

# NEWS

September 2021 / Volume 44 Number 8

for the commercial vegetable, potato and berry grower

## PVGA Young Grower Award Applications Being Accepted



Wyatt Schriver - 2021

The "PVGA Young Grower" award was an award established five years ago. Brandon Christner was the first recipient at the 2017 Mid-Atlantic Convention and Peter Salerno III was the recipient at the 2018 Convention. Unfortunately, there were no nominees for 2019 but in 2020 two young growers were recognized: Wesley Nell and Nick Lubecki. Wyatt Schriver won the award for 2021.

The winner is chosen each year by the PVGA Leadership and Recognition Committee. PVGA members are asked to nominate a young grower (someone they know or themselves) who meets the following criteria for the Award:

- is a PVGA Member who is 35 years old or younger;
- is successfully growing vegetables, potatoes or berries; and
- has contributed to advancing or promoting the Pennsylvania vegetable, potato or berry industry.

The prize for the winner will be free registration and lodging for the Mid-Atlantic Fruit and Vegetable Convention. To nominate someone or yourself, send a brief but comprehensive description of the farm operation and the nominee's qualifications to PVGA at [pvga@pvga.org](mailto:pvga@pvga.org) or 815 Middle Road, Richfield, PA 17086, by November 30, 2021.



Nick Lubecki - 2020



Wes Nell and family - 2020



Brandon Christner - 2017



Peter Salerno III - 2018

## Needed: Nominations for PVGA Directors

The terms of six members of the PVGA Board of Directors expire at the Annual Meeting scheduled for Wednesday, February 2, 2022. The Directors whose terms expire are:

William Reynolds – Waynesboro – first elected 2007  
Jonathan Strite – Harrisburg – first elected 2010  
Tina Forry – Palmyra – first elected 2019  
Barron Hetherington – first elected 2016  
Alan Kemmerer – first elected 2017  
Robert Shenot – first elected 2007

All the directors are eligible for re-election. The members will elect five members to the Board and the Board will name a sixth Director. The Board was given the opportunity to appoint one of the Board members each year to provide diversity and potentially certain expertise in the Board makeup that the election process does not always provide.

The election will be conducted by a mail-in ballot that will be mailed to all members with the dues renewal notices in late November/early December. The Leadership and Recognition Committee will be seeking additional nominees to be included on the ballot. Members who want to nominate someone for Director, or who would like to be considered, should contact the PVGA office at 717-694-3596 or [pvga@pvga.org](mailto:pvga@pvga.org) or Jon Strite, who as Past President serves as chair of the Committee, at [jstrite1979@gmail.com](mailto:jstrite1979@gmail.com).

## PVGA Preparing for Staff Transition

PVGA Executive Director William Troxell is looking to retire towards the end of 2023. The Board of Directors has appointed a Succession Planning Committee composed of the Executive Committee (Brian Campbell, Rita Resick, Peter Flynn, Bill Reynolds and Jon Strite) plus Steve Bogash, Ken Martin, Brian Moyer, and Jeff Stoltzfus. Since Mr. Troxell has served the Association for 38 years as an independent contractor with his wife and part-time employee currently assisting in the work, this will be a major transition for PVGA. The Committee is finalizing a position announcement with the intention of hiring the new Executive Director in late 2022 to provide for a year of training and transition. The job description will be posted on the website at [www.pvga.org](http://www.pvga.org) or by contacting the Association at [pvga@pvga.org](mailto:pvga@pvga.org).

## NEWS



*Pennsylvania  
Vegetable Growers  
Association*

*An association of  
commercial vegetable,  
potato and berry growers.*

*President*

**Brian Campbell '24**  
*Berwick*

*First Vice President*

**Rita Resick '23**  
*Somerset*

*Second Vice President*

**Peter Flynn '24**  
*West Chester*

*Secretary-Treasurer*

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**Jonathan Strite '22**  
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**Barron Hetherington '22**  
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**John Shenk '23**  
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**Robert Shenot '22**  
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**Jeffrey Stoltzfus '23**  
*Atglen*

**Mark Troyer '24**  
*Waterford*

**Joel Weaver '23**  
*Windber*

*Executive Director*  
**William Troxell**  
*Richfield*

## In Memory

### MaryLou Shenot

MaryLou Shenot, wife of Ed Shenot, passed away August 27 at the age of 70. The Shenot family started farming in the Wexford area in the mid-1850's – producing a variety of farm crops like apples, potatoes, grains and a few garden vegetables beside raising dairy cattle, hogs and chickens. When Ed returned to the farm in 1971 after earning a bachelor's degree in horticulture in Penn State, he persuaded his father to focus the farm's production on fruits and vegetables and the small roadside stand the family had. Ed and MaryLou over the years expanded the farm market to its present size and allow the family to retail the farm's production. MaryLou began the production of her signature fudge – offering over 50 flavors of fudge in the market. She also introduced candy apples, fudge dipped apples, and kettle corn.

MaryLou is survived by her husband Ed of 49 years, her daughters Heather Danley and Angie Hoffman and son Rob, six grandchildren, two brothers and three sisters. Services were held September 2 at St. Alphosus church in Wexford. Memorial contributions may be made to a charity of the donors choice.

### Jean Soergel

Jean Soergel, wife of the late Warren Soergel, passed away September 1 at the age of 92. Even though she was a "city girl" from Millvale who was not aspiring to farm life, she ended up becoming the matriarch of Soergel Orchards in Wexford. While the Soergel family had been growing fruit on the family farm since 1850, it was Jean and Warren who established the roadside market in mid-1960's after a spring frost left them with too few apples to merit traveling to town each day to sell them. The roadside market was successful and the business grew through the years as the family expanded the market which now includes greenhouses, garden center, home accents shop, bakery, deli, gift barn, wine shop, cider house, and Naturally Soergel's – a selection of foods for those with special dietary needs. They currently farm over 450 acres in Allegheny and Butler County.

Jean is survived by her daughter Linda Voll and sons Richard, Reed and Randy, plus 13

grandchildren and 17 great grandchildren. Services were held September 5 at Trinity Evangelical Lutheran Church in Wexford.

### Carl Cantaluppi, Jr.

PVGA member Carl Cantaluppi, Jr., passed away September 6 at his home near Selinsgrove. A retired horticultural extension agent from North Carolina, he moved to Pennsylvania in 2016. He made several presentations at the Mid-Atlantic Fruit and Vegetable Convention, most notably on asparagus production which was one of his special areas of expertise.

Carl was born in 1954 in Tuxedo, NY, the son of the late Carl Sr. and Frances (Kircher) Cantaluppi. He grew up in Ringwood, NJ and graduated with a bachelor of science degree in horticulture from Delaware Valley College of Science and Agriculture. He went on to also earn a master's degree in horticulture from Kansas State University. He began his 36-year career in extension in Kansas before moving on to Oklahoma, Illinois, and Ohio before settling in North Carolina. He had a special interest in introducing growers to new high value fruit and vegetable crops, including seedless table grapes and pawpaws as well as asparagus, and conducted various applied research projects on the best production methods for these crops.

Besides his extension work with growers, Carl enjoyed playing his clarinet in high school, college and community bands over the years. In recent years he played with the Catawissa Military Band and the Sunbury City Band.

He was active in the local chapter of the National Association of Active and Retired Federal Employees serving as president. He was also an active member of Wesley United Methodist Church in Selinsgrove.

He is survived by his wife of seven years, the former Ruth Swartz; his three children from a previous marriage Carrie, Chad and Corey; a sister and a brother.

The funeral service at Wesley United Methodist Church is available for viewing on the church's Facebook page. Memorial contributions can be made to the church, the Hospice of Evangelical or a charity of the donor's choice.

*Information from the Daily Item,  
September 7, 2021.*

The **Pennsylvania Vegetable Growers News** is the official monthly publication of the  
Pennsylvania Vegetable Growers Association, Inc.,  
815 Middle Road, Richfield, PA 17086-9205

Phone and fax: 717-694-3596 • Email: [pvga@pvga.org](mailto:pvga@pvga.org) • Website: [www.pvga.org](http://www.pvga.org)

#### **Our Mission:**

The Pennsylvania Vegetable Growers Association serves Pennsylvania's commercial vegetable, potato and berry growers through education, research, advocacy and promotion.

#### **Our Vision:**

The Pennsylvania Vegetable Growers Association will be the driving force in ensuring the future viability of the commercial vegetable, potato and berry industries in Pennsylvania.

Inquiries about membership, this publication or advertising rates should be directed to William Troxell, Executive Director, at the above address.

## NEWS

## Pandemic Response and Safety Grants Available to Small Producers and Farmers Markets

The U.S. Department of Agriculture (USDA) today announced a Request for Applications (RFA) (<https://www.grants.gov/web/grants/view-opportunity.html?oppld=335320>) for the new Pandemic Response and Safety (PRS) Grant program and encourages eligible entities to apply now for funds. Applications must be submitted electronically through the grant portal at <https://usda-prs.grantsolutions.gov/usda> by 11:59 p.m. Eastern Time on Monday, November 22, 2021. Approximately \$650 million in funding is available for the PRS grants, which are funded by the Pandemic Assistance provided in the Consolidated Appropriations Act of 2021.

The PRS Grant program will assist small businesses in certain commodity areas, including specialty crop producers, shellfish farming, finfish farming, aquaculture, and apiculture; specialty crop, meat, and other processors; distributors; and farmers markets. Small businesses and nonprofits in these industries can apply for a grant to cover COVID-related expenses such as workplace safety measures (e.g., personal protective equipment

(PPE), retrofitting facilities for worker and consumer safety, shifting to online sales platforms, transportation, worker housing, and medical costs. The minimum funding request is \$1,500 and the maximum funding request is \$20,000.

The RFA and the PRS Grant Portal provide more details about eligibility for the grant. Eligible entities are required to obtain a free DUNS Number from Dun & Bradstreet (D&B) before applying for this program. USDA has created a custom PRS DUNS number portal at <https://support.dnb.com/?CUST=PandemicResponse>.

Application resources, including Frequently Asked Questions (FAQs), tip sheets in English and Spanish on applying for a DUNS Number, videos on "How to Apply" and more, are available on the PRS Grant Portal.

For more information, you can also reach out to the PRS help desk, Monday-Friday, 9 a.m.-9 p.m. ET at (301) 238-5550 or [ams.prs@grantsolutions.gov](mailto:ams.prs@grantsolutions.gov).

Check your eligibility, obtain a DUNS number, and learn more about the application process at the PRS Grant Portal.

## State News Briefs

### New Program Offers Stormwater Management Assistance

A new state-funded program has launched to help farmers, businesses and other landowners find solutions to stormwater management issues and find grants and loans to help finance stormwater management improvements.

The Center for Water Quality Excellence offers no-cost services at its office in Columbia, Lancaster County, located at 430 Walnut St., Suite 303 and open 9 a.m. to 5 p.m. Tuesdays through Thursdays. The center also offers free services through its online support hub at <https://support.cwqe.org> and can be reached by phone at 855-227-1202 or by email at [support@cwqe.org](mailto:support@cwqe.org).

The program is funded through the Pennsylvania Investment Infrastructure Authority.

While the initial pilot is focused primarily on serving landowners in Lancaster and York counties, anyone in Pennsylvania may contact the center to get assistance with stormwater management.

Learn more at [www.cwqe.org](http://www.cwqe.org).

From *Pennsylvania Agricultural Alliance Issues Update*,  
September 2021

### Ask Your Senator to Support the Agricultural Conservation Assistance Program

Numerous agriculture and conservation groups are supporting an effort that would increase the number of best-management-practices installed on Pennsylvania farms.

The Agricultural Conservation Assistance Program would drive funding throughout the state, using a formula that prioritizes the areas of greatest need. It would give county Conservation Districts the flexibility to fund practices that meet the needs of farmers and landowners in their area. County Conservation districts will be in the driver's seat to establish criteria and identify landowners who want to make conservation improvements on their farm.

Please urge your state senator to support important legislation for the creation of the Agricultural Conservation Assistance Program, which will encourage new investment in on-farm conservation.

Senate Bill 465 would create a framework that would provide county Conservation Districts with a predictable source of funding each year that would be used to help pay for best management practices that improve local water quality.

If you need contact information for your state senator, go to [pasen.gov](http://pasen.gov) or call PVGA at 717-694-3596.

From *Farm Bureau Express*, Penna. Farm Bureau, Sept. 17, 2021.

### REAP Tax Credits Available for Conservation

Pennsylvania has opened its Resource Enhancement and Protection program for 2021-2022. The program offers state tax credits to help farmers implement conservation practices that improve soil and water quality.

There is \$13 million in REAP credits available this year, which will be allocated on a first-come, first-served basis.

REAP tax credits are available to agricultural producers who implement best management practices or purchase equipment that reduces nutrient and sediment runoff. Farmers may receive up to \$250,000 in any seven-year period, and spouses filing jointly can use REAP tax credits.

Examples of funded projects include no-till planting and precision ag equipment, waste storage facilities, conservation plans, nutrient management plans, barnyard runoff controls, cover crops, and riparian stream buffers.

Farmers may receive REAP tax credits of 50 to 75 percent of the project's eligible out-of-pocket costs. Farmers whose operation is in a watershed with an EPA-mandated total maximum daily load, such as the Chesapeake Bay Watershed, can receive REAP tax credits of up to 90 percent of out-of-pocket costs for some projects.

Tax credits can be used in conjunction with other funding sources such as the Environmental Quality Incentive Program, the Chesapeake Bay Program or Conservation Excellence Grants.

To learn more and apply, visit [www.agriculture.pa.gov/Plants\\_Land\\_Water/StateConservationCommission/REAP/Pages/default.aspx](http://www.agriculture.pa.gov/Plants_Land_Water/StateConservationCommission/REAP/Pages/default.aspx).

From *Pennsylvania Agricultural Alliance Issues Update*,  
September 2021

### DEP Announces New Energy Efficiency Rebate Program for Farmers

The Pennsylvania Department of Environmental Protection has a new rebate program for farmers to help with the cost of energy efficiency projects. The Agriculture Energy Efficiency Rebate Program is offering rebates to defray the costs of installing LED

*Continued on page 4*

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## State News Briefs *continued from page 3*

lighting or variable frequency drives on the farm, which can save energy while saving money on utility bills.

Applications will be accepted from September 20, 2021 through March 31, 2022 on a first-come, first-served basis as long as funding is available. The available rebates will pay for 50% of the equipment costs, up to 2,000 dollars. Total funding to any one applicant will not exceed 5,000 dollars.

DEP has up to \$10,000 available for this program through State Energy Program funding from the U.S. Department of Energy.

For complete program guidelines and application instructions, visit the DEP agriculture and farming energy webpage.

*From Pennsylvania Agricultural Alliance Issues Update, September 2021*

### PDA Opens Grant Program for Urban Agriculture Improvements

Agriculture Secretary Russell Redding announced PDA will open the 2021-22 PA Farm Bill's \$500,000 Urban Agriculture Grant Program. The program will provide grants to improve agriculture infrastructure in urban areas, and support for community development efforts. The Wolf Administration has invested \$1 million in urban agriculture which has leveraged an additional \$1 million in local investments through matching dollars. In total for the first two years, the Pennsylvania Farm Bill's Urban Agriculture Infrastructure Program has funded 70 projects in 16 counties.

There are two types of grants available: "microgrants" and "collaboration" grants. Microgrants of up to \$2,500 in matching funds can be used for one-time projects or a single entity applicant. Applicants for collaboration grants of up to \$50,000 in matching funds must demonstrate cooperative or regional efforts which share resources, aggregate agricultural products or producers, promote the sharing of resources among agricultural entities, and support community development.

The 2021-22 Urban Agriculture Infrastructure Grant Program closes on October 15, 2021.

*From <https://pfb.com/pda-opens-grant-program-for-urban-agriculture/>*

### Spotted Lanternfly and Fall Produce

The spotted lanternfly is an invasive insect that feeds on many beneficial plants, including grapevines, fruit trees, and sugar-producing maple trees. The pest is also an excellent hitchhiker, holding on to vehicles moving at highway speeds, and laying their egg masses in hard-to-find areas.

With fall shipments underway, the PA Department of Agriculture reminds all growers and shippers to carefully inspect their products and shipping materials before sending their products to retail centers and warehouses. Spotted lanternfly adults will crawl inside packing crates and boxes, nestling in with pumpkins, gourds, and corn stalks to find new homes elsewhere, and will lay their egg masses on smooth materials like cardboard and the protected inside of wooden pallets. To prevent new populations in non-infested areas in PA and other states, please inspect, squish and scrape these insects and egg masses before they can spread!

All PA businesses that ship products within or from the quarantine are required to have a Spotted Lanternfly Permit. The permit is free, and is reciprocal between all neighboring states. Learn more about the permit and sign up for yours at [agriculture.pa.gov](http://agriculture.pa.gov), keyword: spotted lanternfly permit.

*[https://www.agriculture.pa.gov/Plants\\_Land\\_Water/PlantIndustry/Entomology/spotted\\_lanternfly/program-information/Pages/Businesses.aspx](https://www.agriculture.pa.gov/Plants_Land_Water/PlantIndustry/Entomology/spotted_lanternfly/program-information/Pages/Businesses.aspx)*

## National News Briefs

### State Farm Bureaus Seek Funding for Conservation Efforts in Chesapeake Bay Watershed

Six state farm bureaus in the Chesapeake Bay watershed, including Pennsylvania Farm Bureau, signed on to a letter sent to U.S. Secretary of Agriculture Tom Vilsack, asking the USDA to establish a Chesapeake Bay Resilient Farms Initiative (CRFI), similar to the Mississippi River Basin Initiative, to provide funding for conservation efforts on farms in the watershed. The funding would be used to help reach the 2025 Total Maximum Daily Load deadline to reduce nitrogen in the Bay.

The joint letter asks for the department to direct funding through already existing NRCS programs such as Conservation Technical Assistance, Environmental Quality Incentives Program and Regional Conservation Partnership Program, and to implement those programs more effectively on the ground.

The letter points out that farmers in the Bay watershed have been leaders in implementing conservation practices over the last 30 years, and have reduced nutrient and sediment pollutant loads by half, while human and livestock populations have grown, and crop yields have increased.

This effort comes as Pennsylvania and other Bay states face a heavy lift in meeting the federally mandated goals for reducing nutrient and sediment pollution in the Chesapeake Bay by 2025. While Pennsylvania has developed a detailed plan for expanding conservation practices in agriculture and other sectors to meet those goals, there is a shortfall in available funding to see the plan through.

The letter is available at <https://pfb.com/wp-content/uploads/2021/09/Bay-Watershed-CRFI-letter.pdf>.

*From Farm Bureau Express, Penna. Farm Bureau, Sept. 17, 2021.*

### Cover Crop Rules for Prevented Planting Updated

The U.S. Department of Agriculture will now allow agricultural producers with crop insurance to hay, graze or chop cover crops for silage, haylage or baleage at any time and still receive 100 percent of the prevented planting payment.

Previously, cover crops could only be hayed, grazed or chopped after Nov. 1, or the prevented planting payment would be reduced by 65 percent.

The change gives producers greater flexibility for the 2021 crop year and into the future.

USDA's Risk Management Agency will not consider a cover crop planted following a prevented planting claim to be a second crop. But RMA will continue to consider a cover crop harvested for grain or seed to be a second crop, and that crop would therefore remain subject to a reduction in the prevented planting indemnity.

*From Pennsylvania Agricultural Alliance Issues Update, September 2021*

### EPA Will Continue to Allow Paraquat Application, Expand Safety Measures

The U.S. Environmental Protection Agency has finalized an interim decision on the herbicide paraquat, allowing the product to remain on the market for another 15 years but putting new safety restrictions in place.

The agency walked back a proposal to ban aerial application but will limit pilots to spraying 350 acres per day and impose residential buffers during aerial applications. The new rules also require enclosed tractor cabs for farmers or farmworkers applying paraquat to more than 80 acres per day, banned use of paraquat in backpack sprayers, and prohibited workers from entering a field until 48 hours after paraquat is applied.

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## MARKETING

## At Market Workshop Held at Eagle Point Farm Market



This twilight At-Market Workshop and Building an Effective Display event was held August 18 at Eagle Point Farm Market in Trexlertown, Lehigh County, and was attended by 18 persons. The farm and market are operated by Steve and Gayle Ganser and their daughter Monica Berghold.

The family reviewed the history and present-day story of their farm, retail market and wholesale business along with their plans for the future of the business with the next generation. They also gave a tour of the market storage area as well as the retail store during extended open hours. In the retail store, attendees were able to study the displays, overall décor and presentation, as well as interactions with customers.

The workshop was organized by Christi Powell, Penn State Extension Educator in Business Growth & Development Extension Educator based in Lehigh and Northampton Counties. She and John Wodehouse, Penn State Extension Educator based in Berks and Chester Counties, offered numerous Extension marketing hand-out sheets and other educational items that can be

placed at markets. They also prompted a general marketing and “how to build an effective displays” discussion through their own and other’s research. Promotion of other upcoming Extension marketing events were discussed. Fellow farmers shared success stories and advice amongst the group.

Not only did some of the audience come from quite a distance to attend, it was diverse in experienced vs. newer farmers, younger vs. older ages, and men vs. women. Everyone thoroughly enjoyed the stories and experiences explained by the Ganser family, as well as the fun talks/activities provided by Penn State Extension.

The event was well received with positive feedback by the attendees’ present. Everyone was excited to gather to share ideas, especially since this event and many other similar events in-person had to be cancelled or delayed throughout the pandemic with Penn State Extension.

PVGA provided one of its Educational Meeting Grants to cover some of the costs associated with this event.



## FOOD SAFETY

# Repairing Cracks and Pitting in Concrete Floors

Chris Callahan

### Introduction

Concrete slab floors, ramps, steps, and loading docks make it easier to move produce and produce handling equipment using wheels. The smooth surfaces also allow for easier clean up and wash down at the end of the shift by providing an easy surface to sweep and hose down with good drainage (Callahan, Bihn, & Chamberlin, 2020).



*Pitting can lead to uneven surfaces and ponding of water. These can really disrupt smooth flow of produce whether carried by people or rolled with hand carts or fork trucks. The ponding of water can become a produce safety concern as well.*

Concrete is sturdy and hard once cured. It holds up to heavy loads in compression. But it is brittle which causes it to chip. It often fails in tension which causes cracks to appear. Concrete is also prone to pitting if exposed to acidic liquids such as can drip from bins of apples and other fruit. When concrete fails in the form of a crack or pitting it gets in the way of smooth operation and can also pose a personnel risk in the form of a trip hazard or uneven floor which could put rolling loads out of balance.

Cracks and pitting in concrete floors in food handling, washing, and storage areas can also pose a food safety risk (Ingram 2015, United Fresh 2018). The Food Safety Modernization Act's Produce Safety Rule highlights the need for design, maintenance, and cleaning of floors to provide sanitary conditions in §112.126 (FDA 2016, FDA 2018).

Cracks and pits prevent adequate drainage. Water, soil, and food build up cracks and pits during wash down and

drying is inhibited. Water can accumulate in pits and cracks resulting in standing water. This can result in harborage points for human pathogens. In addition to human pathogens, plant pathogens may also find harborage in these locations resulting in increased product loss in storage.

If your produce or its container is placed on the floor, the floor can become a food contact surface increasing the need for attention to its cleaning and sanitization. Even if you are careful about keeping containers off the floor on pallets, splashing water from the floor can be a source of contamination. So, keeping a floor in good condition so it can be kept clean is important.



*Cracks in floors can accumulate plant matter, soil and water and are very difficult to get clean and completely dry. This is called harborage and can lead to cross contamination of food with human pathogens.*

### Repair Approach Decision

Not all cracks and pits are easily repaired, and some may require cutting and re-pouring if they are significant. How do you know how to proceed? Use the following guidance:

- Are the cracks large (>2 inches on average with offset edges like a cliff)?: Cutting and re-pouring is likely the best option. Contact a mason. Smaller cracks (2 inches wide on average or smaller) can be repaired using the methods described below.
- Are the pits deep (>2 inches deep)? Cutting and re-pouring may be your best option.



*These photos are good examples of walkway sections that should be replaced, not repaired. The cracks and pitting are so severe that they have broken up the main structure leading to dislocation and a repair would not last long.*

*Continued on page 8*

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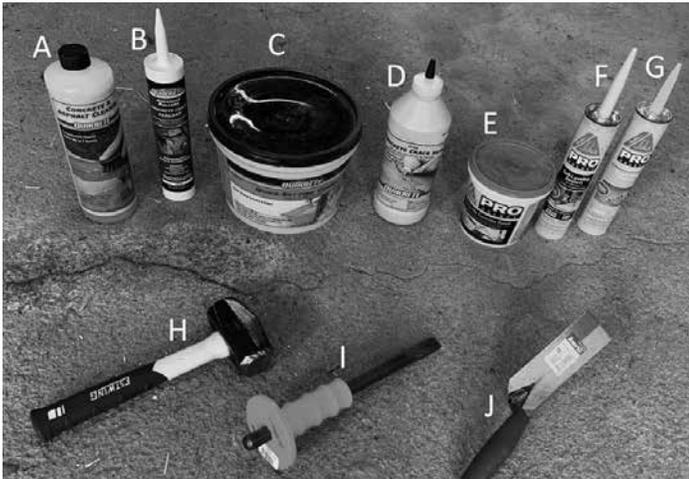
## FOOD SAFETY

# Repairing Cracks and Pitting in Concrete Floors continued from page 7

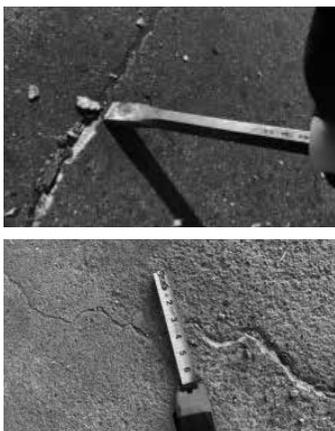
More shallow pits can be repaired using the methods described below.

### Repair Material Decision

- Are the sides of the crack moving relative to each other seasonally? Use a flexible sealant which will allow some movement (not covered in this document). Do note that if there is movement, there may be a more significant structural issue that needs attention. Repairing a crack with significant dislocation and movement over time is not a long-term solution.
- Is the damaged area relatively stable and not moving? Is it in a traffic or heavy load area? Use Fast Setting Repair Mortar or Quick Setting Cement. Repair mortar and cement will cure to provide high strength in compression which will stand up to typical loads.



Tools and supplies that are needed for concrete repairs. (A) Quikrete Concrete and Asphalt Cleaner Concentrate, (B) Quikrete Advanced Polymer Crack Sealant, (C) Quikrete Quick Setting Cement, (D) Quikrete Gray Concrete Crack Sealant, (E) Sika Pro Select Ready Mix Concrete Patch, (F) Sika Pro Select Self-Leveling Sealant, (G) Sika Pro Select Crack Flex Sealant, (H) 3 lb hammer, (I) Masonry chisel, (J) 6"x2" margin trowel.



Use a masonry chisel and a hammer to break off the sharp edge of the crack to expose a fresh surface and widen the crack to finger or thumb width so enough repair material can be applied to provide a solid bond.

width when making the new V-shaped version of the crack. You will develop a feel for it.

### Repairing Cracks

For cracks up to 2 inches wide the repair steps are demonstrated in a series of 5 videos and outlined below.

#### 1. Expose

It is important to expose a fresh face of concrete along the damaged area using a hand sledge and mason chisel or an angle grinder with a masonry wheel. This step is meant to remove any weak or brittle material that wouldn't support a strong new bond, don't hold back. If you do not break it off, it will break off on its own after your attempts to repair it. If you find that material breaks off very easily with one strike, that is a clue that you may have to take more off in that location. Aim for about finger or thumb

#### 2. Clear

Vacuum up the debris and loose material after exposing the fresh face of concrete. A stiff bristled broom or wire brush is helpful here and the masonry chisel will help loosen stubborn bits. The wire brush is especially important if the crack or pit has existed for some time. This longer-term exposure weakens the surface and continues to slowly erode the material. Brushing removes this weakened material. Some more hand sledge and chisel work may be needed to get some of it out. Vacuum out all the loose material, this will help your cleaner go further and do a better job.



Chisel the crack to opened it up to about thumb-width, clean with a wire brush, and then vacuum to remove the debris.

#### 3. Clean

Wet the surface with clean and safe water and apply masonry cleaner in accordance with the label of the repair material you plan to use. Use a stiff bristled brush or a wire brush to work the cleaner into the crack and clean the surface. In some instances, multiple applications and rinses may be required. If the cleaning solution becomes brown and greasy, you have got more work to do. The final cleaning should result in a relatively white and frothy or bubbly appearance.



The crack has had water applied prior to having cleaner applied. A wire brush is then used to ensure the cleaner is distributed throughout the crack surface. Note the white, frothy appearance. This is usually a sign that the current application of the cleaner is effective. If there is heavy soil or other accumulation, the cleaner will quickly become brown and there will be very little suds or frothing. This is usually an indication that another application will be required following a rinse and wet vacuuming.

#### 4. Wait

Concrete cleaner is designed to work over time. Typically, 1-5 minutes is recommended. Consult the label for your application. Hydrate and give your back a stretch, the next steps require attention.

#### 5. Vacuum

Use a wet/dry vacuum to clear up the bulk cleaner and any debris that wire brushing has loosened. It is important to have a clean work area for the next step. Once we start applying mortar, we want to be sure we can "float" or smooth it without having pebbles getting in the mix. Vacuum not only the crack and pit, but the area surrounding them also. You will end up applying mortar to an area wider than the crack or pit so you can smooth it properly.

#### 6. Prepare Repair Material

It is best to use either Fast Setting Repair Mortar or Quick Setting Cement for these repairs. Follow the product label for mixing and preparing.

## FOOD SAFETY

# Repairing Cracks and Pitting in Concrete Floors continued from page 8



The crack has been rinsed with water and a wet vacuum was used to remove the water, cleaner and any debris that resulted from the cleaning. It is read to be repaired.



Smooth the repair by "floating" with a rubber grout trowel.

Remember that we are aiming for "better" and don't let perfect be the enemy of good enough. You will reach a point where you want to go back and float it some more and you just add more problems. That said, a longer floating trowel is helpful for floating these areas. A magnesium float (mag float) can be nice for the centers of these repairs in larger pits, though they work best on large fresh pours of concrete. The existing hard surfaces on the sides of these pits tend to make them less helpful in repair work.

### 7. Apply Repair Material

It is generally best to use a 6"x2" margin trowel for applying the repair material, smoothing it initially with the wider edge. Apply more than you think you need, spread it with the margin trowel ensuring that the material is driven into the crack.

Smooth the repair by "floating" with a rubber grout trowel.

### 8. Cure

Allowing the repaired area to dry naturally. Divert traffic away from the repair.

### Repairing Pits

For pitting the approach is quite similar. There are two main differences.

#### 1. Expose

The pit has largely been exposed for some time, so exposure in this case is about

- angling the cliff edge around the pit and getting to solid material and
- getting rid of any loose or weak material within the pit that may prevent a solid bond when filled.

#### 2. Apply Repair Material

This can be a real trick.

### Conclusion

Concrete floors are a popular choice for both new and renovated packing house and cooler floors. Like any floor they require maintenance and cleaning. The information provided is meant to help growers ensure the integrity of their floors so that their cleaning and sanitization procedures can be most effective.

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It is helpful to use a rubber grout trowel to smooth the repair material after the initial smoothing with the margin trowel. Larger rigid trowels tend to bounce and skid along the existing floor on either side and result in jagged marks. The rubber trowel gives a smooth finish.

Mr. Callahan is with the Dept. of Agricultural Engineering at Univ. of Vermont. From the Univ. of Vermont Extension Blog, <https://blog.uvm.edu/cwcallah/2021/08/04/repairing-cracks-and-pitting-in-concrete-floors/>



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## VEGETABLE PRODUCTION

**Allium Leafminer: 2021 Fall Generation is Emerging Now**

Timothy Elkner and Shelby Fleischer

The fall emergence of allium leafminer adults seems to be right on time in Lancaster County—the last week of September.

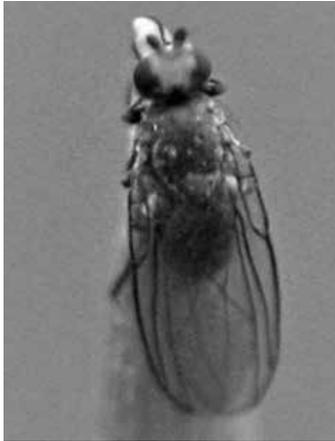


Figure 1. Allium leafminer adult fly on scallion leaf. Photo: B. Lingbeek, Penn State

This makes two years in a row that the fall allium leafminer (ALM) emergence occurred in this last week of September. ALM attacks plants in the Allium genus including onion, garlic, leek, scallions, shallots, and chives. The first signs are the linear series of round white dots on allium leaves. The white dots are made by the female with her ovipositor. Both males and females feed on leaf sap, and egg-laying occurs at this same time. You can distinguish the adult fly by the orange patch on the head, and the wings folded horizontally over its back (Figure 1). The flies tend to be found at the tips of the leaves in the morning. A good place to

look for signs of ALM is on wild garlic, actively growing scallions and leeks.

ALM has two generations per year. It overwinters as a pupa in leaf tissue or adjacent soil, emerges in the spring, and adult flight occurs over 4-5 weeks. Eggs are laid in allium leaf tissue. Larval development progresses to the pupal stage but is then delayed as the pupa undergoes summer aestivation (a resting period with little to no development), and they do not emerge again until the fall. It is this fall generation that is emerging now.

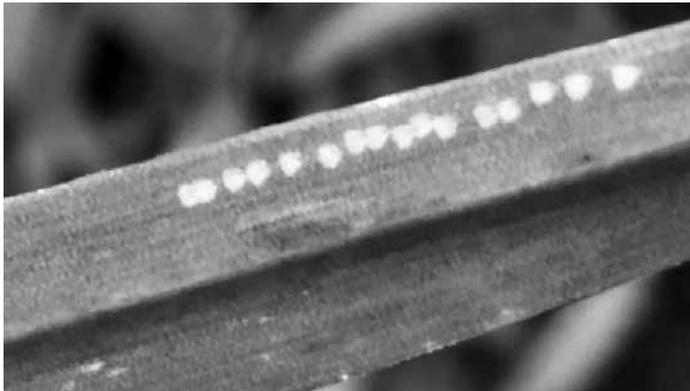


Figure 2. Egg-laying and feeding scars on a leek leaf. Photo: B. Lingbeek, Penn State

Control measures are only needed during the adult flight to target adults, and very shortly after to target developing larvae. Control can be achieved with row covers during the adult flight, or insecticides. Through the support of PVGA and NIFA, we compiled efficacy trials, detailed in Nault et al. 2020. Foliar applications of Scorpion (dinotefuran), Exirel (cyantraniliprole), and Radiant (spinetoram) were the most effective and consistent.

In some trials, Agri-Mek (abamectin), Assail (acetamiprid), Triguard (cyromazine), Admire (imidacloprid), Warrior (lambda-cyhalothrin), Lannate (methomyl) and Entrust, (spinosad) which is

an organic option, were effective. Foliar applications of Aza-Direct (azadirachtin), Surround (kaolin clay), Pyganic (pyrethrin), and Movento (spirotetramat) were not effective. Chemigation treatments also were not effective. Surprisingly, Pyganic plots had higher infestations than control in some trials.

Alliums have a very waxy leaf, so including a spreader sticker or a soap for organic production, is recommended. We used LI-700 for the conventional treatments and M-Pede for the organic treatments. We sprayed weekly, for 4 to 6 weeks, to span the time adults were active, but further work is needed to see if we could reduce the number of applications.

**Citations:**

Nault, B. A., L. E. Iglesias, R. S. Harding, E. A. Grundberg, T. Rusinek, T. Elkner, B. Lingbeek and S. J. Fleischer. 2020. Managing Allium leafminer (Diptera: Agromyzidae): an emerging pest of allium crops in North America. *J. Econ. Entomol.* doi: 10.1093/jee/toaa128  
 Dr. Elkner is with Penn State Extension in Lancaster Co. and Dr. Fleischer is with the Dept. of Entomology at Penn State Univ. From Penn State Extension, <https://extension.psu.edu/allium-leafminer-2021-fall-generation-is-emerging-now>.

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## VEGETABLE PRODUCTION

## Current Vegetable Issues

Beth Gugino, Shelby Fleischer, and Kathy Demchak

**General conditions as of September 14:** Parts of the state experienced significant rainfall as the result of the remnants of Hurricane Ida passing over the region with rainfall totals over 7 inches in locations in eastern Pennsylvania. Some growers lost fields completely to flooding while in others the rain led to significant plant decline and loss of marketable produce. This was on top of an above average warm and wet August across part of the state. For more information on the impact of Tropical Depression Ida on the region check out this article from the Northeast Regional Climate Center (<https://www.nrcc.cornell.edu/services/blog/2021/09/03/index.html>).



*Diamond-shaped lesions caused by Plectosporium blight on a pumpkin handle. (Photo: Jeff Stoltzfus, Penn State Extension)*

on pumpkin, but it can also affect summer squash and zucchini. This fungal disease causes very distinct small diamond- or spindle-shaped lesions on the plant stems, petioles, and leaf veins as well as small white lesions on the fruit. It can also cause less distinctive yellow-tan lesions on the leaves. Under moist conditions and moderate temperatures, the lesions can coalesce together reducing overall marketability of the fruit. The lesions on the fruit can also be an entry way for opportunistic soft-rotting bacteria that can lead to complete fruit collapse as was the case in one field. Some other reports were coming from fields that were being actively managed with fungicides for powdery and downy mildews. The fungicides applied for managing powdery mildew will help manage Plectosporium blight however they need to be applied weekly and with a high volume of water to get good coverage under the plant canopy. Over the past three years, this disease has become increasingly more common and should become a regular part of a scouting program. Chlorothalonil alternated with a strobilurin-type fungicide such as Quadris Top (FRAC 3+11), Cabrio (11), Flint (11) or Pristine (7+11). Consecutive applications of FRAC 11 containing fungicides should not be applied.

There continue to be reports of **cucurbit fruit rots** both in the field and post-harvest in the bins. Although it is too late for this season, getting an accurate diagnosis on what is causing the fruit rot will help in developing a scouting and integrated management program for the next season. Fruit rots can be caused by a wide array of pathogens and can be further exacerbated by insect feeding, storm damage, and damage during harvest. Preventative efforts that improve soil drainage and direct contact between the fruit and soil can be beneficial but require prior planning.

This fall as the temperature drops, dew periods extend, and the skies turn cloudy on the lookout for **Botrytis gray mold (and**

### FIELD and HIGH TUNNEL PRODUCTION

In general, new reports of **cucurbit downy mildew** are declining as more crops are reaching maturity and the end of the season approaches. The closest reports of downy mildew (pathogen Clade 1) on pumpkin, butternut squash, and/or acorn/summer squash are in Ohio and Massachusetts. Continue to manage powdery mildew until 7 to 10 days before harvest to protect the handles and target applications. **Powdery mildew** will cause the handles to become brown and shriveled thus reducing marketability.

There have been several reports of **Plectosporium blight**

**late blight) in high tunnel tomatoes.** Although high tunnels provide direct protection from rain, high relative humidity and dew can still provide the moisture necessary for disease development. Gray mold affects many different types of vegetables and ornamentals so there are many potential sources of this pathogen. It easily grows on weakened or senescing (dying) plant tissue such as old flower blossoms or leaf litter however, it can still cause lesions on the leaves and stems. Foliar lesions can be confused for late blight since both are irregular in shape however gray mold will develop more of a concentric ring pattern and the fuzzy growth (sporulation) is darker and grayer in color and can develop on both the upper and lower leaf surface as well as the surface of stem lesions. Stems can become girdled and break and foliar symptoms can become severe enough to cause defoliation. The fruit can become infected from dying



*Irregular zonate lesions characteristic of Botrytis gray mold. Dense gray sporulation can often be seen on all symptomatic surfaces under very humid conditions. (Photo: Beth K. Gugino)*

*Continued on page 13*

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Participants can attend three in-person meetings during the program season to supplement the online learning modules. Meetings in 2021-22 will be held in virtual and in-person. Content will be the same in in-person meetings and virtual meetings. Although in-person meetings will allow for networking and collaboration with others. Those attending in-person meetings will receive a free lunch.

#### TENTATIVE MEETING DATES

Year 1: November 23, 2021; January 11, 2022; March 15, 2022

Year 2: November 23, 2021; January 20, 2022; March 24, 2022

## VEGETABLE PRODUCTION

### Current Vegetable Issues *continued from page 11*

flower petals that hang on as the fruit develop. These lesions are whitish in color, very soft and watery and typically develop near the stem end. This is in complete contrast to late blight that causes dark-brown greasy firm lesions on the fruit.

For gray mold, general sanitation is important since it is a very good saprophyte. Also maximizing and maintaining good air circulation through cultural practices. Disease development is favored by temperatures from 64 to 75°F and typically develops on more mature plants that have dense canopies. Foliar applications of products such as Scala (FRAC code 9, 1-day PHI), Botran (FRAC code 14, 0-day PHI), and Fontelis (FRAC code 7, 0-day PHI) will help manage the disease and are labeled for use in greenhouse (and high tunnel) tomato production.



*Marginal necrosis characteristic of bacterial canker on tomato. (Photo: Beth K. Gugino)*

In regions of the state which had more significant rainfall, there have been reports of **bacterial canker on tomato** (as well as other bacterial diseases). If it was a problem on your farm this year, now is the time to reflect on the production season while it

is fresh in your mind and identify points in the crop production cycle where disease management could be improved. Managing for bacterial diseases starts with the seed and ends post-harvest – it is a season-long approach. As you clean up from this season remember that wooden stakes can harbor the bacteria even when exposed to freezing temperatures overwinter. Therefore, stakes from symptomatic fields should not be used again the production of solanaceous crops like tomato and pepper. Stakes from asymptomatic fields should be sanitized before use again either by power washing and soaking in a sanitizing solution like sodium hypochlorite, Oxidate, Zeritol, etc. or subjecting them to high temperatures this through kiln drying or steaming. Bacteria are more susceptible to hot rather than cold temperatures. Also, winter when planning crop rotations, allow 3 to 4 years between tomato/pepper crop to facilitate the decomposition of crop residue. These couple of recommendations along with strict sanitation practices in the greenhouse and field can help with reducing potential losses in the future.

Although we've been having high rates of trap capture of both **corn earworm (CEW)** and **fall armyworm (FAW)**, in plots where damage rates were tracked according to species, most of the damage to ears of sweet corn seem to be coming from CEW. FAW has been causing high rates of damage in vegetative situations, including turf, soybeans, alfalfa, and areas vegetated for erosion control such as well-heads.

The fall generation of **Allium leafminer (ALM)** is due to appear. **ALM** spends the summer as pupae, which will emerge as adult flies and begin making egg-laying scars on leeks, onions, garlic, scallions and ornamental alliums. In past years, our earliest detection of the fall adults was the last week of September.

*Continued on page 14*

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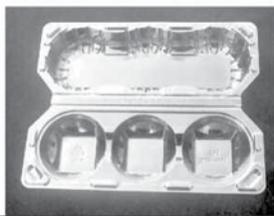
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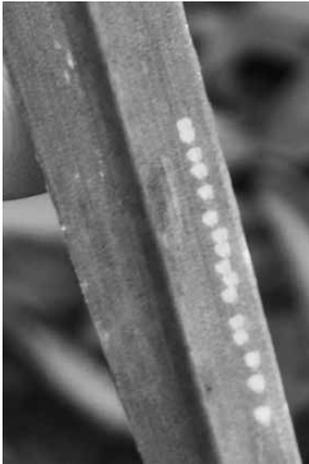
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## VEGETABLE PRODUCTION

Current Vegetable Issues *continued from page 13*

Leeks and scallions tend to get the most damage, and there have been reports of extensive damage to garlic as well. Row covers or well timed sprays during the adult flight (about 5-7 week time span) has provided good control. In plots with weekly applications, the highest and most consistent control occurred using foliar applications of dinotefuran (Scorpion), cyantranilprole (Exirel) and spinetoram (Radiant). Spinosad (Entrust) also provided very good control and is OMRI-labeled. Preliminary data suggest fewer applications (3-4, as opposed to 5-7, starting about a week after first egg-laying marks are detected) may be as effective. Surfactants are recommended for any sprays on alliums due to their waxy leaves.



Allium leafminer adult and egg-laying scars. (Photo: B. Lingbeek)

Both **broad mites** or **cyclamen mites**, and **two-spotted spider mites**, are showing up in multiple crops. Broad or cyclamen mites are very small, elongated mites that are rarely seen. In peppers they can cause leaf cupping, distorted buds, and russetting. Spider mites are much larger mites, that feed by puncturing epidermal cells, resulting in stippling patterns on leaves. We are also seeing **aphid-transmitted virus** in pumpkin at levels that are higher this year than in past years.



Leaf cupping, bud distortion, and russetting caused by broad or cyclamen mites in peppers. (Photo: Lee Stivers)



## Plectosporium Blight in Some Pumpkin Fields This Year

Gerald Brust



Figure 1. Plectosporium yellow-tan spots (lesions) on pumpkin leaf



Figure 2. Plectosporium on pumpkin leaf petioles-the petiole to the far right has split.

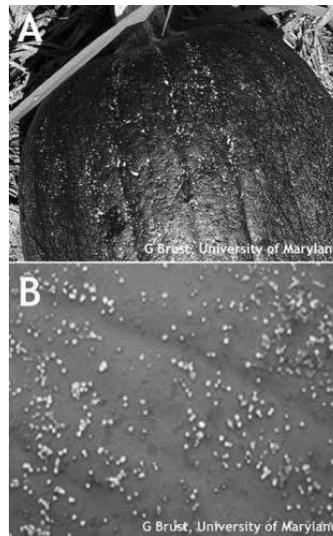


Figure 3. Plectosporium lesions on green fruit (A) and on orange fruit (B)

I am seeing some plectosporium blight in a few pumpkin fields this year, not as bad as last year but still there. This disease will probably increase if we continue having frequent rains in some locations. This fungal disease of pumpkin, zucchini and squash can cause yield loss if left uncontrolled. Plectosporium blight prefers warm, humid or rainy weather conditions. It overwinters on crop residue and can persist in the soil for several years. Plectosporium blight can be recognized from the small white to light tan spots on leaves (Fig. 1) and elongated lesions on stems and leaf petioles (Fig. 2). On green fruit the lesions are very small white to tan flecks (Fig. 3a) on more mature fruit the lesions are round to irregular shaped pimples on the surface of the pumpkin that often makes them unmarketable (Fig. 3b). These fruit lesions also allow soft rot pathogens to penetrate into the pumpkin that will cause the fruit to 'melt-down' into a deflated mess. When stem and foliar lesions occur in large numbers they can give a light gray or white appearance to the foliage. As the lesions increase in numbers and merge they turn the vines and leaf petioles white (Fig. 2). Severely infected pumpkin stems or petioles will become brittle and can split or shatter if disturbed (Fig. 2).

When Plectosporium blight occurs, rotate away from summer squash and pumpkins for 2 years. Scout for disease and apply fungicides when disease first occurs. Thorough coverage of foliage, vines, and fruit is necessary for good control. Most of the time a protective spray of chlorothalonil or mancozeb will give you good protection from this disease, however in years like this one where some of us have had frequent heavy rains the disease control needs a boost with the addition to the protective sprays of using something in rotation such as Cabrio or Flint Extra.

Dr. Brust is the IPM Vegetable Specialist at the Univ. of Maryland. From the **Weekly Crop Update**, Univ. of Delaware Extension, Vol. 29, issue 23, August 27, 2021.

## VEGETABLE PRODUCTION

# Pumpkin Fields: The Good and Bad News This Season

Gerald Brust

After visiting pumpkin fields over the last few weeks it seems that in some of the fields there could be a reduction in yields of around 15-30%. I reached this very unscientific conclusion based on walking around in the fields. Normally I end up stumbling over fruit that is underfoot and unseen under the pumpkin canopy. But this year I stumbled around very little as pumpkins—large orange ones—were spaced greatly apart from one another. Much of the reduction in the number of pumpkins could be due to flower or fruit abortion (Fig. 1) that occurred sometime in late July or early August during our severe heat wave, which greatly reduced pollination success. An indication of this possible flower/fruit abortion is that in many of these fields there were large orange fruit found and small-medium green fruit also being found that look quite good. However, there are no, or at least very, few pumpkin fruit in-between these two sizes. Unfortunately, these small to medium sized fruit will not be harvestable in time as they were formed later in the season.



Figure 1. An aborted pumpkin fruit in early August

The other thing I observed was that the fields that kept their foliage up and in good shape (Fig. 2) had excellent quality fruit. This entails pumpkins with good color and unblemished skins and good dark green firm handles (Fig. 3). I have not seen such good looking foliage this late into the season in quite a while and it is paying off in these fields as pumpkins are well covered with foliage and are not exposed to any possible sunburn we might see now because we are experiencing clear sunny days with highs in the mid to upper 80s, which are perfect settings for sunburn/sunscald. In addition to sunburn protection the good foliage will allow the large green fruit that is present in these fields to ripen to mature orange fruit over the next week or two.

*Dr. Brust is the IPM Vegetable Specialist at the Univ. of Maryland. From the **Weekly Crop Update**, Univ. of Delaware Extension, Vol. 29, issue 26, September 17, 2021.*



Figure 2. Pumpkin field in mid-September with excellent foliage



Figure 3. Pumpkin fruit with excellent skin and handles in mid-September

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## VEGETABLE PRODUCTION

## Ladino (White) Clover for Row Middles in Plasticulture

Gordon Johnson



Ladino Clover will form a dense mat that will outcompete weeds in row middles as a living mulch.

Researchers at Clemson University showed that the use of ladino clover can be an effective living row middle cover crop for row middles in plasticulture in organic production.

We believe this system could be used in all plasticulture crops with some advance planning.

Ladino clover spreads via stolons and can fill in row middles over time, smothering out weeds and allowing for full cover of row middles. It will not creep up the sides of the plastic but will fill in up to the tucks.

### To be successful, follow these guidelines:

- Plant the whole field to ladino clover in September at a rate of 10 lbs per acre using a small seed drill. Inoculate seed with appropriate clover Rhizobium. We prefer the Regal variety.
- Till beds in the spring where plastic is to be laid.
- Limit traffic initially until the clover closes the row middle. If stands are light, wait to plant plastic until the clover has filled in the row middle.



Stolons (creeping stems) of ladino clover will fill in areas quickly.

Dr. Johnson is the Extension Vegetable and Fruit Specialist at the Univ. of Delaware. From the **Weekly Crop Update**, Univ. of Delaware Extension, Vol. 29, Issue 26, September 17, 2021.

## 2021 Cucurbit Downy Mildew Cucumber Variety Trial

Genevieve Higgins

For the last several years, the UMass Extension Vegetable Program has been conducting cucumber variety trials, evaluating varietal resistance to cucurbit downy mildew. These trials are funded jointly by Johnny's Selected Seeds and the New England Vegetable and Berry Growers' Association. (The NEVBGA is an educational, networking, and advocacy group and is the oldest growers' association in the country. They work closely with New England state Extensions to identify research priorities and fund applied research trials.)

Cucurbit downy mildew (CDM) is a devastating disease of cucurbit crops that develops annually in the Northeast. There are several strains of CDM that affect different cucurbit crops; cucumber is susceptible to all strains, so we see CDM in cucumber without fail every year. CDM is caused by *Peronospora cubensis*, an oomycete pathogen that overwinters in the southern US (and potentially in greenhouse cucumbers in southern Canada) and is blown northward on storms every year. It usually arrives in the Northeast around mid-August. The pathogen causes interveinal chlorosis (leaf yellowing that is trapped between the leaf veins) that is visible from the top side of the leaf, and fuzzy gray sporulation on the undersides of leaves. As the disease progresses, leaf spots coalesce and leaves eventually die completely and severe defoliation can occur.

Table 1. Varieties trialed in 2021

Cultivar	Producer*
Cool Customer	Johnny's Seeds
Chaperon	Seminis
Journey	Seminis
Brickyard	Harris Moran
SVCS 0951	Seminis
SV4142CL	Seminis
Raceway	Seminis
Marketmore 76	Hollar Seeds
20-4213xsib_03	Cornellop
20-4203-03.2	Cornellop

\*Varieties bred by Dr. Michael Mazourek of Cornell University are publically bred open pollinated.

Prior to 2004, cucumbers were bred to have resistance to CDM and farmers could easily grow cucumbers through October. However, in 2004, the pathogen overcame that resistance and breeders have been working hard to develop new resistant varieties ever since. UMass trials have helped to identify CDM-resistant varieties appropriate for New England markets, including Bristol, DMR401, NYS264, and Citadel. Results from the 2016 and 2017 trials and the 2020 trial are published in Veg Notes.

This year we trialed 9 varieties—see Table 1. Seeds were sown in the greenhouse on June 15, and transplanted into raised beds with 1-mil white-on-black plastic mulch on July 6. We use white plastic to avoid transplant shock during this hot time of year. 5-4-8 fertilizer was applied prior to bed formation, according to soil test results. Trial plots were arranged in randomized complete blocks. Plots consisted of 6 plants planted in a single row, 18 inches apart in-row, with 10-ft unplanted buffers between plots and 15 feet between beds. There was enough rainfall during the 2021 season (we don't have to tell you!) so drip irrigation was not necessary. We measured downy mildew severity in each plot weekly, and total and marketable yield twice a week. Cucumbers

# VEGETABLE PRODUCTION

## 2021 Cucurbit Downy Mildew Cucumber Variety Trial continued from page 16



were deemed “unmarketable” if they were misshapen or had significant insect damage. We had high striped cucumber beetle pressure in the trial this year, rendering much of the fruit unmarketable. Several varieties tended to produce off-shaped fruit also, so marketable yields were low this year. We began harvesting the earliest-producing varieties on August 3 and were harvesting all varieties by August 10. Harvests continued until September 10 but some varieties stopped producing as early as September 3.

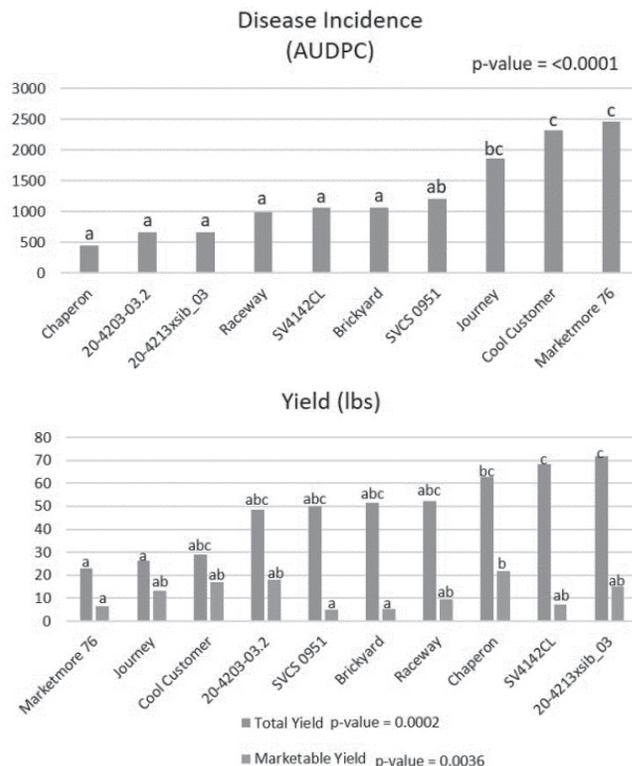


20-4213xsib\_03 (top) and Chaperon (bottom). Photo: S. B. Scheufele

DM was first observed in the trial on August 3, on all varieties except Chaperon, SVCS0951 and 20-4213xsib\_03. The following week, on August 10, DM was observed on all nine varieties. Plant pathologists commonly compare disease incidence over time using a single value, called the Area Under the Disease Progress Curve, or AUDPC. A higher AUDPC value means more disease over time, and a lower AUDPC means less disease over time.

- Cool Customer and Marketmore 76 had significantly higher AUDPC values than all other varieties except for Journey, showing that they had lower resistance to downy mildew.
- Chaperon had the numerically lowest AUDPC value, which was not significantly different from the AUDPC of Brickyard, SVCS0951, SV4142CL, Raceway, 20-4213xsib\_03 and 20-4203.03.2.
- The varieties with the highest yields were SV4142CL and 20-4213xsib\_03, both of which were among the varieties with the lowest AUDPC values.
- Chaperon also performed well with a low AUDPC value, moderate total yield, and the highest marketable yield

The graphs below present the data from this trial. Again, AUDPC represents the disease incidence over time—higher AUDPC means more disease. In both graphs, bars with the same letter on top are not significantly different from each other. For example, the AUDPC values of Cool Customer, Marketmore 76, and Journey are not significantly different from each other, and the AUDPC values of Journey and SVCS0951 are not significantly different from each other. Total and marketable yield data were analyzed separately, so significance letters are not comparable between total and marketable yields.



Ms. Higgins is with the Univ. of Massachusetts Extension Vegetable Program. From **Vegetable Notes for Vegetable Farmers in Massachusetts**, Vol. 33, No. 23, September 23, 2021.

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## VEGETABLE PRODUCTION

## Preventing Bird Damage to Sweet Corn

Ruth Hazzard and Susan Scheufele

Bird damage in sweet corn is always a problem. Although it tends to be worse in a dry year, we are certainly seeing a lot of damage this year, despite the rainy July. To be successful controlling birds, it is best to take action in advance of the problem, because once birds get in the habit of feeding on your corn, it will be harder to stop them. Redwing blackbirds and other flocking birds can cause serious crop losses in some fields. Unfortunately there is no easy answer and no guarantee that a particular tactic will work.

Redwing blackbirds nest in hayfields, marshes, and ditches and congregate at large nighttime roosts near their nesting sites. Large flocks feed in fields and bottomlands, and the worst damage to sweet corn is reported by growers near rivers and marshes. Insects are the dominant food in the nesting season (May through July), then the diet shifts to grain and weed seeds in late summer. This, along with the expanding acreage of ripening sweet corn in mid-July, may explain the 'sudden' appearance of flocks in sweet corn at this time. Grains that are affected by redwing blackbirds include sweet corn, ripening grain corn, sunflower, sorghum, and oats.

### General Tips on Repelling Birds

Time any control techniques so they are in place BEFORE harvest, and remain in place until harvest is complete. Birds invade sweet corn fields about three days before picking.

Use multiple tactics that reach more than one sensory mode. For example, combine scare-eye balloons with auditory repellents like shellcrackers or distress calls. This is likely to be more effective than using one tactic alone.

Move devices frequently. Birds can learn and become habituated to any device that is used for a long time in one place.

Leave old corn for birds to eat. After harvest, scare devices can be removed from one block and concentrated in the next block. Try to keep the birds foraging in the old block while delaying their move to the one that's ready for harvest. Some growers allow birds to scavenge in the old block before disking it in. A method that some growers say works is to rotary mow or disc the interior blocks of the previously harvested fields. Birds like to feed on the ground because it is easier than clinging to an ear, but they prefer perches nearby for protection and rest. It also helps if you plant succession blocks at opposite sides of the field, not right next door.

Good insect control will reduce the corn's attraction to birds. Birds that are attracted to ears by the presence of caterpillars will cause damage to non-infested ears in the block as well. They cause a lot more damage than most insects do.

### Tools for Repelling Birds



Bird damage at a farm in Massachusetts this season.

Visual Scare Devices. Eye-spot balloons and reflective mylar ribbons can be effective and fairly economical for small to medium sized fields, especially if combined with other tactics. Many growers are using these silent deterrents and the general feeling is that they are fairly effective, especially when combined with auditory deterrents. Growers report that the following methods make balloons more effective: use at least 8 balloons per acre, place them in the

field several days before harvest, and leave the previous block standing, without balloons, to allow birds to feed in older corn.

Chemical Deterrents. Bird deterrent sprays (there are several on the market) contain methyl anthranilate, a chemical allowed for use on fruits and vegetables. Methyl anthranilate is also a food additive that imparts a fruity odor to products. The method of action of methyl anthranilate is that it irritates nerves in birds' bills. Tests of the efficacy of methyl anthranilate products have not produced strong evidence that it deters birds in field situations. If you use sprays containing methyl anthranilate, apply them following the label as closely as possible to increase the likelihood of effectiveness. For example, bird deterrence may be improved if they are applied with foggers, which produce smaller droplets, than typical sprayers. Also, the sprays need to be reapplied after it rains. Repellents are likely to be most effective if combined with other tactics.

### Auditory Scare Devices:

- Exploders are gas-fired cannons placed in the field that fire automated, timed discharges. These can be quite effective. Cannons are available from some agriculture supply sources. Do check with your farm neighbors and the local police to let them know what you are going to do. Cannons are very loud. Neighbors may complain.
- Shellcrackers are 12 gauge shotgun shells in which the lead shot has been replaced with a bulldog firecracker. When fired from a shotgun, this firecracker travels 75 to 150 yards and explodes in the air with a loud report. Use a single shot, inexpensive 12 gauge shotgun as the loads are very corrosive. Firing a few rounds early and late in the day will unsettle birds. Federal permits are not required. Again, notify local police and neighbors to let them know what you are doing. Check on local town ordinances. This method can be satisfying on a short term basis. The disadvantage is that it requires a person to take time in the field to discharge the shellcrackers. For a more detailed fact sheet on shellcrackers and other prevention devices, contact USDA Wildlife Services (413-253-2403).

- Distress calls and raptor calls. Recordings of distress calls or the calls of predatory birds, which repeat at regular or random intervals and operate on battery or solar-power, can be quite effective. Because flocking birds are very responsive to the signals from others in their flock, a distress call from one bird is a sign to all the others that an area is unsafe. These tools have become quite sophisticated, with programmable or random call intervals that help to overcome birds' ability to get used to regular sound intervals. Make sure you are using a distress call that matches the bird species you need to scare away. These can be purchased through many farm and orchard suppliers.

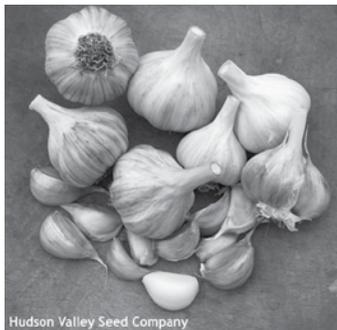
Interfering with birds' perception of their environments. Recently developed devices in bird management impair birds' abilities to perceive their environment and may have applicability in fruit production systems. "Sonic nets", for example, are not actually physical nets; they are systems that broadcast noise at the same frequencies at which birds communicate, potentially interfering with birds' ability to warn each other about danger. One test showed that the nets deterred birds from an airfield. By reducing birds' abilities to communicate and perceive predators, these techniques may be less susceptible to habituation than scare techniques. One producer of such devices is at <http://sonicnets.com/>.

Using falcons. Even better than recorded raptor calls is the real thing! There are falconer clubs in many areas. Hire a falconer to fly their bird over your field. Nothing will clear out a flock of blackbirds faster than a falcon swooping over the field! American kestrels can also be attracted to some fields with nest boxes. Information about building and maintaining nest boxes can be

## Growing Garlic

Gordon Johnson

There is an increase in interest in growing garlic in our region and the time to plant garlic is in the fall. The following information is from the Mid-Atlantic Commercial Vegetable Production Recommendations.



Hudson Valley Seed Company

Redskinned hardneck garlic.

Obtain the best strains of Italian or German "Rocamboles" garlic (late or pink-skinned type), Polish softneck types that will braid (no hard seed stalk), or elephant types from a reputable agriculture products vendor or a local grower who has had success with fall-planted garlic. A locally grown strain will be hardy and may overwinter better than many commercially available strains. Avoid Creole garlics (also called Early, Louisiana, White Mexican, etc.),

since they are not very winter-hardy and do not keep well. Bulbs of both Creole and Italian garlic have a white outer skin, but the Italian type has a pink skin around each clove. Elephant garlic (*Allium ampeloprasum*) is a type of leek that produces bulbils, is milder than regular garlic, and up to four times larger. However, Elephant garlic may not yield well when fall-planted in areas with severe cold or extensive freezing and thawing cycles, which cause heaving. The Italian and Elephant types take about 220 days to mature.

Many of the most productive Italian garlic strains will produce seed stalks prior to harvest. Snap these seed stalks just as they begin to coil for best yields. "Rocamboles" types have coiled seed stalks that are perfectly normal and not the result of any poor cultural practice or herbicide contamination.

Garlic has a moderate nitrogen requirement (125 lbs/a total during the growing season) and higher phosphorus and potassium requirements (150 lbs/acre respectively).

Garlic cloves should be planted in early November on Delmarva. Growers should plant as late as possible to escape damage from the fall generation of the allium leafminer if present in the growing area. Yield tends to increase with the size of the mother bulb. Do not use the following for planting: long, slender cloves in the center of the bulb, cloves weighing less than 1 gram, or bulbs with side growths and very poor skin covering of cloves.

Garlic must be exposed to temperatures between 32-50°F (0-10°C) for about 2 months prior to the long daylength periods that induce bulbing. Fall-planted garlic establishes an excellent root system and receives a natural cold treatment that produces the highest possible garlic yields. Spring-planted garlic (e.g., Elephant type) may be successful where it can be planted by early March.

Cloves should be planted 4 by 4 inches apart in triple rows or multiple beds 16-18 inches apart. Between-row spacing depends on equipment available. Clove tops should be covered with 1-1½ inches of soil. Cloves must not be so deep that the soil will interfere with the growth of the bulbs, nor so shallow that rain, heaving from alternate freezing and thawing, and birds may dislodge them. Cloves placed with the root end down give optimum results. Cloves dropped into furrows will be in various positions and may produce plants with crooked necks.

Fall-planted garlic is ready for harvesting about the second week in July when 40-60% of the leaves have yellowed (garlic generally has 6 leaves). When plants reach this stage pull a sample. There are only about 10-14 days for optimum harvest, when each clove is fully segmented and yet fully covered by a tight outer skin. Before the optimum harvest time, garlic is unsegmented

like an onion. After the optimum time, cloves may have separated, the outer sheath split, and part of the naked cloves may be exposed. Run a cutter bar under the bulbs to cut the extensive root system and partially lift the bulbs. Bulbs can be pulled and gathered into windrows. Tops are placed uppermost in the windrow to protect bulbs from the sun. Garlic is left in the field for a week or more to dry or cure thoroughly. Curing can also be accomplished in a well-ventilated shed or barn. Use this option when rain is forecasted. Bulbs must be thoroughly dried before being shipped or stored. After curing, remove the outer loose portions of the sheath, and trim the roots close to the bulbs. Braid or bunch the tops together or cut off the tops and bag the bulbs like dry onions. Discard diseased and damaged bulbs.

When properly cured, garlic keeps well under a wide range of temperatures. Temporary storage in open-mesh sacks in a dry, well-ventilated storage room at 60-90°F is acceptable. However, storage at 32-35°F and 65% relative humidity (the same conditions as required for onions) is best. Avoid prolonged storage near 40°F to prevent sprouting of cloves. Avoid a relative humidity above 70% to prevent sprouting and development of mold.

Prefar is the only preplant/preemergence herbicide labeled.

Pests include the Allium leafminer, bloat nematode, and the diseases Botrytis leaf blight, downy mildew, Fusarium rot, purple blotch, and white rot. See the Mid-Atlantic Commercial Vegetable Production Recommendations for specific control recommendations.

*Dr. Johnson is the Extension Vegetable and Fruit Specialist at the Univ. of Delaware. From the Weekly Crop Update, Univ. of Delaware Extension, Vol. 29, issue 25, September 10, 2021.*

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## VEGETABLE PRODUCTION

## Preventing Bird Damage to Sweet Corn

*continued from page 18*

found here. Kestrels nest in May and June and sometimes July, and they are most likely to be helpful as a bird deterrent if your crop is ripening during those months—these also work well in sweet cherry orchards. The nest boxes can also be attractive to European starlings. If a starling occupies a box, it will add grass and other materials to the box and lay 5–7 pale blue eggs. A starling nest should be removed from the box, and new wood shavings added to the box if needed. Starlings are not native to North America and are not protected by the Migratory Bird Treaty Act so no permits are needed to remove their nests. An important consideration is that kestrels eat voles and mice, so rodenticides should not be used in fields when kestrels are present.

Laser scarecrows and drones show some promise in reducing bird activity in sweet corn. Laser scarecrows sweep a laser beam over a field. Studies show significant reductions of bird damage but the damage may still be too high for some (about 15% damage, down from 20-50%). For more information including how to purchase a kit to build your own visit <https://sites.google.com/view/urilaserscarecrow/home>. In recent preliminary work with drones in sweet cherry orchards, results were inconsistent but suggest drones may deter birds in some contexts. On some days, in some orchards, fruit-eating bird numbers were lower when drones were flying over a block. Larger-scale trials to investigate this strategy are warranted.

Netting is often used in berry or cherry production and is sometimes used by enterprising sweet corn growers too! This was considered the most effective bird deterrent in a survey of 1500 fruit growers (Anderson et al. 2013). Netting requires considerable effort and materials. If one employs netting, it is important that the netting enclose the vulnerable crop completely. That means with sweet corn you will need to cover the block entirely and bury the edges in the ground. Folks who have been successful using this method in corn recommend setting the nets after sidedressing and leaving extra netting for the crop to push up as it grows. You will need a sturdier netting than that used in fruit settings. On one farm it takes 6 workers 25 minutes per acre to set the nets up but once in place it will protect the crop from birds as well as corn earworm (though not European corn borer or fall armyworm) and so can reduce the number of insecticide sprays needed.

Sweet corn topping (de-tasseling). A technique that has been studied and tested in NY and CT is to ‘top’ the corn. (see [https://cvp.cce.cornell.edu/submit.php?id=512&crumb=crops|crops|sweet\\_corn|crop\\*34](https://cvp.cce.cornell.edu/submit.php?id=512&crumb=crops|crops|sweet_corn|crop*34).) Topping is the removal of the top of the corn plant from just above the silk or top of the ear, after pollen shed and pollination. The advantages may include 1) harvesting 2 to 3 days earlier than un-topped, 2) improved picking ease 3) reduced bird damage, 4) easier to monitor bird activity in the block 5) improved spray coverage and 6) reduced lodging due to wind. One significant risk is that cut stems are sharp and pointed and can cause eye injury to pickers; it’s a good idea for pickers to wear goggles in topped fields. It is important to use equipment that is designed for this purpose to ensure safety; one source for a topper unit is Haigie. As with other methods, topping should be done early, several days before harvest, so the birds are not already feeding in the block.

Shooting birds. A federal permit is not required to shoot or otherwise control blackbirds, cowbirds, grackles, crows, or magpies when they are found committing or are about to commit damage to or “depredation upon” agricultural crops. Contact your local game warden for Game Commission regulations on shoot birds for crop damage. For regulations on geese, consult the US Fish and Wildlife service at 413-253-8200.

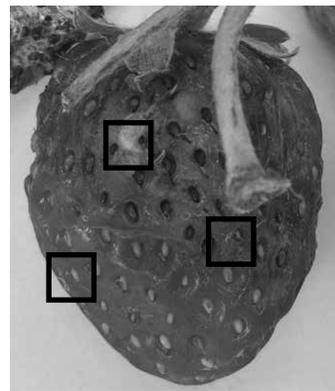
*Article originally written by Ms. Hazzard who is retired from the Univ. of Massachusetts Extension Vegetable Program. It was updated for 2021 by Ms. Scheufele, currently with the Univ. of Mass. Extension Vegetable Program. From the Vegetable Notes for Vegetable Farmers in Massachusetts, Univ. of Mass., Vol. 33, No. 17, August 12, 2021.*

## BERRY PRODUCTION

## Current Issues in Berry Crops

*Kathleen Demchak*

Conditions of moderate temperatures and high humidity are perfect for spotted wing drosophila (SWD), and SWD numbers have increased tremendously lately. Fall raspberry and day-neutral strawberry fields are both being infested. Two signs that day-neutral strawberry fruit may have spotted wing drosophila are that it “melts” even though temperatures are cool, and you may see an assortment of fruit rots moving in, including some typically minor ones. Oviposition wounds may allow fungi to invade the wounded tissue, or perhaps SWD “inoculates” the fruit when puncturing it to lay eggs. Regardless of the mechanics of what is happening, it appears that fruit that is infested with SWD has a greater variety of fruit rots. This may cause growers to think that they have an oddball disease problem when the root of the issue may actually be SWD presence. Ratings of how well pesticides work on SWD in small fruit, and a table of which products can be used on which berry crops can be found here: <https://extension.psu.edu/spotted-wing-drosophila-a-2021-update-for-berry-growers>



*The fruit is infected with anthracnose, but also has soft spots caused by spotted wing drosophila infestation. Note the short white breathing tubes which are attached to eggs, and the outline of an older fly larvae just below the fruit surface. (Photo: K. Demchak)*

Anthracnose fruit rot incidence is fairly high in some day-neutral fields now, probably due to wet conditions along with relatively warm temperatures. In other fields, anthracnose incidence is extremely low to nonexistent. Dr. Menjun Hu at the Univ. of Maryland is finding a fairly high incidence of resistance to category 11 fungicides in anthracnose isolates collected from mid-Atlantic area and surrounding states, almost regardless of location. Resistant strains have likely been building up slowly over the last couple of decades, as category 11 fungicides have been used for management of a variety of strawberry diseases for about that long. Any fungi that were on these plants were exposed

to the treatments, regardless of what you were spraying for. Using tank mixes is going to be even more important in the future than it had been in the past. See this article for more info on how to best manage this disease: <https://extension.psu.edu/strawberry-anthracnose-better-understanding-and-management>. Fall-planted strawberry plugs should be monitored extremely closely for signs of foliar disease and crown or root diseases, as there are a number of issues that may be present. See this article for diseases that you should be watching for, along with photos and fungicide recommendations: <https://extension.psu.edu/disease-management-recommendations-for-fall-planted-strawberry-plug-plants>.

*Ms. Demchak is with the Dept. of Plant Science at Penn State Univ. From Penn State Extension.*

## BERRY PRODUCTION

## Disease Management Recommendations for Fall-Planted Strawberry Plug Plants

Kathleen Demchak and Mengjun Hu

The production of strawberry plugs involves multiple stages during which pathogens can infect the plug plants before they are distributed to growers.



Figure 1. Plant collapse and bluish-green leaf color of 'Flavorfest' plants affected by *Phytophthora* crown rot. Photo: Kathy Demchak, Penn State

Despite regular scouting by propagators, and chemical sprays applied to avoid diseases, these infections can sometimes be latent and asymptomatic (i.e., they are present in the plant material, but there are no outward symptoms), making them a challenge to identify and manage.

Furthermore, cultivars currently grown vary in susceptibility to different diseases, with some being very susceptible to certain ones. Often inoculum is already present in growers' fields where strawberries had been grown previously, and if a cultivar with certain susceptibilities is planted there, disease symptoms can rapidly develop, especially if plants are stressed during the planting process. The following are some steps you can take to minimize disease issues once strawberry plug plants are on your farm.

### General: All Diseases

Remove any leaves with symptoms and all runners while the plants are still in their trays, starting with the cleanest-appearing trays. Watch for brown blotches on leaves and brown sunken lesions on petioles in particular. Collect and dispose of this material. If you cannot complete this operation before you plant, do so right afterwards, and remove this foliage from the field. Diseases sporulate on plant tissue even after it is removed, so dropping plant tissue in the row middles does not eliminate the problems – though this is an improvement over doing nothing. Wash hands and tools frequently, or use hand sanitizer, as diseases can be moved from plant to plant on hands, clothing, and tools.

Do not plant any plug plants that are wilted and fail to recover quickly once watered.

More information on specific diseases is given below. Always refer to product labels for use directions and check your state's regulations to make sure that products may be used as specified in your location.

### Phytophthora crown rot (aka *Phytophthora* crown and root rot)

Symptoms consist of complete plant collapse in the fall and/or spring. Collapsing plants show a reddish-brown discoloration to the crown that is sharply delineated from healthy tissue, though eventually the entire crown may be affected. 'Flavorfest' seems especially susceptible to *Phytophthora* crown rot, as are some cultivars grown mostly in matted-row production.



Figure 2. Darkened tissue is usually at the top of the crown, but may appear in other areas or be more limited in scope, depending on the entry point of the fungus and length of time since initial infection. Photos: Kathy Demchak, Penn State

Historically, this disease has been caused by specific "pathotypes" of *Phytophthora cactorum* which differ from the ones causing leather rot and is a different species from the one causing red stele (aka *Phytophthora* root rot) to which Flavorfest is thought to be resistant. *Phytophthora* crown rot affects certain cultivars much more than others. With other diseases caused by *Phytophthora*, tolerant cultivars, which can be infected but just don't show symptoms, may still release inoculum of this disease into the soil

Continued on page 22

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## BERRY PRODUCTION

# Disease Management Recommendations for Fall-Planted Strawberry Plug Plants continued from page 21

from their roots. Whether that is the case with this disease is unclear. Work is underway to better understand current instances of disease occurrence in the mid-Atlantic region.

There have been striking differences in 'Flavorfest' performance in grower fields in that it has been extremely vigorous and high yielding in fields that never had strawberries grown in them before, but plants collapsed and died in fields where intervals between strawberry plantings were short, leading to the question of whether the *Phytophthora* crown rot organism had been introduced to the fields in earlier plantings. Exactly how long this disease can persist in a field is not known, but at least one other *Phytophthora* species can persist for six years.

When planting 'Flavorfest', and also 'Sweet Charlie', use fields that have never been used for growing strawberries if possible. At planting, use a plant dip of fosetyl-AI (Aliette WDG) or a phosphite product (ProPhyt, Phostrol, etc.). Make foliar applications through mid-Fall at intervals allowed on the label. The fungus is thought to become inactive later in the fall when temperatures cool. Watch for symptoms next spring and continue to treat. Ridomil (mefenoxam) has been very effective in some trials, but resistance has been reported, leading to reduced efficacy in some situations.

Trials conducted in California have shown that one plant dip of Aliette followed by five foliar applications with Aliette increased marketable strawberry yield approximately 40-60% compared with a water-only spray control in *P. cactorum* infested plants, whereas little difference was observed among those treatments in the non-infested control plants. Comparable results were also observed for the Ridomil soil drench treatment at planting (one application) and during the growing season (two applications). In a nutshell, these materials including phosphites and MetaStar can effectively manage *Phytophthora*. Compared to fosetyl-AI (Aliette) and phosphites, Ridomil poses a higher risk for resistance development. Whether to use these materials as a precaution depends on cultivar susceptibility, site and disease history, etc. Actigard is also labeled for suppression of *phytophthora* crown rot, but it is used as a foliar spray and cannot be applied within five days of transplanting. However, little data is available regarding its efficacy.

### Anthracnose crown rot

With this disease, plants fail to grow as expected, and may eventually die. Upon close examination, you may find that the main crown has died, but branch crowns have started to grow. No cultivars are completely immune, but some such as 'Chandler' are very susceptible. Affected crowns appear firm and reddish-brown when they are sliced open. Crown tissue may be uniformly discolored brown, and symptoms sometimes can be confused with those from other crown rot issues.

Switch and Abound plant dips have been found to help with anthracnose crown rot control. Refer to the label for instructions. Two or three applications of captan or thiram may be made after planting during the fall season at 10- to 14-day intervals. Other products are also labeled for this use including Quadris Top, Protocol, and Topsin M. Note that widespread resistance in this pathogen has been found to Topsin M and other fungicides in the same FRAC groups (i.e., groups 1 and 11).

### Neopestalotiopsis crown and fruit rot

There are various strains or species of *Neopestalotiopsis* that cause different symptoms ranging from slowly progressing foliar symptoms to rapid plant decline and death. Early symptoms appear on leaves and consist of tan to brown roughly V-shaped lesions that are wider at the edge of the leaf. If the more virulent strain is present, large areas of the leaf are invaded in a matter of a few days with pycnidia (tiny black raised dots) appearing in the lesions shortly thereafter. The disease can also invade the crown and kill plants, and causes fruit rot similar to anthracnose fruit rot.

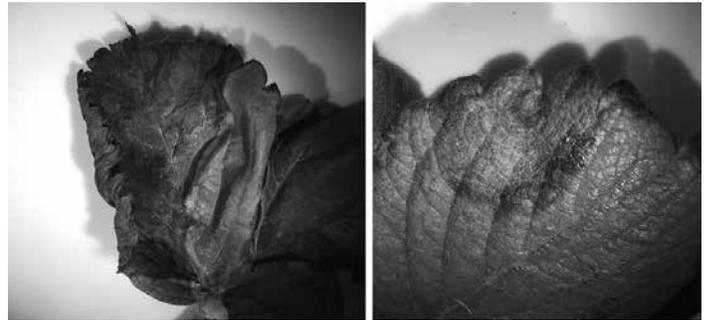


Figure 3. Left: *Neopestalotiopsis* on 'Galletta' showing V-shaped lesion which has consumed most of the leaf within a few days. Right: *Phomopsis* leaf blight on 'Albion', which is invading tissue much more slowly. Photos: Kathy Demchak, Penn State

Many cultivars seem to be susceptible or at least bear watching. At planting and throughout the fall, remove any leaves showing disease symptoms. Sprays of Thiram and Switch (or Miravis Prime, containing fludioxonil as in Switch) 7 to 10 days apart can reduce the disease by about 40% more-or-less based on trials conducted in Florida. Other materials showed little efficacy against this disease. Though this disease caused some plantings in warm locations to be lost during the fall of 2020, the disease did not appear to persist into the spring of 2021 in northern locations. Whether that will be the case every year is not known. Interestingly, a recent study suggests a correlation between spider mites and high severity of *Neopestalotiopsis*. An insecticide or miticide spray may therefore be important to managing this disease if mites or other insects are of concern.

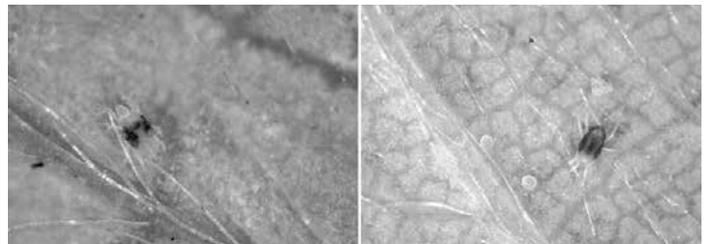


Figure 4. Two-spotted spider mite (left) and carmine mite and eggs (right) on strawberry leaf undersides. Though coloration is different, these two types of spider mites have been determined to be the same species, so control methods (and miticides that may be used) are the same. Photos: Kathy Demchak, Penn State

### Powdery mildew

This disease lives on the surface of the plant tissue and causes leaf edges to curl inward. Reddish-purple blotches appear on the leaves and may coalesce and cause areas of the leaf to die, though the mildew on the leaves is usually apparent only in high tunnels or greenhouses.

'Flavorfest', 'Galletta', 'Earliglow' and any California-bred day-neutral cultivars, especially 'Seascape', are very susceptible. Fungicides in categories 3, 7, and 11, or specific "powdery mildew" fungicides such as Quintec and Torino are effective, while others are not. Note that powdery mildew resistance to many of these materials has been reported, but is neither frequent nor widespread yet. Usually, fungicides are not needed for this disease alone in the fall on plug plants, so sprays should be avoided in order to avoid the unintended consequences of developing resistant botrytis and anthracnose strains while treating the powdery mildew, as these products may be needed in the spring.

### Angular leaf spot

This is a bacterial disease that is usually noticed in the spring

## BERRY PRODUCTION

### Disease Management Recommendations for Fall-Planted Strawberry Plug Plants *continued from page 22*



Figure 5. Powdery mildew symptoms of curled leaves and purple blotches are very common on foliage in the fall and tend to disappear by spring. In spring, however, there may be a "powdery" appearance to the fruit that affects marketability. Seeds are often raised. Photos: Kathy Demchak, Penn State

because it causes caps to turn brown but is mentioned here because if the infection is severe enough, the bacteria can invade the plants' vascular systems causing them to collapse, and thus could be confused with other causes of plant collapse. The bacteria are splashed around by water and unlike most other diseases, this one thrives under cold temperatures. In years where long periods of overhead irrigation for frost protection are needed, it can become very widespread, resulting in tissue death that could be mistaken for fungal diseases.



Figure 6. Left: The most obvious symptom of angular leaf spot is blackened berry caps. Right: The bacteria also cause clearing of leaf tissue, at first delineated by the leaf veins. Injured tissue eventually coalesces, and may die. Photos: Kathy Demchak, Penn State

Some newer cultivars grown in plasticulture appear to be quite susceptible. Since this disease is caused by a bacterium and not a fungus, copper-based materials are needed instead of standard fungicides (which have no effect) and should be applied in the spring to protect healthy foliage and berry caps from disease spread. Make these applications only if the disease is known to be present, as phytotoxicity can occur with multiple applications and when drying conditions are prolonged. It is unlikely that any spray applications will be needed for this disease in the fall. In addition, Actigard, which induces the plants' systemic activated resistance, provided some control efficacy based on trials conducted in Florida. Note that Actigard should be applied at the lowest label rate. Higher rates were found to reduce yields.

#### Long-Term Steps to Take

With the exception of *Phytophthora*, the diseases mentioned above do not survive very well without plant tissue to survive in or on – which includes mummified crowns that can persist for at least 3 years. Beyond the control measures mentioned above, if diseases cannot be gotten under control, consider plowing down the worst sections of the field, and do not carry over the planting

for a second harvest year. Second-year yields are likely to be low, disease pressure is more likely, and the chances of risking a future planting in the same field or other nearby plantings are increased.

*Ms. Demchak is with the Dept. of Plant Science at Penn State Univ. and Dr. Hu is with the Dept. of Plant Science and Landscape Architecture at the Univ. of Maryland. From Penn State Extension, <https://extension.psu.edu/disease-management-recommendations-for-fall-planted-strawberry-plug-plants>, August 31, 2021.*

### National News Briefs *continued from page 4*

Paraquat is applied annually to control invasive weeds and grasses in certain crops, including corn and soybeans. It's a Restricted Use Product, meaning it can only be used by certified pesticide applicators.

*From Pennsylvania Agricultural Alliance Issues Update, September 2021*

#### Organic Certification Cost Sharing Available

Organic producers and handlers can now apply for funds to assist with the cost of receiving or maintaining organic certification. Applications for the U.S. Department of Agriculture's Organic Certification Cost Share Program are open through Nov. 1.

The program provides cost-share assistance to producers and handlers of agricultural products for the costs of obtaining or maintaining organic certification under the USDA's National Organic Program. Eligible producers include any certified producers or handlers who have paid organic certification fees to a USDA-accredited certifying agent during 2021 and any subsequent program year.

Producers can be reimbursed for expenses made between Oct. 1, 2020, and Sept. 30, 2021, including application fees, inspection costs, fees related to equivalency agreement and arrangement requirements, travel expenses for inspectors, user fees, sales assessments and postage.

For 2021, the program will reimburse 50 percent of a certified operation's allowable certification costs, up to a maximum of \$500 for each of the following categories:

- Crops
- Wild crops
- Livestock
- Processing/handling
- State organic program fees

Farmers may apply through their local Farm Service Agency county office.

*From Pennsylvania Agricultural Alliance Issues Update, September 2021*

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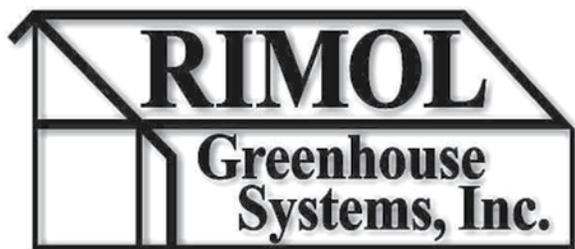
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