



WEEKLY CROP UPDATE

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Vegetable Crops

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

Cucurbits

Begin scouting for **two spotted spider mites**. We recently posted a spider mite fact sheet that covers mite biology, natural enemies, thresholds in various crops, miticides in various crops, and miticide impacts to beneficials: <https://www.udel.edu/academics/colleges/canr/cooperative-extension/fact-sheets/two-spotted-spider-mite/>. **Cucumber beetles** are still moving through to fields.

Snap Bean

Scout now for **leafhopper**; thresholds are 100 adults and nymphs per 20 sweeps. If a spray is warranted, there are a variety of active ingredients to choose from, including pyrethroid, carbamate, OP, neonic 4A and 4D materials. **Bean leaf beetle** are also active, treat when defoliation reaches 20%. BLB feeding injury can look like someone took a hole punch to the leaves.

Sweet Corn

Several universities in the mid-Atlantic, including University of Delaware, are planning to pursue research funds for improving our understanding of corn earworm biology and economics in sweet corn under current conditions, and we need your help. Your feedback in a survey developed by Dr. Kelly Hamby at UMD is extremely valuable as we

identify objectives and demonstrate research need to potential federal programs. Please take a few minutes to provide feedback! Survey link: https://ume.qualtrics.com/jfe/form/SV_9vRh1xHnDp4KEaa

Corn Earworm Moth Counts

We installed our blacklight and pheromone trap network at the beginning of May. Now that the first sweet corn plantings are tasseling, we will be reporting on most recent trap captures. You can find trap counts from earlier in the week, as well as historical data and spray timing recommendations here: <https://www.udel.edu/academics/colleges/canr/cooperative-extension/sustainable-production/pest-management/insect-trapping/>.

Trap Location	BLT - CEW	Pheromone CEW
	3 nights total catch	
Dover	2	32
Harrington	0	12
Milford	2	42
Rising Sun	0	0
Wyoming	3	26
Bridgeville	0	14
Concord	4	9
Georgetown	0	14
Greenwood	0	24
Laurel	3	7
Seaford	2	---

The biggest adjustment that probably should be made to the spray schedule recommendation is to tighten spray schedule intervals by 1 day when the temperature is above 80 degrees, particularly during the first 10 days. Begin treating when 10-20% of silks are out and if emerging tassels were not already infested.

Moth counts are going to steadily increase to our typical mid- to late-June peak. We are also trapping for European corn borer this year at 5 locations (Laurel, Concord, Greenwood, Milford, and Rising Sun), but have not yet captured an ECB in pheromone traps.

Magnesium Deficiencies in Vegetables - *Gordon Johnson, Extension Vegetable & Fruit Specialist; gcjohn@udel.edu*

Each year we see cases of magnesium deficiency in vegetables. This is a common problem with tomatoes, but all vegetables are susceptible. Magnesium (Mg) is considered a secondary macroelement and is essential for plant growth. It is a component of chlorophyll, the green pigment that captures light energy in photosynthesis. The chlorophyll molecule has a porphyrin ring with a magnesium atom at the center. Therefore, deficiencies of magnesium will result in reduced chlorophyll production and yellowing of plants.

In most vegetable crops, magnesium deficiency commonly first appears as yellow or white areas between the veins of older leaves. As the deficiency progresses, the yellowed areas may turn into dead spots. Older leaves in plants may also have a purple or bronze appearance and leaf tips and margins may brown and die. The plants may be stunted and have an overall yellow appearance. Symptoms are most severe on older leaves because magnesium is a mobile element in plants and will be scavenged from older leaves and transported to new growth.



G Johnson, University of Delaware
Magnesium deficiency in sweet corn.



University of Florida Plant Pathology U-Scout
Magnesium deficiency in tomato.

In Delaware, magnesium deficiencies are most commonly found in sandy, acid soils with a pH below 5.4. Therefore, magnesium deficiencies are commonly not field wide, but will be in areas of a field with depressed pH such as “sand

hills” that have been excessively leached. Often a whole field pH will be in an acceptable range, so it is critical to check the soil pH in affected areas. Tissue tests should be considered to confirm the magnesium deficiency.

Excessive levels of potassium can also induce magnesium deficiency in situations where available magnesium levels are low to moderate to begin with.

Commonly, magnesium is applied to soils with dolomitic limestone (Hi-Mag lime). Sulfate of potash and magnesia (K-Mag, Sul-Po-Mag) is a naturally mined mineral deposit that can also be applied to add magnesium to soils. Other magnesium sources include magnesium sulfate (same as Epsom Salts), magnesium oxide (basic slag), and magnesium chloride.

To correct a deficiency in growing vegetables, soluble magnesium sources should be used. Foliar applications are effective but must be applied in a dilute solution to avoid salt injury. Spray 20 lbs of a soluble magnesium source (20 lbs of magnesium sulfate for example) in 100 gallons of water per acre (10 lbs in 50 gallons or 5 lbs in 25 gallons). Dry broadcasts of 15-25 lbs of actual magnesium per acre, irrigated in, or fertigation with similar amounts from soluble sources will also be effective. Sidedress applications may also be effective at 15-20 lbs of actual magnesium per acre. For drip irrigated vegetables, soluble magnesium fertilizers can be applied through the drip system.

Magnesium deficiencies corrected early enough in the growing season will often result in little yield loss. However, it is critical to target affected fields with corrective liming for future crops in the rotation. Variable rate liming may be considered and is recommended where there is excessive variability in pH in a field.

If pH is below 5.2 and vegetables are still small, dolomitic limestone may be broadcast over the top and cultivated in to correct pH related problems. This should be coupled with a foliar magnesium application to address the magnesium deficiency more quickly.

In vine crops, low pH may also be a causal factor for manganese toxicities, and you may see both

magnesium deficiency and manganese toxicity in the same field.

Foliar magnesium levels for most vegetables at mid growth should be in the 0.3 - 0.6 % range (leaves).

Poor Transplant Growth - Gordon Johnson,
Extension Vegetable & Fruit Specialist;
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I recently had several trays of tomato seedlings that were not growing properly in 128 cell trays. They were reddish yellow in color and stunted. We moved them into 72 cell trays with new media and they greened up within 5 days. The following are some possible causes.

Problems with Transplants in Small Cell Sizes
More and more transplants are being grown in small tray cell sizes. These small size transplant plugs can become extremely root bound and may not put on new roots after transplanting. Another issue is when small cell transplants become waterlogged by overwatering. There will be limited oxygen to roots in this situation and plants may turn yellow and remain stunted. This is very common in peppers and tomatoes.

Poor Growth Due to Problems with Greenhouse Media

Each year there are some problems that arise with vegetable transplants related to issues with the growing medium. This is often seen as poor growth, yellow plants, or stunted plants. Greenhouse media manufacturers have good quality control measures in place, but things can go wrong on occasion - inadequate mixing, critical components missing or in the wrong proportions (i.e. wetting agents, fertilizers, lime), or defective, poor quality components. Media can also be affected by poor storage and handling. Most commonly this occurs when it is stored outside, and bales or bags get wet. In addition, media has a certain shelf life - old media often dries out and is hard to get rewetted.

When growers start filling trays, any media that does not handle well should be viewed as suspect and should not be used. Contact your supplier and have them inspect and run tests on

the suspect media. Avoid using overly dry or caked media, media that is hard to loosen, media with a bad smell, water-soaked media or media that is hard to wet.

Most media (but not all) will come with a starter lime and fertilizer charge. The fertilizer is designed to give about 2-3 week of nutrients. If the fertilizer is missing or improperly mixed or in the wrong proportion, seeds will germinate but seedlings will not grow much and will remain stunted. In this case, liquid fertilizer applications will need to be started soon after plant emergence.

Peat based media are acidic in nature and we generally can grow at lower pHs than soil. Plants will perform well from 5.4 to 6.4. Lime is added to peat-based media and reacts over time after first wetting so pH will rise over time. Above 6.4 we often see iron deficiencies in transplants. This also occurs if irrigation water is alkaline (has high carbonates) causing pH to rise too high over time.

In high pH situations, to get transplant growth back to normal, use an acidifying fertilizer (high ammonium content) for liquid feeds. Use of iron products, such as chelated iron, as a foliar application on transplants can help them to green up prior to the pH drop with the acid fertilizer. In severe cases with very high media pH, use of iron sulfate solutions may be needed to more rapidly drop the pH. Acid additions to greenhouse irrigation water may also be considered for where water is alkaline.

If lime is missing or inadequate, and pH is below 5.2, plants may have calcium and magnesium deficiencies or may have iron or manganese toxicities. This also occurs in media that has been saturated for long periods of time. To correct this situation, apply a liquid lime solution to the media and water it in well. Calcium deficiencies will lead to damage to growing points and stunted and distorted plants.

Media that does not wet properly may not have enough wetting agent or the wetting agent may have deteriorated. They will be difficult to water and will not hold water well thus stressing plants. Application of additional greenhouse grade wetting agent may be needed.

If the initial media fertilizer charge is too high, or if too high of concentration of liquid fertilizer feed is used, or if incorporated slow-release fertilizer “dumps” nutrients, high salt concentrations can build up and stunt or damage plants. Leaf edge burn, “plant burn”, or plant desiccation will be the symptoms. Test the media for electrical conductivity (EC) to see if salt levels are high. The acceptable EC will depend on the type of test used (saturated paste, pour through, 1:1, 1:2) so the interpretation from the lab will be important. If salts are high, then leaching the media with water will be required.

Seeing Some ‘Unhappy’ Cucurbit Plants-
Jerry Brust, IPM Vegetable Specialist, University of Maryland; jbrust@umd.edu

Starting to see some watermelon, cucumber and other cucurbit crops that are looking a bit pale green or even yellow (Fig. 1). Sometimes the plants have brown speckles or spots on them that may look like a foliar disease has started (Fig. 2), but it has not. Most of the time if you look at the underside of the leaf with spots you do not see the same browning of the tissue or it is much reduced (Fig. 3). Also, as in the field of watermelon that these photos came from, much of the field looked like the plant in Figure 1. When the damage appears on one side of the leaf or is in much of the field it is usually an abiotic problem-- one that is not caused by an insect, fungus bacteria, or other living pest, but is caused by a non-living factor such as weather. This is what seems to be popping up in some vegetable fields now, but especially in cucurbits in the last few days. The unusually cloudy, cool weather we had most of last week and this past holiday weekend along with some heavy rains have stressed the cucurbit crop and slowed its overall growth (foliar and root). Plants should recover and grow out of it with warmer weather.



Figure 1. Watermelon plant that is yellow with some dark spotting



Figure 2. Watermelon leaf that is yellow with dark marks caused by abiotic factors



G Brust, University of Maryland

Figure 3. Underside of a watermelon leaf that had dark spots on top but not underneath

Pythium in Vegetable Production - Alyssa Koehler, Extension Field Crops Pathologist; akoehler@udel.edu

A few weeks ago, we discussed [Pythium in field corn](#), but it can also cause problems in sweet corn, snap beans, and a number of other crops. Wet spring conditions and low or poorly drained areas of the field can all favor root rot and other diseases caused by the oomycete pathogen, *Pythium*.

Sweet Corn

While seed rot can be caused by a number of organisms, we most frequently observe *Pythium* as the causal organism. Whenever there are cool, wet soils or other factors that delay germination, the seedling has a greater chance of being exposed to *Pythium* in the soil. Seedlings may fail to make it out of the ground, or may germinate and display symptoms of yellowing, wilt and leaf drop, stunting, or death (damping-off) (Figure 1). When dug out of the soil, infected plants typically have brown, rotted roots and mesocotyl. *Pythium* is usually worse in early season plantings, but could appear at any planting date due to the range of *Pythium* species found in our soils. Chemical and biological seed treatments are available to help reduce damping-off.



Figure 1. Corn seedlings with post-emergent damping-off caused by *Pythium* spp.

Snap Beans

In snap beans, *Pythium* can be a problem at different stages throughout the season. Root rot can occur early in the season or into the summer, while cottony leak of pods occurs on mature plants near harvest or postharvest when beans are in transit to processing facilities. Cottony leak (*Pythium* Blight) is typically worse when there is rainy weather with cool temperatures. Look for thick, white, cottony growth on leaves, stems, or fruit (Figure 2). To reduce chance of disease, avoid close planting and maintain proper air circulation. It is also recommended to avoid harvesting and packing during wet weather. ProPhyTe, K-PHITE, Phostrol, Rampart, and Ridomil Gold Copper are also options to help reduce the damage from *Pythium* blight.



Figure 2. Snap bean cottony leak

With Rainfall So Come Phytophthora and Pythium - Andy Wyenandt, Specialist in Vegetable Pathology, Rutgers University; wyenandt@aesop.rutgers.edu

This article originally appeared in the Rutgers University Plant and Pest Advisory.

Most of the region has finally gotten rain and pop-up thunderstorms making conditions ideal for pathogens such as *Phytophthora* and *Pythium* on spring-seeded and transplanted crops. Unfortunately, *Pythium* and *Phytophthora* blight can be found on many farms. Poor crop rotations with susceptible hosts only make matters worse. The *Phytophthora* pathogen has an increasing host range that now includes snap and lima beans; and all crops, other than a few resistant bell pepper cultivars, lack any resistance to the pathogen.

Control of *Phytophthora* blight and *Pythium* are extremely difficult (even with the use of fungicides) in the wet weather conditions. In the past few years a number of new fungicides, with new active ingredients, have become commercially-available for use on multiple crops. Mefenoxam or metalaxyl, both once widely-used to effectively control *Phytophthora* blight has been hit by resistance issues around much of Southern New Jersey the past decade. Growers with a known history of mefenoxam-insensitivity on their farm should use Presidio, Previcur Flex, or Ranman plus a Phosphite fungicide in rotation in their drip application programs. Importantly, if mefenoxam has not been used in particular fields on any crop for a number of years (more than 5+) the fungus may revert back to being mefenoxam-sensitive and control with these products may return. Mefenoxam, metalaxyl, Previcur Flex, and the phoshites are the most systemic of the group and should readily be taken up the by plant via application through the drip. Presidio has locally systemic and has translaminar activity and should offer some protection of the root system via drip. Ranman has protectant activity and thus will offer some root protection where it comes into contact with. Orondis Gold (oxathiapiprolin + mefenoxam, 49 +4) is the newest fungicide available with a new active ingredient in a new FRAC group. Additionally, in past research trials, mefenoxam, Orondis Gold,

Presidio, Previcur Flex, Ranman, Revus and the phosphites in rotation and/or tank mixes have offered very good control of the fruit rot phase of phytophthora blight.

Recommendations

mefenoxam-1.0 pt Ridomil Gold 4SL/A or 1.0 qt Ultra Flourish 2E/A or metalaxyl (MetaStar)-4.0-8.0 pt 2E/A at transplanting via drip and 30 days later.

Orondis Gold (oxathiapiprolin + mefenoxam, 49 +4) at 4.8 to 9.6 fl oz/A 1.675 at transplanting and 30 days after. If applied as drip application it can not be applied as a foliar.

Presidio (fluopicolide, 43) at 3.0-4.0 fl. oz 4SC/A at transplanting via drip and in rotation.

Ranman (cyazofamid, 21) at 2.75 fl oz 400SC at transplanting via drip and in rotation. (Ranman can be added to transplant water, see label for specific crop uses)

Previcur Flex (propamocarb HCL, 28) at 1.2 pt/A 6F at transplanting via drip or directed spray at base of plant. (Previcur Flex can be added to transplant water, see label for specific crop uses). Use in rotation.

Phosphite materials (FRAC code 33) such as Rampart, ProPhyt, or K-Khite may also be tank mixed with one of the above to help suppress Phytophthora blight.

If mefenoxam-insensitivity is present, only use Presidio, Previcur Flex, Ranman, Revus, and/or phosphite fungicides.

For more information on these fungicides and specific crop use please see the [2020/2021 Mid-Atlantic Commercial Vegetable Production Recommendations Guide](#).

Recommendations for Organic Growers

Applications of Double Nickel (*Bacillus amyloliquefaciens*) or Regalia (Extract of *Reynoutria sachalinensis*) as drenches or via the drip system prior to the onset of disease may help suppress phytophthora and pythium development. Other biopesticides, such as those containing *Trichoderma* spp. or *Streptomyces* spp. can also be used to help suppress these pathogens.

If Losses Become High?

If phytophthora or pythium losses become high because of the heavy rains, pre-emptive cultural practices need be taken immediately. Roguing out, discing under, or hitting areas with gramoxone to burn infected plants down will help slow down and reduce the spread of potential inoculum to healthier areas of the block or farm. If beds are chronically wet, plastic can be cut or completely removed to help soils dry out.

Dual Use on Lima Beans for Delaware - *Mark VanGessel, Extension Weed Specialist;*
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Many folks are using about 1 pt of Dual Magnum (or equivalent product) at planting, which is a lower rate than we use in soybeans and corn. Higher rates are labeled with lima beans for our sandy soils (up to 1.3 pts) and while there maybe some leaf crinkling upon emergence it does not impact yield or delay maturity.

Kurt Vollmer has done a lot of work with Dual on lima beans over the past few years through funding by Delaware Department of Agriculture's Specialty Crops Grant as a way of expanding the residual control from Dual Magnum. He researched the concept of "overlapping residuals" with additional Dual Magnum applied after the lima beans have emerged. He looked at all of the commercially grown baby lima varieties and found good crop safety with all of them. Syngenta asked for (and received) a state label for Delaware (24c) (its pending in Maryland) for a postemergence application. This will not control any weeds that have emerged, but will extend residual control of susceptible species such as grasses and pigweeds. The total amount of Dual Magnum cannot exceed 2 pt/A for the season (at planting plus after lima bean emergence).

Besides the rate limitation, other restrictions or comments include

- applications only after the first trifoliolate stage of the lima bean
- applications can be made after cultivation, but at least 50 days before harvest

- we have not looked at tankmixes with Dual Magnum to determine if there is an increase in injury
- occasionally leaf crinkling may appear on the small leaves present at application, but later emerging leaves are not affected
- rainfall or irrigation is needed to move the Dual Magnum into the root zone
- labeling is for Dual Magnum formulation of s-metolachlor/metolachlor only

Fruit Crops

Bacterial Diseases in Tree Fruits -Gordon Johnson, *Extension Vegetable & Fruit Specialist*; gcjohn@udel.edu

This is the time of spring when we see the results from fire blight infections in pome fruits. In addition, warm weather with higher humidity and more frequent showers creates conditions that are very favorable for bacterial spot in stone fruits.

Fire Blight in Pome Fruits

May is when fire blight peaks in apples, pears, Asian pears, and ornamentals such as crabapples and flowering pears from earlier flower infections. After bloom, shoot blights are common in new growth. We are seeing both currently.

The fire blight pathogen, *Erwinia amylovora*, overwinters on branch cankers from the previous year's infections. In spring, as temperatures warm, bacteria multiply at the edge of these cankers and create a yellow exudate that oozes on the bark surface several weeks ahead of bloom. Prior to bloom, insects that are attracted to the ooze, such as flies, spread the bacteria throughout the orchard. During bloom, pollinating insects (bees) spread the bacteria to the blooms. Blooms are susceptible to infection up to petal fall. Infections occur when temperature and moisture conditions are favorable, that is greater than 60° F with free water (rain or dew). Infection symptoms will appear 1-4 weeks after bloom. In addition, shoot

blights can occur when inoculum is high in the orchard. Shoot tip infections occur most commonly on watersprouts and young shoots with about 10 leaves.

Symptoms of the blossom blight phase of fire blight will be the wilting and death of flower clusters which then can spread to the branch and kill portions of the branch. Areas turn dark in color (brown or black). Shoot infections appear as a wilt with a characteristic "shepherd's crook" symptom. Shoot infections can also spread to nearby branches and even the main trunk. Fire blight infected areas are often called "strikes". There are apple rootstocks that are highly susceptible to fire blight (M.26, M.9, Mark). If they become infected, the canker will infect the trunk of the rootstock below the graft union and the tree will decline over 1-2 year period. What makes this disease particularly devastating is that one flower or shoot infection has the potential to kill the whole tree (particularly in young orchards).

In fire blight susceptible orchards, prebloom sprays of copper fungicides can help reduce the bacteria on plant surfaces. Use bloom sprays of the antibiotic Streptomycin on a 3-7 day schedule when conditions are favorable (above 60° F, and >60% humidity). Post bloom Streptomycin sprays may also be needed with susceptible trees to control shoot blights.

According to Penn State, post-bloom, to prevent shoot blight, prohexadione calcium (ProCa; Apogee/Kudos) applications should be used. Depending on the size of the tree (and rootstock), 2 - 12 oz/A is recommended. It takes 10-14 days for ProCa to harden off shoots, which makes the fire blight bacteria, *Erwinia amylovora*, less likely to invade shoots and causing shoot blight. Repeated applications may be necessary. Regular Cueva (type of copper) applications (2 qt/A) has shown to limit shoot blight when low to moderate disease conditions occur.



G Johnson, University of Delaware

Fire blight shoot strike.

There are fire blight resistant apple and pear varieties and rootstocks. In our Delmarva production area, growers should consider using resistant varieties if they meet market and quality standards rather than trying to control the disease with sprays. Fire blight resistant apple rootstocks are also advised for our area.

Once fire blight “strikes” occur on branches, there is no curative action that can be taken. These strikes must be pruned out below the strike (8 inches below the visible discolored branch area) and destroyed. Do not leave the blighted prunings in the orchard. Also disinfect pruning shears and loppers between cuts using alcohol or bleach solutions to avoid inadvertent spread. If main trunks are infected, they should be cut 8 inches below the visible infection.

Bacterial Spot of Stone Fruits

Current weather conditions are favorable for the development of bacterial spot in susceptible stone fruits including peaches, nectarines, apricots, plums, pluots, apriums, and plumcots. Bacterial spot is caused by the organism *Xanthomonas pruni*. It is found on leaves, twigs, and fruits. This time of year, we see the results

of spring twig infections with shoot tips that are dead. Leaf symptoms after infection are most readily seen as a “shot hole” appearance, where the small, infected areas dry up and fall out, or as tattered leaf edges. Fruit infections are dark colored small spots on fruit skin in that then lead to fruit cracking later as spots coalesce.



G Johnson, University of Delaware

Bacterial spot on nectarine leaf. Note shot hole appearance

The bacteria overwinter in twigs that were infected in the previous fall from diseased leaves. In the spring, during warm, wet conditions, the bacteria ooze out and can be splashed onto leaves and fruit. Fruit and leaf infections start around shuck split and then can continue throughout the season in susceptible varieties. Infections only occur during wet conditions.

In bacterial spot susceptible varieties, sprays of copper fungicides are applied in early spring prior to bloom to reduce surface bacteria numbers. To control the disease during the season, sprays should be applied from petal fall

until 2 weeks before harvest. In wet conditions, applications should be close together (5-7 days), in dry conditions, applications can be spread further apart. Use antibiotic products (Mycoshield, Fireline) or use fixed coppers with low phytotoxicity potential. Copper can cause leaf damage so care should be taken with their use.

The best management strategy for bacterial spot is to use resistant varieties. Many eastern bred varieties have good bacterial spot resistance. Western bred varieties, developed in lower humidity areas, are often very bacterial spot susceptible and will be difficult and expensive to produce on Delmarva.

Agronomic Crops

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

Alfalfa

Potato leafhopper are active in alfalfa fields. Pay special attention to short fields after a more mature crop has been cut. The cutting process kills many leafhopper nymphs and adults, those adults that survive disperse away. If there are multiple plantings near each other, it could lead to an increase in the later fields. Similar to alfalfa weevil, there is a dynamic potato leafhopper threshold depending on cost of control, forage value, and plant height. Recommendations can be found at the bottom of the field crops extension page: <https://www.udel.edu/academics/colleges/canr/cooperative-extension/sustainable-production/pest-management/commercial-field-crop-pest-management/>.

Corn

Continue scouting corn for stand loss due to **cutworms**. The threshold for cutworm is 2-5% cut plants up to the V5 stage and with active larvae present.

Soybean

Scout soybeans for **defoliation** and with recent rains and cooler weather, **slug** injury on seedlings. Defoliation thresholds are close to 40%. A few **cutworm** have also been found in

fields, so make sure that stand is not being harmed.

Soil Moisture and GDD Through June 1st -

Jarrold O. Miller, Extension Agronomist, jarrod@udel.edu; Cory Whaley, Sussex Co. Extension Ag Agent, whaley@udel.edu; Jake Jones, Extension Agriculture Agent, Kent County, jjones@udel.edu; Dan Severson, Agriculture Agent, New Castle County, severson@udel.edu

The rainfall this weekend made a big difference across Delmarva, with volumetric soil moisture going increasing rapidly from about 0.10 to 0.30 (Figure 1). New Castle county already had adequate moisture, but Kent and Sussex counties were right on the precipice of a serious drought for all the corn that was already planted. While warmer temperatures and dry conditions helped initial growth, dry soils (without irrigation) have probable reduced growth and stressed plants. Based on accumulated GDD (Table 1), any corn planted in Mid-April should be at V6 and ready to be sidedressed, with other fields right behind. All corn planted mid-May should also be full emerged and into the V1/V2 stages.

Planting Date	New Castle	Kent	Sussex
15-Apr	482	513	527
22-Apr	463	486	503
29-Apr	421	437	456
6-May	309	313	328
13-May	283	283	290

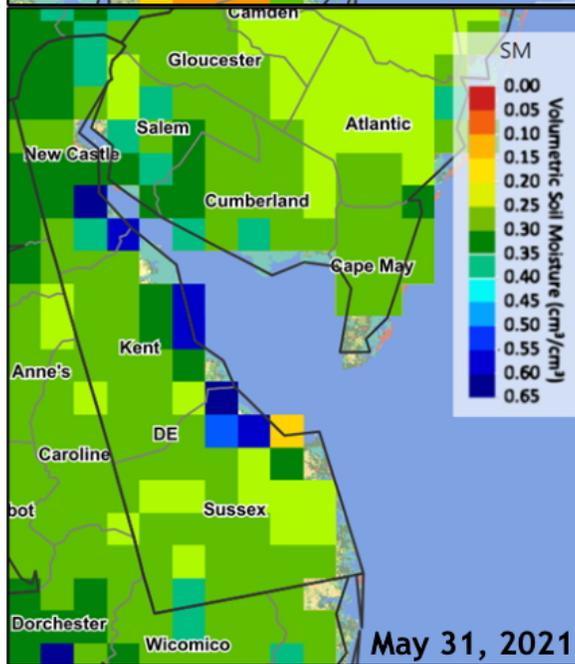
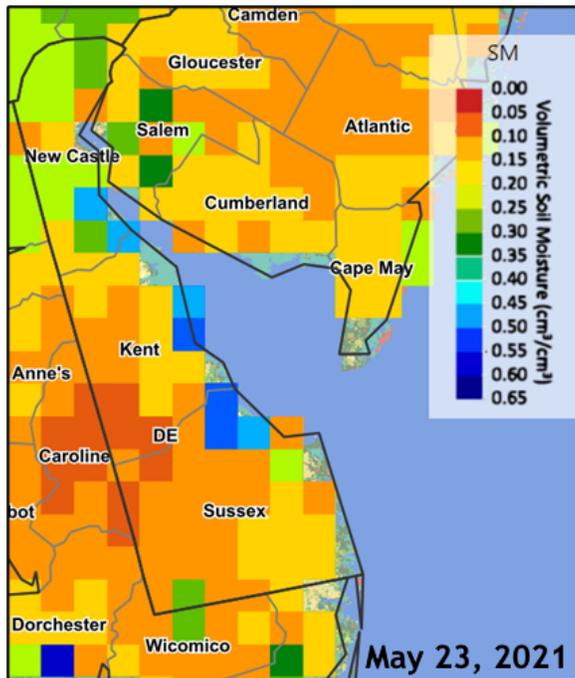


Figure 1. Soil moisture improves significantly after last week's rainfall (top May 23rd, bottom May 30th)

In Georgetown, the rainfall helped soil moisture (Figure 2b), but cooler temperatures significantly dropped soil temperatures (Figure 2a). In 2020, soil temperatures also had a small cooling effect at the end of May, but 2021 was much more drastic as we set records for low temperatures across the region. Soils are well insulated at this point, so a temperature drop of

10 degrees is significant. While the rainfall was welcome, it has simply brought us just below where we were in 2020. At this point last year we started a very dry stretch. Hopefully rainfall this week will keep it from happening again and bring us back to decent conditions.

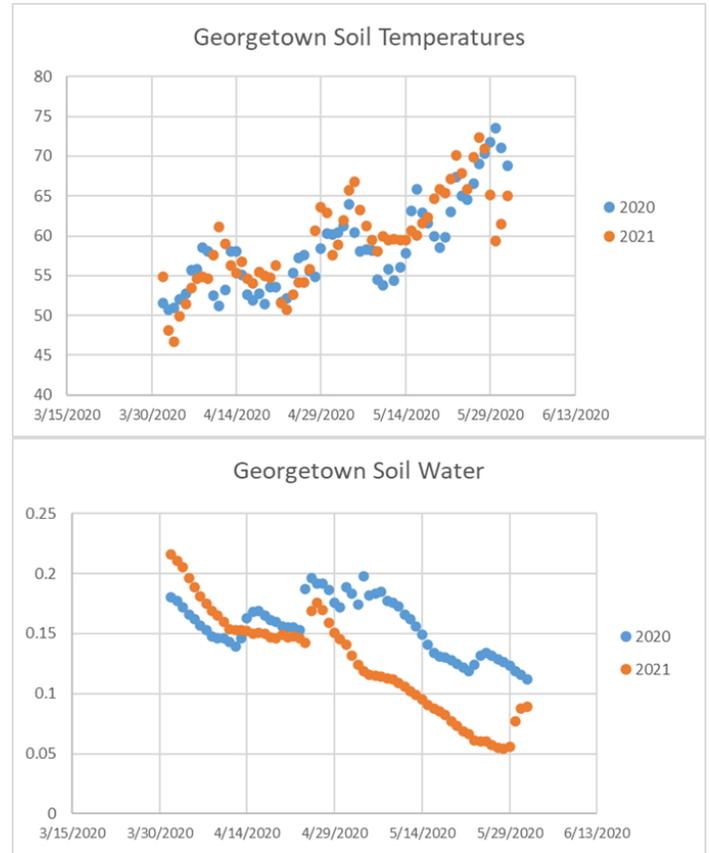


Figure 2. Soil temperatures (a) and soil moisture (b) in Georgetown since April 1st.

Scouting for Soybean Cyst Nematode -
 Alyssa Koehler, *Extension Field Crops Pathologist*; akoehler@udel.edu

Soybean Cyst Nematode consistently ranks as the most yield limiting pathogen of soybeans across the US, with average annual yield losses estimated over \$1 billion dollars. SCN and other nematodes are often silent yield robbers, being present in the field without noticeable aboveground symptoms. If symptoms from SCN do occur, they can look similar to other production challenges like nutrient deficiency, soil compaction, drought stress, or other diseases. SCN can inhibit Rhizobium nodule

formation, causing chlorosis or yellowing of soybeans in affected areas of the field. Due to the lack of consistent or obvious aboveground symptoms, it is very common for SCN to go unknown until severe infestation develops (Figure 1).



Figure 1. Soybeans with healthy looking foliage, but high levels of SCN in the soil

Scouting soybean roots for SCN females in season and conducting fall soil samples are two ways to check your field for SCN. Yellow to white females can be found on roots from about six weeks after planting through the end of the season. While females on the roots confirm the presence of SCN, they do not provide information on the level of infestation. Soil samples are the best method to assess overall populations across the field. Soil sampling can be conducted at any time, but fall samples provide

a good snapshot of end of season populations and can be collected when already out for routine fertility sampling. We will discuss the steps to collect soil samples for SCN in an August article. Today I will introduce the steps to scout for SCN females on roots:

When to Sample

Scouting for SCN females on roots can occur 6 weeks after planting up until 3-4 weeks before harvest. Digging plants earlier in the season is generally more effective because new roots surrounding the base of the plant are easier to dig and not as far down into the soil profile.

Where to Sample

When scouting a field that has never been checked for SCN, you can target any areas with yellowing or stunting, but it is also a good idea to include healthy looking plants since SCN can be present without any aboveground symptoms. Areas of the field that tend to be higher risk for SCN include: near a field entrance, areas that have been flooded, areas with pH greater than 7, areas where yield has historically been lower, areas where weed control is not as good.

How to Sample

Using a shovel, dig 6 to 8 inches from the base of the plant to try to remove as much of the root system as possible. (Avoid tugging or pulling on the plant since you will leave much of the root system behind in the soil.) Gently shake off the soil and check the root system for white to light-yellow lemon-shaped adult SCN females (Figure 2). SCN females are much smaller than the nitrogen-fixing nodules (Figure 3). A hand lens or magnifying glass can make looking for SCN females easier, especially when scouting in sandy soils where sand particles can resemble SCN females. Gently swirling roots in a bucket of water can help to remove soil particles without dislodging the females.



A Koehler, University of Delaware

Figure 2: Soybean root system with SCN females indicated at arrows



A Koehler, University of Delaware

Figure 3: Soybean root system with nodulation (left arrow) and SCN females (right arrow)

What to Do Next

If you find SCN females or suspect nematodes are present in the field, a soil test is the next

step to estimate population density in the field. For many years, nematode populations were managed through a single source of resistance, PI88788. Over the past few decades, we have seen a break down in this resistance and nematodes are reproducing at far higher rates than they should. If high levels of SCN are present, rotation of crop and variety are the best steps to reduce populations. Corn and wheat are both non-host options. While the PI88788 resistance gene still accounts for over 95% of soybean acreage, there are new resistance genes coming out on the market. Seed treatments are another control option. We are currently screening multiple seed treatment products for efficacy in our region and we will post those results as they become available later this year.

Palmer Amaranth Control in Corn - Mark VanGessel, *Extension Weed Specialist*; mjv@udel.edu

Fields with a history of Palmer amaranth (or in close proximity to fields with Palmer amaranth issues) should be scouted for postemergence applications. Postemergence control with the Group 27 herbicides, which include Callisto/Halex GT (mesotrione), Impact/Armezon, Laudis (or Capreno), in combination with atrazine are all very good. All of these products without atrazine are much less effective and often only stunt Palmer amaranth plants and do not kill them. Liberty (or other glufosinate products) is good provided there is good coverage (at least 15 gal/A and medium droplet size) and good sunlight. Dicamba as Diflexx/Diflexx Duo or Status will provide good control. Diflexx and Status both contain safeners for improved corn safety, but will not control large Palmer amaranth plants. So it's important to scout the fields and treat early.

General

Guess The Pest! Week 9 Answer: Black Cutworm - David Owens, Extension Entomologist, owensd@udel.edu

Congratulations to Buzz Lowe for correctly identifying last week's pest as black cutworm. This was a photo I took in 2019 of a soybean field in Kent County that had severe stand loss due to cutworms. The only good thing this one did was it also ate a pigweed. Buzz will be entered for an end of the year drawing for a scouting toolkit and a jar of honey.



Guess The Pest! Week 10 - 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!

In some fruit, russetting is desirable, like pears. In others like tomato, it is not and can be caused by near microscopic russet mites. In apple though, russetting can be caused by something else that the orchardist has done. What sort of spray could do this?



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, June 23, 2021

Wednesday, August 11, 2021

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.

Extension302 Podcast

Episode 19: All About That Pasture

Featuring Dr. Dr. Amanda Grev, UMD Extension Specialist, Forages and Pasture Management

Find out what plants you should use, how to identify and manage a healthy pasture, and learn the industry jargon you need to know!

To listen, go to:

<https://www.udel.edu/academics/colleges/canr/cooperative-extension/about/podcast/>

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, July 30, 2021 9 a.m.–3 p.m.

Register by June 30

<https://www.pcsreg.com/mental-health-first-aid-training-july-2021>

Friday, September 24, 2021 9 a.m.–3 p.m. Register

by August 24

<https://www.pcsreg.com/mental-health-first-aid-training-sept-2021>

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.

University of Delaware's Spring Twilight Crop Update

Thursday, June 10, 2021 6:00-8:15 p.m.

Online via Zoom

Join your fellow producers and the UD Agriculture Extension team with a timely virtual update of this year's current production practices and topics as well as timely issues. Delaware nutrient management and pesticide credits will be available.

Please pre-register and a Zoom link will be sent to you the day before the meeting.

<https://www.pcsreg.com/university-of-delaware-2021-spring-twilight-crop-update-session>

AGENDA

Welcome and Introductions 6:00-6:05

Dan Severson, University of Delaware Cooperative Extension

Weed and Cover Crop Update 6:05-6:25

Mark VanGessel, University of Delaware Cooperative Extension Weed Specialist

2021 Insect Pest Outlook 6:25-6:45

David Owens, University of Delaware Extension Entomologist

Nutrient Management Update 6:45-7:05

Amy Shober, University of Delaware Extension Nutrient Management Specialist

Agronomy Update 7:05-7:25

Jarrold Miller, University of Delaware Extension Agronomy Specialist

Plant Pathology Update 7:25-7:45

Alyssa Koehler, University of Delaware Plant Pathologist Specialist

Plant Diagnostic Update 7:45-8:05

Jill Pollok, University of Delaware Plant Diagnostician

Conclusion and Evaluations 8:05-8:10

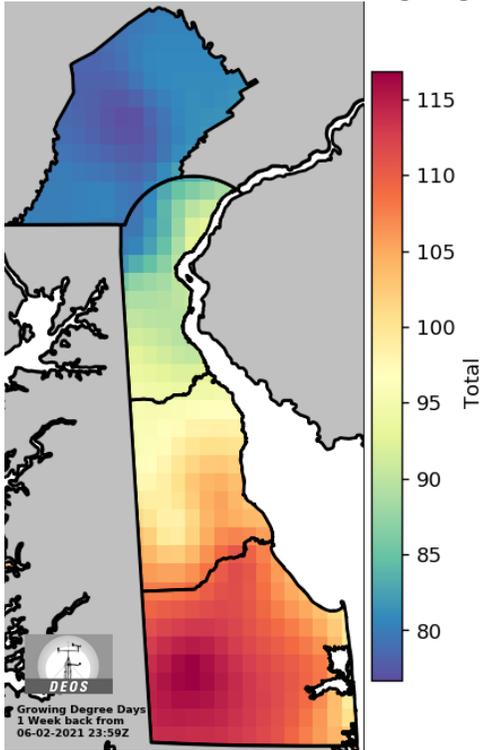
Dan Severson, University of Delaware Cooperative Extension

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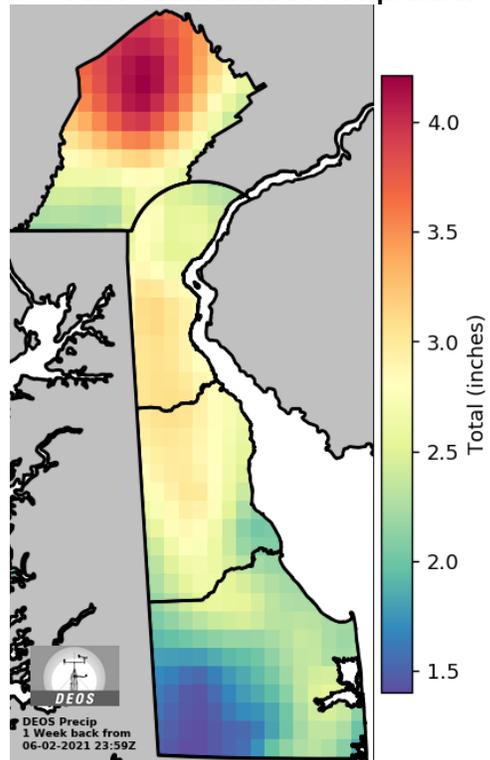
This institution is an equal opportunity provider. If you have special needs that need to be accommodated, please contact the office two weeks prior to the event.

New Weather Summary!

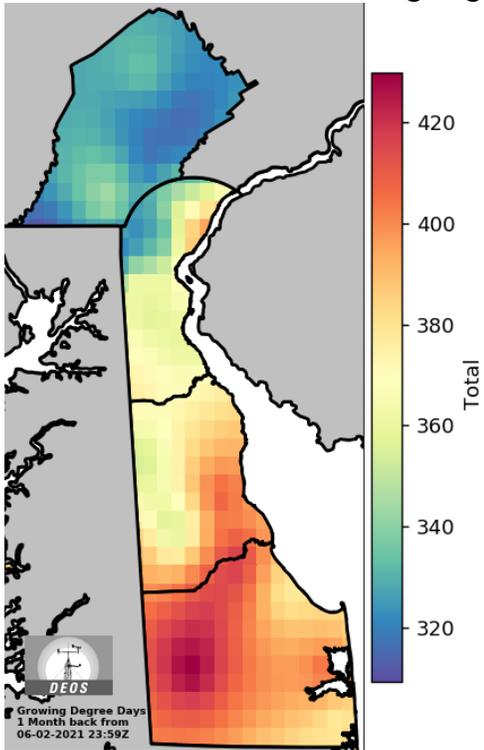
1 Week Accumulated Growing Degree Days



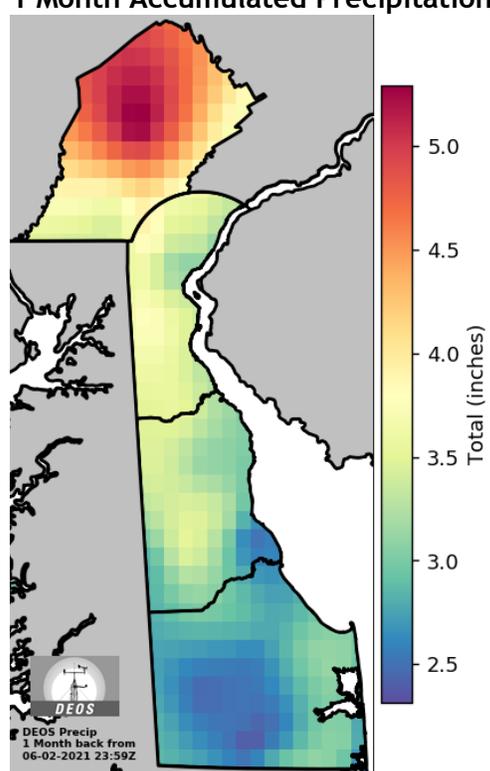
1 Week Accumulated Precipitation



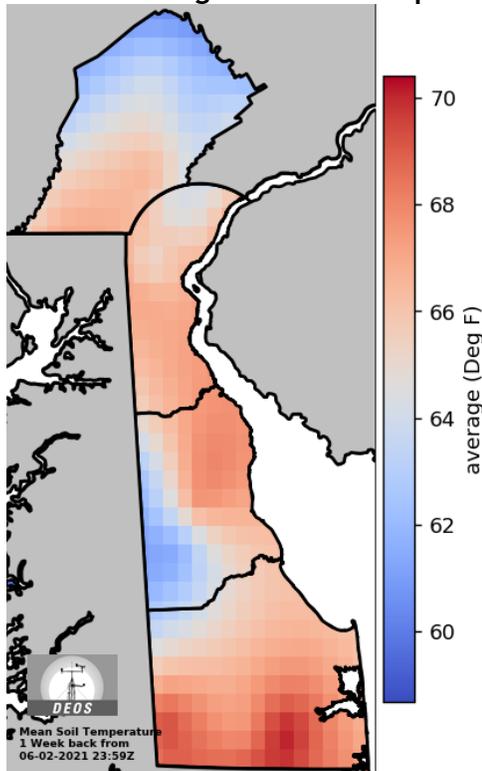
1 Month Accumulated Growing Degree Days



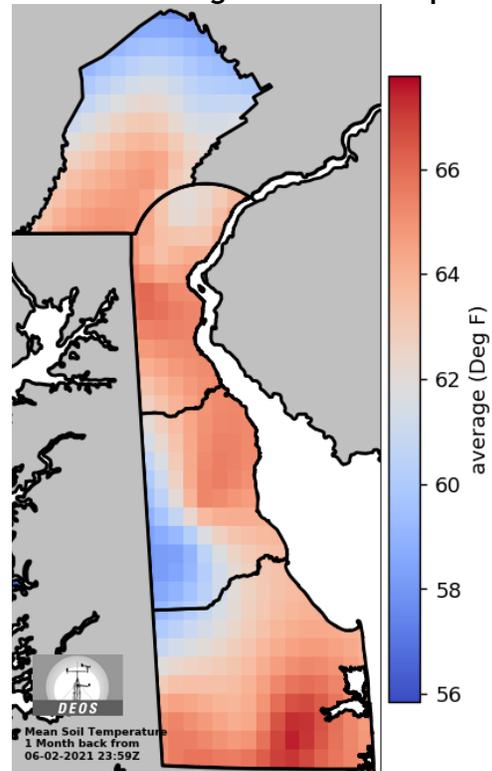
1 Month Accumulated Precipitation



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

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