

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

**Virtual Meeting
Friday, September 16th, 2022
10 a.m. to 2:15 p.m. EDT**

Participants and guests in attendance: Rachel Rudolph (Chair, University of Kentucky), Shawn Wright (Vice-Chair, University of Kentucky), Melanie Stock (Utah State University), 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), Wenjing Guan (Purdue University), Liz Maynard (Purdue University), Miranda Purcell (Purdue University), Lewis Jett (West Virginia University), Mathieu Ngouajio (National Institute of Food and Agriculture)

Agenda

- Rachel Rudolph (Kentucky) facilitated the meeting, which opened with introductions.
- Participants were given an update by Mathieu Ngouajio of the National Institute of Food and Agriculture (NIFA).
- 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, NIFA).

1. Ngouajio thanked SERA 45 participants who have submitted proposals to NIFA, and who have served as reviewers.
2. Although many employees left NIFA when the agency moved to Kansas City in 2019, NIFA is now close to being fully staffed.
3. All positions at NIFA have been approved to be fully remote.

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 an update on the project, which was started because some of the crops hadn't been looked at for a number of years and needed updated production and variety recommendations. The project was also started to evaluate crops that could be made available to food banks after the summer production season. Work on this project began in 2020, with participants from SERA 45 and the Southeastern Vegetable Extension Workers Group (SEVEW). Participation has grown each year, with 14 locations for acorn squash trials in 2022, including Tennessee, Kentucky, Indiana, Iowa, Minnesota, North Carolina, and Utah. There is a great deal of variability across states. The project is also looking at storage of the crops. The group discussed other crops they might consider for the trials, including cabbage and short-day onions in high tunnels.

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

1. The group discussed efforts to get a multistate Specialty Crop Block Grant since the 2021 SERA 45 annual meeting. Kentucky, Tennessee, and Purdue participants submitted a proposal in the fall of 2021 to study root knot nematode in high tunnels, but the proposal was not funded. The group discussed the situations in the participating states regarding Specialty Crop Block Grants. Several state departments of agriculture (Kentucky, Tennessee, and Indiana) had chosen not to be involved in the multistate Specialty Crop Block Grant Program, but the SERA 45 participants had submitted their proposal independently of a state department of agriculture.
2. Melanie Stock (UT) has worked as a consultant on a Kentucky Specialty Crop Block Grant (Tim Woods, PI) “Integrating Post-COVID Cut Flower Demand into Market Education.” Stock said the grant participants have met nearly every month via Zoom and have conducted webinars. Stock was a speaker for one webinar in the series, The Art and Science of Pricing, in April of 2022. Cut flower growers from Kentucky and Utah participated in the webinar. In December, Stock will be participating in extension workshops for cut flower growers as part of this grant.
3. Several SERA 45 participants collaborated on a proposal for an SCRI grant on high tunnels that did not receive funding. Wszelaki said the team is planning to regroup with the reviews they got from their proposal and will meet soon to begin preparing another proposal.
4. The group discussed SCRI planning grants. Wenjing Guan (IN) and Ajay Nair (IA) are among the collaborators on a planning grant looking at root knot nematode in watermelon production. Guan said she wants to organize a meeting this fall to discuss a proposal.

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

1. Margarita Velandia (TN) shared that Tennessee has resumed their farmers market price reports, which are posted on the University of Kentucky Center for Crop Diversification (CCD) website. These price reports were stopped in 2020-21 due to COVID. Tennessee is using CCD standards – reporting a range of prices, and including volume based on the number of vendors selling a product. Because extension agents helping with the price reporting were overwhelmed, Tennessee began reporting prices every two weeks rather than weekly. Velandia said Tennessee has started collecting cut flower prices at farmers markets and noted a significant increase in the number of vendors selling cut flowers. Prices for cut flowers are reported only from urban farmers markets, as the rural markets do not have cut flower vendors. Velandia said that prices at Tennessee farmers markets were steady from 2015-2019, but in 2022, she has seen an increase in prices, which could be due to rising input costs.
2. Velandia said she and Wszelaki have been updating decision aid tools such as their tomato budget and have created a decision tool to accompany a 2019 large-scale pepper budget, both of which they hope to release in the next month or so. Tennessee also has a new blackberry budget that was released in January.
3. Velandia suggested collaborating on the CCD’s three-year farmers market price report publications, to look at similarities and differences across states.
4. Velandia and Christy Cassady (KY) discussed the need to update enterprise budgets, work

that is often dependent on grant funds to hire help as it is very labor-intensive. Velandia suggested collaborating on budgets, including controlled environment horticulture, and mentioned a request for a microgreens budget, which could be developed as a regional budget.

5. Brett Wolff (KY) shared that the Kentucky farmers market price report had as many as 14 markets reporting in 2019 but had fewer markets reporting during the pandemic. In 2022, as many as 10 markets in KY have been reporting. The CCD is also continuing to report prices from Kentucky produce auctions.
6. Wolff said a 2021 KY Specialty Crop Block Grant is allowing the CCD to continue its direct marketing curriculum, including topics like social media analytics and website building.

E. 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. Velandia said Alicia Rihn at the University of Tennessee, a relatively new faculty member in the Department of Agriculture and Resource Economics, has an eye tracking lab to identify what consumers are looking at when they look at products. Velandia plans to invite Rihn to join SERA 45.
2. Wolff directed the group to information about an Agricultural Marketing Service Local Food Systems Project that the University of Kentucky and Colorado State, among others, have been involved in since the onset of the pandemic. Part of that project was a consumer food survey that offers interesting insights.

<https://lfscovid.localfoodeconomics.com/consumer-food-insights/>

The group briefly discussed the process of officially becoming a participant in SERA 45, as well as the need to submit a renewal proposal by September 30, 2023.

Wolff directed the group to the HortBiz Quiz, a survey available through the CCD website that helps growers and the extension agents who work with them narrow down the list of crops that might be appropriate for their situations, based on access to land, labor and capital. It is available at https://uky.az1.qualtrics.com/jfe/form/SV_00gKXJHVHkPPdxH. The August CCD newsletter includes the first in a series of analyses of survey results. It can be accessed at <https://www.uky.edu/ccd/sites/www.uky.edu.ccd/files/CCDnewsaug2022.pdf>.

The group discussed the difficulty of determining fair land rental rates, including rental of high tunnels.

The group discussed pricing of specialty crops in several states, including Kentucky, Tennessee, and Iowa.

Discussion of activities in the participating states

1. Participants gave brief summaries of the activities in their states. Activities involving collaboration among the group not previously mentioned included development of a series of four Spring into Production Season webinars offered in February and March of 2022 by Rudolph (KY) and Wszelaki (TN) for growers in Kentucky and Tennessee. Lewis Jett (WV) shared information about how high tunnel workshops in West Virginia have led to the

development of a high tunnel management certification program. The program might have value in helping workshop participants get loans, or to get jobs on farms that need skilled labor. The program could be replicated in other states. Please see the attached state reports for details of activities in the participating states.

Rudolph (KY) mentioned the need to provide more details regarding impact of activities that represent collaboration among the group, such as attendance numbers for webinars, distribution of fact sheets, etc., based on the SERA 45 mid-term review.

E. Discussion of opportunities for collaboration

1. Rudolph suggested the group collaborate on developing resources on irrigation for small farms and high tunnels, and possibly a high tunnel management guide.
2. Lewis Jett (WV) suggested work being done with elderberries in West Virginia could lead to a co-branded fact sheet published through the CCD on elderberries for Appalachia.
3. The multistate squash trials will continue, and the group might add an onion trial.
4. Liz Maynard (IN) suggested looking at the potential for local small-scale processing as part of the squash variety trials.

Election of officers:

Chair: Lewis Jett, West Virginia University

Vice-Chair: Wenjing Guan, Purdue University

2023 Annual Meeting

Jett suggested possibly meeting in-person in Louisville, KY, in 2023, as it is a central location for many in the group.

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.

- a) 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
- 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 Bergesford and Richard Barnes. 2022-2024.
 - Developing a Novel Multi-Year Production System for Strawberries Grown on Plastic Mulch in Indiana. Funding source: Indiana SCBG. PI: Stephen Meyers and Wenjing Guan. 2022-2024.
 - Assessing the threat of Pestalotiopsis, an emerging disease, to Midwest strawberry production. Funding source: North American Strawberry Grower Association. PI: Dan Egel, Wenjing Guan, John Bonkowski, Tom Creswell. 2021-2022.
 - Multi-state project Squash Hunger - Annette Wszelaki, Wenjing Guan (Wenjing participated in the project in 2020 and 2021, but not 2022 due to labor shortage)
 - 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 Adair

- 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.
- Optimizing Irrigation Management for Vegetable Production in Indiana. Funding source: Indiana SCBG. PI: Wenjing Guan and Liz Maynard. 2021-2023
- Develop a System-based Approach for Managing Root-knot Nematode on Vegetable Crops in Temperate Regions. Funding source: SCRI planning grant. Multiple states. 2021-2022
- Improve watermelon irrigation and fertilization management. Wenjing Guan
- Watermelon and melon variety evaluation. Wenjing Guan
- Sweetcorn insecticide efficacy trial – Laura Ingwell
- Low-tunnel insect management trial on leafy green production – Laura Ingwell
- Organic insecticide efficacy trial for managing Colorado Potato Beetles – Laura Ingwell
- Organic insecticide efficacy trial for managing caterpillar pests on leafy greens – Laura Ingwell
- Evaluating entomopathogenic nematodes for management of Colorado Potato Beetles – Laura Ingwell

b) 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
- a) In-person trainings
 - Indiana Horticultural Conference & Expo www.indianahortconference.org, Vegetable Farming and fruit Management Webinar series
 - Indiana Small farms Conference https://extension.purdue.edu/anr/teams/dffs/small_farm_conference/sfc-2022.html
 - Southwest Indiana Melon and Vegetable Growers Winter Technical Meeting (This is an evening meeting. Wenjing presents watermelon and melon variety trial results. It is also an informal gathering of melon growers to discuss the current production season) – Wenjing Guan, Daniel Egel
 - Urban Ag Certificate Program – Nathan Shoaf
 - Urban Farmer Signature Program – Laura Ingwell and Allen County ANR Educators
 - Women for the Land Soil Insect training – Laura Ingwell and Carroll County NRCS
 - Greenhouse and Indoor Production of Specialty Crops - Nemali

b) Strawberry Chat. A virtual discussion about strawberry production at small and diversified farms in Indiana and neighboring states. Drs. Wenjing Guan and Miranda Purcell from Purdue University are the program's hosts. We invite special guests to discuss activities that happen at the time of the year and cover different production systems. <https://anchor.fm/strawberrychat>

c) Print publications

- Vegetable crops hotline newsletter <https://vegcropshotline.org/>
- Facts for Fancy fruit <https://fff.hort.purdue.edu/>
- Purdue Landscape Report <https://www.purduelandscape.org>
- Maynard, E.T., W. Guan, P. Langenhoven and L. Hoagland. 2021. Vegetable Seedling Performance in Commercial Organic Growing Media. HortScience (submitted).
- Phillips, B., Maynard, E. T., Egel, D. S., Ingwell, L. L., & Meyers, S. L. 2022. Midwest Vegetable Production Guide for Commercial Growers 2022 (ID-56). Purdue University, West Lafayette, Indiana. 295 pp. mwvegguide.org
- [Midwest Vegetable Trial Reports.](#)
- Egel, G., W. Guan, J. Bonkowski, T. Creswell. 2022. Evaluation of fungicides for the management of Neopestalotiopsis leafspot 2022. Plant Disease Management Reports 16:PF045.
<https://www.plantmanagementnetwork.org/pub/trial/pdmr/volume16/abstracts/pf045.asp>
- Egel, G., W. Guan, J. Bonkowski, T. Creswell. 2022. Evaluation of fungicides for the management of Neopestalotiopsis leafspot 2022. Plant Disease Management Reports 16:PF045.
<https://www.plantmanagementnetwork.org/pub/trial/pdmr/volume16/abstracts/pf045.asp>
- Guan, W., D. Egel, D. Nowaskie, and D. Haseman. 2022. 2021 personal-size triploid watermelon variety evaluation in Indiana. Midwest Vegetable Trial Reports.
<https://docs.lib.purdue.edu/mwvtr/227/>
- Guan, W., D. Egel, D. Nowaskie, and D. Haseman. 2022. 2021 standard-size triploid watermelon variety evaluation in Indiana. Midwest Vegetable Trial Reports.
<https://docs.lib.purdue.edu/mwvtr/228/>
- Guan, W., D. Egel, D. Nowaskie, and D. Haseman. 2022. 2021 cantaloupe variety evaluation in Indiana. Midwest Vegetable Trial Reports.
<https://docs.lib.purdue.edu/mwvtr/226/>

d) Field Days

- Purdue Small Farm Education Field Day, West Lafayette IN, July 29, 2022
- Purdue Hemp, Vegetable and Fruit Field Day, Lafayette IN, July 21, 2022
- NW Pinney Purdue Vegetable Field Day, Wanatah IN, August 9, 2022
- NW Pinney Purdue Vegetable Field Day for Ag Professionals, Wanatah IN, August 9, 2022
- No-till Pumpkins and Sweet Corn after Winter Rye Cover Crop – demonstration plantings, Wanatah, IN
- Strawberry Field Day, Southwest Purdue Ag Center, Vincennes, IN. May 12, 2022

e) 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

f) 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: Liz Maynard

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):
 - [Midwest Vegetable Trial Reports](#).
 - Two-spotted spider mite management in high tunnel cucumber production – with L. Ingwell, PI, W. Guan, P. Langenhoven and L. Hoagland. USDA-NCSARE. 2021-2023.
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):
 - Illiana Vegetable Growers School, 1-day in-person educational program. 1/12/2022.
 - Indiana Horticulture Conference and Expo, <https://www.indianahortconference.org>
 - Vegetable Field Day, Wanatah, IN Aug. 9, 2022. Separate events for ag professionals and for farmers and gardeners
 - No-till sweet corn after winter rye cover crop – demonstration planting, Wanatah, IN
 - Summer cover crops for movable high tunnel - demonstration planting, Wanatah, IN
 - Vegetable Crops Hotline Newsletter articles vegcropshotline.org
 - Drip irrigation demonstrations of scheduling and wetting patterns, with PI W. Guan
 - Phillips, B, Egel, D. S., Ingwell, L., **Maynard**, E. T., Meyers, S. 2021. Midwest Vegetable Production Guide for Commercial Growers 2022 (ID-56). Purdue University, W. Lafayette, Indiana and Vegetable Growers News, Sparta, MI. 289 pp. (Horticulture editor) mwveguide.org

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

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:

- ***Expanding production and markets for Iowa melon industry through introduction and evaluation of specialty melons*** (Ajay Nair and Rachel Perry)
The goal of this two-year study is to identify, introduce, and evaluate new and novel specialty melon cultivars under Iowa growing conditions. Iowa State University will conduct research on several specialty melon cultivars/varieties and answer the following questions: 1) What are some high performing specialty melon types/varieties, 2) Does maturity indices differ among varieties, 3) How does irrigation scheduling affect fruit yield and quality, 4) Are there differences in shelf-life, and, 5) what is the economic feasibility of these crops?
- ***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. This was the second year of this trial.

b) Organic production systems –

- **Evaluation of leaf lettuce cultivars for organic systems** (*Ajay Nair and Anne Carey*) - This project was conducted in Spring 2022 at Iowa State University (ISU) Horticulture Research station. The study evaluated 10 spinach cultivars for their establishment, yield, and performance in the field.
- **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.
- **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.
- **Evaluation of bell pepper cultivars for organic systems** (*Ajay Nair and Anne Carey*) - This is an ongoing experiment that started in summer 2022 at Iowa State University (ISU) Horticulture Research station. The study is evaluating five pepper cultivars for their yield, quality, and time to color.

c) small-scale production systems

- *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)

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) **Grower conferences**

- Practical Farmers of Iowa Conference (Jan 2021 and 2022)
- Iowa Fruit and Vegetable Growers Conference (Jan 2021 and Feb 2022)

- Iowa Organic Conference (Nov 2020 and 2021)

b) webinars

- Small Farms Sustainability podcasts
<https://www.extension.iastate.edu/smallfarms/small-farm-sustainability-podcasts>
- Horticulture Zoom webinar series for county horticulturists

c) print publications

- Nair, A., P. O'Malley, and D. Fillius. 2022. Vegetables and herbs. In: Resource guide for Iowa Master Gardeners. p. 223.
- Carey, A. and A. Nair. 2022. Spinach production under Midwest growing conditions. ISUEO (In press)
- Mauch, T. and A. Nair. 2022. An introduction to biochar and its potential use. ISUEO (In press)
- Hughes, M. and A. Nair. July 2022. Five reasons why your tomato leaves are curling.
<https://www.bhg.com/gardening/vegetable/vegetables/curling-tomato-leaves/>. Better Homes and Gardens.
- Brandenberger, L. and Nair, A. April 2022. Stewardship of Soils and its Far-Reaching Effects, In: Open Access Government.
<https://edition.pagesuite-professional.co.uk/html5/reader/production/default.aspx?pubname=&edid=f2355726-b86d-4a5b-879e-c528c1881551&pnum=430>, Cheshire, UK. Pg. 430-431.
- Nair, A. and M. Bilenky. March 2022. Grass or legumes? Assess summer cover crop benefits before organic vegetable in the fall. Organic Grower, p. 16.
- Duan, F., M. Pitesky, and A. Nair. December 2021. Integrating Chicken and Vegetable Production in Organic Farming. Organic Farmer.
<https://organicfarmermag.com/2021/12/integrating-chicken-and-vegetable-production-in-organic-farming/>
- 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

- Leafy greens quick cut harvester
<https://www.youtube.com/watch?v=tZ50Q4b-AI8&t=8s>
- 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=ttUbm9Qkg>
- Effect of mesotunnels on cucurbit growth and yield.
<https://www.youtube.com/watch?v=1rZ8KqXmi38>

e) **field days**

- Fruit and Vegetable Field Day – 135 participants (growers, extension staff, industry leaders). Held on 8 August 2022.
- Organic Field Day - covered topics ranging from organic crop rotations to no-till vegetable production, reaching over 50 people.
- Amish Produce Walk/Field Day – 60 participants

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: Christy Cassady & Brett Wolff

University: University of Kentucky Center for Crop Diversification

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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 –
 - Christy Cassady – Production & Marketing Resources for Kentucky Specialty Crop Growers (2022 KY Fruit and Vegetable Conference)
 - b) Webinars –
 - Virtual Cut Flower Short Course (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 2021 SERA 45 annual meeting are listed below:
 - a) Structures for Cut Flower Production (<https://www.youtube.com/watch?v=PCMjsvd88S8>)
 - b) Winter Integrated Pest Management in Kentucky (https://www.youtube.com/watch?v=5A5p_Utgsdc)
 - c) Selling Locally Grown Flowers to Florists (<https://www.youtube.com/watch?v=6HyT0HNYlzo>)
 - d) The Art & Science of Pricing, speaker Dr. Melanie Stock, Utah

State University
<https://www.youtube.com/watch?v=6HyT0HNYlzo>

- We have continued delivering Marketing for All trainings on an as-needed basis (Brett Wolff)
- 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 2021 include [Cut Flowers for Community Supported Agriculture Production](#) (CCD-MR-2, authors include Savannah Columbia of the CCD and SERA 45 participant Melanie Stock of Utah State); [Making the Pitch: How to Talk to Retail Outlets About Carrying Your Food Product](#) (CCD-MR-3); [The Kentucky Produce Safety Program](#) (CCD-PFS-6); and [Soil Salinity in High Tunnel Production](#) (CCD-FS-24, authors include SERA 45 participants Rachel Rudolph and Krista Jacobsen).
- d) In addition, a profile developed by the CCD for SERA 45 participants at the Center for Profitable Agriculture in Tennessee since September 2021 was reviewed and finalized: [Cider Apples in Tennessee: Basic Considerations](#) (CCD-CPA-CP-4).

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

Adding Value to Plant Production: A Summary of Kentucky Products	Dry Beans	Organic Lettuce & Leafy Greens
Adding Value to Plant Production – An Overview	Market Research for Value-added Products	Pick-your-own (U-pick) Marketing
Catnip	Organic Blackberries & Raspberries	Sprouts

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

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 2022, 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 and Lincoln 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 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. Evaluation of lettuce for *Sclerotinia* resistance with high and low irrigation applications
 2. Tomato grafting for root knot nematode resistance in high tunnels (final year)
 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. Evaluation of summer squash for powdery mildew resistance with low and high inputs of nitrogen
 6. Soil solarization in high tunnels for management of *Sclerotinia*
 7. Soil solarization and tomato grafting for management of root-knot nematode in high tunnels
 - b) small-scale production systems
 1. Mustard cover crop trial (second year)
 2. Multistate winter squash trial (acorn squash)

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. Cover cropping and fertilization requirements in high tunnels for county agents (September 2021)
 2. IPM Training (March 9, 2022)
 3. Vining Crop Production: tips and considerations (Feb. 3, 2022)
 - b) Webinars
 1. High Tunnel Tomato Webinar (Jan. 13, 2022)
https://www.youtube.com/playlist?list=PLQEQoZRMbybKUptHA7_L-u9jIjM-Xr7I
 2. Commercial Vegetable Update (Feb. 22, 2022)
<https://www.youtube.com/playlist?list=PLQEQoZRMbybKlF4-bSDwNL9BjFXFMupgT>

3. Spring into Production Season (Feb. 15, March 1, 15, 29, 2022; co-hosted with Annette Wszelaki).
 - a. Equipment considerations for vegetable production
<https://www.youtube.com/watch?v=jyec2NlrWvw>
 - b. Tomato grafting and root-knot nematode management
https://www.youtube.com/watch?v=q7RsBp_E_5Q
 - c. Ins and Outs of Organic Fertilizer

<https://www.youtube.com/watch?v=sL7i5Cpp1q8&list=PLQEQoZRMbybKyFgPb0ZkabTrkrnCW39Qp&index=2>
 - d. High Tunnel Crop Rotation
https://www.youtube.com/watch?v=0_3QOV55LUI&list=PLQEQoZRMbybKyFgPb0ZkabTrkrnCW39Qp&index=4
4. Understanding fertilizer and using it efficiently (April 14, 2022)
5. Understanding fertigation: what, why, and when (May 16, 2022)
<https://youtu.be/Gv11qzVbXSk>

c) print publications

1. Rudolph, R., K. Leonberger, N. Gauthier, and S. Pandey. 2022. Sclerotinia Diseases of Vegetable Crops. PPFS-VG-29. 5pp.
2. Rudolph, R., R. Lark, and K. Jacobsen. 2022. Soil Salinity in High Tunnel Production. CCD-FS-24. 5 pp.
3. Rudolph, R. (editor). 2021. Fruit and Vegetable 2021 Annual Research Report. UK PR-798. 38 pp.
4. Rudolph, R. 2021. Evaluation of Spring-planted High Tunnel Kale Cultivars. UK Fruit and Vegetable 2021 Research Report. UK PR-798, p. 29-30.
5. Rudolph, R. 2021. Evaluation of Spring-planted High Tunnel Lettuce Cultivars. UK Fruit and Vegetable 2021 Research Report. UK PR-798, p. 27-28.
6. Rudolph, R., J. Larson, A. Sheffield, J. Shepherd, T. Mark, and N. Gauthier. 2021. Rotating Cut Flowers within a Tomato High Tunnel Production System. CCD-FS-23. 11 pp.
7. Rudolph, R., V. Bajek, K. Leonberger, and N. Gauthier. 2021. Root-knot Nematode in Vegetable Cropping Systems. PPFS-VG-28, CCD-FS-22. 7 pp.

d) Videos

All videos can be viewed here:

<https://www.youtube.com/channel/UC6JyU2Fdo3Yvml4y7LF0M4A/videos>

1. Equipment Considerations for Vegetable Production
https://www.youtube.com/watch?v=IL_hZ2qM-b4
2. 2021 Mustard Cover Crop Trial
<https://www.youtube.com/watch?v=Mu7SWxaWRq0>

3. A Discussion on Cover Cropping with Ford Waterstrat of Sustainable Harvest Farm

<https://www.youtube.com/watch?v=KXUn9MdxCMw>

4. Florida Weave

<https://www.youtube.com/watch?v=uHEAvs-ICh8>

- e) field days

1. Lincoln Co. field day (July 2022)

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: 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:

- Cultivating Grower-Buyer Partnership for Ethnic Crops (NC A&T State University)
- Investigating Sesame Production in North Carolina (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)
- Investigating the Potential for Upland and Flooded Rice in NC for the Specialty Grain Market (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)
- Growing Chinese Medicinal Herbs for a Domestic Market (NC State University)
- A Multifaceted Approach to Production and Pest Management in Organic Sweetpotato Systems (NC State University)
- Improving North Carolina Black Truffle Production (NC State University)
- Tomato Organic Management and Improvement Project (TOMI): Part II (NC State University)
- Heirloom-Type Tomato Hybrids for Niche-Market (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-person trainings
 - b) webinars
 - c) print publications
 - d) video
 - 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: Troy Dugger, Margarita Velandia, and Annette Wszelaki

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

- *Reclaiming High Tunnel Soil Health for Sustained Specialty Crop Production*
- *Organic Internship VOL Supported Ag Program*
- *Multi-state Squash Hunger: C. maxima Squash Variety Trial*
- *Chickpeas as an Alternative Specialty Crop and Storage Crop for Tennessee*
- *Evaluating Cultivar Selection and Trellis Systems in Blackberry Production*

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):

1. in-person trainings

- 1.) **Lockwood, D.**, Gargus, K., and T. Dugger. Berry Production. March 1, 2022. (Participants=17), Montgomery County, TN
- 2.) **Lockwood, D.**, and T. Dugger. Berry Production. March 2, 2022. (Participants=24), Smith County, TN
- 3.) **Lockwood, D.**, Whitehouse, S., and T. Dugger. Berry Production. March 3, 2022. (Participants=28), Anderson County, TN
- 4.) **Wszelaki, A.**, and T. Dugger. Tomatoes/Pumpkin Production. March 8, 2022. (Participants=55), Lawrence County, TN
- 5.) **Wszelaki, A.**, and T. Dugger. Tomatoes/Sweet Corn Production. March 8, 2022. (Participants =12), Lincoln County, TN
- 6.) **Wszelaki, A.**, Tomatoes/Pumpkin Production. March 9, 2022. (Participants=32), Van Buren County, TN
- 7.) **Wszelaki, A.**, and T. Dugger. Tomatoes/Sweet Corn Production. March 10, 2022. (Participants=12), Blount County, TN
- 8.) **Lockwood, D.**, and T. Dugger. Tree Nut Production. March 11, 2022. (Participants=15), Greene County, TN
- 9.) **Lockwood, D.**, and A. Smith. Tree Nut Production and Hop Production. March 29, 2022. (Participants=10), Perry County, TN
- 10.) **Wszelaki, A.**, Lockwood, D., Hansen, Z., **Velandia, M.**, Buchanan, J., and R. Florence. Fruit and Vegetable Bootcamp In-service Training. September 13, 2022, Crossville, TN.

2. webinars

- 1.) **Lockwood, D.**, and A. Smith. Hop Production in Tennessee. November 9, 2021. (Participants=10), Extension Agent Training
- 2.) **Wszelaki, A.**, and **M. Velandia**. Vegetable Production (Pumpkins, Sweet Corn, Tomatoes and Asparagus). November 23, 2021. (Participants=26), Extension Agent Training
- 3.) **Lockwood, D.**, Berry Production (Blueberries, Blackberries and Strawberries). December 10, 2021. (Participants=26), Extension Agent Training
- 4.) **Lockwood, D.**, Tree Nut Production (Persimmons, Pecans, Pawpaws and other tree nuts). January 13, 2022. (Participants=22), Extension Agent Training
- 5.) **Pepper, H.**, Myhre, K., and R. Ward. SNAP 101: Best Practices for EBT and Nutrition Incentives – Farmers and Markets Just Getting Started. March 21, 2022. (Participants=*), Farmer Market Boot Camp Webinar
- 6.) **Pepper, H.**, and M. Leffew. Beyond Fresh: Creating Value-Added Products. March 22, 2022. (Participants=*), Farmer Market Boot Camp Webinar
- 7.) **Pepper, H.**, Hart, P., and W. Peppers. Understanding the Regulations for Direct Marketing Meat/Poultry. March 23, 2022. (Participants=*), Farmer Market Boot Camp Webinar
- 8.) **Pepper, H.**, and E. Coleman. You Are Worth It: Defining the Real Cost of Your Products. March 24, 2022. (Participants=*), Farmer Market Boot Camp Webinar
- 9.) **Pepper, H.**, Hart, P., and M. Brown. Frequently Asked Questions about Foods and

Farmers Markets. March 25, 2002. (Participants=*), Farmer Market Boot Camp Webinar - ***130 producers watched one or more of these webinars**

- 10.) **Wszelaki, A.**, and R. Rudolph. Spring Into the Production Season: Tools and Equipment for Vegetable Production, February 15, 2022
 - 11.) **Wszelaki, A.**, and R. Rudolph. Spring Into the Production Season: Ins and Outs of Fertilizers & Soil Fertility for Organic Vegetable Production, March 1, 2022
 - 12.) **Wszelaki, A.**, and R. Rudolph. Spring Into the Production Season: Tomato Grafting and Root-knot Nematode Management, March 15, 2022
 - 13.) **Wszelaki, A.**, and R. Rudolph. Spring Into the Production Season: High Tunnel Crop Rotation, March 29, 2021
 - 14.) **Velandia, M.** Economics of BDM. Global Use of Soil-Biodegradable Mulch, March 1, 2022.
3. print publications
- 1.) **Wolff, B.**, "Cider Apples in Tennessee: Basic Considerations" UK-CCD; UT-CPA Publication, CCD-CPA-CP-4. October 2021. <https://cpa.tennessee.edu/wp-content/uploads/sites/106/2021/10/TNciderapples.pdf>
This publication 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. This effort was funded by a SCBG received by UT's Center for Profitable Agriculture.
 - 2.) Coolong, T., J. Gaskin, E. Haramoto, K. Jacobsen, J. Moore, T. Phillips, R. Rudolph, and **A. Wszelaki**. 2021. CCD-SP-16. [Covers Under Cover: Managing Cover Crops in High Tunnels](#).
 - 3.) Coolong, T., J. Gaskin, E. Haramoto, K. Jacobsen, J. Moore, T. Phillips, R. Rudolph, and **A. Wszelaki**. 2021. CCD-SP-18. [Cool-Season Cover Crops for High Tunnels in the Southeast](#).
 - 4.) Coolong, T., J. Gaskin, E. Haramoto, K. Jacobsen, J. Moore, T. Phillips, R. Rudolph, and **A. Wszelaki**. 2021. CCD-SP-19. [Warm-Season Cover Crops for High Tunnels in the Southeast](#).
 - 5.) **Velandia, M.**, R. Denton, O. Aza, T. Marshall, A. Rihn, D. Lockwood, N. Bumgarner, and Z. Hansen. 2022. Sample Budget for Blackberry Production under Various Integrated Pest Management and Marketing Strategies. UT Extension, D154.
- 6.) video
- Fresh Stop Markets: Become a Shareholder
<https://www.youtube.com/watch?v=XZ5Q3S4PrLs>
- Fresh Stop Markets: We are your Community
<https://www.youtube.com/watch?v=3S2cYdwZK7I>
- Fresh Stop Markets: Words from Our Farmers
<https://www.youtube.com/watch?v=AWC5o4vpB2U>
- 7.) field days
- 8.) demonstrations
- 9.) social media promotion of events/use of Facebook live
Facebook @UTProduce
Instagram @ut_vsa

10.) 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/>

<https://arec.tennessee.edu/extension/budgets/> (Fruit and Vegetable Budgets).

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

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

Grants:

- 1.) Holland, R., T. Dugger, "Considerations for Growing and Marketing Specialty Crops in Tennessee." Specialty Crop Block Grant, 11/1/2019 – 8/1/2022.
- 2.) Holland, R., "Chronicling Tennessee's Specialty Crop Landscape." Specialty Crop Block Grant, 11/1/2020 – 8/1/2023.
- 3.) Hayes, D.G., S.M. Schaeffer, J.M. DeBruyn, **M. Velandia, and A.L. Wszelaki**. "Impact of Micro- and Nanoplastic Pollution from Agricultural Plastics on Soils, Nearby Waterways, and their Related Ecosystems" AgResearch Strategic Action Plan (ASAP) Strategic Planning Research Initiatives (SPRINT), UTIA, 1/2021 – 1/2023 (\$200,000).

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 - 2 papers and 1 presentation
 1. 1 manuscript to be submitted for review in Sep 2022: “High tunnel and field production of early-season peonies”
 2. 1 manuscript to be submitted for review in Sep 2022: “Evaluating Production Strategies for Ranunculus in the US Intermountain West”
 3. 1 presentation at ASHS: Rauter, S. and M. Stock. Evaluating Production Strategies for Anemone and Ranunculus in the Intermountain West. American Society for Horticultural Science Annual Meeting. Chicago, IL. 2nd Place student competition.
 - b) organic production systems – None
 - c) small-scale production systems – 2 papers and 1 presentation, 6 trials in-progress
 1. 1 manuscript in review, “Nitrogen rate and virus incidence effects on cut flower production of dahlia”
 2. 1 manuscript in review: “Meeting the needs of small acreage producers through the Utah Urban and Small Farms Conference”
 3. 1 presentation at ASHS: Stock, M., E. Oliver, K. Wagner, and C. Nischwitz. Improving Dahlia Production in Northern Utah through Nutrient and Temperature Management. American Society for Horticultural Science Annual Meeting. Chicago, IL. 2 Aug.
 4. 1 multi-state trial on winter squash – acorn in 2022
 5. 5 cut flower trials in Utah: 2 dahlia, 1 ranunculus, 1 anemone, 1 freesia
 - d) biodegradable mulches - 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 - 4
 1. Improving the safety and production efficiency of urban agriculture in Utah. USU Extension Annual Conference. Thanksgiving Point, UT. 3 Mar.
 2. High tunnels: vegetables and flowers. IRC. Salt Lake City, UT. 23 Apr.
 3. Soil management for Castle Country. Sustainable Small Farms & Homestead Expo. Hosted by Carbon and Emery Counties. Price, UT. 9 Apr.
 4. Cut flower production in Utah. Sustainable Small Farms & Homestead Expo. Hosted by Carbon and Emery Counties. Price, UT 8 Apr.

 - b) webinars - 6
 1. Western SARE Farmer/Rancher Grant Information Webinar for Cut Flower Growers. 20 July.
 2. The Art and Science of Pricing. University of Kentucky Zoom Webinar. 25 Apr.
 3. Season extension: site considerations and soil management. Wasatch County High Tunnel Workshop. Zoom Webinar. 18 Mar.
 4. Cut Flower Diseases Identified in Utah in 2021. Cut Flowers Session, Utah Urban and Small Farms Conference. Live Zoom webinar. 23 Feb.
 5. Dahlia: the (ongoing) saga to improve production in Utah. Cut Flowers Session, Utah Urban and Small Farms Conference. Live Zoom webinar. 23 Feb.
 6. Optimizing Lisianthus in Utah. Cut Flowers Session, Utah Urban and Small Farms Conference. Live Zoom webinar. 23 Feb.

 - c) print publications – published 6 refereed fact sheets and 3 non-refereed articles
Refereed
 1. Rauter, S. B. Black, D. Drost, and M. Stock. High Tunnel Cost Construction Calculation Workbook. USU Extension Fact Sheet. <https://digitalcommons.usu.edu/extension_curall/2270>.
 2. Chelinski, M., M. Stock, P. Grossl, and E. Oliver. Trace Element Contamination in Urban Soils: Testing and Management. USU Extension Fact Sheet. Soils/01. Paper 2261. <https://digitalcommons.usu.edu/extension_curall/2261/>.
 3. Lewis, M., M. Stock, B. Black, and D. Drost. Stock Cut Flower Production in Utah. USU Extension Fact Sheet. Horticulture. Cut Flower/01. Paper 2255. <https://digitalcommons.usu.edu/extension_curall/2255/>.
 4. Collins, A., M. Stock, M. Lewis, and S. Hansen. Celosia Cut Flower Production in Utah. USU Extension Fact Sheet. Horticulture. Cut Flower/01. Paper 2253. <https://digitalcommons.usu.edu/extension_curall/2253/>.
 5. Hansen, S., D. Drost, B. Black, and M. Stock. Expected Vegetable, Berry, Fruit, and Cut Flowers for Urban Farms in Utah. USU Extension Small Farms Online Fact Sheet. <<https://extension.usu.edu/smallfarms/research/expected-vegetable-yields-in-utah>>.
 6. Rauter, S., M. Stock, B. Black, and D. Drost. Low Tunnels for Cut Flower Production. USU Extension Fact Sheet. Horticulture. Cut Flower/01. Paper 2242. <https://digitalcommons.usu.edu/extension_curall/2242/>.

Non-refereed

1. Gleeson, S., C. Nischwitz, and M. Stock. Dahlia mosaic virus on dahlia. USU Extension Fact Sheet. Integrated Pest Management. <<https://extension.usu.edu/pests/research/dahlia-mosaic-virus-1>>.
2. Nischwitz, C. and M. Stock. New diseases detected on Utah cut flowers. Utah Pests Quarterly Newsletter. Utah Plant Pest Diagnostic Laboratory & USU Extension. Summer 2022. Vol. XVI: 1-2. <<https://extension.usu.edu/pests/files/up-newsletter/2022/UtahPestsNews-summer22.pdf>>.
3. Stock, M. Cut flower crops and programming are rapidly growing across Utah. Utah Pests Quarterly Newsletter. Utah Plant Pest Diagnostic Laboratory & USU Extension. Spring 2022. Vol. XVI : 5-6. <<https://extension.usu.edu/pests/files/up-newsletter/2022/UtahPestsNews-spring22.pdf>>.

d) video - 5

1. Western SARE Farmer/Rancher Grant Information Recorded Webinar for Cut Flower Growers. 20 July. <https://www.youtube.com/watch?v=_bpNwkm_Mf0>.
2. The Art and Science of Pricing. University of Kentucky. Recorded Zoom Webinar. 25 Apr. <<https://www.youtube.com/watch?v=kCDZUfvNRJ4>>.
3. Cut Flower Diseases Identified in Utah in 2021. Cut Flowers Session, Utah Urban and Small Farms Conference. Recorded Zoom webinar. 23 Feb. Presented by M. Stock <https://www.youtube.com/watch?v=-gqgv_0hRc&list=PLMnDQoXFVBEbhN_ZJ5fGZts81Dd2Xftjm&index=21>.
4. Dahlia: the (ongoing) saga to improve production in Utah. Cut Flowers Session, Utah Urban and Small Farms Conference. Recorded Zoom webinar. 23 Feb. <https://www.youtube.com/watch?v=akrSA7q5S9I&list=PLMnDQoXFVBEbhN_ZJ5fGZts81Dd2Xftjm&index=20>.
5. Optimizing Lisianthus in Utah. Cut Flowers Session, Utah Urban and Small Farms Conference. Recorded Zoom webinar. 23 Feb. <https://www.youtube.com/watch?v=7TaWztlrRvA&list=PLMnDQoXFVBEbhN_ZJ5fGZts81Dd2Xftjm&index=19>.

e) field days – 1

1. Cut Flower Production in Utah: Highlights from USU Trials in season extension, disease and soil management, and improving bloom quantity and quality. Urban and Small Farms Conference: High tunnel workshop. UAES – Greenville Research Farm, North Logan, UT. 24 Mar.

f) Demonstrations – 1

1. Utah Flower Day. Salt Lake City, UT. 13 Aug.

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

1. Cut flowers in Utah: Panelists Interview. Punk Rock Farmer. KRCL. Salt Lake City, UT. 5 Aug. <<https://krcl.org/blog/radioactive-080522/>>.
2. Instagram account - @usu_smallfarms, 2550 followers

3. Please **list** current activities in your state related to **reporting specialty crop prices** and development of **decision aids** regarding:
- a) farmers markets – None
 - b) produce auctions – None
 - c) farm to school/institution – None
 - d) retail – None
 - e) community supported agriculture – None
 - f) direct-to-buyer – None
 - g) sampling standards – None
 - h) merchandising education – None
 - i) market performance metrics – None
 - j) other – Wholesale (florists) – 2 articles in press
 - 1. Anemone Cut Flower Budget for One High Tunnel. 2022 Utah Agricultural Statistics and Utah Department of Agriculture and Food Annual Report, pages XX-XX. Salt Lake City, UT.
 - 2. Ranunculus Cut Flower Budget for One High Tunnel. 2022 Utah Agricultural Statistics and Utah Department of Agriculture and Food Annual Report, pages XX-XX. Salt Lake City, UT.
4. Please **list** current **market research activities** in your state that could benefit small farms. Examples may include:
- a) consumer preferences – 1 survey
 - 1. Survey of consumers and local flower purchases/awareness
 - b) comparison of marketing channels – 2 surveys
 - 1. Cut flower grower selection of marketing channels and income
 - 2. Survey of florists of local flowers – barriers, preferences, and sales
 - c) other – wholesale preferences – 6 studies that test wholesale pricing, stem preferences (crop, color, stem length), and presentation (bunch size, packaging)
 - 1. 1, ranunculus pricing and preferences – Cache Valley, 2 cultivars
 - 2. 1, anemone pricing and preferences – Cache Valley, 2 cultivars
 - 3. 2, peony pricing and preferences – Cache Valley and Salt Lake Valley, 2 cultivars
 - 4. 2, Dahlia pricing and preferences – Cache Valley and Salt Lake Valley, 2 cultivars

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 winter *allium* production in low tunnels and high tunnels for 2020-22.
 - Currently evaluating winter cabbage production in high tunnel for processor in southern WV in 2020-22. This includes spacing and plant population study.
 - Random high tunnel year-round temperature logging in WV
 - Conducting 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.
 - Received a SARE Partnership Grant to evaluate commercial elderberry production in WV.
 - 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: 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 production updates)
- Nutrient Management/Crop Production Updates for High Tunnels-Winter Agriculture Dinner Meetings

Presentations at conferences:

- *Growing and Marketing Appalachian Heritage Beans*

c) Print Publications (all on-line now)

- Winter Crop Choices for High Tunnels in WV
- Sequential Planting for High Tunnel Crops

d) Conferences:

- 2022 West Virginia Small Farm Conference
- 2022 Organic Seed Alliance Meeting
- 2022 American Society for Horticulture Sciences Annual Meeting

e) Field Days

- Organic Horticulture Farm Field Day (8/26/22)

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