Supporting Fruit Production

OHIO FRUIT NEWS

Research and Recommendations from The Ohio State University

March 2019

EPA Reviewing Captan Registration

Melanie L. Lewis Ivey

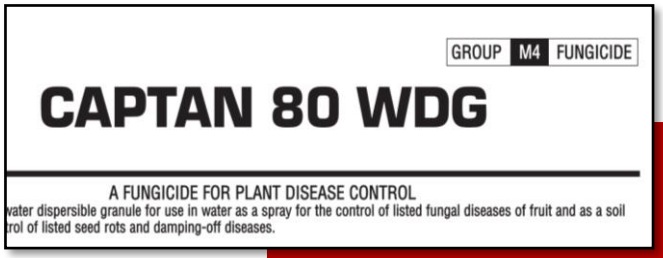
The Environmental Protection Agency (EPA) is currently reviewing the registration for the fungicide captan and is accepting public comments until March 15th 2019. Captan is a non-systemic contact fungicide (meaning it can't move through the plant) that is used by the fruit industry, including homeowners, to manage many fungal diseases of fruit. Captan was first registered in 1951 and is the backbone of spray programs for many fruit growers in the state. Captan is not only highly effective at controlling many fungal diseases, it is also considered a low risk fungicide (FRAC Group M) for resistance development in the fungi it is used to control. I highly encourage fruit growers to submit a comment to the EPA to support keeping captan registered for fungal disease control in fruit crops. Stakeholders can submit a comment on-line at regulations.gov/docket?D=EPA-HQ-OPP-2013-0296 OR by mailing comments to OPP Docket, Environmental Protection Agency Docket Center (EPA/DC), (28221T), 1200 Pennsylvania Ave. NW, Washington, DC 20460-0001.

I have included some talking points that you can use in your comments. These talking points were compiled by fruit and vegetable pathologists from Ohio, Pennsylvania, Indiana and Iowa.

- Disease conditions are favorable through every growing season and require chemical intervention.
- Captan is an integral component of fruit disease control for the fruit crops that you grow (**be specific for the crops and diseases**).
- There are limited broad spectrum fungicides, which includes captan, available for sustainable fungicide resistance management
- Captan is an extremely important fungicide resistance management tool in your operation. No pathogen has been reported to have evolved fungicide resistance to captan for nearly 70 years of its use.
- Captan is efficacious (effective), safe to the crop and environment, and above all, cost-effective.
- Approval for new multisite products is rare.
- Include an estimate of how much money you would lose due to crop loss resulting from disease without the availability of captan. (Including dollar amounts will have a lot of impact.)

If you have any questions about the process or would like assistance with submitting a comment please contact me by email (ivey.14@osu.edu) or phone (330-263-3849). You can also contact your county extension office for assistance.

Inside This Issue:



One of many Captan labels that could be changing (from CDMs.net)

Please Help Us Manage Stink Bugs by Contributing to a Survey

Celeste Welty

Any commercial fruit or vegetable grower who is interested in helping the agricultural community to better understand the economic impact of the brown marmorated stink bug is encouraged to participate in an on-line survey within the next two months. The survey originated at Penn State. It is a nation-wide survey that is part of a multi-State, USDA-funded project on stink bug management. The survey takes about 20 minutes to complete. Use this link to get to the survey:

pennstate.qualtrics.com/jfe/form/SV_09tpBgDGchNpXPD

The survey as well as a lot of other information about stink bugs can be found at the Stop BMSB website: stopbmsb.org/

Adult Stink Bug

Spotted Lanternfly Webinar Series

James Jasinski

Please join the NYS IPM Program (nysipm.cornell.edu/), NYS Dept. of Agriculture and Markets (agriculture.ny.gov/), and the Northeastern IPM Center (northeastipm.org/) for a webinar update on the latest invasive insect to hit the Northeast and Mid-Atlantic regions. The Spotted Lanternfly (SLF) was discovered in Pennsylvania in 2014 and has recently been detected in surrounding states starting with Delaware and New York in 2017, and Virginia, New Jersey and Maryland in 2018.

Recordings for these webinars addressing the threat and management for this pest can be found at the following link: northeastipm.org/working-groups/spotted-lanternfly/spotted-lanternfly-basics-webinar-announcement/ . Postings for additional webinars can be found at this site as well.

To date, SLF has NOT been reported in Ohio. Given the proximity of detections and the possibility of being inadvertently spread by various modes of transportation, we are recommending increased vigilance for this pest. This pest has a wide host range and is known to attack grape vines, apple and cherry trees, and hop bines. This pest also has an affinity for Tree of Heaven (*Ailanthus altissima*), especially in the fall.

For more information, please contact the OSU IPM program at ipm.osu.edu/home.

Adult spotted lanternfly found in PA (Photo by: Lawrence Barringer, PA, Bugwood.org)

New Hop Research Funding Received to Further Develop the Ohio Hop Industry

Brad Bergefurd, Thom Harker, Charissa Gardner,
Wayne Lewis, Ryan Slaughter, Zach Zientek, Becky Colon

Since The Ohio State University South Centers began hops research and educational programming in 2012, more than 100 farmers have become attracted to hop growing due to the continued demand for Ohio-grown hops from the craft brewing industry, and the high value crop opportunity hops offer to small acreage landowners.

According to Brad Bergefurd, Agriculture and Natural Resources Extension Educator and Horticulture Specialist with the OSU Extension in Scioto County and at South Centers in Piketon, decades after disease and prohibition wiped out hops production in the Midwestern United States, Ohio's hop acreage is making a comeback, rising to 200 acres from roughly 10 acres in 2012.

An Ohio brewer, consumer, and hop farmer survey – conducted by the Ohio Hops Growers Guild and partially funded through a grant by the South Centers USDA Cooperative Development Center – indicated over recent years that breweries in Ohio want to buy local. Just as with all local direct agricultural marketing opportunities in Ohio, brewers want to put a face with the farmer growing their hops, which is a big selling point for Ohio brewers. The hop farmers survey results indicated that nearly every hop grower in the state intends to plant more hops in the near future.

To advocate for and educate the state's hop farmers, roughly 70 growers have joined the Ohio Hops Growers Guild, which released a set of standards for a seal of quality for hop growers. The goal being to help guarantee high quality and food safe hops continue to be produced for Ohio craft breweries from Ohio grown yards. If a brewer has a bad experience with poor quality hops because the farmer does not manage their crop properly, it hurts hop growers in general, just like someone who makes lousy beer taints the entire industry.

Hops production is no get-rich-quick endeavor, according to research conducted by Bergefurd and the OSU Hops Research and Education team. It costs more than $10,000, and more than $20,000 for some farms, per acre to plant and the crop doesn't produce a full crop until year three.

Bergefurd and the other members of the OSU Hops Research and Education team have been conducting the development program since 2013 when they received USDA grant funding from the Ohio Department of Agriculture and planted the first hop research trials on record at The Ohio State University. According to Bergefurd, "as with any type of farming, if there's a market to be had, we want to teach our farmers to be aware of the opportunity and see if it fits their farming operations.

New hop analytic testing technology being tested at South Centers

Breweries that bought Ohio hops in 2018

"There's a lot of infrastructure and upfront costs before you get the first dollar back," Bergefurd added. "I always warn those interested – do not underestimate the hand and stoop labor that is required."

Hops cannot be harvested with a tractor. They grow on large 20-foot-tall trellises made of aircraft cable and poles (similar to telephone poles) so the plants must be harvested by hand, removed from the hop yard, and then a large picker is used to mechanically remove the hop cones from the plant. Plus, hops require precisely timed harvesting. “They'll go from not being ready to too far gone within a matter of three or four days, weather-dependent," Bergefurd explained. “Farmers get caught off guard by not having the labor to get it done in a timely manner.”

Hops quality is normally verified using laboratory wet chemistry methods that require special reagents and machinary but these methods can be time-consuming and affect the cycle time of a facility. Due to the importance of harvest timing, and to ensure a high quality crop for brewers, in 2018 the South Centers began a research partnership with an international, Ohio-based company, Eurofins QTA, a subsidiary of Eurofins Scientific located near Cincinnati that has developed technology that provides a method of hop analysis which allows for hops to be tested for multiple parameters, such as alpha and beta acids, in 60 seconds using the latest in infrared technology – compared to three days to collect, mail, and test hops in a laboratory setting currently.

This research support provided to OSU will enhance hop quality analytics equipment and procedures testing that will allow farmers to determine prime harvest times quicker, and that can lead to increased hop quality for brewers. This new hop analysis technology was installed in the recently built hop and small fruit quality analysis lab at OSU South Centers in 2018. Preliminary test data from quality analytics of hops harvested from the OSU hop research yards and from farmer-cooperator hop yards indicates that this new technology can provide similar results to the current laboratory hop testing procedures, but within minutes instead of days.

“By all accounts, the demand for hops is expected to continue to grow. So long as the brewing industry keeps pouring, bottling, and canning more craft ale, there should be a market for Ohio-grown hops,” says Bergefurd.

Upcoming Grower Events:

March 25th - Ohio Agritourism Conference and Trade Show;
Hartville, OH; Link Here
March 26th – 2019 Practical Skills for Managing Invasive Pests Workshop;
Columbus, OH; Link Here
March 29th – 30th – Small Farm Conference and Trade Show;
Piketon, OH; Link Here

Good Agricultural Practices (GAPs) Trainings and **Produce Safety Alliance (PSA) Grower Training Course**;
Various locations on various dates; Please visit: producesafety.osu.edu/events

Save the date: July 17, 2019 – OPGMA Summer Tour at Lynd Fruit Farm in Pataskala, OH!

Results of the 2018 SWD Monitoring Network

Jim Jasinski, Celeste Welty, Elizabeth Long

The spotted wing Drosophila (SWD) is an invasive pest known to attack a wide array of small fruit crops. Since 2012, personnel from The Ohio State University's Department of Entomology, Department of Extension, and Integrated Pest Management (IPM) Program have coordinated their monitoring efforts to track this pest as its ranged expands across Ohio. The intent of the trapping is to understand the distribution and population dynamics of this pest, and to swiftly communicate first detections, rapid increases, or unusual findings to growers to help them manage susceptible crops. Trap monitoring information is released periodically through the vegblog (u.osu.edu/vegnetnews/), small fruit newsletter, and the vegetable and fruit insect pest management website at u.osu.edu/pestmanagement/trap-reports/.

In establishing these monitoring networks with the help of Extension educators, consultants, and growers themselves, a representative and consistent number of counties have been monitored for these pests over the past six years. Although this group of counties is a great starting point and represents the backbone of our network, we realize the need to push into new counties where monitoring has not been done so that we may gain additional insight into the distribution and population dynamics in those counties

SWD Scentry trap used in 2018

Monitoring Protocol

In 2018, we deployed the same style of trap and bait as in 2016 and 2017 (picture left); Scentry SWD traps baited with Scentry lures plus a drowning solution of 25% apple cider vinegar (ACV). Traps were serviced weekly with the trap contents transferred to a vial and the drowning fluid replenished; lures were changed out monthly. At some locations after the first detections were made, the lure was not replaced but 100% ACV was used as both the bait and drowning solution.

Traps were placed on farms that had one or more susceptible crops, including peaches, grapes, raspberries, blackberries, blueberries, and strawberries (on page 6). Most traps were set up during the first week of June and removed the first week of October. Each monitoring site had 1-3 traps deployed per crop. Trap counts were posted on an on-line spreadsheet. The trap counts were viewable to anyone with the link, which was given to growers in several VegBlog and Ohio Fruit News newsletter articles.

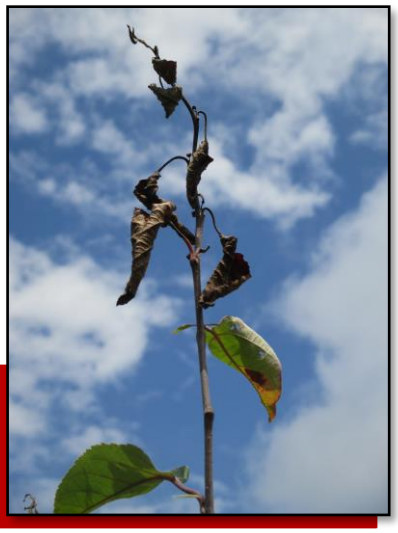
At the Franklin County site, traps that had been placed in a tree line next to a raspberry patch on the Waterman farm in May 2017 were kept in place and checked weekly for the entire winter of 2017/2018. Surprisingly, SWD adults were trapped during warm spells on January 7-13 and 21-27, indicating these pests survived the winter up to that point and were active in that area. No more SWD adults were detected at that site until May 13-19.

In cultivated crops, initial detection of SWD adults ranged from May 20-26 (Franklin, Greene Counties) to Aug. 5-11 (Lake Co.). Five counties (Fairfield, Lucas, Mercer, Shelby and Summit) did not find any SWD adults in traps during the season.

County	Cooperator	Crop(s)	First detection	Total SWD flies identified
Butler	C. Meyer	Grapes	June 17-23	2270
Champaign	A. Douridas	Red Raspberry	June 17-23	655
Clinton	J. Jasinski	Raspberry	June 10-16	1426
Darke	S. Custer	Raspberries/Grapes	July 8-14	379
Fairfield	J. Iles	Black Raspberry	did not catch	0
Franklin	C. Welty	Raspberry	May 20-26	58
Franklin	C. Welty	Treeline	January 7-13	286
Geauga	E. Draper	Blueberries	July 15-21	2974
Greene	J. Jasinski	Blueberry	May 20-26	3619
Greene	J. Jasinski	Blackberry	June 24-30	3122
Guernsey	C. Little	Caneberries	July 1-7	291
Hardin	M. Badertscher	Black Raspberry	July 22-28	94
Knox	S. Schirtziner	Raspberries	June 17-23	81
Lake	L. Ober/Dehaus	Wine Grapes	August 5-11	2383
Lucas	A. Stone	Raspberry	did not catch	0
Mercer	J. Knapke	Grapes	did not catch	0
Monroe	M. Landefeld	Blueberries	July 1-7	32
Morrow	C. Jagger	Caneberries	July 29-Aug 4	94
Pickaway	M. Estadt	Blackberries	July 8-14	583
Pike	R. Slaughter	Blueberries	July 1-7	298
Shelby	A. Heilers	Grapes	did not catch	0
Summit	J. Kowalski	Blueberries	did not catch	0
Warren	J. Jasinski	Grapes	June 24-30	190
Wayne	E. Long	Grapes	July 8-14	2048
Wayne	R. Lewandowski	Stawberries/brambles	July 1-7	1235
Wayne	R. Lewandowski	Peaches	July 22-28	851
Wayne	R. Lewandowski	Grapes	Aug 5-11	307
Wayne	R. Lewandowski	Strawberry/blueberry	July 8-14	14
Wayne	R. Lewandowski	peaches	July 29-Aug 4	1749
Wayne	R. Lewandowski	Strawberry/raspberry	June 17-23	56
Wayne	R. Lewandowski	Peaches	July 15-21	348
Wayne	R. Lewandowski	Strawberry	July 29-Aug 4	10
Wayne	R. Lewandowski	Strawberry/raspberry	July 8-14	7
Wayne	R. Lewandowski	Grapes	Aug 12-18	799
Wayne	R. Lewandowski	blueberries	July 15-21	15
Wayne	R. Lewandowski	Peaches	Aug 12-18	986
Williams	J. Schoenhals	Grapes	July 29-Aug 4	456

Streptomycin-resistance to the Fire Blight Pathogen Reported in Ohio Apple Orchards

Alejandra M. Jimenez



Strike from an apple tree suffering from fire blight

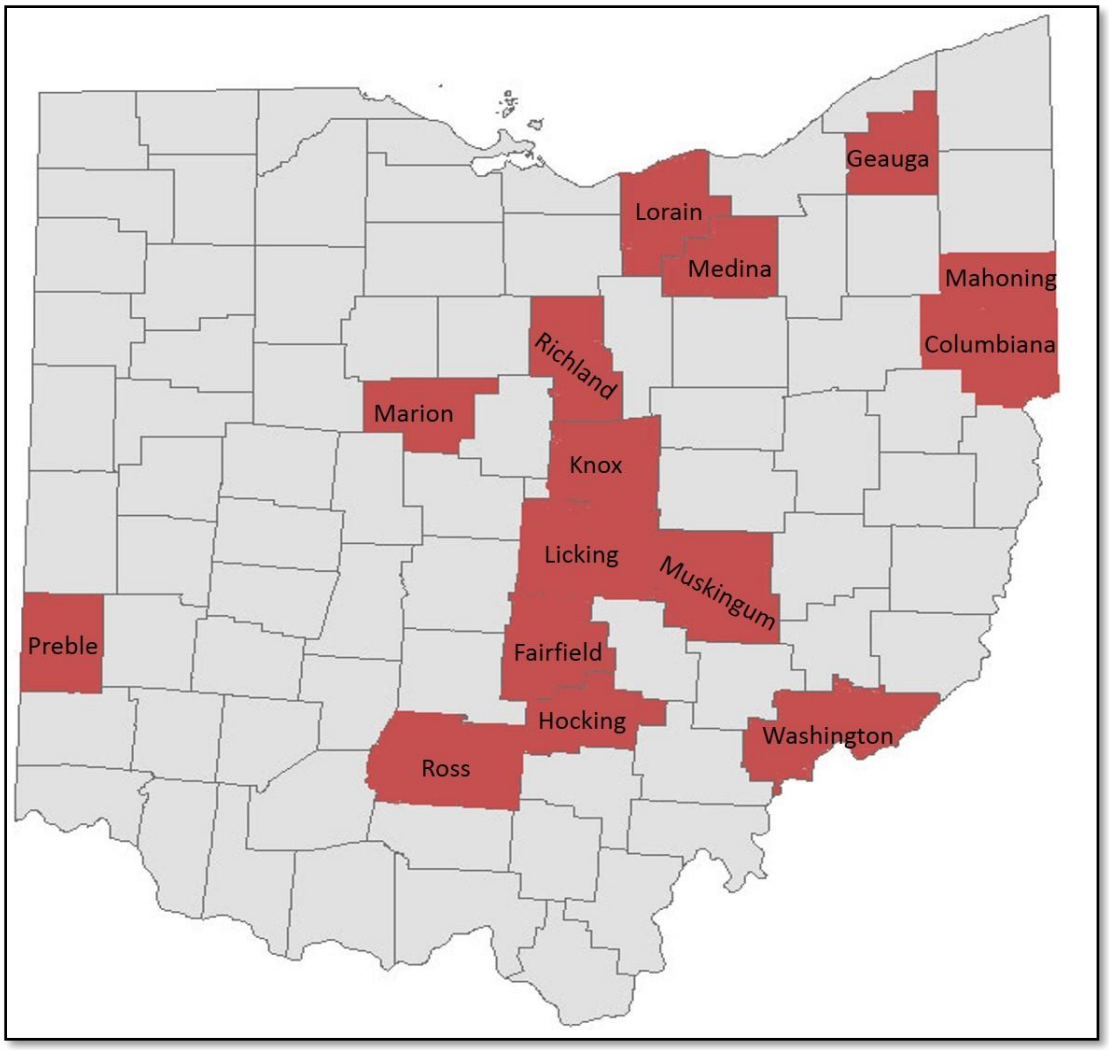
Fire blight disease is caused by the bacterium *Erwinia amylovora* and is among the most devastating and difficult apple diseases to manage in Ohio. The bacteria are easily disseminated to flowers by insects (i.e., bees, pollen wasps, flies, ants), rain, or during production practices such as pruning. Once the flower nectaries are infected the bacteria multiply rapidly and move causing shoot infections. An integrated management approach that includes the use of antibiotics at bloom can minimize tree and fruit losses from fire blight. Although there are three antibiotics (streptomycin, oxytetracycline, and kasugamycin) registered for fire blight control in the United States, streptomycin is the most effective and has been used in apple orchards for over 50 years. However, as a result streptomycin-resistant *E. amylovora* strains have emerged.

During spring 2018, we collected fire blight samples from 24 orchards across fifteen counties to determine if streptomycin resistant fire blight was present in Ohio (see Figure). While we suspected that resistance to streptomycin was occurring in Ohio orchards we were surprised to find that nearly 90% of the orchards that we sampled had resistance to the fire blight pathogen.

Producers with confirmed resistant *E. amylovora* in their orchards will need to begin to modify their fire blight management program to prevent further spread of resistant bacteria through the orchard. **The first and most important change will be to stop using streptomycin** (i.e. FireWall, Streptomycin 17, Agri-Mycin, Harbour). While more expensive, the antibiotic kasugamycin (marketed as Kasumin) has a different mode of action from streptomycin and has been shown to be equally effective. Kasumin should be applied during bloom only, at a rate of 64 fluid ounces per acres in 100 gallons of water. Applications can be repeated every 3 to 6 days depending on the environmental conditions. Oxytetracycline (Mycoshield, FireLine) is another option to replace streptomycin although it is less effective than Kasumin or streptomycin (but still a good option to replace streptomycin). Oxytetracycline is sensitive to degradation by sunlight and will lose its activity within a couple of days after application. A non-ionic surfactant such as Regulaid (1 pint per 100 gallons) should be added to which ever antibiotic is used.

In the absence of streptomycin resistance, streptomycin is still the best management strategy. Streptomycin is partially systemic and can kill the bacteria that have reached the flower nectaries, where infection occurs. To slow resistance development, no more than four applications of streptomycin should be made in a season and it should never be applied after petal drop unless a rescue treatment is needed due to shoot damage from hail or damaging winds. Alternating streptomycin with Kasumin is a good resistance management strategy (do not tank mix them!). One application of the biocontrol Serenade Opti (20 oz/A) at 20% bloom followed by antibiotic sprays can also be done to manage resistance. Applications of Serenade Opti after 20% bloom has been reached is not recommended.

Using a fire blight prediction model (i.e. MaryBlight or Cougar Blight) to time antibiotic applications is highly recommended. For more information on fire blight prediction models please contact Dr. Melanie Lewis Ivey or your county extension office.



Ohio map of counties (red) which were positive for streptomycin resistance in apple orchards

If you would like to have your apple or pear trees sampled for *E. amylovora*, please contact us at the fruit pathology laboratory; our contact information is below. The best time to sample for fire blight is during bloom. We recommend that you contact us at early bloom so that we can arrange a time to visit the orchard while the trees are still in bloom.

Alejandra Jimenez Madrid
Graduate student
Plant Pathology Department
OSU-OARDC
Jimenezmadrid.1@osu.edu
225-288-4106

Sticky panel trap used to monitor stick bugs

Filling in the Gaps for the Invasive Pest Monitoring Network, Part 2: Brown Marmorated Stink Bug

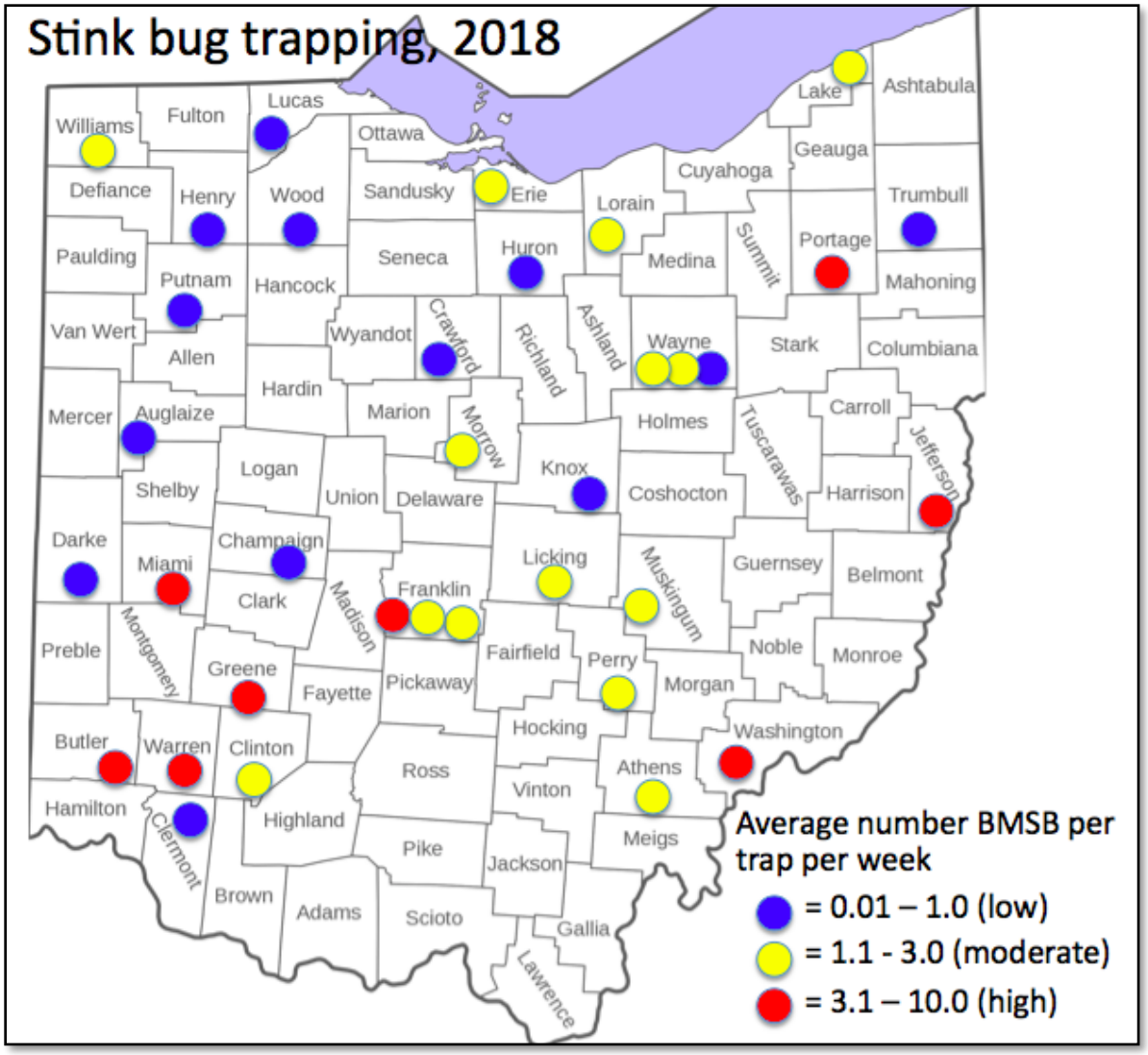
Celeste Welty, Jim Jasinski, and Elizabeth Long

One objective of a project funded by OVSFRDP in 2018 was to monitor and report the distribution and abundance of the brown marmorated stink bug (BMSB) in vegetable and small fruit crops across Ohio using standardized traps and lures, and to expand the pest monitoring network for this pest. The BMSB is an invasive pest known to attack a wide array of fruit and vegetable crops. Since 2012, we have used various monitoring tools to track this pest as it expands its range across Ohio. Trapping helps us understand the seasonal dynamics of this pest with particular utility in detecting when it first appears in plantings of susceptible crops.

Methods: In 2018, we deployed the same style of trap and bait as in 2017: a wooden post with a double-sided clear sticky panel baited with a dual pheromone lure (from Trécé Inc.) that was effective for 12 weeks. There were 36 monitoring sites total, each with three traps per site. Traps were used in 19 new counties in addition to 13 counties that were previously involved. County-based Extension Educators provided most of the labor for trap set-up, maintenance, and data reporting. At most sites, the traps were along the edge of a tree line near a crop field, which is a preferred habitat for BMSB. Crops included berries, grapes, peppers, sweet corn, mixed vegetables, tree fruit, soybeans, and field corn. Most cooperators used the traps for 24 weeks, from May until September. Other cooperators used the traps for 12 weeks, from June through August. Traps were checked every 1 to 2 weeks. The earliest that some traps were deployed was 4/9. Trap counts were posted on an on-line spreadsheet (u.osu.edu/pestmanagement/trap-reports/); trap counts were viewable to anyone with the link, which was given to growers in several articles in the VegNet news blog (u.osu.edu/vegnetnews/) and in Ohio Fruit News (u.osu.edu/fruitpathology/fruit-news-2/).

Results: Among the 32 counties where traps were used in 2018, BMSB was detected in all 32 counties, with the average number ranging from 0.02 to 9.7 BMSB per trap per week. Locations categorized as low, medium, and high density based on the total seasonal catch are shown in the map below. The three counties with the highest seasonal total were Portage County in northeastern Ohio, and Butler and Greene Counties in southwestern Ohio. Most of the sites with very low density were in northwestern Ohio. First detection of BMSB was generally during the first week that traps were deployed in the field. In addition to total numbers, counts were detailed by adult males and females and nymphs. At most sites, only adult BMSB were found until late June. The first nymphs were found in May and early June at a few sites but mostly found starting in late June or early July. Peak numbers of BMSB at most sites were found from 8/11 until 9/22.

Discussion: Expansion of the trapping network into 19 new counties resulted in much better coverage of how this new stink bug is distributed in Ohio. In 2018, the stink bug population density in Ohio was similar to what we detected during the previous few years in terms of great variation among sites, with the stink bug population quite small at some sites and quite large at other sites. Collection of trap counts on a regular basis throughout the season allowed us to detect when crops are at the greatest risk from injury by invading stink bug populations.



Money Does Grow on Trees: Development of the Ohio Pawpaw Industry

Brad Bergefurd and Matt Davies

Pawpaw research orchards were planted in both Columbus and Piketon Campuses in 2018

If you're lucky, valuable fruit in high demand could be growing on a tree on your property. Per acre, a pawpaw orchard has the potential to produce an annual gross income of $50,000, including $15,000 per acre for fresh fruit, $30,000 per acre for frozen pulp, and $5,000 an acre for seed and scion wood.

Members of the Lewis and Clark expedition ate pawpaws for pleasure, and, for a period in Missouri in 1806, subsistence. Our early American ancestors enjoyed pawpaws for centuries, spreading them as far west as Kansas. In 1541, the expedition of conquistador Hernando de Soto recorded Native Americans growing and eating pawpaws in the Mississippi Valley. Even though they had to clear pawpaw trees to create farmable land, white settlers savored pawpaw fruit —often the only fresh fruit available nearby.

Pawpaw trees, the largest edible fruit trees native to North America, grow from the Great Lakes down to portions of the Florida Panhandle with Mid-Atlantic and Midwestern states making up the predominant growing region. Pawpaw trees produce greenish-blackish fruit, usually three to six inches long. The flesh is pale to bright yellow and contains a network of glossy, dark brown seeds.

A pawpaw's flavor is sunny, electric, and downright tropical: a burst of mango-banana-citrus that is incongruous with its temperate, deciduous forest origins. They also have a subtle kick of a yeasty, floral aftertaste somewhat like unfiltered wheat beer.

Want to try some pawpaw fruit? Ask around at your local farmers market, where pawpaw fruit may show up from August or early October. They are not cheap, but you can have fresh pawpaw fruit shipped to you in season, and frozen pawpaw pulp year round. The specialty foods company Earthy Delights says that requests for pawpaws have gone up every year since National Public Radio (npr.org/sections/thesalt/2011/09/29/140894570/the-pawpaw-foraging-for-americas-forgotten-fruit) first aired a story about them in 2011. You can also go directly to the source and contact other regional growers and gatherers, who may be selling both frozen pulp and mixed fruit.

How to Drink Pawpaws

Can’t find fresh pawpaw fruit? Drink beer! Pawpaw-flavored craft beer is popular among Ohio craft beer enthusiasts and is perhaps one of the most accessible ways pawpaws have been brought to the people. Breweries such as Weasel Boy Brewing in Zanesville, Sixth Sense Brewing in Jackson, and Jackie O’s Brewery in Athens are just a few Ohio craft breweries using pawpaw in specialty craft brews.

Interested in growing Pawpaw?

To acquire unbiased, research-based information to help grow the Ohio Pawpaw industry, over two acres of research orchards and native woodland research trials have been established on the Columbus and Piketon campuses of OSU. Pawpaw information from this and past years trials and from the Ohio Pawpaw Growers Association can be found on the projects web site at southcenters.osu.edu/horticulture/fruits/pawpaws, the OPGMA website (ogma.org/), or to receive information on upcoming pawpaw trainings and field days, subscribe to the email list at go.osu.edu/horticulturelistserv or contact Brad Bergefurd at Bergefurd.1@osu.edu.

Due to the pawpaw's enticing taste and untold culinary possibilities, it is in high demand by brewers, consumers, chefs, bakers, ice cream manufacturers, and fresh fruit purveyors throughout Ohio. Pawpaw production has been researched on a small-scale at the OSU South Centers in Piketon since the 90's with small acreage observation and demonstration trials.

In 2018, ***Marketing and Orchard Resource Efficiency (MORE) Ohio Pawpaw***, a new statewide, grant-funded project spearheaded by Principal Investigators Brad Bergefurd, a horticulture specialist with OSU Extension and Dr. Matt Davies, an assistant professor in CFAES, were awarded funding for this research and education project thanks to a USDA and Ohio Department of Agriculture Specialty Crop Block Grant.

Ohio Pawpaw Growers Association
State Native Fruit

USDA

DEPARTMENT OF AGRICULTURE
STATE OF OHIO

Columbus Campus
Research Planting Team

Value added Pawpaw Products:

integrationacres.com/products/

jackieos.com/brews/paw-paw-wheat/

Practical Skills for Managing Invasive Insects Workshop

OSU Department of Entomology and OSU IPM Program

Join members of the OSU Department of Entomology and the OSU IPM Program for a workshop that highlights recent research results and reviews the latest recommendations for key practices in monitoring, identifying, and managing the spotted-wing Drosophila and Brown Marmorated Stink Bug on fruit and vegetable crops. Although the spotted lanternfly has **not** yet been found in Ohio, this invasive pest has been detected in nearby states, so we'll provide some tips to remain vigilant for this potentially new pest.

The workshop will be held Tuesday, March 26 at OSU's Waterman Farm (2490 Carmack Road Columbus, OH 43210) in the Wittmeyer Conference Room in the Headquarters Building, from 9 AM – noon.

The agenda is not yet finalized but will be modeled after the following outline:

Spotted-Wing Drosophila, on berry crops

-Overview of distribution and biology
-Key advances in monitoring, identification & management
-New streamlined approach to monitoring in 2019
-Additional Resources

Brown Marmorated Stink Bug, on fruit & vegetable crops

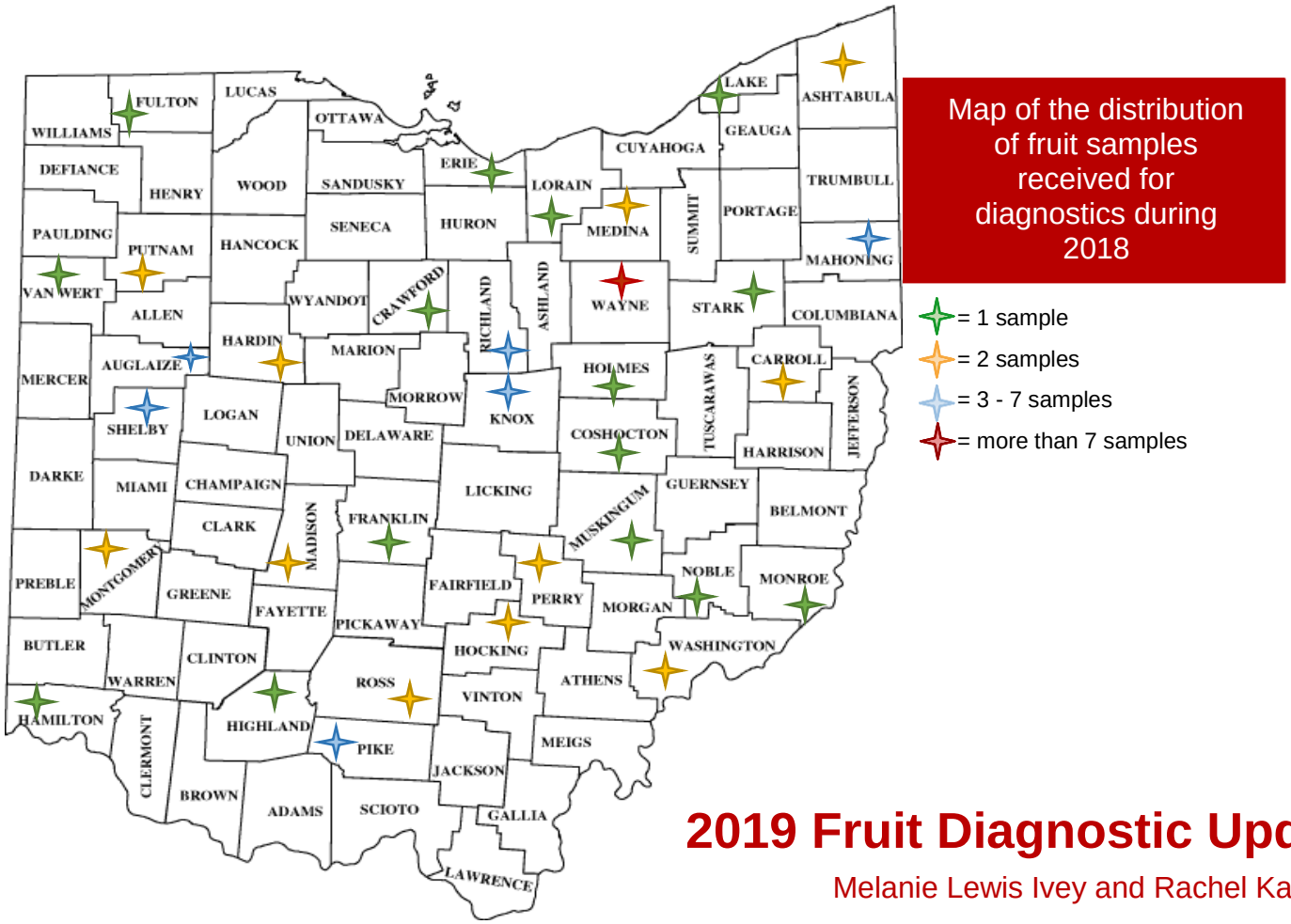
-Overview of distribution and biology
-Key advances in monitoring & management
-Biological control update
-Additional Resources

Spotted Lanternfly, potentially on tree fruit & hop crops

-Overview of distribution and biology
-Monitoring techniques
-Management decisions / options
-Additional Resources

Coffee and light snacks will be served. Registration will cost $5 per person and be limited to only 35 attendees due to room constraints. All participants must pre-register using this link (surveymonkey.com/r/OSUinvasive). Registration will end March 22nd. Payment, cash or check, will be accepted at the door.

If you have any difficulties registering or have other questions, please contact Jim Jasinski, jasinski.4@osu.eduor 937-484-1526, or Celeste Welty, welty.1@osu.edu, 614-292-2803.



2019 Fruit Diagnostic Update

Melanie Lewis Ivey and Rachel Kaufman

In total, 118 samples were received for diagnoses in the fruit pathology lab at the Wooster Campus of OSU, an increase of 34% from 2017. Approximately 13% of these samples were forwarded to Dr. Elizabeth Long, Department of Entomology for confirmation of insect damage.

Fruit samples were received from 34 counties, with the majority coming from Wayne County. Apple (23%), strawberry (17%), and hop (15%) were the top three crops submitted for diagnostics. The number of blueberry samples doubled and the number of strawberry samples tripled from 2017. Two new crops- chestnut and pawpaw, and one weed sample (honeyvine) were also diagnosed.

Most notable samples and diseases that were received this year included:

- **Apple:** fire blight and fungal fruit rot diseases were diagnosed the most frequently, although abiotic disorders including herbicide damage were the most common diagnoses. Diagnosis was not confirmed for four of the samples, although scale damage was suspected. Fire blight was also diagnosed on pear.
- **Strawberry:** Crown and root rots were the main diseases diagnosed for strawberry. A new species of *Colletotrichum*, *C. nymphaeae* (subspecies of the *C. acutatum* species complex) causing strawberry crown rot was identified and QoI fungicide resistance (EC_{50} values > 100 µg/L) was confirmed for the first time.
- **Hops:** Downy mildew and powdery mildew on hop were diagnosed. Although hop powdery mildew was probably present in Ohio in previous years this is the first year that it was confirmed. Molecular characterization indicates that only mating type 1 is present in Ohio, indicating that the fungus is not likely overwinter in hopyards.

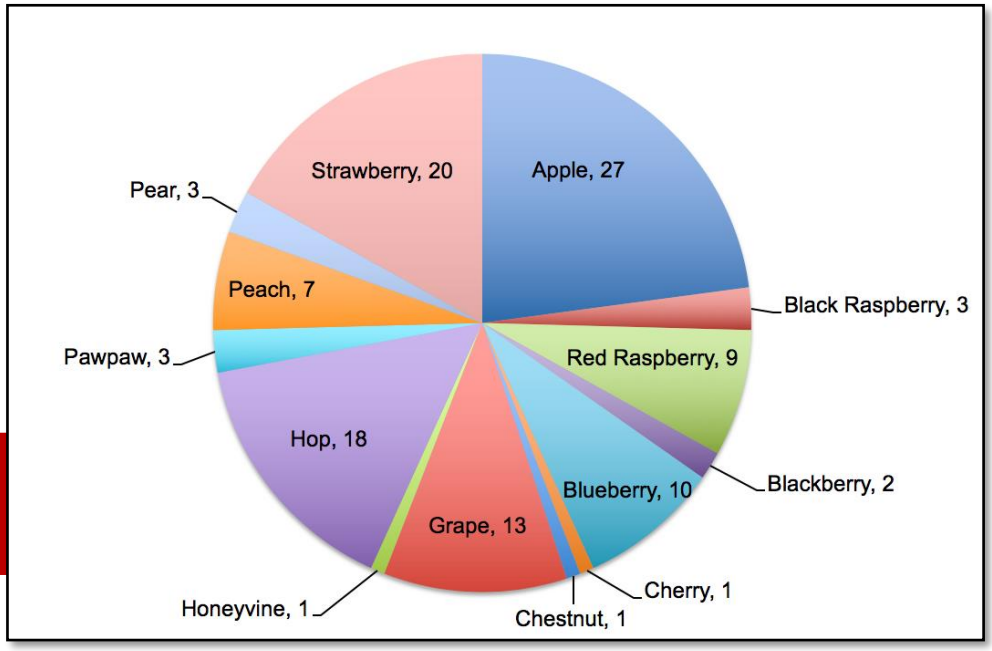
Together brambles accounted for 12% of the samples in 2018. No new reports of downy mildew on blackberry were diagnosed. Leaf spots and root rots were most commonly diagnosed.

One sample each of bacterial spot, peach canker and twig blight were diagnosed on peach. The twig blight and peach canker samples were from homeowners while the bacterial spot sample was from a commercial orchard.

Two new crops, pawpaw and chestnut, were diagnosed this year. Pawpaw samples were diagnosed with Phyllosticta leaf spot and chestnut with blossom end rot (caused by *Colletotrichum* spp.).

We are encouraging commercial growers to submit samples both into our diagnostic laboratory but also electronically to ivey.14@osu.edu. As of this year, home gardeners are asked to please send samples to the C. Wayne Ellett Plant and Pest Diagnostic Clinic for a nominal fee.

Number of samples received for diagnosis in 2018 by crop type



Tips to providing a good diagnostic sample:

1. Provide fresh and live plant tissue
2. Provide as much tissue as possible
3. Ensure the sample is moist during transport
4. Don't use paper bags; only plastic
5. Keep fruit separate from other parts of the sample and send for delivery as quickly as possible after picking

More information about the Fruit Diagnostic Laboratory:

u.osu.edu/fruitpathology/diagnostics/

Authors for this edition:

Dr. Melanie Lewis Ivey; Assistant Professor, Department of Plant Pathology; 224 Selby Hall, 1680 Madison Ave., Wooster, OH, 44691; ivey.14@osu.edu; 330-263–3849 (Office)
Mr. James Jasinski, MS; The Ohio State University Extension Educator for Champaign County and IPM Program Coordinator; Urbana, OH, 43078; jasinski.4@osu.edu; 937-484-1526 (Office)
Dr. Celeste Welty; Associate Professor, Department of Entomology; Bee Laboratory, 2501 Carmack Rd., Columbus, OH, 43210; welty.1@osu.edu; 614-292-2803 (Office)
Miss. Alejandra Madrid Jimenez, MS. PhD Student, Department of Plant Pathology; 229 Selby Hall, 1680 Madison Ave., Wooster, OH, 44691, jimenezmadrid.1@osu.edu; 225-288-4106 (Cell)
Mr. Brad Bergefurd, MS., The Ohio State University Horticulture Specialist and Extension Educator for Scioto County; 1864 Shyville Rd., Piketon, OH, 45661; bergefurd.1@osu.edu; 74-289-2071 ext.136 (Office)

Newsletter Editors:

DR. MELANIE LEWIS IVEY
Fruit Extension Pathologist
Ivey.14@osu.edu
330-263-3849

DR. CELESTE WELTY
Fruit Pest Management
Welty.1@osu.edu
614-292-2803

DR. GARY GAO
Small Fruit Extension Specialist
Gao.2@osu.edu
740-289-2071

BRAD BERGEFURD
Extension Educator
Bergefurd.1@osu.edu
740-354-7879

RACHEL MEDINA
Research Associate
Medina.72@osu.edu
330-263-3846

Grower Resources:

NEW: Midwest Fruit Pest Management Guide 2019 (ag.purdue.edu/hla/hort/documents/id-465.pdf)

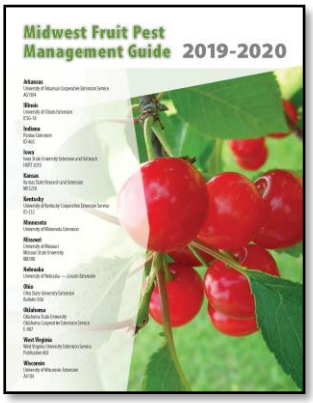
2018 Grape Spray Guide (u.osu.edu/fruitpathology/spray-guides/)

OSU Fruit Pathology Resources (u.osu.edu/fruitpathology)

OSU Fruit and Vegetable Pest Management (entomology.osu.edu)

OSU Fruit and Vegetable Diagnostic Laboratory (u.osu.edu/vegetablediseasefacts/)

OSU Bramble: Production Management and Marketing Guide (Bulletin 782) (extensionpubs.osu.edu)



THE OHIO STATE UNIVERSITY
COLLEGE OF FOOD, AGRICULTURAL, AND ENVIRONMENTAL SCIENCES

Partial Support from the Ohio Vegetable and Small Fruit Research and Development Program