



## Celebrate National Ag Day by Visiting Your Legislator

Tuesday, March 25, is National Ag Day, a day set aside by the Agricultural Council of America to highlight to the public the vital role agriculture plays in our society. PVGA is urging its members to celebrate Ag Day by making plans to visit their state and federal legislator's office to discuss the Association's priorities for 2014. Copies of the Association's priorities will be sent to members.

The Pennsylvania General Assembly is not in session the week of March 25th, so state legislators will likely be available in their local offices on the 25th or another day that week. It isn't so important to make the visit exactly on March 25th, but to make it a point to schedule an appointment with your legislator this spring (before you get any busier!) to go over the priorities with him or her.

While you're there, take a sample of your one of your farm products. If you don't have something from your farm at this time of year, get some processed Pennsylvania vegetable products from the grocery store or a nearby farm market. Even a small basket of fresh vegetables from grocery store of crops that you grow might be appropriate. It emphasizes to the legislator the role of our industry in providing nutritious food to Pennsylvanians.

If you want to team up with some neighboring growers to go as group, that is even better. If one of your farms has a mar-

ket, greenhouse or high tunnel in operation now, you might want to invite the legislator to come visit your market or farm. If you visit your legislator in his office, you might also consider inviting him to your farm or market later in the year like July or August when the General Assembly recesses for the summer.

You as a grower taking the time to visit your legislator gives him or her the opportunity to personally meet you and understand how government decisions can hurt or help your business. If they have met growers personally and are familiar with their businesses, they are more likely to be conscious of how their decisions can affect your business when they are deciding how to vote on different issues.

While personal visits are the ideal, if you can't find time to visit, at least mail a copy of the Associations' state or federal legislative priorities to your state and federal legislators. Just a short handwritten note explaining that you are a PVGA member and asking that your legislator keep PVGA's priorities in mind would be a big help in making our legislators aware of the industry's needs. If a legislator gets one copy of the Association's priorities from a voter in his or her district, it will have more impact than the same set of priorities mailed from the PVGA office. If they get copies of the priorities from several growers in their district, it will have an even greater impact.

*(continued on page 14)*

## 2014 PVGA Annual Award Goes to Richard Pallman

PVGA President Brian Campbell presented the Association's 2014 Annual Award and a Life Membership to Richard Pallman, a former Director and President of the Association, during the Annual Fruit and Vegetable Growers Banquet at the Mid-Atlantic Fruit and Vegetable Convention in Hershey on January 28.

The PVGA Annual Award is presented each year to someone who has demonstrated a longstanding record of service to the Association and/or the vegetable, potato, or berry industry in Pennsylvania. Rich Pallman has done both.

After graduating from Penn State with an agronomy degree, he, along with his father and brothers, developed the family farm in Clarks Summit into what was once one of the largest fresh market tomato operations in Pennsylvania. They also developed a 15 acre pick-your-own strawberry operation and a retail turkey business growing and processing over 10,000 birds annually.

Rich and his family worked closely with Penn State Extension in the 1970s and 1980s to develop recommendations

*(continued on page 2)*



*PVGA President Brian Campbell (right) presents Richard Pallman with the 2014 Annual Award and Life Membership.*

## NEWS



**Pennsylvania  
Vegetable Growers  
Association**

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

*President*

**Robert Shenot '16**  
Wexford

*First Vice President*

**David Miller '17**  
York

*Second Vice President*

**Jonathan Strite '16**  
Harrisburg

*Secretary-Treasurer*

**William Reynolds '16**  
Waynesboro

*Past President*

**Brian Campbell '15**  
Berwick

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**Fred Dymond III '17**  
Dallas

**Christopher Harner '17**

State College

**Curtis Kaelin '15**

Wexford

**David King '16**

Bakerstown

**Lois Klinger '16**

Catawissa

**Kenneth Martin '17**

New Berlin

**Ernest Mast '15**

Morgantown

**Hilary Schramm '15**

Jeannette

**Jeffrey Stoltzfus '17**

Atglen

**John Shenk '17**

Lititz

**Thomas Strzelecki '15**

Wapwalopen

**Thomas Styer '15**

Muncy

**Timothy Weiser '16**

York Springs

*Executive Secretary*

**William Troxell**  
Richfield

## 2014 PVGA Annual Award... (continued from page 1)

for banding their fertilizer for their tomato crop resulting a 50% reduction in fertilizer use – a economic and environmental benefit.

Besides serving three years as President of PVGA and sixteen years as a Director, during which time the structure for current joint convention committee was established for the Mid-Atlantic Fruit and Vegetable Convention, Rich also served on the Pennsylvania Vegetable Marketing and Research Program Board, including several years as chairman of that Board.

Rich was also very involved with the Pennsylvania Farm Bureau, serving as county president, and state board member. In addition, because farm labor was major issue for the family's tomato operation, he was on both the state and national Farm Bureau farm labor committees and served as chairman of both groups.

Locally he has served as chairman of his township zoning hearing board as well as serving on the finance and building committees of Countryside Community Church and Schultzville United Methodist Church. He was active in several gubernatorial and presidential election campaigns. In 2001, Rich became the state Farm Service Agency director for eight years for Pennsylvania. Rich and his wife have a son and daughter plus two grandsons.

The Association is pleased to honor Richard Pallman with its 2014 Annual Award and a Life Membership in the Association in recognition of the many years of service and dedication to the Association, the vegetable industry, and the general agricultural community.

Previous recipients of the Annual Award have been: Kathleen Demchak, John Mason, Michael Orzolek, Keith Eckel, Furmano Foods, Robert C. Trax, Alan MacNab, Peter Ferretti, Daniel Schantz, Wilfred Richards, Samuel Hayes, Jr., Boyd Mertz, Rudolph Grob, and Laurence Yager.

## Scott Guiser Granted Life Membership

Scott Guiser, who will be retiring this year as a Penn State extension educators, was granted a Lifetime Membership by the Association at the Mid-Atlantic Fruit and Vegetable Convention in Hershey.

Scott, a native of Philadelphia, graduated from Penn State and began his extension career in 1979 in Wayne County. In 1980, he moved to the Bucks County office where he has served ever since. He received his master's degree in Horticulture in 1982 and the distinguished service award from the National Association of County Agricultural Agents in 1987. Besides his extension work, he is an avid beekeeper, home gardener (specializing in garlic) and, according to his wife, Betsy, a great cook.

PVGA is pleased to honor with a Life Membership someone who has devoted their career to helping the vegetable and berry growers of south-eastern Pennsylvania. We greatly appreciate the service of extension agents like Scott.



*PVGA Executive Secretary William Troxell (right) presents Scott Guiser with a Life Membership.*

The **Pennsylvania Vegetable Growers News** is the official monthly publication of the Pennsylvania Vegetable Growers Association, Inc., 815 Middle Road, Richfield, PA 17086-9205  
phone and fax - 717-694-3596, email - [pvga@pvga.org](mailto:pvga@pvga.org) website - [www.pvga.org](http://www.pvga.org)

*Our Mission:*

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

*Our Vision:*

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

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

## PVGA Members Elect Directors, Adopt Policies

The General Membership of the Association held their Annual Meeting on January 29, 2014, at the Hershey Lodge and Convention Center during the 2014 Mid-Atlantic Fruit and Vegetable Convention. The results of the mail balloting for the election of six Association Directors were announced. The members also adopted additions to the Association's Policy Resolutions besides receiving reports on the Association's activities for the year.

Until 2012, members of the Board of Directors were elected by the members attending the Annual Meeting. In 2011, the members approved changes to the Association's constitution that allowed the Board of Directors to set guidelines to have the Directors elected by mail ballots prior to the Annual Meeting. Since only about 30 to 50 members typically attend the Annual Meeting, it was hoped the mail ballot would encourage greater participation in the election process, which it has. In 2013, a



*Members elected (left to right) Jeff Stoltzfus, Chris Harner, Ted Dymond, Dave Miller, Ken Martin and John Shenk (not pictured) to three-year terms on the Board of Directors.*

total of 136 valid ballots were returned while in 2014, at total of 179 valid ballots were returned. This year's ballots were counted by election judges Arthur King, Abigail Merhaut and Michael Orzolek.

Chris Harner, of Harner Farms in State College was elected to his first term on the Board of Directors. He replaces Robert Amsterdam who retired from the Board after serving for 20 years, including two years as president. Under the Board's term limitation, he was barred from being elected to another term. Fred (Ted) Dymond III, Kenneth Martin, David Miller, John Shenk and Jeff Stoltzfus, all incumbent Directors, were re-elected for three-year terms. Paul Mock, Sr., Rita Resick and Nathan Richard

were also nominated but not elected..

Chris Harner is a third generation fruit and vegetable grower from Centre County. He has worked on the farm his whole

*(continued on page 4)*

## Robert Shenot Elected PVGA President, Budget Approved

The Association's Board of Directors elected Robert Shenot of Wexford as the President of the Association at a special meeting held immediately after the Annual Meeting of the General Membership on January 29, 2014. Other officers elected were David Miller of York as First Vice President, Jonathan Strite of Harrisburg as Second Vice President and William Reynolds of Waynesboro as Secretary-Treasurer. At their regular meeting on January 27, 2014, in Hershey, they also adopted the 2014 budget that anticipates \$386,800 in income and \$414,000 in spending.

Officers are elected by the Board of Directors each year to one-year terms. By tradition, the President and Vice Presidents are elected to two one-year terms with the Vice Presidents moving up to the next higher office after two years. Brian Campbell of Berwick, President in 2012 and 2013, will serve as the Past President. The Past President sits on the Executive Committee with the other four officers.

The budget adopted by the Directors has a deficit of \$27,600 and allocates a record amount for research - \$56,000 for vegetable research, \$10,000 for tomato breeding technician and \$14,000 for small fruit research or a total of \$80,000.

The budget leaves a projected General Fund balance of \$185,400 at the end of the year, well above the target level balance of \$153,000. The Association purposely maintains a sizeable balance in the General Fund to enable it to self insure itself against unexpected decreases in revenue. Bad weather during



*Association officers for 2014 are: (left to right) Brian Campbell, Past President; Dave Miller, First Vice President; William Reynolds, Secretary-Treasurer; Rob Shenot, President; and Jon Strite, Second Vice President.*

the Farm Show significantly decreased the Farm Show income and profits but higher than expected income last year and the reserve balance in the General Fund enabled the Association to actually increase its support for research, promotion and other activities even though income for 2014 is expected to be lower.

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## NEWS

**PVGA Members...** *(continued from page 3)*

life, and full time since graduating from Penn State University with a bachelor's degree in Agricultural Business Management in 1994. Currently Harner's Farm is composed of a mix of about 40 acres of tree fruit, 30 acres of vegetables, and the rest is a mix of Christmas trees, blueberries, grapes, greenhouses, high-tunnels, corn maze etc. They operate a retail farm market, attend a downtown farmer's market and wholesale to local restaurants, grocery stores and other farms. They've been making the transition to pick-your-own over the years, to provide on-the-farm activities for the families in their area. Harner is a member of the State Horticultural Association, Appalachian Fruit Growers (Past Pres.), Penn State Ag Council, and Penna. Farm Bureau.

Fred (Ted) Dymond III operates Dymond's Farm & Farm Market in partnership with his brother Tim in Dallas, Luzerne Co. They grow about 100 acres of fruits and vegetables which they mostly retail at their market. They also sell some pick-your-own and some wholesale. Dymond has served on the Association's Board since 2008.

Kenneth Martin is currently employed at Furmano Foods Inc. where he started in 1989 as a fieldman and now serves as the Director of Agricultural Operations. He has served on the Vegetable Program Planning Committee for the Mid-Atlantic Fruit and Vegetable Convention for at least 23 years and as a director for 12 years including two years as President of the Association. Martin also sits on the board of the Penn State Ag Council and on the Northeast IPM Center's advisory board. He started out growing vegetables and greenhouse bedding plants in the early 80's and in 1986 managed the Buffalo Valley Produce Auction until going to Furmano's in 1989.

David Miller is the principal owner and president of Miller Plant Farm, Inc. which is a greenhouse and farming operation in York Co. Miller Plant Farm produces a wide variety of vegetable transplants for many growers in Pennsylvania and other states. The company also grows about 35 acres of vegetables both for wholesale sales to chain stores and their own retail market which includes a 350 member CSA. A Director since 2002, he has been elected as First Vice President of the Association. He also serves as Chairman of the Pennsylvania Vegetable Marketing and Research Program Board.

Jeffrey Stoltzfus graduated from Penn State in 1985 with a degree in Agriculture Education. After spending six years working for cooperative extension in water quality projects, he has spent the past 20 years working as the Adult Ag Instructor with Eastern Lancaster County School District. His duties responsibilities have included providing educational meetings and consulting for small vegetable growers in eastern Lancaster County. He has worked closely with both the Leola and Weaverland Produce Auctions, as well as the Lancaster County Vegetable Farmers Cooperative. He serves on the Association's Simply Sweet Onion Committee and has cooperated with research and extension activities with Penn State and Cornell Universities. On his small home farm, he has raised four acres of pumpkins for the past 15 seasons and has recently added strawberries in addition to livestock and grain. Stoltzfus has served as a Director since 2011.

John Shenk credits the 4-H program for creating an 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 berries and vegetables in Philadelphia. He and his wife Linda have farmed with their family for 33 years. They eventually began to concentrate on

growing strawberries for pick-you-own and direct sales. More recently, the focus on strawberries led to developing a strawberry cultivator and beginning Hillside Cultivator Co. Shenk has served as a Director since 2011.

The members also adopted the following additions and revisions to the Association's Policy Resolutions (underlined text is to be added to the resolutions):

**The Pennsylvania State University**

1. Supporting the current practice of six trustees being elected by the agricultural societies.
2. Supporting an option for agricultural trustee election delegates to vote online from the Extension Offices.

**Local Government**

3. Supporting legislation that exempts landowners from requirements for septic service or septic fees on tracts that have no septic systems on the property.

**CRP/CREP**

4. Supporting the limitation of the CREP Program to highly erodible land of 6% or more slope and/or Class III or higher soils, not to exceed 50% of the cultivated farm acres of the farm and include all environmentally sensitive areas.

**Transportation**

5. Supporting legislation to prohibit local municipalities from exceeding PennDOT regulations and arbitrarily lowering road weight limits to prevent the establishment of agricultural operations that have entered into a verifiable planning process.
6. Supporting changes to the vehicle code that would authorize issuance of annual over-width permit for farmers and agricultural custom operators which would exceed the current width allowed by law to transport farm equipment on highways.
7. Supporting provisions to allow farmers and agricultural custom operators to move implements of husbandry 14 to 18 feet wide on public roads during daylight hours without a permit if escorted.
8. Supporting changes to the vehicle code that would authorize issuance of annual excessive weight permits for vehicles hauling all crops during harvest.
9. Supporting requirements that the corridor of travel be clear of limbs and branches for 25 feet from the center of the road.
10. Supporting proportional reductions in Liquid Fuel Tax reimbursements to local municipalities for each road that local authorities reduce the weight limit below 80,000 pounds for agricultural use.
11. Supporting increasing the current cap on taxable value of fuel subject to the Oil Company Franchise Tax to \$1.75 per gallon, provided that additional revenues generated through an increase in taxable value above the current level be used exclusively for road and bridge repair and improvement.

*(continued on page 6)*



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## NEWS

**PVGA Members...** (continued from page 4)**Public Utilities**

12. Supporting requirements that a minimum of 15 feet height of all utility lines be required.
13. Supporting requirements that any above-ground gas/utility structures on agricultural lands be marked at a minimum height of six feet and be a visible reflective color.
14. Supporting requirements that all new permanent land survey markers be buried four feet deep and be GPS activated and all temporary markers be at least six feet tall and reflective.

**Uniform Construction Code**

15. Supporting changes to the Uniform Construction Code (Section 403121) that would exempt small business structures which are less than 2,500 square feet and do not exceed an average of 25 vehicles per day.

**Conservation Districts**

16. Supporting requirements that when ag structure plans are submitted to the conservation district there should be a time limit no longer than 45 days for a decision.
17. Supporting requirements that Conservation Districts be required to inform landowners who inquire if their properties potentially contain wetlands.
18. Supporting the ability of all conservation districts to opt in or out of their compliant policy (DEP Agricultural Enforcement) with the State Conservation Commission every three years.

**Solid Waste Management**

19. Supporting the development of a recycling program for ag plastics by the Pennsylvania Department of Agriculture.

**Taxes**

20. Supporting the exemption of high tunnels from real estate and sales taxes.
21. Supporting a prohibition for counties to change the assessment value of any individual parcel of real estate, solely on the basis of sale or conveyance of the parcel.
22. Supporting the expansion of the farming exemption from inheritance tax provided under Act 85 of 2012 to include transfers by will of any farm being commercially operated at the time of death that will continue to be operated under ownership or lease of the succeeding owner for a period of seven years after transfer.

**Food Safety and Good Agricultural Practices**

23. Supporting the following provisions in the rules for the Food Safety Modernization Act:
  - a 120-day interval between the application of raw manure if incorporated and the harvest of a crop unless there is scientific evidence show the need for a longer interval;
  - involving state departments of agriculture in the enforcements of the Act;
  - provisions to allow farm packing houses to pack produce from other farms if their main purpose is to pack their own produce without registering as a food packing facility subject to the Preventative Controls rules;
  - using the only the sales of covered produce to determine whether a farm is exempt from the Produce and Preventative Controls rules;

- traceability alternatives that are feasible for small growers;
  - exemption of produce auctions from being registered facilities subject to the Preventative Control rules;
  - development of agricultural water quality standards that are science-based and are feasible for growers with multiple sources of water;
  - reasonable allowances for wild animal intrusions;
  - clarification of how variances and alternatives to the rules can be obtained;
  - resources for the development and testing of variances and alternatives specific to regions or classes of growers;
  - flexibility in the rules to allow for advances in knowledge and technology;
  - exemption of retail farm markets from registration as a facility and the Preventative Controls rules; and
  - requirements that imported produce meet all the same food safety standards that domestic produce is required to meet.
24. Supporting the publishing of a second draft of the Produce and Preventative Controls rules for the Food Safety Modernization Act that would be open for further public review and comment.

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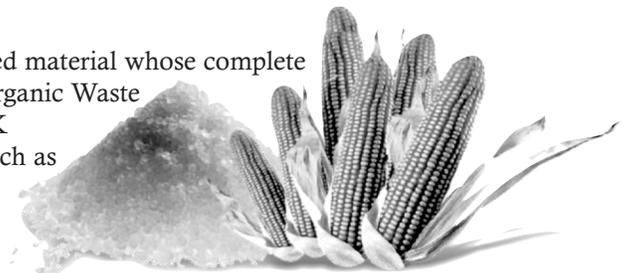
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## NEWS

**Robert Shenot Elected...** (continued from page 3)

At its December meeting, the Board did commit to providing \$10,000 annually for a three-year period to partially support a tomato breeding technician at Penn State University. The Board is also considering whether the Association will need to commit annually commit additional funds to Penn State to maintain research and extension support for vegetable crops. These annual commitments make the reserve in the General Fund even more important to weather years of low income.

The Association will be funding the following small fruit research projects for 2014: "Evaluation of Low Tunnels for Day-Neutral Strawberry Production" by Kathleen Demchak and Richard Marini at Penn State and Kim Lewers at USDA - \$2,800; "Evaluation of Strawberry Cultivars and Selections for Plasticulture and Matted-Row Production" by Kathleen Demchak and Richard Marini at Penn State and Timothy Elkner with Penn State Extension - \$6,300; "Effect of Irrigation Water Treatment on Strawberry Production" by Kathleen Demchak, Luke Laborde and Richard Marini at Penn State - \$1,100. The Board also approved funding for a fourth project that would have established blueberry and raspberry plantings at the Lake Erie Regional Grape Research and Extension Center for future spotted wing drosophila research, however that project was subsequently withdrawn due to various circumstances.

The Association is supplying a record amount towards funding vegetable research projects jointly with the Vegetable Marketing and Research Program Board. The PVGA Board approved \$56,000 while the Vegetable Marketing and Research Program Board allocated \$20,000 in assessment funds allocated to fund \$76,000 in vegetable research. The PVGA Board authorized the Executive Committee to commit an additional \$5,000 for vegetable research if the Vegetable Marketing and Research Board felt it was critical to have those extra funds, however the Marketing and Research Board did not request the additional funds.

In other action, the Board:

- approved the December meeting minutes and the year-end financial reports;
- decided to encourage all members to meet with their state and federal legislators in their local offices in March;
- endorsed Keith Masser for re-election to the Penn State University Board of Trustees;

- increased to \$500 the honorariums paid to Jack, Jackie and Nancy Grace for volunteering the entire week at the Farm Show Food Booth;
- received reports on the Farm Show Food Booth, Simply Sweet Onion program and various other issues.

The next meeting of the Association will be held on Wednesday, March 4, 2013, in conjunction with the Association's Legislative Visitation Day in the Capitol in Harrisburg.

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## NEWS

## 2014 Convention Draws Over 2,400 Persons

A well-planned program full of interesting topics and speakers attracted over 2,400 growers, industry suppliers, processors, extension agents, university staff and students to the 2014 Mid-Atlantic Fruit and Vegetable Convention in Hershey. 887 persons registered with PVGA for the three-day event. With 247 speakers and guests, the attendance for the vegetable portion of the Convention was just over 1,134, an above average attendance. Over 670 fruit growers from Pennsylvania, Maryland, New Jersey and Virginia in addition to about 100 persons registered with the North American Raspberry and Blackberry Association and over 500 exhibitor representatives put total attendance over 2,400.

For the tenth year the program featured a keynote address for all the Convention attendees on the opening morning. This year's session was sponsored again by DuPont Crop Protection. About 350 persons gathered to hear keynote speaker Steve Wiley from the Lincoln Leadership Institute stress the importance of relating to other people's needs and concerns. He used several clips from the film "Gettysburg" to show how one Union officer's ability to empathize with his men's needs inspired them to stand with him in holding a key position in the Union line that ultimately determined the outcome of the battle. Mr. Wiley's message to growers was using that same interpersonal relationship emphasis on relating to employees, customers and essentially everyone we encounter in life.

The three-day Convention featured five to eight concurrent educational sessions on all three days including, for the fifth year, two sessions in Spanish. In addition, the Convention included eight pre-convention workshops on January 27. The workshops covered entrepreneurship and team-building, greenhouse production, basic vegetable production, Good Agricultural Practices, creating gift baskets employee etiquette and raspberry and blackberry production. The North American Raspberry and Blackberry Association organized a bus tour of areas farms and points of interest to their growers. Over 165 exhibitors had their products on display in the exhibit halls all three days.

Robert Shenot was the Convention Joint Committee chairman for 2014 as well as chairman of the PVGA Convention Planning Task Force. Dr. Michael Orzolek, Penn State University emeritus, planned the general vegetable, new equipment and pepper/eggplant sessions while Dr. Elsa Sanchez, Penn State University planned the organic vegetable and herb sessions. The cole crops and soil health sessions were coordinated by Dr. Beth Gugino also from Penn State University. Dr. William Lamont planned the potato, greenhouse vegetable and high tunnel sessions while Dr. Shelby Fleischer worked on the sweet corn and GMOs sessions. Both are from Penn State University along with Kathleen Demchak who organized the small fruit sessions in coordination with Debby Wechsler from the North American Raspberry and Blackberry Association. The following Penn State Extension educators planned sessions:

Steve Bogash – greenhouse, new equipment and cut flower sessions; Thomas Ford – greenhouse, cut flower and value-added; John Esslinger – asparagus, Thomas Butzler and Dr. Timothy Elkner – pumpkins and vine crops; Lynn Kime – labor and farm management; and John Berry, Heather Mikulas, Carla Snyder and Brian Moyer – marketing. Shannon Dill with the University of Maryland Extension, Richard VanVranken with Rutgers Cooperative Extension and William Reynolds with Reynold's Pumpkin Farm also helped plan the marketing programs. Kenneth Martin of Furmano Foods worked on the program for the tomato, pepper/eggplant and GMOs sessions.

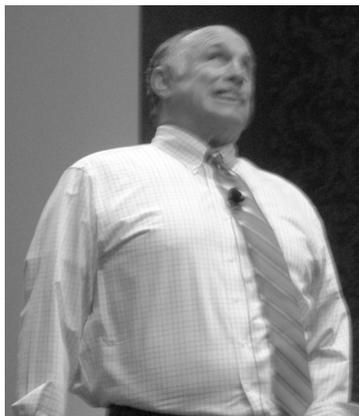
Ag Choice Farm Credit and MidAtlantic Farm Credit, with a small contribution from PVGA sponsored a grower reception prior to the annual Fruit and Vegetable Growers Dinner on January 28. PVGA presented its Annual Award and Life Membership to Richard Pallman and announced a Life Memberships for Scott Guiser (see article on page 1). The State Horticultural Association presented their Grower of the Year Award to Reed Soergel.

Sponsors for the banquet included Kirby Agri, Inc., Knouse Foods Cooperative, the State Horticultural Association of Pennsylvania and the Pennsylvania Apple Marketing Program (Platinum Level \$1,000 or more); Adams County Nursery, and Hess Brothers Fruit Co. (Gold Level \$500 to \$999); Bear Mountain Orchards, Frey Brothers, Inc., Keystone Fruit Marketing, Maryland State Horticultural Society, New Jersey State Horticultural Society, Nourse Farms, Pennsylvania Farm Bureau, Rice Fruit Company, Virginia State Horticultural Society, and Willow Drive Nursery, Inc. (Silver Level \$250 to

\$499); and Baker Ag Lime, C&O Nursery and Helena Chemical Co. (Bronze Level \$100 to \$249). Bayer CropScience sponsored the tote bags for Convention attendees. The American Fruit Grower magazine sponsored three of the tree fruit sessions and the American Vegetable Grower magazine sponsored three of the vegetable sessions.

On the second night of the Convention, PVGA and Kegel's Produce hosted the fifteenth annual Ice Cream Social. Generous portions of ice cream and a choice of toppings (including Hershey's chocolate syrup, of course) were accompanied by potato chips donated by Utz Potato Chips. A musical jam session featuring volunteer convention attendees provided entertainment for the Ice Cream Social. The second night also featured a seed heat treatment workshops.

This was the 37th year for the combined fruit and vegetable meetings in Hershey that have become one of the premier grower meetings in the eastern part of the country. The planning committees will meet in March to begin planning for next year's edition of the Mid-Atlantic Fruit and Vegetable Convention.



*Steve Wiley with the Lincoln Leadership Institute presented a dynamic keynote presentation on the importance of relating to people's needs.*



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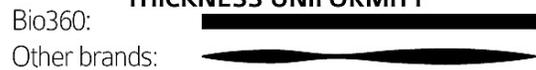
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## NEWS

## Farm Bill Finally Passed

On February 7, President Obama signed the Agricultural Act of 2014 – the long awaited Farm Bill - into law. The Senate had voted 68 to 32 on the conference report on February 4 after the January 29 passage in the House of Representatives by a 251 to 166 margin.

Eleven members of Pennsylvania's Congressional delegation supported the bill with Reps. Robert Brady, Matthew Cartwright, Scott Perry, Joseph Pitts, Keith Rothfus and Chaka Fattah voting against it. Rep. Mike Doyle did not vote.

It has been an exceptionally long and complicated path to reauthorizing the Farm Bill to provide agriculture stakeholders the certainty they need about policies governing agriculture production in the U.S. In addition to much-needed clarity, the measure shows a deepening recognition by federal policymakers that the produce industry is essential to the health of Americans and the American economy. Building on the foundation set in the 2008 Farm Bill, the 2014 Farm Bill consistently maintains or strengthens funding for key produce policy priorities such as Specialty Crop Block Grants, the Specialty Crop Research Initiative, nutrition program, pest and disease mitigation programs and trade. In spite of ever-tightening federal budgets, the Farm Bill reauthorization shows that lawmakers recognize that investing in programs that enhance fruit and vegetable production and consumption in the U.S. is needed. The bill's fruit and vegetable provisions include but aren't limited to:

\$150 million per year for the Fresh Fruit and Vegetable Program, to provide a fresh fruit or vegetable snack every day to low-income school children

\$80 million per year for the Specialty Crop Research

Initiative to provide producers with the information and data they need to enhance their ability to be competitive and meet national nutritional needs

\$85 million per year for the Specialty Crop Block Grant program to help producers make their operations more efficient and innovative

\$75 million per year for pest and disease mitigation to remove threats to producers' ability to harvest a healthy and abundant crop

\$209 million per year to enhance trade opportunities

For a summary of Farm Bill provisions relating to fruits and vegetables, visit: [http://www.unitedfresh.org/assets/2014\\_Farm\\_Bill\\_SummaryFINAL.pdf](http://www.unitedfresh.org/assets/2014_Farm_Bill_SummaryFINAL.pdf).

*From the United Fresh Produce Association and the Pennsylvania Farm Bureau.*



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## National New Briefs

### FDA Allows for Second Comment Period on Food Safety

The Federal Food and Drug Administration (FDA) will allow for a second comment period in its sweeping proposed food safety regulations. FDA officials said they plan on publishing revised proposals by next summer and will accept additional comments on the revised sections of the proposed rules. "Based on our discussions with farmers, the research community and other input we have received, we have learned a great deal and our thinking has evolved," said Michael Taylor, FDA deputy commissioner. The FDA said they believe significant changes are needed in key provisions for two proposed rules under the food safety guidelines, including water quality testing and standards for using raw manure and compost. "We have heard the concern that these provisions, as proposed, would not fully achieve our goal of implement the law in a way that improves public health protections while minimizing undue burden on farmers and other food producers," Taylor said.

From *Farm Bureau Express*, Penna. Farm Bureau, January 3, 2014.

### United Urges House to Act on Immigration Reform

The United Fresh Produce Association joined forces with 636 business organizations representing multiple sectors to send a letter to Speaker of the House of Representatives John Boehner to request House Republicans, who are the majority in the House of Representatives, move forward on immigration reform this year. United Fresh and the other businesses urged the House Republican Conference to use the *Standards for Immigration Reform*, released by the House Republican leadership in January, as a guide to developing more effective nation-

al immigration policies that can be passed by Congress. That document, which laid out principles for immigration reform, specifically cited the needs for a stable agricultural workforce.

"We sent the letter to make sure the House leadership knows that we are not giving up on getting immigration reform passed. Our industry has already suffered greatly because of outdated, dysfunctional immigration policies. By joining with a broad cross-section of businesses that are affected by these policies, we show that the economic consequences of no action will be huge," said United's Robert Guenther, senior vice president of public policy. "We will do everything we can to work with the House leadership, and all members of Congress, to formulate policies that meet the needs of the fresh produce industry but are also politically feasible. We understand this is a very sensitive issue for members of Congress, but a lack of action is the one thing our members cannot withstand."

The letter asserts that if immigration reform is developed and implemented properly it will deter illegal immigration, protect and complement our U.S. workforce, while at the same time generating greater productivity and economic activity, and respecting family unity.

From *Inside United Fresh*, United Fresh Produce Association, February 27, 2014.

### United Fresh Talks Intentional Adulteration at FDA Public Meeting

The United Fresh Produce Association's Dr. David Gombas, senior vice president food safety and technology, gave a fresh produce industry perspective at last week's FDA

(continued on page 14)

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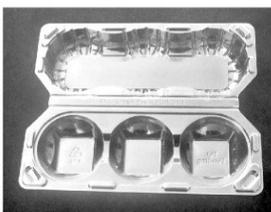
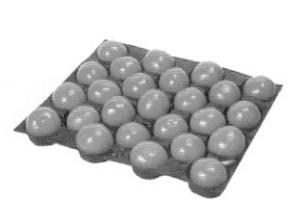
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## NEWS

**National New Briefs** (continued from page 13)

public meeting on the proposed Intentional Adulteration rule. Gombas praised FDA for the voluntary food defense tools available from the FDA website, and thanked FDA for their transparency and contributions to food defense understanding, including presentations to the United Fresh Food Safety & Technology Council. Gombas noted that United Fresh had convened a working group of fresh produce stakeholders to review the Intentional Adulteration rule, line by line, and tentatively agrees with many provisions in the proposed rule. However, he noted that some provisions may need additional clarification. For example, the rule identifies the handling and storage of bulk liquids as an "actionable process step" (analogous to a CCP in a food safety plan). Gombas cautioned that, without clarification, some might interpret non-food bulk liquids such as waxes, chlorine and even wells as "bulk liquids" which, he said, does not appear to be FDA's intention. Gombas noted that FDA proposes to exempt operations subject to the Produce Safety rule, and that the working group had agreed with this exemption, but reinforced earlier comments to FDA that any operation that handles and ships only raw, intact fresh produce should be covered by the Produce Safety rule, regardless of its size or the source of the produce received.

United Fresh is now convening working groups to review two new FDA proposals: the Sanitary Transportation rule and a proposed process for designating foods as "high risk". The working groups will meet by web conference in early March. From *Inside United Fresh, United Fresh Produce Association, February 27, 2014.*

**New AEWB Announced**

THE U.S. Department of Labor Employment Training Administration put the Average Effect Wage Rate (AEWR) Announcement in the Federal Register on January 6, 2014.

**Celebrate National...** (continued from page 1)

When you are calling to make an appointment, if your legislator is not available but a staff person is available, go ahead and take the time to meet with the staff person. Staff people are often the ones who brief the legislators on what their constituents are saying to them on a particular issue, so getting PVGA's priorities and your farm's story before a legislative staff person is equally important. This is particularly true for federal representatives and senators who have more constituents and also larger staffs.

Remember to visit at least one of your five legislators: your state representative, your state senator, your federal representative; Senator Robert Casey and/or Senator Pat Toomey. To find your local legislators and their offices, consult your local telephone directory's blue or government pages, go to <http://www.legis.state.pa.us/> or call PVGA at 717-694-3596. The offices for Pennsylvania's U.S. Senators are as follows:

Pat Toomey

Erie: United States Federal Building, 17 South Park Row, Suite B-120, Erie, PA 16501 Phone: (814) 453-3010

Pittsburgh: 100 W. Station Square Dr., Suite 225, Pittsburgh, PA 15219, Phone: (412) 803-3501

Johnstown: Richland Square III, Suite 302, 1397 Eisenhower Blvd, Johnstown, PA 15904, Phone: (814) 266-5970

Harrisburg: United States Federal Building, 228 Walnut St., Suite 1104, Harrisburg, PA 17101, Phone: (717) 782-3951

Philadelphia: 8 Penn Center, 1628 John F. Kennedy Blvd., Suite 1702, Philadelphia, PA 19103, Phone: (215) 241-1090

The Pennsylvania Average Effect Wage Rate for H2A workers will be \$11.06 per hour. This is the minimum wage rate for all H2A workers and any worker doing the same of similar jobs on farms that are using H2A workers.

Here is a link to the Federal Register announcement: <http://www.gpo.gov/fdsys/pkg/FR-2014-01-06/pdf/2013-31555.pdf>

*From Penna. Farm Bureau.*

**Protect Your Customers from Listeria**

Deadly listeriosis outbreaks in 2010 and 2011, linked to fresh and fresh-cut produce, were a wake-up call for our industry that fresh produce handling facilities can be vulnerable to Listeria harborage leading to product contamination. The United Fresh Produce Association's new Guidance on Environmental Monitoring and Control of Listeria for the Fresh Produce Industry can help businesses develop practical and scientifically sound 'search and destroy' programs for Listeria. The guide is free and available online.

The guide is applicable to all fresh and fresh-cut produce operations, including field and field packing, packinghouse and other produce handling operations such as re-pack, value-added and transport/distribution to retail and foodservice outlets.

To download a free copy of the Listeria guide, visit the United website at: [http://www2.unitedfresh.org/forms/store/ProductFormPublic/search?action=1&Product\\_productNumber=42425](http://www2.unitedfresh.org/forms/store/ProductFormPublic/search?action=1&Product_productNumber=42425). If you don't have internet access, contact PVGA at 717-694-3596.

From *Inside United Fresh, United Fresh Produce Association, January 16, 2014.*

Allentown/Lehigh Valley: 1150 S. Cedar Crest Blvd Suite 101, Allentown, PA 18103, Phone: (610) 434-1444

Scranton: 538 Spruce Street, Suite 302, Scranton, PA 18503, Phone: (570) 941-3540

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Pittsburgh: Grant Building, 310 Grant Street, Suite 2415, Pittsburgh, PA 15219, Phone: (412) 803-7370

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Harrisburg: 22 S. Third Street, Suite 6A, Harrisburg, PA 17101, Phone: (717) 231-7540

Philadelphia: 2000 Market Street, Suite 1870, Philadelphia, PA 19103, Phone: (215) 405-9660

Lehigh Valley: 840 Hamilton Street, Suite 301, Allentown, PA 18101, Phone: (610) 782-9470

Northeastern Pennsylvania: 417 Lackawanna Avenue, Suite 303, Scranton, PA 18503, Phone: (570) 941-0930

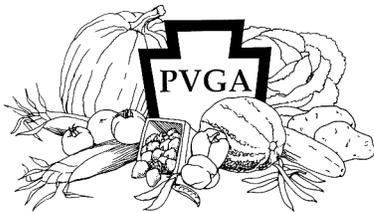
Additional information on the legislative priorities is contained will sent to each member. If you have any questions, please feel free to contact PVGA at 717-694-3596.

We would greatly appreciate if you could let PVGA know which legislators you have contacted. Please send us an email at [pvga@pvga.org](mailto:pvga@pvga.org), call us at 717-694-3596, or send us a note or postcard.

NEWS



Incoming PVGA President Robert Shenot (left) presents a plaque to retiring President PVGA Brian Campbell at the Banquet at the Mid-Atlantic Fruit and Vegetable Convention in Hershey.



PVGA President Brian Campbell (left) presents certificates of appreciation to Robert Amsterdam (center) who served 20 years as a Director and to Arthur King who served nine years as Director. Both Amsterdam and King are past presidents of the Association also.

### Pittsburgh Community Kitchen Offers Co-packing Services

A new opportunity for growers is coming to the Greater Pittsburgh region for the 2014 growing season! Turnkey solutions, contract packaging and private labeling services to include formulation, production, packaging and labeling for small scale users will be offered by the Pittsburgh Community Kitchen.

If you might be interested in using any of these services, or if you currently use co-packing services, they'd love to hear from you.

As a nonprofit food service company, the Kitchen provides high quality, freshly prepared daily meal services to schools, healthcare facilities and other institutional settings, and to other nonprofits serving vulnerable individuals and families. They reduce food waste through the stabilization and use of rescued food. They support food advocacy and nutrition education efforts and promote local growers and producers through sourcing food and—beginning in this next growing season—by providing full service co-packing services. And the best part: every aspect of their operations provides hands-on training for individuals with barriers to employment seeking living wage jobs in the food industry.

Their mission centers on their desire to help open their regional food system to increased economic development, access, and opportunities. They use food to create these opportunities, whether through improved food access and nutrition or through a pathway to a new career.

Want to know more? Visit [www.PittsburghCommunityKitchen.org](http://www.PittsburghCommunityKitchen.org), call 412 667 1983 or email [info@ckpgh.org](mailto:info@ckpgh.org) or [ritaresick@yahoo.com](mailto:ritaresick@yahoo.com).

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NEWS

# State News Briefs

## Governor's Budget Contains Pluses and Minuses for Ag Community

On the plus side, PA Department of Agriculture's (PDA) General Operations budget was increased to \$14.3 million, a \$2.035 million increase, continuing a restoration of those funds begun by Governor Corbett in the current fiscal year. This line item is important because it is where PDA funds its staff and benefits to carry out the food safety and other regulatory responsibilities it has. The Penn State Agricultural Research budget and the Cooperative Extension budget held their own with a modest increase to \$47.737 million from the current actual funds available fiscal year level of \$44.737 million.

Some negatives included:

- Elimination of funding for the PA Center for Dairy Excellence and PA Center for Beef Excellence (\$600,000)
- No funding for Open Dairy Show and Livestock Show (\$177,000 each)
- Elimination of funding for PA Preferred Program; ditto for Food Marketing and Research (\$550,000 and \$494,000 respectively)
- A zeroed out budget for PDA's line item agricultural research budget (\$787,000). This is NOT the Penn State agricultural research budget. It is a stand-alone line item with funding decisions made jointly by PDA, the industry and with legislative representation of the deciding body
- Agricultural Promotion Education and Exports reduced to zero (\$196,000)
- Hardwoods Research & Promotion from \$350,000 to zero

While appearing harsh, these (and other cut budget items) which have been cut are actually treated as bargaining chips between the Governor who cuts them and the General Assembly which ultimately seeks to restore them during the Budget process. This is NOT to say that restoration is automatic. It takes concerted advocacy on the part of the Agricultural Community to stand up for its budgets. Most times as with the agriculture research PDA line item, the restoration succeeds. Sometimes, restoration efforts of line items such as the PA Crop Insurance Premium Subsidy Program instituted after the 1999 drought and eliminated by Governor Corbett, are unsuccessful.

Some of the no or small change items are:

- Weights & Measures Administration at \$4.328 million
- Farm Show at \$10.8 million, up from \$10.688 million
- University of Pennsylvania School of Veterinary Medicine at \$28 million; U Penn Center for Infectious diseases at \$261,000
- Youth Shows at \$140,000
- Farmers' Markets Food Coupons at \$2.079 million

Direct access to the proposed FY 2014-15 State Budget numbers is a massive document prepared by the Office of the Budget with PDA Budget beginning on page E8.1

[http://www.portal.state.pa.us/portal/server.pt/community/current\\_and\\_proposed\\_commonwealth\\_budgets/4566](http://www.portal.state.pa.us/portal/server.pt/community/current_and_proposed_commonwealth_budgets/4566)

From the **AG ONE Newsletter**, Penna. State Council of Farm Organizations, Issue 2014-2, February 11, 2014.

## Dean Christ Comments on Governor's Budget

On February 5, Dr. Barbara Christ, Interim Dean of Penn State's College of Agricultural Sciences, issued the following statement regarding the Governor's proposed budget:

*Yesterday, Governor Tom Corbett released his \$29.4 billion budget proposal for the Commonwealth. Although the state is facing a deficit in the neighborhood of \$1 billion, the college fared well in the Governor's budget with a \$1.5 million increase (3.2%) in our land scrip fund (agricultural research and extension funding.) This is extremely significant and is outstanding news!*

*The increase is a reflection of the great work done in our college and the value we bring to the Commonwealth and your outstanding work in communicating that value in Harrisburg. I cannot thank you enough for all you do on behalf of the college!*

*Also of great importance to the college, the Animal Health and Diagnostic Commission funding is maintained through the Race Horse Development Fund. The Penn State education and general line (E&G) item also remains flat from FY 2013/14 levels.*

*As always, the Governor's budget is just the beginning of the budget process, and we are off to a great start. Our focus will now shift to the legislature, where, working with you, we will continue our efforts to increase college funding.*

(continued on page 17)



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**State News Briefs** (continued from page 16)

**High Tunnel Bill Approved**

The Pennsylvania General Assembly passed legislation that will prevent high tunnels from being subject to real estate taxes.

The legislation, signed into law by Gov. Tom Corbett, prevents county assessment offices from subjecting high tunnels to real estate taxes. Under the legislation, high tunnels will be treated like temporary structures.

The issue came about as horticulturists, including a nursery owner in Erie County, discovered their county assessment offices were taxing the high tunnels.

State farm organizations, including PVGA, worked with lawmakers to pass this commonsense legislation, contained in Senate Bill 638, introduced by Sen. Elder Vogel and House Bill 1439, introduced by Marcia Hahn. The General Assembly is also working on similar legislation that would not require high tunnels to conform to building code requirements, an exemption that is extended to several agriculture buildings.

High tunnels are becoming increasingly popular among growers because it extends the growing season and allows horticulturists to grow a wider variety of plants. Horticulture operations were concerned the possible taxation of high tunnels could have had a detrimental impact on the industry.

*From the Penna. Agricultural Alliance Issues Update, Penna. Farm Bureau, January 2014.*

**Potato Packaging Laws Changed**

The General Assembly passed a law that will allow potato farmers to sell spuds in any weight limit. Current state law

requires that growers sell bags of potatoes in packaging that is less than 3 pounds or 3, 5, 10, 15, 20, 25, 50 and multiples of 100 pounds.

The bill introduced by Sen. David Argall will allow growers to sell potatoes in any weight increment. Growers had approached Argall saying that state law prevented them from selling spuds in 8 pound bags, which are becoming more popular in other states.

"This is another example of undue government intrusion that only frustrates consumers and taxpayers with another unnecessary bureaucracy," Argall said.

Dave Masser, president of Serman Masser, Inc., a potato grower and processor in Schuylkill County, told the Harrisburg Patriot-News that consumers do not want to buy products to store in their homes for long periods of time.

"Giving consumers an option will encourage them to keep potatoes on their dinner plate which is part of a healthy lifestyle," Masser told the newspaper.

*From the Penna. Agricultural Alliance Issues Update, Penna. Farm Bureau, January 2014.*

**Farmers Still Eligible for Fuel Tax Refund under New Transportation Plan**

A transportation funding plan adopted by lawmakers late last year will eliminate one fuel tax, and allow for the expansion of another to fund the state's transportation infrastructure. The new legislation eliminates the 12.5 cent "liquid fuel tax" that consumers paid at the retail level for gasoline and diesel fuel, and

*(continued on page 18)*

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## NEWS

**State News Briefs** (continued from page 17)

generates revenues from increased rate of taxation on wholesale price of fuel imposed under the Oil Company Franchise Tax, (OCFT). However, the change will not affect the ability of Pennsylvania farmers to receive a full refund on tax paid on farm use of fuel under the new funding proposal. "Even though the new law increased the rate of Oil Company Franchise Tax and eliminated the liquid fuels tax, the new law still allows for the full refund of whatever OCFT taxes the farmer pays on fuel consumed for farm use," said John Bell, PFB's Government Affairs Counsel. "Farmers are still eligible for refunds for any additional taxes paid through the OCFT on farm-used fuel." Farmers have been able to receive a refund on taxed purchases of fuel consumed on the farm or used by any of the farmer's truck or agriculture vehicle within a 25-mile radius of the farm. Also, the Oil Company Franchise Tax is not applied to off-road dyed diesel used in farm equipment.

From *Farm Bureau Express*, Penna. Farm Bureau, January 3, 2014.

**Game Commission Changes DMAP Enrollment Date**

Despite concerns raised by Pennsylvania Farm Bureau and other organizations, the Pennsylvania Game Commission has moved the enrollment date for the DMAP program to May 1. The previous deadline was June 1. The DMAP program provides farmers with coupons they can distribute to hunters to control deer damage throughout the hunting season. PFB told commissioners the change of enrollment date could pose a problem for farmers. To enroll in the program, farmers have to show that crops have been damaged by wildlife and must also meet with a local Wildlife Conservation Officer. "We believe the proposed change will create problems for farmers substantiating deer damage problems with their WCO when no crops are in fields," said Jeff Grove, PFB's director of local government affairs during testimony before the Game Commissioners. "Farmers are just beginning planting operations in many parts of the state in April if the weather cooperates." PFB also asked the Game Commission to consider starting rifle deer season on the Friday or Saturday after Thanksgiving. Game Commissioners are expected to keep a Monday start date for rifle deer season, but that decision will come in April.

From *Farm Bureau Express*, Penna. Farm Bureau, January 31, 2014.

**Deer Seasons Given Preliminary Approval**

The Pennsylvania Board of Game Commissioners gave preliminary approval to hunting and trapping seasons and bag limits for 2014-15 license year at their January meeting.

The public may offer comments on all proposed 2014-15 seasons and bag limits, as well as other board actions, between now and the board's next meeting, April 7 and 8, at which time the board is scheduled to finalize seasons and bag limits for 2014-15.

Also, the board will receive staff recommendations for antlerless deer license allocations for the 23 WMUs at its April meeting. Deer harvest estimates for the 2013-14 seasons will be available in mid-March.

The slate of deer seasons for 2014-15 retains the split, five-day antlered deer season (Dec. 1-5) and seven-day concurrent season (Dec. 6-13) in 12 Wildlife Management Units. The list includes (WMUs) 2A, 2C, 2D, 2E, 2F, 2G, 2H, 3B, 3C, 4B, 4D and 4E. The package also retains the two-week (Dec. 1-13) concurrent, antlered and antlerless deer season in WMUs 1A, 1B, 2B, 3A, 3D, 4A, 4C, 5A, 5B, 5C and 5D.

Hunters with Deer Management Assistance Program (DMAP) antlerless deer permits may use the permits on the lands for which they were issued during any established deer season, and will continue to be permitted to harvest antlerless deer from Dec. 1-13 in WMUs 2A, 2C, 2D, 2E, 2F, 2G, 2H, 3B, 3C, 4B, 4D and 4E. Fees for DMAP permits are \$10.70 for residents and \$35.70 for nonresidents.

DMAP permits also may be transferred to Mentored Hunting Program participants.

The board retained antler restrictions in place for adult and senior license holders since the 2011-12 seasons. It remains the "three-up" on one side, not counting a brow tine, provision for the western Wildlife Management Units of 1A, 1B, 2A, 2B and 2D, and the three points on one side in all other WMUs. Those exempt from these antler restrictions are junior license holders, disabled hunters with a permit to use a vehicle as a blind and resident active duty military on leave.



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## Ten Reasons Not To Grow Tomatoes in High Tunnels

Steven Bogash and Judson Reid

While there are many excellent reasons to grow tomatoes and other high dollar return vegetables and small fruit in high tunnels, there are some very compelling arguments against them too. These are seldom mentioned in the rush to put a tunnel on every farm. These are some of the more important negative aspects of tunnel culture.

### Return on investment

Simply put, input costs are substantially higher in a tunnel versus the field. After amortizing the costs of the structure, the plastic film and other specialized equipment that are required to effectively produce in a tunnel, the field planting has much lower input costs. Yes, increased yield, quality or market window can justify the increased costs of tunnels. However, we have observed in some situations poorly managed tunnels yield equal or less than field plantings. Consider carefully what every square foot of production space is worth and manage with the goal of justifying the increased input costs.

### Increased risk

Greenhouses and high tunnels are typically engineered carefully to balance the environment versus the need to keep material costs low. Metal tube structures do fail as do crops. Between your investment in the tunnel itself, the costs incurred in producing a crop and your anticipated return on investment, growing in protected culture requires a greater attention to details and pest management in order to realize economic goals.

### Increased pressure from insects and arthropods

While tunnel culture brings with it the opportunity for higher crop quality, aphids, whiteflies, western flower thrips, spider mites and broad mites all thrive under tunnel conditions. The dry foliage, stems and fruit grown under intense irrigation and fertigation are ideal environments for these pests to flourish. Scout regularly for pests and consider a proactive pest management that includes banker plants such as Black Pearl and Purple Flash peppers hosting minute pirate bugs (*Orius*). Every crop reacts differently under tunnel conditions versus field grown. With no rainfall, spider mites can increase populations incredibly rapidly unless carefully managed.

### Irrigation management requires greater care vs. field grown

This is especially so on the margins of the season when there are often days with little sunshine. Learning to grow dry(er) during the early and late season will reduce root-borne diseases. Growers must adapt to rapidly changing conditions and know when to increase irrigation flow in order to maximize plant growth, reduce cracks, and blossom end rot. Consider investing in tensiometers or irrometers in order to monitor root zone moisture levels. Tunnels will require more irrigation than field plantings. Farms with less than adequate water supply should look at tunnels with caution.

### Increased disease pressure

While tunnels do reduce diseases such as early blight and septoria leaf spot, other diseases are accentuated. Brown leaf  
(continued on page 20)

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## VEGETABLE PRODUCTION

### Ten Reasons... (continued from page 19)

mold, powdery mildew, and botrytis are occasionally seen in field-grown vegetables, but are standard fare under high tunnel conditions. Increasing air flow, reducing humidity, and using disease resistant varieties will all help to manage these diseases. Brown leaf mold in tomatoes is almost exclusive to tunnel-grown tomatoes. We are finally seeing the release of the first tomato varieties with strong resistance to leaf molds. Check with your extension specialist / horticulture educator for the latest on recommended tunnel varieties.

### Tunnels perpetuate viruses

Tunnel tomatoes are a very 'hands-on' crop as many growers have come to appreciate the benefits of greenhouse methods of pruning to improve yields. However, viruses such as tobacco mosaic (TMV) are spread mechanically. Workers move the virus down the row with weekly suckering or pruning. Field tomatoes see much less handling and thus are generally at lower risk. High technology greenhouses on the other hand have disinfection protocols in place to reduce the spread. The soil-based system is also more difficult to disinfect than a concrete floor. The in-between greenhouse field nature of a high tunnel perpetuates TMV. So what can we do to prevent TMV in tunnels? Buy only from reputable seed sources and consider seed treatment. The use of disposable gloves, regular hand washing and tool disinfection will reduce the spread of viruses and other systemic diseases. There are now commercial pruning tools with reservoirs to disinfect the blade continually during usage. Remove suspect plants immediately.

### Soil health and nutrition

Tomatoes are the single most popular high tunnel crop due to their high return on investment and high market demand. There is considerable pressure not to rotate tunnel crops as you would fields. This can result in steadily increasing soil-borne diseases such as Fusariums and Verticilliums. Using only the best quality plants from known and trusted sources along with inoculating plant roots with Actinovate AG, RootShield Plus, Companion, Cease.... (there are an increasing number of biological root inoculants available). These practices reduce the potential need to fumigate.

In addition, tomatoes are heavy feeders making strict attention to soil tests and tissue analysis especially important in the usually higher (than field) densities used in high tunnels. Maintaining recommended levels of Ca, Mg and K are often challenging in tunnels. Since it never rains in a tunnel, all nutrients that the roots utilize are within the drip irrigation zone. This root area can quickly be exhausted of nutrients. Both injected and foliarly-applied nutrients are necessary to maintain nutrient levels are their optimum levels during ideal growing periods.

### Negative R values

Under early and late season short and cloudy days and clear, cold nights, it is possible to have the low temperature in a high tunnel be lower longer than outdoors. Cold nights, particularly in spring, can see temperatures lower inside the tunnel than out (hard to believe but true). Using a set of heavy floating row covers under these conditions can help to keep a crop alive. Many growers will opt to use a low output heater during these conditions to keep tempera-

tures above 45-50°F. In general, an unheated high tunnel can be reliably planted with tomatoes about 4 weeks prior to the normal outdoor planting season. Adding heat can speed up successful planting by 8 weeks or more.

### Increased management and labor

It is more challenging to manage tomatoes, peppers, cucumbers, strawberries and raspberries indoors. Pest populations and infestations tend to come on quickly requiring a very proactive management program. The narrow aisles require careful attention to crop canopy management, so pruning and trellising are constant chores. Is there room within your schedule as manager to accommodate the increased demands of a tunnel? We have seen many cases where the answer is No.

### Playing field irregularities due to subsidized tunnel purchases

Recent grant programs have created two levels of tunnel purchases: those that are subsidized and those were not. Growers that purchase their tunnels without the grant subsidy may have paid 40-60% more for their first high tunnel. If you are not a grant recipient, your input costs will be higher, and your margin lower, than others.

### Conclusion

In conclusion, while we remain optimistic about the role of high tunnels on vegetable farms, it is important to note that they are not ideal for all farms. Here we have tried to present some of the less glamorous aspects of tunnel production to balance the many favorable programs we've conducted for many years. These challenges must be met by those currently growing in tunnels and carefully weighed by those considering getting started.

*Mr. Bogash is an extension educator with Penn State Extension and Mr. Reid is an extension vegetable specialist with Cornell Cooperative Extension. From the Vegetable, Small Fruit and Mushroom Production News, Penn State Extension, <http://extension.psu.edu/plants/vegetable-fruit/news/2014>, January 31, 2014.*



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# Growing Winter Greens

Tianna DuPont

Customers are demanding local food, and they want it all winter long. Some growers are finding effective ways to meet this demand. Jeff Frank from Liberty Gardens, Coopersburg, explained his winter production system to a group of eighty growers at Penn State Extension's Organic Vegetable Intensive.

At Liberty Gardens they grow baby and micro greens in tables all winter long.

"Growing winter greens gets me out and around in the winter, keeping me recharged. It is very pleasant to be inside the greenhouse with green plants on a dreary winter day," Jeff told us. Growing winter greens also helps with cash flow at Liberty Gardens and keeps his staff employed for the majority of the season.

In Pennsylvania we are at 40 latitude. You may be surprised like I was that this is the same latitude as Spain, Naples, Italy and Northern California. That means we have similar sun exposure as these Mediterranean locals in the winter. However, the winter cold periods are much more severe in Pennsylvania. By growing in high tunnels and greenhouses "we are trying to take advantage of that sun exposure but reduce the wind and cold." Jeff explained.

It is important to recognize the effect that cold has on plants. Think of it like the effect of cold on the pipes in your house, Jeff explained. If the heat goes out and the pipes freeze they will burst. This is more or less what happens inside the tissue of the plants. Formation of ice crystals in spaces between



cells causes unfrozen water inside of plant cells to move out of the cells and cells to dehydrate. Ice crystals between cells can rupture cell membranes. When temperatures rise and ice melts the cell contents leak out and they die. Plants are built to withstand some stress. How well a plant can withstand freezing

*(continued on page 22)*

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## VEGETABLE PRODUCTION

**Growing Winter Greens** (continued from page 21)

depends on the depth, duration and frequency of the cold. For example this fall on Nov 20th after many nights with minimum temperatures in the twenties greens outdoors were irreversibly damaged.

**Infrastructure**

In general, growing greens in the winter requires you to modify the environment in order to: regulate day and night temperatures, maximize light, and regulate moisture. There a number of different structures you can use to meet these needs including row cover, low tunnels, high tunnels, greenhouses and greenhouse benches.

Unheated hoop houses or high tunnels are one of Jeff's favorite ways to modify the plant environment. Inside the high tunnels Jeff also places row cover over his plants which will increase the air temperature by another degree or two at night.

Greenhouses. At Liberty Gardens they also use heated greenhouses. Over time they have moderated how they heat the greenhouses. The first year they grew in the greenhouse they kept them at 55 F. But their blower style heater is a "gas hog." When you accounted for the cost of filling the propane tank it was not worth it. Now they keep the air temperature just above freezing, 33-34°F at night. Growing in benches also helps keep the plants warmer, the temperature up off the ground stays warmer as the heat rises. Last year they installed a radiant hot water system. Small rubber tubes run every four inches in a grid pattern on top of the bench tops. An instantaneous hot water heater pumps the tubes full of hot water which warms the soil in the beds as well as a few inches above the bed top. This keeps the plant roots at 60 F and the plants happy.

Each type of protection keeps the plants at different temperatures. For example, on November 20th when the outside air temperature was about 25°F and the outside soil temperature was 34°F the hoop house soil under the row cover was 48°F, the greenhouse air temperature was 40°F and the greenhouse soil temperature in the heated benches was 60°F.

Ventilation "You have to consider air flow mostly for disease reduction," Jeff explained. Jeff compared growing in a greenhouse to growing inside a ziplock bag. If the ziplock (or the greenhouse) is closed up you will get disease. "The worst case scenario is growing inside a ziplock. That will give you mold, rot and death," Jeff cautioned. Even when it is cold, Liberty Gardens runs the ventilation fans in the greenhouse to suck the moisture out of the houses. In their new high tunnels they are trialing a passive system that has gabled windows that will open as the temperature goes up with pistons that have a substance inside that expands with heat.

Water. All of the greenhouses and high tunnels at Liberty Gardens have frost free hydrants. But "water demand is much lower in the winter," Jeff cautioned. You do not want to over water because the damp will promote disease.

**Cultural Practices**

The infrastructure is the easy part Jeff said. The trick is growing winter greens in such a way that you have can harvest nice successions over the whole winter. Jeff explained that when you plan your successions you need to consider that plants need ten hours of day length to grow. They don't necessarily die with fewer light hours but they generally don't grow. In the Allentown area that magic date (where plants start getting less than 10 hrs of light) is November 14th. Jeff works back from this date to make sure all his winter successions are seeded so that they are mature by November 14th, from then on they will be in living storage until he needs to harvest them. For example, if hakurei turnip days to maturity in the high tunnel are 35, he would need to plant his last succession by October 9th. In late January or early February they will start planting again for spring production.

Seeding density is also very important. In general in the benches they seed about ? inch apart for small greens and ? inch apart for microgreens. But Jeff says that the exact spacing you use will have to come with trial and error because it will depend on your system. "You are trying to maximize production but leave enough space for the leaves to dry out."

Jeff explained how the few pest and disease problems he sees in his winter greens production are generally related to moisture. If he has a problem with grey mold he checks the density and air flow. Sometimes he will cut a strip in the greens to allow for increased air flow. If pill or sow bugs become a problem he finds that letting the benches dry out usually takes care of the problem. He also scouts frequently and will quickly get rid of diseased plants to keep problems from spreading through the greenhouse.

*Jeff Frank and Kristin Illick run Liberty Gardens in Coopersburg. They specialize in salad greens and heirloom tomatoes and market primarily to restaurants in New York and the Lehigh Valley. All images courtesy of Jeff Frank, Liberty Gardens. Ms. DuPont is with Penn State Extension. From the **Vegetable, Small Fruit and Mushroom Production News**, Penn State Extension, <http://extension.psu.edu/plants/vegetable-fruit/news/2014>.*

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VEGETABLE PRODUCTION

## Two Years of Sweet Corn Evaluations

Elsa Sánchez; William Lamont, Jr., Timothy Elkner, Thomas Butzler, Steve Bogash, Lee Stivers, Robert Pollock

In 2012-13 we evaluated 24 cultivars of bicolor and white synergistic cultivars of sweet corn in 3 locations across Pennsylvania. This article presents our methods and results.

To provide growers with information for successful, region specific cultivar selection, in 2012-13, we evaluated 25 cultivars of bicolor and white synergistic sweet corn grown in a conventional system across the state. Evaluations were located in southwestern Pennsylvania at Schramm Farms in Harrison City, Westmoreland County, in central Pennsylvania at the Russell E. Larson Research and Education Center in Rock Springs, and in southeastern Pennsylvania at the Southeast Research and Extension Center in Landisville.

The cultivars and year(s) evaluated and company from which seed were acquired from are listed below. The standard used was 'Temptation'.

Synergistic Sweet Corn Varieties for Statewide Trial; 2012-13

Cultivar	Year(s) Evaluated	Seed Company
<b>Bicolor</b>		
Allure	2012-13	Rupp Seeds
BC 0805	2012-13	SeedWay
Bicolor 1102	2012-13	Seminis Vegetable Seeds
Cuppa Joe	2012-13	Rupp Seeds
Espresso	2012-13	Rupp Seeds
Jackie	2012-13	Harris Moran Seed Co.
Ka-Ching	2012-13	SeedWay
Kristine	2012-13	Seigers/Crookham Seed Co.
Montauk	2012-13	Harris Moran Seed Co.

Primus	2012-13	SeedWay
Paydirt	2012-13	SeedWay
Profit	2012-13	SeedWay
Providence	2012-13	SeedWay
1273	2012	Seigers Seed Co.
1274	2012	Seigers Seed Co.
Synergy	2012-13	Seigers Seed Co.
Temptation*	2012-13	Seigers Seed Co.
Temptation II	2012-13	Seminis Vegetable Seeds
SV 9014	2013	Seminis Vegetable Seeds

White

Avalon	2012-13	SeedWay
Captivate	2012-13	Rupp Seeds
Edelweiss	2012-13	Harris Moran Seed Co.
Illusion	2012-13	Rupp Seeds
Mattapoisett	2012-13	SeedWay
Silver Duchess	2012-13	Seigers Seed Co.
Whiteout	2012-13	SeedWay

\*se heterozygous (standard)

At all locations sweet corn was direct seeded with 8 to 10 inches between plants in a row. In the southwestern location 38 inch spacing was used between rows and in central and southeastern locations 30 inch spacing was used. Planting took place on 6 June 2012 and 21 May 2013 in southwestern Pennsylvania, 1 June 2012 and 2013 in central Pennsylvania,

(continued on page 24)



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## VEGETABLE PRODUCTION

**Two Years of Sweet...** (continued from page 23)

and 21 May 2012 and 30 May 2013 in southeastern Pennsylvania.

At the southwestern site, in 2012, 144.5 lb/acre N, 117 lb/acre P and 87 lb/acre K were applied as follows: 57 lb N, 57 lb P and 57 lb K per acre were broadcast preplant, 30 lb N, 60 lb P and 30 lb K per acre were banded at planting and 57.5 lb/acre N was sidedressed. In 2013 200 lb of 19-19-19 per acre was applied. Plants were irrigated during periods of limited rainfall. Weeds were managed with pre-emergent herbicides: atrazine (1 Q/acre atrazine; Syngenta Crop Protection LLC, Wilmington, DE) and metolachlor (1.5 Qt/acre Dual II Magnum; Syngenta Crop Protection LLC, Wilmington, DE). Insects were managed with four applications of methomyl (1.5 pt/acre Lannate LV; DuPont Crop Protection, Wilmington, DE) plus lambda-cyhalothrin (1.5 oz/acre Warrior II; Syngenta Crop Protection LLC, Wilmington, DE).

At the central site, in 2012, 50 lb/acre N and 45 lb/acre phosphate were broadcast preplant. Based on soil levels, K was not added. In 2013 50 lb/acre N was broadcast preplant. Weeds were managed with a preplant application of mesotrione (3 oz/acre Callisto; Syngenta Crop Protection LLC, Wilmington, DE) and atrazine and metolachlor (1.5 pt/acre Bicep II Magnum; Syngenta Crop Protection LLC, Wilmington, DE). Insect pests and diseases were left unmanaged. Supplemental water was provided through a drip irrigation (T-Tape model 508-12-450; John Deere, Moline, IL) system to reach 1-1.5 acre-inch water per week.

At the southeast site, in 2012 150 lb/acre N, 50 lb/acre P and 50 lb/acre K were broadcast preplant. In 2013 100 lb/acre N, 160 lb/acre P and 160 lb/acre K were applied preplant. Weeds were managed in both years with preplant applications of glyphosate (2 qt/acre Credit 41; Nufarm Inc., Burr Ridge, IL), metolachlor (1.2 pt/acre Dual II Magnum; Syngenta Crop Protection Inc., Greensboro, NC) and atrazine (1 qt/acre; Makhteshim Agan of North America, Inc., Raleigh, NC). Insects were controlled with weekly applications of lambda-cyhalothrin (3 oz/acre Warrior; Syngenta Crop Protection Inc., Greensboro, NC) starting at silk in both years.

Ears from 10-15 plants were harvested when all plants of an individual cultivar reached maturity. Data to estimate the work involved in hand harvest was recorded. Ears were categorized as marketable or unmarketable, counted and weighed. Ear quality from a subset of 10 ears per plot was also determined.

Husked ear appearance, unhusked ear appearance, the extent to which the husk covered the ear tip (tip cover), kernels filling the tip of the ear (tip fill), and the relative level of work involved in snapping the ear from the culm (picking ease) were rated using a 5 point scale. For husked ear appearance and unhusked ear appearance 1= poor and 5 = good; tip cover 1= exposed ear tip, 2 = husk cover less than 0.75 in past ear tip, 3 = 0.75 to 1.24 in, 4 = 1.25 to 2 in, 5 = greater than 2 in; tip fill 5 = kernels filled to tip of ear, 4 = greater than 0.5 in unfilled, 3 = 1 to 1.5 in, 2 = 1.6 to 2 in, 1 = greater than 2 inches; and picking ease 1 = difficult, 5 = easy.

All data were subjected to analysis of variance (ANOVA) using the GLM procedure in SAS (version 9.2; SAS Institute, Cary, NC). When P values were less than or equal to 0.05, means were separated using Duncan's multiple comparison test.

## Statewide Results

In determining whether a cultivar was suited for statewide recommendation, the criterion was that it must have produced comparable or superior yields to 'Temptation' in a minimum of two of the evaluation sites over both trial years.

**Estimating the work involved in hand harvesting** - The distance from the soil line to the base of the primary ear and picking ease were collected as an indication of the work involved in hand harvesting.

With the exception of 'Synergy', all cultivar met the criterion above for distance from the soil line to the primary ear. For the following cultivars picking ease rating met the criterion above: Mattapoisette, Primus, Edelweiss, Avalon, Temptation II, Montauk, Cuppa Joe, Jackie, Allure, Bicolor 1102, Illusion, Silver Duchess, Profit, Espresso, Kristine and Paydirt.

**Yields** - Based on marketable yield results all cultivars met the criterion above for number of ears. With the exception of 'Paydirt', all cultivars met the criterion above for weight of marketable ears.

**Ear Quality** - Ear quality is just as important as marketable yield in making profits. Consumers are first attracted to the appearance of the ear, while taste can result in repeat purchases. In most US markets, consumers prefer an 8-9 in ear with a dark green husk, long and dark green flag leaf, and 16 straight rows of small deep and sweet kernels filled to the tip of the ear (Tracy, 2001).

In terms of ear length all cultivars met the criterion. For ear diameter 'BC 0805', 'Espresso' and 'Cuppa Joe' did not meet the criterion while the remaining cultivars were comparable or superior to 'Temptation'. For husked and unhusked appearance all cultivars met the criterion. All ears were completely covered by the husk; however, 'Cuppa Joe' and 'Jackie' did not meet the criterion above while all other cultivars did. Regarding tip fill, 'Cuppa Joe', and 'Profit' did not meet the criterion above while all other cultivars did.

The number of rows was only evaluated in more than one location in one year of the study. Based on the criterion of producing comparable or superior results to 'Temptation' in a minimum of two evaluation sites, the number of rows for all cultivars except 'Paydirt' and 'Illusion' were not different or superior to 'Temptation'.

Brix levels were only evaluated in one year of the study. Based on the criterion of producing comparable or superior results to 'Temptation' in a minimum of two evaluation sites, all cultivars had brix levels not different than or superior to 'Temptation'.

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"Sweet Corn" by W.F. Tracy, In: Specialty Corns, 2nd ed., 2001, A.R. Hallauer, ed.

The authors are with Penn State Univ. and Penn State Extension. From the **Vegetable, Small Fruit and Mushroom Production News**, Penn State Extension, <http://extension.psu.edu/plants/vegetable-fruit/news/2014>, January 28, 2014.

**VEGETABLE PRODUCTION**

**Bio-Intensive High Tunnel Growers School on March 31 and April 1**

2014 Bio-Intensive High Tunnel Growers School is now open for registration. This program will be held on March 31 and April 1, 2014 at the Bucks County Extension Office in Doylestown.

The 2014 High Tunnel Growers School will teach new growers the latest techniques to produce high quality, high tunnel-grown vegetables. While the focus is on high tunnel production to meet the increasing demand for locally-grown vegetables over a longer season, greenhouse growers will find this program very useful. Marketing tomatoes and other high tunnel produce in the 4-6 weeks before and after the traditional outdoor production season has the opportunity to yield enterprising producers substantial profits. This school will include advanced topics on biocontrol of insects and diseases. Pest management and fertilization presentations in this program will cover both conventional and organic methods. PDA pesticide credits will be awarded to licensed applicators. Join Penn State Extension and your fellow growers for what should prove to be a very informative program.

The program will be held on Monday and Tuesday, March 31 and April 1, 2014 at the Penn State Bucks County offices in the Neshaminy Manor Center, Doylestown, PA. Early registration fee for the program is \$145.00 and includes all program materials, lunch, morning and afternoon breaks and a CD or DVD of all presentations, handouts, and some too large to print publications. After March 25, 2014 the fee for any remaining seats is \$175.00. Preregistration is required. Space is very limited, so register early. Penn State programs are open to all persons regardless of age, ancestry, color, disability or handicap, national origin, race, religious creed, sex, sexual orientation, or veteran status.

For additional information please call Steve Bogash at the Penn State Extension Cumberland County office at 717-240-6500 ext. 6507 or by email at [smb13@psu.edu](mailto:smb13@psu.edu). Online registration, the complete agenda, and more information can be found on the registration website at <http://www.cvent.com/events/bio-intensive-high-tunnel-growers-school/event-summary-b95320bacee14ff38b4fd94e99094b6b.aspx>. To register by phone, contact Alicia Cramer at 717-240-6500.

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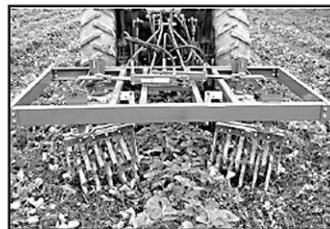
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## BERRY PRODUCTION

## GREENHOUSE PRODUCTION

## That's a Berry Good Question! Mulching Strawberries for Winter

Kathleen Demchak and Cathy Heidenreich

Q: Each year I question whether I'm putting straw mulch on my strawberries too early. Some years, I've waited too long (usually due to hunting season) - then we get snow and I can't get it on at all, so I'd like to mulch as early as I can. I've seen an assortment of recommendations - what should I go by? Thanks.

A: This question resulted in a "two-fer" of articles - a brief answer of the question here, and for more information, an accompanying article on winter injury (see "Winter Injury in Strawberry")!

True, there are a number of different indicators you might read about, including "when the leaves turn red", "after several hard freezes", "when the soil temperature drops to 40 degrees", "when the plants flatten", or "sometime between Thanksgiving and Christmas".

Some varieties seem to develop "fall color" in September, and some diseases (angular leaf spot, powdery mildew and leaf scorch) or magnesium deficiency can cause discolorations that could be confusing. So, coloration alone probably isn't the best indicator to use.

"After several hard freezes" is a little nebulous, and whether that would be sufficient cold exposure depends on what is meant by "several hard freezes". The National Weather Service defines a "hard freeze" as temperatures below 27 degrees for more than 2 hours in a 12-hr period, and actually, that may not be enough cold exposure depending on how far below 27 degrees temperatures get. Compounding the problem, in the last few years, we've gotten some really cold spells with several nights of temperatures in the mid-20's even in late September or early October, followed by a month of mild temperatures.

When the average soil temperature drops to 40 degrees is a pretty good indicator, but there's a lot of variation in soil temperatures with depth and time of day. In our research plots, soil temperature at a 4-inch depth varied roughly a quarter as much as air temperature on most days. So, on a day when the air temperature started out at 30, but warmed to 58, we saw about a 7 degree change in soil temperature 4 inches deep. There's less variation on cloudy days, at deeper depths, or if there's snow cover or straw mulch as a buffer.

When the plants look "flat" is probably the best indicator, and this usually happens in November to December - it's kind of fun to think of the plants as hunkering down for the winter. Waiting until this happens, and then delaying mulching even longer as long as injurious temperatures are not forecast is the best approach. Rich Marini's neighboring article does an excellent job of explaining how the strawberry plants harden off, and what is happening within and to the plant during the fall and winter to help you decide exactly when to mulch.

While we are on the subject of mulching, if you need a brain-jogger to remind you to take the mulch off in the spring, two that work are: 1) the reddish blush of red maple trees breaking bud on the hills, usually a welcome sign of spring, or 2) when wild bush honeysuckle (one of the earliest plants to break bud) leaves are just starting to grow. When you notice these signs, take a peek under the mulch to see whether new leaves on the strawberry plants are starting to grow. If they are, it's time to remove the mulch.

*Ms. Demchak is with Penn State Univ. and Ms. Heidenreich is with Cornell Cooperative Extension. From the **Vegetable, Small Fruit and Mushroom Production News**, Penn State Extension, <http://extension.psu.edu/plants/vegetable-fruit/news/2013>, December 11, 2013.*

## Start Now for Pest Management in Vegetable Transplants

Timothy Elkner

Pest management for vegetable transplant production is an integrated process and includes sanitation, sound cultural practices, the use of resistant cultivars (where possible) and finally, proper use of the correct pesticide. Your pest management program should be starting now in the greenhouse.

Begin the season with a clean, weed-free and disinfected greenhouse. This means clearing the growing area of any plant debris, weeds and any discarded flats or tools. After clean-up, wash and disinfect empty benches, potting areas, storage shelves, tools and leftover cell packs and flats that you plan to reuse. Your disinfecting solution can contain any of the sanitizing products such as Green-Shield®, Phyan 20™, Triathlon®, ZeroTol® or chlorine bleach (10% solution). Be sure to follow the manufacturer's directions when using any commercially prepared materials. If you are using a 1 to 9 bleach solution, remember that it requires a 30-minute soak in order to be effective. Also - while chlorine bleach is an effective sanitizer, please note that there will be a 50% reduction in strength of a chlorine solution after just two hours.

Therefore, you should prepare a new solution each time you plan to sanitize. This includes a new solution after lunch if you started working in the morning.

Once you have the growing area and equipment sanitized, be sure to avoid recontamination. Dirty hose nozzles or tools can contaminate potting soil and the general growing area. Be sure that everything brought into the sanitized area is also clean! The floor or soil in the growing area is a good source of insects and diseases. Do not stand on the benches after they have been cleaned, as you can easily move diseases up from the floor with your shoes.

Use hooks to keep your hose nozzle off the floor. Ideally, grow your transplants off the floor as well, either on benches or pallets. The floor in your greenhouse should be well drained and cleaned before plants are started there. Some growers have taken to covering the entire floor with black fiber cloth to both prevent weed growth and make clean up easier after transplant production. Once dry, plant and soil residues are easily swept-up and removed.

*(continued on page 27)*

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**GREENHOUSE PRODUCTION**

**Start Now for Pest...** (continued from page 26)

Does your growing area have good air movement? Circulating air not only distributes heat more evenly but can also reduce condensation in the greenhouse. Consider installing a horizontal airflow (HAF) system in your transplant production area.

I've heard growers ask if allowing the greenhouse to 'freeze' for several days in cold weather means that insect pests will be killed; and the answer is no. Heat can be more effective than freezing for pest destruction. For example, heat has been shown to be more effective for the control of thrips, according to Leanne Pundt of the University of Connecticut. In one study, high temperature (104°F) combined with very low humidity (less than 10%) for three to four days killed most adult thrips. However, your greenhouse must be completely weed-free for this method to work. If you have constant thrips problems, this control method might be something to try this summer.

Finally, always use disease-free media for transplant production. If using soil, be sure it is pasteurized before you bring it into the growing area. Successful soil pasteurization requires 30 minutes at 180°F. Be sure to frequently sanitize and maintain clean areas where soil is mixed and pots are filled.

If you are producing both vegetable transplants and ornamentals, I strongly recommend that you have separate growing areas for each group of plants. Bringing cuttings of flowering plants into the vegetable area can introduce pests, such as thrips, and diseases, such as tobacco spotted wilt virus (TSWV). Look at your available space(s) and plan accordingly.

Take some time to prepare your vegetable transplant

greenhouse now to reduce disease and insect problems later this season. Waiting until seeding time to start this chore may not leave enough time to do the job thoroughly. This could result in a great deal of time and money spent later to control a disease or insect infestation that could have been prevented.

*Dr. Elkner is with Penn State Extension. From the **Vegetable, Small Fruit and Mushroom Production News**, Penn State Extension, <http://extension.psu.edu/plants/vegetable-fruit/news/2014>, January 6, 2014.*

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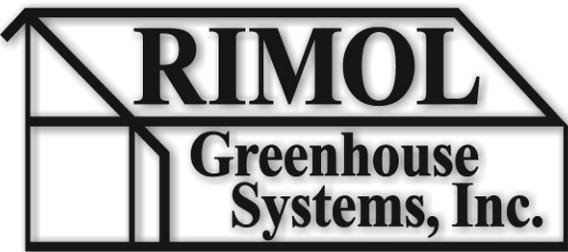
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