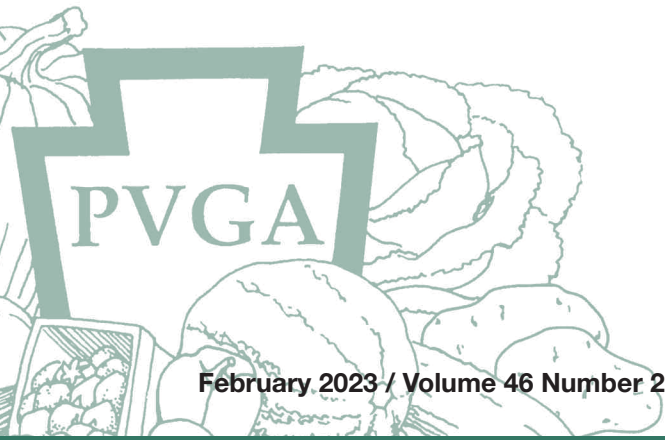


NEWS



February 2023 / Volume 46 Number 2

for the commercial vegetable, potato and berry grower



PVGA Board of Directors (front row left to right) Past President Brian Campbell, President Rita Resick, and Amy Metrick.. (second row) Secretary-Treasurer William Reynolds, John Shenk, Jonathan Strite, Arthur King and Joel Weaver. (third row) Executive Director William Troxell, First Vice President Peter Flynn and Michael Orzolek. Not pictured are Second Vice President Tina Forry, Christopher Harner, Barron Hetherington, Alan Kemmerer, James Reiff, Robert Shenot, Jeffrey Stoltzfus, and Mark Troyer.

Six PVGA Directors Elected, Officers Re-Elected

At the PVGA Annual Meeting on Wednesday, February 1, 2023, Past President Brian Campbell announced that Christopher Harner, Rita Resick, John Shenk, Jeffrey Stoltzfus, and Joel Weaver had been re-elected to three-year terms on the Board of Directors by the members of the Association in the mail-in balloting. After the Annual Meeting, the Board elected James Reiff of Leola to his first three-year term on the Board.

After the Annual Meeting, the Board also re-elected Rita Resick as PVGA President. She is the first woman to be serve as President of PVGA. Also re-elected were Peter Flynn as First Vice President, Tina Forry as Second Vice President and William Reynolds as Secretary-Treasurer. Brian Campbell continues as Past President. The officers are elected to one-year terms by the Board of Directors. The President and Vice Presidents traditionally are elected to their positions for two one-year terms before moving up to the next highest office so that the person elected as Second Vice President begins an eight-year cycle of serving in the

four executive offices.

Following are brief biographies of the newly elected Directors:

Christopher Harner from Harner Farm is a third generation fruit and vegetable grower from Centre County. He has been working on the farm his whole life, and full time since graduating from Penn State with a bachelor's degree in Ag Business Management in 1994. Currently the farm is composed of a mix of about 20 acres of tree fruit, 20 acres of vegetables, and the rest is a mix of Christmas trees, blueberries, grapes, greenhouses, high-tunnels, corn maze etc. They have their own retail location, wholesale to local restaurants, auctions, school districts, grocery stores and other farms. They have been making the transition to pick-your-own over the years to provide on-the-farm activities for the community. Currently he is a member of PVGA, SHAP, Appalachian Fruit Growers (President) and Pa Farm Bureau. Chris has served as a PVGA Director since 2014.

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NEWS



*Pennsylvania
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Association*

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

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Rita Resick '26
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First Vice President

Peter Flynn '24
West Chester

Second Vice President

Tina Forry '25
Palmyra

Secretary-Treasurer

William Reynolds '25
Waynesboro

Past President

Brian Campbell '24
Berwick

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Barron Hetherington '25

Ringtown

Alan Kemmerer '25

Berwick

Arthur King '24

Valencia

Amy Metrick '24

Butler

Michael Orzolek '24

State College

James Riff '26

Leola

John Shenk '26

Littitz

Robert Shenot '25

Wexford

Jeffrey Stoltzfus '26

Atglen

Jonathan Strite '25

Harrisburg

Mark Troyer '24

Waterford

Joel Weaver '26

Windber

Executive Director

William Troxell
Richfield

Directors Elected continued from page 1

James Reiff has been farming produce for over 10 years on his home farm in Leola. Although James has grown pumpkins, tomatoes, cantaloupes, and watermelons, his current operation involves an acre of greenhouse tomatoes and three acres of a line of large gourds that he has developed. He has also started a wholesale citrus marketing business. In his free-time he volunteers with Mennonite Disaster Service and serves on their Board. This is his first term on the PVGA Board.

Rita Resick is one of the four owners of Laurel Vista Farms in Somerset County. Prior to 2021, Laurel Vista grew potatoes, green beans, sweet onions, and summer vegetables for sale to the fresh market through Pittsburgh region grocery stores and wholesale outlets under the label "Ken and Rick's Wholesome Vegetables," as well as grains and hay. Rita also developed a line of shelf stable jarred products made from Laurel Vista vegetables, which are available in stores, specialty shops, local community events, and online. With the pandemic came an increase in food insecurity, and Laurel Vista stepped up as a farm to work with the Somerset County Mobile Food Bank to focus on distribution of food to families in Somerset County that were impacted by it. That need still exists, and now Laurel Vista is the Food Bank's partner in the mission of growing local food to be included in the work it does in food distribution. From Laurel Vista's work in food insecurity, Rita was asked to be Associate Professor at Carnegie Mellon University where she advises students working on projects related to food insecurity and state level funding for it. In her past career, Rita was President of Farr Communications, Inc., owner and operator of an AM/FM radio station in Charleroi. Prior to that, she was the Chief Financial Officer of Medrad, Inc., a medical device manufacturer headquartered in Warrendale, now a part of Bayer HealthCare. In addition to her work at Laurel Vista Farms, Rita provides professional consulting services for sustainable agricultural initiatives in Southwestern Pennsylvania. She currently serves on the Board of Food 21 in Pittsburgh. She is a past director of the Foundation for California University of Pennsylvania, Pennsylvania Association for Sustainable Agriculture, Mon Valley United Way, and Society for Contemporary Craft. Rita served on the PVGA Capacity Development Committee, on the Board of Directors since 2017 and as President beginning 2022. She and her husband Rick Stafford divide their time between their farm home in Somerset and their city home in Pittsburgh.

John Shenk credits the 4-H program for creating his interest in growing berries and vegetables at a young age. He did not grow up on a farm, but was able to get a start in farming by growing and direct marketing produce in Philadelphia. He and his wife Linda have farmed with their family for 45 years. Along the way, they began to concentrate on growing strawberries for pick-your-own and direct sales. More recently, the focus on strawberries led to developing a strawberry cultivator and beginning Hillside Cultivator Co. John has served as a PVGA Director since 2011.

Jeffrey Stoltzfus has been working as the Farm Food Safety educator for Penn State Extension in Lancaster County since 2016. Prior to that he spent 23 years as a farmer educator working for the Eastern Lancaster County School District working primarily with vegetable farmers in Eastern Lancaster County. He assisted farmers in starting an onion growing cooperative and worked with them in areas of production and food safety. He lives on a small farm where he and his family grow strawberries, pumpkins, and beef cattle. Jeff has served as PVGA Director since 2011 and was Second Vice President for one year.

Joel Weaver is the co-owner of his family's fifth generation dairy farm located in Somerset County, which he operates with his brother, Mark Weaver. He has been growing and marketing sweet corn since the 1970's. The farm also includes 140 acres of grains, hay, and beef cattle. In 2004, the dairy cows were sold and the farm added five acres of vegetables and 3,000 square feet of high tunnels, day-neutral strawberries, raspberries, and blueberries. He markets vegetables, beef, and fruits through a home retail market and four tailgate retail markets in Somerset and Cambria County. Joel has been active member in the Pennsylvania Farm Bureau by lobbying and representing farmers from his area for over thirty-eight years. He became a PVGA Director in 2020.

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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.

Beth Gugino Receives 2023 PVGA Annual Award



Beth Gugino (center) and PVGA President Rita Resick (left) and PA Secretary of Agriculture Russell Redding (right).

Each year, the Association recognizes an individual who had demonstrated a noteworthy record of service and dedication to either the state's vegetable, potato or berry growers and/or the Association over their career. It is the Association's highest honor. The year's award winner, Beth Gugino, Penn State Extension Vegetable Pathologist and Assistant Dean for Graduate Studies, has an outstanding record of service to the Pennsylvania vegetable industry and its growers, and to the Association. The award was presented by PVGA President Rita Resick on January 31, 2023, at the Fruit and Vegetable Growers Banquet at the Mid-Atlantic Fruit and Vegetable Convention at the Hershey Lodge in Hershey.

Gugino earned a bachelor's degree in horticulture and master's and doctoral degrees in plant pathology, all from Penn State. She was a postdoctoral scholar in plant pathology at Cornell University from 2004 to 2008 before joining the faculty in Penn State's Department of Plant Pathology and Environmental Microbiology as an assistant professor.

She achieved the ranks of associate professor in 2014 and full professor in 2019. Gugino also has been director of graduate studies for the department since 2016. Just last year, she was named the Assistant Dean for Graduate Studies in Penn State's College of Agricultural Sciences.

Beth has been a thesis or dissertation adviser or co-adviser for 12 graduate students and has served on the graduate committees of more than 30 others. She also has contributed to courses in integrated pest management and has mentored nine undergraduates during independent research or internships.

Her research and extension interests include integrated vegetable disease management, plant pathogen diagnosis, disease monitoring and forecasting, and sustainable crop production. She works with research faculty, extension specialists and county-based educators to develop integrated pest and crop management strategies to address important and emerging diseases of the major vegetable crops grown in Pennsylvania.

Dr. Gugino also has focused on existing and new technologies that can provide growers and other agricultural service providers with research-based information on pathogen biology, epidemiology and vegetable disease management. She has authored or co-authored 37 peer-reviewed journal articles, 80 conference proceedings and scores of extension publications and trade jour-

nal articles. In addition, she has given more than 350 extension presentations.

She has served on several college and University committees and is a member of the American Phytopathological Society and the Pennsylvania Association for Sustainable Agriculture as well as PVGA. She has been a valued liaison between the University and the Association's Board of Directors. She served on the board of directors of Pennsylvania Certified Organic from 2017 to 2021, and she is currently a member of the Pennsylvania Department of Agriculture Pesticide Advisory Board.

Among her numerous awards and honors are the 2019 American Phytopathological Society Excellence in Extension Award, the 2013-14 Department of Plant Pathology and Environmental Microbiology Excellence in Teaching Award, and the 2011 American Phytopathological Society Northeastern Division Early Career Professional Award. She was inducted into Gamma Sigma Delta



Dr. Beth Gugino (right) with her husband Jeff.

- Honor Society of Agriculture and Phi Alpha Xi - Honor Society of Horticulture.

Beth and her husband Jeff have been married 23 years. They have two amazing dogs...Flora and Stone. She loves being outside, playing in nature year-round. She enjoys trail running, mountain biking, cross country skiing, hiking to vistas and climbing waterfalls. On a really nice day, she would choose a long motorcycle ride in search of an out-of-the-way diner, drive-in or dive.

Most important to her is spending time with family and friends. This usually revolves around a wonderful meal, a glass of wine and lots of laughter. She likes the time she gets to spend with her parents who live in the State College area. The end of a perfect day for her would involve sitting on the back patio with friends; Cosmo in hand, watching the dogs play in the yard as the sun set over the Scotia forest.

Fourteen years ago PVGA presented its Annual Award to Gugino's predecessor as the Penn State Extension Vegetable Plant Pathologist. She had big shoes to fill but she has traveled countless miles across the state visiting grower farms and speaking at grower meetings besides writing a multitude of articles and updates for growers over the past 13 years. Besides the honors listed above, she has earned the respect and trust of Pennsylvania's vegetable growers whom she has served well. It is for that reason that the Pennsylvania Vegetable Growers Association is pleased to present it's 2023 Annual Award to Dr. Beth Gugino.

NEWS



SHAP President Andrew Schwalm (left) and PVGA Rita Resick with Secretary of Agriculture Russell Redding and PVGA Executive Director (right).

PVGA and SHAP Recognize Secretary Redding

The Pennsylvania Vegetable Growers Association and the State Horticulture Association of Pennsylvania together recognized a special friend of Pennsylvania's fruit and vegetable growers – Pennsylvania Secretary of Agriculture Russell Redding – on January 31, 2023, at the Fruit and Vegetable Growers Banquet at the Mid-Atlantic Fruit and Vegetable Convention at the Hershey Lodge in Hershey.

When the two groups voted to give this recognition, they were expecting it to be a farewell to Redding's time as Secretary but both groups were more than glad to learn that he will be continuing as Secretary under Governor Joshua Shapiro.

One could go on at great length about his accomplishments and his in-depth understanding of complex agricultural issues like dairy pricing, crop insurance and workforce development. He has led the initiative to develop the first state-level Farm Bill in the nation and is recognized nationally as an agricultural leader by his peers in other states. Mr. Redding has not only served longer as Pennsylvania's Agriculture Secretary than anyone in recent history, he has done so with a dedication that is unmatched. Anyone who follows him on social media knows how many events he attends each week across the state highlighting, promoting, and advocating for Pennsylvania's farmers. The Pennsylvania agricultural community is truly blessed to have a leader like Russell Redding and both organizations wanted to express in this small way their gratitude to Mr. Redding for his work on behalf of Pennsylvania farmers.

The Pennsylvania Vegetable Growers Association periodically likes to recognize individuals who have demonstrated a longstanding record of service and dedication to either the vegetable, potato and/or berry growers across Pennsylvania or the Association with a Life Membership. The PVGA Board of Directors voted to also grant Secretary Redding a Life Membership in the Association in recognition of his service to not only Pennsylvania vegetable, potato and berry growers, but to all of Pennsylvania Agriculture.

In Memory



Brenda Michael Shimmel

Brenda D. Michael-Shimmel, 66 of Shickshinny, PA formerly of Northampton, PA, passed away on Tuesday, March 7, 2023. She and her sister Karen Shea, operating as Michael's Concessions, have worked with the Association since 2005 to prepare the batter-dipped vegetables and blooming onions at the PVGA Farm Show Booth. Brenda was unable to help at

the 2022 and 2023 Farm Shows due to ill health although her son Kelley continued to help. Brenda and Karen along with their husbands and families and their sister Audrey were a real team. Both Brenda's and Karen's husbands passed away in 2021. While Karen, her sister Audrey and her sons Butch and Andrew along with Brenda's son Kelley have continued to work with the Association at the booth, the Farm Show crew misses Brenda's energy and leadership at the booth.

Born July 8, 1956 in Allentown, PA, she was the daughter of the late Albert Michael and the late Mary (Dieter) Michael. She was the wife of the late Jerome K. Shimmel who passed away in July 2021.

Brenda was a 1974 graduate of Northampton High School who went on to carry on the family business with her sisters, Michael's Concessions, Northampton, PA, who were always known at the local fairs and carnivals. Brenda's specialty was french fries along with other items. She was always active in the PA Showman's Association and she had served as both President and as a Director.

She is survived by her son, Kelley Michael and wife Jennifer of Jermyn, PA, sisters, Karen Michael-Shea of Danielsville, PA, Audrey Michael of Orefield, PA, Mrs. Roberta Trexler, and Mrs. Mary Ann Gaumer both of Easton, PA. 2 grandchildren, Hunter and Avery Michael, along with many nieces and nephews.

A Celebration of Life Service was held March 17, 2023 at the Schisler Funeral Home, 2119 Washington Ave. Northampton, PA, 18067 with the Rev. Cliffert Herring officiating.


Contributions may be made to Hilarity for Charity to Benefit Alzheimer's cure c/o the funeral home.

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NEWS

Kevin and Morgan Bond Receive PVGA Young Grower Award



Morgan and Kevin Bond with their daughter Evelyn. Photo: Bond family

The Pennsylvania Vegetable Growers Association is pleased to award its 2023 Young Grower Award to Morgan and Kevin Bond. The Young Grower Award is given to recognize PVGA members who are 35 years old or younger, who have been successfully growing vegetables, potatoes or small fruit and who have contributed to advancing or promoting the Pennsylvania vegetable, potato or berry industries. The prize is free registration for the Mid-Atlantic Fruit and Vegetable Convention plus lodging at the Hershey Lodge.

Kevin and Morgan Bond help to operate and manage B&R Farms in Ringtown, PA - owned and operated by Morgan's parents, Boots & Robin Hetherington. The farm supports a variety of commodities, including corn/soybean rotational acreage, hay crops, a spring greenhouse operation, asparagus, and a pick-your-own strawberry business. Kevin and Morgan both work full-time off-the-farm. Kevin teaches Technology Education at Lehigh Area High School. Morgan works as a Research & Development Technologist at Mrs. T's Pierogies. They support the farm operation on nights, weekends, and all summer in Kevin's case.

Kevin and Morgan have invested in equipment for the retail strawberry business (ex. CropCare Picking Assistant), and seek out methods and techniques from other berry operations that could help improve their family business. They participate in the PVGA Berry Growers Exchange meetings to gain insight from other growers around the state. Pre-Covid, they were active volunteers at the PVGA Food Booth at Farm Show. Morgan started volunteering with her family as a teenager, and Kevin

joined in after they began dating in high school. They hope to return to volunteering in the coming years as the pandemic resolves for the sake of their toddler, Evelyn.

Kevin upgraded the picking crew's wooden and wire racks to composite carriers that wash easier and keep the quarts and BerryMasters cleaner for retail sale. Kevin also modified bakery racks to utilize in cold storage to prolong quality of picked quarts for retail and wholesale. Kevin continues to research different methods of weed control, irrigation styles, cultivation methods, pest management, and customer traffic control to make the strawberry crop a more efficient and less labor-intensive process where possible. His new techniques have shown significant improvement in crop health and customer satisfaction.

Morgan is a critical part of the operation with customer service, product marketing, and crew management. She largely manages the farm's Facebook platform to create daily posts for customer engagement throughout the picking season, and includes periodic farm updates throughout the year as additional berry crop maintenance is performed. Morgan helps with wholesale quart sales and deliveries. She has also started to incorporate a digital Point of Sale system for the strawberry operation as newer customers are seeking credit card options more frequently. Morgan organizes the picking crew schedules for the summer harvest, and leads the pickers on weekend shifts. She also helps to staff the retail cart and manage pick-your-own customers during the hustle and bustle of Saturday and Sunday pickings.

In their spare time, Kevin and Morgan have repurposed a high tunnel on the family farm to grow red and black raspberries, rhubarb and blueberries under bird netting. They're working to better understand commodity management, yield expectations, and disease/pest potentials to one day add those commodities to the farm's pick-your-own operation. While not owners in the operation, Kevin and Morgan are heavily invested in the production and promotion of their family's farm. They plan to transition into ownership of the business in the coming years to continue the tradition of pick-your-own berries through their generation and hopefully through their children's generation as well. PVGA is pleased to be able to honor the Bonds with its 2023 Young Grower Award.

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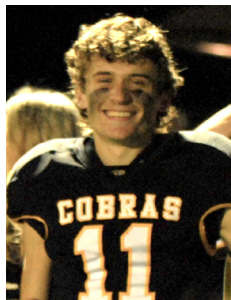
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NEWS

Three Receive PVGA Scholarships

The Pennsylvania Vegetable Growers Association is pleased to be able to offer Rudolph Grob Memorial Scholarships each year to students pursuing higher education. For 2022 five scholarships were given as follows:

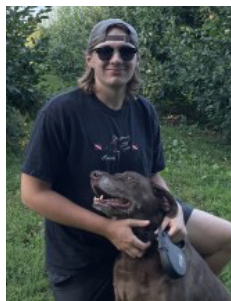


J. Parker Milton

University of Delaware, \$1,400

Parker is the son of Brad and Karin Milton of Churchville, Maryland. He is a freshman at the University of Delaware majoring in Entrepreneurship with an interest in farming. He has worked on his family's produce farm for over ten years besides playing high school football and being an outstanding student. He hopes to help his parents further develop their farm business but also to develop a network of local farms

to allow them to work together for their mutual benefit.



Clayton Harner

Penn State University, \$1,000

Clayton is the son of Chris Harner and Tarrah Geszvain of State College. He is a sophomore at Penn State University majoring in Agricultural Science with the goal of understanding what is necessary to successfully run a business in the agricultural field and possibly have a role in cooperative extension. He works on his family's fruit and vegetable farm which includes a retail farm market and agritainment activities.



Reagan Kelley

Mansfield University, \$1,000

Reagan is the daughter of Curtis and Tresa Kelley of Canton. She is a sophomore at Mansfield University majoring in Environmental Science with the goal of working at a conservation district office working with farmers on conservation issues. She works on the family's orchard where they grow apples, pumpkins, potatoes, tomatoes, raspberries, and blackberries. They sell additional produce and

plants and flowers at their farm market. She also hopes to expand her herd of dairy goats.



Cody Lehman

Penn State University, \$500

Cody is the son of Tim and Amanda Lehman of Nescopeck. He is a sophomore at Penn State University majoring Plant Science with an Agroecology option with an interest in soil science, cover crops and regenerative agriculture. He is looking at pursuing a career as an agronomist or crop consultant. He was very involved in FFA at Central Columbia High School and served as the state vice president. He

has worked at his local Agway for eight years besides working for two years at a blueberry farm and two years on a potato and snap bean farm. He is interested in no-till or conservation tillage, cover cropping, planting green, and integrated pest management and the benefits they offer for soil health and the environment.

Tyler Shannon

Penn State University, \$500

Tyler is the son of Mark and Kelly Shannon of Biglerville. He is a senior at Penn State University majoring in Agricultural Science with an interest in Agribusiness. His anticipated career is working as an agricultural loan officer. He has worked on his family's farm which grows peppers, cucumbers, pumpkins and squash. Tyler has been involved the leadership of THON at Penn State and has also been involved in several mission trips.

The Association gives the annual scholarships in memory of Rudolph Grob of Millersville who served the Association for 50 years as a Director, 20 years as Secretary Treasurer and for over 20 years as manager of the Association's Farm Show Booth. Mr. Grob was a horticulture graduate of Penn State University who was employed for many years at Funks Farm Market in Millersville. The funds for the scholarships are generated by the interest earned by the Association's Keystone Fund, an endowment-type fund created by the voluntary extra dues paid the Keystone Members of the Association.

The purpose of the scholarship is to assist students in obtaining a baccalaureate or associate degree that will enable them to pursue a career in the vegetable, potato or berry production or related industries or businesses. Children or grandchildren of an Association member who has been a member in good standing for one or more years and who are pursuing a degree in an agriculture-related field may also be considered.

Preference will be given first to children or grandchildren of Association members who are pursuing career in the vegetable, potato or berry production or related industries or businesses. Second preference will be given to non-member students who are

Continued on page 13

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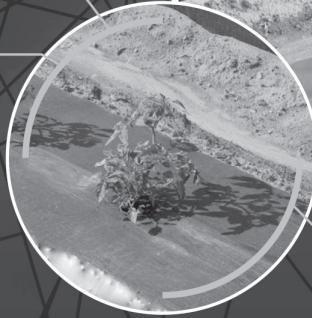
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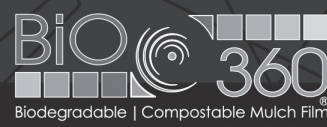
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NEWS

Members Adopt Policy Resolutions at Annual Meeting

Members Adopt Policy Resolutions at Annual Meeting

Members approved a series of Policy Resolutions at the Association's Annual Meeting on February 1 at the Hershey Lodge during the Mid-Atlantic Fruit and Vegetable Convention. These Policy Resolutions determine the Association's official position on various current issues. The new Resolutions are as follows:

Federal Policy Resolutions

The Association is on record as:

1. Supporting changes to permitting requirements for conservation projects to allow projects less than \$100,000 to be certified by a design professional.
2. Supporting the continuation of USDA's Emergency Food Assistance Program (TEFAP).
3. Supporting the continuation of USDA's Local Food Purchase Assistance Cooperative Agreement Program (LFPA).
4. Supporting an exemption for farmers or farm workers from the need to be Haz-Mat certified to transport herbicides, insecticides, etc. between farms or return empty containers provided the farmer or farm worker has had training through a private pesticide applicator's license update or other educational program.

Federal and State Resolutions

The Association is on record as:

1. Supporting the ability to take Section 179 deductions for ag equipment in the year in which the equipment is ordered and paid for.
2. Supporting a change in the due dates for quarterly state and federal tax payments to be April 15th, July 15th, October 15th and January 15th to represent true quarterly payments.

State Resolutions

The Association is on record as:

1. Supporting the addition of resident senior hunters (65 and older), resident senior lifetime hunter (65 and older), and POW license holders to the current state Game Commission policy which allows junior license holders, mentored youth, disabled hunters with a permit to use a vehicle, and resident active-duty Armed Services personnel, to harvest antlered deer with two or more points on one antler, or spike three or more inches in length.
2. Supporting the development of an Earn-a-Buck Program where harvesting a second antlered deer within a license year would be permitted if the hunter has harvested and submitted harvest tags for at least two antlerless deer.
3. Supporting the expansion of the Red Tag Program to allow taking deer on Sundays with the landowners approval.
4. Supporting the Game Commission following their staff biologists' recommendations when setting seasons and limits.
5. Supporting a review of the DEP/Growing Greener grant reimbursement process to provide reimbursement within 30 days to participating farm operations and county conservation districts.
6. Supporting requirements for government agencies and authorities levying Stormwater Management Fees to calculate, publish and enact unlimited offsetting credits to those fees for the following:
 - a. Each acre of compliance for each of the following:
 - i. An NRCS or County Conservation District approved Plan.
 - ii. an Erosion and Sediment Plan.
 - iii. An Act 38 Nutrient Management Plan, and/or an implemented NRCS Comprehensive Nutrient Management Plan.
 - b. Each approved Manure Management Plan.
 - c. Erosion controlling structures including diversion ditches, grass waterways, stone waterways and terraces.
 - d. NRCS or County Conservation District approved manure

holding structures.

- e. Each acre of forested, wooded or grass acres.
- f. Positive ratios of pervious to impervious areas.
7. Supporting requirements that stormwater credits be established before fees are levied and that such credits include currently implemented practices as well as new practices.
8. Supporting requirements that no stormwater fee be levied on properties with less than 20 percent impervious land area.
9. Supporting an agricultural exemption for storm water management for building projects that are 10,000 sq. ft. or less.
10. Supporting provisions that hayride attractions not be recognized as an amusement ride and therefore exempt from the Amusement Ride Inspection Act regulations.
11. Supporting the development of an online portal by the Pennsylvania Department of Agriculture develop to provide safety resources, requirements and online training for conducting agritourism operations.
12. Supporting the establishment of size and weight requirements by the Pennsylvania Department of Agriculture for tow vehicles involved in hayride agritourism operations.
13. Recognizing Penn State Extension's continued relevance to production agriculture and field-based extension education efforts and urging the University to build upon these programs that are vital to our industry composed of small family farms, including nearly a quarter of which belong to the plain communities who do not have access to online resources.

Other Business

Secretary-Treasurer Bill Reynolds reported that the General Fund income for 2022 was \$419,017 while expenses were \$384,546 for a surplus of \$34,471 leaving a year-end balance value of \$231,875. Considering that the budget for 2022 anti-

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patented a deficit of \$46,000, the Association did very good in 2022. The 2023 budget adopted by the Directors anticipates income of \$540,700 (of which \$356,369 has already been received from Farm Show sales, membership dues and Convention registration) and expenses of \$547,700 for a deficit of \$7,000. The Farm Show food booth was very successful with all-time record sales of over \$300,000. Preliminary estimates of the profit were reported at the meeting to be about \$86,000. Reynolds reported the year-end balance value in the Keystone Fund was \$201,911 although that value had increased to \$212,782 as of January 28 with recent stock market gains. The Board recently designated all the interest from Keystone Fund (about \$3,000 annually) to be used for scholarships.

Mr. Reynolds also reported that membership stood at about 638, down slightly from last year at this point in time. Several membership breakfast are being planned at different locations around the state.

Leadership and Recognition Committee Chair Brian Campbell announced that the Committee had selected Kevin and Morgan Bond as the winners of the 2023 PVGA Young Grower Award and that the Scholarship Committee had given scholarships to Clayton Harner, Reagan Kelley, J. Parker Milton, and Tyler Shannon.

Members received reports from the various committees on the activities of the Association and plans for 2023. Educational Committee Chair Peter Flynn reported that the Association hopes to organize a series of local on-farm grower meetings across the state this summer. The website has been updated and the newsletter and email updates continue. The Berry Committee announced that the Board had voted to fund one berry research project entitled "Survey of Plant Parasitic Nematodes Associated with the Root Systems of Blueberry and Bramble Crops in Penn-

sylvania' by Mihail Kantor and Kathleen Demchak at Penn State for \$4,869. The Berry Committee also plans to organize a berry growers twilight meeting besides continuing their monthly virtual meetings.

Potato Committee Chair Mark Troyer noted the committee is working to connect small growers to the large growers and hopefully at some point will be able to include specialty varieties in the ongoing Penn State variety trials. Simply Sweet Onion Committee Chair Art King noted that an increase in price in 2022 will probably result in more interested growers for 2023.

The meeting ended with a moment of silence to remember those friends and members of the Association who had passed away since the last annual meeting: W. Atlee Burpee IV, Fred Dymond, David Geise, Elias Groff and Bruce Hollabaugh.

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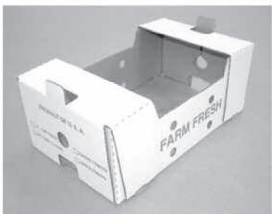
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2023 PVGA Farm Show Booth Sales Were Up 76% Over Last Years



The 2023 Pennsylvania Farm Show is now history and one for the records. Attendance numbers returned to pre-pandemic levels and they were hungry for Farm Show food. PVGA food booth sales were over \$310,000 for the first time exceeding the previous sales record set in 2020 by 27% and last year's sales by 76%. The success of this year's booth is once again only possible due to the well over 2,000 hours of time volunteered by PVGA members and friends who signed up for over 300 volunteer shifts. While it was a struggle to fill the schedule, in the end we were really only short on the the first Saturday and Sunday. The schedule for the rest of the week was adequately filled and we are very grateful for the response of our faithful volunteers.

Sales of the various items are as follows:

Over 7,500 servings batter-dipped vegetables

Almost 5,900 blooming onions

Over 6,800 cups of Strawberry Surprise slush

Over 3,700 cups of raspberry lemonade

Over 3,600 cups of berry infused water

Over 3,400 funnel cakes

Almost 3,200 corn dogs

Almost 2,100 servings of fried pickles

About 2,600 bowls of soup (chicken corn, broccoli cheese and vegetable)

Over 1,200 corn nuggets

We introduced a veggie burger this year which was not overly successful but was actually similar in sales this year to vegetable soup – the original menu item sold by the Association when the booth was initiated about 45 years ago.

PVGA again contracted with Michaels Family Concessions led by Karen Michael and her sons Andrew and Butch Roberts as well as her nephew Kelley Michael to prepare and cook the various fried menu items. PVGA volunteers are involved with the preparation of the other menu items as well as serving and selling the food to the customers. The booth was managed through the week by a committee of PVGA officers and past presidents including Brian Campbell, Bill Reynolds, Dave Miller, Rob Shenot and Jon Strite. Besides the volunteers during Farm Show week, additional volunteers spent time setting up, preparing and tearing down booth while others called members to schedule volunteers.

The goal of the Farm Show food booth ultimately is to earn funds to allow the Association to fund vegetable and small fruit research at a significant level and this will be a very profitable year. Profits for the Association will be about \$100,000 for the first time. That is over 150% of last year's profit and 36% higher than the previous record profit in 2020. However, the booth also represents the Pennsylvania vegetable and small fruit growers in the Food Court to highlight the presence of the vegetable and small fruit industries in the state. It also serves to help build a sense of community among Association members who are able to work next to fellow members from all over the state for a common cause. If you did not help out this year, please consider setting aside a day or two next year to come to Harrisburg to work with your fellow PVGA members to support and advance the vegetable and small fruit industries.

Again – a BIG, BIG thank you to our faithful Farm Show volunteers!!!



John Shenk and Boots Hetherington serving drinks.



Ed Charney and Bruce Hellerick serving batter-dipped vegetables.



Cheryl Troxell and Tracey Starr serving drinks and blooming onions.



Adam Voll serving funnel cakes and corn dogs.

NEWS

Farm Show Lost and Found

The following items were left at the Farm Show booth by volunteers



Black hooded Dickies fleece jacket size medium.



Gray Champion hooded fleece jacket medium size.



Powder-blue Fuelmate stainless steel insulated water bottle.

Five Receive PVGA Scholarships *continued from page 8*

pursuing a career in the vegetable, potato or berry production or related industries or businesses. Last preference will be given to children or grandchildren of members who are pursuing a degree in an agriculture-related field but not necessarily in the vegetable, potato or berry industries.

Applicants must be currently enrolled or be planning to enroll in a two-year associate or four-year baccalaureate degree program at an accredited institution and be in good academic standing.

About \$4,000 in scholarships will be available in 2022. Funds that are not awarded in any year are held over to be added to the amount available in subsequent years. The committee may award scholarships of up to \$2,000. Recipients may apply for a renewal although preference will be given to other qualified students over previous recipients. It is not a need-based scholarship.

The following items must be included with a completed application form:

- A copy of the most recent academic transcript.
- Two letters of reference from someone outside of the immediate family.
- A typed essay (approximately 500 words) on one of the following topics:

- Describe the biggest issue that has faced the Vegetable/Potato/Berry Industry in Pennsylvania in the last five years or that the Industry will face in the next five years and how you plan to deal with this issue in your future career, or
- Describe your previous experiences with the Vegetable/Potato/Berry Industry and the role you hope to play in the Pennsylvania Vegetable/Potato/Berry Industry upon graduation.
- Describe your previous experiences in agriculture and the role you hope to play in agriculture upon graduation.

Applications must be received or postmarked by April 30, 2022, and are available by contacting PVGA at 717-694-3596 or pvga@pvga.org. The application is also available on the website at <https://www.pvga.org/wp-content/uploads/2022/02/PVGA-Scholarship-Application.pdf>. The scholarship committee may request to interview the applicant in person or by telephone as well as contact college or school advisors and/or references. If you have a child or grandchild in college who would be eligible, encourage them to apply for the scholarships.



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NEWS

2023 Mid-Atlantic Convention Attendance Up

Attendance at the 2023 Mid-Atlantic Fruit and Vegetable Convention, by preliminary counts, exceeded the attendance at the 2022 Convention. Total attendance is estimated at about 2,250.

The 2022 attendance was only about 75% of the pre-pandemic 2020 attendance and the 2023 attendance will be less than the records set in 2018 and 2017. Of 2,250 in attendance, about 850 were registered with PVGA, 400 with the State Horticultural Association of Pennsylvania, 160 with the New Jersey State Horticultural Society, 140 with the Maryland State Horticultural Society and 100 with the Virginia State Horticultural Society. In addition, there were about 200 speakers, 100 guests and students, and 300 or more exhibitor representatives in attendance.

The pre-convention Adams Co. Bus Tour sold out with two busloads – about 99 persons which is the usual number on the bus tour – visiting a farm market, a greenhouse, an apple packing operation, a fruit tree nursery and a farm- restaurant/bed-and-breakfast operation. The Tree Fruit Pruning workshop at the Fruit Research and Extension Center in Biglerville drew about 50 participants while the Profitable Farm Market Bakery workshop at the Hershey Lodge drew about 45 persons. There 20 or more participants in each of the the Greenhouse Vegetable, FSMA Food Safety, and Pesticide Applicator License Training workshops

Keynote speaker, Michael Kilpatrick, discussed “Thriving in Uncertain Times” during his presentation on the opening day attended by about 425 Convention attendees. He used examples from his farm and market business as well as several examples from businesses on the Adams County Bus Tour in which he had participated on the previous day to highlight different strategies


that can be used to maximize sales and profits. While he was giving advice on increasing the bottom line financially, he was also constantly reminding growers to also value and care for their teams/employees and make time for own family.

The Annual Fruit and Vegetable Growers Banquet on the evening of the first day featured awards from the various sponsoring groups. The second day of the Convention concluded with a reception for apple growers at 5:00 p.m. followed by the PVGA-sponsored Old-Fashioned Ice Cream Social at 7:00 p.m. . Generous bowls of vanilla ice cream with toppings of your choice and potato chips donated by Herr’s Snacks and Ira A. Middleswarth and Son.

In 2022, with the Covid-19 pandemic still lingering, the AV team rose to the occasion to facilitate over 40 virtual presentations by speakers who were not at the Convention but presented remotely. Thankfully, the pandemic was not a real factor this year and only about five speakers presented remotely either because of schedule conflicts, travel distance or last-minute circumstances preventing their attendance.

The five organizing groups for the Mid-Atlantic Convention hope to continue to build the quality programming and attendance at the Convention. Your ideas for speakers and topics are always welcome. Our goal is to present an educational program that covers the latest research, growing methods and marketing trends along with practical examples of how growers are successfully growing and marketing their produce. Planning for the 2024 Convention will begin in March so send us your suggestions for topics and speakers – 717-694-3596, pvga@pvga.org or PVGA, 815 Middle Road, Richfield, PA 17086.


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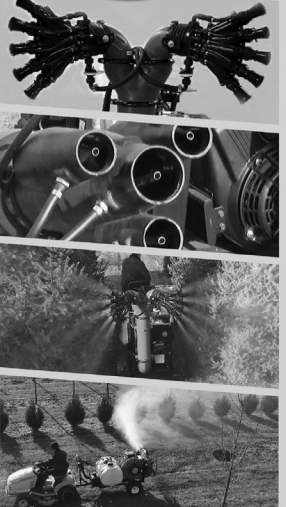
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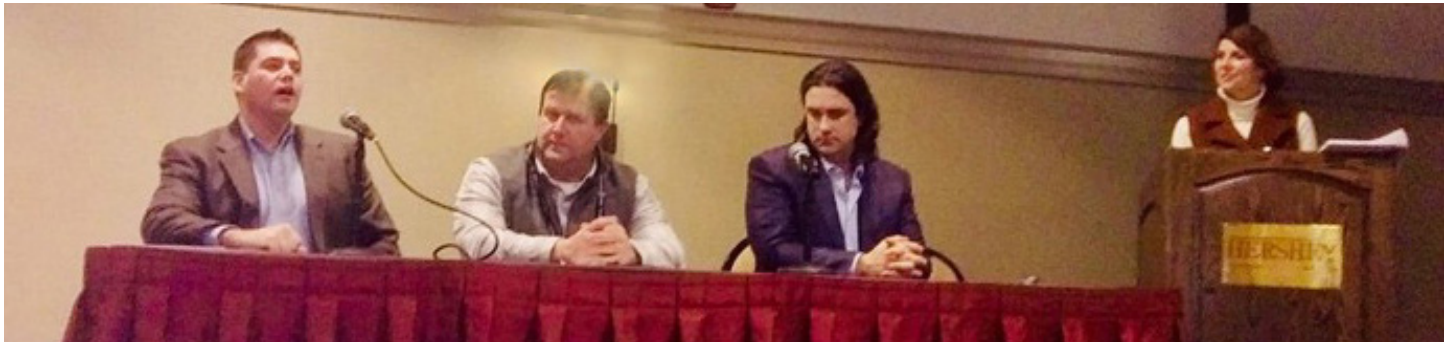




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Above: Lela Reichart, Sterman Masser, Inc., right, moderates a wholesale buyer panel with Jonathan Steffy, Four Seasons Produce; Nathan Tallman, PA Coop. Potato Growers; and Don Mahaney, Scratch and Co. Below: Scenes from the trade show.



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VEGETABLE PRODUCTION

Efficacy of Fungicides for White Mold Control in Snap Bean

Sarah Pethybridge and Sean Murphy

White mold, caused by the fungus, *Sclerotinia sclerotiorum* is one of the most devastating and recalcitrant diseases affecting snap bean production in the Northeastern United States. Crop loss results from reductions in the number of healthy pods and product contamination from fungal growth that remain attached to the pods and plants, incurring additional costs in post-harvest cleaning. Stem infections may also result in canopy lodging making mechanical harvest challenging and additional losses as the remaining healthy pods are not able to be harvested. Symptoms of the disease are initially water-soaked areas that rapidly develop into light-brown lesions, often associated with fungal growth (Fig. 1).



Fig. 1. Symptoms of white mold caused by the fungus *Sclerotinia sclerotiorum* in snap bean cv. Huntington. Note the fungal growth on the diseased plant parts which is characteristic of white mold.

The primary inoculum for white mold is sclerotia which are small, hard, black structures (Fig. 2). Sclerotia form on the diseased plant parts after the mycelia and fall back into the soil. White mold therefore has additional deleterious impacts on the cropping system because the fungus can survive as sclerotia for long periods (typically 2-4 years) between susceptible crops. *S. sclerotiorum* is also able to infect a broad range of vegetable and field crops commonly included in rotations in the Northeastern United States, making disease management by crop rotation to non-susceptible hosts problematic. The sclerotia formed on diseased plants therefore poses a risk to crop losses in future susceptible crop plants. Burying sclerotia in the soil can enhance degradation and reduce viability.

Sclerotia germinate to produce apothecia, which are small (less than a dime in size) fungal structures that appear like mushrooms (Fig. 2).

Ascospores are released into the wind from the top disc-like section of the apothecia. Ascospores can only infect the snap bean flowers and use the dying flowers as a nutrient source to infect the pods and stems.

Effective white mold management therefore relies upon an integration of strategies to reduce sclerotial populations in the soil and in-season management tactics to protect flowers from infection by the ascospores. Management strategies to reduce soil-borne inoculum are generally only incrementally effective as even low inoculum densities may still result in substantial crop loss.

Fungicides are commonly used in conventional and organic snap bean production for white mold control. For fungicides to be effective, they must be applied to protect flowers as these are the only plant part which can be infected by *S. sclerotiorum* asco-

spores. The most impactful fungicide application is usually at 10% flowering (i.e., 10% of plants with at least one open flower). A second application may also be made at 100% flowering (i.e., 100% of plants with at least one open flower). Topsin (thiophanate-methyl) is often the conventional standard for white mold control. However, tolerance within the *S. sclerotiorum* population to thiophanate-methyl suggests that other products with different modes of action would be beneficial. The identification of efficacious OMRI-listed fungicides with a place in both organic and conventional snap bean production is also a priority. The objective of this study was to evaluate selected OMRI-listed fungicides (or those with potential for registration) for white mold control in snap bean.



Fig. 2. *Sclerotinia sclerotiorum* sclerotia (left; marked by the arrow) and apothecia (right). white mold.

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2022 Field Trial. A snap bean (cv. Huntington) field trial was conducted at Cornell AgriTech, Geneva, New York. The trial design was a completely randomized block with four replications of each treatment (**Table 1**) and a nontreated control. Products were

applied on 16 August (10% flowering; 42 DAP) and 23 August (100% flowering; 49 DAP). The trial was also inoculated with *S. sclerotiorum* ascospores. mold control in snap bean.

Table 1. Fungicides evaluated for white mold control in snap bean at Geneva in 2022.

Product (rate)/A	Active Ingredient(s)	Manufacturer	OMRI-listed?
Badge X2 (32 oz)	Copper oxychloride + copper hydroxide	Gowan USA	Yes
Ecoswing (32 fl oz)	<i>Swinglea glutinosa</i> extract	Gowan USA	Yes
Badge X2 (32 oz) + Ecoswing (32 fl oz)	As above	Gowan USA	Yes
Curezin (1:500)	Copper + zinc proprietary product	VM AgriTech	No: product in development
Curezin (1:250)	Copper + zinc proprietary product	VM AgriTech	No: product in development
Howler (5 lb)	<i>Pseudomonas chlororaphis</i> strain AFS009	AgBiome Inc.	Yes
LifeGard (4.5 oz/100 gall)	<i>Bacillus mycooides</i> isolate J	Certis Biologicals	Yes
Theia (3 lb)	<i>Bacillus subtilis</i> strain AFS0320321	AgBiome Inc.	Yes
Topsin 4.5 FL (30 fl oz)	Thiophanate-methyl	UPI	No

Disease incidence in the nontreated plots was high with 76.8% and 31.4% of plants and pods affected by white mold, respectively (Table 2). The incidence of plants and pods with white mold was significantly reduced by all treatments. Moreover, the incidence of white mold on plants and pods was significantly lower than in nontreated plots, and not significantly different between plots receiving Topsin, Theia, LifeGard, Howler, Curezin (both rates), Ecoswing, and Badge X2 + Ecoswing. The incidence

of plants and pods with white mold was not significantly different between Badge X2, Ecoswing, and Badge X2 + Ecoswing, suggesting no additional benefit from the latter tank-mixed combination. White mold incidence on plants and pods was also not significantly different between the two rates of Curezin. White mold incidence on plants and pods was significantly lower in plots receiving the higher rate of Curezin than Badge X2 (Table 2).

Continued on page 18

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VEGETABLE PRODUCTION

Efficacy of Fungicides for White Mold Control in Snap Bean *continued from page 17***Table 3.** Efficacy of selected fungicides for white mold control in snap bean at Cornell AgriTech, Geneva, NY, in 2022.

Product (rate)/A	Incidence of plants with white mold (%)	Incidence of pods with white mold (%)
Badge X2 (32 oz)	38.6 b	11.5 b
Ecoswing (32 fl oz)	17.0 bc	6.2 bc
Badge X2 (32 oz) + Ecoswing (32 fl oz)	20.8 bc	6.0 bc
Curezin (1:500)	1.4 c	1.0 c
Curezin (1:250)	22.6 bc	4.3 bc
Howler (5 lb)	14.8 bc	1.5 c
LifeGard (4.5 oz/100 gall)	9.1 c	3.3 bc
Theia (3 lb)	21.7 bc	5.1 bc
Topsin 4.5 FL (30 fl oz)	0 c	0 c
Nontreated control	76.8 a	31.4 a
LSDz	26.4	9.0
P =	<0.001	<0.001

Dr. Pethybridge and Mr. Murphy are with the Department of Plant Pathology at Cornell AgriTech in Geneva, NY. Mr. Murphy presented this information at the 2023 Mid-Atlantic Fruit and Vegetable Convention in Hershey, PA. This article was submitted for the Convention Proceedings but was inadvertently left out. The authors are grateful for cooperation and support from Seneca Foods and the New York Vegetable Research Association and Council.

In-Row Cultivation Using Camera Guidance Technology in Snap Bean

Tosh Mazzone and John Wallace

**Introduction:**

Weed management in snap bean continues to be a challenge for growers in Pennsylvania and other Mid-Atlantic states. Snap bean production is challenged by the lack of available weed control tools, particularly the lack of effective labeled

herbicides (Odero et. al., 2018). Poor weed control can reduce snap bean yields by over 50% (Aguyoh and Masiunas, 2003; William and Warren, 1975). Mechanical cultivation is an alternative to postemergence herbicides in snap bean. Improving weed control efficacy with mechanical cultivation requires understanding of optimal timing relative to weed emergence. In general, cultivation is more effective when targeting newly emerged weeds. However, snap beans may be more sensitive to mechanical injury at this stage, which occurs at early crop growth stages. Additionally, cultivation requires precise adjustment of between row tools to avoid crop injury. In-row weeds typically escape cultivation when they germinate in the crop row, which limits weed control efficacy.

New cultivation technologies that are now commercially available have the potential to improve snap bean production. Recent advances in cultivator technology have increased the potential for use of in-row cultivation tools, such as finger-weeders, to control weeds. Finger weeders disturb soil in and around the base of crop plants with enough force to kill newly germinating weeds. Camera guidance systems facilitate cultivation within snap bean rows and allow for use of flatter cultivation sweeps between rows, which minimizes soil disturbance. Camera guidance systems can improve the speed, productivity, and efficacy of cultivation.

We are requesting funding to conduct field trials that will evaluate in-row cultivation timing and working depth to identify tradeoffs between weed control efficacy and crop injury. Through this research, we aim to develop recommendations for using in-

row cultivation with finger weeders to reduce crop injury while maintaining effective weed control. Organic and conventional snap bean growers have limited herbicide options, so both can benefit from improved cultivation-based weed control methods. The results of this research will be shared with growers through Penn State Extension.

Objective:

Understanding the tradeoff between weed control and crop tolerance is a significant

knowledge gap that prevents use of in-row crop cultivation in horticultural crops. We propose to establish a field research trial that will evaluate cultivation timing of in-row cultivation with finger-weeders and camera-based guidance to optimize weed control and minimize crop injury (**Table 1**).

Table 1. Key field operations during snap bean field trial.

Treatment	Beans planted	PRE	POST	Cultivation	Harvest
1. PRE + POST Herbicide	June 15	June 15	July 13		August 11
2. PRE + V2 Cult.		June 15	-	July 6 (21 DAP)	
3. PRE + V4 Cult.		June 15	-	July 20 (35 DAP)	
4. PRE + V6 Cult.		June 15	-	July 28 (43 DAP)	
5. Cultivate 1X		-	-	July 6	
6. Cultivate 2X		-	-	July 6 + 20	
7. Cultivate 3X		-	-	July 6 + 20 + 28	

VEGETABLE PRODUCTION

Materials and Methods:

Field trials were conducted in 2021 growing season at PSU Research Farm, Rock Springs, PA. Herbicide and cultivation treatments were imposed in a randomized complete block design with four replications. The experimental site was chisel plowed and followed by a heavy disc to prepare the seedbed. Plot size was 50 feet by four crop rows (10 feet) wide. Snap beans were planted at 75 lb/acre (Target 120,000 plant population/acre) and a 1" depth using cultivar 'Caprice' (Seedway, LLC., Hall, NY). In herbicide control plots, herbicide Dual Magnum (12 fl oz/ac) was applied at crop planting followed by a POST application at V2 growth stage of Basagran (1.5 pt/ac) + Raptor (4 fl oz/ac) + NIS (0.25% v/v).

Cultivation was accomplished with finger weeders (Einboeck, Austria) toolbar-mounted to a Vibro Crop Interrow Cultivator (Kongskilde, Denmark) and using a Row-Guard 500 side-shifting three-point hitch (Einboeck, Austria) guided by cultivator-mounted camera Row-Guard 500 (Einboeck, Austria) (**Figure 1**). Cultivation treatment timings are summarized in **Table 1**.

Results and Discussion:

Crop yield was estimated at crop maturity (**Table 2, Figure 2**). Based on findings, increasing cultivation frequency from 1 to 3 events, and varying cultivation timing did not impact yield.

Table 2: Crop Stand, Yield and Weed Biomass

Treatment	Crop Stand Plants/Acre		Crop Yield Ton/Acre	Weeds Control*	Weeds Lb/Acre	
PRE + POST Herbicide	163000	c	2.5	>95%	1	a
PRE + V2 Cultivation	139000	bc	2.7		17	c
PRE + V4 Cultivation	142000	c	2.3		85	e
PRE + V6 Cultivation	152000	c	2.4		17	c
Cultivate 1X	130300	ac	2.2		55	d
Cultivate 2X	88100	a	1.8		3	b
Cultivate 3X	98000	ab	1.9		23	c
p-value	<0.01		0.128		<0.0001	



Figure 1. Cultivator setup using camera guidance to direct finger-weeder cultivators at V1-2 crop growth stage.

Continued on page 20

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VEGETABLE PRODUCTION

In-Row Cultivation Using Camera Guidance Technology

continued from page 19

Cultivation treatment effect on yield was not observed (Table 2, Figure 2, $p=0.13$). Although not significant, the PRE + V2 Cultivation treatment resulted in the highest numerical yield of all treatments (2.7 ton/ac) which was 50% greater than Cultivating 2x (1.8 ton/ac) and 41% greater than Cultivating 3x (1.93 ton/ac). The second highest yield was observed in the PRE + POST Herbicide treatment (2.5 ton/ac), which was 35% greater than the Cultivating 2x treatment. These results suggest that there may be potential for increased crop injury when cultivating multiple passes throughout the growing season. In addition, a PRE-emergent herbicide program followed by a single cultivation event may be used without impacting yields.

The results of this field trial suggest that a single cultivation event from V2-V6 crop growth stage will not impact crop yields. Precision between- and in-row cultivation could be used as a follow-up to a residual herbicide pass. However, cultivation may become riskier at later crop growth stages. Although not significantly different, a cultivation event at V2 resulted in numerically higher yield than both later cultivation timings, which suggests that either young crop plants can recover quickly from cultivation or that cultivation at later crop growth stages may be more injurious. For a grower using finger-weeder cultivation as a primary in-season weed control, these results suggest that up to three cultivator passes may be conducted from V2- V6 crop growth stage without impacting yield.

The target snap bean population was 120,000 plants/acre. However, planting issues caused irregular seed drop and, as a result, some plant populations are higher than the target population (Table 2). Results demonstrated that increasing cultivation reduced snap bean populations, which were reduced by the greatest amount in the Cultivation 2x treatment (-46% compared to herbicide control) and the Cultivation 3x treatment (-40% compared to herbicide control). Populations were least impacted in the PRE + V6 Cultivation (-15% compared to herbicide control). The most common cultivation injury to crop plants was by disturbance of roots causing desiccation of plants and death (Figure 3).

Weed control was generally high (>95%) across all treatments due to low weed populations in the field, as well as secondary tillage to prep the seedbed. The primary weed species in the field were annual broad-leaf species, including common ragweed (*Ambrosia artemisiifolia*) and lambsquarters (*Chenopodium album*). However, weed biomass results indicate that all cultivation treatments resulted in a higher weed biomass than the PRE + POST herbicide control (Figure 4). Notably, results demonstrate that there were fewer weeds following 2X and 3X cultivation events than 1X. So, for an organic grower, additional cultivation passes are likely to improve weed management. These results suggest that a single cultivation event following a PRE does not replace the benefits of a POST herbicide application. Additionally, waiting to cultivate until V4 may result in additional weed pressure.

Additional field trials should be considered to evaluate the effectiveness of finger weeders on annual grass species or higher weed pressure scenarios.

Mr. Mazzone and Dr. Wallace are with the Department of Plant Science at Penn State University. This is the report of a research project funded jointly by PVGA and the Pennsylvania Vegetable Marketing and Research Program.

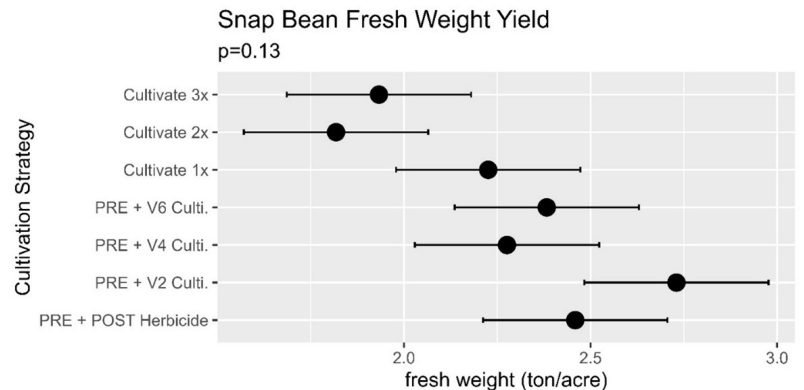


Figure 2. Fresh weight (ton/acre) snap bean yield for cultivation and herbicide treatments. Fresh weight was estimated by harvesting and weighing fresh beans 57 days after planting.



Figure 3. Typical injury of snap bean caused by finger weeder operation too close to plant roots.

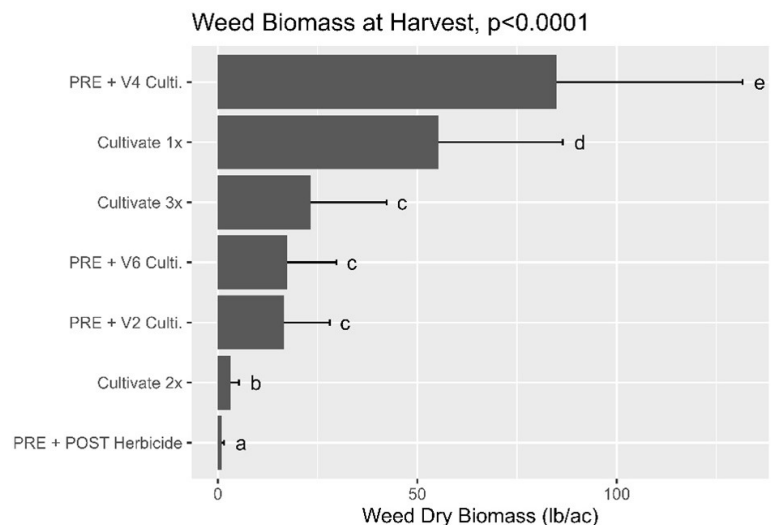


Figure 4. Dry matter weed biomass observed at plant harvest for cultivation treatments.

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Potential Herbicide Programs to Control Problem Weeds in Pumpkin

Dwight D. Lingenfelter and John M. Wallace

Introduction:

Weed control in pumpkins is challenging for many reasons, including the production

practices of wide rows, no-till which excludes use of cultivation, long growing season, and limited number of herbicide options. These practices result in a greater reliance upon herbicides for weed control. Unfortunately, there are very few herbicides labeled for postemergence weed control in pumpkins. Since herbicides play an important role in pumpkin production, it is important that currently registered herbicides are used judiciously and new herbicides (i.e., ones with different active ingredients and modes of action than those currently labeled) are identified that fit into a pumpkin production system and provide effective weed control, minimal crop injury, and environmental safety.

We propose to evaluate preemergence and postemergence herbicide programs for control of typical annual weeds such as, giant foxtail, velvetleaf, pigweed, nightshade, ragweed, and any other weed species present in the study location. In addition to evaluating weed control, we will determine effect of the herbicides on pumpkin injury and any subsequent impacts on yield. We will compare labeled standards such as Command, Curbit, and Sandea to some recently labeled products and those that could potentially receive a label for use in pumpkins such as, Dual, Reflex, Zidua, bicyclopyrone, BroadStar, Tough, and others. The study will be conducted at the Penn State research farm near Rock

Springs, Centre County. Benefits to state and regional pumpkin growers will include updated information in vegetable production guides and other educational resources on how to control weeds more effectively with existing and new products and how best to integrate other effective herbicide modes of action into the program to reduce the potential for resistance.

Objectives:

1. To examine various pre and post herbicide programs in pumpkin (i.e., novel concepts vs. standards) to determine their effectiveness on weed control.
2. To evaluate these herbicide programs on pumpkin injury and yield impact.

Work Statement:

An experiment was conducted at the Russell E. Larson Agricultural Research Farm in Centre County in 2022. Several herbicide-program approaches (Table 1) were evaluated in a randomized complete block design with three replications. Each plot was one row of pumpkin vines, 25 feet long and seeds were direct planted into a raised bed containing drip tape irrigation. A common face-pumpkin variety (EROS hybrid from Seedway) was planted on June 10. Preemergence treatments were applied the same day as planting and postemergence treatments were applied on July 13 but before vines started to run. Weed control for all species present and crop injury was evaluated on July 1, July 25, and August 17. In addition, crop yield (fruit size and

Continued on page 22

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Potential Herbicide Programs to Control Problem Weeds in Pumpkin *cont. from page 21*

number) was documented on September 16. Insect and disease management and irrigation was enacted when necessary, during the growing season.

Results

- Control data was collected for common lambsquarters (*Che-nopodium album*), velvetleaf (*Abutilon theophrasti*), and redroot pigweed (*Amaranthus retroflexus*). o All treatments (Table 1) provided 91-99% control of these three broadleaf weeds.
- Unfortunately, there were inconsistent grasses or nutsedge populations to evaluate control.
- In general, crop injury varied greatly across all treatments; some treatments caused significant injury while others minimal (Table 1 and images). o A16003 (bicyclopyrone-BIR) caused the most pumpkin damage with 57-87% injury
- Zidua SC caused 15-22% injury
- Tough 5EC caused 30-47% injury
- Sandea + Select Max caused 21-25% injury
- The other treatments caused minimal injury to pumpkin
- Pumpkin yields varied across treatments in both fruit size and number per plot (Figure 1). o All treatments produced 18-24 total fruits per 25-foot row except for treatments containing A16003 (bicyclopyrone-BIR) which only produced 8-11 fruits.
- However, some treatments possibly caused a delay in fruit maturation.

Discussion and summary

- Command and Curbit (or Strategy), Sandea, and a graminicide (e.g., clethodim) tend to be typical herbicides used in pumpkin production. The goal of this research was to hopefully find additional active ingredients with different modes of action that could potentially fit into pumpkin production systems. Most of the “different” herbicides were used in conjunction with Command and Curbit to determine if they could improve their weed control spectrum without impacting yield. Below are some comments about each of the products tested:
- Dual Magnum is an ideal candidate to be used as an overlapping residual treatment a few weeks after planting. This “overlapping residuals” approach improves overall weed control by applying a second residual herbicide over the top of the emerged crop, but before the weeds have begun to emerge. Previous research at Penn State and several other universities across the United States have shown effective weed control and minimal crop

damage when applied in this manner. Currently, we are awaiting approval for this label change.

- Reflex, a Group 14 herbicide, was recently labeled for use in pumpkin as a PRE application at 8-10 fl oz/acre, and provides control of pigweeds, ragweed, and nightshade. It is a welcomed addition for various reasons; however, it needs to be used with caution since it can injure certain pumpkin varieties and its residual activity won't last the entire growing season, among other limitations.
- BroadStar (flumioxazin, same active ingredient in Valor), is a dry granular herbicide that is labeled for use in ornamentals, orchards, and other areas. It is a Group 14 residual herbicide that controls many annual broadleaf weeds (including Palmer amaranth and marehail) and provides some annual grass suppression. It must be applied before weeds germinate, so in a pumpkin setting, it might likely be used as an overlapping residual treatment a few weeks after planting. When applied as a broadcast liquid application (i.e., sprayed), flumioxazin causes severe pumpkin injury. However, since BroadStar is a granular product, it tends to cause less crop injury since the granules fall off dry pumpkin leaves. If it were applied to leaves that were damp from dew or rainfall, injury potential might be increased. Once the granules drop to the ground, the herbicide would need to be activated by irrigation or rainfall to get effective weed control. BroadStar is a candidate to include in future pumpkin research to optimize its use rate and further evaluate crop injury potential, as well as other use parameters.
- Initially, none of the other candidates, such as Zidua SC, Tough 5EC, and A16003 (bicyclopyrone-BIR) appear to be adequate options, mostly due to their potential to cause significant crop injury. However, further research on the utility of Zidua SC and A16003 as overlapping residuals might be warranted.

Pumpkin yield was taken on September 16. Pumpkins were evaluated by fruit size and numbers per plot. Size rankings were based on Small (7-9 inches in diameter), Medium (10-12 inches) and Large (13-15 inches) as well as maturity (fully ripe vs. still green). Those that were still immature during the evaluation process might likely ripen and be marketable fruits after a few weeks. The reason for fruit size differences and late maturity of some fruit could possibly be related to herbicide treatment. Further research would be needed to determine if herbicides caused this to occur. Refer to Figure 1 for information about pumpkin yield.

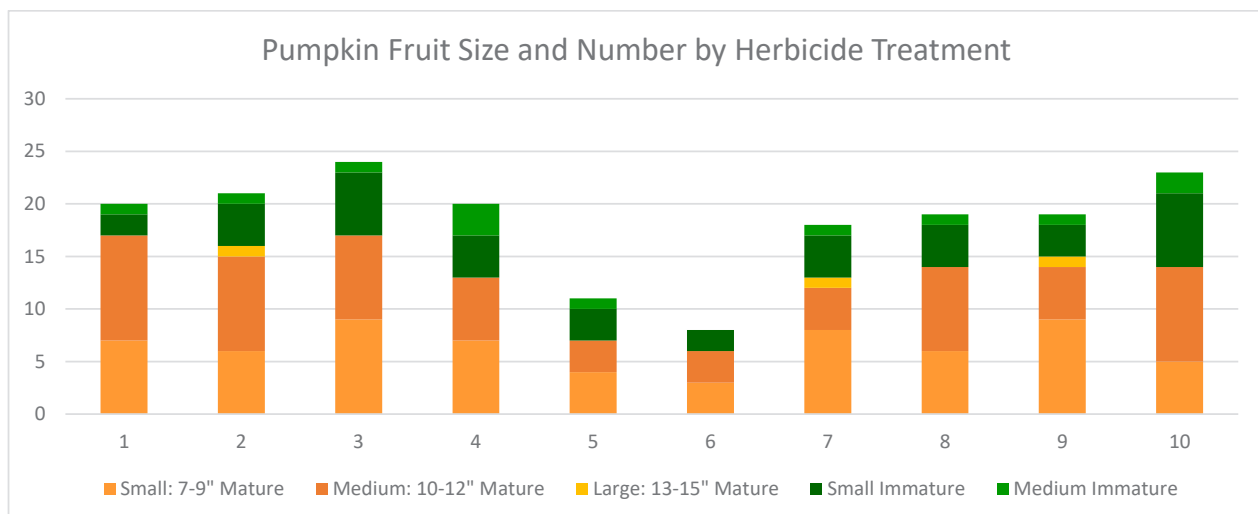


Figure 1. Effect of herbicides on pumpkin fruit size and number at Centre Co., PA, 2022.

X axis = treatment number (refer to Table 1 for descriptions), Y axis = Average number of pumpkins per 25 feet, Color codes = size and maturity of fruit (see legend)

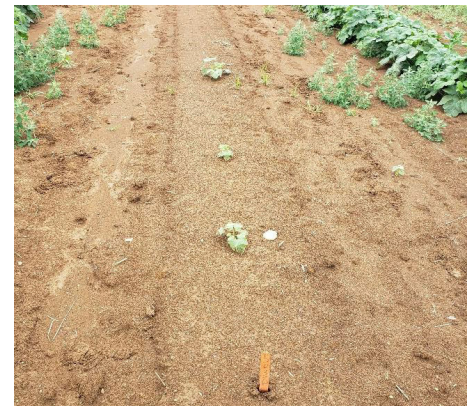
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Table 1. Effect of herbicides on pumpkin injury and weed control at Centre Co., PA, 2022.

Treatment #	Herbicide(s)*	Rate/A	Applic. timing**	Pumpkin injury (7/1/22)	Pumpkin injury (7/25/22)	Pumpkin injury (8/17/22)	Lambs-quarters	Velvetleaf	Rr pig-weed
				% injury					
1	Untreated	-	-	0	0	0	0	0	0
2	Command ME + Curbit	1 pint + 2 pints	PRE	3	1	0	91	95	95
3	Command ME + Curbit + Reflex	1 pint + 2 pints + 10 fl oz	PRE	2	1	1	95	96	96
4	Command ME + Zidua SC	1 pint + 4 fl oz	PRE	22	15	15	95	98	97
5	Command ME + Curbit + A16003 (bicyclopyrone-BIR)	1 pint + 2 pints + 3.4 fl oz	PRE	87	78	62	98	99	99
6	Sandea + A16003 (bicyclopyrone-BIR)	0.5 oz + 3.4 fl oz	PRE	87	76	57	98	99	99
7	Command ME + Curbit fb Sandea + Select Max	1 pint + 2 pints fb 0.5 oz + 12 fl oz	PRE fb	3	25	22	92	96	96
8	Command ME + Curbit fb Dual Magnum	1 pint + 2 pints fb 1.33 pints	POST	3	2	2	92	96	96
9	Command ME + Curbit fb Tough 5EC	1 pint + 2 pints fb 24 fl oz	PRE fb POST	2	47	30	99	99	99
10	Command ME + Curbit fb BroadStar G	1 pint + 2 pints fb 32 lb	PRE fb POST	4	3	6	93	99	98
	LSD (P=0.05)			4	10	15	4	3	4



Untreated check plot (July 25)



Treatment with A16003 (bicyclopyrone-BIR)

Mr. Lingenfelter and Dr. Wallace are with the Department of Plant Science at Penn State. This research project was funded by PVGA and the Pennsylvania Vegetable Marketing and Research Program.

Pictures from the study at Rock Springs.



Treatment with Tough 5EC (July 25)



Treatment with Sandea + Select Max (July 25)



BroadStar granule application (July 13)



Treatment with BroadStar (July 25)



Overview of study area (August 17)

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