

Secretary Redding Presents Produce Month Proclamation at Buffalo Valley Auction

August is PA Produce Month, a month-long celebration of the abundance of local, Pennsylvania-grown vegetables. Pennsylvania Secretary of Agriculture Russell Redding visited Buffalo Valley Produce Auction in Mifflinburg, PA, today (August 15) to present a copy of the Governor's Produce Month proclamation to Neil Courtney, manager of the Auction.

The PA Produce Month celebration is sponsored by the Pennsylvania Vegetable Marketing and Research Program to recognize the 101,000 tons of delicious and nutritious fresh and processed vegetables worth over \$60 million that are grown by over 4,000 Pennsylvania growers on 45,700 acres. Pennsylvania's vegetable growers are national leaders in the production of processing snap beans (3rd); pumpkins (7th), cantaloupes (7th), fresh market sweet corn (9th), fresh market tomatoes (11th) and fresh market cabbage (12th). While Pennsylvania vegetables are available throughout the year either as fresh, processed or stored products, August is the month when many fresh vegetable crops are at the peak of their season. There are tomatoes, sweet corn, peppers, zucchini, cucumbers, cantaloupes, watermelons, cabbage, beans, eggplant, potatoes, onions, and other crops widely available at roadside farm markets, community farmers' markets, specialty grocers and even the local supermarkets not to mention local CSAs.

Buffalo Valley Produce Auction was established in 1987 by a group of forward-thinking farmers who gathered together to dream and then build a 30' x 60' building. Due to the hard work & dedication of their growers and auction staff their business expanded rapidly. After five subsequent building projects, their current buildings cover over 128,000 sq. ft. and boast over 180 dock spaces. The auction is one of the three largest produce auctions in the United States selling millions of dollars of local Pennsylvania produce each year and holding both the largest pumpkin and Christmas tree auctions in the world.

The Vegetable Marketing and Research Program's website at PAVeggies.org offers consumers recipes and preparation tips from chefs and growers to help them enjoy PA vegetables to the fullest this August. The Program also offers tips on vegetable use at "PA Veggies" on Facebook and at "paveggies" on Instagram. The PAVeggies.org website also offers a directory of retail markets and CSAs as well as a directory of wholesale growers.



left to right William Pyle, BVPA Board President; Scott Hoffman, Vegetable Marketing and Research Program Vice Chair; Neil Courtney, BVPA Manager; Russell Redding, PA Secretary of Agriculture; William Troxell, Vegetable Program Exec. Secretary and John Esslinger, Penn State Extension.

PROCLAMATION PENNSYLVANIA PRODUCE MONTH August 2019

WHEREAS, Pennsylvania is a national leader in the production of quality, nutritious and affordable vegetables, a sector of the agriculture industry that generates more than \$140 million for the Commonwealth's economy; and

WHEREAS, more than 4,000 farm families manage about 45,700 acres which produce in excess of 101,000 tons of vegetables worth \$60.6 million for fresh and processing use each year; and

WHEREAS, Pennsylvania's vegetable growers are national leaders in the production of processing snap beans (3rd); pumpkins (7th), cantaloupes (7th), fresh market sweet corn (9th), fresh market tomatoes (11th) and fresh market cabbage (12h); and

WHEREAS, Pennsylvania growers use integrated pest management and other best agricultural practices to provide an extra level of safety to consumers and the environment alike; and

WHEREAS, Pennsylvania vegetables are both delicious and nutritious, providing important vitamins, fiber and other dietary components that are essential to a healthy, balanced diet; and

(continued on page 8)

NEWS



**Pennsylvania
Vegetable Growers
Association**

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

President

Jonathan Strite '22

Harrisburg

First Vice President

Brian Campbell '21

Berwick

Second Vice President

Rita Resick '20

Somerset

Secretary-Treasurer

William Reynolds '22

Waynesboro

Past President

David Miller '20

York

Directors

Robert Amsterdam '21

Mechanicsburg

Peter Flynn '21

West Chester

Tina Forry '22

Palmyra

Christopher Harner '20

State College

Barron Hetherington '22

Ringtown

Alan Kenmerer '22

Berwick

Arthur King '21

Valencia

Kenneth Martin '20

New Berlin

Amy Metrick '21

Butler

Michael Orzolek '21

State College

Christopher Powell '20

Strasburg

John Shenk '20

Lititz

Robert Shenot '22

Wexford

Jeffrey Stoltzfus '20

Atglen

Mark Troyer '21

Waterford

Executive Director

William Troxell

Richfield

PVGA Represents PA Vegetables at Ag Progress Days

PVGA, in cooperation with the Pennsylvania Vegetable Marketing and Research Program (PVMRP) represented the Pennsylvania vegetable industry at Ag Progress Days (APD) this year. This is the third year that the Association has not had a food booth at the event. It has continued to represent the industry with an educational exhibit that promotes vegetables to consumers as well as promoting PVGA membership to vegetable growers in attendance.

This year the Ag Progress Days management offered the Association the opportunity to have two displays, one in the Everitt Cash Management Exhibit Building and one in the Vegetable Tent next to the vegetable equipment demonstrations. In the Exhibit Building the display featured recipes, brochures and "Fun and Healthy Facts" student activity cards from the Vegetable Marketing



and Research Program – all designed to encourage consumers to eat more vegetables. The display also had a tablet playing four videos from the Program's PA Veggies website – one video featuring PVGA Director Rob Shenot and his wife Leah and another featuring PVGA Director Tina Forry.

The second exhibit in the Vegetable Tent was designed to provide growers or potential growers with information about the Association and the Vegetable Marketing and Research Program.

This was the second year that APD featured an area reserved for twice daily demonstrations of various pieces of specialized vegetable equipment. Among the items demonstrated were:

- No-till Transplanter (Joe's Machinery)
- Water-Wheel Transplanter (Nolt's Produce Supplies)
- Rohand II Harvest Aid (Fisher's Sprayer Mfg.)
- Picking Assistant (Crop Care)
- Proveyor Wagon (Fisher's Sprayer Mfg.)
- Rotary Hoe and Tiller (BCS)
- Self-Propelled Sprayer for Tunnels (Iva Mfg.)
- Small Air-Blast Sprayers (Martin's Repair)
- Single-Sided Boom Sprayer (Crop Care)
- Raised-Bed Plastic Mulch Layer (Nolt's Produce Supplies)
- Plastic Mulch Wrapper (Nolt's Produce Supplies)
- Plastic Mulch Lifter and Wrapper (Crop Care)

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

Our Mission:

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

Our Vision:

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

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

Special Membership Meeting Approves Amendments to Articles of Incorporation

On Tuesday, July 30, 2019, 32 PVGA members participated in a special membership meeting of the Association at 8:00 p.m. by telephone conference call. The attendance exceeded the Bylaws quorum requirement of 25 and the Board of Directors appreciates the effort put forth by those members who participated. The purpose of the meeting was to consider Amended and Restated Articles of Incorporation for the Association to enable the Association to move forward with its plan to apply for recognition as a 501(c)3 charitable organization. The motion to adopt the amended and restated articles of incorporation passed without any dissenting votes, so the Association will be submitting these amended articles to the Pennsylvania Department of State for approval in the near future.

For several years, the Capacity Development Committee of the Association has been working toward transitioning the Association's organizational status from a 501(c)5 agricultural organization to a 501(c)3 charitable organization. This would allow member contributions to the Association to be tax deductible as well as make the Association eligible for certain grants that it currently is not eligible for. It is hoped that such grants would enable the Association to hire more staff and offer more services to members.

To enable the Association to qualify as a 501(c)3 organization under the Internal Revenue Service (IRS) regulations, the

PVGA Meets with Game Comm. on DMAP/Red Tag

On August 12, PVGA along with Pennsylvania Farm Bureau and several forestry organizations were invited to meet with Game Commission staff to review the DMAP and Red Tag programs. Specifically, the Commission staff was seeking input on how these deer-damage programs could be made more effective. These programs are designed to give landowners the ability to manage to some degree the deer populations on their properties. Among the changes recommended by the ag and forestry groups were:

- Elimination of the requirement for participation in a public access program for the Red Tag program.
- Increased number of DMAP and Red Tag permits allowed per hunter
- Extended seasons for the DMAP permits.
- Allowing transfer of DMAP tags to mentored youth.
- Allowing out-of-state hunters to use Red Tag permits.
- Later deadline for DMAP application
- Online and multiple-year application process for DMAP permits.
- Annual reporting for Red Tag permits rather than monthly.

Any changes to the programs will need further review by Game Commission staff and then approval by the Board of Game Commissioners, so there is no guarantee that the above suggestions will be implemented. However, thanks to the Game Commission staff's willingness to hear input from the agricultural and forestry industries, they are now on the Commission's radar screen at least.

PVGA appreciates the response of several growers to the email request for suggestions to take to this meeting. Those grower suggestions were a big help in guiding PVGA's input.

Board asked the members at the January 2019 Annual Meeting to approve a new set Bylaws to replace the former Constitution. The Association must also amend its current articles of incorporation with the Pennsylvania Department of State and the Board of Directors had approved a draft of the amended articles of incorporation. However, after having a review of these amended articles by a law firm that specializes in non-profit legal issues, the Committee found out that the draft of the amended articles of incorporation needed further changes and that they had to be approved the membership of the Association. Thus the need for this special meeting of the members.

The full text of the amended articles was published in the June newsletter and can also be found at <https://www.pvga.org/special-membership-meeting-set-for-july-30/>. The three key provisions of the changes were change the purpose statement for the corporation, to state that it will be operated for charitable, educational and scientific purposes and to provide that upon dissolution any assets would be distributed to other 501(c) organizations. The purpose statement was changed to "educating and informing the public in general, and vegetable, potato, and berry farmers in particular, about the resources of the Pennsylvania region, and the methods by which such resources may be conserved, utilized, and improved."

PVGA Directors Meet

The PVGA Board of Directors met by telephone conference immediately after the special membership meeting on July 30 for their summer meeting. They reviewed the minutes of the spring meeting and polls as well as the current financial reports. The financial reports showed a balance of \$339,683 in the General Fund, \$170,626 in the Keystone Fund and \$21,163 in the Onion Committee Fund.

The Board also confirmed the following actions which the Executive Committee took since the last meeting:

- approved limiting speakers at the Convention to three or four presentations each
- approved requiring non-University or Extension program chairs to be paired with Extension or University staff persons.
- approved appointing Beth Gugino or Robert Pollock as the vegetable program chair on the Convention Joint Committee.
- approved sending a charitable donation of \$200 in memory of Jonathan Grace.
- approved writing a letter in support of the "PA Farm Bill" proposals
- approved supporting the proposed bill to limit agritourism liability

The Board noted that the Association's nomination for the 40 Under 40 Awards, James Stahl, had been selected as one of the winners.

Membership was reported at 951, down from 1,000 at last summer's meeting. Plans for changes in the Farm Show food booth were reviewed, noting that the Association had been approved to add berry, melon and vegetable infused waters, batter-dipped green beans and berry-battered Oreos to the

(continued on page 8)

NEWS

National News Briefs

Overhaul of Agricultural Guest Worker Program Proposed

The U.S. Department of Labor has proposed an overhaul of the H-2A Agricultural Guest Worker Program that aims to streamline the application process and modernize other aspects of the program.

Among the changes proposed are revising the definition of agricultural labor, overhauling worker-protection measures, and seeking to streamline the application process by shifting more processes online.

Many farmers have found the current H-2A program does not work for them. In addition, the H-2A program is seasonal and many farms require labor throughout the year, especially in Pennsylvania where there are many year-round dairy and mushroom operations. The proposed changes do not address the need for year-round labor.

"Currently, farmers with year-round worker needs, such as dairy and livestock, are unable to use the program and that's not right," American Farm Bureau President Zippy Duvall said. "An adequate workforce is needed to address issues ranging from food waste to farm sustainability. America disagrees on many things, but surely we can agree we need to keep putting healthy food on the table."

Redding Urges Growers to Sign Up for FieldWatch Registry

During Ag Progress Days, Secretary of Agriculture Russell Redding announced that a new registry is available for Pennsylvania producers to prevent pesticide use from affecting their land and farms.

"While pesticide applicators are conscientious about protecting against drift, it can at times be an unavoidable threat," said Sec. Redding. "FieldWatch will give users the tools they need to proactively safeguard their surroundings and provide for enhanced outreach amongst Pennsylvanians and their neighbors."

FieldWatch is a free, voluntary program that allows participants to register their land to protect it from chemical drift, which can affect organic production, herbicide-sensitive crops, and pollinator protection efforts.

The program encourages communication between sensitive crop producers, beekeepers, and pesticide applicators, and will allow them to map fields or pollinator gardens using a software program. Pesticide and herbicide applicators can also notify growers and beekeepers of spray applications through the program.

Currently under state law, businesses such as apiaries, pesticide applicators, and plant merchants must register with the Pennsylvania Department of Agriculture. FieldWatch was endorsed by the PA Pesticide Advisory Board for use in Pennsylvania, and it is currently used in 22 states and provinces, providing a consistent registry for pesticide applicators across multiple states.

For more information about the program, visit www.fieldwatch.com. PVGA has seeking to have the FieldWatch program extended to Pennsylvania for several years.

Duvall also noted that reforming the guest worker program is especially critical as the administration expands deportation of undocumented workers.

*From the **Pennsylvania Agricultural Alliance Issues Update**, Penna. Farm Bureau, August 2019.*

Enrollment for New Trade Relief Package Now Open

The U.S. Department of Agriculture recently announced details of its \$16 billion aid package that aims to soften the blow dealt to farmers by a prolonged trade war with China.

Farmers can apply now through Dec. 6 for direct payments to be made in up to three waves. The first round of payments, which will be made in August, will cover the higher of either 50 percent of the producer's calculated total payment or \$15 per acre. The other rounds will be made in November and January if deemed necessary by USDA.

Payments for many grain crops will be made based on total 2019 acres planted by Aug. 1 based on a rate that varies by county. Payment rates for Pennsylvania range from \$15 per acre in Susquehanna County to \$71 per acre in Pike County, with a statewide median of \$36 per acre.

Dairy producers will be paid 20 cents per hundredweight based on production history. Hog producers will be paid \$11 per head based on the number of live hogs owned on a day selected by the producer between April 1 and May 15, 2019. Some eligible cover crops planted by producers who experienced natural disasters will be paid at \$15 per acre. Several specialty crops are also eligible for payments including nuts, cranberries, ginseng, sweet cherries and table grapes.

In addition to direct payments, the aid package includes \$1.4 billion in food purchase to distribute to schools and food banks and \$100 million to help farmers identify and access new export markets.

To learn more about the aid package, visit www.farmers.gov/manage/mfp.

*From the **Pennsylvania Agricultural Alliance Issues Update**, Penna. Farm Bureau, August 2019.*

Predatory Wasps are Identified as an Effective Control of Stink Bugs

Research in Georgia has identified small predatory wasps that can provide a natural control of the Brown Marmorated Stink Bug, which is now found in 44 states. Stink bugs can cause severe economic damage to many horticultural and field crops.

About ten species of wasps are known to parasitize and kill the eggs of stink bugs. The wasps are attracted to buckwheat and other nectar-producing plants in the spring and will migrate into crop fields during the summer months, where they destroy the eggs of the stink bugs.

Homeowners who plant nectar-producing plants on their properties to attract the wasps may also experience a reduction in stink bug populations that will benefit home gardens.

*From the **Pennsylvania Agricultural Alliance Issues Update**, Penna. Farm Bureau, August 2019.*



BIO 360

Biodegradable | Compostable Mulch Film®



Made from Mater-Bi



BPI Certification



No negative impact on soil



Suitable for many types of crops



Several thicknesses available



Sustainably produced



Nolt's Produce Supplies
 717-656-9764 - Leola, PA
 noltsproucesupplies.net
 For other regions, contact us
 1-844-4BIO360 (1-844-424-6360)



NEWS

State News Briefs

Crop Insurance Webinars Being Offered

Mother nature can be unpredictable, making it hard for those of us in the world of agriculture to feel confident. National Crop Insurance Services (NCIS) will be conducting a series of webinars on crop insurance beginning this week and running through mid-September. These webinars are designed for producers and allied professionals who want to learn the basics of insurance options available for the specific crops they grow, how the policy works, and what is needed to qualify for a loss. Learn more about the series including past webinars that certain vegetable crops and whole farm revenue protection at <https://cropinsuranceinamerica.org/pennsylvania-crop-insurance-webinars/>, and don't miss out on this great opportunity!

Broadband Divide Much Worse Than Documented, Study Finds

Pennsylvania's rural communities contend with substantially slower internet speeds than urban areas, a recent study by the Center for Rural Pennsylvania found.

And researchers discovered, the Federal Communications Commission's official estimates of internet connectivity downplay that digital divide and paint a much rosier picture than the reality rural residents face in their day-to-day lives. In fact, the study found that while the FCC's maps show 100 percent availability of high-speed internet—or broadband—across Pennsylvania, median internet speeds across most areas of the state were not fast enough to be considered broadband by the agency's own definition.

The study—lead by Sascha D. Meinrath, Palmer Chair in Telecommunications at Pennsylvania State University—examined more than 11 million internet speed tests conducted throughout Pennsylvania in 2018. In many cases, researchers found that actual connection speeds were far slower than the FCC's estimates, which are based on self-reported data from internet service providers.

The research also revealed that there were no counties in Pennsylvania where at least half of the population received connection speeds of at least 25 megabits per second, the threshold to be considered broadband. And actual speeds were found to be much slower in rural counties than urban counties.

The full study and an interactive map showing county-by-county data are available online at www.rural.palegislature.us/publications_broadband.html.

*From the **Pennsylvania Agricultural Alliance Issues Update**, Penna. Farm Bureau, August 2019.*

CWD Management Areas Expand After More Deer Test Positive

The Pennsylvania Game Commission has expanded its disease management areas by more than 2,300 square miles as it attempts to stop the spread of chronic wasting disease.

The commission's testing of free-ranging deer during 2018 uncovered 123 new confirmed cases of the disease, bringing the total cases of CWD discovered in Pennsylvania free ranging deer since 2012 to 250. Nearly half of the new cases were in Bedford County and close to a quarter were in Fulton County. Blair County has the third most new CWD cases and the remaining handful were found in Huntingdon, Franklin, Somerset, Cambria, Jefferson, Juniata and Perry counties.

While the Game Commission has tested free-ranging elk for CWD, none have tested positive for the disease to date.

A type of prion disease, CWD affects all cervids, including deer and elk, and is spread by deer-to-deer contact. It is always fatal. The disease has been identified in both captive and free-ranging deer in Pennsylvania.

Game Commission rules prohibit hunters from moving high-risk parts of animals harvested within a disease management area outside of the DMA boundaries. There are also additional Deer Management Assistance Program permits available within DMAs to encourage assistance from hunters with managing the deer population within those areas and harvesting animals to be tested for CWD.

With the expansion, DMA 2 has been extended 2,101 square miles and includes all or parts of Adams, Bedford, Blair, Cambria, Centre, Clearfield, Cumberland, Franklin, Fulton, Huntingdon, Indiana, Juniata, Mifflin, Perry, Snyder, Somerset and Westmoreland counties.

DMA 3 was expanded by 203 square miles and now includes all or parts of Armstrong, Clarion, Clearfield, Jefferson and Indiana counties. The Game Commission had initially warned that DMA would need to be expanded into the elk range; however, it was determined that doing so could increase the chance of CWD being introduced to that area.

DMA 4, which was established to include parts of Berks, Lebanon and Lancaster counties after the discovery of CWD in a captive deer facility, was not expanded.

The updated DMA maps and boundaries are available at www.pgc.pa.gov.

*From the **Pennsylvania Agricultural Alliance Issues Update**, Penna. Farm Bureau, August 2019.*

Nationwide's Golden Owl Award® Expands to Pennsylvania

Now through Nov. 16, 2019, any student, parent, fellow teacher, or other supporters can nominate their favorite agriculture teacher for a chance to be recognized as one of the best in Pennsylvania.

Nationwide established the Golden Owl Award to honor ag teachers and support them with additional resources to assist their continued educational efforts in preparing the next generation for successful agriculture careers. Because of the positive response from the communities that Golden Owl Award nominees make a difference in, Nationwide has expanded the campaign to Pennsylvania in partnership with Pennsylvania Farm Bureau and Pennsylvania FFA.

Four Pennsylvania finalists will receive an individualized plaque and \$500 to support their agriculture programs. One finalist from the state will be crowned Ag Educator of the Year and will receive the coveted Golden Owl Award trophy and \$3,000 to help fund future educational efforts.

"We're proud to recognize outstanding teachers for their dedication to agriculture education in their farming communities," said Brad Liggett, president of agribusiness for Nationwide. "This award symbolizes the hard work that individual teachers have put into agriculture education to help students pursue their passion for farming."

For more information, visit www.goldenowlaward.com.

*From the **Pennsylvania Agricultural Alliance Issues Update**, Penna. Farm Bureau, August 2019.*

Standard Operating Procedures

Lisa McKeag and Genevieve Higgins

Standard Operating Procedures, or SOPs, are documents that outline how to complete a task. An SOP doesn't need to be complicated – in fact, it should be as concise as possible and provide step-by-step instructions for a specific task.

While the thought of developing standard operating procedures (SOPs) for your farm may seem daunting, or simply like a bureaucratic waste of time, these standardized protocols are simply a way to capture routine farm processes and ensure that they happen the same way each time. SOPs come up a lot when talking about produce safety and complying with the sanitation standards of FSMA's Produce Rule or 3rd-party food safety audits, but their usefulness goes well beyond jumping through food safety hoops. A well-written SOP can help you save time, train workers, manage pests, and put out a more consistent product.

How to Develop an SOP

Accurately capturing all of the steps to even a simple process does require an investment of time. These steps are often stored only in a farmer's head and might have evolved over a long period of time. You might not realize all of the steps that go into a certain task or the best way to convey that information to someone else. Investing time up front will be made up by not having to spend as much time training or correcting mistakes.

Writing an SOP should start with either doing a task yourself, or watching somebody else do it, and writing down all of the steps that lead to the completion of the task. Note which tools and materials are necessary for the job, and if there are tricks that you use to make the job easier. Ask anyone who routinely performs the task to weigh in on whether you've captured the process accurately and included important details or efficiencies – workers will be less likely to follow SOPs if they know a different way to complete a task that's better for them and if they weren't involved in the process of writing it.

What Tasks Should SOPs be Created For?

A good rule of thumb is if a task needs to be done more than twice – whether twice a week or twice a year – you should have an SOP for it. SOPs are useful when it is important that a task be completed in the same way every time, or for tasks that are complex or involve many steps that should be done in order.

SOPs are useful where there is high worker turnover and a frequent need for retraining, or if different employees are responsible for conducting trainings at different times. It is confusing for a trainee to learn Mary's way one day and Jim's the next—processes and standards of completion should be agreed upon ahead of time and adhered to.

SOPs, in combination with recordkeeping, are also important for showing that you are meeting regulatory requirements. For example, FSMA requires that covered farms avoid contamination of produce from dripping condensation in coolers, which seems like a daunting requirement to prove that you're meeting. With an SOP regarding how to effectively clean your cooler and how often to do so, and a recordkeeping log, you can easily show that any condensation forming in your cooler is unlikely to carry food-borne pathogens.

Examples of Tasks That May Warrant a Written SOP:

- Leafy greens washing, drying and packing
- Tote washing and sanitizing

- Monitoring and changing sanitizers in wash water
- Moving animals
- Water sampling
- Greenhouse seeding
- Mixing and applying pesticides
- Sprayer calibration
- Monitoring irrigation equipment
- Any task that you want done efficiently and consistently...

Leafy greens washing is a common practice to prepare an SOP for.
Photo: UMass Student Farm



A General Format for an SOP

An typical SOP might consist of the following parts:

- Title
- Objective/purpose—what task are you accomplishing and why?
- Scope—where and to whom does the SOP apply?
- Responsibility—who is responsible for making sure the task is completed?
- Materials—what specific items are needed to complete the task?
- Procedure—what are the steps to the task, in order?
- Verification/documentation—how will you verify that the procedure was completed correctly and what records will you keep?

Characteristics of Good SOPs:

- Easy and rapidly accessible to employees. Keep SOPs posted at eye level in the relevant area. Laminating SOPs or keeping them in plastic sheet covers is often helpful. Having SOPs readily accessible also makes it easier to revise them on the spot when procedures change.
- Able to be followed by anyone with basic knowledge. A good way to test this is to watch someone who is unfamiliar with the task try to complete the task correctly using the SOP.
- Written using short, direct sentences and simple words wherever possible. Bulleted or numbered lists are usually good.

(continued on page 8)

NEWS

Secretary Redding Presents...*(continued from page 1)*

WHEREAS, health authorities have long encouraged increased consumption of vegetables for both nutritional and disease prevention purposes; and

WHEREAS, many Pennsylvania fruit and vegetable growers market their produce as PA Preferred™, the official brand of agricultural goods grown and made in Pennsylvania. Buying PA Preferred ensures consumers have chosen food locally grown and processed and are investing their dollars back into the local economy by supporting Pennsylvania's producers; and

WHEREAS, fresh Pennsylvania vegetables are available in abundant supply and peak quality at community farmers markets, roadside farm markets, and supermarkets throughout the Commonwealth during August.

THEREFORE, in recognition of our thriving vegetable industry, I, Tom Wolf, Governor of the Commonwealth of Pennsylvania, do hereby proclaim August 2019 PRODUCE MONTH in Pennsylvania, and encourage all citizens to enjoy the commonwealth's plentiful supply of fresh and processed vegetables and vegetable products while recognizing the industry's contributions to our economy and health.

GIVEN under my hand and the Seal of the Governor, at the City of Harrisburg, this first day of August in the year of our Lord two thousand nineteen and of the commonwealth the two hundred forty-third.

Tom Wolf
Governor

Standard Operating... *(continued from page 7)*

- Use diagrams and pictures wherever appropriate. For example, diagrams of where tools/materials belong, or pictures of how something should look at a certain step in the process.

Separate General Information from Instructions.

Don't micromanage. Include any details that are essential and that must be completed in the same way by any worker. Leave out unessential details.

Some examples of SOPs can be found in the Resources section at the end of this article. It's helpful to look at existing SOPs or even use them as a starting point for your own, but remember to tailor them to your own farm so that your final SOPs accurately reflect your actual processes.

SOPs and Food Safety

SOPs are particularly useful where there is a high risk for mistakes or contamination. This is why they feature so prominently in farm food safety plans. SOPs also provide a way to show that you have procedures in place to avoid produce contamination as required by the Food Safety Modernization Act (FSMA). The FSMA Produce Rule requires farms to avoid contamination of produce on many fronts, but doesn't always specify how a farm should do so. With SOPs and recordkeeping, you can show that you've established procedures to avoid produce contamination and that you are following those procedures.

SOPs can be especially helpful for food safety because while you can see an unorganized washroom or manure caked onto tractor tires, you generally cannot see contamination itself. An organized washroom and apparently clean tractor doesn't necessarily mean that your produce is safe from contamination.

PVGA Directors... *(continued from page 3)*

menu for 2020. Some menu items with limited sales will be dropped from the menu.

The Board moved to seek legislative or regulatory changes that would exempt H-2A workers from the state unemployment tax. They are currently exempt from the federal unemployment tax but PVGA recently received confirmation from the state Department of Labor and Industry that they are not exempt from the state unemployment tax.

The Director's also reviewed the Agritourism Liability bill pending in the General Assembly as well as the Sunday hunting bill which would allow for three Sundays a year being open for hunting. PVGA's policy is currently opposed to Sunday hunting but this bill would only allow a limited number of days.

The Board appointed Hilary Schramm and Steven Bogash to the Succession Planning Committee that is being formed to develop a succession plan for the Association's Executive Director.

The Board's next meeting will be December 9 and 10 when it will meet with the various committees for a strategic planning session.



With a good SOPs that address things like standing water, cleaning and sanitizing food contact surfaces, and keeping totes and tools off of the floor and protected from pests, you can have peace of mind that you've thought through common routes of contamination and established processes to avoid that – even if you can't see the contamination you're trying to avoid.

Resources

The Cornell GAPs program has good examples of SOPs relevant to the major food safety risk areas: <https://gaps.cornell.edu/educational-materials/decision-trees/log-sheets-sops>

The University of Idaho has SOPs for all of the field procedures at their research farm to prevent the spread of a particularly noxious weed: <http://ucanr.edu/sites/placernevadasmallfarms/files/140712.pdf>

North Carolina Extension Produce Safety: Standard Operating Procedures - <https://ncfreshproducesafety.ces.ncsu.edu/ncfreshproducesafety-gaps-standard-operating-procedures/>

Penn State Extension - Standard Operating Procedures: A Writing Guide - <https://extension.psu.edu/standard-operating-procedures-a-writing-guide>

University of California Extension - Standard Operating Procedures - https://ucanr.edu/sites/placernevadasmallfarms/Farm_Business_Planning/FBP_Risk_Management/Risk_Management/SOP/

Ms. McKeag and Ms. Higgins are with the Univ. of Massachusetts Extension Vegetable Program. From Vegetable Notes for Vegetable Farmers in Massachusetts, Univ. of Mass. Extension, Vol. 31, No. 16, August 1, 2019.

Multiple Reports of Late Blight on Tomato in Central and Western PA

Beth Gugino

In mid-August there have been an increasing number of confirmed reports and suspected outbreaks of late blight primarily in tomatoes in both commercial production and home gardens especially where there have been limited or no fungicide applied. These reports are from Erie, Mercer, Indiana, Centre and Clinton Counties.

As we head towards fall, with cooler night temperatures and longer dew periods, conditions are going to become increasingly favorable for late blight. The preferred temperatures range is from 50 to 75°F. Keep in mind that even if the temperatures reach into the upper 80's and conditions are sunny

Late blight sporulating on the upper surface of a tomato leaf however, sporulation is most common on the lower leaf surface. Photo: Beth K. Gugino.



during the day, the disease will continue to progress under cooler night temperatures.

Please thoroughly scout your fields especially higher risk areas such as lower lying areas, areas that are more shaded or where late blight has been a problem in the past. The symptoms include pale green or water-soaked and gray in color on the leaves, petioles and stems. Under humid conditions, white sporulation (fuzzy growth) can develop especially on the underside of the leaves although it can also develop on the upper surface under favorable conditions. When released, these spores can spread the pathogen to near-by plants. When dried out, the lesions appear necrotic and brown to black in color.

A number of conventional fungicides are very effective for managing late blight if managed preventatively. Initiating a fungicide program after symptoms are observed can be challenging when conditions are favorable. However, on tomato, chlorothalonil can even be effective if applied on a weekly preventative schedule and good coverage is obtained. Late blight specific fungicides would include products such as but not limited to, Previcur Flex (FRAC 28), Ranman (21), Zampro (45+40) or Orondis Opti (U15+M5). See the [2019 Mid-Atlantic Commercial Vegetable Production Recommendations](#) and [2019 Fungicide Resistance Management Guidelines for Vegetable Crops](#) for additional recommendations on both tomato and potato. These products should be tank mixed with a protectant

(continued on page 10)

ProducePackaging.com[®]
for all your produce packaging needs

1-800-644-8729
Kurt Zuhlke & Assoc., Inc.
P.O. Box 609, Bangor, PA 18013



Over 45 Years In The Industry

For over 45 years, Kurt Zuhlke & Assoc., Inc. has been a part of the many innovative packaging concepts utilized by the produce industry.



High Quality Products And Services

Our packaging is designed to protect produce, provide excellent visibility to the consumer, reduce shrinkage and enhance the product. We also offer professional labeling design and application.



From Farmers To Repackers

Whether you are ordering a case or a truck load, you can rest assured that we have the ability and capacity to service your orders quickly.



VEGETABLE PRODUCTION

Downy Mildew Confirmed on Pumpkin, Winter Squash, Cucumber and Cantaloupe

Beth Gugino

As of August 7, downy mildew has been confirmed on multiple cucurbit hosts in Lancaster and Chester Counties. It is also suspected but not confirmed on butternut squash in Montgomery County. The hosts in Lancaster and/or Chester Counties include jack-o-lantern pumpkin (true pumpkin), winter squash, cucumber and cantaloupe. This is not surprising given the number of favorable weather periods which have placed this part of the state a moderate to high risk. Disease incidence and severity were high in several of the pumpkin fields indicating that they were not likely on any type of fungicide program.



Downy and powdery mildew sporulation on the underside of a cucumber leaf. Photo: Beth K. Gugino.

The unconfirmed reports in pumpkin fields in Clinton County mentioned in the 2 Aug disease alert were confirmed to be powdery mildew. Powdery mildew symptoms were primarily on the underside of the leaves and yellowish spots were observed on the corresponding upper leaf surface resembling downy mildew. The growers had been using a protectant fungicide which was controlling the powdery mildew on the upper leaf surface but not the lower leaf surface.

Symptoms were severe and consisted of small angular chlorotic/yellow lesions on the upper surface of the leaf and then purplish-gray sporulation was observed on the corresponding surface on the underside of the leaf. It is highly likely that there are unreported outbreaks of downy mildew on cucumber and possibly other cucurbit crops across the eastern third of Pennsylvania. This portion of the state has been at moderate to high risk of downy mildew infection several times this season

Multiple Reports... (continued from page 9)

for fungicide resistance management and alternated/rotated between different FRAC codes. For organic growers, copper-based programs tend to be most effective. Another possible option would be to alternate between Regalia and Actinovate both tank mixed with a copper-based fungicide. These products are most effective when applied preventatively and regularly when conditions favor disease. Good spray coverage is essential.

Remember that late blight is a community disease! If you suspect late blight please contact your local Penn State Extension Office, the [Penn State Plant Disease Clinic](http://www.pennstate.edu/plantdiseaseclinic) or me at bkgugino@psu.edu or 814-865-7328 for confirmation. Updates via audio-messages will be left on the 1-800-PENN-IPM hotline as well as posted at the produce auction information displays. For the most current map of confirmed late blight outbreaks please visit <http://usablight.org>.

Dr. Gugino is with the Department of Plant Pathology and Environmental Microbiology at Penn State Univ. From Pennsylvania Vegetable Disease Update, Penn State Extension, August 16, 2019.



Upward curling of pumpkin leaves as a result of severe downy mildew. Severe powdery mildew can result in similar symptoms, so an accurate diagnosis is needed to make management decisions. Photo: Tom Butzler, Penn State Extension.

from inoculum sources moving upward along the east coast. This includes today with portions on Adams, Cumberland, Dauphin, Lebanon, Schuylkill, Berks, Chester, Lehigh and Montgomery being at highest risk and counties north and east being a moderate risk.

It is recommended that all cucurbit fields be scouting regularly. Due to slight differences in pathogen populations, the downy mildew on pumpkin will most likely spread to other pumpkin, squash and watermelon crops while downy mildew on cucumber will spread to other cucumber and cantaloupe crops. Inclusion of downy mildew specific fungicides is highly recommended, and effort should be made to manage for resistance by tank mixing with a protectant fungicide and rotating FRAC groups. Several fungicides including Ranman (FRAC 21), Orondis Opti (FRAC 49 + M5), Orondis Ultra (FRAC 49 + 40) and Zampro (FRAC 45 + 40) have a 0-day pre-harvest interval. Additional options include Elumin (FRAC 22; 2-day PHI), and Previcur Flex (FRAC 28; 2-day PHI). See the [2019 Mid-Atlantic Commercial Vegetable Production Recommendations](#) and [2018 Cucurbit Downy and Powdery Mildew Efficacy Table](#) for additional recommendations. Be sure to read the pesticide label prior to application.

When done harvesting earlier maturing crops such as cucumber, cantaloupe and summer squash, disk under or apply a herbicide to the crop to kill the plant tissue as a measure to reduce potential spread of the disease on and between farms and especially successive plantings. The pathogen does not survive in soil so once the plant tissue is dead so is the pathogen.

We are actively monitoring for this disease so please either contact me via email at bkgugino@psu.edu, by phone at 814-865-7328 or contact your local Extension office for confirmation. All reports aid in our ability to successfully forecast disease risk. Check the [CDM ipmPIPE website](http://www.cdmipmPIPE.com) for the latest reports and forecasts that are updated three times per week.

Dr. Gugino is with the Department of Plant Pathology and Environmental Microbiology at Penn State Univ. From Pennsylvania Vegetable Disease Update, Penn State Extension, August 7, 2019,

Current Vegetable Issues

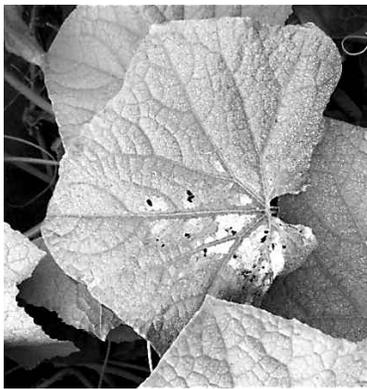
From Penn State Extension Specialists and Educators as of August 13, 2019

General Conditions

Weather conditions have been variable across the state leading to issues with rain checking and radial cracking in tomatoes as well as blossom end rot in pepper.

Insect Pest Update

Flea beetle pressure is high in several crops such as eggplant. The next generation of Colorado potato beetle has hatched. Continued broad mite damage is being observed in peppers in parts of the state despite the application of miticides. Cucumber beetles continue to remain active in cucurbit fields as are squash bugs. Second generation feeding by cucumber beetles and transmission of the bacterial wilt pathogen later in the season can result in water soaking and V-shaped lesions that become tan in color as the bacteria moves in the leaf tissue (pictured right); adult feeding also cause scarring of the fruit. Squash bugs can transmit a different bacterial pathogen, causing yellow vine decline. Sweet corn trap counts continue to be variable across the state, with populations in some locations remaining low while in others the counts are rather high. Moving traps close to silking corn tends to increase trap capture. Some locations are getting the non-target carrot seed moth in European corn borer traps. This will occur in traps baited with the New York strain pheromone, but not the Iowa strain pheromone. In the fall armyworm traps, the non-target species called Intermediate Cucullia, or Intermediate Hooded Owlet, is showing up. Some growers are continuing to experience worm issues in ears despite low trap counts and a regular spray program. Populations of corn earworm carrying resistance to



Symptoms of bacterial wilt later in the season resulting from 2nd generation cucumber beetle transmission of the pathogen. Photo credits: Beth Gugino.



Carrot seed moth (far left, photo D. Biddinger) compared to European corn borer (center, photo M. Rice).

pyrethroid insecticides tends to increase in August. Historically, this problem has been greater in areas to the east of the Appalachians and is well documented this year from Delaware.

Disease Update

Late blight originating from natural inoculum was confirmed on both tomato and potato at the Penn State research farm in Centre Co. The source inoculum was likely either seed potato or a cull pile residing on the farm. Samples were sent for genotyping. Based on images provided, it is also suspected on tomato in a home garden in Mercer Co. The plant has been disposed

(continued on page 12)

CROP CARE

Reduce Labor!



The Plastic Mulch Lifter-Wrapper
(PR2500) combines the lifting and wrapping of plastic mulch into ONE EASY PASS.



The Picking Assistant
(PA1600) is a motorized field hand designed to boost your planting productivity and reduce sore backs!

See these machines in action at:
CropCareEquipment.com

CropCareEquipment.com | Lititz, PA
Manufactured by PBZ LLC, a Paul B. Zimmerman, Inc. company

Please contact your local CropCare® dealer with any questions.

Cedar Grove Farm Store
Shippensburg, PA.....717-532-7571

Martin's Repair Shop LLC
Ephrata, PA.....717-733-3015

VEGETABLE PRODUCTION

Sweet Corn Pollination Problems

Gordon Johnson

Growers are experiencing quality problems in sweet corn this year related to poor pollination as a result of high heat. This problem is more severe in less stress tolerant varieties and where irrigation is inadequate.

In corn, silk elongation begins 7 to 10 days prior to silk emergence from the husk. Every potential kernel (ovule) on an ear develops its own silk that must be pollinated in order for the ovary to be fertilized and develop into a kernel. The silks from near the base of the ear emerge first and those from the tip appear last. Under good conditions, all silks for an ear will emerge and be ready for pollination within a span of 3 to 5 days and this usually provides adequate time for all silks to be pollinated before pollen shed ceases.

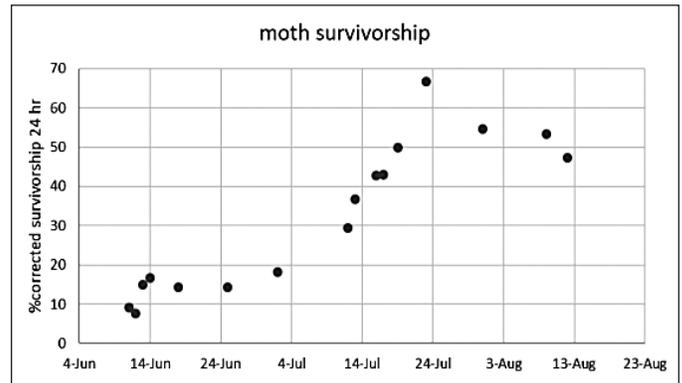
Pollen grains are borne in anthers, each of which contains a large number of pollen grains. The anthers open and the pollen grains pour out after dew has dried off the tassels. Pollen is light and can be carried considerable distances (up to 600 feet) by the wind. However, most of it settles within 20 to 50 feet. Pollen shed is not a continuous process. It stops when the tassel is too wet or too dry and begins again when temperature conditions are favorable.

Under favorable conditions, a pollen grain upon landing on a receptive silk will develop a pollen tube containing the male genetic material, develop and grow inside the silk, and fertilize the female ovary within 24 hours. The amount of pollen is rarely a cause of poor kernel set. Each tassel contains from 2 to 5 million pollen grains, which translates to 2,000 to 5,000 pollen grains produced for each silk of the ear shoot.

Poor seed set is often associated with poor timing of pollen shed with silk emergence. If silks emerge after pollen shed poor seed set will result. Shortages of pollen are usually only a problem under conditions of extreme heat and drought. Extreme heat and desiccating winds can affect pollen germination on silks or pollen tube development leading to poor seed set. Insects that clip silks during pollination can cause similar problems.

*Dr. Johnson is the Extension Vegetable and Fruit Specialist at the Univ. of Delaware. From the **Weekly Crop Update**, Univ. of Delaware Extension, Vol. 27, Issue 19, August 2, 2019.*

Current Vegetable... (continued from page 11)



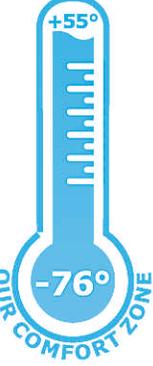
Adult corn earworm survivorship in adult vials treated with a pyrethroid (cypermethrin) in Delaware. Historical baselines of susceptible populations are ~ 5 or 10% survival. Data from David Owens, University of Delaware

of to prevent further spread. Late season diseases like anthracnose on tomato and pepper are becoming more common. Bacterial canker has been more common in tomato fields than bacterial spot and speck this season. Powdery mildew on all cucurbit crops is widespread. To help with resistance management, severely affected fields showing powdery mildew over 75% of the leaf surface should only be sprayed with protectant fungicides. This reduces exposure of the pathogen population to single-site mode of action active ingredient and thus selection of resistance within the population. Cucurbit downy mildew is now confirmed on winter squash (*Cucurbita moschata*), jack-o-lantern pumpkin and cucumber in Lancaster and/or Chester Co., PA. Despite the drier conditions, Phytophthora blight is causing fruit rots in some cucurbit fields. Be on the lookout for northern corn leaf blight it is characterized by elongated tan lesions unusually on the lower leaves and then spreading up the plant. Under humid conditions, the lesions will produce dark gray spores on the lower leaf surface giving them a dusty appearance. The greatest losses occur when symptoms are observed in the upper 2/3 of the crop canopy by silking.





Authority in Refrigeration for Food Processing and Agricultural Industry



- THRU-THE-WALL
- ROOF-MOUNTED
- PORTABLE
- HYDROCOOLERS
- CUSTOM DESIGNS

- BLAST FREEZERS
- CHILLERS
- GREENHOUSE COOLERS



Made in North America

1.866.748.7786 ONE PIECE DESIGN FREE COOLING

Mites in Solanaceous Crops

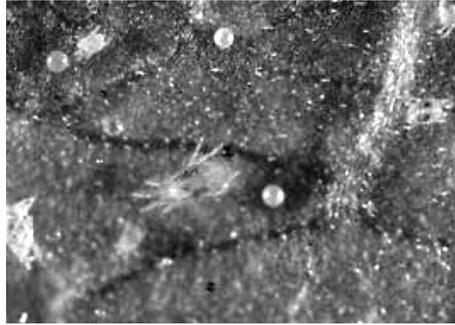
Genevieve Higgins

We are beginning to get reports of mite infestations in solanaceous crops across the region. Both broad mites and two-spotted spider mites (TSSM) affect solanaceous crops—broad mites are the most heavy hitting on pepper, and TSSM are particularly devastating on eggplant and tomato, though they can both affect a variety of crops, including tomato, eggplant, potato, beans, and vine crops such as melons and cucumbers.

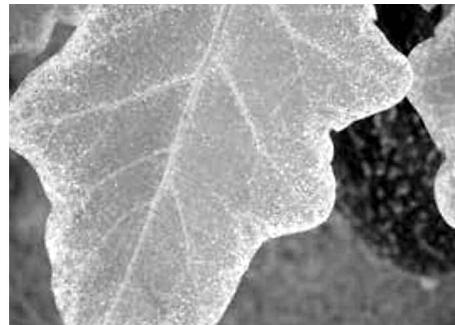
Two-Spotted Spider Mite

TSSM are favored by hot, dry, and dusty conditions, which also aggravate mite injury by stressing the plant. Damage is often underestimated since both the mites and the wounds they cause are difficult to see without inspecting plants closely, or until the problem becomes widespread.

Description. Adult females are tiny—about a ½ mm long—slightly orange to pale green in color, with two dark spots on their body. They are visible with the naked eye but a 10x hand lens is helpful to see them. Initially, mites will feed on the undersides of leaves but in heavy infestations, they will move to the tops of leaves and onto fruit. Large populations will produce visible web-



Adult, eggs, and nymphs of two-spotted spider mite. Photo: D. Ferro



White spotting on eggplant foliage caused by two-spotted spider mite feeding. Photo: J. Boucher

bing that can completely cover the leaves. Mites hide under the webbing, making them difficult to reach with sprays.

Life cycle. All mobile life stages—adults, larvae, and nymphs—can feed on plant tissue. Eggs are laid singly, up to 100 per female, during her 3- to 4-week life span. Eggs hatch into larvae in as few as 3 days. Following a brief larval stage, several nymphal stages occur before adults appear. The egg-to-adult cycle can be completed in just 7 to 14 days, depending on temperature, leading to explosions in mite population and damage.

Damage. Adult TSSM feed by sucking chlorophyll out of the leaves, creating blotchy yellow to reddish-brown spots. Feeding injury often gives the top leaf surfaces a mottled or speckled, dull appearance. Leaves eventually turn yellow and drop. Other symptoms include distorted leaves, overall loss of plant vigor, whitening or spotting of leaves, or abnormalities on stems and fruits. On tomato, mites can damage fruit, causing small whitish spots that render fruit unmarketable.

(continued on page 14)

We get it... It was a tough season!
 As fellow growers, we know the disease challenges you faced in the SOGGY 2018 season. For the BEST defense, you NEED a high pressure boom sprayer! That's where we can help! In business over 30 years, our focus is offering a simple, reliable and very effective sprayer.

Call today
And let's talk sprayers!
570-837-1197

pennscreewelding.com

Be Prepared When The Weeds Start To Grow

Hillside Cultivator Model CS
 ← The best cultivator for strawberries and between plastic mulch.

The best cultivator for in row weed removal. →
Eco Weeder

Hillside Cultivator Co. LLC
 911 Disston View Dr., Lititz, PA 17543
 717-626-6194 www.hillsidecultivator.com

VEGETABLE PRODUCTION

Mites in Solanaceous... (continued from page 13)**Broad Mite**

Broad mites also have a very wide host range, including many weeds and ornamentals, but cause the most damage within the solanaceous family and are especially damaging on pepper. The source of broad mite infestations in vegetable crops is often ornamentals from greenhouses or high tunnels where vegetable transplants were grown. Adult broad mites are even tinier than TSSM—only 0.02 mm. They're notoriously tricky to find, even on severely symptomatic plants. Similarly to TSSM, broad mites reproduce very quickly; their life cycle takes only 7 to 8 days at 85°F.

Broad mites differ significantly from TSSM in their feeding habits and damage. Broad mites feed in the growing tip, and inject a toxin as they feed that causes the growing tip to become distorted or die. Plants become severely stunted and twisted and

fruit develops an unmarketable gray scar tissue. While plants infested with TSSM can recover from feeding damage after the pest has been controlled with pesticides, plants will not grow out of broad mite damage. Early in an infestation, if only a few plants are heavily infested, pull and bag those plants and treat the remaining plants.

Cultural control. Outbreaks may be worsened by excess nitrogen fertilization, or by the use of broad-spectrum insecticides that kill naturally occurring mite predators. Overhead irrigation or prolonged periods of rain can help reduce populations. Keep weeds under control. Control broad mites in ornamentals if you grow ornamentals and vegetable transplants in the same structure.

Biological control. Preventative releases of the predatory mite, *Phytoseiulus persimilis*, may suppress TSSM populations in vegetable fields, as they do in strawberry fields. *Amblyseius fallicis* is a predatory mite that is widely used in greenhouses. See the New England Vegetable Guide section on biological control in greenhouse bedding plants at <https://nevegetable.org/table-18-scouting-and-biological-control-guidelines-vegetable-transplants> for more information.



Broad mite damage on pepper: distorted leaves and gray scar tissue on fruit. Photos: S. Ghimire

Chemical control. Early or preventative control is essential for controlling both broad mites and TSSM, as populations can explode quickly. Use selective products whenever possible. Selective products which have worked well in the field include:

- Agri-Mek (Group 6, 7d PHI): abamectin, derived from a soil bacterium. TSSM & BM. Must be mixed with non-ionic activator type wetting, spreading, and/or penetrating adjuvant.
- Acramite (Group 25, 3d PHI): bifenazate, a contact nerve poison with a long residual. TSSM only.
- Movento (Group 23, 1d PHI): spirotetramat. Active primarily by ingestion. Systemic. Labeled for control of BM and suppression of TSSM in solanaceous crops. Mainly affects immature stages.
- Oberon 2SC (Group 23, 1d PHI for solanaceous, 7d PHI for cucurbits): spiromesifen. Mainly affects immature stages.

Two other selective products are:

- Kanemite (Group 20B, 1d PHI): acequincyl. TSSM only. Knockdown and residual control.
- Portal XLO (Group 21A, 1d PHI): fenpyromixate. TSSM & BM. Stops feeding immediately after application. Mites die in 3 to 7 days.

OMRI-listed products include insecticidal soap (M-Pede) and horticultural oils (e.g. Trilogy, Suffoil X, and Golden Pest Spray Oil). These can be effective, especially if utilized early and regularly and with good leaf coverage. The bioinsecticides Met52, Grandevo, and Venerate (all 0 PHI) are also labeled.

See the appropriate crop sections of the New England Vegetable Management Guide at <http://nevegetable.org/crops> for more details, including resistance groups.

With most miticides (but not bifenazate, which has a long residual), use 2 applications approximately 5 to 7 days apart to help control immature mites that were in the egg stage and protected during the first application. Because mites reproduce so quickly, populations can easily develop resistance to products; alternate between products after 2 applications to help prevent or delay resistance. Check product labels for specific use restrictions.

Sources

Watch for Spider Mites in Eggplant, Tomato, and Vine Crops, Ruth Hazzard, UMass Extension http://ag.umass.edu/sites/ag.umass.edu/files/newsletters/july_28_2016_vegetable_notes.pdf

Two Spotted Spider Mites on High Tunnel Vegetables, Gale Hermenau, Delaware Weekly Crop Update, June 21, 2019 <https://sites.udel.edu/weeklycropupdate/?p=13580>

Significant Crop Losses on Pepper Due to Broad Mites, Judson Reid, Cornell VegEdge, August 7, 2019

Broad Mites in Fruiting Vegetables, Steve Bogash, Penn State Extension, <https://extension.psu.edu/broad-mites-in-fruiting-vegetables>

Compiled by Ms. Higgins who is with the Univ. of Massachusetts Extension. From **Vegetable Notes for Vegetable Farmers in Massachusetts**, Univ. of Mass. Extension, Vol. 31, No. 17, August 8, 2019.

Squash Vine Borers and Pumpkins

Gerald Brust



Figure 1. Pumpkins with bright yellow leaves damaged from squash vine borer

On a recent visit to a farm I saw bright yellow leaves in a pumpkin field (Fig. 1) and wondered if this could be Cucurbit yellow vine decline that was first seen two years ago. Upon closer inspection of the plants it was found to be an old nemesis of pumpkins and squash – the squash vine borer. Borer moths lay eggs mostly at the base of pumpkin and squash plants starting in late June and going through the first few weeks of July. Eggs hatch and borers quickly move their way into the base of the pumpkin stem where they feed inside the stem (Fig. 2) disrupting water and nutrient flow to the rest of the plant (Fig. 3). Insecticide sprays need to be directed to the base of the plant for several weeks. Usually the best method of control is a cultural one – rotation. Squash vine borers overwinter in the same field they fed in. Come next spring and summer they emerge and look for the nearest cucurbit field.

The question is how far away does the next field have to be from this year's? In this case the grower rotated to a field that was ¼ mile from their other pumpkin field that was lightly infested the year before with squash vine borer (there are no other pumpkin fields around this farm for at least 3 miles). I know growers often do not have enough land to rotate much further than a ¼ mile. Last year's field was not plowed or worked over the off-season or this spring so the overwintering pupae survived in large numbers and upon emergence were able to locate this year's pumpkin field. How much of a yield decrease will result from is unknown at this time, but plants with feeding signs at their base were marked and will be followed to harvest to see what the yield reduction is. The bottom line is: a ¼ mile is probably not far enough of a rotation from even a lightly infested field and pumpkin fields that had even a light infestation of squash vine borer need to be worked in the fall and spring to destroy as many overwintering squash vine borers as possible.

*Dr. Brust is the IPM Vegetable Specialist at the Univ. of Maryland. From the **Weekly Crop Update**, Univ. of Delaware Extension, Vol. 27, Issue 21, August 16, 2019.*

Figure 2. Damage to the base of pumpkin plant from squash vine borer



Figure 3. Squash vine borer inside damaged pumpkin stem

Refrigerated and Ventilated Cooling Systems for Fruit and Vegetable Storages

- COMMERCIAL REFRIGERATION
- DESIGN, SALES AND SERVICE
- SERVING AGRICULTURE FOR OVER 70 YEARS

Free Consultation and Quote

Call Mike Mager at 585-343-2678

ARCTIC

REFRIGERATION CO. OF BATAVIA

26 Cedar Street, Batavia, NY 14020

www.arcticrefrigeration.com

VEGETABLE PRODUCTION

Identifying Beneficial Insects

Lisa Mckeag, Genevieve Higgins, Kristina Fahey and Ayana LaSalle

While scouting in the field for insect pests, also keep an eye out for the insects that are working in your favor. Your pest management decisions should be based in part on the natural controls that are already at work! It is important to be able to identify the so called 'beneficials' and their life stages that are helping you by killing pests. Many different insects either prey upon or parasitize vegetable crop pests. Some beneficials are generalists and will feed on a variety of insect species, while others are more discriminating—this is generally true of the parasitoids, which lay their eggs within the eggs or body of a specific host. The most effective natural enemies on farms tend to be those that either consume voraciously (e.g., green lacewing larvae, which feed on aphids and many other small insects) or those that are host-specific (e.g., *Diaeretiella* spp., a wasp that parasitizes exclusively aphids). They should have high reproductive rates and life cycles that coincide with those of their hosts or prey.

The principles of Integrated Pest Management (IPM) include capitalizing on natural controls to manage vegetable pests, along with using cultural practices and making strategic applications of appropriate chemical controls that protect beneficials as much as possible. The goal of IPM is not to eliminate all of the pests from a crop, but to reduce the populations of pests so that they are not causing economic losses, while maintaining enough of the pest population to sustain their natural enemies.

It is often the larval stages of predators that do the bulk of the feeding; the adult stages of many beneficial species may only feed on pollen or nectar, so maintaining flowering plants—whether wildflowers at the edges of fields, or cultivated flowers interspersed within the crop—can help to provide both food and shelter for beneficial insects. To learn more about planting flowers to attract beneficial insects to your fields, please see the following:

Insectary Plants: Flower Power for Natural Enemies of Vegetable Pests by Dr. Ana Legrand, IPM Program, University

of Connecticut, December 2018. https://ag.umass.edu/sites/ag.umass.edu/files/pdf-doc-ppt/insectary_plants_factsheet_legrand_0.pdf

Attracting Beneficial Insects to Reduce Cabbage Aphid Population Size, 2018 by Michele Meder, Genevieve Higgins, and Susan B. Scheufele Written December 2018. https://ag.umass.edu/sites/ag.umass.edu/files/pdf-doc-ppt/insectary_2018_report.pdf

Below are a few beneficial insects that are commonly found in farm fields in New England.



Predatory midge. Photo: A. Eaton

Predators

Predatory midge (*Aphidoletes aphidimyza*) larvae feed on aphids and mites. They are small (about 2 mm long), orange or yellow, legless maggots, and they feed on small insects like aphids and mites. In its lifetime, one larva can kill from 10 to 30 aphids. Adults are very small (2-3mm), delicate, mosquito-like flies with long legs and long antennae. Adults feed on honeydew (aphid excrement) and fly at night, so they're rarely seen during the day. Adults lay minute (less than 0.3 mm), orange eggs in clusters or singly around aphid colonies. Predatory midges are an important part of biological control programs in greenhouse crops and are widely sold in the U.S.

Syrphid flies (Diptera: Syrphidae) (also known as hover or flower flies) larvae also feed on aphids. Larvae are 1/2 inch long and semi-transparent, with green, pink or brown coloring. Each larva can consume up to 400 aphids during development. When syrphids are abundant, aphid populations can be reduced by 70 to 100%. Adults of many syrphid species resemble bees to ward off predators but have characteristic helmet-like fly eyes. Adults are prominent pollinators, and visit flowering plants for pollen and nectar. See the article Attracting Beneficial Insects to Reduce Cabbage Aphid Population Size, linked to above, for more information about syrphid flies.

Spined soldier bug (*Podisus maculiventris*) adults feed on soft-bodied insects, including the larvae of European corn borer, diamondback moth, corn earworm, beet armyworm, fall armyworm, cabbage looper, imported cabbageworm, Colorado potato beetle, and Mexican bean beetle. With good timing, you can catch a spined soldier bug that has impaled its prey with its piercing-sucking mouthparts. One study found that a single adult consumed over 100 fall armyworm larvae in its lifetime.

(continued on page 17)

BUILD YOUR SKILLS WITH AGBIZ MASTERS

TAKEAWAYS

- ▶ Record Keeping
- ▶ Financial Management
- ▶ Growing the Farm
- ▶ Business Planning
- ▶ Communication & Leadership



REGISTER AT
AGBIZMASTERS.COM

AgBiz Masters
A Learning Series for Young & Beginning Farmers

VEGETABLE PRODUCTION

Identifying Beneficial... (continued from page 16)



Syrphid fly adult (top) and larva (bottom). Photos: G. Higgins, M. Spellman



Lady beetle pupa – sometimes mistaken for CPB larva! Photo: J. Boucher.

Adults are pale-brown to tan and about 8.5 to 13 mm long. They are shield-shaped with characteristic spurs on their “shoulders”, immediately behind the head. Nymphs are round instead of shield shaped; young nymphs are red and black while older nymphs have red, black, yellow-orange and cream-colored bands and patches (see photo). Females lay hundreds of gray to gold, barrel-shaped eggs in clusters of 20-30, on leaves or twigs. Eggs hatch in 5-9 days. Growth from egg to adult lasts about 30-35 days and adults live from 1-4 months.

Ladybeetles: There are both native (including the twelve-spotted ladybeetle *Coleomegilla maculata*) and non-native (including the multicolored asian ladybeetle *Harmonia axyridis*) species of ladybeetles, both of which prey on insect pests of vegetables. Eggs are yellow-orange, oval, and laid on-end in clusters on leaves. Larvae look, strangely enough, reptilian; they are flat, dark-colored, with long alligator-like tails, and

(continued on page 18)

— PA —
FARM
MARKETS

We help you grow your market.

www.Pafarm.com

SOLO SPRAYERS

We carry a full line of Solo Sprayers from hand pump to engine driven units.
Call us today for your spraying needs.
We ship UPS

PARTS • SALES • SERVICE

Martin's
Repair Shop LLC

27 West Mohler Church Road,
Ephrata, PA 17522
Ph: 717-733-3015

BRIGGS & STRATTON *cima* CROP CARE
solo FERRIS SNAPPER
 Husqvarna *Tanaka* WALKER
no front mowing

VEGETABLE PRODUCTION

Identifying Beneficial... (continued from page 17)



Lacewing eggs (L. McKeag)

spines covering their bodies. Ladybeetles are excellent predators of aphids but also feed on other insects including mites and scale. Adults overwinter in field edges and other sheltered locations (including in your house, in the case of the multicolored asian ladybeetle!).

Green lacewing (Chrysopa and

Chysoperla spp.) adults are pale green, with a slender soft body, about 1/2" long, and four delicately veined wings. Eggs are laid on filamentous stalks attached to plant tissues, often with several laid in a row. Larvae are 1/8- to 1/2-inch and long alligator-like, but skinner than ladybeetle larvae, with a flattened body that tapers at one end. Larvae have long, curved mandibles that they grab their prey with. The adults of most species are not predaceous, feeding mostly on nectar and pollen. The larvae, however, are voracious predators, and will consume large numbers of a wide range of soft-bodied insects, including other lacewing larvae. Lacewings are found naturally in New England, and are also available commercially, as they are very effective at cleaning up outbreaks of aphids and other pests in greenhouses.

Parasitoids

The beneficial parasitoids that are important in vegetable crops aren't often seen, as most of them are tiny wasps. There are thousands of species of parasitic wasps, most of which are highly specialized to use a particular species or family as a host.



Lacewing larva (G. Higgins)

Several species naturally occur in New England, or have been successfully introduced, and others are commercially available for release. These wasps lay their eggs in either the eggs or larvae of their hosts, where the wasp larvae feed on the insides of the host, and pupate in or on the host before emerging as adult wasps. Often what will be visible in crops to indicate parasitoid activity will be either the parasitized host or the pupating parasite.

Caterpillars are commonly parasitized by braconid and ichneumonid wasps. The braconid wasp, Cotesia rubecula, was introduced to New England from China in 1988, and is now established in Massachusetts. This wasp parasitizes imported cabbageworm larvae. You may see their small white cocoons on brassica leaves. Diamondback moth eggs are parasitized by the ichneumonid wasp, Diadegma insulare, which is native to Eastern North America. D. insulare females require sources of nectar to effectively parasitize DBM, so maintaining wildflower stands near brassica fields will encourage their activity. You may be more familiar with the pupae of other parasitic wasp, Cotesia congregatus, which lays its eggs under the skin of the tomato and tobacco hornworms. The larvae feed within the hornworms, then emerge to pupate on the surface, eventually killing the host. If you see a hornworm in your tomato crop with many white cocoons on its back, don't kill it— either leave it be,



We're thankful that Farm Credit wants to help customers learn. If we wanted a business class, such as AgBiz Masters, we would have to enroll in a college course.

TODD ESBENSHADE, SNYDER COUNTY



T. Smith, UMass

Aphid mummies. Photo: T. Smith

(continued on page 19)

REGISTER AT AGBIZMASTERS.COM

AgBiz Masters A Learning Series for Young & Beginning Farmers

Understanding Weed Life Cycles: The Key to Better Management

Susan B. Scheufele

When trying to figure out how to manage weeds better, it helps to understand why they are so darn successful in the first place. Weeds are plants that thrive in disturbed environments, like roadsides or annual vegetable systems that are repeatedly tilled. But all weeds are not created equal, and each species has its own lifestyle—when and why it germinates, where it thrives, and so on—which you can use to your advantage when it comes to managing them. Here we have broken them down into the following groups: summer annuals (small- or large-seeded broadleaves, and grasses), winter annuals, biennials, and perennials (stationary or wandering). Get to know your most problematic weeds and determine when and how you can get the most out of your weed control efforts. It will also help to have a good field guide around to help identify weeds in the field. We recommend *Weeds of the Northeast* by Uva, Neal, and DiTomaso.

Identifying Beneficial...

(continued from page 18)



Aphidoletes aphidimyza is a parasitic wasp often released in greenhouses to control aphids. Photo: J. Gross.

or move it to another area where it can't continue feeding, to allow the wasps to develop.

Aphids also play host to several parasitic wasps that rely on the aphids' bodies to produce and feed their young. If you see puffy, tan or golden aphids among an aphid colony, these are aphids with one of these wasps pupating within, and are called aphid "mummies". Sometimes you will see a small hole in the mummy, indicating that the adult wasp has already emerged. The braconid wasp *Diaeretiella rapae* parasitizes many species of aphid, but is particularly fond of cabbage aphids. Keep an eye out for these mummies when scouting for aphid colonies to get an idea of the level of the biological control you're getting.

See

https://ag.umass.edu/sites/ag.umass.edu/files/newsletters/august_15_2019_vegetable_notes.pdf for illustrations of spined soldier bugs. Adapted by Ms. Mckeag and Ms. Higgins who with the Univ. of Massachusetts Extension from original article by Ms. Fahey and Ms. LaSalle, Stockbridge School of Agriculture students.

Annual Weeds

Annual weeds germinate from seeds and complete their life cycles within one year, while perennial weeds survive from year to year through underground storage structures from which they re-grow.

Summer annuals germinate in spring and set seed during the growing season—some may have multiple generations per season. Many of our most common and troublesome vegetable weeds fall into this category, including crabgrasses, foxtails, pigweeds, lambsquarters, hairy galinsoga, velvetleaf and purslane. Since the summer annuals are such a big and diverse group, it is helpful to further break them down:

Small-seeded broadleaf weeds germinate when seeds are within the top one inch of soil. They grow very quickly and produce a huge amount of seeds (tens to hundreds of thousands), to improve the chances that some individuals will survive in a highly disturbed area. Because the seeds are small, seedlings of these species are very small and fragile, so it is important to take advantage of this vulnerability and control them at this stage.

Examples: Pigweeds (*Amaranthus* spp.), lambsquarters (*Chenopodium album*), galinsoga (*Galinsoga ciliata*), smartweeds (*Polygonum* spp.), purslane (*Portulaca oleracea*)

Control Strategies:

- Cultivate the top 1 to 2 inches of soil 2 to 4 times within

(continued on page 20)

lambert

PREMIUM PROFESSIONAL PEAT-BASED SUBSTRATES

FOR ALL YOUR GERMINATION AND ALL PURPOSE NEEDS

products available

Para Producción Orgánica
For Organic Use

JEFFREY P. BISHOP
 Cell: (315) 480-1900
 Toll Free: (888) 632-8808
lambertpeatmoss@aol.com
www.lambertpeatmoss.com

VEGETABLE PRODUCTION

Understanding Weed Life... (continued from page 19)

the first month following tillage to eliminate most individuals that will emerge during the season.

- Organic mulches like straw or wood chips are also highly effective—reduce weed density by hoeing or shallow cultivation before placing the mulch.
- Plant crops densely if the crop will tolerate it, since these weeds are easily shaded-out.
- Flaming may be effective on plants < ¼ to ½ inch tall.
- Cultivating in the evening can reduce emergence of seeds brought to the surface by tillage.
- Remove escapes before they set seeds since they produce so many long-lived seeds.

Large-seeded broadleaf weeds emerge from seeds buried between 0.5 and 2 inches deep in the soil. They grow rapidly and are more competitive than small-seeded annuals, since they have more stored energy and bigger leaves, and are more competitive with your crops. They produce fewer seeds (hundreds to thousands per plant) but seeds can survive for longer periods of time (decades).

Examples: Velvetleaf (*Abutilon theophrasti*), giant ragweed (*Ambrosia trifida*), common cocklebur (*Xanthium strumarium*), morning glories (*Ipomea* spp.)

Control Strategies:

- Delay planting until early-June to allow most seeds to germinate and be killed when preparing seedbeds (velvetleaf).
- Cultivate repeatedly in the early season to prevent establishment.
- Mulches are NOT as effective because more energy is stored in large seed and emerging plant is bigger and stronger.
- Don't allow escapes to go to seed, as the seeds last many years in soil.

Summer annual grasses emerge mostly from the top 0.5 to 1 inch of soil. They produce a huge amount of seed and seeds are very long-lived. Abundance of summer annual grasses is associated with shallow or reduced tillage practices or compacted soils.

Examples: Foxtails (*Setaria* spp.), Crabgrasses (*Digitaria* spp.), Barnyardgrass (*Echinochloa crus-galli*), Fall panicum (*Panicum dichotomiflorum*)

Control Strategies:

- Use transplants and plant into clean beds—vigorously growing crops can outcompete relatively shade-intolerant grasses.
- Use stale-seedbed for small-seeded crops or those with a wimpy canopy like carrots.
- Cultivate before plants exceed ¼ inch.
- Pay attention to ends of rows, between rows, or



Hairy galinsoga, a small-seeded summer annual. All photos courtesy UMass Weed Herbarium.



Velvetleaf, a large-seeded broadleaf weed.



Yellow foxtail, a summer annual grass.



Field pepperweed, a winter annual producing flowering stalks in spring.

edges of plastic where there is no competition from crops and/or the soil is compacted.

In contrast, winter annuals germinate in late-summer or fall and overwinter as small plants or rosettes, resume growth in spring, and set seed in late-spring or summer. These weeds are most problematic in winter (think chickweed in overwintered greens!) or in early spring crops and in no-till systems.

Examples: Wild mustard (*Brassica kaber*), horseweed (*Conyza canadensis*), shepherd's purse (*Capsella bursa-pastoris*), field pepperweed (*Lepidium campestre*), henbit (*Lamium amplexicaule*), purple deadnettle (*Lamium purpureum*)

Control Strategies:

- Fall tillage for spring-planted crops is effective, or till in spring and delay planting.
- Rotation with warm season crops like squash and tomato tends to break the life cycle of these cool season weeds.
- Organic mulches are very effective since winter annuals occur as small, prostrate plants or rosettes over the winter.
- Use up all applied nitrogen by end of season, as these can be effective N scavengers.

Biennial Weeds

Biennial weeds are propagated from seeds but generally take more than one full year to complete their life cycles. They grow vegetatively during the first growing season, overwinter as a root, then bolt and flower during the second season. They are very similar to winter annuals, but they can start growing earlier in the season of their first year so that they may live longer than one full calendar year. They are also similar to stationary perennials since they survive as a taproot.

Examples: Wild carrot (*Daucus carota*), wild parsnip (*Pastinaca sativa*), common burdock (*Arctium minus*), bull thistle (*Cirsium vulgare*), common teasel (*Dipsacus fullonum*), white campion (*Silene alba*)

Control Strategies:

- Fall tillage for spring-planted crops is effective, or till in spring and delay planting.
- Organic mulches are very effective since biennials start as small, prostrate plants or rosettes over the winter.
- Frequent mowing or cutting is effective. Take care not to allow flower heads to form.
- Tillage is usually very effective, but if the crown is cut up, new plants may be produced.

Perennial Weeds

Perennial weeds survive for multiple years from underground structures, and can be stationary or wandering.

Stationary perennials are slow-growing at first

(continued on page 21)

Understanding Weed Life... (continued from page 20)

but later become very competitive. They reproduce by seeds, which they produce each year, and individuals survive for several years. These plants overwinter as large taproots in the case of broadleaf weeds like chicory, or large clumps of fibrous roots as in grasses like tall fescue. When the aboveground plant parts are killed through mowing, cultivation, or frost, the plant later regrows from these underground reserves.

Examples: Curly and broadleaf docks (*Rumex crispus* and *R. obtusifolius*), chicory (*Cichorium intybus*), dandelion (*Taraxacum officinale*)

Control Strategies:

- Cultivation and tillage can be effective at exhausting storage roots and will not cause spreading, as with wandering or creeping perennials

- Mowing down foliage will also exhaust storage organs

- Removing taproots or crowns from the field is highly effective if scale appropriate

Wandering perennials reproduce by seed but also by underground vegetative structures like rhizomes (root-like stems), stolons (creeping stems like strawberry runners), or tubers.



Common teasel, a biennial weed, produces rosettes (left) in the first year and flowers (right) in the second year.



Curly dock is a stationary perennial.



Horsenettle is a wandering perennial which reproduces via underground rhizomes.

Fragments of stolons or rhizomes can generate new individuals.

Examples: Johnsongrass (*Sorghum halapense*), quack grass (*Elytrigia repens*), yellow nutsedge (*Cyperus esculentus*), horsenettle (*Solanum carolinense*), milkweed (*Asclepias syriaca*), bindweeds (various), and Canada thistle (*Cirsium arvense*).

Control Strategies:

- Organic and synthetic mulches are NOT effective since the plants have so much stored energy and can poke up through thick mulch.

- Persistent removal of the shoots (mowing or hoeing) before they attain several leaves will exhaust the storage roots within two years—this effort should be focused in the spring when storage reserves are at their lowest.

- Deep tillage (e.g., to 1 foot, or 30 cm) will chop up and thereby weaken the storage roots.

- Watch for creeping perennials moving into fields from hedges and fences.

Ms. Scheufele is with the Univ. of Massachusetts Extension Vegetable Program. From Vegetable Notes for Vegetable Farmers in Massachusetts. Vol. 31, No. 14, July 18, 2019

HEALTHY PREDATORS, PARASITES ON PATROL

Use Biocontrol To Stamp Out:

- Aphids
- Whiteflies
- Fungus Gnats
- Spider Mites
- Thrips

References available in your area.

“I was REALLY pleased! I didn’t see aphids [on the tomatoes] during the whole growing season.”

Vernon Weaver
McAlisterville, PA

Hearty Beneficials GUARANTEED
Call 315.497.2063

IPM Laboratories, Inc.

ipminfo@ipmlabs.com

Since 1981

www.ipmlabs.com

BERRY PRODUCTION

Plasticulture Strawberries Planting and New Varieties

Gordon Johnson

Editor's Note: Keep in mind this article was written for Delaware growers so dates would be later than much of Pennsylvania.

In some years, later planted 'Chandler' strawberries have out-yielded earlier plantings. This illustrates the dramatic effects that fall and winter temperatures can have on plasticulture production.

'Chandler' has been our main plasticulture berry and has shown consistently high yields. For most of Delaware, the recommendation has been to plant 'Chandler' the second week in September. However, 'Chandler' is more sensitive to fall and winter temperatures than other varieties and in warmer conditions 'Chandler' will put on too much growth, leading to small berries the following spring; therefore, knowing when to plant is difficult. If you could accurately predict fall and winter temperatures, you could adjust planting dates, but of course this is not possible.

One strategy has been to make multiple plantings of 'Chandler' one week apart starting the second week in September. This will insure that a part of the crop will come out of winter with the proper number of crowns (not too many, not too little). Unfortunately, this means that part of the crop will be low yield and part will have small berries.

Another strategy is to switch to varieties that are less susceptible to putting on too much growth. This is where the variety 'Camarosa' may have a fit, as it is less temperature sensitive than 'Chandler' in the fall and is not prone to putting on excessive growth. 'Camarosa' can increase mid-to-late season spring sales when 'Chandler' quantity and quality declines as the temperatures increase.

'Sweet Charlie', the early berry that also can put on a second late crop, is normally planted 7-10 days ahead of 'Chandler'. It is not an option to replace 'Chandler'.

Another strawberry that should be considered by growers is Albion, a day-neutral variety. It too is not sensitive to when it is planted in the fall. While much less productive in the main 'Chandler' season, it has some unique properties that make it valuable to growers. First, it will give some early production, ahead of 'Chandler'. Second, even though production is lower, it produces evenly over an extended period of time from April through early July. In general it will give 5-6 weeks more production than 'Chandler'. It is a large, firm berry that, while not as sweet early in the season, has good quality in May and June. It requires much more nitrogen than 'Chandler' to produce adequately sized plants and production.

New Varieties

Many other varieties have trialed in the region; however, we still do not have enough research in our region to know if they can be replacements for 'Chandler'. One with great promise is 'Flavorfest'. This variety was developed at USDA, Beltsville and is well adapted to our region. 'Flavorfest' has a prolonged growing season when compared to most other commercial varieties. It is similar to 'Chandler' when grown in plasticulture, but its yield is higher and berries larger. The plants are also vigorous and require less nitrogen than 'Chandler'. 'Rutgers Scarlet' is another strawberry developed in the Mid-Atlantic. It has good flavor but moderate yields in regional trials. Two new North Carolina State varieties also

have been released for 2019. 'Rocco' is an early season, medium-large, medium soft berry, with excellent flavor and is a very high yielder. It is best for pick your own and on farm sales. Consider it as a 'Sweet Charlie' alternative. 'Liz' is a mid-late season, medium-large, firm berry. It has good flavor and is a high yielder. It produces a large plant which covers berries and can make it hard to pick. It is best for pick your own and short distance shipping. Consider it as a 'Camarosa' alternative.

*Dr. Johnson is the Extension Vegetable and Fruit Specialist at the Univ. of Delaware. From the **Weekly Crop Update**, Univ. of Delaware Extension, Vol. 27, Issue 20, August 9, 2019.*



'Flavorfest' Strawberry

USDA-ARS, Beltsville Agricultural Research Center, Beltsville, MD

'Rutgers Scarlet' Strawberry



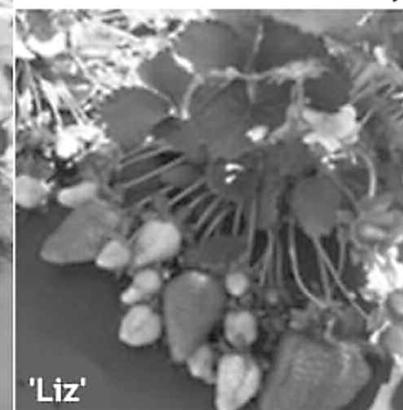
P Nitzsche, NJAES

'Rocco' and 'Liz' Strawberries

North Carolina State University



'Rocco'



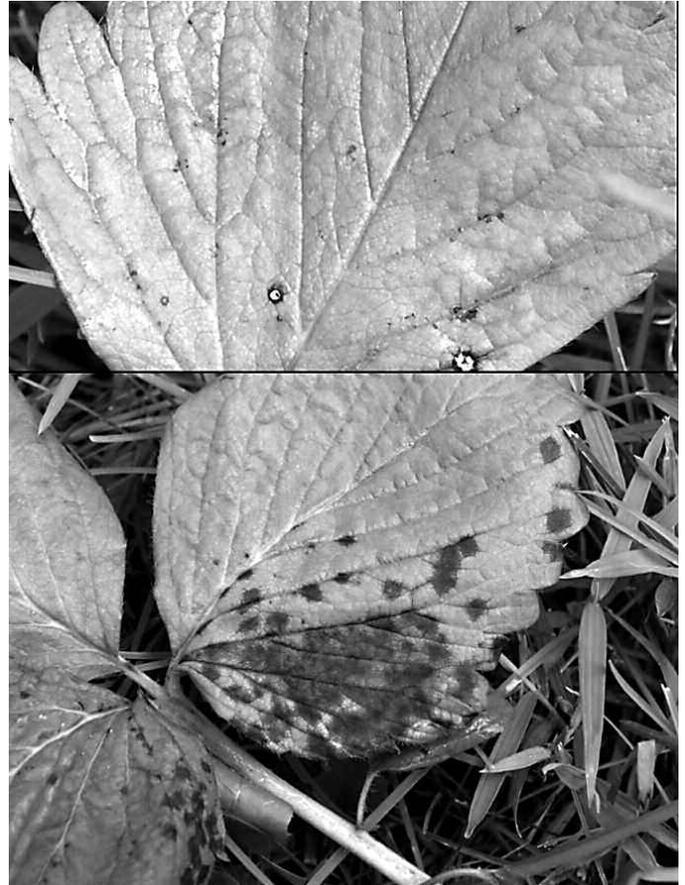
'Liz'

BERRY PRODUCTION

Current Berry Issues

From Kathleen Demchak and Penn State Extension Educators as of August 13, 2019

For this time of year, the usual suspects are being observed in berry plantings. Spotted wing drosophila is present in moderate numbers, and populations are likely to increase given the relatively cool temperatures and high humidity we are currently experiencing. SWD is mainly a problem for primocane-fruiting raspberries and blackberries, and later-season blackberries and blueberries, though day-neutral strawberries may also be affected. Chemical sprays are still the mainstay of control methods, but cultural techniques can assist in management. In primocane-fruiting raspberries and later-season blackberries, minimize weeds and the amount of crop foliage present in the lower canopy. For raspberries and blackberries, this includes using techniques such as keeping rows narrow, thinning primocanes of primocane-bearers, removing leaves from the lower foot of the primocanes, and prompt removal of floricanes from plantings managed for both a summer and fall crop. This allows better penetration of sprays into the lower canopy where SWD prefers to hide. Be sure to get good spray coverage, and make sure the entire canopy is treated including lower portions. With raspberries and blackberries, frequent harvest can assist in control. Powdery mildew, common leaf spot and leaf scorch are a common sight on strawberry plants across central PA. Common leaf spot causes "birds-eye" spots and the center of the spot frequently falls out, whereas leaf scorch spots develop a tan center which remains. Several fungicides are effective; see the Mid-Atlantic Commercial Vegetable Production Recommendations for labeled products. Fruit anthracnose is being reported on day-neutral strawberries. Manage resistance development by using captan alone or including captan in tank mixes.



(Top) Common leaf spot: Note the whitish center to the spots and missing tissue. (Bottom) Leaf scorch: Note the centers of the spots remain intact, even when the spots have advanced to the point where they coalesce. Photo credit: Kathy Demchak.

CLASSIFIED

Equipment

FOR SALE – MIST SPRAYERS

Many options. Spray orchards, produce, vineyards, etc.
Low Volume – High Pressure. Using air as the carrier.
They use less water as well as being more effective
and more efficient with less chemical.

Swiharts, Quinter, KS. 785-754-3513 swihartsales.com

Businesses and Farms

FOR SALE – 39-ACRE PRODUCE FARM near York. Thriving retail market. Has pond for irrigation. Public water and sewer are accessible to property. Farm and Land Realty

www.farmandlandrealityinc.com Ben Landis 717.471.1740

FOR SALE BY OWNER – GREENHOUSE/GARDEN CENTER OPERATION AT 171 Greenhouse Road, (Snyder County) Middleburg, PA 17842. Owners retiring. Proven profitable business model for over 40 years. Turn-key business with records, equipment, inventory, trees, shrubs, retail items. Owner is willing to assist in transition. Creative financing possible. The 18-acre property consists of a two-story, 3-bedroom, 2-bath home with small stream and approximately 60,000 sq. ft. total greenhouse area consisting of aluminum structures with flood tables. A 100 gallon+/minute never-failing well. Additional land to lease.

Call or Text Larry 570-765-6470

07



AgBiz Masters
A Learning Series for Young & Beginning Farmers

Are you a young or beginning farmer?

Are you interested in honing your business and financial management skills?

IF SO, AGBIZ MASTERS IS FOR YOU!

Learn more at AGBIZMASTERS.COM

MANAGE YOUR BUSINESS FOR THE FUTURE

Pennsylvania Vegetable Growers Association
815 Middle Road
Richfield, Pennsylvania 17086-9205
717-694-3596
pvga@pvga.org
www.pvga.org

PRESORTED
STANDARD
U.S. POSTAGE
PAID
MIDDLEBURG PA 17842
PERMIT NO. 26

Address Service Requested



TEW MANUFACTURING CORP.

**Fruit & Vegetable Cleaning &
Sizing Equipment & Parts**

**Quality Latex & Poly Sponge
Rubber Drying Donuts**

Tuff Foam® Protective Padding

Brushes • Bearings • Sizing Chains

Belting • Scrubber Rubber

New Stainless Steel Machines

CALL TOLL FREE 800-380-5839
FOR CATALOG & PRICES

TEW MFG. CORP. 585-586-6120
P.O. BOX 87 FAX: 585-586-6083
PENFIELD, NY 14526 www.tewmfg.com

Your Source for . . .

HIGH TUNNELS



Call Harry Edwards @ 717.606.8021
or Email hedwards@rimol.com