

HORTICULTURE TECHNOLOGY NEWSLETTER

*Published by the Maryland State Horticultural Society
in cooperation with University of Maryland Extension*

Mid-Atlantic Fruit & Vegetable Convention

Dr. Joseph Fiola, University of Maryland Extension, Specialist in Viticulture & Small Fruit



*Andy Masters, Mid-Atlantic Fruit and
Vegetable Convention Keynote Speaker*
Photo Credit: andymasters.com

The 2019 Mid-Atlantic Fruit and Vegetable Convention (MAFVC) is held each year to provide the latest updates and important information to fruit and vegetable growers from Maryland, New Jersey, Pennsylvania, Virginia and surrounding states. The conference will be held at the Hershey Lodge and Convention Center in Hershey, PA. on January 29 to January 31, 2019.

This year's convention will feature several pre-convention workshops, a farm market bus tour, and a trade show with over 170 exhibitors plus three full days of six or more concurrent educational sessions. Sessions on tree fruits, small fruits, wine grapes, organic and general vegetables, pesticide safety, and many other topics are scheduled. The full program is provided at the end of this newsletter.

The keynote speaker is Andy Masters, an award winning author and international speaker on various leadership and customer service topics who has presented over 750 programs across North America.

As always, pesticide applicator credits will be available for Maryland, Pennsylvania, and New Jersey growers that attend the sessions.

The program is jointly sponsored by Maryland State Horticultural Society, University of Maryland Extension, State Horticultural Association of Pennsylvania, Pennsylvania Vegetable Growers Association, Pennsylvania State University Cooperative Extension, New Jersey State Horticultural Society, Rutgers Cooperative Extension, Virginia Horticultural Society, and Virginia Cooperative Extension.

Maryland growers are reminded to pre-register (enclosed registration form or online) through the Maryland State Horticultural Society. Pesticide credits will be available at the meeting.

And just a reminder, updates on the latest UMD and Extension research for the commercial fruit and vegetable industry are presented in monthly issues of the Vegetable and Fruit Headline News from UME. If you would like to view archives or the latest edition, please go to:

VEGETABLE & FRUIT HEADLINE NEWS ARCHIVE: https://go.umd.edu/vfhn_archive

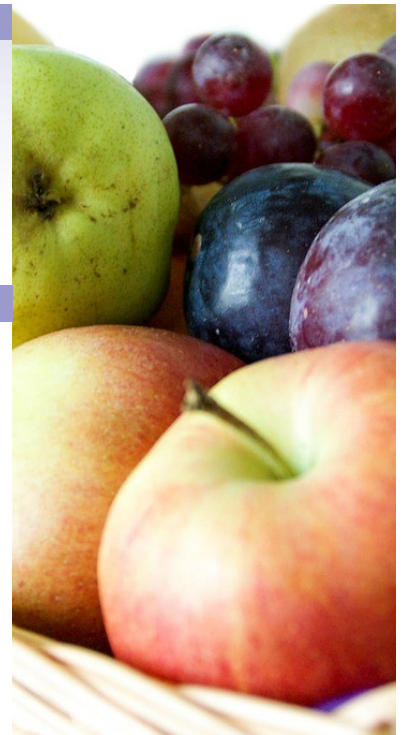
SPECIAL RESEARCH EDITION (OCT. XX, 2018): https://extension.umd.edu/sites/extension.umd.edu/files/_docs/VegetableFruitNewsVol9-7.pdf

This and other information is distributed through my fruit email list. If you are not currently receiving my emails, please email sbarnes6@umd.edu to be added to the list.

I look forward to seeing you in Hershey!

Western Maryland Regional Fruit Meeting to be held on February 14, 2019

The Western Maryland Regional Fruit Meeting has been scheduled to take place on Thursday, February 14, 2019 at the Western Maryland Research and Education Center in Keedysville, MD from 9 a.m. to 4 p.m. Registration information will be posted in mid December on the Grapes and Small Fruit website at: extension.umd.edu/smallfruit



UNIVERSITY OF
MARYLAND
EXTENSION

INSIDE THIS ISSUE

Summer Tour Highlights	2
Winter Pesticide Storage	4
Evaluation of Low Rates of Apogee for Shoot Blight Control	5
Optimizing Spray Coverage in Fall Bearing Raspberries and Blackberries	6
First Blush	7
Your Dues Dollars At Work-Funding Research Proposals	7
Examining the Use of Actigard and Microbials for the Management of Foliar Bacterial Diseases of Tomato	8
Small Farm Composting Using the Passively Aerated Windrow System	9
Growing Hops in Maryland	10
G Solving Blueberry Production Problems in Upland Soils: It's More Than Just pH.	12

**Mid-Atlantic Fruit and Vegetable
Convention Program Information/
Registration **ENCLOSED****

*The University of Maryland Extension
is an Equal Opportunity Employer
with Equal Access Programs.*



THE HORTICULTURE TECHNOLOGY NEWSLETTER

is published yearly by the Maryland State Horticultural Society in cooperation with University of Maryland Extension.

Maryland State Horticultural Society (MSHS)

Contact: Robert E. Black
15308 Kelbaugh Road
Thurmont, MD 21788
Phone: 240-409-7491
E-mail: HBGala@aol.com

MSHA Officers:

President:
Wade Butler

1st Vice President:
John Fendrick

2nd Vice President:
Molly Brumbley

Secretary:
Lynn Moore

Assistant Secretary:
Joe Fiola, Ph. D.

Treasurer:
Robert Black

Board Members:
Stephen Blades, Jay Milburn,
Brad Miller, and Washington
White



2018 Summer Tour at Hollabaugh's

Photo by: Carol Allen

2018 MSHS Summer Tour Highlights

Chris Walsh and Kathy Hunt, Department of Plant Science and Landscape Architecture, University of Maryland

The 2018 MSHS Summer Tour was held in Adams County, Pennsylvania on Tuesday July 10. This tour was organized by Bob Black, Wade Butler and Susan Barnes, and attracted 45 members and guests.

In the morning, we toured two well-managed family farm operations in Biglerville: Hollabaugh's Orchard and McCleaf's Orchard. Coffee and donuts were provided for attendees at Hollabaugh's by Paige Hargett of Farm Credit. The tour began by introductions and an overview in the Bee Room with Kay Hollabaugh. The Bee Room is an innovative idea used as a classroom for educating tour groups. Kay discussed the various roles of family members in this multi-generation farm, and the value of having a well-designed market. That market now accounts for more than 40 percent of their farm sales. When asked about surprises, Kay mentioned two things: the unexpected sales by their scratch bakery and the value of an air-conditioned market for increasing sales and keeping customers and workers happy.

After the talk indoors, the group walked to an intensive orchard at Hollabaugh's and then continued on foot to McCleaf's Orchard. During the walking tour through both orchards, the group saw a lot of fireblight damage to tall-spindle apple plantings caused by an earlier hail storm. Although both growers had sprayed for blight following that hail, the trees had severe symptoms of shoot blight. Fire blight strikes were continuing later into summer than expected, likely due this year's cool, wet weather in June. Both growers expected to push some of these intensive blocks out at the end of the growing season. They felt "the trees were dead; they just don't know it yet."

As we walked through Hollabaugh Orchard we saw a large blueberry field covered with bird netting and two asparagus plantings. Asparagus has done well at Hollabaugh's. Kay highlighted its productivity and storageability. She felt these qualities translated into greater sales in their farm market.



Bob Black and Kay Hollabaugh overview in Bee Room.

Photo by: Susan Barnes



2018 Summer Tour—Blueberries covered with bird netting at Hollabaugh's Orchard

Photo by: Susan Barnes

2018 MSHS Summer Tour Highlights continued from page 2

At that point, we crossed into McCleaf's Orchard where Cory McCleaf showed off a number of unusual crops. Since he sends trucks to a number of farmers markets in the region, he grows a diverse blend of fruits and vegetables. In addition to well managed fruit trees in the field we saw:

- High tunnel production of cherries on Gisela rootstocks
- Protected cultivation of ginger
- Field production of summer squash and onions
- Trellised hardy kiwi berries

Since it was getting quite a bit warmer and lunch was waiting we drove about a mile down the road to the Penn State Fruit Research and Extension Center (FREC) in downtown Biglerville.

FREC was celebrating the 100-year anniversary of their fruit laboratory in Adams County. While we were touring orchards, there was a program at FREC that featured several talks by:

- Dr. Jim Schupp, Director, Fruit Research and Extension Center
- Dr. Gary Thompson, Associate Dean, Research & Graduate Education, College of Agricultural Sciences
- Provost Nick Jones, Executive Vice President and Provost, Pennsylvania State University
- Secretary Russ Redding, Pennsylvania Department of Agriculture
- Mr. Chris Baugher, President, State Horticulture Association of PA

Penn State graciously allowed MSHS President Wade Butler to also make a few remarks. He highlighted the value that FREC brings to Maryland growers, and the long-term interstate collaborations on research and extension programs. These range from twilight grower meetings to working with SHAP at Hershey. Following that ceremony, we all enjoyed a chicken dinner under the tent.

Attendees from Maryland then listened to the afternoon educational programs put on by Penn State faculty and graduate students. These consisted of two major stops; one with speakers from horticulture and agricultural engineering and the other featuring faculty in plant protection. Since it was a hot day, folks were happy to return from these tours to the air conditioning inside FREC and take time to look over posters describing additional fruit research at the center.

The day's activities at FREC ended at about 4 pm. The blend of grower insights in the morning and research programs in the afternoon gave a nice flavor to the day. Speaking for all of us, I would like to thank Bob Black, Wade Butler and Susan Barnes for organizing the tour and Kay and Cory and their families for their time and insights. Lastly we would like to thank the faculty, graduate students and staff at FREC for their efforts and the research they shared.



Cory McCleaf at McCleaf Orchards

Photo Credit: Susan Barnes



High Tunnel production of Cherries

Photo by: Carol Allen



Close up of Ginger at McCleaf's Orchard

Photo by: Susan Barnes



Lunch at Penn State Fruit Research and Extension Center (FREC) in downtown Biglerville

Photo by: Susan Barnes

Passages

Dr. Frances R. Gouin passed away on August 2, 2018. A retired Professor Emeritus of the University of Maryland. To view his obituary you can go to: leefuneralhomes.com/obituaries/Francis-Gouin/#/ Obituary



ONLINE REGISTRATION FOR MAFVC IS NOW AVAILABLE

Online registration for the Mid-Atlantic Fruit and Vegetable Convention (MAFVC) has been set up for those who would like to use their credit card* can go to:

**CONVENTION AND
MEMBERSHIP RENEWAL:**
[2019_mafvc.eventbrite.com](https://2019-mafvc.eventbrite.com)

**WORKSHOP
REGISTRATION:**
[2019_mafvc_pre-
conference_workshops.
eventbrite.com](https://2019-mafvc_pre-conference_workshops.eventbrite.com)
Or if you prefer to register by mail, use inserted registration form.
If you have any questions or need help, please contact Susan Barnes at 301-432-2767 x301 or by email sbarnes6@umd.edu

**There is an additional processing fee from Eventbrite to pay by credit card*

Winter Pesticide Storage

Bryan Butler, University of Maryland Extension Educator-Carroll Co.

Winter is coming soon the fields and orchards will be dormant and the tools will be put away till the spring. But one more crucial job remains -- organizing and properly storing unused pesticides.

Proper storage of herbicides, fungicides, and insecticides is important for protecting the health of farmers, homeowners and their families who use these products. It is also important to remember that storing these pesticides correctly protects the environment and preserves the quality of the chemicals. Pesticides should always be stored in their original container, making sure the product label is legible. Also be sure to maintain a storage inventory to help keep track of unused pesticides.

Keeping an inventory helps you plan for the next growing season so you don't buy more of one type of product than you need. For the inventory, write down the product name, active ingredients, date of purchase, date of storage and volume stored.

The storage area should be a secure, well-ventilated dry area, protected from heat and cold. There should be enough room to keep fertilizers, fungicides, insecticides and herbicides separated. The storage area should be enclosed so leaks or spills can be contained or cleaned without affecting the area's soil or water quality. Some other elements of safe storage that must be addressed when establishing a storage area include;

- **Proper lighting:** is obviously important so that products can be located and to reduce the chance of tripping or spilling while selecting the pesticide for the job.
- **Ventilation:** is a must for human health. Ventilation also is important to prevent volatile chemicals from contaminating other materials in storage. Some lawn chemicals are volatile enough to be absorbed by garden fertilizers. Thus possibly turning a fertility product into a herbicide.
- **Flammable liquids:** any flammable liquids should be stored outside living areas and away from ignition sources.
- **Dampness:** reduces the shelf life of many chemicals and can cause deterioration of metal or paper containers.

All fertilizer products are combinations of chemical salts that attract moisture. Some products can absorb enough moisture during winter storage to create a thick syrup in the spring.

- **Temperature extremes:** intense summer heat increases the volatility of chemicals, particularly herbicides. Freezing temperatures can cause ruptures in some types of containers. Freezing also can alter the chemical quality of liquid products, reducing their effectiveness. Look for directions on the package label for special storage temperatures.
- **Flooding:** pesticides should be stored well off the floor to prevent pesticide contamination if flooding should occur due to heavy rains or spring snowmelt.

It is also important to keep cleaning supplies near the storage facility or area. At a minimum, these supplies should include rubber gloves, absorbents such as kitty litter or paper towels and a container to seal the used clean-up materials.

As a reminder Pesticide Recertification and Training have been scheduled so check the MDA website (mda.maryland.gov/plants-pests/Pages/licensing_and_certification.aspx) for a complete list.

Renewing Your MSHS Dues

If you are not planning to attend the Mid-Atlantic Fruit and Vegetable Convention this year, please consider renewing your Maryland State Horticultural Society (MSHS) membership for 2019. Dues that are collected are used to support educational programs, and much needed research for many of the production problems that commercial growers face.

As funds continued to be cut at our land grant universities, the local horticultural societies have been able to fund research projects. These funds are then used for matching grants. Because they are grower-funded, they are very effective levers for obtaining additional funds. Like it or not, research these days requires outside funding, and we need to

step it up if we're going to get meaningful results when we need them. Membership dues for 2019 is \$50.

There are two ways to renew your membership dues:

By Mail: Fill out line 2 on the Mid-Atlantic Fruit and Vegetable Convention Registration form (INSERT) and mail completed form and payment (payable to MSHS) to: MSHS, C/O Susan Barnes, 18330 Keedysville Road, Keedysville, MD 21756

Online (credit card* payment):
[2019_mafvc.eventbrite.com](https://2019-mafvc.eventbrite.com)

Evaluation of Low Rates of Apogee for Shoot Blight Control

Kari Peter and Brian Lehman , Penn State University Fruit Research and Extension Center, Biglerville, PA

This experiment was conducted at the Western Maryland Research and Education Center in Keedysville, Maryland. The goal of the experiment was to determine low rates of the growth regulator, Apogee, both alone and in combination with plant defense stimulators, could effectively reduce the severity of fire blight shoot strikes. The experiment was carried out in a 'Cripp's Pink' and 'Brookfield Gala' block that were adjacent to each other. Each block was laid out the same and contained equal numbers of trees on four Geneva rootstocks: G.41, G.202, G.202TC (tissue culture), and G.935. This research is building off research conducted at the same site in 2017.

Two to three treatment trees were tagged for each treatment replicate in each variety block. Each cultivar rootstock combination had four replicates in a randomized complete block design. The treatments consisted of a control with no treatment, Apogee 2 oz/A for the second treatment, and Apogee 2 oz/A combined with Regalia 2 qt/A for the third treatment. The fourth treatment consisted of Apogee 2 oz/A for the first two sprays followed by one application of Actigard 2 oz/A. Each treatment was applied with Choice Weather Master as a water conditioner and LI-700 as a penetrant. The three treatment applications were made starting at petal fall on 7 May, 18 May, and 29 May. Shoot inoculations were completed three weeks after the first Apogee treatments on 1 June. Inoculations were done by wounding shoot tips with a scalpel that was dipped in a suspension of local *Erwinia amylovora*, strain Ea 273 at 1×10^7 colony forming units. Sixteen shoot tips per multi-tree replicate were inoculated. Shoots were assessed on 28 June. Disease severity was calculated by measuring the extent of fire blight symptoms down the shoot vs. the length of entire shoot. Shoot length assessments of Apogee treatments were made on separate shoots. Data was analyzed by Analysis of Variance.

Conditions were favorable for inoculation and fire blight development at the time of inoculation, with calm winds, overcast skies and temperatures in the low to mid 70's. Disease development progressed



Shoot blight can be tricky to manage on dwarf apple trees

Photo by: K. Peter

at a moderately slow pace. Symptoms became readily visible with the severity reaching 70-80% on the untreated trees. At four weeks after inoculation in the 'Brookfield Gala' block, Apogee combined with Regalia was the only treatment that significantly reduced the severity of fire blight compared to the control (Figure 1). However, in the 'Cripp's Pink' block, all treatments significantly reduced fire blight severity (Figure 2). The Apogee and Regalia combination produced the biggest reduction in severity but not significantly more than the other treatments. The data collected in this experiment suggest it is possible to reduce fire blight severity with low rates of Apogee alone or in combination with other products if several applications are made prior to disease development.

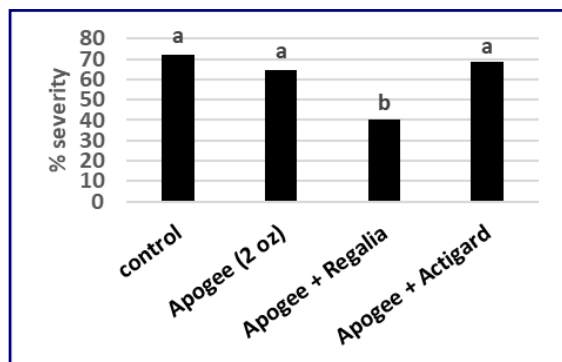


Figure 1. Severity of shoot blight on 'Brookfield Gala' following applications of Apogee, Regalia, and Actigard in Keedysville Md. 2018.

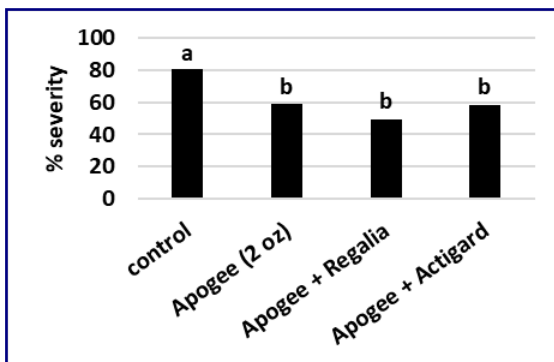


Figure 2. Severity of shoot blight on 'Cripp's Pink' following applications of Apogee, Regalia, and Actigard in Keedysville Md. 2018.



Low rates of Apogee show promise in limiting shoot blight on young apple trees.

Photo by: K. Peter

Acknowledgements: This work would not have been possible if it were not from the amazing assistance from the following individuals: Bryan Butler and Doug Price (UMD); Teresa Krawczyk (PSU); Gabriella Scolpino (Gettysburg College), and Gabrielle Crouse (York College of Pennsylvania). We are appreciative of the 2018 funding received by the Maryland State Horticultural Society to perform this study.

Optimizing Spray Coverage in Fall-Bearing Raspberries and Blackberries

Maggie Lewis and Kelly Hamby, Department of Entomology, University of Maryland



Figure 1. Airblast sprayer with a two-sided row crop head used in the 2018 blackberry trials.

In small fruit production, spray coverage can strongly impact pesticide efficacy; for example, increased spray coverage improves control of fruit rot fungi such as Gray mold (*Botrytis cinerea*). Spray coverage may also be important when managing key insect pests, including spotted-wing drosophila (SWD). In brambles, higher infestation and SWD adult activity occurs in the inner and lower plant canopy, regions that generally receive poorer spray coverage. The dense foliage found in these fruit crops can block pesticide sprays, resulting in uneven deposition patterns that possibly create a refuge for SWD or other pests. In this study, our primary objective was to improve spray coverage in raspberries and blackberries by optimizing carrier water volume and sprayer equipment.

Table 1. Mean percent spray coverage \pm standard error observed in the inner and outer canopy of blackberries 2018 at four heights (approximate feet above ground).

Location	Height	50 GPA	100 GPA
Inner	5.5 ft.	98.8 \pm 0.4	98.5 \pm 0.7
	4.0 ft.	99.7 \pm 0.2	93.2 \pm 2.9
	3.0 ft.	90.9 \pm 6.3	96.9 \pm 0.8
	1.5 ft.	70.2 \pm 12.4	47.3 \pm 11.9
Outer	5.5 ft.	91.1 \pm 8.9	100 \pm 0
	4.0 ft.	99.6 \pm 0.1	99.8 \pm 0.2
	3.0 ft.	98.3 \pm 0.5	95.2 \pm 3.9
	1.5 ft.	51.2 \pm 12.5	33.3 \pm 13.6

Acknowledgements: Thanks to Bryan Butler, Galen Dively and Douglas Price for helping apply spray treatments at Keedysville, to Logan Miller, Alyssa Truong, and Nurani Illahi for helping process spray cards, and to our cooperating growers. Vision Pink Foam Marker Dye samples were provided by GarrCo Products Inc. (Converse, IN). Funding was provided by the Maryland State Horticultural Society and Maryland Department of Agriculture (171501-05). This publication was supported by the Specialty Crop Block Grant Program at the U.S. Department of Agriculture through grant. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the USDA.

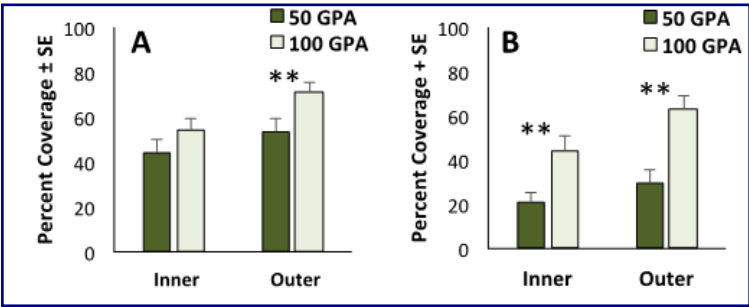


Figure 2. Mean percent spray coverage \pm standard error observed at 50 and 100 GPA in the inner and outer plant canopy (averaged across heights) in the (A) 2016 and (B) 2017 raspberry spray trials. Asterisks indicate significant differences in coverage between 50 and 100 GPA at each canopy location.

Methods: Spray trials were conducted at Keedysville, MD from 2016 - 2017 using fall red-raspberries and in 2018 using fall blackberries. Each year, fruit were sprayed using two carrier water volumes: 50 and 100 gallons per acre (GPA) with a Durand-Wayland 100 airblast sprayer; in 2018 we also attached a two-sided row crop head (DW 16-4935) to the airblast sprayer (Fig. 1) to better direct the pesticide spray. We quantified percent spray coverage in the inner and outer canopy at three heights in raspberries and four heights in blackberries using white paper spray cards and Vision Pink Foam Marker Dye (GarrCo Products Inc.).

Results and Conclusions: In both 2016 and 2017, increasing spray volume consistently improved spray coverage in the outer canopy of raspberries (Fig. 2). However, volume effects were less consistent in the inner canopy. In 2016, we observed no difference in inner coverage rates between 50 and 100 GPA. In contrast, inner canopy percent coverage in 2017 increased by 24% from 50 to 100 GPA.

The addition of a row crop head to the airblast sprayer in 2018 improved overall spray coverage rates in our single blackberry trial (Table 1). With the row-crop head, we found no differences in coverage rates between the inner and outer canopy nor between the 50 GPA and 100 GPA applications (Table 1), suggesting that adjustments to the sprayer equipment may be sufficient for improving spray coverage. However, further testing across a wider variety of sites is needed to verify these conclusions. Bramble plantings with thicker canopies or other trellises may respond differently to carrier water volume treatments and sprayers. We recommend checking spray coverage with water sensitive cards (if rain and dew will not interfere) or with a marker dye to identify and address issues to improve coverage.

First Blush

By Samantha Watters / reprinted from Maryland Today: Nov 07, 2018



Julia Harshman and Chris Walsh Photo by: Stephanie Cordle, University of Maryland, College Park.

How do you like them apples? As the harvest season comes to a close, UMD is releasing its first of seven varieties developed specifically for the climate and growing culture of the mid-Atlantic region.

Christopher Walsh, professor in the Department of Plant Science and Landscape Architecture, received the university's first apple patent for Antietam Blush. This and six more varieties of elite dwarf apple trees coming out of the Maryland Apple Tree Architecture Project represent the culmination of 27 years of research and breeding.

Those trees are more resistant to disease, shorter and stronger, so they're easier to maintain and harvest. Their small size also makes them cost-effective, as more can be planted in a small area. These advances create potential for broad adoption and use, while improving orchard and farm viability and strengthening the apple industry.

"In Maryland, we have a very good climate for apple production, but we also have a couple of limitations because of our hot summers and rainy weather," Walsh said. "One day they're green. The next day they fall on the ground. We needed [varieties] that were heat-tolerant."

Beyond being adapted to this region, the tree architecture makes Antietam Blush and the upcoming new varieties highly marketable. Apple trees are traditionally thought of as large and robust, requiring ladders to pluck all the apples at harvest, but Antietam Blush provides an alternative for popular pick-your-own markets. More trees can be grown, more apples can be produced, and expensive trellises and support systems can be replaced with stepladders—the trees support themselves and need very little pruning.

"It's an advantage for this apple to be ready when lots of folks are picking apples and pumpkins," said Bob Black, owner of Catoctin Mountain Orchard, who has been unofficially growing Antietam Blush for a few seasons solely for grower taste-testing.

Walsh got started back in 1991, when he realized that the main university apple breeding programs were at Cornell, Washington State and the University of Minnesota—all located in the North. He imagined a new, grower-friendly tree for the mid-Atlantic, one that was precocious (meaning it bears fruit early in its life), small and resistant to a destructive bacterial disease known as fire blight.



Harvesting Antietam Blush Photo by: Mark Sherwood, University of Maryland, College Park.

Your Due Dollars At Work—Funding Research Proposals for 2018

Lynn Moore, MSHS Secretary

Each year the Maryland State Horticulture Society funds research projects designed to improve the production and profitability of fruit producers, and support family farming in Maryland. Grants are awarded to projects that are relevant to the industry and will benefit Maryland growers. These grants are frequently used as seed money to attract other monies to fund the research projects.

Eleven projects were funded in 2018:

- Continuation of Monitoring for Fungicide Resistance in Maryland for Small Fruit and Stone Fruit Orchards, Dr. Guido Schnabel, Professor and Extension Specialist, Clemson University.
- Integrating Pruning and Water Carrier Volume for Optimized Spray Coverage and Management of Spotted Wing Drosophila in Fall Bearing Red Raspberries. Approved for the second year, Dr. Kelly Ann Hamby, Entomologist, University of Maryland. (see report on page 6).
- Adjustment to the Strawberry Advisory System (SAS) for Botrytis Control When Using Floating Row Covers. Approved for the second year, Mike Newel, UMD Extension Specialist, WyeREC.
- Variety Evaluation of Several Newer Strawberry Selections Grown in the Annual Plasticulture System, Mike Newel, UMD Extension Specialist, WyeREC.

- Continuation of Implementing the Strawberry Advisory System (SAS) in Maryland, Dr. Mengjun Hu, Pathologist, University of Maryland.
- Mitigating Fire Blight in High Density Apple Orchards, Dr. Kari Peter, Penn State University, FREC. (see report on page 5).
- Grafting the Apple Varieties from Dr. Arthur Thompson's Block to a New Location for Better Maintenance at WMREC, Bryan Butler, UMD Extension Educator.
- Apple Orchard Maintenance for the Trellis System Trials at WMREC, Bryan Butler, UMD Extension Educator.
- Travel funds for Horticultural Programing and Orchard Visits, Bryan Butler, UMD Extension Educator.
- Twilight Meeting at WMREC Funds, Bryan Butler, UMD Extension Educator.
- Pomology Faculty Fund, Dr. Chris Walsh, Horticulture Professor, UMD.

Each scientist is happy to discuss their project with any grower. Project results are presented to the Maryland State Horticultural Society and are available on request. Frequently projects are presented at the Twilight tours put on by the University of Maryland, and/or the winter meetings at WMREC and WyeREC and/or the Mid Atlantic Fruit and Vegetable Conference held at Hershey, PA.



Figure 1. Row on right had fungicides+Cu applied, row on left same fungicides+Cu plus Actigard applied.

Examining the Use of Actigard and Microbials for the Management of Foliar Bacterial Diseases of Tomato

Jerry Brust, IPM Vegetable Specialist

Two very bad foliar diseases of tomato are bacterial spot *Xanthomonas campestris* pv. *vesicatoria* and bacterial speck *Pseudomonas syringae* pv. *tomato*. I conducted a study looking at Actigard, fungicides+copper and microbial plant biostimulants for management of bacterial spot or speck in staked tomato. This study consisted of the tomato cultivar *BHN 964* with 8 plants per rep, 4 reps arranged in a randomized complete block design.

The 4 treatments were: 1. Control (no fungicides or copper) 2. Fungicides+copper as recommended by the 2018 Mid-Atlantic commercial vegetable recommendations guide 3. Actigard + the recommended fungicide and copper sprays (this treatment will be referred to as the 'Actigard treatment') and 4. Microbial biostimulants. Actigard is a systemic compound containing the active ingredient acibenzolar-S-methyl. It elicits a mode of action in many plants (including tomato) that mimics the natural systemic activated resistance (SAR) response. The microbial biostimulant (M-BS) cocktail I used is a concoction of my own that I came up with over the last few years of working with biostimulants. The M-BS cocktail consisted of mycorrhizae and *Trichoderma harzianum* strain t-22 both applied to the roots starting with plants in the greenhouse and every 2 weeks in the field. The foliar M-BS *streptomycin* spp and *Beauveria bassiana* strain GHA were applied every 2 weeks in the field starting ~2 weeks after transplanting. Disease ratings and marketable yield/plant (which includes culling unmarketable fruit from the harvest weight) were recorded and subjected to an analysis of variance and Tukey HSD mean separation test.

Results/Discussion: I normally average about 16 lbs of tomatoes per plant for a tomato trial, this year the average was ~12 lbs/plant. This demonstrates the tremendous disease pressure that tomato plants experienced this season. In figure 1 on the right hand side are tomatoes that were treated with fungicides and copper. The row to the left was the Actigard treatment. You can see that the foliage of the Actigard treatment is in much better condition compared with the fungicide+copper treatment. Figure 2 shows the amount of foliage damage to tomato plants from bacterial spot infection in late August 2018. The control had the worse rating for bacterial spot and was significantly greater than the Actigard treatment or the M-BS treatment. The fungicide+copper spray treatments had only slightly reduced

ratings for bacterial spot compared with the control. *Xanthomonas* spp have developed a tolerance for copper and it is not as effective of a control. For total marketable yields (fig. 3) the Actigard and M-BS treatments were significantly greater compared with the fungicide+copper and the control treatments. The fungicide+copper treatment did not significantly differ from the control in total marketable yields, but was numerically greater.

Using Actigard this year in tomatoes significantly increased marketable tomato yields compared with just using a fungicide and copper spray program. Foliage was less infected by bacterial pathogens in the Actigard treatment and the plant was better able to produce unblemished fruit. The microbial biostimulants did very well in reducing the incidence of bacterial spot and increasing marketable yields. This is what biostimulants are supposed to do-help plants overcome stressful situations, in this case too much rain and disease, and improve the quality of the fruit. But my experience with them has shown that this outcome usually is not achieved or if it is, it is achieved by small increments and not significantly. More trials will be necessary to understand how the biostimulants can best be used.

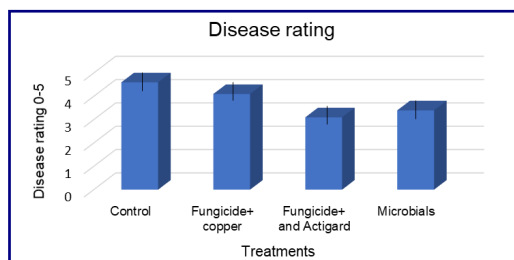


Figure 2. Disease rating of tomato plants 0-5 with SE bars: 0=no disease; 1= 1-10% foliage diseased; 2= 11-20% foliage diseased; 3= 21-35% of foliage diseased; 4= 36-60% of foliage diseased; 5= >61% of foliage diseased.

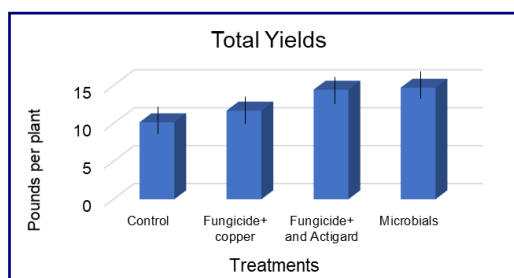


Figure 3. Total yields of marketable fruit per plant (7 harvests)

Small Farm Composting Using the Passively Aerated Windrow System

Bryan Butler Sr., University of Maryland Extension Educator-Carroll Co.



Figure 1

Vegetable and fruit growers are always looking for ways to improve their soil. Many small horse farms are often looking for a way to dispose of their excess manure. The passively aerated windrow composting system (PAWS) may be a tool to help. Many growers on a smaller scale lack the equipment and horse power for large scale composting. PAWS can be a solution since there is no turning involved.

The Carbon to Nitrogen ratio of most manures mixed with bedding that would be commonly removed from stalls make it the almost ideal raw material for composting. Exceptions to this would be meticulously maintained horse stalls where much more saw dust is removed on a daily basis than manure, or a barnyard that is 100% manure. Composting the manure produced on the farm will reduce the total volume which will be applied to the fields, it will stabilize the pH to approximately 7.0, and will provide nutrients in a slower release form while adding valuable organic matter to the soil. The organic matter provided by compost will improve the soil's water holding capacity and increase the availability of nutrients to plants. There is no question that composting will make manure, which is already a valuable on farm resource, more valuable. However, composting does add an extra step between cleaning out the barn and application to the field. Time is required and to make high quality compost. Aeration of the pile is critical. Most methods of composting require physical turning of the pile to assure that the microorganisms throughout the pile have adequate oxygen. Without aeration the pile will go anaerobic (without oxygen), which slows the composting process and can lead to odor problems from the pile. To mechanically aerate a pile of composting manure a producer can run into the same requirements for larger equipment that were experienced when spreading fresh manure.

The passively aerated windrow system (PAWS) is a simple, low-tech option for composting which appears to be particularly well suited for small-scale operations.

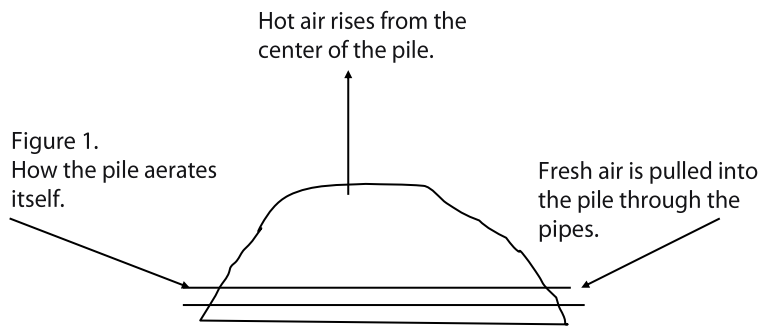
(figure 1.) This system uses pipes with holes around one side, laid under the pile that serve as air inlets pull air into the windrow, as air heated during the compost process rises out of the top. PAWS is a very flexible system that can be used for annual barn clean-outs to daily stall mucking.

To set up a pile, first lay a bed of straw or waste hay approximately 6-8 inches deep. The bed should be about 12 feet wide and long enough to accommodate the manure being composted at the time. Next, four-inch diameter 10' long PVC pipes are laid on the bed of straw. The pipe used for septic drain fields appears to work quite well. The pipes come in 10' sections and have holes 12" apart around half of the circumference of the pipe. The cost of the pipe runs \$.65 - .75 per foot. The lengths of pipe are laid 12" apart on the bed of straw with the holes pointing up.

Then the manure is piled on the bed. The pile should be about four to five feet tall and have gently sloping sides so that the base of the pile is 8-9' wide. Be sure that the ends of the pipe are not covered so that air can

move freely into the pipes. The manure should be well mixed with bedding materials such as straw, wood chips, sawdust, or even waste hay to provide a carbon source to aide in proper decomposition of the manure by maintaining pore space in the pile. This is particularly important with this system because the materials will not be mixed again during the remainder of the process, and if the mix is packed too tightly air will not be able to move through the pile. Once the pile is laid out it should be covered with straw or compost to help retain moisture in the pile and to provide insulation to insure the windrow will maintain the proper temperature while composting. Within 24 - 48 hours the internal temperature of the pile should rise to

between 110 and 140 o F. The temperature should stay in the low end of this range for the duration of the composting process, which will take between 6 and 12 weeks depending on the composting materials in the pile and the weather conditions. Severe weather can effect the composting process especially in the colder months. Thus, it is important to monitor the PAWS on a regular basis by checking the pile temperature in a variety of locations with a compost thermometer. If the pile should become saturated with water from heavy rains the temperature will drop. It may be necessary to take the pile apart and reassemble it with additional blended composting materials that are dry. To avoid this do not set the PAWS up in low or wet areas and consider having a trap available to cover the pile if heavy rainfalls are predicted.



Growing Hops in Maryland—A Collaboration of the University of Maryland and Flying Dog Brewery

Bryan Butler Sr., University of Maryland Extension Educator-Carroll Co.



In an effort to support the new and rapidly growing brewing industry in Maryland, 24 varieties of hops have been established at the University of Maryland Agricultural Experiment Station in Keedysville, Maryland. Although not the first hops planting on a research farm, this planting is about ½ acre and contains 24 varieties replicated three times and is being managed intensively with regard to fertility, irrigation, as well as insect, disease and weed management using IPM principles. Current varieties in the trial;

Planted May 2016: Alpharoma, Cascade, Centennial, Chinook, Crystal, Mt. Hood, Mt. Ranier, Nugget, Sorachi Ace, Southern Cross, Tahoma, and Ultra.

Planted in 2017: Canadian Red Vine, Galena, Glacier, Amallia, Neo 1, New Port, Multi Head, Southern Brewer, Teamaker VF, Willamette, Vojvodina, and Zeus.

Multi Head and Neo 1 have been removed and will be replaced for the 2019 season by two plants that have been growing in the Central for over 100 years.

The following information was generated from what we are learning from the planting in Keedysville, Maryland in 2018. We hope to update this information as we continue to learn about the ins and outs of hop production in Maryland. This outlines our progress in learning about hop production and is intended to be less a recipe for production but more a menu for growers to select what works in your own operation and for ideas for solutions to challenges that limit production in our hot, humid, pest rich environment.

THE CURRENT TRIAL

- Spaced 3.5' x 14' on ¼ Acre. Laminated posts with a cable at 18'. Posts are 4' in the ground.
- Soil was prepared the previous fall, limed, and phosphorus and potassium added to optimum levels.
- Plantings received the equivalent of 180 lbs. of nitrogen yearly from three applications in 2016 and 2017 with 120 pounds in 2018.
- Tall fescue planted between rows in spring 2016. Weekly IPM scouting with control measures taken as needed.
- Crowning was done about three weeks later in 2018 than 2017 in an attempt to increase yields.

Pest Control: Weekly integrated Pest Management (IPM) scouting is a must for successful hops production in Maryland. Rapid deployment of control measures can make all difference between success and failure of a new planting. This consists of walking the rows observing overall condition of your plants looking at vigor, color of foliage, discoloration or browning of leaves and presence of insects or mites. It is important to be examining both the upper and lower surfaces of the leaves with a magnifying glass or hand lens to see mites or early infestations of leaf hoppers. Major pest issues in order of impact on our current planting include; Downy Mildew, Leaf hoppers, Mites, Alternaria Cone Disorder, Fusarium Cone Tip Blight, Japanese Beetles.

INITIAL INVESTMENT COST TO ESTABLISH THIS PROJECT FOR ½ ACRE

ITEM	COST
Hops rhizomes (plants)	\$1,300
Poles	\$4,500
Hardware for poles	\$1,200
Labor (\$20/hr.* 320 hrs.)	\$6,400
Harvester	\$28,000
Oast (for drying)	\$2,000
Pelletizer	\$5,000
Irrigation	\$1,500
Liquid Nitrogen Cooling System	\$500
Hammer Mill	\$2,000
Cooler/Storage	\$1,000
Seed, Fertilizer, Lime, Chemicals	\$3,500
TOTAL COST	\$56,900

2017 SEASONAL COSTS FOR THE ½ ACRE

ITEM	COST
Herbicides	\$130
Fungicides	\$550
Insecticides	\$300
Coconut coir	\$175
Fertilizer	\$120
Labor	\$2,400
TOTAL COST*	\$3,675

2018 SEASONAL COSTS FOR THE ½ ACRE

ITEM	COST
Herbicides	\$127.81
Fungicides	\$167.61
Insecticides	\$435.38
Coconut coir	\$350.00
Fertilizer	\$110.00
Labor	\$3,400.00
TOTAL COST*	\$4,590.80

In 2017 and 18 there was additional cost of laboratory analysis of oil and acid hops panel contracted through VA Tech for research purposes.

ITEM	COST
Pre-pellitization panels (24 varieties)	\$2,256
Post-pellitization panels (24 varieties)	\$2,256
TOTAL COST	\$4,512

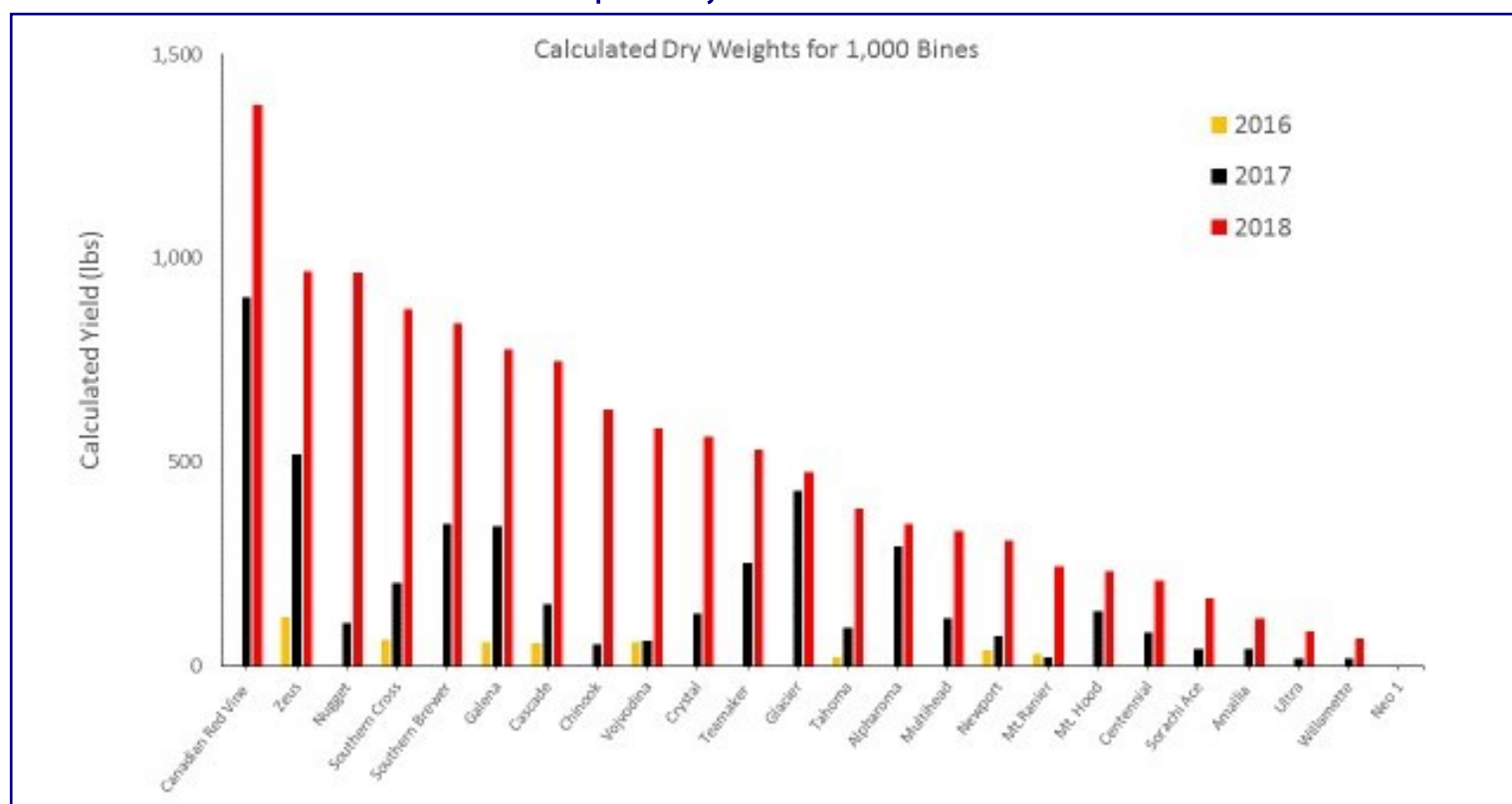
Growing Hops in Maryland—A Collaboration of the University of Maryland and Flying Dog Brewery

continued from page 10

MANAGEMENT OF THE ESTABLISHED MARYLAND HOP YARD—HOPS 2018 TIMELINE

DATE	MANAGEMENT	DATE	MANAGEMENT
2/20/18	Solicam DF + Scythe	6/15/18	applied Phostrol (2.5pt/A) + M-Pede (2% solution)
4/10/18	drenched with Ridomil Gold SL (8oz/A rate - .8oz/10gal, 5 gal treats 50 plants)	6/20/18	applied Phostrol (2.5pt/A) + Ranman (2.75oz/A) + Azaguard (16oz/A)
5/02/18	cleaned debris from rows, applied 50 lb N/acre	6/25/18	applied Phostrol (2.5pt/A) + Tanos (8oz/A) + Champ Formula 2 Flowable (1.33pt/A) + Azaguard (16oz/A)
5/03/18	applied Sycthe (10% solution at 150 gpa)	6/26/18	applied 30 lbs N/acre
5/07/08	crowned plants with mower	6/29/18	applied Malathion 5 (1pt/A) + Phostrol (2.5pt/A)
5/09/18	applied 30 lbs N/acre, installed strings	7/3/18	applied Phostrol (2.5pt/A) + Azaguard (16oz/A)
5/10/18	applied Ranman (2.75 oz/A)	7/9/18	applied Phostrol (2.5pt/A) + Azaguard (16oz/A)
5/16/18	applied 30 lbs N/acre, began training	7/16/18	applied Phostrol (2.5pt/A) + Zeal
5/17/18	*applied Phostrol (2.5pt/A)	7/18/18	applied Phostrol (2.5pt/A) + Acramite
5/21/18	applied Tanos (8oz/A) + Champ Formula 2 Flowable (1.33pt/A)	7/20/18	applied Ranman (2.75oz/A) + Azaguard (16oz/A)
5/25/18	applied Ranman (2.75oz/A) + 30 lbs. N/acre	7/27/18	applied Phostrol (2.5pt/A) + Azaguard (16oz/A)
5/30/18	applied Brigade (6.4oz/A) + Phostrol (2.5pt/A)	7/31/18	applied Oxidate 2.0 (32oz/100gal)
6/4/18	applied Tanos (8oz/A) + Champ Formula 2 Flowable (1.33pt/A)	8/6/18	applied Phostrol (2.5pt/A) + Azaguard (16oz/A)
6/12/18	applied 30 lbs N/acre	8/8/18	applied M-Pede (2% solution)
6/12/18	applied Aim EC (2oz/A) + Chateau (6oz/A) for sucker control	8/17/18	applied Phostrol (2.5pt/A) + Azaguard (16oz/A)
6/12/18	applied Azaguard (16oz/A) + Revus (8oz/A) + Phostrol (2.5pt/A)		

8/12/18- 8/24/18 - Harvest Varieties harvested at 23-29 percent dry matter



University of Maryland Extension Offers Private Pesticide Certification and Recertification & Nutrient Management Voucher Training

University of Maryland Extension is offering private pesticide applicator and Nutrient Management certifications and recertification classes for farmers/producers during the fall, winter, and spring season. To find a listing for classes/workshops near you go to:

University of Maryland Extension Events:
extension.umd.edu/events

Pesticide Education and Assessment Program
<http://pesticide.umd.edu/>

Private Pesticide Recertification Meetings:
<https://mda.maryland.gov/plants-pests/Documents/Private%20Recert%20Meetings%202017-%202018.pdf>

Nutrient Applicator Voucher Courses:
http://mda.maryland.gov/resource_conservation/Pages/nutrient_management_training_program.aspx

G Solving Blueberry Production Problems in Upland Soils: It's More Than Just pH.

Christopher S. Walsh, Professor of Horticulture, University of Maryland, College Park

The following is a short summary of projects conducted by Amelia Loeb, Lukas Hallman, Claire Frank, Lydia Printz and undergraduate students in the Spring 2018 Plant Science Capstone course. We would also like to acknowledge the assistance of Donny Murphy and Alfred Hawkins at the Upper Marlboro facility and Meghan Fisher-Holbert and Sydney Wallace at the University Greenhouse.



Photo: Edwin Remsberg

During my career I have seen many good farmers struggle while trying to grow blueberries in upland soils. In the past two years some of my current and former horticulture students have been trying to unravel the reasons for the stunted plant growth frequently seen in upland soils, even after amending soil pH and adding organic matter.

In addition to increasing iron availability, lowering pH in mineral soils also increases the availability of manganese (Mn) and aluminum (Al). While Mn is an essential element for plant growth, Al is not. In mineral soils excessive Mn is toxic. Aluminum toxicity has long been known to be a problem for plants grown in very acid soils. To test the hypothesis that Mn and Al were problematic, we took leaf samples of two container-grown blueberry varieties, Blue Ray (Northern) and New Harmony (Southern), planted in amended upland soils. While there were dramatic differences in plant vigor between the two varieties, we saw little difference in leaf Mn and Al. Instead, we did find a striking difference in the levels of monovalent cations potassium (K) and sodium (Na) in the tissue samples. Sodium was much lower in the vigorous New Harmony plants bred in North Carolina.

This has led us to wonder whether this difference in sodium levels was restricted to these two particular varieties or reflects a broader difference in salt tolerance between northern and southern varieties. As a result, we recently initiated a larger nutrition trial comparing five representative cultivars from each region.

While the initial work was done in the University Greenhouse, we also wanted to expand the study and test blueberry plant performance in the field. Since our upland soils, especially those in the Baltimore-Washington corridor, differ so greatly from the organic sand of New Jersey's Berryland soil, I've also wondered whether it might be more efficient for us to containerize a blueberry fruit planting in a potting mixture of pine fines and sand. To test this idea, students in my Senior Capstone project designed and installed a blueberry planting in mid-April at the Maryland Agricultural Experiment Station (MAES) facility on Largo Road in Upper Marlboro.

Plants were set in containers and in the ground, both inside and outside an established high tunnel. The soil was treated with elemental sulfur (S), sprayed with glyphosate and covered with black nursery cloth prior to planting. The plants were fertilized by hand using ammonium sulfate and watered with drip irrigation. By the end of their first growing season these plants had made excellent growth, and many appear to be setting flower buds for next spring.

We do not know if the protection offered by the high tunnel will be adequate to protect plants from cold damage. The southern highbush plants have a shorter chilling requirement. Will they bloom earlier and potentially lose their crop to late-spring frosts? Only time will tell....

Lynn Moore receives the 2018 Harry G. Black Distinguished Service Award



Lynn Moore received the Harry G. Black Distinguished Service Award at the Mid-Atlantic Fruit and Vegetable Convention, Hershey Lodge, Hershey PA. on Tuesday, January 30, 2018.

Wade Butler, President of the Maryland State Horticultural Society, presented the award to Lynn during the Fruit and Vegetable Growers Banquet for her many contributions to the industry. Lynn and her family operate Larriland Farm in Woodbine, MD and is currently serving as the Maryland State Horticultural Society secretary.

Harry G. Black Distinguished Service Award

The Harry G. Black Distinguished Service Award is given, when deemed appropriate by the Executive Board, to a person who is a member of the Maryland State Horticultural Society making a significant contribution in the state of Maryland this year and in years past. The Award and Nominations Committee, consisting of three members appointed by the President, shall recommend to the Executive Board such an award.

Although primarily intended to be given to a fruit grower or those involved in fruit production, it may be given to a person in an allied industry such as processing, a state employee, a county agent, university personnel, or to any other person making a special contribution to the fruit industry.

If you have a suggested recipient, please write a brief description and send it to Lynn Moore, Secretary, c/o MSHS, Nominating and Awards Committee, 2415 Woodbine Road, Woodbine, MD 21797

The committee will annually review the list of nominees, if any, to determine its recommendation to the Executive Board.

Previous recipients are:

Lloyd Balderston III, 1976
Dr. Castillo Graham, 1976
Professor A. F. Veirheller, 1976
S. Herman Todd, 1977
William C. Main, 1978
Theodore Stegmaier, 1978
M. N. "Nick" Pope, 1979
Dr. L. O. Weaver, 1980
Dr. Ben L. Rogers, 1981
Dr. Arthur Thompson, 1982
Harry G. Black, 1985
George H. Butler, Jr., 1986
William M. Allenberg, 1996
Evan B. Milburn, 1997
John H. Rinehart, 1999
Dr. Paul W. Steiner, 2000
I. Bruce Barr, 2005
Henry R. Passi, 2008
Allan Baugher, 2011
Robert E. Black, 2014
Bob Rouse, 2016
Lynn Moore, 2018

ARTHUR H. THOMPSON TRAVEL FELLOWSHIP

The purpose of the Thompson Travel Fellowship is to expose young people, working in the Maryland fruit industry, to ideas on fruit production in other areas of the world. In order to do this, the Maryland State Horticultural Society has established a fellowship of up to \$1,000. This fellowship can be awarded annually to young people working in the fruit industry to promote leadership within the Society.

Recipient: The recipient will be a fruit grower or someone else associated with fruit production in Maryland, to be given to young persons aged 18 to 30, to encourage travel outside the state of Maryland. The recipient would be expected to make a short presentation to the membership at the annual meeting concerning the information learned in the travel.

Application and Procedure:

To apply, a brief explanation of the proposed trip should be submitted in writing. The application letter should include the name, age, and potential trip being considered by the applicant. Applications should be submitted by **January 18, 2019** to be considered for use during the subsequent year.

Send applications to: Lynn Moore, Secretary, c/o MSHS, Nominating and Awards Committee, 2415 Woodbine Road, Woodbine, MD 21797, (410) 489-7034.

The Awards and Nominating Committee will consider the nominations and will make its recommendation to the Executive Committee, which will make the final decision. The Thompson Fellowship will be presented at the Awards Banquet held during the Mid-Atlantic Fruit and Vegetable Convention in Hershey, PA.

UME Demonstration Wines Receive Medals from American Wine Society

Nine wines from the University of Maryland Extension, Viticulture & Enology Research program were entered in the 2018 National American Wine Society Amateur (non-commercial) Wine Competition that took place on October 30-31, 2018 in Buffalo, NY. Eight received a medal; here are the results:

Year	Name of Wine	Research Center	Medal
NV	Chambourcin VinSanto	WMREC	Best Estate-Grown Wine, Double Gold
2015	Reserve Oaked Chardonnay	WMREC	Silver
NV	Russian Collusion SK77-5-3,SK77-10-69, XIV-1-86	WREC	Silver
NV	Terrapin Red (Chambourcin, Cabernet Sauvignon, Cabernet Franc, Noriet)	WMREC	Silver
2015	Petit Verdot	WMREC/GRV	Bronze
2016	Gruner Veltliner	WMREC/GRV	Bronze
NV	Chardonnay & Linae Ice	WMREC/WREC	Bronze
NV	Apple Ice	WMREC	Bronze

University of Maryland Vineyard locations:

WMREC: Western Maryland Research & Education Center, Keedysville, MD

WREC: Wye Research & Education Center, Queenstown, MD

LESREC: Lower Eastern Shore Research & Education Center, Salisbury MD

CMREC: Central Maryland Research & Education Center, Upper Marlboro, MD

Other Vineyard locations:

AREC: Alson H. Smith Jr. Agricultural Research & Education Center, Winchester, VA (Virginia Tech) www.ares.vaes.vt.edu/alson-h-smith/

GRV: Golden Run Vineyard, Hans & Jenny Schmidt, Sudlersville, MD



CALENDAR OF EVENTS

Jan. 10-13, 2019: Southeast Regional Fruit and Vegetable Conference, seregionalconference.org

Jan. 16-17, 2019: 2019 Ohio Produce Network Embassy Suites, Dublin, Ohio., <http://www.opgma.org/general-information/>

Jan. 15-17, 2019: 2019 Empire State Fruit and Vegetable Expo, SRC Arena, Syracuse, NY., nysvga.org/expo/information

Jan. 17-19, 2019: Future Harvest - CASA 20th Annual Conference—Growing Our Future Harvest” College Park, MD., futureharvestcasa.org/conference

Jan. 24, 2019 (9:00 AM-3:00 PM): Central Maryland Vegetable Growers Meeting, Friendly Farms, Foreston Road, Upperco, MD. Registration or more info. call (410) 887-8090 or ecrowl@umd.edu

Jan. 29-31, 2019: 2019 Mid-Atlantic Fruit and Vegetable Convention, Hershey, PA ., www.mdhortociety.org/mafvc (registration and program included in this newsletter)

Feb. 1-7, 2019: 2019 Annual NAFDMA Convention, Indianapolis, Indiana. <https://nafdma.wildapricot.org/resources/2019%20NAFDMA%20Concurrent%20Speaker%20RFP%20FINAL.pdf>

Feb. 12, 2019: Eastern Shore Vegetable and Fruit Meeting , Eastern Shore Hospital Center, Cambridge, MD. Register by calling the Dorchester County UME office at 410-228-8800.

Feb. 7, 2019 (8:30 AM - 4 PM): Southern Maryland Vegetable & Fruit Production Meeting, Location: TBA (in St. Mary's County). Register by calling the St. Mary's Extension Office at 301-475-4484.

Feb. 1-2, 2019: Maryland Wine & Grape Industry Annual Meeting for more information go to: marylandgrapes.org/events/annualconference.shtml

Feb. 12-13 2019: 18th Annual Regional Women in Agriculture Conference, Dover Downs Hotel, Dover, DE. For more information or to register go to: extension.umd.edu/womeninag or call 410-822-1244.

Feb. 14, 2019 (9:00 AM to 4:00 PM): Western Maryland Regional Fruit Meeting, Western Maryland Research & Education Center, Keedysville, MD. For more information or to register contact Susan Barnes at (301) 432-2767 x301 or sbarnes6@umd.edu

Feb. 22, 2019 (8:30 AM-3:30 PM): Bay Area Fruit School, Wye Research and Education Center, Queenstown, MD. For more information contact: Mike Newell at (410) 827-7388 /mnewell@umd.edu or to register contact Stephanie Jackson (410) 827-8056/ sjacks@umd.edu

2019 Mid-Atlantic Fruit and Vegetable Convention Jan. 29 –31, 2019

PROGRAM AND REGISTRATION INFORMATION

PRE- CONVENTION WORKSHOPS

Monday, January 28, 2019

FSMA Grower Certification Training (9:00 AM - 5:15 PM)

Fee: \$150 for non-PA growers - limited registration (includes lunch & training materials)

If you are a Pennsylvania grower please go to mafvc.org/Registration to register

This training is for fruit and vegetable growers and others interested in learning about: produce safety, the Food Safety Modernization Act (FSMA) Produce Safety Rule, Good Agricultural Practices (GAPs), and co-management of natural resources and food safety. This PSA course is one way to satisfy the grower training requirement of the FSMA Produce Safety Rule as outlined in Section 112.22(c).

Participants in the course will learn about: Microorganisms relevant to produce safety and where they may be found on the farm; How to identify microbial risks, practices that reduce risks, and how to implement produce safety practices on the farm; Requirements in the FSMA Produce Safety Rule and how to meet them.

After attending the entire course, participants will be eligible to receive a certificate from the Association of Food and Drug Officials (AFDO) that verifies they have completed the training course.

Irrigation Basics (9:30 AM - 3:30 PM)

Fee - \$60 (includes lunch)

This will be a hands-on, practical workshop covering all aspects of irrigation of vegetable crops. Topics include irrigation system components and design, irrigation scheduling and moisture monitoring, fertigation, water sources and delivery systems, pumps, filtration, developing water systems on your farm, and water quality. Speakers/panelists include Bill Wolfram (Toro), Tim Elkner (Penn State Extension, Lancaster County), Dave King (Harvest Valley Farms, Valencia, PA), Brian Campbell (Campbell Farms, Berwick, PA), Elsa Sanchez (Penn State University).

High Tunnel Bramble Production (9:00 AM - 4:30 PM)

Fee - \$50 (includes lunch)

Presented in engaging panel discussion and question-answer formats, this workshop will cover the latest recommendations on production techniques and pest management resulting from the TunnelBerries project (www.tunnelberries.org), a cooperative effort of 7 Universities and the USDA. Presenters will include project researchers, grower advisors, and industry personnel. While some basic information will be covered, most topics will be covered in-depth and assume attendees have a working familiarity with tunnel structures and bramble production. Registration will be limited to 50 participants

Greenhouse Short Course (9:00 AM—4:15 PM)

Fee - \$85 (includes lunch)

Whether seeking to sharpen an "older" set of greenhouse skills or just getting started in the greenhouse industry, the 2019 Greenhouse Short Course is the place to be. Join us as experts from Penn State Extension and the Greenhouse Industry lead discussions on an array of greenhouse topics such as marketing, greenhouse structure selection, water quality, plant nutrition, potting media selection, artificial lighting, insect and disease management, and pesticide application equipment.

This program is appropriate for both organic and conventional growers and for new entrants into the greenhouse industry. Participants will receive a binder packed with reference materials as part of the registration fee. In order to maintain a quality learning environment, we are limiting registration to 50 participants, so act today and reserve your place in one of the premier greenhouse short courses held in the Mid-Atlantic region.

MSHS Meetings Held at MAFV Convention

The Maryland State Horticultural Society (MSHS) will have the following meetings during the Mid-Atlantic Fruit and Vegetable (MAFV) Convention.

EXECUTIVE COMMITTEE MEETING

(officers & board members)
Tuesday, January 29, 2019 •
4:30 PM • Tower #2

BUSINESS MEETING

(All members are encouraged to attend)
Wednesday, January 30, 2019
4:30 PM • Room: TBA

Lodging At Hershey

The Mid Atlantic Fruit & Vegetable group rate is: \$145.00. room/per night plus 11% taxes prior 12/28/18. After that date, room prices may increase and/or rooms may not be available.

TO MAKE HOTEL RESERVATIONS:

Voice:

1-855-729-3108

to receive convention discounted rate; mention that you are attending the MAFV Conference.

Online: <https://book.passkey.com/event/49523786/owner/12056/landing>

PRE- CONVENTION WORKSHOPS

Monday, January 28, 2019

Agenda—Greenhouse Short Course

9:00 AM	Registration
9:30 AM	Market Potential for Greenhouse Ornamentals, and Vegetables, Tom Ford, Penn State Extension
10:00 AM	Greenhouse Structures, Design and Layout, Harry Edwards, Rimol Greenhouses
10:45 AM	Break
11:00 AM	Water Quality, Tom Ford
11:30 AM	Greenhouse Fertility, Krystal Snyder, J.R. Peters
12:15 PM	Lunch
1:00 PM	Media Selection and Management, Dale Rutherford
1:30 PM	Illumination of Greenhouse Crops, Nick Flax, Penn State Extension
2:00 PM	Disease Prevention and Management in Greenhouse Crops with an Emphasis on biocontrols, Steve Bogash, Marrone Bio Innovations
2:45 PM	Break
3:00 PM	Insect and Mite Management with an Emphasis on Biocontrols, Tom Ford
3:45 PM	Pesticide Application Equipment for Greenhouses and High Tunnels, Jared Babik, Dramm
4:15 PM	Adjourn

Intro to Social Media—Use and Marketing (12:30 PM - 4:00 PM)

Fee - \$45 Instructors - Sarah Cornelisse & Kathy Kelley, Penn State University

Social media has become a valuable marketing tool for businesses wanting direct connections with customers. The number of social media options available and their (constantly evolving) differences can be overwhelming. Tailored for beginners, this workshop will explore three of the most popular social media platforms – Facebook, Instagram, and Pinterest – and how you can use these tools to market directly to your customers and potential customers. **Required** – Attendees should bring their own laptop/device and already have business profiles/accounts created. Signing up and creating accounts will not be covered during this workshop.

Agenda: Basic functions of three platforms: Facebook, Instagram, Pinterest; Using social media for market research; Drafting good posts; Activity – Evaluate 2-3 business pages/profiles; SM Best Practices; Developing your social media marketing strategy: 1) Beginning strategy, goal, and timeline development 2) Exercise – develop and share 1 SM goal; Analytics; Q&A – integrated throughout the session

Market Research You Can Use (Time: TBA)

Fee - \$35 (no lunch)

Pros and Cons of Thinning Apples Early (1:00 PM - 4:30 PM)

Fee - \$55 Class size is limited, so sign up early!

Interested in learning more about improving the reliability of chemical thinning in your apple blocks? Pomologists who lead research in early thinning strategies will discuss practical applications for optimum crop load management in your orchards.

1:00 PM	Review of Early Thinning Practices for Apples, Dr. Tom Kon, North Carolina State
1:30 PM	Blossom Thinning with Lime Sulfur, Dr. Jim Schupp, Penn State
2:00 PM	Pollen Tube Growth Model for Thinning, Dr. Keith Yoder, Virginia Tech Research
2:30 PM	NEWA Pollen Tube Model (Hands-On Session - bring your laptop or smart device), Dr. Dan Olmstead, Cornell
3:00 PM	Break
3:15 PM	Disease Management Impacts, Dr. Keith Yoder, Virginia Tech Research
3:45 PM	New Use Patterns with AmidThin W, Dr. Jim Schupp, Penn State
4:15 PM	Regulatory Status & Discussion, Dr. Jim Schupp and Don Seifrit, Penn State

Farm Market Tour (8 AM - 4:30 PM)

Fee - \$60 (includes bus and includes lunch)

This all-day bus tour will leave and return to the Hershey Lodge and Convention Center. The tour will visit the following locations: Oak Grove Farm, Mechanicsburg, Quality Greenhouse, Dillsburg, Maplewood Produce, Shippensburg, Pauls' Country Market, Waynesboro, and Windy Knoll Market and Creamery, Chambersburg.

TO REGISTER FOR THE PRE-CONFERENCE WORKSHOPS

ONLINE: https://2019_mafvc_pre-conference_workshops.eventbrite.com

MAIL IN: Use enclosed registration form

CONVENTION PROGRAM (as of November 26, 2018)

Please note, speakers, topics, credits, times and rooms in this program are subject to change. Check for updates on the website at www.mafvc.org. The printed program at the convention will take precedence over any pre-convention programs.

Tuesday Morning, January 29, 2019

SEASON EXTENSION/LOW TUNNELS (Trinidad Room)

- 9:00 **Getting your crop off to the best start: Nutrient Placement and Management**, Francesco Di Gioia, Penn State University
- 9:30 **Industry Show & Tell**
- 9:45 **Tunnel Use Fall to Spring**, Matt Kleinhenz and Dana Hilfiger, OSU-OARDC
- 10:30 **Adjourn to Keynote Session**

WILDLIFE CONTROLS (Magnolia Room ABC)

- 9:00 **Effective Groundhog Control**, Art King, Harvest Valley Farms
- 9:30 **Industry Show & Tell**
- 9:45 **How Not to Feed the Deer**, David King, Harvest Valley Farms
- 10:30 **Adjourn to Keynote Session**

ORGANIC VEGETABLE PRODUCTION (Empire Room AB)

- 9:00 **Vegetable Grafting: What small- to Midscale Organic Growers May Want to Know**, Matt Kleinhenz, Ohio State University
- 9:30 **Industry Show & Tell**
- 9:45 **The Case for Spider Conservancy in Organic Agroecosystems**, Cerruti Hooks, University of Maryland
- 10:30 **Adjourn to Keynote Session**

ALLIUM PESTS AND PRODUCTION (Crystal Room)

- 9:00 ***Allium Leafminer: What we know, and how to manage it**, Shelby Fleischer, Penn State University
- 9:30 **Industry Show & Tell**
- 9:45 **Onion and Leek Cultivar Evaluations**, Tom Butzler and Tim Elkner, Penn State Extension
- 10:30 **Adjourn to Keynote Session**

SNAP BEANS (Empire Room CD)

- 9:00 **30 Years of Snap Bean Variety Trials...What Looks Good for 2019**, Jim Ballerstein, Cornell University
- 9:30 **Industry Show & Tell**
- 9:45 ***White Mold Management in a Digital Era**, Sarah Jane Pethybridge, Cornell University
- 10:30 **Adjourn to Keynote Session**

EDIBLE FLOWERS (Wild Rose Room)

- 9:00 **Edible Cut Flowers, An Industry Overview**, Thomas Ford, Penn State Extension
- 9:30 **Industry Show & Tell**
- 9:45 **Organic Edible Flowers**, Jodi Danyo, Cherry Valley Organics
- 10:30 **Adjourn to Keynote Session**

FOOD TRENDS (Cocoa Terrace/Cocoa 1)

- 9:00 **To Be Announced**
- 9:30 **Industry Show & Tell**
- 9:45 **To Be Announced**
- 10:30 **Adjourn to Keynote Session**

TREE FRUITS (Nigerian Room)

- 9:00 **Invocation**, Ed Weaver
- 9:05 **President's Address**, Chris Baugher

- 9:15 **PDA Update on Spotted Lanternfly**, Lawrence Barringer, Pennsylvania Dept. Ag, Bureau of Plant Industry
- 9:30 ***Penn State Update on Research with Spotted Lanternfly**, Julie Urban, Penn State University
- 10:00 ***Biological Control of Brown Marmorated Stink Bug**, Hilary Peterson, Penn State University
- 10:30 **Adjourn to Keynote Session**

KEYNOTE (Nigerian and Trinidad Rooms)

- 10:44 **Federal Legislative Update**
- 11:00 **Keynote Speaker—Leadership Lessons from Hollywood**, Andy Masters

Sponsored by the American Vegetable Grower and American Fruit Grower

Tuesday Afternoon, January 29, 2019

HIGH TUNNELS (Trinidad Room) *Sponsored by the American Vegetable Grower*

- 1:30 ***Managing Soilborne Disease of Tomatoes in High Tunnels Using Anaerobic Soil Disinfestation and Grafting**, Sally Miller, Ohio State University
- 2:00 ***Putting Together a Biocontrol-Based Pest Management Program for High Tunnels**, Steve Bogash, Marrone BioInnovations
- 2:30 ***Managing Weeds Using Anaerobic Soil Disinfestation**, Ram Khadka, Ohio State University
- 3:00 **Industry Show & Tell**
- 3:15 **Tunnel Production: Steps and Tools That May Raise Yours to a New Level**, Matt Kleinhenz, OSU-OARDC
- 4:00 ****Water Quality and its' Impact on Pesticide Efficacy**, Thomas Ford, Penn State Extension
- 4:30 **Adjourn**

GENERAL VEGETABLES (Magnolia Room ABC)

- 1:30 **Caring For Figs**, Bill Muzychko, Bill's Figs, Flemington, NJ
- 2:00 **Postharvest Sanitation Scenarios; What Went Wrong**, Meredith Melendez, Rutgers University
- 2:30 ****Pesticide Record Keeping Options**, Tom Butzler, Penn State Extension
- 3:00 **Industry Show & Tell**
- 3:15 **Soil Health and Your Farm**, Denny Wildman, Advanced Agricultural & Associates
- 4:00 **Use of IR Heating Mats for High Tunnel Crop Production**, Tim Ransford, Anglesea LLC
- 4:30 **Adjourn**

ORGANIC VEGETABLE PRODUCTION (Empire Room AB)

- 1:30 **Does the Base Cation Saturation Ratio (BCSR) Philosophy Affect Your Crops, Soils, Weeds, and Bottom-line?**, Matt Kleinhenz, Ohio State University
- 2:00 **Demystifying Biochar for use in Vegetable Crops**, Kristine Lang, Iowa State University
- 2:30 ***Improving Nutrient and Pest Management in Organic High Tunnel Tomato Production**, Mark Hutton, University of Maine
- 3:00 **Industry Show & Tell**
- 3:15 **Organic Tomato Pest (Insect and Disease) Management for the Whole Season**, Steve Bogash, Marrone BioInnovations

4:00 **Roots to River Farm**, Malaika Spenser, Roots to River Farm
4:30 **Adjourn**

IRRIGATION (Crystal Room)

1:30 **To Be Announced**
2:00 **To Be Announced**
2:30 **Irrigation Challenges on Urban Farms**, Carla Burkle, Penn State Extension, Cumberland County
3:00 **Industry Show & Tell**
3:15 **High Tunnel and Field Irrigation: Grower Panel**, Brian Campbell, Campbell Farms, and Dave King, Harvest Valley Farms
4:00 **Research Updates on Sensor-Based Irrigation Scheduling Strategies**, Long He, Dept. of Ag & Biological Engineering, Penn State University
4:30 **Adjourn**

CUT FLOWERS (Empire Room CD)

1:30 **Wedding and Floral Trends for Cut Flower Growers**, Kathleen Kelley, Penn State University
2:00 ***Key Diseases in Specialty Cut Flowers**, Thomas Ford, Penn State Extension
2:30 **Growing Cut Flower Anemones**, Dave Dowling, Ednie Flower Bulbs
3:00 **Industry Show & Tell**
3:15 **Organic Cut Flower Production**, Jodi Danyo, Cherry Valley Organics
4:00 **Forcing Perennials for Early Spring Bloom**, Nick Flax, Penn State Extension
4:30 **Adjourn**

WHOLESALE MARKETING (Wild Rose Room)

1:30 **Wholesale Marketing Overview**, To Be Announced
2:00 **Procurement/Wholesale Buyer Panel**, Andrea Karns, Karns Markets; Rick Stauffer, Stauffer Huling Farms; Jacqueline Soria, Hello Fresh; David Hahn, Four Seasons
3:00 **Industry Show & Tell**
3:15 **Grower Panel**, To Be Announced
4:00 **Wrap Up Discussion**
4:30 **Adjourn**

SUCCESS WITH FARM MARKET BAKERIES (Cocoa Terrace/Cocoa 1)

1:30 **Making Pies from Scratch**, Kay Hollabaugh, Hollabaugh Brothers
2:00 **Value Added Bakery Products**, Reuwai and Gary Mount, Terhune Orchards
2:30 **Bake Off Pies**, Art King, Harvest Valley Farms
3:00 **Industry Show & Tell**
3:15 **To Be Announced**
4:00 **Making Things with Dough**, To Be Announced
4:30 **Adjourn**

TREE FRUIT (Nigerian Room) sponsored by the *American Fruit Grower*

1:30 **George Goodling Lecture: Critical Components for Orchard Establishment**, Dr. Greg Peck, Cornell University
2:15 **Industry Show & Tell**
2:30 ***Grower Experiences with Orchard Establishment (Grower Panel)**, Mr. Don Seifrit (Moderator), Jake Scholl, Scholl Orchards, Marshall Saunders, Saunders Brothers Orchard and Ben Wenk, Three Springs Orchard
3:15 *****Biofumigation of Orchard Soils**, Dr. Kari Peter, Penn State University
4:00 **Adjourn**

4:15 **SHAP Business Meeting**

Tuesday Evening, January 29, 2019

MSHS Executive Committee Meeting

4:30 **Meeting Room: Tower #2**

SOCIAL

6:00 **Reception** (Chocolate Lobby-ticket required)
7:00 **Growers Banquet** (Nigerian & Trinidad Rooms-ticket required)

Wednesday Morning, January 30, 2019

TOMATOES (Trinidad Room) sponsored by the *American Vegetable Grower*

9:00 **Managing Bacterial Spot in Tomatoes**, Sally Miller
9:30 **** Managing Adjuvants**, Tracey Harpster
10:00 **Industry Show and Tell**
10:15 **Packing Higher Quality Tomatoes**, Steve Bogash, Marrone BioInnovations
11:00 **Control of Bacterial Diseases in Tomatoes**, Andrew Wyenandt, Rutgers Cooperative Extension
11:30 **PVGA Annual Meeting** (Crystal Room)
12:30 **Luncheon Buffet** (Great Lobby and Chocolate Lobby-cash)

SOIL HEALTH (Crystal Room)

9:00 **To Be Announced**
9:30 **To Be Announced**
10:00 **Industry Show and Tell**
10:15 **To Be Announced**
11:00 **To Be Announced**
11:30 **PVGA Annual Meeting** (Crystal Room)
12:30 **Luncheon Buffet** (Great Lobby and Chocolate Lobby-cash)

GREENHOUSE ORNAMENTALS (Empire Room AB)

9:00 ****Federal Worker Protection Standards: Key Areas for Compliance by Greenhouse Growers**, Thomas Ford, Penn State Extension
9:30 **The Best of the Penn State Flower Trials**, Sinclair Adam, Penn State Extension
10:00 **Industry Show and Tell**
10:15 **LED Lighting**, Neil Mattson, Cornell University
11:00 ***Insects of Perennials**, Sinclair Adam, Penn State Extension
11:30 **Easy Ways to Increase Nutrient Efficiency**, Krystal Snyder, JR Peters
12:00 **Luncheon Buffet** (Great Lobby and Chocolate Lobby-cash)

NEW TRENDS IN FARM MARKETING (Magnolia Room ABCD)

9:00 **Consumer Trends** - Claudia Schmidt, Penn State University
9:30 **What's Your Hack?** - Brian Moyer & Tanya Lamo, Penn State Extension
10:00 **Industry Show and Tell**
10:15 **Survey - Farm Market Craft Alcohol Sales**, Tanya Lamo, Penn State Extension
10:30 **Reinventing the Farm Market**, Dreyer Farms
11:30 **Making the Most of your Website**, Dreyer Farms,
12:30 **Luncheon Buffet** (Great Lobby and Chocolate Lobby-cash)

COLE CROPS (Empire Room CD)

9:00 **Tillage, Tarping and Mulching for Cabbage Production**, Dr. Mark Hutton, University of Maine

- 9:30 ***Insect Control of Cole Crops Featuring Worms and Swede midge**, Christy Hoepting, Cornell Cooperative Extension
- 10:00 **Industry Show and Tell**
- 10:15 ***Management of Head Rot Diseases in Broccoli and Cauliflower Featuring New Recommendations for Alternaria Leaf Spot**, Dr. Beth Gugino, Penn State and Christy Hoepting, Cornell Cooperative Extension
- 11:00 **Best Practices for Broccoli Production**, Brian Campbell, Campbell Farms
- 11:30 **PVGA Annual Meeting** (Crystal Room)
- 12:00 **Luncheon Buffet** (Great Lobby and Chocolate Lobby-cash)

SMALL FRUIT (Wild Rose Room)

- 9:00 **Farmer Perceptions of Raspberry and Strawberry Production in Tunnels: Management and Marketing Implications**, David Conner, University of Vermont
- 9:30 **Grower Experiences with Netting for Spotted Wing Drosophila Control**, Dale Ila M. Riggs, The Berry Patch
- 10:00 **Industry Show and Tell**
- 10:15 ***Novel Cultural Management Techniques for Japanese Beetle and SWD in High Tunnel Raspberries**, Maria Cramer, Penn State University
- 11:00 **New Raspberry Variety Performance in High Tunnels**, Eric Hanson, Michigan State University
- 11:30 **High Tunnel Design Considerations for Mid-Atlantic Berry Producers**, Mike Marett, Rimol Greenhouses
- 12:00 **Luncheon Buffet** (Great Lobby and Chocolate Lobby-cash)

WINE GRAPES (Cocoa 1)

- 9:00 **Understanding and Overcoming Impediments to Growing Quality Grapes in the Mid- Atlantic**, Joseph Fiola, University of Maryland Extension
- 9:40 **Understanding and Utilizing Fruit Zone Leaf Removal**, Michela Centinari, Penn State University
- 10:10 **Industry Show and Tell**
- 10:20 ***Principles of Integrated Weed Management for Mid-Atlantic Vineyards**, Thierry Besançon, Rutgers University
- 11:00 **Cordon Renewal Strategies for Declining Merlot Vineyard**, Hemant Gohil, Rutgers University
- 11:30 **Drivers of Profit and Loss for Small Growers**, Kevin Martin, Penn State University
- 12:00 **Luncheon Buffet** (Great Lobby and Chocolate Lobby-cash)

TREE FRUIT (Nigerian Room) sponsored by the American Fruit Grower

- 9:00 **Orchard Planning for Hard Cider Production**, Greg Peck, Cornell University
- 9:45 ***Fire Blight Control Differences for Hard Cider Production**, Kari Peter, Penn State University
- 10:15 **Industry Show & Tell**
- 10:30 **First Year Results of Hard Cider Apple Variety Trials in New Jersey**, Megan Muehlbauer, Rutgers Cooperative Extension
- 11:00 **Artificial Spur Extinction – What in Blazes is That?**, Becky Weipz, Penn State University
- 11:30 ***Bitter Rot on Apple: Fungal Species & Managing Resistance**, Phillip Martin, Penn State University
- 12:00 **Luncheon Buffet** (Great Lobby and Chocolate Lobby-cash)

SPANISH (Cocoa Terrace)

Moderador: Maria Gorgo-Gourovitch, Penn State Extension

- 9:00 **Actividad de Apertura (Welcome and Ice-breaker)**, Ilse Huerta y Emma Rosenthal, Penn State University

- 9:30 **Análisis de Suelo y Fertilización (Soil Testing and Fertilization)**, Beth Sastre, VCE-Loudon Extension
- 10:00 **BPA's: Fuentes de Contaminación en Pre- y Pos-cosecha (GAPs: Pre- and Post-Harvest Sources of Contamination)**, Maria Gorgo-Gourovitch, Penn State Extension
- 10:45 ***Tres Insectos Invasores Problemáticos en PA: Chinche apesada, mosca minadora de hojas, y mosca linterna con manchas (Three Important Invasive Insect Pests: Brown Marmorated Stink Bug, Allium Leafminer, and Spotted Lanternfly)**, Dr. Carla Burkle y Don Seifrit, Penn State Extension
- 11:30 **Almuerzo Provisto y Conversación; seguido por una hora para visitar la Expo (Catered Lunch and Round Table Discussions; followed by an hour to visit the Expo)**, Ilse Huerta y Emma Rosenthal, Penn State University

Wednesday Afternoon, January 30, 2019

TOMATOES (Trinidad Room)

- 1:30 **Tomato Variety Update**, Dr. Majid Foolad, Penn State University
- 2:00 ***Understanding Induced Resistance and How to Use it**, Gregory Rodgers, Certis
- 2:30 ***Enhancing Authority MTZ Safety for Processing Tomatoes**, Mark VanGessel, University of Delaware and Dwight Lingenfelter, Penn State University
- 3:00 **Industry Show and Tell**
- 3:15 **Improving Production of Grafted Tomatoes in a Field Setting**, Inga Meadows, North Carolina State
- 4:00 ***Integrated Foliar Disease Management**, Dr. Beth Gugino, Penn State University
- 4:30 **Adjourn**

GENERAL VEGETABLES (Crystal Room)

- 1:30 **PASA'S Diversified Vegetable Apprentice Program**, Dan Dalton, PASA Sustainable Agriculture
- 2:00 **Rutgers Specialty Pumpkin Habanero Peppers**, Dr. Albert Ayenji, Rutgers University
- 2:30 ***Use of Biologicals/Microbials in Crop Production**, Dean Craine, AgriEnergy
- 3:00 **Industry Show and Tell**
- 3:15 **Enhancing Flower Fertility for Increase Crop Yields**, Dr. Richard Woodward, Stoller USA
- 4:00 **Food Banking/Food Waste**, Rob Amsterdam, Feeding America
- 4:45 **Adjourn**

GREENHOUSE ORNAMENTALS (Empire Room AB)

- 1:30 ***Greenhouse Crop Scouting**, Dale Rutherford, Hort. Assist
- 2:00 ****Pesticide Drift, Volatility, and Misapplication**, Thomas Ford, Penn State Extension
- 2:30 **Substrates (Potting Media)**, Neil Mattson, Cornell University
- 3:00 **Industry Show and Tell**
- 3:15 ***PGR's**, Joyce Latimer, Virginia Tech.
- 4:00 ***Biocontrol Products for Disease Control**, Steve Bogash, Marrone Bio Innovations
- 4:30 **Adjourn**

FARM MARKET FINANCIAL MANAGEMENT (Magnolia Room ABCD)

- 1:30 **Including the Younger Generation in the Business**, To Be

Announced.

- 2:00 **Borrowing Money**, Lynn Kime, Penn State University
- 2:30 **Pricing and Merchandising Strategies**, Claudia Schmidt, Penn State University
- 3:00 **Industry Show and Tell**
- 3:15 **Budgeting**, Lynn Kime, Penn State University
- 4:00 **Benchmarking For Success**, Keith Dickinson, Farm Credit East
- 4:30 **Adjourn**

STONE FRUIT (Empire Room CD)

- 1:30 ****Are You Label Literate OR Are You Guessing**, To Be Announced
- 2:00 **New Peach & Nectarine Cultivars**, To Be Announced
- 2:30 **Industry Show & Tell**
- 2:45 **New Methodology & Techniques to Handle SWD in Stone Fruit**, Dean Polk, Rutgers Cooperative Extension
- 3:30 ***Sustainable Management of Brown Rot of Peach**, Norman Lalancette, Rutgers University
- 4:00 **Adjourn**

SMALL FRUIT (Wild Rose Room)

- 1:30 ***Cultural and Conventional Weed Management Strategies for Blueberries**, Eric Hanson, Michigan State University
- 2:30 **Low Tunnels for Strawberry Production: Structures, Management, and Outcomes**, Kaitlyn Orde, University of New Hampshire
- 3:00 **Industry Show and Tell**
- 3:15 **Day-Neutral Variety Performance in NH and PA Under Open Field and Protected Culture Conditions**, Kaitlyn Orde, University of New Hampshire and Kathy Demchak, Penn State University
- 4:00 **Does Plastic Type Make a Difference to High Tunnel Raspberries?**, Kathy Demchak, Penn State University
- 4:30 **Adjourn**

WINE GRAPES (Cocoa 1)

- 1:30 ***Managing Spotted Lanternfly in Your Vineyard**, Heather Leach, Penn State University
- 2:10 ***Implementing NEWA into a Vineyard IPM Strategy**, Timothy Weigle, Cornell University
- 2:40 **Industry Show & Tell**
- 2:50 ***Grape Disease Management in Wet Seasons**, Bryan Hed, Penn State University
- 3:40 ***Insect Management in Vineyards**, Andrew Muza and Jody Timer, Penn State University
- 4:30 **Adjourn**

TREE FRUIT (Nigerian Room)

- 1:30 ****Respirator Mask Fit Test** (note this will also be a time to sign up to be fitted later Wednesday afternoon or Thursday morning. **So bring your respirator for the test**)
- 2:15 **Industry Show & Tell**
- 2:30 **The Use of Reflective Covers in Orchards**, Thomas Kon, North Carolina State University
- 3:00 ***Bin Sanitation – The First Line of Defense**, Wayne Jurick, USDA, Beltsville
- 3:30 ***Stinkbug Control and Monitoring Predators**, Nicole Quinn, Virginia Tech University
- 4:00 **Adjourn**

SPANISH (Cocoa Terrace)

Moderador—Maria Gorgo-Gourovitch, Penn State Extension

- 1:30 ***Polinización de Manzanos y Otros Árboles Frutales (Pollination of Apples and Other Tree Fruits)**, Margarita López-Urbe, Penn State Extension
- 2:15 **El Sistema de Poda en Huertos de Durazno (The Peach Pruning Blueprint)**, Tara Baugher and Rob Crassweller, Penn State Extension
- 3:00 ****Cómo Obtener una Licencia Para Aplicar Pesticidas (How to Get a Pesticide License)**, Carlos Quesada y Maria Gorgo, Penn State Extension
- 3:30 **Evaluación y Cierre del Evento (Evaluation and adjourn)**

Wednesday Evening, January 30, 2019

MSHS Business Meeting

4:30 Meeting Room TBA

All Maryland State Horticultural Society members are encouraged to attend.

Thursday Morning, January 31, 2019

SWEET CORN (TBD) sponsored by the American Vegetable Grower

- 9:00 ****Pesticide Applicator Safety**, John Esslinger, Penn State Extension
- 9:30 ***Late Season Insect Pest Management**, William Cissel, University of Delaware
- 10:00 **Industry Show and Tell**
- 10:15 **Comparing non-Bt, Bt, and stacked Bt cultivars**, Kristian Holmstrom, Rutgers University
- 11:00 ***Effective Weed Control (including marestalk)**, Dwight Lingenfelter, Penn State University
- 11:30 **Optimizing Starter/Pop Up Fertilizers**, Gordon Johnson, University of Delaware
- 12:00 **Luncheon Buffet** (Great Lobby and Chocolate Lobby-cash)

PEPPERS/EGGPLANT (Crystal Room)

- 9:00 **Tips for Growing Colored Bell Peppers in High Tunnels**, Timothy Elkner, Penn State Extension
- 9:30 ***Insect Pest Update for Peppers**, Thomas Kuhar, Virginia Tech University
- 10:00 **Industry Show and Tell**
- 10:15 ***Chronicles of a Perennial Cover Crop's Journey into Managing Pests**, Alan Leslie, University of Maryland
- 11:00 **Pepper Variety Screening for Bacterial Leaf Spot**, Wesley Kline, Rutgers Cooperative Extension
- 11:30 ***Pepper Disease Management 101**, Andrew Wyenandt, Rutgers University
- 12:00 **Luncheon Buffet** (Great Lobby and Chocolate Lobby-cash)

POTATOES (Empire Room AB)

- 9:00 **PotatoesUSA**, Bryan Bender, Bender Potatoes and PotatoesUSA
- 9:30 **2018 Potato Research at Penn State**, Xinshun Qu, Penn State University
- 10:00 **Industry Show and Tell**
- 10:15 ***Current Trends in Potato Breeding and Variety Development**, Jeffery Endelman, University of Wisconsin
- 11:00 ***Potato Insect Pest Management Update**, Thomas Kuhar, Virginia Tech University

- 11:30 **Observations from the 2018 Potato Growing Season**, Robert E. Leiby, Pennsylvania Co-Operative Potato Growers, Inc.
12:00 **Luncheon Buffet** (Great Lobby and Chocolate Lobby-cash)

POLLINATORS (Magnolia Room ABC)

- 9:00 **Honey Bees and Other Bees: Biology and Health of our Major Pollinators**, Margarita Lopez-Urbe, Penn State University
9:30 ***Pollinators, Pesticides, and use-patterns of Neonics**, David Biddinger, Penn State University
10:00 **Industry Show and Tell**
10:15 ***Wild and Managed Pollinators doing the Job in Cucurbits and Tree Fruit**, Shelby Fleischer and David Biddinger, Penn State University
11:00 ***Wild and Managed Pollinators doing the Job in Strawberries**, Heather Grab, Cornell University and Margarita Lopez-Urbe, Penn State University
11:30 **Introducing the Pennsylvania Pollinator Protection Plan**, Charlie Vorisek, Vorisek's Backyard Bee Farm
12:00 **Luncheon Buffet** (Great Lobby and Chocolate Lobby-cash)

CREATIVE APPROACHES TO DIRECT MARKETING (Cocoa Terrace/Cocoa 1)

- Moderator:** Bill Hlubik, Rutgers Cooperative Extension, Rutgers University
9:00 **The Art of Direct Marketing-Catching the Customers Eye**, Rose Robson, Robson Farms Wrightstown, NJ
9:30 **Keeping the Customers Satisfied**, Adam Costello, Wightman Farms, Morristown, NJ
10:00 **Industry Show and Tell**
10:15 **Fernbrook Farm-The Evolution of a Diverse Farm Business**, Jeffery Tober & Jess Brandeisky, Fernbrook Farms, Chesterfield, NJ
11:00 **Creative Marketing Farmer Panel Discussions**, Moderator - William Hlubik, Rutgers Cooperative Extension
11:30 **The Art of Positive Communication with Customers**, William Hlubik, Rutgers Cooperative Extension and Stephen Specca, Specca Farms, Jacksonville, NJ
12:00 **Luncheon Buffet** (Great Lobby and Chocolate Lobby-cash)

SMALL FRUIT (Wild Rose Room)

- 9:00 ***Potential of the Strawberry Advisory System for Timing Fungicide Applications in the Mid-Atlantic**, Mengjun Hu, University of Maryland
9:30 **Strawberry Flower Mapping: Understanding Plant Development and Its Effect on Yield**, Edward Durner, Rutgers University
10:00 **Industry Show and Tell**
10:15 **Putting Flavor and Disease Resistance First in a Strawberry Breeding Program**, Kim Lewers, USDA-ARS Beltsville
11:00 **Goldenberries: A New Superfruit for North America**, Edward Durner, Rutgers University
11:30 **Cane Management to Maximize Yield and Earliness of Primocane-Fruiting Blackberries**, Fumiomi Takeda, USDA-AFRS
12:00 **Luncheon Buffet** (Great Lobby and Chocolate Lobby-cash)

STONE FRUIT (TBA) sponsored by the *American Fruit Grower*

- 9:00 **Marketing Trends and Opportunities for the Peach Market**, Kay Rentzel, National Peach Council
9:15 ***IPM and Beneficial Insects: Working Together in Peaches**, Anne Nielsen, Rutgers Cooperative Extension

- 9:45 ***Update on Mating Disruption**, Greg Krawczyk, Penn State University
10:30 **Industry Show & Tell**
10:45 **Future Directions of Peach Tree Training Systems**, James Schupp, Penn State University
11:15 **Update on New Cherry Rootstocks**, Daniel Weber, PSU Cooperative Extension
11:45 ****Core Talk**, To Be Announced
12:15 **Luncheon Buffet** (Great Lobby and Chocolate Lobby-cash)

TREE FRUIT (Nigerian Room)

- 9:00 **Grower Evaluations of New Apple Rootstocks** (A Panel), Robert Crassweller (moderator), To Be Determined- PA, Eli Cook, VA, Bill Gardenhour, MD and Bruce Hollabaugh, PA.
9:45 **Effect of Rootstock on Bitter Pit Incidence of Honeycrisp**, Megan Muehlbauer, Rutgers Cooperative Extension
10:15 **Industry Show & Tell**
10:30 **Mid-Atlantic Fruit Maturity Program & Honeycrisp Fruit Quality**, Chris Walsh, University of Maryland
11:00 **Results of the Honeycrisp Bitter Pit Predictive Model in 2018**, Rich Marini, Penn State University
11:30 **Methodology for Scheduling Irrigation in the Mid-Atlantic Region**, Long He, Penn State University
12:00 **Luncheon Buffet** (Great Lobby and Chocolate Lobby-cash)

Thursday Afternoon, January 31, 2019

PUMPKINS/VINE CROPS (Trinidad Room)

- 1:30 ***Pumpkin Weed Management Issues and Updates**, Dwight Lingenfelter, Penn State University
2:00 **Giant Pumpkins 2500 lbs – What Do These Growers Know About Vine Crops That You Don't?**, Timothy Parks, Park's Garden Center
2:45 ***Vine Crop Disease Management in the Next Wet Year**, Beth Gugino, Penn State University
3:15 ***Managing Problematic Insects in Pumpkins**, Gerald Brust, University of Maryland
3:45 **Pennsylvania Cantaloupe Variety**, Carla Burkle, Thomas Butzler, Timothy Elkner and Robert Pollock, Penn State Extension and Elsa Sanchez, Penn State University
4:30 **Adjourn**

GREENHOUSE VEGETABLES (Crystal Room)

- 1:30 **Growing Greenhouse Tomatoes - Guidelines for the New Grower**, Rick Snyder, Mississippi State University
2:00 **Observations from 22 years of Growing Greenhouse Vegetables**, Tom Childs, Twin Springs Fruit Farm, Gettysburg, PA
2:45 **Greenhouse Tomato Problems & Solutions**, Rick Snyder, Mississippi State University
3:15 **Production Systems and Practices for Growing Hydroponic Leafy Greens and Culinary Herbs in Greenhouses**, Nick Flax, Penn State Extension
3:45 ***Using Biopesticides to Manage Greenhouse Vegetable Insects, Mites and Diseases**, Steve Bogash, Marrone BioInnovations
4:30 **Adjourn**

POTATOES (Empire Room AB)

- 1:30 **Marketing the Pennsylvania Potato**, Lela Reichart, Sterman Masser, Inc.

- 2:00 ***Potato Disease Update**, Margaret T. McGrath, Cornell Univ.
- 2:45 ***Verticillium Wilt of Potato: Can We Manage the Disease Without Soil Fumigants?**, Laura del Sol Bautista Jalon, Penn State University
- 3:15 **Stem End Discoloration in Chip Potatoes; its Cause and Possible Solutions**, Curtis Frederick, Sterman Masser, Inc.
- 3:45 **To Be Determined**
- 4:30 **Adjourn**

FARM MANAGEMENT OR WHOLESALE MARKETING (Magnolia Room ABC)

- 1:30 **To Be Determined**
- 2:00 **To Be Determined**
- 2:45 **To Be Determined**
- 3:15 **To Be Determined**
- 3:45 **To Be Determined**
- 4:30 **Adjourn**

SOCIAL MEDIA (Cocoa Terrace/Cocoa 1)

- 1:30 **Keep It Legal!: Legal Considerations for Marketing Your Farm on Social Media**, Nicole Cook, Univ. of Maryland Eastern Shore
- 2:15 **MicroInfluencers and Social Media**, Sarah Cornelisse, Penn State Univ.
- 2:45 **Using Social Media on the Farm**, Julie Keene, Flinchbaugh's Orchard and Farm Market
- 3:15 **Tricks of the Trade**, Sarah Cornelisse, Penn State University
This session will be an open discussion to share suggestions and get advice for using social media for your farm business.
- 3:45 **Adjourn**

SMALL FRUIT (Wild Rose Room)

- 1:30 **Who Pollinates Our Blueberries?**, Dr. Margarita Lopez-Urbe, Penn State University
- 2:00 ***Understanding Herbicides Modes of Action and Injury on Blueberries**, Dr. Thierry Besancon, Rutgers University
- 2:45 ***Trapping for SWD vs. Infestation in Blueberries**, Dr. Cesar Rodriguez-Saona, Rutgers University
- 3:15 ****Core Pesticide Credit**, To Be Announced
- 3:45 **Adjourn**

TREE FRUIT (Nigerian Room)

- 1:30 **Farm Labor 101: Helping Fruit & Vegetable Producers Understand Ag. Labor Laws**, Sean High, Penn State University
- 2:00 ***Avoiding Preharvest Stem End splitting of Gala with ReTain & GA4+7**, Thomas Kon, North Carolina State University
- 2:30 **US Apple Association Update**, To Be Announced
- 3:00 **Pennsylvania Apple Program**, To Be Announced
- 3:15 **Is Sulfur Really Deficient in Our Orchards?**, Robert Crassweller, Penn State University
- 3:45 **Adjourn**

* before a topic indicates the topic is expected to qualify for a category pesticide applicator license update credit.

** before a topic indicates the topic is expected to qualify for a core pesticide applicator license update credit.

TO REGISTER FOR THE CONVENTION

ONLINE: https://2019_mafvc.eventbrite.com

MAIL IN: Use enclosed registration form

Maryland State Horticultural Society (MSHS) Annual Meeting - Jan. 29 to 31, 2019

At the Mid-Atlantic Fruit and Vegetable Convention - Hershey Lodge Convention Center, Hershey PA

JOIN MSHS TO QUALIFY FOR THE CONVENTION MEMBER RATE

STEP 1 — FARM/BUSINESS INFORMATION (PLEASE PRINT)

FARM/BUSINESS NAME			
STREET ADDRESS			
CITY	STATE	POSTAL CODE	
E-MAIL	PHONE		

If you would like to pay by credit card* go to:

CONVENTION/MEMBERSHIP: https://2019_mafvc.eventbrite.com

WORKSHOP REGISTRATION: https://2019_mafvc_pre-conference_workshops.eventbrite.com

*There is an additional processing fee from Eventbrite to pay by credit card

STEP 2 — MAILING PREFERENCE (Please check preference)

☐ Add my name to the e-mail list (receive program information from MSHS/UME)

☐ I do not have e-mail and wish to receive program information from MSHS/UME via U.S. Mail.

STEP 3 — SPECIAL OFFER WITH MAFVC REGISTRATION

☐ FREE 1 year subscription to Country Folks Grower & Fruit Grower News

STEP 4 — ATTENDEE REGISTRATION (MUST BE POSTMARKED ON OR BEFORE JANUARY 18, 2019)

Please **CIRCLE** the following membership & conference options that apply for each person attending

To QUALIFY for the Advanced Registration convention rate you must have at least 1 person from a family, farm or company that has paid their 2019 MSHS Membership dues. Use Line #1. Membership (only) use line #2	PLEASE PRINT NAME	MSHS 2019 DUES	2019 MSHS MEMBER		NON MEMBER		GROWERS DINNER 1/29/19	FSMA Grower Training	Irrigation Basics	High Tunnel Bramble Production	Greenhouse Short Course	Intro to Social Media	Market Research You Can Use	Pros and Cons of Thinning Apples Early	Farm Market Bus Tour	TOTAL
			ADVANCED REGISTRATION	WALK IN AFTER 1/18/19	1 DAY	3 DAY										
1. FIRST PERSON from family, farm or business (includes \$50 Membership & \$75 Advance (Registration))		\$125 Membership & Advanced Reg. \$75 + \$50 = 125	ADDITIONAL PERSON, FAMILY, FARM OR COMPANY	\$140 Membership & Walk-in Reg.	\$125	\$165	\$35	\$150	\$60	\$50	\$85	\$45	\$35	\$55	\$60	\$
2. ADDITIONAL PERSON /MEMBERSHIP RENEWAL		\$50 Optional	—	\$60	\$90	\$125	\$165	\$35	\$150	\$60	\$85	\$45	\$35	\$55	\$60	\$
3. ADDITIONAL PERSON		\$50 Optional	—	\$60	\$90	\$125	\$165	\$35	\$150	\$60	\$85	\$45	\$35	\$55	\$60	\$
4. ADDITIONAL PERSON		\$50 Optional	—	\$60	\$90	\$125	\$165	\$35	\$150	\$60	\$85	\$45	\$35	\$55	\$60	\$
5. ADDITIONAL PERSON		\$50 Optional	—	\$60	\$90	\$125	\$165	\$35	\$150	\$60	\$85	\$45	\$35	\$55	\$60	\$
6. ADDITIONAL PERSON		\$50 Optional	—	\$60	\$90	\$125	\$165	\$35	\$150	\$60	\$85	\$45	\$35	\$55	\$60	\$
7. ADDITIONAL PERSON		\$50 Optional	—	\$60	\$90	\$125	\$165	\$35	\$150	\$60	\$85	\$45	\$35	\$55	\$60	\$
8. ADDITIONAL PERSON		\$50 Optional	—	\$60	\$90	\$125	\$165	\$35	\$150	\$60	\$85	\$45	\$35	\$55	\$60	\$

Please make your check payable to: **MARYLAND STATE HORTICULTURAL SOCIETY (MSHS)**

(You may use one check to pay for convention registration and 2019 Membership Dues)

Mail registration and payment to: Maryland State Horticultural Society (MSHS)
c/o Susan Barnes, 18330 Keedysville Road, Keedysville, MD 21756

PAYMENT METHOD

☐ CHECK # _____

☐ CASH

For more information please call Robert Black at 240-409-7491 or e-mail hb gala@aol.com

Western Maryland Research and Education Center
18330 Keedysville Road
Keedysville, MD 21756