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

Sweet Corn

Trap results continue to be inconsistent throughout the state. Georgetown has been experiencing very low to relatively low moth activity while many other sites have normal or above average moth activity. It takes eggs 3 days to hatch when the high temperatures are below 82 to 85 degrees. Sweet corn at first silk through the first week of silking may need to be on a 2-day spray schedule if local traps are indicating very high moth activity. Traps placed by your sweet corn will give you the best indicator of moth pressure, I have seen traps placed less than a quarter mile from each other indicate radically different activity, so only use the below to get an idea of trends.

Thursday Trap results are as follows:

Trap Location	BLT – CEW	Pheromone CEW
	3 nights total catch	
Dover	3	149
Harrington	3	55
Milford	6	157
Rising Sun	3	58
Wyoming	3	59
Bridgeville	1	60
Concord	3	136
Georgetown	---	44
Greenwood	3	
Laurel	3	131
Seaford	2	54
Lewes	6	81
Millsboro	3	2

Cucurbits

Spider mites have dropped off in the fields we have been looking at. The biggest threat to cucurbits now might be aphids and squash bug on late summer squash and pumpkins. In high numbers they can cause leaf curling and distorted or slowed growth, spread viruses and coat developing fruit in honeydew which leads to unsightly sooty mold growth. While the weather has not been conducive to mites, it has been conducive to aphids. Be sure to carefully scout fields that have been treated with pyrethroids. Pyrethroids generally keep natural enemy activity low, unless you are in my melon field where I have sprayed 4 times and still have ladybugs. On the other hand, pyrethroids are very useful against squash bugs. Treat when you have 1 hatching egg mass per plant. If you have to treat for squash bug, you may need to come in with a follow up spray about a week later to clean up any other egg masses that hatched after the first application. Other materials that will get both squash bug and aphids are Assail and Sivanto. Also check your late cucurbits for cucumber beetles. Second generation beetles have begun emerging from the soil and will sometimes congregate on the last remaining cucurbit growth heading into winter.

Calcium and Boron Deficiencies in Brassica Crops

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

Calcium Deficiency

Calcium deficiency is most commonly seen as tipburn of cauliflower, cabbage, and Brussels sprouts. Chinese cabbage (Napa cabbage) is also susceptible to tipburn. This problem can cause severe economic losses. Tipburn is a breakdown of plant tissue inside the head of cabbage and Chinese cabbage, individual sprouts in Brussels sprouts, and on the inner wrapper leaves of cauliflower. It is a physiological disorder which is associated with an inadequate supply of calcium in the affected leaves, causing a collapse of the tissue and death of the cells. Calcium deficiency may occur where the soil calcium is low or where there is an imbalance of nutrients in the soil along with certain weather and soil nutrient conditions, such as high humidity, low soil moisture, high potash or high nitrogen all of which can reduce calcium availability. Secondary rot caused by bacteria can follow tipburn and heads of cauliflower can be severely affected. Some cabbage and cauliflower cultivars are relatively free of tipburn problems. Green cabbage varieties with good resistance to tipburn include Blue Vantage, Bobcat, Cecile, Emblem, Platinum Dynasty, Quick Start, Royal Vantage, Solid Blue 780, Superstar, Thunderhead, Vantage Point and Viceroy. Red cabbage is less susceptible to tipburn. Check with your seed supplier for tipburn ratings for other varieties.

Controlling tipburn starts with managing liming so that soil pH is above 6.0. Limit ammonium forms of nitrogen, and ensure an adequate and even supply of water. Adjust planting date so that head maturation occurs during cooler temperatures. Plant a cultivar that is less susceptible to the disorder. In general, calcium foliar sprays have not been shown to be effective for controlling tipburn incidence.

Severe tipburn in cabbage. *Photo credit David B. Langston, University of Georgia, Bugwood.org*

Boron Deficiency

Cole crops have a high boron requirement. Symptoms of boron deficiency vary with the cole crop. Cabbage heads may simply be small and yellow. Most cole crops develop cracked and corky stems, petioles and midribs. The stems of broccoli, cabbage and cauliflower can be hollow and are sometimes discolored. Cauliflower curds become brown and leaves may roll and curl. It is important to note that cole crops are also sensitive to boron toxicity if boron is over-applied. Toxicity symptoms appear as scorching on the margins of older leaves.

It is recommended in broccoli and kale to apply 1.5-3 pounds of boron (B) per acre in mixed fertilizer prior to planting. In Brussels sprouts, cabbage, collards and cauliflower, boron and molybdenum are recommended. Apply 1.5-3 pounds of boron (B) per acre and 0.2 pound molybdenum (Mo) applied as 0.5 pound sodium molybdate per acre with broadcast fertilizer. Boron may also be applied as a foliar treatment to cole crops if soil applications were not made. The recommended rate is 0.2-0.3 lb/acre of actual boron (1.0 to 1.5 lbs of Solubor 20.5%) in sufficient water (30 or more gallons) for coverage. Apply foliar boron prior to heading of cole crops.

Boron deficiency in broccoli causing hollow stem. *Photo credit Gerald Holmes, California Polytechnic State University at San Luis Obispo, Bugwood.org*

Fruit Crops

Plasticulture Strawberry Planting and Fall Growth Considerations – *Gordon Johnson, Extension Vegetable & Fruit Specialist;* gcjohn@udel.edu

Early September is the optimum period for planting strawberries in the plasticulture system on Delmarva. The variety Chandler, which has the most acreage in our region, is very sensitive to planting date. For highest yields, Chandler should be planted by September 20. Sweet Charlie and Camarosa should be planted 7-10 days earlier than Chandler for best yields. Most other June bearing type strawberry varieties such as Flavorfest or Rutgers Scarlet should be planted by September 20 for best spring yields. Day neutral varieties such as Albion and San Andreas are less sensitive to planting date but should be planted by the third week in September for the best early spring yields.

Strawberry establishment in the plastic bed takes 3-4 weeks. During establishment, the goal is to have plants root as quickly as possible in the soil and start to send out new growth. This requires attention at planting. Most Delmarva growers are using plugs. Plant so that the plug is at the level of the soil or is just covered with a small amount (1/8") of soil but avoid getting soil into the crown of the plant. Deep planting will result in reduced stands and weak plants due to rotting in the crown area. Shallow planting (where part of the plug is out of the ground) will result in plugs desiccating and reduced stands. Soil should be firm around the plug and water provided at planting. It is advantageous to overhead irrigate several times, even with water provided by drip lines, to reduce plant shock. It is also hard to wet beds completely with the drip system in sandy soils thus affecting establishment.

Rooting also requires adequate bed soil temperature. Raise high beds, the higher the better to allow for good drainage. Lay plastic making sure there is a firm crowned bed. The goal is to have the plastic tight against the soil to allow for good heat transfer. Loose plastic will have poor heat transfer and can reduce fall growth. Beds with depressions that allow water to accumulate can lead to disease problems in strawberries.

The goal coming out of the establishment period is to have 3 or more fully green leaves on the plant. After establishment, plants will send out new growth and develop branch crowns during October and November. The goal by late fall is to have 2-3 branch crowns form from the mother plant. Crown growth occurs when temperatures are above 50°F. Flower buds are also initiated during this time. Often, growers receive plugs or plants later than September 20. For later plantings, low tunnels offer an opportunity to maintain temperatures above 50°F for a longer period achieving this goal. Early row covers may also be used to achieve this goal – research has shown that early row covers may not increase crown number but can increase flower bud initiation in the fall. While planting too late can reduce spring yields, planting too early risks too many crowns being developed, especially in Chandler, leading to smaller unmarketable berries (Sweet Charlie and Camarosa are less prone to this problem, as is Albion). That is why we don't plant in late August on Delmarva

Plant size in the fall is also critical for high yields the following spring. Plants should be about 8 inches in diameter going into winter. Sugars produced in leaves are translocated into the crowns of the plant where they are converted into starch for winter storage. This starch is then used in the spring at greenup.

Inadequate starch storage will also lead to lower yields in the spring. Plants should also go into winter with enough leaves to help insulate the crown.

Agronomic Crops

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

Soybean
Continue scouting for stink bug, corn earworm, and defoliators. I have not received any reports of significant podworm, but be looking out for them in double crop beans, especially those at R2 and R3. Stink bugs will aggregate in fields, often near edges that have attractive host plants. These aggregations may exceed the threshold of 5 bugs per 15 sweeps, but stink bug aggregations can be spot treated without treating the entire field. Bean leaf beetles are also active, and will feed on both leaves and pods, but by themselves, you may need to see 2-4 per sweep to warrant treating. Soybean looper, green cloverworm and grasshoppers are the main defoliators active right now. Fungal and viral diseases are also working on the worm complex, aided by the recent rains. Defoliation thresholds for R-stage soybean is 15% with defoliators present. Once we reach R6, defoliation thresholds can be relaxed a bit.

Sorghum
Continue scouting for earworm and sugarcane aphid. Aphid activity is still spotty, most fields have very low numbers, but even in these fields there can be isolated hot spots where entire leaves are covered in aphids. Warm weather next week will stimulate aphids to reproduce rapidly.

Options for Harvest Aid Treatments in Corn – *Mark VanGessel, Extension Weed Specialist*; mjv@udel.edu

The late season rains have allowed a lot of weeds to produce late-season growth. As a result, there has been a number of questions regarding options for harvest-aid treatment. A harvest-aid may be a consideration to dry down vegetation prior to harvesting and to reduce foreign matter in the harvested grain. There are a number of things to consider including: what weeds need to be treated; how will this be applied; stage of the crop and size of the weeds.

Be realistic on expectations of these products; while they are herbicides, they were developed to control much smaller weeds than the size treated as harvest aids. Most of the products listed below will not kill plants; they are likely to burn off leaves, but not impact lower stems or vines. These products will not affect weed seed production. Reducing leaf material and foreign matter entering the combine should be the goal, not killing the weeds present.

A few more considerations:

- At higher temperatures the risk of drift will increase with these products

- Spray coverage is important for the contact herbicides (Defol and Gramoxone), so be sure to apply in 20 gpa or higher

- This time of year will favor translocation, so glyphosate drift is likely to cause more damage to desirable plants

- Read the product label carefully for all instructions and restrictions

Products Labeled:

Defol (sodium chlorate) is labeled for applications 14 days prior to harvest. Defol will dry down plants but it does not have herbicide activity. Dry down is slow; expect at least 14 days for dry down. Control of morningglory can be erratic.

Glyphosate is labeled but must be used with care do to potential injury to desirable vegetation. Apply glyphosate at 35% moisture or less and black layer has formed. Allow 7 days between application and harvest. Refer to the glyphosate label for rates.

Gramoxone is labeled for broadcast treatments. Application rates vary by formulation. Include a

non-ionic surfactant, and must be applied at least 7 days prior to harvest; after black layer has formed. Rates are lower than labeled rates for no-till burndown. Be sure to read the label for all precautions.

Aim is labeled for applications up to 3 days before harvest. Aim will only effect a few weed species and will not dry down grasses.

2,4-D amine is labeled but due to volatility and off-target movement, use of 2,4-D **is not recommended**. Applications with air temperatures above 85 degrees increases the likelihood of off-target movement. Application timing is after the hard dough or dent stage.

Scouting for Stalk Rots in Corn – *Alyssa Koehler, Extension Field Crops Pathologist*; akoehler@udel.edu

Over the past week, corn plants with accelerated senescence due to stalk rots are becoming visible. After pollination, the ear becomes the major sink of sugars produced by the plant. If a stress event occurs, plants will divert or remobilize sugars from the stalk and roots to meet the needs of the developing ear. Often the pathogens that cause stalk rots are opportunistic and take advantage of plants that have been weakened by potential stress events (drought, flooding, hail, insect damage, foliar disease damage, etc.). Current research projects in our lab are also investigating the connection of early season disease issues, such as Pythium root rot, on susceptibility to stalk rots. Yield losses occur when plants senescence prematurely and are unable to fill out grain (Figure 1), and/or when stalks become brittle and lodge close to harvest.

So far this season, Diplodia stalk rot has been the most commonly observed stalk rot. In Diplodia stalk rot, there is no red or pink coloration in the tissue. Black specks (pycnidia) can be observed embedded in the stalk tissue (Figure 2). Diplodia stalk rot is generally caused by *Stenocarpella maydis*, but *Stenocarpella macrospora,* the causal agent of Diplodia leaf streak, can also infect ears and stalks. This season we have observed Diplodia stalk rot caused by both pathogens (Figure 3).

Figure 1. Ear that has dropped early due to a stalk rot that led to accelerated plant senescence

Figure 2. Diplodia stalk rot with embedded pycnidia in lower stalk tissue

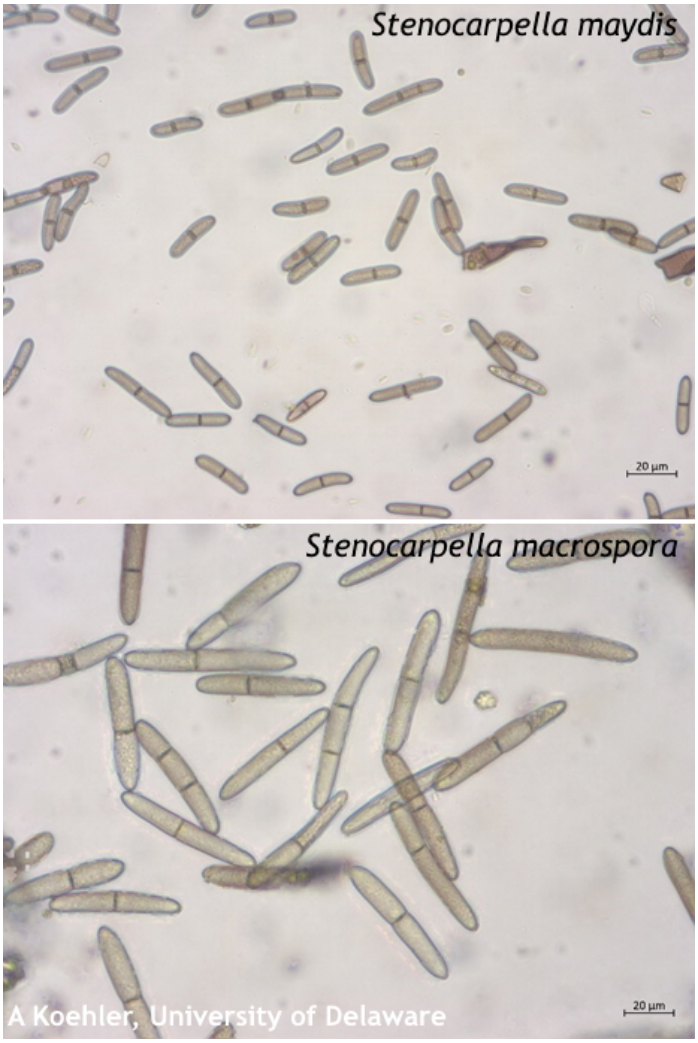


Figure 3. Spores recovered from corn stalks with Diplodia Stalk Rot. *S. maydis* (top) is most commonly associated with Dioplodia stalk rot. *S. macrospora* (bottom) causes Diplodia leaf streak, but can also infect stalks and ears

Another common stalk rot in our area is Giberella stalk rot. Affected plants may wilt and have premature loss of green tissue. Plants often lodge at the nodes and there will be reddish-pink discoloration within the stalk (Figure 4). Small black structures (perithecia) can form at the internodes. Unlike the structures associated with Diplodia, these are superficial and can be easily scraped away from the stalk surface (Figure 5). Red root rot is another disease that can look similar. With red root rot, discoloration is usually darker (Figure 6) and any black structures at the base of the plant (pycnidia) will be embedded in the stalk tissue.

Figure 4. Pink discoloration in the stalk from Gibberella stalk rot

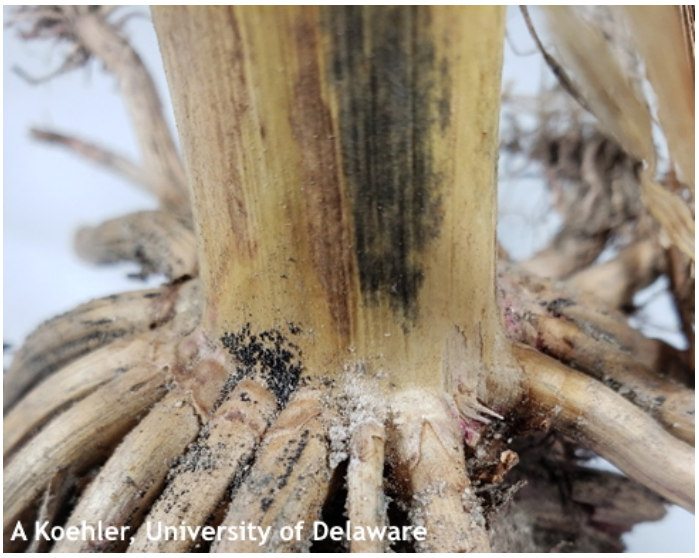


Figure 5. Giberella stalk rot with easily removed black perithecia at the base of the stalk

Figure 6. Red root rot (*Phoma terrestris)* symptoms on corn roots

When plants are a few weeks from physiological maturity (kernel black layer), stalk rots can be scouted by walking the field in a W pattern and randomly checking stalks with either the pinch or push test. (Aim to check 10-20 plants for every 10-20 acres). For the pinch test, pinch the stalk between the lowest two internodes to see if it can withstand the pressure, if the stalk collapses, it fails. To complete a push test, push the stalk 30 degrees from vertical (around 8 inches) and see how many spring back to upright or lodge. In cases where more than 10% of plants are lodging, you may want to consider harvesting at higher moisture and drying grain after harvest to avoid yield loss due to lodging. Since stalk rots are linked to stress, the best management strategies are to reduce stress by planting optimal stand populations, irrigating when possible, managing insect pests and foliar diseases, and using a balanced nutritional program. Planting hybrids with some level of foliar disease resistance can also help to reduce plant stress and encourage strong stalk development.

Checking for Corn Maturity

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

At this point in the season many fields may have started to show signs of dent, but this is a slow transition that sits between two reproductive stages. At the dough stage (R4), the milky fluid is drying down, giving the kernel a soft, dough like consistency (Figure 1). As some of these kernels continue to dry and starch forms at the crown, a dent will form on the outer edge of the kernel. However, to be at the actual dent stage (R5), almost all of the kernels should have the dent feature.

It is important to differentiate between dough and dent stages, where kernel development is still contributing to yield. Not until full maturity (R6, black layer) will your maximum yield be realized. At the dough stage, kernels will still have a dull yellow color, the shelled cob is pink, and the kernels will have a pasty consistency. Some kernels will begin to show dent (Figure 1), but the dent stage start when nearly all of the kernels are fully dented, a hard starch forms at the crown, and kernels will have the typical shiny, dark yellow color we expect of mature corn. For many hybrids, the cob may also be dark red at the dent stage.

The milk line forms shortly after corn plants reach dent (Figure 4). The kernels mature towards the cob and the dry starch line progresses inward. As you watch the milk line progress, keep soil moisture at adequate levels until the kernel has fully matured and black layer (Figure 3) is present. Many of our ears at the station began R4 (dough) last week, and at least one field has begun the R5 dent stage. These fields were planted from late April through mid-May, so expect your fields to follow a similar pattern.

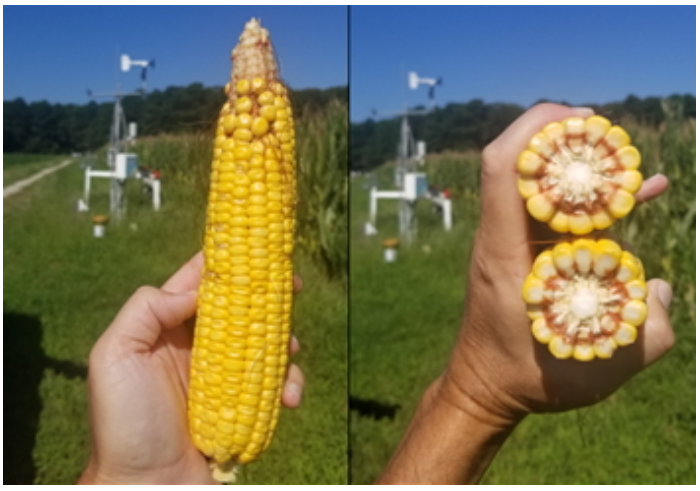


Figure 1. Corn at the dough (R4) stage. Some denting has started.

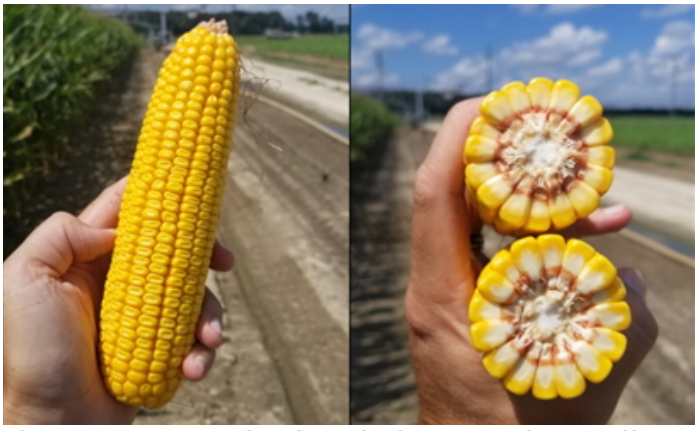


Figure 2. Corn at the dent (R5) stage. Almost all kernels are at dent and the milk line is more prevalent. Depending on the weather, this ear is 2 to 3 weeks from black layer.

Figure 3. Corn at the R6 (black layer) stage. The black layer will be found at the kernel tip.

General

Guess the Pest! Week 20 Answer: Root Knot Nematode – *David Owens, Extension Entomologist,* owensd@udel.edu

Congratulations to Mike Ciborowski for correctly figuring that what has happened to this field is an outbreak of nematodes. Mike will be entered in for the end of year drawing for a scouting toolkit.

This from Dr. Alyssa Koehler:

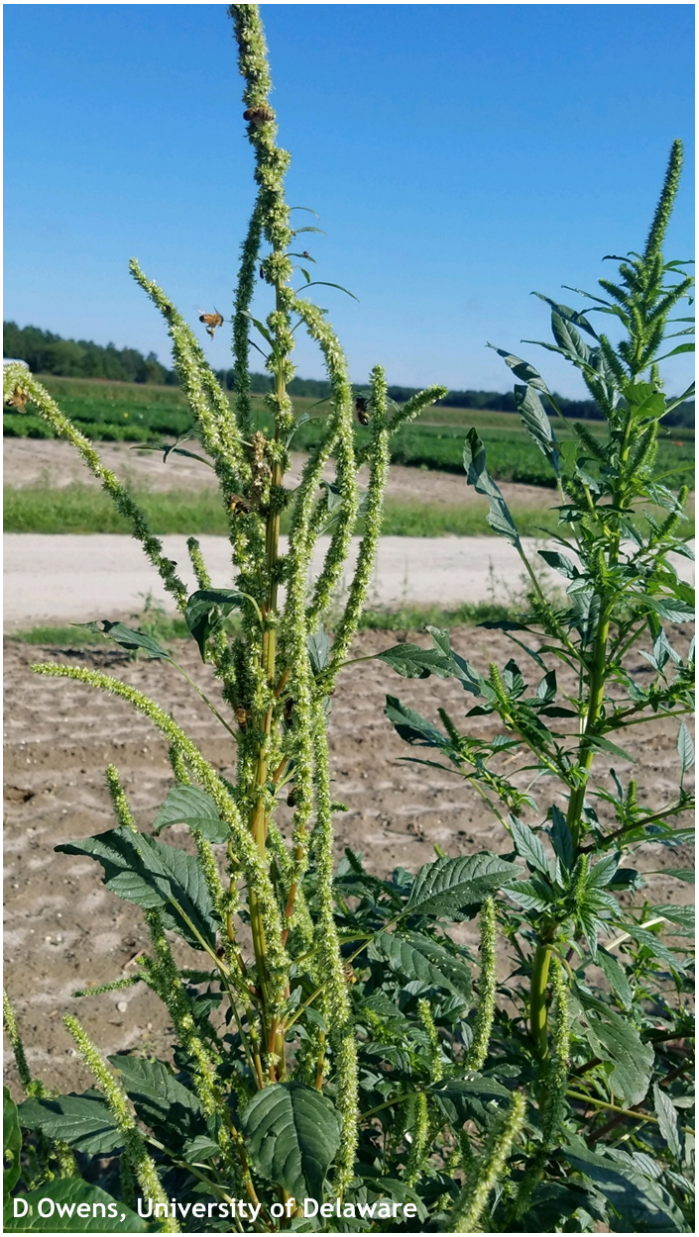
To figure out the culprit of last week's Guess the Pest, we have to look underground where we can see extensive galling of the root system caused by Root Knot Nematodes (Figure 1). At lower populations, aboveground symptoms are difficult to observe, but in highly infected fields non-uniform stunting, wilting, and chlorotic patches can all be visible (Figure 2). Nematodes can be moved mechanically through equipment, workers, and vehicles. Sanitizing equipment between affected fields can minimize the chance of moving nematodes from one field to another. Due to a wide host range, rotation options are limited. Selecting soybean varieties with resistance to RKN is the most cost-effective management strategy.

Figure 1. Severe root galling on soybean caused by root knot nematode

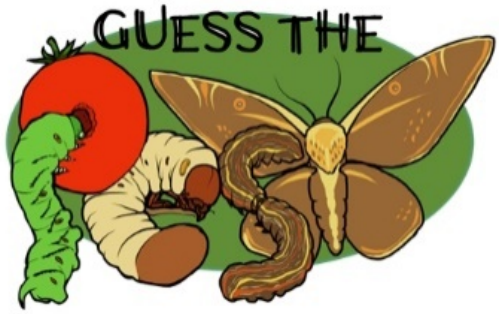
Figure 2: Soybeans plants from the same field with varying levels of stunting due to infection by root knot nematodes

Guess the Pest! Week 21 – *David Owens, Extension Entomologist,* owensd@udel.edu

This week, I thought we could take a slightly more light-hearted approach to a pest. This picture was taken just before me and a string trimmer got to work on my watermelon patch. Seems like this time of year this particular plant rises up from the shadows to give my earlier hand weeding efforts a finger or two. We've got a few things going on in this photo. What is it, and is it a pest or not?



https://docs.google.com/forms/d/e/1FAIpQLSfUPYLZnTRsol46hXmgqj8fvt5f8-JI0eEUHb3QJaNDLG_4kg/viewform?c=0&w=1



Farm Succession Planning – A Process Worth 100 Acres or More…, Part 4 – *Laurie Wolinski, Extension Agent,* lgw@udel.edu; *Dan Severson, New Castle Co. Ag Agent*, severson@udel.edu and *Maria Pippidis, Extension Educator Family & Consumer Sciences,* pippidis@udel.edu

Writing about succession planning somehow happens a lot faster than the actual planning on the farm (Part 1, Part 2 and Part 3 of this series were published in previous weeks.) and just because we are writing about the next steps, you may not be ready to move to the next step. That's OK, please hang in there. It takes time, and thought - and more thought, and discussions, and family meetings. We encourage you to begin early. Seriously, the time involved could be years. Once your succession plan is complete, it will need to be dusted off periodically to review and update if necessary. Life happens and circumstances change – some of the reasons for reviewing and updating.

Were you able to think about, write down or verbalize and share "what if" scenarios? It would not be uncommon to have some family members who align with each other's wishes and some who have something radically different. This is part of the process. The "what if" scenarios can help you and your family develop a plan for building the skills of the successors or determining strategies to assist in supporting your farm's legacy. It can also help you think through how you would handle unexpected circumstances like illness or disability. Lastly it can strengthen the resolve to create plans that support all the generations of the family.

It is not uncommon for some families to need a mediator in order to try and get everyone a little closer and on the same page. A mediator can help during those "what if" conversations. At some point the oldest generation is going to have to make some decisions often done with the assistance of an advisory team (accountant, lawyer, ag lender, insurance agents, financial planner, and/or Extension agent).

Preliminary decision making should reference the checklist used in the "what if" exercises to consider ownership transfer options and timing, retirement planning, farm management and division of labor. The next task is to write a plan – *a rough draft of a plan* - incorporating those preliminary decisions. We recommend, writing it, and re-visiting it periodically. Most of us have those middle of the night thoughts about what we should have/could have written…and a rough draft allows for plenty of flexibility and time.

By now, you should be getting the idea that this is a long process, and not "once and done". If you plan to retire in 10 years, **today** is the perfect day to begin the process. Farmers are very busy and wear many hats – another reason why we urge you begin early. Ten years later will be here before we know it, we want you to have a succession plan in place.

If you haven't yet attended a succession planning workshop, consider registering for the Farm Succession Webinar Series (Thursday evenings in August). Sessions are being recorded. More information about accessing the recordings will be forthcoming.

If you already have a rough draft of a succession plan – Way To Go! You are ready to move-on to designing, developing, writing and reviewing. It is completely fine if, in the midst of executing this step, you realize you need new/alternate options. If you begin early and often, time will more than likely be on your side. As with the previous steps, we have a checklist in The Farm Succession Planning Checklist. Pages 9 and 10 include an outline with check boxes. You may not check those boxes in order, but the list is a great reminder of what to include in your plan.

The final step is one that that should be done periodically. It should be done when life-events occur, but also, just a matter of routine. Mark your calendar to revisit your succession plan annually.

Announcements

Succession Planning Workshops: Investing in Your Farm's Future

Thursdays, August 6, 13, 20, 27, 2020 6:00-7:30 p.m.
Online

Each year, the average age of principal farm operators continues to get just a little bit older. Many of these principal operators may not have developed a retirement plan, considered how to handle health care issues as they age, developed a succession plan, or even developed an estate plan. Join specialists from the University of Delaware Extension and the University of Maryland Extension as they help prepare you for this process.

A four-part series for farm families planning for the next generation.

Session 1: Introduction of the topics and retirement planning.

Session 2: Health insurance in later years.

Session 3: Business planning and communications.

Session 4: Legal topics, planning tools, and finding the right team.

More information and registration is available here: https://go.umd.edu/5Qv

Renovating Pastures Webinar

Wednesday, August 26, 2020 7:00 pm
Online

Join Dr. Amanda Grev, Ph.D. - University of Maryland Forage Specialist for another program in our Webinar Wednesday forage series. Is your pasture in need of some renovation? How do you know if, when, or how to renovate? This webinar will cover the basics of pasture renovation, including an overview of some different types of renovation, steps you can take to determine if renovation is needed, and a step by step guide for the renovation process.

To register: https://www.pcsreg.com/renovating-pastures

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

Extension302 Podcast

Episode 7: Delmarvalous Poultry

The crew interview UD Extension poultry agent, Georgie Cartanza, about the poultry industry on Delmarva, pollinator buffers, and the impact of the recent pandemic.

To listen, go to:

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

Weather Summary

Carvel Research and Education Center Georgetown, DE

Week of August 13 to August 19, 2020

Rainfall:
0.85 inch: August 13 0.80 inch: August 14 0.48 inch: August 16 0.14 inch: August 17 0.68 inch: August 19
Air Temperature:
Highs ranged from 85°F on August 18 to 74°F on August 16.
Lows ranged from 72°F on August 13 to 64°F on August 17.
Soil Temperature:
78.4°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.