

# WEEKLY CROP UPDATE



UNIVERSITY OF DELAWARE  
COOPERATIVE  
EXTENSION

Volume 32, Issue 7

April 26, 2024

## Vegetable Crops

### Extending Lettuce Production into the Summer

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

Lettuce is an important crop for direct market and restaurant sales. In Delaware, lettuce production is typically constrained to the spring and fall since high temperatures can induce premature flowering (bolting) and development of bitter flavor in lettuce. However, I have been testing combinations of practices that might allow for lettuce production in the summer also. Over several seasons, I have tested three strategies for maintaining quality lettuce for summer production: use of heat tolerant varieties, use of shade cloth and use of white and silver plastic mulch. I have also tested using these strategies in combination. All the trials were conducted at University of Delaware's research farm in Georgetown, Delaware.

#### Heat Tolerant Varieties

In all of the trials I have done, variety is the most significant factor determining premature bolting and development of bitter flavor. Some varieties are slow to bolt but still develop bitter flavor. In 2023 I tested 14 lettuce varieties that were reported to be heat tolerant for performance with early and late June planting dates. This trial was transplanted into white plastic mulch and shaded with 30% black shade cloth.

The bitterness ratings from the June 5 planting, which was harvested in early July are in Table 1.

Bitterness was rated on a 1-4 scale with ratings of 1 and 2 considered marketable and ratings of 3 and 4 considered unmarketable. The varieties with the lowest bitterness ratings were Skyphos, Muir, Nevada, Jericho, Salanova Red Tango, and Sunland. In the June 22 planted trial, harvested in early August, only Muir and Nevada produced marketable lettuce.

**Table 1. Flavor Ratings for Lettuce Varieties Transplanted on June 5 and Harvested in Early July**

Variety Name	Type	Average Flavor Rating*
Skyphos	Butterhead, Red	1.04 a**
Muir	Batavia, Green	1.08 ab
Nevada	Batavia, Green	1.13 abc
Jericho	Romaine	1.17 abc
Salanova Red Tango	One-Cut, Red	1.33 abc
Sunland	Romaine	1.38 abc
Salanova Red Butter	On-Cut, Red	1.42 bcd
Verigo	One-Cut, Green	1.46 cde
Rubygo	One-Cut, Red	1.75 def
Salanova Green Oakleaf	One-Cut, Green	1.79 efg
Adriana	Butterhead, Green	1.92 fg
Starfighter	Leaf, Green	2.04 fg
Salanova Green Butter	One-Cut, Green	2.13 g
Red Cross	Butterhead, Red	3.21 h

\*Flavor was rated on a 1-4 scale with ratings 1 and 2 having marketable flavor and 3 and 4 being un-marketable.

\*\*Averages followed by the same letter are not statistically different from one another.



The most heat tolerant varieties from the 2023 July harvested trial.

### Light Colored Mulch

In 2023 I tested the effect of silver and white plastic mulch on lettuce yield and quality. A bare ground treatment and a black plastic mulch treatment were included as controls. Silver mulch produced the largest lettuce plants and the least bitter lettuce. White mulch also improved lettuce flavor, but not as much as silver. Silver or white mulch did not completely overcome the effect of variety, however. Heat sensitive varieties still bolted and became bitter on silver and white mulch. You cannot produce

marketable lettuce under hot conditions if you are not also using a heat tolerant variety.



First harvest of the shade cloth and mulch color trial on July 5, 2023.

### Shade Cloth

In trials planted in 2018 and 2019, use of 30% black shade cloth reduced bitterness in lettuce, however these trials were planted in early April and harvested in early June. In the 2023 trials, which were planted in June and harvested in July and August, 30% black shade cloth decreased lettuce plant size and had no effect on bitterness. In all of these trials, shade cloth was applied over low tunnels, which may have a heat trapping effect. Shade cloth might be more effectively used to reduce air temperatures for lettuce crops grown in high tunnels.

### Conclusions

If you want to try producing lettuce for harvest in July and August, using an extremely heat tolerant variety is vital. Nevada and Muir are the two varieties I have tested with the most heat tolerance. I am testing additional varieties in 2024, and hoping to identify more that are very heat tolerant. Using white or silver plastic mulch can also help reduce bolting and bitterness in summer lettuce. Silver mulch has some additional bitterness reduction and growth promotion advantages over white mulch. However, silver mulch also costs more and is not fun to work around on sunny days. Shade cloth (30% black) on low tunnels did not increase marketable yield in summer lettuce and is probably not worth the cost and trouble in this production system.



*This research is supported by a Specialty Crop Block Grant administered by the Delaware Department of Agriculture titled: Identifying Varieties and Management Practices for Summer Production of Lettuce and Other Greens.*

---

### **Vegetable Crop Insect Scouting**

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

### **Greenhouse Transplants**

Continue scouting greenhouses for signs of aphids and spider mites. If an infestation is found, it is far easier to treat a flat than to treat a field, and more cost effective than hoping it goes away once planted!

### **Legume Vegetables**

Seedcorn maggot activity is increasing. Any seed planted in the next couple of weeks should have an insecticide seed treatment on it. Thiamethoxam in Cruiser is an industry standard, but we have also had good results over the last several seasons with chlorantraniliprole and spinosyn materials used as a seed treatment.

## **Fruit Crops**

### **Fruit Crop Insect Scouting**

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

### **Strawberries**

With the coming week's warm weather forecast, scout strawberries for spider mites. Thresholds for plants beginning to flower are 15-20 mites per leaflet or 50% of sampled leaflets with mites on them. Also, be aware that any other specialty crop grown adjacent to strawberries will be at risk for large, early mite invasion.

### **Tree Fruit**

Plum curculio is the most important peach fruit pest and a major pest of apples and cherry. As we move through shuck split and in the coming weeks with apple petal fall on the horizon, be sure to scout for adults and oviposition and feeding scars on the fruit. Oviposition scars are crescent shaped. Be on the lookout for crescent-

moon shaped oviposition scars on fruit. Adult activity can be assessed by beating or shaking branches over a rigid beat sheet. Michigan State has a good article on effective insecticide options

here: [https://www.canr.msu.edu/news/plum\\_curculio\\_management\\_in\\_stone\\_and\\_pome\\_fruits](https://www.canr.msu.edu/news/plum_curculio_management_in_stone_and_pome_fruits).

In addition to the organic options described, organic producers and smaller plantings can be protected by bagging fruit. University of Kentucky has an excellent article on fruit bagging:

<https://kentuckypestnews.wordpress.com/2023/05/23/bagging-fruit-for-disease-and-insect-management/>. Be sure to treat the fruit with a fungicide and insecticide (if at all possible) before bagging fruit.

---

### **Strawberry Diseases and Freezes - April 26**

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

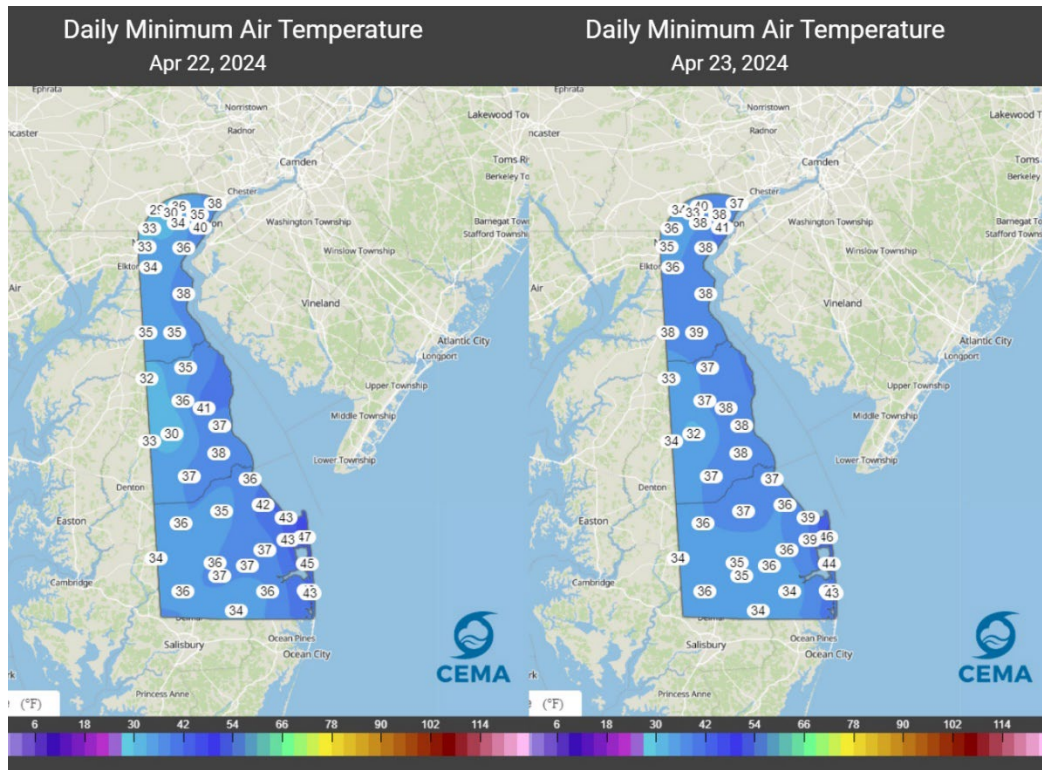
### **Wind Damage**

Strawberry leaves and stems, especially succulent new growth, can become bruised and develop blackened areas after windy weather. Please see this past WCU article [Bruising on](#)

[Strawberry Leaves](#), by Jerry Brust for pictures of wind damage. This type of damage is not a disease and has not been associated with increased risk of disease, so control measures are not needed when you observe wind damage symptoms.

### **Freeze Damage**

Except for this past week, the season has been relatively free of frost risk to strawberries. There were below freezing temperatures in some areas on April 22, 23 and 26. Based on data from [DEOS Almanac](#), freeze damage to unprotected strawberry flowers may have occurred in some locations, especially in northern and western Delaware. Below are minimum temperature maps for April 22 and 23. A map of the April 26 minimum temperatures was not available at the time I wrote this article, but it was 30°F at my house near Ellendale this morning. The weather forecast suggests that risk of freezes is past for the foreseeable future.



Daily minimum temperatures in Delaware on April 22 and 23, 2024

### Disease Risk Forecast

NEWA Strawberry Diseases Risk Levels for seven Delaware locations are compiled in the table below. Good news for strawberry growers this year: disease risk has been and continues to be low across the state.

### Strawberry Anthracnose and Botrytis Infection Risk from NEWA on April 26, 2024

Location	Based on Observed Weather						Based on Forecasted Weather					
	Apr 20	Apr 21	Apr 22	Apr 23	Apr 24	Apr 25	Apr 26	Apr 27	Apr 28	Apr 29	Apr 30	May 1
<b>Risk of Anthracnose Infection   Low &lt;0.15, Moderate ≥0.15 and &lt;0.50, High ≥ 0.50</b>												
Hockessin	0.05	0	0.08	0.07	0	0	0.09	0	0	0.03	0	0.03
Newark	0.05	0	0	0.05	0	0.03	0.05	0	0	0.05	0	0.06
Kenton	0.05	0	0.06	0.12	0	0.03	0.14	0	0	0	0	0.03
Harrington	0.05	0	0	0	0	0	0.09	0	0	0	0	0
Greenwood	0.05	0.03	0.11	0.07	0.03	0.05	0.1	0	0	0.03	0	0
Georgetown	0.05	0	0.03	0	0	0.03	0.09	0	0	0	0	0
Delmar	0.05	0.03	0.05	0.04	0.03	0	0.09	0	0	0	0	0
<b>Risk of Botrytis Infection   Low &lt;0.50, Moderate ≥0.50 and &lt;0.70, High ≥ 0.70</b>												
Hockessin	0.15	0	0.01	0.01	0	0	0.01	0	0	0.02	0	0.03
Newark	0.17	0	0	0.01	0	0.02	0.01	0	0	0.07	0	0.1
Kenton	0.25	0	0.01	0.01	0	0.02	0.01	0	0	0	0	0.02
Harrington	0.15	0	0	0	0	0	0.01	0	0	0	0	0
Greenwood	0.15	0.03	0.02	0.02	0.02	0.15	0.02	0	0	0.02	0	0
Georgetown	0.19	0	0.01	0	0	0.02	0.01	0	0	0	0	0
Delmar	0.22	0.02	0.02	0.01	0.02	0	0.01	0	0	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,*  
[owensd@udel.edu](mailto:owensd@udel.edu)

Dry weather appears to be setting in which should reduce slug activity in the near-term. It will also help planters close seed slots which will help with slug control. If anyone has planted soybeans, be vigilant though, especially in parts of the state that have received a little bit more rain recently.

### **Early Season Moth Activity**

Black cutworm and especially true armyworm activity is much, much lower than last year. Last year, the Smyrna trap peaked in mid-April with over 1,000 moths captured in a week. As you can see from this week's trap counts, moth activity is comparatively non-existent.

Location	# of Nights	Total Catch	
		TAW	BCW
Salisbury, MD	7	7	1
Seaford, DE	7	0	11
Sudlersville, MD	7	3	26
Harrington, DE	7	23	41
Smyrna, DE	7	1	0
Middletown, DE	8	0	-

### **Small Grains**

According to a model developed by Virginia Tech in 2012, we should have reached peak cereal leaf beetle egg lay, if there are any cereal leaf beetle to be found. That threshold is 25 eggs or larvae per 100 tillers. Eggs tend to be concentrated on the upper surface of a leaf, near the midrib, and more tend to be on flag

leaves. Eggs are small, sideways-barrel shaped, and copper colored. It has been many years since any reports of significant CLB activity have been received outside of Maryland research farms. As noted above, true armyworm activity appears to be extremely low this year. At this time, it does not appear that an insecticide will be justified or result in a positive return on investment if tank-mixed with a fungicide.

### **Emergence of Earlier Planted Corn and Soybeans**

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

We have two earlier planted studies at our research station in Georgetown that are emerging from the ground. In our lime by planting timing study (sponsored by the Delaware Soybean Board), the first planting was done on April 9<sup>th</sup>, with emergence occurring 10 days later. Luckily outside of a few frost warnings, we haven't had much to worry about.

In a study sponsored by the Maryland Grain Producers, corn was planted on April 16<sup>th</sup> and we have found the first true leaf starting to emerge from the coleoptile just beneath the soil surface. With temperatures warming up, we can probably expect to see corn emerge through the weekend.

So far, we have been lucky this year, and moderately early planting dates have not had to deal with saturated soils or freezing temperatures. In a recent update from Ohio State, they observed that the addition of moisture after planting (within 10 hours) reduced soybean emergence. They also observed that planting shallower (<1.5") also reduced



early season emergence. You can watch the video here:

[https://www.youtube.com/watch?v=T5\\_QXF-Px7s](https://www.youtube.com/watch?v=T5_QXF-Px7s)



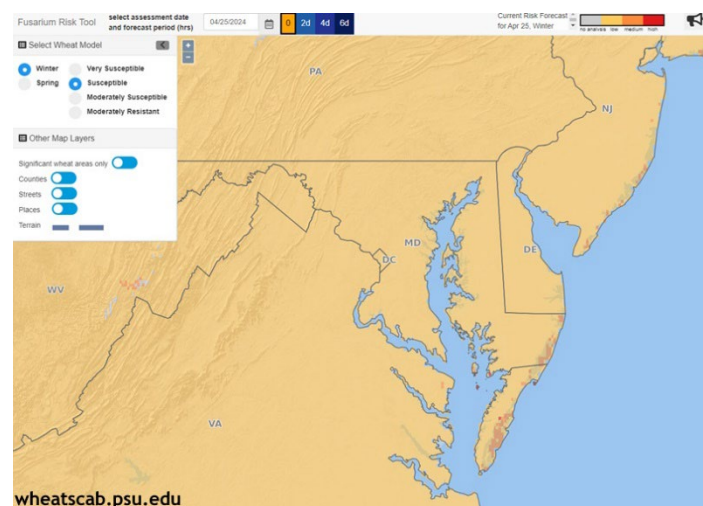
**Figure 1.** On the left, soybean cotyledons are emerging from the soil after 10 days (planted April 9<sup>th</sup>), while the corn on the right is just below the surface, also 10 days after planting (April 16<sup>th</sup>).

### **Small Grains Fusarium Head Blight Update**

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

The temperatures have been a bit of a roller coaster this week, but hopefully after this week we are done with the cold nights. Most barley is wrapping up heading. Over the past few days wheat heads have started to become visible. Depending on the weather, flowers will start to show up on wheat heads 3-5 days after full head emergence, this could be stretched to 7-10 days under cool weather conditions. With hot temperatures in the forecast this weekend, it seems we will be likely to have a shorter period from head emergence to flowering this year. Currently we are at low risk in the FHB Risk Model (Figure 1), dry conditions have this low risk maintained over the 6-day outlook. If you are planning a wheat fungicide application, scout frequently and wait to apply when at least

50% of the wheat heads are flowering. You will be looking for bright yellow anthers in the center of the wheat head to signal the start of flowering (Figure 2). Anthers can remain attached after flowering, but become a pale white. Additional details on fungicide application can be found in the [April 5](#) article. Data over the past few seasons have supported that it is better to be a little bit after first flowering (4-6 days) than to spray too soon, particularly for the mycotoxin deoxynivalenol (DON). If you spray too early, heads that have not emerged (secondary tillers) will not be protected by the fungicide application. The goal is to try to make application when the highest percent of the field is at or just past flowering.



**Figure 1.** FHB Risk Model for April 25, 2024 ([wheatcab.psu.edu](http://wheatcab.psu.edu))



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

## **Monthly Grain Market Outlook**

*Nate Bruce, Farm Business Management  
Specialist, [nsbruce@udel.edu](mailto:nsbruce@udel.edu)*

**Written 4/24/2024**

Corn prices have swung in a \$0.10 - \$0.15 range across all futures during the month of April. This trend is likely to continue until new crop estimates are released in next month's USDA report. As of this writing, December corn is above \$4.70 per bushel. Depending on local basis levels, the opportunity to sell \$5.00 new corn could present an opportunity to sell bushels above breakeven depending on expenses. More than likely \$5.00 is well above breakeven for most dryland production and could be close for irrigated acres depending on own expenses and land charges. Cheaper corn prices have upped the demand side of corn and is built into market prices at this point. Be prepared for weather situations to result in market rallies and prepare for difficult markets in the months to come. Soybean prices took a nosedive across futures after the USDA Prospective Plantings report was released. Soybean prices have recovered in the last week across futures but have come nowhere close to the prices prior to Prospective Plantings. Brazilian soybean crop uncertainty looms over the market currently. Brazil's version of USDA, CONAB, estimates the country's soybean production at 146 million metric tons while USDA's estimate remains at 155 million metric tons. Why the two estimates are so far apart is extremely difficult to understand. Bearishness in the soybean market could certainly dissipate if the low estimate is correct. Wheat prices appeared to reach a market bottom during the month of April across futures, only to rally as the month progressed. July 2024 wheat had jumped to \$5.90 per bushel as of this writing, after bottoming out near \$5.50 per bushel. Depending on your location, local basis can be an issue for wheat prices. This could change only if quality issues occur in other major Mid-Atlantic growing regions around harvest, much like what was experienced across Delmarva last year.

USDA's Prospective Plantings report was released on March 28<sup>th</sup>. The report moved corn prices higher and soybean prices lower upon its release. Producers surveyed intended to plant 5%

less total corn from the previous year for a total of 90 million acres. Intended soybean acreage was estimated to increase by 3% from the previous year, up to a total of 86.5 million acres. The downtrend in wheat prices was surely represented in the report with producers surveyed intending to plant 4% less wheat from the previous year for a total of 47.5 million acres. Locally, Delaware producers intend to plant 3% less corn in 2024 with a reduction from 175,000 acres to 170,000 acres. Maryland producers intend to reduce corn acreage by 2% in 2024, from 480,000 acres to 470,000 acres. The intended corn planting decline is steeper in Virginia where producers expect to reduce corn acreage by 5%, from 495,000 acres to 470,000 acres. Delaware producers intend to plant 3% more soybeans in 2024, from 150,000 acres to 155,000 acres. Interestingly, Maryland producers intend to plant less soybeans in 2024 than in 2023 at 3% less acres, from 470,000 acres to 455,000 acres. Virginia producers intend to increase soybean acres by nearly 9% from 580,000 acres to 630,000 acres. Wheat price decline certainly is correlated to intended decreases in wheat acreage in all three states. Delaware producers intend to reduce wheat acres by 12.5% from 80,000 acres to 70,000 acres. Maryland producers intend to reduce wheat acres by 4% from 340,000 acres to 325,000 acres. Virginia producers intend to reduce their wheat acres by 22.5% from 200,000 acres to 155,000 acres. It should be noted that the USDA's Prospective Plantings report is never the final say on what plays out during the growing season. Going back 24 years of USDA's March Prospective Plantings and final acreages for corn and soybeans, it is evident producers change their planting intentions between pre-planting and final harvest. Not one time in the last 24 years has the March Prospective Plantings Report matched post-harvest reports for corn and soybeans, meaning USDA revisions are more than likely coming. The bottom line is this: history has shown time and time again that acres can change drastically.

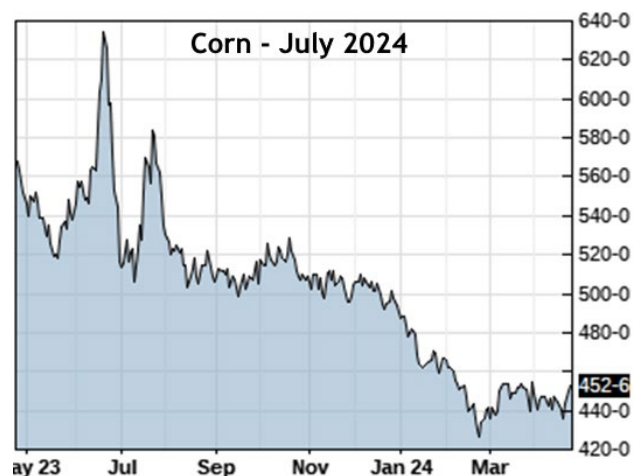
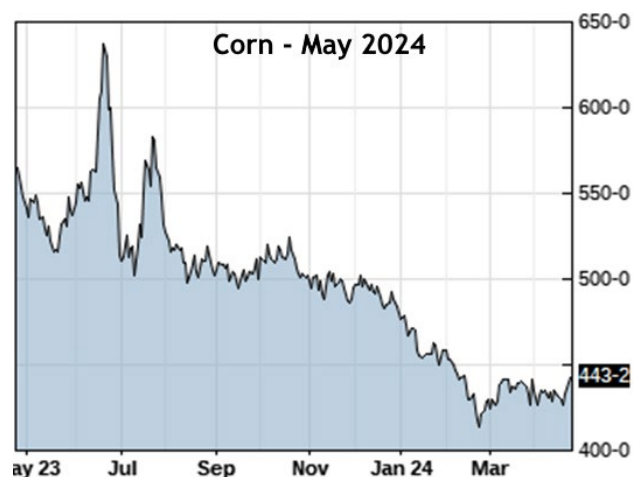
The April USDA (World Agriculture Supply and Demand Estimates) WASDE report was published on April 11<sup>th</sup>. WASDE estimated increased domestic demand, feed and residual demand, food and seed demand, ethanol demand, and

export use totals. Beginning stocks, production, imports, and exports were left unchanged from the March estimate. Ending stocks decreased by 2.3% from 2172 million bushels to 2122 million bushels. The farm season-average price fell from \$4.75 per bushel to \$4.70 per bushel. The estimated yield per acre remained unchanged at 177.3 bushels per acre. The April USDA WASDE estimated decreased soybean imports, exports, seed demand, and residual use. Beginning stocks, production, crushing and crushing demand were all left unchanged from the March estimate. Ending stocks were projected to increase by nearly 8% from 315 million bushels to 340 million bushels. The farm season-average price fell from \$12.65 per bushel to \$12.55 per bushel. Estimated yield remained unchanged at 50.6 bushels per acre. The April USDA WASDE estimated decreased wheat imports, feed and residual demand, and export use totals from the March estimate. Beginning stocks, production, food demand, seed demand, and exports remained unchanged from the March estimate. Ending stocks increased by 3.7% from 673 million bushels to 698 million bushels. The farm season-average price fell from \$7.15 per bushel to \$7.10 per bushel. Expected harvested yield per acre remained unchanged from the March estimate at 48.6 bushels per acre.

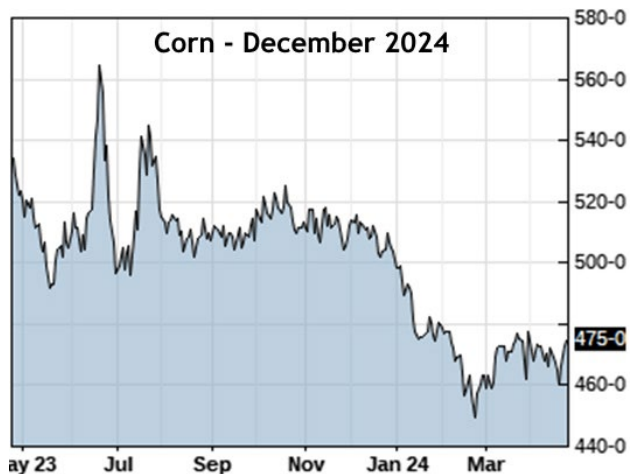
Brazil's soybean crop exceeded 160 million metric tons last year to meet rising global demand. More than likely, the world's top exporter of soybeans will have a smaller soybean harvest this year due to unfavorable weather conditions. As mentioned earlier, USDA and CONAB estimates for the soybean crop differ by about 8 million metric tons. Some private analysts think Brazil's soybean crop is even smaller than the CONAB estimate itself. With Brazil pivoting itself as the world's top agricultural exporter, some analysts predict producers in the country may still increase the amount of tillable acres, perhaps even by 35%. The second corn crop (safrinha) could expand, potentially allowing Brazil to challenge the United States as the world's top corn exporter as well. China, the world's second largest corn producing country, recorded a record corn crop last year at 288.8 million metric tons. China is striving to increase this number by 50 million metric tons by 2030 due to conflicts and tensions

between trade partners. In addition, China opportunistically purchased 20 cargo loads of feed grain from the international market in February as prices hit their lowest levels in three years. Alternative grain export routes that have been implemented after Russia pulled out of the Black Sea Grain Initiative last year have allowed the country to remain a top grain exporter. Before the Russian invasion, Ukraine exported about 6.5 million metric tons of corn every month. Thus far this year, Ukraine exported 5.2 million metric tons in March, 5.8 million metric tons in February, and 5.3 million metric tons in January. There have been issues with neighboring countries, particularly Poland up to this point. However, Ukrainian grain is reaching the world market. Russian wheat exports have increased since the beginning of the conflict. A wheat bumper crop in the country and increased exports has had a drastic impact on global wheat prices across the world.

#### Corn Futures



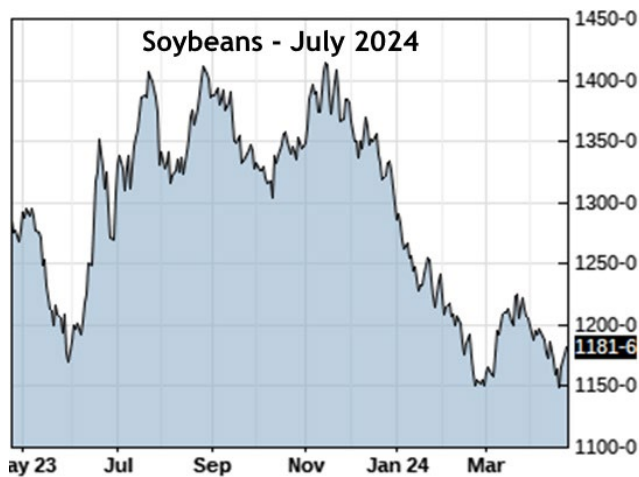
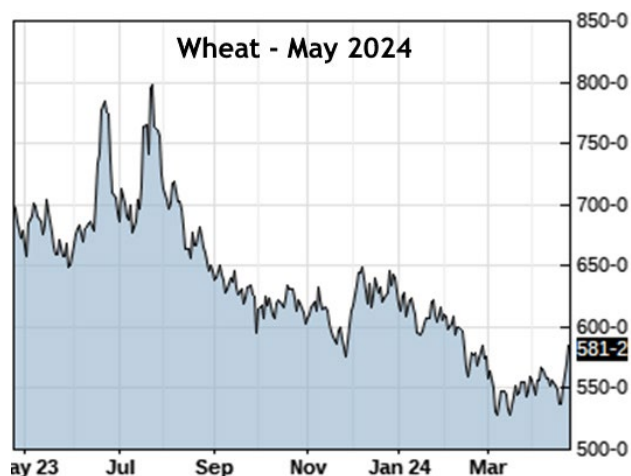




### Soybean Futures



### Wheat Futures





## General

### Mixing Order is Important

Mark VanGessel, Extension Weed Specialist;  
[mjv@udel.edu](mailto:mjv@udel.edu)

As we try to maximize the trips across the field, more and more products are being tankmixed together. Sometimes tankmixtures are not recommended due to a loss of efficacy when certain products are used at the same time and this is referred to as antagonism. An example of this is tankmixing glyphosate with triazine herbicides while trying to control Italian ryegrass. Another example is tankmixing 2,4-D with clethodim, which reduces grass control.

Sometimes tankmixtures do not blend well and you can end up with a gunky mess in the tank. This can often be avoided by mixing in the proper order. Most herbicides have directions on their label for the proper mixing order; unfortunately, these directions may not address all the products you want to include. Looking over numerous herbicides and the recommended order, here is a generalized mixing list. Remember, first refer to the label and if something is not listed, this list can provide some guidance.

### Step

- 1 Fill tank 50% full
- 2 Start agitation
- 3 Add compatibility agent
- 4 Add water conditioners
  - AMS, pH buffering agent
  - volatility reduction adjuvant (VRA); i.e. VaporGrip Xtra, Sentris, Class Act, AEGOS
- 5 Add defoamer
- 6 Add dry products
  - Water Soluble Packets (pre-slurry)
  - Wettable Powders (WP)
  - Water Dispersible Granules (WDG)
  - Dry Flowables (DF)
- 7 **Ensure fully dispersed - well mixed before proceeding**
- 8 Add suspended formulations
  - Micro-Encapsulated (ME)
  - Suspension Concentrate (SC)
  - Aqueous Suspension (AS)
- 9 Add soluble and emulsifiable formulations
  - Flowable Liquids (FL)
  - Soluble Liquids (SL)
  - Emulsifiable Concentrate (EC)
  - Oil Dispersions (OD)
- 10 Add surfactants
  - Crop Oil Concentrate, Nonionic Surfactant, Methylated Seed Oil
- 11 Add micronutrients or liquid fertilizers
- 12 Add drift retardants or Drift Reduction Agents (DRA)
- 13 Fill tank to 100% full

### Herbicide Application Timing

Mark VanGessel, Extension Weed Specialist;  
[mjv@udel.edu](mailto:mjv@udel.edu)

Timing of herbicide application is critical. Whether we are talking about treating small weeds with a postemergence herbicide, spraying residual herbicides at planting (instead of weeks before) to provide in-crop control, or applying

preemergence herbicides before weeds start poking through the soil. Maximizing weed control requires an understanding of how herbicides enter the plant.

Some herbicides must be applied to weeds after they are out of the ground because they enter only through leaves and stems (think glyphosate and paraquat) and provide no control of weeds that have not yet emerged.

Some herbicides need to be absorbed by the weed seedlings as they emerge from the soil. The weeds' roots or shoots absorb the herbicide along with the soil moisture and move to the site of action inside the plant. If these herbicides are

applied to weeds that have emerged, they provide little or no control. They may injure some weeds, but they do not provide "weed control". Think Dual, Command, Zidua and others (see list below).

Finally, some herbicides will provide control of emerged weeds (postemergence control) as well as control of weeds as they emerge from the soil (residual control). Some herbicides in this group can be applied after the crop has emerged (think atrazine in corn) while others must be applied before crop emergence because of the crop injury they can cause (think metribuzin in soybeans).

The following table is refresher:

Postemergence Activity Only	Soil Activity Only/Mostly*	Postemergence and Soil Activity	Mostly Postemergence Control**
Glyphosate Paraquat Liberty Aim Accent Basagran Blazer Cobra	Dual Harness Zidua/Anthem Outlook Prowl Sulfentrazone (Authority) Valor Command Strategy	Atrazine Princep*** Callisto Balance Impact/Armezon Metribuzin*** Reflex Pursuit Raptor Sandeia Goal	2,4-D Dicamba Clethodim

\*Some of these may injure small, emerged weed seedlings but are not recommended for their postemergence control.

\*\*Need to be applied postemergence, but can provide some residual control; however, residual control is inconsistent and generally only for a week or two.

\*\*\*These herbicides will severely injure emerged crops.

## **Irrigate?? Now You are Talking Crazy**

*Mark VanGessel, Extension Weed Specialist;*  
[mjv@udel.edu](mailto:mjv@udel.edu)

Seems like all we have talked about this spring is rain. But, as we all know it's not how much rain we get, but when does it come. Our soil-applied/residual herbicides (like Bicep Magnum, Harness Xtra, Lexar) are applied to the soil

surface but they need to be moved into the top inch of soil where they can be absorbed by weed seedlings' roots and shoots. Left on the soil surface they are not nearly as effective.

The weather station at the Carvel Research Station last registered rain on April 12. Our weather forecast is not showing a high probability of rain for the next 10 days.



Keep an eye on the forecast and if rain is not predicted for 5 to 10 days after your herbicide was applied you should consider irrigation to ensure the maximum effectiveness from that preemergence herbicide application.

How long is the time between herbicide application and rainfall/irrigation? It depends on the soil temperature. The time depends on how long it takes for weed seedlings to emerge. This time of year it is in the 10 to 14 day timeframe, but as weather warms up that could be as short as 5 days.

How much rainfall/irrigation is needed? This is not an exact science and it depends on the water solubility of the herbicides that were applied. Some herbicide are more water soluble than others. Those that require more water include atrazine and simazine.

It also depends on the soil moisture levels at time of application. The less soluble herbicides (atrazine and simazine) need may need 0.5 to 0.6 inches if the soil is dry, but less when soil moisture is high. More soluble herbicides like Dual, may need only need a third of an inch if the soil moisture level is high.

Water solubility is listed in the Virginia Tech Extension, Weed Management for Field Crops (ENTO-566)-  
[https://www.pubs.ext.vt.edu/content/dam/pubs\\_ext\\_vt\\_edu/456/456-016/ENTO-566-E.pdf](https://www.pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/456/456-016/ENTO-566-E.pdf).  
(This publication is a joint effort with Virginia Tech, Univ MD, Univ. of WV, Univ. DE, Rutgers Univ. and Penn State. This is the same information in the Penn State Publication, but this version is free.)

---

### **Reminder: Required Paraquat Training**

*Mark VanGessel, Extension Weed Specialist;*  
[mjv@udel.edu](mailto:mjv@udel.edu)

Paraquat now requires training for all applicators, mixers, and handlers. Training certificates need to be updated every three years and since this rule went into effect four years ago, those who participated in training the initial year, need to take it again.

Syngenta is offering a free webinar on either April 30 at 1pm or May 1 at 2pm. Registration is at [https://syngenta.zoom.us/webinar/register/WN\\_D4RPIS2\\_RAyWTDJ\\_tBtv3A#/registration](https://syngenta.zoom.us/webinar/register/WN_D4RPIS2_RAyWTDJ_tBtv3A#/registration). This training is valid for all formulations of paraquat. Additional free training being offered by Syngenta in May. Registration for those sessions is available here: [https://syngenta.zoom.us/webinar/register/WN\\_oyHHgBXdS\\_6L\\_OiEMHz0\\_A#/registration](https://syngenta.zoom.us/webinar/register/WN_oyHHgBXdS_6L_OiEMHz0_A#/registration). Check the announcements section for additional information on free trainings from Syngenta.

The National Pesticide Safety Education Center continues to offer an online training but has started to charge \$25 per applicator. This option is available at <https://npsec.us/paraquat>

---

### **Guess the Pest “Puzzle Edition” April 26**

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

Congratulations to Nichole Mahoney for correctly identifying last week’s weed seedlings as Ragweed, Marestail, and Lambsquarters. Marestail was a tricky one because it does look similar to amaranth seedlings. When I first started my garden, I didn’t recognize ragweed seedlings for what they were until too late and got busy. I’ve been paying for that mistake ever since!

For everyone who participates and gets a GTP correct, you will be entered to potentially be a lucky winner of an end of season book prize. We have a few copies of Weeds of the Northeast as well as several editions of the Farmers’ Guide series.

This week, we are going back to puzzles.

Word Scramble: Unscramble the letters to reveal the names of some early season Vegetable Diseases!

1. ehncanotrsa =
2. hrnaczitooi =
3. ytupmhi =
4. ngaarul alfe tsop =
5. usufirma =



## Announcements

### Paraquat Training Webinars

Training is required for anyone who applies, mixes, or handles paraquat. Training certificates need to be updated every three years and since this rule went into effect four years ago, those who participated in training the initial year, need to take it again.

Syngenta is offering webinars for Paraquat Handling certification or re-certification. These sessions are free and are scheduled at 2:00-3:00 p.m. EST on the following dates:

May 7, 2024  
May 9, 2024  
May 13, 2024  
May 14, 2024  
May 20, 2024  
May 21, 2024  
May 28, 2024  
May 30, 2024

*Register online using the link below. Registration requires the following: first and last name, email address, state, and certification license #. This will allow a report to be sent to EPA and to your state for certification credits (if applicable).*

[Paraquat Training Webinar Registration](#)

### Correspondence with UD Nutrient Management Program

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.](#)

### 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>

---

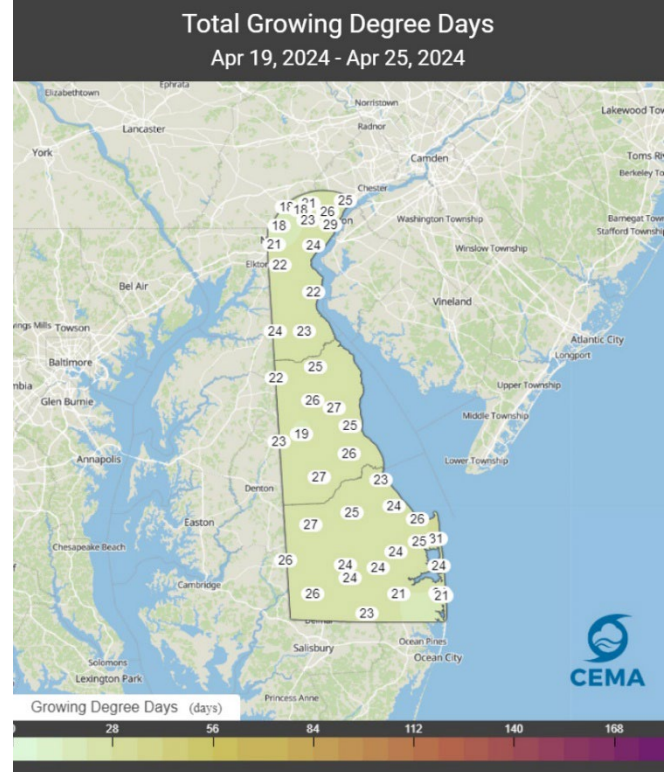
## Are you a Corn Farmer? We Want to Pay You to Earn 1 DE Nutrient Management Credit!

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.

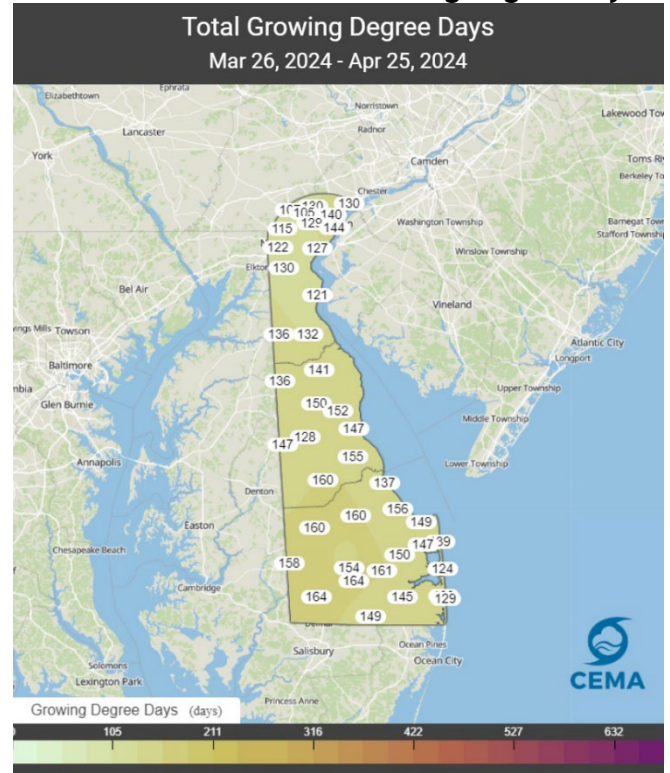
---

## Weather Summary

### 1 Week Accumulated Growing Degree Days

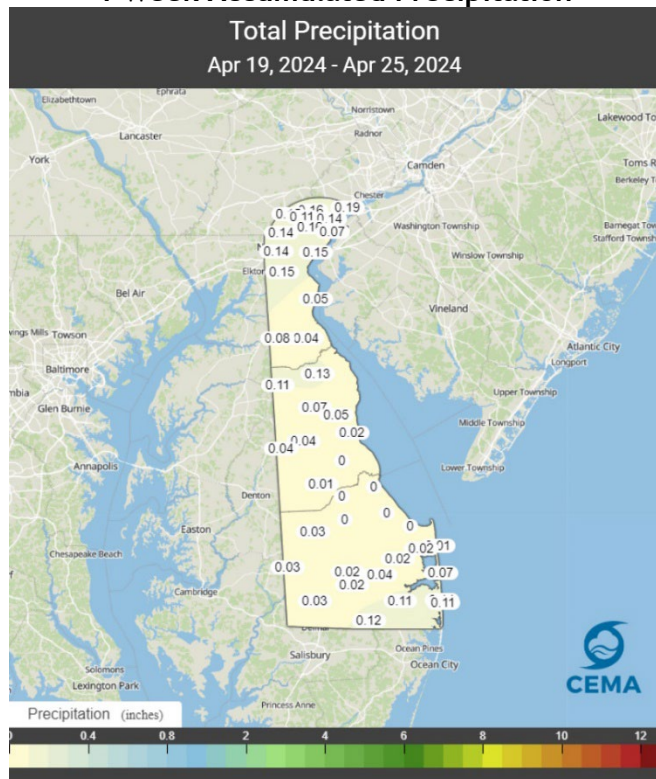


### 1 Month Accumulated Growing Degree Days





## 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*

University of Delaware Cooperative Extension in accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

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

## 1 Month Accumulated Precipitation

