

## PVGA Directors Meet with Legislators



*PVGA members meeting state legislators on March 16 in the Capitol (left to right): Jon Strite, Dave Miller, Ken Martin, Bill Reynolds, John Shenk, Randy Triechler, Art King, Bill Troxell, Tom Strzelecki and Rob Amsterdam. Also present but not pictured was Boots Hetherington.*

Members of the PVGA Board of Directors (and two former Directors) met with several state legislators during their annual Legislative Visitation Day on March 16 at the Capitol Building in Harrisburg. The Directors met with Rep. David Zimmerman, the sponsor of a bill to exempt high tunnel structures from storm water management plan requirements which passed the House of Representatives later that day. They also met with several urban members of the House Agricultural and Rural Affairs Committee including Rep. Pam DeLissio, Rep. Jordan Harris, and Rep. Margo Davidison as well as Rep. Sid Kavulich from Lackawanna Co. The group also met with the staff of Sen. Jay Costa, the Senate Minority Leader from Allegheny County. Joel Rotz, director of state government affairs for the Pennsylvania Farm Bureau, scheduled the appointments and accompanied the group on the visits.

The main focus of the group's visits was urging the legislators to support the appropriation for Penn State agriculture extension and research. Later that day the General Assembly also passed the budget bills that became effective without the Governor's signature putting an end to the nearly nine-month state budget impasse.

While the Association's visits cannot claim credit for the passage of either of these issues, the legislators visited in these annual visits have often noted the importance of visits from constituents and people in an industry on formulating their opinions on issues. They usually hear arguments from both sides of an issue so it is important that they clearly hear the agricultural point of view of issues affecting agriculture. The Association purposely tried to meet with urban legislators this year who may not hear as often from those directly involved in agriculture.

After their visits with legislators, the Directors held their spring meeting in the Capitol Building. The Board continued to work on implementing several aspects of the strategic plan developed in the spring of 2014. Robert

Amsterdam discussed the plan for developing additional staff capacity of the Association. He, Kenneth Martin, Arthur King and Executive Secretary William Troxell were appointed to a working group to further develop this plan. Rita Ressick was later added to this group as well. In addition, the Directors gave preliminary approval to working with the Pennsylvania Vegetable Marketing and Research Program to form a joint Marketing Committee and a joint Research Committee. They also agreed to move toward forming a Pennsylvania Vegetable Foundation as a charitable 501(c)3 organization. This would allow growers and industry companies to voluntarily contribute money tax-free to research and marketing.

In other business, the Board took the following actions:

- approved the auditor's report from Mary Ann Lindner which found the financial records for 2014 to be in order;
- renewed the contract with Troxell Administrative Services for administrative services for period of April 1, 2016, to March 31, 2017, for the sum of \$63,000 (an increase of 1.9%) which includes staff time, office space, office equipment and storage space;

*(continued on page 2)*

## NEWS



**Pennsylvania  
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Association**

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commercial vegetable,  
potato and berry growers.*

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## Second 2015 PVGA Scholarship Awarded to Lake Miller

At their December meeting the Board of Directors of the Association voted to begin awarding up to two \$1,000 Rudolph Grob Memorial Scholarships each year, beginning with 2015. The Scholarship Committee awarded this second scholarship to Lake Miller of Stewartstown, a sophomore at Penn State University. The first 2015 scholarship had been awarded earlier in the year to Nathan Sturges of Fombell, a senior at Penn State University.

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

The purpose of the scholarship is to assist children and grandchildren of Association members in obtaining a degree that will enable them to pursue a career in the vegetable, potato or berry production industries.

Lake, the son of Mitchell and Staci Miller, was raised on his family's farm in Stewartstown. His earliest involvement was helping his great-grandfather, grandfather, uncle, father and sister sorting and bagging potatoes together for delivery later to a local supermarket. Several years later, his father started growing vegetables on a piece of the family farm. The produce was marketed at their roadside farm market and naturally Lake was involved in the production and marketing. He also worked full-time at a local vineyard during the summer besides working on this family's farm.

Lake admits that in his younger years he did not particularly enjoy the long hours of field labor. He completed his high school education at the Millbrook School, a boarding high school in New York state, where he served as a Student Dormitory Leader as well as playing on the varsity soccer, baseball and hockey teams and was captain of the baseball and hockey teams. Being away from home during the school year, he found that he missed the farm work back home and looked forward to returning home to the farm and vineyard work each summer.

He currently is a Plant Science major at Penn State. His goal is to eventually own and operate his own large-scale vegetable/fruit farm with an on-farm retail market. PVGA is pleased to present the second 2015 Grob Memorial Scholarship to Lake.

Applications for the 2016 scholarships were due March 31. Applications are reviewed by the Association's Scholarship Committee which determines who receives the scholarships. The current committee members are: Carolyn Beinlich, Keith Eckel, Curtis Kaelin, Michael Orzolek, Hilary Schramm, Jr. and Randy Treichler.



### **PVGA Directors Meet...** (continued from page 1)

- revised the criteria for the Young Grower Award to eliminate the profitability requirement;
- appointed new members of a Finance Task Force;
- reviewed the current financial reports and the attendance and financial reports from the 2016 Mid-Atlantic Fruit and Vegetable Convention; and
- approved providing \$2,600 to cover the expenses of operating the sweet corn insect pest monitoring network.

*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.*

## Budget Battle Over – For Now

Pennsylvania's protracting, partisan and bitter budget battle is over – at least until June 30, the deadline for the 2016-2017 budget. Gov. Tom Wolf allowed House Bill 1801 to become law without his signature. That bill, passed earlier this month by the General Assembly, fully funds Penn State Cooperative Extension, other priority agriculture items, along with schools and social service providers. Gov. Wolf said he could not add his signature to the bill, but would allow it to become law.

Under state law, Pennsylvania governors have 10 days to either sign or veto a bill, or it automatically becomes law. That is the method Gov. Wolf indicated he will follow in this case. Pennsylvania Farm Bureau expressed gratitude and relief that vital programs like Penn State Extension will be saved by resolution of the budget. A previous budget veto eliminated funding

## Make Sure to Participate in Best Management Practices Survey

Farm Bureau is encouraging all farmers in the Chesapeake Bay Watershed to participate in a survey conducted by Penn State that will measure the usage of best management practices. Pennsylvania Farm Bureau has partnered with Penn State and other state agencies in developing the survey and the process for handling of the data collected through the survey. Farmers will be asked to provide information on the types of BMPs used on their farm, such as cover crops or no-till planting.

"We need all farmers in the bay watershed to take part in this survey and provide information on what they are doing to manage the soil and nutrients on their farm," said PFB President Rick Ebert. "The data collected will be used to quantify for federal agencies a more accurate accounting of BMPs used by Pennsylvania farmers."

Penn State has sent out letters encouraging farmers to participate in the survey and directing them to the website <http://src.survey.psu.edu/farmbmp/>. Each letter has a five-digit code that farmers must use to complete the survey. The survey is intended for farmers operating within the Chesapeake Bay Watershed. Farmers who have not yet completed the electronic survey should have received a copy in the mail. Farmers can visit the survey website to request a copy. The survey is open until April 30.

Pennsylvania Farm Bureau believes it is critical for every farmer in the watershed to participate. Our organization contends the federal Environmental Protection Agency has significantly underreported the number of BMPs that farmers are using to reduce the amount of nutrients reaching the Chesapeake Bay Watershed. Penn State will share the aggregated data with state and federal officials to give a more accurate accounting of BMPs within the watershed. The model used by the EPA to develop its bay cleanup plan only accounts for BMPs that were paid for using federal cost-share dollars, ignoring the voluntary practices installed on farms.

The project may require that someone from Penn State meet with a small number of randomly selected group of survey participants to verify that survey data reflects what is happening on the farm. For more information, and to view a video of the survey, [visit www.pfb.com/pennstatesurvey](http://www.pfb.com/pennstatesurvey).

From **Penna. Agricultural Alliance Issues Update**, Penna. Farm Bureau, March 2016.

to Penn State Extension. Officials at the university were prepared to send out layoff notices May 1 to more than 1,000 Extension educators if funding wasn't quickly restored. Pennsylvania Farm Bureau thanks all of our members who contacted legislators and the governor on the need to protect and fund Extension throughout this budget crisis. Thousands sent letters and added their voices to social media. While this ends a budget fight that has lasted since last summer, lawmakers and Gov. Wolf are still facing a June 30 deadline to address next year's budget, and issues like pension and property tax reform remain.

The administration released its \$33.3 billion spending plan for 2016-17 that calls for an increase in spending and addresses the state's long-term structural deficit.

To pay for the new spending and deficit reduction, Gov. Wolf proposed raising personal income taxes to 3.4 percent from the current 3.07 percent and a severance tax on natural gas extraction. The proposed budget does provide adequate funding to programs like the Pennsylvania Department of Agriculture, Penn State Extension and Research and veterinary services.

Gov. Wolf has proposed \$50.9 million for Penn State Extension and Research and \$30.6 million for the general government operations of the Pennsylvania Department of Agriculture.

From **Farm Bureau Express**, Penna. Farm Bureau, March 24, 2016 and **Penna. Agricultural Alliance Issues Update**, Penna. Farm Bureau, March 2016.

## National News Briefs

### Supreme Court WILL NOT Hear EPA Lawsuit Appeal

The United States Supreme Court declined to hear Farm Bureau's appeal of a lawsuit against the Environmental Protection Agency over cleanup of the Chesapeake Bay.

As a result, a lower court ruling which sided with the EPA and its bay cleanup plan will stand. Farm Bureau has exhausted its legal options in this case.

The EPA's plan, which imposes nutrient and sediment reduction requirements specific to agriculture, local communities and other landowners, will force Pennsylvania and other states to meet tight deadlines for reductions. EPA's plan was mandated without serious effort to analyze the costs that local communities or landowners will have to bear or their practical or financial capability to meet EPA's deadlines. By the EPA's own estimation, some 20 percent of all cropland in the watershed will need to sit idle in order to meet nutrient reduction goals.

"The economic viability of farm families could be placed in jeopardy if EPA's plan forces them to stop growing food on 600,000 acres of fertile farmland located in the watershed. The action could also significantly weaken local communities and local food systems," said PFB President Rick Ebert.

Pennsylvania Farm Bureau, the American Farm Bureau Federation, along with other agriculture and home building organizations, sued the EPA over the plan arguing the Clean Water Act places limits on the federal government's ability to dictate how states and local communities will reach nutrient reduction goals. Farm Bureau believes the EPA significantly underestimated the amount of water quality protection measures farmers have placed on their land. EPA officials only looked

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## NEWS

**National News Briefs** *(continued from page 3)*

at projects that were funded in part by government assistance, ignoring the work that farmers performed voluntarily, such as moving to no-till planting and cover crop systems. As a result, models used by the EPA to calculate nutrient loads in the bay paint agriculture in an unfair light.

That's why Farm Bureau is encouraging farmers to take part in a Penn State survey to provide the EPA a more comprehensive proof of the number of best management practices used on farms. This is the first serious effort to capture and produce data on farm conservation practices, including practices for which farmers receive no public financing, in evaluating the Pennsylvania's environmental progress in the Bay Watershed. PFB is hopeful the data can be used to give farmers the credit they deserve for adopting BMPs.

"EPA's Chesapeake Bay Watershed Model has been flawed since day one," Ebert said. "That flawed model means the EPA has incorrectly concluded that Pennsylvania farms are responsible for more nutrient runoff than what actually enters local creeks and streams."

For more information, and to view a video of the survey, visit [www.pfb.com/pfb-media/pennstatesurvey](http://www.pfb.com/pfb-media/pennstatesurvey).

*From Penna. Agricultural Alliance Issues Update, Penna. Farm Bureau, March 2016.*

**Senators Fail To Adopt GMO Labeling Bill**

The U.S. Senate failed to pass a biotechnology bill that would have established national standards for food derived from genetically modified organisms. In a procedural move, the Senate failed 48-49 to end debate on the bill and move it forward for a final vote. Both sides are continuing negotiations on the measure, but debate on the issue centers on whether it will call for voluntary, or mandatory, labeling. Sen. Pat Toomey voted in support of the bill. Sen. Bob Casey voted against Farm Bureau on the bill. Senate Agriculture Chairman Pat Roberts, a Kansas Republican, introduced a bill that would have prevented a patchwork of state laws, and as a result save consumers' money. "We remain hopeful they will have a chance at redemption by correcting this situation that will otherwise lead to increased food costs for consumers and stifle agricultural innovation, which remains a strength of our nation," said AFBF President Zippy Duvall. "We must not let anyone forget that rural America and our farmers and ranchers do matter." Without a federal standard for labeling products containing ingredients derived from GMOs, state laws like one in Vermont-set to take effect in July-will lead to a patchwork of state laws. A recent study suggests that mandatory labeling would cost the average family an additional \$1,100 a year in increased food costs.

*From Farm Bureau Express, Penna. Farm Bureau, March 24, 2016.*

**USDA Offers Farm Ownership Microloans**

The U.S. Department of Agriculture (USDA) will begin offering farm ownership microloans, creating a new financing avenue for farmers to buy and improve property. These microloans will be especially helpful to beginning or underserved farmers, U.S. veterans looking for a career in farming, and those who have small and mid-sized farming operations. Agriculture Deputy Secretary Krysta Harden announced a new financing avenue for farmers to buy and improve property.

"Many producers, especially new and underserved farmers, tell us that access to land is one of the biggest challenges they face in establishing and growing their own farming opera-

tion," said Harden. "USDA is making it easier for new farmers to hit the ground running and get access to the land that they need to establish their farms or improve their property."

The microloan program, which celebrates its third anniversary this week, has been hugely successful, providing more than 16,800 low-interest loans, totaling over \$373 million to producers across the country. Microloans have helped farmers and ranchers with operating costs, such as feed, fertilizer, tools, fencing, equipment, and living expenses since 2013. Seventy percent of loans have gone to new farmers. Now, microloans will be available to also help with farm land and building purchases, and soil and water conservation improvements. FSA designed the expanded program to simplify the application process, expand eligibility requirements and expedite smaller real estate loans to help farmers strengthen their operations. Microloans provide up to \$50,000 to qualified producers, and can be issued to the applicant directly from the USDA Farm Service Agency (FSA).

*From the U.S. Department of Agriculture as reprinted in the Penna. Agricultural Alliance Issues Update, Penna. Farm Bureau, January 2016.*

**Congress Approves Tax and Funding Provisions That Benefit Agriculture**

Congress approved a bill containing tax provisions that will help farmers better manage their expenses and cash flow. And in a separate move, federal lawmakers approved a new budget that contains key spending provisions beneficial to agriculture.

The tax bill approved by Congress makes permanent Section 179 small business expensing and sets the deduction limit at \$500,000. That provision allows small businesses to deduct equipment expenses, and many farmers have utilized the provision to help even out their year-to-year income and expenses. The bill also extends bonus depreciation for another five years. Bonus depreciation allows businesses to depreciate 50 percent of equipment purchased and used in 2015, 2016 and 2017. The amount of depreciation will be reduced in 2018 and 2019.

"These tax provisions will help farmers free up needed cash flow, so they can reinvest in their business and make improvements that reduce costs and increase efficiency," said Pennsylvania Farm Bureau President Rick Ebert.

The spending bill approved by Congress funds a number of areas critical to American agriculture. At the same time, it also makes the Country of Origin Labeling law voluntary for beef, chicken and pork. Canada and Mexico were threatening to place retaliatory tariffs on U.S. imports if the COOL requirements would have continued.

*From the Penna. Agricultural Alliance Issues Update, Penna. Farm Bureau, January 2016.*

**Congress Approves Transportation Bill**

Congress approved a long-term transportation bill that will provide state and local governments certainty for infrastructure improvements. The bill also gives states flexibility to provide exemptions to farm vehicles and drivers traveling intrastate without jeopardizing federal funding. Pennsylvania Farm Bureau worked closely with members of Congress to ensure that states had the ability to provide exemptions to farm vehicles.

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## NEWS

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The bill provides specific clarification for the Federal Motor Carrier Safety Administration that federal highway funds cannot be withheld if states adopt different standards, or provide exemptions, when dealing with farm vehicles.

Last year, Farm Bureau tried working with members of the Pennsylvania General Assembly to provide common sense exemptions for farm vehicles, such as the requirement that all loads must be secured—essentially requiring tarps. That provision would require farmers to place a cover over every load of harvested crops, even when simply moving material between the field and farm. State officials were concerned they would risk losing federal highway money if they provided exemptions to requiring covered loads. Along with providing states flexibility in providing agriculture exemptions, the highway bill will also call for a significant investment in the nation's highway infrastructure. The five-year bill does not call for any tax increases.

The bill's highlights include:

- Expanded funding for bridges off the National Highway System.
- Streamlines review and permitting process for project approval.
- Consolidates offices within the federal Department of Transportation.
- Promotes new technology for congestion management.

*From the Penna. Agricultural Alliance Issues Update, Penna. Farm Bureau, January 2016.*

**Farmers Can Work Toward Boosting Consumer Confidence**

It's no question that advances in agriculture technology have led to America producing the world's best food system. But those advances have caused a growing gap with consumers' understanding of current agriculture practices. Coupled with a public that is growing more skeptical creates a recipe for consumer confusion over food production.

That is all the more reason for farmers to make steps to tell their story and embrace transparency, said Center for Food Integrity's Charlie Arnot, who spoke to farmers during a workshop at the American Farm Bureau Federation's 97th Annual Convention and IDEAg Trade Show.

"As we've changed in size and scale and in the kind of production techniques and technology we use, we now reflect a different type of agriculture than many people anticipated," Arnot said. "We consistently hear from people that they trust farmers but they don't trust farming."

Agriculture often relies on science and data to underscore its production techniques, Arnot said. But that type of answer does not resonate with consumers who want to know the men and women behind agriculture and if they share the same values, he said. Arnot suggests that farmers try to showcase the values they share with consumers—such as caring for families and their communities. Farmers can explain that current regulations allow them to follow certain practices but in communicating to consumers, farmers need to explain why they follow those practices.

"We are good at answering the can question, but we need to get better at answering the should question," Arnot said. "If we answer from data, we do little to change feelings and beliefs."

Farmers can take a number of steps to help consumers better understand agriculture and the work they do. But Arnot

encourages farmers to keep a few things in mind as they venture into communicating with consumers. Farmers need to understand that telling their story, and being transparent, is as important as what you know. Transparency is now part of the job description for farmers. It is up to the men and women of agriculture to illustrate their commitment to doing the right things in producing food. Changing consumer perception about agriculture will be hard work, and the solution may not come quickly, Arnot said.

"One of the great things about farmers is your commitment to solving problems," he said. "This is not a problem that is going to be solved in the next cycle of production. This is a generational problem. We need a long-term vision to build trust."

*From Penna. Agricultural Alliance Issues Update, Penna. Farm Bureau, March 2016.*

**Robots to Transform Agriculture**

Robots are making inroads into the day to day management of agricultural operations in the United States by improving efficiencies through precision spraying, planting and harvesting operations and helping to overcome labor shortages in the industry. Exceptional growth in agricultural robotics, which includes unmanned aerial vehicles, is expected to reach over \$16 billion by the year 2020. Eighty percent of the commercial market for unmanned aerial vehicles are expected to be used in the agricultural industry. The implementation of thermal imaging cameras onboard unmanned aircraft may help agricultural producers identify healthy and distressed crops, locate where water or pesticides need to be applied and help determine to the optimum time to harvest. Automated field operations may reduce the need for actual operators reducing dependence on labor resources.

*From Penna. Agricultural Alliance Issues Update, Penna. Farm Bureau, March 2016.*

**Trans-Pacific Partnership Will Benefit American Agriculture**

Reaching agreement on the Trans-Pacific Partnership will open new trade export opportunities and bring an additional income boost for American agriculture. According to an economic analysis by the American Farm Bureau Federation, ratification of the partnership would provide a \$4.4 billion boost in net farm income. The partnership impacts trade between 12 Pacific Rim nations.

"TPP will mean a boat-load of expanded exports and increased demand for America's agricultural products," AFBF President Zippy Duvall said. "Clearly, America's farmers and ranchers have much to gain from approval of TPP and we support its ratification. American agriculture is a growth industry, and to continue that trend, we must expand our market opportunities."

Farm Bureau is encouraging Congress to take swift action on the agreement. A delay in ratification means that American agriculture is losing out on potential deals. According to the analysis by AFBF, the Trans-Pacific Partnership would result in a 5 cents per bushel increase in corn, 12 cents per bushel increase in soybeans and 2 cents per bushel increase in wheat. AFBF also expects a \$2.66 increase per hundredweight for beef, \$2.45 per hundredweight for pork and \$1.40 per hundredweight increase for poultry. Dairy products like butter, cheese and powder would see similar increases.

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## NEWS

## State News Briefs

### New President Appointed At DelVal

Dr. Maria Gallo was hired as president of Delaware Valley University in Bucks County.

She's the 13th president in the university's history and the first woman to lead the institution. Gallo currently serves as the dean of the College of Tropical Agriculture and Human Resources at the University of Hawaii.

"Throughout the search process, we were struck by the overwhelmingly positive feedback we received about Dr. Gallo and the extent to which her experience and qualities matched what we were looking for in the next president," said Susan B. Ward, chair of the university's board of trustees.

Gallo has spent her higher education career focused on agriculture. She has taught and researched at the University of Florida and the University of Minnesota. She received her bachelor's degree in agronomy from Cornell University and her masters of crop science and Ph.D. in genetics from North Carolina State University.

"I am honored to have the opportunity to lead an incredibly dynamic institution with a rich history of interdisciplinary education," Gallo said. "It was clear from the beginning that DelVal is a special university, where traditions of the founder are still in place."

Gallo succeeds Dr. Joseph Brosnan, who is retiring. She begins her tenure at DelVal July 1.

*From Penna. Agricultural Alliance Issues Update, Penna. Farm Bureau, March 2016.*

### Task Force Outlines Recommendations for Pipelines

A task force completed a list of recommendations for state government officials to consider as Pennsylvania faces a growing interest in natural gas pipeline development.

The Pipeline Infrastructure Task Force outlined six categories of recommendations on how Pennsylvania can meet the challenges of increased pressure for pipeline infrastructure.

While drilling for natural gas, particularly in the Marcellus Shale formation, has become common in Pennsylvania, that activity has outpaced the development of pipeline infrastructure. Nearly 1/3 of all the wells drilled in Pennsylvania since 2004 are not connect to pipelines that can reach end users, the task force found. As a result, Pennsylvania can expect to see a significant amount of activity related to pipeline construction—a move that will impact every county in the state, the task force noted.

The Pipeline Infrastructure Task Force—which included several Pennsylvania Farm Bureau members— identified areas of recommendations related to agriculture.

*Those recommendations include:*

Development of factual and impartial education materials on pipeline construction and landowner rights. The task force recommended that state agencies such as the Department of Environmental Protection and Department of Agriculture could develop and disseminate these resources, including online. The task force also suggested agriculture organizations partner with state agencies and conservation districts on educational sessions.

Develop a geographic information system database for all Pennsylvania farms. That system could help identify potential impacts that pipelines would have on farms, but it could also help with efforts like farmland preservation and conservation measures.

In addition, the task force focused on the issue of topsoil disturbance during and after pipeline installation. They devel-

oped a series of best management practices that pipeline companies and their subcontractors should follow.

*Those recommendations include:*

Pipeline companies will reimburse landowners for all damages that occur through negligence, or misconduct, to include livestock, surface water and ground water.

Companies will bury the pipeline at a minimum of 48 inches from the top of the pipeline to the soil so that the pipeline will not interfere with crop cultivation.

Companies will pay for physical damage to fences, growing crops and timber.

Pipeline companies must give a minimum of 30 days written notice prior to the start of construction on a landowner's property.

*From Penna. Agricultural Alliance Issues Update, Penna. Farm Bureau, March 2016.*

### PA Supreme Court Decision Ensures Uniformity of Right to Farm' Law Protections

A decision issued in December by the Pennsylvania Supreme Court will foster uniform application of the Right to Farm Law's protections from nuisance suits. The Supreme Court reversed the decision of a lower appeals court, which previously held that juries must be involved in determining what are "normal agricultural practices" when determining the scope of protection from lawsuits provided under the law.

"The Supreme Court appreciated the need for consistent and uniform application of the Right to Farm Law's protection

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NEWS

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from nuisance actions, and the jeopardy that the lower court's ruling placed on that uniformity," said John Bell, PFB's Government Affairs Counsel. "Decisions on whether a farm activity is protected in the law as 'normal' or not protected could have been different from county to county." The Supreme Court ruled that in applying the law's protection from nuisance suits, courts, not juries, are solely responsible for determining whether a farm activity is part of "normal agricultural operation."

Questions over the state's Right to Farm Law came to light in a lawsuit filed by neighbors against York County Farm over the use of biosolids. The lawsuit was filed more than a year after the farm first began to use biosolids. The trial court dismissed the lawsuit, applying the Law's provision to protect farms from nuisance actions after a "substantial change" on the farm has been put in place for at least a year. However, on appeal, Superior Court ruled that the trial court should not have decided on its own the farm was engaged in "normal agricultural operation" when using biosolids and the issue of whether such use was "normal" was one of "fact" for a jury to determine.

Pennsylvania Farm Bureau filed a "friend of the court" brief to the Supreme Court in support of reversing the Superior Court's ruling.

*From the Penna. Agricultural Alliance Issues Update, Penna. Farm Bureau, January 2016.*

**FACE Conference Returns With New Location**

Pennsylvania Farm Bureau will once again host its popular youth conference this summer—at a new location. The sixth annual FACE Conference is planned for June 20-24 at Lock

Haven University. The event is designed for high school students who want to learn more about agriculture, civic engagement and the legislative process. Students can experience how legislatures function and the importance of being involved in the legislative process. At the same time, students will participate in collaborate workshops, listen to dynamic presentations and other fun activities. County Farm Bureaus have agreed to sponsor students in their community so participation for teens is free. However, a \$50 deposit for each participate is required and will be fully refunded after the completion of the FACE Conference. To learn more about the FACE Conference and to download a registration form visit [www.pfb.com/youthconference](http://www.pfb.com/youthconference). The deadline for registration is May 2. Contact Laura Brenner, PFB's committee director, at 717.761.2740 for more information.

*From Penna. Agricultural Alliance Issues Update, Penna. Farm Bureau, March 2016.*



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## NEWS

## USDA Expands Insurance Options for Farmers Transitioning to Organic

Agriculture Secretary Tom Vilsack announced a new step to support farmers transitioning to certified organic production, by expanding a crop insurance option to allow producers to purchase insurance coverage that better reflects their product's actual value. The expanded coverage is part of the U.S. Department of Agriculture's (USDA) continued commitment to provide farmers with resources and tools to meet the growing demand for certified organic products. The Secretary made the announcement at the White House during remarks to participants at the USDA Market Summit.

"Consumer demand for organic products continues to increase and the industry has experienced remarkable growth, representing more than \$39 billion in U.S. retail sales," said Vilsack. "This growth creates opportunities for farmers and businesses across the country. Expanding the safety net for farmers wanting to enter the organic market ensures they have the tools and resources they need to meet this growing demand while protecting their operation."

The organic sector is growing, and certified organic products often return higher profits for farmers. It can take producers three years, however, to transition from conventional to certified organic production. Previously, producers of transitional crops were only able to insure them at the same price as a conventional producer. But today's announcement enables producers to insure transitional crops to their contract price (within approved limits).

Producers transitioning to certified organic production can now use the Contract Price Addendum to cover their crops at a higher price than traditional crops. The Contract Price Addendum allows farmers transitioning to organic production to insure certain crops at their contract price rather than the published U.S. Department of Agriculture (USDA) Risk Management Agency (RMA) price election.

RMA has also expanded organic premium price elections to 57 crops, up from four in 2011, providing organic producers the option to protect their 2016 crops closer to the market value. Barley, rice and wheat are among the crops for which organic price elections have been added. New additions for 2017 will include grapefruit, lemons and oranges.

For example, under the Contract Price Addendum, a producer in Nebraska can use a contract price for millet up to a maximum of \$7.34 per bushel (for transitional) or \$8.44 (for certified organic production), as opposed to using the existing RMA price elections of \$3.67 (for transitional) or \$4.22 (for certified organic production). A Contract Price Addendum fact sheet is available online at <http://go.usa.gov/cyFGR>.

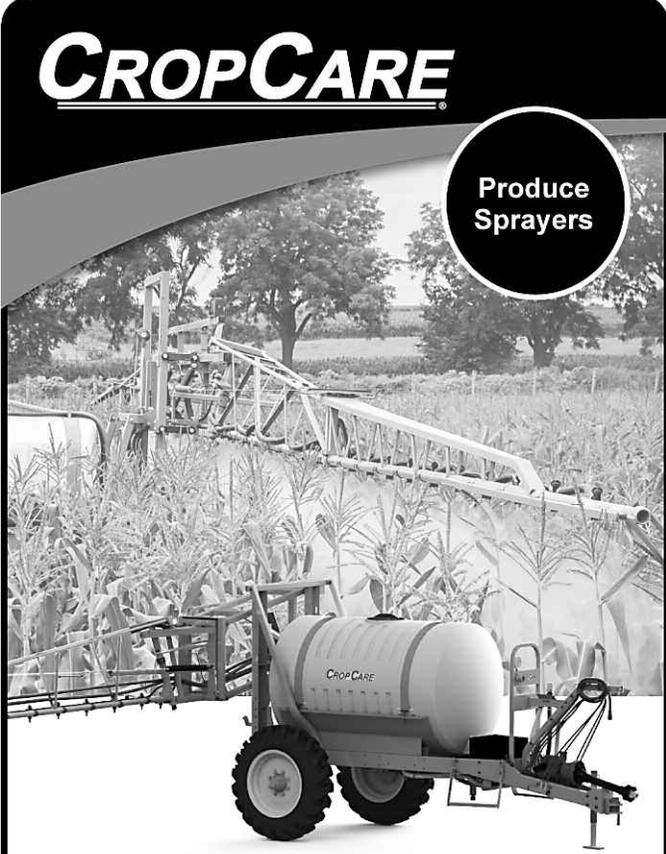
Since 2009, USDA has strengthened programs that support organic producers as they grow, thrive and respond to increasing consumer demand for organic products. Last year, USDA reported that U.S. certified and exempt organic farms sold a total of \$5.5 billion in organic products in 2014, up 72 percent since 2008. The U.S. retail market for organic products is valued at more than \$39 billion, and in 2014 there were 19,474 certified USDA organic operations in the United States, representing nearly a 250 percent increase since 2002. Worldwide, in 2014 there were nearly 28,000 certified organic operations in more than 120 different countries. More information about USDA's support under this Administration for organic producers and businesses can be found at [www.usda.gov/results](http://www.usda.gov/results).

Crop insurance is sold and delivered solely through private crop insurance agents. Contact a local crop insurance agent for more information about the program. A list of crop insurance agents is available at all USDA Service Centers or online at [www.rma.usda.gov/tools/agent.html](http://www.rma.usda.gov/tools/agent.html).

The sales closing date is the last day to buy a new policy or change an existing policy's coverage level. Producers can find sales closing dates for the crops in their states by referring to RMA's regional office state directory. Current policyholders also have until the sales closing date to make any changes to their existing contracts.

A list of commodities eligible for the Contract Price addendum is available online at [www.rma.usda.gov/news/currentissues/organics/cpa\\_eligibility.html](http://www.rma.usda.gov/news/currentissues/organics/cpa_eligibility.html).

More information on risk management tools available for organic farmers can be found on the RMA organic crops website. Visit [www.usda.gov/organic](http://www.usda.gov/organic) to learn more about USDA's resources for organic agriculture.



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## Introduction to Organic Vegetable Production Series to Begin in April 2016

The Seed Farm in Emmaus is offering a series of training sessions for people planning to make the leap from vegetable gardening to production for profit.

Are you thinking about starting a small fresh market vegetable farm this year? Maybe you already grow and sell some vegetables, and you would like to learn new production practices. Would you like to meet other new farmers and learn about their production and marketing ideas?

These classes are for beginning organic vegetable producers who are ready to refine their techniques in order to optimize their production and profit. The course will introduce aspiring and new vegetable producers to diverse production strategies and will provide a framework for effective farm production planning.

Advanced registration is required at least two days before each class. You can sign up for one class or all eight sessions. The cost is \$20 per session or \$150 for all 8 classes. Sessions will be held on Tuesday evenings, April 12, 19, 26, May 3 and 10, and August 9, 16 and 23, 2016. All classes meet from 5:00-8:00 pm.

Sessions include:

- Presentations by Penn State Extension Educators, Seed Farm staff, and experienced farmers.
- Interactive discussions.
- Hands-on learning activities both in the classroom and in the field.

- Hands-on experience trying new techniques and tools appropriate for both small and large farms.
- A detailed course reader containing production information for each topic is included with full, 8-session registration. The course schedule is as follows:

- April 12 Introduction to Soils
- April 19 Tractor Safety
- April 26 Basic Cover Crops, Advanced Soils & Organic Nutrient Management
- May 3 Organic Certification/ IPM/ Introduction to Plant Disease
- May 10 Introduction to Insects/ Early Season Pests and Disease Walk
- Aug 9 Weed Management
- Aug 16 Vegetable Rotation Planning
- Aug 23 Pest and Disease Walk

Classes will be held at the Lehigh County Ag Center (4184 Dorney Park Road in Allentown) and The Seed Farm (5854 Vera Cruz Road in Emmaus). To register, go to <http://www.the-seedfarm.org/showcase/workshops-introduction-to-organic-vegetable-production> or call 610-394-9583 ext. 16.

*Ms. Swackhamer is with Penn State Extension in Lehigh Co. From the **Vegetable, Small Fruit and Mushroom Production News**, Penn State Extension, [extension.psu.edu/vegetable-fruit/news](http://extension.psu.edu/vegetable-fruit/news), March 24, 2016.*

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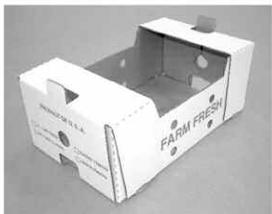
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## GENERAL

## Former Anti-GMO Activist Urges Farmers to Be Part of the Conversation

Darrin Youker

Mark Lynas took a lot of heat on social media when he changed his stance on the use of genetically modified organisms in today's agriculture. Lynas, who was a vocal anti-GMO advocate, announced his change of heart in a public speech in 2013 when he admitted that his stance on biotechnology was not based on scientific scrutiny. He's now grown into a staunch supporter of GMOs as a way to protect the environment and improve the lives of those living in the developing world. But changing the public stance on the use of GMOs will take the voices of farmers and others sharing their stories, said Lynas, an environmental activist who spoke at 97th American Farm Bureau Federation Annual Convention and IDEAg Trade Show. Lynas now works for the Cornell Alliance of Science.

"People need a believable source of information, and it is not going to be a corporate public relations office," he said of changing consumer opinions on GMOs. "I think farmers themselves are believable and credible. Farmers have a real important voice and you can use social media to shed light on this issue."

Lynas believes that one way to change public opinion on GMO technology is by food labeling. In addition, Lynas said he would draw a high bar for what is considered GMO technology to show the public that these products have been used for the better part of two decades with no negative impact on public health.

"You can dispel fear by transparency. If you give people the feeling that they have a choice, they feel it is no longer scary," he said. "The only way to solve this is to get everything labeled. The more transparent you are, the more comfortable people will feel."

Farm Bureau supports voluntary labeling based on national standards set by the federal Food and Drug Administration and the U.S. Department of Agriculture, similar to the national organic labeling standards. Farm Bureau wants to avoid a patchwork of state laws.

Lynas spent most of the late 1990s and early 2000s as a staunch anti-GMO activist. He led efforts to destroy crops standing in fields. But after studying the issue of climate change—

where the science points to a climate shift—Lynas said he could not put the issue of GMOs to the same level of rigor.

"I realized I was not holding myself to the same standard on GMOs as I was about climate change," he said.

Lynas believes the environmental movement is fundamentally wrong on the issues of biotechnology in foods and is holding back the developing world. For instance, scientists have developed a strain of rice—called Golden Rice—that contains vitamin A, which is often deficient in the diets of Third World residents. However, environmentalists are trying to prevent the widespread adoption of Golden Rice because it was derived from GMO technology.

"Even when a crop could save thousands of children's lives it still gets attacked and destroyed because it contains GMO ingredients," he said.

Lynas believes there is an ongoing public shift to better understand the role that GMOs play in feeding a growing plant. And while science can explain the safety of GMOs, farmers need to embrace their role as advocates for the technology and the steps they are taking to protect the Earth. *To view a video about Lynas speaking at AFBF visit: [www.pfb.com/video](http://www.pfb.com/video).*

*Mr. Youker is with Penna. Farm Bureau. From the Penna. Agricultural Alliance Issues Update, Penna. Farm Bureau, February 2016.*

### National News Briefs (continued from page 6)

The agreement has been approved by negotiators from 12 Pacific Rim countries. The U.S. International Trade Commission is reviewing the agreement and would then ask Congress to ratify the deal.

The agreement has been approved by negotiators from the 12 TPP nations. The U.S. International Trade Commission is preparing an official analysis for the administration, which will formally ask Congress to ratify the deal.

*From Penna. Agricultural Alliance Issues Update, Penna. Farm Bureau, March 2016.*



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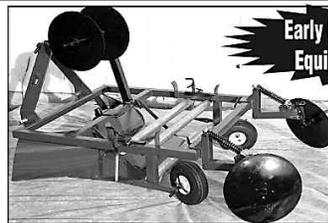
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# Agricultural Commodities Marketing Act (ACMA) Boards

Established more than 50 years ago, the Agricultural Commodities Marketing Act (ACMA) provides the opportunity for growers and producers to invest back into the industry to further improve the quality of Pennsylvania agriculture. The Agricultural Commodity Marketing Boards include: wine, apple, peach and nectarine, vegetable, and potato programs. It is through the timely payments of assessments from growers and producers that allow the boards to invest the funds back into their specific commodity to market our state's top quality products.

Comprised of twelve growers and producers from across the commonwealth, the Pennsylvania Vegetable Marketing and Research Program is fully funded through annual assessments paid by the industry's growers and producers. The rate of assessment is the lesser of the following: A flat fee of \$25.00 plus \$1.50 for each acre of field vegetable production and each 1,000 square feet of greenhouse vegetable production beyond the initial five of these acreage and/or square footage units or an amount equal to 1.25% (.0125) of gross sales of vegetables during a particular marketing season, but no less than \$25. Assessments are due no later than January 31 immediately following the applicable marketing season. Your assessment payment checks can be mailed to The Pennsylvania Vegetable Marketing and Research Program, 2301 North Cameron Street, Harrisburg, PA 17110.

Ranking fourth nationally in apple production, Pennsylvania's apple industry plays a critical role throughout the entire agriculture industry. It is through the work of the Pennsylvania Apple Marketing Program, which is funded and governed by growers from across the state, to promote and market Pennsylvania's apples and apple products. With the growers' small, timely payment of their assessment, the program is able to better serve the growers through this year's marketing and promotional plans. The rate of assessment is fifteen

cents (\$0.15) per bushel of apples sold for the fresh market use and eight cents (\$0.08) per hundred pounds of apples sold or accepted for processing. Assessments are due on a quarterly basis. Your assessment payment checks can be mailed to The Pennsylvania Apple Marketing Program, 2301 North Cameron Street, Harrisburg, PA 17110.

With at least one winery within an hour's drive no matter where you are in the state, Pennsylvania's wine industry continues to expand and advance. It is through the work of the Pennsylvania Wine Marketing and Research Program, in partnership with Pennsylvania Wines and the Department of Agriculture that the state's wines and wineries continue to increase in quality, profitability, and consumer awareness. From the wine assessment rate of twenty cents (\$0.20) per gallon of wine, the program is able to continue to fund research projects and its marketing efforts. Assessments are due February 1 of the year immediately following the marketing season. For questions, please email [RA-PAwines@pa.gov](mailto:RA-PAwines@pa.gov). To input your gallons, please visit <http://www.pda.state.pa.us/PACommodities/> and mail your payments to The Pennsylvania Wine Marketing and Research Program, 2301 North Cameron Street, Harrisburg, PA 17110.

As one of the leading states in potato chip production, Pennsylvania has a rich history of growing high quality potatoes. Through assessment-funded research projects and grower marketing efforts, the Pennsylvania Potato Research Program is committed to developing research-based information to help support the production of potatoes in Pennsylvania. Currently, the assessment rate for potato growers is five dollars (\$5.00) per acre which is due no later than July 31 of the calendar year in which the potatoes were planted. Your assessment payment checks can be mailed to The Pennsylvania Potato

*(continued on page 14)*

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## GENERAL

## Farm Succession Requires Smart Planning

Darrin Youker

Farms surviving from one generation to the next do not happen by accident. Instead, that success comes from a family having a clear goal for the future, and a well-thought-out estate plan. That was the message of Doug Claussen, a certified public accountant at KCOE ISOM, who spoke on estate planning and growth strategies for farmers at The American Farm Bureau Federation's 2016 Annual Convention and IDEAg Trade Show.

Claussen encouraged farmers to start planning now for future growth and to develop a clear and concise strategy for having the next generation take over the operation. Of all family-owned businesses only 30 percent reach the next generation, and much of that failure can be traced to a lack of communication among family members and no concrete plan.

"A lot of farmers want to build a legacy for their family," Claussen said. "Farms that have been around for 100 years didn't just happen by accident. There were plans."

Estate and succession plans are personal to each farm family and their given circumstances, Claussen said. Are there children who want to take over the farm, and siblings who are not involved in the operation? Does a parent still want to be involved in the farm and have day-to-day responsibilities? All of these factors have to be worked out as part of an estate and succession plan to avoid conflict and complications down the road.

"Estate planning means deciding on what you want to do with your assets in life and death. You want to minimize taxes and avoid those family disputes," Claussen said. "If the first time the kids hear about mom and dad's estate plans is at the reading of the will, there will be conflict."

Claussen recommends that families consider legal structures like trusts in order to manage estates and help bring the next generation into the fold. One structure farmers have utilized is an Intentionally Defective Irrevocable Trust, which allows a parent to move assets from their estate, but still remain legally part of the operation. Under that structure, a farmer can still receive a cash flow from the business, Claussen said.

On the income tax side, Claussen encouraged farmers to consider a number of strategies to even out their income and taxation from year to year. But again, doing so requires a strategy. Farmers can utilize deferred payment contracts and pre-paid expenses to help manage their income tax obligations.

### Agricultural Commodities...

(continued from page 13)

Research Program, 2301 North Cameron Street, Harrisburg, PA 17110.

The Pennsylvania Peach and Nectarine Research Program strives to research new methods of producing peach and nectarines. With their funding from Pennsylvania peach and nectarine growers they are able to administer and enforce authorized programs and activities of research. The assessment rate is eight dollars (\$8.00) per acre which is due October 1 of each year. Your assessment payment checks can be mailed to The Pennsylvania Peach and Nectarine Research Program, 2301 North Cameron Street, Harrisburg, PA 17110.

The assessment funds are incredibly vital to the success of these boards and their undertakings. Please be sure to pay yours on time if you are a part of these organizations. General questions can be answered by emailing [ra-markets@pa.gov](mailto:ra-markets@pa.gov) or by calling 717-771-1429.

Wages to children and donations of commodities can also reduce tax liability, Claussen said. The future success of a farm is due in large part to smart planning and long-term strategy, Claussen said. And to make a smart transition from one generation to the next, farmers have to utilize the expertise of lenders, accountants and attorneys to make it successful.

"Don't do it alone. This is not mom and dad sitting at the kitchen table," Claussen said. "This is strategic and requires having stakeholders as part of the process."

*Mr. Youker is with Penna. Farm Bureau. From the Penna. Agricultural Alliance Issues Update, Penna. Farm Bureau, January 2016.*

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## What Did the Pennsylvania Vegetable Industry Look Like in the 1940s and 1950s

Michael Orzolek

The most extensively grown vegetable crops in Pennsylvania in 1959 were: asparagus, beets, snap beans, lima beans, broccoli, cabbage, cauliflower, celery, cucumbers, lettuce, muskmelons, peas, spinach, squash (both summer and winter), sweet corn, sweet peppers, tomatoes, sweet potatoes, and Irish potatoes. Many of the crops above were grown for both processing and fresh market.

In 1920, Pennsylvania ranked third in greenhouse receipts nationally. By 1959, the Pennsylvania vegetable greenhouse acreage dropped to seventh in greenhouse receipts across the United States.

Approximately 8,200 Pennsylvania farms produced vegetables for fresh market and processing on about 72,600 acres according to the 1959 Census of Agriculture. The value of the production was about \$12,500,000 or \$1,529 per farm and only \$173 per acre harvested. In addition, there were 37,700 acres of potatoes grown in the state. The acreage of vegetable production for sale in 1944 was 154,800 acres on 28,800 farms. The value of production in 1944 was \$18,900,000 averaging about \$655 per farm and only \$121 per acre. Potato acreage in 1944 was another 151,600 acres. The average acreage for vegetable production per farm (excluding potato acreage) in 1944 was 5.4 acres and in 1959 was 8.9 acres. The county with the largest acreage of vegetable production was Bucks and the county with the smallest acreage was Centre County.

Pennsylvania soils are extremely variable and in 1959, 400 soil series had been identified within the state. Each of these soil series can have between 3 and 6 types which again can be differentiated into 10 different phases. In other words, it is impossible to make any outright statements that in a specific county all the soil is one series and therefore, the county is well suited for vegetable production. A vegetable grower in 1959 could hardly afford the cost of hand weeding vegetable crops and mechanical cultivation or chemical applications were essential. With many vegetable crops such as carrots, beets, onions, etc. adequate weeding with the cultivator was impossible. With crops such as sweet corn, where mechanical cultivation did an adequate job, costs could be reduced by using herbicides. With the cost of labor rising in 1959, mechanization of vegetable production was essential. Not only the cost of labor but also availability of trained personnel was a problem in 1959.

The total number of acres of the major crops grown in 1959 in Pennsylvania were; green peas – 4,800, asparagus – 950, beets – 550, broccoli – 860, cabbage – 4,600, cauliflower – 327, carrots – 600, celery – 220, cucumber – 5,650, lettuce – 350, lima beans – 1,800 and spinach – 1,100, tomatoes (both FM + P) – 13,700, snap beans – 10,500 and sweet corn – 24,800.

*Dr. Orzolek is Professor Emeritus of Vegetable Crops at Penn State Univ. This information was taken from the Agricultural Adjustment Conference held in 1961 at Penn State Univ. written by Dr. Ernest Bergman.*

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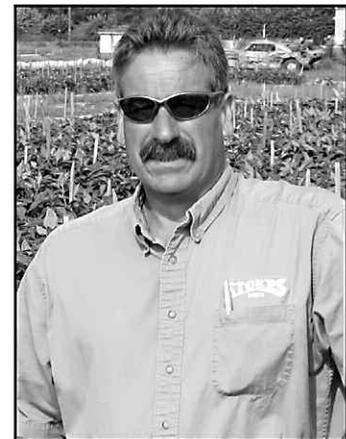
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NEWS

# USDA Expands Microloans to Help Farmers Purchase Farmland and Improve Property

On January 19, 2016 Agriculture Deputy Secretary Krysta Harden announced that the U.S. Department of Agriculture (USDA) will begin offering farm ownership microloans, creating a new financing avenue for farmers to buy and improve property. These microloans will be especially helpful to beginning or

underserved farmers, U.S. veterans looking for a career in farming, and those who have small and mid-sized farming operations.

These microloans will be especially helpful to beginning or underserved farmers, U.S. veterans looking for a career in farming, and those who have small and mid-sized farming operations.

“Many producers, **especially new and underserved farmers**, tell us that access to land is one of the biggest challenges they face in establishing and growing their own farming operation,” said Harden. “USDA is making it easier for new farmers to hit the ground running and get access to the land that they need to establish their farms or improve their property.”

The microloan program, which celebrates its third anniversary this week, has been hugely successful, providing more than 16,800 low-interest loans, totaling over \$373 million to producers across the country. Microloans have helped farmers and ranchers with operating costs, such as feed, fertilizer, tools, fencing, equipment, and living expenses since 2013. Seventy percent of loans have gone to new farmers.

Now, microloans will be available to also help with farm land and building purchases, and soil and water conservation improvements. FSA designed the expanded program to simplify the application process, expand eligibility requirements and expedite smaller real estate loans to help farmers strengthen their operations. Microloans provide up to \$50,000 to qualified producers, and can be issued to the applicant directly from the **USDA Farm Service Agency (FSA)**.

This microloan announcement is another USDA resource for America’s farmers and ranchers to utilize, especially as new and beginning farmers and ranchers look for the assistance they need to get started.

Learn more about the FSA microloan program, go to <http://www.fsa.usda.gov/programs-and-services/farm-loan-programs/microloans/index> or visit your local FSA office.

From the **Vegetable, Small Fruit and Mushroom Production News**, Penn State Extension, [extension.psu.edu/vegetable-fruit/news](http://extension.psu.edu/vegetable-fruit/news), January 28, 2016.

MARKETING

## Farmers Can Market Local Products at Turnpike Plaza Markets

Growers have an opportunity to market their fresh, local produce to travelers along the state’s busiest highway by signing up with the Pennsylvania Turnpike Plaza Farmers’ Market program.

The Pennsylvania Department of Agriculture and Pennsylvania Turnpike Commission organize farm markets at the Allentown Service Plaza in Lehigh County, Sideling Hill Service Plaza in Fulton County and New Stanton Service Plaza in Westmoreland County. Markets are open April 1 through November 30.

“Our nation’s first superhighway is a very unique market opportunity for Pennsylvania’s growers, with more than 525,000 drivers on the turnpike every day,” said Agriculture Secretary Russell Redding. “This is a chance to offer them a fresh taste of Pennsylvania agriculture for snacks or even to prepare for dinner, all without having to leave the toll road.”

Markets open rain or shine at 10 a.m. on Saturdays, Mondays and holiday weekends, and at 11 a.m. on Fridays and Sundays. They close at dusk.

In order to participate, at least half of the stand’s gross sales must be products grown or produced in Pennsylvania. Value-added items like canned goods, candles, soaps, preserves and baked pies may not exceed 25 percent of sales. There is no fee for participation.

Farmers who want to sell products at the service plaza farmers markets should contact Ashlee O. Dugan at [asdugan@pa.gov](mailto:asdugan@pa.gov) or call 717-705-9511.

For more information, visit [www.agriculture.pa.gov](http://www.agriculture.pa.gov) and search “turnpike.”

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# Choosing the Right Market Channel

Brian Moyer

Diversified farming means we have to be experts in the production requirements for each of the products we produce. On top of that, we need to be able to have a market for each product. How we plan to sell our products is just as important as deciding how we will grow them.

“Simple” you say, “I’ll sell them at the farmers market or through my CSA”. Not so long ago, that option was a no-brainer, but today, many CSA’s struggle to fill shareholder slots and vendor spaces may be limited at the farmers markets. Fortunately, there are many more channels for reaching your potential customer these days. But, we need a way to evaluate those channels so we can assess which ones might be best for our business and our quality of life.

Marketing what we grow can take up to thirty percent of our time, which is time away from farming. We need to ask ourselves:

“What markets will give me the greatest return on my time and amount of product sold?”

“Am I the right person to be marketing my product?”

“If I’m not the right person, who is?”

If you decide that you are the right (or only) person to do the marketing, then you need a way to figure out how you can have a diverse marketing plan and still have time to grow your products.



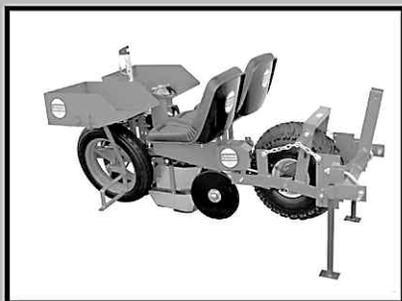
The goal should be to have a marketing plan that is just as diverse as the farm products you are offering.

Let’s think about what channels you want to use to sell your products. Some market channels we pick because they appeal to us and others because they are a necessity. They aren’t our favorite market outlets, but we feel we have to do them. An example might be farmers markets. Some folks love being at the market and others do not. But, if your goal is to build up your CSA or pick your own operation, then selling at a farmers market could be a short term marketing solution to get your farm’s name out into the community. It is inexpensive advertising while selling your products as well.

Let’s take a look at an exercise borrowed from the “Guide to Marketing Channel Selection” written by Matthew LeRoux, Agricultural Marketing Specialist, Cornell Cooperative Extension of Tompkins County, New York. This exercise can help you make some decisions about your marketing channels. On the left hand side of the chart we have the marketing channels our example farm is planning to use. We want to rank the channels against each other. “1” is the best criteria and “5” being the least favorable. Channels you feel are equal for a certain criteria are given the same number and the next number is skipped. After you rank the market channels, you can total up

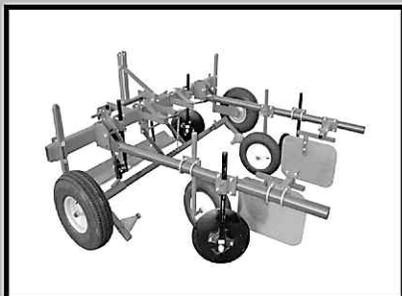
*(continued on page 18)*

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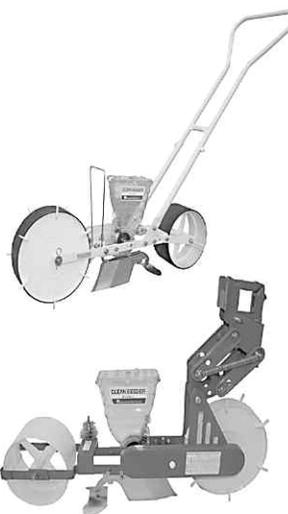
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NEWS

# FDA Seeking Comments on Raw Manure Use Rules

The FSMA Produce Rule was finalized in November 2015. The original proposed rule called for a 9-month interval between applying raw manure and harvest. After receiving feedback from the public that this interval was too long, in the final rule the FDA withdrew this application interval with the stipulation that the FDA would pursue a risk assessment and research agenda in order to establish an appropriate interval with respect to produce safety. For the time being, the FDA recognizes that many growers use the 90/120 interval set forth by the National Organic Program standard, which calls for a 120-day interval between applying raw manure and harvesting crops that contact the soil, and a 90-day interval for crops that do not contact the soil, and they “do not intend to take exception to the continuation of this practice in the interim period”.

On March 4, 2016, the FDA published a notice requesting public comments and scientific data to support the risk assessment as promised in the final Produce Rule. They are seeking information from both the scientific community and from farmers. Specifically, they are interested in:

1. Data on the prevalence and levels of pathogens.
2. Data and information on survival of pathogens (e.g., Salmonella, E. coli O157:H7), and pathogen transfer to produce.
3. On-farm manure-use practices, including, but not limited to, the following aspects:

- a. Extent of manure use
  - b. Types of untreated manure and types of soil, and crops typically grown in manure-amended soils
  - c. Proportion of produce farms that have one or more soil types per geographical location
  - d. Amount of manure applied per unit surface (e.g., per acre) or ratio of manure to soil, for different crops
  - e. Time of year, number of applications, and amount of untreated amendments that are applied
  - f. The method of application (e.g., surface, incorporated), and whether or not the amended soil is covered (e.g., with plastic mulch)
  - g. Produce commodity type and cropping cycles
  - h. Climate conditions and irrigation practices after soil is amended, before and after planting
  - i. Crop density (e.g., the number of rows per bed, and the distance between adjacent rows in a bed), distance between two crop beds (furrow width), and the influence of such factors on pathogen transfer.
4. Harvesting, handling, and storage conditions that may affect pathogen detection and levels, survival, growth, or inactivation between harvest and retail sale along the farm-to-fork continuum.
  5. Storage conditions such as times and temperatures that may affect pathogen growth and/or survival during transportation and storage of produce in the consumer’s home, and consumer handling practices with respect to produce after purchase, including data and information on consumer washing practices.

Comments may be submitted until May 3, 2016 at the Federal Register <https://www.federalregister.gov/articles/2016/03/04/2016-04712/risk-assessment-of-foodborne-illness-associated-with-pathogens-from-produce-grown-in-fields-amended>.

*From the Vegetable Notes for Vegetable Farmers in Massachusetts, Univ. of Mass. Extension, Vol. 28, No. 3, March 10, 2016.*

## Choosing the Right... (continued from page 17)

Marketing Channel	Volume	Price	Risk	Labor Required	Assoc. costs	Total Score	Final Rank
On-farm Stand	4	1	1	3	3	12	2
Farmers Market	3	2	4	4	1	14	4
Restaurants	2	3	2	2	1	10	1
Wholesale Distribution	1	4	3	1	4	13	3

the scores, and give each channel a final ranking. The channel with a final ranking of “1” is the most favorable.

For our example farm, it looks like restaurants would be the preferable marketing channel. Over time, these rankings can change. For instance, if the volume of product sold increases for their on-farm sales then that channel may replace restaurants as the top ranking channel. We can also see that Wholesale Distribution ranks higher than Farmers Markets largely because of the labor associated with farmers markets, which can also change over time.

Finally, consider how each of the market channels will affect you personally. What is the perceived level of stress involved with supplying those market channels? What will it do to your (and your family’s) quality of life? If need be, add that as a column to this exercise. It is just as important as the rest for a profitable and happy farming life.

*Mr. Moyer is with Penn State Extension in Lehigh County. From the Vegetable, Small Fruit and Mushroom Production News, Penn State Extension, extension.psu.edu/vegetable-fruit/news, September 10, 2015.*

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## Engaging Spanish-Speaking Farmers and Farmworkers at MAFVC

Lee Stivers

Since 2009, Penn State Extension has hosted a full-day session at the Mid-Atlantic Fruit and Vegetable Convention (MAFVC), taught completely in Spanish. These sessions have targeted Hispanic and Latino farmers, farm managers and farm workers, working in horticultural crop production. Bilingual educators from surrounding states have collaborated in the project, and helped to create a learning environment that is friendly, engaging, inclusive, and highly relevant.

The number of Hispanic farmers in Pennsylvania is increasing every year, mirroring national trends. Many of these entrepreneurs get their start as workers on established Pennsylvania farms, often rising to management positions. Educating Hispanic and Latino farmers, farm managers and farm workers in best management practices in crop production, pest control, pesticide safety, food safety, and farm business strengthens our state's specialty crop industries and helps sustain them for the future.

Forty-two people attended this year's Spanish session, held on February 3, 2016, at the Mid-Atlantic Fruit and Vegetable Convention. Hands-on, interactive teaching strategies have always been an important feature of this session. Rather than sitting all day in a lecture-style setting, participants roll up their sleeves and jump into learning through activities such as:

- Identifying grass and broadleaf weeds using live samples and reference materials;
- Witnessing how gloves and other personal protective equipment keep pesticides off of skin;
- Visiting an orchard to practice pruning fruit trees for maximum production; and
- Discussing IPM strategies and cost sharing opportunities for high tunnel production directly with USDA-NRCS staff.

A survey following the session indicated that 60% of participants have been involved in horticultural production for five or more years. Over half have attended the Spanish session for three or more years. Nearly all have put into practice what they have learned by improving horticultural practices, using new strategies to manage pests, improving crop quality, and protecting themselves and their families from pesticides.

*Ms. Stivers is with Penn State Extension in Washington County. From the **Vegetable, Small Fruit and Mushroom Production News**, Penn State Extension, [extension.psu.edu/vegetable-fruit/news](http://extension.psu.edu/vegetable-fruit/news), February 18, 2016.*



Spanish session participants practice identifying weeds with a hands-on activity. Photo credit: H. Nunez Contreras.



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## VEGETABLE PRODUCTION

## Growing Mustard as a Biofumigant Cover Crop

The process of 'biofumigation' with brown mustard (*Brassica juncea*) can reduce weed pressure, populations of parasitic nematodes, and soil-borne pathogens such as *Pythium*, *Rhizoctonia*, *Sclerotinia*, *Verticillium* and *Phytophthora*. Brassica plants contain glucosinolates that, when broken down, produce biocidal compounds called isothiocyanates which are similar to metam sodium, the active ingredient in the commercial fumigant Vapam. Brassica crops vary in the amount and types of glucosinolates they contain, and varieties have been bred to improve their biofumigant effects. With a fairly short growing period of about 60 days and tolerance to cool temperatures, brown mustard can be grown successfully as a spring cover crop prior to seeding fall vegetable crops, or as a short season summer cover crop in a fallow field to prepare an area for the following year's crop. Costing around \$5.00/lb, brown mustard seed is cheaper than traditional fumigants such as methyl bromide, which are being phased out.

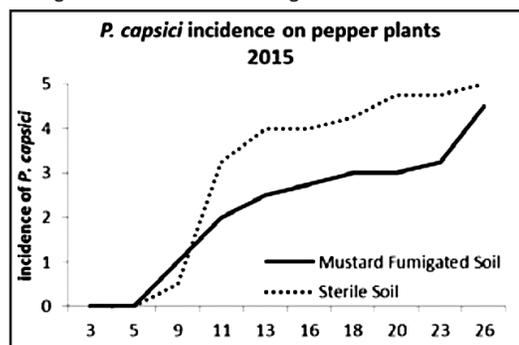
Greenhouse bioassays were conducted in 2014 and 2015 using mustard-biofumigated soils from the UMass Research and Education Farm in Deerfield, Massachusetts and from a commercial farm in Hadley. Pepper plants were planted in fumigated, non-fumigated, or sterilized soil and were inoculated with *Phytophthora capsici*. In our studies, plants grown in mustard-fumigated soils tended to get disease more slowly than plants

are reported to last up to 10 days, the suppression of *P. capsici* may last up to a month, or long enough to harvest from a pepper or summer squash crop in mustard-fumigated fields compared to non-fumigated fields.

In another on-farm trial during the summer of 2015 in Taunton, MA, mustard biofumigation was not shown to significantly reduce the population of plant parasitic root-knot and lesion nematodes in a field into which strawberries were then planted because distribution of plant parasitic nematodes is known to be very patchy. However, under more controlled conditions in other greenhouse studies, results do show significant reduction of nematodes with biofumigation.

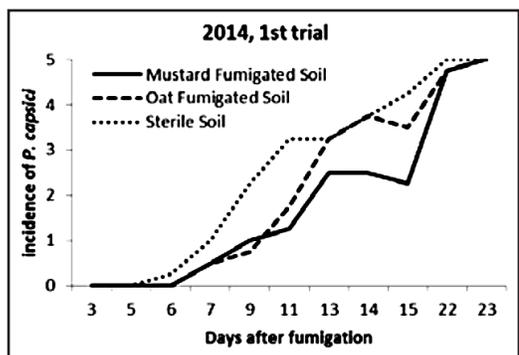
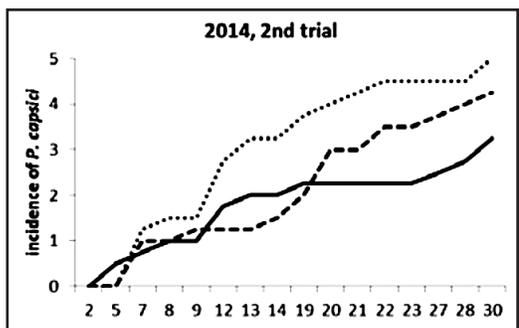
Precautions: Biofumigation is not a silver bullet, and must be used as part of an integrated program, so growers must continue to manage their pests in other ways. Mustard cover crops are host to many of the same pests that attack other brassica crops. Farms that grow a lot of brassicas may wish to avoid growing mustard, or at the very least, plan it into the crop rotation in order to avoid planting fields with brassicas consecutively. Brown mustard was observed to be highly attractive to flea beetle in trials conducted at UMass in 2014 and 2015. Brown mustard is also susceptible to Alternaria leaf spot and Black Rot that can overwinter on crop residue. When used as a biofumigant, mustard has been shown to reduce parasitic nematode populations, however, it is also a host to these same nematodes. If not correctly managed, mustard can keep these pests in the field to infest the next cash crop host.

(continued on page 21)



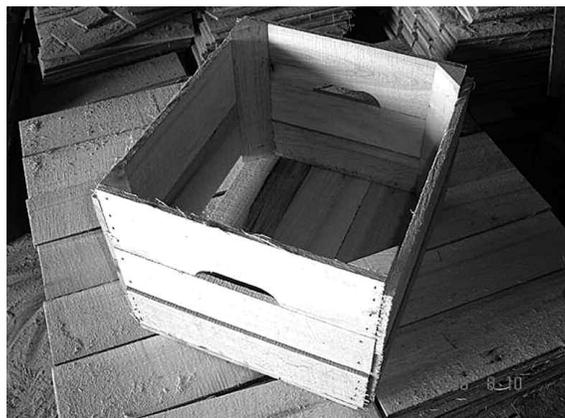
grown in sterilized soil, though this finding was only significant in 2015. While the effects of fumigation

Fig 1. When we analyzed disease development over time (area under the disease progress curve), we found that there were no differences between fumigated and other soils in 2014, but in 2015 the difference between fumigated and sterilized soil was significant ( $p = 0.0061$ ).



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**VEGETABLE PRODUCTION**

**Growing Mustard...** (continued from page 20)

Follow these steps to ensure a bio-fumigation success!

1. Buy the seed. We have found several suppliers of brown mustard, and several species bred for fumigation. One variety that has been bred for increased isothiocyanate production is "Caliente" (*Brassica juncea*) and it is available from High Performance seed company through Siegers Seeds and Seedway. Another brand is 'Pacific Gold' from Mighty Mustard available through Johnny's Seeds.

2. Select a field with a pest shown to be affected by biofumigation with mustard. The entire process from planting and incorporating the mustard until the field is ready for another crop will take 60-70 days depending on weather, so select a field that you don't need for other crops in that amount of time. The best times to seed this mustard in New England are late April before a main season crop such as pumpkin or late August, in order to prepare a field for the following year's crop such as strawberry. Mustard will tolerate cool temperatures and can germinate in soils that are 45-50°F.

3. Prepare and fertilize your field with a plow or disc and broadcast 50-80 lb. nitrogen/acre and 20-30 lb. sulfur/acre immediately prior to planting. Nitrogen is needed to increase biomass, and sulfur is recommended to increase production of isothiocyanates by the mustard. Maintaining a soil pH of 6-7 is important during this process. If the soil is too acidic when the mustard is turned under, the crop will not release fumigating properties, but rather act as a green manure. If the soil pH is within the 6-6.5 range, apply gypsum for sulfur in a neutral form.

(continued on page 22)

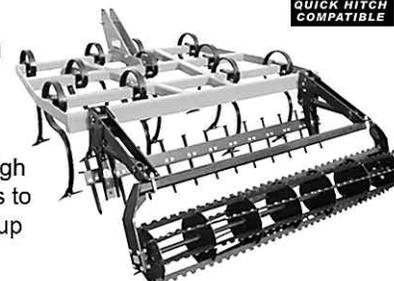
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## VEGETABLE PRODUCTION

**Growing Mustard...** (continued from page 21)

If the soil pH is 6.5-7, ammonium sulfate may be used to provide N and S but it will acidify the soil.

4. Seeding can seem intimidating because the seed is so small and light. However, here are several effective methods:



1) A no-till grain drill (photo) may be used to seed at a rate of 9 to 12 lbs/acre, 0.25-0.75" deep, in rows 6-8" apart. Adding kitty litter to the hopper may help improve seeding and germination.



2) Using a Brillion Sure Stand (photo) or a Stanhay seeder at 12-15 lbs/acre can be effective if the soil is moist, but in a dry year, the Brillion will simply push piles of soil over the seed, burying it too deeply.



3) Broad-casting seed with a fan spreader (eg. a Vicon Seeder) is also an effective alternative to the grain drill but more seed will be needed (15-20lbs/acre). After spinning seed on, follow with just the rollers on a Perfecta cultivator (photo) touching the soil surface to lightly cover the seeds.

5. Chopping, incorporating and sealing: About 60 days after seeding, the mustard should be at peak bloom, but not too woody. All three steps of this process must be completed as quickly as possible in order to maximize fumigation, preferably before rain is expected. If it does not rain, irrigate the field after incorporation to keep the isothiocyanates from volatilizing into the air.



1) Use a flail (photo) or rotary mower to chop the plant tissue while the mustard is at peak bloom.



2) Immediately incorporate the residue with a chisel plow, rototiller, or heavy disc (photo).



3) Seal the soil surface immediately after incorporation with a heavy board, roller, or culti-packer.

6. Plant your main season crop 10 days or more after incorporation as that is how long the fumigation lasts. Be careful not to reintroduce the target pathogens before planting a main season cash crop. Follow other cultural or chemical practices to manage target pests since biofumigation is only one tool in your toolbox.

From the **Vegetable Notes for Vegetable Farmers in Massachusetts**, Univ. of Mass. Extension, Vol. 27, No. 24, December 10, 1015.

# Farm-Tuning Soil Fertility With Cover Crop Mixtures

Denise M Finney

Nitrogen provided by legume cover crops is an important source of fertility for many vegetable growers, but cover crops are also important for recycling nitrogen and building long-term soil nitrogen reserves in soil organic matter (SOM).

Planting mixtures of cover crops that combine legumes (such as hairy vetch, clovers, or pea) and non-legumes (such as cereal rye, triticale, oats, and canola) can provide three important benefits to soil fertility:

- Supplying nitrogen to the following cash crop
- Taking up excess nitrogen from the soil
- Building soil organic matter

When deciding on the species and seeding rates to use in a mixture, it is important to plan for a favorable carbon to nitrogen ratio (C:N ratio) in the cover crop. The high C:N ratio (>25) of most non-legume cover crops can reduce the amount of nitrogen that is available to the following crop. In most locations, mixtures that are mostly legumes with some non-legumes will supply nitrogen to the next crop and do a better job at taking up excess soil nitrogen than a legume alone. If a mixture does contain more non-legumes than legumes, killing the cover crop early can help keep the C:N ratio low.

Another point to consider when planning a cover crop mixture is SOM content. Over time, using cover crops in a rotation increases SOM. High SOM levels lead to greater nitrogen avail-



Oats as a cover crop have a high C:N ratio. Photo: Emelie Swackhamer

ability for crops, but can also generate excess soil nitrogen. Under these conditions (around 4% SOM or higher), more non-legumes are needed in a cover crop mixture to take up excess nitrogen. While more non-legumes will raise the C:N ratio of the mixture, a slightly higher C:N ratio will not reduce nitrogen availability when SOM levels are high. One way to establish this type of “non-legume dominated” mixture is to seed non-legumes at 50-60% of their monoculture seeding rates.

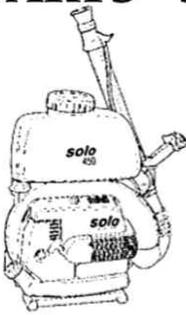
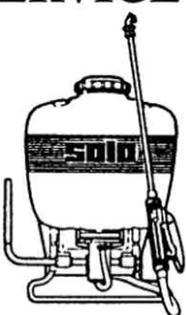
To assure some legumes survive in the mixture use more competitive legume species such as peas and crimson clover and seed them at 50-60% of their monoculture seeding rate. When SOM levels are low (around 2% OM), some non-legumes are still needed, but it is more important to have a lower C:N ratio in a cover crop mixture. Using low seeding rates of non-legumes in the mixture (around 30% of the typical monoculture rate) will help promote a “legume dominated” mixture. Also consider using non-legumes that are less competitive and slower maturing such as triticale and annual ryegrass when SOM is low.

*Dr. Finney is with the Department of Ecosystem Science and Management at Penn State Univ. From the **Vegetable, Small Fruit and Mushroom Production News**, Penn State Extension, [extension.psu.edu/vegetable-fruit/news](http://extension.psu.edu/vegetable-fruit/news), December 10, 2015.*

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## VEGETABLE PRODUCTION

**Early Transplanting***Gordon Johnson*

Early warm season vegetables such as tomatoes and watermelons require protection when transplanted in April. The following are some considerations for these early plantings:

Plant in your highest elevation fields with the lightest soils first and avoid low areas and frost pockets.

Start planting only when a warming trend is in the forecast. This is when daytime temperatures are expected to increase during the week and nighttime temperatures do not drop below 40°F. Bed temperatures should be above 55°F. Do not plant on a cooling trend and avoid planting when cold, clear nights and high winds are in the forecast.

Also avoid planting if extended cold, cloudy weather is in the forecast. It is critical to have warm soil conditions after transplanting to allow roots to grow out into the bed quickly. In cold, cloudy conditions, plants shut down physiologically, little root growth occurs, and the existing roots on the transplant do not function well, thus increasing the risk for transplant stunting or transplant losses.

Target fields with well advanced (the tallest) rye windbreaks between each row for early plantings. Windbreaks reduce wind injury and desiccation of transplants and also reduce the loss of heat from black plastic mulched beds, thus allowing more heat to be accumulated during the day (to be released at night).

In areas without windbreaks, consider using floating row covers for cold sensitive crops for the first 2-3 weeks. Use wire hoops supports over the top of plants to avoid mechanical injury. Clear slitted plastic row covers also can be used to increase daytime temperatures and heat the plastic beds. However, clear row covers do not have the same insulating effect of floating row covers. Row covers may be required in addition to windbreaks in the earliest plantings.

Only use well hardened-off plants for early plantings. Plants should be acclimated to outside conditions for 5 or more days before transplanting.

*Dr. Johnson is Extension Vegetable and Fruit Specialist at the Univ. of Delaware. From the **Weekly Crop Update**, Univ. of Delaware, Vol. 23, No. 5, April 24, 2015.*

**Controlled Release Fertilizer Products in Vegetable Crops***Gordon Johnson*

There has been considerable work on controlled release fertilizer over the years and many of the different technologies have shown potential for use with vegetable crops. Controlled release fertilizer is most useful with nutrients that are subject to leaching losses, particularly nitrogen.

Controlled release fertilizers are most commonly based on coatings (polymer or sulfur coated ureas for example) or having nutrients in chemical forms that slow their release (Ureaform and IBDU nitrogen for example). Polymer coatings can be used on most fertilizers and are common in the nursery and greenhouse industries with complete fertilizer products applied to potted plants. Coated product technologies have advanced over the years to give more precise release properties. However, release will still be dependent on the type of coating, the thickness of the coating, as well as temperature and moisture. Controlled release fertilizers are commonly rated as to how long they take to release nutrients in days (70 day, 90 day, 120 day formulations for example). They can also be mixed with a small amount of regular soluble fertilizer to give an initial nutrient charge.

It should be noted that manures have a component of their nitrogen (the organic fraction) that is available upon decomposition and mineralization so they can be considered a slow release fertilizer.

One main advantage of controlled release fertilizers is that only one application is necessary for a crop, thus reducing application and management costs. The other main advantage is reducing nitrogen leaching losses because not all nitrogen is available at once. In some trials, efficiency of nitrogen utilization is improved (by reducing losses) so that less nitrogen is needed.

For many years, the cost of controlled release fertilizers limited their use to high value horticulture applications. As costs are decreasing, especially with the polymer coated products, the economics is changing for vegetable and field crops.

*Dr. Johnson is Extension Vegetable and Fruit Specialist at the Univ. of Delaware. From the **Weekly Crop Update**, Univ. of Delaware, Vol. 23, No. 4, April 17, 2015.*

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# Frost Protection: Tips and Techniques

Kathleen Demchak

Damage from freezes and frost is of concern from bud break in the spring through flowering and fruit set. The blossoms are tender and are the plant part most commonly damaged by low temperatures. Since loss of the blossoms means a loss of fruit for the year, frost protection is of great concern.

## Critical Temperatures for Frost Damage

Damage occurs when water in the plants' cells freezes, thus causing the cells or cell parts to rupture. The temperature at which this occurs depends on the water content and concentration of water vs. solutes in the plant tissue. Therefore, the temperature at which damage occurs varies with the crop and growth stage. Table 1 lists commonly-accepted critical temperatures for strawberry and blueberry blossoms at different stages of bud development. These values are not absolute, and within reason, it is better to err on the side of safety when protecting crops from frost damage.

Table 1. Critical temperatures (degrees F) for cold damage of flower buds based on stage of development. Note with blueberries, there is considerable variability in temperatures at which damage was reported for these growth stages.

Strawberries	Critical temp.	Blueberries	Critical temp.
Bud emergence	10	Bud swell	15-20
Tight bud	22	Tight cluster	18-23
"Popcorn"	26	Separate flowers visible	22-25
Open blossom	30	Late closed blossom	25-26
Green fruit	28	Open blossom	27
Petal fall	28		

Sources: Strawberry Critical Temperatures - K. Perry and B.C. Poling, North Carolina State Univ.; and Richard Funt, Ohio State Univ.; Blueberry Critical Temperatures - Fruit Crop Advisory Team Alert, Vol. 18, No. 3. "Protecting Blueberries from Frost", E. Hanson and M. Longstroth, Michigan State Univ.

## Types of Frosts and Freezes

Radiant frosts and freezes occur on calm, clear nights with no cloud cover. Heat is lost from the soil and plants, and radiates back to the sky. Advective freezes, sometimes called wind-borne freezes, are caused when a cold air mass moves into the region accompanied by a lot of wind. It is difficult to protect against this type of freeze.

## Environmental Factors Affecting Frost Occurrence and Protection

Air temperature is the measurement used for initiating or stopping frost control practices, and can be taken with either a dry-bulb or wet-bulb thermometer. Dry-bulb temperatures are the type commonly referenced in literature and in weather forecasts. Wet-bulb temperatures are obtained from a thermometer that is covered with a wet wick. Air is moved over the bulb causing evaporative cooling to occur. The wet-bulb temperature is useful because it essentially is what the plant temperature will be once the irrigation is started and evaporative cooling has taken place.

Wind speeds of more than a few miles per hour can make frost protection difficult, especially in an advective freeze. Light breezes, however, tend to mix the air and can increase temperatures at ground level in the case of radiant frosts.

Temperatures tend to be more uniform even across a distance of miles when windy conditions exist.

The dew point is the temperature at which the relative humidity reaches 100% as the air cools. At this point, water vapor in the air condenses into fog or dew, which gives off heat, slowing the temperature drop. The risk of having a frost becomes greater as the dew point becomes lower. If the dew point is below freezing, so that condensation and heat release does not take place until below freezing, temperatures can drop to damaging levels extremely rapidly. In this case, the white crystals typically seen in a frost or freeze may not form, a condition sometimes referred to as a "black frost".

Relative humidity is the amount of moisture contained in the air relative to the maximum amount that could be held. It changes with temperature and can change quickly with the air mass.

## Site-Specific Effects on Frosts/Freeze Occurrence

Site selection is the most important step for frost or freeze protection of a small fruit crop. The best site is one downwind from or closely surrounded by a large body of water. Topography also affects frost occurrence. Cold air is heavier than warm air, and therefore flows downhill. Temperatures are often higher at the tops of slopes, while cold air which collects in the lower areas (frost pockets) is often 4° to 5°F lower. South-facing slopes are generally warmer than those facing north, but

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## GREENHOUSE PRODUCTION

# Organic Nutrition Project for Vegetable Transplants and Herbs

Geoffrey Njue, Tina Smith, and Dr. Douglas Cox

There are many OMRI listed growing media and fertilizers commercially available, however there has been a lack of information for growing organic vegetable transplants and herbs in commercial greenhouses. For the past several years

Dr. Douglas Cox of UMass Extension and Stockbridge School of Agriculture has evaluated the use of organic fertilizers in ornamental crops, and based on his results, he recommends Nature's Source 3-1-1 liquid fertilizer and Sustane 8-4-4 granular slow release fertilizer. During the 2015 spring growing season, the UMass Extension Greenhouse Crops and Floriculture team invited growers to trial and evaluate Nature's Source fertilizer on a greenhouse crop. Nature's Source fertilizer and technical assistance was provided. Three growers participated. Here is a summary of the project at each greenhouse followed by tips for using organic fertilizers in transplant production from Doug Cox.

## Grower One

Grower one is a retail grower that currently grows organic vegetable transplants certified by Bay State organic certifiers. They use primarily fish emulsion for fertility and are not satisfied with the quality of their plants. They decided to try Nature's Source and Sustane plus two other slow release granular fertilizers; Plant Tone (5-3-3) and Pro Gro (5-3-4). All fertilizers were OMRI approved. They also decided to try four different substrates used for organic production: Fafard organic mix, Espoma organic soil, Moo Doo organic potting soil, and Ideal compost. The trial consisted of four sets of media/fertilizer combinations with eight combinations for each media type. Sustane, Plant Tone and Pro Gro slow release granular fertilizers were incorporated in the media using a small portable cement mixer before planting.

Red Brandywine tomato transplants were grown in 4 inch pots. Four plants were grown in each substrate media combination. Plants were fertilized with Nature's Source using 250 ppm at every watering (constant feed). Plants were observed for 8 weeks. Soil tests were conducted during week 7 after planting and the results showed that there were differences in pH and electrical conductivity (EC) in the different growing substrates.

Observations on the quality of the plants, comparing the size and color of the plants showed that the best quality transplants were produced using Fafard Organic mix with Sustane and Nature's Source fertilizer combinations. Other combinations that produced good quality transplants were; Fafard Organic Mix with Pro Gro and Nature's Source; Fafard Organic Mix with Pro Gro; Moo Doo Potting Soil with Nature's Source and Pro Gro; and Moo Doo with Nature's Source. Espoma soil worked best with Pro Gro and Nature's Source, however plant quality was not acceptable.

### Week 7 Growing Media Test Results

Growing Media	pH	EC
Espoma organic soil	4.96	1.22
Fafard organic	5.70	1.73
Ideal Compost	6.39	3.63
Moo Doo	6.35	1.90

## Grower Two

Grower two is a wholesale grower. They grow spring ornamental plants and an assortment of herbs conventionally with

water soluble fertilizers through an injector. They were interested in growing herbs and vegetables organically to investigate expanding their market. They grew celery and basil in 4-inch pots using Fafard Organic Mix with Sustane and Nature's Source. We compared the soil analysis of the organically grown celery with the celery grown using chemical fertilizers and found that the media pH was about the same. Soil pH of organically grown celery was 5.81 and the soil pH of celery with chemical fertilizers was 5.90. However the media EC was lower in celery grown using chemical fertilizers (organic EC was 1.01 and chemical fertilizer EC was 0.31). Observations on the quality of the plants comparing the size and color of the plants showed that the organically grown herbs were very good quality plants but they were slightly smaller than those grown using chemical fertilizers. Although the organic herbs were slightly smaller, they maintained their quality longer than those grown using chemical fertilizers. The grower felt that it was more expensive to grow the herbs organically than conventionally, and it was not economically feasible at this time.

## Grower Three

Grower three is a wholesale farm with a small greenhouse. They grow vegetable and herb transplants organically for their own use in the field. They currently grow transplants using fish emulsion and kelp as fertilizers in Ideal compost as a growing media. They mix up small batches of fertilizer and apply using a watering can or sub-irrigate by dipping the flats into a tray containing fertilizer.

In the first trial the grower grew beet transplants and compared plants grown with Nature's Source (100 ppm) vs fish emulsion. Plants were fertilized sporadically (not at every watering). At 3 weeks, the plants grown with Nature's Source were chlorotic and small, showing symptoms of nutrient deficiency. Plants grown with fish emulsion were larger and darker green. The plants grown with Nature's Source improved in size and color after one week of constant feed and increasing the rate of Nature's Source fertilizer to 200 ppm.

In the second trial, the grower grew kale transplants and compared plants grown in Promix MP vs Ideal Compost. Plants grown in Promix MP and fertilized with Nature's Source were compared with plants grown in Promix MP and fertilized with fish and kelp, both at 100 ppm. Plants grown in Ideal compost did not receive supplemental fertilizer. After 3 weeks, soil tests were conducted and plants evaluated. The pH of Promix MP growing media was 5.7 for both, Nature's source and fish/kelp and EC was less than 100 for both. The ideal compost pH was 6.91 and EC was 3.5. Assessing size and color and root health, the following observations were made:

- Promix MP with Nature's Source – Small plants, chlorotic lower leaves and excellent root systems.
- Promix MP with fish emulsion/kelp – Small plants, chlorotic lower leaves and good roots. Similar to Nature's Source.
- Ideal Compost – Large leaves, large plants, weak stems (leggy) and very few roots.
- Final Thoughts: More trials would need to be conducted using the Promix MP to adjust the fertilizer rate for better quality plants. All composts should be tested prior to use for EC and pH and rates of supplemental fertilizer adjusted as needed.

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## GREENHOUSE PRODUCTION

### Organic Nutrition... (continued from page 26)

The grower did not want to use a fertilizer injector or use constant feed and expressed that the use of compost that contained nutrients was better suited for his purpose.

#### Tips from Doug Cox for using organic fertilizers in greenhouse transplant production:

**Mixing and application:** For a number of years I've studied the use of organic fertilizers for growing commercial greenhouse crops. My work has lead me to recommend using different organic fertilizers in combination rather than relying on one fertilizer. The best combination I found was to use Nature's Source 3-1-1 beginning 4 weeks after planting, and mixing Sustane 8-4-4 into the growing media. Despite the low nutrient analysis, Nature's Source is currently the best liquid organic fertilizer. It is made from oilseed extract. The container has dilution rates expressed in familiar terms for greenhouse growers. I have seen no foliar chlorosis yet with this fertilizer. Nature's Source is widely available and a great improvement over its predecessor Pinnacle. Sustane is a granular slow-release fertilizer made from turkey litter, feather meal, and potassium sulfate. Release time is 45 days, but nutrients may run out a little sooner. It is an excellent fertilizer to combine with liquid organics especially those with no phosphorus or potassium. The fish fertilizers and plant extract fertilizers are sold as concentrates and they must be diluted in water to be safe for plants. Nature's Source has a pleasant "beery" aroma as a concentrate, but within 7 days of being mixed with water it "spoils" and develops very unpleasant odors. The odor, however, is not as bad as fish fertilizer. The nutrient value of spoiled fertilizer is unknown and the colonies of bacteria which develop may plug irrigation lines, so diluted fertilizer solution should be used as soon as possible after mixing.

**Nutrient disorders:** Plants may develop an overall light green or yellowed color caused by a general nutrient deficiency or, more likely, just N deficiency. For example, if Sustane is used alone the symptoms might occur about 45 days after planting, the end of its release time. This can be prevented by applying an organic liquid fertilizer supplement about 30 days after planting. Interveinal chlorosis sometimes occurs about halfway through cropping time if plants are fertilized with some liquid organic fertilizers alone starting at planting. This chlorosis is most likely caused by an accumulation of too much ammonium-nitrogen in the plant, so-called "ammonium toxicity". Most greenhouse crops do best with a combination of ammonium and nitrate nitrogen. Unfortunately organic fertilizers generally don't contain nitrate-nitrogen. The best approach is to rely on Sustane as the sole source of nutrients for the first month after planting and then start applying Nature's Source or another liquid organic fertilizer.

**Organic fertilizer effects on growth medium soluble salts (EC):** Sustane is a slow-release fertilizer and its use results in low EC, and potentially a deficient level after 45 days. As for the liquid organics, at the same N level the lowest EC results from Nature's Source (similar to chemical fertilizer) and then Bombardier. Espartan results in an EC significantly higher than the other liquid organic fertilizers which might be an aggravating factor in ammonium toxicity. In short, from the standpoint of EC, Nature's Source is the best.

**Overcome reduced size caused by organic fertilizers:** Many growers who have used organic fertilizers have observed size reductions compared to what they are used to with chemical fer-

tilizers. Some growers say "raise the rate (ppm)" of organics to compensate. If you have done this and it works, carry on! Otherwise give it a try starting with increases of 20% at a time. Increasing the rate in 20% increments is likely to be partially successful, but because of a nutrient imbalance, ammonium toxicity, or some unknown factor results may be disappointing or worse.

**Plant species-specific responses:** It seems that plants may respond differently to organic fertilizers. For example, marigolds and petunia grow as well fertilized with a combination of liquids and Sustane as they do with chemical fertilizer, but seed geraniums do not and are very prone to chlorosis from too much ammonium. At this point in the development of organic fertilizers for commercial greenhouse use, use them with caution on plants you know have exacting nutrient requirements or those prone to foliar chlorosis. Fertilizers should always be tried first on a small number of plants.

**Best uses:** The fertilizers discussed in this article are probably best for short-term crops of less than 6 weeks duration when environmental conditions are most favorable for plant growth (e.g., April-September). Bedding plants, herbs, and vegetable transplants are good candidates for trying organics. Assuming the plants are of good quality and color, reduce or stop using the fertilizer within a week or two of planned marketing. This practice will reduce the chance of ammonium toxicity symptoms.

*Mr. Njue and Ms. Smith, are with the Univ. of Massachusetts Extension as is Dr. Cox, who is also with the Stockbridge School of Agriculture. From the **Vegetable Notes for Vegetable Farmers in Massachusetts**, Univ. of Mass. Extension, Vol. 28, No. 1, January 14, 2016.*

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### **Frost Protection...** (continued from page 25)

plants on south-facing slopes will also come out of dormancy earlier, possibly negating this benefit in many instances.

Soil moisture has an effect. Moist soil holds more heat and radiates heat back to the environment for a longer time than dry soil. If the soil is dry, plantings should be irrigated a day or two ahead of an expected cold snap to allow time for heat to be captured.

Soil texture and compaction are also factors, as heavier soils with more clay retain heat better than sandy soils. Sandy soils are also often lighter in color and hence tend to reflect

more sunlight, rather than absorbing it in the form of heat.

Ground cover affects the amount of heat absorbed by and released from the soil. A bare, undisturbed moist soil with no ground cover can release enough heat to raise the temperature 2 to 3 degrees in the plant canopy as compared to a sod-, grass-, or straw mulch-covered soil.

*Ms. Demchak is with the Department of Plant Science at Penn State University. From the **New York Berry News**, Cornell Univ., Vol. 15, No. 2, Spring 2016.*

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