



Ohio's Fruit News!

April 2017
Edition: 1

Welcome to the Unnamed (but Awesome!) Fruit Newsletter!
By: Melanie Lewis Ivey, Fruit Pathologist

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Welcome to our new, but unnamed newsletter! Developed by a team of OSU small fruit and tree fruit State Specialists, Extension Educators and staff, with support from **The Ohio Vegetable and Small Fruit Research and Development Program** and The Department of Plant Pathology-Fruit Pathology Program, this newsletter provides fruit growers with the most current and relevant information for managing diseases, insect pests and weeds affecting all fruit crops produced in Ohio.

In the next year, four issues, including this one, will be published. Each issue will include *Feature Articles*, *Research Updates*, *Extension Activities* and *Resources* for Ohio growers. In addition to the quarterly newsletters, 'mini-newsletters' addressing critical pest management issues, pesticide registration changes or other timely issues will be published. Our goal is to reach as many of our diverse fruit growers in Ohio as possible. The main method of distribution will be via email. Hardcopies will be mailed to growers without access to email, to those who do not use email, or to anyone who requests a hardcopy. The newsletters will also be posted on the OSU Fruit Pathology and Entomology websites. If you are interested in subscribing to the Unnamed (but Awesome!) Fruit Newsletter, please send your contact information to medina.72@osu.edu.

Alas, as much as I like the name "Unnamed (but Awesome) Fruit Newsletter", we really do need a better name for our newsletter. We are hoping our readers can help us come up with one. We invite you to send us your catchy names! As a reminder, the newsletter will focus on small fruit and tree fruit pests and management. Please submit your ideas to medina.72@osu.edu by **June 30th, 2017**. The Fruit Team will then vote on a name and the new name will be incorporated into a fruity heading for all of the future issues! The winner will receive a gift basket featuring OSU apparel and products and will be featured in the next newsletter.

We hope you find the newsletter informative and we want and welcome your input. In the third issue, we will include a web-based, anonymous feedback tool that will give you a formal method to provide us with your comments and suggestions. Your feedback will then be used to help us shape the 2018 newsletters!

Upcoming Events:

April

20 **Drift Workshop**
Wooster, Ohio

May

25 **Strawberry Field Night**
Piketon, Ohio

July

11 **Precision Ag Day**
Covington, Ohio

September

19 **Farm Science Review**
London, Ohio



Woolly Apple Aphid on apple tree bark

Preparation for Insect Pest Management in 2017 By: Dr. Celeste Welty

Eastern Ohio combatted the 17-year cicada that emerged in 2016 with harsh insecticides that induced outbreaks of some secondary pests. The following article discusses pests that need to be kept in mind and may be a larger problem this upcoming season.

San Jose scale is observed as red circular marks with a tiny gray center on the surface of fruit. If scale was noticed on fruit at harvest last year, then growers can choose from one of several options for control this year. An early step was to apply horticultural oil before the bud-swell stage, if temperatures were above freezing; some growers took advantage of the mild temperatures in February for this.

The next option is to apply an insect growth regulator such as Esteem (pyriproxyfen) or Centaur (buprofezin) during the pre-bloom period in April. The final option is to wait until the crawlers are active, which is usually in June, and apply Esteem or Centaur. Two applications of Esteem are allowed per year, although only one application should be needed; the lower end of the rate range should be used if applied pre-bloom and the higher end of the rate range should be used if applied after bloom. Only one application of Centaur is allowed per year. Lorsban applied pre-bloom also helps control San Jose scale.

Woolly apple aphid is another pest that was showing up last year in orchards where harsh products were used to control the 17-year cicada. Woolly aphids sometimes appear early in the season but other times do not appear until later, so scouting for them should be done periodically. It is helpful to scout for this pest in May and June, when woolies are typically found as white fuzzy tufts on pruning cuts and small twigs, and they have not yet moved on to the fruit. They often disappear if weather turns very hot. If infestations persist, the insecticide that many growers have found effective is Diazinon AG600 WBC (by Loveland). Note that not all formulations of diazinon are allowed on apples post-bloom, but this specific product is allowed and is readily available.

Berry growers need to be prepared to deal with the spotted wing drosophila again this year. This is the new pest that has caused severe problems in many berry plantings in Ohio since 2012. It is manifested by tiny white larvae in the berries at harvest. This pest is rarely found in May or June, but starts appearing in July. Traps are available for detection of the adult stage of this pest, which is a small fly. This year our Ohio monitoring program will be using jar traps made by Scentry, baited with lures made by Scentry, with a drowning solution of 25% apple cider vinegar in the bottom of the trap jar (Design for Trap Jars). If any adults of this pest are detected in traps, and if fruit are close to harvest, then insecticides can be used for control and should be applied weekly (Product List).

The brown marmorated stink bug is a new pest that is continuing its slow spread across Ohio, generally moving from hot spots in urban areas such as Columbus and Cincinnati, out to surrounding agricultural areas. We expect to see it showing up in raspberries, peaches, and apples. A typical trend is that people see this pest for 3 years in wintertime inside homes and other buildings, before they start seeing this pest in crops. In addition to fruit crops, this stink bug feeds on sweet corn, peppers, and many other vegetable crops. Its damage on apples varies but is usually black irregular patches on the fruit, similar to cork spot but more irregular in shape. This year we will be deploying a new style of trap for monitoring the brown marmorated stink bug; the new trap is a clear sticky panel clipped to a wooden stake.

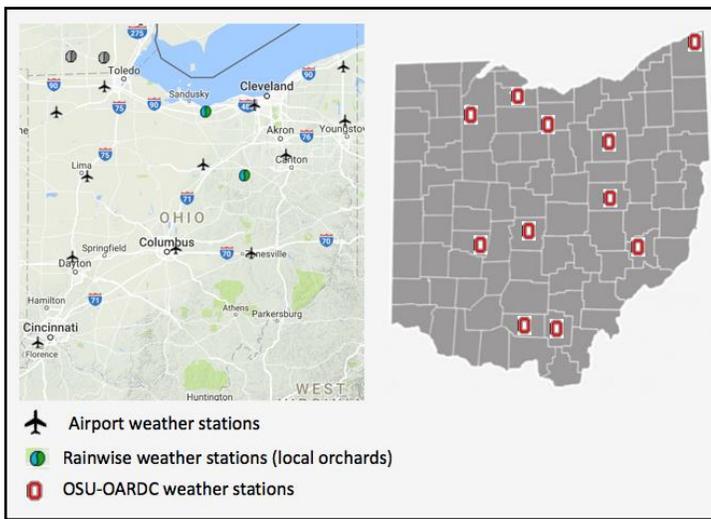
The 2016-2017 update of insecticide products for fruit and vegetable crops can be found using [this link](#).



Raspberry fruit damaged by larvae of Spotted Wing Drosophila

NEWA to Ohio!

By: Melanie Lewis Ivey
Fruit Pathologist



Real-time and past weather data are now being linked to models that guide fruit crop and pest management in Ohio.

Ohio recently became a member of Network for Environment and Weather Applications (NEWA) to provide fruit growers with tools to implement precision Integrated Pest Management (IPM) and crop production practices.

Dr. Matt Wallhead (USDA-Agricultural Research Service (ARS)) and Dr. Melanie Lewis Ivey (Fruit Pathologist, The Ohio State University), both located in Wooster, teamed up to coordinate the connection of 28 weather stations across the state with NEWA. Currently 14 of these weather stations are on-line and ten more, located at the OSU-OARDC Outlying Research Stations, will be on-line by the end of May 2017. NEWA is operated by the New York State IPM Program and the Northeast Regional Climate Center centered at Cornell University. Weather data are radio transmitted from weather stations to the internet and then uploaded into NEWA; weather data summaries, crop production tools, and IPM forecasts are automatically calculated and displayed.

Pesticide use in Ohio orchards and vineyards represents a significant economic cost to growers. NEWA users have reported that on average they can save \$19,500 per year in spray costs as a direct result of using NEWA pest forecast models (J. Carroll, 2007). The pest forecast models are theoretical predictions and forecasts and should not be substituted for actual observations of plant growth stage, pest presence, and disease occurrence determined through scouting or insect pheromone traps. **On the NEWA website (newa.cornell.edu) weather-based IPM forecast tools for fruit crops can be accessed for free to anyone in Ohio.** These tools include:

Fruit Diseases:

- Apple scab infection events
- Apple scab ascospore maturity
- Fire blight (Cougarblight)
- Sooty blotch & flyspeck
- Black rot of grapes
- Grapevine downy mildew (DMCast)
- Grapevine powdery mildew
- Phomopsis cane & leaf spot

Fruit Insect Pests:

- Apple maggot
- Codling maggot
- Obliquebanded leafroller
- Oriental fruit moth
- Plum curculio
- Spotted tentiform leafminer
- San Jose scale
- Grape Berry Moth

Fruit Crop Management:

- Apple carbohydrate thinning
- Apple frost risk
- Cornell apple irrigation model
- Grape bud hardiness
- Soil temperature map

NEWA is a partnership of land grant universities and grower associations. Each member state pays a yearly fee of \$1750 to connect to NEWA. With Ohio being an expansion network, any producers, consultants, researchers and extension specialists in Ohio who want to purchase, install and connect a weather station to NEWA are able to do so free of charge. For non-member states, individual growers can connect to NEWA for a yearly fee of \$290. Dr. Wallhead is Ohio's state NEWA manager and has provided support for NEWA for 2017 and 2018. Please contact Dr. Wallhead (matthew.wallhead@ars.usda.gov, 330-202-3555) for more information on connecting your farm to NEWA. For more information on fruit disease management contact Dr. Lewis Ivey. For more information on fruit pest management contact Dr. Celeste Welty or Dr. Elizabeth Long.

Reference: [Juliet E. Carroll. 2007. Impact of the NYS IPM Program's Network for Environment & Weather Awareness \(NEWA\) on agricultural production. NYS IPM Program.](#)



Current Status of Spring 2017 Fruit Tree Bloom (As of April 10, 2017)

By: Diane Miller

Our normal Ohio spring season is ahead by 2-3 weeks. We are looking at a warm week of temperatures for April 9-15. By the time this article is in print we will likely be close to or in full bloom in many apple varieties and past full bloom in peaches. This is all fine if the temperatures stay above freezing for the duration of the spring. If colder temperatures come this spring, we will likely be in the full bloom or post bloom stages. At these stages the differences between 10% dieback (28°F) and 90% dieback (25°F) are narrower than at lesser-developed flower bud stages, across the board for the tree fruit crops (apples, pears, peaches, cherries, etc).

Mark Longstroth of Michigan State University has put together a nice compilation from several sources of pictures and data on tree fruit freeze damage thresholds (Picture Table of fruit freeze damage thresholds)

In some research on frost/freezing of apple blossoms that I have conducted there was a difference in most sensitive tissue pre-bloom and post-bloom. Pre-bloom, the most sensitive tissue to freezing is the xylem tissue which supports the seeds, right where the flower style and the ovary connect. Post-bloom the most sensitive tissue is the fruit "skin". This is how low temperatures can cause a ring of dead tissue which continues to tear as the fruit develops and becomes seen as a "frost ring" or "frost russet".

There is not an easily effective way to protect tree fruit blossoms from freezing temperatures. Larger orchards may consider wind machines and helicopters that rely on a temperature inversion and can push warm upper air down into cold air closest to the ground. Commercial growers may apply **Promalin as a frost rescue for apples** after a freezing night. Promalin mimics the hormones produced by the seeds and, at some level, keeps seedless apples on the trees. Homeowners may try to cover trees with tarps. Leave the tarp open to the ground to include warmth released from the ground to the blossoms.

Luckily, there will be variation within a tree and among varieties in an orchard in the state of spring flower development and that is a good guard against freeze wipe-out. The flower which will produce the best apples are the king flower in a cluster, and that flower opens first unfortunately. We only need 4-6% of the apple flowers on a tree to 'set' to produce a full crop of apples. That's a flower per cluster, or less if there is a heavy bloom on the tree.

The best solution is to avoid frosts. The Midwest Apple Improvement Association is selecting for later blooming apples as there are differences among varieties in speed of spring flower development. Apple varieties, which respond quickly to warm spring temperatures, are at higher risk of frost damage than apple varieties that take more heat before they bloom. Unfortunately, these are still at the "apples of the future" stage.

Hopefully our biggest problem in 2017 will be how to thin a bumper crop!



How to Grow and Profit from Strawberries Six Months a Year! By: Brad Bergesford

There is always a market for fresh, local strawberries and growers who are able to harvest a crop throughout the year often have the marketing edge. Ohioans consume over 89 million pounds of strawberries annually, however, according to the USDA Ohio farmers only produce 1.8 million pounds annually. This additional 87 million pounds of strawberries, currently sourced from farms and related jobs outside of Ohio, has an estimated farm level value of \$165.3 million. Ohio is also home to several food industries such as the J.M. Smucker Company in Orrville, Ohio that utilize a large portion of strawberries for their processing operations and wholesale produce companies throughout Ohio want to utilize fresh locally grown strawberries to supply their buy local marketing programs.

Based on the increased interest in buying locally grown and produced items, Ohio growers are investing in producing strawberries commercially, for the local consumer market. The Ohio State University is conducting research on strawberry production and management practices to provide farmers with the information they need to grow strawberries for this rapidly expanding market.

Traditionally, Ohio growers have produced strawberries using the matted row or ribbon row production methods. In 2001, the Ohio State University Piketon Research & Extension Center began to pursue a new strawberry field production technique to help growers harvest an earlier crop – the plasticulture strawberry production system. For those willing to make the investment in time and resources, the strawberry plasticulture system may be a good choice for some farms. Strawberries are increasingly being planted on plastic mulch covered beds as a popular way to extend the harvest and marketing season, thus capturing a profit from the high demand for local strawberries. This system allows the grower to have berries up to one-month sooner than growers using the traditional matted row system. One of the main advantages of this system is a potential earlier harvest providing a competitive edge in the marketplace relative to traditional strawberry production systems. Other potential advantages include higher yield, enhanced fruit quality, and increased harvest labor efficiency.

The Ohio State University is also researching day neutral strawberry production, or strawberries that flower and fruit under the long days of summer. Farms that adopt this production method harvest strawberries beginning in July and into November many years until winter settles in. However, the research driven production guidelines for insect and disease management, irrigation and fertilization information needed to produce strawberries using these new production methods has been lacking.

Thanks to support from the Ohio Vegetable and Small Fruit Research and Development Program and the Ohio Department of Agriculture through a USDA Specialty Crop Block Grant, this unbiased research based information is available to assist farms in adopting these season extension strawberry production techniques.

If you want to learn more about these production techniques to help maximize strawberry production and profits an upcoming Strawberry Field Night and Workshop is scheduled for Wednesday, May 25, 2017 at the OSU Piketon Research & Extension Center, 1864 Shyville Road, Piketon, Ohio to showcase this latest strawberry production technology. Please visit: <https://extension.osu.edu/events/strawberry-field-night> for more information regarding this event.

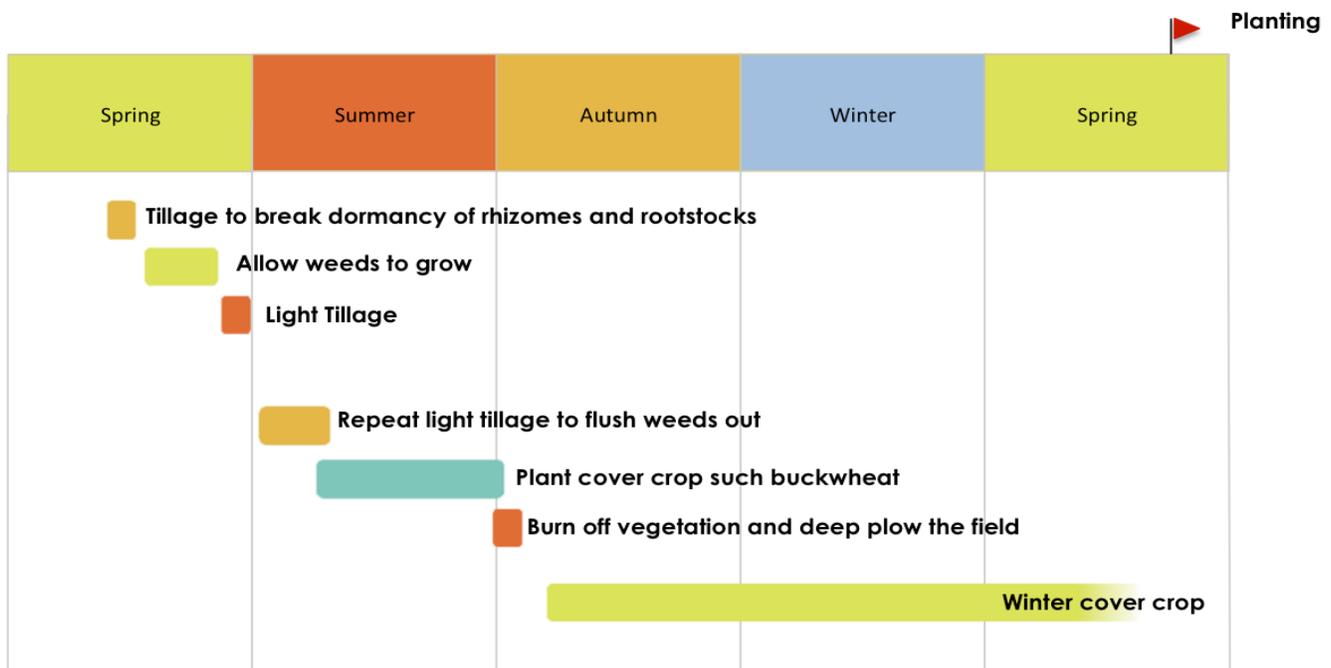
Weed Control of Berry Crops

By: Chengsong Hu, Andrea Leiva Soto, and Doug Doohan

Poor weed control is a major factor limiting profitability of berry crops. Effective weed control program requires a good understanding of the characteristics and growth habits of weeds. The life cycle of weeds falls into one of the three categories: annual, biennial and perennial. Annuals and biennials are species that complete their life cycle within one or two growing seasons, while perennials regrow from the same root or stem for many seasons. Perennials can be further subdivided into simple perennials and creeping perennials. Each category requires different management strategies. **Understanding the characteristics and growth habits of weeds (i.e. biology) can help you formulate an effective weed control program.** For example, eliminating perennials should be started the year before planting. Repeated tillage and systematic herbicides are effective control tools. Cover crop is another tool that can be used to smother weeds. And after planting, combined use of cultivation, weeding by hand and herbicides, referred to as Integrated Weed Management, will result in optimum control for most berry crop growers. Ground cover like perennial grasses between rows will suppress weed growth and provide a trafficable surface.

Read the full article on perennial weed control in berry crops using [this link](#).

Sample of weed control program for perennial-infested field prior to planting



Perennial
weed
infested
raspberry
planting



Growers Needed to Assist with Fruit Pathology Research!

By: Melanie Lewis Ivey



Fire blight on apple

Is Streptomycin Resistance a Problem in Ohio Orchards?

Fire blight, caused by the bacterium *Erwinia amylovora*, is widely distributed in apple and pear orchards throughout Ohio. In neighboring states, including Michigan, New York, Missouri, and most recently Kentucky, streptomycin resistant *Erwinia amylovora* have been reported. However, we do not know if resistant bacteria are currently present in Ohio. Knowing if resistant bacteria are present in Ohio orchards will allow us to develop new or enhanced programs to manage Fire Blight. If you have a history of Fire Blight in your orchards or if you suspect you have Fire Blight, we would like to collect samples and determine if you have streptomycin resistant *Erwinia amylovora* present in your orchard.

What Diseases are lurking in Strawberry Fields?

Annual strawberry production using plasticulture is increasing in Ohio. In the past year, Ohio growers have reported a steady decline in fall plant growth due to plant dieback, collapse, and/or wilting, especially during the second crop cycle (i.e. year two of an annual crop cycle). Symptoms and disease patterns were indicative of *Colletotrichum* crown rot and of the few samples received by my program, *Colletotrichum* spp. was identified in each case. However, a thorough survey of diseases in strawberry plasticulture production in Ohio has not been conducted. With support from the [Ohio Vegetable & Small Fruit Research & Development Program](#), a statewide survey will be conducted to identify the soilborne diseases affecting strawberry produced using the annual plasticulture production system.



Ohio Strawberry Plasticulture

Growers interested in participating in either of the above studies should contact Dr. Melanie Lewis Ivey, Fruit Pathologist or Rachel Medina, Research Associate, Fruit Pathology Program, for more information on the study and for details on how we can obtain a sample of your fruits.

Need Help Identifying a Fruit Disease?

Early and accurate identification of fruit diseases is critical to successfully manage peaky diseases. With support from the [Ohio Vegetable & Small Fruit Research & Development Program](#), the Fruit Pathology laboratory (Wooster, OH), can assist you with disease identification and provide recommendations for management. For insect pest identification and management, please contact Dr. Celeste Welty.

For details on how and where to submit a sample [please visit the diagnostic laboratory website](#) or contact Rachel Medina to have instruction mailed to you.



Peach Leaf Curl

Borrowed from: Fred Hoffman

Early Season Disease Awareness

Early detection of diseases is an essential component of an IPM program. Some of the early diseases you should be on the look-out for are listed here.



Orange rust on blackberry

Borrowed from: Sue Colucci

Apple: Fire blight – cankers and spur and blossom blight

Powdery mildew (especially in southern Ohio)

Peach: Peach leaf curl

Blueberry: Phomopsis twig blight

Brambles (except red raspberry): Orange Rust

Grower Resource Links:

[Midwest Fruit Pest Management Guide 2017](#)

[OSU Fruit Pathology Resources](#)

[OSU Fruit and Vegetable Pest Management](#)

[2017 Winter Climate Summary from OSU](#)

[OSU Weed Control Update](#)



Available Free Online!

OHIO AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER
OHIO STATE UNIVERSITY EXTENSION

Strawberry Field Night

At OSU South Centers

Hosted by Brad Bergefurd

Thursday,
May 25, 2017
5:30 — 8:30 P.M.

Location: OSU South Centers
1864 Shyville Rd., Piketon, OH

Cost: \$25.00 per person,
or \$40.00 per family (up to 3)
(Includes handouts and dinner-served from 5:30 to 6:00)

To Register:
You must register
Contact Charissa Gardner at
Gardner.1148@osu.edu
740.289.2071 ext. 132

DEADLINE to Register:
May 23, 2017



Plasticulture and matted row strawberry field research will be showcased

Topics to be covered will include:

- winter protection techniques
- Israeli drip irrigation demonstration and management
- fertigation and nitrogen management
- row cover management
- June bearing, day-neutral, ever-bearing cultivar evaluations
- pest and disease control
- integrated Pest Management (IPM) techniques
- petiole sap analysis demonstration



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Thank you for taking the time to read our first publication! Look for the next edition in July, as well as important 'mini-newsletters' as the season takes off!



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