



Volume 25, Issue 1

March 3, 2017

### WCU Subscription Options for 2017: Mail, Fax, Email or Text

We hope that this first issue of Weekly Crop Update for 2017 will help you get your growing season off to a good start. The next WCU for 2017 will be issued on April 7. The WCU will then be posted on the web, and sent to mail and fax subscribers by 4:30 p.m. each Friday until September 29. The cost of mail or fax subscription is \$40. You can subscribe by returning the form at the back of this issue. The WCU is also available for free online as a printable PDF or blog format at:

<http://extension.udel.edu/weeklycropupdate/> .

For those who access the newsletter via the internet we send a weekly email reminder which will let you know when the WCU has been posted online, provide a link directly to the current issue, and give you a taste of the headlines. If you would like to receive the email reminder please click on the "Sign Up For Our Emails" link on the WCU blog site. If you experience problems with the online WCU please contact me at [emmalea@udel.edu](mailto:emmalea@udel.edu) or (302)-856-7303.

I will also send out a text message each week when a new issue is posted. The message will be brief, and the text message distribution list will not be used for other announcements except those of an urgent nature (i.e. pest or disease alerts). If you would like to receive the text reminder please send your name, number and cell phone carrier to me at the above email address or send a message to 302-233-4719.

*Emmalea Ernest*

## Vegetable Crops

Cover Crops that Did Not Winter Kill -  
*Gordon Johnson, Extension Vegetable & Fruit Specialist; [gcjohn@udel.edu](mailto:gcjohn@udel.edu)*

Many Delmarva vegetable growers plant cover crops that winter kill. This reduces costs for crop destruction prior to planting early spring vegetables. With the mild January and February temperatures, many cover crops have not fully winter killed, including fall planted spring oats, forage radish, and some mustard species. For vegetable growers seeking to have early areas for spring planting, this will require that these cover crops be killed by non-selective herbicides or tillage. This will also limit the potential to plant no-till vegetables into these areas.



Radish cover crop that did not winter kill.

Another concern is with higher risk of seed corn maggot damage to early planted vegetables. The following is a reprint of an article from Joanne Whalen in 2016 on this issue with some additions regarding terminating cover crops in italics.

#### "Seed Corn Maggot in Spring Planted Vegetables"

Warm daytime temperatures in late February and March followed by cooler spring temperatures may result 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.

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.

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 - *this will be an issue with cover crops that did not winter kill*; (b) early disking or plowing under of crop residues to ensure that they are completely decomposed before planting - *this should take place 2-4 weeks 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 are 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-fruit-resources/commercial-vegetable-production-recommendations/>)



Seed corn maggot damage to a pea seedling.

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#### Planting Spring Cover Crops for Vegetable Rotations - Gordon Johnson, Extension Vegetable & Fruit Specialist; [gcjohn@udel.edu](mailto:gcjohn@udel.edu)

One principle of managing soil for improved health is to always have a crop growing on the soil. This will maintain or add organic matter, provide benefits from the action of growing roots, and recycle nutrients.

Where fall cover crops were not planted due to late harvest, spring cover crops can be planted in March or early April to provide soil health benefits where vegetables and field crops are not scheduled until late May or the month of June.

The most common cover crop options for late March or early April planting include spring oats, mustards and annual ryegrass. Plant oats 90-120 lbs per acre, mustards at 10-20 lbs per acre, and annual ryegrass at 20-30 lbs per acre.

Field peas are another option for spring planting. We are somewhat south of the best zone for spring planting. One type of field pea is the winter pea which is often fall planted in our area but can be spring planted. It has smaller seed so the seeding rate is 30-60 lbs per acre. Canadian or spring field peas are larger seeded and used as a spring cover crop planted alone at 120-140 lb/A.

Mixtures also can be used. Field peas are well adapted to mixing with spring oats or with annual ryegrass. Reduce seeding rates of each component when using in mixtures.



Recommended seeding rates are 70 lbs of oats per acre and 40 lbs/A of Austrian winter peas or 80 lbs/A of Canadian or spring field peas.

Many mustard family crops have biofumigation potential. When allowed to grow to early flower stage and then incorporated into the soil, they release compounds that act as natural fumigants, reducing soil borne disease organisms. Some biofumigant mustard varieties and blends include 'Pacific Gold', 'Idagold', 'Caliente', 'Trifecta', and 'Kodiak'. Other mustard family crops serve as non-hosts, trap crops, or deterrents for pests. In research at the University of Delaware biofumigation using early spring planted biofumigant crops such as 'Image' radish, 'Dwarf Essex' rapeseed, or 'Nemat' arugula showed potential for managing root knot nematode populations. When used as a biofumigant, mustard family cover crops should be grown to achieve maximum biomass by adding 60-100 lbs of nitrogen per acre. Nitrogen is also required to produce high biomass with spring oats and annual ryegrass at similar rates. When planting mixtures with peas, nitrogen rates should be reduced.

An often forgotten spring seeded legume crop that can also be used is red clover. Red clover can be frost seeded into small grains, seeded alone, or mixed with spring oats or annual ryegrass. Seeding rates for pure stands would be 10-16 lbs/A, for mixtures 6-10 lbs/A.

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## Fruit Crops

**False Spring Concerns - Again** -Gordon Johnson, Extension Vegetable & Fruit Specialist; [gcjohn@udel.edu](mailto:gcjohn@udel.edu)

Some peaches, nectarines, plums, and apricots have started to bloom — four weeks ahead of normal. Other fruits such as strawberries may be blooming ahead of schedule in plasticulture systems. These fruit crops are at great risk of losses due to freeze events. Other fruits such as pears, cherries, and blueberries may also flower early and be at risk.

The expected temperatures near 20°F at the end of this week will damage many of these flowers.

The long range outlook for March and April shows a return to more seasonable weather which will slow bloom. However, crops already in bloom will be exposed to the potential of freezing temperatures throughout the rest of March and April.



Peach in various stages of flowering including open bloom, the most susceptible state to freeze damage on March 2, 2017.



Open nectarine flower on March 2, 2017.



Plum with high percentage of open flowers on March 2, 2017



Pluot in full flower on March 2, 2017.

Normally, the average date of the last frost in Delaware is somewhere between April 20-25. We still have seven weeks of worry ahead for our fruiting crops.

For all these fruit crops the most susceptible stage of injury is when flowers have just opened. Open blooms are damaged at 32-34° F. Blooms prior to opening have higher cold tolerance as do small fruit. For most fruits, critical temperature for losses after fruits have formed is 28-30° F.

Frost and freeze protection methods vary with fruits and the type of freeze expected. Advective freezes occur with freezing temperatures and high winds. This is the most difficult to protect against. For strawberries, two layers of floating row covers may be the most effective strategy for advective freezes. Double covers have been shown to be more

effective than single heavy covers in this case. Irrigation along with double covers can provide even more protection if done properly.

Radiation (or radiant) freezes occur on cold, still nights. In this case cold air is near the ground and warmer air is above. Wind machines and helicopters have been successfully used to stir the air and raise the temperatures in orchards in this case. Row covers in strawberries will protect against radiation freezes too. Other options are over the top sprinklers, ground sprinklers, and heaters.

Over the top sprinkling is commonly used for frost protection but it has to be done properly. How this works is that as clear ice forms on plants heat is released. For frost protection, overhead sprinkler systems are designed to deliver 0.1 to 0.2 acre-inches of water per hour. This method is used for radiant freeze or frost protection when wind speeds are low and temperatures 24°F or above. The key is to keep ice formation occurring through the night and continue through melt in the morning. Remember that initially, until ice starts forming, there will be evaporative cooling of the plant. The latent heat of fusion (water freezing) will release heat (approximately 144 BTUs/lb of water), whereas evaporative cooling will absorb heat from the plant (absorbing approximately 1,044 BTUs/lb of water) and lower plant temperatures. Therefore, irrigation must start well above critical temperatures. Also, the volume of water needed needs to be matched with the expected temperature drop and wind speed. In addition, uniformity of water application is critical. This is difficult to do in high wind situations. In orchards, under-tree sprinklers can also be used to release heat (hot air then rises, protecting blooms).

Heaters that are placed throughout an orchard will add heat. Large numbers of small heaters are preferred (40 per acre). This is accomplished with fuel oil fired heaters, gas/propane heaters, or burn barrels using wood or other fuel (check with regulatory agencies before using open burning in barrels). Heaters are much more efficient and less are required if they are used in conjunction with wind machines.

Wind machines or frost protection fans above an orchard or vineyard mix the warmer air above



the inversion layer with the colder air at ground level to protect against radiation frosts. These large fans can be permanently installed and will cover as much as 10 acres. Another type of fan is placed at ground level and pushes the cold air upward, again achieving mixing. Portable fans are also available.

The following is a good factsheet on frost protection on berry crops:

<http://www.fruit.cornell.edu/berry/production/pdfs/frost%20protection%20tips%20techniques.pdf>

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### **Low Level of Two Spotted Spider Mites in Strawberries** - Jerry Brust, IPM Vegetable Specialist, University of Maryland; [jbrust@umd.edu](mailto:jbrust@umd.edu)

Because North Carolina was reporting two spotted spider mite infestations in their strawberry fields I decided to visit some of our fields over the last week. This is 2-3 weeks earlier than I normally visit fields, but with this mild winter and the reports out of North Carolina I decided to start earlier. Most strawberry fields were on plastic but some were matted row production and a few in high tunnels. I was surprised to find very low levels of mites in the fields, with a few hot spots of mites in some high tunnels. There was only one species of mite found: the two spotted spider mite, *Tetranychus urticae*. Overwintering female two spotted spider mites are an orangish-red (Fig. 1) and most of the mites that can be seen with a naked eye will appear reddish in color. Spider mites overwinter as adults in the soil or leaf litter, although they may remain somewhat active in high tunnels through the winter. I found mite eggs in several high tunnel strawberries, but not in any outdoor strawberries. The light yellowish eggs are pearl-like in appearance and are attached to the undersides of leaves or stems (Fig. 2). These overwintering populations of mites can be difficult to control as they are “entrenched” in the strawberries. Feeding damage by mites that occurs before fruiting can cause the most loss in yield, but after the first strawberry harvest plants can tolerate much greater rates of infestation. Growers should check their

strawberries for mites now, especially if they are in a high tunnel. If mites are found now you need more than 5 mites per leaflet (1/3 of a leaf) to justify the expense of a miticide application.



Figure 1. Overwintered two spotted spider mite female with orangish-red coloration.

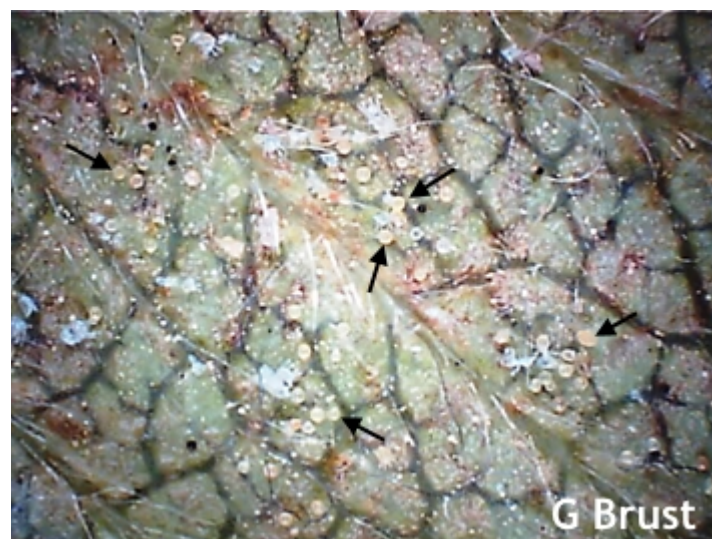


Figure 2. Many two spotted spider mite eggs on back of a leaf

The most difficult thing to accomplish for good control is getting adequate spray coverage. Many of the spray applications do a good job of covering the top of the leaves, but do a poor job of reaching the underside of the trifoliates. The underside area of the leaf that usually sees very little chemical deposition is in the ‘palm’ of the

leaf (Fig 3). These are the areas where mites can still be found even after a few sprays and need to be carefully checked a few days after an application. Good coverage is essential. One grower used a leaf blower-like back pack sprayer and applied two sprays of 1% (by volume) horticultural oil 7-10 days apart. He got excellent spray coverage on the underside of his leaves and consequently excellent control of the mites that were present. By using two applications about one week apart it is possible to control not only the adults and nymphs, but the eggs too. Oil is a good management tactic to use at this time of year as the plants are small and any possible burn from using the oil is a very low risk. An added benefit of the oil is that is rather inexpensive. I would like to see more growers use something like oil now and save the other chemicals for later in the season when plants are much bigger and there is a flare up of mites or other pests. Using oils now will also greatly reduce any development of mite resistance to other chemicals over the course of the season. If miticides are needed Kanemite, Acramite and Portal are all excellent miticides.

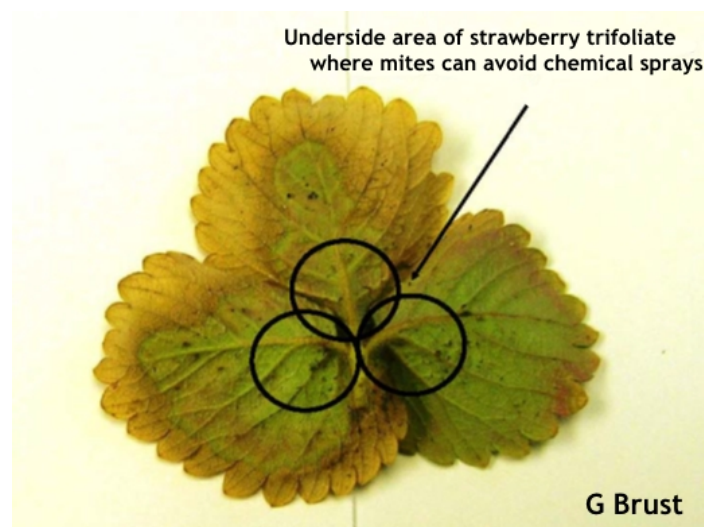


Figure 3. Underside areas of strawberry leaf where mites can hide from spray applications

## Agronomic Crops

**Small Grain Disease Management Tips -**  
*Nathan Kleczewski, Extension Specialist - Plant Pathology; [nkleczew@udel.edu](mailto:nkleczew@udel.edu)*

The warm weather has moved us ahead of schedule for small grains. That means we need to start thinking about disease management. Here are my, "Top 5" small grain disease management tips:

**#1 Know your variety.** Keep records of your wheat varieties in an easily accessible location. Make sure to note how they are rated for potentially damaging diseases including a) Leaf Blotches (tan spot and Stagonospora); b) Fusarium head blight; c) Powdery mildew; d) rusts, including stripe rust. We learned last year the importance of knowing the disease rating of your varieties in relation to stripe rust. Growers planting susceptible varieties (Dynagro Shirley is a good example) saw stripe rust develop early in some places and benefitted from fungicide intervention. Growers who planted a variety with good resistance did not need to apply a fungicide for stripe rust, and instead could focus on other disease issues. Remember, the difference in resistance to stripe rust is huge - with little to no disease development in MR to R varieties (Fig. 1).

**#2 Scout your fields.** Make sure you are taking the time to check your fields every week or so, and increase scouting as fields approach heading. You don't want to be caught off guard by a flush of disease or pests such as cereal leaf beetle.

**#3 Consider a fungicide application.** Regional data show that you can see, on average, a 3-8 bu/A yield improvement when a fungicide is applied at either flag leaf emergence or flowering. A premix fungicide is your best bet at flag leaf, and there are many good products available. If applying at flowering in order to target glume blotch and fusarium head blight, Caramba, Prosaro, and Proline are your best bets. You can also use a labeled tebuconazole product, but these will not provide much protection against fusarium head blight and DON. It is also important to note that we have



seen that the flower timing is efficacious in terms of protecting overall yield, as well as quality. This is likely because our most common foliar diseases, the leaf blotch diseases (Stagonospora and tan spot) take longer to develop in many cases and do not reach the flag leaf until later in the season. If you recall, several years ago, it was not uncommon to put on your fungicides at full head emergence instead of flag leaf emergence. This protected the flag leaf and glumes, but did not protect against fusarium head blight. Now, we know that the Qol's (strobilurins-FRAC group 11) can make DON worse, especially if applied to the head, and therefore want to avoid these timings if possible. Caramba, Prosaro, and Proline all will provide control against foliar diseases, and our data have showed no significant yield difference when comparing these products applied at flower to other products applied at flag leaf emergence. Look for some new products for safe application to flowering wheat in the next 1-2 years. On a similar note, for those who want to include a cut rate of a premix fungicide or a cheap DMI early in the season with your nitrogen- try to get these applied as close to jointing as possible. Diseases need canopy humidity and warmer temperatures to begin to develop, and fungicides applied too early will run out of gas before disease potential starts.

**#4 Pay attention to regional forecasts and disease reports.** There are several ways for you to stay up to date on any impending disease issues. The WCU is one avenue. Also you can sign up for email or text notifications to updates to the **Field Crop Disease Management Blog** (<http://extension.udel.edu/fieldcropdisease/>). Make sure to sign up for the **Fusarium Head Blight Prediction Center** for updates on FHB (<http://www.wheatcab.psu.edu/>).

**#5 If you have an issue- have it confirmed.** Call your county agricultural Extension agent, the UD Diagnostic Clinic, or myself if you have any issues during the season that need to be addressed. We can help with diagnosis and management recommendations. You don't want to add an additional input to control something that was not disease related!

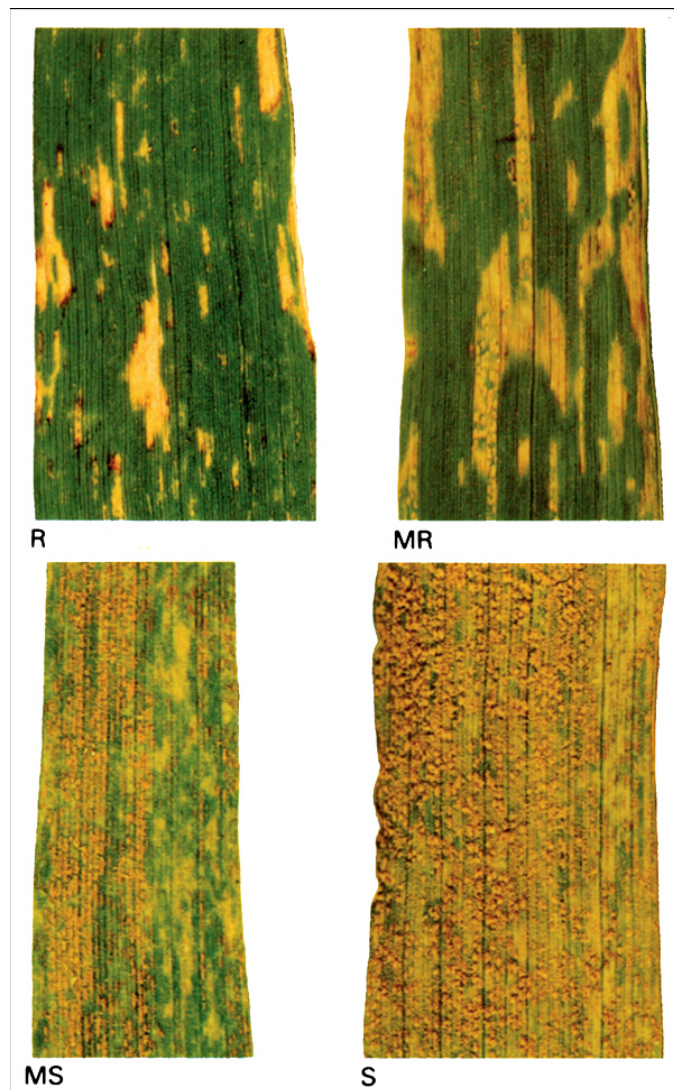


Figure 1. An example of wheat varieties with different levels of resistance to stripe rust. S/MS = susceptible; MR/R = resistant. Resistant varieties can show symptoms, but there will be fewer lesions, smaller lesions, and fewer spores produced within a lesion, resulting in a dramatically reduced impact on disease development and impact to yield.

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**Stripe Rust Present in North Carolina -**  
*Nathan Kleczewski, Extension Specialist - Plant Pathology; [nkleczew@udel.edu](mailto:nkleczew@udel.edu)*

Stripe rust was recently confirmed in wheat in Robeson County, NC on the border with South Carolina. The disease was found in a wheat trial on a susceptible variety, SS 8404.



Stripe rust is an obligate pathogen requiring cool, moist weather to infect tissues and cause disease. It does not overwinter in Delaware or Maryland and must be blown in each year from warmer areas in the south. It will take time for the disease to develop and build, and additional time for the disease to move into the region, if it does at all. That being said, this is simply a note that the disease is active in the region but not at a concerning level. If the disease moves into the area and you have a susceptible variety, a fungicide application may be required, especially if the disease starts early and conditions are cool (50-60°F) and wet. With this knowledge, growers should keep several things in mind.

The first thing for you to do is to check your varieties. If you have a variety with good to excellent stripe rust resistance, fungicide applications are not likely to provide a benefit. Last year we were able to rate our wheat varieties for stripe rust resistance. This data can be found by clicking here: [DE Wheat Variety Trial Disease Ratings](#). In this document a 0 indicates that the disease was completely absent and a 5 indicates that the disease was present at very high levels. Those with varieties between 0 and 2 should feel good about their stripe rust resistance and not be overly concerned about this disease. Those varieties with a rating higher than 3 should keep stripe rust in mind. If you recall, last year we saw pronounced stripe rust in susceptible varieties, but resistant varieties were nearly untouched.

The next thing you should do is plan on scouting your fields regularly. This disease can damage plants quickly on susceptible varieties under

conductive conditions (see Shirley from 2016). If you aren't planning on a fungicide application and have a susceptible variety, definitely keep an eye on your fields. Scouting fields is always a good idea, regardless of whether a disease such as stripe rust is detected in surrounding states.

The big thing now is to be prepared. At this point there is no need to be spraying anything.

For more information on stripe rust management and images, see the [wheat stripe rust factsheet](#) from the University of Delaware.

## General

**Terminating Forage Radish (aka Tillage Radishes)** - Mark VanGessel, *Extension Weed Specialist*; [mjv@udel.edu](mailto:mjv@udel.edu)

When we had weather similar to this winter's a few years ago and many of the forage radishes survived, I did not have much luck with killing radishes with herbicides. My concern is the likelihood of radishes regrowing if only the foliage is removed. I am thinking that we need to be sure the crown portion of the plant is also killed. With lack of experience on how to kill radishes, I don't have any sure-fire approaches.

Some folks say that mowing will terminate these plants. We did not have a mower that would allow us get the blades low enough to remove the crown. Likewise, disking was not sufficient to kill the radishes either.

Glyphosate is not very effective on radishes. So in areas where it is appropriate to use 2,4-D that is the product I would suggest (at a rate of 1 qt for 4lb/gal). Tankmixing it with glyphosate to control rye and other species.

Situations where 2,4-D is not appropriate are more challenging. Paraquat (2 qts) with a triazine herbicide (simazine, atrazine or metribuzin) would be a suggestion.

If the triazines interfere with crop rotation, then only paraquat, but a second application maybe needed.



I would suggest killing the radishes early because: 1) we don't have a sure-fire approach and this allows time to retreat if needed; 2) allows for the root to start to break down so it won't interfere with planting; and 3) radishes will be killed before they start to flower and produce seeds.

However, farmers should also walk their fields and see how many radishes are really alive, there may not be as many as they think. In addition, if they planted mixed species, they need to weigh the pros and cons of terminating the field. Terminating the radishes will also kill other species.

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### **How Does Health Insurance Affect Farmers and Ranchers? Help Influence Rural Health Policy in Upcoming Survey**

Farmers and ranchers: How does health insurance affect you? Help influence rural health policy by participating in an upcoming USDA funded survey. Your responses will help researchers understand how health-insurance policy affects farmers' and ranchers' decisions to invest, expand, and grow their enterprises.

If you would like to participate follow this link: <https://survey.uvm.edu/index.php/132344?lang=en>. Some individuals may have also received a letter in the mail.

This survey is a chance for farmers and ranchers to have their voices heard about their experiences with health insurance and how that affects both their economic development and family's quality of life.

"We want to understand what parts of health insurance are working well for farmers and ranchers and what types of policy and program modifications need to be made. Results will be shared with agriculture and health policy makers," said lead researcher, Shoshanah Inwood, rural sociologist and professor at the University of Vermont. All responses will be confidential and only summary statistics will be reported.

"We know from our prior research that farmers identify the cost of health insurance as a key barrier to growing their farms or farming full-time," said Inwood. This study is a joint effort with the NORC Walsh Center for Rural Health Policy, and the four USDA Rural Development Centers. Findings will be used to guide the development of training materials for professionals who work with farmers and ranchers—such as Extension Educators, farm consultants, and tax accountants—so that they can support farmers' and ranchers' ability to make well-informed decisions regarding health insurance.

The survey questions are based on interviews conducted in 2016 with smaller groups of farmers and ranchers in the 10 states being researched. This study is a four-year national project exploring how health insurance options impact the farm and ranch population in the Project partners include the Northeastern, North Central, Southern and Western Regional Rural Development Centers (RRDCs); University of Vermont Center for Rural Studies; University of Vermont Extension; Center for Rural Affairs; University of Maryland Extension; and, the Farm Foundation.

For more information, visit the HIREDnAG website: <http://www.hirednag.net/> or contact Katlyn Morris, HIREDnAG Project Coordinator at [katlyn.morris@uvm.edu](mailto:katlyn.morris@uvm.edu) or by phone at [802-656-0257](tel:802-656-0257).

## **Announcements**

### **Ag Safety Conference**

Tuesday, March 7, 2017 9:45 a.m.-2:30 p.m.  
Ag Commodities Building  
Delaware State Fairgrounds  
Harrington, Delaware

University of Delaware Cooperative Extension is co-sponsoring an Inaugural Delaware Ag Safety Conference with the Delaware Farm Bureau's Promotion and Education Committee, The Delaware Grange and the Delaware Department of Agriculture. Agriculture is one of the most hazardous industries in the U.S. and this seminar, part of DFB's Ag Safety

campaign, will encourage farmers to “think safety first.”

Delaware’s new Secretary of Agriculture, Michael Scuse, will welcome farmers to the event.

Topics covered will include Equipment Handling & Mechanical Safety, presented by Dr. James Glancey, University of Delaware; Grain Bin Safety by Margie Chase, Nationwide Insurance; Digital Signage, how DelDOT helps keep farmers safe on the highway; and Pesticide Handling Safety by Ron Jester, University of Delaware Extension Safety Specialist (retired). Pesticide recertification credits have been approved.

MyEyeDr will offer free vision screening. Delaware Department of Health and Social Services will offer information on its “Protect Your Skin Delaware” program and chronic disease prevention and control.

Delaware Farm Bureau is looking for sponsors to help cover the costs of the conference, which is offered at no charge and will include a complimentary lunch. Businesses or organizations that are interested in sponsorship or a display may contact Heather Kline at DFB by telephone at (302) 697-3183 or by email at [heather.kline@defb.org](mailto:heather.kline@defb.org).

*All farmers are encouraged to participate. The public also is invited. Register online at [www.defb.org/ag-safety-conference.html](http://www.defb.org/ag-safety-conference.html). Seating is limited; reservations will be first-come, first-served.*

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## 2017 Produce Food Safety Trainings for Direct Marketers and Small Growers

### Dates and Locations:

March 11, UD Carvel Center, 16483 County Seat Highway, Georgetown, DE

March 18, UD Paradee Center, 69 Transportation Circle, Dover, DE

March 25, Fischer Greenhouse, University of Delaware, Newark, DE

**Time:** 8:30 – 12:30 each day

**Registration:** To register, contact Karen Adams at 302-856-7303 or email [adams@udel.edu](mailto:adams@udel.edu).

### Who Should Attend?

Growers who sell primarily through direct market channels (farmer’s markets, farm stands, restaurant

sales, CSA’s), growers that require yearly training to sell at farmer’s markets, and small growers who sell less than \$25,000 of produce.

## What to Expect at the Produce Food Safety Trainings for Direct Marketers and Small Growers?

There will be 4 hours of instruction covering the following areas:

- Introduction to Produce Safety
- Worker Health, Hygiene, and Training;
- Soil Amendments
- Wildlife, Domesticated Animals, and Land Use
- Agricultural Water use in the Field and Postharvest
- Postharvest Produce Handling and Sanitation
- How to Develop a Farm Food Safety Plan

**After attending the entire course, participants will be eligible to receive a certificate from the University of Delaware that verifies they have completed the training course.**

For more information please contact Gordon Johnson [gcjohn@udel.edu](mailto:gcjohn@udel.edu)

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## Delaware Food Safety Modernization Act Product Produce Rule Training, Produce Food Safety Updates, and Food Safety Plan Writing Workshop

**Dates:** March 16-17, 2017

**Time:** 8:00 - 4:00 each day

**Location:** Delaware State Fairgrounds

**Cost:** The Delaware Department of Agriculture will cover the cost of attending for eligible DE growers.

**Registration:** An on-line registration will be available starting on February 1, 2017. You may also e-mail the contacts below or register at your county extension office.

**Lunch and Breaks:** Will be provided

### Who Should Attend?

Fruit and vegetable growers and others interested in learning about produce safety, Good Agricultural Practices (GAPs), and the Food Safety Modernization Act (FSMA) Produce Safety Rule. **The Produce Safety Alliance Grower Training Course is one way to satisfy the FSMA Produce Safety Rule requirement outlined in § 112.22(c) that requires ‘At least one supervisor from the farm must**



**complete food safety training at least equivalent to the standardized curriculum recognized by the FDA’.**

### **What to Expect at the PSA Grower Training Course:**

The trainers will spend approximately seven hours of instruction time to cover content contained in these seven modules:

- Introduction to Produce Safety
- Worker Health, Hygiene, and Training;
- Soil Amendments
- Wildlife, Domesticated Animals, and Land Use
- Agricultural Water (Part I: Production Water; Part II: Postharvest Water)
- Postharvest Handling and Sanitation
- How to Develop a Farm Food Safety Plan

In addition to learning about produce safety best practices, parts of the FSMA Produce Safety Rule requirements are outlined within each module. There will be time for questions and discussion, so participants should come prepared to share their experiences and produce safety questions.

On **day one**, the course will provide a foundation of Good Agricultural Practices (GAPs), FSMA Produce Safety Rule requirements, and details on how to develop a farm food safety plan. Individuals who participate in this course are expected to gain a basic understanding of microorganisms relevant to produce safety and where they may be found on the farm, how to identify microbial risks, practices that reduce risks, how to begin implementing produce safety practices on the farm, and parts of a farm food safety plan and how to begin writing one.

On **day two**, there will be updates on produce food safety research and findings and a produce food safety plan writing workshop.

**After attending the entire course, participants will be eligible to receive a certificate from the Association of Food and Drug Officials (AFDO) that verifies they have completed the training course.** To receive an AFDO certificate, a participant must be present for the entire training and submit the appropriate paperwork.

*For more information please contact Gordon Johnson [gcjohn@udel.edu](mailto:gcjohn@udel.edu) or Holly Porter at [Holly.Porter@state.de.us](mailto:Holly.Porter@state.de.us)*

## **DSU Cooperative Extension's Profiting From a Few Acre\$ Conference**

March 14 and 15, 2017 8:30 a.m.-4:30 p.m.

Modern Maturity Center

1121 Forrest Ave

Dover Delaware

This year's conference will be covering topics that are part of "Profiting from the Local Food System."

Topics include: soil health; small ruminants; profitable poultry farming; value added products; developing of food hub; precision farming; local food networking; improvement of small fruits; community gardens; direct marketing; pricing, and climate change.

There will be ten sessions on March 14 and eight sessions on March 15. Nine sessions will be about the production of crops, vegetables, fruits and animal and nine sessions will be about marketing.

This conference is free for all pre-registered participants. Registration at the door is \$10.

*For more information, to register, or for assistance due to disabilities call 302-857-6438 or email [mpleasanton@desu.edu](mailto:mpleasanton@desu.edu)*

# Weather Summary

Carvel Research and Education Center Georgetown, DE

Week of February 23 to March 1, 2017

Readings Taken from Midnight to Midnight

## Rainfall:

0.12 inches: February 25

0.28 inch: February 28

0.13 inch: March 1

## Air Temperature:

Highs ranged from 76°F on March 1 to 48°F on February 26.

Lows ranged from 56°F on March 1 to 26°F on February 27

## Soil Temperature:

51.6°F average

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

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

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*Weekly Vegetable and Agronomic Crops Newsletter*

*April 7 through September 29, 2017*

<http://extension.udel.edu/weeklycropupdate/>

Timely Production Topics

Current Ag Issues

Disease and Insect Outbreaks

Latest Weed, Insect and Disease Control Options

Pasture and Forage Management

Weather Summary

Upcoming Meetings and Events

Information provided by University of Delaware Cooperative Extension Specialists and Agents.

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To receive the WCU by First Class Mail or Fax, complete the form below and return to:

Emmalea Ernest, Carvel Research & Education Center

16483 County Seat Highway, Georgetown, DE 19947

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