PENNSYLVANIA
VEGETABLE GROWERS

NEWS

October 2020 / Volume 43 Number 10

for the commercial vegetable, potato and berry grower

MID-ATLANTIC *fruit & vegetable convention* to Go Virtual for 2021

The 2021 Mid-Atlantic Fruit and Vegetable Convention will be held virtually on February 8 to 11, 2021. Normally over 2,400 fruit, vegetable, and berry growers and other industry personnel from throughout the mid-Atlantic region and beyond gather at the Hershey Lodge each year for what has become one of the premier grower meetings on the East Coast. Since a normal in-person meeting will not be feasible this year due to the coronavirus pandemic restrictions, the Convention Joint Committee has voted to move to a virtual format for the first time.

Plans are being made to offer exceptional educational sessions on a full-range of topics in tree fruit, vegetable, small fruit, and potato production plus retail and wholesale marketing. A special session will also be presented in Spanish for Spanish-speaking industry members. A tentative schedule of sessions is shown below. A more detailed schedule with topics and speakers will be announced in the coming weeks.

The virtual event will also feature a trade show component allowing participants to "visit" with exhibitors. Registration will be $40 per person and will allow one to visit the trade show exhibitors and to participate in any of the educational sessions both during the week of the Convention and for several weeks after the Convention, since all the educational sessions will be recorded. It is expected that pesticide credits will be available for growers in Pennsylvania, Maryland, New Jersey and Virginia.

The Mid-Atlantic Convention has been jointly sponsored by the State Horticultural Association of Pennsylvania, the Pennsylvania Vegetable Growers Association, the Maryland State Horticultural Society and the New Jersey State Horticultural Society for the past 43 years making this year's Convention the 44th meeting. In 2014, the Virginia State Horticultural Society also began meeting at the Convention. Penn State Extension, University of Maryland Extension, Rutgers Cooperative Extension, and Virginia Cooperative Extension all assist in organizing the educational sessions.

Further information will be published in the November newsletter and on the Convention website at www.mafvc.org as it is available.

2021 Mid-Atlantic Fruit and Vegetable Convention
Tentative Educational Program Outline

Monday, February 8, 2021	Wednesday, February 10, 2021
9:00-11:00/11:15 • Wholesale Marketing • 3rd Party Liability • General Vegetables	*9:00-11:00/11:15* • Pepper/Eggplant/Cole Crops • Small Fruit • Tree Fruit • Vine Crops
12:00-2:00/2:15 • Hydroponics/Greenhouse Vegetables • Honeybees for Pollination • Post-Harvest Food Safety	*12:00-2:00/2:15* • Agritourism • Vegetable Biocontrols • Lunch/Learn — Tree Fruit • Tomatoes
2:30-4:30/4:45 • Creative Marketing • Ag Workplace/Legal Compliance COVID-19 • Specialty Vegetables	*2:30-4:30/4:45* • Farm Markets Post-Covid • Small Fruit • Tree Fruit • General Vegetables • Spanish
Tuesday, February 9, 2021	**Thursday, February 11, 2021**
9:00-11:00/11:15 • Sweet Corn • Economies of Online Sales • Tree Fruit	*9:00-11:00/11:15* • High Tunnels • Potatoes • Tree Fruit • Small Fruit • CSAs
12:00-2:00/2:15 • Soil Health/Cover Crops • Lunch/Learn — Vegetables • E-Commerce	*12:00-2:00/2:15* • Pumpkins/Winter Squash • Potatoes • Digital/Social Marketing • Lunch/Learn — Berries
2:30-4:30/4:45 • Organic Vegetable Production • General Vegetables • Tree Fruit	*2:30-4:30/4:45* • General Vegetables • Potatoes • Tree Fruit • Small Fruit

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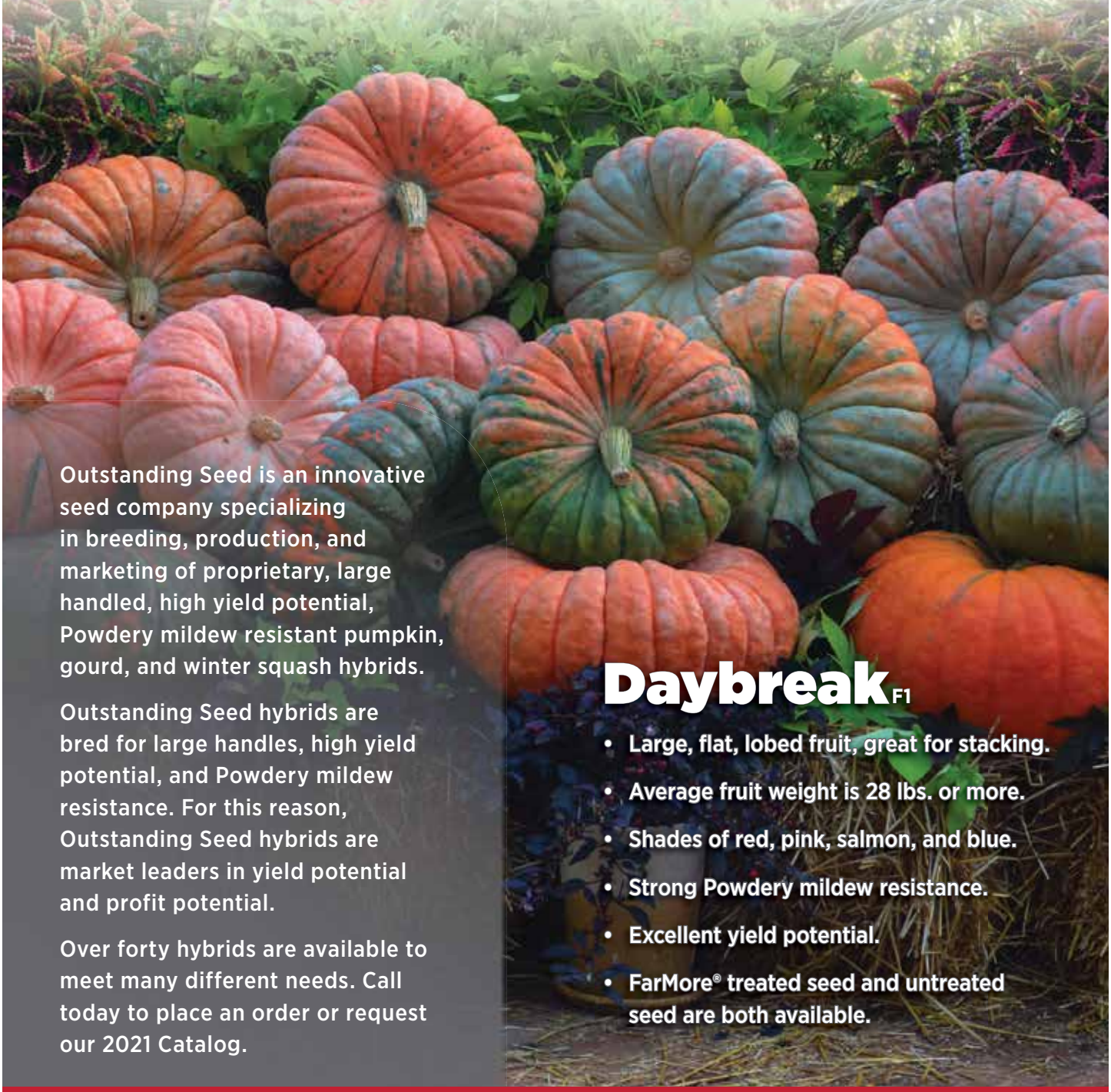

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NEWS

2020 PVGA Membership Increases to 983

PVGA membership increased 3% in 2020 to 983, up from 956 in 2019. In 2017, PVGA membership reached its highest level in recent history at 1,063 members. Unfortunately, in 2018, membership dropped to 1,016, and dropped further in 2019. The Census of Agriculture indicates there are over 3,300 farms in Pennsylvania that grow an acre or more of vegetables. Thus, PVGA has a large potential membership as yet untapped.

The Directors have set a goal of retaining 90% of the previous year's members and recruiting 15% new members each year. For 2020 only 84% of last year's members rejoined and almost 19% new members were recruited – that is they were not members in 2019. Membership has increased over the previous year in six of the last ten years, increasing 4% in that time period from 947 in 2010.

PVGA is completing its 94th year as an association. The Directors are fully aware that membership goals can only be met and maintained by providing an adequate return to members for their dues investment. The Association strove to continue to provide a good return on members' dues investment in 2020 with the following ongoing activities and member services:

- PVGA helped sponsor the 2020 Mid-Atlantic Fruit and Vegetable Convention – the premier grower meeting of its kind on the east coast - and is moving forward with plans for virtual 2021 Mid-Atlantic Convention.
- PVGA published the Pennsylvania Vegetable Growers News, its own 24-plus-page monthly newsletter with pertinent information for the Pennsylvania vegetable, potato, berry or greenhouse vegetable grower.
- PVGA produced a weekly PVGA Update email for members with email capability to keep members regularly updated about the Association as well as pertinent articles of interest on the internet. At the beginning of the coronavirus pandemic, additional special issues of the PVGA Update were published during the week to provide members with current information.
- PVGA provided $60,000 for vegetable in 2020 - bringing the Association's total for research contributions to $1,251,000 over the last 32 years.
- PVGA represents the interests of the vegetable, potato and small fruit industries on legislative and regulatory issues through letters and meetings with public officials.
- PVGA cooperated with the Department of Agriculture and the Vegetable Marketing and Research Program to promote the Pennsylvania vegetable industry at the 2020 Farm Show.
- PVGA holds the trademark for the Pennsylvania Simply Sweet Onion to help develop a new profitable, branded crop for Pennsylvania growers.
- PVGA is especially proud of the volunteer effort put forth each year by PVGA members to run the Association's Food Booths at the Farm Show. As noted above, these efforts have enabled PVGA to donate over $1,250,000 dollars towards research and promotion activities over the last 32 years. The Board of Directors has essentially devoted the profits from the Food Booths to fund the Association's research, promotion and donation budgets rather than any of the Association's general operations.

Due to the coronavirus pandemic, certain activities were not able to be conducted as usual in 2020. PVGA usually co-sponsors several regional twilight meetings and field days during the summer and fall as well as a bus tour of farm markets. Hopefully these events can be resumed in the coming year.

In 2020 PVGA members again received free subscriptions to the American Vegetable Grower magazine and the Vegetable Growers News.

With the cancellation of the 2021 Farm Show, the Association is facing the loss of 47% of its income for 2021. While the 2021 Mid-Atlantic Fruit and Vegetable Convention will still be conducted virtually and is projected to break even, it will not likely provide additional revenue for the Association like the in-person conventions. The bottom line is that your Association needs your membership for 2021 more than ever to continue to serve you and the grower community in the coming years. The Board of Directors has used surpluses in past years to build a healthy general fund reserve for the Association that will enable it to continue operations pretty much as normal in 2021 even with the major loss of revenue – but we do need the continued support of you our members through your dues to remain a strong, viable organization.

Dues invoices for 2021 will be mailed in late November or early December. We hope all members will renew your memberships for 2021 and that you will urge a neighboring grower to join as well. We want to see PVGA membership continue to increase. Increased membership allows the Association to better the serve the vegetable, potato and berry growers of Pennsylvania – and that is our end purpose

Be a Keystone Member for 2021 and Invest in PVGA's Future

In 1994, the Association established a new membership class, the Keystone membership, and an endowment-type fund, the Keystone Fund. PVGA members who wish to support the vegetable, potato and berry industries in a special way pay dues above the regular rate, with the dues above the regular rate being placed in the Keystone Fund. The current balance in the Keystone Fund is about $190,000 which is invested in money market accounts, a bond mutual funds and a S&P index stock fund.

The Board of Directors has approved the following uses for the annual interest earned by the Keystone Fund:

Two annual $1,000 student scholarships that will are awarded according to criteria set by a special committee. The committee has awarded a total of twelve scholarships to date.

Half of any remaining interest is given to the Penn State Plant Pathology Department as a general research grant in support of the vegetable pathologist's ongoing research work.

The other half of any remaining interest is given to the Penn State Entomology Department as a general research grant in support of the vegetable entomologist's ongoing research work.

The special research grants from the Keystone Fund were designated for the Plant Pathology and Entomology Departments at this point in time rather than the Plant Science Department because the Association for several years gave $10,000 a year to partially support a research technician in the Plant Science Department. This support comes from the Association's General Fund. As interest rates declined in the past several years, these research grants grew smaller but should increase again as interest rates increase.

Suggested Keystone dues are based on a member's gross income from vegetables, potatoes or berries instead of being a flat rate. However, any member who pays dues of $75 or more is considered a Keystone member regardless of their gross income. The amount of Keystone dues paid by individual members is not published so as not to disclose their gross income. Keystone dues above the $50 regular dues are added to the principal of the Keystone Fund, thus increasing the potential amount of interest available each year.

Keystone membership is open to all vegetable, potato and berry farm operations, processing firms and allied industry firms. Associate Keystone Members are additional family members or employees of Keystone Members.

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NEWS

Needed: Nominations for PVGA Directors

The terms of seven members of the PVGA Board of Directors expire at the Annual Meeting tentatively scheduled for Wednesday, February 3, 2021, although that date may be changed due to the change in the dates for the Mid-Atlantic Convention. The Directors whose terms expire are:

Robert Amsterdam – Mechanicsburg – first elected 2018

Brian Campbell – Berwick – first elected 2007

Peter Flynn – West Chester – first elected 2018

Arthur King – Valencia – first elected 2018

Amy Metrick – Butler – first elected 2018

Michael Orzolek -State College – first elected 2015

Mark Troyer – Waterford – first elected 2015

All the directors are eligible for re-election although under changes adopted three years ago at the Annual Meeting, the members will elect five members to the Board and the Board will name a sixth Director. Only six of the seven seats will be filled to return the Board to a total of 18 members after the 2021 Annual Meeting. The Board currently has 19 members due to allowing the Board to appoint additional Board members to provide diversity and potentially certain expertise in the Board makeup that the election process does not always provide.

Like last year, 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 or Jon Strite, who as Past President serves as chair of the Committee, at jstrite1979@gmail.com.

PVGA Young Grower Award Applications Being Accepted

The "PVGA Young Grower" award was a new award established four year's 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. 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 criteria for the Award. The criteria are as follows:

- 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 or 815 Middle Road, Richfield, PA 17086, by November 30, 2020.

*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 • Website: 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

Fruit + Vegetable 40 UNDER FORTY

RECOGNIZING THE FRUIT + VEGETABLE INDUSTRY'S

NEXT GENERATION OF LEADERS

The Fruit + Vegetable 40 Under 40 Awards honor 40 outstanding individuals making their marks in the industry. These 40 young professionals represent the best in the industry. The Fruit + Vegetable 40 Under 40 Class of 2020 will be honored at the Great Lakes Fruit, Vegetable & Farm Market EXPO, and recognized in the October 2020 issues of Fruit Growers News and Vegetable Growers News.

The Vegetable Growers News and the Fruit Grower News organizes the 40 Under 40 recognition program that is sponsored by Corteva Agriscience, Stokes Seeds, FMC Corporation, BioWorks, and AgBiome Innovations. The following three individuals from Pennsylvania were included in this year's class of winners. In addition, PVGA member Trevor Hardy from Connecticut was also honored with the award.

Amy Metrick

Metrick's Harvest View Farm & Market/Penn State Extension, Farm Partner/4-H Extension Educator

Amy has been involved in her family farm, Metrick's Harvest View Farm & Market, her entire life. She is responsible for the greenhouses there, growing both flowers and vegetable plants. In addition, she helps manage the family's year-round farm market as well as many other seasonal responsibilities. Currently she works full-time as a Penn State 4-H Extension Educator in Butler County and is a board member of the Pennsylvania Vegetable Growers Association.

Donald Seifrit

Pennsylvania State University Extension, Extension Educator - Tree Fruit

Don is the Tree Fruit Extension Educator for southeastern Pennsylvania. He received his BS and MS from the University of Delaware. Starting with Penn State Extension in 2018, he is the coordinator for the Mid-Atlantic Young Grower Alliance. His work focuses on providing resources for next generation fruit growers (Latinx and young growers). Don recently began recording a tree fruit podcast. He and his fiancée, Erin, are to be married in December 2020.

Benjamin Keim

Keim Orchards, Field Operations Manager

Keim is a fifth-generation grower in Berks county Pennsylvania, focusing on fresh market apples and peaches. Upon completing his degree in Horticulture from Penn State University, he returned to the farm in 2010. His focus on the farm is coordinating field operations and food safety. He also serves as President of the State Horticultural Association of Pennsylvania.

Trevor Hardy

Brookdale Fruit Farm, Farm Supplies Manager and Systems Engineer along with Assistant Crop Production Manager

Trevor is a 7th generation fruit and vegetable farmer with a degree in Industrial Engineering. He is the Current President of New England Vegetable and Berry Growers Association, as well as President of Hillsborough County Farm Bureau. He built and operates Brookdale Farm Supplies the largest irrigation and row crop supplies company in New England. His focus is on change in the industry towards no till vegetable production, high density apple production and the implementation of Lean principles on farms.

NEWS

Be a Keystone Member for 2021 and Invest in PVGA's Future

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The following farms, firms and persons are Keystone or Associate Keystone Members for 2020:

Robert Amsterdam – *Mechanicsburg*
Lady Moon Farms (Thomas Beddard) – *Chambersburg*
Triple B Farms (R.J. and William Beinlich) – *Monongahela*
Benshoff Farms of New Germany (James Benshoff) – *Summerhill*
Bley Farms (Ralph Bley) – *Ringtown*
Dudas Farm (Roberta Dudas) – *Fairview*
Dymond's Farm Market (Christopher, Fred III, and Timothy Dymond) – *Dallas*
Windy Hill Farm (Marian Fifer) – *Bulger*
Mike Finks Produce (Michael Fink) – *Germansville*
Dan Schantz Farm and Greenhouse (Daniel Schantz, Patrick Flanley) – *Zionsville*
Douds Floyd Farm (Philip Doud Floyd) – *Aliquippa*
Pete's Produce Farm (J. Peter Flynn) – *West Chester*
Irritec USA (Jay Fraleigh) – *Jacksonville Beach, FL*
Country Gardens Produce (Laban Garber) – *Greencastle*
Harnish Farms (Bryan Harnish) – *Pequea*
SIW Vegetables (Harry Haskell) – *Chadds Ford*
B & R Farms (Barron Hetherington) – *Ringtown*
Outstanding Seed Co. LLC (Jamie Hoffman) – *Beaver Falls*
Hopkin's Farm (Andrew, Leanne, and William Hopkins) *Falls*
John Hurst – *Mertztown*
Karabin Farms (Diane Karabin) – *Southington, CT*
Harvest Valley Farms (Arthur, David and Larry King) – *Valencia*
Peaceful Acres Farms (Clair King) – *Cochranville*
Kings Potatoes (Gerald R. King) – *Cochranville*
Klingel Farms (Stuart Klingel) – *Saylorsburg*
Kreider's Market (J. Lloyd Krieder) – *Kirkwood*
Good Earth Produce (Mark Kurtz) – *Belleville*
Kitchen Table Consultants (Ted Lebow) – *Collegeville*
Furmano Foods, Inc. (Donald Bergey, Scott Hoffman, Kenneth Martin) – *Northumberland*
Harvest View Farm and Market (Amy and Kenneth Metrick) – *Butler*
Miller Plant Farm (David Miller) – *York*
Keith Moyer – *Middleburg*
General Store Farm Market (David Moyer) – *Birdsboro*
Ben Oberholtzer – *Winfield*
Institute for Plant Based Nutrition (James Oswald) – *Bala Cynwyd*
Peters Produce (Dennis S. Peters) – *Red Lion*
Laurel Vista, Inc. (Rita Resick) – *Somerset*
Reynold's Farm (William Reynolds) – *Waynesboro*
Robertson Farms (Gregg Robertson) – *Hershey*
Pumpkinhill Produce Farms (Harry N. Roinick, Jr.) – *Nescopeck*
Sample's Vegetable Farm (Steve Sample) – *Duncannon*
Jim's Farm Produce (James H Schirg) – *West Abington Twp.*
Green Barn Berry Farm (Robyn and Jarod Schreiber) – *Muncy*
J & L Shafer Farms (Jack L. Shafer) – *Tamaqua*
Shenot Farms (Edward and Robert Shenot) – *Wexford*
Snyder's Farm Market (George Snyder) – *Grampian*
David Sokoloski – *Beaver Falls*
Stauffer Huling Farm – *Sandford, FL*
Hilltop Farm Market (Nathan Stock) – *East Berlin*
AgraPro by MSA (Mark Swingle) – *Lawrence, NJ*
William Troxell – *Richfield*
Van der Grinten Farms (Peter Van der Grinten) – *Guilford, CT*
Varner Farms (Robert D. Varner) – *Collegeville*

Whole-Farm Revenue Protection Program Improvements For Direct Marketers

Earlier this month, the U.S. Department of Agriculture's (USDA) Risk Management Agency (RMA) announced modifications to the Whole-Farm Revenue Protection (WFRP) program to decrease paperwork and recordkeeping burdens for direct marketers beginning with the 2021 crop year.

"These changes will allow more direct marketers who previously could not meet reporting requirements a way to participate in the Whole-Farm program and provide better and more affordable coverage to these diversified growers," RMA Administrator Martin Barbre said.

RMA held several stakeholder meetings with agents, growers, and grower groups to solicit feedback on ways to increase the effectiveness of the WFRP program, as required by the Agricultural Improvement Act of 2018 (Farm Bill). Stakeholders recommended RMA decrease the requirements for reporting yield and revenues for each commodity, which is especially difficult for direct marketers who may sell several commodities through a roadside stand.

The newly implemented modifications allow growers to report two or more direct-marketed commodities as a combined single commodity code with a combined expected revenue for all commodities. Additionally, the combined direct-marketed commodities will count as two commodities in calculating the diversification premium discount. Under WFRP, farms with two or more commodities receive a premium rate discount, reflecting the lower risk of revenue loss due to the farm's diversification. Revenue history will be based on reported revenue from the combined direct-marketed commodities and total acres planted to those commodities. This lessens reporting burdens by alleviating the requirement to report detailed sales or yield records from any specific commodity reported under the direct market commodity code.

For more information on the Whole-Farm Revenue Protection plan, please visit the RMA website.

RMA is also authorizing additional flexibilities due to coronavirus while continuing to support producers, working through Approved Insurance Providers (AIPs) to deliver services, including processing policies, claims, and agreements. RMA staff are working with AIPs and other customers by phone, mail, and electronically to continue supporting crop insurance coverage for producers. Farmers with crop insurance questions or needs should continue to contact their insurance agents about conducting business remotely (by telephone or email). More information can be found at farmers.gov/coronavirus.

Crop insurance is sold and delivered solely through private insurance agents. A list of insurance agents is available online using the RMA Agent Locator. Learn more about crop insurance and the modern farm safety net at rma.usda.gov.

*From **Plant and Pest Advisory**, Rutgers Coop. Extension, https://plant-pest-advisory.rutgers.edu/whole-farm-revenue-protection-program-improvements-for-direct-marketers/, September 24, 2020.*

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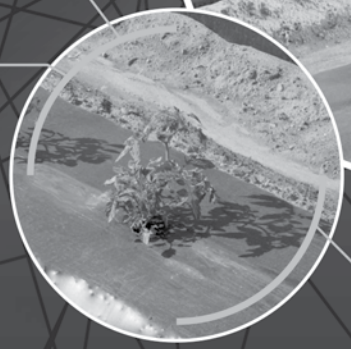

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NEWS

National News Briefs

SBA Simplifies Forgiveness for Some Relief Loans

The U.S. Small Business Administration has simplified the process of applying for some of its signature COVID-19 relief loans to be forgiven.

The agency recently issued a final interim rule that allows a one-page, simplified application to be used to apply for forgiveness of Paycheck Protection Program loans of up to $50,000. The PPP program provided forgivable loans for farms and other small businesses affected by the COVID-19 pandemic to continue to pay employees and certain, other expenses.

Farm Bureau is continuing to advocate for legislation that would allow the simplified application to be used for loans of up to $150,000, a move that would alleviate hours of paperwork for borrowers.

To view the simplified application go to https://www.sba.gov/sites/default/files/2020-10/PPP%20Loan%20Forgiveness%20Application%20Form%203508S.pdf. Farmers and businesses should consult with their accountant, tax preparer and/or financial advisor about the PPP application and loan forgiveness process to ensure all the proper documentation has been completed and reviewed.

*From the **Farm Bureau Express**, Penna. Farm Bureau, October 16, 2020.*

New Conservation Compliance Rule Falls Short of Needed Changes

The U.S. Department of Agriculture's new Highly Erodible Land and Wetland Conservation final rule does not make the changes Farm Bureau has advocated for to provide clear guidance to farmers and prevent unfair treatment and abuse of farmers by federal agencies.

The regulation, more commonly referred to as the conservation compliance rule, sets criteria that farmers who own or farm land that is highly erodible or considered a wetland must abide by in order to participate in Farm Service Agency or Natural Resources Conservation Service programs. Farm Bureau has advocated for greater transparency and safeguards for farmers following the revelation of widespread abuse of farmers and unfair enforcement by NRCS.

"After decades without a finalized rule in this area, we finally have one, but unfortunately it falls short," American Farm Bureau President Zippy Duvall said. "Farmers and ranchers are some of the strongest advocates of conservation, as demonstrated by the 140 million acres they've voluntarily committed to federal conservation programs. That's not what this is about. This is about unfair treatment, which we've clearly laid out for USDA in previous comments and many meetings, backed by court rulings."

Farm Bureau is examining options to address the rule's shortcomings.

*From the **Pennsylvania Agricultural Alliance Issues Update**, Penna. Farm Bureau, September 2020.*

Federal Funding Bill Replenishes Farm Program Funding

A recently adopted federal spending bill replenishes funding for farm safety net and support programs that help farms remain in operation through disasters and times of crisis.

Congress recently passed and President Donald Trump signed a measure to continue funding the federal government that included a provision reimbursing the Commodity Credit Corporation, the federal government's primary funding mechanism for many farm bill programs. Without the reimbursement, USDA may not have had enough funds to make farm program payments.

"For years, funding the CCC has been a bipartisan commitment," American Farm Bureau President Zippy Duvall said. "While we were disappointed it recently became a political flashpoint, we are pleased lawmakers on both sides of the aisle recognize that these funds help to sustain conservation programs and stock America's pantry. I would be remiss if I did not also thank the Farm Bureau members across the country who let their elected leaders know how important the farm safety net is to the future of U.S. agriculture. We are grateful farmers' voices were heard."

*From the **Pennsylvania Agricultural Alliance Issues Update**, Penna. Farm Bureau, September 2020.*

Help Tell USDA How to Improve Farmer Experience

The U.S. Department of Agriculture wants to know how its agencies can better serve farmers.

The department will conduct an annual survey of farmers to understand what the Farm Service Agency, Natural Resources Conservation Service, and Risk Management Agency are doing well and where they can improve.

The survey includes 20 questions and takes approximately 10 minutes to complete. Responses are confidential, and individual responses will be aggregated.

Learn more and take the survey at www.farmers.gov/survey.

*From the **Pennsylvania Agricultural Alliance Issues Update**, Penna. Farm Bureau, September 2020.*

State News Briefs

State Budget Action Needed

Although there are an almost unimaginable number of pending bills in the General Assembly, the major item on the agenda will be passing the remainder of the PA State Budget for Fiscal Year 2020-21. Earlier this year, a State Budget was signed into law covering the first half of the fiscal year (except for education which received full-year funding). The segmented budget process was prompted by COVID-19 where the business shutdown and stay at home orders sorely reduced tax revenues. In addition, an extension of the due date for taxes until July 15 made revenue projections uncertain.

The revenue picture is improving. Through September, year-to-date collections were $9.9 billion, which is $459 million or 4.9 percent over expectations. Above estimate revenues were found in Sales Tax (+5.9%), Personal Income Tax (+1.4%), Corporate Taxes (+13.2%), Inheritance Tax (+12.5%), Realty Transfer Tax (+34.9%), and Cigarette, malt beverage, liquor and gaming taxes (+12.7%).

Another question is what does PA plan to do with the remaining 1.3 billion dollars from the Federal CARES Act? There is no shortage of ideas. Rep. Pam Snyder (D-Greene/Fayette/Washington) sponsored House Bill 2786 to spend $50 million on expansion of high-speed Broadband to underserved areas. Some of the others are: Senate Bill 1234 (Killion-R-Delaware) subsidizes utility costs; House Bill 2821 (Malagari-D-Montgomery) establishes the PA Brewery, Distillery, and Winery Fund; House Bill 2816 (Quinn-R-Delaware) would put $100 million of the CARES Act into the Low Income Assistance Program to help those whose utilities were shut off because of non-payment; and House Bill 2809 (Hanbidge-D-Montgomery) subsidizing childcare.

*From the **AG ONE Newsletter**, Penna. State Council of Farm Organizations, Issue 2020.10, October 29, 2020.*

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NEWS

New Round of COVID-19 Aid for Farmers

The U.S. Department of Agriculture has announced a second round of its Coronavirus Food Assistance Program, which provides direct payments to farmers to help with losses suffered due to the COVID-19 pandemic.

The agency is accepting applications for the $14 billion "CFAP 2" program through Dec. 11.

Farm Bureau had advocated for an additional round of payments, noting that farmers have continued to face challenges due to the market volatility of the pandemic and many affected producers were not eligible for the first round of payments.

Eligibility requirements are similar to the first CFAP program. Payments are limited to $250,000 per person or entity, with exceptions for partnerships and corporations where all members are actively involved. There is an Adjusted Gross Income limit of $900,000, except for producers who make at least 75 percent their income from farming, ranching or forestry-related activities. And applicants must meet conservation compliance provisions.

Several commodities that were not eligible for the first CFAP program will now be eligible, including broilers, more types of eggs, turkey and other specialty livestock, additional fruit and vegetable crops, honey, maple sap, and more. The following commodities are eligible for the CFAP 2 program:

Row crops: alfalfa, amaranth grain, barley, buckwheat, canola, corn, Extra Long Staple cotton, upland cotton, crambe, einkorn, emmer, flax, guar, hemp, industrial rice, kenaf, khorasan, millet, mustard, oats, peanuts, quinoa, rapeseed, rice, sweet rice, wild rice, rye, safflower, sesame, sorghum, soybeans, speltz, sugar beets, sugarcane, sunflowers, teff, triticale, and all classes of wheat.

Dairy: Cow and goat milk are both eligible.

Broilers and eggs

Livestock: beef cattle, hogs and pigs, and lambs and sheep.

Specialty crops: More than 230 fruit, vegetable, horticulture and tree nut crops as well as honey, maple sap and indigo.

Wool

Specialty livestock: alpacas, bison, buffalo, beefalo, deer, ducks, elk, emus, geese, goats, guinea pigs, llamas, mink (including pelts), mohair, ostrich, pheasants, quail, rabbits, reindeer, and turkey.

Floriculture and nursery crops

Aquaculture

Tobacco

For more detailed information, including payment rates, visit www.farmers.gov/cfap.

Apply online or through your USDA Service Center. You can also contact USDA at 877.508.8364. If you applied for the first CFAP program, the application process will be easier for the second round because USDA likely has many of your documents already on file.

Visit www.farmers.gov/cfap for additional information.

*From the **Pennsylvania Agricultural Alliance Issues Update**, Penna. Farm Bureau, September 2020.*

NEWS

State News Briefs *continued from page 8*

Commonsense Protection for Agritourism Sought

Three bills aiming to protect agritourism are pending in the state House:

• House Bill 1348 (Gleim-R-Cumberland) provides limited liability for farms engaged in agritourism and/or agri-entertainment providing there are reasonable safeguards for visitors and notice of potential farm hazards. Status: Although being reported out by the House Agriculture & Rural Affairs, House Rules, and House Appropriations Committees in 2019, it has been on and off the House calendar since then. In order for it to receive action, it would have to be placed on third consideration. In the process, it has been amended three times and is vigorously opposed by the trial lawyers.

• House Bill 2093 (Polinchock-R-Bucks) prevents municipalities from imposing unreasonable restrictions on farms engaging in agritourism. Status: It was reported out by the House Local Government Committee on September 30.

• Senate Bill 583 (Aument-R-Lancaster) allows farmers on protected farmland to engage in agritourism activities. Status: It was passed by the Senate 47-0 on May 7, 2019 and was referred to the House Agriculture & Rural Affairs Committee on May 8, 2019, where it has since remained.

*From the **AG ONE Newsletter**, Penna. State Council of Farm Organizations, Issue 2020.10, October 29, 2020.*

House Committee Advances Broadband Bill

A bill that would help expand broadband access in rural Pennsylvania is on its way to being considered by the state House of Representatives.

The House Consumer Affairs Committee recently advanced Senate Bill 835. The bill, which cleared the state Senate last month, now heads to the full House for consideration. The House passed a similar bill earlier this year.

The legislation—introduced by Sen. Wayne Langerholc of Cambria County—would create a special account for grants to develop broadband service in underserved areas. The grants, which would be overseen by the Commonwealth Financing Authority, would be funded by shifting an existing $5 million tax credit.

Expanding broadband access has been a longtime priority for agriculture. While high-speed internet is becoming more and more essential to agriculture, business and daily life—a reality underscored by the COVID-19 pandemic—many rural communities lack adequate access.

From the Pennsylvania Agricultural Alliance Issues Update, Penna. Farm Bureau, September 2020.

MAV Width Bill Passes in House

The state House has given its approval to a bill that would change the state's vehicle code regarding the width of multipurpose agricultural vehicles (MAVs), commonly known as ATVs or side-by-sides. Senate Bill 995, sponsored by Sen. Dan Laughlin of Erie County, was already passed by the Senate, so the bill now goes to the Governor for his approval.

Currently, the state vehicle code requires that MAVs be no wider than 62 inches; however, newer models of side-by-sides are often up to 66 inches wide. Senate Bill 995, would change the vehicle code definition of an MAV to include vehicles up to 66 inches wide.

Farmers are allowed to operate MAVs in a limited capacity on roadways as part of their farming operations. This change would help farmers who have newer models of MAVs to be able to legally move those vehicles on the road.

*From the **Pennsylvania Agricultural Alliance Issues Update**, Penna. Farm Bureau, September 2020 and AG ONE Newsletter, Penna. State Council of Farm Organizations, Issue 2020.10, October 29, 2020*

Bill Would Create Locally Focused Conservation Program

Legislation to make it easier for farmers and local conservation officials to partner on conservation projects that improve water quality has been introduced in the state Senate.

Senate Bill 1272, introduced by Sen. Gene Yaw of Lycoming County, has been referred to the Senate Agriculture and Rural Affairs Committee.

The bill would create an Agricultural Conservation Assistance Program administered by the State Conservation Commission that would provide funding to county conservation districts across the state to partner with local farmers to implement conservation practices. Conservation districts would determine what types of projects should be prioritized to make the greatest improvements to water quality, allowing the program to be tailored for each county to meet local needs.

Funding would be distributed based on a formula. Counties with the most need for investments in conservation—such as those working to meet federally mandated goals for reducing nutrient and sediment pollution in the Chesapeake Bay Watershed—would receive the most funding. But the program would provide funding to conservation districts throughout the state.

From the Pennsylvania Agricultural Alliance Issues Update, Penna. Farm Bureau, September 2020.

Legislation Would Allow Community Solar Projects

Pennsylvania Farm Bureau is asking the General Assembly to enact legislation that would promote development of solar energy by allowing multiple people to share in the costs and the benefits of solar installations.

In recent written comments to the state House Consumer Affairs Committee, PFB urged lawmakers to remove barriers to so-called "community solar" projects, which allow multiple parties to partner on solar energy. PFB noted that many farms are already engaged in solar energy and see the benefits of a home-grown energy source that is compatible with farming activities and does not involve permanent development of farmland.

"Installing solar power can be expensive and not every farm can afford the capital expenditure of putting panels on their roofs," PFB wrote. "That is why we are supportive of initiatives like community solar development, that can spread the cost and ownership of a solar energy system between multiple people.

PFB supports House Bill 531, which would remove policy barriers currently preventing community solar energy projects in Pennsylvania.

"Community solar will give farm families and others the chance to partner together on a solar project," PFB wrote. "Each will receive the benefit of credits on their electricity bills while also sharing the costs of installing a project."

From the Pennsylvania Agricultural Alliance Issues Update, Penna. Farm Bureau, September 2020.

Grants to Fund Riparian Buffers in Bay Watershed

New grants awarded by the National Fish and Wildlife Foundation will help Pennsylvania add riparian buffers to streams in eight counties within the Chesapeake Bay Watershed to further the goals of Pennsylvania's Phase 3 Watershed Implementation Plan (WIP).

The grants and matching funds will provide nearly $2 million to be administered through the Chesapeake Bay Foundation to plant trees and restore farms along streams in Adams, Bedford, Centre, Cumberland, Franklin, Lancaster, Lebanon and York counties. The WIP goal is to create over 85,000 acres of streamside buffers by 2025.

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The grant will be used to train landscape technicians, provide education and outreach within the priority counties, and test a new buffer incentive program that will provide "simulated property tax relief" for each acre of buffer farmers install. The success of the program will determine if permanent tax relief could incentivize more conversion of streamside crop and pastureland.

The NFWF grant is part of a series of grants made through the Chesapeake Bay Stewardship Fund for 2020, that will direct a total of $18 million in funds to projects in the bay watershed.

*From the **Pennsylvania Agricultural Alliance Issues Update**, Penna. Farm Bureau, October 2020.*

Free Technical Assistance Available for Energy Projects

Farmers and other rural, small businesses can receive no-cost technical assistance to identify and assess renewable energy alternatives that can lead to cost-saving energy alternatives through a program at Northampton Community College.

The school's Emerging Technology Applications Center received a two-year grant from the U.S. Department of Agriculture to participate in the Rural Energy for America Program. Funding through this program will help provide technical assistance to eligible participants throughout Pennsylvania.

For more information and a determination of eligibility, contact cyoung@northampton.edu.

*From the **Pennsylvania Agricultural Alliance Issues Update**, Penna. Farm Bureau, October 2020.*

Nominate Outstanding Ag Educators for 2020–21 Golden Owl Award

Do you know an outstanding agriculture educator? Nominate them now for the Golden Owl Award.

The awards program is presented by Nationwide to recognize exceptional agricultural teachers and provide financial support for their education programs. Nationwide presents the award in five states, including Pennsylvania, where it is awarded in cooperation with Pennsylvania Farm Bureau and Pennsylvania FFA.

The award was presented in Pennsylvania for the first time this year to Mark Anderson, agriculture teacher at Elizabethtown High School in Lancaster County.

Nominations for the 2020–21 award are open now through Dec. 31.

Four finalists will receive $500 each for their programs and an overall winner will receive the Golden Owl Award trophy and $3,000 to help bring new educational opportunities to their program.

For more information and to nominate an outstanding agriculture educator, visit www.nationwide.com/golden-owl-award/pennsylvania.

*From the **Pennsylvania Agricultural Alliance Issues Update**, Penna. Farm Bureau, October 2020.*

Reimbursements Available for Conservation Planning in Chesapeake Bay Watershed

The Pennsylvania Department of Environmental Protection will again reimburse farmers in the Chesapeake Bay Watershed for costs associated with developing conservation plans.

The Agricultural Plan Reimbursement Program has $900,000 available to reimburse producers for the cost of hiring technical experts to develop Nutrient and Manure Management and Agricultural Erosion and Sediment Control plans. Plans developed after Jan. 1, 2019 are eligible.

More than one plan may be submitted for reimbursement, for up to a maximum of $6,000. Plans must be submitted by May 31 to be eligible for reimbursement.

More information about the program is available at http://bit.ly/2Nranxh.

CLASSIFIEDS

Businesses and Farms

FOR SALE BY OWNER – PRICE REDUCED GREENHOUSE/GARDEN CENTER OPERATION AT 171 Greenhouse Road (Snyder County), Middleburg, PA 17842. Owners retiring. Proven profitable business model for over 40 years. Turn-key business with records, equipment, inventory, trees, shrubs, retail items. Owner is willing to assist in transition. Creative financing possible. The 18-acre property consists of a two-story, 3-bedroom, 2-bath home with small stream and approximately 60,000 sq. ft. total greenhouse area consisting of aluminum structures with flood tables. A 100 gallon+/minute never-failing well. Additional land to lease.
Call or text Larry at 570-765-6470.
Remember — Classified Ads are FREE for PVGA Members for non-commercial sales.

For additional questions, farmers in Bradford, Cameron, Carbon, Centre, Clearfield, Clinton, Columbia, Elk, Jefferson, Lackawanna, Luzerne, Lycoming, McKean, Montour, Northumberland, Potter, Schuylkill, Snyder, Sullivan, Susquehanna, Union, Tioga, Wayne, and Wyoming Counties should contact Josh Glace of Larson Design Group at jglace@larsondesigngroup.com or 570.374.5700, extension 4011.

Farmers in Adams, Bedford, Berks, Blair, Cambria, Chester, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Indiana, Juniata, Lancaster, Lebanon, Mifflin, Perry, Somerset, and York Counties should contact Jedd Moncavage of TeamAg at jeddm@teamaginc.com or 717.721.6795.

*From the **Pennsylvania Agricultural Alliance Issues Update**, Penna. Farm Bureau, October 2020.*

NEWS

Virtual Conservation Learning Circles Set for Women in Ag

Nearly 301 million acres of U.S. land – about a third of the nation's land in farms – are now farmed or co-farmed by women and at least 87 million additional acres are in the hands of women landowners. Over the next 20 years, the numbers of women farming and or taking on a management role on farmland is likely to increase as 341 million acres of farmland are expected to change hands when farmers retire or leave their land to the next generation. In Pennsylvania, women are a significant demographic in agriculture with 32,000 female producers and nearly half of all acres farmed by operations with female producers. Yet women farmers and landowners are often overlooked, underappreciated and underserved.

In response American Farmland Trust's Women for the Land Program will be hosting virtual Conservation Learning Circles for Pennsylvania women farmers and landowners designed to address the barriers that women farmers face, engage with women in agriculture about conservation, and provide technical assistance to better serve women and their communities.

The virtual learning circles offer the unique opportunity to hear local agriculture and conservation experts talk about conservation and farming practices that promote healthy and productive farms, learn about how to access support for on farm conservation programs and network with fellow landowners to share experiences and make connections. Each learning circle includes a farm tour, presentation and conversation. Topics to be covered:

- conservation planning
- funding for farmland
- regenerative farming practices
- woodland conservation and restoration
- finding or listing land and
- small farm programs.

These learning circles are most helpful for women farmers and non-operating landowners of agricultural land in the PA counties: Lebanon, Adams, York, Perry and Dauphin.

The Learning Circles are free of charge and will be held on November 10th and 17th and December 2nd, 8th and 15th via Zoom. Registration is open now at https://farmland.salsalabs.org/midatlanticwomenfortheland/index.html.

PENNSYLVANIA LEARNING CIRCLE SCHEDULE

Getting Started with Conservation Planning and your Local Conservation Agencies

Tuesday, November 10, 2020 10:00-11:30am

We will begin with introductions followed by a virtual farm tour of conservation practices at Goldfinch Meadows Farm in Lebanon County with conservation professionals from Lebanon County Conservation District, Natural Resources Conservation Service and Penn State. Joining the conversation to discuss Conservation Plans, how to develop them, and who can help you implement them are:

Dayanna Estades, Dauphin County District Conservationist

Katie Doster, Lebanon County Conservation District Manager

Funding for Your Land — From Conservation Easements to Loans

Tuesday, November 17, 10:00-11:30am

We will begin with introductions followed by a recorded interview with Vy Trinh, Nutrient Management Specialist with the Adams County Demo Garden and conservation professionals with Adams County Conservation District, Natural Resources Conservation Service and Penn State. Joining the conversation to discuss farmland preservation options, conservation easements, finances and loans are:

Ellen Dayhoff, Adams County Farmland Preservation Director and Pennsylvania Farmland Preservation Association Vice-President

TBA, PA Farm Services Agency, United States Department of Agriculture

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Regenerative Practices for Your Land

Wednesday, December 2, 10:00-11:30am

We begin with introductions followed by a virtual farm tour of the Horn Farm Center for Agricultural Education in York County with Farm Manager, Andy Horn, and Forest Steward, Wilson Alvarez, and conservation professionals from York County Conservation District, Natural Resources Conservation Service and Penn State. Joining the conversation to discuss soil health, how to incorporate regenerative practices into your farm management and free services available through the Pennsylvania Farm Bill, are:

Titus Martin, Grazing Specialist, Capital Resource Conservation and Development Area Council

Emily Newman, Organic Crop Consultant, Rodale Institute

Woodland Conservation and Restoration on Your Land

Tuesday, December 8, 10:00-11:30am

We begin with introductions followed by a virtual farm tour of the Witmer Farm in Perry County with Jason Saylor, farm owner, Don Graybill with the Natural Resources Conservation Service, and conservation professionals with the Perry County Conservation District and Penn State. Joining the conversation to discuss who can help you develop and implement a Forest Conservation Plan for your farm and how to participate in the Riparian Buffer Program are:

Lucas Book, State Forester for Perry County, PA Department of Conservation and Natural Resources

Teddi Stark, Riparian Forest Buffer & Watershed Forestry Program Manager, PA Department of Conservation and Natural Resources

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Finding or Listing Land & Small Farm Programs

Tuesday, December 15, 10:00-11:30am

We begin with introductions followed by a virtual farm tour of the Jubilee Farm in Dauphin County with Kendra Nissley, farm owner and owner of Jubilee Heritage Cheese and conservation professionals from the Dauphin County Conservation District, Natural Resources Conservation Service and Penn State. Joining the conversation to discuss how to find farmland and get support for small farm development are:

Michelle Kirk, Pennsylvania Farm Link

Lynn Kime, Pennsylvania State University Small Farms Program

NEWS

Safe Uses of Agricultural Water

Luke LaBorde

Irrigation is considered preharvest water. Photo: Penn State Univ.

Safe use of water is critical in fresh fruit and vegetable production. Water can move harmful microorganisms originating from animal or human feces across a large area or a large volume of product. The water source and how and when the water is applied greatly influence the risk for crop contamination to occur.

Pre-Versus Postharvest Water

When we think about agricultural water and food safety, it is useful to consider the many ways water is used during production, harvesting, and handling fresh produce. Preharvest water is used for crop irrigation, cooling, frost protection, as a carrier for fertilizers and pesticides, and for washing tools and harvest containers, handwashing, and drinking. Postharvest water is used for washing and transporting produce, cooling, applying waxes and coatings, handwashing, and drinking.

Water Source Increases or Decreases Risk

Sources of water used on the farm can be grouped into three types based on the likelihood that they can become contaminated: (1) surface water, (2) well water, and (3) municipal water.

Surface water includes ponds, open springs, lakes, rivers, and streams. It has the highest risk for contamination because we often do not have control over what might be entering the water source upstream at any given time. Access of wild and domestic animals, drainage from upstream cattle operations, runoff from manure piles, and sewage discharges are all possible causes for sudden and unexpected surface water contamination.

Water obtained from the wells on your farm generally has an intermediate risk. The potential for well water to become contaminated with harmful microorganisms is greatest when they are located too close to flood zones, septic tanks, cesspools, animal agricultural sites, manure storage areas, or drainage fields. Risks are greatly increased if the wells have not been constructed properly, or if the well casing has become cracked over time. However, if wells are properly sited, constructed, and maintained, they can be a reliable source of contaminant-free water.

Municipal water obtained from your local water authority has the lowest level of food safety risk. We expect this to be the safest type of water because it is required by law to meet the highest chemical and microbiological drinking water standards, and it is tested regularly to ensure that it is consistently safe to drink.

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NEWS

Safe Uses of Agricultural Water *continued from page 13*

Peppers and tomatoes are grown here using plasticulture and drip irrigation, which eliminates most of the potential for irrigation water to contact the fruit.

Preventing Agricultural Water from Becoming a Source of Contamination

Postharvest Water: Produce Washing, Handwashing, Cooling, Drinking

- Conduct a potable water test. It is critical to use pathogen-free water for all postharvest water used for washing, flumes and tanks, handwashing, and drinking.
- If postharvest water does not meet the drinking water standard, it may be possible to treat the source with a one-time shock chlorination.
- If postharvest water does not meet the drinking water standard, it may be necessary to install a continuous sanitation system using chlorination or ultraviolet (UV) light.

Surface Water Used for Irrigation (Preharvest)

- Regularly monitor the microbial content of your surface water. Consider testing three times each season:
- At planting
- At peak use
- At or near harvest
- Look for evidence of entry points for animals or areas where runoff can occur. Consider installing fences, vegetative buffer plantings, diversion berms, or other physical structures to protect the water from animal intrusion or drainage from contamination sources.
- When possible, use indirect irrigation methods, such as drip irrigation, that minimize water contact with fruits, tomatoes, peppers, and cole crops.
- Plasticulture methods that cover drip lines provide further protection for lower-growing crops such as leafy greens, cantaloupes, and summer squash.
- Use overhead irrigation in the morning to allow adequate drying of the crop surface before harvest. This speeds the destruction of both human and plant pathogens, and saves water.
- Maximize the time between overhead irrigation and harvest.
- Consider switching to well or municipal water for overhead irrigation and crop spraying methods.

Well Water

- Monitor your well water quality at least twice during the growing season.
- Check that your well is installed correctly. There should be at least 2 inches of grout maintained between the well casing and the surrounding soil to prevent infiltration of surface water. Because well drilling is not regulated in Pennsylvania, your well may not have the proper casing and grout to exclude surface water contaminants.
- Maintain a 100-foot radius around the well that is kept free from animal intrusion, manure piles, or other contamination sources.
- Install a sanitary well cap to prevent insects or small mammals from entering the well.
- Inspect your wells at least once each year. Check that the well cap and casing seal are in good condition.

Monitoring Water Quality

Regular water testing can give you useful knowledge about the safety of water and how it might vary during the season or from year to year. Water testing labs test for E. coli instead of Salmonella spp., Listeria monocytogenes, hepatitis A virus, parasites, and other sources of human illness because it can be a useful indicator of these and other pathogens.

Growers who sell their produce through wholesale markets may be required to test their water as a condition of sale. Contact your buyers to make sure you understand their testing requirements. The Food Safety Modernization Act (FSMA) will require water testing for produce growers regulated under the law. [Large farms with sales over $500,000 (3-year average) will be required to fully comply with FSMA water testing requirements by 2022, whereas farms classified as small businesses will need to comply by 2023 and those listed as very small businesses by 2024. FSMA will require testing several times during the year. In the mean time the Pennsylvania Department of Agriculture (PDA) which enforces FSMA in Pennsylvania expects growers to be testing their water periodically and will make recommendations for any remedial actions needed.]

Where Can I Test My Water?

Penn State's College of Agricultural Sciences has established a farm food safety irrigation water testing program to facilitate and encourage testing by fresh produce growers in Pennsylvania. Instructions on how to submit a water sample to the laboratory are provided with test kits available from Penn State Extension offices. Several private laboratories in the state also perform E. coli testing on agricultural water. A list of labs may be found in the Penn State Extension website.

Many labs, including the Penn State College of Agricultural Sciences, conduct potable water testing. Make sure to follow water testing directions included in the test kits.

What Standard Does My Water Need to Meet?

Postharvest water used for washing and transporting produce, cooling, applying waxes and coatings, and handwashing and drinking must meet the drinking water standard.

The most commonly used microbial standard for preharvest agricultural water (crop irrigation, frost protection, as a carrier for fertilizers and pesticides, for washing tools and harvest containers) is based on the U.S. Environmental Protection Agency (EPA) standards for recreational water. This standard says that you may have no more than 235 E. coli bacteria in a single 100-milliliter sample

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NEWS

Safe Uses of Agricultural Water

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and that the average for the last five samples can be no more than 126 E. coli bacteria per 100 milliliters. High E. coli levels do not always predict the presence of human pathogens, but they are the only true indicator of fecal contamination and thus suggest conditions where pathogens might be present. It is important that you ask your testing laboratory to provide you with the actual number of E. coli bacteria in your sample, not just a confirmation of whether they are absent or present.

This well has a sanitary well cap and casing done correctly.

Additional Resources

Food Safety Modernization Act Rule for Produce Safety: see http://www.fda.gov/FSMA for information on specific provisions.

Understanding FSMA: The Produce Safety Rule – Penn State Extension – https://extension.psu.edu/understanding-fsma-the-produce-safety-rule.

Penn State Agricultural Analytical Lab Farm Food Safety (GAP) Water Testing (see http://agsci.psu.edu/aasl/water-testing/farm-food-safety-gap-water-testing) or call 814-863-0841.

Safeguarding Wells and Springs from Bacterial Contamination – Penn State Extension – https://extension.psu.edu/where-does-your-drinking-water-come-from.

Shock Chlorination of Wells and Springs – Penn State Extension – https://extension.psu.edu/shock-chlorination-of-wells-and-springs written by Bryan R. Swistock, Stephanie Clemens, William Sharpe.

Dr. LaBorde is with the Department of Food Science at Penn State Univ. From Penn State Extension, https://extension.psu.edu/safe-uses-of-agricultural-water, October 14, 2020.

VEGETABLE PRODUCTION

Tomato Varieties Differ in Susceptibility to Internal White Tissue Disorder

Wenging Guan

A common problem tomato growers face this time of year are fruit defects caused by high temperatures. Heat stress on tomatoes can lead to reduced yield and abnormal fruit development. The common physiological disorders on fruit development under heat stress include yellow shoulder, internal white tissue, and blotchy ripening.

In a recent presentation by Gordon Johnson from the University of Delaware at the 2020 annual meeting of the American Society for Horticultural Science, he elaborated on the cause of internal white tissue in tomatoes, compared varieties, and provided suggestions to reduce the problem. Information in this article is summarized from this presentation and the tomato variety trial report by Gordon Johnson.

Tomato white tissue (Figure 1) develops when vascular tissue of the fruit is disturbed or damaged by heat so that the tissue turns white and the fruit has a bland taste. The fruit looks normal on the outside but may have severe internal defects. The variety trial compared 28 varieties from 5 companies in the summer of 2019. Commercial varieties that had the highest incidence of white tissue across five harvests were Camaro, Mountain Merit and Mountain Fresh. In addition to these varieties, Red Snapper had high white tissue incidence in the first harvest, and Grand Marshall and Myrtle had high incidence of white tissue in the late harvests. We noticed that some of the popular varieties in our area such as Primo Red, BHN 589, Red Deuce and Red Bounty ranked relatively low in the incidence of white tissue. In terms of marketable yield, the top commercial varieties were Grand Marshall, Red Snapper, Red Mountain and Red Bounty. The full report about this variety trial is found at https://www.udel.edu/content/dam/udelImages/canr/pdfs/extension/sustainable-agriculture/vegetable-trials/TomatoVarietyTrial2019.pdf.

Clearly, variety selection plays an important role in minimizing the white tissue problem. Gordon also suggested in his presentation that maintaining potassium levels in the plant is the key to reduce white tissue incidence. In the black plastic mulch system, soil temperatures might be so high that plant root function is reduced and potassium uptake is inadequate. By reducing soil temperature, white plastic mulch may help to reduce the problem for later planted tomatoes. In addition, applying additional potassium through the drip system or foliar application of potassium may help the problem. Using shade cloth to reduce temperature could also help reduce white tissue incidence.

Figure 1. Internal white tissue of tomato fruit. Photo by Purdue Plant and Pest Diagnostic Laboratory.

Dr. Guan is with the Department of Horticulture and Landscape Architecture at Purdue Univ. From the ***Vegetable Crops Hotline****, Purdue Univ. Extension, Issue 680, https://vegcropshotline.org/article/tomato-varieties-differ-in-susceptibility-to-internal-white-tissue-disorder/, August 12, 2020.*

Aphid Control in High Tunnels

High tunnel tomatoes and peppers are still rolling in, but we're nearing the end of their season and growers are starting to plan for seeding fall greens in tunnels. Aphid populations may have built up over the duration of the summer tunnel crop; if so, it's a good idea to take the time now to plan for control in your coming fall crop or next spring's crop. There are both chemical and biological control options for managing aphids in high tunnels; this article will outline biological control and the aphid identification that's necessary for effective control, but you may choose to spray an insecticide, either to treat crops that are currently being harvested or as cleanup sprays before terminating a crop. For a list of conventional and OMRI-approved insecticides for aphid control in protected culture, see Table 19: Fungicides and Bactericides Labeled for Vegetable Transplants in the New England Vegetable Management Guide.

Planning Ahead for Successful Aphid Biocontrol

Correctly identifying the species of aphid affecting your crop is an important first step before selecting which biocontrol organisms will be effective:

Green peach aphids vary from green to pink to red. They can be distinguished from the melon/cotton aphid by the length and color of the cornicles (the pair of tube-like protrusions extending from the end of the abdomen). Green peach aphids have long (approximately the length of the body) cornicles and only the tips are black. In addition, the head has a distinct indentation at the base of the antennae (see photo). Hosts include peach, apricot, and over 200 species herbaceous plants including vegetables and ornamentals.

Green peach aphids. Photo: UC Statewide IPM Project

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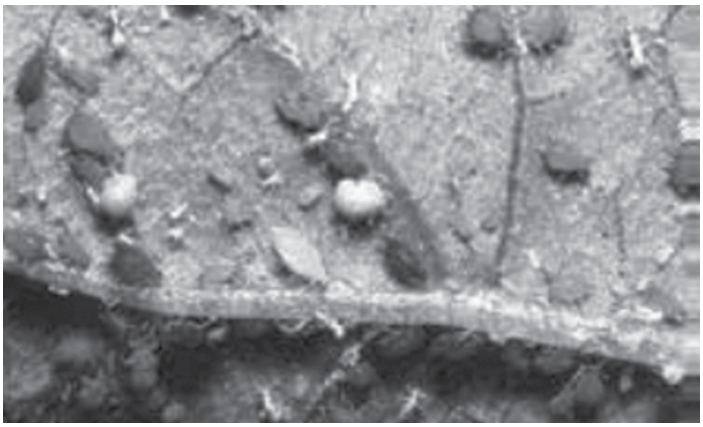
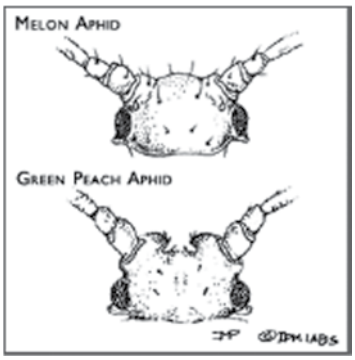
Aphid Control in High Tunnels *continued from page 16*

Melon/cotton aphid: The cornicles on melon/cotton aphid are short (approximately 1/3" or 8.0 mm, the width of the body) and vary in color from light yellow to very dark green (making them appear black). The antennae are typically shorter than the body. Melon/ cotton aphids do not have a distinct indentation at the base of the antennae like that of the green peach aphid. Its host range includes hundreds of species such as pepper, eggplant, spinach, asparagus, okra, and it is particularly damaging on cucurbits.

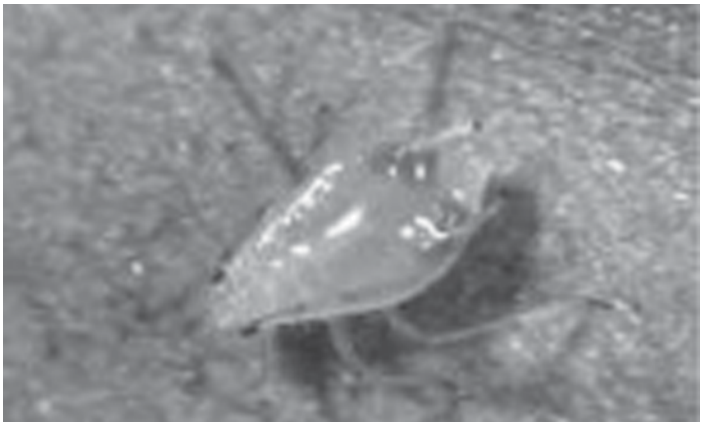


Green peach aphids. Photo: UC Statewide IPM Project

Foxglove aphid: Foxglove aphids have green flecks located at the base of their cornicles. In addition, they have black markings on their leg joints and antennae. Foxglove aphids tend to fall off plants when disturbed and they can cause severe leaf distortion, more so than the green peach and melon/cotton aphid. This aphid has many hosts including foxglove, lettuce, potato, clover and bulbs.



Difference in head shape between melon and green peach aphids. Photo: IPM Labs



Foxglove aphid. Note dark green spots at the base of each cornicle. Photo: D. Gilrein, Cornell Univ.

Potato aphid may be difficult to identify because their sexual forms produce both green and pink aphids, however they move more quickly than the other aphids. These aphids complete 2–6 generations on their winter host of rose plants before moving on to their summer hosts, which include potato and tomato. Therefore, this aphid pest is not typically seen in tunnels until later in the season but they have been reported as a growing problem among high tunnel tomato growers and keeping an eye out for them early is a good idea.

Cabbage aphids are not typically considered a tunnel pest, but have been reported in tunnels with overwintered brassicas. Mature females are greyish green with dark heads and cornicles. Adults produce a powdery wax coating that makes them appear dusty. Cabbage aphids are restricted to brassica species.

Cabbage aphids

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VEGETABLE PRODUCTION

Aphid Control in High Tunnels *continued from page 17*

Root aphid: The primary root aphid (Pemphigus species) overwinters as eggs and infests plants in the spring and fall. Root aphids may be misidentified as mealybugs because they are covered with white wax although they are smaller than mealybugs. Root aphids have reduced cornicles that resemble rings, which are located on the end of the abdomen. These cornicles are difficult to see with the naked eye but can be seen when magnified.

Biological Control Using Aphid Predators

In general, aphid predators are better at controlling high aphid populations, compared to parasitoids, as they are not as efficient at finding low numbers of aphids within the crop.

Ladybeetles are effective at controlling high aphid populations but are highly dispersive and will leave the tunnel in search of food if aphid populations are too low. They can be effective if released under row cover in winter greens. Adults and larvae feed on a wide variety of aphid species.

Predatory midges (Aphidoletes aphidimyza) are another generalist aphid predator that can be purchased and released in your tunnel. They are active in summer months but when day lengths shortens to less than 15 hours (September–March), they enter diapause and become inactive. Larvae feed on aphids and adults feed on pollen and aphid honeydew. Banker plants used to support Aphidius colemani will also support Aphidoletes midges. The midges pupate in the soil, so place banker plants in a tray with moist sand to provide pupation sites if your tunnel has plastic mulch and weed mat.

Green lacewing larvae also feed on many aphid species. Adults feed on pollen and nectar. Lacewings can be purchased as eggs or larvae; larvae tend to survive better than eggs.

Release far apart from each other, as larvae are cannibalistic. In summer months, if temperatures rise above 95°F, lacewings will move out of the tunnel. Lacewing activity and life cycle slows as temperature drops, but one report from Purdue University reported that adults remained active and laying eggs at 52°F.

Biological Control Using Parasitoids.

Aphid parasitoids in the genera Aphidius and Aphelinus are wasps that lay their eggs in the host aphid. The resulting wasp larva develops within the aphid, eating the host from the inside and creating a tan or pink, dome-shaped shelter called a “mummy”. Adult parasitoids emerge from aphid mummies and continue the cycle. Parasitoids are effective for controlling low populations of aphids and preventing outbreaks but are not effective at managing high populations. They are generally more efficient than aphid predators at seeking out the aphid hosts at low levels. Parasitoids are less effective at cold and hot temperatures and function best in the range of 65-77°F and with 70-85% relative humidity. Aphidius does not enter diapause, however, and can be used at colder temperatures.

Aphid parasitoids are host-specific in terms of the aphid species they attack—see Table 1 for parasitoid-host information. Currently no parasitoids are commercially available for cabbage and root aphids. Mixtures of different parasitoid species are commercially available and should be used when multiple aphid species are present or when you cannot identify the aphid species in your tunnel. Parasitoids are shipped either as adults or aphid mummies, from which parasitoid adults soon emerge. To increase the parasitoids’ effectiveness, place small groups of the aphid mummies in cups near aphid colonies. Do not let these aphid mummies get wet. Release rates may vary depending on the parasitoid species. Containers often contain approximately 250 aphid mummies, which can treat 5,000 ft2 at the high release rate (for high aphid populations) or 25,000 ft2 at the low release rate (for less severe outbreaks).

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	Biocontrol Agent	Target Species	Effective Conditions	Notes
PREDATORS	**Ladybeetles** Convergent ladybeetle (Hippodamia convergens) Two-spotted ladybird beetle (Adalia bipunctata)	All aphid species, in addition to other pests	Year-round	Only effective for high populations and if structure is enclosed
	Predatory midge (Aphidoletes aphidimyza)	All aphid species	Inactive September-March unless supplemental light is provided or temperatures remain above 78°F	
	Green lacewing (Chrysoperla rufilabris)	All aphid species	Optimal: 60-80°F. Will leave tunnel above 95°F. Lower temp limit unknown but remain active at 50°F.	Good for high populations
PARASITES	*Aphidius colemani* (parasitic wasp)	Green peach and melon aphids	65-77°F, 70-85% relative humidity	Does not enter diapause so is effective during low winter light.
	Aphidius matricariae (parasitic wasp)	Green peach and tobacco aphid	65-77°F, 70-85% relative humidity	Does not enter diapause so is effective during low winter light. Susceptible to hyperparasitoids in summer.
	Aphidius ervi (parasitic wasp)	Foxglove and potato aphid	65-77°F, 70-85% relative humidity	Does not enter diapause so is effective during low winter light. Susceptible to hyperparasitoids in summer.
	Aphelinus abdominalis (parasitic wasp)	Foxglove and potato aphid	65-77°F, 70-85% relative humidity	

Aphid Control in High Tunnels *continued from page 18*

Aphid parasitoids must be applied preventively to suppress aphid populations. They are less effective when aphid populations are high and already causing plant damage. Release parasitoids on a regular basis to sustain their populations during the growing season. Avoid releasing parasitoids near sticky cards to prevent capturing the released parasitoids. When scouting, look for aphid mummies that have circular holes on one end. These are the exit holes created by adult parasitoids during emergence. Aphid parasitoids are sensitive to pesticides. Release parasitoids preventively on crops you know are susceptible to aphids, so that the parasitoids will be present when aphids are first noticed.

Parasitoids are themselves susceptible to parasitism from other wasp species—these wasps that parasitize parasitoids are called hyperparasites. Hyperparasites will move into tunnels throughout the summer and lay eggs within aphids that have already been parasitized by Aphidius species. The hyperparasite larva then feeds on the Aphidius larva and an adult hyperparasite emerges from the aphid mummy. The exit holds of the aphid mummies can be used as an indicator of the hyperparasitoid population; Aphidius wasps leave a round, smooth-edged exit hole while hyperparasitoid wasps leave a slightly irregular exit hole with jagged edges. If you plan on using parasitoids for aphid control year round in your tunnel, the wasps and/or banker plants will need to be re-introduced once the tunnel has been closed up for the winter and the existing hyperparasitoid population has died. For more information on aphid hyperparasites, see the UVM fact sheet Hyperparasitoids of Aphid Predatory Wasps at http://www.uvm.edu/~entlab/Greenhouse IPM/Pests&Beneficials/Plant Mediated IPM Systems/HyperparasitesfactsheetNov2012.pdf.

Banker Plant Systems.

Banker plant systems are used to maintain parasitoid populations within a tunnel when host pest populations are low, so that the parasitoids do not leave the tunnel looking for hosts. The trade-off of using time and space to grow banker plants and maintain the non-pest aphid population is that you don't need to continually order and release parasitoids in your tunnels.

In the case of aphids in high tunnel crops, banker plants are used to maintain and distribute populations of Aphidius colemani, which parasitizes green peach and melon aphids, throughout a tunnel. Grass plants are in pots and inoculated with bird-cherry oat aphids (Rhopalosiphum padi), which feed only on grasses. A. colemani is then released onto the banker plants, where the bird-cherry oat aphids serve as hosts and function to distribute the parasitoids throughout the tunnel. Recent research from the University of North Carolina found that this system worked best using wheat or barley as the banker crops, compared to oats or rye.

There has been limited research on how many banker plants are needed for a given area, but regardless, banker plants need to be distributed evenly throughout the tunnel, as A. colemani does not migrate far from the point of release/emergence (only 3-6 feet). One rate recommendation given is one banker plant per 1000 sq. ft. Adjust your banker plant rates based on your experience. As with all parasitoid systems, banker plants need to be in place before the pest aphids are even noticed in order to provide sufficient control. Starter aphid banker plants are available from several biological control suppliers. One starter kit is enough to get your banker plant system started for the season, as long as you're growing your own pots of oat, rye or barley.

Entomopathogenic fungus

The entomopathogenic fungus, Beauveria bassiana, is commercially available as the products Mycotrol and BotaniGard. Because aphids have high reproductive rates and molt rapidly, especially during the summer, repeat applications are typically required. Beauveria bassiana is most effective when aphid populations are low. This fungus may not be compatible with the convergent ladybird beetle (Hippodamia convergens) depending on the concentration of spores applied.

Compiled from the following resources:

Aphids on Greenhouse Crops, by Tina Smith, UMass Extension

Managing Aphids in the Greenhouse, Aphid Banker Plants, and Biological Control of Aphids by Leanne Pundt, UConn Extension

Aphid Management in Winter Tunnel Greens, Cornell Cooperative Extension

Other helpful resources:

Aphid Banker Plant System for Greenhouse IPM: Step-by-Step, by Margaret Skinner & Cheryl Frank, UVM Entomology Research Lab and Ronald Valentin, BioBest

Scheduling Biologicals, by Linda Taranto, D&D Farms and Tina Smith, UMass Extension—UMass Extension Vegetable Team

Compiled the Univ. of Massachusetts Extension Vegetable Team. From the ***Vegetable Notes for Vegetable Farmers in Massachusetts****, Univ. of Mass. Extension, Vol. 32, No. 23.*

Winter Squash for Extended Sales

Gordon Johnson

Growers with CSAs, sales to schools and institutions, or restaurant customers should consider storing and marketing winter squash. Winter squash include a wide range of types including butternuts and neck pumpkins, acorns, spaghetti squash, buttercup and kabocha types, delicata and dumpling types, hubbards, cheese pumpkins, and others. Many of these have the ability to be stored for long periods, especially butternuts, buttercups, and spaghetti types. New England has a tradition of eating large quantities winter squash; however, the further south you get, the less they are eaten. This may require customer education in order to market successfully. For example, butternut squash is great in soups, pastries, and casseroles and spaghetti squash is a fine low calorie, low carb, pasta substitute.

Having winter squash for winter sales requires proper handling and storage. Follow a regular fungicide program during crop production to produce disease free fruit to minimize postharvest fruit rots. Harvest when fruits are mature and prior to frost. Use care in handling fruit to prevent wounds. Wounding can negate benefits from a season-long fungicide program. Cure fruit after harvest at temperatures between 80 and 85°F (27-29°C) with a relative humidity of 75-80% for approximately 10 days. Temperatures below 50°F (10°C) cause chilling injury. The hard-shelled squashes, such as Butternut, Delicious, Spaghetti, and the Hubbard strains, can be stored at 55°F (13°C) and 50-70% relative humidity. Acorn squash will store for 5-8 weeks; pumpkins for 2-3 months and other hard-shelled squashes will store for 3-6 months. Research has not documented any benefit to post-harvest fruit fungicide dips.

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VEGETABLE PRODUCTION

Sweet Potato Harvest, Curing and Storage

Gordon Johnson

Sweet potatoes for processing are being grown on Delmarva in larger acreages. These are dug using a modified potato digger, conveyed to trucks, and then are transported to the processing plant.

In contrast, there are a considerable number of small acreage commercial growers of sweet potatoes on Delmarva because it is a profitable crop for fall sales, especially before the holidays. The following are some guidelines for harvesting, curing, and storage of sweet potatoes for local fresh markets:

Sweet potatoes may be dug any time they have developed market size. Normally, vines will have started to yellow at this time.

Caution must be taken when digging sweet potatoes. The sweet potato has a thin, delicate skin that is easily broken. Any cuts, bruises, or skin abrasions will reduce quality and storability significantly.

A common method for digging is using a one bottom plow or middlebuster to expose the row. Sweet potatoes are picked up by hand and then placed into baskets, slatted crates, or small bins, being careful not to cause cuts, abrasions, or bruises. Small acreage growers can also lift potatoes using a garden fork. Expect to miss about 20% of marketable roots with these methods.

Modified potato diggers can also be used for harvesting. The key with these mechanical diggers is to carry enough soil up the separation chain to limit root contact with the rods and to have a limited drop to the ground to reduce cuts and bruises. Vines normally are mowed before digging. Again, sweet potatoes are picked up by hand into baskets or bins. Larger machines that convey the sweet potatoes to a grading line or bins are used on some farms in major sweet potato producing areas such as North Carolina.

Sweet potatoes are best dug while soil temperatures are relatively high and soil is on the dry side. Roots are injured below 55°F. If sweet potato vines are exposed to a light frost, usually no injury will occur if roots are dug quickly because soil temperatures have not dropped too low (it should still be around 60°F near most roots). Heavy frosts or freezes will drop soil temperatures below critical levels, causing significant losses.

Washed and graded sweet potatoes can be sold immediately without curing; however, for Thanksgiving and Christmas markets, curing will be necessary.

Bins or baskets containing harvested sweet potato roots should be taken to an area to cure. Do not wash before curing. In the curing process, cuts and abrasions are healed over, allowing for longer term storage. The ideal conditions for curing are a temperature of 85°F and 90% humidity for 5-7 days. This is an issue because most growers in Delaware do not have dedicated curing houses. As an alternative, place covered baskets or bins containing sweet potatoes in an empty greenhouse. Water the floor heavily or put pans of water out to keep the humidity up and turn the heat on so night temperatures do not drop below 70°F. Set fans for 85°F for the daytime. Using this method, curing will take 14 days usually.

Once cured, store as close to 60°F as possible, but no lower, in an area where you can maintain a high humidity. Most local commercially grown sweet potatoes are stored no longer than Christmas.

Before marketing, cured sweet potatoes should be washed and graded, allowed to dry, and then boxed.

*Dr. Johnson is the Extension Vegetable and Fruit Specialist at the Univ. of Delaware. From the **Weekly Crop Update**, Univ. of Delaware Extension, Vol. 28, Issue 28, September 25, 2020.*

Delayed Fruit Set and Pumpkin Color Development in 2020

Gordon Johnson

Some pumpkin fields have seen a delay in fruit set due to high temperatures in late June and July in 2020. When set is delayed until August, the question is will the pumpkin develop and color in time for sales?

Under favorable summer growing conditions pumpkins will start to color about 4 weeks after fruit set and will be completely colored by 7 weeks after set. If fruit set is delayed until August, reduced day lengths and cooler temperatures may increase the time for full color development. Varietal differences in days to maturity also come into play.

In research at Purdue University, pumpkins that set in August were tagged and then evaluated for maturity in October. They found that for flowers that opened between August 10 and August 21, at least 70% produced pumpkins that were either turning or fully orange by October 2 and 10, respectively. The remaining 20 to 30% either never set a fruit, or the fruit was still immature at the time of harvest.

This indicates that pumpkins set in mid-August will be ready for October sales. In fields with delayed set, it will be critical to keep vines healthy through September. This will mean additional fungicide sprays through the month with special attention being paid to powdery mildew and downy mildew.

Winter Squash for Extended Sales *continued from page 19*

For storage, a ventilated storage shed with supplemental heat works well. Basements are ideal. Empty greenhouses can be used if fans are run to keep the heat down in the day and heat is run to keep the temperature above 50°F (a significant cost). A cold room/box kept at 55° F will also work. Under these conditions, the longer keeping winter squash types can be kept in saleable condition through late winter, into spring.

*Dr. Johnson is the Extension Vegetable and Fruit Specialist at the Univ. of Delaware. From the **Weekly Crop Update**, Univ. of Delaware Extension, Vol. 28, Issue 28, September 25, 2020.*

BERRY PRODUCTION

Day Neutral Variety Performance Under Open Field and Protected Culture Conditions

Kaitlyn M. Orde, Kathleen Demchak, and Becky Sideman

This information was presented at the 2019 Mid-Atlantic Fruit and Vegetable Convention – an example of the valuable information for growers that will be presented at this year's virtual version of the Convention.

Day-neutral strawberry cultivars can be grown successfully in an assortment of production systems. Usually they are grown in a plastic-mulched raised-bed system in open fields, but quality can be improved by growing them under low tunnels or high tunnels, and occasionally they are grown in greenhouses as well. Performance of some of the more commonly-grown day-neutral varieties in trials in New Hampshire and Pennsylvania is presented here.

Exp. 1: Day-Neutral Variety Trial

Production Methods

New Hampshire: In 2017, we conducted an experiment comparing day-neutral variety performance on both open beds and under low tunnels, using the varieties: 'Albion', 'Aromas', 'Monterey', 'San Andreas', 'Seascape', and 'Portola'. The experiment was conducted in Durham, NH (USDA Hardiness Zone 5b). Dormant bare rooted plants were planted on April 28, 2017 into raised beds covered with black plastic mulch and a single line of drip irrigation. The plant spacing was 16" between plants within row, and 12" between double staggered rows, for a total of 13,068 plants per acre (based on 5' bed spacing). The first flush of flower trusses was also removed to encourage plant establishment. Plants began fruiting 9 weeks after planting and were harvested June 28 – Nov. 8, with data collected 2x per week. The field was fertilized with 60 pounds/acre of N and P pre-plant, and 5 lbs N per week through the drip irrigation system (beginning six weeks after planting). Low tunnels were covered with a 1.5 mil transparent film that contained holes on the lower 12" of both sides. Tunnels were left fully vented for the majority of the growing season and only closed for rain and during the entire month of October. Harvests were conducted 2x per week. Plants were obtained from Nourse Farms, Whately, MA (with the exception of 'Aromas').

Pennsylvania: In 2014, an experiment evaluating low tunnel plastic types and day-neutral varieties was established on June 6 and 7 at Penn State's Horticulture Research Farm at Rock Springs, PA (USDA Hardiness Zone 6a). Varieties were the same as those used in New Hampshire, with the exception that 'Aromas' was not included and an additional variety, 'Sweet Ann', was included. Plants were 12" apart in staggered double rows 12" apart using black plastic-mulched raised beds on 6' row centers. Plastic films being tested could not be applied until July 25; thus blossoms were removed until that time so that yields reflected treatment effects. Tunnels were fully vented for the duration of the trial. Plants were harvested from Aug. 18 – Nov. 8 with data collected 3x per week until mid-October, and 2x per week thereafter The field was fertilized with 60 pounds/acre of N broadcast preplant incorporated, and 2 lbs of N per week applied through drip irrigation. Low tunnels were covered with a clear 4-mil covering. Plants were obtained from Lassen Canyon Nursery in Redding, CA.

Varieties Tested

The varieties described here are nearly all from the Univ. of California breeding program. 'Albion' was released in 2004 and quickly became a major variety in the California strawberry industry, though acreage has fallen off recently. It can perform well in Eastern states, though yields may vary considerably depending on management. 'Seascape' was released in 1990, and has been popular with eastern growers for its sweet flavor. 'Monterey' and 'San Andreas', both of which have 'Albion' as a parent, were released in 2008. 'Monterey' is now a major variety in California, along with other proprietary varieties. 'Portola' was released in '2007'. 'Aromas' was released in 1997, and had been found to produce large very firm fruit with only fair flavor in PA. Because these varieties were not bred for the humid, rainy conditions in the eastern U.S., all are moderately to very susceptible to diseases, in particular powdery mildew and fruit anthracnose. 'Sweet Ann' was released through the private breeding program at Lassen Canyon Nursery.

Results

Variety effects: 'Albion' was one of the highest yielders in NH, where it produced a high percentage of marketable fruit, but was one of the lower producers in PA, though berry size was very large (Table 1). 'Seascape' was moderately productive in total yields; however, its small size and susceptibility to splitting and softening when conditions are rainy resulted in a low percentage of marketable fruit, especially in PA. 'Monterey' was among the highest in total and marketable yields in both states; fruit anthracnose and powdery mildew susceptibility were its main issues in PA.

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BERRY PRODUCTION

Day Neutral Variety Performance Under Open Field and Protected Culture Conditions

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'San Andreas' was similar to 'Albion' in that its performance was better in NH than in PA, though its large size and good flavor made it a favorite with harvesters in PA. 'Portola' produced the least total and marketable yields of all of the cultivars in NH. Conversely, it was the second best producer in PA, but its soft fruit, light color, extreme susceptibility to fruit anthracnose, and mild flavor made it a less-than-desirable cultivar. 'Sweet Ann' remained vegetative in the planting year, possibly due to the environmental conditions to which it had been exposed in California. This has not been the case with eastern planting stock of 'Sweet Ann', and in a later experiment in NH, 'Sweet Ann' was among the highest yielding (data not shown).

Low tunnel effects: In both states, total yield of all cultivars, except for 'Seascape' in PA, either changed very little, or decreased when under low tunnels. However, with all varieties and in both states except for 'Monterey' in PA, the % of fruit that was marketable increased by 4 to 10 percentage points under low tunnels compared with open beds. An important note: in NH, the marketable yield for each did not differ between open beds and low tunnels, but the percent marketable was statistically greater under low tunnels.

Table 1. Yield, percent marketable fruit, and mean berry weight in New Hampshire (2017) and Pennsylvania (2014) variety trials on raised beds. Low tunnels were covered with 1.5-mil or 4.0-mil clear plastic in New Hampshire and Pennsylvania, respectively.

	New Hampshire		Pennsylvania		New Hampshire		Pennsylvania	
	Open Field	Low Tunnel	Open Field	Low Tunnel	Open Field	Low Tunnel	Open Field	Low Tunnel
	Total yield per plant (lb)				% marketable fruit			
Albion	1.14	0.99	0.44	0.42	77	85	60	67
Seascape	1.18	0.79	0.70	0.83	62	67	52	59
Monterey	1.18	1.00	1.17	1.02	71	79	69	70
San Andreas	0.93	0.71	0.49	0.53	75	80	62	72
Portola	0.94	0.67	1.27	1.09	67	73	62	66
Aromas	1.07	1.04	---	---	67	81	---	---
	Marketable yield per plant (lb)				Mean Berry Wt. (g)			
Albion	0.88	0.84	0.26	0.28	13.5	12.8	20.6	20.5
Seascape	0.73	0.53	0.36	0.49	10.9	10.8	14.8	14.4
Monterey	0.84	0.79	0.81	0.71	13.4	13.5	18.4	18.5
San Andreas	0.70	0.57	0.30	0.38	14.9	13.0	22.2	21.7
Portola	0.63	0.49	0.78	0.69	11.8	10.7	19.4	17.6
Aromas	0.72	0.84	---	---	12.6	13.2	---	---

Second-year Spring Yield

In NH and PA, after fruiting ended in November, plastic was removed from tunnels and stored in the barn, and plants were mulched with straw or floating row covers, respectively, for the winter. Hoops and other low tunnel components were left in the field. In the spring in NH, mulch was removed and low tunnels were re-erected on April 3, 2018. At this point, we lowered the sides of tunnels to create warmer temperatures around plants and encourage plant growth. Tunnel plastic in PA was redeployed just prior to the first harvest as this was when row covers were no longer needed for frost protection. The first harvest in NH in the second year was May 20, 2018 and harvests continued through July 2, 2018. Harvest in PA took place from May 22 to June 10. During this period, average per plant yields for NH and PA, respectively, were: Albion: 0.12 and 0.05 lbs; Aromas: 0.37 lbs in NH only; Monterey: 0.08 and 0.07 lbs; Portola: 0.13 and 0.06 lbs; San Andreas: 0.31 and 0.20 lbs; Seascape: 0.26 and 0.20 lbs. In PA, Sweet Ann produced 0.13 lbs per plant. Aromas and San Andreas produced approximately an additional 1/3 lb per plant during this early season period in NH. An important note: varieties differed in their winter survival rate, and few 'Monterey' plants survived the winter in NH.

Exp. 2: Effects of mulch color and low tunnel covering plastic type on 'Albion'

While 'Albion' has potential to produce very high yields, it also can yield poorly. Its fruit appearance (size, shape, and color) and flavor are excellent, and this alone is enough to make it a preferred cultivar among growers. While 'Albion' fruit is produced in flushes on individual plants, plants tend not to fruit heavily or at exactly the same time, resulting in fairly even production.

Coordinated trials were conducted in 2016 and 2017 evaluating plastic mulch types (no mulch film, black mulch, or white-on-black film), in combination with various plastic films (uncovered, Tufflite IV, and KoolLite Plus, and 3 others not reported on here). In NH, 'Albion' produced comparable marketable yield on white-on-black and black mulch, but significantly more on plastic mulch than unmulched/bare-ground beds. Low tunnels did not increase marketable yields in NH, but the percent marketable yield was greater under low tunnels than open beds, by as much as 18% for unmulched beds in 2017. 'Albion' yield was strongly affected by mulch type in PA in 2016, with white-on-black producing the highest yields, and low tunnels also increasing yields regardless of plastic cover type (Table 2).

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BERRY PRODUCTION

Day Neutral Variety Performance Under Open Field and Protected Culture Conditions *continued from page 22*

Table 2. 'Albion' total berry yield per plant (lb) and marketable fruit (%) in New Hampshire and Pennsylvania in uncovered and low tunnel raised bed production, and in high tunnel containerized production in PA in 2016 and 2017.

	New Hampshire						Pennsylvania					
	Uncovered		Tufflite IV		KL Plus		Uncovered		Tufflite IV		KL Plus	
2016												
Low tunnels	lb	%	lb	%	lb	%	lb	%	lb	%	lb	%
No mulch	1.00	68	0.80	81	0.92	83	0.44	46	0.48	65	0.54	65
Black	1.11	71	1.01	81	0.88	83	0.66	45	0.91	59	0.93	62
White on Black	1.21	72	0.80	83	0.99	87	0.84	30	1.03	59	1.24	54
High tunnels									1.31	89	1.41	87
2017												
Low tunnels	1.31	89	1.41	87	1.31	89	lb	%	lb	%	lb	%
No mulch	1.31	89	1.41	87	1.31	89	0.47	47	0.53	52	0.58	55
Black	1.31	89	1.41	87	1.31	89	0.56	43	0.51	55	0.62	50
White on Black	1.31	89	1.41	87	1.31	89	0.48	25	0.85	47	0.90	50
High tunnels									2.02	74	1.85	75

KoolLite Plus tended to produce higher yields than Tufflite TIV in PA, but the effect was not statistically significant. The greater effects of low tunnels in this PA trial compared to the one above was likely due to the fact that more substantial tunnels with greater coverage were used in this trial than in the one above.

Exp. 3: Effects of high tunnel covering plastic type on 'Albion'

In high tunnel containerized production in PA, where soilless media (2:1 peat:perlite) and constant-feed fertilizer (100 ppm N) was used, total yields were much higher than in the field in both 2016 and 2017. 'Albion' did not have a preference for one plastic type over the other in the high tunnels, perhaps because with the low plant height (at ground level), effects were influenced by light coming in through the open sides of the tunnel. With earlier planting in 2017 (early May instead of early June as in 2016), total yield near 2 lbs/plant was achieved.

A Low Tunnel Production Guide can be downloaded for free at: https://extension.unh.edu/resource/low-tunnel-strawberry-production-guide.

For additional information, please visit the "TunnelBerries" project web site - www.TunnelBerries.org.

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Ms. Orde and Ms. Sideman are with the Univ. of New Hampshire. Ms. Demchak is with Penn State Univ. *From the 2019 Mid-Atlantic Fruit and Vegetable Convention Proceedings, PVGA, 2019, pp. 199-201.*

GREENHOUSE PRODUCTION

Prepare Greenhouses Now to Prevent Spider Mites

David Owens

Now is the time to prepare greenhouses for the 2021 planting season. Pests such as thrips and spider mites overwinter on weeds growing in the greenhouse or on weeds along the outside of the greenhouse. Now is the time to remove these weeds. Spider mites are going to start shutting down their feeding to prepare for overwintering. They start changing in color to an orange color, and these orange overwintering mites are also harder to kill. Keep them from overwintering in or near your greenhouse by treating weeds. Chickweed and henbit are good winter food sources and are germinating now. In 2020, many watermelon fields had unusually early and severe spider mite infestations, and this can probably be traced back to the greenhouse. Also use the winter as an opportunity to make repairs to covers and screens to prevent moths and aphids from entering in the spring.

Dr. Owens is the Extension Entomologist for the Univ. of Delaware. *From the **Weekly Crop Update**, Univ. of Delaware Extension, Vol. 28, Issue 28, September 25, 2020.*

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