

SERA 45 Crop Diversification Opportunities to Enhance the Viability of Small Farms Annual Meeting

**Virtual Meeting
Friday, September 17th, 2021
10 a.m. to 2 p.m. EDT**

Participants and guests in attendance: Lesley Oliver (AA-University of Kentucky), J. Mike Phillips (AA-Auburn University), Melanie Stock (Chair, Utah State University), Rachel Rudolph (Vice-Chair, University of Kentucky), Ajay Nair (Iowa State University), Annette Wszelaki (University of Tennessee), Margarita Velandia (University of Tennessee), Troy Dugger (Center for Profitable Agriculture, Tennessee), Rob Holland (Center for Profitable Agriculture, Tennessee), Christy Cassady (University of Kentucky), Brett Wolff (University of Kentucky), Shawn Wright (University of Kentucky), Petrus Langenhoven (Purdue University), Wenjing Guan (Purdue University), Lewis Jett (West Virginia University), Matt Kleinhenz (Ohio State University), Daniel Becker (University of Kentucky), Savannah Columbia (University of Kentucky), Mathieu Ngouajio (National Institute of Food and Agriculture), John Erickson (National Institute of Food and Agriculture), and Ryan Burnette (Kentucky Department of Agriculture)

Agenda

- Melanie Stock (Utah) facilitated the meeting, which opened with introductions. Participants briefly discussed how activities are being conducted in their states in response to COVID-19. Participants noted that although in-person events were taking place, attendance was down significantly.
- Participants were given an update by representatives of the National Institute of Food and Agriculture (NIFA), and heard from a representative of the Kentucky Department of Agriculture (KDA) regarding a potential multi-state Specialty Crop Block Grant proposal.
- Participants discussed progress made toward the project objectives, crop diversification activities going on in the participating states, and opportunities for future collaboration. Written state reports were shared with the entire group by email prior to the meeting.

A. Mathieu Ngouajio (National Science Liaison) and John Erickson (National Program Leader) gave an update on NIFA.

1. Ngouajio said NIFA lost about 75 percent of its staff when it moved from Washington to Kansas City, Missouri. NIFA is currently hiring, and remote work is possible.
2. NIFA is seeking volunteers to serve as peer-review panelists for its programs.
3. NIFA is developing a new NIFA Reporting System (NRS).
4. Erickson does not anticipate any programs going away.
5. Budgets have been raised in most AFRI programs.
6. There has been a big increase in funding for the Organic Agriculture Research and Extension Initiative (OREI), going to \$50 million in the next funding cycle.

B. The group discussed progress made toward project objective 1 (developing research-based production information about crops, systems and production practices that have potential to be profitable for small farms).

1. Several participants have been collaborating on a squash hunger trials project. Annette Wszelaki (Tennessee) gave a PowerPoint presentation outlining the progress to date. The goal of the project is to evaluate crops that offer a long storage life, and which could supply people without access to fresh fruits and vegetables during the fall and winter with more access to nutrient dense foods for a longer time throughout the year. Wszelaki proposed this project at the 2019 SERA 45 annual meeting, and work began in 2020, with participants from SERA 45 and the Southeastern Vegetable Extension Workers Group (SEVEW). Eight states participated in 2020 (Georgia, Indiana, Kentucky, Louisiana, Ohio, Tennessee, Utah and West Virginia), when 10 varieties of kabocha squash were evaluated. Researchers are in the process of analyzing data for a journal article and an extension publication. A multistate extension publication published through the University of Kentucky Center for Crop Diversification (CCD) is a possibility. The project continued in 2021, with expanded participation from SERA 45 and SEVEW. Eleven states (with 12 locations) participated, including Alabama, Arkansas, Indiana, Kentucky, Louisiana, Minnesota, North Carolina, South Carolina, Tennessee, Utah and Virginia. Ten varieties of *Cucurbita maxima* squash (flat stackers types) were evaluated (Blue Delight, Fairytale, Flat White Boer, Jarrahdale, Marina Di Chioggia, Mint Prince, Porcelain Doll, Royal Blue, Speckled Hound and Triamble), and harvesting was underway at the time of our meeting. SERA 45 participants interested in joining the project in 2022 were invited to contact Wszelaki at annettew@utk.edu. The group might branch out into sweet potato trials at some point, and any crop that offers long storage will be considered. Winter melons, Chinese cabbage, daikon radish, dry beans and Irish potato were also mentioned as possibilities.

C. The group discussed objectives 2, 3 and 4, coordination of research and extension activities in the participating states, developing direct market information and decision aids that can be shared regionally, and continuing market research in the participating states on consumer preferences and marketing channels that are most effective and profitable for small farms.

1. Savannah Columbia, an extension associate in the University of Kentucky Department of Agricultural Economics, shared that UK has received KY Specialty Crop Block Grant funding to evaluate how the market has changed for cut flowers post-COVID. The project will support cut flower online education programs already happening in Kentucky. Three deliverables are planned, including a survey of cut flower growers regarding consumers' willingness to pay for their cut flowers and services, and to identify new cut flower buyers; a cut flower marketing school, a collaboration with the Kentucky Horticulture Council (KHC), Melanie Stock (Utah) and extension agents covering how growers can use social media, and how to market their flowers; and a cut flower promotion program, which will be offered quarterly, with a cut flower marketing webinar series. The project is built on KHC efforts to strengthen marketing skills for growers. Columbia said the number of cut flower growers in Kentucky has been increasing significantly, and 52 growers participated in Cut Flower Grower Month in July, which reached nearly 60,000 social media users.
2. Other participants shared research they have been conducting, including specialty melons (Ajay Nair, IA). There is a demand for small melons (1 to 3 pounds), but they don't store

well, and it's hard to determine the best harvest time. A Specialty Crop Block Grant will help with evaluation. Purdue (Petrus Langenhoven and Wenjing Guan) has looked at 20 melon varieties as part of a Specialty Crop Block Grant, and will share information with the group. Langenhoven said the plant population can be increased three times when growing melons in high tunnels versus the field.

D. Discussion of activities in the participating states

1. Participants gave brief (five-minute) summaries of the activities in their states. Activities involving collaboration among the group not previously mentioned included development of five additional co-branded publications by the CCD for the Center for Profitable Agriculture (CPA) in Tennessee since our 2020 annual meeting (<https://cpa.tennessee.edu/specialty-crop-profiles/>); development of a co-branded fact sheet written by Lewis Jett of West Virginia University (*Growing, Harvesting, Preserving Appalachian Heirloom Beans (CCD-WVU-FS-2, ANR-HORT-21-001)*) and published through the CCD; development of two additional publications as part of a Southern SARE Cover Crops Under Cover grant that includes SERA 45 participants from Kentucky (Krista Jacobsen and Rachel Rudolph) and Tennessee (Wszelaki), *Cool-Season Cover Crops for High Tunnels in the Southeast (CCD-SP-18)* and *Warm-Season Cover Crops for High Tunnels in the Southeast (CCD-SP-19)*, published through the CCD; and a series of five Getting Ready for Market webinars offered in March of 2021 by Rudolph (KY) and Wszelaki (TN) for growers in Kentucky and Tennessee. Please see the attached state reports for details of activities in the participating states.

E. Discussion of opportunities for collaboration

1. The group discussed the possibility of submitting a proposal for a multistate Specialty Crop Block Grant (SCBG). Project ideas included water management, IPM, and irrigation/sensor help for small farms, including development of a manual for small-scale irrigation. The group heard from Ryan Burnette of the Kentucky Department of Agriculture regarding a possible multistate SCBG proposal. The group's proposal to the KDA would be due in November, and the KDA's proposal to the USDA would be due in December, so there is a short turnaround time. The minimum award is \$250,000 and the maximum is \$1 million.

Election of officers:

Chair: Rachel Rudolph, University of Kentucky

Vice-Chair: Shawn Wright, University of Kentucky

2022 Annual Meeting

If the situation with COVID-19 allows the group to meet in person in 2022, the meeting will be held in the Nashville area and hosted by participants at Tennessee's Center for Profitable Agriculture, as was originally planned for 2020 and 2021.

SERA 45 State Reports - Iowa

Name: Dr. Ajay Nair

University: Iowa State University

Contributors:

Ajay Nair, Associate Professor, Horticulture

Kathleen Delate, Professor, Horticulture

Mark Gleason, Professor, Plant Pathology and Microbiology

Angela Shaw, Associate Professor, Food Safety of Human Nutrition

Please provide a synopsis of current activities in your state that are directly related to the objectives of the SERA 45 project; if you are not aware of any activities related to an objective, please indicate that.

1. Please **list** current activities in your state involving **research-based production information** about specialty crops and systems that have potential to be profitable for small farms, including (but not limited to):

a) **protected agriculture** — high/ low tunnel/greenhouse production

Research and extension efforts in the area of high tunnel vegetable and fruit production continued to identify proper cultivars, production techniques, and cultural operations to enhance yield and produce quality. Below are few of the studies and a brief description:

- *Identifying romaine lettuce cultivars suitable for high tunnel production (Rachel Perry and Ajay Nair)* – The goal of this two-year study is to help Iowa high tunnel growers effectively utilize their high tunnels by growing appropriate lettuce types/cultivars that have high economic value. Research includes identifying high performing lettuce types/varieties, effect of planting date on yield and quality, bolting and disease resistance attributes
- Alternative crops for high tunnels (Jenna Errthum and Ajay Nair) – A preliminary study was started in Spring 2021 to grow ginger in high tunnels. The study focused on spacing and strategies to warm soil in the spring to accelerate plant growth and development

b) **Organic production systems** –

- Methods to enhance organic system soil fertility and plant protection continued at the ISU Neely-Kinyon Farm Long-Term Agroecological Research (LTAR) experiment. In the first 16 years of the LTAR, organic corn and soybean yields have been equivalent to their conventional counterparts, with yields for

organic alfalfa and oats equal to county averages. Soil quality continues to increase with the use of compost and cover crops. Organic no-till was applied to vegetable and field crops to examine production and soil quality effects. Lysimeter data continues to show that the concentration of leached N has been consistently lower under vegetables grown with a cover crop and in no-till. Soil quality comparisons show greater soil carbon sequestration with cover crops and compost.

- *Evaluation of spinach cultivars for organic systems (Ajay Nair and Anne Carey)* - This project was conducted in Spring 2021 at Iowa State University (ISU) Horticulture Research station. The study evaluated 17 spinach cultivars for their size, yield, and performance in the field.
- *Use of cover crops and mesotunnels in organic cucurbit production (Mark Gleason and Ajay Nair)* - An organic transition project is being conducted in collaboration with University of Kentucky, which investigated the effect of Protek net on winter squash and melon production. Protek nets are 3-4 times expensive than typical row covers but have extended shelf life and reduce temperature stress under low tunnels. Based on results so far, Protek net systems are performing well providing insect protection and microclimate modification for enhanced growth, yield, and quality in winter squash and muskmelon production systems.

c) small-scale production systems

- *Midwest Food Safety Hub: Implementing safe production practices in specialty crop production (Angela Shaw)*
- *Precision pesticide spray systems for small scale and diversified orchards (Mark Gleason)*
- *Use of biochar in pepper and cauliflower production systems (Taylor Mauch and Ajay Nair)*

d) Biodegradable mulches

- *Use of biodegradable mulches in winter squash production (Ajay Nair, and Rachel Perry)* - The goal of this two-year study is to help vegetable growers sustainably manage weeds using biodegradable mulches. This study is in collaboration with North Dakota State University.

2. Please **list** current **educational and extension activities** in your state focused on the **production and marketing of specialty crops**. Please include links and/or copies as appropriate. Examples might include (but are not limited to):

a) Virtual conferences

- Iowa Fruit and Vegetable Growers Conference (Jan 2021)
- Practical Farmers of Iowa Conference (Jan 2021)
- Iowa Organic Conference (Nov 2020)

b) webinars

- Sow grow eat keep
<https://www.extension.iastate.edu/humansciences/sow-grow-eat-keep>
- Organic Field Day
(https://www.youtube.com/watch?v=P_PpIV5EmT4)
- Small Farms Sustainability podcasts
<https://www.extension.iastate.edu/smallfarms/small-farm-sustainability-podcasts>
- Zoom webinar series for county horticulturists

c) print publications

- Bilenky, M. and A. Nair. 2021. Specialty melons for high tunnel production. <https://store.extension.iastate.edu/product/16090>
- Bilenky, M., A. Nair, A. Shaw, and E. Bobeck. Integrating poultry into an organic vegetable cropping system: benefits, challenges, and considerations. <https://store.extension.iastate.edu/product/16041>

d) video

- Lettuce cultivars for Iowa. <https://www.youtube.com/watch?v=pQ-9PT4JuaM>
- Biochar in vegetable production.
<https://www.youtube.com/watch?v=793-ZB5BdcY>
- Reading and interpreting soil moisture sensor data.
<https://www.youtube.com/watch?v=1h0S4a-jb7c>
- How to install soil moisture sensor.
<https://www.youtube.com/watch?v=fMKDJdbdoEs>
- Learn about plastic mulch puller.
https://www.youtube.com/watch?v=ttUb_M9Qkg
- Effect of mesotunnels on cucurbit growth and yield.
<https://www.youtube.com/watch?v=1rZ8KqXmi38>

e) field days

- Fruit and Vegetable Field Day – 145 participants (growers, extension staff, industry leaders) in 2021. Held on 22 July 2021.
- Organic Field Day - covered topics ranging from organic crop rotations to no-till vegetable production, reaching over 45 people.
- Amish Produce Walk/Field Day – 50 participants
- IPM Clinic at Amish Produce auction. 7/9/21
- Extension in Plant Sciences Field Day. 7/27/21.
- USDA FSA Loss Adjusters training. 8/3/21

f) Demonstrations

3. Please **list** current activities in your state related to **reporting specialty crop prices** from:
 - a) farmers markets
 - <https://www.agmrc.org/>
 - b) produce auctions
 - Visit to Twin County Produce Auction for on-campus staff, field specialists, and graduate students
 - c) farm to school
 - d) retail
 - e) other – Marketmaker workshops (<https://foodmarketmaker.com/>)

4. Please **list** current **market research activities** in your state that could benefit small farms. Examples may include:
 - a) consumer preferences
 - b) comparison of marketing channels
 - c) other

SERA 45 Guidelines for State Reports

Name: Petrus Langenhoven

University: Purdue

Please provide a synopsis of current activities in your state that are directly related to the objectives of the SERA 45 project; if you are not aware of any activities related to an objective, please indicate that.

1. Please **list** current activities in your state involving **research-based production information** about specialty crops and systems that have potential to be profitable for small farms, including (but not limited to):

- a) protected agriculture — high/midsize/low tunnel/greenhouse production
- b) organic production systems
- c) small-scale production systems
- d) biodegradable mulches

- Two-spotted spider mite management in high tunnel cucumber production – with L. Ingwell, PI, W. Guan, P. Langehoven and L. Hoagland. USDA-NCSARE. 2021-2023.
- High tunnel strawberry production – Wenjing Guan
- Plasticulture strawberry production using low tunnels – Wenjing Guan
- Multi-state project Squash Hunger - Annette Wszelaki, Wenjing Guan
- Diversification of the Indiana Melon Industry, SCBG – Petrus Langenhoven, Wenjing Guan, Amanda Deering, Dan Egel, Ariana Torres
- Propagation and field establishment of CBD hemp – Petrus Langenhoven, Ashley Adair, Marguerite Bolt, John Couture
- CBD hemp variety evaluation – Petrus Langenhoven, Ashley Adair, Marguerite Bolt, John Couture
- Compost production using Black Soldier Flies – Laura Ingwell
- Sweet Pepper variety evaluation – Petrus Langenhoven, Chris Adaire
- Microgreen production – Petrus Langenhoven, Dharmendra Saraswat)
- Research evaluating organic growing media for transplant production – Wenjing Guan, Liz Maynard, Petrus Langenhoven, Lori Hoagland

2. Please **list** current **educational and extension activities** in your state focused on the **production and marketing of specialty crops**. Please include links and/or copies as appropriate. Examples might include (but are not limited to):

- a) in-person trainings
- b) webinars
- c) print publications
- d) video
- e) field days
- f) demonstrations
- g) social media promotion of events/use of Facebook live

- Indiana Horticultural Conference & Expo www.indianahortconference.org, Vegetable Farming and fruit Management Webinar series
- Indiana Small farms Conference www.purdue.edu/dffs/smallfarms/small-farm-conference-2021/
- Southwest Indiana Melon and Vegetable Growers Winter Technical Meeting – Wenjing Guan, Daniel Egel
- Urban Ag Certificate Program – Nathan Shoaf
- Purdue Small Farm Education webinar series (Langenhoven)
- Vegetable Field Day, Wanatah, IN Aug. 10, 2021
- No-till Pumpkins and Sweet Corn after Winter Rye Cover Crop – demonstration plantings, Wanatah, IN
- Opportunities in horticulture presented at the Northwest Indiana Veteran Farmer Workshop and Indiana AgVets Update, September 14, 2021, Wanatah, IN.
- Greenhouse and Indoor Production of Specialty Crops (Nemali)

Podcasts		
<i>CCSI-HAT Soil Health Podcast - Specialty Crops</i>		
1/19/21	Fall-seeded Cover Crops in Specialty Crop Production	S4 E1
5/17/21	Spring Management of Cover Crops in Vegetable Production	S4 E4
<i>The Vegetable Beet</i>		
3/10/21	Organic Media Mixes and Fixes	S2 E2

- Behe, B.K., A.P. Torres and P. Langenhoven. 2020. The market for fresh melons. Episode 119. <http://www.connect-2-consumer.com/the-market-for-fresh-melons-season-3-episode-119/>. May 12, 2020.
- Behe, B.K., A.P. Torres and P. Langenhoven. 2020. More Melon Marketing, Episode 120. <http://www.connect-2-consumer.com/more-melon-marketing-season-3-episode-120/>. June 11, 2020.
- Purdue Extension – Vegetable Farming. Playlist created in December 2020. <https://youtube.com/playlist?list=PLtXSf1tu3Jd9IvIIPnaZmrKcWVT9DCJRX>.
- Indiana Mint Market Development and Research. Playlist created in December 2020. https://youtube.com/playlist?list=PLtXSf1tu3Jd_00wwZBN4coTiw6xcfs53V.
- Purdue Small Farm Education Series. Playlist created in November 2020. <https://www.youtube.com/playlist?list=PLtXSf1tu3Jd80i9c2U6ZITKg7yv8GvHCo>.
- High Tunnel Cucumber Production Guide <https://mdc.itap.purdue.edu/item.asp?itemID=24456>
- Vegetable crops hotline newsletter <https://vegcropshotline.org/>
- Facts for Fancy fruit <https://fff.hort.purdue.edu/>
- Purdue Landscape Report <https://www.purduelandscape.org>
- Purdue Small Farm Education Field Day and Webinar Series – Petrus Langenhoven
- Maynard, E.T., W. Guan, P. Langenhoven and L. Hoagland. 2021. Vegetable Seedling Performance in Commercial Organic Growing Media. HortScience (submitted).
- Marques, J., A. Torres, B. Behe, P. Langenhoven and L. Vilas Boas. 2021. Exploring Consumers' Preferred Purchase Location for Fresh Fruits. HortTechnology. <https://doi.org/10.21273/HORTTECH04865-21>.

- Marques, J.M.R., A. Torres, B.K. Behe, P. Langenhoven and L.H. de Barros Vilas Boas. 2021. The Consumer Choice of Market for Fresh Fruits: A Study of Attitudinal Factors and Market Attributes. J. of Food Distribution Research 52:1. https://www.fdrsinc.org/wp-content/uploads/2021/05/JFDR52.1_9_Marques.pdf
 - Miller, A, P. Langenhoven and K. Nemali. 2020. Maximizing productivity of greenhouse-grown hydroponic lettuce during winter. HortScience 55:12. <https://doi.org/10.21273/HORTSCI15351-20>
 - Velasco, E., Torres, A., Behe, B.K. and Langenhoven P. 2021. Characterizing the US Market of Melons. Describing the Market Segments of Melon Consumers. Purdue Extension, HO-326-W, https://www.edustore.purdue.edu/item.asp?Item_Number=HO-326-W (January 2021).
 - Velasco, E., Torres, A., Langenhoven P. and Behe, B.K. 2021. Characterizing the US Market of Melons. What melon consumers want: Search, Experience, and Credence Attributes for Melons. Purdue Extension, HO-325-W, https://www.edustore.purdue.edu/item.asp?Item_Number=HO-325-W (January 2021).
 - Maynard, E., D. Hilfinger, and M. O'Donnell. Scheduling Fall and Winter Vegetable Production in High Tunnels. (HO-330) Purdue University, West Lafayette, Indiana (in press).
 - Phillips, B., **Maynard, E. T.**, Egel, D. S., Ingwell, L. L., & Meyers, S. L. 2020. Midwest Vegetable Production Guide for Commercial Growers 2021 (ID-56). Purdue University, West Lafayette, Indiana. 295 pp. mwveguide.org
 - Bruce, A.B., E.T. **Maynard**, and J.R. Farmer. 2021. [Farm-type and high tunnel usage: Three varieties of farms utilizing high tunnels in Indiana](#). HortTechnology 31: (in press)
 - [Midwest Vegetable Trial Reports](#).
 - Effects of Using Low Tunnel and Grafted Plants for Watermelon Production under Low Temperature Stress in Indiana – Wenjing Guan
 - 2020 Standard-size and Personal-size Triploid Watermelon Variety Evaluation in Indiana
 - 2020 Cantaloupe Variety Evaluation in Southern Indiana – Wenjing Guan
 - Summer Squash Variety Evaluation for Early-season Production in High Tunnels
 - Fall Broccoli Production in High Tunnels – Wenjing Guan
3. Please **list** current activities in your state related to **reporting specialty crop prices** and development of **decision aids** regarding:
- a) farmers markets
 - b) produce auctions
 - c) farm to school/institution
 - d) retail
 - e) community supported agriculture
 - f) direct-to-buyer
 - g) sampling standards
 - h) merchandising education
 - i) market performance metrics
 - j) other

4. Please **list** current **market research activities** in your state that could benefit small farms.

Examples may include:

- a) consumer preferences
- b) comparison of marketing channels
- c) other

SERA 45 Guidelines for State Reports

Name: Christy Cassady & Brett Wolff

University: University of Kentucky Center for Crop Diversification

Please provide a synopsis of current activities in your state that are directly related to the objectives of the SERA 45 project; if you are not aware of any activities related to an objective, please indicate that.

1. Please **list** current activities in your state involving **research-based production information** about specialty crops and systems that have potential to be profitable for small farms, including (but not limited to):

- a) protected agriculture — high/midsize/low tunnel/greenhouse production
- b) organic production systems
- c) small-scale production systems
- d) biodegradable mulches

2. Please **list** current **educational and extension activities** in your state focused on the **production and marketing of specialty crops**. Please include links and/or copies as appropriate. Examples might include (but are not limited to):

- a) in-person trainings
- b) webinars
- c) print publications
- d) video
- e) field days
- f) demonstrations

a) In-person trainings –

- [Joshua Knight – Three Ways Maps Can Help Your Farm](#) (2021 KY Fruit and Vegetable Conference)
- [Christy Cassady – Using the HortBiz Quiz](#) (2021 KY Fruit and Vegetable Conference)
- Brett Wolff – Using Enterprise Budgets to Frame Your Seasonal Plan (2021 KY Fruit and Vegetable Conference)
- Brett Wolff – Pricing for Direct Marketers: Looking Forward and Backward (2021 KY Fruit and Vegetable Conference)

b) Webinars –

- Wolff developed a webinar series, which the CCD hosted in the fall of 2020:
 - i. Getting Started with Social Media & Web Analytics
 - ii. Exploring Markets & Considering New Crops
 - iii. Simple Web Design + Google Business Profiles
 - iv. Offseason Marketing and Customer Retention

v. : Looking ahead for Farmers Markets & COVID-19

Links to webinar recordings are available at <https://www.uky.edu/ccd/2020-Fall-Webinars>.

- We have continued delivering Marketing for All trainings on an as-needed basis
- The CCD participated in an extension agent training for Tennessee agents with the Center for Profitable Agriculture in January 2021. Presentation topics were Specialty Crop Resources from the CCD (Cassady) and Quick Start Guide + Budgets (Wolff).
- Knight collaborated with Kentucky Horticulture Extension Agents Alexis Sheffield and Kristin Hildabrand to develop a four-part Virtual Cut Flower Short Course in 2021 (ongoing). Recordings of the sessions, including farm tours, are available at <https://www.uky.edu/ccd/production/crop-resources/nursery-ornamental/cut-flowers>.

c) Print publications – CCD crop, marketing and system profiles and fact sheets are being developed and updated. New profiles/fact sheets developed or published by the CCD since the fall of 2020 include 1) [Cool-Season Cover Crops for High Tunnels in the Southeast \(CCD-SP-18\)](#) and 2) [Warm-Season Cover Crops for High Tunnels in the Southeast \(CCD-SP-19\)](#) (University of Georgia, University of Kentucky, University of Tennessee system profiles, authors include SERA 45 participants Krista Jacobsen and Rachel Rudolph – Kentucky, and Annette Wszelaki – Tennessee); 3) [High Tunnel Production and Marketing Survey: Data Summary \(CCD-SP-17\)](#) (authors include SERA 45 participants Tim Woods, Wolff and Jacobsen – Kentucky); 4) [Growing, Harvesting, Preserving Appalachian Heirloom Beans \(CCD-WVU-FS-2, ANR-HORT-21-001\)](#), co-branded CCD and West Virginia University fact sheet (author, Lewis Jett, SERA 45 participant from WVU); 5) [Understanding Equipment Costs on the Small Commercial Vegetable Farm \(CCD-FS-18\)](#), and an accompanying spreadsheet, 6) [Estimating Vegetable Farm Equipment Costs \(CCD-FS-19\)](#); 7) [The Basics of Biofumigation \(CCD-FS-20\)](#) (authors include SERA 45 participant Rachel Rudolph); and 8) [Product Liability Insurance Importance & FAQs \(CCD-MR-1\)](#). In addition, five profiles were developed by the CCD for SERA 45 participants at the Center for Profitable Agriculture in Tennessee since September 2020. These are: [Garden Mum Production in Tennessee \(CCD-CPA-CP-2\)](#), [Cut Flower Production in Tennessee \(CCD-CPA-CP-3\)](#); [High Tunnel Overview \(CCD-SP-2, CCD-CPA-SP-1\)](#); Cider Apples in Tennessee: Basic Considerations (CCD-CPA-CP-4) – in review; and Culinary Mushrooms in Tennessee: Basic Considerations (CCD-CPA-CP-5) – in review.

The following profiles/fact sheets have been updated in the past year:

Marketing Asian Produce	Farm to School	Southern Pea
Social Media Marketing	Organic Certification	Edible Flowers
Gourmet Mushrooms	Ethnic Vegetables: Hispanic	Poinsettias
Greenhouse Cut Flowers	Organic Sweet Corn	Muskmelon
Leaf Amaranth	Value-Added Products – An Introduction to Policies and Regulations for KY Producers	Selected Resources for Developing Value-Added Products in KY

The CCD's monthly newsletter has more than 1,700 subscribers.

Other – Knight has continued to add information to the Geographic Horticulture Directory of Kentucky (<https://uk-horticulture.github.io/hort-directory/>), available on the CCD website, which shows locations of and contact information for shared equipment, farmers markets, produce auctions, water testing labs, roadside markets, horticultural supply stores and educational greenhouses

The Kentucky Commercial Cut Flower Grower Directory, <https://uk-horticulture.github.io/KY-Cut-Flowers/>, has also been updated

3. Please list current activities in your state related to reporting specialty crop prices from:
 - a) farmers markets
 - b) produce auctions
 - c) farm to school/institution
 - d) retail
 - e) community supported agriculture
 - f) direct-to-buyer
 - g) sampling standards
 - h) merchandising education
 - i) market performance metrics
 - j) other
 - a. Prices are reported weekly from a selection of farmers markets across Kentucky. Reports are posted on the CCD website from April through October. In 2021, we had a maximum of 11 markets reporting.
 - b. Prices from Casey County, Fairview, Hart County and Lincoln County produce auctions are posted on the CCD website as they are received.
 - c. New publication on 2017-2019 Average Auction Prices published last fall.
 - d. Forthcoming publication on 2019-2021 Average Farmers Market Prices.
4. Please **list** current **market research activities** in your state that could benefit small farms. Examples may include:
 - a) consumer preferences
 - b) comparison of marketing channels
 - c) other

SERA 45 Guidelines for State Reports

Name: Rachel Rudolph

University: University of Kentucky

Please provide a synopsis of current activities in your state that are directly related to the objectives of the SERA 45 project; if you are not aware of any activities related to an objective, please indicate that.

1. Please **list** current activities in your state involving **research-based production information** about specialty crops and systems that have potential to be profitable for small farms, including (but not limited to):
 - a) protected agriculture — high/midsize/low tunnel/greenhouse production
 1. High tunnel cultivar trials: lettuce, kale
 2. Tomato grafting for root knot nematode resistance in high tunnels
 3. Soil survey of Kentucky for root-knot nematode
 4. Evaluation of the rotation of tomato with fresh-cut flowers in a high tunnel system for improved pest, disease, and soil management
 5. Evaluating excess soil phosphorus and manganese toxicity in tomato
 - b) small-scale production systems
 1. Mustard cover crop trial
 2. Multistate winter squash trial
 3. Field kale and lettuce variety trials
 4. Evaluation of the use of planting date to manage for arthropod pests in spring-planted broccoli
 5. Weed management alternatives for pumpkin

2. Please **list** current **educational and extension activities** in your state focused on the **production and marketing of specialty crops**. Please include links and/or copies as appropriate. Examples might include (but are not limited to):
 - a) in-person trainings
 1. High tunnel economics for county agents (November 2020)
 2. High tunnel IPM training for county agents (June 2021)
 - b) Webinars
 1. Evaluation of high tunnel tomato-flower rotation (Feb. 25, 2021)
 2. Getting Ready for Market Series (March 1, 8, 15, 22, 29, 2021; co-hosted with Annette Wszelaki).
March 1: Organic certification and production basics (https://liveutk-my.sharepoint.com/:v:/g/personal/awszelak_utk_edu/ESzqaToW7P9PufZoBYw66cBIZqZNDnCFKW2DV8zBMXN6A)
March 8: Season extension basics (<https://tennessee.zoom.us/rec/share/kzHq3a54nrhtSMS0Y6kg9c1SnqASnVVjYIGb3EUgg64InNR8rrAsqYbaJ5W1mgwO.ipIvoSl-uEy--z1K>)
March 15: Post-harvest and handling basics (<https://tennessee.zoom.us/rec/share/C1MpiArOa9hYu-te79SWuF7p->

[S7wxflf6yBG5ILiO5wH-56h3Ers_vHRko2w4oQS.Ch3TlwlwKVEVXZ6v](https://www.youtube.com/watch?v=S7wxflf6yBG5ILiO5wH-56h3Ers_vHRko2w4oQS.Ch3TlwlwKVEVXZ6v))

March 22: Soil fertility in high tunnels

(https://tennessee.zoom.us/rec/share/ZbGQpPA6UeA3TS3kNwTNb3vU0vkOcjbiTDl-QSebBcZqNcNKgEiD0_MOhghfotXY.G_iX4G6ZWjAkpC3)

March 29: Food safety/GAP

3. Introduction to Vegetable Production (hosted by the Kentucky Horticulture Council; March 31 and April 1, 2021)

<https://kyhortcouncil.org/2021-intro-to-veggie-production-short-course/>

March 31: Site Selection and Introduction to Production Systems

March 31: UK ID-36—what it is and how to use it

April 1: Equipment Considerations

c) print publications

1. Cucurbit Downy Mildew in Kentucky
<https://plantpathology.ca.uky.edu/files/ppfs-vg-27.pdf>
2. The Basics of Biofumigation
<https://www.uky.edu/ccd/sites/www.uky.edu.ccd/files/biofumigation.pdf>
3. Covers Under Cover: Managing Cover Crops in High Tunnels
<https://www.uky.edu/ccd/sites/www.uky.edu.ccd/files/CoversUnderCover1.pdf>
4. Cool-season Cover Crops for High Tunnels in the Southeast
https://www.uky.edu/ccd/sites/www.uky.edu.ccd/files/cool-season_covercrops.pdf
5. Warm-season Cover Crops for High Tunnels in the Southeast
https://www.uky.edu/ccd/sites/www.uky.edu.ccd/files/warm-season_covercrops.pdf
6. Growing Your Own: Radishes
<http://www2.ca.uky.edu/agc/pubs/NEP/NEP228/NEP228.pdf>
7. Growing Your Own: Beets
<http://www2.ca.uky.edu/agc/pubs/NEP/NEP227/NEP227.pdf>
8. 2020 Fruit and Vegetable Annual Research Report
<http://www2.ca.uky.edu/agc/pubs/PR/PR779/PR779.pdf>

d) Videos

1. Rain-fed Drip Irrigation: <https://www.youtube.com/watch?v=qpoxxjNYhrU>
2. Preparing for Spring with a High Tunnel:
<https://www.youtube.com/watch?v=MwhXXiCF14w>
3. Flower Pinching (How to): <https://www.youtube.com/watch?v=3gAb-GwJI04>
4. Flower Harvest (How to): https://www.youtube.com/watch?v=knRnKhK_ed0
5. Managing a High Tunnel Tomato and Flower Inter-seasonal Rotation:
<https://www.youtube.com/watch?v=5Kf5V4UmD44>
6. Pest Populations in a Tomato/Cut Flower High Tunnel System:
<https://www.youtube.com/watch?v=-u94CyITzul>
7. Disease Potential for Tomato/Cut Flower Rotations:
<https://www.youtube.com/watch?v=5pWWsMDxOn4>
8. Economics of High Tunnel Rotation of Tomato and Fall Flowers:

https://www.youtube.com/watch?v=rZhozRC_lKM

- e) field days
 - 1. Woodford Co. field day for new and beginning vegetable growers (July 15, 2021)
 - 2. Casey Co. field walk focused on tomatoes and cucurbits (July 30, 2021)
 - 3. Scott Co. field day focused on pumpkin production (September 7, 2021)

- 3. Please **list** current activities in your state related to **reporting specialty crop prices** and development of **decision aids** regarding:
 - a) farmers markets
 - b) produce auctions
 - c) farm to school/institution
 - d) retail
 - e) community supported agriculture
 - f) direct-to-buyer
 - g) sampling standards
 - h) merchandising education
 - i) market performance metrics
 - j) other

Not my area of work.

- 4. Please **list** current **market research activities** in your state that could benefit small farms. Examples may include:
 - a) consumer preferences
 - b) comparison of marketing channels
 - c) other

Not my area of work.

SERA 45 Guidelines for State Reports

Name: Shawn Wright

University: University of Kentucky

Please provide a synopsis of current activities in your state that are directly related to the objectives of the SERA 45 project; if you are not aware of any activities related to an objective, please indicate that.

1. Please **list** current activities in your state involving **research-based production information** about specialty crops and systems that have potential to be profitable for small farms, including (but not limited to):
 - a) protected agriculture — high/midsize/low tunnel/greenhouse production
Tomato/cut flower project with Rachel Rudolph
 - b) organic production systems
 - c) small-scale production systems
Hops (though profitability is questionable at small scale)
Pawpaw variety trial
Hybrid Hazelnut trial – is not profitable with the Oregon varieties
Vegetables
Plasticulture strawberry – probably most profit potential for small fruit on small acreage
 - d) biodegradable mulches

2. Please **list** current **educational and extension activities** in your state focused on the **production and marketing of specialty crops**. Please include links and/or copies as appropriate. Examples might include (but are not limited to):
 - a) in-person trainings
 - b) webinars
New Herbicide and Growth Regulator Updates for Fruit Crops (2021 KY Fruit & Vegetable Conference)
Pruning Brambles (Horticulture Webinar Wednesdays) Links to resources available at <https://kentuckyhortnews.com/horticulture-webinar-wednesdays/season-two/>
 - c) print publications
 - d) video
American Ginseng in Kentucky - <https://www.youtube.com/watch?v=M9VMXiy0fqo>
 - e) field days
 - f) demonstrations
 - g) social media promotion of events/use of Facebook live

3. Please **list** current activities in your state related to **reporting specialty crop prices** and development of **decision aids** regarding:
 - a) farmers markets

- b) produce auctions
- c) farm to school/institution
- d) retail
- e) community supported agriculture
- f) direct-to-buyer
- g) sampling standards
- h) merchandising education
- i) market performance metrics
- j) other

4. Please **list** current **market research activities** in your state that could benefit small farms. Examples may include:

- a) consumer preferences
- b) comparison of marketing channels
- c) other

SERA 45 Guidelines for State Reports

Name: Jeanine Davis

University: North Carolina State University

Please provide a synopsis of current activities in your state that are directly related to the objectives of the SERA 45 project; if you are not aware of any activities related to an objective, please indicate that.

These are projects, deliverables, and activities related to specialty crops that I am aware of at NC State University and NC A&T State University. I have included hemp focused on small scale-production.

1. Please **list** current activities in your state involving **research-based production information** about specialty crops and systems that have potential to be profitable for small farms, including (but not limited to):

- a) protected agriculture — high/midsize/low tunnel/greenhouse production
- b) organic production systems
- c) small-scale production systems
- d) biodegradable mulches

- Investigating Sesame Production in North Carolina
- Fostering Cigar Wrapper Tobacco Production in North Carolina
- Rice Development in North Carolina
- New Hop Varieties for North Carolina
- American Ginseng: Increase Bed Production and Conservation
- Forest Farming Woodland Botanicals
- Growing Chinese Medicinal Herbs for a Domestic Market
- A Multifaceted Approach to Production and Pest Management in Organic Sweetpotato Systems
- Improving North Carolina Black Truffle Production
- NC Truffle Soil Fertility Project
- Tomato Organic Management and Improvement Project (TOMI): Part II
- Heirloom-Type Tomato Hybrids for Niche-Market
- Breeding Raspberries with Increased Heat Tolerance, Improved Post Harvest Attributes and Resistance to Pests
- Organic Stevia Pest Control
- Viability of a market for U.S.-sourced, tissue culture-propagated ginger
- Nutrient uptake analysis of black cohosh (*Actaea racemosa* L.) grown under shade in greenhouse
- Genetic Enhancement of CBD Hemp
- Nitrogen and Potassium Rates for Floral CBD Hemp Production
- Optimal Hemp Planting and Harvest Dates

2. Please **list** current **educational and extension activities** in your state focused on the **production and marketing of specialty crops**. Please include links and/or copies as appropriate. Examples might include (but are not limited to):

- a) in-person trainings
- b) webinars
- c) print publications
- d) video
- e) field days
- f) demonstrations
- g) social media promotion of events/use of Facebook live

- Piedmont Research Station Horticulture and Specialty Crops Field Day-in person
- New Crops and Organics News Updates <https://newcropsorganics.ces.ncsu.edu/>
- Brewers Visit to Hop Breeding Hop Yard-in person
- WNC Medicinal Herb Growers – The Art and Science of Plant Vouchers-virtual/recorded
- WNC Vegetable Conference-virtual/interactive
- Mushroom Production Lunch and Learn Agent Training-virtual/interactive/recorded
- Forest Farming Woodland Botanicals-virtual/interactive/recorded
- Facebook: NC Alternative Crops & Organics
<https://www.facebook.com/ncalternativecropsandorganics>
- Western North Carolina Hemp Growers Workshop-virtual/interactive/recorded
- Hemp News Updates <https://hemp.ces.ncsu.edu/>
- 2020 Floral Hemp Variety Trial Results-online
- Phosphorus Nutrition of Greenhouse Grown Hemp-journal article
- Nutritional Guides for Greenhouse Grown Hemp-online pubs
- Nitrogen and Potassium Fertilizer Rates for Floral Hemp in NC-online research summary
- Bare Ground vs. Plastic Mulch: Which is Right for Floral Hemp Growers?-popular press
- Nutrient Acquisition Ranges in Greenhouse Grown Floral Hemp-journal article
- 2020 Hemp Field Day-across several research stations-virtual/recorded
- Floral Hemp Variety Trials-professional meeting poster/virtual/interactive
- Facebook: NC State Hemp <https://www.facebook.com/groups/249126938914816>

3. Please **list** current activities in your state related to **reporting specialty crop prices** and development of **decision aids** regarding:

- a) farmers markets
- b) produce auctions
- c) farm to school/institution
- d) retail
- e) community supported agriculture
- f) direct-to-buyer
- g) sampling standards
- h) merchandising education
- i) market performance metrics
- j) other

4. Please **list** current **market research activities** in your state that could benefit small farms. Examples may include:

- a) consumer preferences
- b) comparison of marketing channels
- c) other

SERA 45 Guidelines for State Reports

Name: Troy Dugger, Margarita Velandia, and Annette Wszelaki

University: The University of Tennessee

Please provide a synopsis of current activities in your state that are directly related to the objectives of the SERA 45 project; if you are not aware of any activities related to an objective, please indicate that.

1. Please **list** current activities in your state involving **research-based production information** about specialty crops and systems that have potential to be profitable for small farms, including (but not limited to):

- a) protected agriculture — high/midsize/low tunnel/greenhouse production
 - b) organic production systems
 - c) small-scale production systems
 - d) biodegradable mulches
- *Evaluating Cultivar Selection and Trellis Systems in Blackberry Production*
 - *Reclaiming High Tunnel Soil Health for Sustained Specialty Crop Production*
 - *Labor, Efficiency, Automation, and Production for Sustainability in the Nursery Crops Industry*
 - *Organic Internship VOL Supported Ag Program*
 - *Comparing Lettuce Yield and Quality Using Drip and Overhead Irrigation on Biodegradable Mulches*
 - *Multi-state Squash Hunger: C. maxima Squash Variety Trial*
 - *Chickpeas as an Alternative Specialty Crop and Storage Crop for Tennessee*

2. Please **list** current **educational and extension activities** in your state focused on the **production and marketing of specialty crops**. Please include links and/or copies as appropriate. Examples might include (but are not limited to):

- a) on-line trainings
 1. **Velandia, M.**, and D. Lockwood. General Considerations for Producing and Marketing Blueberries. Value-added Agriculture Insights In-service Training, July 20, 2021.
 2. **Wszelaki, A.**, A. da Silva, S. Rideout, R. Rudolph, T. Kuhar, J. Shrefler, B. Hu, and S. Upson. Organic Production Agent In-service Training, March 24-25, 2021.
 3. Critzer, F., J. Buchanan, M. Danyluk, L. Dunn, C. Gunter, C. Rock, L. Strawn and **A. Wszelaki**. Bridging the GAPS: Approaches for Treating Water On-farm Train-the Trainer, January 13 & 14, 2021. Southern Center (Participants=30 agents, educators, researchers).
 4. Critzer, F., J. Buchanan, M. Danyluk, L. Dunn, C. Gunter, C. Rock, L. Strawn and **A. Wszelaki**. Bridging the GAPS: Approaches for Treating Water On-farm Train-the Trainer, March 2 & 3, 2021. Western Regional Center (Participants=34 agents, educators, researchers).
 5. Critzer, F., J. Buchanan, M. Danyluk, L. Dunn, C. Gunter, C. Rock, L. Strawn and **A.**

- Wszelaki.** Bridging the GAPs: Approaches for Treating Water On-farm Grower Training, May 18 & 19, 2021. Southern Region (Participants=24 growers)
6. **Tsuruda, J.,** and T. Dugger. Pollinators and Specialty Crops. On-line training for Agents and Producers, July 20, 2021. (Participants=24)
https://www.youtube.com/watch?v=G_cnqy3sg-Q
 7. **Rihn, A.,** and T. Dugger. Marketing of Specialty Crops. On-line training for Agents and Producers, July 21, 2021. (Participants=20)
<https://www.youtube.com/watch?v=01VnQklHesw>
 8. **Painter, R.,** and T. Dugger. Growing Cut Flowers in Tennessee. On-line training for Agents and Producers, July 27, 2021. (Participants=17)
<https://www.youtube.com/watch?v=YhNgMOoCDmU>
 9. **Holman, L.,** and T. Dugger. Growing Garden Mums in Tennessee. On-line training for Agents and Producers, July 28, 2021. (Participants=18)
<https://www.youtube.com/watch?v=Igr7v2wNixg>
 10. **Cassady, C.,** B. Wolff and M. Leffew. Introduction to Crop Profiles. Value-Added Agriculture Insights In-Service Training for Agents, January 19, 2021. (Participants=18)
 11. **Scott, C.,** and M. Leffew. Crop Profiles – Cut Flowers. Value-Added Agriculture Insights In-Service Training for Agents. May 18, 2021. (Participants=27)
 12. **Dugger, T.,** Crop Profiles for Specialty Crop Growers. TN State University Small Farms Expo. (Participants=71)

b) webinars

1. **Wszelaki, A.,** and R. Rudolph. Getting Ready for Market: Going Organic? Production and Certification Basics, March 1, 2021
2. **Wszelaki, A.,** and R. Rudolph. Getting Ready for Market: Season Extension Essentials, March 8, 2021
3. **Wszelaki, A.,** and R. Rudolph. Getting Ready for Market: Keeping Your Produce Cool (and Other Handling Tips), March 15, 2021
4. **Wszelaki, A.,** and R. Rudolph. Getting Ready for Market: Soil Fertility in High Tunnels, March 22, 2021
5. **Wszelaki, A.,** and R. Rudolph. Getting Ready for Market: Filling in Food Safety GAPs, March 29, 2021
- 6.

c) print publications

1. **Velandia, M.,** A. Fulcher, K. Jensen, and S. Schexnayder. "Labor Use and Challenges Faced by Tennessee Nursery and Floriculture Producers." UT Extension Publication, W984, February 2021.
2. **Velandia, M.,** A. Fulcher, K. Jensen, and J. Cross. "Labor Use and Challenges Faced by Tennessee Fruit and Vegetable Producers." UT Extension Publication, W985, February 2021.
3. Critzer, F., and **A. Wszelaki.** "Food Safety Considerations for Postharvest Washing of Produce and Sanitation of Packing Areas." FS353E, WSU Extension.
4. Critzer, F., and **A. Wszelaki.** "Testing Agricultural Water for Fruit and Vegetable Production and Postharvest Handling." FS354E, WSU Extension.

5. **Ernst, M.**, “Culinary Herb Production in Tennessee.” UK-CCD; UT-CPA Publication, CCD-CPA-CP-1. May 2020. <https://tiny.utk.edu/kPFAs>
6. **Ernst, M.**, “Garden Mum Production in Tennessee.” UK-CCD; UT-CPA Publication, CCD-CPA-CP-2. October 2020. <https://tiny.utk.edu/VTDJ2>
7. **Ernst, M.**, “Cut Flower Production in Tennessee.” UK-CCD; UT-CPA Publication, CCD-CPA-CP-3. June 2021. <https://tiny.utk.edu/OwhsF>
8. **Ernst, M.**, and C. Cassady. “High Tunnel Overview.” UK-CCD; UT-CPA Publication, CCD-SP-2, CCD-CPA-SP-1. July 2021. <https://tiny.utk.edu/ODkPz>

Item # 5 – 8 was a joint effort between UK Center for Crop Diversification and UT Center for Profitable Agriculture to develop a series of crop profiles relating to Tennessee and specialty crop producers. Two other publications are being developed on Cider Apples and Mushrooms. This effort was funded by a SCBG received by UT’s Center for Profitable Agriculture.

d) video

UT Produce Safety Videos (5 minutes or less):

- 1) Harvesting
- 2) Worker Training
- 3) First Aid Kit Monitoring
- 4) Illness and Injury
- 5) Animal Intrusion

General Considerations for Producing and Marketing Blueberries (David Lockwood, Zach Hansen, Frank Hale, and **Margarita Velandia**). Available at <https://www.youtube.com/watch?v=C6eQkWMm7F0>

e) field days

f) Demonstrations

g) social media promotion of events/use of Facebook live

Facebook @UTProduce

Instagram @ut_vsa

h) websites

<http://utvegetable.com>

<https://ag.tennessee.edu/biodegradablemulch/Pages/default.aspx>

<https://extension.tennessee.edu/Pages/ANR-CED-CH-Fruit-and-Vegetable.aspx>

<https://cpa.tennessee.edu/>

3. Please **list** current activities in your state related to **reporting specialty crop prices** and development of **decision aids** regarding:

a) farmers markets

- b) produce auctions
- c) farm to school/institution
- d) retail
- e) community supported agriculture
- f) direct-to-buyer
- g) sampling standards
- h) merchandising education
- i) market performance metrics
- j) other

4. Please **list** current **market research activities** in your state that could benefit small farms. Examples may include:

- a) consumer preferences
- b) comparison of marketing channels
 - *Evaluation of the economic feasibility of U-Pick and retail marketing opportunities for blackberries in Tennessee.*
 - *Evaluation of Tennessee and Kentucky farmers willingness to participate in markets with a food justice mission.*
- c) Other

Grants:

1. Hansen, Z., N. Bumgarner, D. Lockwood, V. Sykes, and **M. Velandia**. "Evaluating Cultivar Selection and Trellis Types to Support Blackberry Growers in the Mid-South." Southern Region Small Fruit Consortium, 3/2021 – 2/2022.
2. Jacobsen, K., **T. Woods, A. Wszelaki**, D. Butler, T. Coolong, J. Grossman, M. Hutton, M. Rogers, R. Rudolph, and **M. Velandia**. "Reclaiming High Tunnel Soil Health for Sustained Specialty Crop Production." SCRI, USDA-NIFA, 08/2020 – 08/2022.
3. Fulcher, A., N. Bumgarner, A. LeBude, S. Marble, L. Nackley, M. Palma, L. Ribera, L. Warner, A. Rhin, and **M. Velandia**. "L.E.A.P, Labor, Efficiency, Automation, and Production for Sustainability in the Nursery Crops Industry." SCRI, USDA-NIFA, 08/2020 – 08/2022.
4. Tanaka, K., K. Rignall, K. Moskowitz, **M. Velandia**, C. Trejo-Pech, and S. Muntz. "Extending Roots of Fresh Stop Markets across the Southeast Region." Southern Sustainable Agriculture Research & Education (SARE) Program, USDA-NIFA, 4/2018 - 9/2021.
5. Holland, R., T. Dugger, "Developing and Utilizing Crop Profiles for Tennessee Specialty Crop Growers" (Crop Profiles); Working with Center for Crop Diversification to develop six crop profiles for use in Tennessee. Specialty Crop Block Grant, 11/1/2018 – 8/1/2021.
6. Holland, R., T. Dugger, "Considerations for Growing and Marketing Specialty Crops in Tennessee." Specialty Crop Block Grant, 11/1/2019 – 8/1/2022.
7. Dugger, T. "Building Rural Economic Enterprises Sustainably and Efficiently," USDA Rural Business Enterprise Grant, 7/1/2019 – 12/25/2021.

8. **Wszelaki, A.**, and S. Flowers, "UT Organic Farm Internship Program," UTK Green Fee, 2019-2021.
9. **Wszelaki, A.**, B. Leib, and Z. Hansen, "Comparing lettuce yield and quality using drip and overhead irrigation on biodegradable mulches," USDA Specialty Crop Block Grant, 2018-2021.
10. Schneider, K., and **A. Wszelaki** (Lead PI- TN Subaward), "Southern Regional Center for Food Safety Training, Outreach and Technical Assistance Continuation, and Lead Regional Coordination Center," USDA-NIFA, 2018-2021.
11. **Wszelaki, A.**, "Exploring Opportunities for Tennessee Department of Agriculture to Prepare to Implement FDA Rule: Standards for the Growing, Harvesting, Packing, & Holding of Produce for Human Consumption," FDA, 2016-2021.
12. Critzer, F., et al., "Bridging the Gap: Expanding a HACCP-based Curriculum to Help Produce Grower Treat Agricultural Water," USDA-NIFA, 2020-2023.
13. Schneider, K., and **A. Wszelaki** (Lead PI- TN Subaward), "Southern Regional Center for Food Safety Training and Outreach, and Lead Regional Coordination Center," USDA-NIFA, 2021-2024.
14. **Wszelaki, A.**, "Enhancing the Capacity and Capabilities of Tennessee's Produce Safety Program in Support of an Integrated Produce Safety System," FDA, 2021-2026.
15. Hajimorad, M., and **A. Wszelaki**, "Survey of Viruses and Viroids of Cucurbit Crops, Emphasis on Cucumber Green Mottle Mosaic Virus," APHIS, 2021.
16. Hajimorad, M., and **A. Wszelaki**, "Survey of Solanaceous Crops in Tennessee with Special Attention to Tospovirus Groundnut Bud Necrosis Virus," APHIS, 2021.
17. **Wszelaki, A.**, S. Flowers and V. Sykes, "Chickpea as an Alternative and Storage Crop for TN," USDA Specialty Crop Block Grant, 2021-2024.

SERA 45 Guidelines for State Reports

Name: Melanie Stock

University: Utah State University

Please provide a synopsis of current activities in your state that are directly related to the objectives of the SERA 45 project; if you are not aware of any activities related to an objective, please indicate that.

1. Please **list** current activities in your state involving **research-based production information** about specialty crops and systems that have potential to be profitable for small farms, including (but not limited to):
 - a) protected agriculture — high/midsize/low tunnel/greenhouse production
 - 1) Advancing and scheduling bloom of the peony (perennial cut flower) with high tunnels, low tunnels, and soil heating. Final field season in 2021, writing manuscript now (1 variety)
 - 2) Snapdragon – planting date, cultivar, and high tunnel vs. field trials (6 varieties), manuscript in press with HortScience
(<https://journals.ashs.org/hortsci/view/journals/hortsci/aop/article-10.21273-HORTSCI15910-21/article-10.21273-HORTSCI15910-21.xml?rskey=5QQW2d>). Doi: 10.21273/HORTSCI15910-21).
 - 3) Dahlia – high tunnel vs. unprotected field trials, use of low tunnels for shading with black vs white mulch (4 varieties)
 - 4) Advancing and scheduling bloom of ranunculus (annual, early season cut flower) with high tunnels, low tunnels, and open field conditions. Second field season was in 2020-21, and we are preparing for our final field season (2021-22). One MS student oversees the trial and has presented at academic conferences (4 varieties)
 - 5) Advancing and scheduling bloom of anemone (annual, early season cut flower) with high tunnels, low tunnels, and open field conditions. The first field season was in 2020-21, and we are preparing for our final field season (2021-22). One MS student oversees the trial and has presented at academic conferences (2 varieties)
 - b) organic production systems
 - 1) None
 - c) small-scale production systems
 - 1) Dahlia – nitrogen management (1 variety)
 - 2) Dahlia – virus presence across the state (many varieties)
 - 3) Dahlia – use of black vs white plastic (2 varieties)
 - 4) Dahlia – scheduling bloom in Zone 5 vs Zone 7 (4 varieties)
 - 5) Zinnia – day versus night irrigation efficiency (1 variety)
 - 6) Multistate winter squash variety trial (10 varieties)
 - d) biodegradable mulches
 - 1) None

2. Please **list** current **educational and extension activities** in your state focused on the **production and marketing of specialty crops**. Please include links and/or copies as appropriate. Examples might include (but are not limited to):

a) in-person trainings

1) None due to Covid-19

b) Webinars

1) Utah Urban and Small Farms Conference: hosted Cut Flowers session and coordinated two grower presentations. Zoom webinars.

2) Crop Budgeting Workshop. Educational Live, Utah Cut Flower Farm Association. Zoom Webinar.

3) Kabocha Squash Trial – Yield and Storage Quality. Vegetable Session, Utah Urban and Small Farms Conference. Live Zoom webinar.

4) USU Ranunculus and Anemone Trials. Cut Flowers Session, Utah Urban and Small Farms Conference. Live Zoom webinar.

5) Optimizing production of Snapdragon in the Intermountain West. Association of Specialty Cut Flower Growers. Zoom Webinar.

c) print publications

Refereed

1) Beginning and Small Acreage Farms: Non-motorized Tool Selection. USU Extension Fact Sheet. Horticulture. Paper 2142.

https://digitalcommons.usu.edu/extension_curall/2142/

2) Snapdragon Cut Flower Production Budget, One Field, Northern Utah, 2020. Horticulture. USU Extension Fact Sheet. Horticulture/CutFlower/01. Paper 2140. https://digitalcommons.usu.edu/extension_curall/2140/

3) Snapdragon Cut Flower Production Budget, One Field, Northern Utah, 2020. Horticulture. USU Extension Fact Sheet. Horticulture/CutFlower/01. Paper 2141. https://digitalcommons.usu.edu/extension_curall/2141/

4) Snapdragon Cut Flower Production in Utah. USU Extension Fact Sheet. Horticulture/Cutflower/01. Paper 2187.

https://digitalcommons.usu.edu/extension_curall/2187/

5) Water Management in High Tunnels. USU Extension Fact Sheet. Horticulture. Paper 2173. https://digitalcommons.usu.edu/extension_curall/2173/

6) Peony Cut Flower Production Budget, One Field, Northern Utah, 2020. USU Extension Fact Sheet. Horticulture/Cutflower/01. Paper 2166.

7) https://digitalcommons.usu.edu/extension_curall/2166/

8) Peony Cut Flower Production Budget, One High Tunnel, Northern Utah, 2020. USU Extension Fact Sheet. Horticulture/Cutflower/01. Paper 2165.

https://digitalcommons.usu.edu/extension_curall/2165/

Non-refereed

9) Tackling the three challenges of dahlia production: bloom timing, nutrient management, and disease. The Cut Flower Quarterly. Fall 2021. Association of Specialty Cut Flower Growers, Inc. In press.

10) Snapdragon Cut Flower Budget for One High Tunnel. 2020 Utah Agricultural Statistics and Utah Department of Agriculture and Food Annual Report, pages 78-79. Salt Lake City, UT. <https://ag.utah.gov/wp-content/uploads/2020/10/Utah-2020-Final-Annual-Report-Statistical->

[Bulletin.pdf](#)

- d) video
 - 1) None
 - e) field days
 - 1) Upcoming high tunnel field day: October 7, 2021.
 - f) Demonstrations
 - 1) Dahlia farm tour of the Wasatch Front. Salt Lake and Davis Counties: Virus identification.
 - g) social media promotion of events/use of Facebook live
 - 1) Record keeping for cut flower farms. FacebookLive Event. Hosted by the Utah Cut Flower Farm Association (UCFFA).
 - 2) Use of @usu_smallfarms Instagram account for grower outreach (>2,000 followers, primarily cut flower growers)
3. Please **list** current activities in your state related to **reporting specialty crop prices** and development of **decision aids** regarding:
- a) farmers markets
 - 1) Utah Urban and Small Farms Conference: hosted Cut Flowers session: coordinated presentation by a grower on farmers market sales and pricing. Zoom webinar.
 - 2) Presented: Crop Budgeting Workshop. Educational Live, Utah Cut Flower Farm Association. Zoom Webinar.
 - 3) Presented: Record keeping for cut flower farms. FacebookLive Event. Hosted by the Utah Cut Flower Farm Association (UCFFA).
 - b) produce auctions
 - 1) None
 - c) farm to school/institution
 - 1) None
 - d) Retail
 - 1) Utah Urban and Small Farms Conference: hosted Cut Flowers session: coordinated presentation by a grower on farmers market sales and pricing. Zoom webinar.
 - 2) Presented: Crop Budgeting Workshop. Educational Live, Utah Cut Flower Farm Association. Zoom Webinar.
 - 3) Presented: Record keeping for cut flower farms. FacebookLive Event. Hosted by the Utah Cut Flower Farm Association (UCFFA).
 - e) community supported agriculture
 - 1) Utah Urban and Small Farms Conference: hosted Cut Flowers session: coordinated presentation by a grower on farmers market sales and pricing. Zoom webinar.
 - 2) Presented: Crop Budgeting Workshop. Educational Live, Utah Cut Flower Farm Association. Zoom Webinar.
 - 3) Presented: Record keeping for cut flower farms. FacebookLive Event. Hosted by the Utah Cut Flower Farm Association (UCFFA).
 - f) direct-to-buyer

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- 3) Presented: Record keeping for cut flower farms. FacebookLive Event. Hosted by the Utah Cut Flower Farm Association (UCFFA).
- 4)
- g) sampling standards
 - 1) None
- h) merchandising education
 - 1) None
- i) market performance metrics
 - 1) None
- j) Other (Wholesale)
 - 1) Snapdragon Cut Flower Production Budget, One Field, Northern Utah, 2020. Horticulture. USU Extension Fact Sheet. Horticulture/CutFlower/01. Paper 2140. https://digitalcommons.usu.edu/extension_curall/2140/
 - 2) Snapdragon Cut Flower Production Budget, One Field, Northern Utah, 2020. Horticulture. USU Extension Fact Sheet. Horticulture/CutFlower/01. Paper 2141. https://digitalcommons.usu.edu/extension_curall/2141/
 - 3) Peony Cut Flower Production Budget, One Field, Northern Utah, 2020. USU Extension Fact Sheet. Horticulture/Cutflower/01. Paper 2166. https://digitalcommons.usu.edu/extension_curall/2166/
 - 4) Peony Cut Flower Production Budget, One High Tunnel, Northern Utah, 2020. USU Extension Fact Sheet. Horticulture/Cutflower/01. Paper 2165. https://digitalcommons.usu.edu/extension_curall/2165/
 - 5) Snapdragon Cut Flower Budget for One High Tunnel. 2020 Utah Agricultural Statistics and Utah Department of Agriculture and Food Annual Report, pages 78-79. Salt Lake City, UT. <https://ag.utah.gov/wp-content/uploads/2020/10/Utah-2020-Final-Annual-Report-Statistical-Bulletin.pdf>

4. Please **list** current **market research activities** in your state that could benefit small farms. Examples may include:
- a) consumer preferences
 - 1) Please see c. We received indirect feedback through cut flowers sales, particularly on color preference.
 - b) comparison of marketing channels
 - 1) Only wholesale was directly tested by USU.
 - c) other
 - 1) We sell cut flowers produced by USU through a local cut flower co-op, as wholesale product to florists for price and market preference reports.
 - i. This year, we focused sales of ranunculus and anemone cut flowers that were produced from April through July. We tested pricing and

quality requirements for early season (April) compared to late spring to summer.

- ii. We also tested pre vs post Mother's Day pricing of peony and reached new stem budgets.
- iii. Sales of dinnerplate dahlias in the Salt Lake Valley are beginning in Sep. 2021.

SERA 45 State Report

Name: Lewis W. Jett

University: West Virginia University

Please provide a synopsis of current activities in your state that are directly related to the objectives of the SERA 45 project; if you are not aware of any activities related to an objective, please indicate that.

1. Please **list** current activities in your state involving **research-based production information** about specialty crops and systems that have potential to be profitable for small farms, including (but not limited to):

a) Protected Agriculture — high/midsize/low tunnel/greenhouse production

- We are evaluating shade fabric (percentage, date of application) for high tunnel production in southern West Virginia. This project is funded through both Conservation Districts and a Specialty Crop Block Grant.
- Currently evaluating winter allium production in low tunnels and high tunnels for 2020-21.
- Currently evaluating winter cabbage production in high tunnel for processor in southern WV in 2020-22.
- Random high tunnel year-round temperature logging in WV
- Awarded a SARE Professional Development project to map assets and create grower cooperatives around high tunnel leafy green production in 2 regions of West Virginia.
- Evaluating landraces of West Virginia 'Mortgage Lifter' tomato for high tunnel production

b) Organic Production Systems

- Evaluating heirloom bean production (SARE Funded Partnership Grant)
- Evaluating organic hazelnut production.
- Evaluating hascap production
- Tomato breeding for *Septoria* leaf spot resistance (V. Benedita, PI)r
- Evaluating cider apple varieties (Mira Danilovich, PI)
- Evaluating taro production (M. Domingo, PI)

c) Small-scale Production Systems

- Awarded a SARE Partnership Grant to evaluate commercial elderberry production and processing in WV
- Evaluating heritage bean production for commercial markets. (SARE Partnership Grant)
- Evaluation of asparagus as a u-pik crop in WV (Specialty Crop Block Grant)

2. Please **list** current **educational and extension activities** in your state focused on the **production and marketing of specialty crops**. Please include links and/or copies as appropriate. Examples might include (but are not limited to):

a) In-person Trainings

- Producer trainings for bean trellis construction (SARE Partnership Grant)

b) Webinars

- Webinar on growing and harvesting vegetables for the *WV-Grow This!* Program for over 6000 citizens in WV.
- Preparing the high tunnel for success (weekly webinars through February 2021)
- AgBeats (Biweekly integrated crop production updates)
- Seed Saving Video

c) Presentations at conferences: The West Virginia Small Farm Conference in February 2021 had over 500 attendees

- *Growing and Marketing Appalachian Heritage Beans*
- *Heritage Tomato Production using High Tunnels*
- *What's New in Vegetable Varieties for 2021*

2021 IA Fruit & Vegetable Growers' Conference

- *Profitable Crop Choices for High Tunnels*

The Mid-Atlantic fruit & Vegetable Convention had over 800 attendees.

- *Growing & Marketing Asian Vegetables*

2021 Illinois Specialty Crop Conference

- *Pollination of High Tunnel Crops*

d) Print Publications (all on-line now)

- A Novel Trellis design for heritage beans-Midwest variety Trial Report
- Growing, Harvesting and Preserving Appalachian Heritage Beans (CCD/WVU Extension Publ. CCD-WVU-FS-2)
- High Tunnel Crop Fertilization
- Winter Crop Choices for High Tunnels in WV

e) Conferences:

- 2021 West Virginia Small Farm Conference
- 2021 American Society for Horticulture Sciences Annual Meeting

f) Field Days

- Organic Horticulture Farm Field Day (8/26/21)

3. Please **list** current activities in your state related to **reporting specialty crop prices** and development of **decision aids** regarding:

- a) farmers markets
- b) produce auctions
- c) farm to school/institution
- d) retail
- e) community supported agriculture
- f) direct-to-buyer
- g) sampling standards
- h) merchandising education
- i) market performance metrics
- j) other

4. Please **list** current **market research activities** in your state that could benefit small farms. Examples may include:

- a) consumer preferences
 - test marketing processed and unprocessed heritage beans at farmers' markets
 -
- b) comparison of marketing channels
- c) other