# WEEKLY CROP UPDATE



UNIVERSITY OF DELAWARE COOPERATIVE EXTENSION

#### Volume 30, Issue 7

## Vegetable Crops

#### <u>Vegetable Crop Insect Scouting</u> - David Owens, Extension Entomologist, owensd@udel.edu

Seedcorn maggot is active. If incorporating organic matter, consider seed treatments, or, depending on product labels, a soil application of an appropriate insecticide. We are beginning to see symptoms of seedcorn maggot injury to processing peas planted during the approximately March 20-30 time window for peak overwintering adult activity period. Affected plants may appear as small runts or vellowing as if nitrogen stressed. Digging up plants may reveal a compromised root system and signs of maggot injury or tunneling, and you may see adult flies on the soil surface. Try to mitigate stressors as much as possible, and hopefully these affected plants will limp to the finish line.

Don't want to wait to hear about insect activity? Check out the Syngenta Pest Patrol service. Sign up and whenever a voice recording for a region or crop group you select is recorded, you will receive a text message with a link to the 2-5 minute recording.

Spotted Lanternfly eggs are beginning to hatch. Be on the lookout for the domino-colored nymphs, particularly in areas with tree of heaven and any grapes near tree of heaven. Equipment and vehicles should be inspected prior to leaving the quarantine zone in Kent (especially, but not limited to Smyrna, Harrington, and Dover) and New Castle Counties. May 6, 2022

More information can be found at DDA's Spotted Lanternfly webpage: https://agriculture.delaware.gov/plant-

nttps://agriculture.delaware.gov/plantindustries/spotted-

lanternfly/#:~:text=The%20Delaware%20Departm
ent%20of%20Agriculture,Castle%20County%20and
%20Kent%20County.

#### Cold Effects on Early Transplanted

<u>Vegetables</u> - Gordon Johnson, Extension Vegetable & Fruit Specialist; <u>gcjohn@udel.edu</u>

The frost we had last week should remind growers that as you try to get a jump on the growing season, cold weather effects need to be considered. Over the years, many of our early plantings of summer vegetables have suffered because of cold damage and inadequate provisions to protect plants.

Earliest plantings of watermelons, summer squash, and tomatoes began last month. First transplanting of crops such as cantaloupes, peppers and eggplant will begin in early May. One of the characteristics that all of these crops have in common is that they are warm season vegetables that are sensitive to cold temperatures, both in the root zone and above ground.

Transplanted warm season vegetables vary in their ability to tolerate adverse weather after being set out. Tomatoes will stop growth but will grow out without much damage once warm weather returns. Summer squash also handles adverse conditions fairly well. Watermelons will hold if they have been hardened off properly. Cantaloupes can be permanently stunted if exposed to excessively harsh early conditions. Peppers and eggplants will not put on any root growth until temperatures are warm enough.

Rate of root growth or regeneration is temperature dependent with cool season vegetables such as cabbage or lettuce being able to produce new roots at much lower temperatures than warm season vegetables such as eggplant or watermelon. In soils that are below critical temperatures (60-65°F for watermelon and cantaloupes for example) roots do not grow into the soil bed and transplants will be subject to desiccation losses as soils dry around the root ball. The smaller the root ball (the smaller the tray cell size), the more quickly desiccation and plant loss can occur.

For Solanaceous crops tolerance to cold soil is as follows Tomatoes > Peppers > Eggplant. For cucurbits tolerance to cold soils is in this order Cucumber > Summer Squash > Watermelon > Muskmelon.

All of these vegetables are susceptible to frost damage and will be killed by a late freeze. Many areas on Delmarva had temperatures as low as 25 °F on April 29.



Minimum temperatures in Delaware on April 29, 2022. (Weather data from <u>DEOS</u>)

In years with cold, cloudy, windy weather after transplanting, we have had large losses of transplants in the field. In many fields considerable hand labor was used to replace dying plants and in some cases whole fields were replanted. It is critical to have warm soil conditions after transplanting to allow roots to grow out into the bed quickly. What happens in cold, cloudy conditions is that plants shut down physiologically. Little root growth occurs and the existing roots on the transplant do not function well. If there is any wind, plants lose more water than they can take up and they die due to desiccation. This is accelerated when the sun does come out - the first sunny day after an extended cold, cloudy period is when you will see the most wilting of weakened transplants.

Later on in the growth cycle, cold weather during flowering can lead to problems with pollination and fruit formation resulting in reduced fruit set and malformed fruits.



Watermelon plant with dead growing point due to freezing weather. Buds at the cotyledon are intact. However, without any leaves, the plant may not have enough energy to regrow.



Watermelon plant with live growing point and only one leaf damaged. This plant will regrow.



G Johnson, University of Delaware

Watermelon plant with dead leaves and damaged growing point but with live buds at the leaf axil and cotyledons. This plant is marginal on the potential for regrowth



Watermelon plant with minimal damage will continue to grow.

<u>Reduced Seed Set in Peas</u> - Gordon Johnson, Extension Vegetable & Fruit Specialist; gcjohn@udel.edu

A number of pea fields have had cold injury this year. One issue that could be a concern is early pea fields with reduced seed set. This is where pods develop but only one or two seeds are formed.



Reduced seed set in peas.

Reduced seed set occurs during flower development and pollination. Peas are selfpollinated. As the flower opens, the pollen from the anthers is released to the stigma of the pistil of the same flower. Once on the pollen is on the stigma, the pollen germinates and a pollen tube is formed and then grows down the style and when it reaches the ovule, the egg is fertilized by one of the two sperm cells, the other fuses with polar nuclei to become the seed endosperm. During the development of the pollen tube, plant hormones are released which are also essential for seed set.

Seed set problems therefore may be related to lack of pollen formation, pollen that does not release to the stigma, reduced pollen germination, abnormal pollen tube development, abnormalities in the stigma or stile, or abnormalities in the ovule. Lack of Gibberellin hormone release has also been shown to reduce seed set or lead to early seed abortion in peas.

What are the potential causes of reduced seed set in peas? Frost or freeze when flowers are opening has the potential to injure pollen or directly damage flower parts. Peas are very cold tolerant normally but are susceptible to injury at flowering. There was a frost on much of Delmarva on April 29 and 30 where temperatures dropped to the mid to upper 20's. Cold stress to peas at and after flowering has been shown to cause seed abortions in some varieties (several days below freezing in a row).

Other research has shown that peas under temperature and moisture stress produce fewer seeds. Experiments have shown that temperatures at 93°F or above can also reduce seed set in some varieties of peas. Dry soil conditions will magnify this effect.

Another factor to consider is timing of chemical applications to peas - applications near and at flowering may damage pea flowers under certain weather conditions and reduce seed set.

## **Fruit Crops**

<u>Fruit Crop Insect Scouting</u> - David Owens, Extension Entomologist, <u>owensd@udel.edu</u>

#### Strawberries

Continue scouting for tarnished plant bug activity. Tarnished plant bug feed on flowers and developing fruit, causing cat facing, deformity, and button berries. The nymphs are small and lime green, adults are mottled brown and a little bit smaller than a pencil eraser. Scout for tarnished plant bug by shaking 30 flower trusses or clusters (6 groups of 5 across the field) on a dark sheet or on the black plastic where the nymphs will be more easily seen. Count the number of infested flower clusters (not number of nymphs). A variation on the sampling method is to first sample 15 flower clusters. If 0 clusters are infested, you do not need to spray but if 3 or more are infested, control is justified. If between 0-3, check 5 more flower clusters. The complete sequence can be found here:

https://ag.umass.edu/fruit/factsheets/strawberry-ipm-tarnished-plant-bug.

#### Freeze Damage to Fruits - Apples and

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

Apples were in various stages of bloom during the recent frost events on April 29 and 30 when temperatures dropped to the mid-20s in some locations and there have been reports of injury, especially in frost pockets. The following information on apple freeze injury is from Michigan State University:

In apples, the fruit buds are really small shoots with both flowers and leaves. An apple flower cluster is shown in the photo below. In apples, the flower in the center of the flower cluster is the oldest and most developed and will be the first flower to bloom. This central flower is called the king bloom and is the most desirable of the flowers in the cluster. The king bloom has the potential to be the largest fruit.



The king bloom of the apple flower cluster has opened, but the side blooms are still closed. The king bloom is more susceptible to freeze injury at all stages of the apple bud development in the spring and is often the first flower killed in the cluster. Since the king bloom is also the most advanced flower in the cluster, it is most likely to be killed in a frost. Another difference between apples and stone fruit is that the pistil is buried inside the base of the flower and not exposed above it as in stone fruit. This means that it is often necessary to tear the flower apart to see if the center of the flower is brown or black. The flower in the photo below is a king bloom killed by frost.



The dark brown center of this apple flower indicates it was killed by a freeze.

When checking apples from frost damage, check the king and side blooms separately. Many times the king blooms are killed and many of the side bloom are undamaged.



The dark brown centers and signed appearance of the petals indicate that both kind and side blooms were killed in a freeze the morning this picture was taken. The king bloom in the center of the cluster has lost its petals. See this site for a full list of critical temperatures in tree fruit: <u>https://www.canr.msu.edu/uploads/files/</u> <u>TreeFruitCriticalTemperatures.pdf</u>

#### Blueberries

Blueberries were also blooming or in early fruit formation during this period. According to North Carolina State University: "For highbush blueberries, when the blossoms are open, a temperature of 27°F for more than a few minutes causes damage. Immediately after corolla drop and before the berry begins to swell is the most sensitive stage. A few minutes below 28°F will result in damage. As the berry begins to enlarge, susceptibility is similar to the critical temperature of 28°F for open blossoms."



E Ernest, University of Delaware

The blueberry fruit on the right was damaged by freezing temperatures and will not mature. Seeds inside the ovary have turned brown. The flower on the left was not frozen, seeds remain plump and green. Bruising on Strawberry Leaves - Jerry Brust, IPM Vegetable Specialist, University of Maryland; jbrust@umd.edu

Over the years I have seen dark spots on the foliage of strawberry plants like the ones in Figure 1. These spots can look pretty bad at times and are thought to possibly be the start of some disease such as angular leaf spot or anthracnose. The dark spots are usually on the upper or lower surface of the leaf, but at times can be found on both surfaces of a leaf, which can indicate a biotic source for the problem. These damaged areas of strawberry foliage can be very disconcerting when they appear as dark spots on the stems (Fig. 2).



**Figure 1.** Dark spots on strawberry leaves often mistaken for the start of a foliar disease

No bacteria or fungi have ever been found associated with these dark spots. I have seen this type of discoloration in strawberry foliage early in the season many times over the years and have never seen the spots turn into any disease problem or any other type of problem. The best that we can come up with is that the plant has 'bruised' foliage. And as you look at the spots this is exactly what the damage looks like (kudos to Karen Rane for coming up with this description of the damage). This damage usually appears within a short time span after high winds occur.



G Brust, University of Maryland

Figure 2. Strawberry stem with dark spot

Figure 3 shows a good example of this as you can see the bruised areas of the leaves that appeared a few days after a very windy period. Also notice the tattered appearance of the leaf edges demonstrating that these leaves were knocked around a great deal. It is possible that disease organisms might enter the plant through this damaged tissue, but I have never seen this occur to any extent in the field—even during the wettest spring. Nothing needs to be done about this bruising, growers just need to be aware of the possibility occurring after wind events.



**Figure 3.** Strawberry leaf with bruises and tattered margins

Two Spotted Spider Mites and Cyclamen <u>Mites Found in Strawberries</u> - Jerry Brust, IPM Vegetable Specialist, University of Maryland; jbrust@umd.edu

With the cooler weather we have had of late I was surprised to find low levels of mites in strawberry fields, with a few hot spots of mites in some high tunnels. There were two species of mites found: the two spotted spider mite, *Tetranychus urticae* and the cyclamen mite *Phytonemus pallidus*.

Overwintering female two spotted spider mites are an orangish-red (Fig. 1) and most of the mites that can be seen with a naked eye will appear reddish in color. Spider mites overwinter in the soil or leaf litter, although they may remain somewhat active in high tunnels through the winter. The light yellowish eggs are pearllike in appearance and are attached to the undersides of leaves or stems. Feeding damage by mites that occurs before fruiting can cause the most loss in yield, but after the first strawberry harvest plants can tolerate much greater rates of infestation. Growers should check their strawberries for mites now, especially if you have them in a high tunnel. If mites are found now you need more than 5 mites per leaflet (1/3 of a leaf) to justify the expense of a miticide application.



Figure 1. Overwintered female two spotted spider mite

The most difficult thing to achieve for good control is getting adequate spray coverage. Many of the spray applications do a good job of covering the top of the leaves but do a poor job of reaching the underside of the trifoliate. The underside area of the leaf that usually sees very little chemical deposition is in the 'palm' of the leaf. These are the areas where mites can still be found even after a few sprays and need to be carefully checked a few days after an application. Good coverage is essential. Using two horticulture oil applications about one week apart it is possible to control not only the adults and nymphs, but the eggs too. Oil is a good management tactic to use at this time of year as the plants are small and any possible burn from using the oil is a very low risk. Using oils now also will greatly reduce any development of mite resistance to other chemicals over the course of the season. If miticides are needed there are

many excellent miticides that can be found in the <u>Mid-Atlantic Commercial Vegetable</u> <u>Production Recommendations</u> guide for strawberries.

Adult cyclamen mites are usually never seen as they are only a quarter of a mm long and a 20X hand lens or dissecting microscope is needed to see them. And unlike two spotted spider mites that prefer dry conditions, cyclamen mites thrive in humid conditions.

Adult mites are oval-shaped and a glossy creamy orange (Fig. 2) with males being smaller than females. The eggs are translucent and comparatively large, about ½ the size of an adult (Fig. 2). Masses of eggs in leaf crevices can be so numerous that they look like tiny piles of salt. Female adults overwinter in strawberry crowns and also can be present on transplants. Female mites lay their eggs on strawberry leaves that hatch into tiny, white, six-legged larvae (Fig. 2). The entire life cycle of the cyclamen mite is less than 3 weeks and therefore populations can build quickly. Although there are multiple generations each year, populations tend to peak in spring and again in late summer.

Cyclamen mites use their piercing-sucking mouthparts to feed on plant material. Symptoms of infestation can be found throughout the plant. However, at low numbers cyclamen mites usually are found along the midvein of young, unfolded leaves and under the calvx of newly emerged flower buds. As numbers increase mites can be found anywhere on the plant. The infested leaves will appear stunted and crumpled (Fig. 3), while flowers wither and die and fruit becomes shrunken with protruding seeds (Fig. 4). By the time these symptoms appear, it is too late to limit damage, so cyclamen mites should be managed preventively. Treatments should be applied when 1 leaf in 10 shows cyclamen mite infestation.

Growers should watch for infested deformed leaves starting when new buds emerge from the crown and continuing until harvest. Older fields will most likely have more problems. In order to be sure of the presence of cyclamen mite, you need to examine the newest leaves in the crown, specifically the mid vein and lower part of a leaf where it joins the petiole. Magnification (20-40X) is recommended for confirmation of cclamen mites.

Early detection of cyclamen mites is essential in achieving best control, which means detection early in the growing season when foliage is nominal. Thorough spray coverage of the crown leaves is important for good control. Horticultural oils can be used if temperatures are below 88° F. Agri-Mek SC or Portal also can be used for mite control. Predatory mites can be used and work best if cyclamen mite populations are small and confined to scattered hot-spots in a field.



**Figure 2.** Adult female cyclamen mite (yellow arrow), eggs (black arrows) and larva (red arrow)



Figure 3. Cyclamen mite damage to strawberrycrinkled deformed younger leaves



**Figure 4.** Cyclamen mite damage to strawberry fruit

## Agronomic Crops

#### Agronomic Crop Insect Scouting - David

*Owens, Extension Entomologist,* <u>owensd@udel.edu</u>

#### Early Season Moth Activity

Many thanks to Joanne Whalen for assisting with trapping efforts. Moth captures are beginning to decline but be sure to start scouting small grains for armyworm activity.

Location	# of	Total Catch	
	Nights	TAW	BCW
Willards, MD	6	5	8
Laurel, DE	-	-	-
Seaford, DE	6	2	9
Sudlersville, MD	7	0	55
Harrington, DE	6	71	30
Smyrna, DE	6	132	43
Middletown, DE	13	148	48

#### Corn

Now that corn is up, begin scouting for cutworm injury, especially in fields with a short period of time between cover crop termination and plant emergence. Initial injury generally appears as a row of circular holes across the leaf blade. Look at 10 plants in 10 locations per field and consider a treatment if 10% show cutworm feeding. Cutworm injury can be confused with stink bug injury, but stink bugs will leave very ragged holes, not circular holes. Some of the Bt traits in corn do a great job preventing cutworm injury from progressing, so you may also want to continue watching a field that has plants with small holes in leaves to see if it progresses to actual cut plants before pulling a trigger on a spray. The handy Bt trait table can be found here:

#### https://agrilife.org/lubbock/files/2022/02/BtTr aitTable-March2022.pdf

You may also begin seeing signs of wireworm injury in fields. Wireworm injury will appear either as a portion of a leaf blade with a bright yellow streak or as a dead whorl leaf. There are no rescue treatments for wireworm, but if you see damage, it may be useful to dig 12x12x6 holes to determine what the population is in the field for future decision making.

Finally, in no-till corn, be sure to scout for slug injury. The next week looks very favorable for slugs. Damage is most severe prior to V3. There are no established thresholds for slugs, although Penn State suggests a threshold of 1 slug per square foot. I have heard rumor that the price of Deadline is higher this year, which if so, could warrant a bit more of a wait-and see approach. Other options include cultivation and application of a 30% urea solution at night on a humid, still night when slugs are active on the surface, minimum 10 gallons per acre broadcast. Soil cultivation or tillage will also decrease slug activity.

#### Soybean

Our two most damaging early season invertebrate pests should be very active this week: slugs and seedcorn maggot. Soybeans planted into thick cover crop or high residue environments without turbo tillage or vertical tillage need to be scouted carefully for signs of stand loss. Rescue treatments are very difficult if not impossible to time once plants are emerging out of the soil.

The other important pest, seedcorn maggot, is, unlike slugs, favored by tillage. Organic matter incorporation, and especially manure or a legume cover crop such as crimson clover or vetch, is highly attractive to flies. We planted our second seedcorn maggot seed treatment trial in Georgetown this week, basing our timing off of a degree day model of 1,080 degree days with a base temperature of 39. Adult flies will continue to be active for the next two weeks or so. An insecticidal seed treatment may be warranted for soybean planted in these high risk scenarios.

<u>Sorting Wheat Leaf Symptoms</u> - Alyssa Koehler, Extension Field Crops Pathologist; <u>akoehler@udel.edu</u>

Effects of frost on small grains can vary greatly based on growth stage, length of exposure, temperature, and other factors. It will often take 3-4 days for symptoms to become visible, so we are now seeing the effects of the 2 nights of frost at the end of last week. Leaf tip necrosis, leaf yellowing, or leaf spotting from frost response can look very similar to a number of diseases. While lab confirmation is often needed to 100% guarantee a diagnosis, there are context clues that we can use to help narrow down options. I have created the chart below to help sort out symptoms that might be from disease or something abiotic like a frost event.

#### Wheat Soilborne Mosaic Virus



A Koehler, University of Delaware

*Time of infection*: Primarily fall, vectored by protozoan *Polymyxa graminis*.

*Symptoms:* Stunting, leaves with chlorotic mosaic, irregular mottling, and streaking.

*Time of symptom appearance:* In spring after green up. Symptoms are not expressed on leaves that emerge after the average temperature is above 68°F. (If your wheat has looked healthy up until the past few days, you are probably not looking at WSBM.)

*Field Distribution/Location on Plant:* Irregular, chlorotic patches in the field (often following

low-lying wet areas favored by *P. graminis*). Movement in the plant is dependent on temperature. High temperatures limit movement into developing leaves.

**Management:** Planting resistant cultivars is the most economical management approach. *P. graminis* can survive in soils for many years.

#### Wheat Spindle Streak Mosaic Virus



https://www.apsnet.org/edcenter/disandpath/viral/ pdlessons/Pages/SoilborneWheatMosaic.aspx

*Time of infection:* Primarily fall, presumed to be vectored by protozoan *Polymyxa graminis*.

*Symptoms:* Chlorotic streaks that are elongated and spindle-shaped, often with a dark green island in the center.

*Time of symptom appearance:* In spring after green up. Symptoms most severe following a cold winter. (If your wheat has looked healthy up until the past few days, you are probably not looking at WSSMV.)

#### Field Distribution/Location on Plant:

Symptoms initially uniform across the field, but fade as temperatures warm.

*Management:* Planting resistant cultivars is the most economical management approach. P. *graminis* can survive in soils for many years.

#### Wheat Streak Mosaic Virus



<u>https://cropprotectionnetwork.org/encyclopedia/wh</u> <u>eat-streak-mosaic-high-plains-disease-and-triticum-</u> <u>mosaic-of-wheat</u> *Time of infection:* Primarily early fall, vectored by the wheat curl mite.

*Symptoms:* Rolled and trapped leaves are indicators of mite populations. Young leaves show yellow mosaic pattern of parallel discontinuous streaks. Yellowing can occur on the whole leaf.

*Time of symptom appearance:* Cool springs will delay the onset of symptom appearance, while an early, warm spring will maximizes impact to plants. Symptoms can be observed from tilling through ripening.

*Field Distribution/Location on Plant:* The margins of the field are often the first affected. Symptoms vary by cultivar, strain of virus, time of infection, and environment. Symptoms are often most severe on oldest leaves, with youngest leaves showing most characteristic mosaic symptoms.

*Management:* Management is focused on cultural practices to limit mite infestations. Destruction of volunteer wheat, later planting date, and avoiding susceptible alternative crops may help lower mite populations.

#### **Barley Yellow Dwarf Virus**



A Koehler, University of Delaware

*Time of infection:* Primarily fall, by aphid vectors. Spring infection can occur but is not usually as severe.

**Symptoms:** Leaf discoloration, particularly of flag leaves, that could be yellow, orange, red, purple, or brown and necrotic. Shortened internodes may result in shorter plants.

*Time of symptom appearance:* Typically becomes most apparent after flag leaves have emerged.

#### Field Distribution/Location on Plant:

Yellowing/purpling of flag leaf tips is usually in scattered spots throughout the field.

**Management:** Adjusting planting to avoid peak aphid populations can help lower disease development the following spring. Treated seed may help to manage aphids.

#### Bacterial Streak and Black Chaff



Mary Burrows, Montana State University, Bugwood.org

*Time of infection:* Seedborne, seed is the most common primary inoculum source.

Symptoms: Water-soaked lesions extending along the leaf margins and midrib. When held up to light, lesions appear translucent. Lesions will turn yellow and eventually brown and necrotic. (Can be easily confused with Septoria tritici blotch.)

*Time of symptom appearance:* Leaf symptoms become most noticeable after heading. Symptoms on the head include black, longitudinal stripes on the glumes and purpleblack lesions on the peduncle and rachis.

Field Distribution/Location on Plant: After heading a large number of lesions will appear suddenly on the upper leaves without noticeable progression from lower leaves. Lesions tend to be more abundant where dew remains at the bend of the leaf.

*Management:* Pathogen is primarily seedborne. Seeds can be tested to determine level of infestation, but no commercial seed treatment is available.

#### **Spring Freeze Injury**



A Koehler, University of Delaware

Time of infection: n/a

**Symptoms:** Wheat is most sensitive to freeze injury during reproductive growth. Damage is often worse on leaf tips and newer leaves. Leaf chlorosis, burning of leaf tips, heads trapped in boot, floret sterility, white awns or heads.

*Time of symptom appearance:* Effects of freeze injury usually become visible 3-4 days after the freeze event.

#### Field Distribution/Location on Plant:

Widespread across the whole field. Yellowing may occur primarily in low areas indicating freeze injury where cold air settled.

*Management:* Later maturing varieties may have a better chance of avoiding frost events.

#### Physiological Leaf Spots



A Koehler, University of Delaware

Time of infection: n/a

*Symptoms:* Leaf spotting not attributed to a biological pathogen.

*Time of symptom appearance:* Timing can vary based on contributing factors. Environmental stress, mineral imbalances, resistance gene reactions to rust fungi, aerial drift of fine droplets of nonselective herbicides, and other factors could lead to physiological leaf spots.

*Field Distribution/Location on Plant:* Usually present across the whole field. May vary by

variety, particularly for resistance gene responses.

Management: n/a

Nutrient Deficiency



Chloride deficiency symptoms <u>https://webapp.agron.ksu.edu/agr\_social/m\_eu\_arti</u> <u>cle.throck?article\_id=2133</u>

#### Time of infection: n/a

*Symptoms:* Yellowing in lower leaves may indicate N deficiency. Whole plant yellowing may indicate sulfur deficiency. Chloride and Zinc deficiency may produce a "physiological leaf spot" symptom.

*Time of symptom appearance:* May vary depending on nutrient involved. Warm temperatures followed by cooler temperatures can slow nutrient uptake and may trigger deficiency symptoms in springs with temperature swings.

*Field Distribution/Location on Plant:* Whole fields may be affected but might vary based on soil type or fertilizer application pattern.

**Management:** Stay aware of field nutrient levels and soil pH and make applications as needed.

**Heat/Drought Stress** 



A Koehler, University of Delaware

Time of infection: n/a

*Symptoms:* May see reduction in biomass, yield, and grain quality.

*Time of symptom appearance:* Most sensitive at flowering through grain development stages.

*Field Distribution/Location on Plant*: Whole field.

*Management*: Irrigate if possible. Try to limit irrigation during heading to reduce risk of FHB.

<u>Small Grain Disease Updates</u> - Alyssa Koehler, Extension Field Crops Pathologist; akoehler@udel.edu

Wheat heads are continuing to emerge and will be flowering over the next 2 weeks. I have seen a delay in the emergence of anthers in wheat heads that started coming out early last week. In most cases, about 5% of anthers just started to be visible Thursday. Using a "very susceptible" variety choice, Sussex County is tracking at medium to high FHB risk (Figure 1). We have quite a bit of rain in the forecast this weekend, but cooler temperatures, which are not as favorable to FHB. However, these cooler temperatures may keep Powdery Mildew levels higher than we are used to seeing this time of year. Powdery mildew appears as white, fluffy growth on the leaf surface (Figure 2). Powdery Mildew grows best at temperatures 50-70°F and typically declines after temperatures are above 75°F. We have not had enough consistently warm temperatures to see Powdery Mildew fade out for the year. A number of fields have been dealing with low canopy Powdery Mildew waiting for fungicide application at anthesis. Depending how far away anthesis is, if Powdery Mildew has moved to the top of the canopy and at severe levels, an additional fungicide application may be warranted. Any of the products used for anthesis application for FHB should also have activity for Powdery Mildew, be sure to avoid products containing strobilurins that might have been used earlier in the season. Strobilurins should be applied before Feekes 8 growth stage to avoid risk of increased DON levels in wheat with FHB.



**Figure 1.** FHB Risk Model for May 5, 2022 (wheatscab.psu.edu)



**Figure 2.** White fluffy growth on powdery mildew on wheat leaf

<u>Updates on the Soybean Timing Study</u> -Jarrod O. Miller, Extension Agronomist, jarrod@udel.edu, Cory Whaley, Sussex Co. Extension Ag Agent; <u>whaley@udel.edu</u> and Alyssa Koehler, Extension Field Crops Pathologist; akoehler@udel.edu

With support from the Delaware Soybean Board, we are performing a planting timing study for soybeans. Our first planting was done on April 13<sup>th</sup> while the second was done on April 26<sup>th</sup>, with a third to be done the second week of May.

The first planting emerged on April 24<sup>th</sup> - 25<sup>th</sup> (11-12 days) from planting (Figure 1) and as temperatures have stayed cooler, it appears the second planting is on a similar track. The April 13<sup>th</sup> planting saw faster emergence in portions of

the field with less residue, where soil temperatures probably increased faster (Figure 1b and 1c). However, the warmer soil and earlier emergence may have led to freeze damage (Figure 1d) when Georgetown air temperatures dropped to the low 30s at night from April 28<sup>th</sup>-April 30<sup>th</sup>. Unifoliate leaves were damaged before they could fully unfold and have completed died on plants with the earliest emergence. Plants a few inches away that emerged a day or two later show minimal to no damage.

This project is mean to observe these unpredictable weather conditions and their effects on growth and yield, to help soybean growers decide their risk in future years. This type of freeze or frost damage was not observed in 2020 or 2021 but is still part of the early planting risk.



Figure 1. a) First planting on April 13th, b) emergence within residue, c) emergence on the same day with less residue, and d) freeze or frost damage to the unifoliate leaves 16 days after planting.

## General

Farm Input Prices Increasing Faster Than General Inflation Rate - Nate Bruce, Farm Business Management Specialist, nsbruce@udel.edu

Inflation has been on the rise over the last year and shows no signs of stopping anytime soon. Just this Wednesday, the Federal Reserve raised its key short-term interest rate by a half percentage point. This is the largest interest rate hike since 2000 and could be a signal of more to come over the course of the year to curtail inflation. General inflation has had a drastic impact on farm input costs, in addition to many other factors (Covid 19, Ukraine-Russia, supply chain issues, etc.). An interesting study done by the University of Illinois recently looked at the general price index of farm inputs and their relationship to inflation. They found that agricultural inputs rose at a rate of 15.6% or more than double the general inflation rate, with input price changes for fertilizer products and energy being particularly high. Diesel prices increased by 47% in the last 12 months and fertilizer prices ranged from a 51% increase for diammonium phosphate, to a high of 179% for anhydrous ammonia. The study found the only input prices that increased at a rate lower of the general inflation rate were seeds and wages. It is critical to remember that each farm input used in production agriculture has its own sets of supply and demand functions as well. For example, natural gas is a major input required to produce both ammonia and urea fertilizers. Therefore, certain agricultural input prices have increased at rates far guicker

than others (particularly fertilizer products). Below are the percentage changes in farm input prices over the last 12 months from the Illinois study. The PCE deflator or Personal Consumption Expenditure Deflator is simply a measure of inflation based on changes in personal consumption.

Despite relatively high commodity prices, producer sentiment that input prices will continue to rise over the course of next year remains high. A University of Purdue study found 36% of survey respondents said they expect input prices to rise 10% or more from 2022 to 2023, with 21% expecting input prices to rise 20% or greater. It is impossible to know when and if things will become normal within the year or even the next couple of years. To make sure your farming operation is financially sound to withstand inflation, you need to be aware of all risks and pay attention to the amount of loan borrowing. It is also imperative to review budgets, and particularly understand the return value of all input costs on their operation.

The University of Illinois study:

https://farmdocdaily.illinois.edu/2022/04/trend s-in-general-inflation-and-farm-input-prices.html

The University of Purdue study: https://www.purdue.edu/newsroom/releases/2 022/02/producer-sentiment-improves-withstrengthened-commodity-prices,-but-high-costinflation-worries-farmers.html



### Announcements

#### 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

#### 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

#### **DE Extension Twilight Tailgate Session**

Thursday May 26, 2022 6:00 p.m. UD Cooperative Extension Research Demonstration Area ¾ Mile east of Armstrong Corner, on Marl Pit Rd. –

Road 429, Middletown

Join your fellow producers and the UD Extension team for an in-person discussion of this year's current production issues. Other topics will include nutrient management, pest management and weed management. This session will inform producers of timely topics observed and occurring in 2022.

Credits will be applied for prior to the meeting

The meeting is free and everyone interested in attending is welcome.

To request more information, please call our office at (302) 831-2506.

Register online at: <u>https://www.pcsreg.com/de-</u> extension-twilight-tailgate-session-5-26-22

Please Register by May 20, 2022

# Weather Summary

1 Week Accumulated Growing Degree Days



#### 1 Month Accumulated Growing Degree Days









1 Week 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 (<u>emmalea@udel.edu</u>)

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

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.