

Directors Meet and Visit Legislators in Harrisburg

Members of the PVGA Board of Directors held their spring meeting in Harrisburg on March 21. They also visited with several members of the General Assembly to present the Association's state legislative priorities for 2017.

During the morning, the Directors meet with Rep. Morgan Cephas from Philadelphia, Rep. Ryan Warner from Fayette and Westmoreland Counties and Sen. Sharif Street from Philadelphia as well as staff persons for Rep. Kevin Haggerty from Lackawanna County and Sen. Mike Regan from Cumberland and York Counties. Joel Rotz from Pennsylvania Farm Bureau arranged the visits, purposely choosing members of the Agriculture and Rural Affairs Committees that were either from urban areas or who were new to the committee and therefore not as familiar with agricultural issues. The PVGA representatives had an opportunity to explain the importance of funding for Penn State agricultural research and extension to our growers. The Directors also emphasized the benefits that the Farmers' Market Nutrition Program coupons provide to growers as well as to the Women, Infant and Children (WIC) program recipients and senior citizens.

The other main issue discussed with the legislators was the need to exempt high-tunnels from the storm water management plan requirements. They also gave each legislator a copy of the Association's newly adopted Policy Resolutions, the first one being support of increasing the funding for the Pennsylvania Agricultural Surplus System from \$1 million to \$5 million. That new program provides funds to food banks to purchase surplus crops from growers at a reduced price that allows growers to at least recover harvesting costs. The result is crops going to the food bank that otherwise might be plowed under.

At their meeting that afternoon, the Board discussed several issues that were then approved by an email ballot since the Board was one Director short of a quorum to take final votes at the meeting.

The members of the Association amended the Constitution at this year's Annual Meeting to allow the Board to appoint two "at large" members of the Board to help insure diversity on the Board. The Board voted to appoint Rita Resick of Somerset to the Board to represent women as well as the southwestern portion of the state. Ms. Resick has also been serving on the Association's Capacity Development Task Force and has worked with several other non-profit organizations so she has that experience and expertise to bring to the Board. The also voted to appoint Alan Kemmerer, a wholesale fresh market grower from Berwick, to the Board to help represent the northeastern part of the state. With the retirement of Fred Dymond III from the Board, that region had one less representative.

The Board also received the final report from the Association's Capacity Development Task Force. The Task

Force was formed as part of the implementation of the Pennsylvania Vegetable Industry Strategic Planning process undertaken in 2014. It was evident to the Board that implementing some parts of the strategic plan would require more staff than the Association currently has. Thus the Task Force was created to explore how the Association could potentially support more staff. One of the focuses of the Task Force's report was the potential advantage of either having the Association become a 501(c)3 charitable non-profit (PVGA is currently a 501(c)5 horticultural non-profit) or forming a separate subsidiary entity as a 501(c)3 charitable non-profit organizations. 501(c)3 organizations are eligible for grants from certain foundations and government programs that a 501(c)5 organizations are not eligible for. In addition, contributions from members or industry corporations for activities like research and scholarships would be tax-deductible for members if the Association were a 501(c)3 entity. The Board voted to have the Task Force continue to function to further explore the details involved in the Association becoming a 501(c)3 organization. They also voted to have the Association join the Pennsylvania Association of Non-Profit Organizations (PANO) which offers information and services to its member organizations that will assist in this process.

The Board voted to retain Troxell Administrative Services to manage the Association for the next year at a fee of \$64,500, an increase \$1,500 or 2.4%. These services are provided on an independent contractor basis and include the services of William Troxell as Executive Secretary plus the clerical help of his wife Cheryl and additional hired help as well as the provision of office space, office equipment, and storage space for Association property.

The Board also adopted the following statement:

In response to the comments of the keynote speaker at this year's Convention, the Pennsylvania Vegetable Growers Association Board of Directors wishes to state that the Mid-Atlantic Fruit and Vegetable Convention is intended to be a non-partisan educational event serving the needs of all growers. PVGA has not in the past nor will in the future support particular political parties or candidates. The personal opinions expressed by the keynote and session speakers are those of the presenters and should not be construed as representing the views of PVGA, the other sponsoring associations, their individual members or the cooperating educational institutions. The intention of PVGA is to help growers through research, the discernment and recognition of good research, and the understanding of science with regard to growing healthy food with a final concern for how we leave things to future generations.

(continued on page 2)

NEWS



**Pennsylvania
Vegetable Growers
Association**

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

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Brandon Christner Receives First PVGA Young Grower Award

The winner of the first PVGA Young Grower Award is Brandon Christner of Dawson in Fayette County. This award is designed to recognize outstanding young growers in the vegetable, potato or berry industries.

Brandon grew up on the farm and went to school from a farming community. While his father has always had greenhouses to sell plants that operation only spanned a couple months a year. He asked Brandon if he would be interested in a venture with vegetable production and his eyes light up like the 4th of July. So the research began. That was four years ago and the public in their area is thankful they have decided to start their vegetable operation. Their operation started with 600 tomato plants in the first year and in 2016 they grew 4,000. They also grow a wide range of vegetables and in 2017 plan to expand their potato production to 10,000 lbs. of seed potatoes.

Their success has come from both their backs and their brains. His father states that Brandon's tireless efforts of doing what needs to get done are wordless. Brandon has a determination to be successful. When he is done working at the farm, he goes home and spends his nights doing research for the next crop. His father admires Brandon's enthusiasm but admits he has to pull back the reins on Brandon sometimes so they don't get over extended. Brandon has been known to push for trying a new crop before they have mastered their current crop choices.

The Christners grow and sell tomatoes, peppers, cucurbits, potatoes, melons, beans cabbage, beets, squash, pumpkins, and Indian corn, as well as pork, poultry meat and eggs. Christner Farms sells at three public farm markets along with a seven-day-a-week market on the farm. They also do a lot of marketing on Facebook and recently became an approved vendor with Giant Eagle supermarkets.

For the last three years Brandon and his father have attended the Mid-Atlantic Fruit and Vegetable Convention which they feel has helped them tremendously. They also planned to attend the FSMA training session in Butler this winter.

PVGA Young Grower Award recipients must be PVGA members who are 35 years old or younger, who have been successfully growing vegetables, potatoes or berries for less than five years and who have contributed to advancing or promoting the Pennsylvania vegetable, potato or berry industries. The prize is free registration for the Mid-Atlantic Fruit and Vegetable Convention plus lodging at the Hershey Lodge. To nominate a young grower you think should be recognized (or yourself) send a brief but comprehensive description of the farm operation and the nominee's qualifications to PVGA at pvga@pvga.org or 815 Middle Road, Richfield, PA 17086, by November 30, 2017.

Directors Meet... (continued from page 1)

In other business, the Board voted to:

- approve interim actions by the Executive Committee that responded to the Convention keynote speaker controversy and also provided \$2,600 for the sweet corn insect pest monitoring network;
- approved a letter to Penn State officials regarding the tomato breeding program;
- agreed to sponsor a field day at the Rock Springs research farm on July 12 and one at the Landisville research farm on July 25; and
- accept the previous meeting's minutes and the financial reports.

The Pennsylvania Vegetable Growers News is the official monthly publication of the Pennsylvania Vegetable Growers Association, Inc., 815 Middle Road, Richfield, PA 17086-9205 phone and fax - 717-694-3596, email - pvga@pvga.org website - www.pvga.org

Our Mission:

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

Our Vision:

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

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



Carville Mace and Lake Miller Awarded 2016 Rudolph Grob Memorial Scholarships

Lake Miller of Stewartstown and Carville Mace Jr. of Littlestown were awarded the two Rudolph Grob Memorial Scholarships from PVGA in 2016. These scholarships are awarded each year to a child or grandchild of a PVGA member who is pursuing higher education with the goal of working in production agriculture.

Lake Miller sent the following letter to the Association:

I would like to express my gratitude for the scholarship in which your association has awarded me for the 2016-2017 school year. It is received with an immense amount of honor and appreciation. I can assure you that the money will be used appropriately and that it will help to greatly reduce the cost of my education.



I would like to give everyone a brief update on my current academic situation. This spring, I am in my 6th semester at the Penn State University Park campus. I am making sufficient progress towards earning my degree in Plant Sciences – Horticulture and I am hoping to graduate in December 2017 (next semester). Also, I have decided to take some agronomy classes in order to graduate with a minor in agronomy. This year I have taken many agriculturally relevant courses. Some of these courses include: weed management/identification, plant breeding, deciduous tree fruit production, plant growth regulators, emerging issues in plant science, retail horticulture management, and field crop management. I find these classes not only very useful for the career path that I am choosing, but I also find the topics in these classes to be very interesting. Additionally, I have acquired a job with the tree fruit research group at Penn State's Rock Springs Research farm. Through this job, I spend about nine hours per week assisting Rob Crassweller and Don Smith in taking care of their orchard and getting it prepared for the upcoming growing season. The reason that I have decided to get involved with the tree fruit research group is because it will satisfy two academic credits that will be crucial to helping me achieve my goal of graduating this December. Outside of my academic endeavors, I am also helping to coach youth hockey at the Pegula Ice Arena. I spend about twelve hours per week instructing kids between the ages of 10-18 about the fundamentals and the principles of ice hockey.

In closing, I would like to say thank you one last time for the scholarship that you have awarded me. It truly means a lot to me and I hope that after the brief update that I have supplied in this letter that you feel confident that you have chosen a well-deserved recipient for the award.

*Thank you,
Lake Miller*

Carville Mace also wanted to express his appreciation to the Association:

I want to thank the PVGA for awarding me the scholarship for 2016-2017. I am going into my 5th semester of college at Penn State in the fall. I am continuing towards the ultimate goal of achieving my college degree from the Pennsylvania State University. I am still pursuing my degree in Business Management. After completion of the spring semester



I am currently in I will be accepted into my major and move to Penn State Harrisburg in the fall to finish my degree there.

Outside of college I continued my role on the farm. I worked with my father in the planning of how we were going to run the farm. I worked on making sure the crops grew and were taking care of. We expanded production on the farm by about 30 percent in order to sell more crops through the Cumberland Valley Produce Auction. The Auction now plays an important part in our operation. We now grow crops to sell directly through the auction. What was new for this year was I started to farm on my own. I acquired about 40 acres of rented land from my neighbor down the road who retired. I decided to plant the ground in soybeans. The soybeans yielded very successfully. My average for the entire crop was 52 bu./ac. Because I did not own any equipment I rented equipment from my father to plant and spray the beans, and I had my neighbor custom harvest the beans with his combine. I then planted the ground in wheat which I plan to harvest this summer and bale the straw with my new, New Holland baler I bought this winter along with my new John Deere 4020 tractor. I hope to continue to be successful with my own farming operations so when the time comes I can go back into growing vegetables for myself which is my true passion. And as we get ready for this season I hope to have a successful year working on the family farm growing produce.

Also for this year I continued to plow snow as I have been doing for a number of years now. This year I kept the same contract I had last year through US Lawns. It was not a great snow season. I did upgrade my plowing equipment by purchasing a 12ft pusher box for our loader tractor. But with all the excitement about plowing snow, there wasn't much snow to plow. The only snow that was really good came in the middle of March which was good because it covered the equipment expenses and insurance costs. But that is how it goes when relying on the weather. I seem to have developed a good relationship with US Lawns and they plan to have us back next winter to plow snow if need be.

This year was full of new projects and endeavors as well as continuing ones from years past. I had to really set priorities and manage my time more than ever before. This year I hope to continue my success in school, on the farm, and in whatever else I do. Once again I want to thank the PVGA for awarding me the 2016 scholarship.

*Thank you,
Carville Mace*

NEWS

Letters Needed to Permit Roadside Signs

Growers in some locations have run into issues with the state Department of Transportation (PennDOT) over the placement of signs for roadside markets along highways. While signs on the premise of the market are usually permitted, signs placed along the road on others property in advance of the market property are usually not allowed.

While PennDOT is the agency enforcing the rules, the real issue is Federal Highway Administration regulations that require states to control outdoor advertising signs on federally funded highways or risk losing federal highway dollars. State representative Pam Snyder from southwestern Pennsylvania is asking growers to send the following letter to Congressman Bill Shuster to request a federal exemption for farm signs along highways. Growers can copy the following in your own handwriting adding any personal issues you have had with roadside signs to the letter to personalize it. Rep. Shuster is chairman of the House Transportation and Infrastructure Committee that has jurisdiction over federal highway funding and regulations but would also be helpful to copy your own congressman as well if you do not live in Rep. Shuster's district. (The letter can be "copy and pasted" from the PVGA website at <https://www.pvga.org/letters-needed-to-permit-roadside-signs/>.)

Date:

*The Honorable Bill Shuster
2079 Rayburn House Office Building
Washington, D.C. 20515*

Re: Farm Signs

Dear Congressman Shuster:

Agriculture is the largest industry in Pennsylvania, contributing more than \$67 billion annually in the economic output across more that 7.75 million acres of agricultural land. As a

farm owner that contributes to our local economy, I'm asking for your prompt assistance.

PennDOT is required by the Federal Highway Administration to control outdoor advertising signs adjacent to interstate and federal-aid primary highways in order to receive its full share of federal highway funds, which are necessary to build and maintain Pennsylvania's roadways. PennDOT continues to remove outdoor signage placed along roadways advertising small farmer's markets and farm stands. PennDOT maintains it is ensuring the orderly and effective display of outdoor advertising and is consistent with national policy to protect the public's investment in our highways and Pennsylvania's natural beauty.

In 2015, the U. S. House passed a six-year, \$325 billion federal highway funding bill that includes an obscure amendment that would exempt most church signs that were under scrutiny by states for violations of the Highway Beautification Act. The targeted signs violated a federal requirement that limits the signs on federally funded roadways. Much like Pennsylvania, states were reluctantly enforcing the sign law under the threat of possibly losing federal highway dollars. As a farmer that depends on small signs, I am asking for a federal exemption for farmer's market signs as well.

The removal of farmer's advertising signs by PennDOT at farm stands along the roads in and around your district have been detrimental to local businesses. As farmers are struggling to survive across the state, this exemption would allow us to advertise appropriately and effectively without government overregulation.

Thank you for your consideration,

Name:

Address:

Game Commissioners Increase Overall Antlerless License Allocation

The Pennsylvania Board of Game Commissioners gave final approval to hunting and trapping seasons and bag limits for the 2017-18 license year at their March 28 meeting. The commissioners also set the number of antlerless deer licenses to be allocated.

The board voted to allocate 804,000 antlerless deer licenses statewide, which up from 748,000 licenses in 2016. Allocations by Wildlife Management Unit (WMU) are as follows, with the allocation from the previous license year appearing in parentheses:

WMU 1A – 52,000 (46,000);
WMU 1B – 35,000 (29,000);
WMU 2A – 50,000 (43,000);
WMU 2B – 60,000 (61,000);
WMU 2C – 31,000 (31,000);
WMU 2D – 55,000 (55,000);
WMU 2E – 22,000 (21,000);
WMU 2F – 24,000 (22,000);
WMU 2G – 25,500 (21,000);
WMU 2H – 7,000 (6,000);
WMU 3A – 20,000 (15,000);
WMU 3B – 30,000 (28,000);
WMU 3C – 42,000 (36,000);

WMU 3D – 25,000 (25,000);
WMU 4A – 30,000 (30,000);
WMU 4B – 26,000 (26,000);
WMU 4C – 29,000 (25,000);
WMU 4D – 34,000 (34,000);
WMU 4E – 27,500 (25,000);
WMU 5A – 22,000 (19,000);
WMU 5B – 57,000 (50,000);
WMU 5C – 70,000 (70,000); and
WMU 5D – 30,000 (30,000).

Hunters should note the boundary between WMUs 2C and 2E has changed.

Hunting licenses for 2017-18 go on sale in mid-June and become effective July 1. After hunters purchase a general hunting license, they may apply for antlerless deer licenses based on staggered timelines, which will be outlined in the 2017-18 Pennsylvania Hunting & Trapping Digest to be made available online.

The commissioners approved a split, five-day antlered deer season (Nov. 27-Dec. 1) and seven-day concurrent season (Dec. 2-9) in 20 Wildlife Management Units. They are WMUs

(continued on page 12)

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NEWS

PA Potato Coop Donates Salad Bar to Plum Borough Schools



Photo caption: (L to R) Roger Springer, Ex. Director PA Potato Growers Co-operative, Jessica Griggle, Oblock School Foodservice Director, Kevin Troyer, Heidi Beck (both potato producers and members of PA Potato Growers Co-operative), Dr. Timothy Glasspool, Superintendent, Rachael Lynch, Potatoes USA Global Marketing Manager; Nicole Hockenberry, PA Beef Council and Patrick Andrews, PA Department of Agriculture.

Through a partnership with the Pennsylvania Co-Operative Potato Growers rooted in the National Let's Move Salad Bars to Schools initiative, students within the Plum Borough School District now have fresh daily school lunch choices thanks to the district's newly donated salad bar

As part of the initiative's kick-off at Oblock Junior High School, students were encouraged to get creative with their new healthy eating options by making their own Pittsburgh salad, including strips of steak and Pennsylvania potato french fries.

Students were joined by representatives from the United States Potato Board (USPB), Pennsylvania Department of Agriculture, Pennsylvania Co-Operative Potato Growers and school officials dedicated to increasing student access to making healthy food, nutrition and lifestyle choices.

"The Plum Borough School District is extremely excited to embark on this opportunity to provide another option of healthy and nutritious choices for our students", said Jessica Griggle, the district's Food Service Director

The salad bar grant, donated by Pennsylvania's potato growers, is part of the potato industry's challenge of placing 300 salad bars a year in schools nationwide. The goal of the program is to increase the consumption of fresh fruits and vegetables along with establishing life-long healthy eating habits.

"The cooperative is excited for the opportunity to positively impact youth in our own communities," said Nolan Masser, President of the Pennsylvania Co-Operative Potato Growers.

The nation-wide effort is spurred through a partnership between USPB and United Fresh Start Foundation. To date, more than 180 salad bars have been donated to school districts in more than 16 states across the country.

Pennsylvania is ranked 14th in the nation for potato production, with 5000 acres in production. The Pennsylvania potato grower co-operative has 32 members.

Additional Farm Show Helpers

We inadvertently forgot to list the following volunteers on the Farm Show Honor Roll last month:

- Thane Treaster
- Alvin Martin
- John and Mary Poffenbarger

We apologize for not listing these helpers last month.

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NEWS

Census of Agriculture Countdown Begins

America's farmers and ranchers will soon have the opportunity to strongly represent agriculture in their communities and industry by taking part in the 2017 Census of Agriculture. Conducted every five years by the U.S. Department of Agriculture's (USDA) National Agricultural Statistics Service (NASS), the census, to be mailed at the end of this year, is a complete count of all U.S. farms, ranches, and those who operate them.

Farmers Need to Advocate for Extension

Thanks to the foresight of Congress more than 100 years ago, the nation's Land Grant and Cooperative Extension System has stable funding from the federal government.

But across the country, Cooperative Extension services are facing budget cuts from state legislatures. That's where Farm Bureau members can step in to help lobby for adequate support for Cooperative Extension services in their community.

That was the message of Dr. Richard Bonanno, associate dean of the College of Agriculture and Life Sciences at North Carolina University, who spoke during a seminar held at the American Farm Bureau Federation's 2017 Annual Convention & IDEAg Trade Show. While the federal government provides yearly funding for Extension services, those dollars must be matched by state governments, Bonanno said. That's why cuts in state funding can hamper Extension's ability to offer programs.

"We need to do a better job of engaging our state politicians about the need for stable funding. Level funding, or small decreases in Extension budgets can impact our ability to interact with the public, provide youth development programs like 4-H and offer food and nutrition programs," Bonanno said.

Situations like that one that arose in Pennsylvania, where Extension faced the total elimination of funding, can grab headlines, but there is still a danger of small programmatic cuts, Bonanno said. Both types of cuts—either dramatically or over time—can yield the same result, he said.

"If your state funding goes away, you lose your federal match," he said. "That is something we can't ignore."

North Carolina, for instance, has lost 200 agents since 2010 because of budget cuts. That reduces the ability of Extension agents to get out in the field and have face-to-face contact, Bonanno said. As the nation's Extension system enters its second century of existence, it faces issues like funding, how to connect the public with agriculture, and increased urbanization. In North Carolina, some urban counties questioned the need for funding Extension when they did not have any farmers living in the community, Bonanno said. While the growth in local foods has helped the public understand more about agriculture, Bonanno said he wants to make sure the public understands the whole picture of the nation's agriculture system.

"To me, a big part of local foods is the public's desire to understand their food supply," Bonanno said. "The abundance and affordability of our food supply requires we have all types of farmers, and all types of agriculture."

From the *Penna. Agricultural Alliance Issues Update*, Penna. Farm Bureau, February 2017.

"The Census of Agriculture remains the only source of uniform, comprehensive, and impartial agriculture data for every county in the nation," said NASS Administrator Hubert Hamer. "As such, census results are relied upon heavily by those who serve farmers and rural communities, including federal, state and local governments, agribusinesses, trade associations, extension educators, researchers, and farmers and ranchers themselves."

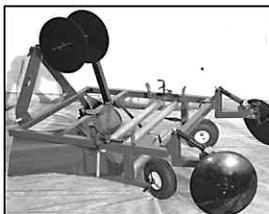
The Census of Agriculture highlights land use and ownership, operator characteristics, production practices, income and expenditures, and other topics. The 2012 Census of Agriculture revealed that over three million farmers operated more than two million farms, spanning over 914 million acres. This was a four percent decrease in the number of U.S. farms from the previous census in 2007. However, agriculture sales, income, and expenses increased between 2007 and 2012. This telling information and thousands of other agriculture statistics are a direct result of responses to the Census of Agriculture.

"Today, when data are so important, there is strength in numbers," said Hamer. "For farmers and ranchers, participation in the 2017 Census of Agriculture is their voice, their future, and their opportunity to shape American agriculture – its policies, services, and assistance programs – for years to come."

Producers who are new to farming or did not receive a Census of Agriculture in 2012 still have time to sign up to receive the 2017 Census of Agriculture report form by visiting www.agcensus.usda.gov and clicking on the 'Make Sure You Are Counted' button through June. NASS defines a farm as any place from which \$1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the census year (2017).

For more information about the 2017 Census of Agriculture and to see how census data are used, visit www.agcensus.usda.gov or call (800) 727-9540.

VEGETABLE GROWERS

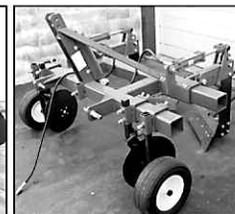


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National News Briefs

EPA Decides Not to Ban Chlopyrifos

United Fresh applauds the decision made recently by the Environmental Protection Agency (EPA) to reject an interest group petition to remove the crop protection product known as chlopyrifos, from the market. The product, which is used on a variety of specialty crops, has been the subject of extensive and lengthy review by EPA. In spite of the agency's own review process uncovering questionable data regarding the impacts of chlorpyrifos and multiple scientific studies supporting the safe usage of the product, the previous administration had recommended it be banned.

Agriculture stakeholders across the crop spectrum, including United Fresh, had urged that the agency ensure that its regulation of the product uphold the solid foundation of unbiased scientific data showing this product could be used safely and effectively. The agency's decision to reject the effort to remove chlorpyrifos from the marketplace was welcomed by a variety of agriculture grower organizations.

From the United Fresh Produce Association.

Taxes May Take Center Stage in Congress

The American Farm Bureau Federation is paying close attention to federal tax reform efforts in Congress, including a push to eliminate estate taxes. Congress and President Donald Trump have voiced support for various aspects of tax reform, including the repeal of estate taxes. And recently, separate bills in the House and Senate call for the elimination of the death tax. Farm Bureau will be pushing for swift adoption of a bill to repeal

estate taxes, outside of other tax reform efforts that may take place later this spring.

"It's important that it's happening now because Congress is about to write comprehensive tax reform," said Pat Wolff, AFBF senior director of Congressional Relations.

During a session held as part of the American Farm Bureau Federation's 98th Annual Convention, Wolff said other portions of a tax reform package could be problematic for farmers, such as changes to cost-recovery provisions for expensing and depreciation.

There is also discussion about a new tax called border adjustability under which taxes on income would be determined by whether or not the income passes over the U.S. border. That tax would make U.S. exports cheaper, but some goods purchased from foreign companies would be subject to a 20 percent tax, Wolff said.

"Another way to think about it is that revenue is taxed where it's consumed, not where it's generated. That means under the Republican proposal there would be a 20 percent tax on all imported products. For any products that are sold overseas, there would be no income tax," Wolff said.

From the Pennsylvania Agricultural Alliance Issues Update, Penna. Farm Bureau, March 2017.

WOTUS Rule to be Reviewed

President Donald Trump signed an executive order to send the misguided "Waters of the United States" rule back to the drawing board. The executive order, signed in late February, *(continued on page 10)*

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NEWS

National News Briefs (continued from page 9)

directs the Environmental Protection Agency and U.S. Army Corps of Engineers to review the WOTUS rule. The rule, which took effect in 2015, gives the federal government sweeping authority over small ditches and streams. American Farm Bureau President Zippy Duvall said Trump's decision brings welcomed relief to farm families across the country.

"The flawed WOTUS rule has proven to be nothing more than a federal land grab, aimed at telling farmers and ranchers how to run their businesses," Duvall said. "The Environmental Protection Agency failed to listen to farmers' and ranchers' concerns when drafting the rule and instead created widespread confusion for agriculture. Under the rule, the smallest pond or ditch could be declared a federal waterway."

Under the WOTUS rule, farmers would have needed to acquire a permit from the federal government to perform routine farm tasks near ditches, or small streams, such as crop treatment or building fences. EPA officials were using the WOTUS rule to clarify their jurisdiction under the Clean Water Act, which gives the federal government authority over "navigable waters." Throughout the rule making process, farmers aired concerns that extending Clean Water Act jurisdiction to small bodies of water—and even dry ditches—was a significant, and unnecessary, federal overreach. PFB President Rick Ebert thanked the administration for listening to the concerns of farm families.

"The executive order demonstrates that the President and his administration understand that the final WOTUS rule is clearly flawed and needs to be revised with input from farmers, builders, county governments and other stakeholders, who care about water quality and are interested in securing a new policy in a fair and transparent manner," Ebert said.

From the Pennsylvania Agricultural Alliance Issues Update, Penna. Farm Bureau, March 2017.

A Different Mite May Pose a Threat to Honeybees

A second mite belonging to the Varroa species is now threatening European honeybees after shifting from its preference for the Asian honeybee. The new mite is classified as Varroa jacobsoni which has not yet been found in the United States but could spread to many regions throughout the world. Mites feed on honeybees and leave a wound prone to infection and can transmit diseases. The parasite is linked to colony collapse disorder. Scientists are seeking ways to disrupt, block or manipulate the destructive behavior of the Varroa jacobsoni mite to remove this threat to the European honeybee. The European honeybee is the primary species used to pollinate crops and produce honey worldwide.

From the Penna. Agricultural Alliance Issues Update, Penna. Farm Bureau, January 2017.

Trade Driving Growth in Agriculture

Over the past decade, overseas trade has been driving growth in agriculture. And while farmers may feel disconnected from international consumers, the grains and protein products leaving U.S. soil for ports abroad are helping to drive consumption in

farm products. So for U.S. agriculture to remain productive, and profitable, our nation's farmers need open markets and fair trade agreements, according to experts from the American Farm Bureau Federation during a workshop held as part of the national FUSION conference.

"We have really reached maximum consumption in the country on a number of our products," said Veronica Nigh, an economist with AFBF. "Roughly 95 percent of the world's population is located outside the United States, so trade is absolutely crucial to growth."

While President Trump withdrew the United States from the Trans-Pacific Partnership, AFBF will make sure that farmers' voices are heard and that the administration understands how crucial trade is to agriculture growth, said Dave Salmonsens, Senior Director of Congressional Relations for AFBF with the American Farm Bureau Federation. It remains to be seen how the United States will move forward in the wake of withdrawing from the trade deal—which was a pact between 12 Pacific Rim nations, Salmonsens said. Negotiations could start again, or the United States could strike deals with individual nations, he said. There has also been some talk about reexamining the North American Free Trade Agreement (NAFTA) but any change to that accord would need Congressional action, Salmonsens said. NAFTA has been positive for American farmers as Canada and Mexico rank first and third in terms of our agriculture trading partners, he said.

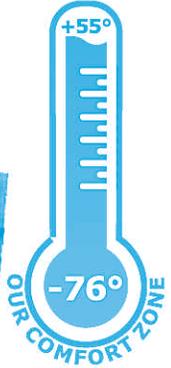
American farmers are sensitive to trade because of the growth that it has caused for agriculture, Nigh said. As countries like China become more developed, it causes a greater demand for farm products. For instance, the average Chinese consumer ate 214 pounds of grain per capita in 1995, and that number is now up to 290 pounds of grain. Over the same time frame, Chinese consumers ate 15 more pounds of red meat per capita, Nigh said.

While the United States works to grow agriculture exports through trade pacts, organizations within the U.S. Department of Agriculture, along with AFBF and commodity groups also work to build demand with foreign nations, Nigh said. She encouraged farmers to play a role in those organizations that promote trade.

(continued on page 11)



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Consumers Paid Less for Food in 2016

Last year marked the first time in nearly 50 years that grocery store (food-at-home) prices were lower than those in the year before. In 2016, retail food prices decreased by 1.3%, as many food categories saw declining year-over-year prices, including beef and veal, pork, poultry, eggs, and dairy.

Looking at the last 50 years of Consumer Price Index (CPI) data for food at home reveals that retail food prices have, on average, risen 4% annually. However, the degree of the price change varied over time. High inflation in the 1970s — price increases as large as 16% — were precipitated by food commodity and energy price shocks. The last year that retail food prices did not increase over those of the previous year was 1967.

The unusual decline in retail food prices in 2016 can be attributed to a culmination of factors. Retail food prices, in general, are driven by the costs of several production factors, including commodity inputs, labor, packaging, transportation, and food processing. Declining prices for retail meats, eggs, and dairy in 2016 are largely a story about rising commodity production, especially for eggs. Retail egg prices declined by 21% in 2016 due to ever higher numbers of laying hens on farms. The cattle, hog, turkey, and dairy industries also saw upticks in the number of animals produced in 2016.

In addition to falling commodity prices, declining energy prices and a strong U.S. dollar played a central role in the food price decline. Lower transportation costs due to low oil prices and the strength of the U.S. dollar placed additional downward pressure on U.S. food prices in the first half of 2016. A strong U.S. dollar makes U.S. foods less fiscally attractive to other countries, leaving a larger supply of U.S. foods in the domestic market as well as making imported foods less costly.

Retail prices did not fall for all food categories in 2016. Fresh vegetable prices remained flat, and consumers paid 2% more for fresh fruits.

Mr. Berry is with Penn State Extension in Lehigh County. Information for this article is drawn from Food Price Outlook, by Annemarie Kuhns and David Levin, USDA, Economic Research Service.

National News Briefs *(continued from page 10)*

When farmers are talking to lawmakers, it's important for them to personalize what agriculture trade means to their farm, Salmonsensaid. For instance, Kevin Paap who is president of the Minnesota Farm Bureau, said in a recent interview that three out of every 10 rows of his crops goes to export, Salmonsensaid. That helps personalize the story. In addition, he encouraged farmers to reach out to their state officials—including their state's Departments of Agriculture—about the importance of open trade.

From the Pennsylvania Agricultural Alliance Issues Update, Penna. Farm Bureau, March 2017.



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NEWS

PSU Offers Public Sessions on Spotted Lanternfly

Penn State Extension is offering sessions for farmers and landowners to learn more about the invasive spotted lanternfly. The pest, first discovered in Berks County in 2014, attacks high-value crops such as grapes, tree fruits and hardwoods. The pest has spread to several adjacent counties in Southeast Pennsylvania.

During the sessions, representatives from Penn State Extension and the Pennsylvania Department of Agriculture will provide information regarding the eradication efforts to date and on what landowners can do to assist. Penn State is also looking for volunteers to place sticky bands on Tree of Heaven throughout the summer and count how many spotted lanternflies are captured.

The remaining public meetings are: April 12, 9:30- 11:30 a.m., 4-H Center, Collegetown; April 15, 12-2 p.m., Center at Spring Street, Boyertown; April 22, 9:30- 11:30 a.m., Lehigh County Agriculture Center, Allentown; April 26, 6:30-8:30 p.m., Brandywine Heights Middle School, Topton; April 27, 6:30-8:30 p.m., Ruscombmanor Township Building; April 29, 9:30-11:30 a.m., Milford Township Office.

*From the **Pennsylvania Agricultural Alliance Issues Update**, Penna. Farm Bureau, March 2017.*

Game Commissioners...

(continued from page 4)

1A, 1B, 2A, 2C, 2D, 2E, 2F, 2G, 2H, 3A, 3B, 3C, 3D, 4A, 4B, 4C, 4D, 4E, 5A and 5B. The package also retains the two-week (Nov. 27-Dec. 9) concurrent, antlered and antlerless deer season in WMUs 2B, 5C and 5D.

Hunters with Deer Management Assistance Program (DMAP) antlerless deer permits may use the permits during any established deer season, so long as the permits are used on the lands for which they are issued. DMAP permit holders will continue to be able to harvest antlerless deer from Nov. 27-Dec. 9 in WMUs 1A, 1B, 2A, 2C, 2D, 2E, 2F, 2G, 2H, 3A, 3B, 3C, 3D, 4A, 4B, 4C, 4D, 4E, 5A and 5B. Fees for DMAP permits are \$10.90 for residents and \$35.90 for nonresidents.

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

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

Once again this year, the commissioners gave tentative approval to concurrent hunting of antlered and antlerless deer in WMUs 2B, 5C and 5D during most seasons, with the first segment of the archery season to run from Sept. 16 to Nov. 25 in those WMUs.

Critical Updates for the 2017 Mid-Atlantic Commercial Vegetable Production Guide Enclosed

The Mid-Atlantic Commercial Vegetable Production Guide is currently undergoing some much needed upgrading to improve both the editor and end-user experience.

To account for the time needed to make this transition, a critical updates addendum was prepared to supplement and bring up-to-date the 2016 Mid-Atlantic Commercial Vegetable Production Guide. The critical updates that the contributors deemed as important for the 2017 growing season are included in this newsletter as an insert that you can keep with your 2016 Production Guide. It is organized by insect, weed and disease management update information.

NRCS Makes Funding Available For High Tunnels

The Natural Resource Conservation Service is making funding available for Pennsylvania farmers to install high tunnel systems. Money is being made available through the Agricultural Management Assistance program, which was authorized as part of the 2014 Farm Bill. Funding can be used for high tunnel systems and related costs, such as irrigation and erosion control. Producers have until April 21 to apply for funding. Funding is competitive, with the highest priority given to urban and suburban areas. Producers may receive an incentive payment based on the average cost for installing conservation practices. Farmers must have a conservation plan in place before the application can be considered for funding. For more information, visit: www.pa.nrcs.usda.gov.

*From **Farm Bureau Express**, Penna. Farm Bureau, April 7, 2017.*



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State News Briefs

PBF Urges Regulators to Accept Penn State Data

Pennsylvania Farm Bureau is calling on the Environmental Protection Agency to accept all of the data collected through a Penn State survey that measured best management practices in the Chesapeake Bay Watershed. The data has been verified by Penn State University, and an independent firm hired by the federal Environmental Protection Agency. Both the university, and the private company, agree the results are accurate.

But questions still remain as to how much of the agricultural conservation practices documented in the Penn State survey will be given credit in the model used by EPA to measure Pennsylvania's progress in meeting nutrient reduction goals in the Chesapeake Bay. Last year, Penn State surveyed thousands of farmers in the watershed to determine how many voluntary conservation practices are being followed on farms. The survey asked questions on nutrient and manure management plans, stream bank fencing and riparian buffers, along with other conservation planning.

What Penn State found was extensive effort by Pennsylvania farmers in the Bay watershed to install voluntary conservation measures that impact downstream water quality, prevents soil erosion and reduces nutrients from reaching creeks and streams.

Prior assessments by the EPA only looked at projects paid for by federal cost share dollars. That approach could put more of the blame for water quality on farmers.

Penn State presented their survey findings to the Chesapeake Bay Program Agriculture Workgroup. Prior to presenting the data, an independent company regularly used by

EPA to perform technical analysis reviewed Penn State's findings and found they were statistically sound.

In December, the Agriculture Workgroup to the Chesapeake Bay Partnership considered the merits of Penn State's survey as an acceptable approach in measuring pollution and progress in the Bay Model. While the Agriculture Workgroup generally approved the method employed in the Penn State survey, the Workgroup did not approve the data produced from the survey.

Pennsylvania Farm Bureau President Rick Ebert said that farmers have been telling government officials for years that the EPA's approach to measuring best management practices on farms is inadequate. Numerous farmers have made the decision to adopt conservation practices that prevent soil runoff and nutrients from reaching waterways, he said.

"Pennsylvania farmers have been frustrated by the unwillingness of regulators to count farmers voluntary conservation measures. Penn State's survey and methods gives farmers the recognition they deserve," Ebert said. "The time has come for the EPA to accept the survey data."

Penn State received nearly 7,000 surveys from farmers in the Bay watershed. To verify the data, Penn State researchers visited more than 700 farms to make sure that what was reported in the survey was actually being put into practice.

From the Penna. Agricultural Alliance Issues Update, Penna. Farm Bureau, January 2017.

(continued on page 14)



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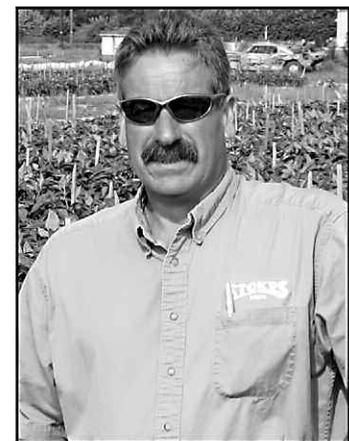
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NEWS

State News Briefs (continued from page 13)

Lawmakers Pushing on Natural Gas Issues

State lawmakers are making several efforts to address concerns that landowners are having with natural gas drilling, including minimum royalty payments. Recently, Rep. Garth Everett introduced House Bill 557 that would establish that a minimum royalty payment will not be less than 12.5 percent, regardless of the costs natural gas companies incur getting gas to market.

Landowners are having issues with natural gas companies taking out “post-production” costs that significantly reduce their royalty payments. The practice is not universal among natural gas companies. In addition, efforts to give landowners greater protection in the natural gas development process have passed the Senate. The bills sponsored by Sen. Gene Yaw are now headed to the House of Representatives for consideration.

The legislation would allow leaseholders to inspect natural gas company records dealing with gas taken from their property in order to verify proper payment. Separate legislation would prohibit natural gas companies from taking retaliatory action against royalty owners who may question the accuracy of royalty payments—including terminating leases or ceasing development.

From the Pennsylvania Agricultural Alliance Issues Update, Penna. Farm Bureau, March 2017.

Spread the Word: Educator’s Ag Institute

The Pennsylvania Friends of Agriculture Foundation is committed to growing agriculture literacy. And one way the foundation achieves that goal is by helping educators develop lesson plans based on agriculture. The foundation, a charitable organization supported by Pennsylvania Farm Bureau, is hosting the Educator’s Ag Institute this summer at Penn State. This year’s institute, planned for July 9-13, will give teachers an up close and personal look at farming practices, and how they can use agriculture as the basis for lesson plans. While at the conference, educators will tour a number of Penn State’s agriculture facilities, participate in hands-on lessons and leave with a host of materials for use in their classroom.

The Educator’s Ag Institute is open to new educators, along with those who have previously attended our Ag in the Classroom workshop. Participants will also tour several area

farms and hear from farmers about how they grow food, care for and feed their animals, and overall how the farm is run. Educators will receive Act 48 credits and/or can register for continuing education credits through Penn State.

In addition, many of our county Farm Bureaus have previously sponsored educators to attend; and we are encouraging that same outreach this year. Please consider sharing information about this valuable workshop with educators in your area. For more information, contact the foundation at 717.731.3556 or www.pfb.com/aginstitute.

From the Pennsylvania Agricultural Alliance Issues Update, Penna. Farm Bureau, March 2017.

Farmers Show Their Community Spirit

Farmers across Pennsylvania are continuing to show their civic spirit with the Farmers Care program, which helps collect donations for various charities including the Ronald McDonald House. This year, volunteers have collected more than \$31,000 in food, supplies and monetary donations for Ronald McDonald Houses in two Pennsylvania communities. Led by our Women’s Leadership Committee, the Farmers Care program is building on more than \$1 million in donations since the program began in 1998. Many of those donations have been in support of Ronald McDonald Houses, but also includes support to local charities like food banks.

To date, our Women’s Leadership Committee has hosted events with Ronald McDonald Houses in Hershey and Philadelphia, and is also planning on making donations to houses in Danville, Pittsburgh and Scranton. During an event at Freddy Hill Farms in Montgomery County, Pennsylvania Farm Bureau President Rick Ebert praised the efforts that farmers have made to support charities like Ronald McDonald Houses.

Farmers recognize the crucial role the houses play in the lives of rural residents—providing a home away from home for families with children in hospitals. The Farmers Care program also highlights the civic spirit of farm families, who spend the winter months supporting charitable institutions, Ebert said.

From the Pennsylvania Agricultural Alliance Issues Update, Penna. Farm Bureau, March 2017.



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Farm Transition: Writing a Letter May Help Communication

Elaine Froese

Sometimes we have to go back to basics in order to keep healthy change happening on our farms. Lately in my transition seminars I have been encouraging frustrated young farmers to write a letter of intent to their founding parents. People who are stuck with a large degree of anxiety and overwhelm from not knowing the certainty of the future are caught in what William Bridges has termed “the neutral zone”. You want to get out of neutral and moving towards a more certain future.

Let’s look at five types of letters that might be helpful to your situation

- Exploration
- Collaboration
- Explanation
- Confrontation
- Affirmation

You might want to take parts of each of these types of letters to accomplish your specific goals. Here’s how I have seen them used in my coaching work.

Exploration: This is the discovery process of seeking out the possibilities of how you might like to address an issue with another party. You are exploring the various options ahead of you. For a young farmer it might be exploring a new business plan with the founders or folks who hold most of the equity in the operation. In our case, our son used a marketing contract with a hemp processing company to explore the possibility of growing hemp on our certified seed farm. His father agreed to the plan and we now have three years of hemp growing experience. What opportunities are you wanting to explore on your farm?

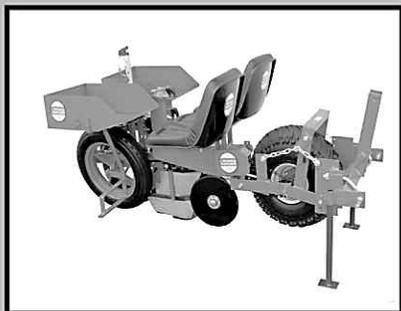
What letters of reference or testimonials do you have in your research to prove that it is a workable choice to engage? Writing the letter will help crystalize your commitment to the project and help think things through for your business plan.

Collaboration: The purpose of this letter is to agree on a working contract. I use this letter in my speaker agreements to be clear about timelines, dates, venues, supplies, and fees and expenses. When you are wanting to collaborate on a project with a family member you usually talk about it lots, but how many documents are in place to be clear about roles and responsibilities? Many farm folks I know wish that they would have taken a few more steps to get things in writing so that they could refer back to the original goals and expectations. A shareholder’s agreement is really a document letter of collaboration. Do you understand what your shareholder’s agreement says? Do you need to update it?

Explanation: This is a powerful script to follow when you want to convey your thoughts and intent at a meeting, but are not sure that you will be able to say everything quite the right way that you want it to go. I have seen this type of letter used as a powerful tool by a farm widow who was distressed that her adult children were fighting over how the father’s estate had been carried out. She used the letter to read her thoughts at the opening of the family meeting. The children listened intently while their mother conveyed her angst at their bickering. When the tone of reconciliation had been set by the mother’s expectations conveyed in her letter, the children discussed their next

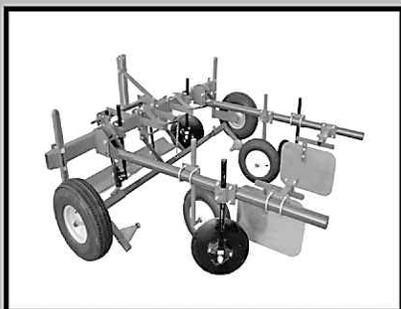
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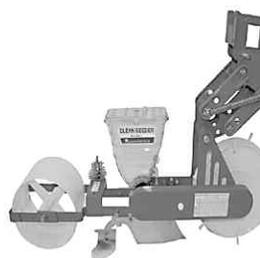
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GENERAL

Farm Transition... (continued from page 15)

steps towards a better family relationship with understanding of why the estate was executed in a certain manner. People cannot read minds, so letters are a vehicle for building up understanding and starting robust courageous conversations.

Confrontation: Stop texting when you are angry. Put that energy towards collecting your thoughts on paper in a word document that you can craft until it sounds right. I have used this approach when adults want to deliver a strong message of concern to another adult. In one case it was crafted by a husband and wife, and then hand delivered to the party that needed to receive the message of concern. This took time, and deliberation over carefully chosen words. The power of hand delivery emphasized the openness for ongoing conversation, and the seriousness of the need for the conflict to be dealt with. You can make this even more impactful if the letter is handwritten, as long as your writing is easy to read. Sometimes these con-

Making The Farm-to-Consumer Connections

John Scott Port knows that consumers have a lot of options when it comes to buying beef, including visiting a nearby grocery store. So Port, who owns a beef farm and retail store in Clarion County, puts a lot of effort into marketing his product in a way that sets himself apart from the rest. And much of that centers on showcasing the farm, and his life as a farmer. Port shared those insights as part of a panel discussion on direct marketing, held during a Farm Bureau Day event in Clarion. Along with owning a retail store in Clarion, Port also markets his beef in Pittsburgh at farm markets.

"Something that has helped me a lot in wrapping my mind around direct marketing is that we are serving a niche," he said. "I don't wake up to sell beef. I wake up to sell an experience."

Farmers looking to get into direct marketing must be willing to tell their story, and the story behind what they are growing and selling, said Juliette Enfield, a Penn State Extension educator who specializes in marketing. Consumers who are interested in buying local also are looking for the experience of connecting with the farmer, she said.

Perhaps one of the best ways to do that is through social media, Enfield said.

"You have to have a social media presence for direct marketing. It is how you reach new audiences and have people interact with you," she said. "Videos and pictures are essential. The more you can make and post, the more visibility you get. It's a free tool."

Port makes a point of posting content about his farm at least six days a week, with themes for each day. Posts like "Beef Tip Tuesday," or "Wonderful Wednesday," have resonated, but not as much as his farm dog, Oscar. "Farm Dog Friday" has, by far, the most engagement. Customer service is also crucial to direct marketing, Port said.

"It's important to be their friend, not a salesman," he said. "I really like what I do, and I want to share that experience. They will come to you if you have that reputation."

(continued on page 30)

frontation letters are hard to receive, particularly if you are like me and would rather just have a face to face conversation. Use the letter as a starting point, and as an invitation to have a face to face conversation.

Affirmation: One of my love languages is verbal affirmation. As a writer I also love the power of the written word through cards and notes of affirmation. They are nice to see on social media, but those are fleeting comments. You can hold a card or letter of affirmation in your hand, and pull it out again on hard days when you need a word of encouragement. I have seen this powerful letter used by a father in-law who sought to empower his talented daughter in-law. He wrote her a letter stating the many reasons why he thought that they should work together on the farm. That letter started a great relationship, and affirmed open, loving, respectful communication between them as a team.

Some younger people have not learned cursive writing, and therefore only print or keyboard their messages. Our local agent who sells driver licenses has taken to teaching young teens how to craft a great signature! I find this hard to believe, but a reflection of how the written word is changing in our culture. Writing a letter to break down the barrier of anxiety about your future on the farm, or the plans for the fairness factor in estate plans is a place to start. You can be clear about your intent not to cause harm, stating your hope to gain clarity of expectations for the future. You can think about the words you carefully choose.

Please consider what type of letter you need to be crafting today. Also go to www.elainefroese.com/unstuck to sign up for a six module course online that we have created to help you break through the barriers keeping your farm transition stuck.

Write me a letter.

Elaine Froese, CSP, CAFA, CHICoach empowers families to communicate better and resolve conflict. Visit www.elainefroese.com/store to find more resources. Like her on Facebook at "farm family coach" or follow @elainefroese. Send mail to Box 957, Boissevain MB R0K 0E0.

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Extension Asks Growers to Take Food Safety Survey

Pennsylvania produce growers, food processors and animal feed producers preparing to comply with the Food Safety Modernization Act (FSMA) can provide Penn State Extension with input — via an anonymous survey — that will help guide the development of relevant educational resources.

Passed by Congress in 2011, FSMA establishes regulatory practices that produce farmers, food processors and feed manufacturers must adopt to prevent contamination of fresh produce, processed and manufactured human foods, and animal feeds.

Penn State Extension recently added a link to three industry surveys on the homepage of its FSMA website. Survey participants should complete the versions tailored to their segments of the food industry — there is a survey for produce growers, one for human food processors and one for animal feed producers. Personal information is not required, and individual survey responses will not be shared publicly.

The surveys ask participants about their needs and preferences regarding FSMA education and include a few multiple-choice questions about how they would categorize their food business or growing operation. Each survey takes approximately 10 minutes to complete. Extension educators will consider feedback from the surveys as they develop future educational resources.

Penn State Extension encourages participants to complete the survey as soon as possible. The FSMA survey project is conducted in coordination with the Pennsylvania Ag Resource Centers, a partnership between the Penn State College of

Agricultural Sciences and the Pennsylvania Department of Agriculture.

The Penn State Extension FSMA website also contains a variety of educational resources, including videos, handouts, articles and news updates about FSMA regulations. In addition, website visitors can use the site to communicate with food-safety extension educators and to register for educational FSMA workshops being held throughout the state.

Over the next several years, the Food and Drug Administration will begin enforcing the mandated food-safety activities and record-keeping requirements outlined in the Food Safety Modernization Act. The act includes seven regulations, and current Penn State Extension resources focus on three that will significantly impact Pennsylvania’s growers, distributors and processors: the Produce Safety Rule, the Preventive Controls for Human Food Rule and the Preventive Controls for Animal Food Rule.

These rules require food and feed businesses to take a preventative, instead of a reactive, approach to understanding and controlling potential food safety risks in their operations, according to Luke LaBorde, associate professor of food science in the College of Agricultural Sciences.

“Penn State Extension has the expertise to assist growers and processors with developing science-based strategies to prevent foodborne illnesses before problems occur,” Laborde said. “By surveying the industry, we can identify current needs of Pennsylvania’s producers and processors and strategically prioritize educational efforts that will help them comply with the regulations.”



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VEGETABLE PRODUCTION

Best Management Practices for Farmers Using Seeds Treated with Neonicotinoid Insecticides

Kimberly Stoner

Neonicotinoids are a group of insecticides that have a mode of action similar to that of nicotine and are often used as seed treatments because they can travel from the seed into the plant and control insects feeding on plants as well as on the seed. Honey bees, native bees such as bumble bees and mason bees, and many other native pollinators are critically important to Connecticut's agricultural community. While the primary concern is acute exposure to neonicotinoid insecticides, particularly from airborne dust associated with planting of treated seed, there is growing concern regarding the chronic exposure to foraging bees from nectar, pollen, and plant guttation which supplies water bees transport back to the hive.

Four neonicotinoid insecticides that are highly toxic to honey bees and native bees such as bumble bees are regulated by Connecticut Public Act 16-17 (An Act Concerning Pollinator Health): clothianidin, dinotefuran, imidacloprid, and thiamethoxam.

Some common trade names for insecticides used as seed treatments with these active ingredients are (1): Clothianidin: Poncho, NipsItInside, Poncho/VOTiVO Thiamethoxam: Cruiser, Platinum, Actara Imidacloprid: Gaucho, Admire, Wrangler

Although neonicotinoid seed treatments are used on a wide range of crop plants, including soybean, cotton, canola, wheat, sunflower, potato, and many vegetables (1,2), reported honey bee kills from neonicotinoids have most often been associated with dust from corn seed released by vacuum planters at planting time (3,4,5,6). In addition to affecting honey bees and native bees, neonicotinoids applied as seed treatments may also affect other beneficial insects (7,8) and contaminate groundwater, streams and wetlands (9,10,11). Treated seeds are also attractive to birds, and the amount of neonicotinoid on one treated corn kernel is enough to kill a songbird (12). Thus, there are many reasons to be careful in using neonicotinoid-treated seeds.

General Principles for Best Management Practices:

- Do not use seed treated with neonicotinoids unless there is a specific pest problem that can be effectively managed with a neonicotinoid seed treatment.
- When the use of neonicotinoids is not warranted, purchase seed that is not treated with this group of chemicals (seeds may be treated with fungicides or other pesticides). If seed selection is limited, contact your seed company's field representative to request increased selection and availability of seed that is not treated with neonicotinoids.
- Before planting with seeds treated with neonicotinoids, notify any nearby beekeepers, so that they can protect their bees. Also remove flowering plants from the field and field edges by mowing or tillage.
- Read and follow all instructions on the seed tag including personal protective equipment to be used in handling seed and required buffer zones.
- Keep the treatment on the seed during storage and handling. Avoid storing seed under extreme temperatures and excessive humidity that may increase the breakdown of the seed treatment.
- Reduce insecticide dust produced at planting, keeping the treatment on the seed as much as possible. Load treated

seed into planter boxes in a manner that will minimize the dust from becoming airborne. Minimize any drift of dust outside the field. Most problems with neonicotinoid-contaminated dust drifting in the air have been with treated corn planted using vacuum planters. There is currently no single solution to this problem. Options, including using deflectors or filters on the planting equipment and changing the lubricant mixed with the seed, are discussed below.

- Avoid planting on windy days when any dust will blow into the environment, particularly if wind is blowing toward bee hives, flowering trees or standing water sources used by bees.
- Dispose of any leftover treated seed properly, following directions on the seed tag. Generally it is best to plant it or bury it in an appropriate place away from water bodies. 2
- Dispose of any dust left over in seed bags and filters properly, following any instructions on the seed bag or using the hazardous waste collection process in your municipality. (Because this is farm waste rather than household waste, there may be a fee.)

Specific Information: Seed treatment with neonicotinoids has advantages when compared to application of pesticides by other methods, particularly when used to control insect pests that feed on seeds or seedlings early in the season.

(continued on page 19)

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VEGETABLE PRODUCTION

Best Management... (continued from page 18)

Neonicotinoids have a combination of high toxicity to insects and low toxicity to mammals that make them safer than many of the older insecticides, and application to the seed allows the amount applied per area to be greatly reduced compared to soil or foliar applications (6, 13). However, several studies have found that neonicotinoid seed treatments are being widely used in crops and regions where there is little or no economic benefit (14, 15), and in some cases even reducing yield by killing off the natural enemies of pests (8). The Integrated Pest Management (IPM) approach would call for using a preemptive pesticide treatment only when there is a high probability of a target pest causing economic damage or when rescue treatments cannot keep the target pest under the economic injury level (15, 17). This approach would greatly decrease the use of seed treatments (15, 16) and the associated unintended consequences of overuse of pesticides including evolution of insecticide resistance, outbreaks of non-target pests, resurgence of target pests, and negative effects on the environment (14, 16).

For some crops, neonicotinoid seed treatments have been overused in part because seed producers sold these as part of a "package" along with fungicide treatment or genetic modifications for resistance to insects not controlled by neonicotinoids (14, 16). According to Canadian authorities, most seed companies can accommodate orders for non-insecticide treated seed (16).

As with any application of an insecticide highly toxic to bees, drift of insecticide dust onto bee hives and onto flowering plants being used by bees should be avoided. Although research has shown that honey bees are mostly using flowering

trees such as maple, willow, apple, cherry, and hawthorn at the time of spring planting (17), other spring flowering weeds and wildflowers like clovers, dandelions and mustards are also used by honey bees (17) and mustards and clovers are very important to bumble bees and other native pollinators (18, 19).

Although seeds of many different crops have been treated with neonicotinoids, bee kills at planting have generally been associated with treated corn (3, 4, 5, 6, 21). A few studies of treated seeds of other crops have found much less insecticide dust in batches of sugar beet and oil seed rape seeds than in corn (6), although another detailed study found that wheat may have as much risk of dust drift as corn (22).

The most important factors affecting the amount of dust released into the air when planting neonicotinoid treated corn seeds are the quality of the seed treatment, the equipment used for planting, and the weather conditions at the time of planting (6, 17, 21). The quality of the seed treatment depends on how well the seed has been cleaned before treatment; the formulation of the treatment, including the active ingredient (insecticide), polymers used to stick the active ingredient to the seed; and film coatings added to the outside (6,17). The quality of the seed treatment has been shown to be variable across corn varieties and among batches in various studies (17, 21), and this has been correlated with bee kills (21) or with high levels of dust released at planting (17).

The equipment used for planting has also been found to be important. Most farmers growing corn use pneumatic precision seed planters, also called vacuum planters (5, 6, 17, 21). A few

(continued on page 20)

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VEGETABLE PRODUCTION

Best Management... (continued from page 19)

studies have compared vacuum planters to planters using a mechanical method or compressed air to place the seed, and have found that the planters without a vacuum produce much less dust (16, 21) and less hazard to bees (21) than vacuum planters. In vacuum planters, corn seeds are precisely spaced in the row by using a vacuum, generated by a central fan, to aspirate the seeds onto a perforated disk, and to keep each seed sticking to a single hole in the disk until the seed drops into the furrow (5, 21). The fan draws air in through an air intake, and then exhausts it through an outlet that is typically 4 to 6 feet above the ground (5, 21). A lubricant, such as talc or graphite, may be used to keep the seeds from sticking together, but also abrades the seed and creates insecticide dust, which mixes with the lubricant (23). This mixture of lubricant and insecticide dust travels in different directions: some travels into the furrow and is planted with the seed, some is exhausted into the air, and some remains behind in the planting equipment (23). Xue et al. (5) have also shown that field dust is sucked in through the air intake, abrades the seed, and then is exhausted into the air. Because neonicotinoid insecticides break down slowly and are so heavily used, the field dust already has residues of a neonicotinoid (clothianidin) before it goes into the planter, but the carry-over pesticide accounts for only 5% of the insecticide residue in the aerial dust; 95% of the neonicotinoid residues are from seed dust (5).

The combination of defective seed treatment and the vacuum planter system can create the problem of dust highly toxic to bees traveling into the air and potentially coming into contact with bees or plants used by bees (5, 6, 17, 21, 23). Various modifications have been tried with some degree of success. After a large bee kill in Germany associated with poor quality seed treatment of corn and vacuum planters (21), Bayer (the pesticide manufacturer) instituted standardization of seed treatment, training of workers, and testing of seeds to make sure that dust was minimized, and also worked with European equipment manufacturers to create kits to modify the vacuum planters to release the exhaust air, and thus the dust, at a lower air speed close to the ground, ideally into the furrows (6, 21). These deflectors were required in some European countries, but they generated such a large amount of dust close to the ground that many farmers refused to use them (6).

The province of Ontario requires farmers to use a new lubricant, Bayer Fluency Agent (ethane, a homopolymer), rather than talc or graphite, when planting neonicotinoid-treated seed of corn or soybeans (20). However, a direct comparison of this lubricant compared to the lubricants chosen by farmers (talc, graphite or a mixture of the two) showed no significant difference in dust released (17). A change in lubricant may not be effective in reducing insecticide dust if field dust is also entering the system and abrading the seed (5).

There are many points at which farmers could modify the planting system: using no-till planting to avoid generating field dust (5), filtering the air intake to limit field dust coming into the planter (5), using a new seed lubricant to reduce abrasion of the seed (20), diverting the dust into the seed furrow during planting (6, 21) or filtering the air exhaust (5, 6, 21). In my discussions with scientists researching these options, none is currently considered the single best option (Reed Johnson, Ohio State University; Art Schaafsma, Guelph University; personal communication).

Once the planting is finished, it is important to collect any spilled seed and dispose of spilled and leftover seed properly.

Seeds left on the soil surface are particularly a hazard to birds. According to a study by the American Bird Conservancy, a single corn kernel treated with any of the commonly used neonicotinoids can kill a songbird, and 1/10 of a treated corn kernel is enough to reduce reproduction in a songbird (12). Seed disposal instructions should be on the seed tag. Generally it is recommended to plant leftover seed in the headland or in double rows in the field or to bury it away from water bodies.

At the end of planting, the farmer may be left with seed bags contaminated with insecticide dust, or if filters have been used on the air exhaust of the planter, these filters will have collected the insecticide dust. Dust may also be left behind in the planting equipment, and should be vacuumed out using a vacuum with a filter. This then leaves the farmer with the problem of disposing of bags and filters with insecticidal dust. If there are instructions on the seed tag or label about how to dispose of the dust, those should be followed. Otherwise, seal the material securely and dispose of it using the local hazardous waste process. Because this is farm waste and not household waste, there may be a fee.

Numbers throughout the article refer to references – see http://ag.umass.edu/sites/ag.umass.edu/files/newsletters/january_12_2017_vegetable_notes.pdf for the list of references or contact PVGA. Dr. Stoner is with the Connecticut Agricultural Experiment Station. From the **Vegetable Notes for Vegetable Farmers in Massachusetts**, Univ. of Mass. Ext., Vol. 29, No. 1, Jan. 12, 2017.

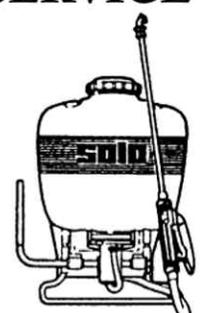
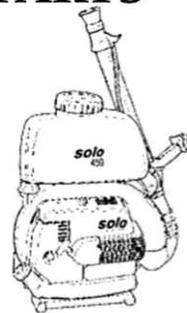
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VEGETABLE PRODUCTION

Broad Mites: An Example of a Grower Using Biocontrols for Management

Elsa Sanchez

Broad mites are being observed more frequently on a variety of vegetable crops in the field, high tunnel, and greenhouse.



Broad mites damage on bell pepper. Photo: Elsa Sánchez, Penn State.

Recently Penn State Extension educator Tom Ford penned this article on broad mites: Broad Mite Infestations Have Growers Considering Biocontrols. As a follow-up, this article looks at how one grower has used biocontrols to manage a severe broad mite infestation of peppers in high tunnels.

At the farm, the grower was able to get one good pepper harvest before nearly all fruit had broad mite damage. As stated in Tom Ford's article, broad mites have a wide host range including beet, bean, cucumber, eggplant, pepper, potato, and tomato. Fruit russetting predominately at the stem end of the fruit was seen on all types of peppers.



Broad mites damage on a long green pepper. Russetting is predominately at the stem end, but also lower on the fruit. Photo: Elsa Sánchez, Penn State.

Symptoms of broad mites were also seen on plant leaves. New growth on nearly every plant was distorted with curling, elongated leaves, and short internodes. We took a sample of distorted new growth to Penn State's Plant Disease Clinic where the presence of broad mites was confirmed. Broad mites damage on new growth of a pepper plant. Photo: Elsa Sánchez, Penn State

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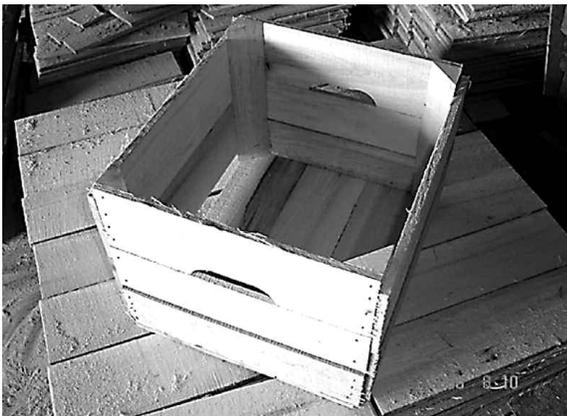


Broad mites damage on Jalapeño peppers. Photo: Elsa Sánchez, Penn State.



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VEGETABLE PRODUCTION

Broad Mites... (continued page 21)

In order to effectively manage broad mites with pesticides or biocontrols, a preventative approach needs to be used. When plant damage is seen, it is usually too late. Tom Ford gives reasons for this in his article. The grower decided to use biocontrols the following summer.

Neoseiulus (synonym *Amblyseius*) *cucumeris* is a predatory mite that preys on broad mites, as well as, other mites, whiteflies, thrips, aphids, and psyllids. They can also eat pollen, plant fluids, and fungi as alternate food sources for short periods of time when prey are not available.

They come in a few delivery systems, this grower used bottles and sachets. Bottles contain predatory mites, bran mites, and bran. Bran serves as a food source for bran mites which the predatory mites eat. This is sprinkled by hand or by the use of a fan on the plants. Once out of the bottle, mites begin searching for prey. With sachets the same bran/bran mite/predatory mite system is



Broad mites damage on Jalapeño peppers. Photo: Elsa Sánchez, Penn State.

used. However, since predatory mites are enclosed they feed on the bran mites for a longer period before leaving sachets through a small opening. As a result they are slowly released over a period of weeks.

Biocontrol suppliers can work with you to develop a plan. A really extensive list of suppliers can be found in the contact information section of Penn State's Vegetable Integrated Pest Management with an Emphasis on Biocontrol guide. The plan that this grower used involved sprinkling predatory mites over transplants after they had been set. Then, once plants grew a little larger, sachets were used.

The key to any successful biocontrol program is to establish natural enemies before pest populations get too high. Biocontrols were placed on every pepper plant when plants were young, before broad mite populations established. Broad mite damage was absent from the plants and fruit. The grower spent about \$400 to implement this program in several high tunnels and was pleased with the results.

Dr. Sanchez is with the Department of Plant Science at Penn State Univ. From Vegetable, Small Fruit and Mushroom Production News, Penn State Extension, <http://extension.psu.edu/plants/vegetable-fruit/news>, March 28, 2017.



Amblyseius cucumeris delivered through sachets were used for management of broad mites. (Right) Sachets were placed near the base of every plant early in the growing season. Photos: Elsa Sánchez, Penn State.



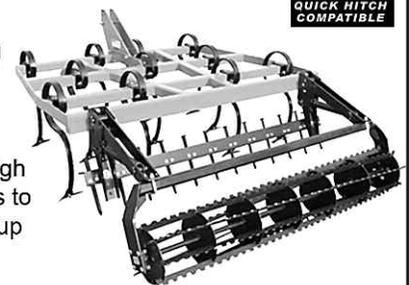
Sachets were placed near the base of every plant early in the growing season. Photos: Elsa Sánchez, Penn State.

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Simple Guide to Plastic Mulch and Alternatives

Megan Chawner

With spring on the horizon, now is a good time to talk about plastic mulch and alternate options.

There's been a lot of buzz about biodegradable and compostable mulch, but how do you know one of these might be a good choice for your operation?

Let's start by considering why mulch is used widely by growers in Pennsylvania. Mulch can increase yields, produce high quality, earlier maturing crops, enhance insect management, and control weeds. This system also allows the use of other components, such as drip irrigation, to increase efficiency.

Traditionally, plastic mulch is used in vegetable and berry production. It comes in a variety of thicknesses and colors that farmers can choose between for their specific needs. Black plastic is the most widely used mulch color and is typically the least expensive option. However, additional grower costs for removal and disposal should be taken into account. The use of plastic mulch also raises environmental concerns since it is a petroleum-based product and difficult to recycle.

Things get more complicated when we look at degradable mulch options. There are several different kinds, made with a variety of materials. The first and least popular degradable mulch is photodegradable plastic mulch that breaks down when exposed to light. Another type of degradable mulch is made primarily of polyethylene. These mulches degrade very slowly in



Photo: Megan Chawner

the environment. Many growers who use these products report uneven and incomplete breakdown, particularly after tillage when the plastic fragments are buried at the end of the season.

Options that are more popular include biodegradable and/or compostable mulch. Most biodegradable mulch is made from plant starches such as corn and wheat. Soil microbes are able to break down the starch completely into CO₂ and water. As a result, the mulch can be tilled in at the

end of the season, which reduces labor and disposal costs. However, these mulches can cost two to three times as much as standard black plastic.

It is important for organic growers to note that in 2015, the National Organic Program added an allowance for the use of biodegradable mulch, but specified that it must be 100% bio-based. However, due to the physical limitations of starch, including its brittleness, it must be blended with polymers and plasticizers. Since most, if not all, of the commercially available biodegradable mulch contain some petrochemicals (and are typically less than 50% bio-based), there are no biodegradable mulch products on the OMRI list.

*Ms. Chawner is with Penn State Extension in Lehigh and Northampton Counties. From **Vegetable, Small Fruit and Mushroom Production News**, Penn State Extension, <http://extension.psu.edu/plants/vegetable-fruit/news>, March 10, 2017.*

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VEGETABLE PRODUCTION

Allium Leafminer Expected to Emerge in April

Shelby Fleischer, Dana Roberts, and Timothy Elkner

The allium leafminer, *Phytomyza gymnostoma*, is a fly that originates from Poland, Germany, Austria and Spain, and was confirmed in 18 counties in Pennsylvania last year.



Adult Allium Leafminer

The fly infests plants in the *Allium* genus, including leeks (*A. porrum*) onion (*A. cepa*), garlic (*A. sativum*), chive (*A. schoenoprasum*), shallot (*A. cepa* var. *aggregatum*), and green onion (*A. fistulosum*). We've also found feeding signs on wild garlic (*A. vinealae*), garlic chives (*A. tuberosum*), and an ornamental-*Allium* 'Globemaster' (*A. christophii* x *A. maclearii*). The Pennsylvania Department of Agriculture and Penn State posted reports and a pest alert to these websites:

Allium Leafminer, PA Department of Agriculture at <http://www.agriculture.pa.gov/protect/plantindustry/pages/allium-leafminer.aspx>

Allium Leafminer, Penn State Extension at <http://ento.psu.edu/extension/vegetables/pest-alert-allium-leafminer>

Adult females puncture leaves in a linear pattern with their ovipositor for feeding and egg laying (Figure 1). Leaves from infested plants can be wavy, curled and distorted (Figure 2). Larvae mine leaves moving towards and into bulbs and leaf sheaths (Figure 3) where they pupate (Figure 4). It is often necessary to peel back the leaves to find the insect. Both the leaf punctures and mines serve as entry routes for bacterial and fungal pathogens.

Allium leafminer overwinters as a pupa. Reports suggest that the fly has a distinct spring flight, a summer aestivation (dormancy) period, and a fall flight. One useful report from Fuchsenbigl, Austria ('Kahrer, 1999) recorded the adult flight based on emergence of adults within cages that held infested plants. Kahrer noted that adults were active during the spring from mid-April to mid-May, and in the fall from early September to early October. Last year we used sticky traps to estimate timing of fall flight from 5 farms in Lancaster County and 3 farms in Berks County. Adults were active during the last week of September until we stopped trapping in the second week of November. We also recorded data about how the fly responds to different visual stimuli, as part of ongoing studies to optimize traps.

The adult fly (Figures 1, 5, 6, 7) has a charismatic orange face, yellow "knees" (end of femurs), and matte black body. At 3mm-4mm, the adult is small (larger than a fruit fly but much smaller than a house fly). Eggs are laid in or on plant tissue, and larvae are well embedded into the plant tissue.

The timing of planting and harvest affect risks of damage. We seem to be getting most damage to allium crops that are showing strong vegetative growth at the time of adult flight activity. For example, last year, bulb onions planted after the spring flight, and harvested before the fall flight, mostly escaped damage. But settings with alliums present during the flight periods

¹Kahrer, A. (1999). *Biology and control of the leek mining fly, Napomyza gymnostoma. Integrated Control in Field Vegetable Crops IOBC Bulletin, 22 (5), pp. 205-211.*

were most at risk. Last year, spring onions were damaged during the spring flight, and leeks and other alliums were damaged during the fall flight. Row covers during the flight period should prevent damage.

Insecticides labelled for leafminers in various allium crops (the list is on page 1 and 2, right after the cover page) at <http://extension.psu.edu/publications/agrs-028>.

We anticipate emergence of the adults in the beginning of April. We are deploying traps and will report when we see flight activity using the 1-800-PENN-IPM phone line, and postings to the Vegetable Extension Team's news site at <http://extension.psu.edu/plants/vegetable-fruit/news>.

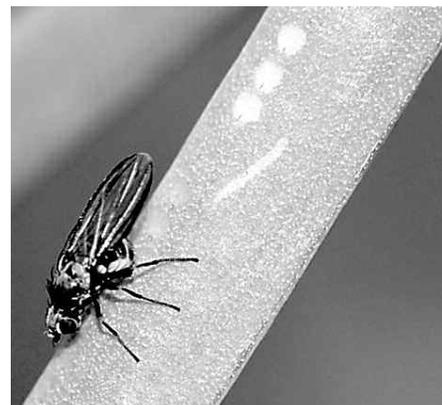


Figure 1. Female puncturing leaf with ovipositor. Note linear puncture marks, which is a sign of adult activity. Photo: T. Elkner



Figure 2. Twisted leaves of infested crop. Photo: L. Donoval



Figure 3. Larvae feeding in onion. Photo: S. Spichiger

(continued on page 25)

Seed and Seedling Biology

Lee Stivers

Most vegetable crops start their life as seeds.



Photo: Seedling, U.S. Department of Agriculture, Flickr.com (CC BY 2.0)

Seeds of some crops, such as tomatoes, peppers, and broccoli, are usually planted into greenhouse trays to grow seedlings for later transplanting into the field.

Other crops, such as sweet corn, beans and peas, are most often established by planting seeds directly into the field. Understanding how seeds germinate and grow into healthy seedlings is critical for successful crop establishment. This is a brief summary of seed and seedling biology and recommendations for producing healthy seedlings.

Allium Leafminer... (continued from page 24)



Figure 4. Pupae in base of allium plants. Photo: L. Donoval



Figure 5. Adult. Top view. Note yellow patch on head, and yellow 'knees'. Photo: A. Megroz



Figure 6. Adult, preserved specimen. Note yellow head patch and yellow knees. Photo: N. Stoff



Figure 7. Adult. Side view. Photo: A. Megroz

Choosing the Right Seed

Few decisions are more important to successful vegetable production than choosing the right seed. Seeds should be of high quality, clean, and purchased from a reputable seed company. Take care to choose varieties that are well adapted to the area, and suit local consumer preferences. Certified organic growers are required to use certified organic seed and seedlings with only a few exceptions.

The Right Environment to Germinate

All fully developed seeds contain an embryo and, in most plant species, a store of food reserves, wrapped in a seed coat. Seeds generally "wake up" and germinate when soil moisture and temperature conditions are favorable for them to grow. But not all seeds have the same germination requirements, so it is important to know what each seed type needs.

Seeds need the proper temperature, moisture, air, and light conditions to germinate. All seeds have optimal temperature ranges for germination (Table 1). The minimum temperature is the lowest temperature at which seeds can germinate effectively. The maximum is the highest temperature at which seeds can germinate. Anything above or below this temperature can damage seeds or make them go into dormancy. At optimal temperatures, germination is rapid and uniform.

All seeds need both moisture and air to germinate. Good seed-to-soil contact is very important. A fine-textured seedbed with little compaction is recommended for direct seeding in the

(continued on page 26)

Dr. Fleischer and Ms. Roberts are with the Department of Entomology at Penn State Univ. while Dr. Elkner is with Penn State Extension in Lancaster Co. From **Vegetable, Small Fruit and Mushroom Production News**, Penn State Extension, <http://extension.psu.edu/plants/vegetable->

VEGETABLE PRODUCTION

Seed and Seedling... (continued from page 25)

field. For greenhouse transplants, soilless media should be moist and fluffy. The soil or growing media must contain enough moisture so that the seed can take up water to begin the germination process. But if the soil or media are too wet, or too compacted, there will not be enough air around the seed to “breathe”. Like any other living organism, seeds need oxygen for respiration, and that oxygen comes from air in the soil.

Not all seeds have the same light requirements. Most seeds germinate best under dark conditions and might even be inhibited by light. A few other seeds need light to germinate. But once seeds have germinated and broken through the surface of the soil or growing media as seedlings, they all need sunlight to grow. Table 1 shows optimal soil temperatures for germination for common vegetable crops.

Table 1. Optimal soil temperature conditions for vegetable crop germination.				
Vegetable Crop	Minimum (°F)	Optimum Range (°F)	Optimum (°F)	Maximum (°F)
Beet	40	50-85	85	85
Bean	60	60-85	80	95
Cabbage	40	45-95	85	100
Cauliflower	40	45-85	80	100
Celery	40	60-70	70	85
Chard	40	50-85	85	95
Cucumber	60	60-95	95	105
Eggplant	60	75-90	85	95
Lettuce	35	40-80	75	85
Melons	60	75-95	90	100
Onion	35	50-95	75	95
Parsley	40	50-85	75	90
Pea	40	40-75	75	85
Pepper	60	65-95	85	95
Pumpkin	60	70-90	90	100
Spinach	35	45-75	70	85
Squash	60	70-95	95	100
Sweet Corn	50	60-95	95	105
Tomato	50	70-95	85	95

Steps from Seed to Seedling

When a dry seed comes into contact with moist soil or growing media, the seed begins to take up water through the seed coat. As it takes up more water, the seed expands and the seed coat cracks open. The embryo inside the seed is made up of a small shoot and a small root. The root is the first to emerge from the seed. As it grows, it anchors the plant to the ground, and begins absorbing water through the root. After the root absorbs water, the shoot begins to emerge from the seed.

Most of the vegetable plants that we grow are “dicots”. Dicots have two seed leaves in the shoot that emerge from the

germinating seed. Tomatoes, peppers, cabbage, beets, lettuce, beans, cucumbers, and squash are all dicots. A few vegetables are monocots, including sweet corn, onions and asparagus. Monocots have one seed leaf in the emerging shoot. Once the shoot, with its one or two seed leaves, emerges from the soil or growing media, we call the plant a seedling. Still quite fragile at this stage, the young seedling is vulnerable to diseases and to environmental stresses such as high temperatures and dry soil. Making sure that conditions are optimal for growth will ensure that young seedlings can grow rapidly and uniformly.

Managing for Optimal Germination and Seedling Development

Testing stored seeds for germination - Seeds purchased within a year of when they are to be planted rarely fail to germinate. However, seeds are often stored from one year to the next, and if they are stored improperly or for too many years, they can lose vigor and germinate poorly when planted. A simple germination test can show whether or not stored seed is still viable. To test seed for germination, count out a sample of at least twenty-five seeds. Wrap seeds lightly in a moist paper towel, keep the paper towel moist but not soggy for five to ten days. Unwrap the paper towel and count how many seeds have germinated. If fewer than 85-90% of the seeds have germinated, it is best to discard the rest of them and purchase new seeds.

Uniform germination - We know that seeds need proper conditions to germinate rapidly. Whether seeds are planted into trays in the greenhouse or directly in the field, the goal is to have all seeds germinate close to the same time and grow at the same rate. A uniform tray of transplants or a uniform field of seedlings is easier to manage and will lead to a better crop. Uneven germination due to slow growth, differences in soil moisture or temperatures, or planting depth of the seed, can result in seedlings of different sizes. This can especially cause problems when transplanting a tray of seedlings; half are ready to plant in the field, and the other half are too small, with root balls that don't slide easily out of the tray cells.

In the greenhouse, one way to achieve rapid, uniform germination is to use germination mats under the trays. These mats allow you to set the temperature according to seed requirements. For example, peppers will germinate in 8 days at 86°F, but take more than 13 days to germinate at 58°F. Make sure you maintain optimal temperatures for your crop (see Table 1). Providing good air circulation during germination and early seedling growing will help to control diseases in this early stage.

We cannot control conditions in the field like we can in the greenhouse, but we can still take steps to make sure that seeds planted directly into the field germinate uniformly. A fine-textured seed bed provides good growing conditions, ample seed-to-soil contact, and the ability to plant to a uniform depth. Planting when the soil temperatures are near optimum will hasten germination and emergence of the seedlings. Sometimes in the rush of spring planting, seeds are sown in soils that are too cold. This can result in slow germination, weakened and diseased seedlings, and even plant death. It is much better to delay planting until soils warm up.

Seedling development - The optimal temperature for growing seedlings may be different from optimal germination temperatures. Table 2 shows the range of day and night temperatures

(continued on page 27)

VEGETABLE PRODUCTION

Seed and Seedling... (continued from page 25)

that are best for growing seedlings in a greenhouse, where temperatures can be controlled. Cooler temperatures generally slow down growth, and warmer ones speed up seedling growth.

All seedlings need ample light to grow. If light levels are low or if seedlings are too crowded as they grow, the stems will

stretch as the plants seek more light, resulting in weak, "leggy" transplants. Consider supplemental lighting if greenhouse light levels are low.

Seedling maturation and hardening off

The length of time that seedlings need to grow in the greenhouse before they are big enough to transplant into the field varies by crop. Tomato and pepper seedlings may take five to seven weeks to produce, while cucumbers and squash are ready to transplant after three to four weeks in the greenhouse. But all transplants need to be hardened off before going from the greenhouse out to the field, or they will be damaged by the harsher conditions. To harden off seedlings, gradually expose them to conditions they will have in the field. Most transplants may be hardened off by reducing the temperature in the greenhouse and/or reducing watering. Plants may show some signs of wilting, but do not let plants wilt excessively.

After a day or two, weather permitting, set the trays outside of the greenhouse for five to seven days prior to planting. If it is very hot and sunny, provide some shade for the seedlings for the first day or two. Plants that are hardened off in this manner will be better able to tolerate transplanting, and continue to grow in the field uninterrupted.

For more information, see factsheet "Seed and Seedling Biology".

*Ms. Stivers is with Penn State Extension in Washington Co. From **Vegetable, Small Fruit and Mushroom Production News**, Penn State Extension, <http://extension.psu.edu/plants/vegetable-fruit/news>, March 15, 2017.*

Vegetable Crop	Day (°F)	Night (°F)	Time (weeks)
Broccoli	60–70	50–60	5–7
Cabbage	60–70	50–60	5–7
Cauliflower	60–70	50–60	5–7
Celery	65–75	60–65	10–12
Cucumber	70–75	60–65	3–4
Eggplant	70–80	65–70	6–8
Lettuce	55–65	50–55	5–7
Melons	70–80	65–70	3–4
Onion	60–65	55–60	10–12
Pepper	65–75	60–65	6–8
Squash	70–75	60–65	3–4
Tomato	65–75	60–65	5–7

BERRY PRODUCTION

How to Destroy Spotted Lanternfly Eggs and Report Your Efforts

Emelie Swackhammer

People can reduce the populations of spotted lanternfly on their properties by killing the overwintering eggs.

Residents of the infested area are encouraged to inspect their trees and other objects for spotted lanternfly egg masses, and destroy them before they hatch. Experts expect the eggs will start to hatch in early May, so late March through April is a great time to do this.

For a demonstration on how to scrape and destroy eggs go to https://www.youtube.com/watch?v=WoFp_MbDiE8.

For a longer discussion and tips to identify egg masses, see the first part of a video done in cooperation with PA senator Judy Schwank at <http://www.senatorschwank.com/pennsylvania-report-with-senator-judy-schwankjanuary-2017>.

If you successfully destroy spotted lanternfly egg masses, please report your efforts to the Pennsylvania Department of Agriculture at <https://www.paplants.pa.gov/EntomologySurveyExternal.aspx>. This information is important to help continue the eradication effort and also for research to know where high populations are being found.

*Ms Swackhamer is with Penn State Extension in Montgomery Co. From **Vegetable, Small Fruit and Mushroom Production News**, Penn State Extension, <http://extension.psu.edu/plants/vegetable-fruit/news>, March 15, 2017.*

Help Needed for Spotted Wing Drosophila Survey

Growers, your help is needed to combat spotted wing drosophila! If you grow berries or cherries, please complete this 25-30 minute survey at <https://survey.ncsu.edu/swd/>. The survey is available in English and Spanish and can be printed and completed offline. This survey is important. We will use the information collected to:

Use grant money wisely and focus the efforts of our USDA NIFA funded national project (<https://swdmanagement.org/>) on the areas of greatest need.

Provide support for additional resources to manage SWD such as new insecticides or biological controls.

Help us evaluate if our efforts are successful.

The deadline for the survey is December 1, 2017. Please contact Hannah Burrack at hjburrac@ncsu.edu if you have questions about the survey.

- Online Grower Survey - <https://survey.ncsu.edu/swd/>
- Mail-in Paper Version of Survey - contact PVGA
- Spanish Language Version of Survey - <https://survey.ncsu.edu/swd/Spanish/Default.asp>

*From **Vegetable, Small Fruit and Mushroom Production News**, Penn State Extension, <http://extension.psu.edu/plants/vegetable-fruit/news>, March 31, 2017.*

BERRY PRODUCTION

Blueberries and Winter Injury Concerns

Kathleen Demchak

Fluctuating temperatures can cause as much or more crop loss than cold winter temperatures or spring frosts.

Unfortunately, our 'Bluecrop' blueberry field at the Horticulture Research Farm has more flower bud damage this year than I've ever seen before. While our site makes winter damage especially likely, I'm afraid we won't be alone.

Our planting is right on the valley floor where we've never been able to overwinter blackberry plants without tunnels. We get really cold temperatures overnight, and it warms up nicely during the day, so the temperatures tend to fluctuate anyway. But the fluctuations this year were extreme.

From February 18 through March 1, highs were in the 60's or 70's on 6 out of 11 days. Then we had highs only in the 20's on March 3 and 4 and a low of 7 on March 5. This was followed by highs in the 50's on March 7, 8, and 9, a high of only 22 on March 11, and a low of 7 on March 13.

The flower buds were still perfectly fine at the end of February. However, out of 36 'Bluecrop' buds collected 2 days ago (March 28) from various parts of the plants, 33 were nearly completely killed, 2 had a small amount of green tissue, and about half the tissue in one was still green. 'Bluecrop' is supposed to be one of the more hardy varieties. Our 'Patriot', a very hardy variety higher up on a slope, has only a slight amount of injury despite being at a more advanced stage of bloom, so both site location and variety likely had an effect.

One of our local growers had asked, when checking for winter injury, whether it was better to cut the buds lengthwise or across. I guess I'd say that's personal preference. Information online and in the literature says that the most tender tissue is that which connects the buds to the stem. Cutting lengthwise allows one to see injury in this area, though I must admit, that's a little tricky. I find it easier to hold the bud lengthwise when cutting it, though maybe that's not a good reason for doing so. Eric Hanson at Michigan State University, who has a lot more experience with this than me, tells me he cuts the bud crosswise about a third of the way from the tip, and then a second time about a 2/3's of the way down, checking each time for injured tissue. So, to be safe, I guess you could do both.

Here are several images with varying degrees of injury, and with buds cut both cross-wise and length-wise. These are greatly magnified, so it won't be as easy for you to see the damage, and you might need to use your imagination a bit when looking at the blossoms. It helps a lot to have a single-edge razor blade, fresh utility knife blade, or an exacto-knife for making the cuts.



Blueberry buds breaking. Photo: Erutuon on Flickr.com (CC BY-SA 2.0)

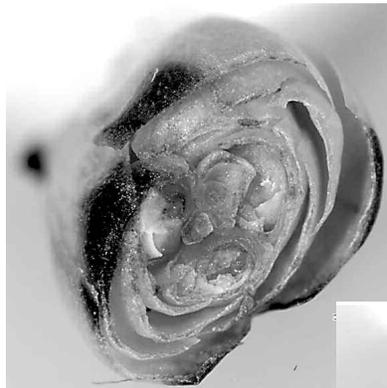


Photo 1 'Patriot' uninjured. Photo: Kathy Demchak, Penn State

Also make sure that any brown you see isn't just a loose piece of bud scale that got stuck to your knife when you were cutting.

Note in the photos below that the little bar on the right is only 1 mm, so you're seeing a lot of magnification here.

Photo 1 shows a 'Patriot' blueberry bud that appears to be uninjured when cut crosswise.

However, you can see in Photo 2 that when the same bud is cut lengthwise, one of the would-be blossoms (lower left) is partially injured.

Photo 3 shows a flower bud in which one of the would-be blossoms is completely killed.

Photo 4 shows a 'Patriot' blossom where it appears that the tissue at the base of the bud that would connect it to the plant is water-soaked in appearance, so probably is injured. If this is the case, the bud may not be able to survive past bloom.

Photo 5 shows a 'Bluecrop' bud where tissue in the center of the bud is injured.

In Photo 6 where the bud is cut lengthwise, the tissue that would have formed the pedicel and the individual blossoms has been killed.

Our final image, Photo 7, is what nearly all of our Bluecrop blossoms look like. This shows a flower bud in which all of the blossoms have been killed. The tissue that is still creamy-tan is

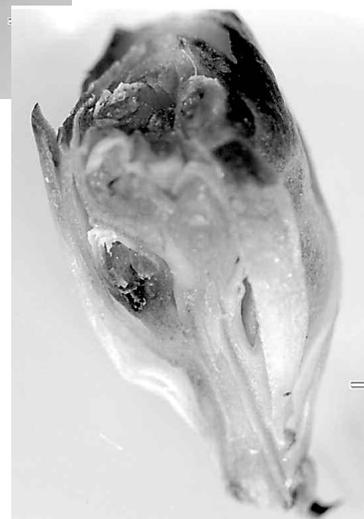


Photo 2 'Patriot' uninjured side view. Photo: Kathy Demchak, Penn State



Photo 3 'Patriot' partly injured. Photo: Kathy Demchak, Penn State

(continued on page 29)

BERRY PRODUCTION

Blueberries and Winter... (continued from page 28)



Photo 4 'Patriot' base injury. Photo: Kathy Demchak, Penn State



Photo 5 'Bluecrop' center injury. Photo: Kathy Demchak, Penn State

what would have been the anthers. If you look closely, in the upper left quadrant, to the lower right of the anthers, you can see tiny white spherical structures. These are the ovules which, after pollination, would have eventually become the seeds in the berries.

Hopefully these images will help folks with sorting out what might similar situations with some of their flower buds. It certainly is starting out to be an interesting year.

Thanks to Don Smith and the NEWA network (<http://newa.cornell.edu/>) for making on-site weather data available, and to Eric Hanson at Michigan State University for his for input and review of this article.

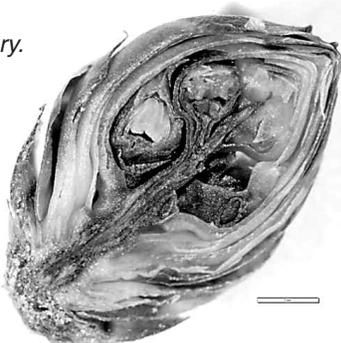


Photo 6 'Bluecrop' dead connecting tissue. Photo: Kathy Demchak, Penn State

Photo 7 'Bluecrop' very dead. Photo: Kathy Demchak, Penn State



Ms. Demchak is with the Department of Plant Science at Penn State Univ. **From Vegetable, Small Fruit and Mushroom Production News, Penn State Extension, <http://extension.psu.edu/plants/vegetable-fruit/news>, March 31, 2017.**



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BERRY PRODUCTION

High Tunnel Raspberries in Grow Bags – Lessons Learned!

Kathleen Demchak

An update to last Fall's article on growing berries in grow bags is sorely needed, just to keep other people from repeating some of our less-than-enjoyable experiences.

The first thing we've learned is that there apparently is quite a difference in the quality and expected life of grow bags, because we're now going to be repotting 572 raspberries in new bags this spring—after our bags basically disintegrated over the course of the winter, less than 9 months after planting. The bags seemed to be getting weak last fall, but the plants impressively broke out of them this spring, either splitting them as the root systems grew, or sending new canes through the sides of bags - sometimes through the drainage holes, and sometimes just through the sides of the bags.

The bags being used at Michigan State where they have more experience with this system, have generally lasted for 4 years. However, I found out from talking to Eric Hanson today that he had a similar experience with one batch of bags several years back. So, if you use grow bags, be sure you get some sort of assurance from the company that they will hold up for the length of time that you need them.

In other interesting matters, we've struggled a bit with how to overwinter the raspberries given that we don't have a cooler available to us for storing them. We laid the plants down under 2 layers of row covers inside the tunnels, and this did seem to work quite well (as long as you control the voles), right up until the last couple of weeks of fluctuating temperatures. So, we stood the plants up when they started to grow at the end of February, then laid them back down during the low temperatures in the single digits last weekend, stood them up again this past week with highs in the 50's and 60's, and now are laying them back down again with outside lows forecast in the single digits again for this coming weekend. Not kidding.

Generally the low temperatures in the tunnels haven't been that much different than lows outside, so I'm making an assumption that the plants need to be under row covers when it gets this cold. If we get a summer crop, I will be completely baffled as to why, because this should be enough to kill off any normal flower buds.

The bottom line to this is that if you have raspberries in containers, being able to move them into a cooler for the winter is really best (assuming your bags stay in one piece). Then you can wait and take them out of the cooler when you are ready for them to grow. Eric H. pointed out that you can also wait until the



New cane poking through bag. Photo: Kathy Demchak



irrigation system is operational, instead of needing to fuss with draining the lines several times.

If you don't have a cooler, the next best option is probably to overwinter the plants outside either under a white film or perhaps a nursery cover. At any rate, it would be better if they were somewhere other than in a single bay tunnel that is kept covered for the winter with clear plastic, at least for a winter like this one, since they hopefully wouldn't take off so fast in the spring. On days like today when it's both sunny and windy, we haven't been able to vent even though it certainly is toasty in the tunnels.

On the bright side of things, I do know that we always learn a lot from trying new things like this – even if we what we learn isn't what we expected. So, we'll keep you posted on what's working, and what isn't. It certainly should be an interesting year.

To see the original article Growing Raspberries and Strawberries in Containers, see the November issue of the **Pennsylvania Vegetable Growers News** or visit <http://extension.psu.edu/plants/vegetable-fruit/news/2016/growing-raspberries-and-strawberries-in-containers>.

*Ms. Demchak is with the Department of Plant Science at Penn State Univ. From **Vegetable, Small Fruit and Mushroom Production News**, Penn State Extension, <http://extension.psu.edu/plants/vegetable-fruit/news>, March 10, 2017.*

GENERAL

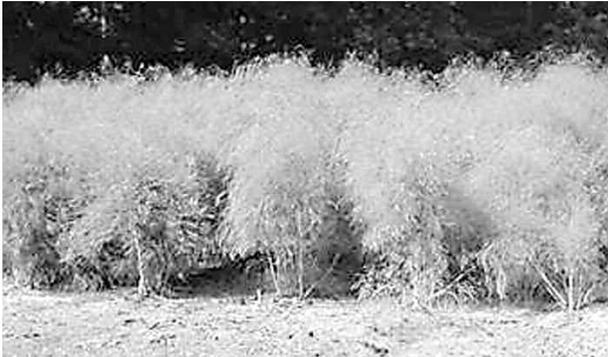
Making The Farm... (continued from page 16)

Warren Thomas, who converted his Venango County dairy into a sheep farm, said making connections is essential to direct marketing. He tries different ways to introduce consumers to his product, including on-the-farm events. And perhaps one of the best ways that farmers can improve their direct marketing is through networking. Farmers can help the public understand agriculture by volunteering and being visible, he said.

"You have to volunteer. You are the agriculture person," he said. "People are willing to hear our story. Every opportunity we can, we have people at our farms. It is networking."

*From the **Pennsylvania Agricultural Alliance Issues Update**, Penna. Farm Bureau, March 2017.*

New Asparagus Publication is Now Available



Carl Cantaluppi, recently retired Area Horticulture Agent with the NC Cooperative Extension Service has revised and updated his new publication entitled, "Asparagus Production from A to Z". It is a comprehensive 66-page regional bulletin that covers the planting, growing, harvesting, and marketing of asparagus, including a budget with costs and expected income per acre, for the serious commercial asparagus grower. The bulletin includes over 20 color photos of insects, diseases, and planting techniques to aid the grower. The author is an asparagus expert with over 30 years of applied research experience, having worked with asparagus in the northeast, mid-west and southeast U.S., with variety trial information being reported in those areas.

Other interesting topics in the bulletin include:

- A detailed study of asparagus varieties
- Results of a ten-year replicated variety trial in NC
- White asparagus production using opaque covers
- Handling, grading, and storage
- Marketing methods
- Estimating spear growth of asparagus as affected by temperature
- Yield increases as influenced by judicious fungicide applications

The bulletin is bound with a plastic spiral binder with a front and back cover. It sells for \$25.00 and includes shipping and handling. To order a copy, send a check or money order in U.S. dollars for \$25.00, payable to Carl Cantaluppi and mail to:

Carl Cantaluppi
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The bulletin will be shipped after payment is received.

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