WEEKLY CROP UPDATE

UNIVERSITY OF DELAWARE COOPERATIVE EXTENSION

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Vegetable Crops

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

Asparagus
Continue scouting for early signs of asparagus beetle activity and egg lay. Earlier this week, I spent some time looking for them and it took a while, but I did find an adult beetle. Asparagus beetles will stick their cylindrical dark eggs at a 90 angle to the stem. Minnesota scouting recommendations suggest to sample 20 plants in each of 5 locations for at least 100 spears/plants. Thresholds are 2% of spears with eggs, 5-10% of plants with adults, and 50-75% of plants with larvae.

Greenhouses
Continue monitoring transplants for mites and for aphids. Melon aphids occasionally get drawn into greenhouses and can build up to very high numbers prior to transplanting in fields. Look for leaves that curl or cup downwards and for sticky specks on trays from their honeydew excretions. Heavily impacted plants, if not treated, can have a hard time catching up. For spider mites, check weeds that might be growing along the edge of the greenhouse and any weeds coming up underneath of the tables. Look for small stippling on new leaves.

Spinach
Reports of aphid activity in spinach have come in this week. The good news is we have a lot of modes of action that are not harmful against biological control agents. The bad news is that parasitic wasps tend to destroy the aphid larvae, glue the aphid down on the leaf, and change its color from green to straw brown. Labeled materials include the 4A, 4C, and 4D 'neonicotinoids and neonicotinoid-like'. This is followed by several group 9 materials (PQZ, Fulfill, Versys). Diamides and Torac are also labeled and performed well in last year's cabbage aphid trial. If a pyrethroid is used, please note that it will kill biological control agents, not all of which glue the aphid down like parasitic wasps.

Cole Crops
Begin scouting for worms. Cabbage whites have been active several weeks now and are ovipositing into various Cole crops. Early thresholds are pretty high, between 20-30%. Other Lep pests are active but in very low numbers. Be sure to get good coverage on plants, spreader sticker type adjuvants are helpful to get good deposition on the waxy leaves. If you use Radiant or a diamide like Coragen, Harvanta, or Exirel, do not use a sticker. These products try to get into the leaf tissue while a sticker tries to keep it on the leaf surface.

Sulfur Recommendations in the Mid-Atlantic Vegetable Guide – *Gordon Johnson, Extension Vegetable & Fruit Specialist;* gcjohn@udel.edu

Vegetable growers should note that sulfur (S) recommendations have been added to the 2022-23 Mid-Atlantic Commercial Vegetable Production Recommendations in the footnotes of the Recommended Nutrients section for each crop. For example, in the cole crop chapter below, 25-40 lbs. of sulfur are recommended.

Recommended Nutrients Based on Soil Tests – continued

Cole Crops[1,2]		Soil Phosphorus Level				Soil Potassium Level				
		Low	Med	High (Opt)	Very High	Low	Med	High (Opt)	Very High	
	N (lb/A)	P_2O_5 (lb/A)				K_2O (lb/A)				Nutrient Timing and Method
Kale, Collards	100-200	200	100	50	0[3]	200	100	50	0[3]	Total nutrient recommended
	50-100	200	100	50	0[3]	200	100	50	0[3]	Broadcast and disk-in
	25-50	0	0	0	0	0	0	0	0	Sidedress after each cutting or stripping
Kohlrabi	25-50	0	0	0	0	0	0	0	0	Total nutrient recommended
	25-50	0	0	0	0	0	0	0	0	Sidedress if needed according to weather

[1]For broccoli, apply 1.5-3 lb/A of boron (B). For Brussels sprouts, cabbage and cauliflower, apply 1.5-3 lb/A of B and 0.2 lb molybdenum (Mo) applied as 0.5 lb/A sodium molybdate with broadcast fertilizer; see also Table B-7. in chapter B Soil and Nutrient Management.
[2]Include 25-40 lb/A of sulfur (S) in the fertilizer program for cole crops.
[3]In VA, crop replacement values of 25 lb/A of P_2O_5 and 25 lb/A of K_2O are recommended on soils testing Very High.

Sulfur is one of the secondary macronutrients that vegetable crops require for growth. Sulfur is a component of four amino acids and is therefore critical for protein formation. It is also a component of certain glycosides that give pungency to mustard family crops (greens, cole crops) and allium crops (onions, garlic).

In the last 30 years, as industrial air pollution has been reduced (especially pollution from coal fired power plants) we have had less sulfur deposition from rainfall. Sulfur deficiencies are common and sulfur additions from fertilizer or manure are required for all vegetable crops to produce high yields.

Most of the sulfur in the upper part of the soil is held in organic matter. Upon mineralization, sulfur is found in the soil as the sulfate ion ($SO4^2$) which has two negative charges. The sulfate ion is subject to leaching, especially in sandy textured soils (loamy sands, sandy loams). It does accumulate in the subsoil but may not be available for shallow rooted vegetables.

In vegetable crops, sulfur removal is generally in the 10-25 lb/A range. Mustard family crops (cole crops such as cabbage and broccoli, mustard and turnip greens, radishes) remove between 30 and 45 lbs/A of sulfur. Research in our region has shown response to added sulfur for sweet corn and for watermelons. In Florida research it was shown that adding 25 pounds of sulfur per acre boosted yields by 1.7 tons per acre in tomatoes. Similar results were found with strawberries.

Our general recommendations are to apply 25-30 lbs of sulfur per acre for most vegetable crops. Remember to take credit for any sulfur being added with fertilizer sources such as ammonium sulfate (24% sulfur).

One vegetable where we want to limit sulfur is with sweet onions. Because sulfur increases onion pungency, and sweet onions are sold based on their low pungency, we limit sulfur applications to this crop.

Reducing Tillage on Small Vegetable Farms: Mulch-Based Systems

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

This past year, I attended several talks where small growers were using practices where little, or no tillage was done. This eliminated or reduced the need for power equipment. In these growing systems, permanent growing areas are created, and crops are planted through natural mulches.

Sheet or layer composting is one of the basic principles used in these systems. This involves layering materials that will break down over several months resulting in a bed that is easily planted into without the need for tillage.

There are several ways accomplish this. In one system, existing vegetation is covered with waste cardboard (paper mulch can be used for larger areas). This carbon material smothers the grass and weeds underneath. This is then covered with a 1-inch layer of a nitrogen source such as manure. The next layer will be leaves, straw, bark or other carbon material followed by another layer providing nitrogen such as green

produce scraps, manure, or fresh green plants (minus the seed heads), or a combination. Continue to add alternating layers of carbon and nitrogen until reaching the final height. Once these layers have decomposed, the bed is ready to plant in. This normally takes about 6 months. Each year, continue to add alternating layers of carbon and nitrogen, as materials become available.

Once created, these sheet composted beds become permanent growing areas, weeds are controlled, and planting can be done using simple hand tools.

For larger areas, one initial (or last) tillage is done and 3-4-foot-wide beds 100 or more feet in length are laid out with paths between the beds. The bed surface is covered with compost and mulch and paths are covered with bark or wood chips. Crops are planted through the compost/mulch on the beds. Each year additional compost and mulch are added to bed, and bark or wood chips is added as needed between rows. Cover crops are planted on the beds between seasons and are laid down or rolled by hand and then planted through providing additional mulch that decomposes. Crop debris also remains to decompose. A rich organic layer develops that no longer requires any tillage.

Getting Pole Lima Beans Started Right

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

Large-seeded pole lima beans are a unique crop produced by direct market growers and home gardeners in the Mid-Atlantic region. Unlike most legume crops, pole lima beans are usually transplanted into the field. This is because seed is expensive and sometimes hard to procure and because plants are spaced at 4 to 6 feet in the row. Here are some tips for successful production of pole lima transplants.

Quality Seed
Pole lima bean seed can be difficult to procure and consequently many growers save their own seed. Plant seeds that are free of obvious damage from fungi and insects. Fully dry seed should be stored in a sealed container (such as a lidded jar) in the refrigerator for maximum longevity and vigor.

Planting Date
Pole lima beans should be transplanted after the danger of frost. I aim for a mid-May planting in my research plots in Georgetown, Delaware. Because of their large seeds, which store lots of energy for the seedling, pole bean transplants grow quickly and the time from seeding to transplant is short, about three weeks. For mid-May planting, I seed the last week of April. It is not necessary to keep pole beans in pots longer than it takes for the seedlings to emerge and fully expand their primary leaves.

Pots and Media
Use pots with a diameter of 2.5-3 inches. I use the 2.5 inch square pots pictured below (Figure 1). Styrofoam cups can make a good pole bean seedling pot if you poke a hole in the bottom to provide drainage. Use pasteurized potting media to reduce incidence of seedling diseases. Avoid using potting media that is formulated for seed starting; this type of media is designed for germination of small-seeded crops and stays wetter than ideal for pole beans.

Figure 1. Pole lima seedlings in 2.5 inch pots.

Seeding, Water & Temp
Seeds should be planted 1.5 inches deep. I have been asked many times whether I plant my pole limas “eye up” or “eye down”. I guess I am wishy-washy because I plant them laying flat on their sides! Maintaining proper moisture and temperature is probably more important than seed orientation. Transplants should be grown in

a greenhouse or other warm, high light location. Water very well after seeding and keep media moist but not wet until plants have emerged. Maintain soil temperatures at ~80˚F for quickest emergence. Heat mats are useful for this. If you provide ideal conditions for germination, you will soon (4 days) see those green hypocotyls arching out of the potting media. After emergence, transplants can be moved off of heat mats if in a warm location.

Handle Gently & Harden Off
When seedlings have fully expanded their primary leaves (as in Figures 1 & 2) they should be moved to a protected outdoor location to harden-off for about 7 days. When handling transplants avoid breaking off the cotyledons (Figure 2) which store energy and nutrients for the growing seedling. Plants with missing cotyledons will be stunted and grow slowly. Do not keep transplants in pots longer than necessary, this too will stunt growth. Also, transplants that begin rapid shoot growth in the pot quickly become tangled with one another. At transplanting handle plants gently to avoid breaking off cotyledons or shoots.

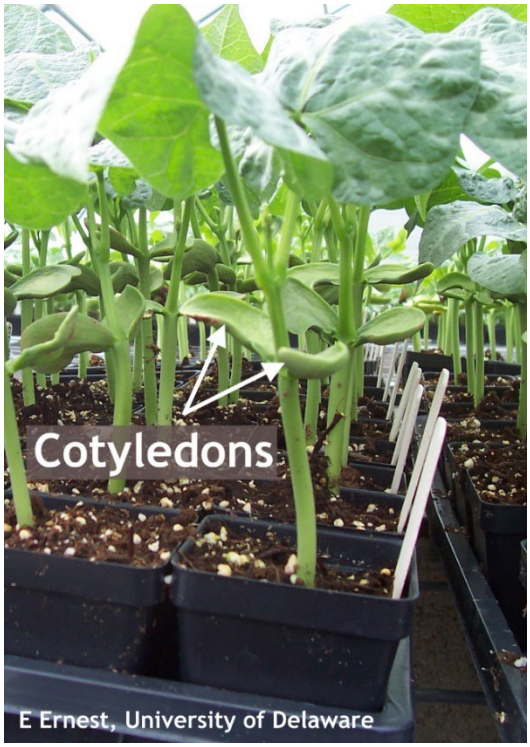


Figure 2. Be careful not to damage the cotyledons, they are providing nutrients to the growing plant.

Figure 3. Newly transplanted pole limas

Fruit Crops

Fruits and Nuts are Key Components of Permaculture Systems – *Gordon Johnson, Extension Vegetable & Fruit Specialist;* gcjohn@udel.edu

There is increased grower interest in permaculture systems for fruit and vegetable production. Also called “forest gardening” or “agroforestry”, these systems are based on interplanting perennial tree and shrub crops, with other fruits, vegetables, and herbs below. These systems are common in tropical areas of the world and have been adapted to our temperate areas.

Permaculture systems use fruit and nut trees as the tallest level (apples, pears, cherries, and hazelnuts as examples). The next level is shrubs and cane crops than produce edible products such as blackberry, serviceberry, gooseberry, and currants. Lower levels include permanent sheet composted beds for upright vegetables (peppers, eggplants, tomatoes), leafy crops (lettuce, kale), and root crops (sweet potato). Ground cover edible plants that spread (strawberries, creeping blueberries, creeping thyme) are used for the bottom layer. Additional vining crops (grapes, pole beans, Malabar spinach) then can be added to the mix along with associated plants as a natural trellis. Different levels are interspersed with perimeters

often being hedgerows of useful plants (such as brambles).

Brambles such as the primocane blackberries seen in the photo can be used in permaculture systems as second level crops and as borders or hedgerows.

Areas are laid out to allow for mutual benefits (such as wind protection), allow for light penetration (for vegetables below), provide shading in hot summer months (for heat sensitive crops), and allow for access (mulched pathways).

These interplanted systems also will have leguminous plants throughout as a nitrogen source, perennial herbs for aromatic compounds, and plants to promote pollinators. Systems may also incorporate other income generating plants such as edible flowers, woody plants as cut flowers, craft plants, and medicinal plants.

In permaculture systems, plant residues are cut and dropped and leaves that drop from trees and shrubs are left to create natural mulch layers, building a "forest garden floor" rich in organic matter.

Because of the plant diversity, disease and insect pressure is reduced and nutrients are efficiently recycled. These systems are also drought resistant.

Agronomic Crops

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

Early Season Moth Trapping

The black cutworm flight continues in the Laurel and Harrington areas. Be sure to check crops going into late cover crop termination fields. Recent southerly winds and warmer weather have most likely contributed to this increase. Also, for the second year in a row, our trap in the Smyrna area is catching very high numbers of true armyworm. It will take a couple of weeks for moths to lay eggs, those eggs hatch, and larvae begin feeding on wheat. Please note that trapping data is meant to be correlative over time, we do NOT have thresholds or make recommendations for individual fields or crop considerations based on them. We do not know at what point these traps indicate a potential problem, short of comparing true armyworm counts to some long term data collected by University of Kentucky. Many thanks to Joanne Whalen for assisting with trapping efforts.

Location	# of Nights	Total Catch	
		TAW	BCW
Willards, MD	6	2	21
Laurel, DE	7	53	86
Seaford, DE	7	21	43
Sudlersville, MD	7 (4/8)	3	2
Harrington, DE	7	136	74
Smyrna, DE	7	576	9
Middletown, DE	7	63	18

Small Grains

In addition to the armyworm note for Smyrna, we have reached the cereal leaf beetle target degree days for peak egg lay. In previous years, we have attempted to use this threshold but cereal leaf beetle counts have been too low. In 2018, we started seeing our first eggs around this target. When Bill Cissel and I surveyed for cereal leaf beetle, the greatest concentration was at the Wye REC in MD. Threshold for cereal leaf beetle is 25 eggs or larvae per 100 tillers. Aphids are generally low this year.

Corn and Soybean
The first of our corn and soybean crop is going in the ground. Next week's weather looks favorable to slugs; cool weather, recent rains, and some more in the forecast to keep them happy. We picked up our first gray garden neonates four weeks ago, but now we are seeing more of them, suggesting that we are nearing peak egg hatching.

Save riskier fields for later in the planting season if possible. Fields that have been turbotilled in the fall or this year are much less likely to have significant slug populations. Remember to avoid adding insecticide in burndown herbicide applications to conserve slug predators. Having said that last point, if planting into a green cover crop that has not died prior to planting, scout it carefully. We have been picking up a greater black cutworm flight in our pheromone traps than last year or the year before. These moths may have been aided by strong southerly winds last week. I do not make specific recommendations on cutworms based on pheromone traps, but monitoring them is useful for starting a degree day calculator to estimate when larvae may be big enough to cut corn.

Finally, a discussion of tillage would be incomplete without mentioning another early season pest that is favored by tillage: seedcorn maggot. Seedcorn maggot like incorporated organic matter. Right now in Georgetown we are in between generations. We tilled under Austrian winter peas and chicken manure in a field setup for seedcorn maggot three weeks ago. Most of the larvae in the field are almost done with their feeding and are beginning to pupate, suggesting that the next 7 to 10 days pose lower risk for seedcorn maggot. Seedcorn maggot is another pest favored by cool soil temperatures. As with slugs, anything that favors earlier vigor and faster growth will go a long way towards reducing stand loss risk to seedcorn maggot.

Early Planted Soybeans Considerations

– *Jake Jones, Extension Agriculture Agent, Kent County*; jgjones@udel.edu

Of the top 10 yields recorded in the Delaware Soybean Board 2021 Soybean Yield Contest, five were planted in April and five were planted in May. "Early planted" soybeans have become popular in recent years due to the upside potential for additional yield and earlier harvests possible in the damp fall season. The logic of a longer grower season and higher photosynthesis with flowering occurring at the summer solstice is sound. Yields can reflect this, but early planting does not come without substantial challenges from weather, diseases, insects, and weeds.

Check the weather forecast.
Between 2000 to 2021 the average last frost date in Georgetown, DE was April 7 but the latest was April 22. Be wary of false springs, which in 2020 led to very early planting of some soybeans that emerged and were subsequently killed by a late frost. Soil temperatures at two inches of 77°F are ideal for soybean germination with a minimum requirement of 50°F. Check the forecast before early planting and make sure cold and rainy days aren't ahead that can stall germination. Also, remember that surface residue can limit the solar radiation needed to heat soils in no-till situations. At 50°F, germination will occur very slowly, allowing for diseases and insects to reduce stands.

Use seed treatments to protect the seed.
Diseases that infect and reduce emergence are caused by *Pythium*, *Phytophthora*, *Fusarium*, and *Rhizoctonia*. *Pythium* and *Phytophthora* can cause pre and post-emergence damping off. *Fusarium* causes root rot and wilt. *Rhizoctonia* causes pre-emergence damping off and root rot post-emergence. Symptoms can occur immediately in germinating seedlings or remain latent until stressors and weather conditions later in the season cause symptom development. Sudden Death Syndrome (SDS), caused by *Fusarium virguliforme*, is a great example of an infection that occurs in the cold and wet early spring but symptom development is delayed until late vegetative or early reproductive stages. Using seed treatments and choosing resistant varieties are two ways to reduce disease infection of germinating soybeans.

Maintain season-long weed control.
Weed control can be both a challenge and an opportunity in early planted soybeans. The first step is always to start clean. Early soybeans are slow to emerge and grow, taking more days to

close the canopy than soybeans planted in the same row spacing later in the year. Residual herbicides will be important during the slow emergence and canopy filling stages. Consult herbicide labels to stay below the maximum yearly herbicide rate. But with canopies that close earlier on the calendar, early soybeans could provide a benefit by shading out more of the summer emerging palmer amaranth.

Use row cleaners and close the seed furrow. Slugs are public enemy number one for soybeans in no-till situations. The ideal conditions for slug damage are no-till situations with high residue, high moisture, and open seed furrows. Correct these conditions by waiting to plant until soil moisture is drier, move the residue with row cleaners, and use tillage, which is a very effective cultural tool in fields with a history of slugs. On the other hand, tillage of heavy residue into the soil could lead to the proliferation of a different insect pest, seedcorn maggot. Seedcorn maggot feeds on decaying organic matter in the soil and can also cause damage to germinating and emerging soybeans. With no rescue treatments for seedcorn maggot, the best option is to avoid planting during peak fly emergence for the first generation. If your field is the earliest soybean field to emerge in your area, expect the insects and deer to know about it.

Scout but don't stress.
With seeds in the ground for longer, seedlings growing slower, and plants growing for longer, early planted soybeans face many challenges throughout the extended growing season. It is important to scout and properly identify the weeds, insects, and diseases in order to manage them properly and plan for future success with early planted soybeans. Soybeans have an amazing capacity for compensating for stand loss and maintaining yields. 60,000 plants per acre can yield 90% that of a normal population, so don't be too quick to give up on a damaged field.

Soybean Planting Timing Decisions

- *Jarrod O. Miller, Extension Agronomist,* jarrod@udel.edu; *Cory Whaley, Sussex Co. Extension Ag Agent*; whaley@udel.edu and *Alyssa Koehler, Extension Field Crops Pathologist*; akoehler@udel.edu

At the Carvel research station, we have been examining planting date, yields, and nutrient uptake on soybeans with support from the Delaware Soybean Board. In 2020 our early planting date was restricted to May 8th, but in 2021 we planted April 12th, and have also planted this year on April 13th. In both years we planted a 4-2 maturity group soybean.

In both 2020 and 2021 we saw no yield differences by planting from April 12th up until June 4th (Table 1). We did observe some stand issues in 2021 (Figure 1), where one of the row units had a bad spring and planted too deep. The same planter had no issues with later plantings though, so our *untreated* seeds probably succumned to cool temps, higher moisture, and a deeper seed placement.

We also noticed some differeces in nutrient uptake by planting date both years, where tissue samples were taken in late July (R2 growth stage). More Ca, S, and Fe have been taken up with earlier plantings (varies by year), while Mg, Zn, Mn, were all higher in soybean tissues planted later in May. All nutrients were within sufficiency ranges, however you can expect differences in tissue concentrations by planting date. Ealier planting both years had much higher concentrations of Al, which is toxic to plant roots and not an essential nutrient. This may be limiting yield in our region with earlier plantings, but more work should be done.

Overall, earlier planting has not increased yield, but has also not reduced yield, so this earlier planting may help spread out field work. However, these were all planted in an irrigated, sandy soil in southern DE, which may not reflect all conditions across the state.

Keep up with your regional conditions through DEOS (http://www.deos.udel.edu/).

Table 1. Soybean yields by planting date in 2020 and 2021.

2020		2021	
Planting Date	**Yield**	**Planting Date**	**Yield**
05/08	74.0	**04/12**	50.1
05/21	75.9	**04/28**	52.7
06/04	72.1	**05/10**	53.1

Figure 1. Some rows did not emerge in our 2021 mid-April planting due to planting depth issues. Later planting didn't cause the same issues.

Soil Temperature and Moisture in Mid-April (2020-2022)

- *Jarrod O. Miller, Extension Agronomist,* jarrod@udel.edu

In 2021 soils warmed up in mid-April and stayed there (blue line, Figure 1), overall remaining warmer than 2020 (green line), which lead to good field conditions for corn planting (Figure 1). This week we saw some air temperatures in the 80s, which lead to a fast rise in soil temperatures (yellow line). With rain and night-time temperatures in the high 40s this weekend, we will likely see a drop in soil temperatures, slowing any corn germination if you have taken this window to plant. Monitor those fields for any emergence (about 8-10 days from mid-April plantings) in case you must make replant decisions. By the 1st of May we should expect soil temperatures to remain above 50°F with emergence beginning to occur within 5-7 days.

Our soil moisture has been a little higher than 2020 and 2021 (Figure 2) due to recent rains, but as you can see it will be quickly depleted as soils warm up, evaporation occurs, and there is any lack of rainfall. Still, we don't expect an issue with soil moisture without rain until later in May. At our research station in Sussex County, we plan on planting our first corn sometime next week (April 20-22).

Keep up with your regional conditions through DEOS (http://www.deos.udel.edu/).

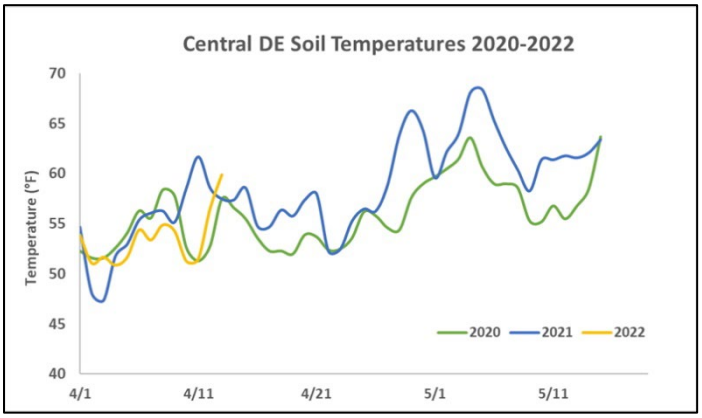


Figure 1. Soil temperatures from mid-April to mid-May 2020-2022 in central DE.

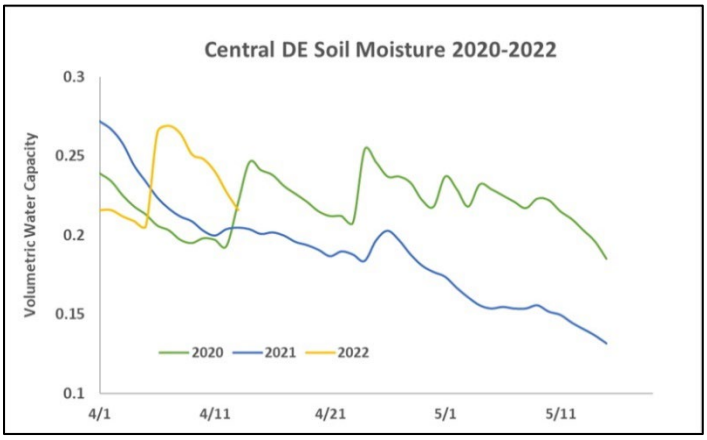


Figure 2. Soil moisture from mid-April to mid-May 2020-2022 in central DE.

Announcements

Berries and Brambles: Small Fruit Production Session

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

Session Two: Small Fruit Establishment
Thursday, May 5, 2022 6:00-8:00 p.m.

Get started successfully with strawberries, blueberries or brambles. Learn what you need to know about soil preparation, variety selection, irrigation systems, planting dates and trellising options.
Speakers: Dr. Gordon Johnson, Dr. Emmalea Ernest, and James Adkins

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

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

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

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

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

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

Please CLICK HERE to Register

April 18
An Overview of Our Delaware/Maryland Food System from an Agriculture Perspective
Nikko Brady, Deputy Principal Assistant Director Delaware Department of Agriculture and Cassie Shirk, Director of Legislation & Government, Maryland Department of Agriculture

April 25
Understanding Fruit and Vegetable Production in Within our DE/MD Food System
Gordon Johnson, Assistant Professor and Extension Specialist, Fruits and Vegetables, University of Delaware, Department of Plant and Soil Sciences

May 2
What's in Your Basket - Chicken or Eggs? Exploring Poultry and Egg Production Within our DE/MD Food System
Georgie Cartanza, Extension Agent – Poultry, University of Delaware Cooperative Extension

May 16
Knowing the Consumer in our Region and Increasing Food Accessibility
Gina Crist, Community Health Specialist, University of Delaware Cooperative Extension and Instructor, University of Delaware Department of Behavioral Health and Nutrition and Erin Norris, Planner (Natural Hazards) at Delaware Emergency Management Agency and Karen Shore, Founder and Principal of Upstream Strategies

May 23
Exploring Seafood and Aquaculture Production Within our DE/MD Food System
Chris Petrone, Extension Director, Marine Education, University of Delaware Sea Grant and Dennis McIntosh, Professor and Extension Specialist – Aquaculture, Delaware State University, Department of Agriculture and Natural Resources and Ed Hale, Assistant Professor and Marine Advisory Service Specialist, University of Delaware School of Marine Science and Policy

June 6
How Agricultural Production and Consumer Markets are Intertwined
Nate Bruce, Farm Business Management Agent, University of Delaware Cooperative Extension and Laurie Wolinski, Extension Agent - Agribusiness Risk Management, University of Delaware Cooperative Extension

June 13
Will Climate Change Impact our Regional Food System?
Jenn Volk, Associate Director of Cooperative Extension & Extension Specialist - Environmental Quality, University of Delaware Cooperative Extension and Emmalea Ernest, Scientist - Vegetables & Fruits, University of Delaware Cooperative Extension

TBD
Grazing, Food Production, and the Environment
Susan Garey, Kent County Extension Director & Extension Agent Animal Science and State 4-H Animal Science Program Coordinator, University of Delaware Cooperative Extension

Updated Vegetable Recommendations Books Available

The 2022/2023 Commercial Vegetable Production Recommendations are available online.

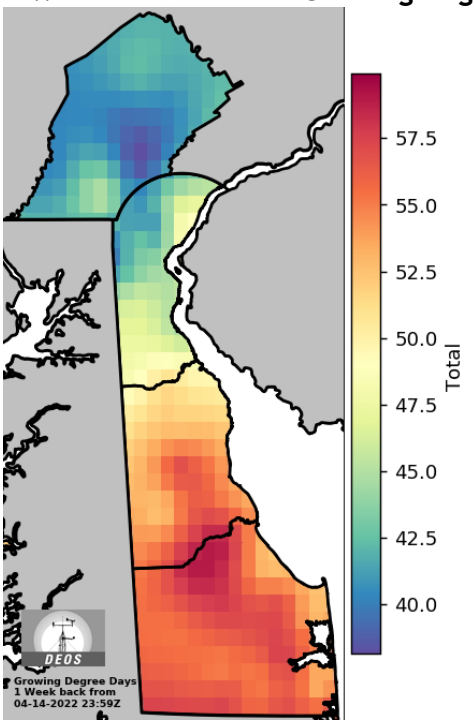
Printed copies of the books are available at all three of the county Extension offices courtesy of the Fruit & Vegetable Growers Association of Delaware. Books may be purchased for $20 for FVGAD members and $25 for non-members.

2022 Field Crops Weed Guide Available

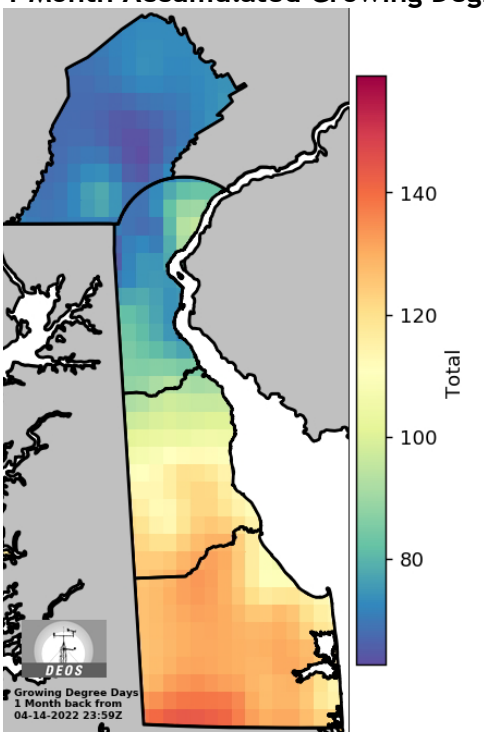
The 2022 Mid-Atlantic Weed Management Guide is available online through Virginia Tech's Pest Management Guide – Field Crops. The digital version is free. The publication can be viewed online or a free pdf can be downloaded; hardcopies can also be order at their website. Either google VCE Publications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

Weather Summary

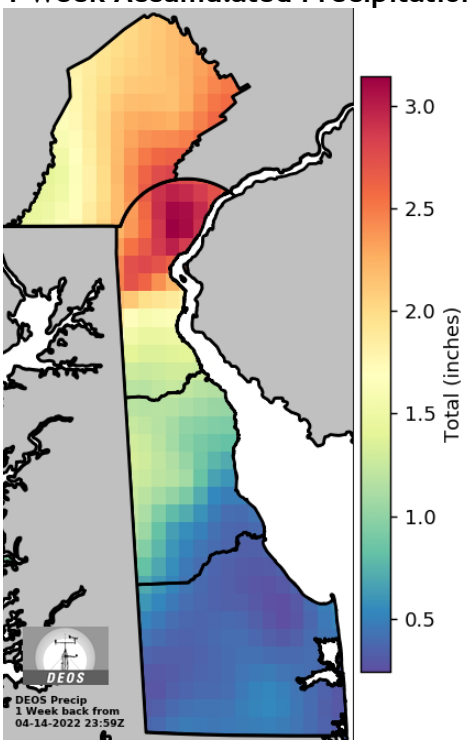
1 Week Accumulated Growing Degree Days



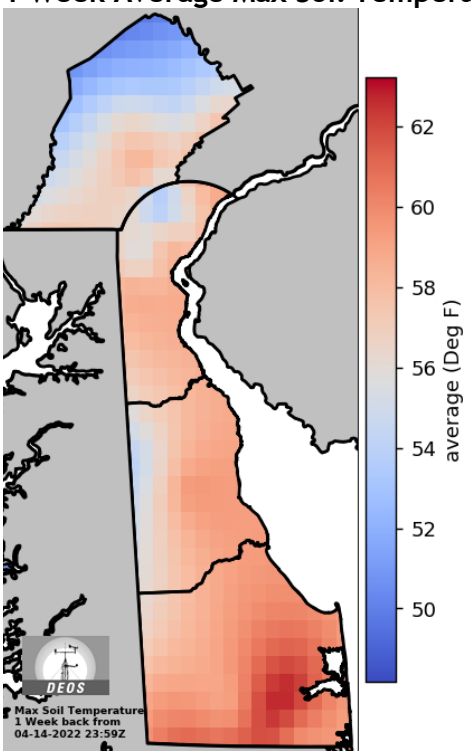
1 Month Accumulated Growing Degree Days



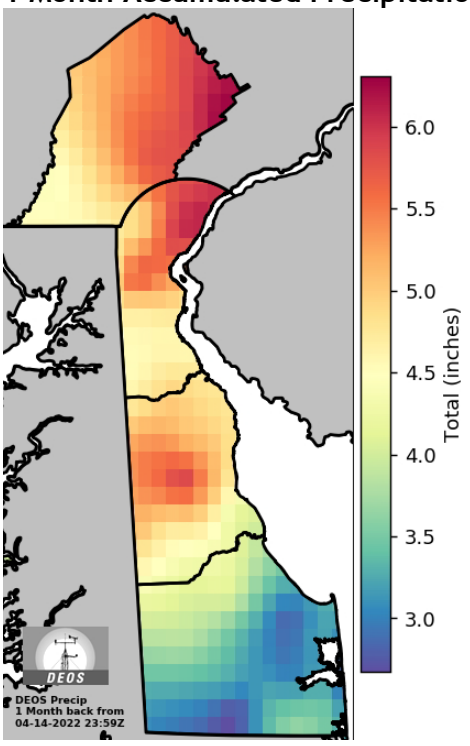
1 Week Accumulated Precipitation



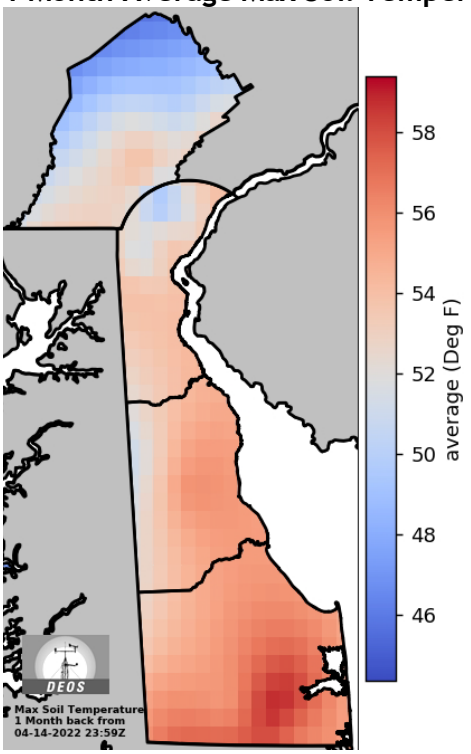
1 Week Average Max Soil Temperature



1 Month Accumulated Precipitation



1 Month Average Max Soil Temperature



These weather maps are generated from DEOS weather station data and are part of a new Ag Weather website that is under development. Your feedback is welcome!
Thanks!! Emmalea (emmalea@udel.edu)

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

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