

# WEEKLY CROP UPDATE



UNIVERSITY OF DELAWARE  
COOPERATIVE  
EXTENSION

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## Vegetable Crops

### Updated Mid-Atlantic Commercial Vegetable Production Recommendations are Available

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

The Mid-Atlantic Vegetable Recommendations have been updated for 2024/2025. The new version is available for free online here: <https://www.udel.edu/academics/colleges/canr/cooperative-extension/sustainable-production/commercial-crops/vegetable-crops/midatlantic-vegetable-recommendations/>.

Print copies are available courtesy of the Fruit and Vegetable Growers Association of Delaware. They may be purchased at any of the county offices (New Castle, Kent, Sussex) for \$30. FVGAD members can purchase copies for \$25.

### Herbicide Registration for Vegetable Crops

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

Dacthal (DCPA) registration has been re-stored. The EPA suspended use in August 2023 because the manufacturer did not supply required data for re-registration. Data was submitted in December of 2023 and registration was restored. New product will be available for this year's growing season. EPA is continuing with the re-registration process.

Rely 280 (glufosinate) is now labeled for use in cantaloupes, cucumbers, summer squash, watermelon, tomato, and peppers (bell and non-bell); however, it is not readily available. The label covers pre-transplanting applications over plastic but requires 0.5 inches of rain or irrigation before transplanting occurs. Shielded/directed applications for row middles are also allowed. The labels are not available online so if you are interested in this application contact your chemical dealer or BASF representative.

Optogen (bicyclopyrone) has received labeling for broccoli, strawberry, transplanted sweet potato, transplanted watermelon, and other crops. The application method varies by the crop so be sure to read the label. We have limited experience with this herbicide, but studies in 2023 we had poor control of Palmer amaranth and annual morning glory.

Dual Magnum (s-metolachlor) has a state label (24c) for Delaware for use in peppers and transplanted cabbage. The label can only be found buried on Syngenta's website. You will need to click Crop Protection tab and then Indemnified Label Search (<https://www.syngenta-us.com/labels/indemnified-label-search>). Labels are listed under individual states

# Agronomic Crops

## Tidbits on Spring Weed Control in Wheat and Barley

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

List of recommended herbicides for winter wheat and barley in Delaware (additional herbicides are labeled).

Herbicide	Maximum Stage	Rotation to Soybeans	Rotation to Vegetables
Axial XL	Pre-boot	90 days	90 days
Axial Bold	Pre-boot	90 days	90 days
Axial Star	Pre-boot	120 days	120 days
Harmony Extra	Before flag leaf emergence	7 days	45 days
Huskie	Flag leaf emergence	120 days	9 months
<b>Osprey</b>	Jointing stage	90 days	10 months
<b>PowerFlex</b>	Jointing stage	90 days	at least 9 months
Quelex	Flag leaf emergence	90 days	15 months
Starane Ultra	Early boot stage	120 days in MD 90 days in DE, VA	4 months
Sentrallas	Before flag leaf emergence	120 days 90 days in DE, MD, VA	4 months
2,4-D	After tillering before jointing	No restrictions	3 months
Metricor/Tricor	Recommended at “green up stage”	No restrictions	at least 4 months

**Note Osprey and PowerFlex are not labeled for barley.**

Points to consider:

Be sure to prioritize scouting those fields that have a history of poor weed control. That includes those no-till field that did were not sprayed with glyphosate or fields that only received vertical tillage prior to planting.

In our trials, PowerFlex applications in the spring can cause crop stunting and yield loss. Injury and yield loss does not occur with all spring applications but occurs enough that I warn folks about it and only recommend it when no other option is available. We do not see injury with fall applications of PowerFlex and have not been able to determine what causes this injury.

Small grain herbicides are going out in the spring at a time when weather is often less than ideal for herbicide performance. Cutting rates increases the likelihood of poor herbicide control. Starane Ultra is an herbicide I often hear folks using at rates less than 5 fl oz as a way of cutting costs. I have found that we really need to use at least 5 fl oz to get best control.

Annual ryegrass populations with resistance to Group 2 herbicides (Osprey and PowerFlex) have been reported in Delaware. No reported resistance issues with Axial products in Delaware; however, resistance has been confirmed in Maryland.

Annual bluegrass and roughstalk bluegrass control is best with Osprey (with 80 to 85% control the best we can expect). However, Osprey should not be applied within 14 days of nitrogen application due to crop damage.

Henbit is the most common weed in winter wheat and barley, and it can be difficult to control with most small grain herbicides applied in the spring. Harmony Extra tanked mixed with either Starane Ultra or Quelex will suppress henbit, but seldom completely kill the plants. But suppression in combination with a competitive small grain canopy is sufficient to stop henbit growth.

Common chickweed control is becoming more challenging with the spread of ALS-resistant common chickweed (resistant to Finesse, Harmony Extra, Osprey, and PowerFlex). Spring application of Starane Ultra and Quelex are the most common options to suppress/control resistant chickweed. Metricor or Tricor (metribuzin) has a state label for use in winter wheat and barley. Metricor or Tricor are the only formulations of metribuzin with this special label in DE and MD. In addition to chickweed, UD Weed Science has also had encouraging results with control of ivyleaf speedwell, jagged chickweed, henbit, and knawel when applied to weeds 3 inches or less. We know some varieties differ in their sensitivity to metribuzin, and most varieties have not been tested. So, we recommend limiting metribuzin to fields with ALS-resistant chickweed, treating early-spring, and being cautious on varieties with no previous experience.

- Winter wheat is most tolerant if treated at green up timing. UD Research has used Shirley, a sensitive variety, and have not documented significant injury with green-up applications. When using a sensitive variety, applications in late March and into April did cause significant injury and yield reductions.
- We have not tested malting barley varieties, but feed barley has exhibited good crop safety to Metricor or Tricor.
- Do not apply with nitrogen.
- The label allows tankmixtures with other small grain herbicides.
- Use of non-ionic surfactants (80/20) is okay, but do not use with crop oils or MSO.
- Do not use on sandy soils with organic matter less than 0.75%, which includes sandy knolls in portions of some fields.
- **We recommend use of metribuzin only in fields planted with a grain drill (not recommend on fields where seeds were broadcast and incorporated with vertical tillage tool or disc).**
- Be sure to use the rate recommended for your crop stage.
- Do not plant vegetables after small grain harvest.

Refer to the label for additional precautions, rates, and timings.

Jagged chickweed control has not been very good with most herbicide or herbicide combinations when applied in the spring. In our trials, metribuzin is the most effective treatment. Harmony Extra plus Starane Ultra provides some suppression. No other treatment provided better suppression in our trials.

Ivyleaf speedwell control is another difficult weed to control. UD research has found suppression with a combination of Harmony Extra with either Starane Ultra, 2,4-D or Quelex. PowerFlex also provides suppression but can cause injury to wheat with spring applications.

There is always interest in applying wheat herbicides with nitrogen, so be sure to read all herbicide labels carefully because some products can be tankmixed with nitrogen but only if the nitrogen is no more than 50% of the spray solution (nitrogen is mixed 1:1 with water).

A longer-term approach for weed control is to prevent winter annual weeds from producing viable seeds in the years the field is not planted with small grains. Jagged chickweed and henbit will start flowering in mid-March and need to be treated within a few weeks of flowering to prevent seed production. Using a competitive cover crop is another alternative to limit seed production of these winter annual weed.

## Potassium Applications in Delaware Soils

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

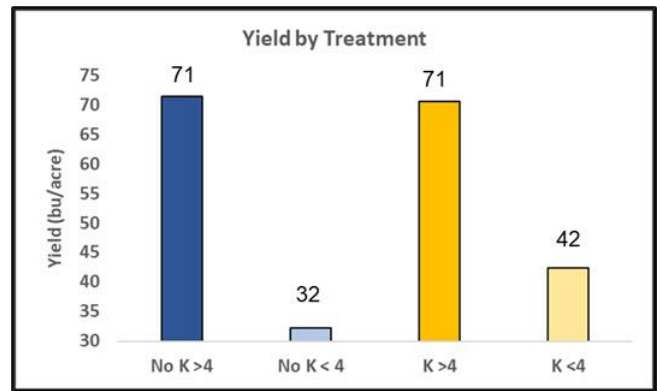
University of Delaware recommends potassium (K) applications for low (0-70 ppm) and medium (71-140 ppm) soil test categories. However, soils in Delaware may have K that is not accounted for in a normal soil test, with minerals slowly releasing K over the growing season. Some of this was established by UD soil chemists in the 1980s, who observed high total K (not all plant available) in our soils, particularly in the sand fraction

(<https://www1.udel.edu/soilchem/Parker89SSSAJa.pdf>). This means that some soils may need less K than is recommended by a regular soil test.

Some recent studies at UD, including K rates and split applied K have observed limited responses to K applications. For six corn K-rate studies at UD (2021-2023), a response to K was only observed in one field, even though the field was in the low to medium soil test range (52-142 ppm K.) For split applied K studies (pre-plant and in season), a yield response was also not observed for both corn and soybeans in 2019 and 2020, although K uptake could increase.



**Figure 1.** A map of soil cation exchange capacity (CEC) at our research farm in Harbeson, DE



**Figure 2.** yields based on CEC (> or < 4) and K applications (0 or 60 lbs K<sub>2</sub>O). Yields were only significantly greater based on CEC.

In 2023, the Delaware Soybean Board sponsored a project observing K applications across soils with varying cation exchange capacity (CEC), which controls nutrient holding in the soil. One of our research farms (Figure 1) has a zone in the field with very low CEC's (< 4 meq/100g), that will hold less K and promote leaching. This field had very low K concentrations (20 - 50 ppm) where K was applied at two rates (0 and 60 lbs K<sub>2</sub>O) in high and low CEC zones. While CEC had a large effect on yields (Figure 2), applying K did not have any statistically significant effect.

This implies that our research farm has additional K not being picked up by a soil test, and we should be more concerned with soil variability and low CEC. Managing CEC is difficult since it is an inherent property of the soil that can only realistically be improved with increased organic matter.

The overall point is that your sandy, Delaware soils may provide more K than you are aware of. The only way to be sure is through soil and tissue testing combined with varying potash applications (can be small areas) to predict field K supplies.

## **Corn Yield Responses to In-furrow**

### **Biological Products**

*James Adkins, Irrigation Engineer,*  
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In 2023, the University of Delaware evaluated the corn yield response to 14 biological products at 3 nitrogen fertility levels (optimum, 80%, and 50% rates). While some of the products claimed to provide nitrogen fixation, others were designed to improve plant health and root structure. Thirteen of the products were applied during planting through Keeton seed firmers, using five gallons per acre of water as a carrier. One product (Source) was sprayer applied at V4.

Irrigated yield results showed no statistical significance between any of the materials and the untreated check at a full 270 lbs./a of total applied nitrogen with a plot average of 265 bu./a. At the 80% nitrogen fertility level (218 lbs./a), the plots averaged 260 bu./a with 4 products being significantly worse than the untreated control and no products providing a statistical yield benefit over doing nothing. The 50% nitrogen plots (135 lbs./a) averaged 234 bu./a with 4 products being significantly lower yield than the untreated check. While a few products, (ProveN40, Utrisha P, BioGrowth & Source) tended to yield more than the control at the 50% N rate, the differences were not statistically significant. This resulted in a net economic loss versus applying the full rate of nitrogen.

The same 14 products were tested in a non-irrigated field at 130, 102 and 65 lbs./a of applied nitrogen. None of the products out yielded the untreated check at the lower nitrogen rates while four products (Invigorate, Accomplish Max, RioZyme Plus & RioZyme Supreme) provided a minor but statistically insignificant yield bump at the full 130 lbs./acre of nitrogen.

Similar results were documented by Nicole Fiorellino in her trials at the University of Maryland. Farmers should keep in mind that crop response to a biological product will be dependent on enumerable factors such as soil

type, OM, CEC, compaction, moisture, manure history, etc. Growers need to conduct side-by-side evaluations of these products to determine the real-world economic benefits to their operation keeping in mind that results may vary by field within a farm.

A detailed summary of the 2023 in-furrow biological application can be found here:  
<https://sites.udel.edu/agronomy/2024/02/15/udbiologicals23/>

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### **Dicamba's Roller Coaster Journey**

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

On February 6 of this year, a US District Court in Arizona “vacated” (aka cancelled) all labels for dicamba application over the top of Xtend crops. This meant these dicamba products (XtendiMax, Tavium, and Engenia) could not be used for any purpose. The reason for this was that the Environmental Protection Agency did not follow the guidelines set out under the pesticide registration process. On February 14 the EPA issued an “Existing Stocks Order for Dicamba Products Previously Registered for Over-the-Top Use on Dicamba-Tolerant Cotton and Soybean”. This means that products that were manufactured and have “entered the channels of trade” prior to February 6 can be used according to the label. For use in soybeans in DE and MD, the product must be sold and distributed by May 31 and the cutoff date for application is June 30, 2024. Reminder that XtendiMax, Tavium, and Engenia labels require applicators to complete training every year. Each applicator needs to have their own certification; working under the supervision of someone who has completed the training is not allowed. Trainings are available online through Bayer, BASF, or Syngenta.

This ruling by the EPA provides access of these herbicides to farmers for the 2024 season. EPA will need to make a decision on how they intend to deal with these dicamba products for the 2025 season and beyond.

## **Reminder for Paraquat Training**

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

Paraquat also requires training for applicators, mixers, and handlers. Training certificates need to be updated every three years. This training is available on-line at <https://npsec.us/paraquat>.

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## **Monthly Grain Market Outlook**

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

The trend for grain prices thus far in 2024 has been down, fast. Historically, January is not a big month for major corn market news. Since 1970, cash corn prices have bottomed out during the months of January and February only once a piece. Will February 2024 bring a second occurrence? At this point anything is possible. Soybean price decline can be attributed to cheaper Brazilian soybeans pushing US soybeans out of the export market. Last production season \$13.00 per bushel was a sales target by many producers in our region. In 2024, has \$12.00 become the new \$13.00? The good news is soybean crush and meal demand are strong at current prices. Soybean demand is becoming increasingly dependent on domestic demand, with growth in renewable diesel, this trend will continue. Wheat prices have followed corn and soybean prices thus far in 2024 and have declined as well.

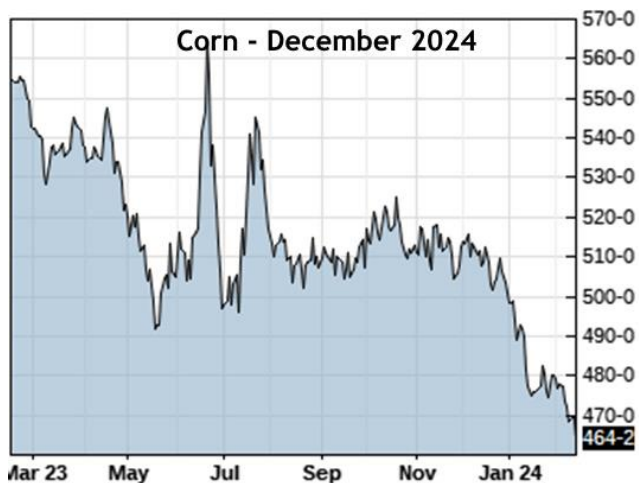
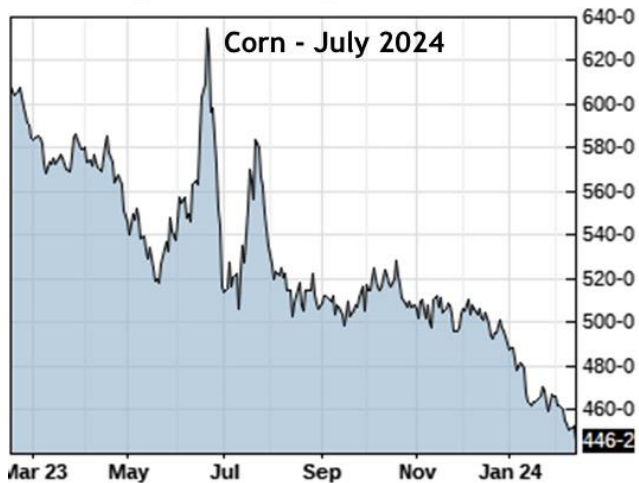
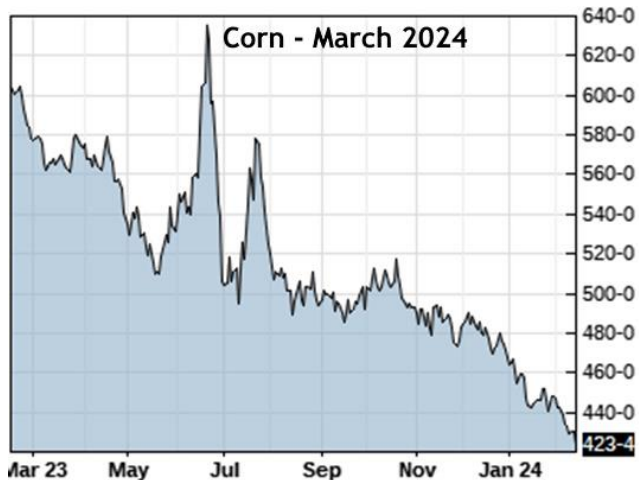
The February USDA (World Agriculture Supply and Demand Estimates) WASDE estimated lower domestic use, and total export use but increased ending stocks. Beginning stocks, production, imports, feed and residual demand, and exports remained unchanged from the January estimate. Ending stocks increased from 2,162 million bushels to 2,172 million bushels. Food, seed, and industrial demand decreased from 6,790 million bushels to 6,780 million bushels. Export use decreased from 14,565 million bushels to 14,555 million bushels. The farm season-average price remained unchanged at \$4.80 per bushel. The February USDA WASDE estimated decreased soybean exports and total residual use. The

February estimate increased seed demand from the January estimate. Beginning stocks, production, imports, and crushing's remained unchanged from the January estimate. Ending stocks increased by 12.5% from the January estimate, from 280 million bushels to 315 million bushels. Exports decreased from 1,755 million bushels to 1,720 million bushels from the January estimate. Total residual use decreased from 4,179 million bushels to 4,144 million bushels. Seed use increased from 101 million bushels to 102 million bushels. The season-average farm price dropped from \$12.75 to \$12.65 per bushel. The February USDA WASDE estimated decreased wheat export use, total domestic use, and food demand. Beginning stocks, production, imports, and seed remained unchanged from the January estimate. Ending stocks increased from 648 million bushels to 658 million bushels. The farm season-average farm price remained unchanged from the January estimate at \$7.20 per bushel. The next WASDE report will come out on March 8<sup>th</sup>.

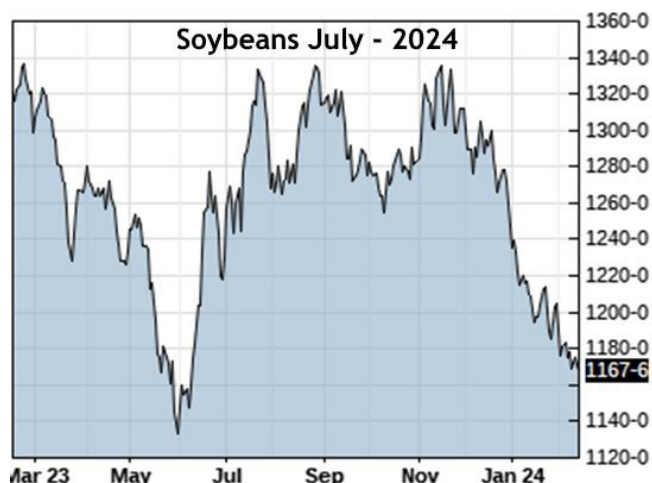
In international grain market news, Brazil's equivalent of the USDA named CONAB, lowered the countries outlook for corn and soybeans from their January estimate. They estimated soybean production decreased to 149.40 million tons. This decrease can be attributed to dry weather and planting issues. CONAB decreased corn production as well by 3.4% of the January estimate to 88.10 tons. Brazil's second corn crop has been impacted by soybean issues this year. The country is currently harvesting soybeans and planting corn. Argentinian soybean production is projected to increase by 150% during the 2024-2024 marketing year according to a report done from USDA Foreign Agriculture Service (FAS). The past few years, the country had drought issues occur. Timely rains during the crops key production cycle have attributed to this increase. China recently approved several Argentine companies to its list of approved exporters in a move to purchase wheat from the South American country. Much of Ukraine's 2023 crops have made their way out of the country, despite Russian attacks on infrastructure. However, Polish farmers upset with cheaper

imported grain entering the country, stopped three Ukrainian grain trucks at the border entering the country, ultimately resulting in the grain being spilled. The Black Sea export situation is far from being stable.

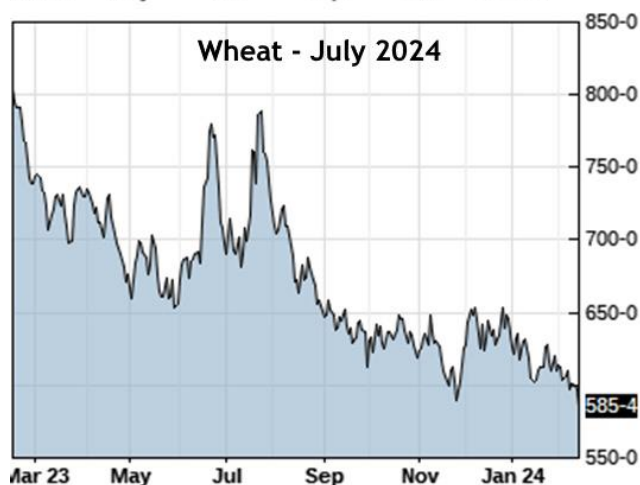
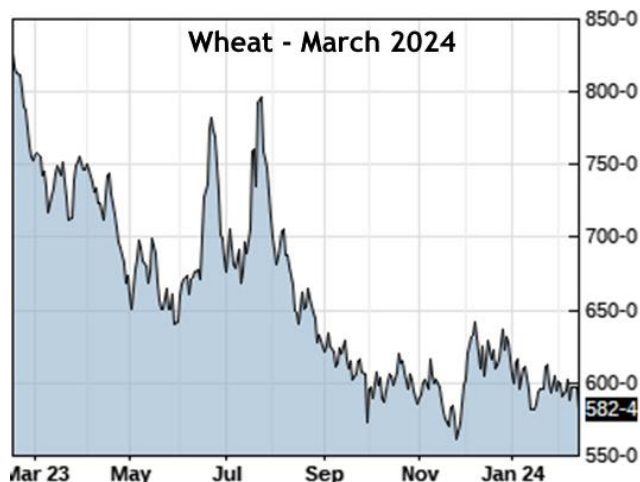
### Corn Futures



### Soybean Futures



## Wheat Futures



## General

### Recommended On-line Resources for Pest Management

Alyssa Koehler, *Extension Field Crops Pathologist*; [akoehler@udel.edu](mailto:akoehler@udel.edu), Mark VanGessel, *Extension Weed Specialist*; [mjv@udel.edu](mailto:mjv@udel.edu), David Owens, *Extension Entomologist*, [owensd@udel.edu](mailto:owensd@udel.edu)

GROW (Get Rid of Weeds) - [www.GROWiwm.org](http://www.GROWiwm.org)

- Website for resources on integrated weed management to combat herbicide-resistance and other problematic weed species.

Virginia Tech Extension, *Weed Management for Field Crops* -

[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 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.

Weed Identification -

<https://weedid.cals.vt.edu/>

- Virginia Tech's online weed identification, a very comprehensive list of weed species found in the mid-Atlantic region.

Insects and Diseases - <https://myipm.app/>

- MyIPM App for Vegetables - tomato and cucurbit disease and insect pest photo guide, damage, and control strategies available as a free apple or android download. Never be without vegetable recommendations! More crops to be pushed out as updates during 2024. Each crop and pest category file can be downloaded individually. Put together with input from regional entomologists across the Southern region and hosted by the Southern IPM Center.



- MyIPM App for Row Crops - field corn, soybean, small grain, sorghum, peanut, and cotton insect pest photos and control strategies also available as a free apple or android download. Each crop can be downloaded separately. Put together with input from regional entomologists across the mid-Atlantic and Southeast, hosted by the Southern IPM Center.

Crop Protection Network -

<https://cropprotectionnetwork.org/>

- Publications, encyclopedia of factsheets, image library, fungicide efficacy tables, yield loss calculator, severity estimation tool, and more

### **Agricultural Pest Management Needs Assessment Survey**

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

We are in the process of writing a grant proposal that funds a very significant chunk of UD and DSU integrated pest management extension programs and we would like to hear from you to help guide our narrative and proposed outputs. Please take a few moments to answer a very short, 7 question survey:

[https://delaware.ca1.qualtrics.com/jfe/form/SV\\_8IkutN5bHUBib7o](https://delaware.ca1.qualtrics.com/jfe/form/SV_8IkutN5bHUBib7o) or by following the QR code:



### **2024 AI-CLIMATE Stakeholder Survey**

Rose Ogutu, Horticulture Specialist, Delaware State University [rogutu@desu.edu](mailto:rogutu@desu.edu)

The AI-CLIMATE Institute for Climate-Smart Agriculture was established in 2023 to help improve farmers', foresters', and ranchers' ability to make more informed decisions and respond to

climate change

(<https://cse.umn.edu/aicclimate>).

Climate change is causing disruptions to agricultural and forestry systems through its impact on temperatures, precipitation, extreme weather events, uncertainty and variability, and changes in weeds, pests, and diseases.

Machine learning (artificial intelligence or AI) is the science of developing computer systems that can perform tasks that normally require human intelligence, such as recognizing patterns or making decisions. AI technology can process large amounts of data to improve decision-making.

Our team is exploring compelling AI-powered knowledge and solutions - for example to enhance the measurement of greenhouse gases (GHGs) and create specialized decision-support tools for farms. The new institute is a collaboration among the University of Minnesota, Colorado State, Cornell, Delaware State, North Carolina State, Purdue, the USDA National Institute for Food and Agriculture, and the National Science Foundation. Watch a video about the work of our team: "Curbing Climate Change with Artificial Intelligence," UMN Dept. of Computer Science and Engineering, December 6, 2023.

We need your input to develop the most useful AI-inspired data and tools possible! Please take 3-5 minutes to fill out this short questionnaire to give us your input on the needs for AI in Climate-Smart Agriculture and Forestry.

Please follow the following link to complete the survey;

Farmer-Questionnaire-

[https://docs.google.com/forms/d/e/1FAIpQLScXR7ihtuNJoEOcx3J7uOx63FVrc3d3OYhwS1tBESuKzyzarA/viewform?usp=sf\\_link](https://docs.google.com/forms/d/e/1FAIpQLScXR7ihtuNJoEOcx3J7uOx63FVrc3d3OYhwS1tBESuKzyzarA/viewform?usp=sf_link)

Non-Farmer Questionnaire-

<https://forms.gle/arSimfzkfZjRx8RBA>

Non- farmer Questionnaire



Farmer Questionnaire



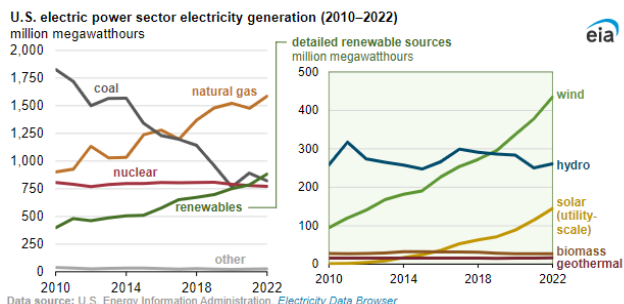
Thank you very much for providing us with your feedback!

Rose Ogutu (Horticulture Specialist- Delaware State University) on behalf of the AI-CLIMATE Team, [ai-climate@umn.edu](mailto:ai-climate@umn.edu)

## Benefits, Drawbacks, and Opportunities for Solar Energy Adoption for Delaware Farmers

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

Even though interests in renewable energy gained traction in the 1970s, sparked by the oil crises, recent concerns about the environment have encouraged investments and research in renewable energy as a viable alternative source. In years 2021 and 2022, the renewable energy portfolio exceeded nuclear energy in terms of total electricity generated. Together, wind and solar energy comprised 14% of total energy generated in 2022, up from 12% in 2021 (according to the US Energy Information Administration) with California, Texas, and North Carolina ranking as leaders in solar energy generation.



In Delaware, the Renewable Energy Portfolio Standards Act, which was signed into law in 2021 by Governor Carney and stipulates that 40% of the state’s energy be sourced from renewable

energy by 2035 has amplified the significance for alternatives such as solar energy.

Within the farming community, there is widespread adoption of renewable energy, with solar power being the most commonly adopted by farmers. Several incentive programs exist, but they vary by states. In addition to environmental considerations, the adoption of solar energy by farmers presents great benefits as well as potential drawbacks. Some of these are discussed below.

### Benefits/Cost Savings of Incorporating Solar Energy

Irrespective of the farm enterprise, incorporating off-grid solar energy can result in substantial cost savings on several fronts, including lighting, heating and cooling systems, crop drying, irrigation, electric fences, and more. To provide some context to these cost savings, consider this scenario:

Conservatively, a 1-kilowatt solar panel system can produce 750-to-850-kilowatt hour (kWh) per year. That is, if we use the typical high end of between 350 - 400 Watts of power produced by residential panels. With 7 hours of sunshine a day and given 350 Watts solar panels,

$$\text{Kilowatt hours/day} = (7\text{hours} \times 350 \text{ Watts}) / 1000 = 2.45\text{kWh}$$

$$\text{In one year, this translates to } 2.45\text{kWh} \times 365 \text{ days} = 894.25\text{kWh/year}$$

For the purposes of this example, let’s still assume an output of 850kWh/year. With a 10kW solar photovoltaic system, that comes up to 8,500kWh/year.

In Delaware, a conservative average cost per kilowatt of electricity is 15.60 cents per kWh. Thus, if 8,500kWh/year is generated from solar,

$$\text{Cost savings} = 8,500\text{kWh/year} \times 15.60 \text{ cents per kWh} = \$1,326.00 \text{ (for a 10kW solar system)}$$

Another benefit of solar photovoltaic panels is that they require minimal maintenance after

installation, making them easy to manage. The average cost of a 10kW solar systems is \$20/kW/year (see [Michigan State University factsheet](#)) or \$200/year. With our example, this reduces cost savings marginally, to **\$1,126 a year** for a 10kW system (i.e., \$1,326 - (\$20/kW/year x 10kW)).



### **Drawbacks of incorporating solar energy in farming**

Solar photovoltaic panels may entail significant upfront costs. In Delaware, average solar panel systems cost \$2.65/W to install. For a farm wishing to install 10kW (1,000W) solar system,

**Installation costs = \$2.65/W x 10 x 1000 = \$26,500**

However, there is some good news. Costs of installation are trending down. According to the Energy Information Administration, the average construction costs for solar projects in the United States, spanning all types of solar panels, declined by 6% to \$1,561 per kilowatt (kW) in 2021. There are also several incentive programs (some described below) that can help defray some of these costs.

Solar farms take up space, and in a small state such as Delaware it can compete with tillable agricultural land. The panels may be aesthetically displeasing for some, and there is also the possibility of irregular availability of sunlight - depending on whether or how long the sun is up.

### **Federal and State Incentives**

#### *Rural Energy for America Program (REAP)*

[REAP](#) is a federal program administered by the United States Department of Agriculture (USDA) that provides guaranteed loans to agricultural producers seeking to integrate renewable energy systems into their operations. Eligibility requires farmers to derive at least 50% of their gross income from their farm operations. The loans can be applied towards the purchase and installation of small or large solar equipment and guarantees loans of up to 75% of eligible project costs. Grants of up to 50% of eligible costs are also available, from a minimum of \$2,500 up to \$1 million, although matching funds are required for farmers applying for a grant only.

#### *Investment Tax Credit (ITC)*

The [solar investment tax credit \(ITC\)](#) is a federal program that offers a 26% tax credit for solar panels installed in years 2020 and 2021, and a 30% tax credit for installations between 2022 to 2032 upon eligibility. Expenses covered by the ITC include the cost of the solar panels, installation or contractor costs, and applicable sales taxes. For eligibility, the solar project must be situated within the United States, the equipment should be either new or limited previously used equipment, and ownership of the solar project is required—it should not be leased to a tax-exempt entity or be under power purchase agreements. Although the tax credit does not function as a rebate (not issued as a check after filing taxes), it reduces an entity's federal income tax liability. For instance, if \$100,000 is invested in a solar system, \$30,000 of that amount can be deducted from taxes owed.

#### *Energize Delaware Program*

State programs such as [Energize Delaware Program](#) extends support to agricultural producers by providing loans of up to \$2million and up to \$100,000 in rebates for agricultural producers towards solar or energy efficient installations, which can substantially lower costs associated with solar projects for farmers. To qualify for the Energize Delaware Farm Program,

the entity must be categorized as a farm (per USDA definition), having generated a minimum of \$1,000 in sales from agricultural produce within a year, and it should incur at least \$10,000 in annual energy costs.

### What to Consider

Evidently, consideration should be given to available land to install the necessary infrastructure on the farm. An estimated 5-10 acres of land are needed for each 1MW (1,000 kW) of solar generating capacity. It is crucial to evaluate both costs and benefits, and these considerations can be examined within the framework of the various federal and state incentives that are available to farmers.

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### Chlorpyrifos Update

On November 2, 2023, the Eighth Circuit [issued a ruling](#) vacating EPA's final rule and sending the issue of chlorpyrifos tolerances back to EPA for further proceedings. EPA has reinstated tolerances for commodities that chlorpyrifos was registered for use for 2024. As a result, since tolerances are currently in effect, growers can now use currently registered chlorpyrifos products on all crops with reinstated tolerances, consistent with directions for use on those product labels. However, such uses may be subject to restrictions by individual states. For instance, chlorpyrifos was banned in Maryland prior to the 2022 decision and the 2023 reversal. That ban is in place.

It is extremely uncertain whether or not we will be able to use chlorpyrifos products in 2025 or on what commodities. The court ruling singled out 11 crops that labels could be adjusted. At this time, we do not have any guidance as to product use pattern legality would be in 2025. We also do not know if EPA will put in place a sunset period to use existing stocks for a period of time. USDA is putting together a list of products which are affected and labels effectively re-instated including Loveland's 'Warhawk', 'Warhawk Clearform', and 'Match-Up;' Gharda's 'Pilot 4E and 15G' and Drexel's 'Chlorpyrifos 15G, 4E, 15GR, 4E-AG2', and

'Lambdafos'. My understanding is that chlorpyrifos products that were available for sale prior to 2022 but not listed above (ex Lorsban) is left to individual states interpretation of what to do with existing stocks. If you are uncertain as to whether or not you can use a product not listed above, feel free to contact either of us at any time ([owensd@udel.edu](mailto:owensd@udel.edu), [kerryr@udel.edu](mailto:kerryr@udel.edu)), or Chris Wade at DDA ([christopher.wade@delaware.gov](mailto:christopher.wade@delaware.gov)).

Bottom line: if you are in Delaware and have a chlorpyrifos product still in storage, 2024 is going to be the best time to consider using it up should anything change in 2025 like what we saw with the tolerance revocation before the 2022 growing season.

Additional information can be found at this site: [EPA Update on the Use of the Pesticide Chlorpyrifos on Food | US EPA](#)

The Federal Register Notice can be found at [Federal Register :: Chlorpyrifos; Reinstatement of Tolerances](#)

## Announcements

### Farmer Stress, Stigma and Mental Wellbeing Survey

*Maria Pippidis, Extension Educator;*  
[pippidis@udel.edu](mailto:pippidis@udel.edu)

Farmers & ranchers, farm workers, foresters, aquaculture, marine producers, and others who live in Delaware communities and those who work in agriculture related industries are invited to participate in a short survey about stress and mental health. We want to hear from you.



Participation in this project is anonymous and is entirely voluntary. You may skip any question that you do not wish to answer, and you may discontinue at any time. West Virginia University Extension is taking the lead on this regional survey. Please consider participating in this important Northeast region study.



Participants who complete the survey are eligible to be entered in a drawing for a Gift Card. One person will be selected randomly from each state in the Northeast region to receive a \$50 Amazon gift card.

For more information and to participate, follow the QR code or enter one of the anonymous links below. The survey is open through April 2024 and the Gift card drawing in May.

The study is trying to understand access and barriers to mental health resources in agriculture. You can use the QR code or go to this website: <https://bit.ly/Cultivemos>

This survey is funded through FRSSAN - Northeast (Farm and Ranch Stress Assistance Network) and is being conducted by the Extension systems within this region.

If you are looking for resources in Delaware about this topic, please google Delaware Got Your Back or go to <https://www.udel.edu/academics/colleges/canr/cooperative-extension/nutrition-wellness/got-your-back/>

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**2024 Delaware Risk Management Conference**  
Monday, March 4, 2024, 8:00 a.m.-4:00 p.m.  
Harrington Fire Hall  
20 Clark Street, Harrington, DE 19952

University of Delaware Cooperative Extension and Delaware Farm Bureau's 2024 Risk Management Conference will be held on March 4<sup>th</sup> from 8:00 am to 4:00 PM at the Harrington Fire Hall. Lunch will be provided. Topics will include:

- 2024 Commodity Crop Enterprise Budgets
- USDA Farm Services Agency Update
- USDA Risk Management Agency Update
- Fertilizer Market Update
- Grain Market Update
- Dryland Yield Modelling for Crop Insurance
- Delaware Solar Farm Development Update
- CCA CEU's
  - Nutrient Management: 1
  - Crop Management: 5
  - Sustainability: 1

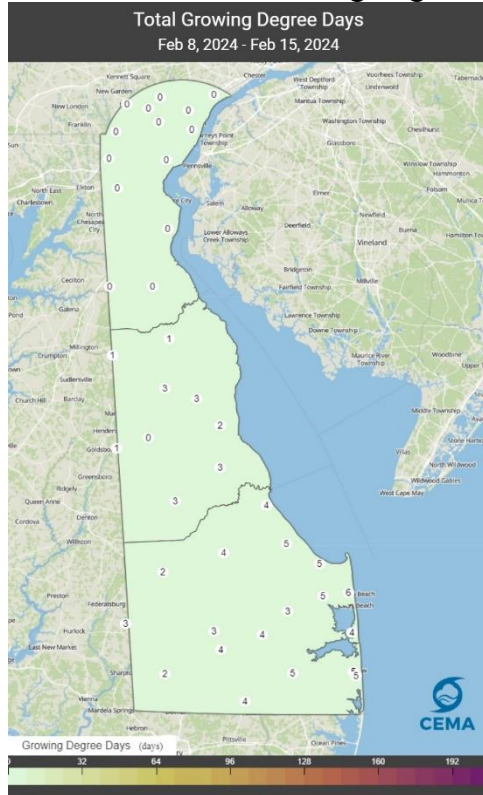
**To register, please use online weblink below:**  
<https://defb.org/risk-management-conference/>

**If you have any additional questions about registration, please contact Mikayla Paul.**  
**E: [mikayla.paul@defb.org](mailto:mikayla.paul@defb.org)**  
**P: 302-697-3183**

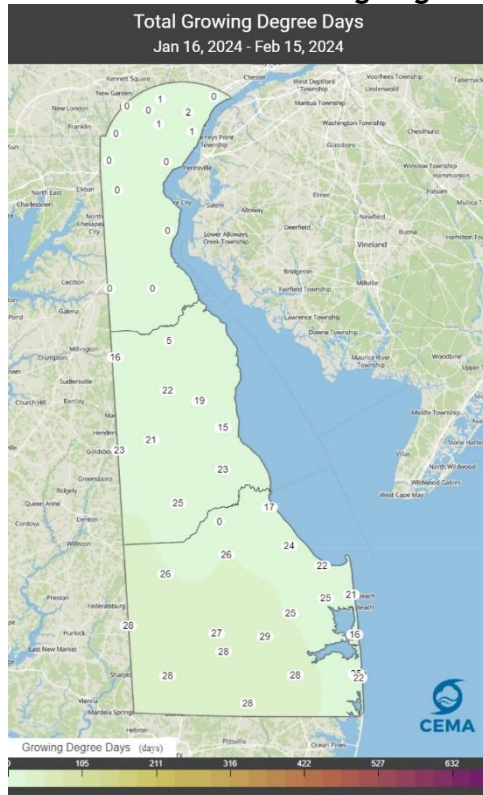
**Please contact Nate Bruce [nsbruce@udel.edu](mailto:nsbruce@udel.edu) with any questions about the conference.**

# Weather Summary

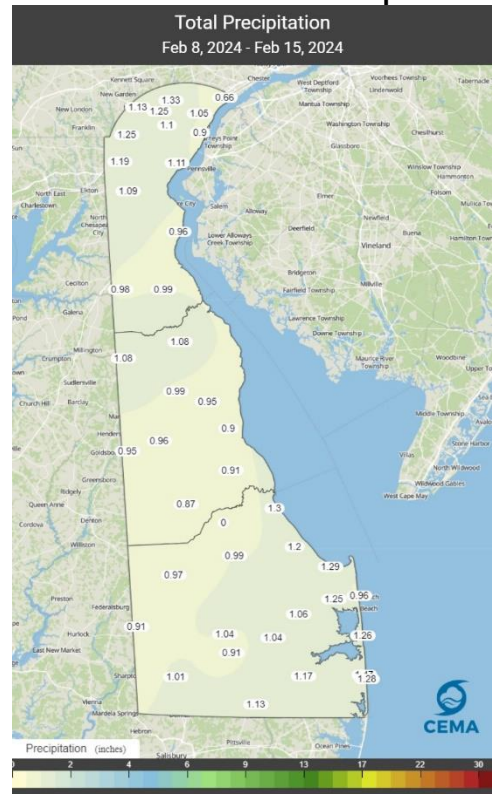
## 1 Week Accumulated Growing Degree Days



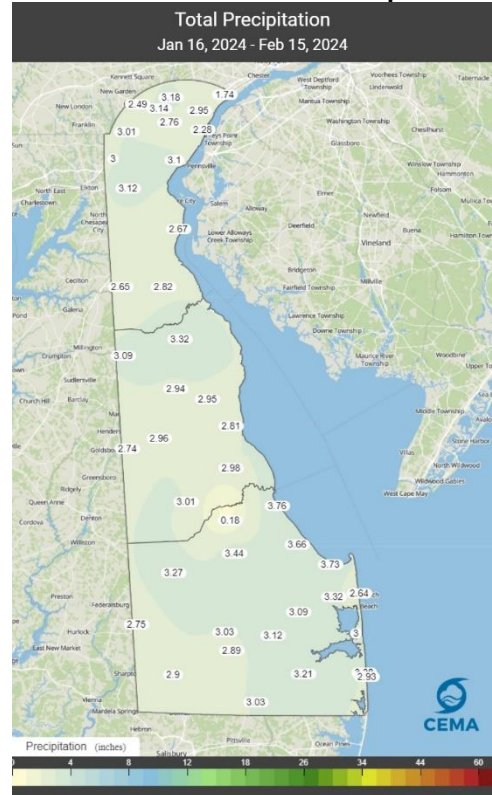
## 1 Month Accumulated Growing Degree Days



## 1 Week Accumulated Precipitation



## 1 Month 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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