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

Pumpkins
Scout pumpkins for **aphids** and treat if honeydew is starting to become evident, particularly on the pumpkin. We have a plethora of aphid active materials, including acetamiprid, Sivanto, Fulfill, PQZ, Sefina, Torac, diamides and Beleaf.

Spinach
Scout for **beet webworms**. I have not seen as many this year in lima bean fields, but they are present. They will lay eggs in spinach, beets, chard and pigweed. Controlling pigweed may help reduce a field's attractiveness. **Beet armyworm** is also present and also prefers pigweeds. Both caterpillars will produce webbing as early instars, although webworms will fold leaves over themselves as later instars. It is important to differentiate the two species because beet armyworm are resistant to pyrethroids. Webworm larvae are narrow, translucent green with many dark spots. They will wriggle violently when pulled out of their shelters. Beet armyworm are a dull green and have a small black spot above their second pair of legs behind the head.

Sweet Corn
Periodically over the course of the season we have mentioned a Needs Assessment Survey for sweet corn in support of research prioritization and grant funding. We need your help to identify research needs and demonstrate need and interest in applied research for addressing earworm management. Our most recent mode of action is almost 20 years old, and earworm resistance to pyrethroids has made spray schedules and rotations a bit more of a challenge. Other questions regarding trapping efficacy and relationship to damage during the course of the season have come up among researchers. These are just some of the issues we have observed, but we need your feedback. Please take a few minutes to participate in this anonymous survey: https://ume.qualtrics.com/jfe/form/SV_9vRh1xHnDp4KEaa. Thank you!

Under current lower temperature conditions, it takes earworm eggs 3 days to hatch, meaning that we can relax spray schedules a bit on newly silking corn. Earworm catch in pheromone traps has decreased a bit over the past week. Thursday trap captures are as follows:

Trap Location	BLT - CEW	Pheromone CEW
	3 nights total catch	
Dover	3	144
Harrington	1	64
Milford	1	87
Rising Sun	1	109
Wyoming	2	51
Bridgeville	2	63
Concord	4	67
Georgetown	1	94
Greenwood	1	59
Laurel	6	97
Seaford	4	---
Lewes	---	111
Millsboro	4	14

Specialty Pumpkins and Winter Squash for Expanded Sales

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

Specialty Pumpkins and Winter Squash for Expanded Sales

Pumpkin growers and retailers are always looking for ways to expand fall sales. To that end, breeders have developed more and more specialty pumpkins and winter squash.

We have a demonstration planting at the University of Delaware to show off some of these types and assess consumer demand.

The white group has expanded to include table top, flat, and giant types.

There has been a proliferation of warty and bumpy types.

A cupboard of Hubbards that are also good eating.

Heirlooms, doll, wheel, cheese, and "Harry Potter" types are popular and are good eating.

There are new colors of pumpkins, some with splashes and thick stems.

Fusarium Wilt in Basil – *Jerry Brust, IPM Vegetable Specialist, University of Maryland*, jbrust@umd.edu

Usually when anyone talks about basil problems they talk about basil downy mildew, but there are unfortunately other disease problems with basil that are important and need to be managed. One basil disease that has been found in the field this season is Fusarium wilt, caused by the fungus *Fusarium oxysporum* f. sp. *basilicum*. It was first found in the U.S. in North Carolina thirty years ago and has now spread throughout North America.

Basil plants (sweet basil only) infected with Fusarium wilt usually grow without any symptoms until they are about 8-12 inches tall, at which point they become stunted and begin to wilt. Initial symptoms usually include brown streaks starting on the lower areas of stems and discoloration of the internal stem tissue (Fig. 1). Leaves become yellow and malformed and may curl. Wilted plants can develop a shepherd's crook and plants can suddenly lose their leaves. A pink-orange layer of mold may cover stems when it is very moist. The disease is spread by air or soil and can be seedborne. Once a field has become infested with the fusarium wilt pathogen, infective propagules may persist in the soil for 8-12 years.

The best management practices include planting disease free basil seed. If you can't get tested seed, soak your seed in cold water for 4-hours and then transfer the seed to a heat treatment of 20 minutes in 133-136° F water. The hot water treatment causes a sticky layer to develop on the outer surface of the seed making it very slippery and this treatment will reduce germination. There are now Fusarium resistant sweet basil cultivars available such as Aroma-2, Prospera and Obsession as well as others. If Fusarium wilt is introduced into the field growers should not grow any sweet basil or members of the mint family in that field for at least 2-3 years. Mint plants will not show any symptoms of fusarium wilt but they will act as hosts for the disease. Some of the specialty basils, such as lemon or purple basil, show resistance to the disease. A few biologicals that have demonstrated some reduction in disease incidence are Actinovate as a soil drench at planting and Rootshield as an in-furrow spray.

Figure 1. Sweet basil infected with Fusarium wilt

Fruit Crops

San Jose Scale in Peaches – *David Owens, Extension Entomologist*, owensd@udel.edu

A photo of a young peach tree with **San Jose Scale** infested fruit came in last week. Fruit with scale on it will have red rings on the surface. The reddening is a reaction to scale saliva. Often when scale are present on fruit at harvest, it indicates a large population on the tree that, if not controlled, can result in significant tree health decline. A dormant oil spray is recommended between the last frost and bud break. If a dormant oil application is not performed, first generation crawlers can be targeted in the spring. Spray timing can be determined according to degree days after the

first male is captured in a pheromone trap. Rutgers has had excellent efficacy from Centaur.

Disease Management Recommendations for Fall-Planted Strawberry Plug Plants - *Kathy Demchak, Penn State Extension and Dr. Mengjun Hu, University of Maryland*

The production of strawberry plugs involves multiple stages during which pathogens can infect the plug plants before they are distributed to growers. Despite regular scouting by propagators, and chemical sprays applied to avoid diseases, these infections can sometimes be latent and asymptomatic (i.e., they are present in the plant material, but there are no outward symptoms), making them a challenge to identify and manage.

Furthermore, cultivars currently grown vary in susceptibility to different diseases, with some being very susceptible to certain ones. Often inoculum is already present in growers' fields where strawberries had been grown previously, and if a cultivar with certain susceptibilities is planted there, disease symptoms can rapidly develop, especially if plants are stressed during the planting process.

Here are some steps you can take to minimize disease issues once strawberry plug plants are on your farm.

General – All Diseases
Remove any leaves with symptoms and all runners while the plants are still in their trays, starting with the cleanest-appearing trays. Watch for brown blotches on leaves and brown sunken lesions on petioles in particular. Collect and dispose of this material. If you cannot complete this operation before you plant, do so right afterwards, and remove this foliage from the field. Diseases sporulate on plant tissue even after it is removed, so dropping plant tissue in the row middles does not eliminate the problems – though this is an improvement over doing nothing. Wash hands and tools frequently, or use hand sanitizer, as diseases can be moved from plant to plant on hands, clothing, and tools.

Do not plant any plug plants that are wilted and fail to recover quickly once watered.

More information on specific diseases is given below. *Always refer to product labels for use directions and check your state's regulations to make sure that products may be used as specified in your location.*

Phytophthora Crown Rot (aka Phytophthora crown and root rot)
Symptoms consist of complete plant collapse in the fall and/or spring. Collapsing plants show a reddish-brown discoloration to the crown that is sharply delineated from healthy tissue, though eventually the entire crown may be affected. 'Flavorfest' seems especially susceptible to Phytophthora crown rot, as are some cultivars grown mostly in matted-row production.

Plant collapse and bluish-green leaf color of 'Flavorfest' plants affected by Phytophthora crown rot.

Historically, this disease has been caused by specific "pathotypes" of *Phytophthora cactorum* which differ from the ones causing leather rot, and is a different species from the one causing red stele (aka Phytophthora root rot) to which Flavorfest is thought to be resistant. Phytophthora crown rot affects certain cultivars much more than others. With other diseases caused by Phytophthora, tolerant cultivars, which can be infected but just don't show symptoms, may still release inoculum of this disease into the soil from their roots. Whether that is the case with this disease is unclear. Work is underway to better understand current

instances of disease occurrence in the mid-Atlantic region.

Darkened tissue is usually at the top of the crown, but may appear in other areas or be more limited in scope, depending on the entry point of the fungus and length of time since initial infection.

There have been striking differences in 'Flavorfest' performance in grower fields in that it has been extremely vigorous and high yielding in fields that never had strawberries grown in them before, but plants collapsed and died in fields where intervals between strawberry plantings were short, leading to the question of whether the Phytophthora crown rot organism had been introduced to the fields in earlier plantings. Exactly how long this disease can persist in a field is not known, but at least one other Phytophthora species can persist for six years.

When planting 'Flavorfest', and also 'Sweet Charlie', use fields that have never been used for growing strawberries if possible. At planting, use a plant dip of fosetyl-Al (Aliette WDG) or a phosphite product (ProPhyt, Phostrol, etc.). Make foliar applications through mid-Fall at intervals allowed on the label. The fungus is thought to become inactive later in the fall when temperatures cool. Watch for symptoms next spring and continue to treat. Ridomil (mefenoxam) has been very effective in some trials, but resistance has been reported, leading to reduced efficacy in some situations.

Trials conducted in California have showed that one plant dip of Aliette followed by five foliar applications with Aliette increased marketable strawberry yield approximately 40-60% compared with a water-only spray control in *P. cactorum* infested plants, whereas little difference was observed among those treatments in the non-infested control plants. Comparable results were also observed for the Ridomil soil drench treatment at planting (one application) and during the growing season (two applications). In a nutshell, these materials including phosphites and MetaStar can effectively manage Phytophthora. Compared to fosetyl-Al (Aliette) and phosphites, Ridomil poses a higher risk for resistance development. Whether to use these materials as a precaution depends on cultivar susceptibility, site and disease history, etc. Actigard is also labelled for suppression of phytophthora crown rot, but it is used as a foliar spray and cannot be applied within five days of transplanting. However, little data is available regarding its efficacy.

Anthracnose Crown Rot

With this disease, plants fail to grow as expected, and may eventually die. Upon close examination, you may find that the main crown

has died, but branch crowns have started to grow. No cultivars are completely immune, but some such as 'Chandler' are very susceptible. Affected crowns appear firm and reddish brown when they are sliced open. Crown tissue may be uniformly discolored brown, and symptoms sometimes can be confused with those from other crown rot issues.

Switch and Abound plant dips have been found to help with anthracnose crown rot control. Refer to the label for instructions. Two or three applications of captan or thiram may be made after planting during the fall season at 10- to 14-day intervals. Other products are also labeled for this use including Quadris Top, Protocol, and Topsin M. Note that widespread resistance in this pathogen has been found to Topsin M and other fungicides in the same FRAC groups (i.e., groups 1 and 11).

Neopestalotiopsis Crown and Fruit Rot
There are various strains or species of Neopestalotiopsis that cause different symptoms ranging from slowly progressing foliar symptoms to rapid plant decline and death. Early symptoms appear on leaves and consist of tan to brown roughly V-shaped lesions that are wider at the edge of the leaf. If the more virulent strain is present, large areas of the leaf are invaded in a matter of a few days with pycnidia (tiny black raised dots) appearing in the lesions shortly thereafter. The disease can also invade the crown and kill plants, and causes a fruit rot similar to anthracnose fruit rot.

Many cultivars seem to be susceptible or at least bear watching. At planting and throughout the fall, remove any leaves showing disease symptoms. Sprays of Thiram and Switch (or Miravis Prime, containing fludioxonil as in Switch) 7 to 10 days apart can reduce the disease by about 40% more-or-less based on trials conducted in FL. Other materials showed little efficacy against this disease. Though this disease caused some plantings in warm locations to be lost during the fall of 2020, the disease did not appear to persist into the spring of 2021 in northern locations. Whether that will be the case every year is not known. Interestingly, a recent study suggests a correlation between spider mites and high severity of Neopestalotiopsis. An insecticide or miticide spray may therefore be important to managing this disease, if mites or other insects are of concern.

Top: Neopestalotiopsis on 'Galletta' showing V-shaped lesion which has consumed most of the leaf within a few days. Bottom: Phomopsis leaf blight on 'Albion, which is invading tissue much more slowly.

Two-spotted spider mite (top) and carmine mite and eggs (bottom) on strawberry leaf undersides. Though coloration is different, these two types of spider mites have been determined to be the same species, so control methods (and miticides that may be used) are the same.

Powdery Mildew

This disease lives on the surface of the plant tissue, and causes leaf edges to curl inward. Reddish-purple blotches appear on the leaves, and may coalesce and cause areas of the leaf to die, though the mildew on the leaves is usually apparent only in high tunnels or greenhouses.

‘Flavorfest’, ‘Galletta’, ‘Earliglow’ and any California-bred day-neutral cultivars, especially ‘Seascape’, are very susceptible. Fungicides in categories 3, 7, and 11, or specific “powdery mildew” fungicides such as Quintec and Torino are effective, while others are not. Note that powdery mildew resistance to many of these materials has been reported, but is neither frequent nor widespread yet. Usually fungicides are not needed for this disease alone in the fall on plug plants, so sprays should be avoided in order to avoid the unintended consequences of developing resistant botrytis and anthracnose strains while treating the powdery mildew, as these products may be needed in the spring.

Powdery mildew symptoms of curled leaves and purple blotches are very common on foliage in the fall and tend to disappear by spring. In spring, however, there may be a “powdery” appearance to the fruit that affects marketability. Seeds are often raised.

Angular Leaf Spot

This is a bacterial disease that is usually noticed in the spring because it causes caps to turn brown, but is mentioned here because if the infection is severe enough, the bacteria can invade the plants’ vascular systems causing them

to collapse, and thus could be confused with other causes of plant collapse. The bacteria are splashed around by water and unlike most other diseases, this one thrives under cold temperatures. In years where long periods of overhead irrigation for frost protection are needed, it can become very widespread, resulting in tissue death that could be mistaken for fungal diseases.

Top: The most obvious symptom of angular leaf spot is blackened berry caps. Bottom: The bacteria also cause clearing of leaf tissue, at first delineated by the leaf veins. Injured tissue eventually coalesces, and may die.

Some newer cultivars grown in plasticulture appear to be quite susceptible. Since this disease is caused by a bacterium and not a fungus, copper-based materials are needed instead of standard fungicides (which have no effect) and should be applied in the spring to protect healthy foliage and berry caps from disease spread. Make these applications only if the disease is known to be present, as phytotoxicity can occur with multiple applications and when drying conditions are prolonged. It is unlikely that any spray applications will be needed for this disease in the fall. In addition, Actigard, which induces the plants' systemic activated resistance, provided some control efficacy based on trials conducted in FL. Note that Actigard should be applied at the lowest label rate. Higher rates were found to reduce yields.

Long-Term Steps to Take

With the exception of Phytophthora, the diseases mentioned above do not survive very well without plant tissue to survive in or on – which includes mummified crowns that can persist for at least 3 years. Beyond the control measures mentioned above, if diseases cannot be gotten under control, consider plowing down the worst sections of the field, and do not carry over the planting for a second harvest year. Second-year yields are likely to be low, disease pressure is more likely, and the chances of risking a future planting in the same field or other nearby plantings are increased.

Agronomic Crops

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

Sorghum

Scout late sorghum for **corn earworm** and **sugarcane aphid**. Last week, a field of sorghum we had been looking at that just finished pollinating was over threshold for corn earworm, and our variety trial at Carvel was in various stages of head emergence through soft dough. The best way to scout for earworm is to use a 'beat bucket' – traditionally a 2-5 gallon bucket, although a sweep net can serve in a pinch. Gently bend the head to fit inside the bucket and shake it against the sides of the bucket several times to dislodge worms. Do this for 10 heads in a location, and 5 locations per field. Keep notes on how many larvae are small (1/4 inch or less), mid-sized (1/4 – ½ inch) and large (>1/2 inch). Texas A&M has a useful sorghum threshold calculator that takes into account

control costs, grain value, and heads per acre and calculates a threshold based on the number of medium and large larvae. If your field is over threshold, we have several good options for earworm. In a 2019 spray trial, the greatest worm reductions came from Carbaryl (1.5 qts), Lannate (1.1 pints), Besiege (8 fl oz), Prevathon (now Vantacor), and Baythroid XL (2.8 fl oz). Before treating sorghum for corn earworm or the next pest of interest, remember to read labels carefully; the label is the law.

While scouting for earworm, take a few moments to flip some leaves back to look for white sugarcane aphids. When it is present in a field, it is obvious. Aphids produce copious honeydew which attracts flies, bees, and butterflies. It can cause yield loss as late as soft dough, particularly in drought stressed fields. So far this year in Delaware, its populations have been spotty, slow to build, and our soils have good moisture. There are two thresholds: 40-150 aphids per leaf or 30% of plants with aphids and scattered areas of honeydew slicks present on the upper surface of a leaf just below the aphid colony. In 2019, we found our first sugarcane aphid on August 8. By September 11, the field averaged between 227 and 644 aphids per leaf! If you deem a field needs treating, the only good options are Sivanto, Transform, and Sefina. Sivanto has a 2ee recommendation to use at 4 fl oz, although even lower rates will work very well. Lorsban and dimethoate annoy aphids for about a week before their population increases. Pyrethroids are completely ineffective. If sorghum is going to continue serving in your rotation, reach out to your agronomist – several varieties have some level of resistance or tolerance to aphids, and this far north, that may be all we need for late sorghum.

Hemp

Corn earworm continues to increase in hemp. Remember, our best options are microbial insecticides B.t. and polyhedrosis viruses (ex Gemstar), and these work best on small larvae. Aphids are also showing up on flowers. These can be controlled insecticidal soaps. If you are unsure what is allowable on hemp, please visit https://www.epa.gov/pesticide-registration/pesticide-products-registered-use-hemp. Useful biological control agents in enclosed spaces include lady beetles and lacewings.

Soybean

Corn earworm populations in double crop are spotty, some fields are at or near threshold, but many are clean. Other insects of interest that are active include **stink bugs**, **soybean loopers**, and **bean leaf beetle**. Bean leaf beetle populations typically peak in early September. Soybean looper populations are low, but continue scouting double crop soybean for defoliation through the R6 stage. We were recently called to a field with stink bugs. Stink bugs were concentrated along a woodline that contained walnut, maple, mulberry and wild cherry. A mixture of greens, browns, and brown marmorateds were present. Our threshold is 5 bugs per 15 sweeps until the beans reach R6, and then thresholds can start to increase. Nymphs should be included in that count.

University of Delaware Scientists Participate in a National Effort to Improve Fertilizer Recommendations

- *Amy Shober, Professor and Extension Specialist, Nutrient Management and Environmental Quality,* ashober@udel.edu; *Jarrod Miller, Assistant Professor and Extension Specialist, Agronomy,* jarrod@udel.edu

It has been decades since soil test correlation and calibration research was a priority in the United States, but there is a national effort underway to change this. University of Delaware is participating in a national effort among land-grant and government scientists to develop a Fertilizer Recommendation Support Tool (FRST). The group envisions that the FRST online decision support tool will help farmers and crop consultants make science-based nutrient management decisions. The group's mission is "to provide soil-testing transparency as the basis of fertilizer rate recommendations, removing political and institutional (public and private) bias from soil test interpretation, and fostering the best possible science in nutrient management decisions." Historical data from hundreds of soil test correlation and calibration studies have already been added to the FRST database. Unfortunately, there is also a lot of

soil test correlation and calibration data that was lost or destroyed when scientists moved on. As such, there is a renewed effort to generate new soil fertility and crop response data to "fill in the gaps" in the database.

We have teamed up with researchers at University of Maryland College Park and Virginia Tech to evaluate corn response to potassium fertilizer rates. Why did we choose to evaluate potassium? Well, in 2015 a local CCA reported that soil test K concentrations were declining at a rate of 10 to 18 mg/kg per year under a standard cropping rotation (e.g., corn, full season soybean or corn, winter wheat, double-crop soybean) even when K fertilizers were applied at land-grant recommendations. Soil test K declines of this magnitude provide evidence that our existing K fertilizer rates were too low for today's high yielding corn crops, especially when corn is produced on our sandy, low-CEC Delmarva soils. While we did increase K fertilizer recommendations recently, we did so based on best scientific judgement. These current fertilizer rate trials will provide evidence that provide further information to help us fine tune K recommendations for corn.

In 2021, we established field trials to evaluate five rates of potassium fertilization on the Delmarva Peninsula (Figure 1). There are two sites in each state: Delaware, Maryland, and Virginia. In addition, we selected two sites in the following soil test categories: Low (high probability of crop response), Medium (moderate probability of crop response), and Optimum/High (low probability of crop response). Potassium fertilizer rate treatments were 0, 54, 108, 161, and 214 lb K_2O/ac and were replicated five times at each site. We are collecting soil (both Mehlich 3 and Mehlich 1) and crop response and plant tissue data following a rigorous minimum data set, which was developed by the FRST team to ensure essential information for development of fertilizer recommendations was included. Once completed, data from our regional field trials will be added to the FRST database. Stay tuned for more information once we harvest the trials.

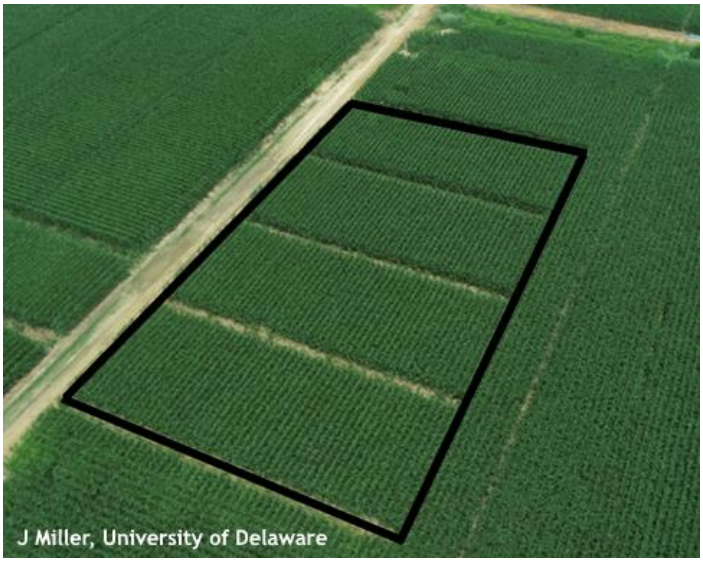


Figure 1. Aerial image of UD potassium rate response trials planted on a field with medium soil test potassium (Mehlich 3 K = 30 FIV or 52 ppm). While we see no visual response to K fertilizers from the air, we will evaluate plant tissue concentrations and yields to determine plant response.

General

Cover Crops, Drone Imagery, and Winter Weather - *Jamie Taraila, Graduate Research Assistant; Jarrod O. Miller, Assistant Professor and Extension Specialist, Agronomy,* jarrod@udel.edu; *Amy L. Shober, Professor and Extension Specialist, Nutrient Management and Environmental Quality,* ashober@udel.edu

As part of a Northeast SARE sponsored project, we evaluated cover crop growth response (biomass) to various seeding rates. We also followed cover crop growth through the winter using drone imagery. We planted NRCS recommended rates of rye (100 lbs/acre), clover (15 lbs/acre), and a rye/clover mix (40 lbs/acre rye, 10 lbs/acre clover) at the UD Carvel Research and Education Center in Georgetown following corn harvest in late September 2020. We also planted the same cover crops at reduced rates of 25, 50, and 75% the NRCS recommendation. By the time we sampled cover crop biomass in April, there was very little difference in biomass from the 25 to 100% (full) rates. In fact, the biomass response curves show that there was little increase in biomass above

the 25% seeding rate (0.25) for each cover crop type, as the curve is relatively flat above this rate (Figure 1).

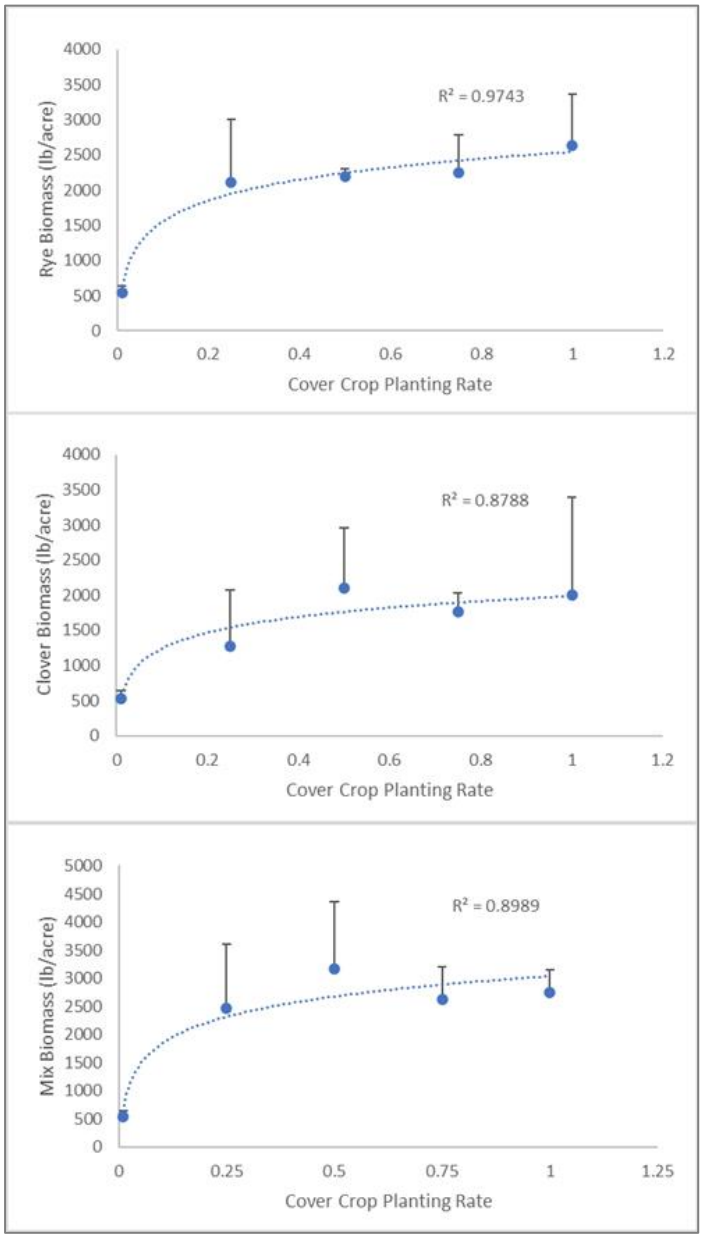


Figure 1. Cover crop biomass response curves for (a) rye, (b) clover, and rye/clover mixture (c) planted at 0, 25, 50, 75, and 100% of (0, 0.25, 0.5, 0.75, and 1) of the NRCS recommended seeding rates for corn in Georgetown, DE following corn harvest in September 2020.

One potential takeaway is that planting cover crops at a significantly reduced seeding rate may not limit biomass accumulation when cover crops are planted early. In other words, lower seeding rates may not limit the potential benefits (e.g., weed suppression or nutrient scavenging with rye or nitrogen additions from clover) of cover crops. However, this study was only from one season in a field where saturated low spots may have caused a lot of variability in the desired planting rates and we may not have reached a maximum potential biomass.

Drone imagery collected 12 times between planting and harvest helps to explain cover crop conditions over the winter. Photos taken by a drone were analyzed for their reflectance of red and near-infrared light with vegetation index known as NDVI, which can range in value from -1 to +1. This index is very good at measuring leaf area (or plant biomass). Theoretically, higher cover crop planting rates should result in greater NDVI if they result in more biomass.

Normal (bare) soil NDVI background levels are about 0.2, which we observed in September to October as well as in the plots with zero rate plots (Figure 2). The NDVI levels in the rye plots (yellow points, Figure 2a) show and effect of seeding rate by December, as points appear to spread out on the graph. After December, winter temperatures or soil saturation decreased NDVI in plots with the highest rye (NRCS recommended) seeding rate; NDVI of all treatments decreased by mid-February. This may not occur in every field every winter, but it does explain why plots planted with 100 lbs/acre of rye ended up with similar plant growth (biomass) as plots planted at a seeding rate of25 lbs/acre (25% of the NRCS recommended rate). In this case it appears that winter weather resulted in the death of individual plants or a significant reduction in tillers. Most cover crop fields do not receive additional N, which may explain why tillers did not survive through the winter.

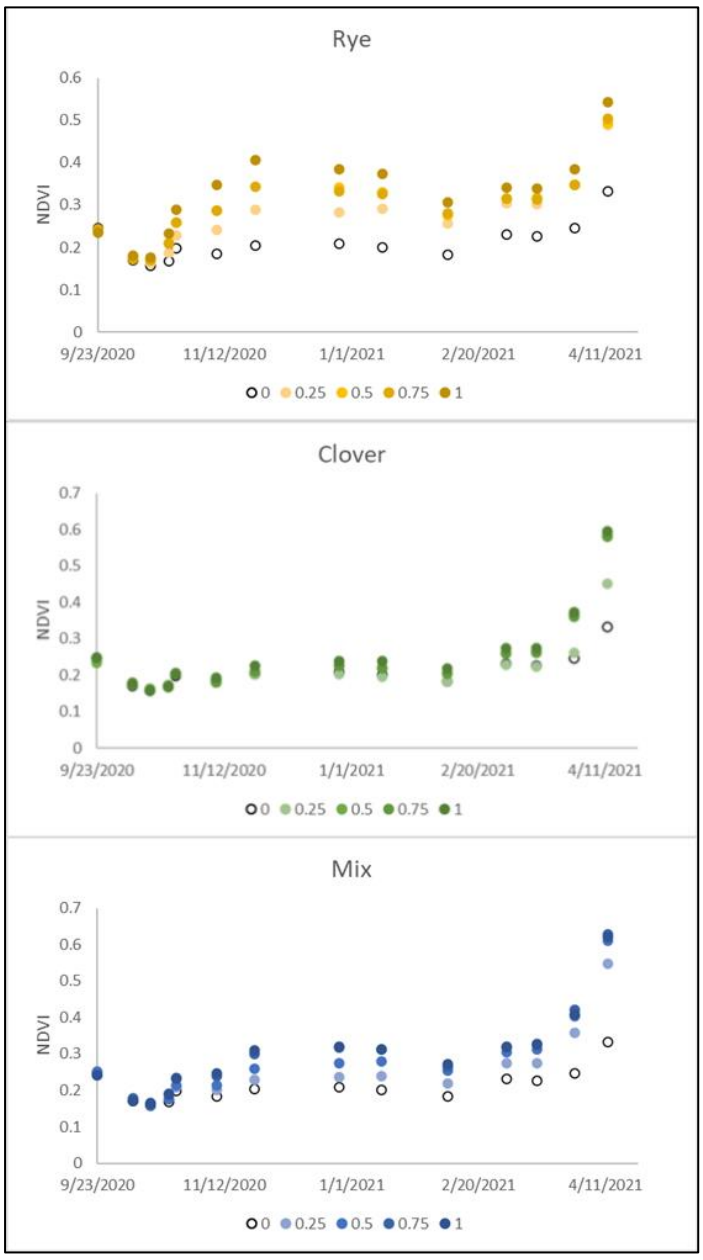


Figure 2. Cover crop growth measured by NDVI over the winter growing season for (a) rye, (b) clover, and (c) a mix of clover and rye. Cover crops were planted at 0, 25, 50, 75, and 100% (0, 0.25, 0.5, 0.75, and 1) of the NRCS recommended seeding rates for corn in Georgetown, DE following corn harvest in September 2020.

Clover growth (green points, Figure 2b) tells a different story. There was very little clover growth from fall through winter, and almost no seeding rate response until late March or early April. The NDVI for the 25% clover seeding rate sits almost evenly between 0 and the other rates (50, 75, and 100%) by the time we reach mid-April. It seems possible that planting clover at a rate of 7 lbs/acre would produce similar biomass to a cover crop planted at a seeding rate of 15 lbs/acre; however, several years or fields need to be evaluated to verify these results.

The inclusion of rye (at a lower rate seeding rate of 40 lbs/ace) in the rye-clover cover crop mixture resulted in separation of NDVI between rates in the fall. In the case of the cover crop mixes, most of the winter kill occurred around February (Figure 2c).

Our study raises interesting questions about whether we can achieve desired biomass production and when cover crops are planted at lower seeding rates. And in the case of rye, would application of a starter N fertilizer be beneficial to control winter kill if high biomass is desired when following corn. While these questions cannot be answered based on this study alone, these are questions that could be answered with additional cover crop research within the Delmarva climate.

Project sponsored by Northeast SARE.

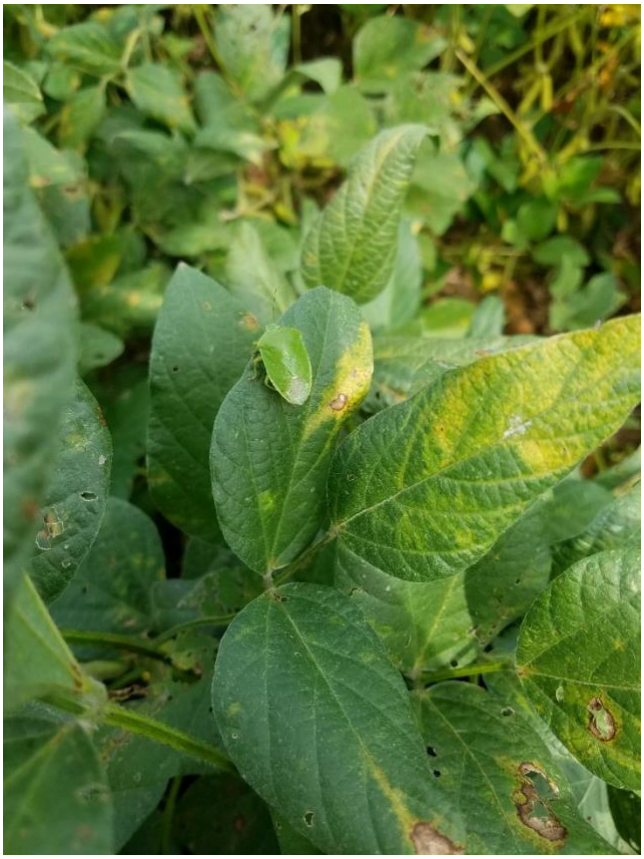
Guess The Pest! Week 21 Answer - *David Owens, Extension Entomologist,* owensd@udel.edu

Congratulations to Erin Eure for correctly identifying the three causes of late season watermelon issues: Insect feeding (most likely cucumber beetle in this case), Phytopthora, and Rain-caused splitting. We received about 5 inches of rain in one week at Carvel, and our field does not have good surface drainage. These two factors together promote both the rain-splitting and the Phytopthora. Second generation cucumber beetles are emerging. Adults like to hide from direct sunlight on hot days, hence the reason why this fruit is scarred on the shaded underside but not on the ground spot. Beetles hiding and feeding on the fruit next to the plastic.

Guess The Pest! Week 22 – *David Owens, Extension Entomologist,* owensd@udel.edu

Get out your field guides and practice your pest management knowledge by clicking on the GUESS THE PEST logo or following this link: http://www.udel.edu/008255 and submitting your best guess. For the 2021 season, we will have an "end of season" raffle for a scouting toolkit for one lucky winner, and five winners will be sent a small jar of locally produced honey. Remember, you can't win if you don't play, and time is running out to participate!

Two soybean issues are present in this picture: an insect and a disease caused by an insect. What are they?



Go to http://www.udel.edu/008255
to Guess the Pest!

Announcements

Pesticide Safety Exam Reviews

Beginning in March the Delaware Department of Agriculture Pesticide Section will provide a Pre-Certification Pesticide Core Exam Review. This review will provide essential information, covering laws, equipment, personal safety and more to help you prepare for the core certification exam.

The core exam is for private pesticide applicators and a prerequisite for all commercial pesticide applicators.

2021 Pesticide Exam Dates
Wednesday, September 29, 2021
Wednesday, November 17, 2021

Schedule for Exam/Review Dates
Core Exam Review: 9 – 11:30am
Lunch Break
Pesticide Testing for ALL: 1 – 4pm

You may choose to test in the afternoon of the review or on another testing date.

Sign up is free!
Log into your account on dda.force.com/pesticide then click on Exam Registrations.

For more information on this training course and testing please contact Amanda Strouse at amanda.strouse@delaware.gov or 302-698-4575.

COVID-19 Vaccination Opportunities in Delaware

COVID-19 vaccination is currently available to Delawareans ages 12+ at numerous sites throughout the state. Some sites require an appointment and others offer walk-in hours. Information about vaccine sites and appointments is online at https://coronavirus.delaware.gov/vaccine/where-can-i-get-my-vaccine/.

Mental Health First Aid Training

What is this training about?
The Mental Health First Aid training is an 8 hour evidence based program that introduces participants to risk factors and warning signs of mental illnesses, builds understanding of their impact, and overviews common ways to help and find support. Using interactive educational methods, you'll learn how to offer initial help in a mental health crisis and how to connect with the appropriate level of care. You will also receive a list of community healthcare providers and national resources, support groups, and online tools for mental health and addictions treatment and support.

What is the training format?
The course will be offered in two parts. The first part is offered online in a self-study format, takes about 2 hours, and needs to be completed before the live session. The second part will be offered live and virtually via a Zoom connection. This session will be held from 9am-3pm. You will receive the link for the self-paced session and Zoom info for the live session after you have registered. You need to register by the dates listed below to be able to attend the schedule live Zoom training date.

Why attend?
In Delaware our agriculture community is facing many stressors. Those who are in the position to consult and aid them need to know the signs, symptoms and strategies to best serve them. Farm family members also need to know how best to help their loved ones. This training is being taught by instructors from the Delaware Mental Health Association.

A certificate of completion is provided to attendees who attend all 8 hours of the training.

There are four dates for the Zoom session. Seating is limited. Please choose only one:

Mental Health First Aid Zoom Sessions with Registration Links

Friday, October 5, 2021 9 a.m.–3 p.m. Register by September 5

https://www.pcsreg.com/mental-health-first-aid-training-oct-2021

This training is underwritten by the Sustainable Coastal Communities Project, Delaware Farm Bureau and University of Delaware Cooperative Extension. These organizations are equal opportunity providers.

Extension302 Podcast

Episode 23: The Good, The Bad & The Buggy

UD Extension's resident Agricultural Entomologist talks about insects, bug jokes and crops in this episode of Extension302!

To listen, go to:
https://www.udel.edu/academics/colleges/canr/cooperative-extension/about/podcast/

Virtual Professional Development Opportunity

Presented by DSU Cooperative Extension & Northeast SARE

With guest, Dr. Nancy Franz
Professor Emeritus, Iowa State University, School of Education

Improving Your Outreach Strategy
September 8, 2021, 10:00-11:30 AM (EDT)

Using situation analysis and needs assessment techniques to better serve your constituents and be more efficient.

Register for either or both here:
https://forms.gle/9MyG6FKdgDnCdvSZ8

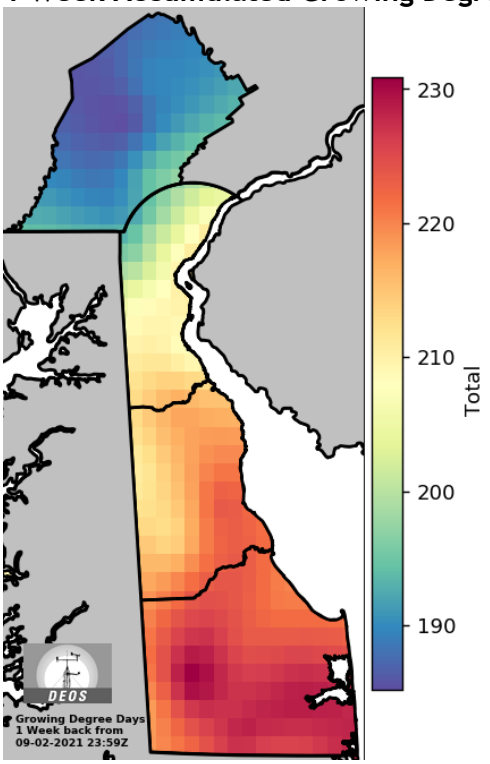
Email jchallandes@desu.edu if you have any questions.

Cooperative Education in Agriculture, Youth Development, and Home Economics. Delaware State University, University of Delaware and the United States Department of Agriculture cooperating, Dr. Dyremple B.

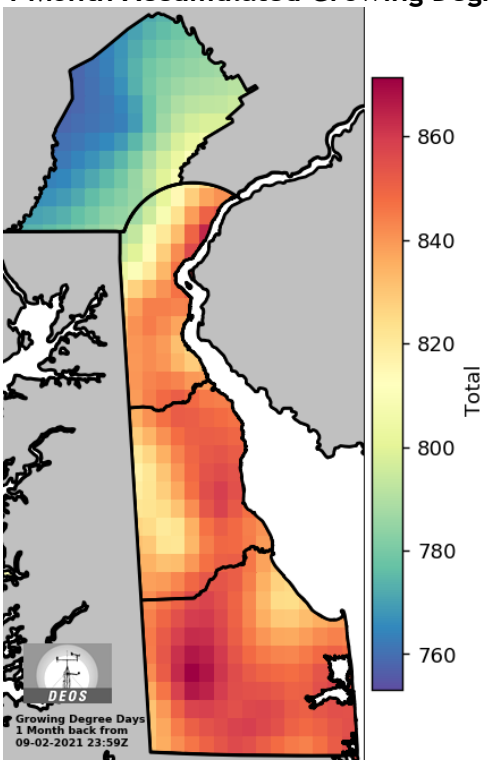
Marsh, Dean and Administrator. It is the policy of the Delaware Cooperative Extension System that no person shall be subjected to discrimination on the grounds of race, color, sex, disability, age, or national origin.

Weather Summary

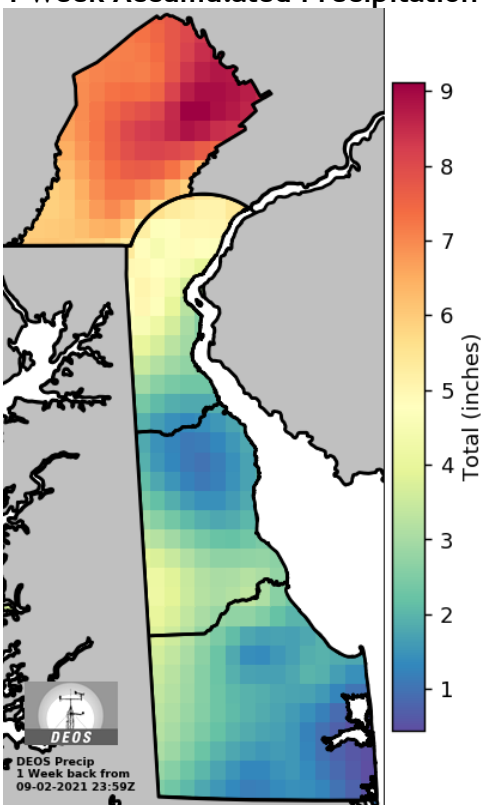
1 Week Accumulated Growing Degree Days



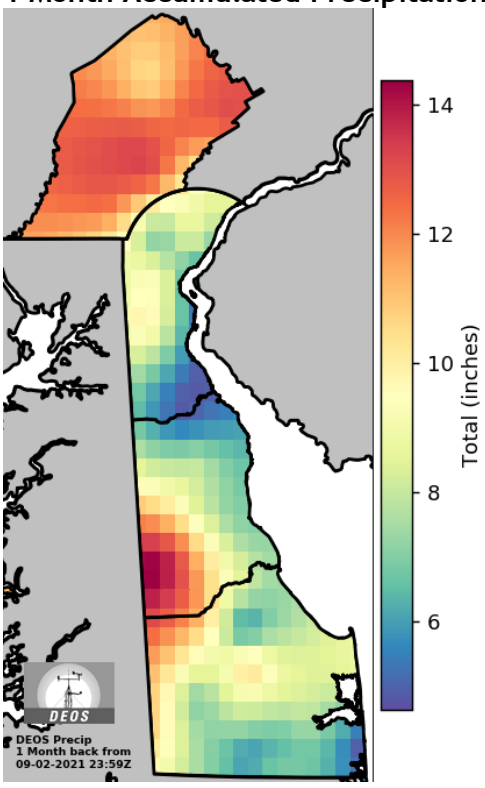
1 Month Accumulated Growing Degree Days



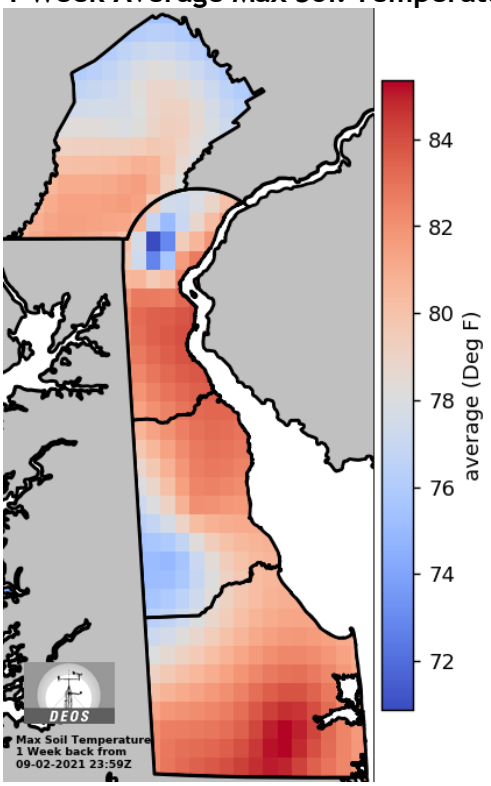
1 Week Accumulated Precipitation



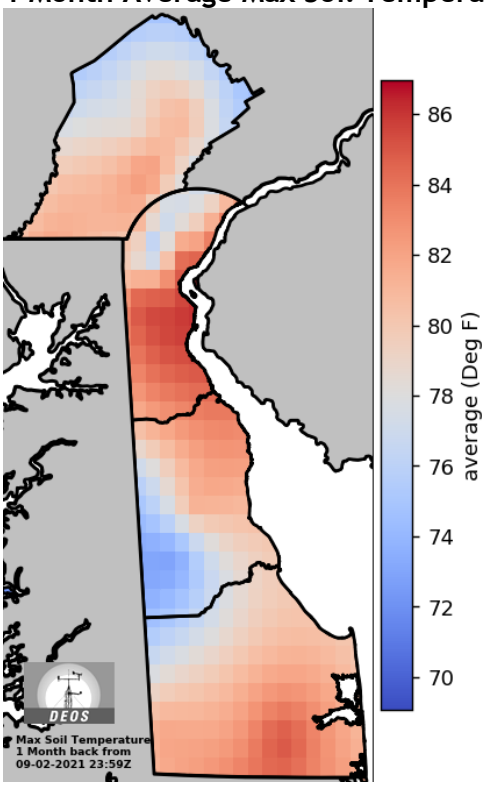
1 Month Accumulated Precipitation



1 Week Average Max Soil Temperature



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