



WEEKLY CROP UPDATE

UNIVERSITY OF DELAWARE COOPERATIVE EXTENSION

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Vegetable Crops

More on Fruit Cracking in Tomato -Gordon Johnson, *Extension Vegetable & Fruit Specialist*; gcjohn@udel.edu

Heavy rain over the last two weeks has resulted in increased fruit cracking in field tomatoes causing extensive losses of marketable fruit.

Jerry Brust wrote a good [article last week](#) on rain check in tomato. The following is more information on cracking in tomatoes.

Cracks in the skin of tomato fruit that expose the internal fruit tissue can appear in several forms.



G Johnson

Concentric cracks circle the tomato around the shoulder of the fruit.



G Johnson

Radial cracks start at the stem end and extend lengthwise down the fruit. Deep radial cracks render fruit unmarketable and increase the likelihood of fruit rot. In cherry tomatoes the split can go the length of the fruit.



G Johnson

Irregular cracks can also appear starting at the fruit shoulder.



G Johnson

Rain checking appears as small cracks arranged concentrically across the shoulders of fruits



G Johnson

In severe cases you can see multiple types of cracking on the same fruit.

Tomato cracking occurs when the skin of the fruit does not expand at the same rate as the fruit interior. Cracking is most common after heavy rain events, but can also occur with irregular irrigation.

Fruit cracking is most prevalent when there is a rapid uptake of water into fruit during ripening when the fruit is accumulating solids. The combined pressure of accumulated water and solutes can split fruits in tomato varieties with low skin elasticity. In addition, during heavy rain events, water can enter the fruit at the stem scar or through minute cracks in the skin shoulder, again causing extra pressure and larger cracks.

Elevated fruit temperatures, often caused by loss of leaf cover, can increase the susceptibility of fruit to cracking as can exposure to high light levels. High humidity around fruit can also increase cracking.

Varieties that are most susceptible to cracking have low skin elasticity during ripening and skin/underlying skin tissue that is thin. Larger fruits tend to be most susceptible; however, many cherry tomatoes are also prone to cracking.

Management of tomato skin cracking starts with selecting crack resistant varieties. Maintain even soil moisture to avoid sudden influx of water into the fruit (but do not over-irrigate). Maintain good fruit cover to keep fruits from overheating and manage fruit load by not over-pruning.

High tunnels and rain shelters are good tools to reduce fruit cracking by controlling plant wetness and soil moisture.

Lack of Netting in Muskmelons -Gordon Johnson, *Extension Vegetable & Fruit Specialist*; gcjohn@udel.edu

Recently a muskmelon field was observed with a whole section of the field producing fruits without netting (bald).

Melons have several different potential rind patterns: smooth such as honeydews, wrinkled such as canary melons, or netted such as our eastern muskmelons and western cantaloupes. Netting is controlled genetically and is highly heritable. Breeders select for netting types in their programs when developing new melons.

Commonly we find lack of netting in muskmelons where fruits have not fully developed due to poor pollination and late in the season when nights are cool affecting fruit development. There is also an association with calcium levels and netting. Poor netting can be a result of calcium deficiencies under low pH soil conditions.

Water Ring and Water Belly in Watermelon Fruits -Gordon Johnson, Extension Vegetable & Fruit Specialist; gcjohn@udel.edu

We are seeing increased incidence of water ring and water belly in watermelon fruit this year. Water ring and water belly is associated with water management, environment, and foliage health. It is found most commonly on fields after heavy rains or if irrigation is heavy, humidity is high and skies are overcast, and foliage is diseased.

This disorder is caused by the accumulation of water in the fruit coinciding with slowed solute (sugar) accumulation. Excess water accumulates at the bottom of the fruit or just beneath the rind in a ring, leaving a water-soaked appearance in the flesh when cut open. Water accumulates during cloudy weather when transpiration from fruits is low. It is often worse in fields where foliage has deteriorated and sugar accumulation is reduced. In this situation, water is still being translocated in the xylem but there is limited transpiration through the leaves. Watermelon fruits are still transpiring, but due to the nature of the fruit (thick rind, waxy surface); transpiration is lower than in leaf tissue, leading to water buildup in the fruit. At the same time solute accumulation has been reduced because foliage is compromised leading to cells full of water but with little sugar.



Water ring in watermelon (anonymous source)

Frequent Heavy Rains = Lots of Vegetable Disease Problems - Jerry Brust, IPM Vegetable Specialist, University of Maryland; jbrust@umd.edu

I do not have to tell you that these frequent and heavy rains we have been having over the last 2-3 weeks have really increased the amount of foliar and, at times, soil diseases in our vegetable crops. In cucurbits foliar diseases such as *Alternaria*, gummy stem blight and an odd one *Cercospora* (Fig. 1 and 2) have been found causing moderate to severe defoliation in some fields that are heavy with fruit. The large fruit load puts a strain on the plant and when conditions are right (wet weather and warm temperatures) the fungal and bacterial diseases will flourish. *Phytophthora sp* also has been a problem in some cucurbit fields as this organism moves best by swimming in water and a very wet or temporarily flooded field is just what it needs to move around and infect the crop causing a 'melt down' of the plant.

Even when a grower has been diligent about applying their foliar fungicides and copper protectant sprays, we are still going to see plants become infected with foliar pathogens under the kinds of weather conditions we have had. One of these problem pathogens is *Xanthomonas campestris* pv. *vesicatoria*, which is the causal agent of bacterial spot in tomato (Fig. 3). However it is not that straight forward as there are at least 4 different species and four different races of this pest that can cause bacterial leaf spot. Preliminary work at North Carolina State University has shown that their bacterial leaf spot in many of their tomato fields has resistance to copper sprays. Based on what I have seen in some of our tomato fields I am sure we have similar problems. However, even if your bacterial spot is not resistant it still is going to spread and get worse in fields where it was already present after all the frequent rains that we have had. I know you have heard us in Extension say this before and repeatedly, but growers need to be sure to follow good sanitation and cultural practices in their vegetable fields, which will allow for better disease management.

Some good cultural controls include: Using pathogen-free seed and disease-free transplants

--including hot water treatments that can be used to kill bacteria on and in seed. Good sanitation practices including cleaning all equipment used in diseased fields, sanitation of equipment can be done safely and effectively using a power washer and a commercial sanitizer. Keep fields free from volunteers plants, weeds, and cull piles. Avoid working in fields when bacterial diseases are present and the fields are wet. Bury or remove crop debris at the end of the season and rotate with a non-host crop for at least 2-3 years.

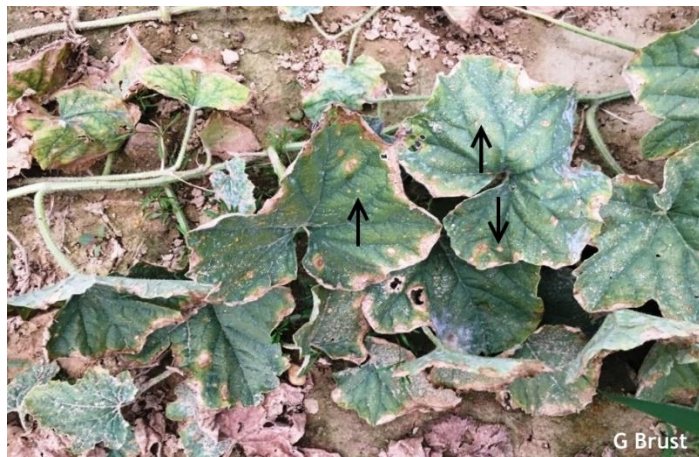


Figure 1. Alternaria (larger tan/brown spots) and Cercospora leaf spots (arrows) on cantaloupe leaves



Figure 2. Gummy stem blight on a watermelon leaf



Figure 3. Bacterial spot on tomato leaf

Agronomic Crops

Kudzu Bug Detected in Maryland Soybeans!

- Bill Cissel, Extension Agent - Integrated Pest Management; bcissel@udel.edu

The kudzu bug was recently detected in Maryland soybean fields. Here is a link for more information on the kudzu bug and how to report detections in Maryland: <http://mdkudzubug.org/>

I am currently surveying fields throughout the state as well as inspecting a couple kudzu patches for the kudzu bug so if you find a field with a kudzu bug infestation in Delaware, please contact me at bcissel@udel.edu or call 302-893-9206.

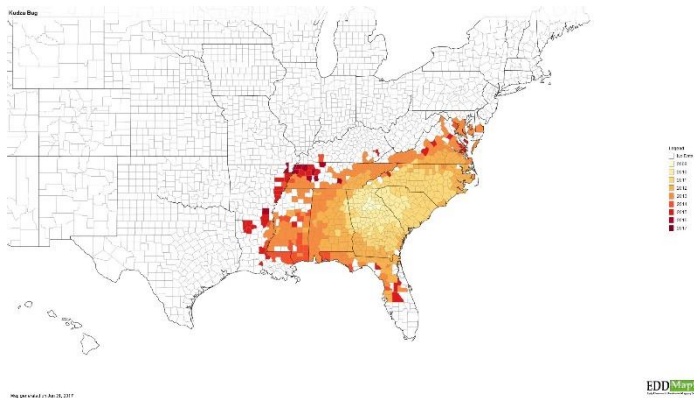


Kudzu Bug Adults



Kudzu Bug Nymphs

The kudzu bug, also called the bean plataspid, lablab bug, and globular stink bug is an invasive species introduced from Asia. It was first discovered in Georgia in 2009 and has since been detected throughout much of the southeastern US. In 2013, the kudzu bug was detected in Sussex County Delaware. Kudzu bug adults and nymphs are a pest of soybean, using their piercing sucking mouthparts to feed on plant sap of soybean stems and leaf petioles. In Georgia and South Carolina, kudzu bug feeding injury reduced yield in 16 of 19 trials with an average yield loss of 18%, ranging from 0-47%.



Kudzu Bug Distribution Map

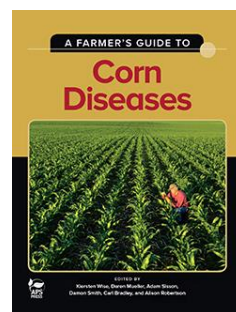
In 2013, the kudzu bug was detected in Delaware but has **not** been detected at economic levels in Delaware soybeans. For more information on identification, biology, research, and management of kudzu bug in soybeans, please visit kudzubug.org: <https://www.kudzubug.org/>

Based on information from the south, a 15-inch diameter sweep net is the preferred method for sampling soybeans. The suggested threshold is one nymph per sweep. If adult infestations are high and the soybeans are under stress, an insecticide treatment may be necessary to prevent economic losses from occurring. There are many products that will provide effective control if this pest were to become a problem for us.

General

Guess the Pest! - Bill Cissel, Extension Agent - Integrated Pest Management; bcissel@udel.edu

Congratulations to Bill Rankin for accurately identifying the damage in Guess the Pest Week #18-19 as Mexican bean beetle feeding injury. Bill will have his name entered into the end of season raffle for \$100 gift card not once but five times, and he will also receive a FREE copy of A Farmer's Guide to Corn Diseases. Click on the Guess the Pest logo below to participate in this week's Guess the Pest! Guessing correctly will automatically enter you into a raffle for \$100 gift card at the end of the season and one lucky winner will also be selected to have their name entered into the raffle five times. For Guess the Pest # 20, we will also be giving away A Farmer's Guide To Corn Diseases (\$29.95 value) to one lucky participant.



<http://www.plantmanagementnetwork.org/book/cornfarmersguide/>

Guess the Pest Week #18-19 Answer: Mexican Bean Beetle



Mexican bean beetle larva



Mexican bean beetle larva



Mexican bean beetle adult



Feeding injury from Mexican bean beetle

This Guess the Pest was challenging for some because we don't typically have too many problems from Mexican bean beetles and there is a good reason for that. That reason being **Biological Control**.

Mexican bean beetle adults and larvae are considered a pest of beans, including soybeans, lima, and snap beans. They feed on the

underside of leaves, removing the lower epidermis giving the leaves a lacy appearance. Eventually, the upper epidermis dies, and falls out to give the leaves a skeletonized appearance. Mexican bean beetles overwinter as adults in wooded areas or under plant debris. The adults emerge in the spring and lay eggs on the underside of leaves. Within two weeks, larvae hatch, and begin feeding on plant foliage.

Mexican bean beetles have been successfully controlled in our region by *Pediobius foveolatus*, a small parasitoid that attacks Mexican bean beetle larvae. These efforts have been led by the New Jersey Department of Agriculture since the 1980s. The parasitoids are reared at the Phillip Alampi Beneficial Insect Laboratory and released each summer because the parasitoid does not overwinter in our region. Despite the success of biological control in preventing Mexican bean beetles from requiring insecticide applications in soybeans throughout much of the region, there are a few hot spots that have occasional problems from this pest.

If you are experiencing an economic infestation of Mexican bean beetles, consider releasing the biological control agent, *Pediobius foveolatus*, to keep those populations in check. For more information on how, when and where to purchase *Pediobius foveolatus* for release, please contact Alexandra Villard at alexandra.villard@ag.state.nj.us.

The threshold for Mexican bean beetles during bloom-pod fill stages in soybeans is 15% defoliation. Once the seeds are fully developed, the threshold is 35% defoliation.

Here is a link for chemical control options if your fields are at threshold for Mexican bean beetles: <http://cdn.extension.udel.edu/wp-content/uploads/2012/05/18063934/Insect-Control-in-Soybeans-2017-final.pdf>

Guess the Pest Week #20



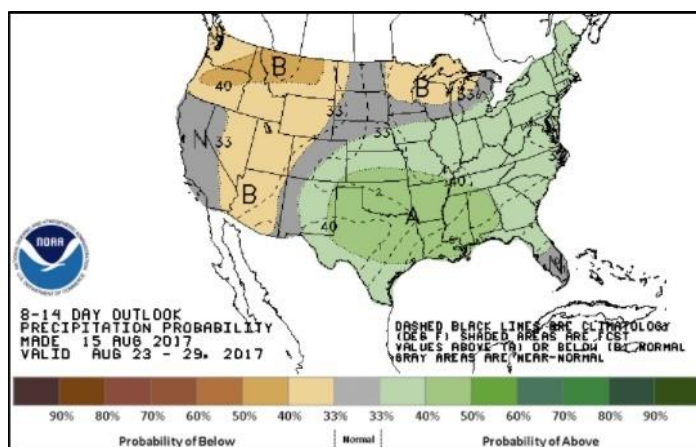
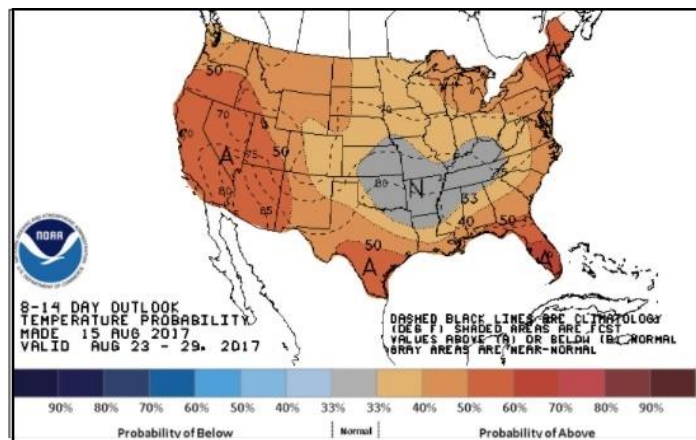
What is this disease?

To submit your guess click the Guess the Pest logo below or go to:
https://docs.google.com/forms/d/e/1FAIpQLSfUPYLZnTRsol46hXmgqj8fvt5f8-Jl0eEUHb3QJaNDLG_4kg/viewform?c=0&w=1



**Delaware Late August-September
Agriculture Weather Report - Scott A.
Minnick, NOAA-National Weather Service,
Wakefield, VA; scott.minnick@noaa.gov,
www.weather.gov**

A warm and wet end to July has transitioned to a cool and wet start to August. Through the 15th, rainfall across the state is already 1 to 3 inches above the normal for the month. Average temperatures are running 1 to 2 degrees below normal. Based on the latest guidance, the cool trend will be short lived as guidance indicates a return to more seasonable temperatures through the latter half of August. The Climate Prediction Center's 8 to 14 day outlook calls for increased probabilities for above normal temperatures. Guidance does indicate that the above normal rainfall trend will persist through the end of the month, with CPC calling for increased probabilities of above normal precipitation. As we move into meteorological fall next month, the forecast becomes more challenging. ENSO neutral conditions, meaning neither El Niño nor La Niña, leave us with no strong climate indicator heading into the fall months. This means the climate trends are tied to more short term climate drivers. However, these indicators are difficult to forecast outside of a few weeks. As the higher latitudes begin to cool, this results in more opportunities to get cooler air filtering into the eastern portion of the nation. Long term guidance and recent trends indicate that the cooler air will generally stay over Canada, leaving Delaware in an area of increased probabilities for above normal temperatures. Fall is typically the driest season of the year, so uncertainty increases. CPC calls for equal chances for above, below, or near-normal rainfall. Which of course, a tropical system can impact quickly.



Speaking of the tropics, the National Hurricane Center has revised the original hurricane outlook based on the already active season. With now Hurricane Gert lifting well offshore, that brings us to 7 named storms. The revised forecast calls for 14 to 19 names storms. As we move into the peak of the season in September, always be prepared for possible impacts from a tropical system.



Announcements

2017 Dickeya and Pectobacterium Summit

November 9, 2017

The Potato Association of America meetings were held last week in Fargo, ND. Interesting items of note were:

- Scottish scientists (including Ian Toth and Gerry Saddler) recommend regulating *Dickeya dianthicola* as A2 quarantine pest. They also recommend a zero tolerance for all *Dickeya* spp. on potatoes in Scotland.
- Work from North Dakota and Maine presented changes in dormant tuber tests that increased *Dickeya* recovery (reduced the false negatives) by as much as 30 percent.
- There is a new *Pectobacterium* species reported from Maine that affects plants in the field and tubers in storage.
- There may be some progress in chemical control of the pathogens (and NO, it is not phosphorous acid, Tanos, or anything else applied to the foliage!!!)

Sound interesting? Valuable? These, and other speakers will all be presenting on these and other topics at the *Dickeya* and *Pectobacterium* summit in Bangor on November 9, 2017.

This is an opportunity to hear the latest information that you, as a grower, need to know about these pathogens and diseases.

There is still room at the upcoming *Dickeya* and *Pectobacterium* Summit:

<https://extension.umaine.edu/agriculture/programs/dickeya-and-pectobacterium-summit/>

Whole Farm Revenue Protection (WFRP) Workshop

Tuesday, August 22, 2017 9:00 a.m.-12:00 noon

University of Delaware

Carvel Research & Education Center

16483 County Seat Highway, Georgetown, DE

[Video: DDA Deputy Sec. Kenny Bounds on the Importance of Crop Insurance](#)

An emerging insurance product, Whole Farm Revenue Protection (WFRP), is now available throughout the U.S. In many cases, **WFRP can provide more actual income protection at a reduced premium cost.**

This workshop will include an introduction to WFRP. Every farm family should have someone in attendance to get an overview of how the Whole Farm coverage concept works.

Details are still being arranged. Save the date and watch future Weekly Crop Updates for further details. In the meantime, contact Laurie Wolinski at 302-831-258 or LGW@udel.edu.

Fall Pasture Walk

Thursday, September 7, 2017 6:00 - 8:00 p.m.

Woodside Creamery

378 North Star Rd, Newark, DE 19711

Come and see how Woodside Creamery uses pasture to effectively feed the dairy herd. Learn how to identify weeds and how to control them in a pasture setting. In addition, the topic of integrated pest management on forage fields will be discussed. Hear how to take a proper soil sample and how to pick out the right fence charger for your operation. NRCS will give an update on the programs available for pasture planting. Experts will be on hand to answer specific questions.

The meeting is free and everyone interested in attending is welcome. If you have special needs in accessing this program, please call the office two weeks in advance.

Credits: Nutrient Management (1) Pesticide credit(1)

6:00-6:05

Welcome and Introductions

Dan Severson, University of Delaware Cooperative Extension

6:05-6:20

Tour of Pastures and Pasture Management

Jim Mitchell, Woodside Farm Creamery

6:20-6:35

Soil Sampling Techniques and How to Properly Submit Your Sample

Karen Gartley, University of Delaware Plant and Soil Science Research Manager

6:35-7:00

Weed Identification and Control in Pastures

Quintin Johnson, University of Delaware Cooperative Extension

7:00-7:15

Update on Natural Resource Conservation District Programs

Brooke Jones, NRCS District Conservationist

7:15-7:35

Integrated Pest Management in a Pasture Setting

Bill Cissel, University of Delaware Cooperative Extension

7:35-7:50

Choosing the Right Fence Charger for your Operation

Dan Severson, University of Delaware Cooperative Extension

7:50-8:00

Wrap up and Evaluations

Dan Severson, University of Delaware Cooperative Extension

To register or request more information, please call our office at (302) 831-2506. Mark your Calendar and call to register by Friday, September 1!

Thank you and see you there. Dan Severson, Susan Garey

Delaware Beekeepers Association's Open Hive Event

Saturday, September 16, 2017

8:30 a.m. – 12:00 p.m.

Delaware State University

Outreach and Research Center

884 Smyrna-Leipsic Road Smyrna, DE 19977

Please join us for educational lectures, demonstrations and a first-hand look inside a real honeybee hive. Get your first exposure to these important and fascinating insects!

(Rain Date September 17, 2017)

RSVP: Kathy Hossler, DBA President,
dbapresidenthossler@gmail.com

Or for more information about DSU's beekeeping program, contact Jason Challandes,
jchallandes@desu.edu or 302-388-2241

Cooperative Extension Education in Agriculture, 4-H and Home Economics, Delaware State University, University of Delaware and United States Department of Agriculture cooperating, Dr. Dyremple B. Marsh, Dean and Administrator. It is the policy of Delaware

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DSU Woodland Workshop Series

Please register for any or all of these workshops by contacting Megan (302) 857-6438 or emailing mpleasanton@desu.edu. (Please note that these workshops are not all at the same location.) You must register to attend these free workshops.

Tree Identification Walk and Talk

Thursday, August 24th 5:00 p.m.

Delaware State University

1200 North Dupont Highway Dover, DE 19901

Come join us at Delaware State University. We will walk and talk about some of the native and nonnative tree species we have located on our Tree Campus USA. A tour will be provided by Dr. Cynthia Hong-Wa our herbarium curator.

Chainsaw 101

Saturday, September 23 10:00 a.m. – noon

915 Kenton Rd. Dover DE 19904

This workshop will show you the do's and don'ts when it comes to chainsaw operations. You will learn safety tips as well as general chainsaw maintenance techniques. The class will be taught by Sam Topper from the Delaware Department of Agriculture's Forest Service.

Selecting and Harvesting Firewood

Thursday, October 26 3:00 – 5:00 p.m.

142 Simmental Meadows Ln, Marydel, DE

During this workshop, you will learn what trees to choose for harvest and which to let grow. You will also learn techniques for harvesting and selecting firewood for sale. This class will be taught by a Delaware Department of Agriculture Forest Service Representative.

Tree Trimming

Thursday, November 9 10:00 – noon

884 Smyrna Leipsic Rd, Smyrna DE 19977

This workshop will teach you the importance of proper tree trimming. The first half of the class will be instructions on how to make a proper cut and the second part will be a demonstration outside.

Building Wood Duck Boxes

Thursday, December 14 6:00 -8:00 p.m.
884 Smyrna Leipsic Rd Smyrna DE 19977

Build them and they will come. During this session you will learn the importance of wood ducks and why we should promote the species. You will be able to build and prepare a wood duck box and take it home with you free of charge.

Weather Summary

Carvel Research and Education Center Georgetown, DE

Week of August 10 to August 16, 2017

Readings Taken from Midnight to Midnight

Rainfall:

1.19 inch: August 12

0.19 inch: August 13

0.69 inch: August 15

Air Temperature:

Highs ranged from 88°F on August 16 to 80°F on August 12.

Lows ranged from 72°F on August 15 and August 16 to 58°F on August 10.

Soil Temperature:

78.4°F average

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

*Weekly Crop Update is compiled and edited by
Emmalea Ernest, Associate Scientist - Vegetable
Crops with assistance from Don Seifrit.*

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