



# WEEKLY CROP UPDATE

UNIVERSITY OF DELAWARE COOPERATIVE EXTENSION

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## Vegetable Crops

**Vegetable Crop Insects** - Joanne Whalen, Extension IPM Specialist; [jwhalen@udel.edu](mailto:jwhalen@udel.edu)

### Cole Crops

Continue to sample for cabbage looper, diamondback larvae, beet and fall armyworms and Harlequin bug. Although the pyrethroids will provide control of Harlequin bugs they are not effective on beet armyworm or diamondback. Be sure to scout and select controls options based on the complex of insects present in the field.

### Lima Beans

Continue to scout for stink bugs, lygus bugs, soybean looper and corn earworm. If present in the mix, be sure to select a material labeled for soybean loopers.

### Melons

Continue to scout all melons for aphids and cucumber beetles and rind feeding caterpillars. Treatments for aphids should be applied before populations explode and leaf curling occurs. In addition, be sure to read the label regarding when a penetrating surfactant is needed in order to achieve effective control.

### Peppers

At this time of year, aphids, corn borer, corn earworm, beet armyworm and fall armyworm are all potential problems in peppers. Be sure to select the material that will control the complex of insects present in the field. Check local corn borer and corn earworm moth catches in your

area by calling the Crop Pest Hotline (302-831-8851) or our webpage at <http://agdev.anr.udel.edu/trap/trap.php>.

### Snap Beans

You will need to consider a treatment for both corn borer and corn earworm. Sprays are needed at the bud and pin stages on processing beans for worm control. With the diversity of worm pest that may be present in fields, be sure to scout fields and select materials that will control the complex of insects present. You will need to call the Crop Pest Hotline (302-831-8851) or check our website for the most recent trap catches to help decide on the spray interval between the pin stage and harvest for processing snap beans

<http://agdev.anr.udel.edu/trap/trap.php>

<http://extension.udel.edu/ag/insect-management/insect-trapping-program/ecb-and-cew-moth-catch-thresholds-for-processing-snap-beans/>

### Spinach

Webworms and beet armyworms moths continue to be active at this time and controls need to be applied when worms first hatch and before they have moved deep into the hearts of the plants. Also, remember that both insects can produce webbing on the plants. Generally, at least 2 applications are needed to achieve control of webworms and beet armyworm.

### Sweet Corn

The first silk sprays will be needed as soon as ear

shanks are visible. Be sure to check both blacklight and pheromone trap catches since the spray schedules can quickly change. Trap catches are generally updated on Tuesday and Friday mornings on our website (<http://agdev.anr.udel.edu/trap/trap.php>) and the Crop Pest Hotline (302-831-8851). Information on scouting sweet corn and how to use the trap catch information can be found at <http://extension.udel.edu/ag/insect-management/insect-trapping-program/action-thresholds-for-silk-stage-sweet-corn/>.

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**Gold Flecking on Tomatoes** - Jerry Brust, IPM Vegetable Specialist, University of Maryland; [jbrust@umd.edu](mailto:jbrust@umd.edu)

“Why do I still have gold fleck on my tomatoes when I have sprayed repeatedly for thrips? I must have a resistant thrips population.” I have heard growers tell me this a few times this year. When I ask why they think they have a thrips problem since they usually tell me they do not see any thrips it is because of the gold flecking (Figure 1) they see on their tomatoes at harvest. While gold fleck on tomatoes can be caused by a moderately high thrips population, at this time of year the explanation of the cause of flecking is more likely due to the weather conditions we have been having. I have conducted research and read many other studies on gold flecking over the last 5 years and they all point to 3 main possible causes. The most likely and common one is when we have high daytime (>88°F) and nighttime (>68°F) temperatures combined with high humidity (dew point temperatures >68°F) and that is what we are experiencing now and have been from July through August. The second most common cause is high populations of either two spotted spider mites (more common) or thrips (less common) feeding on the plant. You can tell that high populations are present when the mites or thrips feeding on the leaves cause white speckles (stippling) on the leaves of a plant (Figures 2 and 3). Sometimes the damage becomes so bad that the edge of a leaf will turn brown and die because of the feeding (Figure 4).



Figure 1. Gold flecking on a red round and a plum tomato

Gold flecking is not from direct mite or thrips feeding on the fruit itself—it can't be because gold flecking can be induced in tomatoes with no thrips or mites being present with high temperatures and humidity. Mites and thrips CAN feed directly on tomato fruit and this damage can superficially look like gold flecking. But the actual 'fleck' in gold flecking is caused by calcium salt crystals that form inside a cell. Mites or thrips damage the fruit to get at the juices and leave damaged cells behind (Figure 4). If you rub your finger or thumb lightly over gold flecked fruit it will feel smooth, but rub it over thrips or mite damaged fruit and it feels rough. At times, if mite populations are high you could get both gold flecking and direct mite feeding on a single fruit. The third possibility that is pretty rare for field production tomatoes is excessive levels of calcium and phosphorous,

but these levels have to be extremely high and rarely if ever occur under field conditions. They do occur, though, at times in hydroponic production systems where gold flecking is considered more of a nutrient imbalance. This is just a quick summary of the work that has been done on this very difficult-to-pin-down problem.

So if you have been spraying for thrips because of gold flecking and you are still seeing it, STOP SPRAYING and check for: 1. thrips, and 2. two-spotted spider mites. You might find a few of each of these, especially the mites as they like hot dry weather, exactly what we have been having. Also look at the foliage to see if there is white speckling over most of the middle and top half of the plant. If it is mites Oberon or Portal (both have a 1-day PHI) or Acramite (with a 3-day PHI) can be used. But chances are you have only low levels of either of these two pests and it is more likely because of our weather conditions that you continue to see gold flecking on your tomatoes.



Figure 2. Moderate white flecking on leaves caused by two spotted spider mite feeding.



Figure 3. Heavy feeding damage on tomato leaves caused by two spotted spider mite feeding



Figure 4. Very heavy TSSM feeding on tomato leaf

## Agronomic Crops

**Agronomic Crop Insects** - Joanne Whalen, Extension IPM Specialist; [jwhalen@udel.edu](mailto:jwhalen@udel.edu)

### Alfalfa and Grass Hay Crops

Continue to watch for defoliators in grass hay crops and alfalfa. We continue to see economic levels in an occasional field. Significant damage can occur in grass hay fields from true armyworm and fall armyworm. It is important to catch populations before significant damage has occurred and when larvae are small. In addition to checking labels for rates, be sure to check for all restrictions, including, but not limited to, comments on control under high populations and size of larvae; days to harvest and forage/silage restrictions. No thresholds are available; however, controls should be applied before significant defoliation occurs.

### Soybeans

Corn earworm populations still remain relatively low; however, we can still find spotty infestation of economic levels of small larvae in double crop fields. Trap catches as of early in the week have started to show a slight decrease. Although it is extremely dry in all areas of the state, a combination of early morning dew with hot, humid temperatures may help increase the incidence of fungal pathogens that can help to regulate populations. However, only scouting will tell if this is occurring. It is also important to continue scouting to determine if a treatment is needed since population levels will vary from field to field. Once pods are present, the best approach to making a decision on what threshold to use for corn earworm is to access the Corn Earworm Calculator developed at Virginia Tech (<http://www.ipm.vt.edu/cew/>) which estimates a threshold based on the actual treatment cost and bushel value you enter.

As far as defoliators, we have started to see an increase in hatch of small grasshoppers and newly emerging bean leaf adults (generally grey in color) in double crop soybeans. Although both insects can defoliate soybeans it is also important to consider their ability to feed on pods resulting in the potential for moldy beans this fall. For more information on decision making for bean leaf beetles and pod feeding

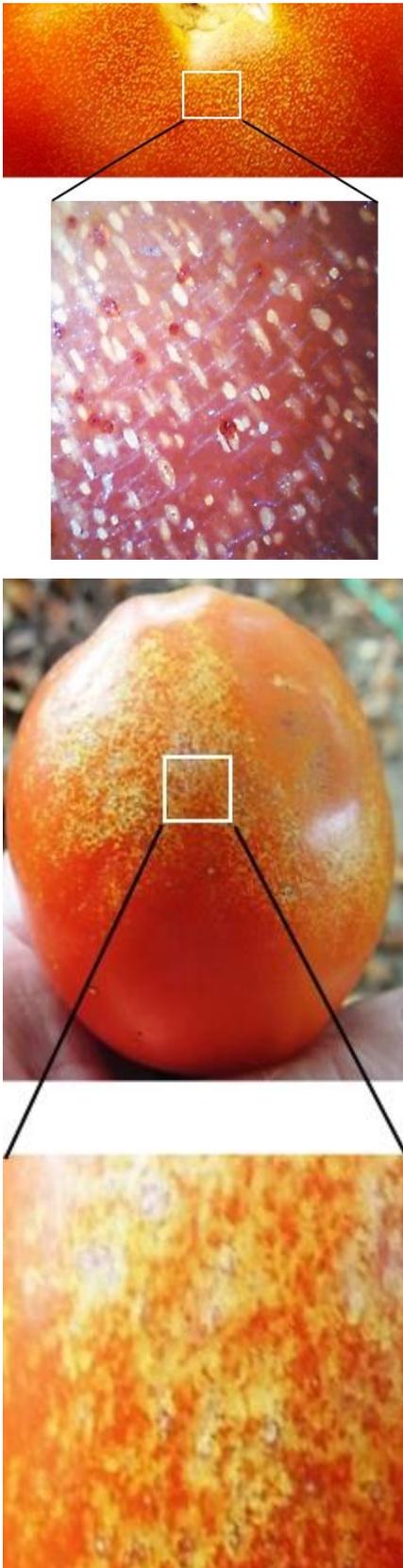


Figure 5. Comparison of gold flecking on the top and mite or thrips feeding on the bottom

please check the following link  
<http://extension.entm.purdue.edu/fieldcropsipm/insects/bean-leaf-beetle.php>.

Soybean loopers continue to be present in many fields in Sussex and Kent counties and they are also increasing in states to our south as of last week. This is a migratory pest and although we have been finding low levels for the last month we have seen an increase in populations over the last 10 day period. In addition, it is difficult to control and pyrethroid resistance has been documented in states to our south. Be sure to select a material that lists soybean looper control on the label. In most cases, higher labeled rates will be needed so be sure to read all labels for rates and restrictions, including but not limited to days to harvest and rotational restrictions.

We continue to find fields with economic levels of native stink bugs (mainly green stink bugs), especially in fields that have reached the R-5 stage (beginning seed - seed is 1/8 inch long (3 mm) long in the pod at one of the four uppermost nodes on the main stem). You will need to sample for both adults and nymphs when making a treatment decision. Available thresholds are based on beans that are in the pod development and fill stages. Studies from the South say that scouting is needed until beans are in the R-7 growth stage (beginning seed maturity) to avoid damage from stinkbugs which can include underdeveloped or aborted seeds, green stem syndrome, reductions in pod fill, seed vigor and viability, yield loss and a reduction in the storage stability of harvested seeds. As a general guideline, we are using a new threshold in the Mid-Atlantic Region -- 5 stink bugs per 15 sweeps. This is the threshold for soybeans produced for grain. If you are producing soybeans for seed, the threshold is still 2.5 per 15 sweeps. We are also starting to see an increase in brown marmorated stink bugs (BMSB), only on field edges bordered by woods. A new BMSB threshold of 3 to 5 total adults + medium and large nymphs in a 2-minute visual count is being used this season. For BMSB, a single, well-timed field-edge-only treatment can provide season-long control.

### **Small Grains**

As you make plans to plant small grains, you

need to remember that Hessian fly can still be a problem. Since the fly survives as puparia ("flax seeds") in wheat stubble through the summer, you should still consider this pest as you make plans to plant small grains. Although damage in our area has generally been the result of spring infestations, we can see damage in the fall. Plants attacked in the spring have shortened and weakened stems that may eventually break just above the first or second node, causing plants to lodge near harvest. Plants attacked in the fall at the one-leaf stage may be killed outright. Wheat attacked later in the fall will be severely stunted, with the first tillers killed and plant growth delayed. Plants infested in the fall can be recognized by their darker than normal bluish coloration and leaves with unusually broad blades. The following combinations of strategies are needed to reduce problems from Hessian fly:

- (a) Completely plowing under infested wheat stubble to prevent flies from emerging.
- (b) Avoid planting wheat into last season's wheat stubble, especially if it was infested with Hessian fly.
- (c) Avoid planting wheat next to last season's wheat fields - the most serious infestations can occur when wheat is early planted into wheat stubble or into fields next to wheat stubble.
- (d) Eliminate volunteer wheat before planting to prevent early egg-laying.
- (e) Do not use wheat as a fall cover crop near fields with infestations.
- (f) Plant after the fly-free date. (Oct 3 for New Castle County; Oct 8 for Kent County; and Oct 10 for Sussex County).
- (g) Plant resistant varieties. You should look for varieties that have resistance to Biotype L. You will need to check with your seed dealers to identify varieties that our adapted our area.

The following link from Alabama provides additional information on Hessian Fly Management  
<http://www.aces.edu/dept/grain/HessianFly.php>.

**Soft Red Winter Wheat and the Falling Number Game** - Richard Taylor, *Extension Agronomy Specialist*; [rtaylor@udel.edu](mailto:rtaylor@udel.edu)

A number of tests have been developed to estimate or measure the quality of grain produced by various types of wheat. Most of us are most familiar with the measure called test weight, which is a measure of the density of wheat or the number of pounds of kernels in a bushel volume. Other than levels of compounds like vomitoxin that are associated with scab infection, most quality problems are associated with pre-harvest sprouting (PHS). Tests for PHS range from visual scoring to enzyme analysis to viscosity analysis.

Pre-harvest sprouting occurs when wheat germinates within the grain head prior to harvest. This most often occurs after the grain has matured and when wet conditions either delay harvest or occur just prior to harvest but after grain maturation. Frequent showers creating within canopy high humidity conditions increase the chance for PHS. Wheat varieties have a variable dormancy period, although most of the wheat grown in our area does not have a very long dormancy as evidenced by the amount of germinated wheat we see in double-cropped soybean fields.

Another quality test associated with PHS that has been getting a lot of attention since the very rainy 2006 harvest season is the falling number (FN) test. The FN was first developed in 1960 and named 'falling number' in 1961 by the test developer, Sven Hagber. This test is a method for determining  $\alpha$ -amylase activity in sprout-damaged grain. It was accepted as an Official AACC method in 1972 and on an international level in 1982. The method measures the effect of enzymes on wheat quality in flour or meal and is a measure of the time in seconds required for a viscometer stirrer to fall a given distance through hot, aqueous flour gel undergoing liquefaction by hydrolyzing enzymes. To simplify that explanation, let's say it's a measure of how fast the amylase enzymes in the wheat grain convert the starch of the grain (ground and put in liquid to make a paste) into sugars that convert the gel into something akin to sugar water. A high FN (>300 seconds) indicates that there was no sprout damage in a wheat grain

sample; a number between 200 and 300 indicates some sprouting; and a FN<200 indicates severe sprouting damage.

The occurrence of sprouting signals an increase in the hydrolytic enzyme activity leading to starch and protein breakdown in grain from  $\alpha$ - and  $\beta$ -amylase and protease enzymes. This reduces grain yield and quality and can cause the wheat to be downgraded to feed wheat costing the grower money. The reason for the down grade to feed wheat is that pasta and noodles made with low FN flour are fragile, soft, mushy when cooked, and lose more starch to the cooking water, making the water cloudy. Low FN flour also creates processing problems such as uneven extrusion, strand stretching, and irregularities in drying.

A low FN in soft red winter wheat (SRWW) always is detrimental when the flour is used in cakes, sometimes can affect cookie quality, and for pretzels it necessitates changes in the mechanization since pretzels require consistent flour quality. Other wheat products are not affected by a low FN.

Although the amount of dormancy before sprouting varies among wheat types, there hasn't been much, if any, breeding for improved FN in wheat varieties within a class of wheat. So, how does the grower avoid PHS and low FN wheat grain. Since weather control is still beyond our capabilities—we still can't even predict weather very well—growers have limited options for protecting themselves from PHS and a low FN. If the grower can dry the grain then harvesting wheat the first time it reaches 20 percent moisture is advisable but if drying is not an option then growers should harvest the first time wheat reaches 15 percent moisture. Growers should also modify the combine cylinder speed and/or concave clearance as harvest conditions change during the day.

Unfortunately all varieties of SRWW will sprout given exposure to the right conditions for a sufficient time. Cool temperatures during the late grain fill period will reduce the dormancy period and signals a need to harvest as early as possible, weather permitting.

Studies have shown that nitrogen fertilization rate either increases or decreases the FN. *Fusarium* infection does cause a minor decrease in the FN and fungicide treatment can also decrease the FN, although this is cultivar dependent. The largest effect on FN comes from weather conditions and especially rainfall that delays harvest.

## General

**Fall Control of Perennial Weeds** - Mark VanGessel, *Extension Weed Specialist*; [mjv@udel.edu](mailto:mjv@udel.edu)

Fall is often the best time and the most convenient time to treat most perennial weeds because it is the time that plants are best able to move the herbicide to the roots where it will do the most good. When considering fall weed control the emphasis should be on what the patch of weeds will look like next spring or summer not the amount of dead stems this fall. Also, it is important to consider that a fall application will not eradicate a stand of perennial weeds; the fall application will reduce the stand size or the stand vigor.

Fall application of glyphosate is the most flexible treatment for most perennial weeds such as bermudagrass, Canada thistle, common milkweed, common pokeweed, dock, hemp dogbane, horsenettle and johnsongrass. Rates of 1 to 1.25 lb acid per acre are consistently the most economical (or about 1.5X the normal use rate for annual weeds). Dicamba (Banvel) at 2 to 4 pints is also labeled for artichoke, bindweeds, dock, hemp dogbane, horsenettle, milkweeds, pokeweed or Canada thistle. Planting small grains must be delayed after dicamba application 20 days per pint of dicamba applied. Fall herbicide applications should be made to actively growing plants. It is best to allow plants to recover after harvest and to spray prior to mowing the corn stalks. Allow 10 to 14 days after treatment before disturbing the treated plants. If fall applications are delayed, remember weed species differ in their sensitivity to frost; some are easily killed by frost (i.e. horsenettle) others can withstand relatively heavy frosts. Check the weeds prior to application to be sure they are actively growing.

## Announcements

### **Poultry Grower's Disease Control Workshop: Keeping Disease Off of the Poultry Farm**

Wednesday, September 30, 2015

If you missed the first workshop on June 11th, the same program will be presented on September 30 at the following times and locations:

10:00 a.m. – 12:00 noon  
**VFW Worcester Post 93**  
2017 Bypass Rd., Pocomoke City, MD

2:00 p.m. – 4:00 p.m.  
**Bridgeville Fire Hall**  
311 Market St., Bridgeville, DE

6:00 p.m. – 8:00 p.m.  
**Ruthsburg Community Club**  
105 Damsontown Rd., Queen Anne, MD

#### **TOPICS INCLUDE:**

#### **Avian Influenza Outbreaks in Commercial Poultry in the U.S.**

Dr. David Shapiro, *Veterinarian, Perdue Farms*

#### **Practical Biosecurity Best Management Practices for Broiler Growers**

Dr. Jon Moyle, *Extension Specialist, University of Maryland Extension*

Ms. Jenny Rhodes, *Ag Extension Educator, University of Maryland Extension*

Mr. Bill Brown, *Poultry Extension Agent, University of Delaware Cooperative Extension*

#### **Avian Flu Response and Control Plan on Delmarva**

Dr. Don Ritter, *Veterinarian, Mountaire Farms*

#### **REGISTRATION DEADLINE is September 25, 2015**

Please register online by visiting:

<http://ag.udel.edu/rec/>. When registering, please be sure to choose the location of the workshop you would like to attend.

For more information, please contact Lisa Collins at [lcollins@udel.edu](mailto:lcollins@udel.edu) or call (302) 856-2585 x702

This event is hosted by University of Delaware Cooperative Extension and University of Maryland Extension, in cooperation with Delmarva Poultry

Industry, Inc., Delaware Department of Agriculture and Maryland Department of Agriculture.

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### **Pasture Walk**

Wednesday, September 16, 2015 6:00-8:00 p.m.  
University of Delaware Webb Farm  
508 S Chapel St, Newark, DE 19713.

This pasture walk is specifically focused on grazing season extension for beef cattle and sheep through the use of brassicas, BMR Pearl Millet and other short term high dry matter yielding grazing crops.

1.25 NM credits will be offered.

To register call (302)831-2506 by Sept 11.

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## **2015 Delaware Cooperative Extension Horticulture Short Courses**

### **Pruning**

Wednesday, September 16, 4:00-6:00 p.m.  
Kent County Extension Office, 69 Transportation Circle, Dover

Cost: \$15

How do I prune a tree/shrub? When and why should I prune? This workshop will provide individuals the tools for proper pruning methods that will benefit the plant and satisfy your customer.

*Instructors: Dot Abbott, Richard Pratt, and Tracy Wootten*

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

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### **Landscape 101 Series**

Cost: \$10/session

Register with Carrie Murphy (302) 831-2506 or [cjmurphy@udel.edu](mailto:cjmurphy@udel.edu) for any of the courses below.

### **Turf Maintenance**

Wednesday, September 2, 4:30-5:30 p.m.  
University of Delaware Botanic Gardens

Revisit methods for maintenance of fall turf. Topics discussed will include establishment or reseeding, aeration, fertilization and insect management options.

Credits: 1 Pest., 0.75 Nut. Mgmt., 1 CNP

*Instructor: Brian Kunkel*

### **Plant Identification – Herbaceous Plants**

Wednesday, September 9, 4:30-5:30 PM  
University of Delaware Botanic Gardens

Learn to identify some of the great herbaceous plants used in the landscape. We will cover the common disease and insect pests of each and strategies for incorporating into the landscape. Meet at UDBG Perennial Garden.

Credits: 1 Pest., 1 CNP

*Instructors: Valann Budischak and Sue Barton*

### **Soils**

Wednesday, September 16, 4:30-5:30 PM, University of Delaware Botanic Gardens

Soil improvement is an ongoing process – discover options available to you. This session will cover the basics of soil health. Meet at the entrance to Fischer Greenhouse.

Credits: 1 Nut. Mgmt., 1 CNP

*Instructors: Carrie Murphy and Tracy Wootten*

### **Plant Identification- Woody Shrubs**

Wednesday, October 7, 4:30 – 5:30 PM, University of Delaware Botanic Gardens

Learn to identify some of the woody shrubs used in the landscape. We will cover the common disease and insect pests of each and strategies for incorporating into the landscape. Meet at UDBG kiosk in the Charles Dunham Garden.

Credits: 1 Pest., 1 CNP

*Instructors: Valann Budischak and Sue Barton*

### **Weed Identification/Maintenance**

Wednesday, October 21, 4:30 – 5:30 PM, University of Delaware Botanic Gardens

Examine some common weeds found in turf and flower beds during the fall and we will discuss management options.

Credits: 1 Pest., 1 CNP,

*Instructor: Brian Kunkel*

### **Plant Identification- Shade Trees**

Wednesday, November 4, 4:30 – 5:30 PM, University of Delaware Botanic Gardens

Learn to identify some of the major shade trees used in the landscape. We will cover the common disease and insect pests of each and strategies for incorporating into the landscape. Meet at UDBG kiosk in the Charles Dunham Garden.

Credits: 1 Pest., 1 CNP

*Instructors: Valann Budischak and Sue Barton*

# Weather Summary

Carvel Research and Education Center Georgetown, DE

**Week of August 27 to September 2, 2015**

**Readings Taken from Midnight to Midnight**

## Rainfall:

0.23 inch: September 1

## Air Temperature:

Highs ranged from 91°F on September 1 to 81°F on August 27.

Lows ranged from 71°F on August 31 to 56°F on August 28.

## Soil Temperature:

76.1°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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