PENNSYLVANIA
VEGETABLE GROWERS

NEWS

April 2021 / Volume 44 Number 4

for the commercial vegetable, potato and berry grower

A beautiful bed of lettuce at Harvest Valley Farms in Valencia. Photo: Robert Shenot.

Game Commission Approves Concurrent Deer Seasons Statewide

At the recent Pennsylvania Game Commission quarterly meeting in April, commissioners finalized the 2021-22 hunting seasons and bag limits and approved a few other changes, including an extension to the Deer Management Assistance Program application deadline, a removal of the limit on antlerless tags, and a return to the concurrent deer firearms season

The commission approved a statewide, 14-day concurrent antlered and antlerless rifle deer season, which includes the Saturday opener and Sunday again this season. Antlerless tag allocation will be reduced in many wildlife management units in conjunction with this change, except in areas with established high levels of chronic wasting disease or where the deer populations are increasing.

The three Sundays will remain this season, all three once again falling in November. But the commission voted to expand hunting small game during the three Sundays. Pennsylvania Farm Bureau advocated against the species expansion.

Elk licenses were increased to 187 total, 56 antlered and 131 antlerless, as a response to increased conflict between elk and agriculture in the past year.

The deadline to apply for DMAP permits was extended from May 1 to July 1, giving landowners more time to enroll their property in the program.

The board also voted to allow the use of digital hunting licenses, which will utilize Pennsylvania's new online licensing system. Hunters will not have to carry a paper license and can instead show a digital version on their phone. Harvest tags will still be physical printed tags, however.

The board also approved a measure that allows hunters 'unlimited' antlerless tags. The same process of applying in rounds for antlerless tags will remain, with over-the-counter sales beginning in early September for hunters to purchase more. One hunter is now allowed to hold up to six unfilled antlerless tags at a time. Once a tag is filled, hunters may purchase another, as long as there are tags available within the WMU.

The additional species that can now be hunted on Sundays vary by each Sunday where hunting is allowed and, in some cases, by WMU.

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NEWS

PVGA Directors Hold Spring Meeting

The PVGA Board of Directors met virtually on the evening of April 13. After approving the minutes from the February meeting, they reviewed the financial reports. While income is down drastically with no Farm Show Food Booth income and much lower Convention income, they did note that members had contributed over $8,000 to increase the amount of money available for research this year. In addition, the members of the Board had contributed or pledged $18,430 to the General Fund to bolster the financial stability of the Association.

The Executive Committee reported that Conewago Ventures had been retained to redesign the Association's website. The Committee had also agreed to join other Farm Show Food Court organizations in seeking grants to cover loss income from the cancelation of the in-person 2021 Farm Show.

The Board voted to retain Troxell Administrative Services as an independent contractor to carry on the day-to-day operations of the Association including the services of William Troxell as Executive Director plus additional clerical help, office space and equipment, and storage space for a fee of $72,800, the same amount as paid in 2019 and 2020.

Current membership was reported as 759, down from 921 last year at the spring meeting. The Directors will be personally calling members who have not renewed their membership to urge them to continue to support the Association with their dues. The attendance and financial report from the 2021 Mid-Atlantic Convention showed a surplus from the successful virtual event, but far less than what is normally realized from an in-person event. The PVGA Convention Planning Task Force had met on March 22 to begin planning for an in-person 2022 Convention.

The Board reviewed reports from the Succession Planning Committee that is planning the transition for the retirement of Mr. Troxell in the near future and the Strategic Planning Committee that is exploring ways to allow the Association to provide additional services to members. While the Educational Committee hopes there will be the opportunity for local grower meetings this summer, Penn State Extension events will depend on what University and CDC guidelines will allow.

It was reported that Penn State Extension is in the process of filling vegetable extension educator positions based in Franklin, Butler and Columbia counties. It was also noted that Kathy Demchak and Francesco DiGioia had recently received awards for excellence in programing.

The Directors reviewed a revised Workplan for 2021 and also the results from the 2021 membership survey completed by 374 members. The survey showed 38% had found the Association's email Updates issued several times a week during the beginning of the coronavirus pandemic lockdown to very helpful and another 41% found them at least somewhat helpful. In the survey, members listed FSMA/food safety, government regulations in general and H-2A/labor issues to be the major government affairs issues the Association should be concerned with. Deer crop damage continues to be a major concern with 47% reporting major damage and 48% reporting it was worse than the previous year.

The Board's next meeting will be on July 20.

*The **Pennsylvania Vegetable Growers News** is the official monthly publication of the Pennsylvania Vegetable Growers Association, Inc.,*
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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 address.

NEWS

Bill to Expand On-Farm Conservation Efforts Introduced

Legislation that would provide new funding for Pennsylvania farmers to work with their local conservation districts on projects to improve water quality can now be considered by the General Assembly.

Senate Bill 465 was introduced by state Sen. Gene Yaw of Lycoming County and referred to the Senate Agriculture and Rural Affairs Committee for consideration. The same bill was introduced last year but expired at the end of the legislative session.

Pennsylvania Farm Bureau developed the legislation along with Yaw, Penn State, and the Chesapeake Bay Foundation.

The bill, modeled off of the state's Dirt and Gravel Roads program, would provide funding for county conservation districts to work directly with local farmers to implement on-farm conservation practices that improve water quality. Projects completed with the funding would be decided on and executed at the local level.

The push comes as Pennsylvania faces a heavy lift in meeting its federally mandated goals for reducing nutrient and sediment pollution in the Chesapeake Bay by 2025. While Pennsylvania has developed a detailed plan for expanding conservation practices in agriculture and other sectors to meet those goals, there is a shortfall in available funding to see the plan through.

The proposed program, which would be called the Agriculture Conservation Assistance Program, would target the most funding to areas with the greatest need, such as the Chesapeake Bay Watershed, although all areas of the state would receive at least some assistance to improve water quality.

"Pennsylvania farmers have long been conservation minded and manage their farms in a way that protects natural resources," said PFB President Rick Ebert. "However, challenges remain in meeting water quality goals, especially within the Chesapeake Bay Watershed. We are pleased that lawmakers such as Senator Yaw acknowledge that farmers cannot go it alone, while also recognizing that environmental challenges are not going away. This agriculture conservation bill will help farmers make conservation improvements on their farm and bring Pennsylvania closer to meeting those water quality goals."

From Pennsylvania Farm Bureau, https://pfb.com/bill-to-expand-on-farm-conservation-efforts-introduced/

Game Commission Approves Concurrent Deer Seasons Statewide

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Sunday, Nov. 14

Bear (archery) 2B, 5B, 5C & 5D

Deer (archery)

Squirrels

Ruffed Grouse

Rabbit

Pheasant

Bobwhite Quail

Groundhogs

Raccoons

Opossum

Skunks

Weasels

Porcupines

Sunday, Nov. 21

Bear (firearm)

Bear (archery) 2B, 5C, 5D

Deer (archery) 2B, 5C, 5D

Squirrels

Ruffed Grouse

Rabbit

Pheasant

Bobwhite Quail

Groundhogs

Raccoons

Opossum

Skunks

Weasels

Porcupines

Nov. 28

Bear (firearms) 1B, 2B, 2C, 3A, 3B, 3C, 3D, 4A, 4B, 4C, 4D, 4E, 5A, 5B, 5C, 5D

Deer (firearms)

Raccoons

Opossums

Skunks

Weasels

The complete list of adopted 2021-22 seasons and bag limits is available at https://www.media.pa.gov/Pages/game-commission-details.aspx?newsid=460.

In most WMUs, antlerless license allocations were decreased with the move from a seven-day to a 14-day concurrent season. But because deer-population objectives determine harvest goals, and therefore the allocation of antlerless licenses, the allocations are not decreasing everywhere. For example, in WMUs where the deer population is increasing, but the deer management plan goal is to stabilize the population, an increase in harvest is needed. As a result, the antlerless allocation has increased to achieve a higher harvest. In WMUs with chronic wasting disease (CWD), similar increases in allocation and harvest are necessary.

Providing for the concurrent antlerless and antlered season provides hunters with additional time to meet the deer management objectives in each WMU and takes into account the potential for inclement weather to negatively affect hunting opportunities during the firearms deer season.

The board voted to allocate 925,000 antlerless deer licenses statewide, which is down from the 932,000 licenses allocated for 2020-21. The move to allow concurrent hunting of antlered and antlerless deer statewide throughout the 14-day regular firearms season decreased the number of antlerless licenses available in many Wildlife Management Units (WMUs) while goals to maintain higher harvests in WMUs affected by chronic wasting disease (CWD) led to increased license allocations there. Allocations by WMU are as follows, with the allocation from the previous license year appearing in parentheses: **WMU 1A – 40,000** (49,000); **WMU 1B – 32,000** (41,000); **WMU 2A – 39,000** (46,000); **WMU 2B – 49,000** (49,000); **WMU 2C – 67,000** (58,000); **WMU 2D – 74,000** (60,000); **WMU 2E – 42,000** (39,000); **WMU 2F – 32,000** (36,000); **WMU 2G – 23,000** (27,000); **WMU 2H – 9,000** (7,000); **WMU 3A – 19,000** (21,000); **WMU 3B – 30,000** (33,000); **WMU 3C – 33,000** (49,000); **WMU 3D – 36,000** (36,000); **WMU 4A – 50,000** (49,000); **WMU 4B – 34,000** (33,000); **WMU 4C – 29,000** (32,000); **WMU 4D – 55,000** (45,000); **WMU 4E – 42,000** (37,000); **WMU 5A – 31,000** (26,000); **WMU 5B – 60,000** (60,000); **WMU 5C – 70,000** (70,000); and **WMU 5D – 29,000** (29,000).

From Pennsylvania Farm Bureau, https://pfb.com/game-commission-approves-hunting-regulation-changes/ and the Pennsylvania Game Commission.

NEWS

Tax Plans Would Threaten Family Farms

Farm Bureau is opposing plans in Congress that would tax unrealized capital gains at death and eliminate the stepped-up basis on those capital gains, warning that the move could force many family farms out of business.

Enacting those changes would result in a significant tax burden for agriculture, putting at risk the ability of family farms to remain financially sustainable as they continue to the next generation.

"Taxing capital gains when a loved one passes away would have a devastating impact on farm and ranch families, even more so if the stepped-up basis tool is taken out of the toolbox," American Farm Bureau President Zippy Duvall said. "Stepped-up basis encourages families to grow their businesses and pass them on to another generation, and elimination could force those families to sell their farms just to pay the taxes."

Stepped-up basis enables farms to reduce the burden of capital gains taxes by resetting the value of an asset when it is transferred between generations. It's especially important in agriculture because assets, such as land, are often held for decades and passed on from generation to generation.

Currently, the capital gains taxes on the stepped-up value of an inherited asset are deferred until that asset is sold. So if capital gains are taxed at death and the stepped-up basis is removed, the next generation inheriting the farm could be forced to pay taxes on the increase in value over generations.

"The value of many farms is tied up in land and equipment," Duvall said. "Cash flow on most farms is much too small to pay large capital gains taxes. These taxes would cause further consolidation in agriculture with small farms more likely to be forced out of business by the tax liability."

In Pennsylvania, the average cropland value has increased 168 percent since 1997, resulting in an estimated capital gains tax of $890 per acre. In that scenario, the capital gains tax would be close to 10 times the average cash rental rate.

From Pennsylvania Farm Bureau, see https://pfb.com/tax-plans-would-threaten-family-farms/ for additional information and links to contact your legislator.

USDA to Assist Socially Disadvantaged Farmers and Reopen CFAP 2

The U.S. Department of Agriculture (USDA) Farm Service Agency (FSA) announced on April 5 the availability of $2 million to establish partnerships with organizations to provide outreach and technical assistance to socially disadvantaged farmers and ranchers. The funding was made possible by USDA's new Pandemic Assistance for Producers initiative, an effort to distribute resources more broadly and to put greater emphasis on outreach to small and socially disadvantaged producers impacted by the pandemic. This also marks the reopening of FSA's Coronavirus Food Assistance Program 2 (CFAP 2) signup as part of the Pandemic Assistance for Producers initiative. Farmers and ranchers will have at least 60 days to apply or make modifications to existing CFAP 2 applications.

Cooperative Agreements

The cooperative agreements will support participation in programs offered by FSA, including those that are part of USDA's Pandemic Assistance for Producers initiative. Interested organizations must submit proposals by May 5, 2021.

"USDA is committed to making financial assistance available to a broader set of producers, including to socially disadvantaged communities, and we know that we need partners to help make that happen," said FSA Administrator Zach Ducheneaux. "This funding will support grassroots organizations and public institutions as we support their producers. I am excited to see their innovative, results-driven proposals to help us reach our producers, especially those who have not taken full advantage of the available assistance."

Reopening of CFAP 2

CFAP 2 provides financial assistance that gives producers the ability to absorb increased marketing costs associated with the COVID-19 pandemic. Eligible commodities include specialty crops, livestock, dairy, row crops, aquaculture, floriculture and nursery crops. The initial CFAP 2 signup ended on Dec. 11, 2020, but USDA will reopen sign-up for CFAP 2 for at least 60 days beginning today. Visit farmers.gov/cfap for details on all eligible commodities, producer eligibility, payment limitations and structure and additional program resources.

Producers have multiple options to apply for CFAP 2, including through an online application portal and by working directly with the FSA office at their local USDA Service Center. Customers seeking one-on-one support with the CFAP 2 application process can call 877-508-8364 to speak directly with a USDA employee ready to offer assistance. This is a recommended first step before a producer engages with the team at the FSA county office.

Additional CFAP Actions

USDA will also finalize routine decisions and minor formula adjustments on applications and begin processing payments for certain applications filed as part of the CFAP Additional Assistance. The Consolidated Appropriations Act, 2021, enacted December 2020 requires FSA to make certain payments to producers according to a mandated formula.

While USDA offices are currently closed to visitors because of the pandemic, Service Center staff continue to work with agricultural producers via phone, email, and other digital tools. To conduct business, please contact your local USDA Service Center. Additionally, more information related to USDA's response and relief for producers can be found at www.farmers.gov/coronavirus.

About Pandemic Assistance for Producers

This announcement supports USDA's efforts to bring financial assistance to farmers, ranchers and producers who felt the impact of COVID-19 market disruptions. The new initiative—USDA Pandemic Assistance for Producers—will reach a broader set of producers than in previous COVID-19 aid programs. USDA is dedicating at least $6 billion toward the new programs. The Department will also develop rules for new programs that will put a greater emphasis on outreach to small and socially disadvantaged producers, specialty crop and organic producers, and timber harvesters, as well as provide support for the food supply chain and producers of renewable fuel, among others. For more information, visit www.farmers.gov/pandemic-assistance.

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NEWS

News Briefs

USDA Pre-Solicitation Announcement for TEFAP Fresh Produce

On April 9, USDA announced plans to purchase pre-packed, fresh produce boxes to offer through The Emergency Food Assistance Program (TEFAP) from June through September 2021. The fresh produce package will weigh 10-12 pounds and consist of a variety of fresh fruits and vegetables, including at least 2 that are locally grown, and will be expected to have a shelf life of 7-10 days once delivered to the contract location. USDA expects to issues solicitations in the near future, which will be available electronically through the Web-Based Supply Chain Management (WBSCM) system and on the WBSCM Public Procurement Page. To be eligible to submit offers, potential contractors must meet the Qualification Requirements for Selling TEFAP Fresh Produce to the USDA Agricultural Marketing Service.

Senate Passes Wedding Barn Bill

A bill supported by Pennsylvania Farm Bureau that aims to make it easier for farmers to rent out barns for weddings and similar social events has been passed by the state Senate.

Senators voted 28-19 in favor of Senate Bill 191, sponsored by Sen. Judy Ward of Blair County. The measure now heads to the House for consideration.

The bill would exempt certain agricultural buildings that are used occasionally for weddings or other social events from some parts of the Uniform Construction Code, as long as other safety conditions are met. The exemption would apply only to existing structures, not new construction.

With more people wanting to connect with agriculture and hold events in rustic settings, wedding barns can be a great option for farms to diversify and bring in additional revenue to supplement farm income. However, some municipal governments have required farms that want to host events to retrofit historic barns and agricultural buildings to meet the entirety of the construction code, which can be cost prohibitive, especially if a sprinkler system is required.

The legislation would allow farms to avoid having to install a sprinkler system in existing buildings if they meet certain safety requirements. Those include: ensuring electrical wiring is up to date, ensuring there are sufficient and operational smoke detectors and portable fire extinguishers on site, prohibiting smoking and open flames (except for food-warming trays), and ensuring there are multiple ways to exit the building safely in an emergency.

The bill is based on agreements that some farmers have reached with local officials in their municipalities and would establish a statewide standard that makes it easier for farms throughout the commonwealth to host events safely.

From Pennsylvania Farm Bureau,
https://pfb.com/wedding-barn-bill-passed-by-senate/

2021 Farm Vitality Grant Program Announced

On April 9, 2021, Pennsylvania Secretary of Agriculture Russel Redding announced the availability of $1 million for the Farm Vitality Planning Grant program, which will provide $7,500 grants to current and prospective farmers for the provision of professional services for farm planning. The grants can fund up to 75% of the costs to help develop plans for the management, expansion, and ownership transition or transfer of a farm. Applicants may use expenses incurred since July 1, 2020 as part of a work plan. Grant applications will be accepted beginning April 19, 2021 until funding is depleted. For further information, visit https://www.agriculture.pa.gov/Pages/Farm-Vitality-Planning-Program.aspx or call 717-787-3568.

*From **Agricultural Law Weekly Review**,*
Penn State Center for Ag. and Shale Law, April 16, 2021.

Monthly FSMA Conference Calls Scheduled

This year the Food Safety Modernization Act (FSMA) will require many small food producers, growing $28,000 to $250,000 in produce, to receive their first inspection. But many growers still have questions on how this will impact their operation. What will an FSMA inspection involve? What needs to happen to be in compliance? How is FSMA like GAP audits?

The calls will be the first Monday of each month starting May 3 at 8:00 p.m. Join Farm Food Safety Educator Jeff Stoltzfus in a conference call to unpack FSMA. Learn what "educate while you regulate" means. Get current FSMA updates. And have Q&A time to ask your questions about the act and ongoing inspections. Monthly conference calls are free to attend! Call: 425-436-6321 Use access code: 5348473 Pre-registration is not necessary There is no cost but it is not a toll-free number.

Berry Growers Weekly Info Exchange by Phone or Zoom

PVGA will be hosting a weekly get-together for berry growers each Monday night at 8:00 p.m., where you'll have a chance to get time-sensitive updates on current issues from state and regional extension personnel, exchange info with other growers, get answers to your questions, or just listen in or maybe bounce your thoughts off of others. Kathy Demchak will be your weekly host. The first session on April 26 was attended by a small but dedicated group of berry growers. Attendees compared notes on their experiences with the frost and freeze events of the previous week, touched on strawberry variety performance on their farms, and then discussed new strawberry diseases and methods of management. The meeting wrapped up with a discussion of strawberry herbicide options for springtime use.

Calls are open to PVGA members and non-members to maximize information exchange, so spread the word and invite your friends and neighbors to join. How long we stay on the call, and how far calls continue into the summer depends on how many people join and how the conversation is going – this is our first attempt at something like this, so we'll just see how things go!!

The Zoom link is https://us02web.zoom.us/j/83077021881

The call-in numbers are *(be aware that this is not a toll-free call):*
+1 929 436 2866 US (New York)
+1 301 715 8592 US (Washington DC).
The meeting ID is 830 7702 1881

If you have questions, contact us at pvga@pvga.org or 717-694-3596.

MARKETING

Farmers Markets Urged to Take Advantage of Free Equipment for SNAP

Agriculture Secretary Russell Redding and Human Services Secretary Teresa Miller highlighted an opportunity for farmers markets to address food security in their local communities and expand their consumer base by taking advantage of free electronic benefit transfer equipment to accept Supplemental Nutrition Assistance Program (SNAP) benefits from residents.

"Farmers markets who don't accept SNAP are missing an opportunity to serve their community by providing those who rely on the benefits with access to nutritious, local food," said Redding. "Not only does accepting SNAP benefit your community, but it benefits you. It's an opportunity to expand your consumer base and increase your sales."

The Department of Human Services has been awarded a grant from the U.S. Department of Agriculture's Food and Nutrition Service (FNS) to support access to fresh, healthy foods for SNAP recipients while supporting Pennsylvania's agricultural economy. Interested market owners should apply to be an authorized SNAP retailer through FNS (see www.fns.usda.gov/snap/retailer or call 1-877-823-4369). Once authorized to accept SNAP, vendors can contact Pennsylvania's electronic benefit transfer (EBT) provider Conduent at 1-888-736-6328 to request free wireless EBT processing equipment. The grant also covers set-up costs and one year of SNAP transaction fees.

"Becoming an authorized SNAP retailer is a common-sense way to help small businesses grow their consumer base and to support families so they can keep food on the table. SNAP is the nation's most important and effective anti-hunger program; it helps individuals and families stretch their budgets, reduces the burden on local charitable food networks, and supports local retailers and grocers," said DHS Secretary Teresa Miller. "We want to do everything we can to help families who are feeling this economic strain most acutely and small businesses that have had to weather the last year of economic uncertainty, which is why we are so proud to offer this opportunity. I strongly encourage farmers markets across Pennsylvania to apply to be an authorized SNAP retailer."

Pennsylvania is home to more nearly 1,000 farmers markets and on-farm markets, however only 48 – less than 5% – are registered with FNS to accept SNAP benefits. By taking advantage of the opportunity for free EBT equipment to accept SNAP through the Department of Human Services, farmers markets can offer a new avenue for Pennsylvanians who rely on SNAP to spend their benefits on fresh, nutritious food. For farmers markets operators, there is no difference in accepting SNAP than accepting debit or credit transactions and SNAP benefits cover the full price that any consumer would pay at market for products.

"Throughout the pandemic, Managers of farmers markets and on-farm markets who redeem SNAP benefits have reported their redemption numbers have, in most cases, double from previous years," said Brian Moyer, executive director of the Pennsylvania Farmers Market Association. "This reflects the critical role that these markets play as an essential source of food and nutrition in our communities and the wireless EBT equipment makes SNAP redemption easier to use for outdoor community farmers markets.".

SNAP helps more than 1.8 million Pennsylvanians, including children, people with disabilities, older adults, and working Pennsylvanians, expand purchasing power to ensure their household has enough food to avoid going hungry. SNAP is issued through a monthly payment to an electronic benefit transfer card, and benefits are based off income and household size.

Vendors Wanted for Western PA Markets

Farmer vendors are wanted for the following western PA farmers' markets:

Midweek Market at SouthSide Works
Wednesdays
Bi-Weekly July 14th-October 6th • 3pm-7pm
Contact Carla Clipper southsideworksmarket@gmail.com

Mt. Lebanon Uptown Market
Saturdays
May 8-October 30th • 9am-noon
Contact Carla Clipper at mtlebanonevents@gmail.com

Bellvue Farmers' Market
Wednesdays
June 2nd-October 27th • 3pm-7pm
Contact marketmanager@bellevuemarket.org

Baldwin Borough Farmers' Market
Second and Fourth Saturdays
June 12th through September 18th • 10am-2pm
Contact Denise Maiden at denisemaiden@gmail.com

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GENERAL

Pasa Recognizes the First Graduates of its Diversified Vegetable Apprenticeship Program

Pasa Sustainable Agriculture is proud to announce the first three graduates of its Diversified Vegetable Apprenticeship program. This formal, paid apprenticeship program, registered with the Pennsylvania Department of Labor and Industry, pairs beginning farmers with established farmers to provide a guided pathway toward managing or starting a vegetable farm. Graduating apprentices have completed at least 2,700 hours of on-the-job training as well as 200 hours of related technical instruction, including trainings, workshops, and other educational events.

The graduating apprentices are **Ashley Beeson** at Two Gander Farm with host farmers Trey and Deirdre Flemming; **Logan McCabe** at Fullers Overlook Farm with host farmers Liz and Mike Krug; and **Megan Moore** at Nook & Cranny Farm with host farmer Bob Tuori.

Ashley Beeson at Two Gander Farm.

Liz Krug and Logan McCabe at Fullers Overlook.

Apprentice Megan Moore and Host Farmer Bob Tou.

Graduates were recognized in a virtual ceremony at Pasa's Annual Meeting at the end of January. In a video of the ceremony (at https://www.youtube.com/watch?v=rmGiuo7ce14), which includes interviews with apprentices and host farms, Bob Touri remarked that his apprentice, Megan, "did a fantastic job... She definitely has a future of running a good business ahead of her!" Liz Krug said, "We can't speak highly enough about the program and Logan...It's been wonderful seeing the growth of a new farmer over two seasons. And from an employer standpoint, it's been wonderful having that steady employee here." In an extended version of his interview, host farmer Trey Flemming also sang the praises of his apprentice, Ashley, and of the program, adding that it was a "profound experience...to be able bring the next generation into diversified vegetable farming."

What's next for the next generation?

Diversified Vegetable Apprenticeship graduates have now achieved journeyworker status and are each pursuing different paths toward their respective futures in farming. Logan McCabe is currently seeking continued employment in farm management; Ashley Beeson is in the process of opening her own diversified vegetable farming operation, and even had help from her former host farmers in planning her new greenhouse; and Megan Moore is partnering with two other women to start a small CSA and farm stand at a brewery.

GENERAL

The 1-800-PENN-IPM Hotline is Active for 2021

Daniel Weber

A new season is upon us and once again the 1-800 PENN IPM hotline is active, providing 90-second snippets of distilled information that complement our newsletters and email alerts.

At the time of this writing, Dr. Kari Peter has already begun recording messages, and we expect the other hotline message boxes to spring into action soon if they are not already active by the time this article arrives in your hands.

If you are unfamiliar with the hotline or if it has been some time since you last used it, the 1-800 PENN IPM line is designed to provide concise bursts of content on matters of immediate importance relating to production fields and orchards.

Messages are recorded by a specialist or educator on an as-needed basis to provide convenient access to content wherever telephone service is available. While the hotline cannot serve as a replacement for the fuller articles available in print or at the Penn State Extension website, the recordings are designed to be short and to the point, to appraise you of critical concerns worth investigating on your farms.

The system was upgraded and expanded in 2020 to provide more content than ever before, including content outside that of pest control. There are now dedicated lines for disease, insect, and general tree fruit horticultural management, and announcements of upcoming Extension programs and services. Each message line provides 90 seconds-worth of content for each of these subjects as compared to the previous format where only one message box served all of these areas. There are also dedicated message boxes for a variety of vegetable crops and small fruit for those of you who have diversified operations.

The hotline also has expanded its content for Spanish-speaking listeners . Messages posted to the tree fruit lines will be translated and posted to the tree fruit Spanish-language message box as quickly as possible upon their release by our specialists. (The Spanish tree fruit line is not yet split into sub-categories like the tree fruit or vegetable lines.) Our hope is that by providing this information in Spanish, your guest workers and members of our local Latinx communities for whom English is a second language will be able to access this information more readily and with fewer misunderstandings than reliance on English-language messages only. (Of course, anyone may access any of the message boxes, in English or in Spanish, at any time!)

To listen to the recordings, simply dial 1-800 PENN IPM (1-800-736-6476) with a touch-tone phone and follow the directions at the message prompts. A convenient chart is given below to make locating messages of interest easier. If you wish to have a printed copy of this chart and instructions on how to access the system to hang on your wall near your phone or on your refrigerator, contact a local Extension agent as we have a supply of pre-printed mailers that can be sent to you.

We are always interested in your feedback. If you think of a topic to be addressed or a crop that should receive a dedicated message box, please contact your local Extension educator to make those suggestions. There is room for expansion in this new system. If there is significant demand and an available specialist or educator to provide the content, we will consider adding it.

Dr. Weber is with Penn State Extension in Adams Co. From Penn State Extension, https://extension.psu.edu/the-1-800-penn-ipm-hotline-is-active-for-2021, April 14, 2021.

HOW TO NAVIGATE THE NEW 1-800-PENN-IPM

Subject	Keys	Description
Vegetables	1	**Updates for commercial vegetable production**
General		1 Messages applicable to general vegetable production
Onion and Allium		2 Specific to allium production
Tomatoes and Potatoes		3 Specific to tomato/potato production
Sweet Corn		4 Sweet corn pest updates
Vine Crops		5 Pumpkins, squash, other cucurbits and vines
Previous Menu		* Return to the previous menu
Greenhouse IPM	2	**Updates for commercial greenhouse IPM**
Coronavirus Tips	3	**Coronavirus updates for produce growers**
Small Fruit	4	**Commercial small fruit production (all kinds)**
Tree Fruit	6	**Commercial tree fruit industry main menu**
Pathology		1 Pathology updates (diseases)
Entomology		2 Entomology updates (insects and mites)
Physiology/Horticulture		3 Physiology, pomology, and horticulture updates
General		4 Current tree fruit industry issues
Directory		8 A brief directory of specialist and educator contact numbers
FREC		0 Transfer to the Fruit Research and Extension Center (FREC)
Previous Menu		* Return to the previous menu
Private Applicator License Update	8	**Information about the PDA pesticide applicator license process**
Spanish-Language Translations (Traducciones al idioma Español)	9	**Updates in Spanish (Actualizaciones en Español)**
Vegetables (Hortalizas)		1 General vegetable production (Producción de hortalizas)
Greenhouse IPM (MIP de invernadero)		2 Greenhouse growing (Producción en invernaderos)
Small Fruit (Frutas pequeñas)		3 General small fruit production (Producción de frutas pequeñas)
Tree Fruit (Árboles Frutales)		4 General tree fruit production (Producción de árboles frutales)
Previous Menu (Menú anterior)		* Return to the previous menu (Retornar al menú anterior)

TIPS FOR USING THE HOTLINE

1. 1-800-PENN-IPM = 1-800-736-6476
2. Press the key associated with the subject of interest.
3. If additional category topics are available, press the key corresponding to that subtopic to hear that message.
4. Keys may be pressed at any time - there is no need to wait for a message to finish.
5. Pressing "*" at any time takes you back to the previous menu.
6. All messages last 90 seconds at most and will repeat twice.
7. When messages are complete, you will be returned to the previous menu for additional selections.
8. Hang up when done, or press "*" to make another selection.

GENERAL

Weekly Pest Management Teleconference for Growers Begin

On Wednesday, April 21 at 12:30 pm ET, Steve Bogash of Marrone Bio Innovations started the first of a season of weekly pest management education teleconferences. These calls are for growers, retailers and crop consultants. The calls will last 30 minutes and begin at 12:30 PM ET. The first 15 minutes will be reports on seasonal and active pest management challenges in vegetables and small fruit with a guest expert. Then, we will open the call to discussion and Q & A. The calls will be recorded and accessible thru the playback number below.

Scheduled Topics and Guests:

4/21: Dr. Matt Kleinhenz, Ohio State University. 'Everything High Tunnels'

4/28: Dr. Timothy Johnson, Marrone Bio Innovations. 'Regalia® Biofungicide and SAR's, how this makes healthier plants'

5/5: Tom Ford, Penn State Extension. 'High Tunnel Pests and a First Look at Field Conditions'

5/12: Dr. Margaret McGrath, Cornell University. 'Tomato and Pepper Disease Management'

5/19: Dean Polk, Rutgers University. 'Blueberry Insect and Disease Management'

9/8: Dr. Matt Kleinhenz, Ohio State University. 'Prepping your High Tunnel for 2022'

Call-In Number: 515-604-9914, Access Code: 832191 Playback Number: 515-604-9875

All of the 2020 recordings are still available and can be heard by contacting Steve Bogash at sbogash@marronebio.com or calling him at 717-877-7105.

This program is organized by Marrone Bio Innovations (MBI), a global supplier of bio-based plant health and pest management solutions. While MBI products may be mentioned, the teleconferences will be focused on pest management education and solutions.

VEGETABLE PRODUCTION

Improve Pest Management by Planning Ahead

K. Campbell-Nelson, S. Scheufele and L. McKeag

Integrated Pest Management (IPM) is a stepwise approach to managing pests that combines accurate knowledge of the pest and level of potential harm with multiple tactics to prevent, reduce, or eliminate the effect of pests (disease, insects, weeds, or even abiotic issues) on your crops. It is not an alternative to organic or conventional production, but is a strategy that can be used by any grower, whether using OMRI-listed or conventional materials.

Over decades of working directly with growers to implement IPM on their farms, we have developed an IPM planning template to help you focus and be successful with your pest management strategies. Following are instructions for completing an IPM Plan at https://ag.umass.edu/sites/ag.umass.edu/files/ipm_planning_template_nov2017edit.docx:

Crop & Pest columns: Choose up to 5 pest-crop combinations you would like to work on most this season. We have found that choosing no more than 5 pest issues each season leads to more successful pest management because it allows you to focus on learning pest identification and life cycles and become more confident at using control strategies that work. Often, growers will choose to focus on their most valuable or newest crop(s). Each season, you can choose new pests and crops to build on your IPM knowledge from the previous year.

Past Control Strategies column: Write down what strategies you have tried before. What worked? What didn't work? Take a moment to think about your crop quality, inputs, and yields this season in terms of the pest in question. Did you implement a practice that reduced pesticide use, labor, or other inputs on the crop? Was the crop more profitable? Perhaps some of your strategies worked, but not others; write down both. "I don't know" may be what you write down, especially if you are working with a crop or pest that you don't have much experience with.

Future IPM Strategies column: Some of the core IPM strategies are listed below. List the strategies that you plan to use. Be picky; only write down the strategies you think you will actually use. Below are some strategies to choose from.

a. Accurate identification: Determine the true underlying cause of the pest problem through soil or plant tissue testing, disease diagnostics, insect and weed identification, or other methods. Often, pest identification is the most important task in the first year of developing an IPM plan.

b. Pest scouting: Determine pest levels, damage, and life stages, and keep records over time. We recommend weekly scouting for most crops (sometimes more frequently, for example as pest levels approach thresholds). See our scouting resources page at https://ag.umass.edu/vegetable/resources-services/scouting-resources for pest scouting sheets that we have developed for different crops.

Crop	Pest	Past Control Strategies	Future IPM Strategies	This Year's Plan: *2018*	Calendar Alert	Notes
Summer Squash, Zucchini, and various winter squash: Delicata, Butternut Acorn Spaghetti	Squash Vine Borer (SVB)	We identify the larvae in stalks, but it's too late to treat once they are infesting the crop. We lost about 30% of yield to fruit infestation in the fall. We didn't know there could be 2 generations of SVB per year! **What didn't work?** Treatment was too late since Entrust must be consumed by the larvae before they enter the stalk and row cover is not practical on a large scale. We need to know when adults arrive, how to identify eggs and when to treat so that we can target larvae before they enter the plant.	**Accurate Identification:** Adult and eggs. **Monitoring:** Use pheromone trap to determine arrival of adults. Trap is to be placed in the top of the crop canopy about 3ft. above the ground. **Chemical Control:** Use Entrust targeting base of plant at a threshold of 5 adults/trap in non-vining crops and 12/trap in vining crops.	Get Pest ID guide from UMass Extension. Manager order trap and pheromones from Great Lakes IPM. Manager will set up the trap with field crew and assign a scout. First place the trap in the field where the winter squash was last year, then when the first adults are captured, move the trap to the summer squash field. Scout will check traps weekly and scout for eggs then report to Manager. Farmer will treat at threshold.	December 3: Order trapping supplies and ID Guide. May 15: Set up trap. Early June (likely): Scout for eggs near the base of the plant. Weekly, May 15–harvest: Check trap and scout field. Spray if threshold is reached.	Summer squash is being grown in the field adjacent to last year's winter squash which had a high infestation, so heavy pressure is expected. The winter squash was not tilled under to destroy pupae because this is a no-till field, so higher populations are also expected.

Continued on page 20

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Two Dozen Practices to Consider Doing this Year

Vern Grubinger

Note: Some links were changed from the original article to direct growers to Pennsylvania resources where appropriate.

Here's a list of some "best practices" you might already be implementing, have been meaning to do, or…don't even want to think about. This isn't meant to overwhelm you, but to provide reminders of things you may want to act on. The list is not in priority order, and is kind of random…send us your ideas on topics that should have been included!

1. Add *Trichoderma* and/or other *biofungicides* to your potting mix (see https://ag.umass.edu/greenhouse-floriculture/fact-sheets/biofungicides). Many of these are low cost, essentially nontoxic, and they can help prevent diseases that cause damping off. Depending on the label, they can be incorporated in the mix ahead of time, or applied as a drench to established transplants.

2. Calculate the cost of your field fertilizer options. Becky Maden (UVM Extension) developed spreadsheets to help you select the lowest-cost soil amendments to meet the nutrient application rates you've identified, based on crops and soil test results. The spreadsheets and related information are available at https://www.uvm.edu/vtvegandberry/NMPlinks.html.

3. Call a technician to service greenhouse heating systems. Making sure your furnaces, boilers, etc. are in optimal condition can save money by improving their efficiency, and avoid potential problems such as heating failures or ethylene damage due to combustion gases getting into the greenhouse. For more information, see this fact sheet from Virginia Tech (https://www.pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/2906/2906-1387/2906-1387(SPES-97).pdf) and this fact sheet from UMass (https://ag.umass.edu/greenhouse-floriculture/fact-sheets/heating-system-maintenance) focused on gas and oil furnaces.

4. Clean up your surfaces. Do you have wooden walls, or other hard-to-clean-surfaces in places where produce or other food is handled? This UVM Extension Ag Engineering blog post on smooth and cleanable surfaces at https://blog.uvm.edu/cwcallah/2016/04/29/finish-surfaces-for-produce-and-food-areas/ provides a summary of some finish surface materials, their pros, cons and prices.

5. Develop an employee handbook. This is not as hard as it sounds, and there are many potential benefits of being on the same page with your employees. Use this personnel policy generator at https://www.uvm.edu/aglabor/dashboard/personnel-policy-generator to edit pre-exiting text that makes it super easy for farms to generate your own employee handbook. If you need a good example, here's the Lewis Creek Farm Employee Handbook posted on-line at http://lewiscreekfarm.com/employeehandbook.pdf by Hank Bissell and shared without permission. Thanks Hank!

6. E-mail pictures of plant problems for diagnosis. The pandemic has increased use of this option. Visit https://plantpath.psu.edu/about/facilities/plant-disease-clinic to see how to submit a digital sample. A live sample may eventually be needed, but you can save time by sending the right kind of images first.

7. Get customer feedback. Set up a consistent way to learn what your customers like and don't like. This can be as simple as providing feedback forms and a collection box at your retail market, or you could conduct an e-mail survey to your customer list. Keep the questions short and focused on things you can respond to (change).

8. Increase your drip irrigation. In high tunnels or in the field, the entire root zone of crops may not be fully wetted if there are not enough drip lines, especially during droughty periods. This is most likely an issue in light-textured, sandy soils, where water tends to move down rather than sideways. This article at https://blogs.oregonstate.edu/mgmetro/2020/04/04/drip-soaker-irrigation/ has a couple of good images showing water movement over time in different textured soils.

9. Install monitoring systems – at least for greenhouse temperature, and maybe much more. A simple temperature alarm can save you a bundle if the heat goes out or vents aren't open when they should be. Keeping tabs on vegetable storage conditions is a good idea, too. Here's some information at https://blog.uvm.edu/cwcallah/remote-monitoring/ from UVM Ag Engineering about monitoring options on the farm.

10. Invest in good rain gear and neoprene gloves. In response to VVBGA listserv queries in recent years, Grunden or Helly Hansen were popular rain gear products, and Ice Bay Glacier gloves were a favorite.

11. Join PVGA at www.pvga.org. The association provides programming and support for vegetable and berry growers and is a great way to meet ag service providers and other growers in your region.

12. Monitor spray coverage by using water sensitive cards. If you apply pesticides, organic or conventional, good coverage is important. Here's an article with images at https://sprayers101.com/wsp-coverage/ that shows how these cards can help you assess coverage. Here's a video (https://www.youtube.com/watch?v=P79fH2VdJic) with a lot more information.

13. Mount HAF fans in high tunnels (especially for trellised tomatoes, which block air movement). The fans create a more uniform temperature by reducing stratification, can reduce disease problems by avoiding condensation on leaves, and can help maintain higher carbon dioxide levels around the leaves. Proper selection and installation of HAF fans is important; see this article at http://ipm.uconn.edu/documents/raw2/Horizontal%20Air%20

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Flow%20Systems/Horizontal%20Air%20Flow%20Systems.php for details.

14. Net some of your blueberry or raspberry crop. A good way to estimate what your losses to birds are is to cover a part of your planting for comparison. Using insect netting can give you protection from both birds and SWD. Growers are experimenting with a variety of netting systems to protect their crops. Here's a collection of bird netting images on brambles and blueberries at https://www.uky.edu/hort/bird_netting_pics.

15. Order *Trichogramma ostriniae* for European corn borer control. This miniature wasp seeks out ECB egg masses and parasitizes them, killing them before they hatch. This beneficial insect is produced on demand by IPM Labs in NY (https://www.ipmlabs.com/wp-content/uploads/2016/06/european-corn-borer-control.pdf), so you need to call them when you plant your sweet corn to place your order.

16. Plan some down time and empower your employees to do the same. Take regular work breaks, and get away from the farm, even for a day or two. There is a lot of evidence that these practices are good for well-being and productivity, for business owners and employees. But if you don't plan ahead, they may not happen.

17. Prune your blueberries properly. That means every year if possible, while still dormant, removing old canes and weak growth. This 6-minute video from UMaine (https://www.youtube.com/watch?v=osQB7jWeNvs) shows you how. If a planting is old and has not been pruned much at all, consider renovation for some or all of it (cutting down to the ground) to allow new canes to flourish (see https://www.canr.msu.edu/news/revitalize_blueberries_with_renovation).

18. "Stack" your weed cultivation tools. Using several different cultivation implements at once can improve weed control, especially tools that work synergistically together, to undercut, then uproot, then bury weeds. Research by Bryan Brown in NY found that sweeps plus fingers plus disk hillers consistently provided good weed control in beans and beets (see https://blogs.cornell.edu/nysipm/2020/03/04/summary-of-stacked-cultivation-trials-in-new-york/).

19. Apply for or renew your pesticide license. Pesticide applicators who use Restricted-Use pesticides must be licensed, but any applicator may benefit from the licensing process. Anyone with a pesticide license can provide Worker Protection Standards training to farm employees; WPS training is required for anyone who works on a farm who may be exposed to pesticides, including pesticides OMRI-approved for Organic production (including working in a field where pesticides have been applied). Pennsylvania growers: visit https://extension.psu.edu/insects-pests-and-diseases/pesticide-applicators or https://www.paplants.pa.gov/ page for information on how to sign up for a pesticide exam and exam preparation materials.

20. Track labor time on key crops and tasks. Okay, I know this is not simple. But there are some tools to help you get a general handle on this. See the short and long forms for worker time reporting developed by Veggie Compass at http://www.veggiecompass.com/veggie-compass/. There's also a crop labor estimation workbook on this site. Compass Tools are free downloadable spreadsheets created at the Center for Integrated Agricultural Systems, University of Wisconsin-Madison.

21. Expand your use of cover crops. Check out the brand-new Cover Crop Decision Tool at https://covercrop.tools/ for the Northeast to select different covers best suited to different conditions, and to learn more about each cover crop.

22. Use the correct soil test for established high tunnels. Once you have amended the soil for several years, we recommend that you use the "Long Term/Combined High Tunnel Package" offered by the UMaine soil test lab at https://umaine.edu/soiltestinglab/home/forms/. This includes the Basic High Tunnel Test (modified Morgan's extract, like a field soil test) PLUS the Saturated Media Extract (potting soil test) for all major and micronutrients. The results report both season-long nutrient availability and short-term nutrient intensity.

23. Validate your crew. Create a culture of encouragement – see https://www.cupahr.org/blog/10-ways-create-culture-encouragement-work/. Buy doughnuts every Monday. Catch people doing something right. Leave notes of appreciation. Do some 'affirmations' in weekly meetings about what is going well.

Celebrate once in a while.

24. Reach out to your state Extension program for resources and help! This list was created by Vern Grubinger of the University of Vermont Extension who has compiled a list of crop-by-crop production information links at https://www.uvm.edu/~-pass/grubinger/cropindex.html from extension services across the country. For Pennsylvania/Mid-Atlantic recommendations, see the Mid-Atlantic Commercial Vegetable Production Recommendations available from your local Penn State Extension office or online at https://extension.psu.edu/commercial-vegetable-production-recommendations.

Dr. Grubinger is Extension Professor and Vegetable and Berry Specialist at the Univ. of Vermont. ***From the Vermont Vegetable and Berry News****, Univ. of Vermont Extension, March 1, 2021.*

VEGETABLE PRODUCTION

Vegetable Seed Germination in Direct Seeding

Gordon Johnson

Many vegetables are commonly direct seeded in the field. There are many factors that affect seed germination but soil temperature and moisture are the most critical. Other factors include seed quality (age, conditioning, handling), seed treatments, and seeding depth.

Early Spring Planted Crops

The table below shows the average days to germination for cold season crops. For example, peas will take over a month to geminate with soil temperatures at 41°F, two weeks with soil temperature of 50°F, and one week with soil temperature in the 70s. Spinach, onions, and radish will germinate at the lowest temperatures. Some crops (celery, lettuce, and spinach) stop germination at high soil temperatures.

	Average Days to Germination							
Crop	32˚F	41˚F	50˚F	59˚F	68˚F	77˚F	86˚F	95˚F
Beets	—	42	17	10	6	5	5	5
Cabbage	—	—	15	9	6	5	4	—
Collards	—	—	15	9	6	5	4	—
Carrots	none	51	17	10	7	6	6	9
Cauliflower	—	—	20	10	6	5	5	—
Celery	none	41	16	12	7	none	none	none
Kale	—	—	15	9	6	5	4	—
Lettuce	49	15	7	4	3	3	3	none
Onions	136	31	13	7	5	4	4	13
Parsley	—	—	29	17	14	13	12	—
Parsnips	172	57	27	19	14	15	32	none
Peas	—	36	14	9	8	6	6	—
Radishes	none	29	11	6	4	4	3	—
Spinach	63	23	12	7	6	5	6	none
Turnips	none	none	5	3	2	1	1	1

Warm Season Crops

Most warm season crops will not germinate util soil temperature is above 50°F. Sweet corn will take over 3 weeks to germinate at 50°F but less than a week at 68°F. Snap beans will take over 2 weeks at 59°F but only one week at 77°F. Cucumbers are similar.

	Average Days to Germination							
Crop	32˚F	41˚F	50˚F	59˚F	68˚F	77˚F	86˚F	95˚F
Lima Beans	none	none	none	31	18	7	7	none
Snap Beans	none	none	none	16	11	8	6	6
Sweet Corn	none	none	22	12	7	4	4	3
Cucumbers	none	none	none	13	6	4	3	3
Eggplant	none	none	none	none	13	8	5	5
Melons	none	none	none	none	8	4	3	3
Okra	none	none	none	27	17	13	7	6
Peppers	none	none	none	25	13	8	8	9
Tomatoes	none	none	43	14	8	6	6	9
Watermelons	none	none	none	none	12	5	4	3

This information came from UC Davis research over 60 years ago. Since that time, some crops have been bred for better cold germination such as sweet corn.

*Dr. Johnson is the Vegetable and Fruit Specialist at the Univ. of Delaware. From the **Weekly Crop Update**, Univ. of Delaware, Vol. 29, Issue 2, April 2, 2021.*

VEGETABLE PRODUCTION

New Report Unearths Soil Health Insights

Franklin Egan, Pasa Sustainable Agriculture

Photo credit: Cheryl Burns, Capital RC&D.

Our new 2021 Soil Health Benchmarks Report offers fresh insights into how farmers can improve soil stewardship to more effectively protect ecosystems and communities, better withstand severe weather, and increase yields. The report reviews our findings to date of our ongoing Soil Health Benchmark Study—the largest and most diverse community science project studying soil health in the country.

Since we began our study in 2016, we've worked with partners including the Cornell Soil Health Laboratory, Future Harvest and the Million Acre Challenge, Penn State Extension, Rodale Institute, and Stroud Water Research Center, as well as more than 100 pastured livestock, row crop, and vegetable farmers in Pennsylvania and Maryland, to collect and analyze soil samples and field management records.

Collectively, these soil samples and field records shed light on the nuanced soil health strengths and challenges that can exist simultaneously within the same field—and what farmers can do about it. Here's what we found.

Tillage *can* be part of a holistic soil health management strategy

Photo: New Morning Farm, Huntingdon County, PA.

Our study's most remarkable revelation challenges a popular theory among farmers and other industry professionals positing that eliminating tillage is always necessary for achieving optimal soil.

We found that, while most no-till farms participating in our study did indeed have optimal soil health, farms that rely on tillage for controlling weeds and preparing fields were also capable of achieving optimal soil health. These farms likely accomplished this by balancing tillage with a holistic soil health management strategy, which might include planting cover crops, rotating crops, calibrating soil amendments well, and carefully timing tillage operations to avoid excessively wet or dry soil conditions.

Most no-till farmers are able to avoid tillage by relying, to some degree, on herbicides to control weeds and terminate cover crops. However, because of the escalating prevalence of herbicide-resistant weeds and growing public health and environmental problems associated with herbicide use, continuous no-till may not always be a sustainable soil health management method.

While some farms and farming organizations are experimenting with organic no-till methods, this approach remains largely elusive to most organic farmers who typically depend on at least some "steel in the field" to effectively control weeds and prepare beds for planting. Our findings offer optimistic news for farmers, since we're learning that there are many paths toward optimal soil health—many of which are more practical than we might have previously imagined.

Better calibrating fertilizer inputs will improve soil health and water quality

Photo: Spiral Path Farm, Perry County, PA.

Many vegetable farms, and some row crop farms, participating in our study struggled with high levels of phosphorus in their fields. Through runoff and erosion, excessive phosphorus can pollute streams and estuaries by causing blooms of algae that exhaust oxygen from the water and kill other life forms. At the global scale, phosphorus is a nonrenewable resource, mined from a limited number of deposits across the globe. Once phosphorus is lost to rivers and diluted in the vast ocean, it isn't available again to future generations.

For vegetable farmers, excessive phosphorus can also significantly weaken crop vigor by inhibiting a plant's uptake of vital micronutrients, which can impede crop growth and increase susceptibility to pests. In most cases in our study, high phosphorus levels could be attributed to heavy manure or compost inputs, often applied in excess of crop needs. Better aligning fertilizer inputs with soil test results will not only save farmers money and improve yields, it will also improve water quality.

Tough weather is tough on soil

Photo: Village Acres Farm, Juniata County, PA.

Our study also provides a glimpse into how climate change will present new challenges for soil stewardship in the Northeast and Mid-Atlantic regions. In 2018, a season defined by historic rainfall totals—most of it arriving in heavy, concentrated doses—we observed a 60% and 54% drop in aggregate stability on row crop and vegetable farms, respectively, in Pennsylvania and Maryland.

While most of these farms were able to partially or substantially rebuild their aggregate stability the following season, which offered more amenable weather and field working conditions, it's likely that extreme rainfall events and consistently wet seasons will become more common in the region. Without much-needed reprieves from wet weather, maintaining healthy soil structure that's resistant to erosion could be a significant ongoing challenge for farmers.

Planting fibrous-rooted cover crops and developing other soil management strategies that anticipate more frequent wet weather may be key for protecting and building soil aggregate stability.

Pastured livestock farms are the "gold standard" for soil health

Both organic vegetable farms and no-till row crop farms were consistently outpaced by pastured livestock farms. While it might be unfair to compare annual crop farms to farms that maintain fields of deep-rooted perennial forage, pastured livestock farmers can nonetheless take pride in their superior soil health performance.

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VEGETABLE PRODUCTION

New Report Unearths Soil Health Insights

continued from page 17

Perennial pastured livestock farms achieved optimal scores for every soil health indicator we measured, on nearly all fields we measured. Most annual row crop and vegetable farms have excellent or optimal soil health in many respects, but, as mentioned above, often show challenges with low aggregate stability and high phosphorus.

Testing for a holistic analysis of soil health

Photo: Henry Got Crops Farm, Philadelphia, PA.

Our report further details benchmarks for a variety of biological, chemical, and physical soil health indicators, such as organic matter levels and microbial activity, as well as field management benchmarks, such as overall tillage intensity and the number of days farmers maintain living cover in their fields. Collectively, these benchmarks provide a holistic picture of a soil's strengths and problem areas.

For decades, and continuing into the present day, soil health testing labs have primarily focused on measuring a soil's chemical attributes—levels of acidity; nitrogen, phosphorus, and potassium; and micronutrients. While this provides farmers with some basic information about soil fertility, such a narrow scope of analysis offers a highly limited, and often misleading, understanding of a soil's true health.

Critically, this approach does not take into account a wealth of other attributes, such as whether a soil is resistant to erosion, or to what extent beneficial microorganisms are present. In contrast, our study employs a holistic approach to soil testing that measures not only a soil's chemical health, but also its physical and biological health.

While the benchmarks outlined in our report paint an overall positive picture of the state of farmers' soils, it's important to note that our study does not reflect a representative sample of agriculture in the Mid-Atlantic region. Many of the farmers participating in our study have worked to hone their soil-building practices over many years, and are at the forefront of innovative land stewardship. Our findings should therefore be understood in terms of "what's possible" when farmers are committed to soil stewardship and are supported by technical service providers and their peers as they work to fine-tune their field management practices.

We expect this report to be the first of a series of soil health benchmark reports that we will publish periodically to help farmers, technical service providers, scientists, policymakers, and communities better understand soil health and how best to protect it.

Read the full report here: www.pasafarming.org/soil-benchmarks-2021

Our Soil Health Benchmark Study was initially made possible thanks to generous financial investments from Lady Moon Farms, the Jerry Brunetti family, the Shon Seeley family, and more than 120 individual donors committed to supporting farmers' efforts to build and preserve soil health.

Additional support has been provided through the William Penn Foundation, the Hillman Foundation, the Pennsylvania Department of Agriculture, and the USDA Conservation Innovation Grants program.

Dr. Egan is Director of Education at Pasa Sustainable Agriculture.

BERRY PRODUCTION

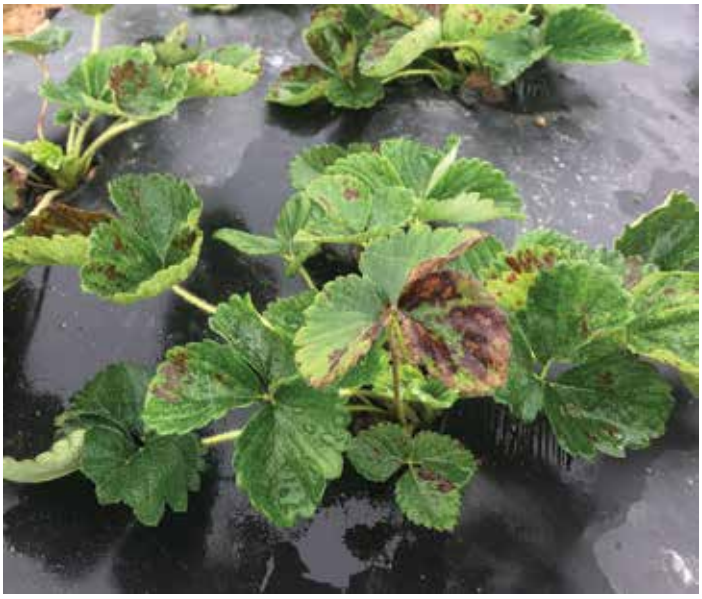
Spring Strawberry Alert

Kathleen Demchak

The strawberry crop growth stage varies a lot across the state right now, so which issues you should watch for - and when - may be very different on various farms. However, here are some issues to be aware of, including ones that are a continuation from last year.

Frost

The problem is that when it's both cold AND windy, as the forecast was for Wednesday night, April 21, row covers don't provide much if any protection, and it's difficult to get consistent coverage with overhead irrigation. When using overhead irrigation alone, damage can actually be increased as evaporation of the water drops plant blossom temperatures below that of the air temperatures. Unless your air temperature *at blossom level is at or below the critical temperature for your crop's growth stage*, you will likely be better off not irrigating at all especially when you are using irrigation alone. You can apply the water on top of row covers to get more consistent protection. Here is an article from 2020 that discusses critical temperatures for different berry crop growth stages and frost control options: https://extension.psu.edu/frost-and-freeze-damage-on-berry-crops



Neopestalotiopsis on 'Chandler'. Photo: Dr. Mengjun Hu, Univ. of Maryland.

Neopestalotiopsis

This disease is having some really bad effects this year as the weather warms down South. Before I send you all into a panic though, I do want to point out that most foliage diseases we saw last Fall were our more typical problems, even in plasticulture plantings where runner tips originated from the source in question. We are hoping there are no additional plantings with issues beyond those identified last fall, but who knows…

The hallmark of Neopestalotiopsis is rapid development of tan blotches on leaves that quickly overtake the healthy foliage, plant death, and lesions on strawberry fruit. Tiny black dots appear within a few days within the leaf and fruit lesions. Last year, we had hoped that the problem was caught early and that infected plants were discarded, but it became apparent that some infected plants of Sweet Charlie and Chandler (primarily) made it into grower fields, mainly on plug plants sold later in the late summer/early fall plug planting season.

Last fall, affected growers were advised to remove any foliage with symptoms and make fungicide applications, which seemed to help quite a bit. We hope this spring that with diligence and meticulous sanitation, the problem can be minimized. Inoculum could potentially be spread by hand, so removal of leaves with symptoms should take place in the least affected areas of the field first, during dry weather, and later in the day when the foliage has dried. Any plant material should be bagged and removed completely from the field, and not be composted. Thiram is somewhat effective, and has a 2(ee) label; Switch has some effectiveness, too. Repeated applications will likely be needed.

New species of botrytis/gray mold?

Besides our typical species – *Botrytis cinerea*, there may be a new one on strawberries - *Botrytis fragariae*, which may have greater resistance to one of the active ingredients in Switch. Dr. Mengjun Hu from the University of Maryland is interested in obtaining samples from grower farms to determine how widespread this new species is in the area and the degree of fungicide resistance that exists. More to follow on that at a later date.

Phytophthora crown rot on 'Flavorfest'

I'm continuing to get reports of plantings that are collapsing from Phytophthora crown rot. If you have Flavorfest, and plants are collapsing, cut through some crowns to see if you can find any brownish discoloration. Ridomil through the drip is best, and Aliette and foliar sprays of a phosphonite material should help. In some cases where plants had been declining all winter, it's questionable whether treatment this spring is worthwhile. Other diseases like crown anthracnose or winter injury can cause similar symptoms on a wide range of cultivars, so in this case, we are focusing on Flavorfest in plasticulture plug plantings.

Wondering what you can use to protect your fruit crops, including strawberries and blueberries?

If you have a smartphone, check out the myIPM app available in the Apple Store and on Google Play for no charge. More info can be found here: https://www.clemson.edu/extension/peach/commercial/diseases/myipmsmartphoneappseries.html . Developed and designed by Guido Schnabel (Clemson Univ.), Mengjun Hu (Univ. of Maryland), and Brett Blaauw (Univ. of Georgia), the app is being updated and maintained by fruit specialists at Cornell Univ., the Univ. of Massachusetts, Penn State Univ. (Kari Peter and Greg Krawczyk), the University of Maryland (Mengjun Hu), North Carolina State University, and the University of Georgia.

If you are more inclined to get info via phone, the 1-800-PENN-IPM line for berry crops is up and running with alerts and updates provided on a weekly basis this year, so you can dial in and find out what the current issues are. With only 90 seconds available for the recording, there may not be time to provide a lot of detail on all topics, but at least you'll have a heads-up on the most important current ones.

Ms. Demchak is with the Dept. of Plant Science at Penn State Univ. From Penn State Extension, https://extension.psu.edu/strawberry-alert-april-20-2021, April 20, 2021.

BERRY PRODUCTION

Plasticulture Strawberry Fertilization

Gordon Johnson, Extension Vegetable & Fruit Specialist; gcjohn@udel.edu

Plasticulture strawberries are blooming now across Delmarva. Plasticulture strawberries should have had nitrogen applications prior to bloom. Base recommendations are 25 lbs/a of N at greenup and another 25 lbs/a of N 2-3 weeks later. If fertigating weekly, addition of 3-5 lbs of nitrogen per acre per week may be warranted. Nitrogen is critical prior to and during early bloom. Including potassium at a 1:1 ratio with nitrogen will often improve fruit quality (sugars).

You can monitor petiole sap N and K concentration in the field. This is based on sampling leaf petioles from the most recently expanded leaves, extracting the sap, and using portable nitrate and potassium meters. The procedure can be found at this website http://edis.ifas.ufl.edu/cv004, along with recommended levels for different growth stages. Targets initially are 600-800 ppm petiole sap nitrate and 3000-3500 ppm petiole sap potassium.

While this is a quick way to monitor nutrient levels, growers are also encouraged to take petiole and leaf tissue samples for laboratory analysis. To collect and submit strawberry tissue samples, follow these guidelines: Select the most recently mature, healthy, trifoliate leaves from uniform field areas and the same variety; detach the petioles from the leaves as you collect them and save each separately; include leaves and petioles from 20 to 25 plants; and then submit leaves and petioles together as one sample.

There are a number of laboratories in the region that can run these tissue samples. Leaf tissue nutrient levels should be maintained as follows: N (%) 3–4, P (%) 0.2–0.4, K (%) 1.1–2.5, Ca (%) 0.5–1.5, Mg (%) 0.25–0.45. When in full bloom, petiole tissue nitrate content should be between 4000-6000 ppm and then will decrease thereafter. The recommended levels for petiole tissue nitrate from laboratory analyses can be found at this publication from North Carolina: http://www.ncagr.gov/agronomi/pdffiles/sberrypta.pdf (our week one would be beginning bloom). Day neutral varieties that fruit into July should maintain higher levels of petiole tissue nitrate later in the season than June bearing types.

*Dr. Johnson is the Vegetable and Fruit Specialist at the Univ. of Delaware. From the **Weekly Crop Update**, Univ. of Delaware Extension, Vol. 29, Issue 3, April 9, 2021.*

Strawberry Insect Scouting

David Owens

Begin scouting strawberry for two spotted spider mite and tarnished plant bug. With the cooler winter we had this year, mite populations may be slower. In 2020, we had strawberry plots in Georgetown with plants from two different nurseries. One of them had much higher mite counts in the spring than the others, suggesting that the transplants were already infested in the fall of 2019 going into winter. Thresholds early in the year are 5 mites per leaflet, but once berry harvest begins, thresholds increase to 20 per leaflet. Sample 10 leaflets per acre. Use of a hand lens is highly recommended. If you have good eyes in strong light, you may be able to get by with a visor lens at 3.5x, but a hand lens with 10x magnification is preferable.

While sampling for mites, also sample for tarnished plant bug. Tarnished plant bugs are small, mottled brown, sucking insects. Nymphs are a light green, gradually developing black spots as they grow larger. Feeding injury will show up as deformed berries with fully developed seed. This differs from poor pollination, in which some of the seeds are not going to be developed. Sample 1 plant every 20' by beating the plant on the black plastic or over a beat sheet. One bug per 20 plants is enough to warrant an insecticide treatment. Keep in mind, this insect is more likely to cause problems in late maturity group berries as its populations build up in weeds, some of which may start senescing by the time the latest varieties start producing. If you decide to use an insecticide, there are numerous options, including Malathion, various pyrethroids, Assail, Transform and Closer, Apta, Cormoran, and Beleaf. Of these, Beleaf has low toxicity to bees and the active ingredient is widely used in southern states for tarnished plant bug in cotton. It also has a 0 d PHI. Apta has powdery mildew activity. Probably the best organic option is Azera, a mixture of azadirachtin + pyrethrin.

*Dr. Owens is the Extension Entomologist at the Univ. of Delaware. From the **Weekly Crop Update**, Univ. of Delaware Extension, Vol. 29, Issue 3, April 9, 2021.*

Improve Pest Management by Planning Ahead *continued from page 13*

c. Monitoring & Forecasting: Use data loggers, pheromone traps, online networks, pest models, and pest or weather forecasts to monitor or predict pest arrival/emergence and potential for damage.

d. Cultural practices: E.g., crop rotation, mulches, irrigation, resistant varieties, row covers.

e. Biological control: Attract and/or release beneficial insects, predators, or parasitoids to control pests.

f. Chemical control: Choose the right materials and spray timing. Improve coverage, and manage for resistance.

This Year's Plan column: Fill in the year here. Get more specific with the strategies you listed in the previous column. Use our Scouting Toolkit Inventory at https://ag.umass.edu/sites/ag.umass.edu/files/pdf-doc-ppt/scouting_tool_kit_inventory.pdf to find out what supplies you will need for the season and where to buy them. Write down the tools and supplies needed, people involved, resources to use, etc. *Write down the steps necessary to implement your plan and who will do them.*

Calendar Alert column: *When does each task need to be completed or planned?* Jot down dates or set calendar reminders to make sure you set up traps on time, know when to begin scouting for a pest, etc. Review past *Pest Alerts in Vegetable Notes* at https://ag.umass.edu/vegetable/newsletters to get an idea when pests first appeared in your area or rely on past experience to plan.

Notes column: Consider other factors that may impact your pest management success but may not be directly related to your plan. For example: equipment or labor shortages, unpredictable weather, underlying field conditions (e.g., rocky, low fertility, prior crops, surrounding environment), etc. *Write down any of these outside influences that may have a specific effect on your plan.*

Here is a sample IPM plan from a grower we have worked with in the past to guide you. In this example, we select one pest to tackle using the IPM principles of accurate pest identification, scouting, monitoring, and implementing an effective chemical control at the right time.

*Originally written by Ms. Campbell-Nelson and Ms. Scheufele, for 2017 and updated for 2019 by Ms.. McKeag. All are with the Univ. of Massachusetts Extension. From **Vegetable Notes for Vegetable Farmers in Massachusetts**, Univ. of Mass., Vol. 33, No. 3, March 18, 2021.*

GREENHOUSE PRODUCTION

Odd Damage to Greenhouse Watermelon Transplants

Jerry Brust

There have been several reports of odd-looking damage to watermelon transplants being grown in greenhouses these past couple of weeks. The damage does not appear to be cold damage per se, but more of a strange environmental/weather one. Watermelon transplants, along with some other vegetables, began showing dark pitted lesions on their cotyledons (Fig. 1). The marks looked bad and alarmed several growers as to what was going on. There were some indications that the damage was abiotic, (i.e., it was not caused by a disease or insect pest or any living organism). The first was that only the cotyledon leaves were damaged, all true leaves were clean. The cotyledon leaves tend to be more sensitive to any possible phytotoxic sprays that may be applied. The second was that the damage to the cotyledons was only one-sided. The top side of the leaf had the dark spots, but the underside of the same leaf just had some pitting caused by the damage on the top side of the leaf (Fig. 2). The third indication was that tomato seedlings in the greenhouse also developed similar necrotic spotting as the watermelon around the same time. Most of growers had all applied a spray treatment recently that they had applied for many years without any problems, but the environmental conditions at the time of this recent application resulted in a phytotoxic response from the plants. Although we had these 3 indicators that it was very unlikely to be a bacterial disease we still went ahead and had them tested by Karen Rane, Director of the UMD Diagnostic clinic. No disease was found.

Figure 1. Watermelon cotyledon leaves with brown lesions.

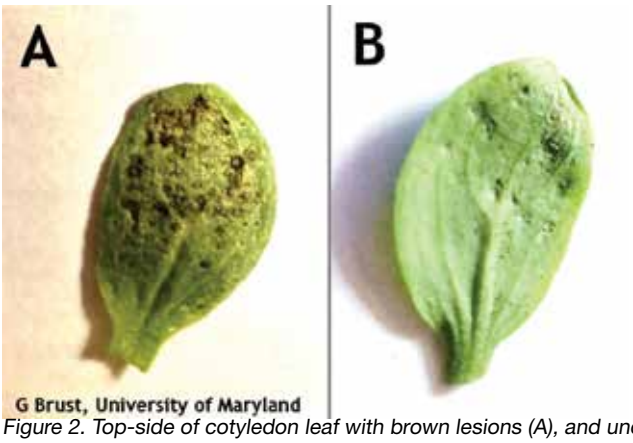


Figure 2. Top-side of cotyledon leaf with brown lesions (A), and underside of same leaf (B).

Finally, there have been other samples and reports from GH growers of: necrotic lesions on watermelon leaves that were not a disease or insect damage (Fig. 3), poor seed germination of tomatoes and peppers and odd and poor growth of tomato, pepper and some cucurbit transplants. There unfortunately have not been any definitive answers found as to what the causes are and what can be done about them, although I greatly suspect they are all associated with environmental factors. These occurrences over the last couple of weeks demonstrate how weather can affect our crops even in greenhouses in ways that are unexpected and hard to figure out at times.

Figure 3. Necrotic (not-disease) spots on watermelon transplants.

*Dr. Brust is the IPM Vegetable Specialist at the Univ. of Maryland. From the **Weekly Crop Update**, Univ. of Delaware Extension, Vol. 29, Issue 4, April16, 2021.*

GREENHOUSE PRODUCTION

Thrips Damage in Greenhouse and High Tunnel Vegetables is Serious

Gerald Brust and Karen Rane

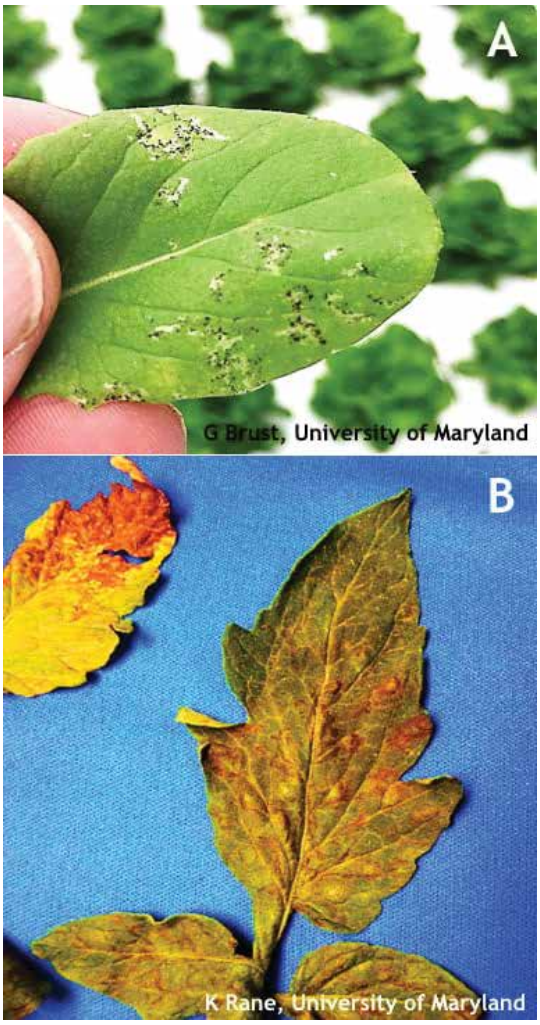


Figure 1. Thrips feeding damage to basil (A) with flecks of black feces associated with feeding scars (B).

Over the past few weeks, we have seen several greenhouse (GH) and high tunnel (HT) vegetable (basil and tomato mostly, but also lettuce, pepper and spinach) operations from around Maryland having problems with thrips. There are several species of vegetable thrips with the most common being the Eastern flower thrips, *Frankliniella tritici*, Tobacco thrips *Frankliniella fusca*, Western flower thrips, *F. occidentalis* and Onion thrips *Thrips tabaci*. The last three species are the ones most likely to transmit tomato spotted wilt virus (TSWV). Thrips are tiny, thin yellowish-orange insects the size of metal filings with fringed wings. They feed by puncturing the outer layer of plant tissue and sucking out the cell contents, which results in stippling or discolored flecking (Fig. 1a) that is usually accompanied by black flecks of frass on the damaged areas of the leaf surface (Figs. 1b and 3a). Other feeding responses include scar formation and distorted growth (Fig. 2a). Thrips hatch from an egg and develop into two larval stages and then the 'prepupa and pupa' stages, before becoming an adult. Females lay their kidney-shaped eggs into plant tissue. Thrips have several generations (up to eight) a year. When the weather is warm, the life cycle may be as short as 2 weeks.

In most of the cases where we found thrips problems growers did not follow good sanitation practices. They allowed weeds such as prickly lettuce, chickweed, spiny amaranth, lambsquarters, black nightshade and shepherd's purse to overwinter in their GH or HT. These weed species not only act as hosts for thrips they also can act as hosts for TSWV. In addition to weeds some growers kept bedding plants in their greenhouse before and at the same time as their vegetable transplants. Bedding plants are notorious for harboring thrips — never grow vegetable transplants in the same greenhouse with bedding plants. These things may seem unimportant but they allowed the thrips to overwinter and get a head start on the new plantings. Sanitation is one of the most important things that can be done to reduce or eliminate thrips and mite problems from a GH or HT before planting.

Besides the physical damage to leaf and plant tissue, several of the thrips can transmit TSWV (Western flower thrips are good at it while Onion thrips and Tobacco thrips are not quite as good at it and Eastern flower thrips cannot transmit the virus). Tomato spotted wilt virus is an obligate parasite, e.g., it must have a living host and must be moved from one plant to another by thrips or through cuttings or possibly seed. This disease can affect tomato and other Solanaceae crops as well as lettuce, beans, cucumber and 170 other plant species. TSWV may occur in the field but tends to affect greenhouse and high tunnel crops more severely. It may take 2 – 4 weeks from when adult thrips first fed on a plant to see initial symptoms occur. Because of this, TSWV appears to spread and worsen in plantings over time. TSWV infected leaves may show deformities and mottling (Fig. 2b) or reddish-brown spots or streaks on leaves (Fig. 3b) or stems. Growing tips are usually affected with systemic necrosis and potentially stunted growth.

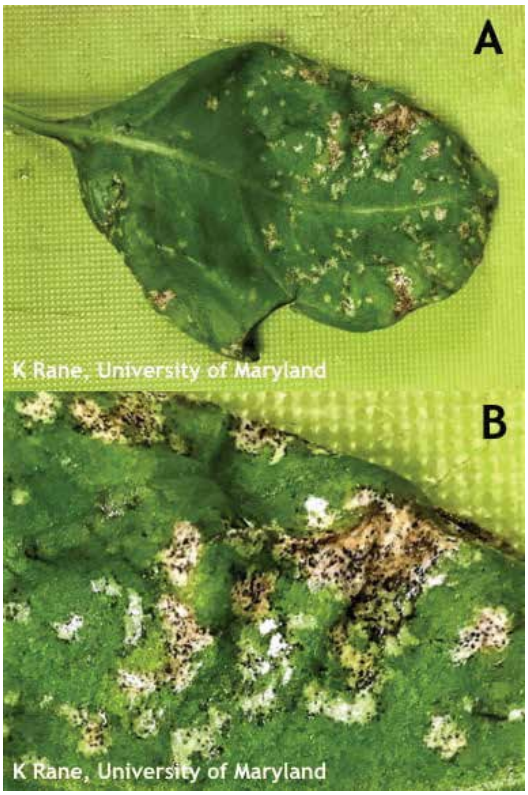


Figure 2. Pepper plant with thrips feeding (A) and TSWV symptoms (B). Figure 3. Lettuce leaf with thrips feeding (A) notice how the black flecks follow the feeding scars on the leaf and TSWV symptoms on tomato leaves (B).

We tested for both INSV and TSWV on tomatoes and bedding plants. Only TSWV was found in both, no INSV was found in any sample. A few growers had some TSWV resistant (or tolerant) tomato varieties (BHN 444 and 640, Dixie Red and Primo

Red) and those plants showed no symptoms. However, research shows that the flowers of resistant plants may NOT be resistant, so plants could possibly still become infected with TSWV if thrips feed on the flowers. Several high tunnel vegetable growing operations as well as some GH operations we have seen or that have been reported to us have 20-30% of their plants showing signs of TSWV infection. These plants will not produce much of anything in the way of a harvest and will need to be removed and replaced.

Growers can monitor for thrips using yellow sticky cards that are placed at the same height as the vegetable plants and checking them 2-3 times a week. Early detection can mean using horticultural oils or biological controls for thrips management rather than relying on synthetic chemicals. The biological control agents work best in greenhouse situations and have had mixed results in high tunnel conditions. Predatory mites such as *Amblyseius cucumeris* or *A. swirskii* are two good thrips predators. *A. swirskii*- works better in warmer temperatures (77-85o F) while *A. cucumeris* is better in cooler temperatures. *A. cucumeris* feeds only on first instar larvae so must be released early before thrips populations increase. *Orius insidiosus* the insidious flower bug, is best used on crops that are producing pollen or by releasing the bugs onto flowering ornamental pepper plants that are in flower which serve as banker plants. *Beauveria bassiana*, an entomopathogenic fungus that attacks thrips can control thrips problems before they get started by applying weekly applications very early on in the crop cycle in the GH or HT. However, once thrips populations start to rapidly increase a recommended chemical for GH or HT use on the particular vegetable crop should be used. Be sure you know how your state regulates pesticide use in greenhouses and high tunnels. It should be noted that transmission of TSWV may have already taken place by the time even an effective pesticide is used if TSWV infected weeds or plants are present. The 2020-2021 Mid-Atlantic Commercial Vegetable Production Recommendations guide has recommendations for management of thrips in many vegetables in both GH and HT situations.

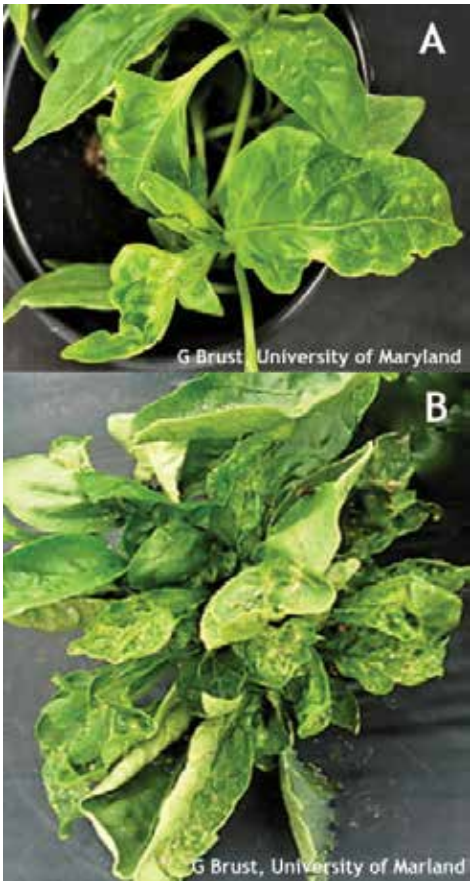


Figure 3. Lettuce leaf with thrips feeding (A) notice how the black flecks follow the feeding scars on the leaf and TSWV symptoms on tomato leaves (B).

Dr. Brust is the IPM Vegetable Specialist at the Univ. of Maryland; and Ms. Rane is a Plant Diagnostician at the Univ. of Maryland. From the ***Weekly Crop Update****, Univ. of Delaware Extension, Vol. 29, Issue 2, April 2, 2021.*

CLASSIFIEDS

Employment

HELP WANTED – ST LUKES RODALE INSTITUTE ORGANIC FARM – FRUIT MANAGER Rodale is offering a Fruit Manager position for our organic community supported agriculture (CSA) and wholesale operations at the St. Luke's Rodale Institute Organic Farm. The farm is a partnership between the Rodale Institute and St. Luke's Hospital to create an innovative farm-to-hospital model. Over the last seven years the farm has had a robust vegetable production operation and now we are looking to expand the farm to include a variety of fruits. The Fruit Manager will lead St. Luke's farmers to produce and deliver safe, healthy, organic fruit to all hospitals in the St. Luke's Health Network. Additionally, the Fruit Manager will coordinate with St. Luke's hospital staff and dining services to meet produce requests and deliveries. This position will report to the Rodale Institute Farm Director. Applicants should be driven, hardworking, and committed to organic agriculture practices. All candidates must be prepared to work in a professional environment, complete tasks carefully and in a timely manner, and work in all weather conditions. For further information, contact: Elaine Macbeth, Director of Finance/ HR, at elaine.macbeth@rodaleinstitute.org.

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