



Get Ready Now to Celebrate August as PA Produce Month

The Pennsylvania Vegetable Marketing and Research Program (PVMRP) is excited to again celebrate August as Pennsylvania Produce Month - what better time to highlight the bounty of Pennsylvania Vegetable Farms! The Program will concentrate its promotion efforts on the month of August and we invite you to join in the opportunities to promote your Pennsylvania grown vegetables. The purpose is to focus consumer attention on the abundant supplies of quality, fresh Pennsylvania produce that are available in farmers' markets, roadside farm markets and even supermarkets during the month of August.

Based on the success of last year, August is PA Produce Month will again partner with Penn State Extension to focus on social media engagement. New to the program this year is a partnership with Kitchen Table Consultants to develop new

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Pennsylvania Vegetable Marketing and Research Program

messaging and promotional opportunities, tips and tricks for driving sales and interest during this peak season. **See the special centerfold section of this newsletter on pages 14 and 15 to see how your market can take full advantage of this promotion.**

PVMRP has PA Produce Month point-of-purchase kit available for interested markets. These kits are available at most of the various produce auctions in the state or from the Program. The kits contain a large poster (22"x18"), six small posters (8.5"x11") (illustrated here) and a pack of 20 price cards (7"x11") all in full

color. These are available from the Program at a cost of \$2 each. To order one or more kits, send a check to the PA Vegetable Marketing and Research Program, 2301 North Cameron Street, Harrisburg, PA 17110-9408.

Don't Miss These Summer Educational Events

Various groups are sponsoring different educational events this summer that can be valuable learning and networking opportunities for growers. Many are sponsored partially by PVGA as part of our effort to keep growers updated on the latest methods in profitable vegetable and small fruit production. Be sure to take advantage of these opportunities to get off your farm for a day or an evening to see how other growers are meeting production challenges. You also have the chance to visit with fellow growers and share ideas, problems and solutions.

July 5, 2016

Summer High Tunnel Production

This twilight meeting will be held at Teen's 4 Good Farm Site at East Popular Playground at 820 North 8th Street in Philadelphia from 6:00 to 8:00 p.m. This meeting is part of a series of meetings being held at urban farm locations around the city. Lead Urban Farm Manager & Educator, Adam Lauer of FNC will discuss how he uses their high tunnel during the summer, and how the transition into cool season growing takes place.

There is no registration fee. Go to <http://extension.psu.edu/business/farm/events/grower-series-summer-line-up-high-tunnel-production> to register or contact Tommy McCann at 215-471-2200 or tjm161@psu.edu.

July 19, 2016

Central Susquehanna Summer Vegetable Meeting

This twilight meeting will be held at the Linus Martin, Sr., farm at 557 South 4th Street in Mifflinburg, Union County., from 6:00 to 8:30 p.m. To get to the farm, from PA Route 45, take PA Route 304 south for one-half mile. The farm is on the left.

The evening will start with grower Leonard Burger sharing his experience in using beneficial insects to control worms in peppers. Penn State Extension educator John Esslinger will review local insect pest issues and demonstrate sprayer calibration techniques. Dr. Beth Gugino, Penn State Extension vegetable pathologist, will cover the biology and management of vegetable diseases.

There is no registration or fee for this event. Contact John Esslinger at 570-316-6516 or cje2@psu.edu.

July 20, 2016

Chester Co. At-Market Workshop

The direct-marketing workshop will be held at Down To Earth Harvest Farm at 1585 Winfield Drive in Downingtown, Chester Co., from 6:30 to 8:30 p.m.

Down to Earth Harvest CSA strives to offer its customers products that are first in quality, value and flavor. Products are

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NEWS



Pennsylvania Vegetable Growers Association

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

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Executive Secretary
William Troxell
Richfield

Don't Miss These Summer... *(continued from page 1)*

grown with great care for both each other and the tilled land. It is owned and operated by Robert Todd and his wife Amy.

Down to Earth Harvest is a CSA farm that has been in business six years. It primarily serves the people of the southern Chester County area. In fall of 2015, Robert and Amy welcomed their daughter Ruth into the world and Down to Earth Harvest CSA Farm quickly became a family owned & operated farm. Down to Earth passionately believes in a soil driven plant positive approach that creates stronger healthier plants (better equip to defending themselves from pests and diseases) and produces the highest quality and best tasting product possible.

The discussion topics for the evening will be production related to markets, and marketing. Robert Todd will lead a discussion about his farms CSA's alternative distribution model and he will share his experiences as a small-scale intensive vegetable producer. Also, conversations will revolve around managing and promoting a CSA. We will have group discussions regarding harvesting & transporting product off farm i.e. going to market(s).

There is no registration fee and light refreshments will be provided. Walk-ins are welcome but you can also register with John Wodehouse at 610-696-3500 or jpw20@psu.edu.

July 27, 2016

Berks Summer Twilight Meeting

This annual family event will be held at the Kutztown Produce Auction at 209 Oak Haven Road in Fleetwood, Berks Co., from 5:00 to 9:00 p.m. A supper featuring local produce will be included.

Insect Pest Control Updates, Allium Leafminer, Sweet Corn Production, Sprayer Calibration, and Drift Management will be covered by Dr. Shelby Fleischer, Penn State Extension vegetable entomologist and Penn State Extension educators John Esslinger and William Riden.

There is no pre-registration but there will be a \$10 registration fee collected at the door. Contact Tanner Delvalle at 570-622-4225 or tcd125@psu.edu.

August 3, 2016

Northampton Co. At-Market Workshop

This direct marketing workshop will be held at Twin Maple Farms at 7486 School Road in Bath, Northampton Co. from 6:30 to 8:30 p.m. The farm is located one mile south of Bath on School Road off Route 512.

Twin Maple Farms is a third and fourth generation potato, vegetable, and grain farm owned and operated by the Hunsicker family. Their tag line is "Providing prize-winning produce from our farm to your family since 1939."

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Monthly Grower Conference Calls

In the fall of 2014 it was suggested that we conduct grower conference calls during the season to allow growers to talk about problems they are experiencing during the season – and hear recommendations from Penn State experts for solving them. These calls were successful last year and we will continue them in 2016.

So if you're too busy to get off the farm, join us on one or more of the following Tuesday evenings from 8:00 p.m. to 9:00 p.m.:

<u>July 12</u>	<u>August 9</u>
<u>September 6</u>	<u>October 4</u>

To participate in the calls, call toll-free 1-877-643-6951 and then enter pass code 55835024# at the scheduled time. All callers will be able to speak if they wish or they can just listen in on the discussion. Please do not call the toll-free number at other times – no one will answer. For any questions, contact PVGA at 717-694-3596.

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.

United Seeks Improvements to H-2A Program

The United Fresh Produce Association, of which PVGA is a member, has joined forces with other industry groups to urge Congress to work with the Department of Labor to implement needed improvements to the H-2A guest worker program for agriculture. Farmers have been frustrated this spring by unusually long processing times for H-2A applications.

Dear Secretary Perez and Administrator Rodriguez,

We are writing with regard to the serious issues now occurring with the administration of the H-2A agricultural worker program, which are creating a growing number of delays in the timely processing of applications and visa petitions. This breakdown is impacting growers and ranchers who are trying to hire workers in time for the harvest and threatening millions of dollars in perishable agricultural products.

America's farmers and ranchers face continuing and growing labor shortages needed to produce the crops that our nation relies upon. While some segments of the agricultural industry have been able to continue to increase productivity through mechanization, there remain major segments of our agricultural economy that require human labor.

As the instability in the labor force grows, so does the use of the H-2A seasonal temporary worker program. While we acknowledge the need for broader improvements to our legal immigration system and temporary visa program, the H-2A program is the sole legal visa program available to production agriculture although it is limited to labor of a "temporary or seasonal nature." Although still accounting for less than 10 percent of all seasonal farm workers, employment of H-2A workers has nearly tripled in the past five years. Growth in the H-2A program has occurred despite extreme regulatory hurdles, government inefficiencies, and high costs.

The need for a legal and reliable work force is so great that farmers use this program despite these concerns. Unfortunately, regulatory roadblocks create even more complexity. For the past two years, H-2A employers have experienced unacceptable delays in the processing of labor certifications, visa petitions, and interviews for final border crossing and arrival on farms and ranches. Already this spring, farmers from all across the country are seeing significant delays at the U.S. Department of Labor (DOL) and the U.S. Citizenship and Immigration Service (USCIS). Unfortunately, it is also clear that DOL is at times not following the statutory requirement prescribed in law to respond to applications 30 days prior to the farmer's date of need. These delays are devastating to growers and ranchers that cannot wait to plant, tend, and harvest. DOL must comply with the law, and the failure to comply is unacceptable. This trend leaves growers fearful of a major break-down in the system when peak demand for H-2A workers hits beginning in June.

We fully support efforts to ensure that both employers and employees comply with the statutory requirements of the H-2A program. We believe there are significant measures that the three agencies involved could, and should, put into place that do not require legislation or even a major regulatory change. Implementing these measures could significantly improve the situation for growers and ranchers while the agencies continue to fulfill their duties to protect the rights of domestic workers and provide for our homeland security.

For example, DOL's Office of Foreign Labor Certification (OFLC) has a policy that is not supported by current regulations which requires all workers requested in any single petition be

brought onto the job on the start date of the petition. Under the current delays experienced by growers at both the OFLC and USCIS, there is no opportunity to receive these workers by the date they are actually needed. Growers must be given the opportunity to provide a start date that is earlier than the actual anticipated start date as a "grace period" in an effort to better manage the administrative delays.

In addition, the Validation Instrument for Business Enterprises (VIBE) program, as it is currently administered, is inappropriate for the H-2A program. VIBE mandates an annual subscription to Dunn & Bradstreet which is an additional expense for growers. It is highly unusual for family farms to subscribe to Dun & Bradstreet except to comply with VIBE.

A number of employers have been receiving Notices of Deficiencies (DOL) or Requests for Further Evidence (USCIS) related to proving that agriculture is in fact seasonal in nature. These notices create an unnecessary and untimely delay in the process. Your agencies must recognize that agriculture is inherently seasonal, and analysts in your agencies should be instructed to take all steps possible not to delay the process, especially considering current conditions.

In view of the current situation, we urge that the three agencies expeditiously process agricultural employers' H-2A applications where possible. Our farms, our economies, and the livelihoods of our constituents depend upon timely application processing and visa issuance in advance of farmers' dates of need. We look forward to your response and your plans to increase the efficiency of the H-2A program to supply the agriculture sector with much-needed labor. We look forward to your timely response.

From United Fresh Produce Association at <http://www.united-fresh.org/h-2a-improvement-project-letter>

State News Briefs

Potato Growers Vote to Continue Research Program

The PA Department of Agriculture published referendum results to continue the PA Potato Research Program for five more years. Results were 31 producers for, three producers against. On May 14, the PA Potato Research Program 2016 Order set out details on the functioning of the Commodity Research Board whose purpose is to "provide funds to be used for potato marketing contracts of benefit to the Pennsylvania potato producer." It is funded by an assessment of five dollars per acre of potatoes planted.

*From the **AG-ONE Newsletter**, Penna. State Council of Farm Organizations, Issue 2016.7, May 23, 2016.*

PFB Reiterates Opposition to Sunday Hunting in Hearing

Pennsylvania Farm Bureau does not believe the quest to grow the ranks of hunters will be solved allowing Sunday hunting. Instead, the move may harm relationships built between farmers and landowners, PFB said in testimony before the Senate Game and Fisheries Committee.

Senate Bill 1070, introduced by Sen. Jim Brewster and sitting in the committee, would allow the Pennsylvania Game Commission to expand current Sunday hunting options.

Joel Rotz, Pennsylvania Farm Bureau's senior director of state government affairs, said categorizing the restriction on Sunday hunting as an "arcane blue law" fails to acknowledge
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State News Briefs *(continued from page 3)*

those who will be most closely impacted by that repeal—farm families.

“What is most frustrating to farmers in this debate is the arrogance of the assumption that private land should be available to hunters seven days a week with no recognition of the fact that farms are not only privately-owned businesses, but family homesteads as well,” Rotz said.

While proponents have argued opening Sundays will allow more youth to hunt, they fail to acknowledge that youth sports and other activities already occur throughout the weekend, Rotz said. Pennsylvania farmers support additional days afield, as long as they are not held on Sundays. And there are options the Game Commission can consider—without needing approval from the General Assembly. For instance, the Game Commission could open a youth, rifled deer season on the Friday following Thanksgiving.

“This is just one example of some creative thinking that the Game Commission can act upon without any involvement by the General Assembly and while not interfering on others’ use of public and private lands on Sundays,” Rotz said.

While landowners are welcoming of additional hunting opportunities, a survey suggests 80 percent of landowners do not support an expansion of Sunday hunting. In addition, 18 percent of those respondents said they would close their land if Sunday hunting was expanded. Private land represents the vast majority of land open to hunting.

Farmers and landowners have concerns about trespassing—whether intentional or otherwise. If just one percent of the estimated 950,000 hunters trespass on private property “it is 9,500 instances of someone violating the privacy of the landowner and his or her own family,” Rotz said.

Keeping the current Sunday hunting restrictions in place has long been a stance of our farmer members, developed through our grassroots policy process. Farmers are not convinced that opening Sundays to hunting can be done in a way that will alleviate their concerns, Rotz said. Instead, farmers want to continue to develop programs that assist with wildlife damage, while allowing hunter access.

From Pennsylvania Agricultural Alliance Issues Update, Penna. Farm Bureau, June 2016.

DEP, Conservation Districts, Begin Farm Visits

Pennsylvania’s state and local agencies will begin a more concentrated program of farm inspections in the Chesapeake Bay Watershed this summer. Visits by the Department of Environmental Protection (DEP) and conservation district staff will focus on verifying whether farms have developed and are following their plans for erosion and sedimentation control and manure management. The visits are part of a revised strategy by DEP for improvement of water quality in the Bay. The state’s “reboot” strategy is being driven by the federal Environmental Protection Agency, which is claiming that Pennsylvania is behind in meeting nutrient reduction goals in the watershed. Conservation district visits will focus on conservation practices and documents that farmers are required to have under current state law.

That includes a written soil conservation plan, along with a manure management plan for animal farm operations and farms that use animal manure. Compliance of farms with state planning requirements has been part of the state’s strategy for the bay cleanup since 2011. Pennsylvania Farm Bureau has serious concerns with the EPA’s approach in cleaning the Chesapeake Bay Watershed. The EPA’s model used to determine the amount of nutrients reaching the bay failed to account for voluntary practices adopted by farmers. That’s why Pennsylvania Farm Bureau partnered with Penn State on a best management practices survey, conducted this spring. Once those results are compiled, they will be shared with the appropriate state and federal agencies. Pennsylvania Farm Bureau wants to make sure that the men and women of agriculture are not unduly burdened during the Chesapeake Bay cleanup. Farmers have made strides in reducing the nutrients reaching local tributaries that feed into the bay watershed. Farmers should get credit for those water quality improvements. Some of those conservation plans followed by farmers in their businesses may not have been recorded in formal plans. Help is available for farmers who need to update, or write, their conservation plans. Contact your local conservation district, or National Resource Conservation Service, for more information.

Farmers Warned to Watch for Palmer Amaranth and Waterhemp

Penn State is encouraging farmers to watch for two aggressive weeds throughout the planting season. Researchers at Penn State College of Agricultural Sciences are encouraging farmers to scout for Palmer amaranth and waterhemp—both of which are gaining a foothold in the state.

Palmer amaranth is a pigweed, native to the southwestern United States that has spread from the Delmarva area over the last five years, according to Dwight Lingenfelter, an extension educator. The weed may have come to the region through cottonseed meal as part of dairy rations, or with shipments of hay, he said. Seeds can spread through combine movement. The

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weed was first found in Pennsylvania in 2013 and is now present in 14 counties. Researchers have also found pockets of waterhemp in Pennsylvania. Both grow aggressively and are prolific in seed production.

"These plants can grow 1 to 2 inches per day," said Bill Curran, professor of weed science at Penn State. "Each plant can produce 300,000 or more seeds, and new plants can emerge throughout the growing season. Most will start to emerge in late April or early May, but it's not uncommon to have plants emerging into July."

Both weeds have the ability to significantly reduce crop yields. Research has shown that both crops reduced soybean yields by upwards of 78 percent. In corn, Palmer amaranth has reduced yields by up to 91 percent, according to Penn State. Experts recommend focusing on prevention strategies—aiming for the complete control of the weeds to prevent escapes. Among the strategies Lingenfelter suggests:

- Harvest infested fields last to prevent the spread of the weed through combines.
- Cover crops can prevent weeds from becoming established.
- Growers must use a two-pass system for herbicide application for effective control. Herbicide costs will at least double if Palmer amaranth becomes established in fields.

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

USFRA Workshop: Help Farmers and Ranchers Talk to Consumers about Sustainability

Participants can learn new ways to talk to consumers about sustainable farming and ranching during a workshop at Ag Progress Days this summer. The U.S. Farmers and Ranchers Alliance (USFRA), in conjunction with Pennsylvania Farm Bureau (PFB) and Penn State University's College of Agricultural Sciences, will host the workshop on August 16 at 2:30 p.m.

The training session, which is free and open to farmers and ranchers, will focus on new messaging that can be used when talking with and answering questions from consumers about sustainability. It will be held in the Special Events Building on the Ag Progress Days grounds in Centre County.

USFRA conducted research to determine the key areas of sustainability that consumers are most concerned about. They include, water, air, soil, and habitat. The training session will provide tools, including hard copy takeaways, for communicating your message of sustainability in those key areas. The event is one of several training sessions USFRA will host throughout the summer of 2016. USFRA, of which PFB is a member, was created to earn consumer trust in U.S. food and agriculture.

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

Don't Miss These Summer...

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Garry, his wife Kathleen, and sons Joey and Steven currently operate the 250 acre Twin Maple Farms. They have a farm stand that is open daily from July through March along with stands at three local farmers' markets and wholesale accounts. They sell potatoes, sweet corn, and seasonal vegetables including; tomatoes, peppers, eggplant, cucumbers, zucchini, cabbage, beans, lettuce, onions, radishes, flowers, and more. Garry and his family take pride in selling only what they grow. Twin Maple Farms is one of only three remaining commercial potato producers in Northampton County. They also raise grain corn, soybeans, and wheat.

The program focus for this twilight event is marketing. In addition to learning from the outstanding produce presentation and displays at this business, the Hunsicker's will lead a discussion on "small wholesale" from their experiences with Buy Fresh. Buy Local, Redner store direct delivery, and specialty restaurants. We will also discuss the challenges and rewards of managing both a roadside market and three farmers' market stands.

There is no registration fee and light refreshments will be provided. Walk-ins are welcome but you can also register with Christi Graver at 610-746-1970 or cug137@psu.edu.

August 18, 2016

Mock Harmonized GAP Audit Twilight Meeting

This mock Harmonized GAP Audit will be held at the Fulton Center for Sustainability Living at Wilson College at 1015 Philadelphia Avenue in Chambersburg, Franklin Co., from 6:00 to 8:00 p.m. Growers will be able to observe what GAP auditors are looking for in their visits so they can be better prepared for an audit of their own operations and meet the new FSMA regulations. There is no cost to attend but please RSVP to Jeff Stoltzfus at 717-394-6851 at jhs3@psu.edu.



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Are You Crazy? Retail Farm Market Tour is Sept. 13 & 14

Join us for our 20th Annual Are You Crazy? Retail Farm Market Bus Tour to explore some of the premier farm markets in Northern Pennsylvania and the Finger Lakes region of New York. This two-day tour will be September 13 and 14, 2016. It will depart from and return to the Lehigh County Penn State Extension in Allentown.

This tour is for retail farm market professionals and is held at the height of the season to enable participants to learn from their regional farm market peers during their best and most robust season.

Our special 20th anniversary tour will include:

- Behind the scenes tours and information directly from market owners
- Unique display and merchandising ideas
- Information on market expansion and farm transition
- Commercial juice pressing facility tour
- Overnight stay on Seneca Lake's edge at the Ramada Geneva Lakefront
- Rolling classroom sessions to discuss 2016 farm market trending topics
- Networking opportunities with fellow farm market peers

The tour includes stops at the following farm markets on the first day: Roba Family Farm www.robafamilyfarms.com - North Abington Township, PA; Stoughton www.stoughtonfarm.com - Newark Valley, NY; Bigsby Market www.thebigsbymarket.com - Freeville, NY; and Red Jacket Orchards www.redjacketorchards.com - Geneva, NY

The stops for the second day are: The Apple Shed www.theappleshed.com - Newark, NY; Reisingers Apple Country reisingersapplecountry.com - Watkins Glen, NY; and Iron Kettle www.ironkettlefarm.com - Candor, NY

The hosts are Brian Moyer and Carla Snyder from Penn State Extension.

National News Briefs

USDA Creates Website for Beginning Farmers

The USDA has launched a website to guide those who are pursuing a career in farming. The user has access to specific information such as risk management, taxes, labor and farm safety and will be able to design a business plan. A section is devoted to women interested in farming. The site is designed to help younger producers enter farming as older producers prepare to retire. The website is newfarmers.usda.gov/women-ag-success-stories.

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

USDA Provides Loans for Storage and Handling Equipment

The USDA is offering small loans to help agricultural producers acquire portable storage and handling equipment. The amount borrowed would be less than \$50,000.00 and require a 5 percent down payment. The loan option is open to farms of every size and will benefit those producers who do not have on-farm storage after the harvest. The equipment includes conveyors, refrigeration units and trucks that can store commodities before delivery to the market. Contact the local FSA office for details on applying for the microloan.

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

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The registration deadline is Friday, August 12, 2016 and the fees are: \$280 for one per room, \$225 for two per room, \$206 for three per room and \$197 for four per room. Registration fee includes the overnight stay at the Ramada Geneva Lakefront in Geneva, New York, bus fare, lunch on both days, and breakfast on the second day. Note that dinner on the first day will be on your own. To register, call 610-391-9840 or go to www.cvent.com/events/are-you-crazy-retail-farm-market-bus-tour/event-summary-cd388ee6b7224bc5825d48ed24bb499f.aspx.

Each year this tour brings unexpected learning opportunities and beneficial networking connections to its participants. We look forward to two full, well-rounded days of interactive education and networking!

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Highlights of the New Worker Protection Standard

James Harvey

In late 2015 the Environmental Protection Agency issued the long awaited revision to the Worker Protection Standard (WPS). Although it is now technically active it will not be enforced until 2017 but the original WPS will still be enforced until the end of 2016.

Please keep in mind that the WPS covers both restricted use AND general use pesticides.

This article will deal with the highlights to the revision but also some areas of the current WPS that need emphasized. Let's get started.

Resources for the WPS: Although articles such as this and the winter meeting season can go a long way in explaining the WPS the best way to get a good understanding of the WPS is to get an individualized farm visit from a WPS specialist at Penn State University. If you want a specialist to meet with you at your farm to go over your compliance efforts you can call Jim Harvey at 814-863-8214 at the Pennsylvania Office of Rural Health or Email Jim at jdh18@psu.edu to schedule a visit. The visits are free and typically take an hour but can go longer.

Organic Growers: Don't ignore this regulation! Although organic growers use different products there is a very good chance that you are using pest control products that make you

Attention Organic Growers
Be aware that the WPS covers both restricted use AND general use (and thus organic) pesticides. As noted above, in Pennsylvania WPS requires training for workers be conducted by a trainer with a current Pennsylvania Applicators License – even if your farm does not use any restricted use pesticides.

subject to the WPS. To know if your products are subject to the WPS look at the product label and if you see an EPA registration number on the label that product is probably under the WPS. To be absolutely sure look for the "Agriculture Use Statement" on the label and if you find that and are using that product in production Ag you are under the WPS and can be inspected.

Just Family? There is an "immediate family" exemption to the WPS that exempts family members from MOST of the WPS protections. However family members must still use label required PPE (personal protection equipment) and still must obey the REIs (Restricted Entry Intervals) and the other label requirements.

So who falls under the family exemption? The regulation revision has expanded the family exemption to now include first cousins, nephews, nieces, aunts, uncles, grandchildren, grandparents and in-laws. The original exemptions are still valid and they include children, step children, foster children, parents, step parents, foster parents, siblings and spouses and of course the owner. In spite of this exemption why not give your family the benefit of these WPS protections?

(continued on page 10)

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NEWS

Highlights of the New Worker Protection Standard... (continued from page 9)

Training Changes: This is the area with the most changes. Under the revision growers subject to the WPS must now train their employees every year and they must be trained on Day 1 before they do any work in the crop areas if it has been less than 30 days since the last restricted entry interval expired. Make sure the employees sign off on their training and keep those on file. If the employee requests a copy of the sign off employers are now responsible to give them one copy.

Training materials will be changing but any EPA approved WPS training materials (including the Penn State University WPS training DVDs) will be good until January of 2018. New training materials should start showing up in 2017. Penn State will be redoing their DVDs to comply with the changes but it will take time.

Trainers in Pennsylvania still must have a current Pennsylvania Pesticide Applicator certification to train employees and must be present at the training. Trainers cannot just give employees a copy of the Handbook or DVD and tell them to take it home tonight and look at it. If you are using general use pesticides and don't have a pesticide certification, find a grower friend to do your training for you.

Central Location – The big change here is the need to keep SDS sheets (Safety Data Sheets). Many of you are unfamiliar with SDS sheets but they are the old MSDS sheets in a standardized format. You will need to "display" them at the central location for 30 days following their use. Keeping them in a loose leaf notebook at the central location is acceptable. You need to keep these SDS sheets for two years after they were last used. You can get the SDS sheets from your pesticide supplier or download them off the Internet.

Of course you will still need to keep pesticide application information for 30 days at the central location and the pesticide safety information (poster). The central location must be easily accessible to your employees.

Decontamination Supplies: Pesticide Handlers still need three gallons of water, soap and paper towels at the mix and load site, within a quarter mile of the application area and where PPE is taken off. If they are working with a product requiring eye protection they must have "immediate" access to at least a pint of eye wash or fresh water. Handlers need an eye wash system at the mix and load site capable of delivering .4 gallons of water for 15 minutes or 6 gallons of water able to flow gently for 15 minutes. This does NOT have to be a fancy system, it can be a hose attached to a faucet. A change of clothes for Handlers is also required.

Although Handlers and Workers need to have access to the required decontamination supplies they can in emergency situations make use of natural waters that are close by in addition to the required decontamination supplies.

Workers need to have access to at least a gallon of wash water, soap and paper towels within a quarter of a mile of the crop area that they are working in.

Application Exclusion Zone (AEZ): This is new to the WPS and will be implemented over two years. Starting in 2017 the AEZ takes effect on the grower's property. Then in 2018 the AEZ will cover areas outside of the grower's property that fall within the "bubble". This may include roads and your neighbor's property. Keep in mind that the "bubble" moves with the application equipment as the application equipment moves.

The AEZ is an exclusion zone that surrounds the application equipment in a 360 degree radius. High drift applications

such as air blast sprayers, aerial applications, fumigants, mist and fogging will need a 100 foot "bubble" where everyone is excluded except for Handlers that have the proper PPE and training to work inside that bubble. Low drift applications will need a 25 foot bubble. If someone is in that AEZ the Handler must suspend application in that area until they leave that area.

Respirator Fit Tests: The other big change is the Respirator Fit tests for Handlers that work with products requiring a respirator. Starting in 2017 Handlers MUST get an annual Fit test which involves first a medical evaluation. There are medical contractors that offer this but your local hospital probably can do it in their occupational health department. Once the medical evaluation is passed then the actual Fit tests can be

(continued on page 11)

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Farm to Food Bank

Do you know where your next meal is going to come from? An estimated 1.7 million Pennsylvanians are at risk of hunger and may struggle to find their next meal. Of this number, more than 520,000 of those individuals are children. Hunger impacts all 67 counties throughout Pennsylvania. However, there is healthy and nutritious food available in the fields that never makes it into the food supply, and the Wolf Administration wants to see it put onto the plates of people who need it. This is why the an innovative program, known as the Pennsylvania Agricultural Surplus System (PASS), to put healthy and nutritious food grown and produced by Pennsylvania farmers into the charitable food system that was established six years ago – but never funded – will finally get off the ground thanks to first-ever funding through the 2015-16 state budget.

In April, Agriculture Secretary Russell Redding announced the Central Pennsylvania Food Bank as the winning bidder to implement the program, and made it a point to mention that the healthy and nutritious food produced here in Pennsylvania should be put in the hands of the people who need it most.

With the funding appropriated through the state's 2015-16 budget, the food bank and the state's network of charitable feeding organizations will secure a variety of surplus agricultural products produced in Pennsylvania, creating additional supply to feed those who are at risk of hunger and providing an alternative market for many farmers in the commonwealth.

PASS will provide an opportunity to create new markets for many of the state's farmers and food producers who currently have no outlets or limited opportunity for surplus product. The program will also provide a safe, efficient system for farmers

wishing to donate products to the charitable food system. Producers, packers and processors participating in PASS may be reimbursed for costs involved in harvesting, processing and/or packaging, and transporting donated product. In this way, Pennsylvania-produced products will stay in the state to help meet people's basic food needs.

As part of the PASS implementation process, the department is developing a database of producers who want to be considered as sources of product for the program. This database will include farmers who offer products such as fruits and vegetables, eggs, dairy, beef, pork and poultry. Pennsylvania producers interested in participating in PASS can contact the department's Bureau of Food Distribution at 800-468-2433.

Highlights of the New Worker

Protection Standard...(continued from page 10)

done. The employee can conduct the Fit Test using kits from safety retailers. You can go to a commercial contractor that offers this or you might be able to get someone at your local fire company to do it for a small donation.

This article has just hit the highlights and hot spots of the WPS. Please feel free to contact James Harvey, Penn State Extension WPS specialist,, for a further clarification on these various areas or a compliance assistance visit to your farm. His contact information is jdh18@psu.edu or call at 814-863-8214.

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NEWS

National News Briefs (continued from page 8)

USDA Survey Points to Honey Bee Troubles

For the first time, the U.S. Department of Agriculture has conducted a survey aimed at measuring the extent of honey bee loss due to colony collapse disorder. The survey of 23,000 bee keepers—including hobbyists with smaller colonies—shows an 8 percent decline in colonies between 2015 and 2016. Survey data also shows that Varroa mites are the leading stressor affecting larger colonies. The initial survey data is important because it establishes a baseline comparison against future honey bee losses.

Bee keepers across the country have been confronting colony collapse disorder, which causes significant die-off of bees over the winter. Scientists believe a host of factors, including mites, poor genetics and nutrition, are causing a decline in honey bee health. USDA staff are also conducting several research projects aimed at gaining a greater understanding of what is impacting honey bee colonies. That research includes:

A national bee genebank organized by the Agricultural Research Service will help preserve the genetic diversity of honey bees, and examine the traits that help those bees' better combat pests or disease.

Examining seasonal pollens to determine if it impacts bees' immune response to stress—and if location has any impact.

A project to determine the rate of colony survival, and return on investments, based on two strategies for controlling Varroa mites.

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




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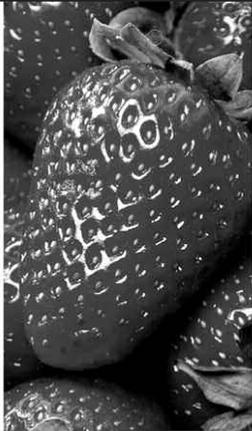
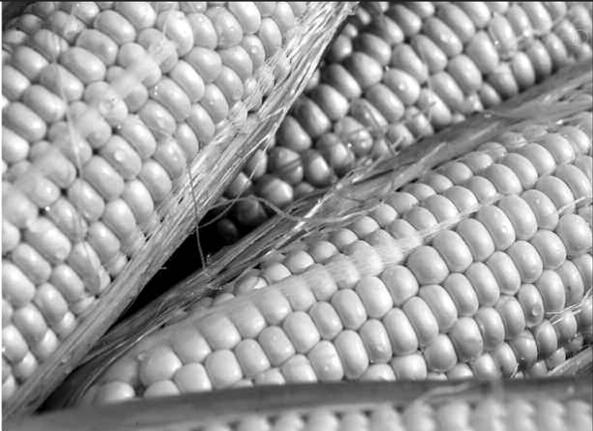
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WHAT IS CONTENT MARKETING?

And Why It Is Your Secret Weapon

Competition from CSA and farm box programs, other farmers' markets, and supermarkets means that direct-to-consumer farmers must be proactive with marketing efforts to maintain and grow their consumer base. **Content Marketing** - sharing your farm's story with the world through online channels -- can grow sales, increase awareness of your brand, and deepen the connection your customers feel to your business.

Content marketing draws on your brand's strengths. Your customers buy from you because they're seeking out a direct connection with a producer. They want to buy food that has a story -- your story -- behind it, a sense of place and time. Using food and farm photos, short videos, family recipes, and weekly email updates and/or occasional email blasts on available products, crop progress, and other happenings at the farm build on this connection, adding value to the customer's experience and strengthening their relationship with their favorite farmer.



TELL YOUR STORY AND GROW YOUR AUDIENCE

Start with a monthly blog or email update. Write about what's going on at the farm - how the season is shaping up, what's in bloom, what's ripe, what you're excited about (this includes the off-season). Be sure to include information on growing practices, harvesting methods, farm history, and more to make your farm stand out. If you don't have the where-withal to write, look to a trusted staff, intern, or family member who can help you out. Look over their pieces before publication to ensure the message is right. Don't be afraid to send out a short, exciting email off the schedule if there is a bumper crop or event to promote, but be sensitive about clogging inboxes with emails more than every other week. Include a link to sign up for your newsletter on your website and blog posts, and print out a sign up sheet for your farmstand or market table so shoppers can sign up.

CALL TO ACTION

The content is a way to get customers' attention, but be sure to include a call to action - whether at the end of a blog post or email update, or in a photo or video caption. (Take it to the next level and add text to your photo with an easy web editor like PicMonkey.com or AddText.com). The call to action: "Get the first sweet corn of the season this weekend!" or "Try this recipe and let us know how you like it!". This inspires customers to come to the market, make that purchase, or attend your event.

Measure the effectiveness of your work. Email marketing services like Constant Contact and MailChimp include tools that show statistics on customer engagement - how many opens for each email, how many clicks for each link, etc. to help you determine what's working and what's not as well as tips like the best day and time to schedule email blasts to get the most engagement. Google Analytics can help you collect information on how visitors are finding your site (referral pages), where site visitors are located (to help you target consumers in specific areas where you sell your produce), and measure how effective your homepage is at drawing visitors in to click around (a.k.a. your "bounce rate").

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SOCIAL MEDIA INSIDER TIPS

Social media and content marketing go hand in hand. While blogposts, recipes, and written updates are great for engaging your customer base, they take a little time to create - and finding the time to sit down and write during the season is hard for any farmer.

- Supplement occasional blog posts and email blasts with quick and easy multimedia content that can be created and posted from your smartphone.
- Link Instagram posts so that they show up on Facebook and Twitter accounts automatically
- Zucchini blossoms looking particularly beautiful this morning? Snap a pic and post it on Instagram to get your followers excited for the upcoming crop (whether it's the flowers or the soon to develop fruit)
- Farm cat has kittens? Take a 10-second video of the cuties and post it. Sharing these snapshots of life on the farm gives your customers the connection that they crave. You can make this visual content do double duty in email blasts or blog posts later. And be sure to hit the "Explore" tab on Instagram to search for other small produce farms around the country for inspiration on how to market your business through these channels.
- Looking to connect with chefs to grow your wholesale business? Twitter and Instagram are the best social media channels to connect with this customer segment.

GENERAL

What Should You Do With Fruit and Vegetables After Pesticide Drift

John Masiunas

“A pesticide application that damages or contaminates nearby property, including plants and bees, is not only a violation of pesticide regulations, but can be a very costly mistake for all parties. Certified Organic farms can be put out of business for three years or more if their fields are exposed to pesticides.”

A common question that we get after a garden, vegetable field, or orchard is damaged by pesticide drift is whether or not it is “safe” to harvest and consume the produce. This is a very difficult question to answer. Re-entry time and worker protection information on the pesticide label will provide guidance on when the garden, field, or orchard can be re-entered, but it provides no information about the residue that might be on or within the produce. To answer conclusively the question about whether or not it is “safe” to harvest and consume the produce requires knowledge of the pesticide involved, the amount of residues within the plant, the health effects of the pesticide, how the harvested part of the plant has changed, and laws regulating pesticides. When herbicide drift damages your plants, it is an indication that the herbicide has entered the plant. To legally sell the produce, there has to have been an established tolerance for the particular herbicide causing the injury. Some herbicides such as glyphosate (active ingredient in Roundup, Touchdown and others) are used for spot or stale seedbed treatments in a wide range of fruit and vegetable crops. These herbicides have established tolerances (Table 1). Other herbicides do not have an established tolerance for most fruit and vegetable crops. If the concentration of the herbicide in your fruit or vegetable is above the established tolerance or there is no tolerance, then you have a tainted crop that is illegal to sell and is subject to seizure. The website to check for tolerances is: www.epa.gov/pesticides/food/viewtols.htm.

Table 1. Examples of some tolerances for herbicide residues in apple and tomato fruit.

Apple		Tomatoes	
Herbicide	Tolerance (ppm)	Herbicide	Tolerance (ppm)
Casoran	0.50	Dacthal	1.0
2,4-D	5.0	Dual	0.1
Gramoxone	0.05	Poast	24
Karmex	1.0	Sandea	0.05
Liberty	0.05	Select	1.0
		Sencor	0.1

Tolerances are not the only factor that should go into your decision on whether or not to sell or consume produce. The U.S. EPA tolerance levels are the best scientific information we have, but you or your customers may not trust that information completely, and if your customers have heard of the drift problem, selling affected produce may damage your farm’s reputation. Concentrations detected by analyzing selected plant tissues, usually leaves, may have little relationship to the concentrations of herbicide occurring in the harvested portion of the plant, often the fruit. Because there are so many unknowns, I advise not consuming the fruit or vegetable when visible herbicide injury occurs to the plant. Herbicide drift can kill flowers and

damage fruit and leaves. The damage makes the harvested fruit or vegetable unsightly and may affect storage life and taste. Instead of trying to use the fruit or leaves from damaged plants, I recommend that gardeners purchase locally grown produce at a farmers market or roadside stand. If you are interested in harvesting some undamaged fruit or vegetables from a garden or field with areas having drift damage, get as much information as possible. What herbicide(s) drifted? Many herbicides that commonly cause drift injury are absorbed by the leaves and translocate to the growing points, fruit, and seed where they concen-

(continued on page 17)





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GENERAL

What Should You After Drift?... (continued from page 16)

trate. Some herbicides such as 2,4-D degrade in plants, others such as glyphosate degrade only slightly in plant tissues. Over time, the herbicide concentration in the plant may be diluted due to plant growth and herbicide loss in dead shoot and root tissue. I feel that having the fruits or vegetables analyzed for herbicide residue is critical to making an informed decision in herbicide drift situations. Several private laboratories will analyze plant tissues for herbicide residues for a fee; that fee can be several hundred dollars per herbicide per sample. Talk to the applicator who caused the drift problem; they may be willing to pay for the analysis. Some manufacturers will analyze plant tissues for their products. The Illinois Department of Agriculture, as part of a pesticide misuse investigation, will collect plant samples and test for herbicide residues. In Pennsylvania, pesticide misuse complaints are filed with the Pennsylvania Department of Agriculture's Bureau of Plant Industry: http://www.agriculture.state.pa.us/portal/server.pt/gateway/PTARGS_0_2_2447_0297_0_43/AgWebsite/OrganizationDetail.aspx?name=Bureau-of-Plant-Industry&navid=34&parentnavid=0&orgid=22&.

In addition, whoever collects samples for residue analysis must collect them correctly and in a timely manner for it to be useful for you in the decision making process. If the harvested part is present, collect that tissue. If fruit are not present, then collect samples of recently formed leaves and the shoot tips. Translocated herbicides will concentrate in those tissues. Ask that fruit samples be collected later to help you in deciding whether or not to sell or consume the fruit. Make sure that samples are collected from the crop plants showing injury and as close as possible to the site of herbicide application.

What does information of herbicide residue concentrations tell you? Sometimes it may not tell you much. Obviously, the lower the herbicide concentration, the better, and a concentration below an established tolerance is better than one above, but there are no clear-cut answers. Low or no residues can mean a variety of things. The herbicide may be absent from the parts you wish to harvest and eat, or the herbicide concentration may be below the limits of detection for the equipment or procedure being used. Another possibility is that your sampling procedure was not careful enough to find fruit or vegetables with residues, and the herbicide may have degraded between the time of the drift and when you sampled (or during sampling, handling, shipping, or storage). Be conservative in how you interpret the residue information. If herbicide residues are

detected, the scientific literature suggests that for the concentrations likely to occur from drift and subsequent absorption into fruits and vegetables, acute poisoning effects are very unlikely. Questions about the possible chronic effects (including cancer, the endpoint that is always debated in questions about pesticide safety) from multiple exposures from repeated incidents of herbicide drift, along with many other routes of exposure, remain the subject of research.

Dr. Masiunas is with the Univ. of Illinois. From the Illinois Fruit and Vegetable News, June 2012, as reprinted in the VegNet, The Ohio State Univ. Ext., Vol. 23, No. 3, May 3, 2016.





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GENERAL

On the Road to Furmano's and Earl Lake Farm

Elsa Sanchez and Thomas Butzler

In May, 2016 we had the opportunity to visit with Scott Hoffman, Field Manager with Furmano's Foods. Furmano's is a tomato grower and packer that was started by J.W. and Emma Furman in 1921 in Northumberland.



Seedlings being watered by sub-irrigation before planting. Transplant solution is also being run through the green hose into the fertilizer tank.

In addition to farming 600 acres at Furmano's Family Farms, Furmano's works with 30 tomato farmers primarily in Pennsylvania, but also in Maryland, Delaware and New Jersey. Earl Lake is one of those farmers and we were at his Pennsylvania Furnace farm where about 70 acres of processing tomatoes were in the process of being planted.

Cultivars grown are primarily Heinz varieties. Furmano's goal is to have an about even split between peeling and crushing tomatoes. Peelers are used in dicing and whole tomato products, while crushers are used to make ketchup and sauces. Environmental factors also determine whether a cultivar will be used for peeling or crushing, with soft tomatoes destined for crushing. Another consideration is field storage. Cultivars grown can keep in the field for a week or 10 days and maintain excellent quality.

Five- to 6-week-old transplants in 512-celled seedling trays are bought from transplant growers in Georgia and Pennsylvania for planting. Multiple transplant growers are used to decrease the risk of issues with transplants, such as, bacterial diseases. Another way that

(continued on page 19)



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GENERAL

On the Road... (continued from page 18)



Seedlings being placed on the transplanter.



Workers following the transplanter to set any plants that were not planted correctly or were skipped. For a video showing how the transplanter works go to <http://extension.psu.edu/plants/vegetable-fruit/news/2016/on-the-road-furmanos-and-earl-lake-farm>.

Seedlings being placed in the carousel before being dropped and planted.

risk is minimized is by buying 35 acres worth of "insurance plants" annually in the event that replanting is needed due to late frost killing transplants in the ground.

Scott said that he prefers to have transplants that have slightly purple leaves because they experience less transplant shock. Plants are just slightly nutrient deficient or underfed and Scott mentioned that they that will seek nutrients once planted and establish quickly. Transplants are planted by an 8 person team that can plant up to 10-12 acres a day. Plants are spaced 9 1/2 to 11 inches apart within a row with 56 inches between row centers for a plant population of about 12,000 plants/acre. A solution consisting of Awaken, BlackMax 22 and Regalia is applied with each transplant.

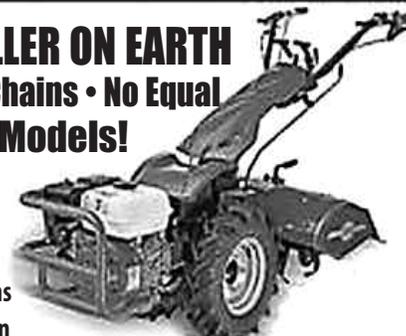
Most fields where tomatoes are grown have access to water for irrigation. Earl uses an irrigation gun during dry periods. In fields where irrigation is not used, tomatoes tend to be smaller and harder and overall yield is decreased. Using drip irrigation results in better quality and increased tonnage and consistency. However, drip tape needs to be removed from fields before harvest. The labor required for this is cost prohibitive. Scott mentioned that he would like to find a way to mechanically roll up to 400 yards of drip tape without it snapping.

(continued on page 20)



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GENERAL

On the Road... (continued from page 19)

Seedlings planted on our visit. 9 1/2 to 11 inches in-row spacing and 56 inches center-to-center rows are used.

Plants are closely monitored throughout the growing season. Scott scouts the farm twice weekly, each time scouting about 1/2 of the acres. Earl also scouts the fields. They are looking for pest and disease problems as well monitoring plant health. Insect pests that are scouted are aphids, flea beetles, potato beetles, hornworms and spider mites. Pests and diseases are managed with pesticides, when needed.

Diagnostic services are also used. For example, before planting soil testing results are used to direct fertility management. Also, twice over the growing season leaf analysis is conducted to fine-tune fertility management.

Nutrients are side-dressed or applied to foliage, when needed. Fruit will also be analyzed to determine the effect of fertility management on fruit nutrient levels. Record keeping is an important part of the success of this production system. Scott mentioned that they have a database to match management practices with cultivars and growing locations.

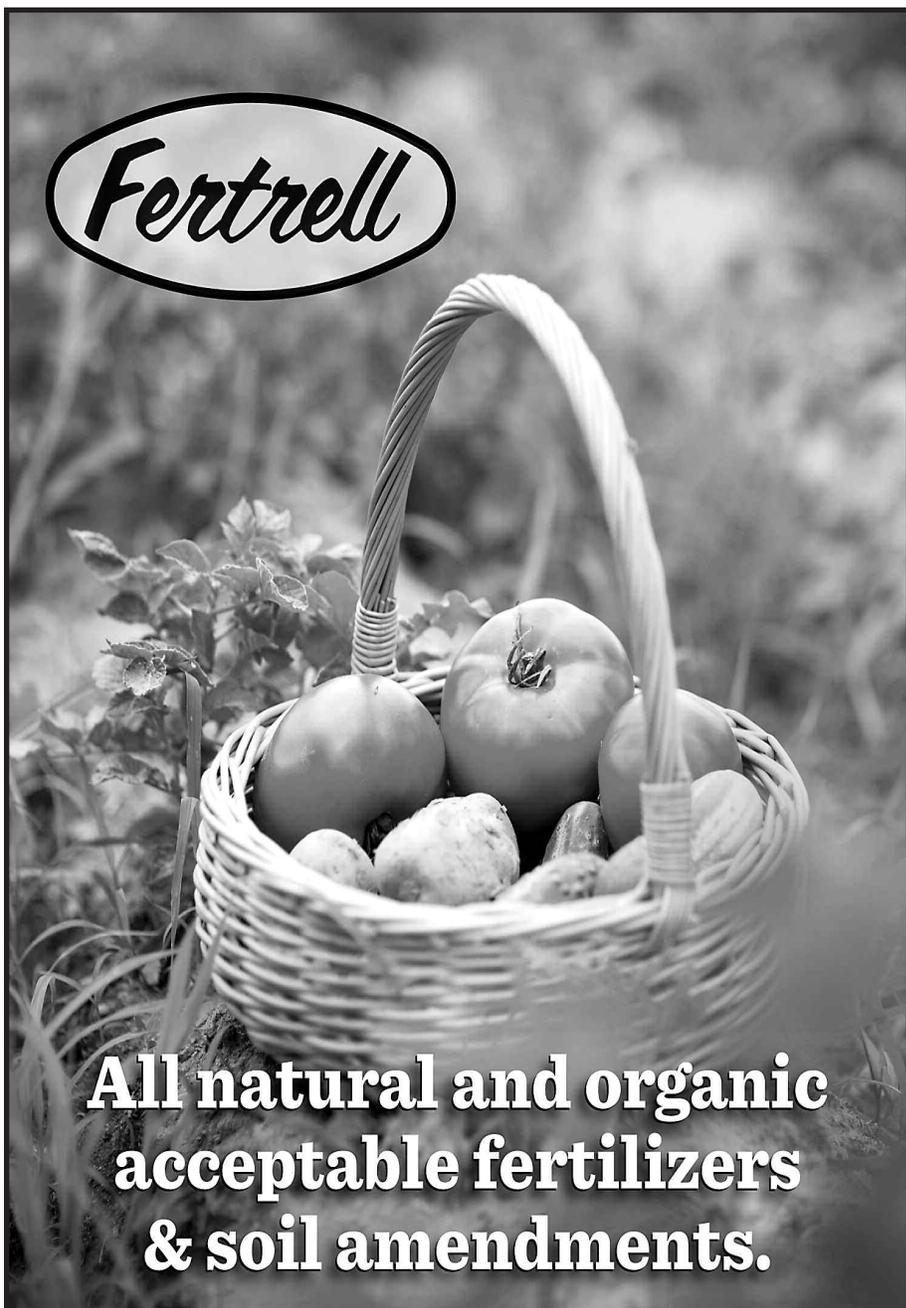
This production system results in tomato fruit yields of 50 – 55 tons/acre. We were invited back to see the plants develop over the growing season and will return for harvesting and a visit to the processing plant in September.

Thank you to Scott for the time spent and information shared with us and to Earl for allowing us to visit his farm.

Dr. Sanchez is with the Department of Plant Science at Penn State Univ. and Mr. Butzler is with Penn State Extension. From the Vegetable, Small Fruit and Mushroom Production News, Penn State Extension, extension.psu.edu/plants/vegetable-fruit/news, June 1, 2016.



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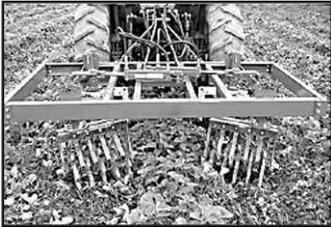
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VEGETABLE PRODUCTION

Preventing Tomato Fruit Physiological Disorders

Brad Bergefurd

Not only was the 2015 growing season one of the wettest on record, but the season had some of the lowest average temperatures for an extended period of time in recent years. The season long extreme environmental conditions caused many problems for all vegetable growers, but fresh-market tomato growers were particularly affected due to high percentages of fruit physiological disorders with some farms experiencing up to 50 percent of fruit affected. Thanks to greatly appreciated grant funding from the Ohio Vegetable and Small Fruit Research and Development Program (OVSFRDP), researchers have shed some light on reducing the economic impact of these tomato fruit disorders through cultural management and fertility research.

Yellow shoulder disorder and other tomato fruit disorders are a wide-spread problem annually, especially with extended hot and dry growing conditions at blossoming and fruit development. Yellow shoulder disorder seems to impact all-sized fruit and is characterized by areas at the top of the fruit and shoulders of fruit that stay green or yellow and as the fruit ripens, and tends to turn a more intense yellow color. These areas never will ripen properly, even if left to hang on the plant for an extended time. The area beneath the yellow shoulder is firm and poor tasting which makes the fruit unmarketable and not desired by consumers. Unfortunately, the cause of this problem is complex and researchers have been investigating cures for almost thirty years with limited success.

The complexity of the disorder is increased since environmental conditions as well as tomato plant physiology lead to the

disorder and there is no real solution. Factors that can increase the severity of these disorders include cloudy weather, wet and cool conditions, high nitrogen, low potassium, and compacted soils. Some of the cultural and crop management practices that fresh-market tomato growers can do to ease the symptoms and possibly reduce crop losses will be covered here. One of the main causes of this disorder, that we have limited control over, is intense heat. High temperatures prevent lycopene production, the red pigment in the tomato fruit. Lycopene is most often in the shoulders of tomato, as this part is more commonly exposed to the direct rays of the sun.

Researchers measured fruit temperatures of between 86 degrees and 105 degrees Fahrenheit morning through evening hours in July 2012, one of the hottest months on record for southern Ohio. When temperatures are greater than 85 degrees, lycopene production begins to cease, whereas at temperatures below 85 degrees, lycopene consistently produces.

Inside the plant we see a reduction in potassium (K) just before yellow shoulders are seen. This year in our tissue testing we saw drops in K of 3 to 4 percent in a matter of weeks, going from 4 to 6 percent - which is in the good range, to 2 to 3 percent - which is in the poor range. Usually within a week or two of this drop, yellow shoulder will be expressed. Therefore, early detection and management are critical for control.

Drops in calcium (Ca), nitrogen (N), and at times magnesium (Mg) have also been observed as we move into mid-July and early August, the hottest months of the year. We also have

(continued on page 27)



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Sweet corn, tomato and curcubit integrated pest management (IPM) weekly updates will again be available to growers in several forms this year, including email, fax or regular mail.

PVGA and the Pennsylvania Vegetable Marketing and Research Program (PVMRP) have funded IPM research at Penn State for tomato disease control and sweet corn insect control for many years. The PVMRP Board feels it is important to provide this IPM information to growers during the season when they can use it to time fungicide and insecticide applications. For the last nineteen years the Program has offered this information to growers in the PA Vegetable IPM Weekly Update. Besides being sent to individual growers, it is posted at many of the produce auctions.

The IPM Weekly Update will be offered again this year from mid-June through August. To receive the Update weekly by mail, fax or email, contact PVMRP at 717-694-3596 or pvmp@embarqmail.com.

Growers can also obtain IPM information a toll-free recorded telephone message that is available 24-hours-a-day by calling 1-800-PENN-IPM. The IPM information will also be available on the Penn State Extension website at www.pestwatch.psu.edu.

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VEGETABLE PRODUCTION

Fungicide Products for Managing Powdery Mildew on Cucurbit Crops

Kate Everts

There are many new fungicide products for management of powdery mildew on cucurbits such as pumpkin, squash, cucumber and melon. Last year we conducted a trial at the University of Maryland's research farm in Salisbury that included some of these new fungicides (and a few "old" fungicides). The fungicides tested in this trial are in Table 1. Note that some of these fungicides, such as Quintec, are not labelled on all cucurbits, so check the labels carefully.

Table 1. List of fungicides and Fungicide Resistance Action Committee (FRAC) Code tested in 2015.

FRAC Code M5 (Contact fungicide)	Bravo Weatherstik
FRAC Code 3	Proline
FRAC Code 3	Procure
FRAC Code 7	Fontelis
FRAC Code 3 + 7	Aprovia Top
FRAC Code 3 + 7	Luna Experience
FRAC Code 13	Quintec
FRAC Code U6	Torino

Several lessons could be gleaned from this trial that confirm results from other trials.

1) **Always rotate fungicides with products in different FRAC Code groups.** When rotated with Procure, Luna experience performed significantly better than when used without a rotation partner.

2) **Products that have some systemic activity perform better than products with only contact activity.** In our trial, when Aprovia Top was alternated with Bravo Weatherstik, it was only moderately effective in reduction powdery mildew. However in alternation with Procure, Aprovia Top was much better at reducing powdery mildew.

3) **Using the best fungicides earlier in the season will improve control.** We designed some treatments to see if applying the most effective rotation partner early or late was better for control. The differences were small, but when the better product was applied early, the control was marginally better.

The two best treatments in this trial were Luna Experience alternated with Procure, and Quintec alternated with Procure. Aprovia Top alternated with Procure, and Torino alternated with Procure significantly reduced powdery mildew, but were not quite as effective. Better than the control, but even less effective was Fontelis alternated with Torino.

*Dr. Everts is the Vegetable Pathologist at the Univ. of Delaware and the Univ. of Maryland. From the **Weekly Crop Update**, Univ. of Delaware Coop. Ext., Vol. 24, Issue 3, April 8, 2016.*



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BERRY PRODUCTION

MyIPM: New Smartphone Apps for Fruit Disease Management

A new smartphone application, called MyIPM-NED, was developed to promote integrated disease management for apples, pears, cherries, and cranberries and is available for free for Android and iOS devices. These apps are also able to be used on tablets, as well.

Fighting disease is now at your fingertips! Spearheaded by plant pathologist Dr. Guido Schnabel at Clemson University, the MyIPM smartphone app series for fruit disease and pest management are available for free for Android and iOS devices. Additional apps in the series are MyIPM-SED (peach, strawberry, and blueberry diseases) and MyIPM-SEP (blueberry and strawberry insect pests).

The latest in the series, the MyIPM-NED app, is a collaboration between Clemson University, Cornell University, The University of Massachusetts, Penn State University, and North Carolina University and focuses on managing fruit diseases specifically for the northeastern United States—apples, pears, cherries, and cranberries.

Very user-friendly, the app includes high-resolution images to help diagnose disease problems, as well as interactive tables to outline effective conventional and organic control options. Want to learn more about the causal organism, disease cycle, symptoms, biology, and pesticide resistance management for a particular disease? It's in the app!

These apps were developed to cover crops in the southern United States; however, they can be utilized anywhere.

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From the **Vegetable, Small Fruit and Mushroom Production News**, Penn State Extension, extension.psu.edu/plants/vegetable-fruit/news, June 3, 2016.

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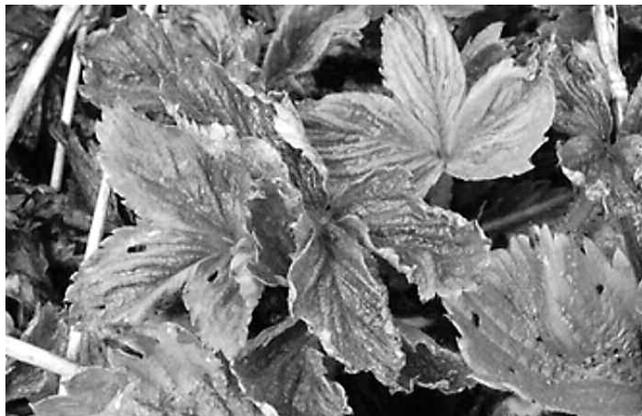
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BERRY PRODUCTION

Causes of Strawberry Leaf Distortion

Kathleen Demchak

We've received a number of calls from growers who are concerned about various types of leaf distortion on their strawberry plants this year. Here is a review of some of the more common causes.



Cyclamen mite leaf damage. Photo: Kathleen Demchak

Cyclamen mites - These mites are very tiny, so you can't see them even with a magnifying glass. Symptoms are small distorted leaves that are cupped upward and have an "off" color. Often only individual plants show symptoms at first, but because the mites are sticky and can be spread on equipment or worker's hands, patches of plants will eventually show symptoms. If symptoms are not recognized and plants are not treated, entire plantings can become infested. Plant vigor is affected, and severely infested plants remain very small with only tiny leaves and fruit present. If the problem is recognized early when only a few plants are lightly infested, predatory mites can be released to bring the problem under control.

Plants can also be treated with Thionex – but only in perennial (i.e., matted-row) fields or with Portal. Be aware that after July 31, 2016, Thionex can no longer be used on perennial strawberries. Its use had already been discontinued on annual strawberries as of 2012. Either Thionex or Portal must be applied at times of the year when the spray can penetrate into the crown area, which is where the cyclamen mites are found. That means that there are only two windows of opportunity for treatment – early spring when only a few leaves are present, and at renovation after leaves are mowed off. High volumes of water (200 gallons per acre) should be used.

Cold injury - Cold injury can also cause leaves to emerge distorted either fan-shaped or lopsided, as if they had been exposed to a growth regulator type of herbicide. In some cases, they also look crinkly or bubbly. New leaves that emerge subsequently are normal in appearance when cold injury is the cause of leaf distortion.

Growth-regulator types of herbicides - Growth-regulator types of herbicides cause curled, fan-shaped, or lopsided. So far, we've seen symptoms of damage from spot applications of clopyralid (Stinger), and glyphosate (Roundup and other trade names). When Roundup is the cause of the leaf distortion, the leaves will usually be "strappy" in appearance and chlorotic as if they have a nutrient deficiency.

Viruses - Viruses can cause leaf distortion and discoloration, and this might be what people think of first if they remember the widespread virus situation from 2013. In that year, nursery plants had become infected with two different

viruses, and infected plant material was sent to a number of growers in the eastern U.S. Much more stringent testing protocols are now in place at a number of nurseries, so hopefully we won't see a similar situation anytime soon.

Potato leafhopper - Potato leafhopper feeding can cause leaves to become distorted, yellowed, and curled, though it is a little early for widespread issues yet this year. Symptoms are most apparent when plants are drought- or heat-stressed and growing slowly so that symptoms accrue. New plantings of matted-row strawberries, where the plants have few leaves for photosynthesis, are often most severely affected. The leafhoppers can be difficult to spot as the adults fly quickly. The nymphs cannot fly; however, they are usually on the leaf undersides so the leaves should be flipped over to find them.

Powdery mildew - Powdery mildew will cause leaves to curl upward, usually with some purpling on the leaf undersides. The typical white powdery appearance is usually only apparent on the upper leaf surface, if it is apparent at all. In some cases, powdery mildew is apparent on the fruit, and in other cases, it's less apparent but grows around and under the seeds, causing them to easily rub off during harvest. Usually some scarring is present where the seeds had been. Powdery mildew is most problematic when the weather is warm, dry, and humid. There are a number of fungicides with FRAC codes 1, 3, and 11 that are effective, though resistance is a serious concern within these chemical classes, so materials in these classes should not be overused.



Potato leafhopper damage plus powdery mildew on strawberry. Photo: Kathleen Demchak

Boron deficiency - Boron deficiency causes symptoms that are nearly identical with cyclamen mite damage. Boron deficiencies are most common on sandy soils. A plant sample should be submitted for nutrient analysis to correctly identify the problem before applying corrective amounts of boron. If applying boron to correct a deficiency, take care to apply the correct recommended rate (either 4 pounds per acre of Solubor as a soil application in early spring or late fall, or 1.5 pounds of Solubor in 100 gallons of water per acre in early spring and after renovation). Solubor contains 20% boron, so you are applying only 0.8 pounds or 0.3 pounds of actual boron per acre per application, respectively. Boron can quickly become toxic if over-applied.

*Ms. Demchak is with the Department of Plant Science at Penn State Univ. From the **Vegetable, Small Fruit and Mushroom Production News**, Penn State Extension, extension.psu.edu/plants/vegetable-fruit/news, June 3, 2016.*

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Preventing Tomato... (continued from page 22) observed this disorder in high-tunnel tomatoes; however, it is usually a month or so earlier, when temperatures in the tunnels begin to climb around Memorial Day. High-tunnel tomato growers will apply a 10 to 15 percent shade cloth to tunnels around this time in an attempt to reduce the heat stress in the tunnels. This disorder is expressed in plants that are under some stressful growing conditions when the plant is under a heavy fruit load. These stresses can be too little water, too much heat, high amounts of plant disease, or insect infections.

Mr. Bergefurd is an Extension Educator with The Ohio State University. From **VegNet**, The Ohio State Univ. Ext., Vol. 23, No. 1, April 19, 2016.

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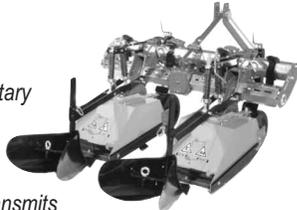
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