

# Midwest Winter Production Conference

**Monday and Tuesday,  
February 11 and 12, 2019**

George Washington Carver Farm  
3804 Bald Hill Road, Jefferson City

*Winter production! The demand for locally grown vegetables & fruit knows no season & the opportunity for innovative farmers to expand into the winter months is huge.*

*This conference features national & regional presenters with hands-on experience in winter production.*

**REGISTRATION IS LIMITED TO 100 PARTICIPANTS**

For more information & for a registration form go to: [www.webbcityfarmersmarket.com](http://www.webbcityfarmersmarket.com)



*Sponsors of the Conference:*



The Missouri Department of Agriculture has funded a portion of this project through the Specialty Crop Block Grant Program

The Webb City  
Farmers Market



Eat local – Eat fresh



UNIVERSITY OF MISSOURI  
**U** Extension

# Midwest Winter Production Conference

**Monday and Tuesday, February 11 and 12, 2019\***

George Washington Carver Farm, 3804 Bald Hill Road, Jefferson City, Missouri

## Monday, February 11

Registration – 8 to 8:45 am

8:45 - Welcome

9:00 am - 10:15- concurrent sessions

**Session For Beginning Winter Producers** - *High tunnel siting, choices of equipment, costs and returns, choosing crops for winter production*  
*Shon Bishop & Robert Balek*

**Session For Advanced Winter Producers** - *High tunnel maintenance and rehabbing equipment, long term soil management; methods to provide supplemental heat*  
*Patrick Byers & David Middleton*

10:30 to 11:30 - **Crop Production for Winter Storage for Added Sales** - *Adding root crops and other storage crops to the table for winter sales can increase your total sales by at least 50%. The Arnolds will run through their system of post-harvest handling and storage of over 20 crops including alliums, root crops, brassicas, winter squash and greens. Specific storage conditions help maintain good quality of produce for many months and create a "one stop" shop for their customers.*  
*Paul & Sandy Arnold*

11:30 to 12:30 - **Improving Our Understanding of and Ability to Manage Crop-Environment Relationships** - *Years of farmer-minded research focused on using tunnels to allow for year-round vegetable harvests has given much information on how crops respond to microenvironments, especially October through March in the Midwest and other regions. This session will complement growers' experiences shared at the conference by providing the view of a researcher and crop physiologist. Datasets and pictures depicting the influence of various microenvironments on the yield and quality of leafy vegetable crops harvested fall, winter, and spring will be summarized and shown.*  
*Matthew Kleinhenz*

12:30 to 1:30 - Lunch (local ingredients supplied by Happy Hollow Farm)

1:30 to 2:45 - **Maximizing High Tunnel Winter Production** - *Through detailed slides, the Arnolds describe their full system of planning, planting and protection of winter greens for sale at farmers' markets in zone 4 of New York in minimally heated high tunnels. After more than 20 years of tweaking production and learning from their many trials, details of their success will be examined in all aspects of production topics, including: soil preparation, varieties, dates, insect/disease control, harvesting, technology on the farm, washing/packing in their updated facility, and more.*  
*Paul & Sandy Arnold*

2:45 to 3:45 - **Setting a Table that Sells** - *other crops to supplement major winter crops and displays that sell*  
*Liz Graznak*

4:00 to 5:15 - **Crop Quality: An Overview of What We Know and What We Think We Know, but Really Don't** - *High quality products are essential to the success of every vegetable farmer but especially for ones using CSA, direct-marketing, retail, farm-to-restaurant, and similar outlets. In Part 1, comments and discussion will summarize what quality is, why it is important, and how it*

is set and assessed. Part 2 is a hands-on activity. During it, participants will become more familiar with the use of a refractometer to measure °Brix (soluble solids), a popular but often misunderstood descriptor of potential crop quality as buyers rate it. Some perceptions about quality are likely to be reinforced while others may be challenged.

*Matthew Kleinhenz*

5:15 to 5:30 - **Recap of day, lessons learned, questions**

## **Tuesday, February 12**

8:30 to 9:30 - **Year-round salad production** - *cultural techniques and schedules to maintain a continual high quality harvest*

*Jason Hirtz*

9:30 to 10:30 - **Profit from Data?** - *Inexperienced high tunnel growers look to straighten and shorten their paths to success while experienced growers look for greater levels of it. Everybody wants to optimize their investments in time, money, space, effort, and other resources. Comments and discussion in this session will focus on an opportunity for farmers, industry professionals, USDA, extension researchers, and others to integrate their capacities so that high tunnel production is reliable, useful, and common long into the future. A framework for creating grower-focused resources based on relationships between abiotic conditions outside the tunnel and abiotic and crop conditions inside it will be shared and discussed.*

*Matthew Kleinhenz*

10:45 to 11:45 - **Record-keeping and Economics for Maximum Winter Greens Profit** *Through simple record-keeping, data will show the value of winter greens production, and how some crops can yield over \$400,000 gross per acre! It's important to have a large diversity of crops to sell, but also to know what each one yields and offers for the bottom line of the books. Good farmers' markets' displays also help in the goal of maximizing sales and increasing the profit, and the Arnold's unique system of tracking sales will show how each crop rates on the economics scale.*

*Paul and Sandy Arnold*

11:45 - 12:45 - Lunch (local ingredients supplied by Happy Hollow Farm)

12:45 - 1:45 - **Building & reviving your high tunnel soil through cover cropping** *Touria Eaton*

1:45 - 2:45 - **Round tables** - A chance to follow up with our presenters and other resource people.

2:45 - **Wrap -up**

3:00 – 5:00 - Pierpont Farm tour

***\*All presentations subject to change.***



## **Presenters**

Paul and Sandy Arnold purchased land in Argyle in 1988, located about an hour north of Albany, NY. They have built Pleasant Valley Farm up from just land to be a thriving fruit and vegetable farm over the past 30 years, which included building barns, a house, a greenhouse, and high tunnels, situated in a scenic valley in Washington County. Their two children, Robert (26) and Kim (23), were both home-schooled, attended college and are an integral part of their family farm, in addition to Kim's husband,

Peyton Atkins. Over 40 varieties of diverse fruit and vegetable crops are grown with organic methods

on about 5 acres of land and the farm is certified through Certified Naturally Grown (grass roots alternative certification to USDA organic) and they are a NOFA-NY Pledge member.

They own 60 acres of land and rent 120 acres from a neighbor; about 4 acres are cover-cropped for rotation, and many acres are for hay, used by a neighboring beefalo farmer. Some of the major crops grown on their farm, which lies in zone 4, include: lettuce, spinach, greens, beets, carrots, potatoes, squashes, cabbage, onions, tomatoes, strawberries, and herbs. Their produce is sold almost exclusively at near-by farmers' markets year-round and to a few restaurants and health food stores in Saratoga Springs. They attend 3 area farmers' markets each week May 1<sup>st</sup> to November 1<sup>st</sup> (Wednesday and Saturday), then 2 Saturday winter markets November 1<sup>st</sup> to May 1<sup>st</sup>. Since 2006, the Arnolds have been producing crops for winter markets, but have specialized in winter growing/season extension since 1992; Production for the winter markets was accomplished by constructing three large, unheated Rimol high tunnels which are used to grow greens all winter, and by storing many crops in an environmentally-controlled root cellar that stores about 24 tons of produce under the barn.

To meet the energy challenges of the farm, the Arnolds have installed radiant-heated rolling benches in their polycarbonate greenhouse, as well as two photovoltaic-solar systems, totaling 29.2 kW that generate 100% of their needed electricity for the entire farm and house. Although neither came from a farming background, they reached their goal 26 years ago of having the farm provide all their family income and have enjoyed the great lifestyle it offers.

Interns have been an important part of Pleasant Valley Farm, which they've had helping to run the farm since 1995; they often mentor other farmers, and do numerous farm tours for farmers, schools, and the community. One of their major goals is to create new farmers and help all farmers become profitable.



**Matthew Kleinhenz** Degrees from Kent State University, The Ohio State University, and University of Wisconsin-Madison helped prepare Matt Kleinhenz to serve the vegetable industry in an extension, research, and teaching role. However, experiences with peers, farmers, and many others have also been his invaluable teacher since 1996. Currently, Matt is a Professor and Extension Vegetable Specialist at The OSU where he coordinates the Vegetable Production Systems Laboratory (<http://u.osu.edu/vegprolab/>). He is responsible for assisting current and future vegetable farmers and people who advise or rely directly on them. Matt's specialty is creating solutions rooted in crop physiology and cultural management tools and practices. His efforts to help expand and improve the use of microenvironments created with low, mid, and high tunnels officially began in 2003. Since then, he has been fortunate to learn from many and to

contribute to many tunnel production-related programs and resources throughout the U.S. and in other locations.

**Liz Graznak** is a Columbia, Missouri, native whose love of gardening and the outdoors is the result of time spent outside with her grandparents growing up.

It was in graduate school in at Cornell University that Liz discovered Community Supported Agriculture farming and realized her passion for growing food & building community. After working on a number of different farms out east Liz decided to move back to the Columbia area. While farming with her friend & mentor Dan Kuebler, who owns The Salad Garden in Ashland, MO., Liz realized that if she was ever going to be able to afford to purchase her own farm than she was going to have to have a "real" job for a while. Liz worked for six years at Superior Garden



Center honing her business & employee management skills. In November 2007 Liz & her wife Katie purchased Happy Hollow Farm. CSA farming has provided the opportunity to fulfill Liz's long anticipated goal of growing beautiful, healthy food and sharing it with a community of people that share her enthusiasm and commitment to a local food system. With a six year old daughter and a new baby on the way, Liz is entering her ninth year of USDA certified organic production and has expanded to nearly 7 acres of veggies, fruit, eggs & flowers. Happy Hollow Farm sells thru a 65 member CSA, 50 Saturdays a year at the Columbia Farmers Market and to a number of local Columbia restaurants and grocery stores.



**Jason Hirtz** raises approximately one acre of certified organic vegetables at Box Turtle Farm in southwest Missouri. He and his wife have owned Box Turtle Farm for ten years. Over the decade, Jason has expanded his winter production from small cold frames and low tunnels, to DIY caterpillar tunnels, and now, with over 12,000 square feet of high tunnel space, they sell salad greens to grocers and restaurants every week of the year. Jason has a reputation for producing exceptional greens that have earned Box Turtle Farm a dedicated customer base.

**Dr. Touria Eaton** is an Assistant Professor of Horticulture and State Extension Specialist at Lincoln University of Missouri. Her research projects include agricultural strategies to increase the nutrient concentration in vegetable crops, production of Brussels sprouts in Missouri, and production of vegetables under protected structures. Her Extension program consists of applied research and educational programs aimed at helping farmers increase income and profitability through new crops and sustainable agricultural practices. She is a member of the organizing committees of the Great Plains Growers conference, Blueberry school, and high tunnel workshop. She also is an editor of the Mid-West Vegetable production guide for commercial growers and an editor of the Journal of Plant Nutrition.



**Shon Bishop** grew up in southwest Missouri around small family farms. After graduating from College of the Ozarks with a degree in Horticulture, Shon joined Lincoln University Cooperative Extension in the Southwest Region of Missouri and currently is the Small Farm Specialist for the Innovative Small Farmers Outreach Program (ISFOP) which serves Barry, Lawrence, McDonald, Newton, Jasper, and Greene counties. Shon has worked extensively with high tunnels since 2011.



**David Middleton** grew up on a diversified grain and livestock farm near Laddonia, Missouri. He graduated from the University of Missouri with a B.S. and M.S. in Animal Science. David joined Lincoln University Cooperative Extension (LUCE) in 2014 as the Farm Outreach Worker (FOW) for Lawrence and Greene Counties. With Shon Bishop, he has worked extensively with the Webb City Farmers Market's Year-Round Growing Education Center.



**Robert Balek** (left) is a horticulture specialist with the Jasper County office of University of Missouri Extension.

**Patrick Byers** is Commercial Horticulture Field Specialist with the Webster County office of University of Missouri Extension, with extensive experience in specialty crop production including protected culture.



Pierpont Farms, 8810 South Route N, Columbia, is owned by Rob Hemwall. The tour will feature 3 unheated high tunnels, a greenhouse, 3 Haygrove tunnels used for three season growing and a packing shed with walk-in cooler. The farm is about a 45 minute drive from Carver Farm and directions will be provided in the program.

**Registration Form— Full registration includes lunch each of the two days and materials. Additional registrations from the same farm or group each include lunch each of the two days but no materials. Materials included with \$50 registration:**  
The Year-Round Hoophouse - *Polytunnels for All Seasons and All Climates* by Pam Dawling.

Mail with check made out to Webb City Farmers Market to : Webb City Farmers Market  
PO Box 1  
Webb City, MO 64870

To ensure meals, please let us know you're coming by February 5.

Questions or need to use your credit card? Call Eileen at 417 483-8139.

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Name

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Farm/Business Name

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PO Box/street address

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E-mail address

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Additional person(s) attending:  
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Email or mailing address if different from above

Fee(s):

Full registration (50) \$ \_\_\_\_\_

Additional registrations (the \$35 rate does not include the book) ( \_\_\_\_\_ persons x \$35 each) \$ \_\_\_\_\_

Dietary or other information: \_\_\_\_\_ Total enclosed: \_\_\_\_\_