

# WEEKLY CROP UPDATE



UNIVERSITY OF DELAWARE  
COOPERATIVE  
EXTENSION

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## Vegetable Crops

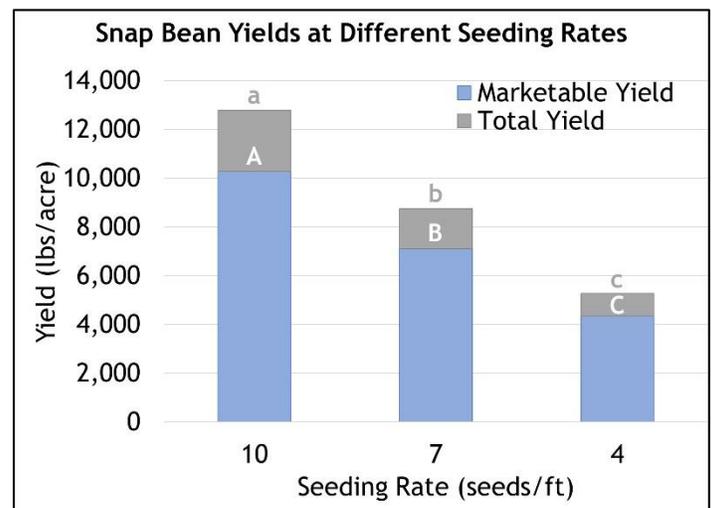
### High Plant Populations Needed for Best Snap Bean Yields

*Emmalea Ernest, Extension Fruit & Vegetable Specialist; [emmalea@udel.edu](mailto:emmalea@udel.edu)*

The recommended planting rate for snap beans is 6-10 seeds per foot (2.0-1.2 inch spacing) which works out to 104,540 to 174,240 seeds per acre. In past years I have been asked about the potential for snap beans to produce economic yields at lower populations from two different perspectives. Sometimes reduced seeding rate is being considered as a means of reducing input (seed) costs and sometimes plantings experience stand loss from diseases, seedcorn maggot or environmental stress. Past research done at University of Delaware has shown that both lima beans and processing sweet corn can compensate for reduced plant populations. Processing sweet corn continues to produce similar yields with up to 40% stand reduction, i.e. same yields at 23,250-13,950 plants per acre. Lima beans can compensate for up to 50% stand reduction, i.e. same yields at 69,700-34,800 plants per acre. In 2023 I conducted a trial to determine the impact of reduced plant populations on snap bean yields.

The 2023 snap bean stand study was planted on June 2. Plants established well and grew to nearly fill the rows; however, this trial did experience heat stress during the flowering period. I tested three varieties (PV 857, Caprice, Greenback) at seeding rates of 4, 7 and 10 seeds per foot. For all three varieties, yields were statistically significantly different from one

another at the three seeding rates. The highest total and marketable yields were achieved at the highest seeding rate of 10 seeds per foot (174,240 seeds/acre) and the lowest at 4 seeds per foot (69,696 seeds/acre) (Figure 1). Notably, there was a significant difference in yield between the 10 and 7 seeds per foot treatments, both of which are within the range of recommended seeding rates.

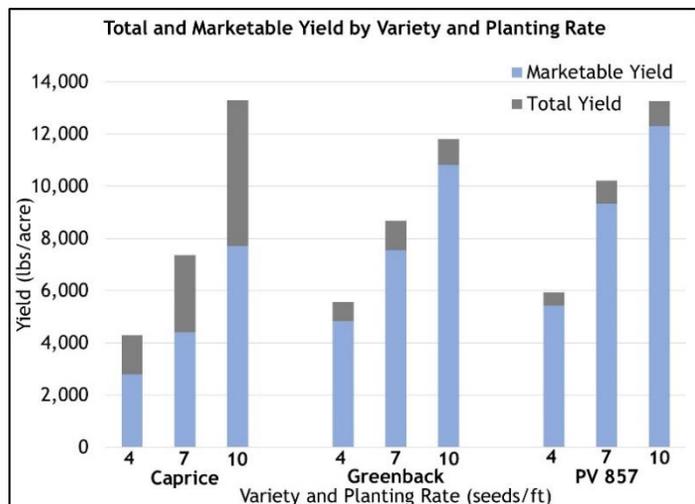


**Figure 1.** There were significant differences in total and marketable yield between seeding rate treatments.

Beside affecting yield, the lowest seeding rate treatment also had smaller seed size at harvest than the 7 and 10 seeds/ft treatments, indicating slower maturity at lower plant populations.

The population effects on yield were consistent across varieties and none of the varieties I tested were better able to compensate for reduced stands (Figure 2). Caprice, which is less

heat tolerant than PV 857 and Greenback, had a higher percent cull at the highest seeding rate, whereas the proportion of culls remained the same across seeding rates for PV 857 and Greenback (Figure 2). This indicates that high populations might exacerbate marketable yield loss in heat-sensitive varieties.



**Figure 2.** Varieties responded similarly to planting rate in terms of total yield, but the proportion of cull beans increased in heat sensitive Caprice at the highest planting rate.

Overall, the results of this trial indicate that reducing snap bean seeding rate is likely to reduce yield potential, so I would not recommend lowering seeding rates to cut costs. Also, since stand establishment is especially important for maximizing snap bean yield potential, manage tillage, planting practices and irrigation for quick, even emergence. Use appropriate seed treatments to manage seed corn maggot and disease risk. Remember that rough seed handling reduces germination in beans. For early plantings into cooler soils, use high vigor (not carryover) seed.

### **Vegetable Crop Insect Scouting**

David Owens, *Extension Entomologist*,  
[owensd@udel.edu](mailto:owensd@udel.edu)

#### **Greenhouses**

Begin scouting greenhouses for aphids and spider mites on early season transplants. Aphids can easily establish on transplants and build up moderate sized colonies in hotspots. These hotspots can be identified by increased ant

activity on the plants or by curling leaves. Should transplants be found with aphids, a tray drench treatment of a neonicotinoid will remove the aphids and provide some degree of short-term cucumber beetle protection. Heavily impacted plants may be so stunted that they might never yield.

Signs of spider mite feeding include yellow striping on the upper surface of the leaf indicating mite feeding on the leaf underside. It is easier to treat trays than to clean up a field after infested plants have been transplanted. Focus mite scouting in areas near sidewalls or where weeds may be present inside the greenhouse.

#### **Cole Crops**

With warm weather, many of our cole crop pests have broken dormancy and are searching for food, including imported cabbageworm, diamondback moth, and harlequin bug. This past winter was cooler than 2022-2023 but wasn't 'cold' and not nearly cold enough to set any of these pests back.

#### **Potato**

Warm weather earlier in the week may have been enough to allow colorado potato beetles to emerge and start looking for early emerging potato. Once temperatures are in the upper 70's to low 80s adults will begin flying. Cool weather in the week or so ahead should slow them down if they have not yet been spotted on new plantings.

#### **Strawberry**

It might seem odd to mention spider mites given all the rain and cool weather we have had, but strawberries are an excellent early season host for mites. Mites overwinter quite comfortably under row covers and begin reproducing in earnest once the plants enter flowering and fruit set stages. Plants on black plastic also warm faster, stimulating mite activity. Thresholds for plants beginning to flower are 15-20 mites per leaflet or 50% of sampled leaflets with mites on them.

#### **Asparagus**

Scout for asparagus beetle activity on emerging spears. Asparagus beetle lay dark cylindrical eggs on spears perpendicular to the spear. Thresholds from Michigan State University suggest a threshold of 5% of spears with adults and 2% of spears with eggs.

# Fruit Crops

## NEWA Strawberry Botrytis and Anthracnose Risk Model - April 18

Emmalea Ernest, Extension Fruit & Vegetable Specialist; [emmalea@udel.edu](mailto:emmalea@udel.edu)

The [strawberry section](#) of the [Mid-Atlantic Commercial Vegetable Production Recommendations](#) includes fungicide recommendations for botrytis and anthracnose. Timing of fungicide sprays should be informed by weather conditions. [NEWA](#) offers a [Strawberry Diseases Model](#) for predicting risk of infection by Anthracnose and Botrytis based on [DEOS](#) weather stations in Delaware. This tool includes risk levels based on the 5-day weather forecast. I have compiled the NEWA Strawberry Diseases Risk Levels for seven Delaware locations in the table below. Risk of infection has been low in the last week, except on April 12 in some locations. Forecasted risk is low through April 23 in all locations.

### Strawberry Anthracnose and Botrytis Infection Risk from NEWA on April 18, 2024

Location	Based on Observed Weather						Based on Forecasted Weather					
	Apr 12	Apr 13	Apr 14	Apr 15	Apr 16	Apr 17	Apr 18	Apr 19	Apr 20	Apr 21	Apr 22	Apr 23
<b>Risk of Anthracnose Infection   Low &lt;0.15, Moderate ≥0.15 and &lt;0.50, High ≥ 0.50</b>												
Hockessin	0.20	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0	0	0
Newark	0.08	0.03	0	0.03	0.03	0.03	0.04	0.03	0.03	0	0	0
Kenton	0.05	0.03	0.03	0.03	0	0.03	0.06	0	0.04	0	0	0
Harrington	0.1	0	0	0	0	0.03	0.05	0	0.03	0	0	0
Bridgeville	0.15	0	0	0	0.03	0	0.06	0	0.03	0	0	0
Georgetown	0.19	0.03	0	0	0	0	0.09	0.03	0.04	0.03	0	0
Delmar	0.41	0	0.03	0	0	0	0.05	0.03	0.04	0	0	0
<b>Risk of Botrytis Infection   Low &lt;0.50, Moderate ≥0.50 and &lt;0.70, High ≥ 0.70</b>												
Hockessin	0.71	0.02	0.01	0.02	0.02	0.03	0.04	0.02	0.04	0	0	0
Newark	0.19	0.02	0	0.02	0.02	0.02	0.09	0.02	0.04	0	0	0
Kenton	0.05	0.02	0.01	0.02	0	0.02	0.24	0	0.06	0	0	0
Harrington	0.17	0	0	0	0	0.02	0.17	0	0.04	0	0	0
Bridgeville	0.34	0	0	0	0.02	0	0.16	0	0.04	0	0	0
Georgetown	0.49	0.02	0	0	0	0	0.42	0.02	0.07	0.02	0	0
Delmar	0.88	0	0.01	0	0	0	0.08	0.02	0.09	0	0	0

When risk levels are low (green highlight) fungicides are not needed to control disease. When risk levels are moderate (orange highlight), fungicides should be applied if other factors are present that increase disease risk, such as susceptible varieties or a history of disease in the planting, AND fungicides have not been applied for 7-14 days. When risk levels are high (red highlight) apply a highly effective fungicide as soon as possible if no fungicides have been applied for 7-14 days.

You can get the most recent and relevant strawberry disease risk information by checking the [NEWA model](#) for the DEOS station closest to your field.

# Agronomic Crops

## Agronomic Crop Insect Scouting

David Owens, *Extension Entomologist*,  
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### Early Season Moth Activity

Many thanks to David Armentrout at the Lower Eastern Shore REC and to Joanne Whalen extension entomologist emeritus extraordinaire for assistance with check traps. Moth counts were low this week, but enough black cutworm were captured in the Harrington area to begin a degree day model to predict when larvae will first be big enough to cause issues in corn. Currently, it is too early to make predictions on cutworm risk, but these counts are not unusual. Please keep in mind there are other cutworm species!

Location	# of Nights	Total Catch	
		TAW	BCW
Salisbury, MD	7	2	1
Seaford, DE	6	0	0
Sudlersville, MD	7	3	26
Harrington, DE	6	56	71
Smyrna, DE	6	1	4
Middletown, DE	6	0	16

### Corn

Early Seedling pests of corn include birds, slugs, cutworms, wireworms, and white grubs. White grubs are probably the most problematic of the bunch. White grubs and wireworms tend to be more abundant in fields that have previously been fallow or grass pasture or sod. To scout for white grubs and wireworms, sampling can be done on 12 inches x 12 inches x 6 inches or, as Virginia Tech recommends, a more compact sample of 8 inches x 8 inches x 6 inches. Spring thresholds are 1 white grub per sample. Wireworm thresholds are uncertain, but probably a little bit less than white grubs given their greater mobility in the soil. If sampling a

field that has corn stubble in it, do not focus solely on old plant stubble but select sample sites randomly. It is not uncommon to find a white grub under old stalks and roots.

If a high number of white grubs are present, a higher rate of seed treatment combined with a pyrethroid in furrow will aid control. Wireworms can be controlled with a mid-rate seed treatment.

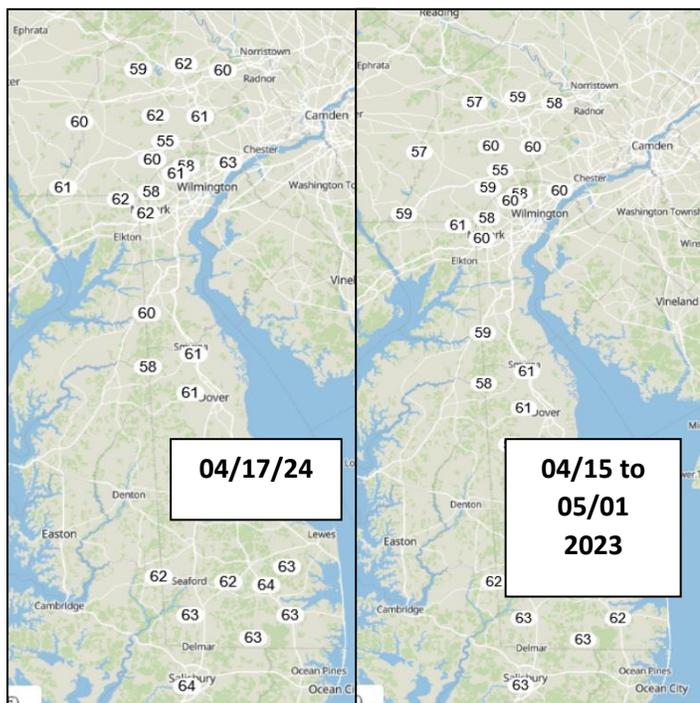
Last year there were several reports of clay backed cutworm activity, and some reports of bird damage. Birds can be distinguished from cutworm by their habit of going down the row, partially pulling seedlings up to devour the seed. Holes left by their beaks are going to have straight edges. Cutworm holes are going to be scattered between rows and be perfectly rounded. Cutworms will clip plants off at the base and partially drag the plant material into a burrow. Also look for circular, transverse holes in the leaves. Last year, we marked plants with cutworm feeding signs to see how they responded to an insecticide treatment. Corn was 1-2 leaf stage, and cutworms were overwintered (not new black cutworm). A pyrethroid application only somewhat reduced new injury, and plants quickly outgrew cutworm feeding. Birds can be managed using Avipel seed treatment, but it must be applied by certain applicators and is only available after purchase.

Finally, scout corn seedlings for slug damage, particularly in no-till fields with heavy residue and fields in Kent and New Castle County that received rain this week. Heavy feeding can stunt seedlings and may warrant control measures if defoliation reaches or exceeds 50% and plants are only growing slowly. Starter fertilizer and row cleaners help. Be sure to close seed slots.

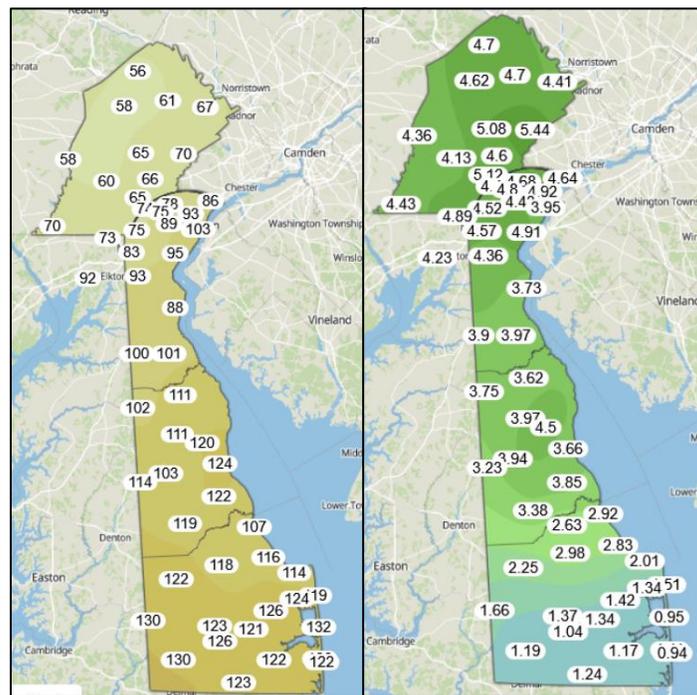
## Soil Temperatures and Growing Degree Days

Jarrold O. Miller, Extension Agronomist,  
[jarrod@udel.edu](mailto:jarrod@udel.edu)

Minimum soil temperatures for planting are 50° F to obtain good germination and emergence from corn and soybeans. Based on DEOS (<https://deos.udel.edu/>), soil temperatures were above 60° F across most of the region on April 17<sup>th</sup> (Figure 1a). Based on average soil temperatures for the second half of April in 2023, we can expect conditions to stay ideal (Figure 1b).



**Figure 1:** Current soil temperatures across the region (a) compared to average soil temperatures during the last two weeks of April in 2023 (b).



**Figure 2:** Growing degree day accumulation in the last half of April 2023 (a) and the April 2024 rainfall totals through the 17<sup>th</sup> (b).

Based on past growing degree information for Delaware

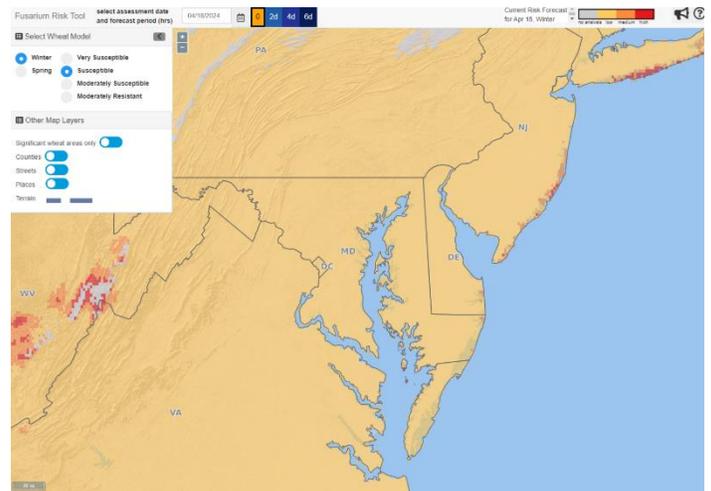
(<https://sites.udel.edu/agronomy/2022/06/22/average-delaware-growing-degree-days-2019-2021/>), corn emergence may occur anywhere

from 84-150 GDD, with an average of 109 GDD. A more nationally recognized value for corn emergence is about 120 GDD for 50% of your stand. During the second half of April in 2023 (Figure 2a), Sussex County met this threshold. Any corn planting done this week should emerge by May 1<sup>st</sup>, but northern parts of the state can expect delays in emergence. However, due to the excessive rainfall that has also occurred further north (Figure 2b), field conditions may be too poor to plant in New Castle and northern Kent County.

## Small Grains Disease Updates

Dr. Alyssa K. Betts, *Extension Field Crops Pathologist*; [akoehler@udel.edu](mailto:akoehler@udel.edu)

Heading in barley is underway and wheat is flag leaf to boot stage. Although it has been wet, the rains are slowing, and we are currently at low risk in the Fusarium Risk Tool (Figure 1). Barley starts flowering prior to heading, while wheat usually starts to flower 3-4 days after heading out (Figure 2). If you are planning for wheat fungicide application, scout frequently and apply when wheat is flowering (Feekes 10.5.1). Weather can impact how many days from when heads become visible until flowering actually begins. Look for yellow anthers in the center of the wheat head to signal the start of flowering (Figure 2). Some years it may be 3-4 days while others I have waited 10-11 days. Once wheat is flowering, fungicides are most effective when applied within 4-5 days. For best mycotoxin (DON) control, it is better to be at flowering or a few days beyond than to spray too early when heads are not out yet. Anthers can remain attached after flowering but become a pale white. Fungicide products should be applied at the manufacturers recommended rate with nozzles 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 1:** FHB Risk Model for April 18, 2024 ([wheatscab.psu.edu](http://wheatscab.psu.edu))



**Figure 2:** Wheat at flowering (Feekes 10.5.1) with yellow anthers visible 3-4 days after heads emerge.

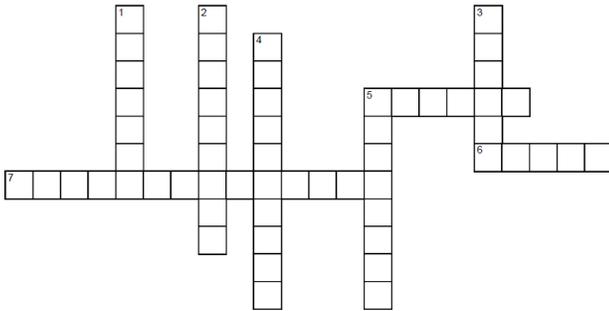
# General

Possible answers include: amaranth, chickweed, cocklebur, jimsonweed, lambsquarter, marehail, and morning glory.

## Guess the Pest “Puzzle Edition” April 12

David Owens, Extension Entomologist,  
[owensd@udel.edu](mailto:owensd@udel.edu)

Congratulations to Bob Lieby for filling out the crossword puzzle last week correctly! Bob will be entered for an end-of-season drawing for useful scouting materials and a jar of honey.



### ACROSS

- 5 This type of beetle is a serious defoliator of alfalfa
- 6 Pests of no-till fields in cool, moist conditions that shred leaves
- 7 These cucurbit specialists transmit bacterial wilt to cucumber and squash

### DOWN

- 1 Pest of seedlings. Moths lay eggs in weedy field and larvae hide in soil
- 2 This used to be THE pest of corn, potato, pepper, and snap bean but is now very uncommon
- 3 These insects transmit barley dwarf virus
- 4 these small jumping insects can be very serious defoliators of eggplant
- 5 this seedling pest is orange and drills holes in seeds

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## Guess the Pest “Puzzle Edition” April 12

David Owens, Extension Entomologist,  
[owensd@udel.edu](mailto:owensd@udel.edu)

Last week we ran a crossword puzzle for the Weekly Crop Update puzzle edition. This week, we have a hybrid. Match the seedling with the weed! Answers for this one can either be sent to me, [owensd@udel.edu](mailto:owensd@udel.edu) or submitted through the google form ([https://docs.google.com/forms/d/e/1FAIpQLSfUPYLZnTRsol46hXmgqj8fvt5f8-JI0eEUHb3QJaNDLG\\_4kg/viewform?usp=sf\\_link](https://docs.google.com/forms/d/e/1FAIpQLSfUPYLZnTRsol46hXmgqj8fvt5f8-JI0eEUHb3QJaNDLG_4kg/viewform?usp=sf_link)) or clicking the GTP logo.



## Assessing the Fallout for the Francis Scott Key Bridge Disaster: Broad Impacts and Effects on Delaware Agriculture

*Kofi Britwum, Assistant Professor of Farm Management, [britwum@udel.edu](mailto:britwum@udel.edu). Nate Bruce, Farm Business Specialist [nsbruce@udel.edu](mailto:nsbruce@udel.edu)*



Within 40 seconds on the fated morning of March 26, 2024, the Francis Scott Key Bridge collapsed and tragically claimed the lives of six construction workers. The timing of the catastrophe, in the wee hours of the morning, spared potentially greater casualties had it happened later in the day, during rush hour. The bridge's collapse temporarily halted marine traffic at the Port of Baltimore. Prior to the bridge's collapse and subsequent suspension of normal shipping operations, the Port of Baltimore functioned as a vital trade hub in the eastern corridor of the US.

In 2023, the port is estimated to have handled 52.3 million tons of international cargo valued at approximately \$81 billion. To put this in context, this places the Port of Baltimore within the top 20 ports nationwide in terms of total tonnage and container handling, according to the Department of Transportation. In addition, it was ranked ninth in terms of value and handling of international cargo. It served as the leading hub for "roll on, roll off" cargo in the US, comprising of automobiles, construction, and farm equipment (wheeled cargo). Major agricultural commodities and products were transported through the ports in 2023 and included sugar, soybeans, corn, wheat, coffee, and various produce items.

Fortunately, the temporary closure of the port will have only a minor effect on the overall US economy, although its impact will be somewhat significant in Maryland. According to a post by IMPLAN, approximately 15,000 individuals were employed at the port, and its temporary closure is expected to result in the loss of approximately \$275 million in labor income. This could potentially reduce Maryland's Gross Domestic Product (GDP) contribution by about \$286 million, with ripple effects on tax revenues.

Since agricultural commodities and products were handled through the port, a valid question is whether the closure will broadly affect agricultural trade. Not substantially at least. In 2023, exports through the port accounted for approximately \$650 million, with tonnage of approximately 605,000 MT; this represented about 0.4% of total US agricultural exports by value. Imports of agricultural products through the port were equally small, estimated at 1.7% of the value of overall US agricultural imports.

For the state of Delaware, thanks to a thriving poultry industry, most of the soybean and corn produced are absorbed for chicken feed; therefore, the port closure is not expected to impact grain agriculture to any meaningful degree. Similarly, the Mid-Atlantic region consumes a large share of poultry products from the state, with just about 10% to 15% of Delmarva poultry exported overseas. Consequently, the impacts on poultry exports are not expected to be considerable for the state.

However, impacts are likely to be felt in key agricultural imports that came through the ports - in particular, fertilizer and farm machinery. The Port of Baltimore handled significant fertilizer imports, including nearly all of the nitrogen fertilizer (both UAN and urea) used on the eastern shore. Additionally, about half of the supply of potash used locally also comes through the port. Due to the port's closure, fertilizer imports will be redirected to other major ports on the East Coast. For the purpose of planning, local producers in Delaware should consider budgeting for higher fertilizer expenses due to increased shipping costs. For nitrogen expenses, producers should consider increasing the

budgeted cost per pound of nitrogen by \$0.10 - \$0.20 due to increased logistical costs. While the port has been a primary hub for handling cars, light trucks, and farm equipment, local equipment inventories for this production year are not expected to pose a problem. This could, however, change in the future depending on how long the port remains closed.

Although the port closure is by no means minor, robust supply chains post-Covid-19 have generally mitigated large-scale economic impacts in Maryland and surrounding regions. President Biden has assured federal funding for the bridge's reconstruction within the shortest possible time, though it may still take a while before a new bridge is up and fully operational. Thankfully, Maryland officials anticipate a reopening of the port by the end of May with a few temporary passages already underway for smaller vessels and barges.

## Announcements

### Correspondence with UD Nutrient Management Program

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

The UD Nutrient Management program recently bid a fond farewell to Hilary Gibson, as she has left UD to pursue a new opportunity. Hilary has been the main point of contact for several years related to nutrient management certification and continuing education questions. As such, we wanted to make our clientele aware that the Nutrient Management Program Coordinator position is currently vacant, and we are currently working to refill this position. **In the meantime, please send all email inquiries related to nutrient management to [nutrient-management@udel.edu](mailto:nutrient-management@udel.edu).** We also ask that you bear with us in the near future as you may experience slight delays while we are short staffed. We will do our best to respond to emails and enter accrued credits in a timely fashion.

### UD Nutrient Management is Hiring a Program Coordinator

Are you interested in working with UD Cooperative Extension and the Nutrient Management Program? We are currently looking to hire a **Program Coordinator**.

[Qualified individuals interested in potential employment with the UD Nutrient Management program can view the position description here.](#)

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### Job Posting: Research Associate - Vegetable Crops

The University of Delaware Extension Vegetable and Fruit Program, based at the Carvel Research & Education Center in Georgetown, Delaware, conducts applied research and provides Extension support to Delaware's vegetable and fruit growers. This full-time position will support a grant funded research project in the area of lima bean breeding and genetics and vegetable variety trials. Funding is in place for 3 years with continued funding support anticipated. The Research Associate will work under the supervision of the Extension Vegetable and Fruit Specialist.

#### Responsibilities:

Manage greenhouse and field production of lima bean breeding lines and experimental populations.

Assist with yield trials and drone-based phenotyping of lima bean breeding lines and experimental populations.

Provide supervision and direction to seasonal employees.

Organize trial seed acquisition, inventory, and distribution.

Assist with establishment, maintenance and data collection of applied vegetable and fruit research plots.

#### Qualifications:

Bachelor's degree in horticulture, plant science, plant breeding, or related field and two years'

related experience, or equivalent combination of education and experience.

Must have or obtain Delaware Pesticide Applicator Certification.

Experience with field and greenhouse production.

Familiarity with statistical analysis and software is preferred, along with Microsoft Word, Excel, or equivalent program.

Experience with UAV systems, remote sensing and image analysis preferred. Hires will be expected to obtain a FAA - 107 Remote Pilot Certificate.

*Additional information at:*

<https://careers.udel.edu/cw/en-us/job/500920/research-associate-ii-vegetable-crops>

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### **Are you a Corn Farmer? We Want to Pay You to Earn 1 DE Nutrient Management Credit!**

Farmers in DE who grow corn and are interested in learning more about in-season nitrogen modeling tools can participate in a 30-minute, farmer-friendly computer simulation. All participants are paid for participation (up to \$150 in a gift card) and earn 1 DE Nutrient Management Credit (1 MD credit also available) for using N model outputs to make management decisions on a virtual farm. Responses are anonymous and personal information will not be shared outside the project team. If you are interested, please fill out this [form](#) and you will be sent instructions by email to participate.

### **Recommendation Support Tool Launches Nationwide to Digitize Crop Nutrient Management**



Nationwide, April 8, 2024—The FRST project partners are proud to announce the nationwide release of the FRST (Fertilizer Recommendation Support Tool), a decision-aid that provides an unbiased, science-based interpretation of soil test phosphorus and potassium values for crop fertilization.

The FRST project is a collaboration of over 100 soil science and agronomic professionals representing nearly 50 universities, four divisions of the USDA, several not-for-profit organizations, and one private sector partner. This diverse partnership underscores the collective effort and expertise invested in the development of FRST.

University of Delaware is represented on the project by Dr. Amy Shober and Dr. Jarrod Miller.

Shober noted that, “we are extremely excited about the launch of the decision support tool. FRST was developed in response to the pressing need to harmonize soil testing across state boundaries. It represents an improvement in our ability to evaluate soil test correlation.”

The new web-based tool represents a significant advancement in soil testing for phosphorus and potassium and nutrient management that uses

data from across the U.S. with the hope of potentially saving farmers millions of dollars annually while reducing excess nutrient losses to the environment.

Deanna Osmond, soil science researcher at NC State University, is one of the group's leaders.

“Until now, soil fertility faculty in each state worked independently,” Osmond said. “But for farmers who work across state lines, it’s difficult to compare or assimilate multi-state guidelines. Our goal is to improve the accuracy of nutrient recommendations through independent, scientifically developed nutrient management best practices that farmers can believe in and adopt.”

Currently, the FRST provides critical phosphorus and potassium soil test values. Critical soil test values indicate where there is no expected yield increase from phosphorus or potassium fertilizer application. In the next phase, the FRST will provide research-based phosphorus or potassium rate response information to assist farmers in selecting the minimum fertilizer rate expected to produce maximal crop yield.

The current version (FRST v1.0) includes data from nearly 2,500 phosphorus and potassium trials for 21 major agricultural crops, with the majority as corn and soybean.

The FRST includes a map of the US that shows the location of phosphorus and potassium trials represented in the database and can be used to identify where the need for additional research data is greatest.

The database was constructed from both historical and current research data and includes trials from 40 states and Puerto Rico. The team has plans to expand to other crops, cropping systems, and other nutrients, such as sulfur.

Key Features of FRST Include:

- **Data-Driven:** FRST utilizes a dynamic database of soil test correlation data that is constantly updated to improve testing confidence.
- **Crop Specific:** The database currently covers 21 major commodity crops.
- **Geographically Diverse:** Includes published and unpublished trial data from 40 states and Puerto Rico.
- **Unbiased:** Blended data removes political and institutional bias in soil test interpretation.
- **Scientifically Sound:** Data represents a minimum dataset that provides reliable outcomes.

Nathan Slaton, soil science researcher at University of Arkansas and a leader on the project, noted that “The FRST project has accomplished two really important objectives to advance phosphorus and potassium management for crop production. The first was developing a national database to archive soil test correlation and calibration research ensuring that research information that supports crop fertilization recommendations is not lost as scientists retire. The second is providing a tool that anyone can use to review the research results relevant to their crop, soils, and geographic area to check their soil-test-based fertilizer recommendations.

Hosted in a neutral space with common access, FRST fosters collaboration and innovation in soil fertility research, paving the way for future advancements in nutrient management.

Greg Buol of NC State University who has provided database and programming support stated, “the design of FRST has always been focused on the end user being able to easily use the tool and understand the results.”

"We believe that FRST will not only benefit farmers by improving farm economics and conservation practices but also contribute to global sustainability," concluded Miller.

For more information about FRST and how it can transform nutrient management on your farm or in your organization, visit <https://soiltestfrst.org> and click on "Tool".

Funding for the FRST project has been provided by the USDA-NRCS including the Conservation Innovation Grants, USDA-ARS, and USDA-NIFA, and OCP North America.

Contact:

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OR

Jarrod Miller, Assistant Professor and Extension Specialist, University of Delaware  
[jarrod@udel.edu](mailto:jarrod@udel.edu)

OR

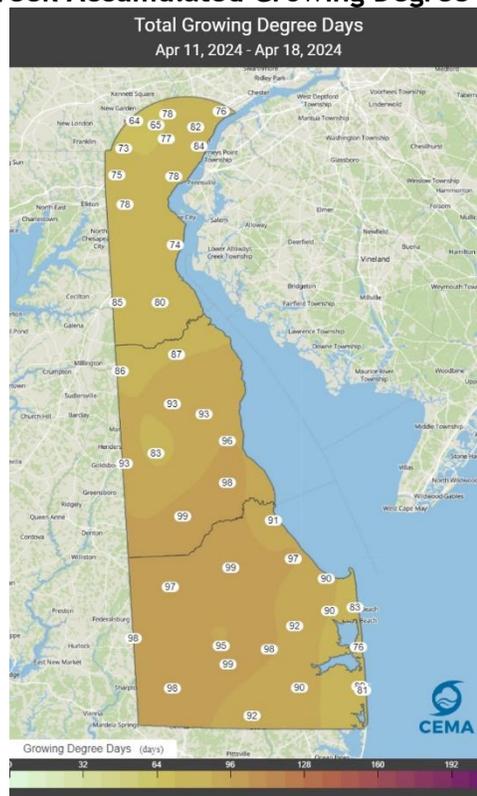
Deanna Osmond, Professor of Soil Science, NC State University  
[dosmond@ncsu.edu](mailto:dosmond@ncsu.edu)

OR

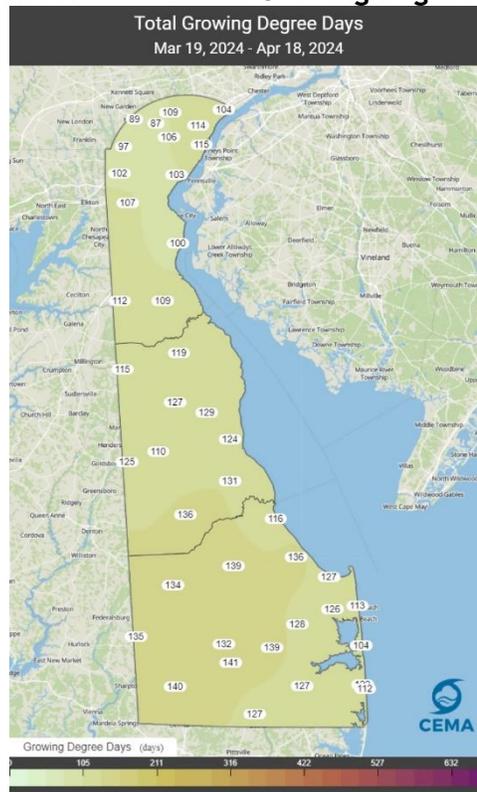
Nathan Slaton, Assistant Director of the Arkansas Agricultural Experiment Station, University of Arkansas Division of Agriculture  
[nslaton@uark.edu](mailto:nslaton@uark.edu)

## Weather Summary

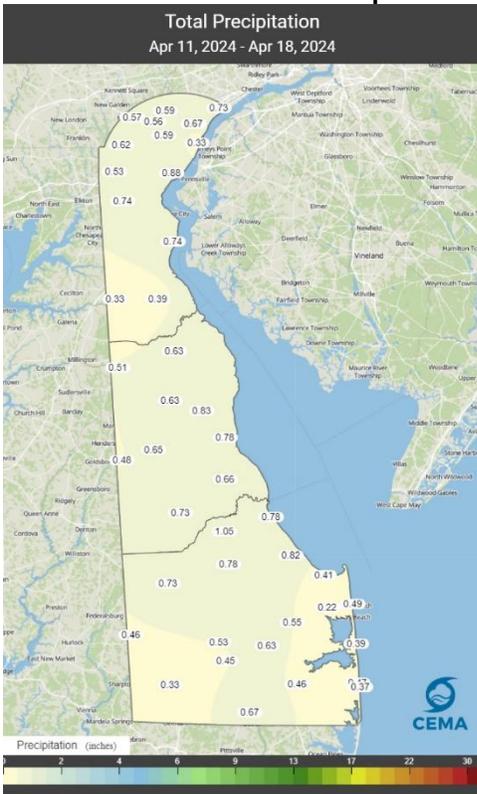
### 1 Week Accumulated Growing Degree Days



### 1 Month Accumulated Growing Degree Days



## 1 Week Accumulated Precipitation



*Weekly Crop Update is compiled and edited by Emmalea Ernest, Extension Fruit & Vegetable Specialist and Drew Harris - Kent Co. Ag Agent*

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## 1 Month Accumulated Precipitation

