

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

**Annual Meeting
Friday, September 22nd, 2023
9 a.m. to 2:30 p.m. EDT**

Participants and guests in attendance: In-person: Lesley Oliver (Administrative Advisor, University of Kentucky); J. Mike Phillips (Administrative Advisor, Auburn University); Wenjing Guan (Vice-Chair, Purdue University), Christy Cassady (University of Kentucky), Ajay Nair (Iowa State University), Mary Rogers (University of Minnesota), Emily Spencer (University of Kentucky), Melanie Stock (Utah State University), Brett Wolff (University of Kentucky), Tim Woods (University of Kentucky), Shawn Wright (University of Kentucky). Virtual: Lewis Jett (Chair, West Virginia University), Matt Kleinhenz (The Ohio State University), Petrus Langenhoven (Purdue University), Rachel Painter (Center for Profitable Agriculture, Tennessee), Rachel Rudolph (University of Kentucky), Margarita Velandia (University of Tennessee), Annette Wszelaki (University of Tennessee).

The 2023 SERA 45 annual meeting was held at the Jefferson County Farm Bureau in Louisville, KY.

Agenda

- Lewis Jett (West Virginia) facilitated the meeting, which opened with introductions.
- 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. 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. Annette Wszelaki (Tennessee) gave an update on a squash hunger trials project, which was started to provide updated production and variety recommendations for crops that had not been looked at for a number of years. The project was also started to evaluate crops that could be made available to food banks later in the year. The group conducted research on kabocha squash in 2021, acorn squash in 2022, and spaghetti squash in 2023. The project is also looking at storage of the crops, and the spaghetti squash crop was lost after a month in storage. Wszelaki has a new assistant who is going through a backlog of data on the project. The group discussed other crops they might consider for the trials, including potatoes, sweet potatoes, onions, and carrots.
2. Ajay Nair (Iowa) gave a PowerPoint presentation on a mesotunnel project using Protek netting conducted by Iowa State, the University of Kentucky, and Cornell University. Research has shown Protek netting to be a viable option, although the economics need to be worked out. Growers are finding multiple uses for Protek netting. Mary Rogers (Minnesota) shared that the netting works well for spotted wing drosophila. She added that Protek netting might be a better option than poly covers for high tunnels during Minnesota's hot, dry summers. Wenjing Guan (Indiana) mentioned a farmer who uses Protek netting on high

tunnels during the summer, and it works well.

B. The group discussed objective 2, coordination of research and extension activities in the participating states.

1. Melanie Stock (Utah) and Tim Woods (Kentucky) discussed their collaboration on a Kentucky Specialty Crop Block Grant (Woods, PI) “Integrating Post-Covid Cut Flower Demand into Market Education.” Stock shared a PowerPoint presentation on the Kentucky-Utah cut flower collaboration. Interest in cut flowers has grown dramatically in Kentucky and Utah in recent years. Stock said cut flower growers are active on social media, with Facebook being more popular in Kentucky and Instagram in Utah. Fact sheets are popular among growers, who still want PDFs. The collaboration resulted in a fact sheet in 2021, [Cut Flowers for Community Supported Agriculture Production](#), which has been downloaded 339 times. In 2022, UK Cooperative Extension, the UK Center for Crop Diversification (CCD), the Kentucky Horticulture Council (KHC) and Utah State offered a webinar, The Art & Science of Pricing, which drew 360 registrants. The webinar recording has been viewed 2,276 times on the CCD YouTube channel. A cut flower short course was held at the Kentucky Fruit and Vegetable Conference in Bowling Green, KY in January 2023, featuring speakers from UK, Stock, and farmers. The short course, which was organized by Cindy Finneseth of the KHC, drew approximately 90 attendees. Feedback from attendees indicated a 30 percent increase in understanding of the subject matter after attending the programming, and the overall presentation was rated very good to excellent. In addition, a majority of attendees indicated they were likely or definitely planning to use the information in their operations within the next three to six months. Recorded conference sessions, which were posted to the CCD YouTube channel, received 1,402 views across nine presentations in seven months. The most viewed recordings were the KY flower calendar, florist survey, and the top five flowers. Next steps in this collaboration include creating a survey for cut flower workshop participants to identify consumer behaviors such as willingness to recommend, cross purchasing, etc. This will help growers identify the impact a workshop could have on their business model. The grant will also involve working with a stem-pricing tool and looking for ways to integrate a pricing tool like this in the grower education series. Those at UK involved in the grant might visit Utah in 2024.
2. The group discussed an SCRI planning grant looking at root-knot nematode in watermelon production. Guan (Indiana) and Rachel Rudolph (Kentucky) are among the collaborators. Guan said root knot nematode is a major problem for melon growers in southwestern Indiana. Rudolph had already done a root knot nematode survey of high tunnel growers in Kentucky. Her survey showed more than half of the high tunnels sampled were infested with root knot nematode. Guan and Rudolph are building a team and writing a proposal.
3. Christy Cassady (Kentucky), Rachel Painter (Tennessee), and Lewis Jett (West Virginia) discussed their collaboration on a regional elderberry crop profile earlier this year. The result was a new regional publication, [Commercial Production of Elderberry](#), which built upon the CCD’s existing crop profile on elderberry. The new publication grew out of increased interest throughout the region in this crop.

C. The group discussed Objective 3, developing direct market information and decision aids that can be shared regionally.

1. Cassady (Kentucky) shared that the UK CCD is regularly reporting prices from five produce

auctions across Kentucky, including a new auction located in Trigg County. A three-year report of produce auction prices in Kentucky will be available soon. Brett Wolff (Kentucky) gave an update on farmers market price reporting in Kentucky and said that there has been a decline in the number of reporters since Covid. Wolff is working on a five-year farmers market price reporting publication. Wolff and Woods recently had an article published in Southern Ag Today, [Farmers Markets and the South](#). Margarita Velandia (Tennessee) shared that Tennessee has had five or six farmers markets reporting regularly in 2023. Velandia said that after years of seeing virtually no change in prices at Tennessee farmers markets, she has seen an increase in prices since Covid, possibly due to increases in input costs. Woods (Kentucky) noted there has been a big increase in prices at produce auctions post-Covid. Tennessee has also seen an increase in the number of vendors at farmers markets since Covid. Velandia noted that farmers markets in urban areas in Tennessee have increased in size, but rural markets are smaller, and some have nearly died. Shawn Wright (Kentucky) said that Eastern Kentucky is still seeing good use of farmers markets.

D. The group discussed Objective 4, continuing market research in the participating states on consumer preferences and marketing channels that are most effective and profitable for small farms.

1. Woods is conducting an 1,100-household survey on market channel use and awareness of local foods. This is a Kentucky-wide survey looking at changes by consumers due to inflation. It is also looking at awareness of and purchases of the Kentucky Proud brand.

E. Discussion of activities in the participating states

1. Participants gave summaries of the activities in their states. Please see the attached state reports for details of activities in the participating states.

F. Discussion of opportunities for collaboration

1. The group plans to move forward with crop evaluation research on low-input, high-return crops, and will choose among onions, potatoes, and carrots.
2. The group decided to continue the SERA 45 project beyond September 30, 2024. Lesley Oliver (AA, Kentucky) shared that the group needed to submit an updated Issues and Justification section of the current proposal within the next two to three weeks. Oliver said the renewal proposal is due by March 15, 2024. Woods, Stock, and Jett agreed to write the proposal. Potential areas of collaboration include research on additional crops (onions, potatoes, sweet potatoes, carrots), cut flower production and marketing research and extension activities, high tunnel research, production research in response to climate change, and marketing research in response to changes resulting from Covid.

Election of officers:

The group chose to deal with the selection of a chair and vice-chair for the coming year via email.

2024 Annual Meeting

Jett suggested meeting in-person at The Ohio State University South Centers in Piketon. Kleinhenz mentioned Columbus and Wooster, OH, as additional possible sites.

SERA 45 Guidelines for State Reports

Name: Petrus Langenhoven

University: Purdue 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
 - b) organic production systems
 - c) small-scale production systems
 - d) biodegradable mulches
 - Evaluating the diversified strawberry production systems (Wenjing Guan)
 - Two-year plasticulture strawberry production (Steve Meyers and Wenjing Guan)
 - High-tunnel pest management (Laura Ingwell, Wenjing Guan and other Co-PIs)
 - Improve irrigation management in vegetable and melon production (Wenjing Guan and Liz Maynard)
 - Watermelon fertility management with control-released fertilizers and foliar fertilizers (Wenjing Guan)
 - Root-knot nematode survey in Indiana (Wenjing Guan and Lei Zhang)
 - Managing root-knot nematode on-farm research in Indiana (Wenjing Guan and Lei Zhang)
 - Seedless watermelon cultivar evaluation (Wenjing Guan)
 - Seeded watermelon cultivar evaluation (Wenjing Guan)
 - Personal-sized watermelon cultivar evaluation (Wenjing Guan)
 - Cantaloupe and specialty melon cultivar evaluation (Wenjing Guan)
 - Watermelon production in caterpillar tunnels (Wenjing Guan)
 - On-farm project on early-season high tunnel cucumber production with grafted plants (Wenjing Guan)
 - High tunnel determinate tomato cultivar evaluation (Wenjing Guan)

 - The Nature Conservancy-Conservation Cropping Systems Initiative Mini Grant Program. “Establishing and demonstrating resilient practices in Southwestern Indiana melon rotations”. L. Ingwell, PI, C. Krupke, W. Guan, L. Maynard, D. Nowaskie 2023
 - North Central IPM Center. “Great Lakes Urban Ag IPM Working Group”. L. Ingwell Co-PI, M. Rivera (OSU) 2023
 - Optimizing pest management in high tunnels to increase the resiliency of local food systems – with L. Ingwell, PI, W. Guan, I. Kaplan, and A. Torres (plus other institutions). USDA NIFA SCRI. 2021-2025

- Utilizing integrated pest and pollinator management strategies to improve sustainable plant production in community gardens – with L. Ingwell and B. Harpur, PI J. Noseworthy at Indiana Wesleyan University. NIFA REEU. 2021-2025
- Two-spotted spider mite management in high tunnel cucumber production – with L. Ingwell, PI, W. Guan, P. Langenhoven, and L. Maynard. USDA-NCSARE. 2021-2023.
- Enhance strawberry production in the north-central region. The project explores diverse production systems in growing strawberries at small-scale, diversified farms (plasticulture production, in-soil high tunnel production and substrate production on an elevated system). Funding source: NC-SARE Research & Education Grant. PI: Wenjing Guan, Laura Ingwell, Dan Egel, Brad Bergefurd and Richard Barnes. 2022-2024.
- Taking the next step as a small and medium-sized farm: Understanding the integration of production, food safety, and profitability, AFRI grant – Petrus Langenhoven, Maria Marshall, Betty Feng, Nathan Shoaf. Renee Wiatt.
- Sweet Pepper variety evaluation – Petrus Langenhoven, Chris Adair
- Propagation and field establishment of CBD hemp – Petrus Langenhoven, Ashley Adair, Marguerite Bolt, John Couture.
- Education and Outreach Activities to Improve Food Safety for Small Farms – Amanda Deering, Petrus Langenhoven, Tari Gary, and Scott Monroe.

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
- Podcast Strawberry Chat <https://podcasters.spotify.com/pod/show/strawberrychat>. *Strawberry Chat is a virtual discussion about strawberry production at small and diversified farms in Indiana and neighboring states. We invite guests to discuss activities that happen at the time of the year and cover different production systems.*
 - A video about high tunnel in-soil strawberry production <https://www.youtube.com/watch?v=1Nb7gkCLgzE>
 - Technical trial reports:
 - Strawberry Production in an Elevated Bench Growing System inside a High Tunnel in Southern Indiana
 - 2022 Personal-sized Triploid Watermelon Cultivar Evaluation in Indiana
 - 2022 Standard-sized Triploid Watermelon Cultivar Evaluation in Indiana
 - Solid-Green Watermelon Cultivar Comparison
 - Watermelon and melon cultivar evaluation reports at Southwest Purdue Ag Center since 2018 are available at <https://ag.purdue.edu/departments/arge/swpap/variety->

[trial-files-swpap.html](#)

- ASHS workshop *How Plastic-Covered Structures Create Microenvironments Affecting Pests and Their Management* at 2023 Annual Conference in Orlando.
- Shoaf, N.L. and L.L. Ingwell. 2023. Opportunities and challenges for Indiana's urban agriculturalists. ID-531-W.
- Ingwell, L.L. 2023. Managing pests that thrive in hot and dry conditions. Veg Crops Hotline. Issue 723.
- Ingwell, L.L. 2023. Japanese beetles are here, and hungry! Veg Crops Hotline Issue 722.
- Ingwell, L.L. 2023. Corn earworm in early plantings. Veg Crops Hotline Issue 722.
- Ingwell, L.L. and C. Adair. 2023. Are you scouting your potatoes? The beetles are here! Veg Crops Hotline Issue 720.
- Willden, S.A., and L.L. Ingwell. 2023. Are pillbugs pests? How can they be managed? Veg Crops Hotline. Issue 718, Reprinted in the Pennsylvania Vegetable Growers News (930 subscribers)
- Ingwell, L.L. 2023. Cut seedlings and the potential culprits. Veg. Crops Hotline. Issue 718, Reprinted in the Pennsylvania Vegetable Growers News (930 subscribers)
- Ingwell, L.L. 2023. Threats to Early Seedlings. Veg Crops Hotline. Issue 717
- Ingwell, L.L. 2023. Start your season of right with pest-free transplants. Veg Crops Hotline. Issue 715.
- Ingwell, L.L. 2023. Insect traps as a monitoring tool. Veg. Crops Hotline. Issue 714.
- Guan, W., Haseman, D., Ingwell, L.L., Willden, S., and D. Egel. 2023. Strawberry Production in an Elevated Bench Growing System inside a High Tunnel in Southern Indiana. Midwest Vegetable Trial Reports. Paper 246.
- <https://docs.lib.purdue.edu/mwvtr/246>
- Shoaf, N.L. and L.L. Ingwell. 2022. Demographics of Indiana's urban agriculturalists. ID-530-W.
- Terrell, C., and L.L. Ingwell. 2022. Black soldier fly composting guide. E-276.
- Ingwell, L.L. Statewide monitoring program for corn earworm management. <https://extension.entm.purdue.edu/veg/cornearworm/>
- Ingwell, L.L. Statewide monitoring program for squash vine borer management. <https://extension.entm.purdue.edu/veg/squash-vine-borer/>
- Ingwell, L.L. 2023. Integrated pest management for greenhouses. East Chicago Parks and Recreation Summer Internship Program. July 25, 2023 (7 ppl)
- Ingwell, L.L. 2022. Insect control in ornamental and vegetable crops. Hydroponics and Floriculture Workshop. Purdue University. Nov. 3, 2022. (45 ppl)
- Zablah, A., Willden, S. and L.L. Ingwell. 2023. Entomopathogenic nematodes for CPB management. Indiana Small Farm Conference. Danville, IN. Mar 2-3, 2023. (poster presentation)
- Agila, M. and L.L. Ingwell. 2023. Converting food waste into soil amendments while growing protein with *Hermetia illucens*. Indiana Small Farm Conference. Danville, IN. Mar 2-3, 2023. (poster presentation)
- Willden, S. and L.L. Ingwell. 2023. Common insect pests and options for management on urban farms. Indiana Small Farm Conference. Danville, IN. Mar 2-3, 2023.
- Aviles, L., Liz, M., Wenjing., G., and L.L. Ingwell. 2023. Cucumber cultivar

susceptibility against twospotted spider mites in high tunnels. Indiana Small Farm Conference. Danville, IN. Mar 2-3, 2023.

- Ingwell, L.L. 2023. Tomato pinworm in Indiana. Indiana Small Farm Conference. Danville, IN. Mar 2-3, 2023.
- Aviles, L., Maynard, L., Guan, W., and L.L. Ingwell. 2023. Cucumber cultivar susceptibility against twospotted spider mites in high tunnels. Indiana Horticulture Conference and Expo. West Lafayette, IN. Jan. 23-24, 2023. (poster presentation)
- Agila, M. and L.L. Ingwell. 2023. Converting food waste into soil amendments while growing protein with *Hermetia illucens*. Indiana Horticulture Conference and Expo. West Lafayette, IN. Jan. 23-24, 2023. (poster presentation)
- Zablah, A., Willden, S. and L.L. Ingwell. 2023. Entomopathogenic nematodes for CPB management. Indiana Horticulture Conference and Expo. West Lafayette, IN. Jan. 23-24, 2023. (poster presentation)
- S. Willden and L.L. Ingwell. 2023. How does farm location impact high tunnel growing conditions? Indiana Horticulture Conference and Expo. West Lafayette, IN. Jan. 23-24, 2023. (poster presentation)
- Ploessl, S., Willden, S. and L.L. Ingwell. 2023. Insect pests and natural enemies on urban farms. Mid Atlantic Fruit and Vegetable Convention. Hershey, PA. Jan. 31, 2023. (50 ppl)
- Ingwell, L.L. 2023. Contrasting insect biocontrols in tunnels vs. greenhouse production. Mid Atlantic Fruit and Vegetable Convention. Hershey, PA. Jan. 31, 2023. (50 ppl)
- Ingwell, L.L. and S. Willden. 2023. What are common pests under high tunnels? How do we manage them? Mid Atlantic Fruit and Vegetable Convention. Hershey, PA. Jan. 31, 2023. (50 ppl)
- Ingwell, L.L. 2023. IPM and pollinator stewardship at Purdue University. Michigan State University Extension Webinar for Meijer produce buyers and growers. Aug. 3, 2023. (27 ppl)
- Willden, S., Zablah, A. and L.L. Ingwell. 2023. Predator-prey dynamics in high tunnel crop production. Small Farm Education Field Day, Purdue Student Farm. West Lafayette, IN. July 27, 2023.
- Ingwell, L.L. 2023. Biorational pesticide efficacy for controlling caterpillars and flea beetles in crucifer crop production. Small Farm Education Field Day, Purdue Student Farm. West Lafayette, IN. July 27, 2023.
- Agila, M. and L.L. Ingwell. 2023. Black soldier fly composting and specialty crops production. Small Farm Education Field Day, Purdue Student Farm. West Lafayette, IN. July 27, 2023.
- Willden, S., Zablah, A., Aviles, L., and L.L. Ingwell. 2023. High tunnel diversification and biological control. Purdue Fruit and Vegetable Field Day, Meigs Horticulture Farm. Lafayette, IN. July 20, 2023.
- Agila, M., and L.L. Ingwell. 2023. Black soldier fly composting and specialty crop production. Purdue Fruit and Vegetable Field Day, Meigs Horticulture Farm. Lafayette, IN. July 20, 2023.
- Ingwell, L.L. 2022. Sweet corn pest management updates. Purdue Fruit and Vegetable Field Day, Meigs Horticulture Farm. Lafayette, IN. July 20, 2023.
- Ingwell, L.L. 2022. Sweet corn insect management. Pinney Purdue Vegetable Field Day.

Aug. 9, 2022. 50 attendees

- Ingwell, L.L. 2022. Insect ID and control. Master Gardner Training in Wayne County. Oct. 25, 2022. (92 ppl)
 - Ingwell, L.L. and D. Egel. 2022. High Tunnel Soil Production. Strawberry Chat Podcast hosted by Wenjing Guan and Miranda Purcell. Episode 8, Oct. 18, 2022. (52 ppl)
 - Langenhoven, P. (Author and Presenter) and N. Shoaf (Contributor). Indiana Small Farms Conference, “Increasing Vegetable Farm Sustainability Through a Mixed-systems Approach”, Danville, IN, United States. March 3, 2023.
 - Langenhoven, P. (Author and Presenter). Indiana Small Farms Conference, “High Tunnel Sweet Pepper Variety Trial Updates”, West Lafayette, IN, United States. March 2, 2023.
 - Langenhoven, P. (Author and Presenter). Indiana Vegetable Growers Annual Meeting, “USDA/NIFA Soil-to-Market project”, Tuttle’s Orchard, Greenfield, IN, United States. March 1, 2023.
 - Langenhoven, P. (Author and Presenter) and N. Shoaf (Author). “A Two-system Approach to Vegetable Farm Sustainability”. Indiana Horticultural Conference and Expo. West Lafayette, IN, United States. January 24, 2023.
 - Shoaf, N (Author and Presenter) and P. Langenhoven (Author). “What can Soil Health do for your Farm?”. Indiana Horticultural Conference and Expo. West Lafayette, IN, United States. January 24, 2023.
 - Hoagland, L. (Author and Presenter) and P. Langenhoven (Presenter). “Research results - Verticillium wilt greenhouse and field study results”. Final SARE Project Workshop: Biological Approaches to Sustainable Mint Production. Fair Oaks Farms, Fair Oaks, IN, United States. January 19, 2023.
 - Langenhoven, P. (Author and Presenter). “Project Overview and Accomplishments”. Final SARE Project Workshop: Biological Approaches to Sustainable Mint Production. Fair Oaks Farms, Fair Oaks, IN, United States. January 19, 2023
 - Purdue Fruit and Vegetable Field Day, July 20, 2023
 - Small Farm Education Field Day, July 27, 2023
 - Pinney Purdue Vegetable Twilight Meeting, August 24, 2023
 - Vegetable Crops Hotline Newsletter - <https://vegcropshotline.org/>
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

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
 - Consumer preferences for different watermelon types (Wenjing Guan)
 - Fruit quality evaluation and informal taste tests of determinate tomato cultivars grown in high tunnels (Wenjing Guan)

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/virtual trainings –
 - Brett Wolff and Emily Spencer – Accepting Cashless Payments at Your Farm Business (2023 Kentucky Horticulture Council Direct Marketing Summit) Recording available at <https://www.youtube.com/watch?v=LpjW7WwPj8A>
 - Brett Wolff, Camille Dant, and Savannah Columbia - Growing Online: Growing Your Farm Business with digital marketing, analytics, and web design, virtual training Recording available at <https://www.youtube.com/watch?v=jgJJOACxBDg>
 - SERA 45 participant Melanie Stock (Utah) gave four presentations at the 2023 Kentucky Fruit & Vegetable Conference Cut Flower Short Course Track. The CCD's Savannah Columbia also gave a presentation. All nine presentations are available on the CCD website at <https://www.uky.edu/ccd/production/crop-resources/nursery-ornamental/cut-flowers>.
 - b) Webinars –
 - Virtual Cut Flower Short Course (The CCD's Joshua Knight, in collaboration with Kentucky Horticulture Extension Agents Alexis Sheffield and Kristin

Hildabrand and the Kentucky Horticulture Council). Recordings of the sessions are available at <https://www.uky.edu/ccd/production/crop-resources/nursery-ornamental/cut-flowers>. Specific webinars offered since the 2022 SERA 45 annual meeting are listed below:

- a) Learning Lisianthus with Farmer Bailey
(<https://www.youtube.com/watch?v=tTIAWpTdlT4>)
 - b) Digital Marketing with Amanda Kelly
(<https://www.youtube.com/watch?v=eiZKfjCvwrw>)
 - c) Farm Layout & Design with Dr. Stephen Higgins
(https://www.youtube.com/watch?v=RYMHCakwm_0)
- We have continued delivering Marketing for All trainings on an as-needed basis (Brett Wolff)
 - The CCD's MarketReady team (Savannah Columbia, Tim Woods) has offered multiple trainings and buyer tours.

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 2022 include [Commercial Production of Elderberry \(CCD-CPA-CP-6, CCD-WVU-CP-1, ANR-Hort-23-001\)](#), a regional publication developed by SERA 45 participants Christy Cassady (Kentucky), Rachel Painter (Tennessee), Lewis Jett (West Virginia), and UK contractor Matt Ernst; [Growing and Marketing Mushrooms in Tennessee: Basic Considerations \(CCD-CPA-CP-5\)](#), a profile developed by SERA 45 participant Brett Wolff and UK contractor Matt Ernst for participants at the Center for Profitable Agriculture in Tennessee; [Assessing Your Fields After a Flood \(CCD-FS-27\)](#); [IPM Fact Sheet for Agricultural Service Providers \(CCD-FS-25\)](#); [Sustainable Agricultural Practices for Ag Service Professionals: A Resource Checklist \(CCD-FS-26\)](#); and [Ecommerce Platforms in Kentucky \(CCD-MP-25\)](#). Updated CCD publications include [Beekeeping & Honey Production \(CCD-CP-78\)](#); [Christmas Trees \(CCD-CP-67\)](#); [Willows for Cuttings \(CCD-CP-75\)](#); and [Truffles & Other Edible Mycorrhizal Mushrooms \(CCD-CP-83\)](#). In addition, the CCD's Knight, in collaboration with the Kentucky Horticulture Council, developed a [Cover Crop Calculator](#) that calculates high and low seeding rates for a variety of cover crops and provides additional resources for growers.

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

Other – Knight has continued to add/update information to the Geographic Horticulture Directory of Kentucky (<https://uk-horticulture.github.io/hort-directory/>), available on the CCD website in collaboration with grower organizations, including the Kentucky Horticulture Council. The directory shows locations of and contact information for shared equipment, commercial kitchens, 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

Wolff and Knight joined Kentucky extension agents Alexis Sheffield and Ray Tackett in developing a new weekly podcast, Hort Culture, which includes discussions of the business, production, and joy of farming. The podcast is available at <https://www.uky.edu/ccd/hortculturepodcast>.

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 2023, we had a maximum of nine markets reporting.
 - b. Prices are reported from a selection of farmers markets in Tennessee every other week.
 - c. Prices from Casey County, Fairview, Hart County, Lincoln County, and Western Kentucky (Trigg County) produce auctions are posted on the CCD website as they are received.
 - d. Prices from the Arthur Produce Auction in Illinois are posted on the CCD website as they are received.
 - e. The CCD has a forthcoming 2020-2022 Three-year Average Prices & Quantities at Kentucky Produce Auctions report.
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: Univ. 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. Evaluation of lettuce for *Sclerotinia* resistance with high and low irrigation applications (2nd and final year)
 2. Evaluation of summer squash for powdery mildew resistance with low and high inputs of nitrogen (2nd and final year)
 3. Soil solarization in high tunnels for management of *Sclerotinia* (2nd and final year)
 - b) small-scale production systems
 1. Fall season mustard planting (2nd attempt)
 2. Open field soil solarization—evaluating soil temperatures reached through the spring, summer, and fall
 3. Evaluation of tomato cultivars for Early Blight
 - c) organic production systems
 1. Evaluation of root-knot nematode resistant tomato cultivars in an organic certified high tunnel (commercial grower)

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. KY Fruit and Vegetable Conference (January 3 and 4; 3 talks)
 - a. *Managing Root-knot Nematode in High Tunnels*
 - b. *Soil Solarization in High Tunnels*
 - c. *The Basics of Cover Cropping*
 2. Organic Association of Kentucky annual conference (January 19)
 - a. *Tomato grafting: What, why, and how*
This talk was followed by a hands-on tutorial where participants practiced grafting tomatoes.
 3. Indiana Hort Congress (January 23; 3 talks)
 - a. *Biofumigation*
 - b. *Root-knot nematode in vegetable production*
 - c. *Soil Survey Update of Root-knot Nematode*

4. Pick TN Conference (February 16)
High Tunnels: they're not just for tomatoes
5. High Tunnel Production for Beginners. Central (April 12), East (April 25), and West (May 10) Kentucky. After participating in the webinars, people were encouraged to attend one of the in-person workshops in one of the above regions where we were able to demonstrate aspects of the high tunnel in-person.
6. Tomato grafting workshops. Mason Co. (January 19); Fayette Co./UK Hort Farm (March 9); Muhlenberg Co. (March 14)
7. IPM Training School (March 8)
Root-knot Nematode Management in Open Field and High Tunnels

b) webinars

1. High Tunnel Production for Beginners

Link for full playlist:

<https://www.youtube.com/playlist?list=PLQEQoZRMbyBIHAPvsLDmHGIN9YeJgEGj->

c) print publications

Extension publications

1. Kemble, J. (ed.). 2023. Southeastern U.S. Vegetable Crop Handbook.
2. **Rudolph, R.** (editor), N. Gauthier, R. Bessin, and S. Wright. 2023. An IPM Scouting Guide for Common Pests of Solanaceous Crops in Kentucky. ID-172. 48 pp. *Update*.
3. Durbin K, Williams M, Jacobsen K, **Rudolph R.** 2022. Community Supported Agriculture (CSA) Production Manual of the Organic Farming Unit at the University of Kentucky. HO-127. 296 pp.
4. Bowen, D., Durham, R. and **R. Rudolph.** 2023. Growing Your Own: Sweet Potatoes. UK NEP-232. 4 pp.
5. Bowen, D., Durham, R., and **R. Rudolph.** 2023. Growing Your Own: Potatoes. UK NEP-231. 5 pp.

Peer-reviewed Journal Articles

1. ~Bajek V, Munir M, ***Rudolph RE.** 2023. Soil census of Kentucky high tunnels reveals statewide distribution of two *Meloidogyne* species. Plant Health Progress <https://doi.org/10.1094/PHP-05-23-0052-S>
2. Faske T, Mueller J, Becker JO, Bernard E, Bradley C, Bond J, Desaegeer J, Eisenback J, Grabau Z, Hu J, Kemerait R, Koehler A, Lawrence K, Mehl H, **Rudolph RE,** Sikora E, Thomas S, Walker N, Wheeler T, Wrather J, Ye W, Zhang L. 2023. Summarized distribution of the southern root-knot nematode, *Meloidogyne incognita*, in field crops in the United States. Plant Health Progress. <https://doi.org/10.1094/PHP-04-23-0031-BR>
3. ~Bajek V, ***Rudolph RE.** 2023. Managing southern root-knot nematode in Kentucky high tunnels using grafted tomato. HortScience 58(6):704-713. <https://doi.org/10.21273/HORTSCI17141-23>

d) video

1. Steps for Successful Transplanting:

- https://www.youtube.com/watch?v=5KH_e8ONw3Y
2. How to Solarize Soil: <https://www.youtube.com/watch?v=LB2G3E0OPsU>
 3. The Benefits of Soil Solarization:
<https://www.youtube.com/watch?v=DH41Y-8IdNk>
 4. High Tunnel Management for Beginners:
<https://www.youtube.com/watch?v=fIZ2EipPsHM>
 5. Weed Management Options in High Tunnels:
<https://www.youtube.com/watch?v=albnAhAUfUQ>
 6. Preparation of Newly Installed High Tunnels:
<https://www.youtube.com/watch?v=JbBBWyI2SDM>
 7. Post-harvest Management of Acorn Squash: https://youtu.be/T25cdS_PVwg
 8. Lettuce Drop Disease in High Tunnel Lettuce Production:
<https://youtu.be/T3ydsLoUG5E>
 9. Insect Pest Monitoring and Management in High Tunnel Cut Flower Production: <https://youtu.be/3uLYI4ygIZ0>

- 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

N/A

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

N/A

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 nothing currently, two high tunnels to be constructed
 - b) organic production systems – not involved with
 - c) small-scale production systems – sweet potato production, blueberry and ribes trials to be planted in 2024, heirloom green beans, pawpaw production
 - d) biodegradable mulches – not involved with this

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 – tree and nut grafting, medicinal plant production
 - b) webinars -
 - c) print publications – wild plant foraging, dandelion foraging – submitted for publication
 - d) video
 - e) field days – pumpkin days (pre-K to 1st grade ~800 participants)
 - f) demonstrations – hops planting, hazelnut planting, pollination garden,
 - g) social media promotion of events/use of Facebook live – all our events are promoted on Facebook.

3. Please **list** current activities in your state related to **reporting specialty crop prices** and development of **decision aids** regarding:
 - a) farmers markets – farmer consulting
 - b) produce auctions - farmer consulting
 - c) farm to school/institution – farmer consulting
 - d) retail
 - e) community supported agriculture – farmer consulting
 - f) direct-to-buyer – farmer consulting
 - 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: Mary Rogers

University: University of Minnesota

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.

- I. 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

Current Projects Addressing Objectives B&C

1. Project title: On-Farm Integration of Organic Management of Spotted-wing drosophila in Fruit Crops

Synopsis: We are continuing our work with multi-state team to integrate compatible organic management approaches with biological control, monitoring, non-chemical controls, and conservation practices. This approach will enhance adoption of integrated pest management, maintain crop quality, and support profitable berry production while developing opportunities to reduce dependence on insecticides. We will pair these short-term goals to address immediate needs, with outreach and training to build an organic literate extension workforce.

Collaborators & Funding: Fanning, P, Rogers, M, Isaacs, R, Lee, J, Sial, A, Daane, K, Liburd, O, Rodriguez-Soana, C, Walton, V, Zalom, F, Chiu, J, Beers, E, Gomez, M. On-Farm Integration of Organic Management of Spotted-wing drosophila in Fruit Crops. USDA OREI. 09/01/2022-8/31/2025.

Rogers, M, Burkness, E. Management of SWD in small fruit with botanical-based repellents and classical biological control. MDA SCBG. 02/01/2023-1/31/2025.

2. Project title: Transitioning to Organic Day-Neutral Strawberry Production in the Upper Midwest- A Systems Approach.

Synopsis: Researchers at the University of Minnesota and University of Wisconsin on a multi-disciplinary project (horticulture, entomology, plant pathology, applied economics) to implement a systems approach to overcome challenges faced by growers transitioning to organic strawberry

production, aiming to increase and sustain organic day-neutral strawberry production in the Upper Midwest. USDA ORG, 2021-2024.

Collaborators & Funding: Atucha, A., Guedot, C, Holland, L, Rogers, M. Transitioning to organic day-neutral strawberry production in the Upper Midwest- A systems Approach. USDA ORG. 09/01/2021-5/31/2024.

- 3. Project title:** Advancing Spotted-Wing Drosophila Sustainable Management Techniques for Strawberries in Minnesota.

Synopsis: Currently there is little understanding of the management or economic impact of SWD on day neutral (DN) strawberries, a crop with high statewide economic value. Although there has been an increase in research on SWD management, little research has focused on strawberry specifically. The objectives of this research and outreach project are: 1) test cultural and behavioral-based management strategies (field sanitation, botanical-based repellants, and weekly rotation of OMRI microbial-based insecticides) for SWD control and cost effectiveness; 2) facilitate strawberry demonstrations and learning opportunities for growers alongside the Hmong American Farmers Association (HAFA); 3) develop case studies with individual farmers to gather information about strawberry production, pest control and profitability. NC SARE R&E, 2021-2024.

Collaborators & Funding: Rogers, M, DiGiacomo, G, Klodd, A, Hang, J. Advancing Spotted-Wing Drosophila Sustainable Management Techniques for Strawberries in Minnesota. NC SARE R&E. 11/01/2021-11/01/2024.

- 4. Project title:** Investigating Spread and Sustainable Management Practices for the Invasive Swede Midge in Minnesota.

Synopsis: Swede midge (SM) is a relatively new invasive pest of brassica vegetables that was first detected in MN in 2016. SM infestations are currently limited to urban and community gardens in metropolitan St. Paul and Minneapolis. This project includes investigating the extent of swede midge spread in Minnesota; find sustainable, non-pesticidal methods to prevent swede midge damage to broccoli crops; and prepare commercial growers to respond to this emerging pest. MN Dept. of Ag. Specialty Crop Block Grant, 2021-2024.

Collaborators & Funding: Tong, C, Rogers, M, Schuh, M. Investigating Spread and Sustainable Management Practices for the Invasive Swede Midge in Minnesota. MDA SCBG. 11/01/2021-06/01/24.

- 5. Project title:** On farm evaluations of novel methods to increase garlic marketable yield.

Synopsis: Small-acreage, local vegetable farms provide healthful food, taxable income, and ecosystem services to their communities. This project seeks to help sustain these farms by improving the yield of hardneck garlic, an economically important crop grown on many Minnesota vegetable farms. The

project has both preharvest and postharvest components. In the preharvest experiment, an adaptation of a vernalization method used by southern USA garlic farmers that has shown promise in increasing garlic bulb size in Minnesota will be tested on three Minnesota farms. In the postharvest experiment, on-farm and laboratory-controlled postharvest storage will be compared to determine how well storage temperature recommendations translate to actual situations and how postharvest storage temperatures affect garlic shelf-life at market. The project has two objectives: 1) determine how to adapt vernalization practices used in the southern USA to grow garlic, and test the practice on three Minnesota farms with different varieties of hardneck garlic, and 2) learn how well postharvest storage recommendations translate to actual farming situations and how on-farm postharvest practices affect shelf-life at market.

Collaborators & Funding: Tong, C., and Rosen, C. On farm evaluations of novel methods to increase garlic marketable yield. NC SARE Partnership. 2023-2024.

Current Projects Addressing Objectives B&C

- 1. Project title:** Exploration of Shredded Cardboard as a Mulch and Compost Resource to Improve Soil Health and Water Management by Urban Growers in the Twin Cities.

Synopsis: Mulching is utilized by urban growers to build soil health, mitigate weed pressure, and reduce water use. Despite these benefits, many mulching materials have become too expensive for growers to purchase and transport in the quantities required for an urban garden or farm. Our community-university research team identified shredded cardboard as a potential new mulch material that is accessible and affordable because of the increase in cardboard packaging for home delivery during the COVID-19 pandemic. The overall objective of this collaborative project is to assess the performance of shredded cardboard mulch in urban farms and gardens.

Collaborators & Funding: Jelinski, N, Rogers, M, Hakanson, K. Exploration of Shredded Cardboard as a Mulch and Compost Resource to Improve Soil Health and Water Management by Urban Growers in the Twin Cities. NC SARE R&E. 01/01/2023-05/31/-2025.

- II. 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

Web resources:

UMN Commercial Fruit & Vegetable Extension: <https://extension.umn.edu/commercial-fruit-and-vegetable-growers>

UMN Fruit & Vegetable Newsletter: <https://blog-fruit-vegetable-ipm.extension.umn.edu>

UMN Grape Breeding & Enology: <http://enology.umn.edu>

UMN Extension IPM: <https://www.mnipm.umn.edu>

UMN Fruit Research: <http://fruit.umn.edu>

UMN VegEdge: <https://www.vegedge.umn.edu>

UM FruitEdge: <https://www.fruitedge.umn.edu>

For Food Entrepreneurs: <https://extension.umn.edu/food-safety/food-entrepreneurs>

Field days:

- Organic Fruit & Vegetable Field Day (annually in July, St. Paul campus)
- Annual Grape Field Day
- Farm tours & educational networking events with [Twin Cities Metro Growers Network](#) (~3-6 events annually)

Video:

<https://smfarm.cfans.umn.edu/covered-crops-between-raised-vegetable-beds>

In-person trainings:

Head to the Kitchen Workshop, part 1 - a training for entry-level food entrepreneurs and small-scale farmers/growers who want to begin planning a value-added food processing business - *this is in final review and then off to be branded, etc. A pilot workshop was held in June and is now modified based on lessons learned. Here is the program description and I can share the supporting materials if needed:* [Head to the Kitchen workshop, part 1](#)

III. 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

In partnership with Gigi DiGiacomo, researcher in the Dept. of Applied Economics, we have developed case studies on economics of day-neutral strawberry production (in publication) as well as decision aids for managing SWD in small fruit (<https://fruitedge.umn.edu/spotted-wing-drosophila/calculating-returns-swd-control-measures>)

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.

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

These are the current research projects I am aware of at NC State and NC A&T State University:

- Adapting Bambara Groundnuts to North Carolina (NC State University)
- Optimizing Truffle Orchard Evaluation for Growers (NC State University)
- Pest Management in Organic Sunflower Production (NC State University)
- Growing Sycamore as a Harvestable Crop (NC State University)
- Boosting Microgreen Production via Science Driven Approaches (NC A&T State University)
- Developing Agronomic Management Strategies for Fiber Hemp (NC State University)
- Cultivating Grower-Buyer Partnership for Ethnic Crops (NC A&T State University)
- De-risking Early Adoption of Sesame Production for NC Farmers (NC State University)
- Fostering Cigar Wrapper Tobacco Production in North Carolina (NC State University)
- IPM for Vegetable Amaranths in NC (NC A&T State University)
- Rice Development in North Carolina (NC State University)
- New Hop Varieties for North Carolina (NC State University)
- American Ginseng: Increase Bed Production and Conservation (NC State University)
- Forest Farming Woodland Botanicals (NC State University)
- NC Grown Chinese Medicinal Herbs (NC State University)
- A Multifaceted Approach to Production and Pest Management in Organic Sweetpotato Systems (NC State University)
- Tomato Organic Management and Improvement Project (TOMI): Part II (NC 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) in-service trainings for Extension personnel-
 - Micro-greens production and marketing
 - Ginger and turmeric production
 - Forest farming of botanicals, mushrooms, and edibles
 - b) webinars
 - Series of webinars, multi-state effort-on forest products-syrups, ramps, ginseng, goldenseal, mushrooms
 - c) print publications
 - d) video
 - e) field days
 - Black Perigord truffle production field day
 - Pawpaw field day
 - Hops morning tour
 - Sesame field days
 - Organic commodities field day-highlighting organic sunflowers and soybeans
 - Research station field day focused on hops, hemp, Chinese medicinal herbs, tomatoes, ornamentals, and apples
 - f) workshops
 - Medicinal herb grower and buyer event
 - Future opportunities with hemp
 - Medicinal herb post-harvest handling
 - 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: Margarita Velandia, Annette Wszelaki, and Rachel Painter

University: 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
 - *Impact of Micro- and Nanoplastic Pollution from Agricultural Plastics on Soils, Nearby Waterways, and their Related Ecosystems.*
 - *Exploring The Feasibility of End of Production Regimens to Improve Leafy Green Nutritional Content, Appearance, And Post-Harvest Longevity.*
 - *Alley Cropping Agroforestry as a Climate Change Resiliency Strategy for Vegetable Production in the Southeastern US.*
 - *Evaluation of Soil Solarization as a Sustainable Management Method in Upper Southeast High Tunnels for Pests, Pathogens, and Weeds.*
 - *Multi-state Squash Hunger: Spaghetti Squash Variety Trial*
 - *Chickpeas as an Alternative Specialty Crop and Storage Crop for Tennessee*
 - *Effects of Biostimulants on Yield and Postharvest Quality of Two Popular Southeastern Strawberry Varieties in an Organic Production System*

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) **Painter, R., and A. Wszelaki.** Microgreens and Garlic. March 10, 2023, Memphis, TN, Specialty Vegetable Crops Workshops.
 - 2) **Painter, R., and A. Wszelaki.** Microgreens and Garlic. March 23, 2023, Gallatin, TN, Specialty Vegetable Crops Workshops.
 - 3) **Painter, R., and A. Wszelaki.** Microgreens and Garlic. March 30, 2023, Jonesborough, TN, Specialty Vegetable Crops Workshops.
 - 4) **Painter, R., and A. Wszelaki.** Microgreens and Garlic. December 13, 2022, Pulaski, TN, Specialty Vegetable Crops Workshops.
 - 5) **Painter, R., A. Rihn, and C. Scott.** Production and Marketing of Cut Flowers.

- January 23, 2023. Lebanon, TN. Specialty Crop Block Grant Workshops.
- 6) **Painter, R.**, A. Rihn, and C. Scott. Production and Marketing of Cut Flowers. January 25, 2023. Jackson, TN. Specialty Crop Block Grant Workshops.
 - 7) **Painter, R.**, A. Rihn, and C. Scott. Production and Marketing of Cut Flowers. January 27, 2023. Maryville, TN. Specialty Crop Block Grant Workshops.
 - 8) **Painter, R.**, D. Lockwood. Marketing Grapes and Wine in Tennessee. February 9, 2023. Jackson, TN, Vines to Wines Agent Training.
 - 9) **Painter, R.** Marketing Value-Added Products Direct to Consumer. February 15, 2023. Nashville, TN, Sustainable Agriculture Agent Training.
 - 10) **Painter, R.** Marketing Grapes and Wine in Tennessee. February 16, 2023. Franklin, TN, Pick Tennessee Conference.
 - 11) **Painter, R.**, A. Rihn, and C. Scott. Production and Marketing of Cut Flowers. February 18, 2023. Franklin, TN. Pick Tennessee Conference.
 - 12) **Painter, R.**, and D. Lockwood. Production and Marketing of Blueberries, Elderberries, Paw Paws, and Persimmons. March 2, 2023, Greeneville, TN, Specialty Vegetable Crops Workshops.
 - 13) **Painter, R.**, and D. Lockwood. Production and Marketing of Blueberries, Elderberries, Paw Paws, and Persimmons. March 6, 2023, Spring Hill, TN, Specialty Vegetable Crops Workshops.
 - 14) **Painter, R.**, and D. Lockwood. Production and Marketing of Blueberries, Elderberries, Paw Paws, and Persimmons. March 9, 2023, Bolivar, TN, Specialty Vegetable Crops Workshops.
 - 15) **Painter, R.** Building Farm to School Relationships. April 11, 2023. Chattanooga, TN. Farm to School Institute Training.
 - 16) **Painter, R.** Identifying and Connecting with Target Customers for Direct Sales. May 25, 2023. Carthage, TN, Women in Agriculture Summit.
 - 17) **Painter, R.**, L. Humpal, M. Horsman, T. Reeder, and T. Dugger. Farmers Market and Specialty Crops Agent Training. June 6, 2023. Franklin, Tennessee.
 - 18) **Painter, R.** Marketing Hops and Extension Resources for Hops Producers. June 13, 2023. Memphis, TN. Tennessee Hops Week.
 - 19) **Painter, R.** Marketing Hops and Extension Resources for Hops Producers. June 15, 2023. Knoxville, TN. Tennessee Hops Week.
 - 20) **Painter, R.** and D. Lockwood. Producing and Marketing Hops in Tennessee. June 8, 2022, Franklin, TN, Farm to Tap Workshop.
 - 21) **Painter, R.**, D. Lockwood. Marketing Grapes and Wine in Tennessee. August 23, 2022. Madisonville, TN, Vines to Wines Agent Training.
 - 22) **Painter, R.** Starting a Successful Farmers Market. November 14, 2022, Madisonville, TN.

b) webinars

- 1) **Velandia, M.** How to use University of Tennessee Fruit and Vegetable Budgets? Horticulture Hot Topics training. Extension Agent Training. September 26, 2023.
- 2) **Wszelaki, A.**, D. Lockwood, and Z. Hansen. Summer Fruit and Vegetable Outlook, Hort Hot Topics Extension Agent Training. April 27, 2023.
- 3) **Wszelaki, A.**, and V. Sykes. Chickpeas as an Alternative Crop. Hort Hot Topics Extension Agent Training. June 29, 2023.
- 4) **Painter, R.**, and N. Bumgarner. Production and Marketing of Microgreens in

- Tennessee. Hort Hot Topics Extension Agent Training. September 27, 2022.
- 5) **Painter, R.** and M. Leffew. Marketing Value Added Products. Value Added Agriculture Insights Agent Training. January 17, 2023.
 - 6) Humpal, L., E. Bell, and **R. Painter**. Recordkeeping for Agri-Businesses. Farmers Market Vendor Bootcamp Training. January 17, 2023.
 - 7) Trout, B., and **R. Painter**. Sales Tax for Farmers Market Vendors. Farmers Market Vendor Bootcamp Training. January 24, 2023.
 - 8) Haire, K. and **R. Painter**. Best Practices for Marketing at Farmers Markets. Farmers Market Vendor Bootcamp Training. January 26, 2023.
 - 9) Rihn, A. and **R. Painter**. Consumer Preferences at Farmers Markets. Farmers Market Vendor Bootcamp Training. January 31, 2023.
 - 10) **Painter, R.**, M. Richmond, and D. Lockwood. Hops Production and Marketing. Farm to Tap Educational Session. March 7, 2023.
 - 11) **Painter, R.** and Anni Self. Plant Licensing for Cut Flower Producers. Cut Flower Video Series. June 5, 2023.
 - 12) **Painter, R.** and B. Trout. Sales Tax for Cut Flower Producers. Cut Flower Video Series. June 5, 2023.
 - 13) **Painter, R.** Developing a Marketing Mix for Cut Flower Producers in Tennessee. Cut Flower Video Series. July 31, 2023.
 - 14) **Painter, R.** Writing Marketing Plans for Cut Flower Producers in Tennessee. Cut Flower Video Series. July 31, 2023.
 - 15) **Painter R.** and N. Underwood. Sourcing Specialty Crop Ingredients Locally. Tennessee Sustainable Spirits Webinar Series. August 1, 2023.
- c) print publications
- 1) Fulcher, A., A. L. Rihn, L. A. Warner, A. V. LeBude, **M. Velandia**, N. R. Bumgarner, and S. M. Schexnayder. 2023. The Role of Automation in Addressing the Nursery Industry Labor Shortage, Part I: Current Automation Adoption. UT Extension Publication, W1147.
 - 2) Ernst, M. and **R. Painter**. 2023. Commercial Production of Elderberry. Center for Crop Diversification Crop Profile. CCD-CPA-CP-6, CCD-WVU-CP-1, ANR-Hort-23-001.
 - 3) **Painter, R.** and K. Chippendale. 2023. A Guide for Developing a Farmers Market in Tennessee. UT Extension Publication, PB 1918.
 - 4) **Painter, R.** 2023. Connecting with Customers at Farmers Markets: Direct Marketing. CPA Info 426.
 - 5) **Painter, R.** 2023. Marketing for Value-Added Agricultural Operations: Direct Marketing. CPA Info 424.
 - 6) **Velandia, M.**, and Z. R. Hansen., **A. L. Wszelaki**, and T. Wolaver. 2022. Sample Budget for Large-Scale Bell Pepper Operations and the Impact of Phytophthora Blight on Farm Revenue and Costs - 2022. University of Tennessee Extension, W831.
 - 7) **Velandia, M.**, Z. R. Hansen, **A. L. Wszelaki**, and T. Wolaver. 2022. Sample Budget for Small-Scale Commercial Tomato Operations. University of Tennessee Extension, W1125.
 - 8) Warner, L.A., A. L. Rihn, A. Fulcher, S. M. Schexnayder, A. V. LeBude, L. Nackley, **M. Velandia**, and J. Altland. 2022. Addressing Labor Needs by Understanding

Grower Perceptions about Adoption of Automated Nursery Technologies: A Resource for US Extension Professionals. University of Florida IFAS Extension Publication, AEC764.

- 9) **Painter, R., and A. Wszelaki.** 2022. Chronicling Specialty Crop Marketing in Tennessee: Focus on Garlic. CPA Info 413.
 - 10) **Painter, R., and A. Wszelaki.** 2022. Chronicling Specialty Crop Marketing in Tennessee: Focus on Microgreens. CPA Info 414.
 - 11) **Painter R.** and D. Lockwood. 2022. Chronicling Specialty Crop Marketing in Tennessee: Focus on Blueberries. CPA Info 411.
 - 12) **Painter R.** and D. Lockwood. 2022. Chronicling Specialty Crop Marketing in Tennessee: Focus on Elderberries. CPA Info 410.
- d) video
- e) field days
- 1) Tuesday Twilight Tours at the UT Organic Crops Unit- monthly tours, from August to November, of projects and initiatives being conducted at the farm
 - 2) Steak and Potatoes Field Day at the Plateau and Research Education Center Crossville Unit – presentations at the field day by **Rachel Painter** included Connecting with Customers at Farmers Markets and Cut Flower Production and Marketing.
- f) Demonstrations
- 1) **Painter, R., D. Lockwood, and A. Counce.** Harvesting Hops and Community Connections at the UT East Tennessee Research and Education Plant Sciences Unit Hopyard Research Plot. August 25, 2023.
- g) social media promotion of events/use of Facebook live
Facebook @UTProduce
Instagram @ut_vsa
Facebook @CenterforProfitableAgriculture
Instagram @tnvalueaddedag
3. Please **list** current activities in your state related to **reporting specialty crop prices** and development of **decision aids** regarding:
- a) farmers markets
Tennessee Farmers Markets Price Reports
<https://www.uky.edu/ccd/pricereports/tnfm>
 - b) produce auctions
 - c) farm to school/institution
 - a. Tennessee Farm to School Resources [tn.gov/education/districts/snp-resources](https://www.tn.gov/education/districts/snp-resources)
 - 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

Denton, R., **M. Velandia**, J. N. Yenerall, K. L. DeLong, C. Trejo-Pech, X. Chen, K. Tanaka, K. Rignall, and S. M. Schexnayder. 2023. Evaluating Factors Influencing Tennessee and Kentucky Farmers' Willingness to Sell Produce Through Fresh Stop Markets. *Frontiers in Sustainable Food Systems*. (accepted).

Grants:

- Butler, David; **Wszelaki, Annette; Velandia, Margarita**; Shekoofa, Avat; Trejo-Pech, Carlos. "Alley cropping agroforestry as a climate change resiliency strategy for vegetable production in the southeastern US." Southern Region SARE Program – University of Georgia. Planned Performance Period: 04/2023-03/2026.
- Rudolph, Rachel; Haramoto, Erin; Gauthier, Nicole; Larson, Jonathan; **Wszelaki, Annette**; Hansen, Zach; **Velandia, Margarita**. "Evaluation of Soil Solarization as a Sustainable Management Method in Upper Southeast High Tunnels for Pests, Pathogens, and Weeds." Southern Region SARE Program – University of Georgia. Planned Performance Period: 04/2023-03/2026.
- Roches, Amy; Chadwell, Jane; **Velandia, Margarita**; Wolaver, Ty; and Wright, Hannah. "Labor Considerations for Tennessee Farmers: Strategies to Securing and Retaining Quality Farm Labor." Southern Extension Risk Management Education. Planned Performance Period: 04/2023-09/2024.
- Walters, Kellie; Sams, Carl; **Velandia, Margarita**; Rihn, Alicia; and Trejo-Pech, Carlos. "Exploring The Feasibility of End Of Production Regimens to Improve Leafy Green Nutritional Content, Appearance, And Post-Harvest Longevity," USDA - NIFA. Planned Performance Period: 06/2023-05/2028.
- Bumgarner, Natalie; **Painter, Rachel**; Lockwood, David; and Rose, Melody. Supporting Blueberry Growers and Educators in Tennessee. 2023. Southern Region Small Fruit Consortium. Planned Performance Period: 3/1/2023 – 2/29/2024.
- Hughes, David; Rihn, Alicia; and **Painter, Rachel**. Feasibility of a Winery Business Development Center in Tennessee. Tennessee Wine and Grape Board. Planned Performance Period: 2/01/2023- 12/31/2023.
- Bumgarner, Natalie; Rihn, Alicia; **Painter, Rachel**; and Scott, Celeste. Equipping Cut Flower Growers to Expand Their Markets in Tennessee. Tennessee Department of Agriculture, Specialty Crop Block Grant. Planned Performance Period: 12/01/2023- 8/01/2026.

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
 - *Published, scholarly articles*
 - Rauter, S., M. Stock, B. Black, D. Drost, and X. Dai. Overwintering Improves Ranunculus Cut Flower Production in the US Intermountain West. *Horticulturae*. 8(12): 1128. DOI: 10.3390/horticulturae8121128. <<https://www.mdpi.com/2311-7524/8/12/1128/htm>>.
 - (*Editor's Choice Article Award by Horticulturae*): Rauter, S., M. Stock, B. Black, D. Drost, and X. Dai. 2022. Anemone Cut Flower Timing, Yield, and Quality in a High-Elevation Field and High Tunnel. *Horticulturae*. 9(2):3390. DOI: 10.3390/horticulturae9010002. <<https://www.mdpi.com/2311-7524/9/1/2/pdf>>.
 - Lewis, M., M.N. Stock, B. Black, D. Drost, and X. Dai. 2023. High tunnel and field production of early-season peonies. *HortScience*. 58(4): 389-394. DOI: 10.21273/HORTSCI16942-22. <<https://journals.ashs.org/hortsci/view/journals/hortsci/58/4/article-p389.xml>>.
 - *In review, scholarly article on nutrient and disease management for dahlia*: Oliver, E., M. Stock, and C. Nischwitz. Nitrogen rate and virus incidence effects on cut flower production of dahlia. *Research Reports. J. Environ. Hort.*
 - *Funded grants*
 - Stock, M., N. Volesky, C. Nischwitz, K. Curtis, S. Hansen, and B. Scow. 2023. Expanding cut flower production education supports agricultural professionals and small farms. Western SARE Professional Development Program. \$99,979.00.
 - Stock, M., J. Gunnell, C. Reid, V. Xiong, N. Volesky, and C. Nischwitz. 2023. Increasing water-wise cut flower production in Utah. USU Extension Grants Program. \$29,966.66
 - Nischwitz, C., M. Stock, S. Hansen, and B. Scow. 2023. Identification and management of cut flower diseases and insect pests in Utah. USU Extension Grants Program. \$29,454.
 - Stock, M. and N. Volesky. 2023. Producing cut flowers through drought: evaluating early-season freesia followed by water-wise annuals. Association

of Specialty Cut Flower Growers Research Foundation. \$16,250.00.

- b) organic production systems
 - NA
- c) small-scale production systems
 - *Scholarly articles*
 - o *In revision, scholarly article on soil contaminant management for urban farming*: Oliver, E., M. Stock, P. Grossl, and G. Cardon. An soil survey of trace elements and organic contaminants on urban farms and community gardens in Northern Utah. Urban Ag Reg Food Sys.
- d) biodegradable mulches
 - NA

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
 - Utah Flower Day, 2nd annual, August 5, 2023
 - Stock, M. 2023. High tunnels for cut flower production. High Tunnel Fruit, Vegetable, and Cut Flower Workshop. University of Idaho. Caldwell, ID. 6 Apr.
 - Stock, M. 2023. Soil and water considerations for high tunnel production. High Tunnel Fruit, Vegetable, and Cut Flower Workshop. University of Idaho. Caldwell, ID. 6 Apr.
 - Stock, M. 2023. High tunnels for cut flower production. High Tunnel Fruit, Vegetable, and Cut Flower Workshop. University of Idaho. Rigby, ID. 23 Mar.
 - Stock, M. 2023. Soil and water considerations for high tunnel production. High Tunnel Fruit, Vegetable, and Cut Flower Workshop. University of Idaho. Rigby, ID. 23 Mar.
 - Stock, M. 2023. Tunnels for improving timing, yield, and quality of five cut flowers. ASCFG Research Foundation Webinar Series. 16 May.
 - Stock, M. 2023. Soil Health. Certified Naturally Grown. Farm school: Foundations of Crop Production. <https://naturallygrown.org/event/foundations-of-crop-production-soil-health/>. 8 Feb.
 - Stock, M. 2023. Tunnels: Maximizing season extension for cut flowers on limited land. Cornell University Cooperative Extension. 2023 Winter Cut Flower Webinar Series. 30 Jan.
 - Collaboration with UK at the Fruit and Vegetable Conference: Cut Flowers Session (I presented 4 of the 8 presentations).
 - o Stock, M. 2023. Cut flower fertility dos and don'ts. Kentucky Fruit and Vegetable Conference: Cut Flowers Session. Bowling Green, KY. 04 Jan.
 - o Stock, M. and R. Ward. 2023. Record keeping: is your crop worth the space? Kentucky Fruit and Vegetable Conference: Cut Flowers Session. Bowling Green, KY. 04 Jan.
 - o Stock, M., K. Curtis, and the Utah Cut Flower Farm Association. 2023. What we learned from a florist survey. Kentucky Fruit and Vegetable Conference: Cut Flowers Session. Bowling Green, KY. 04 Jan.
 - o Stock, M. 2023. Designing an effective on-farm workshop. Kentucky Fruit

and Vegetable Conference: Cut Flowers Session. Bowling Green, KY. 04 Jan.

b) Webinars

- USU Urban and Small Farms Conference, Cut Flowers Session & Vegetable Session (videos of these presentations are on YouTube)
 - Stock, M. 2023. Winter Squash Variety Trials @ USU. Urban and Small Farms Conference. Vegetable Session. Recorded Zoom Webinar. Utah State University Extension YouTube Channel.
<<https://www.youtube.com/watch?v=hCta9o0tLZA>>. Recorded 24 Feb, posted 9 Mar.
 - Curtis, K. and M. Stock. 2023. Florist Market Needs and Preferences. Urban and Small Farms Conference. Cut Flowers Session. Recorded Zoom Webinar. Utah State University Extension YouTube Channel.
<<https://www.youtube.com/watch?v=iqrbYW2OaCU>>. Recorded 23 Feb, posted 9 Mar.
 - Nischwitz, C. and M. Stock. 2023. CSI Cut Flower Farm: Disease and Insect Cases from 2022. Urban and Small Farms Conference. Cut Flowers Session. Recorded Zoom Webinar. Utah State University Extension YouTube Channel.
<<https://www.youtube.com/watch?v=mjIwYTsX9wk>>. Recorded 23 Feb, posted 9 Mar.
 - Rauter, S. and M. Stock. 2023. Cut Flower Session Intro and USU Trials: Improving Mountain West Anemone and Ranunculus Production. Urban and Small Farms Conference. Cut Flowers Session. Recorded Zoom Webinar. Utah State University Extension YouTube Channel.
<<https://www.youtube.com/watch?v=qmBECRrzcXg>>. Recorded 23 Feb, posted 9 Mar.

c) print publications

- *Refereed USU Extension Fact Sheets:*
 - Curtis, K. and M. Stock. 2023. Utah Florist Preferences for Local Cut Flowers. USU Extension Fact Sheet. Horticulture. Paper 2344.
https://digitalcommons.usu.edu/extension_curall/2344/ &
<<https://extension.usu.edu/apec/research/florist-preferences-for-local-cut-flowers>>.
 - Stock, M., A. Pratt, C. Nischwitz, E. Oliver, K. Wagner, and N. Volesky. 2023. Dahlia Cut Flower Production in Utah. USU Extension Fact Sheet. Horticulture. Cut Flower/01. Paper 2320.
<https://digitalcommons.usu.edu/extension_curall/2320/>.
 - Chelinski, M., P. Grossl, and M. Stock. 2023. Polycyclic Aromatic Hydrocarbon (PAH) Contamination in Urban Soils: Testing and Management. USU Extension Fact Sheet. Soils/01. Paper 2336.
<https://digitalcommons.usu.edu/extension_curall/2336/>.
 - Rauter, S. and M. Stock. 2023. Anemone Cut Flower Production in Utah. Horticulture. USU Extension Fact Sheet. Horticulture/CutFlower/01. Paper 2334.
<https://digitalcommons.usu.edu/extension_curall/2334/>.
 - Rauter, S. and M. Stock. 2023. Ranunculus Cut Flower Production in Utah. Horticulture. USU Extension Fact Sheet. Horticulture/CutFlower/01. Paper 2333.
<https://digitalcommons.usu.edu/extension_curall/2333/>.

- Rauter, S., M. Stock, R. Ward. 2023. Anemone Cut Flower Production Budget, One Field, Northern Utah, 2022. Horticulture. USU Extension Fact Sheet. Horticulture/CutFlower/01. Paper 2322. <https://digitalcommons.usu.edu/extension_curall/2322/>.
- Rauter, S., M. Stock, R. Ward. 2023. Ranunculus Cut Flower Production Budget, One Field, Northern Utah, 2022. Horticulture. USU Extension Fact Sheet. Horticulture/CutFlower/01. Paper 2321. <https://digitalcommons.usu.edu/extension_curall/2321/>.
- Rauter, S., M. Stock, and R. Ward. 2022. Anemone Cut Flower Production Budget, One High Tunnel, Northern Utah, 2022. Horticulture. USU Extension Fact Sheet. Horticulture/CutFlower/01. Paper 2300. <https://digitalcommons.usu.edu/extension_curall/2300/>.
- Gleeson, S., C. Nischwitz, and M. Stock. 2022. Dahlia mosaic virus on dahlia. USU Extension Fact Sheet. Integrated Pest Management. Paper 2302. <https://digitalcommons.usu.edu/extension_curall/2302/>.
- Non-refereed publications:
 - Stock, M., O. Stewart, B. Scow, and V. Xiong. 2023. Freesia is a risky option for early high tunnel production in the US Mountain West. The Cut Flower Quarterly. Fall 2023. Association of Specialty Cut Flower Growers, Inc. *In press*.
 - Martens, J. Soil health for cut flowers. 2023. The Cut Flower Quarterly. Fall 2023. The Association of Specialty Cut Flower Growers. Interview with Melanie Stock and others. Interview on August 3, 2023. *In press*.
 - David, L. 2023. How to water your garden wisely in the summer heat. Interview with Melanie Stock and others. The Washington Post. Interview on July 18, 2023; published August 3, 2023. <<https://www.washingtonpost.com/home/2023/08/03/water-efficient-summer-heat-garden/>>.
- d) Video
 - *Beginner Urban Farmer Training Online Course*: Muntz, H., R. Ward, A. Whyte, S. Hansen, A. Walker-Bravo, and C. Zesiger, and M. Stock. 2023. Beginner Urban Farmer Training. USU Extension. Six modules. <<https://extensioncourses.usu.edu/product/beginner-urban-farmer-training/>>.
- e) field days
 - Ward, R. and M. Stock. 2023. Whole-farm budget workshop. USU Urban and Small Farms Conference Field Day, Cut flowers session. Kaysville, UT, 28 June.
- f) Demonstrations
 - None
- g) social media promotion of events/use of Facebook live
 - Instagram, @usu_smallfarms: ~3,100 followers, 60 posts (items of content) in 2023.

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 – wholesale

- Rauter, S., M. Stock, and R. Ward. 2023. Anemone Cut Flower Budget for One High Tunnel. 2022 Utah Agricultural Statistics and Utah Department of Agriculture and Food Annual Report, pages 76-78. Salt Lake City, UT. <<https://ag.utah.gov/wp-content/uploads/2023/01/2022-UDAF-Annual-Report-final-version.pdf>>.
- Rauter, S., M. Stock, and R. Ward. 2023. Ranunculus Cut Flower Budget for One High Tunnel. 2022 Utah Agricultural Statistics and Utah Department of Agriculture and Food Annual Report, pages 79-80. Salt Lake City, UT. <<https://ag.utah.gov/wp-content/uploads/2023/01/2022-UDAF-Annual-Report-final-version.pdf>>.

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

- a) consumer preferences
 - *Published scholarly article on florist marketing preferences:* Curtis, C. and M. Stock. 2023. Research Report: Growing a New Cut Flower Industry: Markets Needs and Preferences. Journal of Food Distribution Research, 54(1), 1-7. <https://www.fdrsinc.org/wp-content/uploads/2023/04/JFDR54.1_1_Curtis.pdf>.
- b) comparison of marketing channels
 - *USU Extension grant to study marketing channels of cut flowers:* Curtis, K., M. Stock, K. Wagner, C. Reid, V. Xiong, and C. Zesiger. 2023. Growing the Utah Cut Flower Market: Market Needs, Preferences, and Hurdles. USU Extension Grants Program. \$29,930.
- c) other

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

- Currently evaluating cantaloupe production high tunnels for 2023-24. This includes trellis vs. no trellis.
- Currently evaluating winter cabbage production in high tunnel for processor in southern WV in 2020-23. This includes spacing and plant population study.
- Evaluating landraces of West Virginia 'Mortgage Lifter' tomato for high tunnel production
- Evaluating insect exclusion nets for high tunnels.
- Evaluating tomato cultivars for high tunnel production.

b) Organic Production Systems

- Received a SARE Partnership Grant to evaluate commercial elderberry production in WV.
- Tomato breeding for *Septoria* leaf spot resistance (V. Benedita, PI) (M. Gallegly)
- Evaluating cider apple varieties (Mira Danilovich, PI)
- Evaluating plant-based dyes for organic textiles (J. Masters, 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
- Evaluation of asparagus as a U-Pik crop in WV (Specialty Crop Block Grant)
- Evaluation of pumpkin cultivars
- Evaluating management of bitter pit (M. Rahman, PI)
- Evaluation of paw paw cultivars (N Peterson PI)

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) Professional Development training for USDA-NRCS, Extension Educators and teachers related to high tunnel production
- 2) Training for veterans interested in agriculture related to high tunnel production.
- 3) Agriculture Workforce Training Program-4 classes related to high tunnel crop management

b) Webinars

- *AgBeats* (Biweekly integrated crop management updates)
- Nutrient Management/Crop Production Updates for High Tunnels-Winter Agriculture Dinner Meetings

Presentations at conferences:

- *High Tunnel Tomato Production*
- *Commercial Elderberry Production*
- *Fertigation of High Tunnel Crops*

c) Print Publications (all on-line now)

- Sequential Planting Guide for High Tunnel Crops

d) Conferences:

- 2023 West Virginia Small Farm Conference
- 2023 Mid-Ohio Vegetable Growers Conference

e) Field Days

- Organic Horticulture Farm Field Day (8/26/23)

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