

WEEKLY CROP UPDATE



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Vegetable Crops

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

Seedcorn Maggot

We are between seedcorn maggot generations in Georgetown. Peas planted between March 21 and April 1 should be scouted for damage.

Asparagus

Asparagus spears are beginning to emerge. Begin scouting for asparagus beetle and beetle eggs, especially with the warm weather forecast for next week. Asparagus beetles will stick their cylindrical dark eggs at a 90 angle to the stem. Minnesota scouting recommendations suggest to sample 20 plants in each of 5 locations for at least 100 spears/plants. Thresholds are 2% of spears with eggs, 5-10% of plants with adults, and 50-75% of plants with larvae.

Sweet Corn Starter Fertilizer - Gordon Johnson, *Extension Vegetable & Fruit Specialist*; gcjohn@udel.edu

The first sweet corn has been planted on plastic and bare ground plantings will be starting soon. This is a good time to revisit starter fertilizer use in sweet corn.

Sweet corn does respond to starter fertilizer. Of the nutrients that can be provided in a starter fertilizer, research has shown nitrogen (N) and Sulfur (S) to be the most beneficial, followed by phosphorus (P). In sweet corn it is common to

include all 3 in starter fertilizer, although P does not always show a response.

We are starting to see some potassium (K) deficiencies in sweet corn on Delmarva. K in starter can be beneficial but rates should be limited. If soil K levels are high, K in starter fertilizer is not necessary.

We usually do not see a response to boron (B) in sweet corn so it is generally not recommended in starter fertilizer. Fields that receive B broadcast applications (1-2 lbs/A) at least once every 2 years should have sufficient B for sweet corn growth. If B has not been broadcast in the rotation it can be added to starter fertilizer but the rate should be very low to avoid B toxicity ($\frac{1}{8}$ lb/A, or less).

Zinc is usually not added to starter fertilizer for sweet corn except on high pH soils or soils with excessive P.

It is important to be careful in how close you place starter fertilizer to the seed (a concern with sweet corn starter fertilizer is reduction in stands due to fertilizer salt injury). The standard recommendation is to place starter fertilizer 2" to the side and 2" deep. This provides a concentrated band for early uptake (plant roots will proliferate around the band); and the band will be far enough away not to cause salt injury to germinating seedlings. Do not use pop-up (in seed furrow) fertilizers with sweet corn because there is a risk of salt injury.

General starter fertilizer recommendations for sweet corn are N at 20 lbs/A (10-20 lb/A range) with S at 10 lbs/A (10-15 lb/A range). Phosphorus (P2O5) can be added at 20 lbs/A (15-

20 lb/A range) in early plantings but is not necessary in later plantings. Potassium (K) should only be added in low K soils at a rate 10 lbs/A (10-15 lb/A range).

Micronutrients generally are not needed; however, Zinc at 1 lb/A may be added in high P or high pH soils and Boron (B) may be added at 0.125 lbs/A if B was not applied broadcast in previous crops.

Revisiting Compost for Vegetable

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

Each year I field questions from vegetable and strawberry growers on the use of compost for their production systems. The availability of commercial compost has fluctuated over the years based on the companies operating in the region. Bioenergy Devco now manages the composting facility in Seaford Delaware and produces another quality compost for use by growers on Delmarva. Expansions are planned. There are several other commercial composting companies in the region producing quality products.

Growers also can learn how to make good compost and many of our small producers make compost at some level. The following is some information on how to evaluate and use compost.

In the composting process, organic stock material sources such as yard wastes, manure and litter, wood waste, food scraps and garbage, paper, hatchery waste, or other waste materials are combined in a proper mix to create a carbon to nitrogen ratio that will promote the growth of microorganisms that then decompose the materials, producing a dark, humus-rich end-product. In addition, in the composting process, the compost piles will heat up to between 130-170° F, killing pathogens of concern in the materials. A properly produced compost can be used for vegetable production without concerns for transferring plant pathogens or human pathogens.

Compost will contain plant nutrients, the level of which depends largely upon the stock

materials used. Nitrogen content may be significant; however, much of the nitrogen will be in organic form and will be slowly available over several years. Most of the potassium will be readily available while phosphorus availability is more variable.

While compost does contain plant nutrients, the more important benefit that it provides is stable organic matter. Because it has already been decomposed, the organic component contains humus-like materials that will decompose very slowly when added to the soil. This means that compost will immediately raise the organic matter of the soil. This in turn will increase the cation exchange capacity (CEC) of the soil, improve soil moisture holding capacity, and improve soil physical characteristics (reduced compaction, improved aeration, decreased crusting).

Research has also shown that certain composts can reduce the incidence of soil borne diseases and pests. This is most likely because the organic addition promotes more diversity in soil microorganisms that can compete with pathogens and the improved physical properties of the soil (such as reduced compaction) that limits the impact of certain pathogens. Newly finished compost also contains beneficial microorganisms that directly affect plant pathogens by antibiosis or hyperparasitism. Some composts have also been shown to induce resistance to pathogens in crop plants.

When using compost, growers should first receive an analysis of the material. From this analysis you should look at the following:

Compost Maturity and Stability - Only use mature compost that has finished the composting process and that is stable. Immature compost will continue to decompose and can cause soil imbalances in some cases.

Nutrient Content - As previously stated, compost has a base nutrient content. You need to account for available nutrients in the nutrient management plan for the crop the compost will be used on. Much of the nitrogen will be in organic form and only a portion will be available for the growing season.

Electrical Conductivity (EC or salts levels) - Composts that use manure or poultry litter as part of the stock materials can accumulate salts (particularly potassium) at elevated levels. The elevated salt content must be accounted for when determining application rates so that salt injury does not occur with crops.

Calcium Carbonate Equivalent (lime value) - Lime is generally not added in the composting process; however, high pH materials such as hatchery waste sometimes are composted. This means that certain composts may have more liming value.

Moisture Content and Physical Condition - Compost will be partly water. With higher moisture composts, you will be paying for more water and less of the humus material and nutrients. In addition, higher moisture composts do not spread as well. Compost should be adequately screened so that the product spreads well.

In research at the University of Delaware with several compost materials, a rate of 5-7 tons per acre showed yield benefits on sandy soils in the first year with several vegetable crops. However, specific effects on a grower's farm will depend on soil type, existing organic matter, existing soil health, and compost source; therefore, rates should be adjusted accordingly.

The decision to use compost is also an economic one. Compost can cost anywhere from \$20.00 to \$50.00 per ton depending upon the source and distance for transport. Growers need to consider the soil improving and nutrient value of the compost and evaluate that against other soil improvement programs such as cover cropping and green manure crops.

For small growers, permanent composted beds can create extremely productive and resilient growing systems. Three to four-foot-wide beds 100 or more feet in length are laid out with paths between the beds. The bed surface is covered with compost and paths are covered with bark or wood chips. Crops are planted through the compost. Each year additional compost is added to the bed. Cover crops are planted on the beds between seasons and are laid down or rolled by hand and then planted through providing additional mulch that

decomposes. Crop debris also remains to decompose. A rich organic layer develops that no longer requires any tillage.

Edema Problem in High Tunnel Tomatoes - Jerry Brust, *IPM Vegetable Specialist, University of Maryland*, jbrust@umd.edu

I recently received an inquiry from a high tunnel grower about unusual symptoms on tomato leaves. The tomatoes were planted in early March, and in the past few weeks developed blisters or callus-like growths along veins (Fig. 1 mild symptoms, Fig. 2 more severe symptoms). Leaves also showed unusual curling and other odd distortions as well as yellow spots on the upper side of the leaf (Fig. 3). Leaves with a great deal of this blistering were brittle with the leaf often cracking with any type of handling. These symptoms are edema (or sometimes spelled oedema).



Figure 1. Underside of tomato leaf showing mild symptoms (swollen tissue) of edema



Figure 2. Underside of tomato leaf with severe symptoms of edema



Figure 3. Top side of tomato leaf with edema

Edema is caused by the buildup of excess water in the root and conditions unfavorable for transpiration, usually caused by high humidity, low light and little air movement. When the tomato plant cells get too much water the cells will expand faster than they can get rid of the water leading to split and cracked tissue. Extensive edema can severely decrease the leaf's photosynthetic capability and lead to senescence. Other research has looked at poor or low light sources that affect the plant's ability to expel excess water. We have had cloudy cool weather in the last few weeks and these types of environmental conditions do not make it possible to roll up the sides of a high tunnel for good air circulation, which would help increase transpiration and reduce the likelihood of edema.

Basically overwatering, high humidity and low or poor light are the major causes for the development of edema in plants. Therefore, avoid overwatering plants especially during cool temperatures when they should be kept slightly on the dry side. Keep humidity levels below 70% by enhancing airflow around the plants and by spacing the plants farther apart. And finally, if possible though more complicated, research has shown that increasing light quality by providing a more "full-spectrum" of light output, with significantly more short-wavelength energy (i.e., UV light), will also decrease the occurrence of edema.

Spartan Charge Label for Lima Beans

Extended - Mark VanGessel, *Extension Weed Specialist*; mjv@udel.edu

FMC and Delaware Department of Agriculture has extended the state local needs label (24C) for use of Spartan Charge as a preemergence herbicide in lima bean. The label has been extended through the 2026 field season.

Fruit Crops

Would My Blueberries Benefit from More Nitrogen?

- Emmalea Ernest, *Scientist - Vegetable & Fruit Crops*; emmalea@udel.edu

It is soon time to apply nitrogen fertilizer to blueberries. Urea or ammonium sulfate are the recommended materials. Use urea if your soil pH is in the recommended range of 4.5 to 5.0 and use ammonium sulfate if pH is greater than 5.0 or if you have a history of rising pH because of soil properties, high pH irrigation water, mulch materials or other factors.

The nitrogen (N) fertilization recommendation for established blueberry plants in the Mid-Atlantic region is 65 lbs/acre (1.2 oz/plant) each year. The recommended application timing is to apply half of the N at bloom and the remaining half 6 weeks later. In other regions of the U.S. the N fertilization recommendation for blueberries is higher and recommended applications occur later in the season. For

example, in Georgia and Mississippi the recommendation for bearing blueberries grown in soil is 80-120 lbs of N/year, split over 4-5 applications with final applications in July or August. The recommendations for Oregon growers are 100-165 lbs of N/year with applications at bloom, mid-May and mid-June. The vastly different N fertilization rates and application timings in other regions have prompted questions about whether the recommendations for the Mid-Atlantic are high enough and whether a later season N application would be beneficial to blueberry yield.

Blueberry Nitrogen Fertilization Study in Georgetown, Delaware

A blueberry nitrogen rate and timing study was undertaken in an established planting of ‘Chandler’ northern highbush blueberries at the Carvel Research and Education Center in Georgetown, Delaware. The planting was six years old at the time the study began and yield data was collected over a three year period. Six different rate/timing treatments were tested (Table 1.). Ammonium sulfate was applied to the mulched area, followed by overhead irrigation.

Table 1. Nitrogen Rate and Application Treatments Tested

Lbs of N over # Applications	Application Timing
65 over 2	Bloom, 6 wks post bloom
65 over 3	Bloom, 3 wks and 6 wks post bloom
85 over 2	Bloom, 6 wks post bloom
85 over 3	Bloom, 3 wks and 6 wks post bloom
85 over 4	Bloom, 3 wks, 6 wks and 10 wks post bloom
105 over 5	Bloom, 3 wks, 6 wks, 10 wks, and 14 wks post bloom

Plots consisted of three plants and there were four replications per treatment, resulting in 12 plants that received each nitrogen treatment. Yield was measured on an individual plant basis with harvest twice per week.

Over the three years of the study there were no statistically significant differences in yield between the six nitrogen fertilization treatments (Figure 1). In 2016 a late freeze damaged flowers and reduced yields in all treatments. The highest yields were obtained in 2017 followed by slightly lower yields in 2018.

Additionally, leaf tissue analysis of samples collected from each plot in early August of 2016 and 2017 did not reveal any statistically significant differences in N and all samples were in the sufficient range.

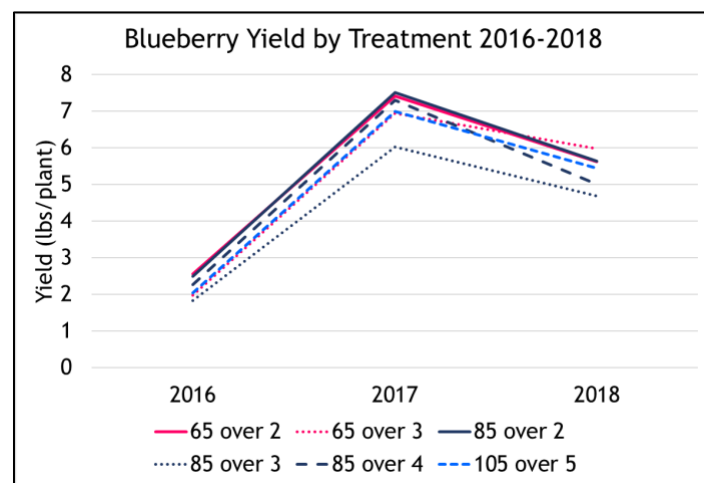


Figure 1. Blueberry yield in pounds/plant for each N fertilization treatment over the three years of the study. There were no statistically significant differences in yield between treatments in any of the three years.

Conclusions

Additional nitrogen, further splitting of nitrogen applications and later season nitrogen applications did not increase yield in Chandler highbush blueberries. Plants that received the current recommendation of 65 lbs/acre of N with half applied at bloom and half six weeks later yielded equivalently to treatments receiving more N, later N applications and more frequent N applications. The current Mid-Atlantic nitrogen recommendation for highbush blueberries provides adequate N, even in the southern part of the region. Mid-Atlantic blueberry growers

should use the current N recommendation rate and timing for established plantings.

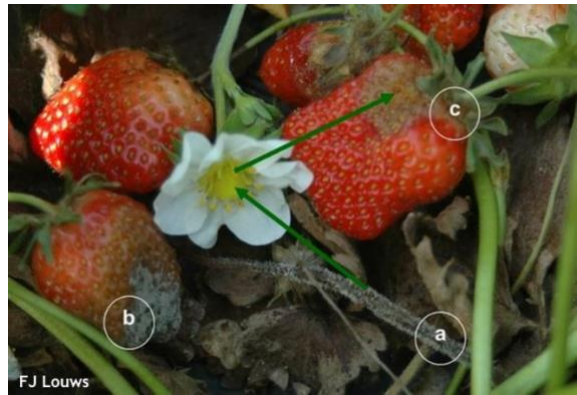
Growers should consider applying higher than the recommended rate of N in certain circumstances. If the material used to mulch blueberries is not well aged (<1 year) it will tie up N and additional N will be needed to ensure plant availability. If leaf tissue tests (sampling recommended in August) indicate N deficiency, additional N should be supplied in the spring of the following year. If plants are not producing adequate new growth, additional N might be warranted if other causes of poor vigor (soil pH, inadequate soil moisture, root disease, weed competition) are ruled out.

Botrytis Fruit Rot (Gray Mold) and Crown Rot in Strawberries - Gordon Johnson, Extension Vegetable & Fruit Specialist; gcjohn@udel.edu

Strawberry growers in the region should initiate programs to control Botrytis fruit and crown rots in strawberries.

Gray mold of strawberry fruit is caused by the fungus *Botrytis cinerea*. This pathogen can also cause crown rots that can weaken or kill plants. The crown rot phase of the disease often develops under floating row covers that are used to promote growth or protect against cold events.

The reservoir for this fungus is mycelium in dead strawberry leaves. This mycelium becomes active in the spring and starts to produce spores on the old leaf tissue, which then spread to blooms. Most infections start at the bloom stage, but symptoms usually do not develop until close to harvest (the fungus does not become active until the fruit enlarges). Ripening fruits can also be infected. Conditions conducive for infection are temperatures between 70 and 80 °F and wet conditions (rain, dew, fog, irrigation). The most critical period for applying fungicides to control gray mold is during bloom.



Infection cycle of *B. cinerea* in strawberry plantings. Gray mold on different parts of strawberry; a) Sporulation on dead petiole and leaf; b) fruit infection from colonized dead tissue; c) fruit infection that came through the flower.

From *Botrytis Fruit Rot / Gray Mold on Strawberry*, NCState University

<https://content.ces.ncsu.edu/botrytis-cinerea-botrytis-fruit-rot-and-blight-on-strawberry>

Fungicide Recommendations From our Commercial Production Recommendation Guide

Start spraying at 5-10% bloom, because most fruit infections occur through the flower. Repeat every 7-10 days. Spray less frequently during prolonged dry periods but spray every 5-7 days during very wet periods. Base resistance management on protectants captan and thiram and add in a site-specific fungicide (e.g., Elevate or Switch) to the protectants when weather conditions turn favorable for disease. Except for Captan and Thiram, do not use the same FRAC code more than twice per season. FRAC 2 products (e.g., Rovral) need to be applied before first fruiting flower and can only be applied once per season. Risk of resistance to FRAC 17 (Elevate) and 2 (e.g., Rovral) is high. The active ingredient boscalid in Pristine fungicide has the least intrinsic activity compared with other fungicides within the FRAC 7 code. If a product like Pristine is used for Anthracnose Fruit Rot control, this can also reduce Gray Mold due to the presence of boscalid in it. High risk of Botrytis infection is estimated with weather-based models recommended by the Strawberry Advisory System (<http://agroclimate.org/tools/strawberry/>) and NEWA (<https://newa.cornell.edu/strawberry-diseases/>).

Fungicide Chart for Botrytis Control

FRAC Code	Product Name (*=Restricted Use)	Product Rate	Active Ingredient(s)	PHI (d)	REI (h)	Be e TR
Apply Captan or Thiram solely when disease pressure is low to moderate. Captan is a better choice if Anthracnose is a concern or is present.						
M03	Thiram SC	2.5 qt/A	thiram	1	24	--
M03	Thiram Granuflo	4.4 lb/A	thiram	3	24	--
M04	Captan 50W	6.0 lb/A	captan	0	24	N
M04	Captan 80WDG	3.7 lb/A	captan	0	24	N
M04	Captan 4L	3.0 qt/A	captan	0	24	N
M04+17	Captevate 68WDG ¹	3.5 to 5.25 lb/A	captan + fenhexamid	0	24	N
Use the following fungicides when disease pressure is high. Apply them with a tank-mix partner (captan or thiram) may help with resistance management. Do not apply the same FRAC code more than twice in a row or in a season (e.g., Cabrio and Pristine contain the same FRAC code).						
2	Meteor ²	1.5 to 2.0 pt/A	iprodione	n/a	24	N
2	Nevado 4F ²	1.5 to 2.0 pt/A	iprodione	n/a	24	N
2	Rovral 4F ²	1.5 to 2.0 pt/A	iprodione	n/a	24	N
7	Fontelis 1.67SC	16 to 24 fl oz/A	penthiopyrad	0	12	L
7	Kenja 400SC ³	13.5 to 15.5 fl oz/A	isofetamid	0	12	--
7 + 9	Luna Tranquility 4.16SC	16 to 27 fl oz/A	fluopyram + pyrimethanil	1	12	--
7 + 11	Luna Sensation 4.25SC	6 to 7.6 fl oz/A	fluopyram + trifloxystrobin	0	12	--
7 + 11	Pristine 38WG	18.5 to 23 fl oz/A	boscalid + pyraclostrobin	0	12	M
7 + 11	Merivon Xemium	8 to 11 fl oz/A	fluxapyroxad + pyraclostrobin	0	12	N
7 + 12	Miravis Prime	9.1 to 13.4 fl oz/A	pydiflumetofen + fludioxinil	0	12	--
9	Scala 5SC	18 fl oz/A, if alone	pyrimethanil	1	12	--
9 + 12	Switch 62.5WG	11 to 14 oz/A	cyprodinil + fludioxonil	0	12	L
17	Elevate 50 WDG	1.5 lb/A	fenhexamid	0	12	N

¹Do not tank mix Captevate with Elevate. Captevate is no longer manufactured so supplies are limited. ²Do not make more than 1 application/season. Do not apply these products after first fruiting flower. ³Except for the varieties Clancy, Jewel, and L'Amour.

Agronomic Crops

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

Small Grains

Recent cool wet weather should encourage entomopathogens of aphids. Lady beetle activity has been noticeable in other crops, suggesting that aphid pressure be reduced compared to recent years. However, warm weather in the week ahead will allow aphids to increase in number rapidly.

Alfalfa

Alfalfa weevil adults and larvae continue to be active. Select 30 stems by randomly walking to six locations and plucking stems from those locations. Take a few of the stems at a time and beat them vigorously against the side wall of a bucket to dislodge weevil larvae. Also measure the length of a few of those stems to get an average stem height. Penn State has a great alfalfa weevil control fact sheet with a dynamic threshold table based on stem height, value of the hay, and control costs. We incorporated the table into the UD Insect Control in Alfalfa document which can be found here: <https://www.udel.edu/academics/colleges/canr/cooperative-extension/sustainable-production/pest-management/commercial-field-crop-pest-management/alfalfa/>. Be advised that small weevil larvae often hide in the half folded terminal leaflets and are not easy to dislodge. You may want to visually examine the terminals after shaking stems.

When making an insecticide application, use higher water volume rates to ensure good coverage, especially into the terminals. Do not apply an insecticide a couple of days before or after a significant cold spell. Weevil larvae need to be active to come into contact with treated foliage. Keep good records of previous applications and be sure to scout fields after application. We can have new weevil hatch after a spray, justifying a second and sometimes even a third application prior to cutting. Our insecticide selection is very limited in alfalfa, and for this reason it is possible that besides environmental factors there can be some

intrinsic factors in your local population that could render them less susceptible to a given insecticide if it has been used continuously for a long period of time. Adding to this concern is the chlorpyrifos tolerance revocation effective February 28, 2022. In last year's spray trials, pyrethroids provided between 40 and 70% efficacy three weeks after application. Carbaryl initially provided a 70% reduction in alfalfa weevil but residual activity was very short and weevil counts increased afterwards. The most consistent active ingredient has been indoxacarb (Steward). It has a supplemental 2ee label for reduced rates, 4.0 to 11.3 fl oz per acre as opposed to the main label rate range of 6.7 to 11.3 fl oz. It also provided excellent residual control in last year's trial at the 6.7 fl oz rate. FMC advises lower rates should have about 8-14 days residual, higher rates up to 21 days. When making an application to alfalfa, industry recommends including a spreader sticker type adjuvant such as an organosilicone to improve coverage. As always, make sure to read the labels of all products applied or tank-mixed to make sure there are no insecticide/adjuvant/herbicide concerns.

Early Season Moth Trapping

This week we had a decent cutworm flight near Harrington. Recent southerly winds and warmer weather have most likely contributed to this increase. Please note that trapping data is meant to be correlative over time, we do NOT have thresholds or make recommendations for individual fields or crop considerations based on them. We do not know at what point do these traps indicate a potential problem, short of comparing true armyworm counts to some long term data collected by University of Kentucky. Many thanks to Joanne Whalen for assisting with trapping efforts.

Location	# of Nights	Total Catch	
		TAW	BCW
Willards, MD	7	1	15
Laurel, DE	7	8	25
Seaford, DE	7	0	36
Sudlersville, MD	7 (4/1)	1	2
Harrington, DE	7	58	65
Smyrna, DE	7	57	20
Middletown, DE	7	4	25

Fusarium Risk Tool Available for 2022

Season - Alyssa Koehler, *Extension Field Crops Pathologist*;

[Last week](#) we introduced that the Fusarium Risk Assessment Tool <http://www.wheatscab.psu.edu/> is live for the 2022 season. There have been a few updates to the system since last year, so I wanted to take a moment to introduce the changes. When you enter the tool, you will see the risk based on the current date. There is a calendar icon that allows you to look back in time by selecting a different day of interest. You can also now set the forecast period for current (0), 2, 4, or 6 days from the time you are looking. Currently most of the state and country are at low risk. High humidity, heavy dew, rain, and night temperatures above 50°F favor FHB infection. A menu icon in the upper left corner allows users to customize model predictions to account for using wheat varieties with different levels of genetic susceptibility to Fusarium head blight (Figure 1). In the top right corner you will see a microphone that when clicked on will show national and regional commentary from state extension pathologists (Figure 2).

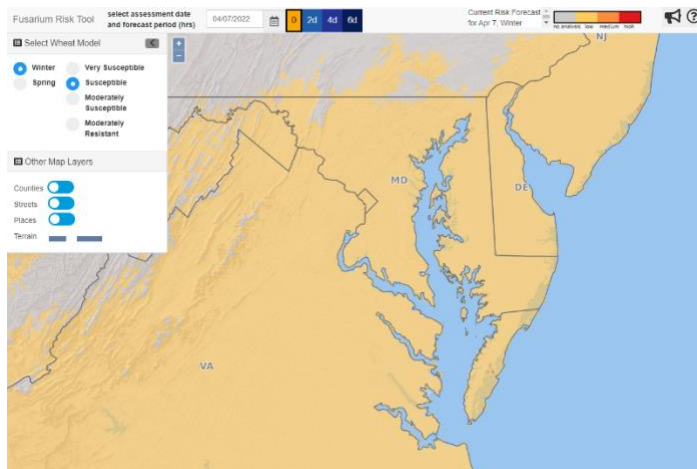


Figure 1. Fusarium Risk Tool model on April 7, 2022. The menu in the upper left corner allows for customization of genetic susceptibility to FHB. <http://www.wheatscab.psu.edu/>



Figure 2. Clicking on the microphone icon in the upper right corner will bring up commentary for different regions of the US. You can click on the whole US map to see all commentary, or on the Mid-Atlantic US icon to see commentary from our region as it is added over the coming weeks.

2022 USDA Prospective Planting Report Predicts Less Corn Acreage Nationally and in the Mid-Atlantic - Nate Bruce, *Farm Business Management Specialist*, nsbruce@udel.edu

With input costs continually rising, there has been considerable speculation for months now whether more soybeans would be planted instead of corn nationally, and in the Mid-Atlantic region. We may have more insight into this question after USDA released their annual prospective plantings report last week on March 31st. USDA estimates corn acreage will be down 4% nationally in 2022 as compared to 2021. Soybean acreage is estimated to increase 4% nationally in 2022 as compared to 2021. USDA estimates all Mid-Atlantic states will have lower corn acreage planted in 2022 compared to 2021. Their prediction for each state is given below:

Delaware - Down 4%

Maryland - Down 2%

New Jersey - Down 3%

Pennsylvania - Down 8%

Virginia - Down 13%

It should be noted that Virginia's significant estimated loss in corn acreage in 2022 is more than likely not just influenced by producers looking to switch to soybeans, but also influenced by acreage competition for cotton as well. The USDA prospective planting report predicts an increase in cotton acreage nationally by 9%. It will be interesting to see what happens

this year in our region and how markets will respond.

Here is a link to the USDA Prospective Plantings Report:

https://www.nass.usda.gov/Publications/Todays_Reports/reports/pspl0322.pdf?msclid=0df6b2e6b67c11ec8fa5981b3d22c857

General

Suggestions for Dealing with Herbicide

Shortages for 2022 - Kurt M. Vollmer, *Extension Weed Management Specialist, University of Maryland*; kvollmer@umd.edu and Mark VanGessel, *Extension Weed Specialist*; mjv@udel.edu

The shortage of glyphosate (Roundup, Gly Star, etc.) and glufosinate (Liberty, Interline, etc.) herbicides are forcing farmers to seek other options for burndown and postemergence spray. No one anticipated this shortage and very little research has been done to address this issue. Many of us had to dust off our notes from the early 1990's, the time before cheap glyphosate was available. One thing is certain, alternative weed control options will require more targeted management. The key is to plan ahead, select herbicides based on the weeds in the field, and make timely applications. Your mindset needs to be that you are not substituting a herbicide for glyphosate, rather you are using a different herbicide that has its own set of recommendations and limitations.

Alternative herbicides will not control as many weed species as glyphosate; in fact, some are only effective on a few weed species. Weed populations differ from field to field and so it is likely that herbicide mixtures will need to be adjusted for specific fields. Scouting will be key to selecting the right herbicide combination for a particular field. Scouting should be performed multiple times during the growing season to identify the species present and be sure weeds are small at time of application. In addition, it's important to check after a treatment to be sure it was effective.

Field records and past experience will help you decide which fields to prioritize for treatment with glyphosate or glufosinate. Targeting those "problem" fields or fields that will be rotated to vegetables for glyphosate or glufosinate applications.

Making Glyphosate Go Further

Use the correct glyphosate rate for the situation. In the past few years, many have simply used a quart of glyphosate (regardless of brand) because it was easy and still quite cost-effective. Matching the rate based on formulation and weed size will help conserve glyphosate and allow more acres to be treated. The amount of glyphosate in formulated products ranges from 41% to 51.2%. In practical terms, the rate of various brands can vary widely. For example, the Roundup PowerMax 3 rate for most annual weeds is 20 fl oz, while the same amount of glyphosate in a popular generic version is 32 fl oz.

Also, using glyphosate at higher use rates often overcomes issues that could reduce performance. So be sure to review the label for recommended adjuvants and any tankmixtures to avoid.

Start Clean

"Starting clean" means weeds are dead at planting. This is important since it is difficult to control many species like horseweed or Italian ryegrass after planting. Spring tillage is an option for replacing burndown herbicides; but tillage can negatively impact soil health, and stimulate the emergence of weeds such as common ragweed and Palmer amaranth.

For no-till corn, paraquat plus atrazine or paraquat plus simazine have worked very well on most of our acreage, including fields with horseweed and seedling grasses. One exception is Italian ryegrass, and this is a situation that may warrant using glyphosate.

For no-till soybeans, which are often sprayed 2 to 4 weeks later than corn, winter annual weeds will be larger and more challenging to control. Paraquat plus metribuzin is effective on smaller broadleaf weeds. Back in the '90's when glyphosate was too expensive to spray across all acres, sequential applications of paraquat were commonly used. The recommendation was to use

paraquat plus metribuzin 2 to 3 weeks before planting and then a second application at planting with the residual herbicides.

Fields with “problem” winter annual weeds may need an early herbicide application followed by an at-planting treatment. Herbicide options for soybean burndown include Sharpen, Elevore, 2,4-D or dicamba for horseweed; Canopy EX plus 2,4-D for field pansy and primrose control; metribuzin for chickweed and henbit; and Select (clethodim) for grass control (although clethodim is weak on annual bluegrass). Tankmixing broadleaf herbicides such as 2,4-D or dicamba with clethodim can reduce grass control; using higher rates of clethodim and spraying smaller grasses can reduce the likelihood of antagonism. The alternative is to separate applications. Clethodim and other grass herbicides should be made 2-3 days before or 7 days after a broadleaf herbicide.

Paraquat plus metribuzin is useful for terminating cover crops, including legumes and brassicas. Paraquat is more effective for terminating winter wheat or cereal rye when it is applied at the boot stage or later. Delaying cover crop termination until 7 to 14 days before planting will enhance overall weed control by allowing more cover crop biomass to form, which results in fewer weeds emerging and slowing the growth of emerging weeds. Paraquat applications before the boot stage often allow cereals to regrow. Clethodim could be used to control cereal cover crops before the boot stage.

Burndown for double-cropped soybeans will also be challenging without glyphosate and/or glufosinate. Paraquat and 2,4-D are not good options as they are more likely to move off-target that time of year. This may be another situation that gets priority for glyphosate and/or glufosinate applications.

Include Residual Herbicides at Planting

A good residual program will help delay a postemergence herbicide application. Two or more herbicide groups will be needed to provide broad-spectrum control of all the potential weeds that may emerge. A corn program should include at least atrazine and a group 15 herbicide such as S-metolachlor or acetochlor. Using products that include group 27 herbicides

(Balance Flexx, Acuron, Corvus, Lumax) can also help.

A soybean program should include at least two effective herbicide modes-of-action from group 14 (Valor, Authority), group 5 (metribuzin), group 15 (Dual, Warrant, Zidua), or group 3 (Prowl). Group 15 herbicides provide good grass control and can reduce the likelihood of needing to treat postemergence with a product such as clethodim (Select) or sethoxydim (Poast). Several prepackaged mixtures of these herbicides are also available but be sure to check to ensure they are the appropriate rates for your situation. Regardless of what programs are chosen, an activating rainfall of about half inch will be needed.

Make Timely Postemergence Applications

Postemergence control is more successful with small weeds; thus avoiding the urge to wait for all weeds to emerge prior to spraying or cultivating. Corn is most susceptible to yield loss from weed competition during the V1 to V6 growth stages, and soybean at the V1 to V5 growth stages.

Because it is cooler during the early stages of corn growth than soybeans, it creates a wider window of application for corn. Postemergence treatments in corn are more effective when corn is less than 12 inches tall because it allows the use of atrazine. In corn, group 27 herbicides such as Armezon, Callisto, or Laudis plus atrazine provide effective control of weeds like Palmer amaranth. Impact, Armezon, and Accent Q will provide good to excellent control of most grass species.

Postemergence herbicide applications in soybeans are most effective when soybeans have less than 4 trifoliates, and weeds are less than 4 inches tall. In local research, this is typically 3 to 4 weeks after planting. In soybean, postemergence herbicide options will be trait dependent. Group 14 herbicides such as Cobra, Reflex, and Ultra Blazer can be used in non-GMO soybean. Dicamba-containing products such as Xtendimax, Engenia, or Tavium can be applied to Xtend and Xtendflex soybeans; and 2,4-D choline (Enlist One, Enlist Duo) can be applied to Enlist E3 soybeans. Glufosinate and glyphosate-based products can also be applied to Enlist E3 and

Xtendflex soybean. If planning to use these products, growers need to be aware of restrictions as well as specific requirements for adjuvants, nozzles, buffers, etc. which can be found at

Enlist One and Enlist Duo:

www.enlist.com/en/herbicides/application-guide.html

XtendiMax:

www.xtendimaxapplicationrequirements.com/

Engenia: www.engeniatankmix.com

Residual herbicides such as Dual, Warrant, or Zidua can be included with postemergence treatments to help extend weed control capabilities until the crop canopies. (Note: Reflex provides both postemergence and residual control). This will be cheaper than making multiple postemergence applications.

Optimize Herbicide Performance

It is important to maximize the performance of herbicides and most of this information is available on herbicide labels. Adequate spray coverage is important for contact herbicides like glufosinate and fomesafen. Applications of contact herbicides should be made at 15 to 20 gallons per acre with nozzles that produce medium to coarse droplets to ensure good coverage. Growers should also follow recommendations for adjuvants.

When tankmixing herbicides it can be challenging if recommendations differ by product, such as droplet size does not match or required adjuvants may differ. For instance, Enlist One requires large droplets to avoid drift while a contact herbicide, like Reflex, recommends smaller droplets to improve spray coverage. In this case, select a nozzle from the Enlist label that produces the smaller droplets.

Environmental conditions such as temperature and time of day will also affect the performance of herbicides. In particular, conditions during burndown applications can be challenging; and if applications are made during poor growing conditions control is often reduced. There are very few alternatives to waiting for better weather. Generally, contact herbicides such as paraquat and fomesafen are more effective when sunlight is more intense. Glufosinate has

specific recommendations for applications between the hours of 10 AM and 2 PM to ensure there is adequate sunlight to maximize performance.

Including other tactics to reduce weed competition can enhance an effective herbicide program. A healthy, competitive crop will reduce late-season weed emergence. The quicker a crop canopy develops, the less likely it will be for additional weeds to emerge. Reducing soybean row spacing from 30 to 15 inches will allow for quicker canopy closure. A timely cultivation can replace a postemergence herbicide application in fields with light weed pressure.

Preparing ahead of time and considering all the options will help ensure the highest level of weed control. Have a conversation with your crop advisor on which options are best for your fields and focus on managing small weeds.

For additional resources on herbicide selection see your extension weed management guide available at www.pubs.ext.vt.edu/456/456-016/456-016.html; and for weed identification and integrated weed management tactics see Virginia Tech Weed Id website (<https://weedid.cals.vt.edu/>) and Get Rid Of Weeds (www.GROWiwm.org).

New Premix of Sulfentrazone Plus Metribuzin - Preview - Mark VanGessel, Extension Weed Specialist; mjv@udel.edu

Preview 2.1 is labeled for soybeans, tomatoes, potatoes, and asparagus. It is a 2 to 1 ratio of metribuzin and sulfentrazone, and as a result, it delivers a low rate of sulfentrazone for soybeans. UD Weed Science has looked at this product in processing tomatoes and the lower sulfentrazone rates improve crop safety. Be advised that means length of weed control is not as long.

Now is the Right Time to Take Care of You

- Maria Pippidis, Extension Educator Family & Consumer Sciences; pippidis@udel.edu

Do you find yourself feeling constantly overwhelmed, down or prone to extreme emotional changes? If symptoms of a mental health concern are interfering with your daily life, it may be time to ask for a little help. Reaching out for support doesn't mean that you aren't capable of handling life's challenges. With today's pressures of social media comparisons, global uncertainty and fast-paced work culture, more and more people are slowing down to take a break and take care of their emotional wellbeing.

It might feel scary to start, but with support from friends, family and healthcare professionals, connecting with the right resources can help you start to feel seen, feel heard and feel better.

Starting Point for Finding Help This National Institute for Mental Health resource list includes information on a range of topics including how to start a conversation with your healthcare provider. Many of your mental health questions can be answered here.

<https://www.nimh.nih.gov/health/find-help>

Virtual Programs and Support Groups -

Presented by NAMI Delaware, these virtual programs and support groups are open to the community. Connect with peers in a welcoming and confidential online space. More information about the types of programs offered are on the link below.

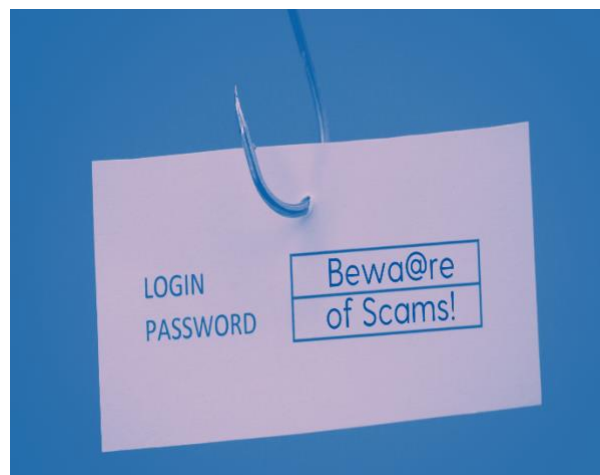
[Virtual Programs – NAMI Delaware](#)

What Are Online Fraudsters Up to Now? -

Tips for Cyber Safety - Michele Walfred, Communications Specialist, University of Delaware; walfred@udel.edu and Maria Pippidis, Extension Educator Family & Consumer Sciences; pippidis@udel.edu

Did you know that identity fraud cost Americans a total of about \$56 billion last year, with about 49 million consumers falling victim? That's according to the 2021 Identity Fraud Study by

Javelin Strategy & Research. With concern about cyber security looming across the globe, ranging from major government and corporate initiatives to smaller-scale individual attempts, now is a good time for the public to review their personal cyber behavior and refresh awareness on the relentless methods scammers and hackers use to gain access to your personal and financial information. Here are some tips from University of Delaware Cooperative Extension professionals.



Here are important tips to keep you safe:

- Look out for emails or text messages confirming a purchase you did not make. The idea is to alarm you so you react with “What? I didn’t buy anything!” The scammer hopes you get worked up and click on the link or the attached receipt. Do the exact opposite! These attachments and links are likely malware.
- You are contacted by a business that you know. It’s an issue that needs immediate attention or warns you of an urgent matter, such as closing your account or detecting fraud. These usually pose as names you know like Amazon, UPS, FEDEX, USPS, IRS, PayPal, or your bank. The odds are these emails, known as phishing attempts, are fake. People fall for them because they may indeed coincide with a recent legitimate transaction. That is exactly what the criminals count on.
- Never click on links inside a text or email. Instead, open up a new browser window and

sign in to your account via an official website for legitimate notifications.

- Check the salutation! “Dear customer,” or “Dear account holder” are dead giveaways of a phishing attempt. However, spammers are increasingly taking the time to use your name, so a good rule of thumb is to open a fresh webpage to verify on a legitimate website.
- Beware of emails from friends who send links without any type of salutation. A link out of the blue from a trusted friend is a link not to be trusted!
- Be careful with emails from trusted people (friends and family) that use your name but contain uncharacteristic content. If Aunt Edna regularly sends you pictures of her cat, but suddenly asks you to click on a PDF attachment, call Aunt Edna and confirm if she sent you that email first.
- If you are on Facebook, hide your friend list. A simple Google search will show you how. If spammers can see your friend list, they can pose as one of those friends and use that identity to get you to view a video or click on a link embedded with malware.
- Spammers and criminals also call on the phone. They use a local number or business name to hide their actual nefarious boiler room, network location. This is call spoofing. Blocking the number is ineffective because they are not really calling from the number on display. They use a device to disguise the party name and real number. You may be blocking a legitimate number. Let your messages go to voicemail so you can screen accordingly. Some people even get calls from their own number!
- Be wary of pop-ups warning that your computer is compromised with a virus. Do not click on anything. Exit the browser window immediately.
- Make sure your computer and device’s operating systems are up to date. Check with your Internet provider to assure you have the

recommended antivirus or anti-malware software for your computer. Many IP providers include this service with their plans.

- If any contact via phone, email or text feels strange, odd, misplaced or off-topic, trust your instincts. In such cases, odd equals dangerous!
- Re-examine all passwords. Most experts recommend using a minimum of 12 characters in combinations of numbers, caps, lowercase and symbols. Those can be hard to remember so consider a sentence structure that is unique to you, but that you can remember such as (and don’t use this example) “DontUseThisPassword” becomes instead “d0ntU\$3ThizP@\$5w0rD!”

Michele Walfred is a communications specialist and presents on Internet security and technology topics on behalf of Cooperative Extension. Maria Pippidis is a family consumer scientist educator and financial management expert with the University of Delaware Cooperative Extension.

Announcements

Berries and Brambles: Small Fruit Production Session

Attend in person at the New Castle, Kent or Sussex County Extension Office OR join by Zoom.

Session Two: Small Fruit Establishment

Thursday, May 5, 2022 6:00-8:00 p.m.

Get started successfully with strawberries, blueberries or brambles. Learn what you need to know about soil preparation, variety selection, irrigation systems, planting dates and trellising options.

Speakers: Dr. Gordon Johnson, Dr. Emmalea Ernest, and James Adkins

There is no registration fee but pre-registration is required.

[Register online](#) or contact Karen Adams (302-856-7303 or adams@udel.edu)

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

April 11

Healthy Food System = Healthy People, Communities and Economies – The Complex Nature of Our Delaware/Maryland Food System

Rita Landgraf, Professor, Director of Partnership for Healthy Communities, University of Delaware Department of Behavioral Health and Nutrition

April 18

An Overview of Our Delaware/Maryland Food System from an Agriculture Perspective

Nikko Brady, Deputy Principal Assistant Director Delaware Department of Agriculture and Cassie Shirk, Director of Legislation & Government, Maryland Department of Agriculture

April 25

Understanding Fruit and Vegetable Production in Within our DE/MD Food System

Gordon Johnson, Assistant Professor and Extension Specialist, Fruits and Vegetables, University of Delaware, Department of Plant and Soil Sciences

May 2

What's in Your Basket - Chicken or Eggs? Exploring Poultry and Egg Production Within our DE/MD Food System

Georgie Cartanza, Extension Agent – Poultry, University of Delaware Cooperative Extension

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

Updated Vegetable Recommendations Books Available

The [2022/2023 Commercial Vegetable Production Recommendations](#) are available online.

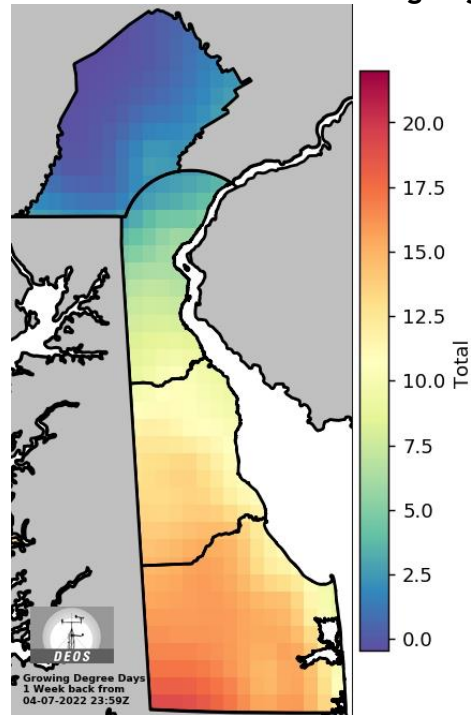
Printed copies of the books are available at all three of the county Extension offices courtesy of the Fruit & Vegetable Growers Association of Delaware. Books may be purchased for \$20 for FVGAD members and \$25 for non-members.

2022 Field Crops Weed Guide Available

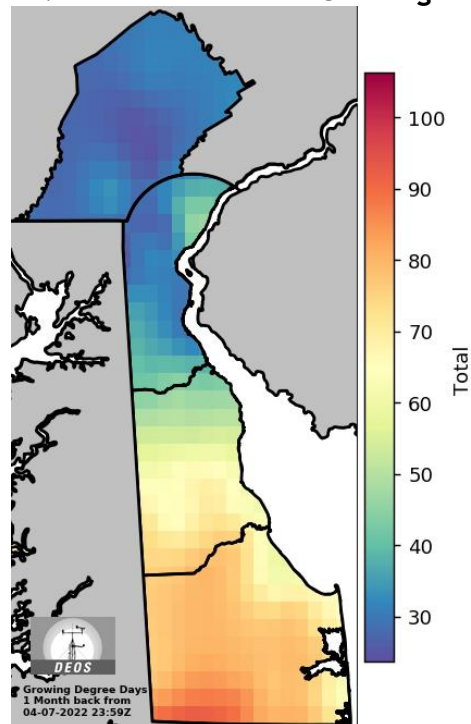
The 2022 Mid-Atlantic Weed Management Guide is available online through Virginia Tech's Pest Management Guide – Field Crops. The digital version is free. The publication can be viewed online or a free pdf can be downloaded; hardcopies can also be order at their website. Either google VCE Publications 456-016, or follow this link www.pubs.ext.vt.edu/456/456-016/456-016.html. This is the same information that has been available through the PSU Extension Publications; however the PSU publication was not updated for 2022.

Weather Summary

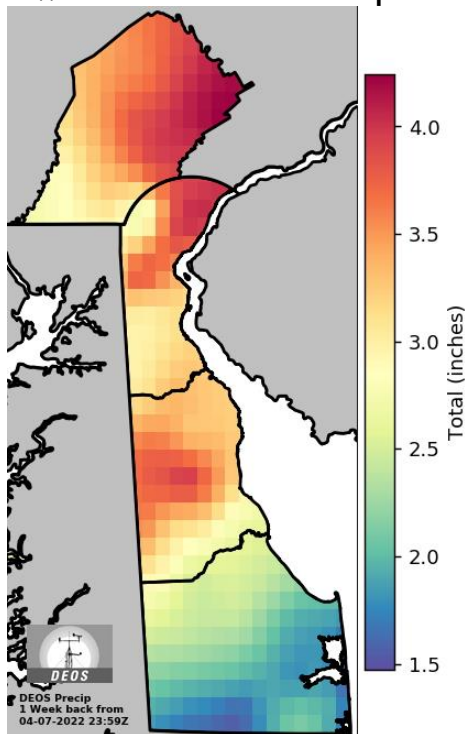
1 Week Accumulated Growing Degree Days



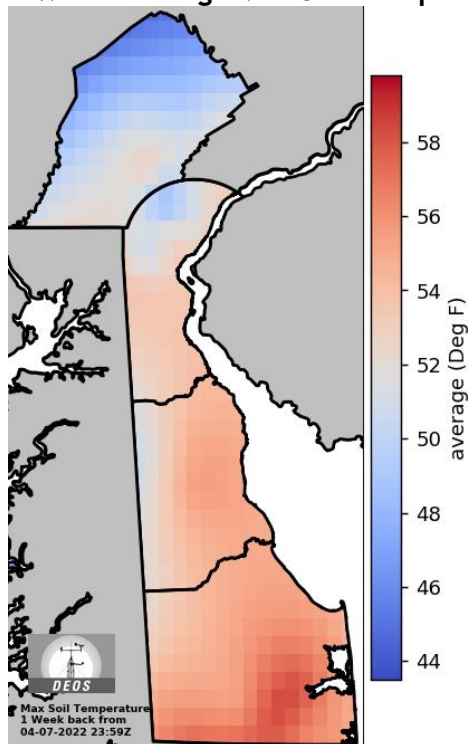
1 Month Accumulated Growing Degree Days



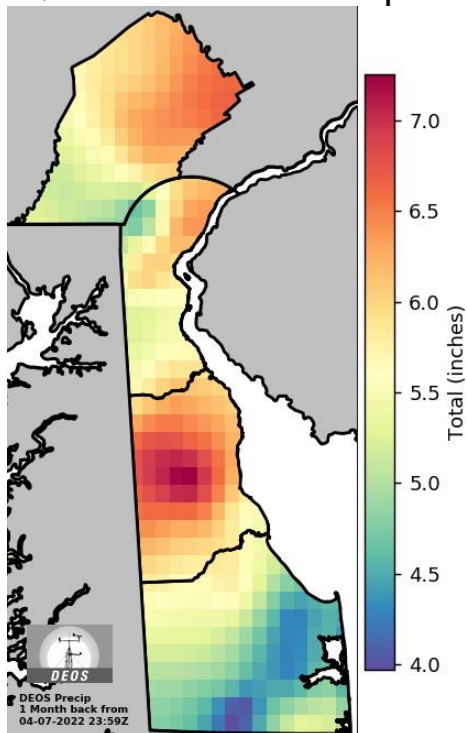
1 Week Accumulated Precipitation



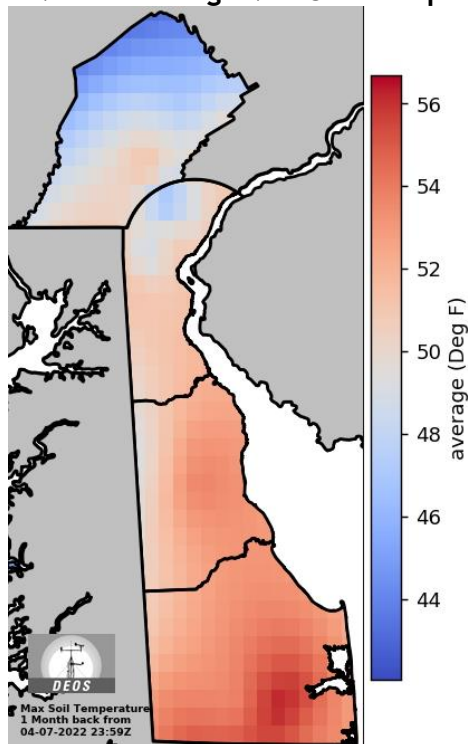
1 Week Average Max Soil Temperature



1 Month Accumulated Precipitation



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)

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

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