



WEEKLY CROP UPDATE

UNIVERSITY OF DELAWARE COOPERATIVE EXTENSION

Volume 27, Issue 19

August 2, 2019

Vegetable Crops

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

Sweet Corn

Continue scouting fields for fall armyworm whorl infestations. Corn earworm trap counts are beginning their annual climb from a somewhat low period during the last half of July. In several locations, blacklight traps are indicating for a more conservative spray schedule than pheromone traps. This could be due to crop phenology near our pheromone traps.

Sweet corn pheromone and blacklight traps are checked twice weekly on Mondays and Thursdays. By Tuesday and Friday morning, data is uploaded to our website <https://agdev.anr.udel.edu/trap/trap.php>. Moth counts from Thursday are as follows:

Trap Location	BLT - CEW	Pheromone CEW
	3 nights total catch	
Dover	5	65
Harrington	1	4
Milford	4	23
Rising Sun	6	16
Wyoming	3	21
Bridgeville	2	53
Concord	4	36
Georgetown	5	15
Greenwood	0	
Laurel		64

Seaford	3	34
Trap Pond	3	12
Lewes	7	168

Watermelon

Spider mites and cucumber beetles have needed treatment in some fields recently. Continue scouting for them. As a reminder, action thresholds increase to 50% of terminal leaves infested. When scouting, examine mites under magnification to make sure that they are alive and active. Dead mites frequently turn a brownish-gray dull color. Several miticides have a long preharvest interval (7 days). Portal and Acramite are 3 day PHIs and Kanemite is a 1 day PHI.

Leaf Scald in Sweet Corn - Gordon Johnson, Extension Vegetable & Fruit Specialist;
gcjohn@udel.edu

Leaf scald is a physiological disorder similar to necrotic sunburn in fruits and vegetables. It occurs when leaf temperatures rise above a critical level, cells die rapidly, leaving a bleached white appearance. While newly emerged leaves in the upper canopy of susceptible varieties that are the most exposed are the most likely to scald, some of the leaf scald we are seeing this year has progressed deeper into the canopy, even showing up on some of the corn husks, which will affect marketability. Leaf scald occurs most commonly when temperatures are in the high 90s or over 100, skies are clear (high solar radiation), and humidity is low. While effect on yield is usually

minimal, leaf scorch at the ear leaf level can affect kernel fill.



Leaf Scald in sweet corn affecting the upper canopy.



Leaf scald affecting sweet corn husks.

Sweet Corn Pollination Problems - Gordon Johnson, Extension Vegetable & Fruit Specialist; gcjohn@udel.edu

Growers are experiencing quality problems in sweet corn this year related to poor pollination as a result of high heat. This problem is more severe in less stress tolerant varieties and where irrigation is inadequate.

In corn, silk elongation begins 7 to 10 days prior to silk emergence from the husk. Every potential

kernel (ovule) on an ear develops its own silk that must be pollinated in order for the ovary to be fertilized and develop into a kernel. The silks from near the base of the ear emerge first and those from the tip appear last. Under good conditions, all silks for an ear will emerge and be ready for pollination within a span of 3 to 5 days and this usually provides adequate time for all silks to be pollinated before pollen shed ceases.

Pollen grains are borne in anthers, each of which contains a large number of pollen grains. The anthers open and the pollen grains pour out after dew has dried off the tassels. Pollen is light and can be carried considerable distances (up to 600 feet) by the wind. However, most of it settles within 20 to 50 feet. Pollen shed is not a continuous process. It stops when the tassel is too wet or too dry and begins again when temperature conditions are favorable.

Under favorable conditions, a pollen grain upon landing on a receptive silk will develop a pollen tube containing the male genetic material, develop and grow inside the silk, and fertilize the female ovary within 24 hours. The amount of pollen is rarely a cause of poor kernel set. Each tassel contains from 2 to 5 million pollen grains, which translates to 2,000 to 5,000 pollen grains produced for each silk of the ear shoot.

Poor seed set is often associated with poor timing of pollen shed with silk emergence. If silks emerge after pollen shed poor seed set will result. Shortages of pollen are usually only a problem under conditions of extreme heat and drought. Extreme heat and desiccating winds can affect pollen germination on silks or pollen tube development leading to poor seed set. Insects that clip silks during pollination can cause similar problems.

Leafhopper Damage Found on Fruits and Vegetables - Jerry Brust, IPM Vegetable Specialist, University of Maryland; jbrust@umd.edu

Potato leafhoppers *Empoasca fabae* started out showing up early in the season in our area in unexpected numbers and now they are showing

up again in vegetables (eggplant and potato) fruit crops (raspberries) and hops where they are causing some problems (Figures 1, 2, 3). Unlike earlier in the season when most of the leafhoppers were adults most of the ones found now are nymphs (Fig. 4). Potato leafhoppers (PLH) prefer warm, dry conditions and are commonplace in southern states where they overwinter; leafhoppers do not overwinter in our area, but the milder the winter the better able they can overwinter close to us. PLH are generally first seen in late April or early May but are arriving on average 7-10 days earlier in our area than just 20-30 years ago. Females lay 2-4 eggs per day in the leaf stems or veins of plants. In 7 to 10 days nymphs emerge. Nymphs undergo five instars and reach maturity in about 2 weeks. The newly emerged nymph is nearly colorless with red spots that fade. Nymphs then become yellow, finally changing to pale green in the third and later instars. There are 3-4 generations each summer. Leafhoppers are capable of very rapid population increases so scouting is important to control the pest to avoid damage to crops. Alfalfa and a few other forage legumes are the primary hosts for the potato leafhopper and once the first cutting of the forage is done, PLH will move into other susceptible crops.

Damage

The most obvious symptom of potato leafhopper feeding is hopper burn. Hopper burn is the yellowing of the leaf margin (Figures 1-3). This damage is followed by leaf curling and necrosis. Hopper burn occurs because potato leafhoppers feed by sucking the juices out of leaf veins and blocking the veins with a toxin in their saliva. Once hopper-burn is seen the plant has been damaged, which will either reduce yield or the quality of fruit.

Monitoring and Management

Because potato leafhoppers can have very rapid population surges, it is important to scout and control them before major damage can occur. While there is no agreed upon threshold for leafhoppers in several of our crops, such as eggplant, raspberry or hops, most recommendations have a threshold at 2-3 PLH per leaf. Fields should be scouted weekly by checking the undersides of 5-10 leaves per 10-20 plants. If the average number of leafhoppers per

leaf is at or above the threshold, then a control is needed. Because hops are a newer crop in our area states may differ in what they allow to be used, so be sure to check the label to see what your state will allow to be used on hops for PLH control. In general, neonicotinoids, pyrethroids, or spinosyns could be used. Organic growers could use spinosad or pyrethrins that are OMRI approved for potato leafhopper management. If PLH are more of a consistent problem for you one suggestion is to plant red clover in drive rows (do not mow) as potato leafhoppers prefer to feed on the red clover than most of our vegetables.



Figure 1. Hopper burn on eggplant



G Brust, University of Maryland
Figure 2. Hopper burn on raspberries



G Brust, University of Maryland
Figure 3. Hopper burn on hops



G Brust, University of Maryland
Figure 4. Leafhopper nymphs (arrows)

Agronomic Crops

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

Soybean

The usual defoliator complex is active. Dectes numbers seem to be decreasing. Spider mites are still active. When scouting for them, be sure to put them under magnification to check if they are alive or dead. The cool front 10 days ago brought weather that favors fungal pathogen outbreaks which usually occur about 14 days after. This is not a guarantee, as aside from that rain event and a small one recently, it's been plenty hot and dry.

There have been reports of some field corn fields around Kent Co. with large numbers of earworm. When those caterpillars finish developing, the adults will be looking for drought stressed, open canopied, flowering soybean. Our August peak moth flight is just beginning, be scouting for larvae in the coming weeks. If a field goes above threshold and requires treatment, be cautious with pyrethroids. We have been seeing a significant number of moths survive our testing, and other states further south have been seeing inconsistent to poor control. That doesn't mean

you won't get sufficient kill, but it's not going to be as reliable. Other excellent materials labeled for CEW include Prevathon, Steward, Radiant, and Blackhawk. As a reminder, a very useful tool for calculating thresholds depending on sampling method, row spacing, estimated control cost, and soybean value can be found here:

<https://soybeans.ces.ncsu.edu/wp-content/uploads/2017/08/CEW-calculator-v0.006.html>.

Sorghum

Any fields that are pushing heads or flowering will be attractive to corn earworm to lay eggs in. During the next few weeks be sure to check heads for earworm. One earworm per head can reduce yields by about 5%. When scouting, take a 5 gallon bucket to beat heads into, 5 heads per spot, 10 spots per field and count the number of dislodged earworms.

Corn and Soybean Disease Update - Alyssa Koehler, Extension Field Crops Pathologist; akoehler@udel.edu

Corn

Grey Leaf Spot (GLS) has continued to be the most common foliar disease present in fields at this time. Lesions from GLS typically begin in the lower canopy and progress up the plant under favorable environmental conditions. Due to this, irrigated corn will have higher disease pressure. In corn that is already past R3, foliar lesions that move in should not significantly influence yield potential. In late-planted, irrigated corn, continue to scout for small, tan, rectangular lesions of GLS (Figure 1). As lesions age, the rectangle can expand, following the leaf veins (Figure 2). If over 50% of plants have lesions on the third leaf below the ear leaf or higher prior to tassel, a fungicide application may be considered. Yield potential, grain prices, and cost of application are other factors to consider.



Figure 1. Corn leaf with young lesions from Grey Leaf Spot



Figure 2. Grey Leaf Spot lesions expanding on a corn leaf

Soybean

Full season soybeans across the area are R1-R4. There have been a few reports of downy mildew and low canopy Septoria Brown Spot, which do not typically affect yield. There have also been a few cases of Anthracnose caused by *Colletotrichum truncatum* and other *Colletotrichum sp.* This fungal pathogen causes irregular black spots present on the stem, pods, or petioles (Figure 3). If you zoom in on the black zones, you will see acervuli that resemble pincushions with many needle-like structures called setae (Figure 4). These structures produce

conidia that spread the disease. Pod and Stem blight will also have black structures visible on the stem, but these are typically in straight lines and are most visible from R6 to R8. It is possible to have both diseases present on the same plant late in the season.

Overall, the heat of the past few weeks has kept disease pressure low across the region. Fungicide applications are typically most economical when disease is present and fungicides are applied during R1-R6 growth stages, with R3 being the most common timing. If you have disease present, and are considering a fungicide application, it is important to scout fields and monitor the weather. Most soybean diseases are favored by humid, wet conditions. If weather patterns continue to be hot and dry, disease pressure will likely remain low. However, as we saw last year, frequent rainfall can lead to serious late season disease issues, so continue to monitor rainfall and disease pressure through R6.



Figure 3. Soybean Anthracnose

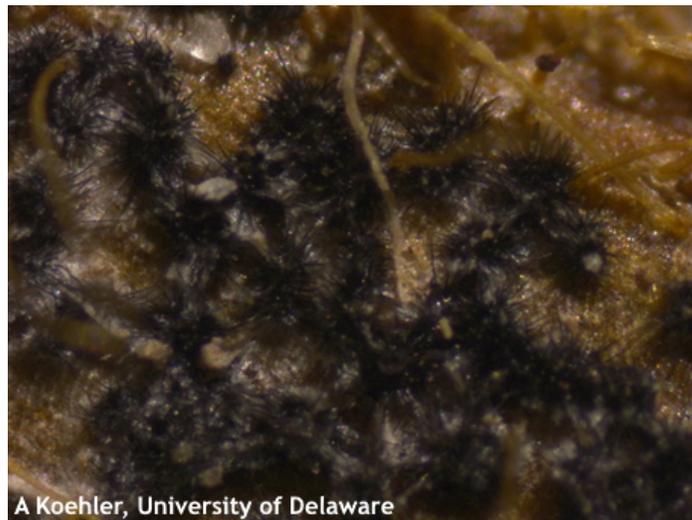


Figure 4. Zoomed in soybean Anthracnose acervuli with needle-like setae

Growing Degree Days Through August 31st - Jarrod O. Miller, Extension Agronomist, jarrod@udel.edu

Unless you planted corn later in June, and some people appear to have made that choice, cornfields across Delaware should be into the reproductive stages. The easiest reproductive stage to decipher is probably R5, which is the dent stage (Figure 1). As corn grains dry down, moisture loss causes a dent near the crown as the kernel shrinks a little. Prior to dent you must estimate liquid in the kernel to determine whether you are in blister, milk, or dough stages. A guide to grain fill stages can be found here:

<https://www.agry.purdue.edu/ext/corn/news/timeless/GrainFill.html>.

The dent stage is typically reached at 2190 to 2450 growing degree days (GDD), which most corn planted in April has reached. The ear in figure 1 was planted in Georgetown on April 24th, which is between 2196 and 2277 GDD. For the temperatures this ear has seen, the kernels look fairly good, with minimal aborted grains. Through July, temperatures were often above 87°F during the day and sometimes 72°F at night, which can cause the plant to stress during pollination and grain fill (Figure 2). Corn planted later in May could have seen some relief in the last week as kernels have pollinated and started

to fill. Only scouting will tell how the weather has interacted with your planting dates.



J Miller, University of Delaware

Figure 1: Corn in dent stage (R5) planted on April 24th in Georgetown.

Rainfall has continued to benefit the northern end of the state, with both Newark (21.5") and Dover (18.8") leading the state in total rainfall since April 14th. Smaller rainfalls have contributed a little to soil moisture in Georgetown, Dagsboro and Delmar in the last week. However, dryland fields in the southern

part of the state were hit hard during grain fill, and the results may show up in September. The southern end of the state has received about 5 inches less than the Newark region, so hopefully you kept the irrigation running.

Table 1: Accumulated growing degree-days based on planting dates through July 31st

If you planted ↓	Sussex	Kent	New Castle
14-Apr	2368	2312	2219
21-Apr	2277	2220	2132
28-Apr	2196	2145	2052
5-May	2095	2064	1980
12-May	1995	1966	1889
19-May	1924	1901	1829
26-May	1785	1766	1696

R1 = 1400 GDD, R5 (Dent) = 2190-2450, R6 (Blacklayer) = 2700

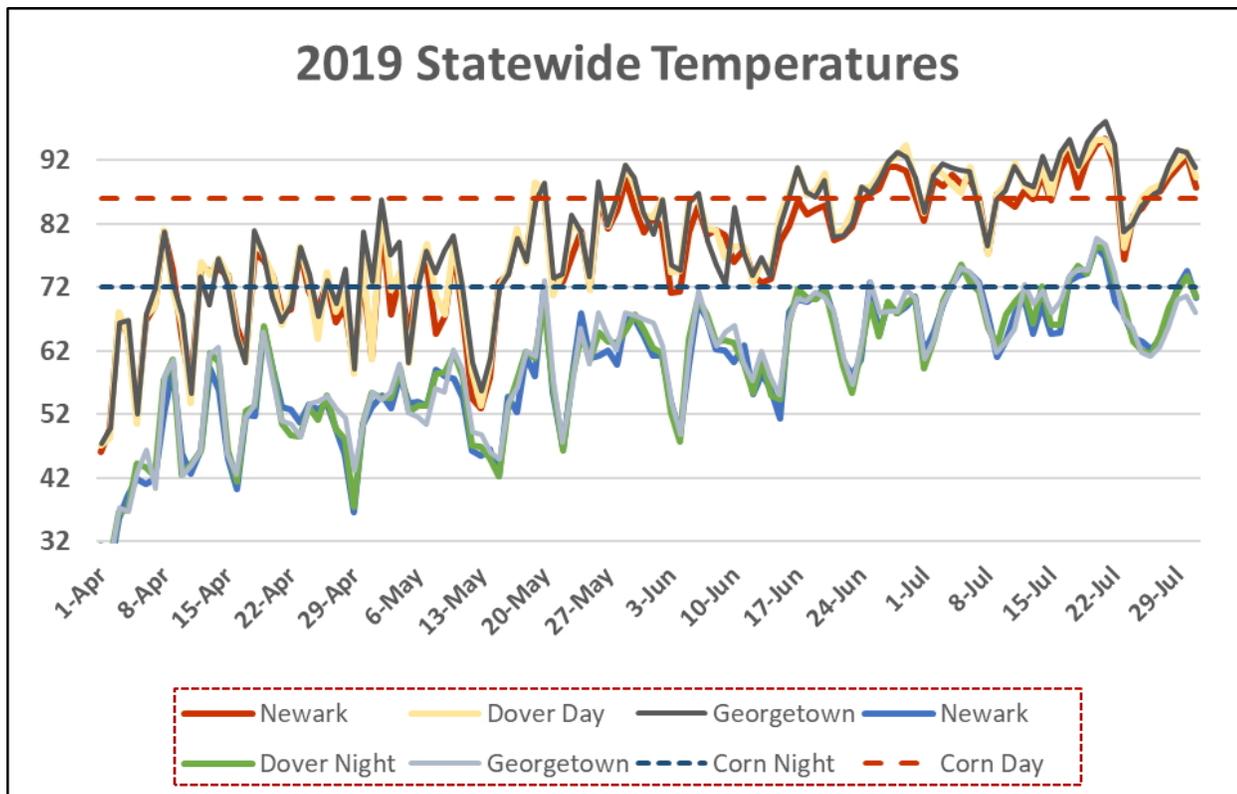


Figure 2: Statewide temperatures since April 1st.

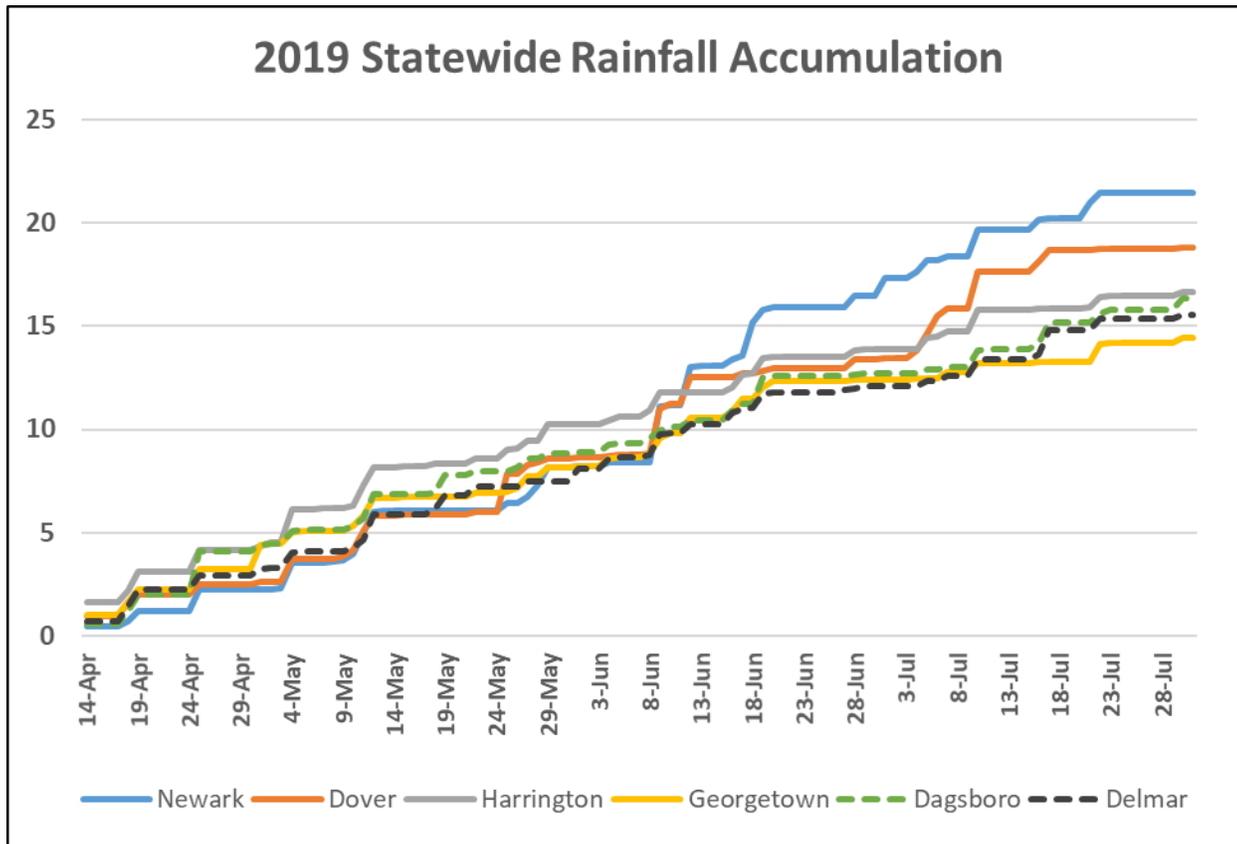


Figure 3: Statewide rainfall accumulation since April 14th.

2019 University of Delaware Small Grains Variety Trial Results -

Victor Green, Associate Scientist;
vmgreen@udel.edu

Results of the 2019 Delaware wheat and barley trials have just been posted online at:
<http://extension.udel.edu/ag/field-crop-resources/variety-trials-corn-hybrids-small-grains-soybeans/>

General

Irrigation Management: Cloudy Forecast = Lower ET- James Adkins, Agricultural Engineer;
adkins@udel.edu

Weather predictions for the next 5 days are calling for lower temperatures and cloudy skies. This, combined with the reduced crop water demands as corn begins to enter the dent stage, makes for a significant reduction in irrigation demand for the upcoming week. Full season

soybeans are still using considerable water which will continue until the leaves start to yellow. If the weather forecast holds, both corn and full season soybeans are predicted to use around 0.18" per day next week. The moderate chance of rainfall over the next 5 days will hopefully allow irrigators a chance to catch up.

The information presented below is an example of the soil moisture status at University of Delaware's Warrington Irrigation Research Farm. Actual field values will vary greatly depending on crop stage, soil type and local rainfall. There are many tools available that provide field by field values to assist farmers in making irrigation scheduling decisions including paid services through local crop consultants, irrigation equipment manufacturer's, Climate Corp, etc and free tools like KanSched and the Delaware Irrigation Management System (DIMS)
<http://dims.deos.udel.edu/>

Field Corn

Daily corn evapotranspiration (ET) rates for April

25th planted 114 day corn at R3/R4 averaged 0.23"/day for the past week. Soil moisture sensors in the field are in line with the model predictions and have been a good confirmation that our estimated soil moisture values are correct. This field had not received any rain over the past week and 6 irrigation events totaling 1.8" applied. Wednesday evening thunderstorms yielded 1.06" of rain bringing this field to 100% available water. Many fields did not receive much or any rain and will need to continue irrigating. This field is predicted to use 0.18", 0.18", 0.16", 0.20", 0.23" for Thursday 8-1 - Monday 8-5 for an estimated daily usage of 0.19" per day for the upcoming week. These are estimated values and are no substitute for daily ET use models and field level soil moisture data.

At this point in the growing season most corn fields are at least into the R2+ stage. UD research on when irrigation can be stopped has been largely inconclusive. Farmers should continue to intensively irrigate through the R2 stage and gradually taper off through R3 until black layer. Historically, crop water use after R4

has been light (less than 1/2") to get to the black layer stage. With pumping costs averaging \$4.5 per acre inch, the cost of applying water up to black layer is worthwhile insurance.

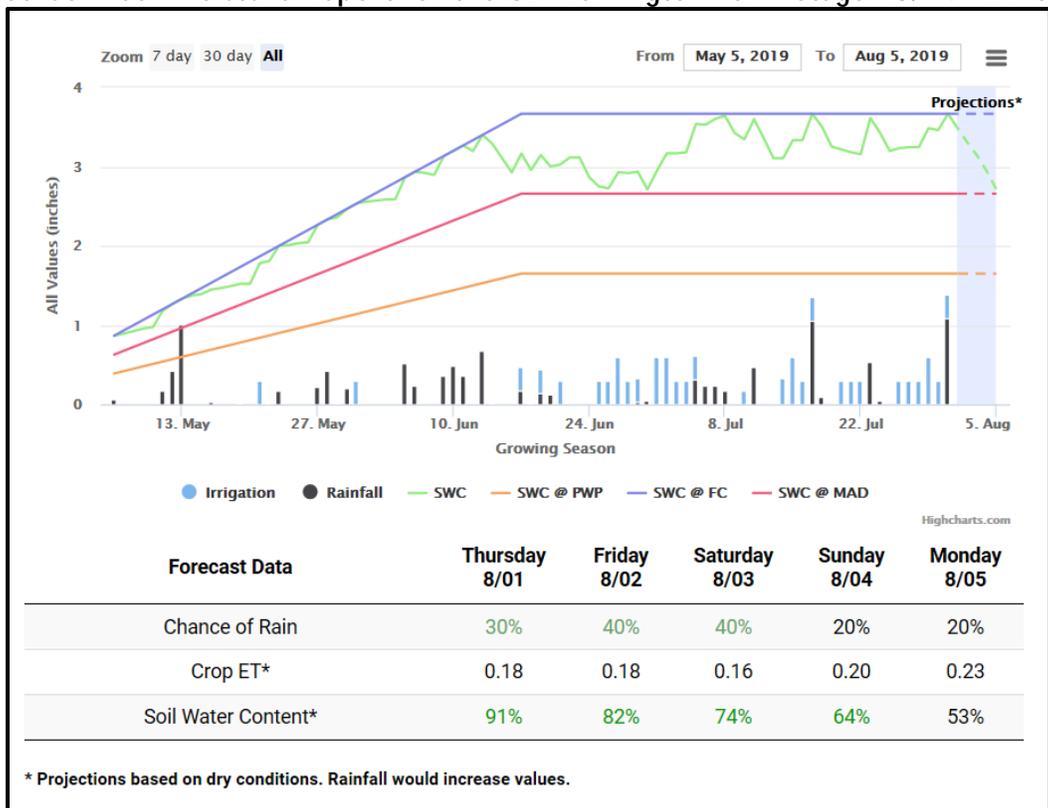
Full Season Soybeans

May 2nd planted soybeans at the UD Warrington Irrigation Research Farm are into the R4 stage as of Aug 1st. The average daily crop water use for the past week was 0.22" per day and the predicted daily ET for next week is 0.18" per day (the same amount as corn). We have observed high rate of water use from the shallow profile; Remember to irrigate in small but frequent doses to avoid pushing water beyond the root zone. Multiple years of soil moisture sensor data show so use water primarily from the shallow (0-8") soil profile.

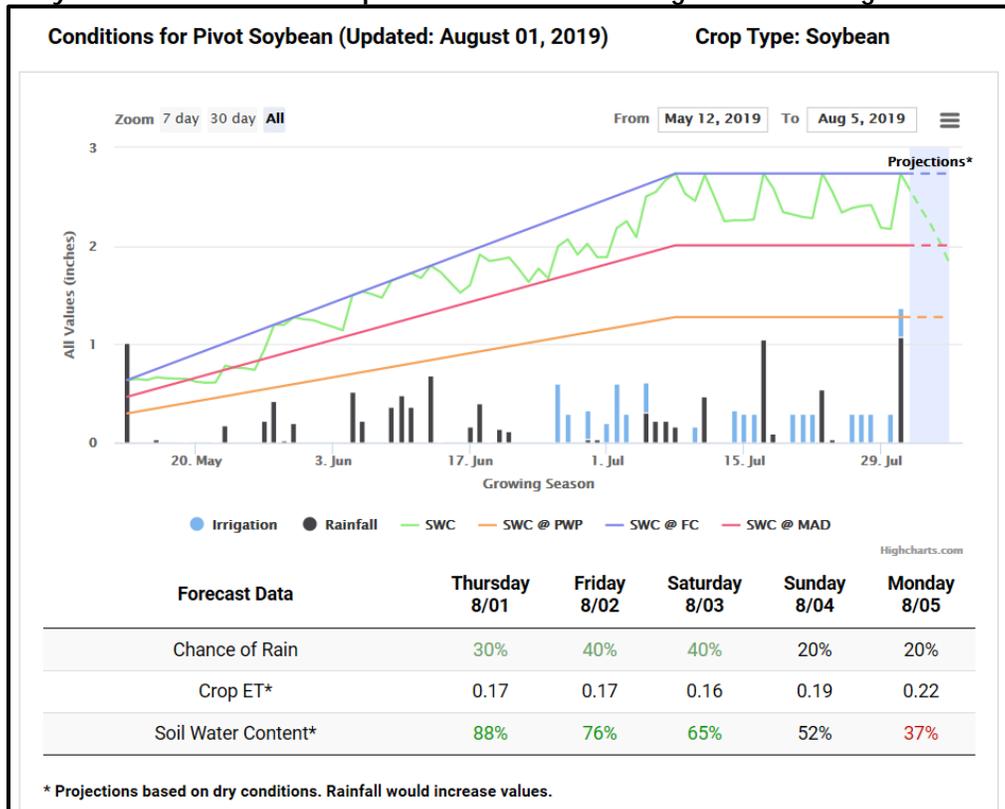
Double Crop/Late Season Soybeans

At this point, most double crop soybeans should be close to full canopy. Once full canopy is achieved, late soybeans will use the same amount of water as the full season beans above.

Irrigated Corn Soil Moisture Report for the UD Warrington Farm Stage R3/R4 - DIMS Report



Irrigated Soybean Soil Moisture Report for the UD Warrington Farm Stage R3 - DIMS Report



Guess the Pest! Week 16 Answer: Sunscald

- David Owens, Extension Entomologist,
owensd@udel.edu

Congratulations to Sylvie Childress for correctly identifying the leaf issue as sunscald or sunburn. Everyone else who also guessed correctly will also be entered in the end of year raffle.



N Gregory, University of Delaware

With the hot, dry, and very sunny weather, this is a common condition. Gordon Johnson wrote

about sunburn in the July 5 issue of the Weekly Crop Update, which can be found here: <https://sites.udel.edu/weeklycropupdate/?p=13716> and about sunscald in the current issue.

Guess the Pest! Week 17 - David Owens, Extension Entomologist, owensd@udel.edu

Test your pest management knowledge by clicking on the GUESS THE PEST logo and submitting your best guess. For the 2019 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. A lucky winner will also receive a heavy duty sweep net.

What's going on with these discolored kernels?



To submit your answer, please go to:
https://docs.google.com/forms/d/e/1FAIpQLSfU-PYLZnTRsol46hXmgqj8fvt5f8-JI0eEUHb3QJaNDLG_4kg/viewform



Announcements

Pesticide Container Recycling for DE and MD

Delaware Pesticide Container (HDPE) Recycling

Third Thursday of the month, Apr-Oct
 9:30 a.m.-1:00 p.m.

Containers will be collected at the SCD Maintenance Yard (23818 Shortly Rd., Georgetown) on the following dates for 2019:

August 15
 September 19
 October 17

All containers must be triple rinsed or equivalent, with labels and all foil wrapping removed (if not glued).

Sponsored by Delaware Department of Agriculture for further information contact Jimmy Hughes @ 302-698-4569 or check the website:

<https://agriculture.delaware.gov/pesticide-management/calendar/>

Maryland Pesticide Container Recycling

Various date and locations, details are at:

<https://mda.maryland.gov/plants-pests/Documents/2019RecycleBrochure.pdf>

Or contact the Maryland Department of Agriculture, Pesticide Regulation Section at 410-841-5710

Field Tour of Carvel Crops Research

Wednesday, August 14, 2019 3:30-5:30 p.m.

University of Delaware
 Carvel Research & Education Center
 16483 County Seat Hwy
 Georgetown, DE 19947

Please mark your calendars and save the date to join us for the 2019 Crops Research Tour at the University of Delaware Carvel Research and Education Center. This event will include wagon tours of agronomic and vegetable research plots. Dinner will be provided.

Ag Horizons Conference

Thursday, August 15, 2019 9:00 a.m.-1:00 p.m.

Carvel Research & Education Center
 16483 County Seat Highway
 Georgetown, DE 19947

A lot can happen on a farm and in the farm community over the course of a year. When a new farm bill is introduced, it can be doubly eventful. In order to take stock of the past crop year and to plan for future ones, the Ag Horizons Conference aims to serve as a State of Agriculture meeting for Delmarva producers and ag influencers.

Organized by University of Delaware Cooperative Extension and the USDA Risk Management Agency, the Ag Horizons Conference will feature sessions appealing to producers of a variety of commodities, including poultry, grain, and specialty crops, and will focus on changes brought about by new farm policy.

Agenda

8:45 a.m. **Registration**

9:00 a.m. **Welcome**

Laurie Wolinski, Extension Agent, University of Delaware

9:05 a.m. **Delaware Department of Agriculture Update**

Michael Scuse, Secretary of Agriculture

9:30 a.m. **Farm Service Agency**

- ARC/PLC changes in farm bill
- Increases in farm loan limits
- Dairy Margin Coverage Program
- 2019 Market Facilitation Program

Sean McKeon, State Executive Director

10:00 a.m. **Risk Management Agency**

- Farm Bill updates
- Double Cropping
- Unit Identification

Alex Sereno, Director, Raleigh Regional Office

10:45 a.m. **Break**

11:00 a.m. **Delaware Poultry Industry**

- Updates on Market Trends, Production and Environmental Challenges

James Fisher, Communications Manager

11:15 a.m. **Natural Resources Conservation District**

- 2018 Farm Bill updates to Conservation Programs

Brooke Jones, District Conservationist

11:30 a.m. **USDA/UD Extension Risk Management Education Partnership**

- Recap of How Crop Insurance Performed in 2018
- One Farmer's Experience with Supplemental Coverage Option (SCO)

Don Clifton, Program Specialist, Farmers First Services, Inc.

12:15 p.m. **Lunch & Networking**

Register for the [Ag Horizons Conference](#) by emailing lgw@udel.edu or decrophelp@gmail.com or by calling 302-831-2538. Registration is encouraged to ensure proper resources are available to each attendee.



Cut Flowers 1: Succession Planting, Harvesting Tips, & Pest Control

Sunday, July 21, 2019 1:00 – 4:00 p.m.

Hattie's Garden

31341 Kendale Rd, Lewes, DE 19958

Local, sustainable flowers are increasingly popular with farmers, at markets, and with florists! Join us at Hattie's Garden to learn the following important cut flower production skills: succession planting, harvesting techniques, and organic pest control. All experience levels are welcome! (Rain Date: July 22nd, same time, same place.)

This workshop will be led by farmer/owner Hattie Allen, who is deeply committed to growing flowers sustainably and organically. Thanks to Hattie and to the organizers of Future Harvest CASA and the University of Delaware.

<https://www.eventbrite.com/e/cut-flowers-1-succession-planting-harvesting-tips-pest-control-tickets-63985426132>

Cut Flowers 2: Advanced Annuals, Post-Harvest Handling & Season Extension

Saturday, September 28, 2019 1:00–4:00 p.m.

Masterpiece Flower Farm

7945 Old Ocean City Road, Whaleyville, MD 21872

Join us at Masterpiece Flower Farm and learn how to grow advanced annuals such as Dahlias, Ranunculus, and Lisianthus. Special focus will be given to post-harvest handling practices. We will also discuss tips for season extension. All experience levels are welcome. (Rain Date: September 29th, same time, same place.)

This workshop will be led by farmer/owner Crystal Giesey, who is deeply committed to growing flowers sustainably and organically. Thanks to Crystal and to the organizers Future Harvest CASA and the University of Delaware.

<https://www.eventbrite.com/e/cut-flowers-2-advanced-annuals-post-harvest-handling-season-extension-tickets-64194508503>

Weather Summary

Carvel Research and Education Center Georgetown, DE

Week of July 25 to July 31, 2019

Readings Taken from Midnight to Midnight

Rainfall:

0.22 inch: July 31

Air Temperature:

Highs ranged from 94°F on July 29 to 85°F on July 25.

Lows ranged from 71°F on July 30 to 61°F on July 26.

Soil Temperature:

80.6°F average

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

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

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