - David Owens, *Extension Entomologist*, [owensd@udel.edu](mailto:owensd@udel.edu)

### Greenhouses

This week Cody Stubbs scouted several watermelon greenhouses. Low numbers of mites were observed in 3 of 17 greenhouses. Check plants nearest to entrances and to any weeds growing in the greenhouse or along sidewalls. Look underneath of leaves that show stippling. If a mite infestation gets started in the greenhouse, it puts the field at greater risk for earlier treatment. Mites can be targeted in 4 ways: greenhouse specific miticides (often, but not always different from field branded products), predatory mite application in the greenhouse or on transplant wagons, field-use miticides on transplant wagons, or wait and scout the field after planting and treat when mite populations go above the nominal action threshold of 2 mites per crown leaf on 1/3 to 1/2 of the plants scouted. Check labels carefully before applying a product to a greenhouse. Make sure that there is no language preventing the use of a product indoors, in a greenhouse, hot house, or enclosed space. Some labels are silent on this matter, and states interpret silent labels differently. Check with your local Extension agent how a state would interpret product use in your specific situation.

Aphids were found in greenhouse tomato and pepper transplants as well. Aphids on tomatoes can be controlled by many of the same products

used for early season insect pest prevention (such as flea beetles).

### Spotted Lanternfly

Spotted lanternfly eggs are hatching. Be on the alert when moving equipment or plants out of the quarantine areas. Early instar nymphs are black with white spots.

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**More on Cold Damage and Wind Injury in Vegetables** - Gordon Johnson, *Extension Vegetable & Fruit Specialist*; [gcjohn@udel.edu](mailto:gcjohn@udel.edu)

Over the last 2 weeks we have had freezing temperatures in some locations, high winds, and wind-blown sand that have damaged early planted vegetables. May 7 and 8 saw sustained high winds with peak gusts over 30 mph causing significant plant stress and injury.

This combination has resulted in extensive damage in vegetable crops. Some symptoms are marginal leaf burn, leaf bleaching, leaf desiccation, leaf dropping, stem browning, and in some cases, plant losses. Symptoms are most severe on newly transplanted crops or transplants that have not yet rooted in well. In conventionally tilled field there was extensive sandblasting on our light soils with high winds.

Growers with damage should evaluate plants for the extent of damage and need for replanting. Wilted, snapped, broken, or severely “wind burnt” plants may need to be replaced. Growers should also consider applying protectant fungicides/bactericides to reduce infections by opportunistic disease organisms on damaged tissues.

## Potatoes

Damage on potato will appear 1-3 days after the freeze event. The symptoms commonly will be black areas on leaves that dry out. Seed pieces are well below ground and will not be damaged. If the apical meristem is killed, the growing point will move to an axillary bud(s) lower on the stem and growth will continue. The plants may be set back a few days depending on the severity of the damage. Temperatures between 29-32 °F will cause minor injury, but temperatures below 28 °F may kill the plant to the ground.

## Cantaloupe

Early planted cantaloupe has been damaged by cold temperatures and high winds. Symptoms of damage are desiccation, dry paper like leaves, light brown to tan areas on leaves, stem browning and plant wilting. Cantaloupes with cold damage will likely remain stunted and may need to be replanted.

## Watermelons

Several hundred acres of watermelons were transplanted over the last 2 weeks on Delmarva. Freezing temperatures and high wind caused severe damage in some fields that will require selective replanting. Fields with strong rye windbreaks had the least damage. Wind-blown sand has “sandblasted” some fields. Symptoms of damage on watermelon will be dark brown to black areas on leaves that become papery. Plants with live growing points will recover; however, if the growing point was damaged, the plants would have to regrow from the buds at the cotyledon.

## Sweet Corn

Hundreds of acres of both processing and fresh market sweet corn have been planted. Growth has been slow and many fields have freeze and “sand blasting” damage. Effects on corn will depend on where the growing point is and if the growing point was damaged. At V-4, the growing point is just below the ground. By V-6, the growing point is above the ground. For most sweet corn, a light freeze will damage the leaves but the plants will continue to grow because the growing point is still alive. In a sand-blasted field, even though the growing point is still below the ground, the plant is cut off at the soil line. There are no leaves left and

an open wound subject to disease entry. These fields may have to be replanted.

## Peas in Flower

Peas in flower can tolerate short periods below 32 °F (a few hours). However, several days in a row with night freezes will cause yield losses. The most common symptom of damage to peas is blanks where seeds are missing in the pod due to incomplete pollination. This has been observed in early varieties such as Jumpstart in the past.

## Tomatoes

Throughout Delaware, freezing temperatures damaged or killed unprotected tomatoes. Tomatoes are a warm season vegetable that cannot tolerate any frost or freeze event. Damaged plants will have to be replaced.

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**The Value of Windbreaks for Early Vegetable Production** - Gordon Johnson, *Extension Vegetable & Fruit Specialist*; [gcjohn@udel.edu](mailto:gcjohn@udel.edu)

We are seeing great benefits with the use of high-quality windbreaks in vegetables in 2022.

Windbreaks are a very useful tool for producing early vegetables. Most commonly, rye is used because it grows taller than other small grains and elongates in April. Using rye windbreaks requires planning because they are planted the previous fall (September-October).

Windbreaks can be planted between every vegetable bed, every 2-3 beds, or in drive row areas only. For early protection, every-bed windbreaks are recommended. Most commonly a drill is used and 2-4, 7” drill rows of rye are planted, and the other drill spouts are blocked off to leave the area where the vegetable crop will grow (bed areas) unplanted. As an alternative, the field can be solid planted and areas between windbreaks can be tilled in early spring to terminate the rye in bed areas. Windbreaks can be used in bare ground systems but are most effective when combined with plasticulture

Windbreaks serve several functions:

1) Windbreaks block high winds, thus protecting transplants and seedlings from direct wind damage (whipping, tearing, shredding, and breaking stems and leaves).

2) Windbreaks reduce or eliminate “sandblasting” in sandy soils where fine sand particles are picked up by the wind. Sandblasting can severely damage young plants by shredding leaves and cutting stems.

3) Windbreaks reduce transpiration losses in young transplants thus reducing losses to wilting and desiccation.

4) Windbreaks reduce convective heat losses from the soil, thus providing a warmer environment for early growth.

5) Windbreaks can serve as a mulch between plastic beds, reducing soil contact for vining crops such as melons, thus producing cleaner fruit and reducing the potential for soil borne diseases infecting fruits.

Rye is the most common crop used for windbreaks because of its early growth and height. Triticale (wheat/rye cross) matures 1-2 weeks later and can be used as a windbreak. Barley is also early; however, modern varieties are shorter in stature and less effective as a windbreak. Wheat is later still and not as effective as rye for early plantings.



Plastic mulch bed between every-bed-planted rye windbreak that is full height. This will provide maximum protection and heat accumulation.

In no-till or strip till systems using rye cover crops or mixtures with rye, windbreaks can be

left in the field by rolling some areas and leaving others unrolled as a windbreak.

Windbreak growth termination is also important. All rye (or other small grain) windbreaks should be killed using a non-selective herbicide before viable seed is produced, otherwise volunteer grain will come up in later crops. This is not a big problem for farms that only produce vegetables but can be a major issue on farms that rotate with other crops (volunteer rye in a wheat field for grain is a problem).



Rye windbreak with drive row area for pesticide application and harvesting.

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### **Spinach Crown Mites in Spinach - Jerry Brust, IPM Vegetable Specialist, University of Maryland; [jbrust@umd.edu](mailto:jbrust@umd.edu)**

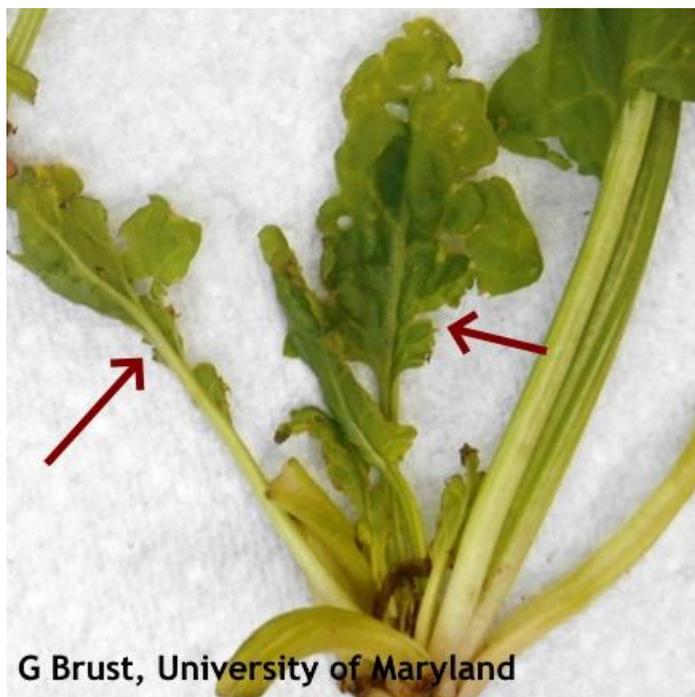
Spinach crown mites *Rhizoglyphus sp.* feed within the folds of new leaves in the crown of spinach plants. This feeding causes the new leaves to become deformed as they grow (Figs. 1 and 2). Crown mite adults are extremely small bulbous nearly transparent mites that also may have a yellow-beige body color with reddish-brown legs (Fig 3). A good characteristic to look for to identify these mites is the sparse long hairs mostly found on the back end of the mite (Fig. 3). Crown mite eggs are spherical and clear and laid on the creased leaf surfaces in the crown area. Some reports state that crown mites can act as vectors for plant pathogens such as *Pythium* and *Rhizoctonia*, but this is not definitive.

The spinach crown mite is most damaging in soils high in organic matter and under cool moist conditions - plants grow a little more slowly and the mites proliferate in this type of environment. Because these mites can consume organic matter, they can survive in soils after the crop has been removed. This is one reason they are difficult to control as they can survive for fairly long periods of time with no crop being present. The other reason they are difficult to 'control' is we do not realize they are causing the problem until it is too late.

Most control recommendations include sanitation and crop rotations as being important, as are fallow periods. Pyrethroids are a possible chemical control as is Neem; any chemical control has to get down into the crown of the plant to have any chance of working. There has been little research conducted on the most efficacious material for these mites. Mostly what is needed are warm sunny days where spinach can grow well and the environment is not so conducive to the mites, which reduces their ability to injure the crop.



**Figure 2.** In the field the crown leaves are distorted and wrinkled in appearance.



**Figure 1.** Crown leaves fed on by spinach crown mites are misshapen and ragged with necrotic margins as they expand.



**Figure 3.** Spinach crown mite adult with sparse long hairs over its body

# Fruit Crops

**Fruit Crop Insect Scouting** - David Owens, Extension Entomologist, [owensd@udel.edu](mailto:owensd@udel.edu)

## Strawberry

Continue scouting for tarnished plant bug ([see last week's edition](#) for further scouting information). Virginia is reporting increasing incidences of spider mite and cyclamen mite activity. Cyclamen mite damage will appear as crinkled leaves and shrunken fruit. If 10% of leaves have cyclamen mite, a miticide is recommended.

## Spotted Lanternfly

Spotted lanternfly eggs are hatching. Be on the alert when moving equipment or plants out of the quarantine areas. Early instar nymphs are black with white spots.

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**Late Drop in Tree Fruit Revisited** - Gordon Johnson, Extension Vegetable & Fruit Specialist; [gcjohn@udel.edu](mailto: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. In 2022, most stone fruits have a light crop so fruit drop will be due to other weather-related factors.

Natural fruit drop in 2022 will likely be a result of unfertilized or poorly fertilized seeds and cold injury during flowering in late March and April. Poor pollination can result from 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. Other fruits may remain on the plant but will not develop properly. They may be misshapen or appear cube like.

Defoliation due to diseases such as peach leaf curl, chemical injury such as copper fungicide damage, or severe storms can also cause fruit drop.

# Agronomic Crops

**Agronomic Crop Insect Scouting** - David Owens, Extension Entomologist, [owensd@udel.edu](mailto:owensd@udel.edu)

Many thanks to Joanne Whalen for assisting with trapping efforts. Somewhat moderately high populations of true armyworm continue to be detected in the Harrington and Smyrna area while remaining traps have quite low populations.

Location	# of Nights	Total Catch	
		TAW	BCW
Laurel, DE	9	1	--
Seaford, DE	9	5	11
Sudlersville, MD	7	0	4
Harrington, DE	8	34	86
Smyrna, DE	8	130	19
Middletown, DE	8	53	69

## Alfalfa

Continue to scout for alfalfa weevil. We saw numerous weevil feeding and oviposition scars in samples collected two weeks ago. Most of the early weevil larvae are now pupating, but we may have another round of larvae soon. Most alfalfa should have flower buds by now, meaning that rather than treat an above threshold alfalfa weevil population, early harvest is a viable management tactic.

## Corn and Soybean

There are reports of damage to early planted soybean caused by seedcorn maggot and by slugs. Recent cool, wet weather is favorable to both. Seedcorn maggot is attracted to fields with cover crop or manure tilled in and incorporated into the soil. Soybean might fail to emerge. Plants that do emerge may wilt or remain stunted because of the compromised root system. Cotyledons will have small pin holes and etchings, the roots will be brown and the stem will have a shredded appearance. Unfortunately, there is nothing that can be done after planting. Soybean treated with an insecticidal seed

treatment (which can be found at the end of the UD soybean insect pest management publication: [https://www.udel.edu/content/dam/udelImage/canr/pdfs/extension/sustainable-agriculture/pest-management/Insect\\_Control\\_in\\_Soybeans\\_-\\_2020\\_-\\_David\\_Owens.pdf](https://www.udel.edu/content/dam/udelImage/canr/pdfs/extension/sustainable-agriculture/pest-management/Insect_Control_in_Soybeans_-_2020_-_David_Owens.pdf)) can help reduce seedcorn maggot damage, but with weather conditions such as we have had and if a field is highly attractive to flies, seed treatments can be overwhelmed. Corn is able to withstand greater injury as the maggots often feed on the senescing kernel rather than the root or stem, but can still be stunted. If a stand is damaged by seedcorn maggot, assess stand carefully and discuss with your local agronomist or extension agronomist Jarrod Miller or our new farm business specialist Nate Bruce to determine understand the cost, implications and justifiability of replanting or overplanting.

This past week, reports have also come in of slug damaged stands in no-till soybean fields. A large number of slug eggs have been hatching this past week, especially in fields with heavy crop residue or thick cover crop. If planting into these conditions, make sure the seed gets into the ground first and foremost. If scouting fields prior to planting, be aware that there are no established thresholds for soybean. If a field averages greater than 1-2 slugs per square foot, it is at a higher risk. Anything that encourages rapid seedling growth will help reduce slug damage. Row cleaners can help to push residue off the furrow so the ground warms faster, and delaying planting until the soil warms can also help. Slug baits can also help reduce slug damage. Slug bait is most effective in soybean if applied before or just as soybean begins emerging, following rain but followed by warm, dry weather so that intoxicated slugs dry out in the sun.

Later this week coming up, we will have accumulated enough growing degree days for cutworms to be large enough to cut corn plants. We had an early cutworm flight in Kent County in April. This does not mean that a given field will have cutworm injury, and in corn, some of the Bt traits are especially suited to reduce cutworm injury. If planting under late terminated conditions or planted green, be aware that additional scouting is warranted.

Look for plants with rows of circular holes or cut plants.

### Small Grains

Continue to scout for armyworm activity in small grains, especially in the Harrington and Smyrna areas where traps intercepted large numbers of moths earlier this season, and especially fields that did not have an insecticide tank mixed with a fungicide application. Be mindful also of the long pre harvest intervals of all pyrethroids except for Mustang. Armyworm threshold is 2 per row foot. In the last few years, we have not had an above threshold population of armyworm.

### Spotted Lanternfly

Spotted lanternfly eggs are hatching. Be on the alert when moving equipment or plants out of the quarantine areas. Early instar nymphs are black with white spots.

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### Soybean Seedling Diseases and Fungicide

Efficacy - Alyssa Koehler, Extension Field Crops Pathologist; [akoehler@udel.edu](mailto:akoehler@udel.edu)

Seedling diseases are common across many crops, including soybeans. The most common seedling pathogens *Pythium* spp., *Phytophthora sojae*, *Fusarium* spp., and *Rhizoctonia solani* are often naturally present in the field, but certain environments like compacted, wet, or poorly-drained soils and cool weather that slows emergence can favor disease development. Infected seedlings may fail to emerge before coming out of the ground (pre-emergence damping off) or die after coming out of the ground (post-emergence damping off), surviving plants may appear stunted with other symptoms visible on the seedling.

***Pythium* spp.** can cause pre- and post-emergence damping off. Development of *Pythium* is favored by wet soils and we have species in the area that favor both cool and warm weather. Tissue will be brown in color and appear soft and rotting. This can look very similar to *Phytophthora* in seedlings, but can be confirmed by submitting a sample to the diagnostic lab. Surviving plants may be stunted and have less vigor.



**Figure 1.** Soybean seedling with post-emergence damping off due to infection by *Pythium*

*Phytophthora* is also able to cause pre-and post-emergence damping off. Tissue will be soft and tan-brown in color. Stems may look bruised and with rotten roots, plants will usually wilt and die. It is also possible to see *Phytophthora* symptoms develop mid to end of season. Later in the season, dark brown discoloration of the stem will extend from just below the soil line up into the plant (Figure 2).



**Figure 2.** Soybean plant with root rot and dark brown discoloration moving up the plant

*Rhizoctonia* can cause damage pre- or post-emergence. Often rust-brown lesions will be present on the roots or lower stems. In some cases, this may girdle the stem stunting or killing the plant.

*Fusarium spp.* can infect the seed or seedling. There will often be brown lesions on the roots and the root system may appear shrunken. Numerous *Fusarium* species can be associated with root rot of soybean. Another soybean disease Soybean Sudden Death (SDS) is caused by *Fusarium virguliforme*. While *F. virguliforme* will infect early in the season, symptom of SDS do not become present until the plant reaches reproduction.

Seed and seedling diseases can be difficult to manage. Waiting for fields to be relatively dry and delaying planting until soils are warmer than 55° F can favor quicker emergence and growth which can be beneficial. Genetic resistance is available for managing *Phytophthora*. Fungicide seed treatments may reduce seed and seedling diseases. In our work over the past 3 seasons, we have observed faster emergence and improved stand when using seed treatments in April planted soybeans. Although collectively called fungicides, not all fungicide products are effective against all pathogens. *Pythium* and *Phytophthora* are fungal-like organisms called oomycetes. Active ingredients mefenoxam and metalaxyl have activity on oomycetes while strobilurins (azoxystrobin, trifloxystrobin, pyraclostrobin, etc.) have activity on *Fusarium* and *Rhizoctonia*. For this reason, seed treatments typically have two or more active ingredients. Each year the Crop Protection Network releases a “Fungicide Efficacy for Control of Soybean Seedling Diseases” publication to aid in decision making for seed treatments. The full publication can be found at <https://cropprotectionnetwork.org/publications/fungicide-efficacy-for-control-of-soybean-seedling-diseases> and a screenshot of the 2022 efficacy table is included (Figure 3).



## Fungicide Efficacy for Control of Soybean Seedling Diseases (02/2022)

### 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

Fungicide active ingredient	<i>Pythium</i> spp. <sup>1</sup>	<i>Phytophthora</i>	<i>Rhizoctonia</i> spp.	<i>Fusarium</i> spp. <sup>2,3</sup>	Sudden death syndrome (SDS) <i>Fusarium virguliforme</i>	<i>Phomopsis</i> spp.
Azoxystrobin	P-G	NS	VG	F-G	NR	P
Carboxin	U	U	G	U	NR	U
Ethaboxam	E	E	NR	NR	NR	NR
Fludioxonil	NR	NR	G	F-VG	NR	G
Fluopyram	NR	NR	NR	NR	VG	NR
Fluxapyroxad	U	U	E	G	NR	G
Ipconazole	P	NR	F-G	F-E	NR	G
Mefenoxam	E <sup>2</sup>	E	NR	NR	NR	NR
Metalaxyl	E <sup>2</sup>	E	NR	NR	NR	NR
Oxathioprolin	P-G	E	NR	NR	NR	NR
PCNB	NR	NR	G	U	NR	G
Penflufen	NR	NR	G	G	NR	G
Prothioconazole	NR	NR	G	G	NR	G
Pydiflumetofen	NL	NL	NL	NL	VG	NL
Pyraclostrobin	P-G	NR	F-G	F	NR	G
Sedaxane	NR	NR	E	NS	NR	G
Thiabendazole	NR	NR	NL	NL	P	G
Trifloxystrobin	P	P	F-E	F-G	NR	P-F
Extract of <i>Chenopodium quinoa</i> saponins <sup>4</sup>	U	U	U	U	P-F	U

<sup>1</sup> Products may vary in efficacy against different *Fusarium* and *Pythium* species. <sup>2</sup> Areas with mefenoxam or metalaxyl insensitive populations may see less efficacy with these products. <sup>3</sup> Listed seed treatments do not have efficacy against *Fusarium virguliforme*, causal agent of sudden death syndrome. <sup>4</sup> This product is a biological seed treatment that is registered and approved for organic use.

## Common Fungicide Trade Names and Active Ingredients (02/2022)

Product trade name	Active ingredient(s)
Acceleron	DX-612 Fluxapyroxad, DX-309 Metalaxyl, DX-109 Pyraclostrobin
Allegiance FL	Metalaxyl
Allegiance LS	Metalaxyl
Apron XL LS	Mefenoxam
ApronMaxx RFC	Fludioxonil, Mefenoxam
ApronMaxx RTA	
CruiserMaxx	
CruiserMaxx Advanced or Cruiser Maxx Plus	
CruiserMaxx Vibrance or Vibrance Trio	Fludioxonil, Mefenoxam, Sedaxane
Dynasty	Azoxystrobin
EverGol Energy SB	Metalaxyl, Penflufen, Prothioconazole
Heads Up	Extract of <i>Chenopodium quinoa</i> saponins
ILEVO	Fluopyram
Inovate Pro	Ipconazole, Metalaxyl
Intego	Ethaboxam
Lumisena	Oxathioprolin, Metalaxyl
Maxim 4FS	Fludioxonil
Mertect 340 F	Thiabendazole
Prevail	Carboxin, Metalaxyl, PCNB
Saltro	Pydiflumetofen
Trilex 2000	Metalaxyl, Trifloxystrobin
Vibrance	Sedaxane
Warden CX	Fludioxonil, Mefenoxam, Sedaxane
Warden RTA	Fludioxonil, Mefenoxam



The CPN would like to thank the United Soybean Board for their support of this publication.

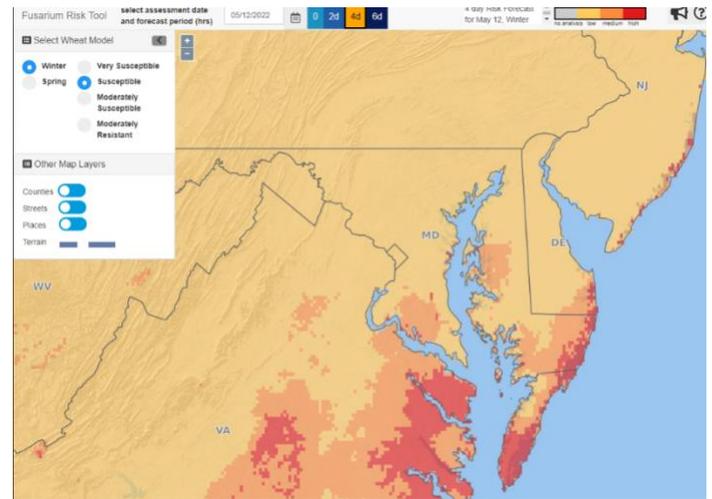


**Figure 3.** Efficacy of fungicides commonly used in seed treatments for management of seedling diseases of soybean from:

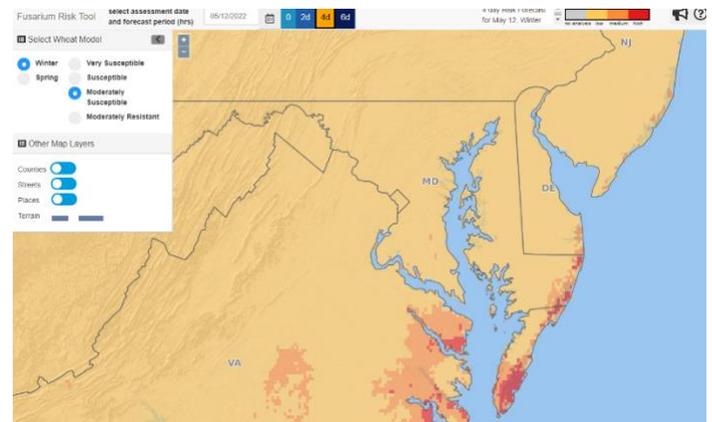
[https://cropprotectionnetwork.s3.amazonaws.com/CPN1020\\_FungicideEfficacySoybeanSeedling\\_2022-1.pdf](https://cropprotectionnetwork.s3.amazonaws.com/CPN1020_FungicideEfficacySoybeanSeedling_2022-1.pdf)

**Disease Update for Small Grains - Alyssa Koehler, Extension Field Crops Pathologist; [akoehler@udel.edu](mailto:akoehler@udel.edu)**

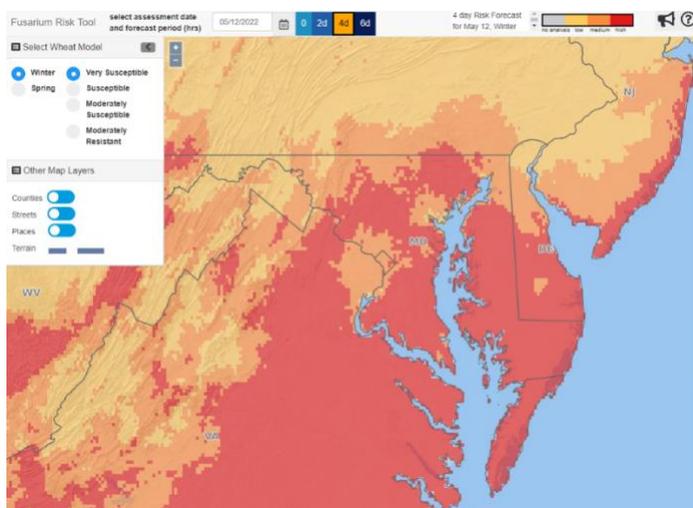
Weather conditions have continued to be more interesting than we would have liked over the past week. Most fields in the region are heading and at or near flowering. Last weekend's wet weather and the rains this week have bumped our FHB risk, particularly for very susceptible hybrids. I have included the 4-day projection of risk for very susceptible (Figure 1), Susceptible (Figure 2), and Moderately Susceptible (Figure 3). As these models show, starting with host resistance is a great first line of defense. If planning for fungicide applications, 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 are most effective when applied within a 4-5 day window. Anthers can remain attached after flowering, but become a pale white (Figure 4). 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.** FHB Risk Model for May 12, 2022 using the 4 day outlook for winter wheat rated susceptible to FHB from: [wheatcab.psu.edu](http://wheatcab.psu.edu)



**Figure 3.** FHB Risk Model for May 12, 2022 using the 4 day outlook for winter wheat rated moderately susceptible to FHB from: [wheatcab.psu.edu](http://wheatcab.psu.edu)



**Figure 1.** FHB Risk Model for May 12, 2022 using the 4 day outlook for winter wheat rated as very susceptible to FHB from: [wheatcab.psu.edu](http://wheatcab.psu.edu).



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

## **Calculate Manganese Availability Index to Identify Potential Deficiencies in Soybean** -

*Amy Shober, Extension Nutrient Management and Environmental Quality Specialist; [ashober@udel.edu](mailto:ashober@udel.edu) and Jarrod O. Miller, Extension Agronomist, [jarrod@udel.edu](mailto:jarrod@udel.edu)*

Micronutrient deficiencies, particularly manganese (Mn), are often overlooked, but can significantly reduce soybean yields. In Delaware, most reports of Mn deficiency in soybean come from western Kent County. However, many sandy soils in Delaware are susceptible to Mn deficiency if pH is not managed properly, which is most likely to occur when soil pH is higher than 6.0.

Preplant soil tests offer a quick method to screen soils for potential Mn deficiencies, and many soil testing laboratories offer micronutrient testing as a routine analysis. If micronutrients are not part of the routine test, consider requesting this analysis as an “add-on” if you have experienced soybean Mn deficiency in the past.

Some soil test reports may include soil test Mn values and include a visual interpretation of those results (e.g., low, medium, optimum, excessive). However, Mn availability in soils is pH dependent, with availability decreasing as soil pH increases. The Mn availability index (MnAI) calculation accounts for the effect of pH on soil Mn availability and should be calculated using the equation:

$$\text{MnAI} = 101.7 - (15.2 \times \text{soil pH}) + (2.11 \times \text{M3-Mn})$$

where MnAI is the Mn availability index, soil pH is measured in water (1:1 V:V), and M3-Mn is Mehlich 3 soil test Mn in lb/A. (Note: To convert soil test Mn results from ppm to lb/A multiply by 2; do not use “buffer” pH for this calculation). Interpretation of the MnAI is crop specific. Manganese deficiency in soybean is likely when the MnAI is less than 25, but unlikely when the MnAI is above 35. When MnAI is between 25 and 35, University of Delaware recommends that crops be monitored for Mn deficiencies, especially if liming was recommended.

Manganese is not mobile in plant tissue, which means that deficiency symptoms will appear in

new growth because the plant cannot move Mn from old growth to new growth. Interveinal chlorosis or yellowing of the plant tissue is the most common visual symptom of Mn deficiency in soybean (Figure 1). However, because interveinal chlorosis is a common nutrient deficiency symptom, visual deficiencies should be confirmed with a tissue test. The critical level for tissue Mn concentrations at the soybean R2 stage is 17 ppm. Keep in mind that visual deficiencies indicate a more severe problem and yield reductions may be occurring in fields without obvious symptoms. Regular tissue testing is the only method that will reveal if “hidden” hunger is occurring.



**Figure 1.** Interveinal chlorosis in soybean appears on the new growth due to Mn deficiency.

Broadcast soil applications of 20-30 lb Mn/A can be applied to prevent soybean Mn deficiency if the MnAI is <25. Foliar applications [1.0 to 2.0 lb/ac elemental Mn as Mn sulfate or Mn oxide; 0.5 to 1.0 lb/A elemental Mn as chelated Mn (Mn-EDTA)] can be used to correct soybean Mn deficiency in season if confirmed by a tissue test. Foliar applications should be applied only

when adequate growth is present to aid absorption.

University of Delaware researchers established replicated in-field strip trials in 2019 and 2020 and small-plots at the University of Delaware Warrington Irrigation Farm in 2020 to evaluate foliar application of Mn to soybean at two rates (0 and 1.5 lb/ac Mn) on crop yield and tissue concentrations. Despite soil test reports that suggested “low” to “optimum” concentrations of soil test Mn, all sites had a calculated MnAI that was >35. We reported no significant yield or tissue Mn response to foliar Mn application at any site. As such, we do not recommend that farmers apply foliar Mn unless soil MnAI is below 25 or if Mn deficiency was observed and documented previously by a tissue test. Additional research is needed on soils with suspected Mn deficiency (MnAI <25) to determine the economic value of foliar Mn applications to soybean.

## General

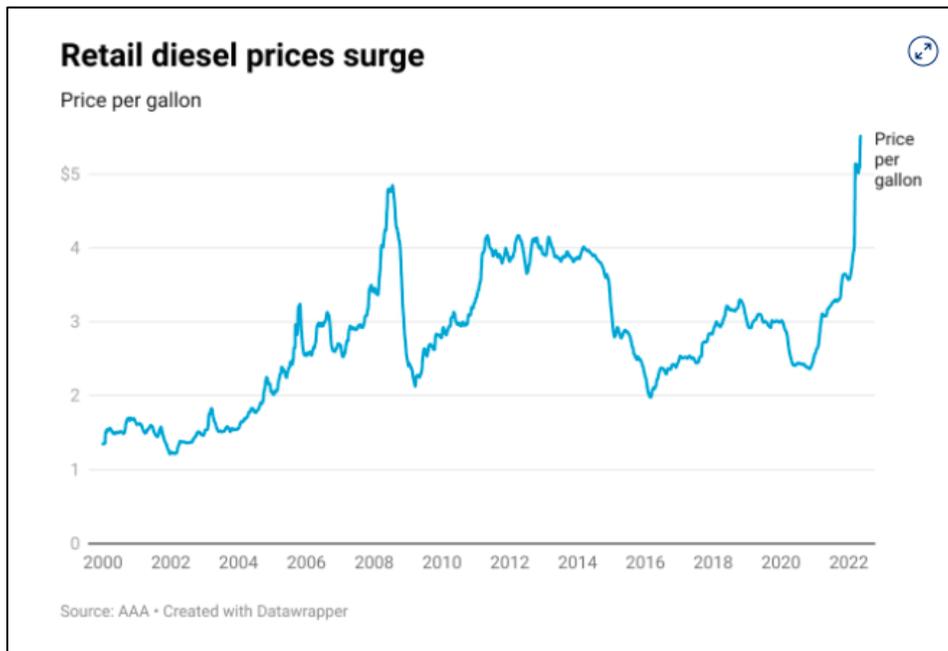
**Diesel Fuel Prices Reach New Highs and Potential Shortage Looms** - Nate Bruce, Farm Business Management Specialist, [nsbruce@udel.edu](mailto:nsbruce@udel.edu)

United States fuel prices have reached new highs for the second time in recent months. The cost

of diesel has risen exponentially in the past year. Last year at this time, the national average for a gallon of diesel was \$3.12. Today, the national average price of diesel gas is \$5.54 per gallon, which increased by \$0.22 just from last week. In just one year, the price of diesel has increased by 78%. In Delmarva, diesel is running around \$6.00 per gallon, higher than the national average. Offroad diesel (dyed) is running at about \$5.64 per gallon. It is difficult to believe that at one point, retail diesel was viewed as a cheaper alternative to gasoline. The last time diesel prices were lower than gasoline prices was in 2004.

Why has the price of diesel risen? There are a lot of factors but Ukraine / Russia, limited refining capacity on the East Coast, and post-pandemic supply chain issues all have contributed to the rising price per gallon for diesel. In some areas on the East Coast, it has even been reported that offroad diesel has been more expensive than on-road diesel. This typically is not the case. This has not been seen yet in Delmarva as regional producers are fortunate to be near refineries located in the Baltimore area. Getting diesel fuel may become one of the next issues producers face this season. This will be something to watch in the coming months.

Below are retail diesel prices from 2000 to now:



**Mental Health Awareness Month - Why is Mental Health Important?** - Hannah Sherman, Community Health Intern, Sarah Goldring, Extension Agent, [sbercaw@udel.edu](mailto:sbercaw@udel.edu), Gina Crist, Extension Community Health Specialist, [gcrist@udel.edu](mailto:gcrist@udel.edu)

May is Mental Health Awareness Month. The month is observed with media, local events, and film screenings. Mental Health Awareness Month began in the United States in 1949 and was started by the Mental Health America organization. Mental illnesses are among the most common health conditions in the United States. Mental and physical health are equally important components of overall health. Depression increases the risk for many types of physical health problems, particularly long-lasting conditions like diabetes, heart disease, and stroke. The presence of chronic conditions can increase the risk for mental illness. A person's mental health can change over time, depending on many factors. When the demands placed on a person exceed their resources and coping abilities, their mental health could be impacted. If you are facing a change in your mental health, please discuss these changes with a healthcare provider or medical professional.

More than 50% of people will be diagnosed with a mental illness or disorder at some point in their lifetime.

- 1 in 5 Americans will experience a mental illness in a given year.
- 1 in 5 children, either currently or at some point during their life, have had a seriously debilitating mental illness.
- 1 in 25 Americans lives with a serious mental illness, such as schizophrenia, bipolar disorder, or major depression.

**Mental Health Resources**

**Helplines (Immediate Help)**

Call 911

National Suicide Prevention Lifeline  
English: 1-800-273-8255  
Spanish: 1-888-628-9454

Crisis Text Line: Text SIGNS to 741741 for 24/7 anonymous, free crisis counseling

Disaster Distress Helpline: CALL or TEXT 1-800-985-5990 (Press 2 for Spanish)

**Abuse/Assault/Violence**

National Domestic Violence Hotline: 1-800-799-7233 or text LOVEIS to 22522

National Child Abuse Hotline: 1-800-4AChild (1-800-422-4453) or text 1-800-422-4453

National Sexual Assault Hotline: 1-800-656-HOPE (4673)

**LGBTQ+**

Trans Lifeline: 1-877-565-8860 (para español presiona el 2)

The Trevor Project's TrevorLife: 1-866-488-7386

**Older Adults**

The Eldercare Locator: 1-800-677-1116

Alzheimer's Association Helpline: 1-800-272-3900 (para español presiona el 2)

**Veterans/Active-Duty Military**

Veterans Crisis Line: 1-800-273-8255 (press 1) or text 838255

Source:

<https://www.cdc.gov/mentalhealth/learn/index.htm>

# Announcements

## **Webinar Series: Exploring the Elements and Interconnectedness of Our DE/MD Peninsula Food System**

Mondays, starting April 11 12:00-1:00 pm EST  
Online

Speakers from across a variety of food related sectors will offer presentations designed to increase knowledge about the make-up and workings of our DE/MD regional food system.

The health, heritage, economy, and culture of communities across the DE/MD region are all directly related to the production, distribution, preparation, and access to safe and healthy food. What are the connections that make up the regional “food system”? What are the links between how food is produced, processed, distributed, and sold across the region? How does our food system actually work?

**Please CLICK HERE to Register**

May 16

### **Knowing the Consumer in our Region and Increasing Food Accessibility**

*Gina Crist, Community Health Specialist, University of Delaware Cooperative Extension and Instructor, University of Delaware Department of Behavioral Health and Nutrition and Erin Norris, Planner (Natural Hazards) at Delaware Emergency Management Agency and Karen Shore, Founder and Principal of Upstream Strategies*

May 23

### **Exploring Seafood and Aquaculture Production Within our DE/MD Food System**

*Chris Petrone, Extension Director, Marine Education, University of Delaware Sea Grant and Dennis McIntosh, Professor and Extension Specialist – Aquaculture, Delaware State University, Department of Agriculture and Natural Resources and Ed Hale, Assistant Professor and Marine Advisory Service Specialist, University of Delaware School of Marine Science and Policy*

June 6

### **How Agricultural Production and Consumer Markets are Intertwined**

*Nate Bruce, Farm Business Management Agent,*

*University of Delaware Cooperative Extension and Laurie Wolinski, Extension Agent - Agribusiness Risk Management, University of Delaware Cooperative Extension*

June 13

### **Will Climate Change Impact our Regional Food System?**

*Jenn Volk, Associate Director of Cooperative Extension & Extension Specialist - Environmental Quality, University of Delaware Cooperative Extension and Emmalea Ernest, Scientist - Vegetables & Fruits, University of Delaware Cooperative Extension*

TBD

### **Grazing, Food Production, and the Environment**

*Susan Garey, Kent County Extension Director & Extension Agent Animal Science and State 4-H Animal Science Program Coordinator, University of Delaware Cooperative Extension*

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## **DE Extension Twilight Tailgate Session**

Thursday May 26, 2022 6:00 p.m.

UD Cooperative Extension Research Demonstration Area

¾ Mile east of Armstrong Corner, on Marl Pit Rd. – Road 429, Middletown

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 2022.

Credits will be applied for prior to the meeting

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

To request more information, please call our office at (302) 831-2506.

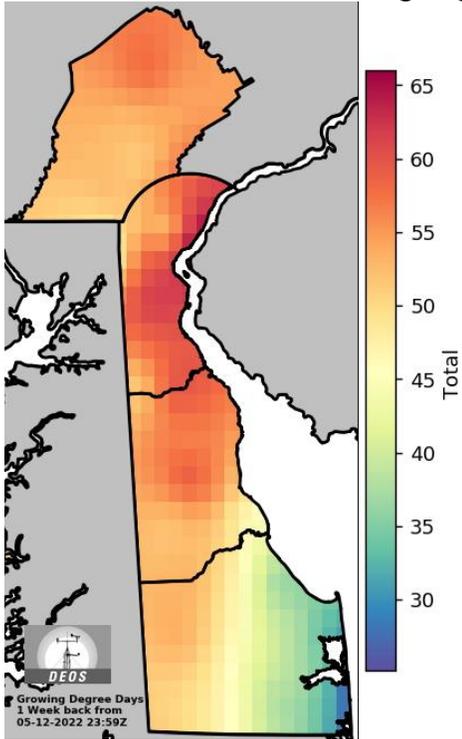
Register online at: <https://www.pcsreg.com/de-extension-twilight-tailgate-session-5-26-22>

Please Register by May 20, 2022

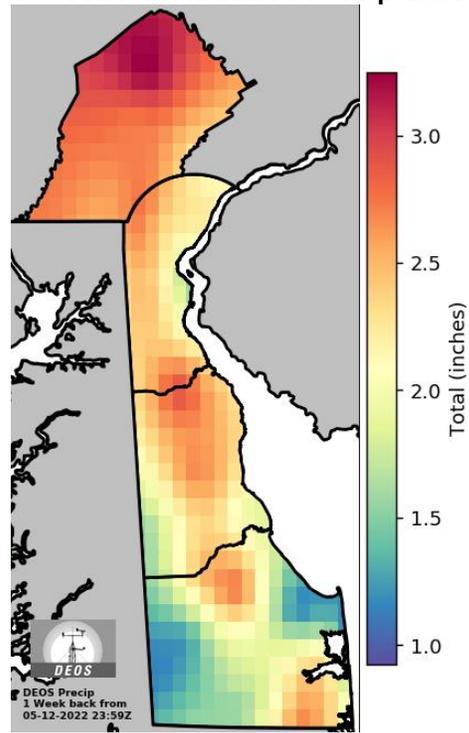
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# Weather Summary

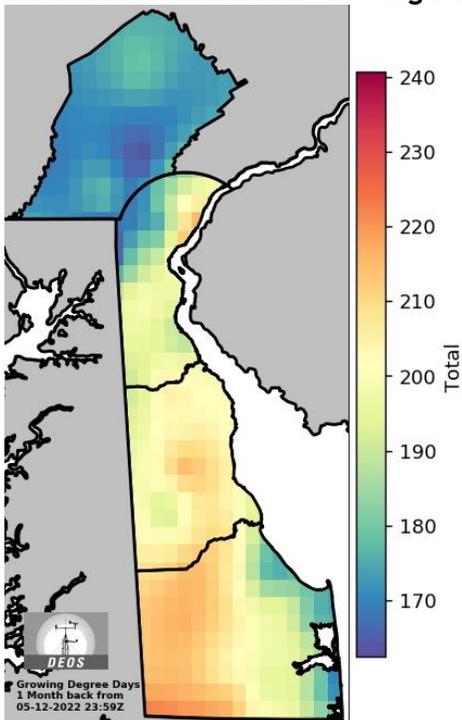
## 1 Week Accumulated Growing Degree Days



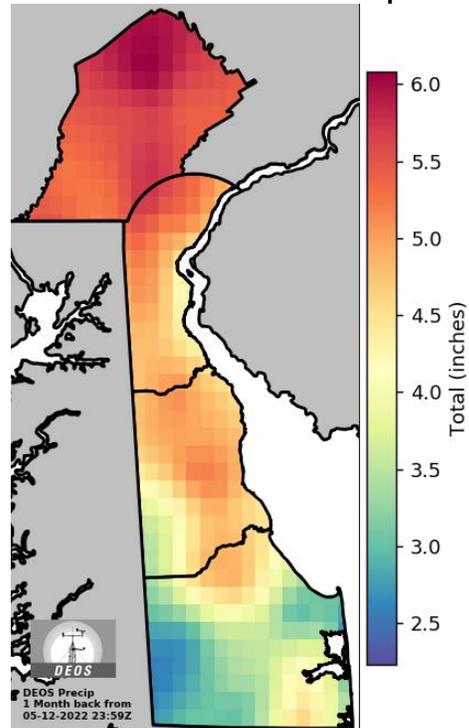
## 1 Week Accumulated Precipitation



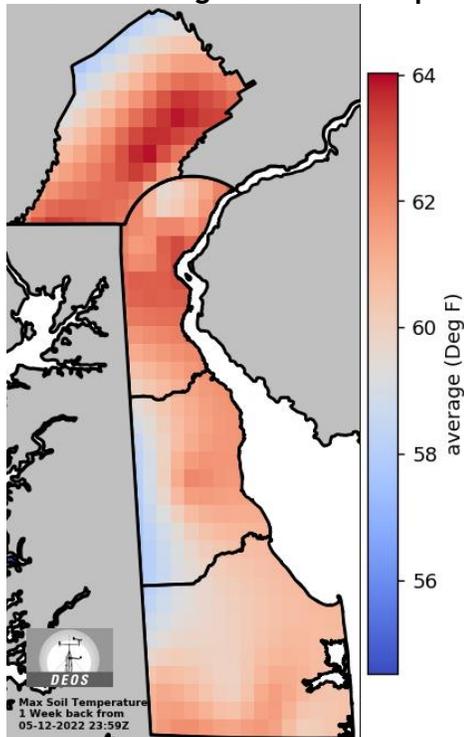
## 1 Month Accumulated Growing Degree Days



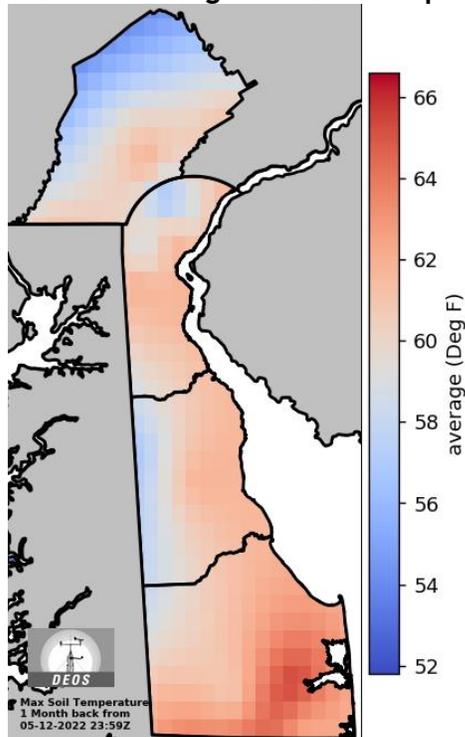
## 1 Month Accumulated Precipitation



1 Week Average Max Soil Temperature



1 Month Average Max 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](mailto:emmalea@udel.edu) )

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

**Reference to commercial products or trade names does not imply endorsement by University of Delaware Cooperative Extension or bias against those not mentioned.**

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