



# WEEKLY CROP UPDATE

UNIVERSITY OF DELAWARE COOPERATIVE EXTENSION

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## Vegetable Crops

### Vegetable Insect Update - May 25, 2018 -

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Striped cucumber beetles have been roaring into watermelon fields now that the sky has cleared. Our threshold for watermelon, which is not susceptible to a bacterial wilt, is 2 per plant. A lot of folks are going out with or planning to go out with a foliar neonic. Be careful with the product you use. Some only permit soil applications (imidacloprid - Admire Pro and other labeled formulations) while other active ingredients can be applied by soil or foliar depending on the specific trade name you use. The difference is in the formulation and how the product interacts with leaf tissue (ex: thiamethoxam - Platinum is for soil, Actara is for foliar application). Also check your application restrictions. Some products can only be used at the full rate once in the field while others can be applied several times in-season.

Another question that comes up is residual control. Efficacy trials are hard to get good data on with this pest in a field setting due to the unreliable nature of cucumber beetle pressure. Some data suggests that products should be effective for up to 5 or more weeks, other data and personal anecdotes say no more than about 2 weeks. I would be very interested to hear your input. Please also note that Vydate, effective on nematodes, does not have cucumber beetle on the label. While it does affect cucumber beetles, it is not consistent.

The question has come up regarding application timing and bee safety. A foliar application is going to be a bit more toxic because of the additional exposure route. If you are within 2 weeks of flowering, either a chemigation treatment or switching products to acetamiprid (ex. Assail) would be a little more bee-friendly. A great table indicating insecticide toxicity to bees can be found here:

[http://msue.anr.msu.edu/uploads/resources/pdfs/Minimizing\\_Pesticide\\_Risk\\_to\\_Bees\\_in\\_Fruit\\_Crops\\_\(E3245\).pdf](http://msue.anr.msu.edu/uploads/resources/pdfs/Minimizing_Pesticide_Risk_to_Bees_in_Fruit_Crops_(E3245).pdf). Other products that you can use with less risk to bees BEFORE flowering include Sevin and various pyrethroids. Pyrethroids and Sevin are very toxic to bees, but the residues are short lived, and effective for no more than about a week under 'good' conditions. Apply no later than several days before hives are placed.

Unfortunately, that limited activity may not give us adequate cucumber beetle protection, necessitating follow up applications in shorter intervals - increasing risks to bees.



D Owens  
Live mating cucumber beetles and a dead individual on a leaf.

## **Flooding, Waterlogged Soils, and Effects on Vegetable Crops with Special Consideration for Plasticulture Vegetables** - Gordon

*Johnson, Extension Vegetable & Fruit Specialist;*  
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We have had widespread flooding in vegetable crops in May due to heavy and extended rains. Soils in some field areas have remained waterlogged for several days. Over a 10-day period from May 12, 2018 at our Georgetown, Delaware Research station, 7.5 inches of rainfall fell. There were 4 days with rainfall over 1 inch and one day receiving 3 inches of rain. Many surrounding areas had over 10 inches of rain during this period.

Climate scientists predict that extreme weather events will become more common on Delmarva over the next several decades. This will present additional challenges for vegetable growers related to flooding, wet weather diseases, nutrient losses, ability to do timely harvests, field compaction, other wet soil issues, and resulting crop losses.

In 2018, initial plantings of watermelons and other fresh market vegetables have been made; peas are nearing harvest, and significant acres of pickles, snap beans, and sweet corn are in the field. Many processing vegetable fields have already had significant crop losses (sweet corn, snap beans, peas) due to flooding.

In flooded soils, the oxygen concentration drops to near zero within 24 hours because water replaces most of the air in the soil pore space. Oxygen diffuses much more slowly in water filled pores than in open pores. Roots need oxygen to respire and have normal cell activity. When any remaining oxygen is used up by the roots in flooded or waterlogged soils, they will cease to function normally. Therefore, mineral nutrient uptake and water uptake are reduced or stopped in flooded conditions (plants will often wilt in flooded conditions because roots have shut down). There is also a buildup of ethylene in flooded soils, the plant hormone that in excess amounts can cause leaf drop and premature senescence.

In general, if flooding or waterlogging lasts for less than 48 hours, most vegetable crops can recover. Longer periods will lead to high

amounts of root death and lower chances of recovery.

While there has been limited research on flooding effects on vegetables, the following are some physiological effects that have been documented:

- Oxygen starvation to vegetable roots will cause roots to cease to function resulting in plant collapse with limited recovery potential
- Oxygen starvation in root crops such as potatoes will lead to cell death in tubers and storage roots. This will appear as dark or discolored areas in the tubers or roots. In carrots and other crops where the tap root is harvested, the tap root will often die leading to the formation of unmarketable fibrous roots.
- Ethylene buildup in saturated soil conditions can cause leaf drop, flower drop, fruit drop, or early plant decline in many vegetable crops.
- Leaching and denitrification losses of nitrogen and limited nitrogen uptake in flooded soils will lead to nitrogen deficiencies across most vegetable crops.
- In bean crops, flooding or waterlogging has shown to decrease flower production and increase flower and young fruit abscission or abortion.
- Lack of root function and movement of water and calcium in the plant can lead to calcium related disorders in plants. There is a potential for higher incidence of blossom end rot in tomatoes, peppers, watermelons, and other susceptible crops when fruits are forming and soils are saturated.

Low lying areas of fields are most affected by excess rainfall. However, cropping practices can also increase water standing. In vegetables, field compaction will reduce water infiltration leading to increased crop losses in wet weather.

### **Plasticulture Concerns in Wet Weather**

In plasticulture, water can accumulate and persist between rows of plastic mulch because of the impervious surface of the mulch. Because much of the rainfall runs off the plastic, water pooling can be serious problem in plastic mulched fields, especially where row middles have become compacted. Vining crops that fruit

into the row middles can have vines and fruits sitting in water and this produces ideal conditions for diseases of wet conditions to develop. A prime example is *Phytophthora capsici* (a water mold) that needs saturated soils or standing water to infect plants (fruits).

When water overflows the bed tops of plastic mulched crops, whole beds become saturated as water enters the planting holes. This often leads to plant losses as beds take a very long time to dry once saturated in this way and oxygen is very limited in the root zone.

To avoid water accumulation between plastic mulched beds, tilling with a deep shank or a subsoiler in row middles can help improve drainage. Cut drainage channels at row ends to reduce blockage (dams) that can back up water. Where practical, section plasticulture fields and install cross drains to remove extra water to improve drainage and reduce water damage potential. Growers may also choose not to plant lower areas in the field prone to water damage where plastic is laid.

In some crops such as peppers and strawberries, high raised beds will improve drainage significantly and can reduce losses to water standing between plastic rows. Another option in watermelons (and other strongly vining crops) grown on plastic is to reduce plastic bed width and increase distance between rows to limit impervious surfaces.

In some crops in our region (plasticulture strawberries for example), cover crops such as ryegrass are being grown between beds to reduce erosion. Research on row middle management will be a priority for the future.



Compaction between mulched beds can lead to increased ponding.



When water goes over top of beds they become saturated for long periods leading to plant losses. In this case the water just missed going over the bed (note the trash line).

#### Identifying Poorly Drained Areas for *Phytophthora capsici* Management

Growers with crops susceptible to *Phytophthora capsici* (*P. cap*) are encouraged to evaluate fields with susceptible crops (all vine crops, tomatoes, peppers, lima beans) for drainage issues where this disease can proliferate. The primary keys to *P. cap* management are limiting standing water, the potential for saturated soils, and water movement across the crop.

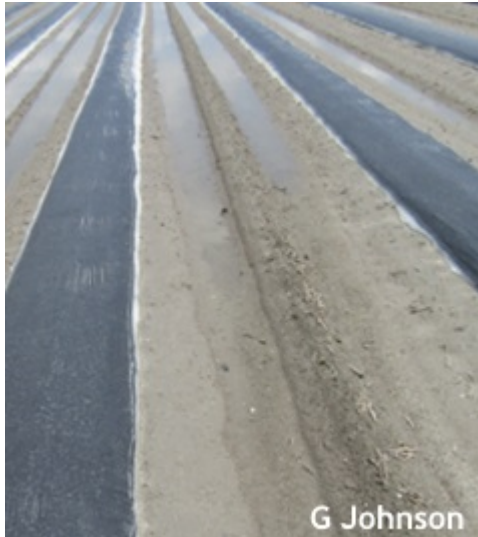
#### Recovering from Flooding or Waterlogging

One option to aid in vegetable crop recovery after floods or waterlogging is to aerate the soil by cultivating (in crops that can be cultivated) as soon as you can get back into the field. This allows for oxygen to enter the soil more rapidly. To address nitrogen leaching and denitrification losses, sidedress with 40-50 lbs of N where possible depending on the crop and crop stage.

In vegetable fields that remain wet, consider foliar applications of nutrients. Since nitrogen is the key nutrient to supply, spraying with urea ammonium nitrate (28 % N solution) alone can be helpful. These can be sprayed by aerial or ground application. Use 5 to 20 gallons of water per acre. The higher gallons per acre generally provide better coverage. As with all foliar applications, keep total salt concentrations to less than 3% solutions to avoid foliage burn.

### Future Considerations

To address excess water challenges in the future, vegetable growers will need to invest in and plan for drainage in every field. Solutions including land levelling, surface drainage, tiles (tile wells, patterned tiling), and pumping may all need to be considered. See the article by James Adkins in this issue on drainage basics.



Row middles with ponding due to a field depression.

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### Sunscald on Vegetable Leaves - Jerry Brust, *IPM Vegetable Specialist, University of Maryland*; [jbrust@umd.edu](mailto:jbrust@umd.edu)

I know it may seem odd to see an article about sunscald or sunburn on leaves with the week of rain we just had, but leaves came in over the last week as the rain started and the damage had been done days before this. It is also possible that there will be a greater chance for

sunscald in the coming days as growers try to get their transplants out.

An area on the leaf turning papery white or tan is usually the first indication of scald on plants (Fig. 1).



Figure 1. Scald on crucifer leaf (top) and bean leaf (bottom)

Many of these plants were set in the field after coming straight out of the greenhouse or off the trailer. Before the rains we had a few days of very hot temperatures and intense sunlight. In figure one you can see that only certain parts of the leaf are scalded (these are the areas that had direct sunlight on them for an extended period) and the tissue next to the scalded area is still bright green. In the transplant production house plants are exposed to filtered light so the leaves are good at absorbing as much light as possible. The problem with taking plants straight from this type of environment to the field is that the plants at times are not ready for the extra UV light they are going to receive. The leaf tissue rapidly becomes desiccated with the extra

light/heat exposure, causing light tan to white discoloration on the leaves and stems of sensitive plants. At times even established plantings can experience this as well, especially during an unexpected heat wave, which we had (believe it or not) as a heat wave is defined as 3 or more consecutive days of temperatures at or over 90°F. Once leaves are damaged, all that can be done is to support the plant until it manages to grow new leaves. Hardening off the transplants would have prevented the sunscald on the new transplants, but with all the cool wet weather we had growers were forced to get their plants out when they could. Make sure to appropriately water and feed plants that have sunscald while they are recovering.

## Agronomic Crops

**Agronomic Insect Update - May 25, 2018 -**  
*David Owens, Extension Entomologist,*  
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Although worms tend not to like prolonged wet weather, both black cutworm and true armyworm are active in fields. How much they are suppressed is the open ended question that is almost like predicting a 40% chance of anything. If you see worms in the field, they were not affected.

### Corn

As we wrote earlier, if you have a late planted field that has had a recent green cover crop (within the past week), or if you have a corn field that is not yet planted, you will be at greater risk for either pest. We usually don't worry about these critters in fields destined for soybean. We should expect good protection from cutworms with traits that contain Cry1F or Vip3A. Please see The Handy Bt Trait Table for an excellent breakdown of trait packages that contain them:

<https://lubbock.tamu.edu/files/2018/01/BtTraitTableJan2018.pdf>. A small amount of feeding in a field with the above traits is expected, the Bt is a stomach poison that needs to be ingested. But watch the field to ensure that injury doesn't progress.

True armyworm is a bit different. Only trait packages with the Viptera gene, (Leptra, Viptera, Trecepta and the 5222 Agrisure

Duracade - not 5122) are rated for true armyworm protection. It is possible that the other traits may have some efficacy, but scout your fields and look out for worms in other traits. The photo below was taken by Dr. Kelly Hamby, University of Maryland field crops entomologist from organic (no trait package) field corn. Thresholds for armyworm depend on number, defoliation, and size of the worm. Treatment is warranted if 25% of the plants are infested, 50% defoliation has occurred, and worms are less than ¾ inch long.



True armyworm on organic corn

### Wheat

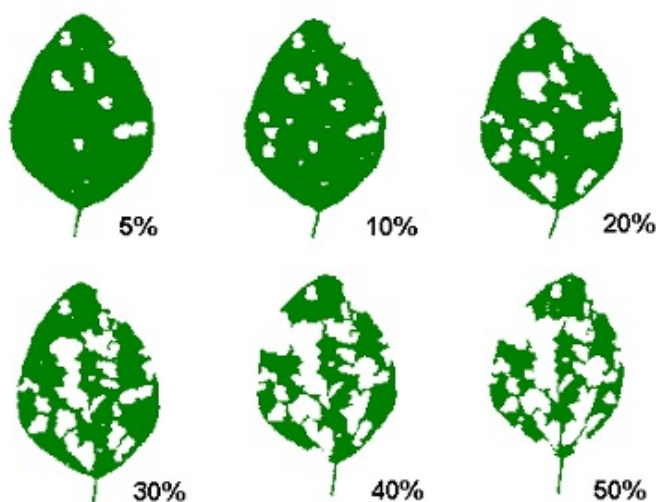
For wheat we use a threshold of 1-2 armyworms per foot of inter-row space. Check the base of the plants. Barley thresholds are a little lower at 1 per row-ft. It seems like harvest is a long way off, but if you have a treatable population be careful with observing the preharvest intervals. The only pyrethroid with less than a 30 day PHI is Mustang Maxx (14 days). The diamide insecticide Prevathon is available for Delaware this year and has a 1 day pre harvest interval.

### Soybeans

Some beans went into the ground before the rain. The wet weather we have been having favors slug activity. You will want to watch your

soybeans to detect any early issues with slug-induced stand loss. Unlike corn, soybeans can compensate for some stand loss. Fields with prior slug history and no-till fields with heavy residue tend to have greater slug populations.

We are also seeing bean leaf beetle working on seedlings. Beetle activity is concentrated a little more than usual for this time of year due to planting delays and the wet weather suppressing beetle activity last week. Beetle movement really picked up with Sunday's sunny weather. Beetles may move out, when scouting, check for beetle presence. Count the number of beetles per 6 row-ft in 10 spots per field, and estimate defoliation percentage. Seedling thresholds are 2/ft, 25% stand loss. Once the plants have their second trifoliolate, we need to see 2-3 per plant and 25% or more defoliation. Defoliation can be hard to visually estimate, use the below image as a general guide.



<https://cropwatch.unl.edu/evaluating-soybean-defoliation-and-treatment-need>

Graphic representations of various levels of soybean leaf defoliation.

### **Should You be Taking PSNTs Right Now? -**

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The compressed corn planting window this spring will result in a narrow window for in-season N applications. We recommend that growers take pre-sidedress nitrate testing (PSNT) samples prior to sidedressing corn. The goal of the PSNT is to provide a real-time recommendation while there is still the opportunity to adjust nitrogen (N) applications to corn. Regional research has shown that producers who use the PSNT can save time and money, while reducing the risk of nitrogen loss.

The PSNT is recommended for fields that have a history of manure, biosolids, or compost applications. The PSNT is also appropriate for fields with forage legume residues. As such, we suggest that fields that had a cover crop that produced significant biomass (i.e., late killed or planted green) may also benefit from a PSNT; however, no research-based recommendations are available specifically for fields planted in cover crops.

In our region, the PSNT is not recommended for corn fields where commercial fertilizer is the only N source for three or more years because there was no regional PSNT calibration under these conditions. In addition, the PSNT is not recommended for manured fields that received commercial fertilizer (pre-plant or pre-emergence) at rates exceeding 40 to 50 lbs N/ac. Under both of these conditions, the PSNT may overestimate the amount of soil N that will be available to the corn crop over the season. For fields with no recent manure history, we feel that growers can better calculate N-needs based on realistic yield goal (1 lb N/bu corn expected), adjusting for the amount of N applied prior to sidedress. We caution against using PSNT recommendations from other regions for fields with no recent manure history, because their soil conditions and fertilizer management practices are often very different from ours.

It is important to note that the PSNT is less accurate during cool, wet growing seasons like we have had this season. Cooler temperatures early this spring, may have reduced early season N mineralization, which can lead to lower than normal PSNT results. Plus, the 5-10 inches of rain across our region may have moved soil nitrate below the 12 inch depth (the recommended depth of the PSNT sample), but this N will not be out of reach of corn roots later

in the season. While regional PSNT recommendations were developed based only on soil nitrate concentrations, we believe that it may also prove valuable to evaluate soil ammonium concentrations this year, especially if soil nitrate concentrations come back lower than normal (based on past history) and manure was applied recently. Elevated soil ammonium concentrations may indicate that mineralization of manure (organic) N was delayed. In our opinion, evaluating soil nitrate + ammonium concentrations can help eliminate the chance of a false positive during cool, wet seasons. However, there are admittedly no hard and fast research-based recommendations for this particular situation.

If you decide to collect a PSNT sample, remember that the samples should be collected:

- When corn plants are 10-12 inches tall (growth stage V5 to V6)
- To a depth of 12 inches from 15 to 20 locations in a field (not to exceed 20 acres per sample)
- No sooner than 2 to 3 days after significant rainfall

Prior to taking samples, there should be a plan as to where and when the sample will go to be dried and analyzed. If the sample will be stored for more than an hour, then it should be held in a cooler until it can be dried for analysis. Properly drying the sample is critical to getting an accurate analysis. A subsample of one to two cups of soil should be spread thinly (½ or less) on newspaper in a warm, dry place and allowed to dry. Once you receive the results of a PSNT, we refer you to the following documents for state-specific guidance on determining the sidedress N rate:

Delaware - [Nitrogen Management for Corn in Delaware: The Pre-Sidedress Nitrate Test](#)

Maryland - [Soil Fertility Management](#)

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**Dealing with Salt Affected Soils** - Jarrod O. Miller, Extension Agronomist, [jarrod@udel.edu](mailto:jarrod@udel.edu)

If you have had issues with tidal inundation of soils in the past, or had some flooding this spring, you may be thinking about remediation

methods to get the salt content down. While gypsum is a great method of ameliorating these soils, it works best if your salt issues come from sodium (Na). The calcium (Ca) in gypsum can replace Na on your CEC, which will let rainfall or irrigation leach it below the root zone. Fields where Na contents is greater than 15% of the CEC are the most likely to show toxicity issues and should be taken care of first.

However, if your total salt content is high due to Ca, Mg and Na, gypsum will not solve this issue. In these fields irrigation is your best option with recommendations of up to 6 inches of water to reduce salinity by 50% and up to 24 inches to reduce it by 90%.

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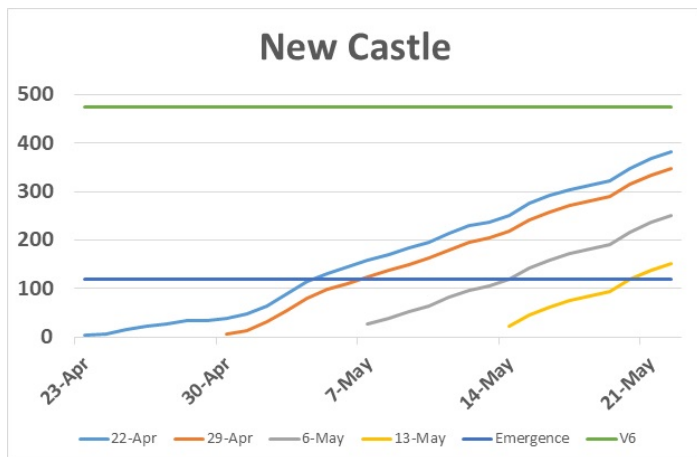
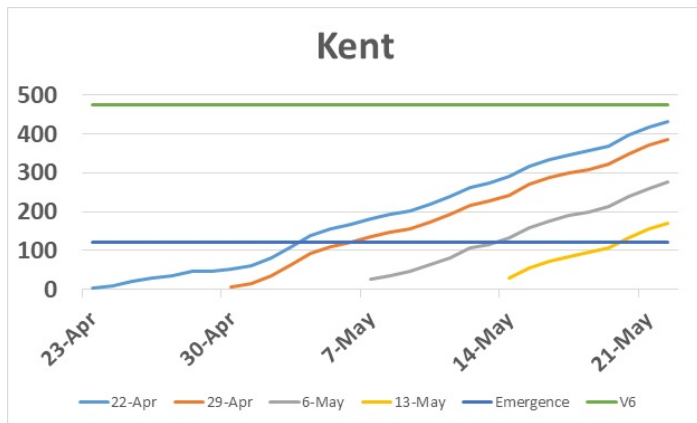
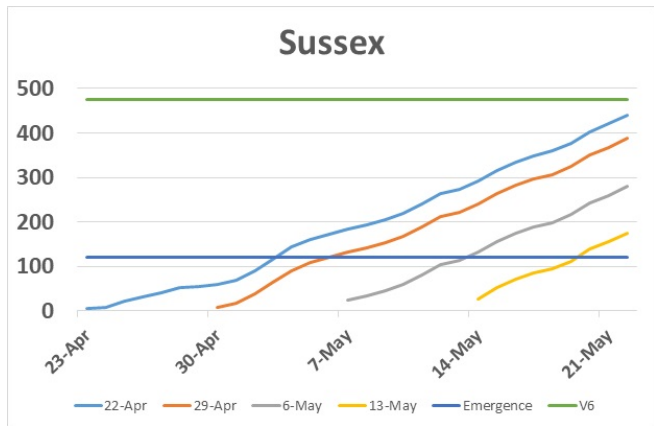
**Growing Degree Days for the Last Month** - Jarrod O. Miller, Extension Agronomist, [jarrod@udel.edu](mailto:jarrod@udel.edu)

Growing degree day (GDD) accumulation has been pretty steady for the last month, with most corn emerging within a week of planting. In Sussex County, we have observed some fields between V4-V6(4-6 visible leaf collars) that were planted between April 22<sup>nd</sup> and 29<sup>th</sup>.

Sussex and Kent counties have been accumulating about 14 growing degrees every day, with New Castle at 12. Expect to hit V6 around 475 GDD, so anything planted between April 22-29<sup>th</sup> could reach V6 this week in the lower portions of Delaware. For those fields that received manure or with legume nitrogen credits, you should be thinking about running a PSNT. Any nitrate released with warmer weather could have been lost to leaching or denitrification with the past week's rainfall.

**Table 1:** Growing degree days accumulated over the last few weeks

	Sussex	Kent	New Castle
Sunday, April 22	440	432	382
Sunday, April 29	388	365	348
Sunday, May 6	280	275	250
Sunday, May 13	175	170	152



**To Treat or Not to Treat (Slugs), That is the Question! Week 3** - *Bill Cissel, Extension Agent - Integrated Pest Management; bcissel@udel.edu*

Over the past couple of weeks, we have been following the corn plant in the photographs below to see if the plant would out-compete the slugs or if the slugs would ultimately kill the plant.

In the first photo taken on May 9th, I asked, if all your plants looked like the the plant in the photograph, would you apply slug bait? Sixty percent of the respondents said they would and forty percent said No.



Taken on May 9<sup>th</sup>, 2018

Approximately one week later, I took another photograph of the same plant and asked, if you said YES, that you would treat the field if all the plants looked like the plant in the first photo taken on May 9, do you think you made the right decision. Half (50%) of the respondents said that they feel they made the right decision in treating and half said they didn't feel as though they made the right decision to treat.

As I mentioned last week, this is a difficult decision and in many cases, there is no "right or wrong". That is because the weather is a variable that can't be controlled for and is often not easy to predict, or should I say, rarely predicted accurately. There is little doubt that the plant in the pictures would be in serious trouble now if the weather had been cool and wet.





Taken on May 15, 2018

Below is a photo of the same plant we have been following taken on May 24, 2018. As you can see in the photo, the plant is well on its way and with some sun and heat; I expect it to jump, leaving slugs in its rear view mirror. However, even though this plant is well on its way, there are spots in this field that the slugs are doing their best to kill the plants. There is little doubt that if the weather conditions had been less favorable for corn growth during the past few weeks, this field would be in a re-plant situation today.



Taken on May 24, 2018

Determining when an application of slug bait is justified can be difficult and only comes with experience because the weather has so much impact on not only seedling vigor and growth but also the slugs. There really isn't a "right" or "wrong" answer in this scenario because even though everything suggests that the plant in the photo will survive and out compete the slugs, there is still some uncertainty as to whether or not the slug feeding injury has impacted the yield potential of this plant.

Did you learn anything from this series of articles? Click on the link below and let me know if this was valuable to you:

<https://goo.gl/forms/0kGiCaWdXWrsqgw1>

**Weed Control After Recent Rains** - Mark VanGessel, *Extension Weed Specialist*; [mjv@udel.edu](mailto:mjv@udel.edu)

Rainfall over the past week have complicated weed control for fields planted before the rain. The rains have moved most of the herbicide out of the weed emergence zone and will there is probably not much left to provide residual control. With that said, we do not know if the herbicide is all gone, and thus replanting with something other than the original crop, may lead to crop injury.

So, be sure to visit your fields soon, and often, to look for new emergence and time your postemergence sprays before weeds get too large. Fields may need to be treated sooner than you normally would spray since herbicides providing residual control are probably gone.

Areas with drowned out crops may need to be replanted. Weed control in areas being replanted will be challenging. Be sure to start clean and kill any weeds that might be present. Consider if you will be able to get into these replanted areas later. If you are only replanting areas that were drowned out, it may mean that you will need to drive through taller corn to get to these spots. If that is the case, will you be able to get in there when the replanted sections need to be sprayed with postemergence herbicides. The earlier planted corn may be too tall to allow a sprayer to get in when the replanted corn is 10 to 14 inches tall. Therefore, you may need to think about relying more on residual herbicides with these replanted areas.

Drowned out areas that are not replanted should be sprayed to prevent weeds from getting established and ultimately producing seeds. Weeds growing in these areas can produce a tremendous amount of seeds that could cause problems for the next few years.

## General

**Guess the Pest! Week #8 Answer:**

**Parasitized Aphid (Mummy)**- Bill Cissel, *Extension Agent - Integrated Pest Management*; [bcissel@udel.edu](mailto:bcissel@udel.edu)

Congratulations to Bob Leiby for correctly identifying the parasitized aphid in the photograph and for being selected to be entered into the end of season raffle for \$100 not once but five times. Everyone else who guessed correctly will also have their name entered into the raffle. Click on the Guess the Pest logo to participate in this week's Guess the Pest challenge!



The aphid in the photograph has been parasitized by a tiny wasp, about 1/10<sup>th</sup> inch in length. The adult female wasp, referred to as a parasitoid, lays an egg in the aphid. When the egg hatches, the tiny white parasitoid larva develops inside the aphid which eventually kills the aphid. Once the parasitoid larva finishes its development, it pupates, causing the aphid body to turn tan or black depending on the species of parasitoid. An aphid that has been parasitized is referred to as an aphid mummy.



David Cappaert, Bugwood.org

UGA5351020

Highly magnified image of a Braconid wasp (parasitic wasp).

Parasitic wasps and other beneficial insects play a major role in keeping aphid populations in check in many cropping systems. For example, in small grains during heading, a ratio of one beneficial insect (lady beetle larva, syrphid fly maggot, lacewing larva, damsel bug or parasitic wasp) per 50-100 aphids is often sufficient to achieve biological control. Because of this, if you have an aphid infestation, it is always important to also note beneficial insect activity.



B Cissel



B Cissel

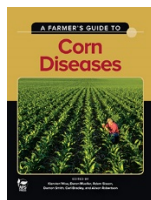
[What is this insect pest?](#)



**Guess the Pest! Week #9** - *Bill Cissel*,  
*Extension Agent - Integrated Pest Management;*  
[bcissel@udel.edu](mailto:bcissel@udel.edu)

Test your pest management knowledge by clicking on the GUESS THE PEST logo and submitting your best guess. For the 2018 season, we will have an "end of season" raffle for a \$100.00 gift card. Each week, one lucky winner will also be selected for a prize and have their name entered not once but five times into the end of season raffle.

This week, one lucky participant will also win A Farmer's Guide To Corn Diseases (\$29.95 value).



*You can't win if you don't play!*

**Tackling Drainage Issues for Vegetables and Agronomic Crops** - *James Adkins*,  
*Associate Scientist-Irrigation Engineering;*  
[adkins@udel.edu](mailto:adkins@udel.edu)

The recent rainfall events have identified countless deficiencies in drainage across the region. While corrective measures are too late for many crops, there are some in-season options to help drain standing water and reduce disease potential.

### Land Leveling

Leveling a field with a tool similar to a Rayne Plane or other land leveler prior to cropping can typically resolve minor puddling issues where the

difference in elevation is 6 inches or less. If more than 6 inches of fill is needed this will not be a good option as too much top soil will be removed from the areas surrounding the depression and yield loss will occur. Land levelers are typically run on a diagonal to normal field operations and multiple passes may be required to achieve optimal results.

### Surface Drainage

Most farms already utilize some form of surface drainage whether natural or manmade. Field operations including tillage and particularly laying beds for vegetable production often limit the natural flow paths for surface water. Trenches or periodic breaks in a vegetable bed should be put in place just after the beds are formed to allow water to escape as quickly as possible. After a major rain some shovel maintenance of the trenches will be necessary to maximize flow. Likewise, spinner ditches made with a rotary trencher or middle buster plow will likely require a shovel touchup if they have been crossed by a sprayer or planter. Swales or trenches with high flow rates and/or slope should employ a pipe, tile or stone at the outlet to minimize ditch bank erosion. Swales permit a much deeper flow path without the interruption to field operations however it may be necessary to seed the swale to grass to prevent gullying.

### Tile Drainage

At this point most of the standing water is the result of a Delmarva Bay, or a deep depression in the middle of the field with no practical way to surface drain. Tile wells are the common solution that can be installed in the cropping season if the affected area is justifiably large. Inlets can be the traditional concrete type, slotted or perforated risers or a blind inlet consisting of stone and filter cloth that can be farmed across. The first step to determine if a tile well is a viable option is to assess whether there is an outlet with adequate elevation difference to successfully drain the depression. This is best determined with a transit, laser or gps survey equipment in coordination with the NRCS for survey and engineering support. For an initial assessment, Google Earth Pro (free download) has a feature where you can draw a proposed flow path using the path measure tool and check the box labeled "show elevation profile" to view the elevation across the drawn

path.

<https://www.google.com/earth/download/gep/agree.html>

Ideally, the tile outlet in the ditch will have at least 1' of free board above the normal ditch bottom level to prevent the tile line from silting closed and at least 0.1% grade (0.001 ft/ft or 1.2 in/100 ft of tile). Slopes as shallow as 0.02% can be accurately installed with laser and gps controlled tile machines but more slope is desirable to allow sediment to flush out of the tile. If the installation is done with an excavator or backhoe a minimum recommended grade of 0.1% should be followed. The tile should have a minimum of 2' of cover at all times to prevent damage from equipment as plastic tile is easily crushed by tractors, combines and center pivot irrigation ruts.

While 4 inch flexible drain tile is often adequate in size to drain a small depression in a 12 - 24 hour period it is best suited for a plow installation and should not be trench installed due to its tendency to snake and rise above target grade during backfilling. Ideally 20' sticks of 6 inch or larger dual wall pipe should be used in open trenches to help achieve target grade and prevent poor installation. When connecting multiple inlets into one tile line, it is preferable to tee into the mainline with a 6-10' stub for each inlet to prevent a failed inlet from plugging the entire system. Whenever an open trench is dug, be sure to follow the proper safety procedures to prevent injury from trench collapse.

Pattern tiling is becoming more common on Delmarva and is an effective solution to address field that traditionally would be pattern ditched. Pattern tiling typically is used to dry an entire field that suffers from a high or perched water table that leaves the field saturated for extended periods and consists of parallel rows of slotted tile that must be installed with a plow or trencher.

### Pumping

Many folks have accepted pumping as their final solution. While I admit to using a transfer or irrigation pump to remove surface water in a pinch; the high volume of trash and sediment is very hard on seals and plastic impellers. It is preferable to use a trash or mud pump when

available. A few Delmarva farmers, including the University of Delaware Warrington farm employ electric lift stations when an adequate surface drain for tile is unavailable. This option can be expensive but is often the only solution to difficult drainage situations on the shore.

For questions regarding the legality of installing any drainage system contact your local NRCS office.

For more information on tile systems and design the University of Minnesota has an extensive fact sheet.

<http://www.extension.umn.edu/agriculture/water/planning/planning-a-subsurface-drainage-system/>

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### **Loss Adjustment Procedures for Aflatoxin -** Compiled by *Lucas Clifton, Program Specialist, Targeted States RME*, [decrophelp@gmail.com](mailto:decrophelp@gmail.com)

Moisture stress, insect damage, and high-temperature stress are major contributing factors in aflatoxin contamination in certain unharvested crops. Aflatoxin contamination can be harmful to humans and animals at certain levels. The U.S. Food and Drug Administration (FDA) has established action levels for aflatoxin present in food or animal feed. Post-harvest aflatoxin contamination can increase during storage and if crop drying is delayed. The commodities with the highest risk of aflatoxin contamination are corn, peanuts, and cottonseed. If aflatoxin is in your corn crop you may receive:

- No discounts;
- Varying discounts; or
- A destruction order.

The FDA has no published action levels or use restrictions for crops with 0 to 20.0 parts per billion (ppb) of aflatoxin. Therefore, crop insurance policy provisions do not provide quality adjustments for levels below 20.1 ppb. If you think your insured crop has aflatoxin, contact your crop insurance agent before you:

- Harvest the grain;
- Put the grain in storage; or
- Deliver it for sale.

Your insurance provider will:

- Take samples for testing; and
- Submit them to an approved aflatoxin testing facility.

Because aflatoxin can worsen in storage, aflatoxin losses are only insurable if:

- The grain is tested at an approved testing facility before being moved into commercial or on-farm storage; or
- Your insurance provider asks you to leave representative sample areas of the unharvested crop for taking samples for testing.

Losses not covered under the crop insurance policy include:

- Losses due to an increase in the aflatoxin level while in farm storage; and
- Losses that cannot be determined because proper testing was not completed.

Refer to the applicable special provisions for the most current policy on testing.

The FDA, or another government agency, may require the destruction of crops with more than 300 ppb. If you destroy the crop in an acceptable manner, you will be paid for a full loss. Please ask your approved insurance provider about acceptable ways to destroy your crop before doing so.

If the crop qualifies for quality adjustment (test results are over 20.0 ppb), you may receive the actual reduction in value (RIV) if:

- You deliver your crop to a buyer directly from the field; or
- You put it in commercial storage without the crop going into on-farm storage and the crop is sold not later than 59 days after the calendar date of the end of the insurance period to a disinterested third party.

You can find aflatoxin discount factors on a chart in the special provisions. The special provisions contain information, such as quality adjustment factors, which are part of your insurance policy. Claims are not settled for production that contains levels of aflatoxin over the maximum amounts shown in the special provisions until the crop is sold to a disinterested third party, fed, used, or destroyed.

If you are concerned about placing aflatoxin-infected grain in storage or about efforts to reduce the spread of aflatoxin within grain storage facilities, you should contact local agricultural experts. You should contact your crop insurance agent or approved insurance provider if you have questions about your crop insurance coverage or responsibilities.



## Announcements

### 2018 Delaware Cooperative Extension Horticulture Short Courses

[Register for these courses online.](#)

#### Pest and Beneficial Insect Walk

*\$15, 2 Pest., 1 CNP, 2 ISA credits*

**Wednesday, June 6, 4-6 pm**

**Sussex County Extension Office**

**16483 County Seat Highway, Georgetown**

or

**Wednesday, June 20, 4-6 pm**

**University of Delaware Botanic Gardens**

**531 S College Avenue, Newark, Meet at the entrance to Fischer Greenhouse.**

Learn to identify insect and disease pests, as well as beneficial insects in the landscape at either the Sussex County Extension Office or the University of Delaware Botanic Gardens. **Instructors:** Nancy Gregory, Brian Kunkel, Carrie Murphy, and Tracy Wootten

### **Poultry Grower Workshop: Hiring, Firing and Employee Management 101**

Thursday, June 7, 2018 6:00 – 9:00 p.m.  
Caroline County Fairgrounds, Denton, MD.

Friday, June 8 9:00 a.m.-12:00 noon  
Carvel Research and Education Center, Georgetown,  
DE

How to hire quality employees and prepare for a future crisis.

The University of Maryland Extension and University of Delaware Cooperative Extension in partnership with Delmarva Poultry Industry, Inc. will be hosting two workshops for commercial poultry growers.

The workshops will focus on human resource issues related to hiring quality employees, retaining quality employees, and how to prepare for issues caused by employees.

*Mark your calendar:*

*Register at <https://go.umd.edu/poultryworkshop>.*

The Universities of Delaware and Maryland Extension programs are open to any person and will not discriminate against anyone because of race, age, sex, color, sexual orientation, physical or mental disability, religion, ancestry, national origin, marital status, genetic information, political affiliation, and gender identity or expression.

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### **2018 UD Weed Science Field Day**

Wednesday, June 20, 2018 8:30 a.m.

University of Delaware

Carvel Research and Education Center

16483 County Seat Hwy, Georgetown, DE

The UD Weed Science Field Day will begin with **registration at 8:30** at the Grove near the farm buildings and new office building on the north side of the road. We will start to view the plots at 8:45 am.

Coffee, juices, and donuts will be provided. We will also provide sandwiches for lunch.

Pesticide credits and Certified Crop Advisor continuation credits will also be available.

Dr. Michael Flessner, VA Tech, will hold a field day on Tuesday, June 19<sup>th</sup> at Blackstone, VA

Dwight Lingenfelter, Penn State, will hold a field day on Thursday, June 21<sup>st</sup> at Landisville, PA

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### 2018 Farmers' Field Day At LESREC

Wednesday, June 27, 2018 9:00 a.m.-1:00 p.m.

University of Maryland

Lower Eastern Shore Research & Education Center  
(LESREC)

27664 Nanticoke Road, Salisbury, MD 21801

### Calling all Farmers/Growers to Your Field Day at LESREC

#### Topics

- IR-4 Program
- Nutrient Management & Soil Health
- Ag Law and Conserve (Possible Nutrient Mgmt. Credits)

- Plant Pathology Information
- Variety Studies
- Weed Management
- Poultry Information
- Diagnostic Information
- Bee / Pollen Research
- Wagon Tours

Lunch will be provided

REGISTER AT: <https://2018-farmers-field-day-at-lesrec.eventbrite.com>

More Information to Follow. Check out Events at <https://extension.umd.edu/lesrec>

The University of Maryland is an Equal Opportunity Employer and Equal Access Programs

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### Marl Pit Tailgate Session

Tuesday, June 5, 2018 6:00 – 8:00 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 a discussion of this year's demonstration trials and current production issues. Other topics will include

nutrient management, pest management and weed management.

Bring a tailgate or a lawn chair

We will wrap up with the traditional ice cream treat.

#### Credits:

Nutrient Management: 1.0, Pesticide: 1.0

*The meeting is free and everyone interested in attending is welcome. If you have special needs in accessing this program, please call the office two weeks in advance.*

*To register or request more information, please call our office at (302)831-2506. Please register by Tuesday, May 29.*

#### AGENDA

6:00-6:05

#### **Welcome and Introductions**

*Dan Severson, University of Delaware Cooperative Extension*

6:05-6:10

#### **Overview of Small Grains Variety Trials at Marl Pit**

*Victor Green, University of Delaware Extension*

6:10-6:30

#### **Weed Update**

*Mark VanGessel, University of Delaware Cooperative Extension Weed Specialist*

Discussion of early-season weed management issues. We will talk about what we have seen and been asked about in the spring of 2018. We will explain and discuss our cover crop demonstration plots at the Marl Pit site as well.

6:30-6:50

#### **2018 Insect Pest Outlook**

*David Owens, University of Delaware Extension Entomologist*

Perennial insect pests that need to be anticipated will be discussed along with management implications of current insect pest populations.”

6:50-7:10

#### **Nutrient Management Update**

*Amy Shober, University of Delaware Extension Nutrient Management Specialist*

#### **7:10-7:30 Agronomic Crop Insect Management Update**

*Bill Cissell, University of Delaware Cooperative Extension*

This talk will address current pest management concerns, focusing on cereal leaf beetle management in small grains and pest management issues with cover crops.

7:30-7:50

### Using NDVI to Measure Wheat Populations and Spring Nitrogen Needs

Jarrold Miller, University of Delaware Extension Agronomy Specialist

UAVs can be used to scout crops as well as obtain NDVI measurements of crop health and biomass. Research on winter wheat was performed to determine whether NDVI imagery could detect wheat population, tiller counts, and nitrogen needs.

7:50-8:00

### Conclusion and Evaluations

Dan Severson, University of Delaware Cooperative Extension

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## Small Ruminant Fecal Egg Counting and FAMACHA© Workshop

Saturday, June 2, 2018 9:00 a.m. – 3:00 p.m.

University of Delaware, Carvel REC  
16686 County Seat Highway  
Georgetown, DE 19947

### Learn Parasite Control

Internal parasites are a major health problem affecting sheep and goats. This workshop is designed to help producers learn the basics of selective internal parasite control. Join us as we provide hands-on training to certify producers in the use of FAMACHA© score card and fecal egg counts.

Presented jointly by: Kwame Matthews, Delaware State University and Susan Garey and Daniel Severson, University of Delaware

The cost of the workshop is \$25. Lunch is included.

Workshop participation is limited to 25 attendees. Pre-register by May 25, 2018.

Register online at: <https://hub.desu.edu/Famacha-Workshop-DSU-UD2018>

or

contact Kwame Matthews at (302) 857-6540

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## Weather Summary

Carvel Research and Education Center Georgetown, DE

Week of May 17 to May 23, 2018

Readings Taken from Midnight to Midnight

### Rainfall:

1.41 inch: May 17  
0.69 inch: May 18  
1.41 inch: May 19  
0.26 inch: May 20  
0.40 inch: May 22

### Air Temperature:

Highs ranged from 84°F on May 20 to 66°F on May 18.

Lows ranged from 70°F on May 20 to 54°F on May 18

### Soil Temperature:

68.0°F average

Additional Delaware weather data is available at [http://www.deos.udel.edu/monthly\\_retrieval.html](http://www.deos.udel.edu/monthly_retrieval.html) and <http://www.rec.udel.edu/TopLevel/Weather.htm>

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

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