

VegNet

The Vegetable and Fruit Crops Teams Newsletter

<http://vegnet.osu.edu>

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Are Grafted Plants Especially Beneficial When Strip- or No-Tillage are Used?

From Zheng Wang, Jennifer Moyseenko, and Matthew Kleinhenz, Department of Horticulture and Crop Science, The Ohio State University

Aggressive tillage, i.e. to prepare for seeding or transplanting, has pros and cons. It loosens soil, slows weed growth, and allows for bed-shaping and other steps. However, repeated or aggressive tillage also lowers soil organic matter, disrupts soil structure, and requires certain equipment and other inputs. Using a no-till approach tends to maintain soil structure as well as organic matter, and may require fewer trips over the field. However, it has disadvantages, including a history of leading to lower vegetable yield.

Strip-tillage is designed to offer the benefits of aggressive and no tillage. Yet, while it helps maintain soil health, data say that strip- is often less productive than aggressive tillage. Root constriction caused by high soil penetration resistance may be one reason for the lower yield of strip tillage-based production.

(Continued on next page)

Please contact Zheng Wang (wang.2735@osu.edu), Jennifer Moyseenko (moyseenko.2@osu.edu), or Matt Kleinhenz (330.263.3810; kleinhenz.1@osu.edu) for more information.

Are Grafted Plants Especially Beneficial When Strip- or No-Tillage are Used? Continued

From Zheng Wang, Jennifer Moyseenko, and Matthew Kleinhenz, Department of Horticulture and Crop Science, The Ohio State University

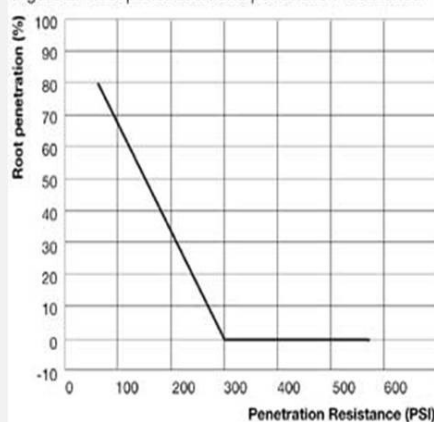
For growers, consultants, investigators, educators, and others, penetration resistance is a window into the amount of force and energy roots need to push through soil, especially as they attempt to grow downward. The greater the penetration resistance, the more work for roots to grow through and exploit soils. The more work (energy) required for root growth, the less energy available for top and other forms of growth, including fruit production. Penetration resistance is measured with a penetrometer (see images), giving values in pounds per square inch (PSI) or kilopascal (kPa). Penetration resistance is also felt when growers are attempting to drive a shovel, spade, or soil probe into the soil or when pulling a plow or other implement across it. The more power needed, the greater the penetration resistance.

Loosening tight soil can involve tillage, cover cropping, applying amendments, and other approaches. However, some of these approaches are difficult or impossible in strip tillage-based production. Are there any other ways to maintain yield when strip tillage is used? Using grafted plants may be part of the answer.

Grafted plants can have larger and more vigorous root systems than ungrafted plants. Larger and more vigorous root systems may be especially useful when strip tillage is used because the zone where soil is loosened is smaller than when standard tillage is used.

In the May 3, 2016 and June 14, 2016 editions of VegNet (see <http://vegnet.osu.edu/newsletter>), we introduced a study we began this spring with the support of the Ohio Vegetable and Small Fruit Research and Development program and USDA SCRI program. We are comparing the yields of grafted and ungrafted tomato plants in strip- and no tillage plots. Earlier, we also measured soil penetration resistance in the same plots. Readings were taken: a) in the planted row between two plants at points four feet apart, b) every two inches downward from 2 to 12 inches deep, c) on June 8, 2016 (two weeks after transplanting), and d) using a digital soil penetrometer (see images). Overall, resistance was greater in no-till than in strip-till plots, which is expected. Interestingly, though, plots containing two of the three types of grafted plants in the experiment (i.e., rootstock-scion combinations) had lower resistance than plots with ungrafted plants. This suggests that these grafted plants were loosening more soil more effectively than ungrafted plants. Crop growth and fruit yield and quality are also being monitored. Results will be available this fall.

Figure 2. Root penetration and penetration resistance.



The penetrometer simulates root growth. Root growth decreases linearly with increasing resistance, until practically stopping above 300 psi. Remember, however, that roots may still penetrate soil with a resistance greater than 300 psi if natural cracks and pores are present.



Image courtesy MI State Univ

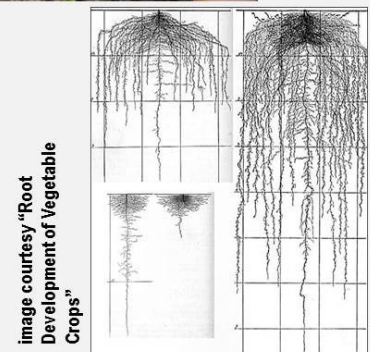


Image courtesy "Root Development of Vegetable Crops"

North Central Report

From Tim Malinich, Agriculture and Natural Resources, Horticulture Educator, The Ohio State University Extension

Crop Reports

Trailing blackberry harvest is peaking for most growers. Primocane blackberries are full of red fruit but not much ripening yet. There seems to be more bird pressure in blackberries this year than in prior years, especially in the more drought-stricken counties. Local growers with irrigation and a good spray program for spotted wing *Drosophila* are having a good harvest.

Summer apple harvest is underway. Growers are still reporting bird damage to apples, especially in the tops of trees. In nurseries, fireblight has become an issue in the last couple weeks. So far, orchards don't seem to be seeing any late fireblight strikes. Apple maggot numbers appear to be up in the region.

Peaches are coming on strong now. Blocks and varieties that escaped the late freeze are producing well. Recent rain in an otherwise dry year has allowed the peaches to put some size on very recently. However, some growers are complaining about a significant amount of mature fruit quickly dropping from the trees.

Drought

Dry, wet, then dry again sums up the drought in North Central Ohio. The long period of high temperatures and little to no rainfall was broken by two weekends of heavy showers over most of the area. However, that relief did not replenish the soil as well as one would think. The return of hot weather with no rainfall is raising concerns that the dry weather will continue.

Unirrigated vegetable crops that survived are showing signs of misshapen or small fruit, light fruit set and scorch. Irrigated crops, of course, fared much better and didn't seem to be troubled by the heat as long as water was available.

Photos:

- A. Apple harvest is underway and the crop looks good. Dry weather has helped with disease management but may have led to more bird damage than usual.
- B. Irrigation ponds are very low in the region. This is the shallow end of one pond at the four-foot deep level. Growth of cattail and other weeds indicates how long the water level has been down.
- C. This block of sweet corn was not harvested. A later planting in the same field seemed to have fared a bit better, but not much. The photo was taken just prior to a front that actually brought wide spread rain.

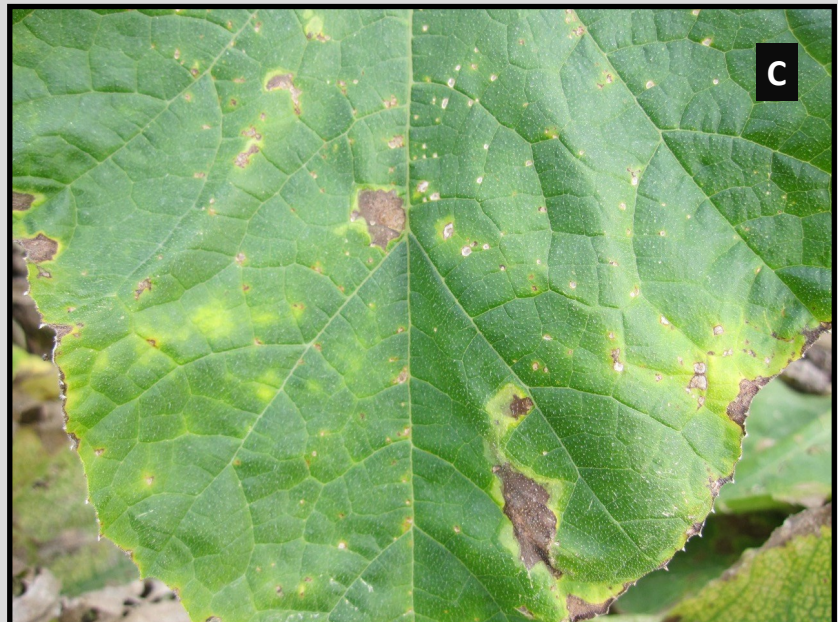


Cucurbit Downy Mildew Update

From Sally A. Miller, Professor, Department of Plant Pathology, The Ohio State University, Wooster, OH 44691

So far downy mildew has been confirmed on cucumbers in Wayne, Huron, Sandusky, Medina, and Fulton counties in Ohio. We also found it on cantaloupe in our sentinel plots in Huron County on July 28. We have not had reports of downy mildew on squash or pumpkins in Ohio to date. With dry or very dry weather in much of Ohio (1/3 of Ohio is currently under moderate drought conditions), we expect that downy mildew will continue to be less frequent and less severe than in previous years. However, in gardens and fields where it has occurred and fungicides have not been applied, downy mildew has been very damaging. We are recommending Orondis Opti alternated with Ranman, Gavel, Zing! or Zampro (tank mixed with a protectant fungicide like chlorothalanil or mancozeb if not included in the product). Presidio has been an effective fungicide in the past, but several studies have shown that it has lost efficacy in the last few years. Growers should be aware, especially with pumpkins, of other diseases that may be confused with downy mildew. Bacterial spot of pumpkin can cause leaf spots that converge and kill the leaves; however, fungicides are ineffective against bacterial spot. Despite the dry weather, we have seen bacterial spot of pumpkin and other bacterial diseases of vegetable crops this year in Ohio. Bacterial diseases are best managed in vegetables by using clean seed and reducing bacterial populations during transplant production by limiting moisture and applying bactericides.

If in doubt about what ails your cucurbit (or other vegetable) crop, submit a sample to the OSU Vegetable Pathology Lab for diagnosis, free of charge to Ohio growers. Instructions and sample submission forms can be found here (u.osu.edu/BXhG) or through your OSU Extension Educator.



Photos:

- A. Map of downy mildew outbreaks in cucurbits as of August 9, 2016 (<http://cdm.ipmpipe.org/>)
- B. Bacterial spot of pumpkin.
- C. Downy mildew of pumpkin

Wayne County IPM Report — August 25th

From Rory Lewandowski, Extension Educator Wayne County

Overall, the weather remains dry and the effects of a hot, dry summer are evident in some of the physiological and/or weather related conditions seen in some of the vegetable crops. Blossom end rot (BER) continues to be noted in tomatoes, peppers, summer squash and zucchini. In peppers BER is accompanied by sunscald. Scouts are also noting more yellow shoulder in tomatoes. Although there does not seem to be any one single factor responsible for yellow shoulder, high temperatures do contribute to this disorder.

With regard to diseases, powdery mildew continues to thrive and scouts are noting the disease in all cucurbit plantings. Anthracnose is also being noted in fall squash, pumpkins, summer squash and zucchini. In tomatoes, early blight and bacterial speck and spot are being found.

Although our IPM program has brown marmorated stink bug traps set up in fields of several different growers representing primarily tomato and grape crops, we have yet to get our first stink bug in any of those traps. However, scouts have noted quite a bit of damage from stinkbugs in tomatoes and peppers. Quite a few growers have put out fall plantings of cabbage, cauliflower and broccoli and scouts were noting imported cabbage worm larvae in many of those plantings. Additionally, in several of those plantings flea beetles were over treatment thresholds and growers were advised to treat. Sweet corn growers have benefitted from to-date low corn ear worm numbers, although over the past week a grower in the northern part of the county did record 50+ corn earworm moths in a trap, so this situation may be changing.

In addition to keeping up with irrigation needs, some growers face the challenge of managing produce losses from wildlife, in particular raccoons and deer.



Photos:

- A. Deer damage to pumpkins. Photo by Chris Smedley IPM program scout
- B. Pumpkin damaged by deer. Photo by Chris Smedley, IPM program scout

Southern Ohio Vegetable and Fruit Update

August 14-August 24, 2016

From Brad Bergefurd, OSU Extension Educator Agriculture and Natural Resources, OSU Extension Scioto County and OSU South Centers

Field work and harvest remains in full force. The dreaded “back-to-school” produce market slump has come and gone where consumers spent their money on back to school supplies and shopping which relates to slower traffic at retail produce markets, a lower market demand and lower wholesale produce prices for the past two weeks, demand and prices have rebounded for most crops. Pumpkin harvest is into week three with high yields and quality though some reduced fruit size ~ 15 to 20% lower is being reported throughout the southern Ohio region, with growers not sure why; it could be the high heat and increased heat units during fruit enlargement. Some areas have increased irrigation schedules due to dry conditions the past 2 weeks though some localized heavy rains have been reported. The traditional late August morning dews and fogs have brought on increased disease pressures, especially where tight fungicide programs have not been followed. Downy mildew symptoms were found in pumpkin on 8/26 samples will be sent to Dr. Sally Millers lab for lab confirmation this week. Harvest of all produce remains in full swing with daily harvests being made and excellent quality and yields.

Harvests include: hops, sweet corn, peaches, day-neutral strawberries, green beans, half-runner beans, red beets, radishes, high tunnel tomatoes, peppers, pickles, cucumbers, field tomatoes, cabbage, zucchini and summer squash, lettuce, sweet onion, new potatoes, bell and hot peppers, hops, pumpkins, pie pumpkins, blueberries, summer apples and blackberries.

Strawberry plug plants are looking good with some of the best quality and size being reported in the past 10 years. Strawberry plants will be ready for planting to the field the first week of September through mid-September. Plug growers and tip suppliers are reporting higher volumes of strawberry tips being shipped and plugs being grown for Ohio farms this year.

Field work has included plowing, working ground, spraying, bed shaping for hops and plasticulture strawberry plantings, laying plastic and applying herbicides for plasticulture strawberries, staking and tying late tomatoes. Matted row strawberry fields continue to be fertilized and irrigated post renovation. Transplanting of hops continues. Spraying fungicides on tree fruit, hops, brambles, blueberries, grapes, and all vegetable crops continues. New plantings of hops continue to be hand-planted and new high-trellis hop systems are being installed.

Leafhoppers and spider mites continue to reach threshold levels in hop plantings requiring tight insecticide and miticide programs. Cucumber beetles continue to reach threshold levels in melons, cucumbers and squash. With morning dews and fog vegetable crops are showing more pronounced fungal and bacterial disease symptoms, typical pattern for August and September. Bacterial wilt continues to be reported in cucumbers, melons, and pumpkins.

(Continued on next page)

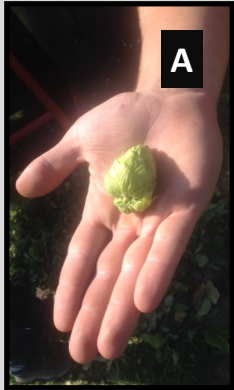


Photo: Suspected downy mildew disease is showing up in pumpkin crops. (Photos by Brad Bergefurd)

Southern Ohio Vegetable and Fruit Update

— August 14-August 24, 2016 Continued

From Brad Bergefurd, OSU Extension Educator Agriculture and Natural Resources,
OSU Extension Scioto County and OSU South Centers



Photos:

- A. With high market demand, the hop crop has been reported to be one of the best yield and quality in five years, according to Ohio growers. Photos by Brad Bergefurd
- B. The last OSU Hop Yard was mechanically harvested last week (8/26) in Bowling Green, Ohio. Photo by Brad Bergefurd
- C. Mechanical harvest of Ohio pickles is in full swing with good yields and quality. Photos by Brad Bergefurd
- D. The southern Ohio pumpkin crop harvest and shipping is in week three with high yields and quality being reported. Photos by Brad Bergefurd
- E. Many areas continue to be in drought conditions, this late field of cabbage in Northwest Ohio is being overhead irrigated. Photo by Zach Zientek

Hirzel Farms Host OEFFA Summer Tour

From Brad Bergefurd, Extension Educator, Agriculture and Natural Resources, The Ohio State University, Scioto County & South Centers

The OEFFA Organic Grain Growers held their summer Chapter Meeting and field day on August 19 at Hirzel Farms headquarters located at 20790 Bradner Road in Luckey, Ohio. Lou Kozma Jr. and Bridget Burgess were the hosts for the afternoon grain seed cleaning operations, compost tour and mechanical cultivation and weeding demonstrations.

Hirzel Canning Company and Farms is a fourth generation family-owned business that operates three tomato and cabbage processing facilities and farms over 1,000 acres of organic crops. Hirzel farms are proud of their continual efforts toward environmental stewardship since 1992 through the development and operation of a top-notch fully licensed Ohio EPA Class II composting operation. This operation plays a large role in the reduction of compostable waste entering area landfills. In 2013, the facility diverted over 75 million pounds of compostable waste from area landfills. These sources included:

Curbside compostable waste = 160,000 lbs

Animal waste such as horse and dairy cow bedding = 950,000 lbs

Municipal yard waste such as brush and leaves = 17 million lbs

Commercial food waste = 57 million lbs

The high quality compost is used on the Hirzel farms 1,000 acres of certified organic ground, but compost is also available for sale. To see where Hirzel Farms compost can be purchased, visit this link http://www.hirzelfarms.com/?page_id=10506.

Hirzel farm operates a large state-of-the-art organic and non-GMO grain and seed cleaning operation. This operation is very important and necessary for grading and cleaning USDA certified grade and malting barley for the rapidly growing Ohio malting barley industry. Currently all of Ohio Malting operations utilize the services of Hirzel farms to clean all malting barley being grown in Ohio as well as malting barley being shipped in from out west. Hirezels are able to receive bulk or bulk bag loads and every seed cleaning and sorting, is documented by certified weight and lot code tracking. This is done to ensure product identity is maintained throughout the entire process. Each production run can be tracked for verification.

Hirzel farms sell cover crop seed and are a representative of Blue River Hybrids. If you are interested in purchasing cover crop seed or seed cleaning services contact Bridget at hirzelfarms@hirzel.com or 419-467-7525. **(Continued on next page)**



Photos:

Hirzel farms has over 1,000 acres of certified organic crop production and is one of Ohio's largest certified composting facilities.

Photos by Brad Bergefurd and Zach Zientek

Hirzel Farms Host OEFFA Summer Tour Continued

From Brad Bergefurd, Extension Educator, Agriculture and Natural Resources, The Ohio State University, Scioto County & South Centers

Hirzel farms provided tours of some of their vegetable fields. In the 70's the well-known and respected late John Hirzel began the process of converting traditional acreage to organic. In 1982, the first 345 acres was certified organic. With so many acres being farmed organically, Lou Kozma Jr., who manages the day-to-day Hirzel farming operations, is always on the forefront with testing and purchasing the newest and best in weeding and cultivation equipment which was demonstrated at the field day.

A big THANKS to Lou Kozma Jr., Bridget Burgess and all the staff of Hirzel farms for hosting an OUTSTANDING tour for the OEFFA Organic Summer Tour.



Photos:

- A. Lou Kozma Jr., Farm Manager, and Bridget Burgess welcomed attendees of the OEFFA Farm Tour. Photos by Brad Bergefurd
- B. Mechanical weeding and cultivation equipment was demonstrated at the OEFFA Summer Field Day. Photos by Zach Zientek
- C. Hirzel farms is one of a few commercial seed cleaning and grading operations using optical sorters to clean seed. Photos by Brad Bergefurd
- D. Joe Hirzel welcomed attendees to the field day demonstrations and tour of the compost facility. Photos by Brad Bergefurd



THE OHIO STATE UNIVERSITY

COLLEGE OF FOOD, AGRICULTURAL,
AND ENVIRONMENTAL SCIENCES

Ohio State University South Centers 25th Anniversary

Extending Knowledge, Growing Southern Ohio, and Enhancing Lives

Come celebrate our 25th Anniversary with us...

Date: Thursday, September 15, 2016

Time: 5:00 p.m. — 8:00 p.m.

Location: OSU South Centers
1862 Shyville Road, Piketon Ohio

For more information contact: Charissa Gardner at
gardner.1148@osu.edu or 740.289.2071 ext. 132

The celebration will include:

Walking and wagon tours of:

- ♦ Aquaculture, Horticulture, Soil and Water Research facilities
- ♦ Endeavor Center (business incubator)

Come take a closer look at:

- ♦ Sturgeons, Yellow Perch, and Bluegill
- ♦ Aquaponic System
- ♦ Indoor Recirculating Aquaculture System
- ♦ Hops Yard
- ♦ Wine Grape Production
- ♦ Cover Crops Research

Learn about techniques to start and assist your business:

- ♦ SBDC counselors
- ♦ Marketing Specialists
- ♦ Joining a co-op with your farm/business

OSU Student Recruitment:

- ♦ Visit with recruitment representative
- ♦ Learn about the OSU College of Food, Agricultural, and Environmental Sciences
- ♦ Informational handouts

Come and enjoy:

- ♦ Prize giveaway-OSU signed football by Coach Urban Meyer
- ♦ Door prizes
- ♦ Refreshments
- ♦ Family fun activities

Directions: Approximately 1 mile east of the intersection of State Route 32 and US 23 at the intersection of State Route 32 and Shyville Road (Pike County)



OHIO AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER
OHIO STATE UNIVERSITY EXTENSION

Pumpkin Field Night

(In conjunction with OSU South Centers 25th Anniversary celebration)

OSU South Centers

Hosted by Brad Bergefurd

Thursday,

**September 15th,
2016**

25th Anniversary Open House is
from 5:00 p.m.— 8:00 p.m.

Field Night is from
6:00—8:30 P.M.

Location:

OSU South Centers
1864 Shyville Rd.
Piketon, OH

Cost: FREE

(includes refreshments)

To Register:

Contact Charissa Gardner
at gardner.1148@osu.edu or
at 740.289.2071 ext. 132

DEADLINE to Register:

September 13, 2016



Photo courtesy of Turkey Run Farms

The workshop will include the following:

- Pumpkin crop management
- 70 Pumpkin cultivar evaluations
- Pest and disease control
- Disease screening for resistance to powdery mildew, downy mildew, anthracnose and white speck
- Integrated pest management (IPM) techniques
- Walking tour of our pumpkin variety evaluations and field research trials
- Israeli drip irrigation management



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OHIO STATE UNIVERSITY EXTENSION, SANDUSKY COUNTY NORTH CENTRAL AGRICULTURAL RESEARCH STATION

OSU Vegetable Workshop Series

Join the staff at the North Central Ag Research Station near Fremont and OSU Extension on the 2nd Thursday of each month, April through October for catered breakfast, industry updates, and in-depth tips, tricks, and information from researchers to help make your 2016 growing season a profitable one! Attend when the topic suits you, or come each month and stick around after the speaker to view the OARDC field trials or network with peers and industry reps.

2nd Thursday: April – Oct.

**Bring your plant disease and insect samples for identification and same day delivery to the OARDC lab, free of charge!*

7:00 a.m. Breakfast

with OSU and industry updates

7:30 a.m. Featured speaker

8:00 a.m. Field walk / networking

Held at NCARS office, No rsvp, No cost!

For more information contact:

Allen Gahler, OSU Extension Sandusky County
419-334-6340
gahler.2@osu.edu

Matt Hofelich, North Central Ag Research Station
419-332-5142
hofelich.4@osu.edu

Aug. 4: *Sweet Corn Evaluation/tasting and insect management*

Mike Gastier, Extension Educator – Huron County
Celeste Welty, Extension Entomologist

Sept. 8: *Pepper Evaluation and field walk*

Allen Gahler, Extension Educator – Sandusky County
Non-Insured Crop Disaster Assistance Program Briefing
Brenda Turley, CED – Henry County Farm Service Agency

Oct. 13: *Soil Health and Water Quality - How does it affect me?*

A look at edge of field studies and NCARS water samples
Libby Dayton, OSU Soil Scientist



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OHIO AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER
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Ohio State University Direct Marketing Food & Agriculture

2016 Webinar Series

One-hour webinars will be offered to bring exceptional speakers to your home, office or local Extension center. If you're interested in finding out more about marketing issues, visit the website for details.



2016 Direct Marketing Webinar Series All webinars begin at 12 noon

Date	Topic	Lead Presenter	Connection
Feb. 18	Marketing Trends Learned from the Super Bowl	Eric Barrett & Rob Leeds	http://carmenconnect.osu.edu/marketingtrends2016/
Mar. 2	Using All Your Senses in Branding Your Business	Eric Barrett & Rob Leeds	http://carmenconnect.osu.edu/brandingyourbusiness/
Apr. 21	Enhancing Your Web Presence	Melissa Carter	http://carmenconnect.osu.edu/enhancingwebpresence/
May 26	Product Recall & Traceability	Eric Pawlowski	http://carmenconnect.osu.edu/productrecallandtracibility/
June 16	Product Labeling	Emily Adams	http://carmenconnect.osu.edu/productlabeling/
July 21	Celebrate Ohio Local Foods Week	Heather Neikirk & Patricia Barker	http://carmenconnect.osu.edu/localfoodsweek/
Aug. 18	Produce Auctions	Brad Bergefurd	http://carmenconnect.osu.edu/auctionsforproduce/
Sept. 15	Pricing Your Products	Megan Leffew	http://carmenconnect.osu.edu/pricingproducts/
Oct. 20	Cooperatively Marketing Your Products	Hannah Scott	http://carmenconnect.osu.edu/marketingyourproducts/
Nov. 17	Using Facebook For Your Business	Duane Rigby	http://carmenconnect.osu.edu/facebookforyourbusiness/
Dec. 15	Survey Results for Ohio Produce Marketers	Direct Marketing Team	http://carmenconnect.osu.edu/surveyresultsformarketers/

For recordings of all webinars go to go.osu.edu/DirectMarketingWebinars



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<http://directmarketing.osu.edu>

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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.



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