



WEEKLY CROP UPDATE

UNIVERSITY OF DELAWARE COOPERATIVE EXTENSION

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Vegetable Crops

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

Cucurbits

Cucumber beetles continue to move into watermelons, cantaloupes, and other cucurbits. The infestations that I have seen tend to be fairly localized, but intense. While beetles do not transmit bacterial wilt to watermelon, heavy feeding can make the plant more vulnerable to gummy stem blight. Thresholds range from 2 to 5 beetles per plant in watermelon. If you need to control beetles and are within a week or two of honeybee placement, it may be a good idea to switch to foliar sprays of Assail, pyrethroid, or diamide insecticide. Some folks have commented that pyrethroid efficacy can be variable. Diamides can be expensive, and while they quickly stop beetle feeding, they do not kill beetles quickly.

Sweet Corn

Some of the first sweet corn is getting near to tassel push or has started silking. For tassel push sweet corn, scout for worms infesting the whorl. While CEW activity seems to be light so far, their first generation into corn whorls can occasionally cause issues. Whorl stage corn thresholds are fairly high, between 15 and 30% whorl infestation. Tassel-push corn thresholds are 15%. We have a couple of different options for pre-silking sweet corn for worms that we do not have

in silking corn, namely Avaunt (WDG and eVo formulations) and Intrepid or Intrepid Edge.

Moth activity has increased. Historically, we get a mid to late June small peak. We caught a single European corn borer in the Wyoming area.

Insect trap counts are as follows:

| Trap Location | BLT - CEW | Pheromone CEW |
|---------------|----------------------|---------------|
| | 3 nights total catch | |
| Dover | 1 | 1 |
| Harrington | 1 | 0 |
| Milford | 1 | 1 |
| Rising Sun | 1 | 0 |
| Wyoming | 1 | 0 |
| Bridgeville | 1 | 0 |
| Concord | 3 | 21 |
| Georgetown | 0 | 1 |
| Greenwood | 1 | --- |
| Laurel | 2 | 4 |
| Seaford | 0 | 0 |

Potato

Continue scouting field interiors. With recent hot weather, adults are capable of flight and will begin moving in from the edges.

Brassicas

Continue scouting for worms, especially as heads are nearing harvest. Thresholds decrease to 5% infested plants as they form heads or harvested structure. You can find more information in the Mid-Atlantic Vegetable Production Guide: <https://www.udel.edu/content/dam/udellimage>

Avoiding Blossom End Rot - Gordon Johnson,
Extension Vegetable & Fruit Specialist;
gcjohn@udel.edu

Variable June weather often creates conditions favorable for blossom end rot in susceptible crops, with tomatoes and peppers being the most affected. In most years, there is a transition point in June where temperatures move from the moderate side to an extended hot period with temperatures in the 90s. This is also when many tomatoes and peppers have reached full plant size with high water demand and have large numbers of flowers and developing fruit with heavy calcium demand.

While field tomatoes are not near this stage yet, high tunnel tomatoes are susceptible. We are seeing days in the 90's and high tunnel tomatoes will have high water demand.

Blossom End Rot (BER) is a disorder where developing fruits do not have enough calcium for cell walls, cells do not form properly, and the fruit tissue at the blossom end collapses, turning dark in color. Calcium moves through cation exchange with water movement in the fruit, so the end of the fruit will be the last to accumulate calcium. Larger fruits and longer fruits are most susceptible. With fruits, the rapid cell division phase occurs early in the development of the fruit and if calcium accumulation in the fruit is inadequate during this period, BER may occur. While it may not be noticed until the fruit expands, the deficiency has already occurred and cells have already been negatively affected. We most commonly see signs of blossom end rot on fruits two weeks after the calcium deficiency has occurred.

Understanding blossom end rot also requires an understanding of how calcium moves from the soil into and through the plant. Calcium moves from the soil exchange sites into soil water and to plant roots by diffusion and mass flow. At plant roots, the calcium moves into the xylem (water conducting vessels), mostly from the area right behind root tips. In the xylem, calcium moves with the transpirational flow, the

movement of water from roots, up the xylem, and out the leaf through stomata. Calcium is taken up by the plant as a divalent cation, which means it has a charge of +2. It is attracted to negatively charged areas on the wall of the xylem, and for calcium to move, it must be exchanged off the xylem wall by other positively charged cations such as magnesium (Mg^{++}), potassium (K^+), ammonium (NH_4^+), or additional calcium cations (Ca^{++}). This cation exchange of calcium in the xylem requires continuous movement of water into and up through the plant. It also requires a continuous supply of calcium from the soil.

In general, most soils have sufficient calcium to support proper plant growth. While proper liming will ensure there is adequate calcium, it is not the lack of calcium in the soil that causes blossom end rot in most cases. It is the inadequate movement of calcium into plants that is the common culprit. Anything that impacts root activity or effectiveness will limit calcium uptake. This would include dry soils, saturated soils (low oxygen limits root function), compaction, root pathogens, or root insect damage. In hot weather on black plastic mulch, roots can also be affected by high bed temperatures. Low pH can also be a contributing factor. Calcium availability decreases as pH drops, and below a pH of 5.2 free aluminum is released, directly interfering with calcium uptake. Again, proper liming will ensure that this does not occur. Applying additional calcium as a soil amendment, above what is needed by normal liming, will not reduce blossom end rot.

In the plant, there is a "competition" for calcium by various plant parts that require calcium such as newly forming leaves and newly forming fruits. Those areas that transpire the most will receive more calcium. In general, fruits have much lower transpiration than leaves. In hot weather, transpiration increases through the leaves and fruits receive lower amounts of calcium. High humidity will reduce calcium movement into the fruit even more. Tissue tests will often show adequate levels of calcium in leaf samples; however, fruits may not be receiving adequate calcium. In addition, in hot weather, there is an increased risk of interruptions in water uptake, evidenced by plant wilting, when transpirational demand

exceeds water uptake. When plants wilt, calcium uptake will be severely restricted. Therefore, excess heat and interruptions in the supply of water (inadequate irrigation and/or rainfall) will have a large impact on the potential for blossom end rot to occur. Proper irrigation is therefore critical to manage blossom end rot.

As a positive cation, there is “competition” for uptake of calcium with other positive cations. Therefore, if potassium, ammonium, or magnesium levels are too high in relation to calcium, they can reduce calcium uptake. To manage this, do not over-fertilize with potassium or magnesium and replace ammonium or urea sources of nitrogen with nitrate sources.

Applying additional soluble calcium through irrigation, especially drip systems, can reduce blossom end rot to some degree if applied prior to and through heat events and if irrigation is applied evenly in adequate amounts. Foliar applications are only partially effective when applied to very young developing fruit. Fruits do not absorb much calcium, especially once a waxy layer has developed, and calcium will not move from leaves into the fruit (there is little or no phloem transport). Foliar applications of 2-4 lb Calcium (Ca) per acre is recommended. Foliar calcium can be applied as calcium chloride at the rate of 5-10 lb per 100 gallons per acre, calcium nitrate at the rate of 10-15 lb per 100 gallons per acre, or chelated calcium at labeled rate.

In conclusion, the keys to controlling blossom end rot are making sure roots are actively growing and root systems are not compromised, soil pH is in the proper range, and irrigation is supplied in an even manner so that calcium uptake is not interrupted. Supplemental calcium fertilization will only marginally reduce blossom end rot if water is not managed properly.

Agronomic Crops

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

Alfalfa

Potato leafhoppers are active in low numbers. I

visited a field earlier this week with an average of 2-3 leafhoppers per 15 sweeps, and did not see nymphs. The field was also at a stage where it could be cut any time. However, if you have recently cut alfalfa, pay attention for leafhopper. Cutting will remove eggs, kill most nymphs, and discourage adults from staying in the field, but be sure to scout for them! Once hopperburn symptoms are visible, damage has already occurred. You can find more information, including dynamic thresholds and cultural control tactics here:

https://www.udel.edu/content/dam/udelImage/s/canr/pdfs/extension/sustainable-agriculture/pest-management/Insect_Control_in_Alfalfa_-2020_-David_Owens.pdf.

Corn

Corn should be outgrowing slug injury by now. Wireworm and white grub feeding symptoms are evident now. Be sure to scout for stink bugs. As mentioned in [last week's WCU](#), North Carolina has recently revised thresholds for pre-tassel corn down significantly. Be sure to also scout for cutworm and armyworm damage. A foliar spray may be advised if upon scouting, you see 3% of cut plants or 10% of plants with recent feeding (small holes in rows on leaves) for small corn. Between 2-4 leaf corn, the threshold is a little higher: 5% cut plants with active larvae. Pyrethroids are the go-to materials.

Soybean

Recent warm, dry weather has helped curb some slug activity, especially in fields in which vertical or turbo tillage was used. Bean leaf beetle activity has increased, although I am not aware of any economic infestations. Seedling defoliation thresholds are pretty high, 40% defoliation with 2 beetles per plant.

Watch for Sulfur Deficiencies - Jarrod O. Miller, *Extension Agronomist*, jarrod@udel.edu and Cory Whaley, *Sussex Co. Extension Ag Agent*; whaley@udel.edu

This is the typical time of year for sulfur (S) deficiencies to show up in our corn fields, starting in the V3-V5 growth stages. Sulfur is negatively charged and leaches from the upper

root zone easily. Besides fertilizers, our most likely source of S in the soil is organic matter with maybe 5 lbs/acre coming from the atmosphere. With our cooler spring weather, it is possible that organic matter breakdown and release has been slower, so you may see fields that appear pale yellow in color (Figure 1) or have interveinal striping (Figure 2). Nitrogen deficiency will start on the older leaves, while S will often be across the whole plant (Figure 2).



Figure 1. Pale yellow patterns typical of S deficiency.



Figure 2. Closer inspection may reveal stripes (interveinal chlorosis) in some.

Many nutrients can have interveinal chlorosis, including Mn and Zn, so a tissue test will be necessary to be sure of the issue. For corn at this stage, S values should be within a range of 0.15 to 0.40% in the leaf tissue, although the field below with visual symptoms had a S value

of 0.16%. You may also use the N:S ratio, which should be between 10 to 15 to diagnose problems.

As mentioned by Dr. Amy Shober last week (<https://sites.udel.edu/weeklycropupdate/?p=15022>), sidedressing is a good time to correct S deficiencies, which can be accomplished with fertilizers such as ammonium sulfate or N-Sol.

Considerations for Postemergence Herbicide Applications - Mark VanGessel, Extension Weed Specialist; mjv@udel.edu

The past week or two has resulted in a lot of weed emergence and its time to consider postemergence sprays. Here are some items to consider:

When to Spray

In many situations “when” is more important than “what” to spray. For most weeds we don’t have good options for rescuing fields when weeds get too large. My rule of thumb is spray when the first flush of weeds reach 3-inches tall. The approach many folks have voiced is they want to wait for all the weeds to emerge - this is a recipe for disaster.

- Weeds like Palmer amaranth, nightshades, and crabgrass emerge over a long period of time and by waiting those weeds that emerged first are getting big. The first flush of weeds are the ones that are going to cause the most yield reduction, get the largest and interfere with combining, and produce the greatest amount of seeds. Later emerging weeds are much less competitive and produce a lot fewer seeds.

- If you expect a prolonged germination period, there are a lot of options that provide residual control for weeds. Glyphosate, Liberty, dicamba, 2,4-D do not provide residual control but tankmixtures with Dual, Warrant, Zidua/Anthem, Callisto+atrazine, Capreno+atrazine, Reflex, and others can be used to provide residual control until the crop canopy produces enough shade to suppress weed growth and prevent additional weed emergence.

- As we get into the warmer part of the summer, weeds are going to start growing a lot faster. It is important to scout regularly so that weeds do not get ahead of you, particularly if you have to rely on someone else to spray your fields. It's unlikely that you can wait for your Palmer amaranth to reach 3-inch height, and call for a spray operator to come and they will be there the next day. In the case of Palmer amaranth our research has shown that postemergence sprays should be applied within 28 days of when the residual herbicides were applied. So if you are not scouting regularly, you can use this as a guideline. Local research with soybeans has demonstrated good to excellent Palmer amaranth control at 26 to 28 days after the residual application, but control was not acceptable at 32 days after the residual application. Don't wait.

- Another reason for spraying earlier instead of waiting is because it gives you options to retreat if needed. There are no guarantees for 100% control and so you want to leave yourself some time in case you need to follow up with an additional treatment.

Use Adjuvants When Needed

Most of the glyphosate formulations have their own adjuvant system "built in". Those adjuvants will optimize the performance of glyphosate. So, if you are tankmixing another herbicide with glyphosate you need to ask, "Why is this additional herbicide included?"

1. Is it there only to provide residual control?
2. Is it there to help improve the control on a couple of weed species (and the weeds are small)?
3. Is it there because there are weeds in the field that glyphosate is not very effective on (for instance morningglory)?
4. Is it there because weeds in the field are resistant to glyphosate?

In the first situation no additional adjuvant is needed. In the second situation there is a good chance there is no need for additional adjuvants. However, if you are using tankmix partners with

glyphosate for the last two scenarios then you need to consider additional adjuvants. Read the label because there may be specific recommendations when tankmixing with glyphosate or Liberty (i.e. Callisto, DiFlexx, Laudis, Capreno, Realm Q), otherwise, include the adjuvants recommended for these additional herbicides. Remember you are using the additional product(s) because glyphosate will not control the weeds, so you need to maximize the effectiveness of these products.

Use Atrazine with HPPD-Herbicides

Be sure you use atrazine with any HPPD-herbicide (Group 27) such as Callisto, Impact, Armazon, or Laudis. Without atrazine these products look pretty pedestrian (trying to find a nice way to say they look very poor without atrazine).

No Silver Bullet

If there was an ideal herbicide in the market we would not have so many options. Remember when Roundup Ready came out, a lot of products were discontinued. In fact, the project for Liberty Link crops was put on moth balls because of Roundup Ready. Well, we now know glyphosate alone is not the answer anymore. Dicamba and 2,4-D are not the silver bullet either. So be sure to select your postemergence herbicides based on weeds present in the field. Refer to the Mid-Atlantic Weed Management Guides, specifically Tables 2.11 and 2.12 for postemergence in corn and Tables 4.11 and 4.12 for postemergence in soybeans (order online at <https://extension.psu.edu/mid-atlantic-field-crop-weed-management-guide>).

Valor Tank Clean-Out- *Mark VanGessel, Extension Weed Specialist; mjv@udel.edu*

It's the time of year when sprayers are used for applying soil-applied herbicides in soybeans then moving back into corn fields to spray postemergence herbicides. Be aware that any herbicide containing flumioxazin (i.e. Valor, Fierce, Envive, Panther, Trivence) needs to be cleaned out of your spray system before spraying sensitive crops. It is important to clean the tank as well as the hoses, booms, screens, and nozzles. Use ammonia or Valent Tank Cleaner.

Small amounts of flumioxazin residue left in the tank can cause leaf burn on susceptible crops, such as corn.

For Palmer Amaranth, Two is Better Than One - Mark VanGessel, *Extension Weed Specialist*; mjv@udel.edu

Our results have consistently shown that two effective active ingredients for Palmer amaranth control provides better residual control than either one by themselves. So consider tankmix partners with your residual herbicide program. In soybeans, metribuzin, Group 15 (i.e. Anthem, Dual, Zidua, Warrant), Group 14 (sulfentrazone [i.e. Authority products or BroadAxe] or flumioxazin [i.e. Valor]), or pendimethalin all look better in combinations. We still recommend use at full labeled rates when tankmixing.

Dicamba Registration Update - Kurt M. Vollmer, *Extension Weed Management Specialist*, University of Maryland; kvollmer@umd.edu

On June 3, the Ninth Circuit Court of Appeals issued a decision vacating the registration of three dicamba herbicides, Xtendimax® (Bayer), Engenia® (BASF), and FeXapan (Corteva). However, this ruling does not seem to include Tavium® (Syngenta). This ruling is a result of a lawsuit filed against the EPA's 2018 registration decision (<https://www.epa.gov/pesticides/epa-announces-changes-dicamba-registration>) requesting that U.S. registrations of certain low-volatility dicamba formulations be vacated. If the label remains vacated, growers who have planted dicamba tolerant soybeans will not be able to use dicamba-containing products in their weed control program. That is unwelcome news to those who plan to use it to control glyphosate and ALS-resistant common ragweed and Palmer amaranth. As a result, PPO-inhibiting herbicides (Group 14) such as (Cobra®, Reflex®, Ultra Blazer®) are the only labeled products that will provide POST control of these weeds in dicamba tolerant soybeans. Further information and updates on this issue can be found by going to <https://www.roundupreadyxtend.com/Pages/xt>

[endimax-updates.aspx?utm_source=Various_Collateral](#).

General

Guess the Pest! Week 9 Answer: Black Rot - David Owens, *Extension Entomologist*, owensd@udel.edu

Congratulations to Chris Burkhart for correctly identifying Black Rot of cabbage. Chris and the other correct guessers will be entered into an end of the year drawing.



From Jill Pollack, Plant Diagnostician: Black rot is a bacterial disease caused by *Xanthomonas campestris* pv. *campestris* and affects cruciferous crops which include cabbage, broccoli, cauliflower, and cruciferous weeds, including mustards and radish. The defining characteristic of this disease is the V-shaped lesion coming in from the leaf edge. Black rot can be diagnosed using a microscope by observing the bacteria streaming out of the diseased tissue. The most common infection sources are diseased seeds and transplants, or susceptible weeds. Control is difficult for this disease once established, and buying certified disease-free seed and using resistant varieties are the best preventative management options. It's important to rotate out of cruciferous crops for two years if black rot is present.

Guess the Pest! Week 10 - David Owens,
Extension Entomologist, owensd@udel.edu

What is responsible for these leaf scars?



Click on the Guess the Pest logo to enter your name, email, and your answer. The winner and answer will be revealed next week.

https://docs.google.com/forms/d/e/1FAIpQLSfUPYLZnTRsol46hXmgqj8fv5f8-JI0eEUHb3QJaNDLG_4kq/viewform?c=0&w=1



FINPACK Financial Analysis Coming Soon -
Laurie Wolinski, Extension Agent; lgw@udel.edu

Laurie Wolinski will begin offering FINPACK® (financial software for ag and farm management) analysis for Delaware farmers and their operations beginning mid-June. FINPACK® is farm analysis software that can help a farm identify its strengths and weaknesses and also look at different long-range scenarios to assist in deciding what changes could be made to the operation to help cash flow, or if the time is right for expansion.

FINPACK® analysis is typically done in a confidential face to face setting. We are working on a way to securely share files so, that in the midst of COVID-19, we can safely work together electronically.

More information will be shared in the coming weeks. In the meantime, please email Laurie Wolinski with questions: lgw@udel.edu

Announcements

Online Sheep and Goat FAMACHA Certification Webinar

June 10 6:00-8:00 p.m.
Online

Learn Integrated Parasite Control and Get Certified in FAMACHA

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 and covers topics such as types and kinds of parasites, dewormers, the role of pasture management, the 5 Point Check®, FAMACHA® and FEC. Join us as we provide training to certify producers in the use of the FAMACHA® score card and an integrated approach to parasite control in small ruminants.

Cost \$15.00 (to cover the cost of the FAMACHA card). Registration is required.

To register visit: <https://www.pcsreg.com/learn-integrated-parasite-control-and-get-certified-in-famacha> Once registered you will receive an email link to access the Zoom training. After completing the webinar, producers will be required to pass a short

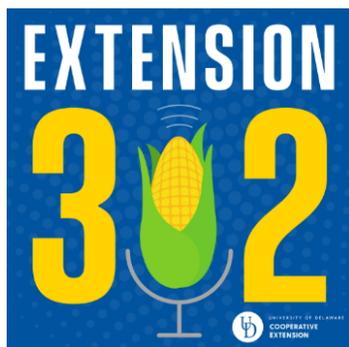
web based quiz and submit a short video clip demonstrating their proficiency in the FAMCHA© push-pull-pop eyelid technique in order to complete their certification requirements. For questions please contact a member of the Delaware Cooperative Extension Small Ruminant Team- Susan Garey truehart@udel.edu, Dr. Kwame Matthews, PhD kmatthews@desu.edu or Dan Severson severson@udel.edu

Sponsored by Delaware Cooperative Extension - a joint effort between Delaware State University and the University of Delaware

Extension302 Podcast – Scams in the Time of Covid-19

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

Have scams become a bigger issue during the pandemic? How can consumers identify a scam online? This episode features special guest Delaware's Auditor of Accounts, Kathleen K. McGuiness.



Pest and Beneficial Insects Online Workshop

June 11, 2020 4:00-6:00 p.m.

Learn to identify insect and disease pests, as well as beneficial insects in the landscape. Find out what signs and symptoms are used to identify pests and diseases. Instructors: Dr. Brian Kunkel, Jill Pollok, Tracy Wootten, and Carrie Murphy

2 Pesticide Credits

Pre-registration required:

<https://www.pcsreg.com/pests-and-beneficial-insects>

Stormwater Workshop Series

June 18, 2020 10:00 a.m. – 12:00 noon
Online

Workshop 3 of 4 will provide an introduction to drainage in Delaware, preventative maintenance of stormwater facilities, irrigation and water management best practices.

2 Delaware Nutrient Management Credits

The webinar link will be emailed to registered participants one day prior to the event. To register go to: <https://www.sussexconservation.org/events/ssw-workshop-3.html>

Coronavirus Food Assistance Program Webinars

CFAP webinars have been announced for all farmers and ranchers. Ag producers can learn more about the Coronavirus Food Assistance Program and how to submit additional commodities for USDA consideration through the NOFA process.

Webinar Dates & Topics:

June 9 at 3:00 p.m. EDT - Outreach CFAP Webinar for Specialty Crop Producers

June 11 at 3:00 p.m. EDT - Outreach CFAP Webinar for Dairy & Non-Specialty Crop Producers

June 16 at 3:00 p.m. EDT - Outreach CFAP Webinar for Non-Specialty Crop & Livestock Producers

June 18 at 3:00 p.m. EDT - Outreach CFAP Webinar on FSA Programs in the Time of Coronavirus

Please visit the [FSA webinar page](#) as pre-registration links will soon be posted.

Weather Summary

Carvel Research and Education Center Georgetown, DE

Week of May 28 to June 3, 2020

Rainfall:

0.33 inch: May 28

0.02 inch: May 29

Air Temperature:

Highs ranged from 90°F on June 3 to 71°F on June 1.

Lows ranged from 71°F on June 3 to 48°F on June 3.

21

Soil Temperature:

70.7°F average

Additional Delaware weather data is available at <http://www.deos.udel.edu/data/>

Weekly Crop Update is compiled and edited by Emmalea Ernest, Associate Scientist - Vegetable Crops. Aisha Hoggard assists with web posting.

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