President’s Message

Greetings,

Hopefully as you read this, apple harvest will be over or at least you can see the light at the end of the tunnel.

Labor has been a challenge this year, especially with a large crop. All reports say the quality of the crop is excellent.

Planning is well underway for the 2015 Mid-Atlantic Fruit and Vegetable Convention. I look forward to another very good convention and hope for good weather. Pre-registration will be in next issue of this newsletter and be sure to make your room reservations early.

We have had several meetings to discuss the need for Grad student housing at F.R.E.C. The building that has been used for the past 30+ years is no longer in good condition to house students.

F.R.E.C. is looking to build new housing. It will be a real challenge to have this building constructed and ready for occupancy by spring. Alternate housing may be needed if this cannot be accomplished. We are open for any suggestions! Discussion is ongoing for funding of this building project.

The 2015 Farm Show is also fast approaching. Remember when the call/email comes asking for help to man the Apple Booth, apple sampling table and the young growers booth, PLEASE volunteer your time. This is our largest fund raiser of the year. It is also a good time for growers to have the opportunity to speak with consumers about the wonderful quality of Pennsylvania fruit.

I hope this finds everyone healthy and ready for some well deserved down time.

Tim Weiser
President

MARK YOUR CALENDARS NOW for the next
Mid-Atlantic Fruit & Vegetable Convention
January 27-29, 2015
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Statement required by 39 U.S.C. 3685. Showing the ownership, management and circulation of Pennsylvania Fruit News, published monthly at Orrtanna, PA. Filed October 1, 2014. The Publication is sent to members of the State Horticultural Association of Pennsylvania. $20.00 of each members dues is paid for the subscription to the publication. It is edited by Dr. Robert Crassweller. The Executive Secretary is Maureen A. Irvin. The average number of copies for the past 11 months was 625 and these were sent to members and remaining copies kept on file for future use. I certify that the statements made by me are correct and complete.

Signed,
Maureen A. Irvin, Executive Secretary
Editorial Views
By Dr. Rob Crossbeller

“A Preview of Hershey”
While there can always be last minute changes, the fruit program for the Mid Atlantic Fruit & Vegetable Convention is pretty well set. Thanks to all the growers who helped serve on the program committee and to my colleagues at FREC, PSU, Rutgers University, Virginia Tech and University of Maryland who provided suggestions on topics and speakers and who also “volunteered” to make presentations. We start working on the annual program in April with the planning meeting; although the initial Convention committee composed of representatives from the various organizations meet in March to outline the general flow to the event and decide on registration fees, exhibitor fees, and Tuesday’s keynote speaker. I’m pleased to announce this year’s keynote speaker is Russell Redding, Dean of Agriculture and Environmental Sciences at Delaware Valley College.

This year’s Goodling lecture will be presented by Alan Lakso from Cornell University on Tuesday morning. He will be discussing the development and use of the MaluSim carbohydrate model for thinning. The next day he will be talking about water use under northeastern growing conditions for apple trees. Tuesday afternoon will be devoted to a pruning workshop titled “Forget the Art of Pruning – It’s all Science.” Tara Baugher helped organize this session and will feature Peter Hirst and Johnny Park from Purdue University and project leaders on the Specialty Crop Grant project on automating pruning in apples and wine grapes. Other speakers include Jim Schupp and Jay Harper from Penn State. The afternoon will finish with a grower panel on computer assisted pruning.

Wednesday will begin with a presentation on the NEWA weather and pest modeling and then a panel by growers that have been using the system. Gary Thompson, Associate Dean for Research, will be talking about the importance of grower funded research and its importance. Peter Hirst will be presenting a second talk about apple flower development. His team has made some very interesting observations that are changing what we know about apple flowering. (You can read about some of his findings elsewhere in this issue.) Wednesday will also feature a grower panel on innovations some growers have adopted to help with their fruit production business’s. Other presentations on Wednesday include control options for internal worms, wooly apple aphids and the latest on a low cost harvest assist device.

Thursday will be potpourri of topics including a grower panel on adjusting spraying based on tree size, information on worker protection standards, best management practices to minimize bitter pit on Honeycrisp, evaluation of new fire blight resistant pears as grown in Michigan and fire blight management strategies in the wake of 2014 experiences. Thursday afternoon will begin with another presentation on sprayer application; followed by a panel on the use of social media to promote your business, and preliminary results on an Asian pear trial and help in determining harvest maturity of Asian pears.

The stone fruit session will be held Wednesday afternoon through Thursday morning. The Ernie Christ lecture will be presented by Bill Shane from Michigan State. There will also be presentation on the PSU peach rootstock trials, a grower panel on peach varieties, marketing and promotion concepts of peaches, and BMSB and its effects on IPM in peaches.

I look forward to seeing many of you at the meeting. I would also remind you that the 9th Annual Mid-Atlantic Cider contest will be held on Tuesday. I hope you will enjoy the meeting and pick up some new ideas that will make you more profitable.

Editor’s note: Some of the abstracts in this issue have a URL at the bottom for the source of the material. Those abstracts came from the program for the American Society for Horticultural Science annual meeting held in July. The link goes to the printed version of the abstract. Some of the linked abstract also have the audio or video of the actual presentation that you can listen or watch. There are more presentations than I have in this issue and to see all of them go to www.ashs.org . Click on the Conferences tab in the gray top bar, then scroll down and highlight “Technical Program”, enter apple or whatever crop you are interested in the search bar to see all presentations related to apple.

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FDA RESPONDS TO GROWER CONCERNS IN REVISED PRODUCE FOOD SAFETY PROPOSALS

In response to concerns raised by USApple and others, the FDA issued a revised set of proposed produce food safety regulations. USApple filed a comment letter with the FDA last year challenging a number of proposals that affected apple production. In addition to USApple’s comments, the Northwest Horticultural Council (NHC) also submitted an extensive comment letter on the impact on tree fruit production. While the comment letters addressed a number of areas in the proposed rules, much of our concern centered on the FDA proposals regarding “agricultural water” used for irrigation, overhead cooling, and crop protection chemical application. USApple’s comments focused on these key areas:

- **Apples are not a “high risk” commodity** - There are no known documented cases of food borne illness associated with the consumption of fresh apples in the U.S.
- **Cost of the proposed rules** - USApple believes that the FDA had significantly underestimated the cost of the rules on growers.
- **The agricultural water rules are excessive and could result in significant loss of fruit** by potentially causing a sudden halt in irrigation and cooling usage during the growing season, and as a result reduce the food supply unnecessarily - The FDA’s “one size fits all” approach to agricultural water is an example of a solution in search of a problem.

Under the original rule proposal, growers would have been required to begin testing water at the beginning of the growing season and continue testing at intervals of 7 or 30 days depending upon the water source. Even worse, if any of the tests exceeded the EPA recreational water standard, the use of water from that source would need to immediately cease until the problem was addressed.

The FDA considered the comments by USApple and other industry organizations and revised the original proposals. The new proposal replaces the original requirement of weekly or monthly testing of water throughout growing season with microbial standards based on EPA “recreational water” standard. The revision calls for growers to establish a “baseline” for microbial presence in agricultural water.

Under the new proposal, water testing will not be required throughout the growing season. Instead, after the establishment of the “baseline”, growers will be required to collect and test 5 samples “as close to harvest as practical.” Then, if the EPA standard for recreational water is exceeded, the growers have options short of halting the use of water completely. In the examples accompanying the revision, the FDA shows a typical die off calculation where the microbial test was nearly double the recreational water standard. In the example, the grower would have to wait one day after the last water application before starting to harvest to allow for sufficient microbial die off.

The FDA says in the revised proposals that it intends to develop a “tool” - most likely an “App” for cell phones or software to be installed on a laptop computer - that will assist growers in doing the mathematical calculations necessary to determine the interval between last water application and harvest, based upon the individual grower’s water test results.

USApple is pleased that the FDA considered grower and industry comments on the original proposal and revised them. While the new proposals may not be a perfect solution, they represent a significant improvement. USApple will be utilizing its Technical Food Safety Task Force to further evaluate the revised proposals and will file additional comments prior to the December 15th deadline. (Apple Bites, 10.7.2014, U.S. Apple Association)

FOOD FACILITY BIENNIAL REGISTRATION RENEWAL

Food facilities required to register with FDA must renew their food facility registrations this year during the period beginning on October 1, 2014 and ending on December 31, 2014. FDA encourages food facilities to renew their registrations early on in the three-month renewal period.

The FDA Food Safety Modernization Act (FSMA), enacted on January 4, 2011, amended the food facility registration requirements of section 415 of the Federal Food, Drug, and Cosmetic Act (FD&C Act) [21 U.S.C. § 350d]. The registration requirements in section 415 apply to domestic and foreign food facilities that manufacture, process, pack, or hold food for human or animal consumption in the United States. FSMA amended the Act to provide that food facilities required to register with FDA must renew their registrations with FDA every other year, during the period beginning on October 1 and ending on December 31 of each even-numbered year.

FDA has three guidance documents available to provide assistance to registrants with the registration process, including information on biennial registration renewal. These guidance documents are listed below:

- **The Guidance for Industry: What You Need to Know About the Registration of Food Facilities - Small Entity Compliance Guide** was updated in 2012 to reflect FSMA amendments to the FD&C Act, and contains information regarding: who is required to

**continued on page 6**
register and who may be exempt; how often facilities must register and renew registrations; when FDA may suspend a registration; and how facilities may submit their registrations and registration renewals to FDA.

- The Guidance for Industry: Questions and Answers Regarding Food Facility Registration (Fifth Edition) was updated in 2012 and contains helpful questions and answers regarding food facility registration. Updates to questions in this edition are based on FSMA amendments.

- The Guidance for Industry: Necessity of the Use of Food Product Categories in Food Facility Registration contains information regarding food-product categories included in the food facility registration form.

These documents supersede previously released versions and may be found on the web at http://www.fda.gov/Food/GuidanceRegulation. (Apple Bites, 10.7.2014, U.S. Apple Association)

**FARM BILL IMPLEMENTATION CONTINUES**

Last week, USDA announced the recipients of the 2014 Specialty Crop Block Grants and the Specialty Crop Research Initiative (SCRI). Apple growers came out on top with 28 block grants awarded in 19 states for everything from marketing to research and food safety initiatives. A detailed list of SCRI projects has not been released, however, we know that several apple-specific projects were awarded, including the BMSB SCRI CAP Project, which has been funded in full at $5,357,738 for an additional two years.

Both programs are funded under the new Farm Bill and were top priorities for USApple during the reauthorization process. The SCRI was one of a handful of programs which lost funding when Congress failed to pass a new Farm Bill and instead extended the 2008 legislation. USApple and our coalition partners in the Specialty Crop Farm Bill Alliance (SCFBA) worked to ensure the SCRI received “permanent” funding so that it will continue if extensions occur in the future. (Apple Bites, 10.7.2014, U.S. Apple Association)

**USAPPLE PRESIDENT WRITES SECRETARY VILSACK**

USApple President & CEO Jim Bair recently wrote USDA Secretary Tom Vilsack regarding Poland’s request for access to our fresh market. The request came in reaction to the closure of the Russian market to Poland and other countries engaged in the situation in the Ukraine. This represents a significant loss for Poland as Russia was its top export market.

The Polish government is now utilizing social media creating the hashtag “freedom apples,” and is appealing to U.S. and Canadian consumers to take their apples. They have even recruited Polish born NBA star Marcin Gortat who proclaims, “From my early childhood, I ate a lot of apples. Look how tall I grew.”

Clearly, a PR campaign should in no way impact the regulatory process administered by the Animal Plant Health Inspection Service (APHIS). In fact, U.S. growers are also adversely affected by the Russian embargo. Bair spelled this out in the letter to Vilsack, stating that “The United States has a vigorous regulatory process based strictly on science and we trust it will be adhered to in this case, despite geopolitical concerns.”

As the world’s largest exporter of fresh apples, Poland’s entry into our market would be significant. USApple will watch this issue very closely and will engage our TreeTAC scientific advisors if the process moves forward. (Apple Bites, 10.7.2014, U.S. Apple Association)

**FARM BUREAU MAKES THE CASE TO “DITCH THE RULE”**

Pennsylvania Farm Bureau has worked hard to make sure the federal government knows that harm that could come from its misguided “waters of the U.S.” rule. Recently, PFB sent a stack of post cards—towering more than two feet in height—to the U.S. Environmental Protection Agency in Washington D.C. On every card was a signature telling the EPA to “Ditch the Rule!”

If allowed to move forward, the EPA and U.S. Army Corps of Engineers would have jurisdiction over nearly every water body in the country, including small creeks, ponds, and ditches.

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streams and rain dependent ditches. That proposed expansion brings a raft of uncertainty, including if farmers would need to obtain federal permits for normal farming activities such as weed control and fence installation near water bodies the EPA claims it can regulate.

Recently, members of the House of Representatives passed H.R. 5078 which would prevent the EPA and Army Corps from moving ahead with the rule. Passage of the bill sends “an unmistakable signal that the tide is turning against those who ignore the constitutional separation of powers in the United States,” said American Farm Bureau Federation President Bob Stallman. “We will ditch this rule.”

The bill now heads to the Senate, which has shown limited interest in taking up the measure. If passed, the bill would prevent the agencies from using the rule for future administrative actions that undermines the federal-state partnership or attempts to go around the authority of Congress to change the Clean Water Act.

FARM BUREAU LOBBIES FOR CASH ACCOUNTING
The American Farm Bureau Federation is urging Congress to allow farmers to continue to use cash accounting. A bill currently before the Senate would require that small businesses with receipts greater than $10 million a year would be forced to use the accrual accounting method.

A bipartisan group of Congress has signed a letter that recommends that farmers be allowed to continue with cash accounting. Under an accrual accounting system, small businesses would be taxed on non-existent income, reducing cash flow of operating costs. Farmers could be faced with the need to take out loans to cover liquidity problems.

“We are pleased to see members of Congress reach across party lines and stand together for farmers and ranchers who are working to build their businesses and communities,” AFBF President Bob Stallman said.

VEHICLE CODE BILL ADVANCES
A Pennsylvania Senate Committee has approved a bill that would provide exemptions from commercial driver’s license requirements for operators of farm trucks. House Bill 2092 introduced by Rep. Mark Keller would exempt drivers of farm-register trucks from the requirements when the trucks are driven anywhere in Pennsylvania, or within a 150-mile radius of the farm when crossing state lines. This bill would make state law consistent with federal law.

“Under my bill, farm drivers will be relieved of the excessive regulatory burdens that were primarily developed for commercial truck drivers,” Keller said. HB 2092 has already been approved by the House. The Senate is expected to take action on the bill before the end of this legislative session.

PROPERTY TAX ELIMINATION BILL PASSES SENATE COMMITTEE
Members of the Senate Finance Committee have passed a bill that would eliminate school property taxes and instead shift to an increase in income and sales taxes to fund schools. Senate Bill 76, supported by Pennsylvania Farm Bureau, was narrowly adopted by the committee, but saw bipartisan support.

If signed into law, SB 76 would increase the state income tax rate to 4.34 percent from its current rate of 3.07 percent and increase sales taxes to 7 percent from its current rate of 6 percent. Additional goods and services would be subject to sales taxes, including some food and clothing items.

“For too many years, legislative plans to remedy this problem have languished in committee, never to see the light of day,” said Sen. David Argall, prime sponsor of SB 76. The Senate is not expected to take action on the bill during the remainder of this legislative session.

SOUND SCIENCE MUST GUIDE ENDANGERED SPECIES PROCESS
Bats play a valuable role in agriculture. Feasting on bugs and pests as they dart through the air at night, the humble bat is a pest control powerhouse, saving American farmers billions of dollars in crop protection.

However, White Nose Syndrome has decimated bat populations, particularly the Northern Long Eared Bat—which ranges throughout Pennsylvania and the East Coast. Some environmental groups have pushed for the bat to be placed on the federal endangered species act, but that designation would have far reaching consequences for farming and forestry. Recently, Farm Bureau participated in a hearing before the Congressional House Committee on Natural Resources arguing the designation would put farmers and timber companies at risk, while doing little to correct the root cause of the decline in bat populations.

White nose syndrome has decimated bat populations. Caused by a fungus, and spread by bat-to-bat contact, the disease has caused nearly 100 percent declines in some hibernating bat populations. That’s why some environmental groups are pushing for the Northern Long Eared Bat to be placed on the endangered species list. If that were to occur, it would nearly shut down the state’s forestry industry.

Loggers would be unable to move or cut timber for most of the year. Farmers with bats nesting in buildings would be unable to tear down or repair those structures, except during times when bats are hibernating. However those moves would not address white nose syndrome—the real culprit behind bat deaths.

“The Endangered Species Act has generated unintended consequences,” Rep. Glenn “GT” Thompson said during
the hearing. “We want to build consensus around positive solutions that don’t have significant impacts on landowners.”

PFB State Board Member Jim Brubaker, who testified on behalf of Farm Bureau at the hearing, said farmers are concerned about the conservation of natural resources, as long as they are based on sound science. Shutting off crop production areas near bat nesting sites fails to fix the problems caused by white nose syndrome.

AGRICULTURAL LOADS MAY BE UNDER SCRUTINY DURING HARVEST
Pennsylvania Farm Bureau encourages farmers to be familiar with Vehicle Code laws as harvest approaches. One of the most frequent calls on agricultural transportation is concerns securing the load when transporting crops from the field and onto the highways. The Pennsylvania Vehicle Code states all loads driven on the highways must be prevented from dropping or escaping. Agriculture is not exempt from securing loads except for feathers or other matter escaping from vehicles hauling birds or animals. Visit http://transportation.pfb.com to learn more.

PENN STATE EXTENSION OFFERING FREE ENERGY REVIEW
Farmers - is your farm energy efficient? Would you like to find out how your operation compares? Penn State Extension is providing a free energy review for farms in the Keystone State. Sign up now to learn valuable information about your energy use.

Here is how it works: We analyze your energy use from the past year (or two), adjust it for factors such as farm type and farm size, and calculate an “Energy Use Index” for your farm.

You will be able to see how your farm compares to others, which will help you see whether or not it would make sense to look into energy saving measures to reduce your usage.

This is a free service, which is being done as part of a student project this year. If you are interested in taking part, please contact Dan Ciolkosz at Penn State Extension, dec109@psu.edu or 814.863.3484, or visit http://extension.psu.edu/natural-resources/energy-energy-use/resources/farm-energy-benchmarking-project.

Source: Penn State

NEW CULTIVARS RECENTLY HARVESTED FROM PENN STATE ROCK SPRINGS ORCHARDS
Apples that were harvested from Penn State Rock Springs Orchards in the last week include Rubinola, Autumn Crisp and Pixie Crunch.

Rubinola is a product of Prima x Rubin from the Czech Republic. It is a medium sized fruit with a striped red color. The firm crisp fruit has a sweet tart slightly spiced taste that is high in vitamin C content. Fruit have about a 90 day life in regular storage although towards the end they can develop a greasy skin. Trees are moderately vigorous. The cultivar is resistant to apple scab and powdery mildew. Drawbacks are stem-end russetting and having thick skin typical of scab resistant cultivars. Rubinola is probably only suitable for home owner planting.

Autumn Crisp was developed at Cornell University from a cross of Golden Delicious x Monroe. It was extensively tested as NY 674. The bright red bledish fruit have a white flesh that is slow to oxidize. Although not related to it, the texture is similar to Honeycrisp and very juicy. While good for fresh consumption it was also developed to be used as a processing cultivar. This cultivar is being produced by growers in New York and New England and one grower in Pennsylvania.

Pixie Crunch was released from the Purdue, Rutgers, Illinois (PRI) breeding program as Co-op 33. The fruit are a deep red with some slight russet around the stem on some fruit. Fruit are on the small side but are perfect for a snack apple. The yellow flesh is very crisp hence the “crunch” appellation. The flavor is described as rich with a complex mixture of sweet and tart. Trees are moderately vigorous and resistant to apple scab and moderately resistant to fire blight and frog eye leafspot. Pixie Crunch is susceptible to powdery mildew and cedar apple rust. Source: Penn State
In Memory
Kenneth D. Hickey

Kenneth D. Hickey, age 81 of Gettysburg, PA passed away peacefully surrounded by his family on Thursday, September 4, 2014 at the Gettysburg Hospital. Born March 4, 1933 in Cookville, TN, he was the son of the late Claude & Bessie (Tolleson) Hickey. Ken was predeceased by his beloved wife, Patricia on August 6, 2011. Ken received his Bachelor of Science degree in agronomy from Tennessee Tech in 1954 and his Masters and PhD in Plant Pathology from the Pennsylvania State University in 1959. During his graduate training, he served as research assistant at the Biglerville fruit research station under the supervision of the late “Doc” Lewis and met his soon to be bride, Patricia Heckenluber soon after. They were wed July 30, 1960. Ken launched his career as county extension agent for Cornell University in 1961 and later accepted his post as fruit disease researcher for the Virginia Technological Institute from 1967-1976. He then returned to the Biglerville fruit research station as Scientist in Charge where he remained until his retirement in 2001. Ken found tremendous joy and satisfaction assisting local fruit growers, collaborating with fellow fruit researchers and walking countless apple and peach orchards over the years. Ken was an active member of the American Phytopathological Society, the Kvainis Club, Adams County Land Conservancy, Good Sam’s Club, and the Gettysburg Presbyterian Church where he attended the men’s Sunday School Class for over 35 years. His most cherished accomplishment and joy however was his family, his three children; Deborah (husband Tom and daughters Delaney and Caitlin (husband Chad and son Beckett), Benjamin (wife Tammy and daughter Brittany) and Beth (husband Matthew and children Alexander and Madilynn) and his treasured wife of 51 years, Patricia Ann. Also surviving are his sisters; Agnes and Barbara, and his brother, J. V. “Bud”.

A Celebration of Life Service was held on Saturday, September 6, 2014 the Gettysburg Presbyterian Church, 208 Baltimore St. Gettysburg, PA. The family received friends following the service in the church fellowship hall. A private interment took place in the Fairview Cemetery in Arendtsville, PA. The family suggests memorials to the Gettysburg Presbyterian Church.

Spur Versus Whole-Tree Regulation of Apple Flowering  By M. Elsysy & P. Hirst

Flowering regulation in apple trees is important because biennial bearing is challenging for the apple industry. Apple flowering is generally thought to be influenced by many factors including crop load, seed number and bourse length. However it is unclear how these factors exert their control. In this study we investigated how these different factors contribute to the control of flower induction and whether this is regulated locally in the spur or if it is under the control of the whole tree system. Seven different thinning treatments were applied manually, which varied in the total number of fruit per tree and fruit number per spur. The appropriate number of fruiting spurs was tagged and fruits were removed from the rest of the tree. Fruit weight, seed number, seed weight, bourse number, bourse length, bud diameter and flowering differentiation per spur were recorded. This experiment was conducted in spring 2011, 2012 and 2013, but no data were collected in 2012 due to a severe spring freeze. In 2013, the methods were modified so that individual spurs could be tracked rather than averages and proportions being calculated. In 2011, there were no significant differences in the proportion of flowers on tagged spurs among treatments suggesting that fruiting on the rest of the tree did not influence flowering on tagged spurs. It appeared that the local, within-spur fruiting status had stronger impact. Bearing one or two fruits on the same spur had a similar effect on return bloom. Fruit weight and seed number had a negative linear relationship with flower formation. This experiment will help us to characterize the local versus general regulation of apple flowering and aims to improve our current understanding of apple tree regulation of flowering.

The primary mission of the Penn State Pesticide Education Program is to provide training for applicators and users about pest management alternatives, including the safe, proper, and legal use of pesticides. Responsible decision-making protects pesticide users, the public, plants, animals, and the environment.

The Pesticide Education team is partnering with the Penn State Horticulture Team to offer this short course series for a New Generation of Horticulturists. Concurrent sessions for English and Spanish speaking orchard employees will be offered during the three-hour program and a Certificate of Participation will be awarded. The November 5th course will focus on integrated approaches to pest and pollinator management and pesticide applicator safety.

Pesticide applicators and also those who may become applicators in the future are encouraged to attend. There is no fee, but pre-registration is encouraged. For more information, please contact Montserrat Fonseca Estrada, muf29@psu.edu or 717-334-6271, ext. 315.

*3 core and 3 category credits available for pesticide applicators.

Registration Form for Pesticide Safety Short Course

Registration encouraged but if you find you are available at the last minute, please attend!

Business__________________________________________________________ Number attending______

Names_____________________________________________________________________________________

Phone________________________ E-mail________________________

Please return form to:
Montserrat Fonseca Estrada, Penn State Extension in Adams County
Adams County Agricultural and Natural Resource Center
670 Old Harrisburg Rd.
Gettysburg, PA  17324

Please call 717-334-6271, ext. 315 if you prefer to register by phone.

This publication is available in alternative media on request.
Cider apple production is increasing in Washington State where an estimated 204 acres were produced in 2010 and 256 acres in 2011. Common cider apple varieties grown include Kingston Black, Yarlington Mill, Brown Snout, Dabinett, Porter’s Perfection, among others. Fewer pesticide inputs are used for cider apples than for dessert apples, as minor surface blemishes are tolerated if yield and internal fruit quality are not affected. In western Washington cider apple production is not limited by environment-induced diseases (e.g., scab) which otherwise limit apple production and yields. The objective of this study was to provide information on (1) the costs of equipment, materials, supplies, and labor required to establish and produce a cider apple orchard in western Washington; and (2) the ranges of price and yield levels at which cider apple production would be a profitable enterprise. The study outlined baseline production assumptions for a 10-acre cider apple orchard based on input from producers, including a productive orchard life of 25 years, with four years of establishment and 21 years of full production; and crop yield of 5 bins/acre, 12 bins/acre and 46 bins/acre during Years 3, 4 and thereafter, respectively. Furthermore, the baseline price received for a 900-lb bin of cider apples was $315 ($0.35 per lb). Study findings indicated that a producer will start to receive positive net returns after four years. For a fully established cider apple orchard, a producer would expect about $2,400 per acre of net returns based on a yield of 46 bins/acre at $315/bin, and the break-even return was estimated at $263/bin ($0.29 per lb). The cost of investing in the cider apple orchard was estimated to be recovered after 14 years. Changing the price level while holding all else constant, the investment cost would not be recovered within the productive life of the orchard if the price received for cider apples was $290/bin ($0.32 per lb). At higher prices of $350/bin ($0.39 per lb) and $400/bin ($0.44 per lb), the estimated payback periods were 10.06 years and 7.71 years, respectively. Given the baseline yield, price and production costs, study results show that it would be economically feasible to produce cider apples in western Washington.

From ASHS Annual 2014 Meeting [https://ashs.confex.com/ashs/2014/webprogram/Paper17950.html]
Profits: Choosing Your Marketing Methods
Workshop

Wednesday, December 10, 2014, 8:30 a.m. – 4 p.m.
Penn State Lehigh Valley Campus, Room 135
2809 Saucon Valley Road
Center Valley, PA 18034

Penn State Extension of Lehigh County is pleased to announce a workshop devoted to helping farmers assess and choose marketing methods. Those interested in direct-to-consumer sales will learn with experts from Pennsylvania and New York.

There are many ways to sell your product: farmers’ market, CSA, farm stand, wholesale, direct to institution, online, u-pick, and more. This workshop will help you match the right market mix to your customers, your business goals and your personal skills and resources.

Topics:

Insights on Retail Food Trends for CSA Farms, Farmers’ Markets and Roadside Stands by Heather E. Mikulas, Penn State Extension, Allegheny County, PA

Assessing Marketing Channels by Matt LeRoux, Cornell University Extension, Tompkins County, NY

Pluses, Minuses, Requirements of Farmers’ Markets and CSA’s by Steve Shelly, Gottschell Farm, Coopersburg, PA

Pluses, Minuses, Requirements of Roadside Stands and Wholesale by Mike Fink, Mike Finks Produce and Heidel Hollow Farm, Germansville, PA

Direct To Consumer Farm Marketing Through Social Media by Sarah Cornelisse, Penn State Extension

Panel Discussion

Our Speakers:

Heather E. Mikulas, MS, Program Manager: Community Based Agriculture, Penn State Extension, Allegheny County, PA.

Heather Mikulas currently works on local food infrastructure development and agricultural entrepreneurship for Pennsylvania State University, Extension Office in Allegheny County. She has an earned M.Sc. in Sustainable Systems: Agroecology and undergraduate B.S.B.A in Business Administration and Marketing. She is also Chair of the Pittsburgh Food Policy Council.

Mathew LeRoux, Agriculture Marketing Specialist, Cornell Cooperative Extension Tompkins County, NY. Mathew earned a Masters in Ag/Food Marketing and is a Niche Meat Processor Assistance Network Advisory Board Member.

Mathew works with farmers on business development, direct and wholesale marketing, market channel selection and cost analysis, marketing and processing regulations, and agritourism. He worked for five years for the New England Livestock Alliance and Heritage Breeds Conservancy. Mathew started two brands of Natural and Grass-fed beef.

Steve Shelly, Gottschell Farm, Coopersburg, PA.

Steve completed an internship on a certified organic farm in New York state. He interned at Somerton Tanks Farm, a new urban farm in Philadelphia, running all farming aspects from 2004 until 2006. After his internship he purchased Gottschell Farm and used sustainable farming practices to overcome the weeds and low fertility levels. Steve is active in the farm community and served as president of the Emmaus Farmers’ Market.

Mike Fink, Mike Fink’s Produce and Heidel Hollow Farm, Inc., Germansville, PA. Mike is a fifth generation farmer, past chair of Pennsylvania Farm Bureau Young Farmer and Rancher committee, and past member of the American Farm Bureau Young Farmer and Rancher Committee.

Mike markets his products at Water Wheel Farm Stand and the farm store at Heidel Hollow. His produce can be purchased at Lehigh Valley stores such as Redner’s Warehouse Markets and at other grocery stores along the east coast.

Sarah Cornelisse, Senior Extension Associate, Penn State Extension, M.S. Agricultural Economics, M.S. Animal Science.

Areas of Expertise: Marketing, Social Media, Business and Marketing Planning, Value-Added Dairy and Meat.

Registration: $55.00 Registration fee includes lunch and refreshments.

To register go on-line to:
http://extension.psu.edu/business/farm/events Scroll down the web page to “December2014,” click on “PROFITS: Choosing Your Marketing Methods Workshop” and follow the directions to register.

Registration Deadline: November 25, 2014

Space is limited so register early.

To Register by Phone or for Registration Questions:
Extension Registration Support Unit, Penn State Extension Lehigh County, Phone: 610-391-9840

For questions or more information about the event: John Berry, 610-391-9840 or johnberry@psu.edu
Area Apple Growers Could Have A Winner With Cosmic Crisp

Gary Cox plans to make hard cider from Cosmic Crisp, the new apple variety that Washington State University breeders pitch as near-perfect and uniquely homegrown in an industry crowded with new choices. Cox is one of 24 growers who won a lottery to receive the first batch of new trees in 2017, according to a list released to the public Tuesday.

After Cox found out and signed a contract in June, he began seeking a trademark for his Cosmic Crisp Cider and developing a website. Cider, he points out, is a fast-growing market, and a catchy name will help his brand stand out. “Can you picture it?” said the 61-year-old owner of Cox Canyon Vineyards, in the Yakima River Canyon between Ellensburg and Selah. “The name alone ought to sell billions.”

The university’s plant-breeding program held a random lottery out of 445 applicants because of limits to nursery stock for the apple formerly known as WA 38, a cross between an Enterprise and Honeycrisp and named for green-yellow lenticels that dot its red skin like starbursts. The first 300,000 trees won’t be ready for delivery until 2017 as university breeders work with nurseries to ramp up production. Cox aims to start selling bottles of cider by 2020.

Marketing teams hired by the university will pitch the apple as uniquely Washington in a competitive market that sees new, high-quality varieties all the time. Consumers like their go-to apples. “There’s a lot of loyalty in the state,” said Tom Kelly, a plant variety licenser for WSU.

The Cosmic Crisp is a product of the university’s breeding program, which began in 1994 to develop varieties well suited to the Central Washington climate. Researchers spent 16 years working on the Cosmic Crisp, touted as firm, juicy, resistant to sunburn and slow to brown after being cut.

“It’s an apple that really doesn’t have any flaws at this point,” Kelly said. Officials expect it to compete well against the 7,500 varieties of apples in the world, 100 of which are grown commercially in the United States. “They’re really good,” Kelly said. “I’m biased obviously, but it’s true.”

As the previous name indicates, Cosmic Crisp is the 38th variety developed by the university breeders, but only the third to reach commercial release and the first to receive a real name, Kelly said.

Most of the funding for fruit breeding comes from the Washington State Tree Fruit Research Commission, a collection of growers that awards grants to research projects. That’s why, for 10 years after the release, only Washington growers will have access to the Cosmic Crisp rootstock.

The university will retain marketing rights and keep the revenue from royalty agreements, Kelly said. Growers will buy the trees from six registered nurseries across the state, with $1 per tree going to the breeding program. The university also will charge production royalties in several years once the trees start producing fruit. Such a practice is common now in the public research world but would have been unheard of a few decades ago when there were fewer choices of varieties, said Desmond O’Rourke, an apple market analyst in Pullman and a former WSU professor. In the past, universities would have simply given away the rights for public use.

Sales crews will have their work cut out for them, too, O’Rourke warned.

New varieties frequently enter markets all over the globe, including Washington. They may not have been bred specifically for the local climate but companies test them and find they work.

Some of the state’s most successful varieties came from far away. Fujis are from Japan, Galas from New Zealand and Granny Smiths from Australia. The popular and lucrative Honeycrisp was developed in Minnesota. “It is a lottery in the sense of dropping it into the market and seeing how it will do,” O’Rourke said. “That’s the big lottery.”

(From the Yakima Herald 10/8/14)
Introduction to Hard Cider Production

Tuesday, January 13, 2015, 8:00 AM - 3:30 PM (Snow Date – January 14)
Penn State Fruit Research & Extension Center, 290 University Drive, Biglerville, PA 17307

Local soils and climatic conditions favor the production of apples with the highest fruit quality, which has been a competitive advantage for the Mid-Atlantic fruit industry over the years. There is a growing interest among consumers for hard cider, and producers exploring alternative markets for apples will learn how to establish a hard cider orchard and also important considerations for cider production.

Guest speakers from Cornell and Virginia Tech will address traditional American and European apple varieties for cider fermentation, cider apple budget tools, cider market potential and long-term prospects for hard ciders in the U.S. Penn State Enology Extension Associate, Denise Gardner, will discuss fermentation, sanitation and stabilization. The program fee includes tasting of hard ciders of various flavors, a catered lunch and take-home resource materials.

Cost - $120.00; Registration Deadline: Monday, December 15, 2014; Space Limited, so Sign up Early!

Register by Phone or Email:
Extension Registration Support
Phone: 717-334-6271
Email: ExtensionRegistration@ag.psu.edu

This publication is available in alternative media on request.

The Pennsylvania State University encourages qualified persons with disabilities to participate in its programs and activities. If you anticipate needing any type of accommodation or have questions about the physical access provided, please contact 717-334-6271 in advance of your participation or visit. Penn State is an equal opportunity, affirmative action employer, and is committed to providing employment opportunities to minorities, women, veterans, individuals with disabilities, and other protected groups. Nondiscrimination: http://psu.edu/policies/AD85.html. Penn State College of Agricultural Sciences research and extension programs are funded in part by Pennsylvania counties, the Commonwealth of Pennsylvania, and the U.S. Department of Agriculture.
Young Growers Tackle Ag Literacy at the 2015 Mid-Atlantic Fruit and Vegetable Convention

Do you question your skills when discussing “hot” agricultural topics with others? Are you, your customers, and your media statements Ag Literate? The Young Grower Alliance, State Horticultural Association of PA, and Penn State Extension will hold their Pre-Conference Workshop at the 2015 Mid Atlantic Fruit and Vegetable Convention on Monday, January 26 from 1 to 4 pm.

The YGA is pleased to announce two guest speakers: Lori Connelly and Dr. Richard Stup. Lori is the Executive Director of the PA Ag Resource Centers, a partnership between the Penn State College of Agricultural Sciences, the PA Department of Agriculture and the Pennsylvania Legislature. Lori brings years of experience within the agricultural industry, including a stint with Land O’Lakes Inc., and will address what “Ag Literacy” means and how we, as producers, can mindfully educate our consumers. She also will provide us with basic tools to address questions from the public and the media.

Dr. Richard Stup is Sales Manager for AgChoice Farm Credit. Richard has a varied background in dairy, human resources, and leadership. Before he worked for AgChoice Farm Credit, Richard was an Extension specialist with Penn State University, where he led the Dairy Alliance program. Richard will train us on internal communications, focusing on controversial conversations with customers.

Expect a dynamic presentation with opportunities to interact with other young growers across the Mid-Atlantic, as well as a panel of your peers and industry experts as they relate their experiences with communicating controversial topics.

A registration form is included in this issue of PA Fruit News. For more information, contact Tara Baugher, tab36@psu.edu or 717-334-6271.

Lori Connelly, Executive Director of the PA Ag Resource Centers, will teach mindful communication styles.

Dr. Richard Stup, Sales Manager for AgChoice Farm Credit, will offer training on internal communication methods.

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Communicating with Consumers and the Media

With Special Guest Speakers: Lori Connelly and Dr. Richard Stup

Ms. Connelly is the Executive Director of the PA Ag Resource Centers, a partnership between the Penn State College of Agricultural Sciences, the Pa Department of Agriculture and the Pennsylvania Legislature. Dr. Stup is a Sales Manager for AgChoice Farm Credit.

January 26, 2015, 1:00—4:00 PM
Hershey Lodge and Convention Center
325 University Drive, Hershey, PA 17033

Workshop Topics
⇒ Ag Literacy—What is it?
⇒ Connecting with your Consumers
⇒ Framing your Message
⇒ Do’s and Don’ts when the Press Calls

Session incorporates interaction between participants to expand your network and opportunities to ask questions of your peers, industry experts and educators.

Registration is $50 and includes light refreshments during a networking hour following the workshop.

For more details, please contact Tara A. Baugher at tab36@psu.edu or 717 334-6271.

Please register by January 15, 2015, by completing the workshop section of the Mid-Atlantic Fruit and Vegetable Convention registration form or the form with this flier.

Do you struggle with communicating your message to consumers and media? Are you confident that your employees can handle any question from a customer?

Worry no longer! Lori Connelly will prepare you to smoothly deliver your company’s beliefs and easily conduct interviews before any audience. Dr. Richard Stup returns to discuss best practices for training employees to address concerns they hear from consumers.

Partnering Organizations:

Ag Literacy for Growers Registration Form - Registration Deadline: January 15, 2015

Names: ____________________________________________________________ Business: __________________________

Address: __________________________________________________________________________________________________

Phone: __________________________ Email: __________________________

Registration Fee: $50 (includes light refreshments during networking hour)

Total Enclosed: $50 x _________ = $ __________

Please make check payable to: State Horticultural Association of Pennsylvania

Please return registration form and payment to: Maureen Irvin, Executive Secretary, State Horticultural Association of Pennsylvania, 480 Mountain Road, Orrtanna, PA 17353

This publication is available in alternative media on request.

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Certificate Courses in Spanish Offered at 2015 Mid-Atlantic Fruit and Vegetable Convention

Penn State Extension will hold its 5th Annual Session in Spanish for Horticultural Employees at the 2015 Mid-Atlantic Fruit and Vegetable Convention in Hershey, PA. University researchers and educators will present on a range of topics, including: Berries and the Spotted Wing Drosophila, Building a Budget for your own Agricultural Enterprise, and Impact of Water Quality on Pesticides. Our featured speaker, Mario Miranda Sazo, Cornell Extension, will give a hands-on demonstration on high density orchard pruning systems and address the newest orchard technologies that assist fieldworkers.

Each year’s educational programming is adjusted to the needs of the industry, as expressed in surveys completed by both farm owners and employees. Certificates of participation are awarded for each course. The 2015 sessions will be on Wednesday, January 28th and we welcome your farm to participate!

Please share the availability of the sessions in Spanish with anyone that may be interested. A registration form is included in this issue of PA Fruit News. For more information, contact Montserrat Fonseca Estrada, muf29@psu.edu, or 717-334-6271, ext. 315.

Mario Miranda Sazo, Cornell Extension, will demonstrate pruning techniques for intensive orchard systems.

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Special Session for Spanish-Speaking Horticulturists at the Mid-Atlantic Fruit and Vegetable Convention

Fruit and Vegetable Production Techniques
Moderated by Montserrat Fonseca Estrada, Penn State Extension

Wednesday, January 28, 2014

Morning

9:00 *Bayas y la Drosophila Ala Manchada (Brambles and SWD)
Kathy Demchak & Tianna Dupont, Penn State Extension

9:30 Manejo Postcosecha de Bayas y Fresas (Post-Harvest Handling of Berries)
Lee Stivers, Penn State Extension

10:00 *Mantenga la Seguridad de sus Cultivos- Use Buenas Prácticas Agrícolas y MIP (Keep Your Crop Safe – Use Good Agricultural Practices and IPM)
Maria Gorgo-Gourovitch, Penn State Extension

11:30 Poda de Huertos de Manzano de Alta Densidad: Principios y una Demonstration (Pruning High Density Apple Orchards: Principles and a Demonstration)
Mario Miranda Sazo, Cornell Extension

Afternoon

1:30 Nuevas Tecnologías para Trabajar Inteligentemente y No Tan Fuerte (New Technologies to Work Smarter Not Harder)
Mario Miranda Sazo, Cornell Extension

2:15 Uso de Presupuestos para Evaluar Empresas Agrícolas (Using Budgets to Analyze Agricultural Enterprises)
Miguel Savioff, Penn State Extension

3:10 **El Impacto de la Calidad del Agua en el Desempeño del Pesticida: El pequeño Factor que hace la Gran Diferencia (The Impact of Water Quality on Pesticide Performance: The Little Factor that Makes a Big Difference)
Hector Nunez-Contreras, Penn State Extension

4:05 Evaluación (Survey)

4:15 Sesión termine (Session adjourned)

*Category Credit; ** Core Credit (Credits offered pending approval from PA Dept of Agriculture). For more information contact/Para mas información, comuníquese con Montserrat Fonseca Estrada (muf29@psu.edu) o 717-334-6271 ext. 315

Registration Form for Production Techniques

Name/Nombre__________________________________ Farm/Empresario________________________________

Additional persons attending/Participantes adicionales

Address/Dirección ______________________________________ City/Ciudad____________________________
State/Estado_____________________ Zip____________________ Email/c.e._____________________________
Phone/Teléfono (day/día)__________________________ (evening/noche) ______________________________

Registration Fee/Remuneración: $60 per person* (Includes admission to all educational sessions and trade show/ Incluye la entrada a todos los talleres y a la feria de muestras)

Total Enclosed/Incluydo: $60 x ________ = $_________

Please return registration form and payment to: Please make checks payable to/Haga cheque a nombre de:
Maureen Irvin, Executive Secretary
State Horticultural Association of Pennsylvania
480 Mountain Road
Orrtanna, PA 17353

This publication is available in alternative media on request.

Penn State Extension extension.psu.edu
Use of 1-Aminocyclopropane-1-Carboxylic Acid and Sysstem-Cal for Post-Bloom Thinning of Apples

By E. Fallahi, D. Greene & B. Fallahi

Application of blossom thinners is an alternative option to post-bloom thinners but they present a risk of overthinking in the areas that weather is less predictable. Availability of the existing post-bloom thinners and the prospects for additional thinners appear to be limited. Thus, we have been searching for new post-bloom thinners or thinners supplements that may be useful at different physiological stages of fruit development. In Study 1, we used various rates of ACC or Ethrel on ‘Gala’ and ‘Fuji’. In Study 2, various combinations of Sysstem-Cal™ with and without MaxCel® were used in ‘Gala’ apple. Application of ACC at the rate of 250 ppm or 350 ppm significantly reduced fruit set, increased fruit size, and improved fruit quality, while ACC at 150 ppm or Ethrel at 300 ppm did not result in sufficient thinning in ‘Gala’ apple. In ‘Fuji’, ACC at rates of 300 or 450 ppm showed effective fruit thinning and resulted in larger fruit with better quality attributes. In Study 2, Control trees had numerically the highest fruit set while trees with MaxCel® alone applied at 1% at 5-10 mm stage and those receiving Sevin and NAA had the lowest fruit set in ‘Gala’ apple. While there were numerical improvements, there were no statistically significant differences in fruit set within Sysstem-Cal™ treatments and between the Sysstem-Cal™ treatments and Control. It seems that ACC is a promising post-bloom thinner for apple, especially when used at the 20 mm stage where few thinners are effective. This naturally occurring phytohormone deserves to be further studied under different climate conditions and in different cultivars of apples.


Control of Botrytis Fruit Rot – Influence of Floral Stage and Number of Chemical Sprays

By R. Faby

The main fruit rot disease in strawberries is grey mould (Botrytis cinerea). Three-year trials were carried out in 2006-2008 to examine the influence of the floral stage (0, 20, 40, 60, 80 and a 100% blossom opening) and the frequency of applications during the flowering period (1, 2, 3, 4 and 5 sprays). The weather conditions showed large variations among the three years. 2006 was characterized by heavy rainfall during flowering and a dry harvest season. In 2007 the rainfall started in the middle of the flowering period and stayed until the end of harvest, with severe problems with Botrytis fruit rot in the commercial strawberry fields. In 2008 we had only some rain during flowering, but replicated rainfall during the harvest. Single applications had an effect against Botrytis at any time; however spraying at 60% flowering was most effective. In terms of application frequency, good results were achievable with as few as three sprays (25, 50 and 75% flowering). A sequence of four applications (20, 40, 60 and 80% flowering) gave only marginal further improvements to Botrytis control.

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Surveying the Research and Extension Needs of U.S. Cider Apple Growers and Cider Makers
By G. Peck & C. Miles

Since 2011, commercial cider producers throughout the U.S. have gathered at an annual trade show and educational conference in Chicago, IL called CiderCON. In both 2013 and 2014, university researchers have attended CiderCON to present findings from their research programs and to survey cider makers and cider apple growers about their research and extension needs. These surveys were conducted during the opening Plenary Session with the use of TurningPoint (Turning Technologies, Youngstown, OH), a PowerPoint-based, real-time survey instrument. One representative from each prospective or existing orchard and cider company was provided a clicker and asked to respond to multiple-choice questions that were projected on large screens. Other attendees, such as vendors, media representatives, researchers, and support staff did not participate in the survey but everyone was able to see the response to each question. Respondents were first trained in the use of the clickers with a sample question and given the opportunity to resolve technical issues before the actual survey began. In 2013 there were 64 respondents, and in 2014, there were 105 respondents. Survey questions were only slightly modified between 2013 and 2014, so that year-to-year trends could be monitored. Averaged over the two year, we found that 90% of respondents indicated they would like more research by university scientists into cider/perry production, 91% were willing to participate in research experiments in their orchard or cidery, and 56% were willing to fund research that targeted their needs. Respondents felt the research that would most benefit their business included fermentation issues (18%), final product quality evaluation (15%), storage and packaging techniques and management (13%), cultivar and rootstock trials (13%), cider orchard management (11%), juice quality improvement (11%), and economic feasibility and consumer preference (8%). When seeking technical information about growing apples or making cider, the majority of respondents searched the internet (25%) or contacted a colleague (25%), referred to their reference books (16%), contacted a university specialist (11%), posed questions to listserves (10%), or contacted a private consultant (6%). Respondents felt their business would benefit most from workshops on cider fermentation (26%), workshops on growing apples (16%), printed university information (13%), visits with university specialists (18%), university websites (17%), and private consultants (11%). Our findings show that the needs of this burgeoning industry are diverse, strengthening our need to use a multi-disciplinary team of researchers and extension specialists.


Relationships of Apple Rootstock Mediated Nutrient Concentrations in Leaves and Fruit of Gala Apples
By G. Fazio & T. Robinson

Diverse apple rootstocks possess different capacities to absorb mineral nutrients from soil and transfer them to the grafted scion variety. A replicated field experiment of Gala scion grafted onto a population of 186 rootstocks (progeny of Ottawa 3 x Robusta 5) segregating for many apple important rootstock traits was used to monitor the dry matter concentration of nitrogen (N), potassium (K), phosphorous (P), calcium (Ca), magnesium (Mg), sulfur (S), iron (Fe), copper (Cu) manganese (Mn) and aluminum (Al) in mature leaf and immature fruit tissue. Correlation analysis revealed many significant relationships among mineral nutrients in fruit and leaves. Leaf and fruit P and K and leaf Mg were positively correlated and trunk cross sectional area was negatively correlated with fruit concentration of S, N, Cu, Mg in order of decreasing effect and significance. Trunk cross sectional area was positively correlated with leaf concentration of K, P and Ca in order of decreasing effect and significance. Rootstocks with different abilities to increase uptake of NPK and micro-nutrients in leaves and fruit might have a significant effect on the productivity of the orchard as well as fruit size and quality during storage. Given the importance of fruit calcium concentrations to post-harvest fruit quality, increasing the availability of calcium and other important nutrients to growing fruit is a major target for this research. We describe how these relationships may be used in breeding new rootstocks tailored to nutrient needs of commercial apple varieties.

(Presentation at AHSH Annual Meeting In 2014 https://ashs.confex.com/ashs/2014/videogateway.cgi/id/877?recordingid=877)
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Does Rootstock and Fertilizer Choice Affect Apple Orchard Productivity and Soil Community Ecology? By A. Thompson & G. Peck

Rootstock genotype and soil fertility management practices in apple (Malus domestica Borkh.) orchards impacts soil health and nutrient status, plant associated soil microbial communities, and tree growth and fruit yield. Growers select specific apple rootstocks for use in their orchard systems to confer beneficial traits, including size control, precocity, and pest and disease resistance. Rootstock genotypes confer some of these traits through interactions with the soil microbiome. Such interactions may alter soil microbial community structure, resulting in changes to tree growth and yield. Nitrogen (N) fertilizers may improve fruit yield and quality. However, in excess of tree requirements nitrogen fertilizers may reduce crop yield and quality, and may cause environmental problems such as the contamination of ground and surface waters. The addition of carbon-based amendments, such as compost, have been shown to reduce N and water loss, while improving soil structure and making certain mineral nutrients more available to plants and microorganisms. In 2013, a pot-in-pot study was implemented to determine the effects of different composts (yardwaste and chicken litter), calcium nitrate (CaNO$_3$) fertilizer, and combinations of compost and CaNO$_3$ fertilizer on apple tree growth and nutrient status, soil health and microbial activity. For this study, ‘Gala’ scions were grafted to five rootstocks, ‘Budagovsky 9’, ‘Malling 9’, ‘Geneva 41’, ‘G. 214’, and ‘G. 935’. Four individual tree replicates of each rootstock were treated with 40 kg ha$^{-1}$ N from either chicken litter compost, yard waste compost, CaNO$_3$, or a combination of 20 kg ha$^{-1}$ N from compost and 20 kg ha$^{-1}$ from CaNO$_3$. There was also an unfertilized control. After one growing season, there was no significant differences in leaf N status among all fertilizer treatments. However, microbial respiration was greater in soils treated with yardwaste compost compared with other treatments and the control, indicating an increase in microbial activity in this treatment. Throughout the next two years, leaf N and microbial respiration will continue to be monitored in addition to trunk cross sectional area, soil carbon to nitrogen ratios, microbial biomass, and microbial community composition. Understanding the effects of fertilization practices on orchard productivity and edaphic factors will allow us to develop more efficient fertilizer practices for high-density apple orchards.

(From ASHS Annual 2014 Meeting https://ashs.confex.com/ashs/2014/webprogram/Paper19054.html)

Effects of Pollen Source and Seed Number on Fruit Set, Fruit Quality and Flower Initiation of Apple

By K. Jahed & P. Hirst

In apple, adequate pollination and fertilization is required for fruit set and subsequent fruit growth. Limitations in fertilization could potentially be due to the rate of pollen tube growth or the interaction of the pollen with the tissues within the ovary. Both these factors are presumed to be influenced by the genetic interaction between male gametophyte and female tissues of the flower. To evaluate the roles of these two factors in affecting fruit set and return bloom, the pollen of three cultivars, Red Delicious, Gala, and Ralph Shay Crabapple, were applied to Honeycrisp flowers. Hand pollinations were performed under bee exclusion tents. Fruit set, seed number, fruit quality and flower development in bourse buds were measured. Preliminary data showed that fruit set and return bloom both increased when Red Delicious and Gala were used as male gametophytes and were lower with crabapple as the pollen source. However, pollen source did not affect fruit quality and maturity. Seed numbers were positively correlated to fruit weight, but not to fruit quality or fruit maturity. Seed number had no significant impact on return bloom. Male gametophyte had positively effect on soluble solid concentration (SSC), the amount of sugar in the apple fruit. These results suggest that prevailing pollen source and seed numbers can increase fruit set, fruit quality and return bloom of apple.

Winter Educational Meetings for Fruit Growers

Tuesday, Feb. 10—Central Susquehanna
Mifflinburg, PA; Contact John Esslinger, cje2@psu.edu
570-784-6660

Wednesday, Feb. 11—Southeast Region
Leesport, PA; Contact Tanner Delvalle, tcd125@psu.edu
570-622-4225; Kathy Salisbury, kvs14@psu.edu
215-345-3283

Thursday, Feb. 12—Northeast Region
Avoca, PA; Contact John Esslinger, cje2@psu.edu
570-784-6660

Monday, Feb. 16—Adams County
Biglerville, PA; Contact Tara Baugher, tab36@psu.edu
717-334-6271

Tuesday, Feb. 17—Lancaster/York Co.
Lancaster, PA; Contact Tim Elkner, tee2@psu.edu
717-394-6851

Wednesday, Feb. 18—Franklin County
Waynesboro, PA; Contact Tara Baugher, tab36@psu.edu
717-334-6271

Tuesday, Mar. 3—Appalachian Fruit Growers
Bedford, PA; Contact Tom Ford, tgf2@psu.edu
814-472-7986

Wednesday, Mar. 4—Erie County
North East, PA; Contact Andy Muza, ajm4@psu.edu
814-825-0900

Thursday, Mar. 5—Western PA
Wexford, PA; Contact Bob Pollock, rcp3@psu.edu
724-465-3880

2015 Program Highlights

- The Right Nutrients for Quality Fruit
- On the Horizon—the WPS Regulation Revision
- Disease Management Following a Wet Year
- Basics of Nematode Management
- Secondary Pests as a Result of BMSB
- Tree Fruit Borers 101
- Getting the Upper Hand on Troublesome Weeds
- Improving Crop Protectant Spray Coverage

This publication is available in alternative media on request.

Penn State is an equal opportunity, affirmative action employer, and is committed to providing employment opportunities to minorities, women, veterans, individuals with disabilities, and other protected groups.
**Capitalizing on the Health Benefits of Berryfruit: Science Versus the Marketplace**
By M. Lila

Today, the ready availability of sophisticated ‘omics’ technologies (genomics, transcriptomics, pharmacogenomics, and metabolomics) has permitted science to elucidate and confirm multiple human health-protective properties linked to consumption of the characteristic berryfruit phytochemicals. Wellness-promoting attributes of berryfruit components have been demonstrated in recent in vitro, in vivo, and clinical trials, but how much of the science translates into public awareness and, more importantly, dietary changes? Berryfruits are generally recognized as a healthy alternative, and after multiple years of publicity, the term ‘antioxidant’ can be recognized by the general public as a proactive route to avoid chronic human diseases; in particular, cancer. Still, most consumers have little awareness of other health-relevant properties linked to berryfruit constituents, including immune system benefits or anti-inflammatory properties, and fail to realize the associations between berry consumption and probiotic effects on gut microflora or improvement of insulin sensitivity and blood glucose regulation relevant to diabetes. In the USA, only 1% of the adult population (and 2% of children) consume the recommended amount (per USDA Dietary Guidelines) of servings/cups of both fruit and vegetables on a daily basis. In market trials hosted by major food companies, consumer panels are oblivious to words like ‘polyphenolics’, ‘bioflavonoids’, or ‘anthocyanins’, and label claims can be prohibited by regulation, thus the pertinent phytochemical content of key fruit introductions fails to resonate in the marketplace. Despite these actualities, scientific discoveries on the health attributes of the so called ‘superfruits’, when translated by the popular media and delivered to consumers at large, can be reflected in significant changes in the demand for certain fruit categories. The wild blueberry story is presented as an example of how research has positively and sustainably influenced sales for a commodity fruit group.

(From Acta Hort. 1048:123)

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**Climate Drivers of Crop Carbon Gain & Water Use in Apple Between Western and Eastern States**
By S. Kim & M. Glenn

Apple is cultivated under various climatic conditions in many parts of the world. Better understanding of how climate factors affect crop growth and productivity at different locations will improve our ability to optimize crop selection, management strategies, and resource use. The objective of this work was to apply a process-based apple canopy model 1) to identify what and how climatic factors limit crop biomass accumulation and water use at multiple locations in the states of Washington, California, and West Virginia, and 2) to evaluate how these climate factors influence crop radiation use efficiency (RUE) and water use efficiency (WUE) in apple. Our results indicate that temperature is a dominant factor limiting biomass gain when compared across the locations while VPD was predominantly dictating crop water use during the growing season. Crop RUE and WUE were strongly correlated with each other while VPD showed highly negative correlation with both RUE and WUE across all locations examined. Locations in western WA were found to have both higher RUE and WUE than other locations examined in this study. Locations with higher diffuse light fraction (e.g., WV and western WA) tended to have greater RUE than other locations but its positive effects on RUE and WUE were negated by low total radiation and high temperatures in WV. Our results provide effective means and useful insights to disentangle the complex relationships between canopy carbon gain, water use, and climate factors that are site-specific.


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**Nutrient Management in Apple**
By L. Cheng, T. Robinson

Editor’s note: The link below will open up a presentation made by Terence Robinson this past summer at the annual meeting of the American Society for Horticultural Science held in Orlando, Florida. The presentation was part of a workshop titled “The Current Status of Precision Nutrition in Apples and Stone Fruit.” To view the presentation click on the “Recorded Presentation button on the right side of the web page.

https://ashs.confex.com/ashs/2014/webprogram/Paper20504.html
Peach consumption in the U.S. has remained fairly consistent since the early 1980’s but declined to 8.8 pounds per person in 2008 (Brunke et al., 2010). One approach to increasing peach consumption would be to better understand what characteristics consumers desire when purchasing this fruit and what marketing strategist could increase purchasing frequency and quantity.

Aside from determining how consumers select peaches, what characteristics denote ripeness, and what promotional activities could favorably impact fresh peach consumption, it is worth investigating what value-added peach products would have the greatest appeal.

Hence, research was conducted to understand factors effecting fresh and value-added peach purchases and identify barriers that prevent consumers from purchasing the amount they desire. To accomplish this goal, an Internet survey was conducted June 19-25, 2013 with a sensory evaluation conducted August 7, 2013. Select Internet survey results are below. Data from the sensory evaluation will be published in the next newsletter.

INTERNET SURVEY

Data were collected through a 15-min Internet survey (19-25 June 2013) administered to 1,645 consumers, 1,290 of which met the criteria for the survey, and 1,093 completed the survey. Screener criteria selected for individuals who were:

- age 18 and older,
- resided in the mid-Atlantic (Maryland, New Jersey, New York, Pennsylvania, Virginia, and Washington, D.C.) region,
- were not a member of the tree fruit industry or trade (e.g. retailer, distributor, peach grower),
- were responsible for at least half of the grocery shopping for the household, and
- purchased and at fresh peaches during the months of July through September.

Participants were randomly selected from a panel of participants managed by Survey Sampling International, LLC (Shelton, CT) a provider of sampling solutions for survey research. Panelists received an electronic consent statement along with a link to the survey developed by researchers and approved by the Office of Research Protections at The Pennsylvania State University (University Park, PA). Upon completion of the survey, each participant received $1.00 in compensation, administered by Survey Sampling International, LLC, for completing the survey. Survey questions were pre-tested and administered to a sample of 104 randomly selected Survey Sampling International, LLC panelists.

RESULTS

Demographics characteristics

The most common responses to demographic questions for participants were: female (71.9%), no children in the household (62.8%), living in a three adult household (44.0%), age 45 to 54 (23.0%) and age 25 to 34 (21.6%), some college/technical school education (35.0%), a household income between $25,000 to $49,999 (27.2%), followed by $50,000 to $99,999, and resided in Pennsylvania (57.3%).

Fresh peach purchases

Pertaining to how often all survey participants purchased fresh peaches for themselves and/or their households during the months of July through September, the most common response was “about once a week” (42.2%) followed by “two to three times a month” (27.0%; Figure 1).

Participants also responded to questions about their attitudes towards fresh peaches. A majority (72.1%) responded that fresh peaches were a planned purchase and that fresh peaches were among their family’s favorite fruit (86.3%). Just under half (48.4%) stated that when fresh peaches are available they reduce or stop buying other fresh fruit that they normally purchase. Pertaining to how they store the peaches after they purchase them, 60.1% store them at room temperature and 56.5% store...
them in the refrigerator (participants were allowed to select one option or both). Regardless of how they stored the peaches, 74.8% stated that they have never had an issue storing fresh peaches before eating or using them and 86.6% responded that they were able to eat most of the peaches they purchase before they are no longer desirable or “go bad.”

As to who eats the fresh peaches that are purchased for the household, 40.0% of participants indicated that only they do with 33.3% responding that they and another adult eat the peaches. Peaches are primarily purchased to eat fresh (98.3%) but 36.3% of participants use them “as an ingredient in recipes and/or to bake with” (Table 1).

Related to what would encourage participants to purchase more fresh peaches than they typically do, they were asked to indicate whether purchasing would increase, decrease, or remain the same based on select scenarios. Percent responses for those who would be influenced to purchase more peaches are presented.

- Three to four peaches are prepackaged and sold in containers (22.8%)
- Six to eight peaches are prepackaged and sold in containers (23.8%)
- Nutritional value of peach is stated (27.4% increase)
- Information on how to store the peaches is present (35.3%)
- Information on how long peaches can be stored is present (40.0%)
- Family member or friend suggested the particular peach (41.6%)

Fresh peach characteristics that appealed to participants were:

- Large peaches: Peaches that are 2.5 inches and larger in diameter (appealed to 45.5% of participants), while 19.4% of participants preferred peaches smaller than 2.5 inches. About one-third (35.1%) had no preference.
- Peaches that are sweet (88.6%)
- Freestone variety of peaches (45.1%)
- Peaches that are slightly soft (65.3%)

Additionally, participants were shown pictures of three different peel colors and asked to indicate which one appealed to them. About one-third (35.8%) preferred “red over yellow peach peels” and another 31.9% had no preference (Figure 2).

As value-added processed products present additional opportunity for the industry, participants were asked to select the value-added peach products that they have purchased in the past and those that they would be interested in purchasing (Table 2). Canned or jarred peaches or slices had previously been purchased by 83.9% of participants and 63.0% of participants had purchased non-alcoholic peach beverages (e.g., juice, tea); however, 76.0% of respondents indicated that they would be interested in purchasing these peach flavored beverages in the future.

![Figure 2. Percent of participants who preferred each peel color presented.](image)

Data from the sensory evaluation will be presented in the next issue of the Fruit News.

**Table 1. How consumers use the fresh peaches they purchase**

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>To eat fresh</td>
<td>98.3</td>
</tr>
<tr>
<td>Use as an ingredient in recipes and/or to bake with</td>
<td>36.3</td>
</tr>
<tr>
<td>Freeze for later use</td>
<td>8.0</td>
</tr>
<tr>
<td>Can in jars for later use</td>
<td>7.4</td>
</tr>
</tbody>
</table>

**Table 2. Internet survey participants’ past processed peach purchases and interest**

<table>
<thead>
<tr>
<th>Product</th>
<th>Percent who purchased (%)</th>
<th>Percent interested in purchasing (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canned or jarred peaches or slices</td>
<td>83.9</td>
<td>85.8</td>
</tr>
<tr>
<td>Non-alcoholic peach beverages (juice, tea, etc.)</td>
<td>63.0</td>
<td>76.0</td>
</tr>
<tr>
<td>Ready to eat snacks (dried peach slices, peach chips, etc.)</td>
<td>60.9</td>
<td>78.0</td>
</tr>
<tr>
<td>Preserves, jellies, jams, or butters</td>
<td>56.2</td>
<td>76.0</td>
</tr>
<tr>
<td>Ice cream or other frozen desserts</td>
<td>56.0</td>
<td>78.0</td>
</tr>
<tr>
<td>Pastries, cakes, or other bakery items</td>
<td>55.3</td>
<td>77.3</td>
</tr>
<tr>
<td>Oatmeal, toaster pastries, cereal, other breakfast foods</td>
<td>43.4</td>
<td>64.4</td>
</tr>
<tr>
<td>Smoothies and smoothie mixes</td>
<td>39.7</td>
<td>72.0</td>
</tr>
<tr>
<td>Alcoholic beverages (wine, brandy, hard cider, etc.) *Responses from adult participants age 21 and older</td>
<td>38.4</td>
<td>56.1</td>
</tr>
</tbody>
</table>

**REFERENCE**

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