The Ohio State University Extension

VegNet *The Vegetable and Fruit Crops Teams Newsletter*

http://vegnet.osu.edu

Lead Editor and Contributing Author: Brad Bergefurd
Graphic Designer & Editor: Charissa McGlothin

Vol. 22 Number 1, April 6, 2015

In this issue:

Hops Research Update, Wooster

from Chelsea Smith, Research Assistant, OSU Department of Entomology

As of 3/30/2015 over 50% of the hop plants in Wooster have started to emerge. In preparation for training, we will be dropping the twines soon. No bugs or diseases of concern have appeared yet. However, we are anticipating that downy mildew will be presenting problems for us based on the symptoms we observed last year.

Within the next topw weeks a new fertigation will be installed to apply nitrogen to the hops yard in a timely manner. A new field is being prepared for a second hops research planting at this location.

2015 Upcoming Events

- **April 9** Biofuels and Bioproducts Workshop, Columbus, Ohio. For more information contact Sara Strausbaugh at strausbaugh.54@osu.edu. See flyer on page 13.
- **April 27-28** High Tunnel Training, South Centers in Piketon.

  For more information and to register go to **go.osu.edu/hightunneltraining2015** See flyer on page 12.
- **May 21** Strawberry Field Night, South Centers in Piketon. For more information email Charissa McGlothin at mcglothin.4@osu.edu

To list your upcoming events in future additions of the VegNet newsletter, please send details to bergefurd.1@osu.edu

Cuyahoga County Report

from Jacqueline A. Kowalski, Educator Cuyahoga County

Last of the snow finally melted away in Cuyahoga County a few weeks ago, so field operations have been limited. A flurry of activity is taking place in seasonal high tunnels and seedlings are being produced and transplanted

A. B. C. Seedlings are being grown in high tunnels

Photos by Jacqueline A. Kowalski

OSU South Centers Update at Piketon

from Thom Harker, Research Assistant OSU South Centers

Row covers are off the plasticulture strawberries, plants are looking good despite some cold temperatures in February. Fertigation of nitrogen will begin on the plastic berries early next week and continue weekly. Straw was removed from matted row strawberries as well this week. Hops began to emerge week of March 23rd. Most varieties have emerged. Seeding of lettuce was done early this week in the aquaponics greenhouse. Also done this week, was the seeding of tomatoes with the trays being placed in the germination chamber.

A. Plasticulture Strawberries

B. Straw covered matted row strawberry

C. Matted row strawberry

D. Emerging hops bines

E. Row covers being removed from the plasticulture

Photos by Thom Harker

Antibiotic Sprays for Fireblight

from Dave Rosenberger, Plant Pathologist, Highland, New York
Submitted by Diane Miller, OSU Fruit Specialist

While Kasugamycin works about as well as streptomycin, oxytetracycline is generally a bit less effective and has the disadvantage of preventing bacterial multiplication without killing off all of the bacteria contacted by the spray. Of the three antibiotics, it is my understanding that only strep is absorbed into apple tissue, thereby giving it a bit of an edge over both of the other products, especially in cases where a few infections might have been initiated a few hours before the product is applied. Kasugamycin, like strep, kills bacterial cells that it contacts, but it has the disadvantage of being considerably more expensive than strep.

Some of my pathologist colleagues may disagree with me, but I see no reason to pay the extra price for kasugamycin in established orchards that have no history of strep resistance. (An exception would be in countries like Canada where the strep labels allow a maximum of 3 applications/yr.) In eastern New York and New England, we have used strep exclusively for fire blight control for more than 60 years without encountering resistance. Resistance to strep has only appeared in regions where nurseries or fruit growers have used it repeatedly during summer (as many as 12 times/yr) to prevent shoot blight. Thus, there is an abundance of observational evidence that repeated applications of strep after bloom DEFINITELY WILL result in strep-resistant Erwinia amylovora (Ea) whereas, so far as I know, there is absolutely no evidence that multiple applications during bloom have ever resulted in strep resistance. Thus, I would argue that strep is still the cheapest, most effective, and most proven product for controlling blossom blight, and I see no reason to use other products except where strep resistance has been documented or is suspected due to failure of well-timed strep sprays. In fact, alternating with biologicals or with oxytet may actually be counter-productive because they may allow more bacteria to survive, thereby leaving larger populations to be controlled by strep and/or allowing some infections to become established and thus carry the disease through until the next year.

Given that there is increasing evidence that fire blight is sometimes present in symptomless nursery trees, one could argue that strep-resistance may show up anywhere as a result of distribution via nursery trees. This is a very real and valid concern. To diminish the likelihood that strep-resistance might be introduced with nursery stock, we in NY have been recommending that all newly planted trees be sprayed with copper shortly after they break bud and then with copper plus strep during bloom. The basis for this recommendation is that copper should knock out strep-resistant Ea on plant surfaces whereas strep will still be more effective for preventing local sources of Ea from infecting flowers on newly planted trees. Using several sprays of Kasugamycin on newly planted trees when they produce flowers during the first year of planting might be even better than copper plus strep for preventing establishment of strep-resistance brought in with nursery stock. Finally, it should be obvious that all new apple plantings should be observed very carefully for evidence of fire blight symptoms for several months after the trees begin to grow, and any diseased trees should be removed immediately.

We probably had more fire blight in newly planted trees in 2014 than in any prior year, but it is not a new phenomenon. I ended up with some blight-infested nursery trees in 1986 when I was establishing one of my research orchards. Both in that 1986 situation, rapid removal of diseased trees as they showed up during the year of planting prevented blight introduced in nursery trees from becoming established in my research blocks, and the remaining trees were completely disease-free in subsequent years. However, last year some growers opted to remove all newly planted trees when they found significant percentages of the trees were developing fire blight because it was unclear whether they could successfully identify all of the trees that were carrying the disease. Hopefully there will be less blight in nursery stock in 2015.

Southern Ohio Vegetable and Fruit Update

from Brad Bergefurd, Ohio State University Extension Educator, Ohio State University Extension Scioto County and OSU South Centers

Field work has been in full force the past 3 weeks with much plowing being done, fertilizer and compost being applied, pre-emergent herbicides are being applied to brambles and grapes , asparagus ferns are being mowed and pre-emerge herbicides are being applied. Apples and peaches are being pruned though it looks like the peach crop has been severely damaged and probably lost due to the -15 to -20 temperature events of this past winter. Pruning of blueberries, black raspberries, grapes and blackberry is finishing up. Lime Sulfur applications are almost complete on brambles and blueberries. Beds and soil are being tilled and fertilizer knifed in on new apple plantings. Deer fence is being repaired and erected on several fruit and vegetable farms throughout southern Ohio. Field work continued until heavy rains the afternoon of Thursday shut down field operations for the Easter weekend.

SWEET CORN PLANTED

Sweet corn was planted under plastic March 23 in the Rainsboro area and has good germination but has not emerged as of 4/2. Sweet corn was also planted under plastic in the Lowell area on March 30. Second plantings of plastic sweet corn was planted in the Rainsboro and Bainbridge areas on April 1 . With the intense sunshine we have been experiencing temperatures under the plastic are exceeding 70 degrees F. **(article continued on next page.)**

A. Sweet corn was planted in Lowell Ohio on March 30

B. Sweet corn being planted under plastic

C. Sweet corn planted under plastic in Rainsboro on March 23 has a good germination percentage

D. Sweet corn being planted Washington County

Photos by Brad Bergefurd and Witten Farm

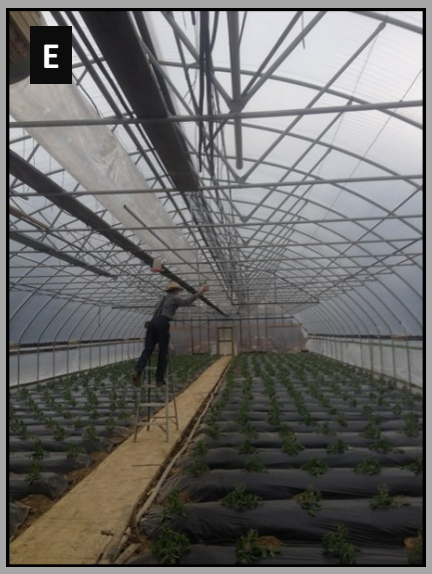
Southern Ohio Vegetable and Fruit Update Continued...

TOMATO FRUIT SIZING UP NICE

High tunnel/greenhouse tomatoes were planted to the ground and in grow bags beginning the last week of January and weekly plantings continue. With the sunshine we have experienced the past 4 weeks tomato fruit is pollinating and sizing up nicely. Bumblebees were installed 5 weeks ago to increase pollination and tomato fruit set in the tunnels. In addition to bumblebees, pollination is performed by hand daily using electric bees and /or leaf blowers. Fruit was greater than 1 inch diameter on March 16 and has been increasing about ¼ inch every 2 days. First harvest is predicted to be in about 5 weeks sunshine dependent. Hand pruning, training and tying continue weekly.

BEWARE OF ETHYLENE DAMAGE TO GREENHOUSE/TUNNEL CROPS

As I have been visiting greenhouse and high tunnels that have heaters I have noticed a couple poorly ventilated or poor burning propane heaters and stoves. The transplants and tomato crops in these tunnels were showing signs of twisting or epinasty and upon closer inspection propane burners were dirty and plugged and not burning properly causing a build-up of ethylene. Tomatoes are very sensitive to ethylene injury. Here is an article by Dr. Susan Jones from 2014 that describes this injury and how plants could be severely damaged if the condition is not fixed soon after symptoms are noticed. As soon as I noticed this injury in one greenhouse me and the grower immediately opened up the roof vents and cranked down the drop down curtains to bring in fresh air. **(article continued on the next page)**



A. B. Tomato fruit planted on February 6 is pollinating and sizing up nicely in high tunnels in Cynthiana

C. D. E. Newly planted greenhouse tomato plants showing signs of ethylene injury, ventilation needs to occur immediately to prevent plant damage

Photos by Brad Bergefurd

Southern Ohio Vegetable and Fruit Update Continued...

How to prevent ethylene damage
Dr. Michelle Jones, 330-263-3885, Jones.1968@osu.edu
http://www.oardc.ohio-state.edu/joneslab/images/ethylene_extension.pdf
The proper maintenance and use of heating units is the best way to prevent ethylene damage in the greenhouse. Regular maintenance can identify leaks or cracked heat exchangers that may result in harmful levels of ethylene in the greenhouse. Incomplete combustion can result in the production of harmful gases including ethylene and carbon monoxide. These products should be vented outside of the greenhouse. Adequate ventilation is also needed so that the heaters have enough oxygen for complete combustion to reduce the production of these byproducts.
Other things you can do to prevent ethylene damage in the greenhouse include:
Use electric carts or bicycles rather than modes of transportation that utilize gasoline or propane
Clean up all dying and damaged plant materials

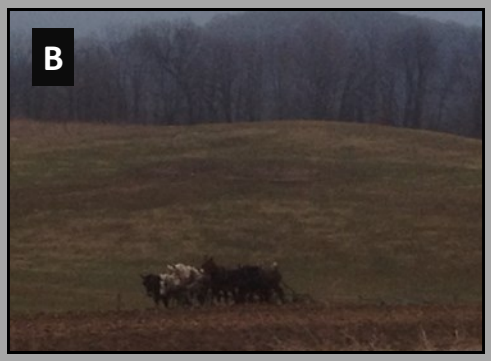
How do you determine if you have ethylene contamination in your greenhouse?
The best way you can determine if you have ethylene in your greenhouse is to carefully monitor plants that are sensitive to ethylene for the symptoms listed above. If you suspect that you have an ethylene problem, you can use place indicator plants in the greenhouse. The best indicator plant is tomato, which will show downward bending of the leaves when exposed to very low concentrations of ethylene. This downward growth of the petioles is called epinasty. If you observe these symptoms you must act to remove the source of ethylene and ventilate the area to remove the ethylene gas. Ethylene damage may easily be confused with other types of stress that cause similar damage. If you suspect you may have an ethylene problem or you would just like more information please feel free to contact me. We can also use an instrument called a gas chromatograph to determine if ethylene levels in your facility are high.

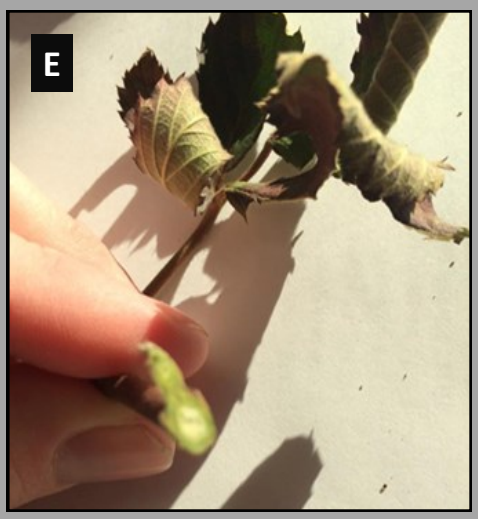
BEWARE OF MICE DAMAGE TO GREENHOUSE SEEDINGS
Every year I see damage from mice and other rodents getting after newly seeded melon, watermelon, squash or pepper seedlings in the greenhouse. Very rarely have I seen injury to a mature transplant (see pepper plant damage photo).I have been getting reports and seeing damage to greenhouse seedlings throughout Ohio this winter and spring especially where floating row covers were applied to increase soil temperatures and humidity for germination. The best control has been the use of snap traps baited with melon seed, this has been working better than peanut butter, cheese or other types of baits. For more information on controlling rodents in the greenhouse see this article: https://extension.umass.edu/floriculture/fact-sheets/preventing-rodent-damage-greenhouses.

A. B. Rodents can cause severe damage to germinating seeds and transplants in the greenhouse

Photos by Brad Bergefurd

Southern Ohio Vegetable and Fruit Update Continued...





A. B. Plowing has been non-stop since March 15

C. Row covers and straw were removed from strawberries the past days

D. Row covers were removed from Rotatable Cross Arm trellis blackberries in Circleville on March 11

E. Blackberry buds protected by rotatable cross arm trellis appear to be damage free after two - 15 degree F. weather events this winter

F. Rows have been prepared the past two weeks to begin planting new hop fields

Photos by Brad Bergefurd, Rhoads Farm, and Mankato farms

Southern Ohio Vegetable and Fruit Update Continued...

A. B. Lots of sunshine is leading to healthy growing hops plants in the greenhouse

C. D. E. High winds damaged newly installed weed fabric on area hop farms

Photos by Brad Bergefurd, Heartland Hops, and Grandpop's hops

OSU South Centers Fruit Update

from Ryan Slaughter, Research Assistant OSU South Centers

Our 2015 Super Berry School on March 19th was very successful. This all-day program was a combination of classroom instructions and field demonstrations to take full advantage of our research plots and meeting facilities at Piketon. Topics included Elderberry, Aronia and Goji berry production and marketing and winter injury assessment of grape and blackberry canes. Attendees were given a tour of the research plots where they were given instructions on how to properly prune and train plants of grapes, blackberries, blueberries, raspberries and elderberries. Ohio State University speakers included Dr. Gary Gao, Ryan Slaughter, and Dave Scurlock.

A. Dave Scurlock explaining the process of grape pruning

B. Dave Scurlock getting ready to demonstrate the pruning of grapes

C. Dr. Gary Gao explaining the process of blueberry pruning

D. Dr. Gary Gao pruning blueberries

Photos by Ryan Slaughter

Ohio Produce Safety

from Lindsey Hoover, Food Safety Program Coordinator, Department of Horticulture

Good Agricultural Practices:

The Ohio State University Produce Safety Team is once again offering educational classes on good agricultural practices (GAPs) for fruit and vegetable growers around the state of Ohio. The GAPs class is a 3-hour course that covers ways to identify and reduce the risk of microbiological contamination at the farm level. The GAPs 'season' is winding down, but there are still several classes available to take advantage of. Upcoming classes are in the following counties: Wayne, Knox, Mahoning, Cuyahoga, Belmont, Athens, Washington, Stark and more! To see the full list of classes and to download a registration form, visit producesafety.osu.edu/events . Registration fees are $20 per person and there must be at least 10 people pre-registered a week prior to the scheduled class date in order to proceed with the training.

Agricultural Water Workshop:

New this year! The OSU Produce Safety Team is also offering an Agricultural Water Quality and Testing Workshop to help fruit and vegetable growers become more familiar with the water quality used on their produce operation. The 3-hour course offers information on the science behind water quality, FDA's proposed water quality standards in the Food Safety Modernization Act (FSMA) produce safety rule, an interactive demonstration of proper water sample collection presented by a laboratory representative, and more. Thanks to funding from the Ohio Department of Agriculture, the workshop will be FREE to all who attend PLUS all attendees will receive a 50% discount voucher for a water sample analysis from Holmes Laboratory in Millersburg, Ohio. There are two workshops currently scheduled in 2015: March 30, 1:00-4:00PM, at Ohio Agricultural Research and Development Center (OARDC) Fisher Building North, 1680 Madison Ave, Wooster, OH 44691 and April 27, 9:00AM-12:00PM, at The OSU South Centers conference room, 1864 Shyville Road, Piketon, OH 45661. This is a great opportunity to better understand the importance of water quality used in fruit and vegetable production that we hope many will take advantage of!

If you have questions about a GAPs class or water workshop, contact Lindsey Hoover at 330-202-3555 ext 2918 or hoover.482@osu.edu.

Apple Talk IPM Conference Calls

From Peter Wert, IPM Institute of North America, Inc.
Submitted by Diane Miller, OSU Fruit Specialist

AppleTalk IPM Conference Calls 2015
WEEKLY CALL TUESDAYS, Green tip to mid-August
8AM to 9AM Central Time

The IPM Institute of North America, in collaboration with the University of Wisconsin Center for Integrated Agricultural Systems and the Wisconsin Apple Growers Association will offer another season of weekly conference calls with IPM consultant John Aue and other IPM experts.

The weekly call allows you to stay informed on pest conditions, answer pressing questions and learn about other growers' approaches to IPM. Call moderator John Aue shares his wealth of knowledge and experience as an IPM consultant for the tree fruit industry in Illinois, Minnesota and Wisconsin for over 25 years. Guest presenters from the University of Wisconsin, Michigan State University and Cornell have been regular participants and discuss a wide range of IPM and fruit production issues including: insect, weed and disease management, thinning and tree nutrition.

Visit the blog, www.ecofruit.wisc.edu/appletalk.
Call registration, http://www.ecofruit.wisc.edu/appletalk/signup-now-for-the-2015-appletalk-ipm-conference-call/
AppleTalk costs
$125.00 provides access to all sixteen calls and blog.
$65.00 allows blog only access, which includes content for registered users and call downloads.

Please direct all questions to:
Peter Werts, IPM Institute of North America, Inc.
pwerts@ipminstitute.org or call (608) 232-1410
www.ipminstitute.org

OHIO AGRICUTURAL RESEARCH AND DEVELOPMENT CENTER
OHIO STATE UNIVERSITY EXTENSION

High Tunnel Training

OSU South Centers

Hosted by Brad Bergefurd & OSU EIPM

April 27th & 28th 2015



April 27th, Day 1– **High Tunnel Training**
Topics include: high tunnel basic and advanced techniques on Integrated Pest Management in high tunnels, crop physiology and nutritional aspects of high tunnel production, petiole sap analysis demonstration, high tunnel greens and berry production, tomato grafting demonstration & exercise, water quality management for irrigation and fertigation in high tunnels

April 28th, Day 2– **High Tunnel Facility Tour**
The tour will consist of four local farm locations. We will begin at The Ohio State University, South Centers in Piketon, Ohio. Following the tour of South Centers will we load the bus to tour three local farms.

2-Day Training
Monday & Tuesday

For more information contact:
Charissa McGlothin
740.289.2071 ext. 132

1864 Shyville Rd.
Piketon, Ohio 45661

Application Deadline to apply is Thursday, April 23, 2015

Cost: $50.00* per person
*the cost includes: attendance both days, bus tour, breakfast, lunch, and snacks on both days

To register go to
go.osu.edu/hightunneltraining2015

Note: Space for participating in this training is very limited.

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

USDA NIFA
United States Department of Agriculture
National Institute of Food and Agriculture

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OHIO AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER
OHIO STATE UNIVERSITY EXTENSION

Biofuels and Bioproducts

Workshop on sustainable advanced energy feedstock production for enhanced ecosystems services

Purpose: Advanced energy (bioenergy) mandates and economic incentives are driving interest in growing high-yielding annual or perennial energy crops. While using our best land to grow advanced energy crops may not be a logical choice, the question is how can the economic benefits of growing plants for energy and bio-based products be balanced by environmental concerns? This program is part of several multi-state workshops in Maryland, Michigan, and Ohio to educate professionals including extension educators, conservation district staff, graduate students, Farm Bureau members and farm leaders to equip them with science-based knowledge, teaching materials and assessment tools.

Agenda:

8:30 a.m. **Registration**

9:00 a.m. **Welcome and overview**
Randall Reeder - Professor Emeritus, Department of Food, Agricultural, and Biological Engineering, The Ohio State University

9:05 a.m. **Developing high-value bio-based commercial products**
Kate Lewis - BioPreferred Deputy Program Manager, USDA, Washington, DC

10:05 a.m. **High-value bio-based products (rubber and other chemicals)**
Katrina Cornish - Professor, Department of Horticulture and Crop Science, The Ohio State University

11:00 a.m. **BioProducts: Innovation at OSU**
Dennis Hall - Director, Ohio Bioproducts Innovation Center, The Ohio State University

11:45 a.m. **Sustainable bioenergy cropping systems**
Randall Reeder

12:15 p.m. ***Lunch break***

1:15 p.m. **Sorghum "designed" for ethanol production**
Ismail Dweikat - Associate Professor, Department of Agronomy and Horticulture, University of Nebraska

2:15 p.m. **Switchgrass, Miscanthes and other perennial grasses for ethanol**
Rafiq Islam - Senior Research Scientist and Soil, Water, and Bioenergy Program Leader, The Ohio State University South Centers

3:00 p.m. **Discussion of energy crops**
Rafiq Islam and Ismail Dweikat

3:15 p.m. **Break**

3:30 p.m. **Evaluating and calculating soil organic carbon**
Jerry Grigar - State Agronomist, USDA-NRCS, Michigan; Vinayak Shedekar, Graduate Research Associate, Department of Food, Agricultural, and Biological Engineering, The Ohio State University

4:30 p.m. ***Evaluation and Adjourn***

Thursday
April 9, 2015
8:30 a.m. – 4:30 p.m.

Nationwide & Ohio Farm Bureau 4-H Center
2201 Fred Taylor Drive
Columbus, OH 43210
The Ohio State University

Cost: Free
(RSVP required for lunch please register by April 6th)

Contact: Sarah Strausbaugh at strausbaugh.54@osu.edu or at (740) 289-2071 x112 if you intend to attend.

For directions and parking information please go to campusparc.com/osu

southcenters.osu.edu

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VegNet Newsletter

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http://vegnet.osu.edu/newsletter

Submit Articles:

To submit an article to the VegNet newsletter please send the article and any photos to **Brad Bergefurd** at bergefurd.1@osu.edu or for questions regarding the newsletter call 740.289.2071 ext.132.

About the editor

Brad Bergefurd

Bergefurd is an Extension Educator, Agriculture and Horticulture Specialist with Ohio State University Extension, with statewide responsibilities for outreach and research to the agriculture and commercial fruit and vegetable industries Brad has offices at the OSU Piketon Research & Extension Center in Piketon and at OSU Extension Scioto County in Portsmouth.

Brad Bergefurd, MS

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