SUPPORTING FRUIT PRODUCTION

OHIO FRUIT NEWS

July 2017 Edition: 2

Inside This Issue:

Upcoming Events:

July

11 Precision Ag Day
Covington, Ohio

21 Grape Disease Diagnostic Workshop
Ashtabula, Ohio

26 Grape Disease Diagnostic Workshop
Piketon, Ohio

August

3 Orchard Sprayer Tech. Field Day
Rittman, Ohio

Welcome to the Second Edition of Ohio Fruit News!

This newsletter is put together by a team of OSU experts in fruit production and protection to give you timely and important plant pest and seasonal information. Our goal is to reach as many of our diverse fruit growers in Ohio as possible!

After our first edition, we received great feedback from growers and educators around the state – so thank you for your support! We continue to ask for feedback on articles, recommendations, and other topics that you, the growers, would like covered within these newsletters.

The season is well underway and for us here at OSU, it has been a busy one! Upcoming events include Precision Ag Day, Grape Pest Diagnostic Workshops, and an Orchard Sprayer Field day with more in the planning! Flyers for events as well as links to event pages can be found in this edition.

In addition to this larger article, 'mini' versions of this newsletter have been distributed to communicate immediate and important pest information. Keep your eye out for more of those coming out as we approach harvest! All newsletters and flyers can be found at this link: https://u.osu.edu/fruitpathology/fruit-news-2/. Please contact Rachel Medina (medina.72@osu.edu; 229 Selby Hall, 1680 Madison Ave, Wooster, Ohio, 44691 to subscribe to this newsletter or with any questions about content.

Our third Ohio Fruit News issue will be distributed in October and will contain a survey to obtain grower feedback. Your feedback will help shape the upcoming newsletters and our focus for 2018, so please take a moment to fill it out!

As always, happy growing! And contact your local county extension agents (https://extension.osu.edu/lao) with additional fruit production questions!

Netting for Minimizing Bird Depredation in the Berry Path

By: Dr. Gary Gao

Netting used over berries rows

Many bird species are attracted to our fruit crops. Blackberries, blueberries, grapes, and raspberries seem to be some of their favorites. As I was composing this article on June 9, 2017, quite a few blueberry varieties started turning blue in southern Ohio and I have seen many birds in our extension plots and commercial plantings. Fortunately, the growers have already put up netting for crop protection. It is often much better to keep them out before they get a taste of your berry crops!

There are quite a few strategies recommended for bird management in berries, however, bird netting seems to be the most effective method. At the OSU South Centers in Piketon, we use two different kinds of material. We use Smart Net System overhead netting and blackbird netting material with hole sizes of a half inch or smaller. I have noticed that birds can get through the netting with holes that are larger than a half inch (i.e. 3/4in holes). Throughout the season the torn holes should be promptly repaired. Other methods of bird control include noisemakers such as canons or bird distress calls, scarecrows, tapes or ribbons, and laser beams have also been tried for this purpose. In general, a combination of these approaches is needed to reduce bird feeding on berries. For more information on other recommended strategies, you can refer to the Midwest Blueberry Production Guide.

Netted berries in Piketon, Ohio

A Costly Mistake – Confusing Downy Mildew with Powdery Mildew!

By: Melanie Lewis Ivey

Despite their similar names and the fact that they both produce powdery growth on leaves, the pathogens that cause powdery mildew and downy mildew diseases are very different. So why does it matter which mildew is causing disease on the plants? It's because different chemistries are required to manage downy and powdery mildew and failure to accurately identify and treat the disease can result in significant economic losses. While both diseases are common on a wide range of plants, diseases caused by the downy mildew pathogens are generally more destructive and more difficult to manage.

Symptoms of downy mildew on grape and raspberry leaves

Downy Mildews: Contrary to popular belief, downy mildews are not fungi. The downy mildew pathogens are in a different taxonomic group and are more similar to algae than fungi. They are grouped with the water molds and this group includes two other economically important plant pathogens: *Phytophthora* and *Pythium*. The downy mildews produce brownish-gray, lavender or white spores on the underside of leaves. On the upper leaves, angular yellow (chlorosis) spots form and as the disease progresses the spots often turn brown (necrosis). The downy mildew pathogens favor cool temperatures (45-75°F) and high humidity (>85%). Infection and spore production require the presence of free moisture.

Powdery Mildews are caused by true fungi and in most cases, white circular spots form on the upper surfaces of leaves first. Exceptions include strawberry and apple powdery mildew, which form spots or patches on both the upper and lower leaf surfaces. Powdery mildews produce a range of symptoms such as leaf discoloration (yellowing, reddening, browning), leaf cupping or curling, and leaf distortion. Powdery mildew favors moderate to high temperatures (68-85°F) and high humidity (95%). However, free water is not required for the pathogen to reproduce or initiate infection.

Symptoms of powdery mildew on grape and strawberry leaves

Successful Management Requires Accurate Identification

Accurate and rapid diagnosis is essential for successful management of downy and powdery mildew diseases. Diagnosis without confirmation can be costly and result in 100% crop loss. To the experienced eye the type of mildew causing disease can accurately be identified by observing the color, location, and pattern of the pathogen on the leaves. However, disease manifestation is variable and both types of pathogens can cause disease on the same plant at the same time. Therefore, microscopic confirmation is strongly recommended.

Spores from the downy mildew pathogen

Disease Management Strategies

Whether you are dealing with downy or powdery mildew diseases an integrated disease management (IDM) program is recommended. While the chemistries used to manage the two types of mildews differ, the cultural and sanitation practices used to prevent introduction and minimize spread of the pathogens are similar. Below is an example of a generalized IDM program for downy and powdery mildews.

- Start with high quality seed or transplants.
- Select varieties with genetic resistance to each disease if available.
- Scout regularly for signs and symptoms of disease. Remember to look on the underside of the leaves as well as the upperside.
- Minimize humidity within the canopy by increasing plant spacing or proper pruning practices.
- Remove and destroy plant debris and weeds.
- Use registered biopesticides as protectants if available.
- Use appropriate registered synthetic fungicides. The mildew pathogens are very prone to chemical resistance development and therefore should be used in a manner that minimizes the risk of resistance development consult the Midwest Fruit Pest Management Guide for specific fungicide recommendations.

Send samples to:
Dr. Melanie L. Lewis Ivey
OSU-Wooster Campus
Department of Plant Pathology
1680 Madison Avenue
Wooster, OH, 44691

Instructional video for trap set-up: Click here!

Spotted Wing Drosophila Update

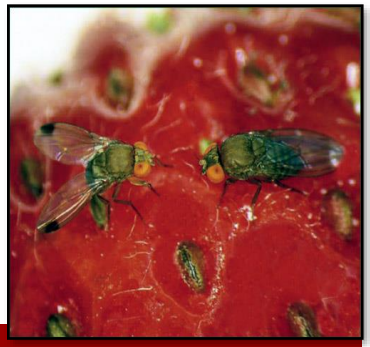
By: Jim Jasinski and Celeste Welty

Various OSU cooperators, mostly specialists and Extension educators, have been monitoring for spotted wing drosophila (SWD) adults in a statewide network since around mid-May. So far positive detections have been made in Franklin, Greene, Clinton, Clark, and Wayne counties, with an unconfirmed report from Champaign county. Several other counties in the SWD trapping network have not reported yet so this is what we know to date. While the captures are still relatively low, they are higher than this time frame last year.

If you grow raspberries, blackberries, grapes, peaches, strawberries, or blueberries that have ripe or ripening fruit, you should be alert to any SWD reports in your area and be prepared to start a treatment program if found on your farm. Here is a quick SWD factsheet and insecticide list for your reference.

If you don't have ripe or ripening fruit yet, it is still not too late to put a trap up and look for adult flies. A new 3 minute video showing how to set up the SWD trap we currently recommend, the Scentry trap, has just been created and posted on the OSU IPM YouTube channel (Pictured above). You can also contact your local Extension educator for instructions on how to setup a trap. Remember that **any** SWD trap will catch non-target insects, so be sure to have your catches inspected for the right species. The Scentry trap and lure can be purchased at Great Lakes IPM (http://www.greatlakesipm.com/).

Spotted wing drosophila adult



SWD laying eggs on strawberry

Plan to Manage Borers in Peach Trees

By: Celeste Welty

Peachtree borer damage

We are starting to catch adults of the peachtree borer (also known as the greater peachtree borer) in pheromone traps. New adults are likely to continue to emerge throughout July and August, with a peak usually around the end of July. The adult moths lay eggs on bark at the base of the tree. When eggs hatch, the young larvae borer through the outer bark and feed on the inner bark. If the feeding girdles the tree, then the tree will die. Young trees are commonly attacked. This pest can be managed by either insecticide drench to the base of the tree trunk or by pheromone mating disruption.

For chemical control, chlorpyrifos (Lorsban) is a good option for a directed spray to the tree trunk, but beware that Lorsban is not allowed to contact the fruit. Lorsban is allowed as a single application to the trunk, with a 14-day PHI. This is most effective when applied around the time of peak moth emergence, usually in late July or early August. Endosulfan (Thionex) is no longer an option for control of this pest because it is no longer registered for use on peaches.

Pheromone mating disruption is becoming a more widely used tactic for control of borers in peach blocks that are 5 acres or larger in size. This tactic does not kill the borers, but confuses the male moths so that they are unable to find the female moths, thus mating is prevented and no viable eggs are laid. This tactic requires dispensers in the form of twist-ties to be placed in trees manually. 'Isomate PTB Dual' is used for control of both the lesser peachtree borer and the peachtree borer, while 'Isomate P' is for control of peachtree borer only. Isomate PTB Dual is used at a rate of 150 dispensers per acre for average populations of the pests, or at a rate of 250 dispensers per acre where pest pressure is high. The dispensers should be placed in trees before the adults begin to emerge. For management of lesser peachtree borer, the dispensers should have been deployed by early May. For management of peachtree borer, the dispensers should have been deployed by early to mid-June. These products are made by Pacific Biocontrol and distributed by Great Lakes IPM.

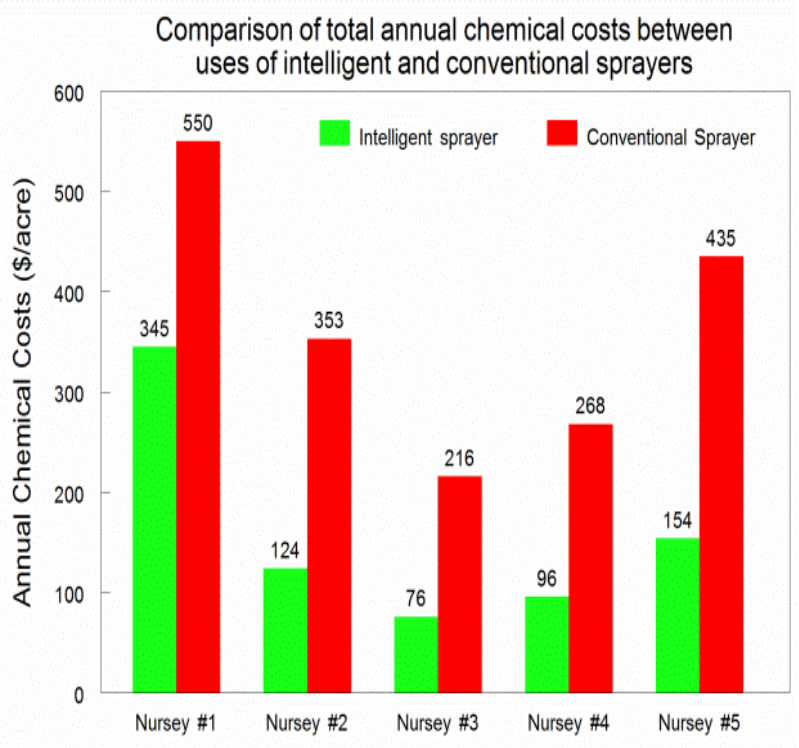
(Left) Peachtree borer (Right) Lesser peachtree borer

Intelligent Sprayer Development for Nursery and Orchard Spray Applications

By: Erdal Ozkan & Heping Zhu

Intelligent sprayer developed in Ohio

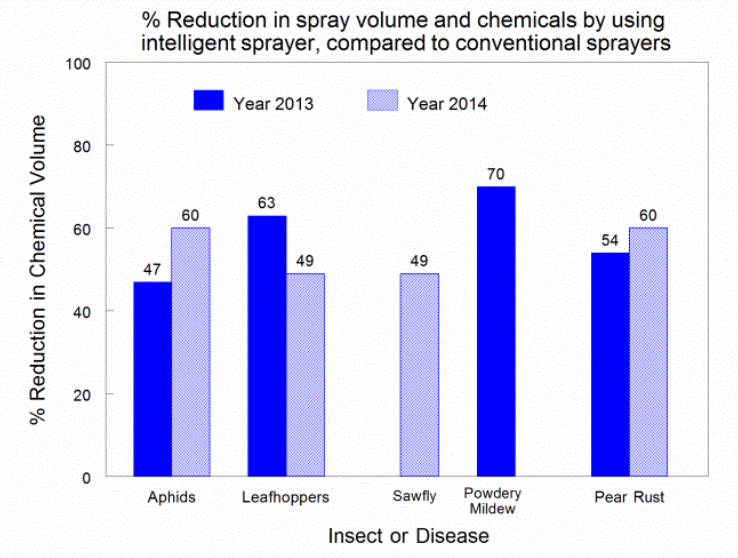
Current application technology for fruit, grapes, and nursery crop production wastes significant amounts of pesticides. During the past 10 years, we demonstrated that optimum spray coverage, independent of spray volume, could reduce pesticide use by over 50% and result in significant production cost savings. However, achieving optimum spray coverage required spray applicators to execute complex guidelines for a particular sprayer in order to reach the spray quality needed for effective pest and disease control. To simplify this procedure, a new spraying system with intelligent technologies was invented. This sprayer will be demonstrated at the Spray Technology Field Day on August 3, 2017 at Bauman Orchards. Registration, using the flyer below, is due by July 27th.



Critical intelligent technology was developed to increase application efficiencies and reduce uncertainties in spray deposition uniformity, off-target loss and calibration for current pesticide sprayers. We achieved real cost benefits with new pesticide application strategies for tree crop producers, consumers and the environment. Four sprayer prototypes, built at a cost of $21,000 each, are currently being tested for efficacy, reliability and durability in commercial nurseries in Ohio, Oregon and Tennessee.

A laser-guided variable-rate air-assisted sprayer was developed to improve pesticide application efficiencies for ornamental nursery and **fruit tree industries**. The sprayer integrates a high speed laser scanning system to a custom-designed sensor-signal analyzer and variable-rate controller, variable-rate nozzles and a multi-channel air-assisted delivery system. This unique precision sprayer can visualize the presence, size, shape, and foliage density of target trees and apply only the necessary amount of pesticide.

Controlled spray outputs to match canopy structures in real time are now realistic with intelligent sprayer capabilities. Field experiments demonstrated that the intelligent sprayer, compared to conventional sprayers, reduced variations in spray deposition due to changes in tree structure and increased consistency of spray deposition uniformity on targets at different growth stages. **The pest control efficacies of the new sprayer are comparable to those of conventional sprayers, while the new sprayer reduces average pesticide use by 47% to 70%, for an annual cost savings of $140 to $280 per acre.** Additional tests in an apple orchard have shown that the new sprayer reduces spray loss beyond the tree canopy by 40% to 87%, reduces airborne spray drift by up to 87%, and reduces spray loss on the ground by 68% to 93%.



Dr. Elizabeth Long, Heping Zhu, and Melanie Lewis Ivey were recently awarded a grant from the Ohio grape industry committee to evaluate the use of intelligent sprayers in a vineyard. To learn more about the project, contact Dr. Long (long.154@osu.edu or 330-202-3556).

Calibrate your Sprayer to Determine Your True Application Rate

By: Erdal Ozkan

Did you calibrate your sprayer this year before the spraying season started? If yes, great! If not, there is still time to do it. You may ask: Why do I need to calibrate my sprayer? The answer is simple: you must know exactly how much chemical is applied. Without calibrating, you are simply guessing.

Applying pesticides at the proper rate is essential to achieving satisfactory weed, disease, and insect control. The directions on the pesticide container label tell what application rates give the best results. However, proper application rates will be attained only if sprayers work well and are calibrated correctly.

Calibrating a high-pressure air-blast sprayer, which is most commonly used in orchards and vineyards, is not as difficult as it sounds. Usually the first thing you want to know is the application rate in gallons per acre. There are many methods to choose from to determine this, but a method that is the easiest and the most practical is:

1) Find a level ground and, fill up the sprayer tank completely up to the lid; or up to a certain marking on the tank water site gauge, if your sprayer has one.
2) Measure an area in the orchard or vineyard equal to one acre and spray this area at your normal spraying settings
3) Return to where you had measured the initial water level in the tank
4) Refill the sprayer tank with water up to the same marking you placed when you filled the tank,
5) The amount of water that was needed to refill the tank back to the same level is equal to gallons per acre application rate.
6) Make changes in pressure or travel speed if the difference between the measured (actual) application rate and the intended rate is greater than 5% of the intended rate.

Additional methods including calibrating following a plugged nozzle or spray inconsistencies can be found at this link.

Picture from Syngenta

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Orchard Sprayer Technology Field Day

BAUMAN ORCHARDS

161 RITTMAN AVENUE, RITTMAN OH 44270

2:30 PM - 7:30 PM

The field day will be an opportunity to gain some education and hands on experience regarding:

- Effective spraying using airblast sprayers
- Calibration of sprayers
- Orchard and small fruit equipment and supplies
- Distribution and Deposition of spray material
- Conventional sprayer Demonstrations
- Intelligent Sprayer Demonstration: Automatic adjustment of spray volume, spray pattern and nozzle output based on tree size, canopy density and spacing between trees

Presented by OSU Extension, USDA-ARS, and Bauman Orchards

SPONSORS OF THE FIELD DAY INCLUDE:

CPS - Dave O'Brian, Columbus Irrigation, Farm Credit Mid-America, Farmers National Bank, Farmers State Bank, Fred's Water Service, The George F. Ackerman Company, Miller Chemical, Sterling Farm Equipment, and Wayne Savings Bank

Handout Materials, Refreshments and Light Supper Provided!

Pre-register to the Wayne County Extension Office by July 27 COST: $5 per person

Contact the office for more information at 330-264-8722 or Lewandowski.11@osu.edu

Orchard Technology Field Day

Registration cost is only $5/person. Pre-registration requested to the Wayne County Extension Office at 330-264-8722 or email Lewandowski.11@osu.edu by **Thursday, July 27**. Make checks payable to Ohio State University Extension and mail to Ohio State University Extension – Wayne County, 428 W. Liberty St. Wooster, OH 44691. Please detach and return this form with payment. Thank you.

Name:_____

Address:_____

Phone Number:_____ Email:_____

Apple Trees on Fire!

By: Melanie Lewis Ivey

Fireblight canker on apple trunk

If you have an apple tree (or acres of apple trees) you have probably seen fire blight symptoms this year. Several factors have contributed to a high level of fire blight in several orchards this year including:

- an early and warm spring that resulted in an early bloom for some apple varieties,
- an extended bloom period due to cooler late spring temperatures and,
- lots of rain during bloom, which made the applications of preventative sprays difficult.

Once a tree has fire blight it is very difficult to control. Commercial growers should consider following a recommended chemical spray program for fire blight. Chemical sprays for fire blight control are generally not recommended for backyard growers. Instead, backyard growers are encouraged to plant less susceptible varieties and use other nonchemical control measures such as the removal of diseased twigs and branches during the dormant season and avoiding excessive fertilizing with nitrogen and heavy pruning in the spring.

For the most current spray recommendations, commercial growers are referred to the Midwest Fruit Pest Management Guide. Backyard growers are referred to Bulletin 780, Controlling Diseases and Insects in Home Fruit Plantings, which is available from your county Extension office or the CFAES Publications online bookstore at estore.osu-extension.org. A factsheet on fire blight can be downloaded here or you can request a copy of the factsheet from your county Extension educator.

Don't forget that we need your fire blight samples! If you have fire blight or suspect you have it, please contact Dr. Melanie Lewis Ivey (ivey.14@osu.edu) or Rachel Medina (medina.72@osu.edu). We can provide instructions on how to collect and send your diseased plant material or come to your orchard to collect it.

Insect Observations on Fruit Crops

By: Celeste Welty

Japanese Beetles: Japanese beetles are now emerging. They have been seen in central Ohio starting on 16 June, which is 2 weeks earlier than usual. These will be feeding on plums, peaches, grapes, raspberries, and hops as well as various ornamental plants and some weeds such as giant ragweed.

Brown marmorated stink bug: We are now finding fewer adult stink bugs, but starting to find young nymphs in apple and peach trees.

Fall Webworm: Fall webworm is now active, mostly on branches of ornamental trees but sometimes in fruit trees. Fall webworms are caterpillars that feed in large groups surrounded by webbing. Infestations are usually in isolated branches that can be removed by pruning.

Flea Beetle: In grapes, we are hearing reports of flea beetle larvae feeding on leaves. This pest seems more common this year than usual.

Thrips: We are continuing to hear reports of thrips injury to strawberries as well as raspberries. Thrips are difficult to kill with insecticides, but the best bet for chemical control is spinetoram (Radiant for strawberries; Delegate on raspberries, blueberries, grapes). We also have one report of broad mite on strawberries. Broad mite and cyclamen mite infestations can result in fruit damage similar to that done by thrips feeding.

Fruit Insecticide Update
By: Celeste Welty

The label for **Exirel** has been expanded to include strawberries, for control of spotted wing drosophila, and for suppression of foliage-feeding thrips. The pre-harvest interval for strawberry is one day. Exirel contains the active ingredient cyantraniliprole, also known as Cyazypyr, which is in the same chemical group as Altacor and Coragen. Fruit crops already on the older federal label for Exirel are blueberries, apples and other pome fruit, and peaches and other stone fruit. Target pests are caterpillars, aphids, Japanese beetle, and plum curculio. Full details about use on strawberries are found on a new supplemental label.

Belay has a new label that has a new restriction for its use on grapes. Only one application per year is now allowed on grapes. Belay is a neonicotinid that contains the active ingredient clothianidin. Target pests are leafhoppers, beetles, caterpillars, and mealybugs.

New Product for Fireblight and Downy Mildew Control
By: Melanie Lewis Ivey

LifeGard (Certis USA) is a new biocontrol product registered in Ohio for apple and pear fire blight and grape downy mildew control. The active ingredient in LifeGard is a bacterium– *Bacillus mycoides* isolate J to be specific, that can activate the plants natural immunity to some pathogens. LifeGard is approved for organic production by the National Organic Program and is bee safe! It has a 0 day post-harvest interval (PHI) and a 4 hour re-entry interval (REI).

For control of the **blossom blight phase of fire blight** applications should begin when green tissue is present, prior to the infection period, which occur during bloom. If no pre-bloom applications have been made, then combine LifeGard applications with other standard bloom sprays that target fire blight.

For control of **grape downy mildew** LifeGard applications should begin 2 – 3 weeks before bloom and be repeated at 7-21 day intervals as part of a rotational program with fungicides. Applications should continue until 2-4 weeks after fruit set. The product label can be downloaded here.

Downy mildew on developing grapes

Shepard's crook caused by fireblight on apple twig

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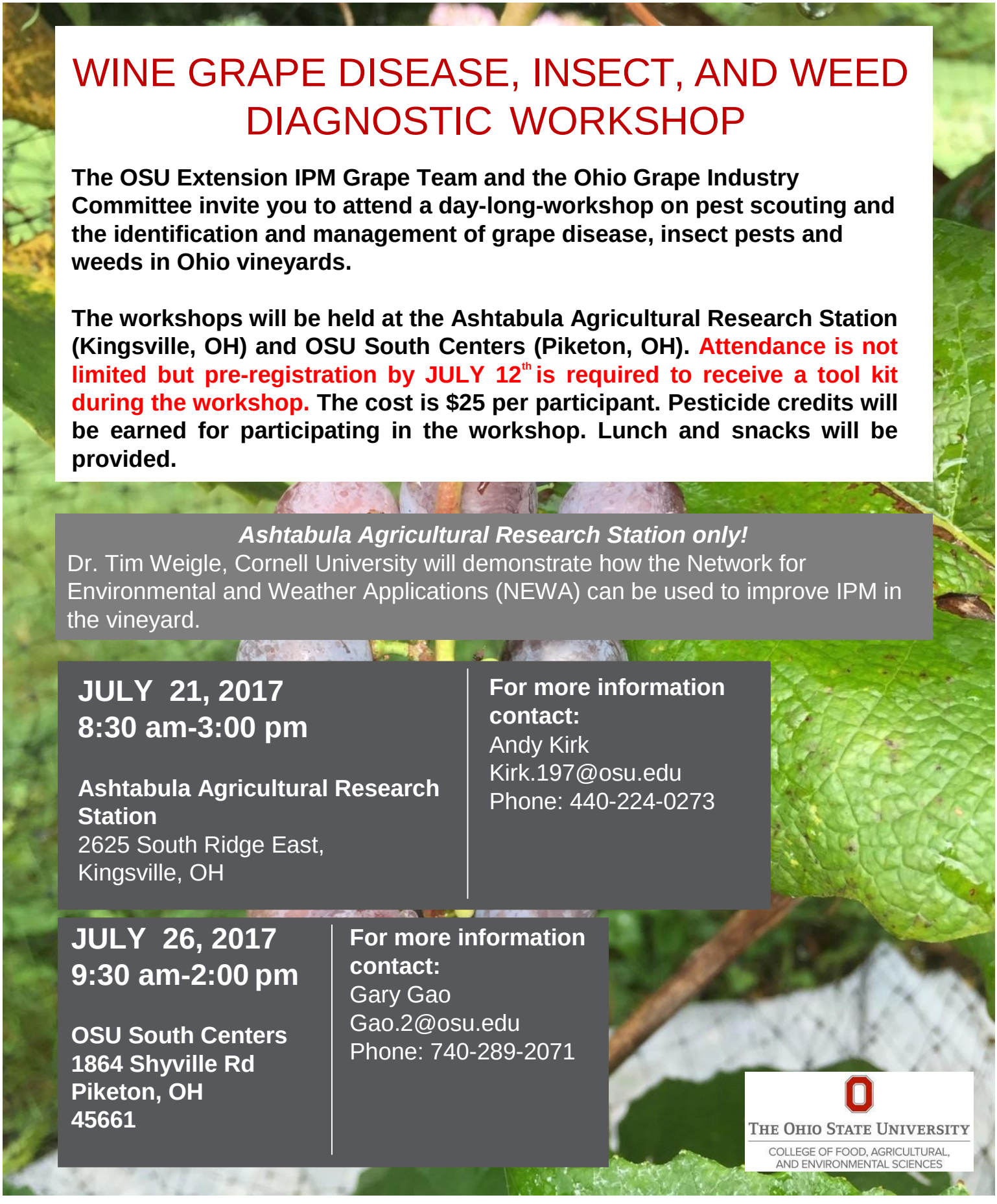

WINE GRAPE DISEASE, INSECT, AND WEED DIAGNOSTIC WORKSHOP

The OSU Extension IPM Grape Team and the Ohio Grape Industry Committee invite you to attend a day-long-workshop on pest scouting and the identification and management of grape disease, insect pests and weeds in Ohio vineyards.

The workshops will be held at the Ashtabula Agricultural Research Station (Kingsville, OH) and OSU South Centers (Piketon, OH). Attendance is not limited but pre-registration by JULY 12th is required to receive a tool kit during the workshop. The cost is $25 per participant. Pesticide credits will be earned for participating in the workshop. Lunch and snacks will be provided.

Ashtabula Agricultural Research Station only!

Dr. Tim Weigle, Cornell University will demonstrate how the Network for Environmental and Weather Applications (NEWA) can be used to improve IPM in the vineyard.

JULY 21, 2017
8:30 am-3:00 pm

Ashtabula Agricultural Research Station
2625 South Ridge East,
Kingsville, OH

For more information contact:
Andy Kirk
Kirk.197@osu.edu
Phone: 440-224-0273

JULY 26, 2017
9:30 am-2:00 pm

OSU South Centers
1864 Shyville Rd
Piketon, OH
45661

For more information contact:
Gary Gao
Gao.2@osu.edu
Phone: 740-289-2071

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REGISTRATION FORM

The workshops will be held at the Ashtabula Agricultural Research Station (Kingsville, OH) and OSU South Centers (Piketon, OH). Attendance is not limited but registration is required to receive a tool kit during the workshop and the cost is $25 per participant. PLEASE REGISTER BY JULY 12th.

Name:

Contact number:

I will attend the workshop at (check one):

☐ **Ashtabula Agricultural Research Station, Kingsville OH (July 21, 2017)**

☐ **OSU South Centers, Piketon OH (July 26, 2017)**

Please select any special dietary needs:

☐ Gluten-free ☐ Vegetarian ☐ Vegan ☐ Other, please specify

Please Make checks payable to The Ohio State University. Please mail your registration form and $25 registration fee to: Melanie Ivey, The Ohio State University, 1680 Madison Avenue, Wooster OH 44691. For questions about registration please contact Rachel Medina, medina.72@osu.edu, 330-236-2865.

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Disease Awareness:

It's been a busy season for us in the fruit pathology laboratory, some of the problems that we have seen and that you should be on the lookout for are:

Apple: Fireblight and frost damage to fruit

Peach: Copper toxicity and stink bug damage on fruit

Strawberries: Fruit cracking due too much water

Blackberry: Orange rust and herbicide damage

Brambles: Fruit flies

Stink bugs feeding on peaches

Grower Resources:

Midwest Fruit Pest Management Guide 2017

OSU Fruit Pathology Resources

OSU Fruit and Vegetable Pest Management

OSU Fruit and Vegetable Diagnostic Laboratory

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Thank you for taking the time to read this publication! Please feel free to contact us with feedback or article requests!

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