

Volume 24, Issue 4

Vegetable Crops

<u>Vegetable Crop Insect Management</u> - Joanne Whalen, Extension IPM Specialist; jwhalen@udel.edu

Seed Corn Maggot in Spring Planted Vegetables The warmer daytime temperatures in late February and March followed by cooler spring temperatures has resulted in very favorable conditions for seed corn maggot (SCM) infestations. Spring planted vegetables most susceptible to maggot damage include cole crops, melons, peas, snap beans, spinach, and sweet corn. SCM overwinter as pupae in the soil and adult flies start emerging in our area in late February and early March. SCM larvae (maggots) can cause damage by burrowing into seeds, cotyledons and the below ground hypocotyl tissue of seedlings. Maggots can also burrow into the main stems of plants.



Seed corn maggot damage to the pea seed.

E Ernest

April 15, 2016

Seed corn maggot damage to pea seed and tunneling in stem (arrow).

There are other maggots that can attack spring planted crops; however, the SCM generally occurs earlier in the season and has the widest host range. In Emmalea Ernest's early season pea variety trial planted in mid-March at the Research and Education Center in Georgetown, DE, damage was significant, especially in untreated plots (i.e. no insecticide seed treatment was applied)



Severe stand reduction from seed corn maggot in plot where no insecticide seed treatment was applied.

As most are aware, there are no rescue treatments for maggots, once damage is found it is too late to control them. Cultural control options to consider include: (a) avoid planting into fields where animal manure was recently applied and/or where a green manure was recently incorporated, (b) early disking or plowing under of crop residues to ensure that they are completely decomposed before planting; (c) good weed management; and (d) planting seeds as shallow as possible to encourage quick emergence. Chemical control options can include commercial applied seed treatments, or soil insecticides; however, not all options are available for all crops. In addition, if conditions remain favorable for seed corn maggot, a combination of a seed treatment and soil insecticide (where labeled) may be needed to provide effective control. Please refer to the Commercial Vegetable Recommendations for available control options.

(http://extension.udel.edu/ag/vegetable-fruitresources/commercial-vegetable-productionrecommendations/)

Cabbage

Be sure to watch for imported cabbage worm (ICW) and diamondback moth larvae (DBM) within a week of transplanting. As a general guideline, treatment is recommended if you find 5% of the plants infested with larvae. If DBM is the predominant species, be sure to select an insecticide that is effective for this insect pest since it can be difficult to control. The pyrethroids have not provided effective control of DBM in many cases, especially where resistance has been documented. Please refer to the Commercial Vegetable Recommendations for suggested chemical controls

https://cdn.extension.udel.edu/wpcontent/uploads/2012/03/20132545/ColeCrops. pdf

Peas

As soon as plants emerge, be sure to sample on a weekly basis for pea aphids. On small plants, you should sample for aphids by counting the number of aphids on 10 plants in 10 locations throughout a field. On larger plants, take 10 sweeps in 10 locations. As a general guideline, a treatment is recommended if you find 5-10 aphids per plant or 50 or more aphids per sweep. Although beneficial insects can help to reduce aphid populations, cool temperatures will favor an increase in aphid populations but will slow beneficial insect activity. As a general rule, you need one beneficial insect per every 50-100 aphids to help crash populations. Please refer to the Commercial Vegetable Recommendations for suggested chemical controls:

https://cdn.extension.udel.edu/wpcontent/uploads/2012/03/20132545/Peas.pdf

Potatoes

As soon as plants emerge, be sure to sample fields for Colorado potato beetle adults, especially if an at-planting insecticide was not used. A treatment should not be needed for adults until you find 25 beetles per 50 plants and defoliation has reached the 10% level. Please refer to the Commercial Vegetable Recommendations for suggested chemical controls:

https://cdn.extension.udel.edu/wpcontent/uploads/2012/03/20132545/Potatoes.p df

Sweet Corn

The earliest planted fields should be scouted for cutworms. A number of cutworm species may be present at planting, including the black cutworm, dingy cutworm and clay backed cutworm. Regardless of the species, treatments should be applied for cutworms if you find 3% cut plants or 10% leaf feeding. Please refer to the Commercial Vegetable Recommendations for suggested chemical controls:

https://cdn.extension.udel.edu/wpcontent/uploads/2012/03/20132545/SweetCorn. pdf

Pest Alert - Allium Leafminer - Joanne

Whalen, Extension IPM Specialist; jwhalen@udel.edu

The allium leafminer (also known as the onion leafminer) has recently been detected and confirmed from infested leeks and onions in Lancaster County, PA. This is the first confirmed infestation in the Western Hemisphere. HOWEVER, this insect has not been detected in Delaware. If you think you may have observed damage or a life stage of the allium leafminer, it is important that you contact Steve Hauss at the Delaware Department of Agriculture by email (<u>stephen.hauss@state.de.us</u>) or call (302) 698-4500 for official confirmation since this would be a new detection in Delaware.

The following pest alert written by written by Shelby Fleischer, Department of Entomology, Pennsylvania State University, University Park, PA, and Tim Elkner, Cooperative Extension, Lancaster County, PA and edited by Dan Gilrein, Cornell Cooperative Extension of Suffolk County provides information on damage symptoms, insect identification and life history, monitoring and potential management options

http://ento.psu.edu/extension/vegetables/pestalert-allium-leafminer

Low Soil pH and Plasticulture - A Bad

<u>Combination</u> - Gordon Johnson, Extension Vegetable & Fruit Specialist; <u>gcjohn@udel.edu</u>

Mid-April is when plastic mulch laying starts for many of our summer crops. I have seen many acres that already have mulch laid in 2016 The following is a reprint of an article from 2015 on the issue of low pH and plastic mulched beds. Each year we see problems with low bed pH under plastic mulch. This can result in a range of problems including poor growth, manganese toxicities, calcium and magnesium deficiencies, poor fruit quality, increased water stress, and increased blossom end rot.

If whole field pHs are below 5.8 there is a high likelihood that areas in the field have a pH of 5.2 or below. If fields are in the third year from a lime application, the risk of low pH areas in the field also increases.

At pHs below 5.2, there is an increase in exchangeable aluminum (Al3+) which is toxic to plant roots. This free aluminum will cause roots to stop growing. Roots will be short, thickened, and stubby and will be brown in color and there will be few fine roots. Poor root growth will lead to increased plant stress, reduced nutrient uptake, reduced water uptake, and poor aboveground growth. In addition, exchangeable aluminum competes with cation nutrients such as calcium (Ca2+) and magnesium (Mg2+) on soil exchange sites. Excess aluminum reduces phosphorus and sulfur availability by complexing with those nutrients, rendering them unavailable for plants.

Another issue at low pH is that certain minerals become more available and may increase to toxic levels. This is what happens with manganese in some low pH soils. Sensitive crops such as muskmelons can be injured when available manganese increases to toxic levels

Another issue is with the use of nitrogen fertilizers with ammonium or urea which are acid forming. Ammonium is found in ammonium sulfate, ammonium nitrate, mono and diammonium phosphate, and urea ammonium nitrate solutions. Urea is found in UAN and as straight urea. Urea has the short-term effect of increasing pH, but once ammonium is released in the soil from the reaction of the urea, the longterm effect will be to reduce pH.

All manures and organic nitrogen sources release ammonium upon mineralization. Depending on the organic source, the pH may decrease. Poultry manures tend to maintain pH and many composts have lime added so pH is not affected, but other organic nitrogen sources will often lower the pH.

In plasticulture beds, the use of these acid forming fertilizers or soil amendments during bed formation or with fertigation through the drip tape will lower soil pH: if the bed pH is marginal to begin with (5.3-5.6) it can be lowered over the season to below the critical pH of 5.2 and cause problems with the growing crop.

Once plastic is laid, there are few solutions to correct the pH of the soil. The key is to apply needed lime before the mulch is applied.

Success with Early Transplanted

<u>Vegetables</u> - Gordon Johnson, Extension Vegetable & Fruit Specialist; <u>gcjohn@udel.edu</u>

With the recent cold, windy weather as a reminder, it is important to understand those factors that affect success with transplanting early warm season vegetables. Remember that the average date of the last killing frost is around April 25 for most of the Delaware and cold weather events can occur well into the middle of May.

Earliest plantings of watermelons, cantaloupes, summer squash, and tomatoes will begin the last week in April. First transplanting of crops such as peppers and eggplant will begin in early May. One of the characteristics that all of these crops have in common is that they are warm season vegetables that are sensitive to cold temperatures, both in the root zone and above ground. There has been a tendency to risk earlier and earlier plantings as growers try to hit the early market. Over the years, many of our early plantings of summer vegetables have suffered because of early cold damage and inadequate provisions to protect plants.

For early transplanted warm season vegetables, choose the lightest ground that warms up quickly. Plant higher sections in the field first. Avoid areas that receive any shade from woods or hedgerows. Early fields should be protected from extreme wind and should not have frost pockets. Rve windbreaks planted between each bed are desirable for early plantings because they limit heat transfer by wind. If no rye windbreaks have been planted, then consideration should be given to using row covers to protect the plants - either clear slitted or perforated low tunnels or floating row covers. Even where windbreaks have been used, row covers may be necessary for extremely early plantings.

Lay plastic mulch well ahead of time to warm soil. Black plastic mulch should have excellent soil contact. I have seen many fields with plastic this year that have been laid on cloddy soils. These bed will not heat up effectively. Firm beds and tight mulch are much more effective in warming soils. Make sure that there is good soil moisture when forming beds and laying plastic because soil water will serve as the heat reservoir during cold nights.

When producing transplants, use larger cell sizes and grow plants so that they have well developed roots in those cells for the first plantings. Large cell sizes will perform better than small cells in early plantings.

Careful attention needs to be paid to hardening off warm season vegetable transplants that will

be planted early. Gradual acclimation to colder temperatures will reduce transplant shock. Do not transplant tender, leggy plants or plants coming directly out of warm greenhouse conditions for these early plantings.

Watch extended weather forecasts and plant at the beginning of a predicted warming trend. Monitor soil temperatures in plastic beds and do not plant if they are below 60°F. Soil temperature in beds should be measured at the beginning of the day when at the coolest. When soil temperature conditions are not favorable, wait to plant. Avoid planting in extended cloudy periods, especially if plants have come out of the greenhouse after an overcast period. These plants will not perform well. Extra caution should be taken to minimize root injury during transplanting. When transplanting, make sure that there is good root to soil contact and there are few air pockets around roots.

In years with cold, cloudy, windy weather after transplanting, we have had large losses of transplants in the field. It is critical to have warm soil conditions after transplanting to allow roots to grow out into the bed quickly. In cold, cloudy conditions, plants shut down physiologically, little root growth occurs, and the existing roots on the transplant do not function well. If there is any wind, plants lose more water than they can take up and they die due to desiccation. This is accelerated when the sun does come out - the first sunny day after an extended cold, cloudy period is when you will see the most wilting of weakened transplants.

If cold weather occurs after transplanting, warm season vegetables vary in their ability to tolerate adverse weather after being set out. Tomatoes will stop growth but will grow out without much damage once warm weather returns. Summer squash and cucumber transplants may be temporarily stunted but generally grow out of the condition. Watermelons will hold if they have been hardened off properly. Cantaloupes can be stunted if exposed to excessively harsh early conditions. Peppers and eggplants will not put on any root growth until temperatures are warm enough. If stunting occurs on any of these warm season vegetables, you may lose the early advantage you were seeking. In addition, remember that all of these vegetables are

susceptible to frost damage and will be killed by a late freeze.

Agronomic Crops

Agronomic Crop Insect Management -

Joanne Whalen, Extension IPM Specialist; jwhalen@udel.edu

Alfalfa

Continue to scout fields for both alfalfa weevil and pea aphids. The first weevil larvae have been found at very low levels. Fields should be scouted for these two insect pests until the first cutting. Examine 5-10 stems for damage and weevil larvae. A full stem sample is not needed until damage or larvae are found on the plants. Once larvae are found, a decision to treat should be based on collecting a minimum of 30 stems throughout a field and checking for the number of larvae per stem. The following thresholds, based on the height of the alfalfa, should be used as a guideline when making a treatment decision for alfalfa weevil: (a) up to 11 inches tall - 0.7 per stem; (b) 12 inches tall - 1.0 per stem; (c) 13 to 15 inches tall - 1.5 per stem; (d) 16 inches tall - 2.0 per stem and (e) 17 to 18 inches tall - 2.5 per stem. The following thresholds should be used as a guideline when making a treatment decision for aphids : (a) alfalfa less than 10 inches tall treat if you find 40-50 aphids per stem, and (b) alfalfa 10 inches or taller in height treat if you find 75-100 per stem. Information on identification, damage symptoms, treatment thresholds and options for insect management in alfalfa can be found at the following links:

http://extension.udel.edu/factsheets/alfalfaweevil-control-in-alfalfa-2/

and https://cdn.extension.udel.edu/wpcontent/uploads/2012/05/31152336/InsectContr olinAlfalfa2016.pdf

Field Corn

As soon as plants emerge, be sure to watch for cutworm, slug and bird damage. You can distinguish bird damage from cutworm damage by the pattern in the field. With bird damage, you generally see longer strips of damaged plants, plants pulled out of the ground, and/or

plants cut high that are compressed at the base of the stems. Although birds can cut plants off at the soil surface, they tend to pull plants out of the ground. In addition, if you look closely you should see "bird prints" near the missing plants or holes where birds have pulled plants out of the ground. In Delaware, the 24(c) Special Local Needs Registration for Avipel Hopper Box (dry) Corn Seed is still available for the 2016 season and expires on July 1, 2016. A copy of the 24C label must be in your possession to use this product. In past years, the 24 (c) label and use directions were on the pesticide canister. However, if this is not case you will need to contact Chris Wade at the Delaware Department of Agriculture for a copy of the label and/or for additional guestions

(Christopher.wade@state.de.us)

Although we generally see more slug damage on seedling corn when conditions remain cooler and soil remains wet, significant egg hatch of grey garden slugs generally occurs during warmer days in April and early May. Although no thresholds are available, in the past levels of five or more grey garden slugs per square foot have indicated the potential for a problem

You will also need to scout for cutworm feeding as soon as plants emerge, even if an at-planting insecticide, seed treatment or Bt corn was used for cutworm control. Depending on when you plant, a number of cutworm species may be present at planting, including the black cutworm, dingy cutworm and clay backed cutworm. In Delaware, black cutworm populations result from local overwintering populations as well as moths migrating from areas in the south. Populations in Kentucky are slightly higher than this time last year (http://www.uky.edu/Ag/IPMPrinceton/counts/ bcw/bcwgraph.htm). Remember, this should be used as just an early warning sign since spring temperatures and weather conditions also have an impact on the size of the population and time of egg hatch.

Small Grains

In general, insect activity remains light in fields throughout the state. As we see a return to warmer temperatures, be sure to scout fields on a weekly basis for aphids, cereal leaf beetles, armyworms and grass sawfly. Low levels of cereal leaf beetle adults, eggs and larvae have been found in an occasional field throughout the state. As far as armyworm, a combination of local overwintering and migratory populations can cause potential problems in small grains. The following link to the University of Kentucky's website provides an idea of the potential size of the migratory population <u>http://www.uky.edu/Ag/IPMPrinceton/counts/t</u> <u>aw/tawgraph.htm</u>

Trap counts in Kentucky at the end of last week for true armyworm were lower than their rolling 5-year averages.

<u>Wheat and Freezing Injury</u> - Richard Taylor, Extension Agronomy Specialist; <u>rtaylor@udel.edu</u>

Since the unusually cold temperatures last week and with many fields showing at least leaf burn from the very low morning temperatures, I thought it might be worthwhile to include here some information from the University of Kentucky about freeze injury on wheat. Reprinted below is Table 1 from an article by Chad Lee and Jim Herbek, Extension Grain Crops Specialists with the University of Kentucky and originally printed in Wheat Science News, Vol. 11, Issue 1 for April 2007 and published by the University of Kentucky College of Agriculture Cooperative Extension Service. Wheat losses from cold temperatures depend on the growth stage of the wheat, the air temperature in the canopy, the duration of the temperature, and possibly the sensitivity of the wheat related to the amount of nitrogen (N) applied (the higher the N rate, the more tender the tissue). It is important for growers to scout frost-susceptible small grain fields to keep abreast of yield potential for their marketing plans.



Photo 1. Winter injured wheat showing leaf burn but this wheat had not reached the jointing stage.

Growth stage	Approximate iniurious	Primary Symptoms	Effect on Yield Potential
otago	temperature		i otontiai
	(2 hours		
	duration)		
Tillering	12° F.	Leaf chlorosis; burning of leaf tips; silage	Slight to moderate
(1-5) ^a		odor; blue cast to fields	
Jointing	24°F.	Death of growing point; leaf yellowing or	Moderate to severe
(6-7)		burning; lesions, splitting, or bending of lower	
		stem; odor	
Boot	28° F.	Floret sterility; spike trapped in boot; damage	Moderate to severe
(10)		to lower stem; leaf discoloration; odor	
Heading	30°F.	Floret sterility; white awns or white spikes;	Severe
(10.15)		damage to lower stem; leaf discoloration	
Flowering	30°F.	Floret sterility; white awns or white spikes;	Severe
(10.515)		damage to lower stem; leaf discoloration	
Milk	28°F.	White awns or white spikes; damage to lower	Moderate to severe
(11.1)		stems; leaf discoloration; shrunken,	
		roughened, or discolored kernels	
Dough	28° F.	Shriveled, discolored kernels; poor	Slight to moderate
(11.2)		germination	
¹ Numbers ir	n parentheses re	fer to the Feekes' scale.	

Stripe Rust in Virginia and Other Small

<u>Grain Disease Updates</u> - Nathan Kleczewski, Extension Specialist - Plant Pathology; nkleczew@udel.edu</u>

Growers should be aware that Stripe Rust was confirmed in different parts of Virginia, including the Eastern Shore, over the weekend. As mentioned last week, it was confirmed in Kentucky, North Carolina, and Tennessee the previous week. Currently the level of infection is low in areas of VA where the pathogen is found, so the potential for any significant movement into our area is low. Regardless, growers in southern parts of Sussex County Delaware and southern counties in Maryland should plan on scouting for the disease over the next 2 weeks, as the forecast continues to look favorable for potential disease development.



Figure 1. Stripe rust infected wheat from Eastern Shore Virginia.

The stripe rust fungus produces yellow to orange pustules that will rub off on your hands, leaving a rusty residue. Often the pathogen will form pustules in strips following the leaf veins (Figure 1). Under cool wet conditions the pathogen can spread rapidly on susceptible varieties. Early stripe rust can look like any number of foliar diseases. Suspect foliage can be placed in a plastic sandwich bag with a moist (not wet) paper towel at room temperature. If rust is present you should see pustules develop on these lesions within 72 hours. If stripe rust is detected, applications of a premix fungicide at early flag leaf will provide excellent control, provided that significant infections have not already occurred. Fungicides containing a strobilurin - (Qol, Group 11) fungicides should not be applied later than Feekes 8/9. Make sure

you scout your fields and assess it for diseases before pulling the trigger. Look for foliar disease symptoms on upper, green foliage. In addition to stripe rust, look for leaf blotch complex (tan spot, Stagonospora) and powdery mildew. I cannot stress the importance of looking at your fields now to see what diseases are present.

I have had questions about powdery mildew on susceptible wheat varieties and if the cold weather has had any impact. The answer is yes, it likely has had an impact. Powdery mildew is active when temperatures are above 59°F, and certainly, we have been under this temperature the past few weeks. However, when canopies are dense you have an increased number of insulated or protected areas of the canopy that will take longer to be impacted by cold temperatures. The result is that although the total number of active pustules will decrease, there will still be some active fungus within the canopy. When our daytime temperatures increase to over 59°F, the active fungus can continue to develop and potentially spread.

That leads me to another question I have been asked several times this week: How do I know if the powdery mildew is active? Aside from asking the fungus, you can look at the color of the pustules as well as the pustule location. Old pustules will often be grey in color, spent pustules may show up as necrotic flecks or small lesions on the foliage. Right now you should be looking at the new foliage- this will tell you if the pathogen has been on the move recently. Do you see white pustules or early lesions on the upper 2-3 leaves? This may indicate a recent infection.

Anxious to Begin Planting Corn? - Richard Taylor, Extension Agronomy Specialist; <u>rtaylor@udel.edu</u> and Amy Shober, Extension Nutrient Management and Environmental Quality Specialist; <u>ashober@udel.edu</u>

With the tax filing deadline rapidly approaching and morning low temperatures this past week in the mid- to low 20 degrees, we expect that many growers are getting just a bit anxious to get to the field to start planting corn. Thankfully, the ten day forecast is finally calling for a much higher average temperature beginning next week. Warmer temperatures are important for corn planting since the key to achieving top yields is obtaining a uniform emerging stand. Corn germination begins once the soil temperature at a 2 to 3 inch depth reaches 50°F. Soil temperature is especially critical in no-till planting situations. Since so many growers now have both a cover crop on their fields and substantial amounts of crop residue, the soil remains cooler than when the soil is worked even by disk or turbo-till. In addition, many locations in Delaware have received 2.5 to 3 inches of rainfall already this month. Moist to wet soil conditions mean that it will take longer for the soil to warm up, even with clear skies and warmer air temperatures.

Corn that takes two to three weeks to emerge often has a lower yield potential and has much greater variability in the growth stage of seedlings. When seedlings differ by two or more leaf stages (a two fully emerged leaf plant versus a four fully emerged leaf plant), the smaller plant can act more like a weed to the corn crop than a contributor to the field's yield potential. In addition, the smaller, later emerging plants allow more sunlight to reach the soil surface, which can stimulate weed germination and competition if the weed control program is not adequate or fails.

There are some management techniques growers can use to make the most of the upcoming favorable weather period, even with the corn planting season getting a bit of a late start. Using row sweeps or row cleaners to remove the stubble from over the row to allow direct sunlight on the soil surface that can help warm the seed row. Another technique is use starter fertilizer in a band near the seed to encourage rapid rooting and guick nutrient uptake. On sandy soil, take care to avoid fertilizers with too high a salt index to prevent damage to the stand. Still, applying enough starter fertilizer to carry the corn crop to sidedress time can help maximize yield potential. We recommend 2×2 placement of starter fertilizer over the use of infurrow ("pop-up") starter fertilizers. Placement of the fertilizer within the furrow increases the risk of damage to the seed and/or emerging seedling. High salt concentrations can damage and/or dry out emerging roots, leading to

uneven emergence, which can potentially reduce yields.

Growers should also consider field selection to maximize yields over the whole operation. Consider planting those fields that have the best drainage and are sandier or darker with organic matter before other fields. Sandier fields and fields with black soils tend to dry more quickly and, therefore, also warm faster; these fields will pick up more heat during the sunny and warmer weather that is forecast for next week. Fields that are more open to the wind or have less shading from woods at the field edge will also warm faster.

Once the soil temperature climbs into the 60 degree range, growers should consider planting their most productive fields because emergence will be relatively rapid and even at that point. This will ensure that a grower's most productive fields have the greatest yield potential and potential profitability.

<u>Nitrogen Deficiency on Forage Grasses</u> -Richard Taylor, Extension Agronomy Specialist; <u>rtaylor@udel.edu</u> and Amy Shober, Extension Nutrient Management and Environmental Quality Specialist; <u>ashober@udel.edu</u>

In a survey this past year, readers expressed their desire to have more articles about nutrient deficiencies included in the Weekly Crop Update. Over the next few issues, we will present information about nutrient deficiencies and provide readers with photos to use as visual aids when trying to diagnose nutrient-related field problems.

Most of us find that identifying nitrogen (N) deficiency on field corn is relatively easy to do, but how many growers could identify the same deficiency on the typical forage grasses used in Delaware. Unlike corn, that shows a distinctive inverted V area of yellowing (chlorosis) from leaf blade tip back towards the leaf collar on the oldest leaves, the forage grasses (tall fescue, timothy, orchardgrass, and reed canarygrass) can exhibit the inverted V, a regular V, or even a diffused area of chlorosis when the deficiency becomes severe. A more typical symptom of N deficiency of forage grasses is a lack of tillering, rhizome or stolon development, and slow growth. In most cases, lower yield at a cutting is the primary symptom of N deficiency that is observed by the producer. Since lower yields can be the result of numerous factors, such as moisture, disease or weed pressure, N deficiency might not even be considered.

The following photos illustrate the range in Nrelated chlorosis symptoms that can be seen on the oldest (lowest) leaves and how the lack of N affects root, shoot, leaf, and tiller production. The take home message, as shown in the photos, is that yield reduction due to N deficiency very likely occurs long before a grower or consultant will see distinct and visible leaf yellowing symptoms. A regular N management program is essential to maintain yield of the forage grasses whether grown for hay or pasture. Tissue sampling and testing, done in conjunction with a routine soil testing program, can help producers achieve maximum forage yields.

Tall Fescue

Tillering/Rhizomes	Root Growth	Leaves/ Top Growth
Image: constraint of the second sec	Image: Constraint of the system is larger.	Image: A state of the state

Orchardgrass



Timothy



Reed Canarygrass

Tillering/Rhizome Development	Root Growth	Leaves/ Top Growth
The top photo shows N deficient reed canarygrass on the right and the bottom photo shows reed canarygrass grown with all essential nutrients on the left and then deficient in N, P, and K going left to right. There's a significant increase in the number of tillers in the plant with all nutrients. In the photo for root growth, it can be observed that rhizome development was severely inhibited by the lack of nitrogen.	As with the other forage grasses, the root system for reed canarygrass grown with all essential elements is larger and roots are coarser than the plant deficient in nitrogen.	The entire reed canarygrass leaf was less green than where N was supplied to the plant and the chlorotic area was more diffuse and didn't show the typical inverted V shape seen in corn. Top growth for all species was severely limited when N was absent but until leaf N deficiency symptoms develop, the reduction in top growth might be attributed to a number of factors.

Commercial Field Crop Disease Page Now

<u>Online</u> - Nathan Kleczewski, Extension Specialist - Plant Pathology; <u>nkleczew@udel.edu</u>

I am happy to announce that the first version of the field crop plant pathology/disease page is now online. This page provides you with helpful IPM information for managing diseases of field crops, disease identification, management recommendations, applied research reports, useful sites, links to variety trial results, and more. Content will continue to be added and changed, but mark your browsers:

http://extension.udel.edu/ag/plant-pathologyand-diseases/commercial-field-crops/. You will also notice that by clicking on "Plant Pathology Home" you will be directed to a main Pathology/Disease Landing page. Be aware that the commercial vegetable section is something that we will be working on this year and plan to have content developed and online by this time next season. We also plan on including an image database at some point. Check it out and if you have any suggestions or comments feel free to send me an email.

	Extension Home
Plant Pathology Home Small Grains Corn Soybeans Useful Links	UD Plant Diagnostic Clinic
Welcome to the Field Crop Disease website of the University of Delaware Extension Plant Pathology Group.	UD Nematode Assay
	🔊 Field Crop Disease Blog
i nis site contains information about diseases and disease management of agronomic crops in Delaware and the surrounding region:	Stripe Rust Update April 13, 2016
Fact sheets	Growers should be aware that Strip
Images	was confirmed in different parts of
 Management recommendations 	weekend As mentioned last week
 Important links and websites 	confirmed in Kentucky, North Carol
Dr. Nathan Kleczewski, nkleczew@udel.edu, (302)831-4768	Tennessee the previous week. Curr level of infection is
Mailing address:	Cocial Madia
149 Townsend Hall	Social Media
531 S College Avenue	Tweet to @Delmarplantdoc
Newark, DE 19711	Turnet to difference of

Grants Available to Help Farmers, Agribusinesses With Marketing, Research and Sales

More than \$300,000 in federal grant funding is now available for projects to help produce, market or access Delaware-grown fruit, vegetables and certain other crops. The Delaware Department of Agriculture is accepting applications for the Specialty Crop Block Grant Program through June 3. The program, funded through the federal Farm Bill, covers products known as specialty crops, including fruits, vegetables, tree nuts, dried fruits, horticulture and nursery crops, including floriculture. Projects may run for one to three years. Grants are available between \$5,000 and \$50,000.

Applications must be submitted by agricultural producers, nonprofit organizations, government entities, for-profit companies or educational institutions based in Delaware or with a business or educational affiliation here. Funding cannot be used for field crops, such as corn and soybeans, or animal agriculture.

An informational grant workshop will be held 5 p.m. April 26 at the Delaware Department of Agriculture, 2320 South DuPont Highway, Dover.

Past Delaware projects have included research on heat-tolerant lima bean varieties, work to improve sales of local produce in Wilmington, efforts to expand a community-supported agriculture program, research on blueberry varieties, and advertising to promote locally run farm stands.

Applications are available at

http://dda.delaware.gov/marketing/grants_spe cialty_cropblock.shtml, or from DDA marketing specialist JoAnn Walston at 302-698-4592 or joann.walston@state.de.us. Applications must be received by 4:30 p.m. June 3. A review team will rank applications for a final decision.

Other grants are available directly from the U.S. Department of Agriculture to help support farmers, agribusinesses, farm stands, farmers' markets, and other ventures:

The Farmers Market Promotion Program funds direct-to-consumer projects, and is not limited to community-run farmers' markets. Deadline is May 12; contact USDA Agricultural Marketing Service, 202-720-0933, or visit https://www.ams.usda.gov/services/grants/fmp p.

The Local Food Promotion Program helps businesses with processing, distribution or storage of food products. Deadline is May 12; contact USDA Agricultural Marketing Service, 202-720-2731, or visit https://www.ams.usda.gov/services/grants/lfpp The Value Added Producer Grant program assists farmers, cooperatives or businesses with processing or marketing of value-added products. Deadline is June 24; contact Letitia Nichols, USDA Rural Development, 302-857-3628, or visit <u>http://www.rd.usda.gov/programs-</u> services/value-added-producer-grants.

Announcements

Free Webinars in April, Sponsored by the Mid-Atlantic Women in Agriculture

4/27: Soil pH, Liming Rates and Fertility - Soil pH is only one number on a soil test report, but can control a lot of your production potential. To maximize your returns from the soil, understanding where soil acidity comes from and how we determine lime rates is essential.

To register: <u>http://www.eventbrite.com/e/wednesday-webinars-</u> registration-11452674257

Webinars begin at noon EST. Duration is approximately 1 hour. For optimal performance we suggest using Internet Explorer as your web browser and connecting via Ethernet connection instead of wireless (wireless will work, but a hard line is more stable)

See website for more information and other upcoming topics: <u>https://extension.umd.edu/womeninag/webinars</u>

If you do not have access to high speed internet and would like to participate in one of the above webinars, contact Tracy Wootten at <u>wootten@udel.edu</u>.

2016 Horticulture Short Courses

For the complete list of 2016 courses go to: <u>http://extension.udel.edu/lawngarden/commercial-horticulture/2016-horticulture-short-courses/</u>

Tree Identification Walk

April 19 4:30-6 p.m. **NEW DATE** Delaware State University Campus 1200 North DuPont Highway, Dover, DE Washington Building near the Herbarium (additional details will be provided following registration)

Cost: \$15 Credits: 1 Pest., 2 ISA, 1 CNP Come prepared to walk around the Delaware State University TREE CAMPUS USA - Arboretum as we exam the growing characteristics of nearly 178 different tree/shrub species (*of which 70 are native to Delaware*) established at this location. Discover common insect and disease issues found in the urban landscape. Instructors: Dot Abbott and Megan Pleasanton

Register with Jan Unflat (302) 730-4000 or jmunflat@udel.edu.

Repreve Renewables Miscanthus Production Field Day

Tuesday, May 10, 2016 10:00 a.m.–12:00 p.m. 23039 Ninetown Road Ridgely, MD 21660

Repreve Renewables, in partnership with University of Delaware and University of Maryland Extension, will be hosting a field day event to demonstrate the benefits of giant miscanthus production. Giant miscanthus is a perennial crop that provides environmental benefits such as reductions in soil loss and compaction, reduction of nitrogen runoff and an increase in soil carbon sequestration.

Repreve Renewables has developed an innovative business approach by partnering with growers and companies alike to grow a renewable and sustainable fiber, called giant miscanthus, used for poultry bedding.

Speakers will be on hand to describe miscanthus crop production practices, as well as the impressive results from utilizing the fiber for poultry bedding.

Registration and more information is online at: http://repreverenewablesfieldday2016.eventbrite.com

Farm Succession Planning Education Series Financial Planning: Creating a Retirement Paycheck

Thursday, May 5, 2016 7:00 - 9:00 p.m. University of Delaware Paradee Center 169 Transportation Circle, Dover, 19901

If you're pre-retirement and planning for your retirement, this session will help you learn how to calculate what you will need, provide some strategies for using your savings assets to create a "retirement paycheck", and offer resources to assist you in your planning. It's never too late...or early, to start!

Please RSVP by calling (302) 831-2506 by May 2.

For more information, contact Extension agents, Dan Severson at <u>severson@udel.edu</u> or 302-831-8860 or Laurie Wolinski at <u>lgw@udel.edu</u> or 302-831-2538.

Season Extension Workshop and Field Day

Friday May, 20, 2016 10:00 a.m. - 3:30 p.m. Delaware State University Smyrna Outreach & Research Center (SORC) 884 Smyrna-Leipsic Road, Smyrna, DE

RSVP by May, 13, 2016. To register for the free workshop or for more information, call Rose Ogutu at (302) 587-6397 or email <u>rogutu@desu.edu</u>

Weather Summary

Carvel Research and Education Center Georgetown, DE

Week of April 7 to April 13, 2016

Readings Taken from Midnight to Midnight

Rainfall:

0.23 inch: April 7 0.43 inch: April 9 0.39 inch: April 12

Air Temperature:

Highs ranged from 68°F on April 11 to 46°F on April 9.

Lows ranged from 49°F on April 7 to 29°F on April 10.

Soil Temperature:

52.6°F average Additional Delaware weather data is available at 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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