

**Project/Activity Number:** SERA 45

**Project/Activity Title:** Crop Diversification Opportunities to Enhance the Viability of Small Farms

**Period Covered:** October 1, 2018 to September 30, 2019

**Annual Meeting Date:** September 27, 2019

**Participants in attendance:** Lesley Oliver (AA-University of Kentucky), Margarita Velandia (University of Tennessee), Annette Wszelaki (University of Tennessee), Troy Dugger (Center for Profitable Agriculture, Tennessee), Krista Jacobsen (Chair, University of Kentucky), Christy Cassady (University of Kentucky), Rachel Rudolph (University of Kentucky), Brett Wolff (University of Kentucky), Tim Woods (University of Kentucky), Shawn Wright (University of Kentucky), Lewis Jett (West Virginia University), Petrus Langenhoven (Purdue University), Melanie Stock (Utah State University), Mary Rogers (University of Minnesota). Also attending: Joshua Knight (University of Kentucky).

The 2019 SERA 45 annual meeting was held at the University of Kentucky Horticulture Research Farm in Lexington, KY.

### **Agenda**

Brett Wolff (KY) facilitated the meeting, which opened with a review of the agenda. That was followed by introductions. There were three new participants, Rachel Rudolph of the University of Kentucky, Mary Rogers of the University of Minnesota, and Melanie Stock of Utah State University.

#### **A. The group discussed research and extension activities in the participating states.**

1. Christy Cassady (KY) and Wolff shared information about the Center for Crop Diversification's activities in Kentucky, including activities that have been part of three Kentucky Specialty Crop Block Grants. These included presentations around the state (Marketing for All) and at the 2019 Kentucky Fruit and Vegetable Conference, including a workshop on using crop budgets. The CCD has developed new crop profiles, Ginger and Turmeric, and Saffron, Cumin and Coriander, plus new fact sheets on High Tunnel and Low Tunnel Economics. The CCD has also updated a number of CCD profiles, and developed a publication numbering system. The CCD has been working on doing some co-publishing with SERA 45 participants from other states. Lewis Jett (WV) indicated that he was very interested in exploring co-publishing with the CCD.

Joshua Knight, a senior extension associate in the UK Department of Horticulture, shared some of the resources he has helped develop for the UK Center for Crop Diversification (CCD) in collaboration with SERA 45 participant Rachel Rudolph at UK. These included High Tunnel Planting Calendars (<https://www.uky.edu/ccd/content/new-high-tunnel-planting-calendars-available>) with an accompanying fact sheet, and a Geographic Horticulture Directory of Kentucky (<https://uk-horticulture.github.io/hort-directory/>), which uses different icons to locate different resources, such as water testing labs, produce auctions, shared equipment, etc. Wolff suggested this as a potential deliverable for a multistate proposal that could be either regional, or could be developed for each state. Knight indicated the bulk of the time spent developing this resource was in gathering the data, and that he could provide code

to IT personnel at other institutions to develop similar resources. Wolff indicated if participants have data they want to represent in a map and are interested in collaboration, the CCD does have that skill set to offer, and other universities most likely have it as well.

Wolff discussed video production he has worked on, including short social media style videos, often developed based on talks agents have just given or are getting ready to give. Cassidy discussed field days and conferences the CCD has participated in and where CCD staff has disseminated publications, both in Kentucky and in surrounding states.

Wolff mentioned an upcoming 3-Year Average Kentucky Farmers Market Price Report publication, and discussed the weekly farmers market price reports he coordinates. He said Kentucky does try to report rough numbers of vendors using ranges. In 2020, he is considering having price reporters list the exact number of vendors for each crop in their reports to get a better indication of volume. Margarita Velandia (TN), who coordinates the Tennessee Farmers Market Price Report that is housed on the CCD website, said she has extension agents reporting, as well as one farmer. Wolff said about 80 percent of Kentucky's farmers market reporters are farmers. Most have had transformational moments with the reports and see the value of them.

2. Velandia discussed biodegradable mulch work at Tennessee, which has been going on for five years. A number of educational materials including extension publications have been developed, and a farm survey has been conducted, as have agent trainings. Regional field days have been held, and UT did a presentation at the Ohio Ecological Food and Farm Association Conference in February 2019 on biodegradable mulches. UT also conducted research on blueberry production (cultivar selection and IPM). Extension publications also include large-scale bell pepper budgets. Velandia plans to continue the TN farmers market reports, and wants to add the number of vendors to be consistent with UK reports.

Annette Wszelaki (TN) discussed biodegradable mulch work, including work done as part of a Specialty Crop Block Grant to look at irrigation. Specifically, UT is looking at lettuce production and drip irrigation versus overhead irrigation with biodegradable mulch, including water usage and disease issues. After one year of data when there was a rainy spring, researchers did not see much disease difference, but did see water use difference, with overhead using significantly more water. Tennessee is finishing a project on thermal protection strategies in high tunnels. UT still has an organic internship program, which SERA participant Mary Rogers (MN) started in 2009, that trains five students a year to be small farmers. The interns run a community supported agriculture (CSA) program called Volunteer Supported Agriculture (VSA). UT is still conducting tomato and pumpkin variety trials. Also, UT's food safety person left at end of 2017, so Wszelaki inherited the produce food safety work. UT has been offering a vegetable Field Breaks Facebook Live Webinar Series; these include food safety topics. Their first webinar, To Wash or Not to Wash, drew almost 500 views. The second webinar, on postharvest handling tips, had 200-300 views. About 10 people participated live, then the numbers of viewers went up. Wszelaki is trying to work with the format, and plans to keep it on Facebook for now. Wolff said UK in the past year tried virtual office hours – on a topic like value-added protocol – in which you bring three people together on a topic just for questions, adding that that type of program needs to be live. Wolff

mentioned that another option is to have two recording devices set up – one going to Facebook and one to Zoom. Another option is to stream to YouTube live.

3. Lewis Jett (WV) asked about the platform for price reports, as farmers are looking for a one-stop shop for resources. Velandia said the CCD is the place. Jett said the WV Farmers Market Association was once collecting prices but they stopped, and now they have no pricing data for the state. He said underpricing is a big problem in WV. Wolff mentioned that the CCD had the WV Farmers Market Association reporting briefly, but that stopped. Jett said that growers need justification for advocating for higher prices.

Jett said he has been working with heritage varieties in Appalachia. He has a SARE grant to try to improve harvest efficiency of heirloom beans. He is trying to improve trellis design, as there are people in rural areas willing to pay higher prices for older varieties. The heirloom bean project is looking at land races from WV, Eastern Kentucky, and parts of North Carolina. The project is looking at freezing beans, processing trials and nutritional analysis. Jett said he would be happy to collaborate with anyone in TN and KY on this project. He added that growers in WV are growing beans in high tunnels as well as in the field, and that they can produce beans, which bring \$3-\$4 per pound, eight months a year. He is drafting fact sheets on manufacturing the trellis, a SARE project, and producing videos this year. Jett is also working with heritage crops such as Hillbilly and Mortgage Lifter tomato, and is looking at production of ramps in high tunnels. He added there's a good out of state market for ramps in Washington, D.C. and Northern VA.

WV is mapping high tunnels in the state using GIS; a graduate student is helping with that project, and they are working closely with the Natural Resources Conservation Service (NRCS) in WV to get locations of high tunnels. WV has almost 1,000 high tunnels, and they're clustered in some areas. Mapping them will allow WVU to develop programming. A SARE grant to train growers to develop co-ops and centered around high tunnel production has been submitted. Jett said some counties have as many as 100 tunnels. WV is also looking at hazelnuts and agroforestry crops.

4. Shawn Wright (KY), who conducts research and extension activities in Eastern Kentucky, said he deals with many similar things as Jett in WV. Wright has been working with Grow Appalachia, an NGO, and is putting up a new passive solar greenhouse. These are typically built into the side of a mountain, and cost about \$10,000 to construct. They are probably not appropriate for growers who don't have a south-facing slope. He added that in his area, 3 acres of flat ground is a lot of flat ground. He said growers are looking for high-value crops such as heirloom beans, which sell for \$40-\$60 bushel. Wright has been doing a lot with hops through a KY Specialty Crop Block Grant, as well as working with bees. He said there are only two producers in Kentucky with as many as 5 acres of hops, but 15 to 20 hops growers overall.

5. Petrus Langenhoven (IN) said Indiana has 43,000 acres of specialty crops, most of which consists of processing tomatoes, watermelon, cantaloupe and pickling cucumbers. The state has a lot of growers with 1-5 acres and 5-10 acres. There's a big push for urban agriculture. One SARE project is looking at urban ag and markets within urban centers. Langenhoven

started a small farm education field day, which drew 40 participants the first year, and 140 this year. He cited a need for hands-on experience within the season rather than through webinars. He is currently looking for funding for that program. He currently has a Specialty Crop Block Grant on high tunnel production of niche-type melons. One of the challenges has been that some melons do not produce high brix in tunnels, but Purdue research has found a few that look promising. They are looking at 2- to 4-pound melons, which last longer than other melons. Other work at Purdue includes variety trials for sweet peppers and zucchini, evaluation of grafted cucumbers, and strawberry and cucumber evaluation in high tunnels. Liz Maynard and Wenjing Guan are working on an organic transplant project that is in its second year. Sweet corn evaluations are also being conducted. Langenhoven said verticillium wilt is a big problem for IN growers. Purdue is looking at environmentally friendly ways to deal with this problem. Purdue is also conducting grape, apple and pawpaw cultivar trials. Maynard has a new publication, *Seasonal Daily Light Integrals Across Indiana*, which looks at how light affects production.

Langenhoven said Purdue is trying to reinvigorate the Indiana Hort Congress, scheduled for February in Indianapolis. He encouraged SERA 45 participants interested in presenting to contact him. Purdue also offers the Indiana Small Farm Conference, which is designed more for beginning farmers, in early March.

6. Tim Woods (KY) discussed his work with the newly formed CSA Innovation Network, a collaboration between UK and CSA coalitions around the country designed to facilitate idea sharing and best practices across the CSA community. He also discussed Kentucky's CSA in the workplace program, a voucher program offered through wellness programs, which gives CSA vouchers to employees. The program involves 11-12 employers, and 1,500-2,000 vouchers. UK is largest employer in the program. There is concern as to whether or not there are enough CSAs to go around. It is a very innovative way to build local food communities. Woods said the city of Lexington has been using program for a few years, and the Kentucky Department of Agriculture has been using it for some state employees. Woods is also doing a couple of garden center surveys, and a high tunnel survey in collaboration with Krista Jacobsen's project. The high tunnel survey is looking at the number of tunnels, production assets, and what technical assistance is needed. It is looking at new, beginning high tunnel producer technical assistance needs, as well as how high tunnels have changed labor demands, market channels, etc. A report resulting from the survey will be offered through the CCD.

7. Mary Rogers (MN) said Minnesota has decentralized extension activities, with regional sustainable development partnerships (RSDP) in five regions of state, doing community-based extension projects, and they recruit farmers who work with staff from the RSDP, which works well for extension, but it's difficult to know who's doing what. Minnesota has faculty and staff who dabble in specialty crops. Two horticulture extension educators, who have responsibilities for entire state, were hired recently, one for vegetables and one for fruit, and they are doing needs assessments. Rogers said there is a lot of interest in hydroponics, aquaponics, and local and urban farming. She wrote a Specialty Crop Block Grant with a grower, then his aquaponics facility shut down. But she is going ahead with the work, partnering with hydroponic growers. She partnered with the RSDP to look at passive solar greenhouses, also called deep winter greenhouses, which have an average price of \$18,500.

This was a grassroots project from growers interested in developing these systems, and the RSDP had grant money to provide cost-share. They are specialized for winter production, and can't be used outside of winter. Growers are excited about them, but it's risky, as many are based in rural areas where there is no access to markets where people pay top dollar for local organic produce. She is also working in cover crop management, and has been working with Jacobsen (KY) on an OREI-funded project looking at quality and soil health in high tunnels. She has also been doing spotted wing drosophila (SWD) research, working with an economist to look at decision-making tools regarding how to manage SWD organically, including adapting tunnels for exclusion. She said Minnesota has a great deal of wine/viticulture, hobby winemaker, agritourism activities, and an enologist who specializes in cold-climate varieties. There is a lot of interest in cider apples and making hard cider, as well as interest in hops. Rogers also has a colleague doing biodegradable mulch work.

Jett (WV) said he has been seeing a lot more southern pests in Appalachia than before, including problems with whitefly in high tunnels. He said he thinks there's a need for an IPM manual for high tunnels.

8. Rudolph (KY) said she does a lot of vegetable trials, mostly in high tunnels. She thinks they're valuable but you can't really publish them, and it would be nice to make them more useful beyond information directed to growers. She is doing tomato grafting, specifically tomatoes grown in high tunnels, and looking at rootstock resistant to root knot nematode. She did a preliminary on-farm trial this summer with a grower who has root knot nematode in high tunnels, and the extension agent was very involved, making it a perfect extension situation. She also did tomato grafting for a greenhouse grower doing soilless production who was interested in improved vigor and yield. She has done in-person trainings, including at the Kentucky Fruit & Vegetable Conference, and she and Jacobsen had done a soil fertility and cover crop workshop the day before at the Horticulture Research Farm, which was attended by agents and growers. She was also planning to do a tomato-grafting workshop for county agents – a train the trainer program, and a high tunnel training for agents funded by a SARE grant, with Jacobsen and Woods as collaborators. She had three high tunnel webinars coming up in October, and two tomato webinars in November. The plan is to do a webinar to train agents, and give them a PowerPoint presentation to use later in working with clients. She and Wright (KY) had also done a strawberry webinar. For print publications, she said she had discovered the power of the CCD, which is able to get a new publication done more quickly than UK Agricultural Communications. An example is a new fact sheet on Blossom End Rot. UK publications include the 2019 Fruit and Vegetable Research Report, in which Kentucky State University participates as well, and includes any extension related research. UK is also updating ID-36 – Commercial Growers Vegetable Production Guide, the Bible for commercial vegetable growers. Rudolph said Kentucky growers indicate that they want Kentucky information.

Wright said he has seen that new growers are learning that regional information is valid. Rudolph mentioned that the Southeast Vegetable Guide is great.

Rudolph said there was an October field day planned to complement the high tunnel webinars, and future demonstrations include a broccoli cold hardiness demonstration, likely in

Lexington and neighboring Clark County. Rudolph said she had also done some ground cherry research. Jett said he had a producer who made good money growing ground cherries.

9. Melanie Stock (UT) said the top third of the state has two-thirds of the population, and arable land is located in the north. Grower challenges include a longer winter for the area, 40-degree temperature shifts, and 4,500-foot elevation. Utah experiences intense light during the day and freezing temperatures at night. Stock has been at Utah State for about a year as part of the production horticulture team. The university has a fruit and vegetable specialist who is very established. There is a lot of flower production happening across the state, but the university didn't have a handle on it. Many women in UT don't work, so flower production offers a way for them to contribute income to their households. Stock started getting involved in cut flowers, and has a number of studies going. She said there are a lot of similarities with fruit and vegetable production. One project is peony production, a perennial cut flower. The technique also works with raspberry and asparagus. Peony comes in right after Mother's Day; growers are trying to find ways to advance bloom to hit the Mother's Day sales window by using high tunnels, low tunnels and soil heating. She is looking at planting annuals in high tunnels versus the field, and at the florist market, as well as shading techniques to help increase stem lengths and get a better premium. Because Utah is a water-stressed state, another project is looking at daytime versus nighttime irrigation for water conservation. Soils are a challenge, and nutrient management is important. Stock has a SARE grant for a simple nitrogen rate study of dahlia – another high-value flower. Stock has started doing enterprise budgets for cut flowers, and recently submitted a budget for peony in high tunnels to the Utah Department of Agriculture. She is now working on an enterprise budget for snapdragons. They are also looking at pest and disease management for cut flower crops. Next she plans to try to delay bloom on white varieties of peony for the wedding market. She said she gets data to calculate labor for enterprise budgets from her farm team and from a new flower co-op in Utah, in which two farms that had been competing with each other decided to join up and specialize. Utah State sells flowers to them, and they take a 30 percent cut, and report everything regarding their labor and mileage. USU hosts an Urban and Small Farm Conference, which is popular with hobbyists and small-scale growers. She is working on fact sheets, including one on small equipment use. USU Extension wants each specialist to have an online presence. Stock wants to put together a high tunnel production course with eight modules on basic production, then people can pick two electives on specialized topics. That will be coming up next year. A survey of cut flower and vegetable growers regarding their favorite social media source showed 58% preferred Instagram, 33% Facebook, and 3% Twitter. Stock started using Instagram, and it's been a good way to show the person behind the science. She's found it to be a good way to find out who the growers are, and they've developed a cut flower association in Utah since starting this. Other activities include a Fact Sheet Friday where she promotes fact sheets to bring growers to her site, and she does posts each week with updates from experiments. Stock wants to do surveys with florists, to determine what percentage of flowers is local. Utah has a lot of farmer-florists who work with CSAs or do subscriptions on their own. She said there are many people operating on less than a quarter-acre.

10. Jacobsen (KY) said she does some outreach, and that she was one of the authors of a movable tunnel extension fact sheet that was just released through the CCD. She has been

working with build-your-own movable tunnels since 2011, and has learned some things along the way. Last summer, all of UK's tunnels were set up to roll on wheels, so they don't need tractors to move them. She said UK developed a very good relationship with NRCS early on, and has had good support and cooperation from that agency on stationary and movable high tunnels. NRCS will share costs for high tunnel kits. She added that Grow Appalachia has also been a good partner on high tunnel programming with UK.

## **B. Guest speakers and farm tour.**

UK enologist Jeff Wheeler led a tour of the UK winery and discussed UK's enology program just before lunch. After lunch, Jacobsen introduced Dr. Lilian Brislen, Executive Director of The Food Connection @ UK. Brislen discussed Farm to Campus work in general, and shared UK's story as an illustration. She talked about opportunities and challenges working with institutional supply chain requirements, and shared that The Food Connection has a learning kitchen to create a space for students and community members to feel comfortable working with local foods. She also discussed UK's Salad Bar Program, which is looking for more season extension and hydroponic production, and currently handles 24,000 pounds of local produce. Wolff recommended that SERA 45 participants contact Dr. Brislen if they are interested in collaboration.

After the presentation, the group took a tour of the UK Horticulture Research Farm, and made stops at both stationary and movable high tunnels. Rudolph discussed her research in stationary tunnels, and Jacobsen discussed the movable tunnels.

## **C. Discussion of potential collaboration, including ideas for proposals or products.**

### **Production Information**

1. Velandia (TN) said a pre-proposal for Southern SARE on a project evaluating different mulch products had been accepted. The proposal needs to be submitted by November 15.
2. Jacobsen (KY) said it seems the SERA 45 group could do more organization of Specialty Crop Block Grants to avoid duplicating each other. She said there is always value in crop selection and different cropping systems. She asked if anyone had interesting ideas about new cropping systems for tunnels. Rudolph said she is involved in a multistate beet trial.
3. Wszelaki (TN) proposed a multipurpose project to look at storage of winter squash, which varieties can be stored longest, as part of a squash hunger campaign that could benefit communities in food deserts through food pantries. The project could also look at other storage vegetables, and could carry over to CSAs. Woods (KY) said it would be helpful to come alongside the community, and mentioned sweet potatoes as another crop to consider. Jett (WV) said he would be in favor of such a project. Wszelaki said the number of varieties would depend on what people are willing to do.

### **Research and Extension Activities**

1. Rudolph (KY) suggested working on a High Tunnel IPM Guide for the Southeast that was briefly discussed earlier in the day. She said UK has a very photo-heavy IPM scouting guide, and she sees value in a more in-depth guide that includes information such as which pesticides are appropriate for high tunnel use, etc.

2. Wolff (KY) said at our 2018 meeting, we discussed an SCRI planning grant. Jacobsen (KY) said Matt Kleinhenz (OH) led a proposal that looked at integrating weather data for high tunnel management, but it was not funded. Jacobsen, Rogers (MN) and Wszelaki (TN) were part of the proposal team. Jacobsen said Kleinhenz is continuing to shop the idea in foundational programs for AFRI, which has a call for conference grants with no deadline, and added that Liz Maynard (IN), Ajay Nair (IA), Kleinhenz and Jacobsen are involved. It is a conference proposal for \$50,000-\$60,000. If that is funded, Matt will be reaching out to other SERA 45 participants.

3. Jacobsen said that several SERA 45 participants are collaborating on an SCRI FY 2020 Research and Extension Planning Project Proposal entitled *Reclaiming High Tunnel Soil Health for Sustained Specialty Crop Production*. Collaborators include SERA 45 participants Jacobsen, Rudolph and Woods (KY), Wszelaki and Velandia (TN), and Rogers (MN). The participants are waiting to hear whether they will be invited for a full proposal.

4. Langenhoven (IN) suggested looking at heavy metals on farms, including in high tunnels as an area the group might want to consider.

5. Velandia (TN) suggested biodegradable mulch and soil health as an area to explore, including identifying what data we have and don't have.

6. Wolff (KY) asked what it would take to produce a Southeast High Tunnel Guide. Rudolph (KY) said it would require dividing responsibilities. Jett (WV) said Regional IPM Centers have internal competitive grant projects, but the group would need to get the right people on board. Wszelaki (TN) said a realistic timeline would be more than a year. Rudolph added that if the group wants to get funding it would add to the timeline. Velandia (TN) said if the work is part of a grant, it would give incentive to do it. Jett said he would investigate funding. Velandia said the Southern Risk Management Education Center offers funding, but only for educational purposes for publications and trainings. Woods (KY) added that those grants lean toward economics. Rudolph said she would like to see a guide include information as to the most profitable crops per square foot, and how to do a rotation and still get optimal economic outcome. Velandia suggested that the group target an educational publication for 2020. Oliver (KY) mentioned a Southern IPM Center data grant, referred to as an IPM document grant, which offers funding of \$8,000, that the group might want to take a look at. Velandia volunteered to collaborate on a proposal for 2020 with Southern IPM.

7. Wolff (KY) said if anyone is interested in publishing through the CCD extension publication system, we'll be happy to do that. He added that the CCD is already working on some fact sheets with the Center for Profitable Agriculture (TN).

8. Woods (KY) mentioned the possibility of working on a publication about trellising in high tunnels. Jett (WV) said had hadn't seen any publications evaluating trellis designs for high tunnels, and he thought more compact types could be developed for high tunnels.

9. Jett said he was interested in biodegradable netting. Langenhoven said the Dutch have designed biodegradable string.



10. Stock (UT) said if anyone was interested in cut flowers, there are some annual varieties that don't cost a lot to start (stock and snapdragon). Utah State will have enterprise budgets done by next year, but stock and snapdragon are looking profitable. She said she is interested in collaborating on vegetable research, including winter squash, which urban homesteaders in Utah would be interested in.

### **Price Reporting Activities**

1. Jett said he would try to set up a price reporting system in West Virginia – it's needed for the Small Farm Center. Velandia said if he could get someone to lead the effort who really sees the value of price reporting as a stakeholder, it would help. Jett said a lot of agents are highly involved in farmers markets in WV, and that there is incentive in their annual reports to get this type of data. Wolff offered to share CCD onboarding documents for reporters.

2. Velandia said she would start talking to the one produce auction in TN about getting a price report. She is hoping to find a graduate student to look at six years of farmers market pricing data; three farmers markets have reported through the six years, and she would like to look at trends by crop and by market. She will submit a proposal for a Specialty Crop Block Grant to look at price trends.

3. Woods mentioned the Farm Service Agency (FSA) Noninsured Crop Disaster Assistance Program (NAP); he thinks FSA is in good faith trying to revisit that program to structure it for small, diversified farms. He might reach out to the SERA 45 group about their experiences with their producers regarding NAP. He has tried to stress how important high tunnel production is to FSA, but it doesn't show up on their radar. He added that Minnesota has the Center for Farm Financial Management, which is interested in NAP as well.

### **Market Research, Other Activities**

1. Velandia said if Tennessee gets funding from Southern SARE, regarding how much polyethylene mulch is being used in Tennessee, they could extend that to other states.

2. Rogers (MN) said if anyone has an interest at looking at invasive species in specialty crops, to let her know. Minnesota has been having an issue with Swedevinch, but only in urban agriculture.

Oliver said the reviewers of the SERA 45 proposal commented that the group should consider recruiting more people from the Southern region. Cassady (KY) shared an email from current vice-chair Ajay Nair (IA), who was willing to step into the chair's role for the coming year, but felt the 2020 annual meeting should be held in a more centrally located state. Oliver said the meeting does not have to be hosted by the chair, and can be held at any location. The group discussed the possibility of asking incoming SERA 45 participant Jeanine Davis (NC) to host the 2020 meeting. Cassady said she would contact Davis.

### **Election of officers:**

**Chair** – Ajay Nair (Iowa State)

**Vice-Chair** – Melanie Stock (Utah State)

# SERA 45 State Report - Indiana

**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

*High Tunnels:*

- Specialty melon variety evaluation involving ten specialty melon types in high tunnel and open field; soil and soilless production techniques, grown vertically (Langenhoven, Guan)
- Sweet Pepper variety evaluation (Langenhoven)
- Zucchini variety evaluation (Langenhoven)
- Evaluate grafted cucumbers for enhanced cold tolerance (Guan)
- Evaluate cucumbers grafted with different rootstocks for yield improvement, cold tolerance and fruit quality (Guan)
- Strawberry variety evaluation in high tunnel (Guan)
- Cucumber variety evaluation in high tunnel (Guan)
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*Hydroponics:*

b) organic production systems

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c) small-scale production systems

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d) biodegradable mulches

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e) field production of fruit crops (Bordelon, Hirst, Beckerman, Long, Ingwell)

- Grape cultivar trials
- Grape production systems and management
- Grape IPM
- Small fruit evaluation trials
- Small fruit IPM
- Pawpaw cultivar trials
- Apple rootstock, cultivar, and training systems

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
    - Indiana Horticultural Congress [www.inhortcongress.org](http://www.inhortcongress.org) (now renamed to Indiana Horticulture Conference & Expo)
    - Indiana Small farms Conference [www.purdue.edu/dffs/smallfarms/small-farm-conference-2019/](http://www.purdue.edu/dffs/smallfarms/small-farm-conference-2019/)
    - Illiana Vegetable Growers Symposium [www.ag.purdue.edu/hla/Extension/Pages/IVGS.aspx](http://www.ag.purdue.edu/hla/Extension/Pages/IVGS.aspx)
    - Michiana Fruit and Vegetable Growers Technical Meeting (Burbrink and Egel)
    - Southwest Indiana Melon and Vegetable Growers Winter Technical Meeting (Guan and Egel)
    - Southwest Indiana Melon and Vegetable Growers Meeting
    - Urban Ag Certificate Program (Alford)
    - Purdue Wine Grape Workshops (Bordelon, Blume, Barnett)
    - Greenhouse and Indoor Hydroponics Workshop (Nemali and Langenhoven)

*County-level Events:*

- a) Local Foods in Indiana (Ballard)
- b) webinars
  -
- c) print publications
  - Purdue Extension bulletins are available at <https://ag.purdue.edu/hla/Extension/Pages/Publications-and-Newsletters.aspx>

*New/Recently Updated Publications:*

- How to Splice Graft Cucumber Plants (Guan) [https://www.extension.purdue.edu/extmedia/ho/hoy\\_328y\\_w.pdf](https://www.extension.purdue.edu/extmedia/ho/hoy_328y_w.pdf)
  - Midwest Variety Trial Report for 2018 (Maynard, Guan, Langenhoven, Burgeford) <https://ag.purdue.edu/hla/fruitveg/Pages/mvtr2018.aspx>
  - Seasonal Daily Light Integrals Across Indiana (Maynard, O'Donnell, Ningning, Kong) <https://edustore.purdue.edu/epub/ho-303-w.pdf>
  - Managing Environment in High Tunnels for Cool Season Vegetable Production (Maynard, O'Donnell)
  - <https://www.extension.purdue.edu/extmedia/HO/HO-297-W.pdf>
- d) video
    - How to Splice Graft Cucumbers (Guan) (<https://www.youtube.com/watch?v=z-tXoobiMnY>)

- e) field days/tours
  - Small Farm Education (Langenhoven, Torres, Hallett, Adair, Benjamin, Monroe, Deering, Mitchell, Hoagland, Ballard)
  - Meigs High Tunnel Field Day (Langenhoven, Ingwell, Ghanem, Tronson)
  - Indiana Hort Society Summer Field Day (Hirst)
  - Southwest Purdue Ag Center Field Day
- f) demonstrations
  - Cucumber grafting demonstration at the 2018 Indiana Small Farm Conference

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 State Report - Iowa

**Name: Dr. Ajay Nair**

**University: Iowa State University**

**Contributors:**

Mark Gleason, Professor, Dept. of Plant Pathology and Microbiology

Angela Shaw, Associate Professor, Food Safety of Human Nutrition

Kathleen Delate, Professor, Horticulture

Laura Iles, Dept. of 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 were 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:

- *Specialty melon production within high tunnels (Moriah Bilenky and Ajay Nair)* – Tomato is the most widely and commonly grown vegetable within a high tunnel production system. Growers often plant tomatoes in for multiple years and this leads to challenges such as soil-borne pathogens, lack of soil fertility, and other soil related issues. This study investigated an alternative crop, such as specialty melons, within a high tunnel production. In 2019, ten cultivars of specialty melons (2-3 lb. personal size melons) were evaluated for yield and quality. The project is ongoing and data is being analyzed.
- *Season extension study for high tunnel peach production (Marcus Jansen)* - Peach production in Iowa is limited to the southern tier counties (warmer climate). However, with season extension technology (high tunnels) we are investigating high tunnel peach production. In 2016, a trial was established to compare field-grown peaches to high tunnel field grown peaches. The project is ongoing and data being collected on peach growth and development. At the same time when peaches were planted in high tunnels, an outside planting was also established to compare both production systems.

**b) Organic production systems** - Methods to enhance organic system soil fertility and plant protection continued at the ISU Neely-Kinyon Farm Long-Term Agroecological Research (LTAR) experiment. In the first 16 years of the LTAR, organic corn and soybean yields have been equivalent to their conventional counterparts, with yields for organic alfalfa and oats equal to county averages. Soil quality continues to increase with the use of compost and cover crops. Organic no-till was applied to vegetable and field crops to examine production and soil quality effects. Lysimeter data continues to show that the concentration of leached N has been consistently lower under vegetables grown with a cover crop and in no-till. Soil quality comparisons show greater soil carbon sequestration with cover crops and compost.

### **c) small-scale production systems**

- *Strawberry disease management (Mark Gleason)*– This study was established at the ISU Horticulture Research Station near Gilbert, IA, to evaluate of fungicide-spray strategies to protect strawberries from anthracnose fruit rot, caused by the fungus *Colletotrichum acutatum*, in the presence of isolates of the fungus that are resistant to a widely used fungicide group called strobilurins. Recently, resistance to strobilurins by *C. acutatum* has been spreading throughout the U.S. on strawberry transplants that have symptomless infections of strobilurin-resistant strains of the fungus, so management answers are needed if these fungicides are no longer effective. Analysis of the Iowa field experiment is ongoing, and the trial will be repeated in 2019.
- *Integration of poultry and vegetable production systems (Ajay Nair and Moriah Bilenky)* - This project is currently being carried out on transitional organic land at the Iowa State University (ISU) Horticulture Research station. The first year of the study investigated changes in soil properties, crop performance, and poultry health.
- *Use of biodegradable mulches in pepper production (Ajay Nair and Moriah Bilenky)* - Vegetable growers in Iowa face several production challenges including erratic weather, insect and disease pressure, weeds, and short growing seasons. This directly affects crop development, yield, fruit quality, and ultimately grower profitability. The goal of this two-year study is to help vegetable growers sustainably manage weeds using biodegradable mulches. Mulch materials were selected based on input from the USDA SCRI biodegradable mulch project. The study will primarily answer the following questions: 1) Do biodegradable mulches perform equal or better than conventional mulches in Iowa growing conditions?, 2) how long do the mulches last and how effective they are during the growing season?, and 3) what is the economic feasibility of these mulches? Pepper was transplanted in May 2019 on these mulches and data was collected on weed suppression, soil temperature and several crop growth parameters such as stem diameter, leaf area, yield, and pepper quality.

- *Midwest Food Safety Hub: Implementing safe production practices in specialty crop production (Angela Shaw)*
  - *Use of mulches and mesotunnels in organic cucurbit production (Mark Gleason)* - 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.
  - *Integrated pest management in broccoli production (Ajay Nair and Laura Iles)* - A broccoli IPM project is being conducted, which is investigating the use of netting material for broccoli production. In addition to netting treatment, six cultivars of broccoli are being tested for performance under Iowa growing conditions. Data is being collected on several crop growth parameters and environmental factors such as temperature, relative humidity, etc.
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**
    - Practical Farmers of Iowa Conference
    - Iowa Fruit and Vegetable Growers Conference
    - Horticulture In-Service Training
    - High tunnel crop production workshops
    - Workshops on mitigating heat stress in high tunnels workshop
    - Iowa Organic Conference
    - Frost protection for apple orchards
    - High Tunnel Short Course
    - Vegetable Pest Management Workshop
  - b) webinars**
    - Integrated pest management
    - Vegetable production webinar series
    - Nutrient management in vegetable production
  - c) print publications**
    - Sweet Corn. HORT3089. Iowa State University  
(<https://store.extension.iastate.edu/product/5485>)
    - Cole crops. HORT 3087. Iowa State University.  
(<https://store.extension.iastate.edu/product/5494>)

- Peppers. HORT 3084. Iowa State University.  
(<https://store.extension.iastate.edu/product/5479>)
- Tomatoes. HORT 3091. Iowa State University.  
(<https://store.extension.iastate.edu/product/3981>)
- Onions. HORT 3085. Iowa State University.  
(<https://store.extension.iastate.edu/product/5481>)

**d) video**

<http://www.extension.iastate.edu/vegetablelab/>  
<http://extension.agron.iastate.edu/organicag/>  
<https://www.cucurbit.plantpath.iastate.edu/>

**e) field days**

- Fruit and Vegetable Field Day – 125 participants (growers, extension staff, industry leaders) in 2019.
- Organic Field Day - covered topics ranging from organic crop rotations to no-till vegetable production, reaching over 60 people.
- Broccoli pest management Field Day - Highlighted functionality and use of Protek netting in broccoli production.
- Amish Produce Walk/Field Day – 75 participants

**f) Demonstrations**

- Equipment Demonstration Field Day
- Sprayer calibration for tree fruits

3. Please **list** current activities in your state related to **reporting specialty crop prices** from:

- a) farmers markets
- b) produce auctions
  - Visit to Twin County Produce Auction for on-campus staff, field specialists, and graduate students
  - On-site disease and insect diagnostic clinic for Amish and Mennonite growers at the Twin County Produce Auction, Kalona, IA
- 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 State Report - Kentucky (CCD)

**Name: Christy Cassady & Brett Wolff**

**University: University of Kentucky Center for Crop Diversification**

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

1. Please **list** current activities in your state involving **research-based production information** about specialty crops and systems that have potential to be profitable for small farms, including (but not limited to):
  - a) protected agriculture — high/midsize/low tunnel/greenhouse production
  - b) organic production systems
  - c) small-scale production systems
  - d) biodegradable mulches

2. Please **list** current **educational and extension activities** in your state focused on the **production and marketing of specialty crops**. Please include links and/or copies as appropriate. Examples might include (but are not limited to):
  - a) in-person trainings
  - b) webinars
  - c) print publications
  - d) video
  - e) field days
  - f) demonstrations

- a) In-person trainings –
  - Marketing for All (most delivered multiple times across the state)
    - i. Marketing Basics
    - ii. Social Media Basics
    - iii. Exploring New Markets
    - iv. Visual Marketing
    - v. Market Signs that Work
    - vi. Using Price Data
    - vii. Accepting more than just cash

Kentucky Fruit and Vegetable Conference presentations, January, 2019

- Budgeting and Planning: How to Use CCD Budgets
- Center for Crop Diversification Tools
- High Tunnel Grower Resources

- b) Webinars –
- CPA Online Marketing Webinar Series:
    - i. Social Media Basics
    - ii. Understanding and Using Analytics
    - iii. Basics of Web Design.
  - Getting Started in Value-Added Production: Packaging & Labeling
- c) Print publications – CCD crop, marketing and system profiles and fact sheets are being developed and updated. New profiles/fact sheets have been developed since the fall of 2018 on Ginger and Turmeric; Saffron, Coriander & Cumin; Blossom End Rot; High Tunnel Economics; and Low Tunnel Economics (Saffron, Coriander & Cumin and High Tunnel and Low Tunnel Economics are under review). The CCD is now collaborating with the Kentucky Horticulture Council on a variety of Extension resources and activities. Josh Knight, a senior extension associate funded by the Hort Council to work with the CCD, in close collaboration with Horticulture Department faculty (Drs. Rachel Rudolph and Krista Jacobsen), has developed a High Tunnel Planting Calendar, which is now available on the CCD website at <http://www.uky.edu/ccd/production/system-resources/gh-ht/plantingdates>. There are three versions of the calendar, with one for each region of Kentucky.

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

Apples	High Tunnel Strawberries	Watermelon
Asparagus	Hops	Winter Squash
Bamboo	Ornamental Grasses	Co-ops
Bedding Plants	Peaches	Farmers Markets
Brussels Sprouts	Plasticulture Strawberries	Herb Marketing Resources
Garlic	Pumpkins	Marketing Organic Produce
Gourds	Strawberries	Producer Grants
High Tunnel Brambles	Turfgrass Sod Production	Roadside Stands

The CCD's blueberry budget publications, Blueberry Cost and Return Estimates (CCD-BG-2), Highbush Blueberries, Kentucky Pick-Your-Own Marketing (CCD-BG-3), and Highbush Blueberries, Kentucky Wholesale/Retail Marketing (CCD-BG-4) have been updated in 2019. A new budget is being developed for peaches, and a budget for strawberries will be updated in 2020.

The CCD's monthly newsletter has 1,655 subscribers.

- d) Video –
- Basics of Cut Flower Production 5-part series
    - i. Introduction to Growing Cut Flowers
    - ii. Cut Flower Harvest Tips

- iii. Bulbs, Corms, and Tubers
- iv. Cut Flower Seasonality
- v. Biennials and Perennials

- CSA Unboxing video
- multiple how to prepare vegetable videos
- Webinar Promo Videos (Food Chain, MarketReady, KY Dept. of Ag)
- Getting Started in Gardening
- Demystifying Tomatoes
- Setting Prices for Farmers Markets
- Soil Blocking for Transplants
- How to start Transplants
- Shaker Village Tour Highlights
- Whitesburg Community Kitchen overview
- In-process: High Tunnel Basics series with Grow Appalachia, setting up a basic irrigation system

See the CCD YouTube page at

<https://www.youtube.com/channel/UCQfp0ujlfpXEVX3GadvSr7g>.

- e) Field Days – The CCD has distributed publications and information about our resources at:

- Third Thursday Thing, June 20, 2019, Kentucky State University, Frankfort

- High Tunnel Management and Production Systems Workshop, August 6, 2019, hosted by Grow Appalachia and Community Agricultural Nutritional Enterprises, Inc. (CANE), Whitesburg, KY.

2019 Organic Association of Kentucky Field Days

- Mastering the Art of Marketing (March 26, 2019, Oldham County Extension Office, LaGrange, KY)
- Irrigation Systems: Considerations and Installation (April 12, 2019, UK Horticulture Research Farm, Lexington)

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

The CCD developed a new podcast on growing and marketing sweet potatoes in 2019. CCD podcasts are available at <http://www.uky.edu/ccd/training/podcasts>.

CCD publications and general information were disseminated at the following conferences/meetings in late 2018-2019:

Kentucky Fruit and Vegetable Conference (Lexington)  
Kentucky State University Small Farm Conference (Frankfort)  
Indiana Small Farm Conference (Danville)  
Ohio Ecological Food and Farm Association Conference (Dayton)  
Ohio State University Small Farm Conference and Trade Show (Piketon)  
Organic Association of Kentucky Conference (Lexington)  
Pick TN Conference (Franklin)  
Southern Sustainable Agriculture Working Group Conference (Little Rock, AR)  
West Virginia Small Farm Conference (Charleston)

CCD personnel will be participating in meetings and conference trade shows at the following sites in late 2019 and 2020:

Kentucky Fruit and Vegetable Conference (Lexington)  
Illinois Specialty Crop, Agritourism and Organic Conference (Springfield, IL)  
Indiana Hort Congress (Indianapolis, IN)  
Southern Sustainable Agriculture Working Group Conference (Little Rock, AR)  
PickTN Conference (Franklin, TN)  
Ohio Ecological Food and Farm Association Conference (Dayton, OH)  
Indiana Small Farm Conference (Danville, IN)  
Organic Association of Kentucky Conference (Louisville)  
Kentucky Women in Agriculture Conference (Louisville)  
Kentucky State University Small Farm Conference (Frankfort)  
West Virginia Small Farm Conference (Charleston, WV)

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. This year, we had a maximum of 14 markets reporting.

- b. Prices from Bath County, Casey County, Fairview, Hart County and Lincoln County produce auctions are posted on the CCD website as they are received.
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

Surveys have been conducted and reports are being developed on:

- 1) An organic producer/stakeholder survey
- 2) A high tunnel grower survey

Work has begun on development of:

- 1) A nursery products buyer survey, focusing on garden centers
- 2) A survey of homeowners and their demand for nursery products

Additional surveys are planned for 2019-21, including:

- 1) A farmers market vendor and market manager survey that will look at changes in marketing activity resulting from creating a permanent market facility, and using a rural and urban market lens to look at those changes.
- 2) A Kentucky restaurant produce buyers survey, which was last done in 2006, to monitor changes in buying trends.
- 3) A produce auction buyers survey to help us craft better price reports and help the auctions improve their outreach.

## SERA 45 State Report - Kentucky (Jacobsen)

**Name: Krista Jacobsen**

**University: University of Kentucky**

Note: this report is just for Krista's activities. Separate reports have been submitted by other project participants at UK.

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

I don't have any activities that are linked to production per se. I have a lot more work focused on cover crop and conservation practices for high tunnels and organic farming systems. These are focused on sustaining the long-term productivity of protected agriculture and organic farming systems, but are probably slightly askew of the SERA-45 project objectives.

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

Brett Wolff has spearheaded the creation of a movable tunnel extension fact sheet based on the research and development of Jacobsen and Tim Coolong at UGA. This is near completion, and was reviewed externally by two external reviewers that are SERA-45 participants as part of the peer review process.

As part of an OREI grant (USDA 2016-51300-25722) a group of University of Minnesota, Kansas State University and University of Kentucky faculty, staff and students took part in a short course to build a high tunnel in May 2019. University

of Minnesota PI Julie Grossman partnered with co-PI Jacobsen at UK and the Kentucky-based NGO Grow Appalachia to offer a short-course in Appalachian culture and agriculture. This educational outcome of the OREI included experiential learning activities with organic specialty crop production with the University of Kentucky Community Supported Agriculture project, as well as tours of specialty crop operations in Berea and London, Kentucky. The group built a small-footprint high tunnel at the Hindman Settlement School in Hindman, Kentucky.

Jacobsen gave a talk titled “Extending the Season, Expanding Markets” about specialty crop production in protected agriculture systems as a means to build and promote community food systems in the first Kentucky Local Food Systems Summit. <https://foodconnection.ca.uky.edu/kentucky-local-food-systems-summit>. Further, there were several sessions focused on barriers to specialty crop marketing at the wholesale/institutional procurement level. Presenters were representative of the entire specialty crop value chain, including producers, food hub managers, institutional buyers, and food safety specialists. This is slated to be an annual event occurring in February each year, with at least a few sessions focused on production and marketing of specialty crops.

Educational activities in organic specialty crop production systems at the University of Kentucky include the following course offerings:

SAG 397: Apprenticeship in Sustainable Agriculture. This hands-on apprenticeship in diversified, organic vegetable production is part of UK’s Sustainable Agriculture (SAG) degree program, although it is open to students of all majors. In summer 2019 there were 10 students in the course. It takes place on the UK Horticulture Research Farm in Lexington, KY with the UK Community Supported Agriculture (CSA) project.

The UK CSA provides educational tours for a multitude of UK courses and community groups interested in local specialty crop production. Such tours included the following groups in 2018-2019:

- 21 sections of the UK College of Agriculture GEN 100 (Introduction to Issues in Agriculture, Food and the Environment), which include all incoming College of Agriculture freshmen.
- 2 sections of PLS/SAG 386 (Plant Production Systems), which provided an overview of specialty crop production. A second lab covered season extension and greenhouse production of specialty crops.
- Many tours for local school groups and visiting farmers.

Rachel Rudolph and others have likely reported on field days and other activities at the Horticulture Research Farm. Many thanks to them for their contributions.

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 State Report - Kentucky (Rudolph)

**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
  - a. High tunnel vegetable cultivar trials
    - i. Ground cherry
    - ii. Summer squash
    - iii. Beets
    - iv. Broccoli
    - v. Lettuce
  - b. Tomato grafting for root knot nematode resistance in high tunnels
  - c. Tomato grafting for improved vigor and yield in greenhouse system
- 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
  - a. January 2020: Kentucky Fruit and Vegetable Conference
  - b. 2020: High tunnel trainings/workshops for county extension agents (train the trainer)
  - c. 2020: Tomato grafting workshops for county agents (train the trainer)
- b) webinars
  - a. October 2019: 3 high tunnel webinars focused on different aspects of high tunnel production
  - b. November 2019: 2 webinars focused on different aspects of tomato production
  - c. December 2019: 2 webinars focused on different aspects of pumpkin production
- c) print publications
  - a. Blossom end rot fact sheet (CCD-FS-11)  
[https://www.uky.edu/ccd/sites/www.uky.edu.ccd/files/blossom\\_end\\_rot.pdf](https://www.uky.edu/ccd/sites/www.uky.edu.ccd/files/blossom_end_rot.pdf)

- b. 2019 Annual Fruit and Vegetable Research Report
  - c. Vegetable Production Guide for Commercial Growers, 2019-2020 (ID-36)
  - d. Root knot nematode in vegetables fact sheet
  - d) video
  - e) field days
    - a. October 2019—high tunnel field day
  - f) Demonstrations
    - a. Broccoli cold-hardiness demonstration in Clark County
    - b. Cover crops in high tunnels and open fields
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

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

## SERA 45 State Report - Kentucky (Strang)

**Name: John Strang**

**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
  - b) organic production systems
  - c) small-scale production systems
    - a. Matted row strawberry cultivar trial
    - b. Black rot resistant cabbage cultivar trial
    - c. Uba tuba pepper *C. baccatum* selection program to find earlier maturing higher yielding selections
  - 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
    - a. Kentucky Fruit and Vegetable Conference January 7-8, 2019
  - b) Webinars
    - a. Plasticulture Strawberry Production, Sept 5 and 9.
  - c) print publications
    - a. 2018 Annual Fruit and Vegetable Research Report (PR-757)  
<http://www2.ca.uky.edu/agcomm/pubs/PR/PR757/PR757.pdf>
    - b. An IPM Scouting Guide for Common Problems of Grapes in KY (ID-254) <http://www2.ca.uky.edu/agcomm/pubs/ID/ID254/ID254.pdf>
  - d) Video
    - a. Vole Management in Blueberries.  
<https://www.youtube.com/watch?v=WvFJobCKo8M&feature=youtu.be>
  - e) field days
    - a. Fruit Grower Orchard Meeting, Eckert's Orchard, Versailles, KY, March 12, 2019
    - b. Fruit Grower Orchard Meeting, Hinton's Orchard and Farm Market, Hodgenville, KY, May 2, 2019
  - f) demonstrations
    - a. Danville Senior Citizens Center thornless erect blackberry program

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
  - a. Average Kentucky wholesale and retail fruit prices collected as a basis for the Kentucky NAP program fruit 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 State Report - Kentucky (Wright)

**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
  - b) organic production systems
  - c) small-scale production systems
  - d) biodegradable mulches

Not sure if hops would be considered small-scale production. We have some folks that may be covering costs at under 5 acres, but the Great Lakes Hops Working Group has estimated that the break even acreage is about 5 acres and we only have two growers around that size. Kentucky has 15 to 20 hops growers overall.

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

We are completing construction of a passive solar greenhouse here at RCARS.

If a grant proposal comes through I will be doing yellowroot production, otherwise I may look at winecap mushroom production in my small high tunnel.

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

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

## SERA 45 State Report - Minnesota

**Name:** Mary Rogers, Assistant Professor, Horticultural Science

**Contributors:**

Julie Grossman, Associate Professor, Dept. of Horticultural Science

Paulo H. Pagliari, Associate Professor, Dept. of Soil, Water, and Climate

Annie Klodd, Assistant Extension Professor - Fruit and Vegetable Production

**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.

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**

Integrated pest management for local hydroponic and aquaponic vegetable crop industries

Investigator: Rogers, Anderson

Agency: MN Department of Agriculture Specialty Crop Block Grant

Dates: 2019-2021

Deep Winter Food Production in the North Central Region

Investigators: Schweser, Rogers...

Agency: NC SARE Research & Education Grant

Dates: 2017-2019

Educating urban youth via decision cases and curriculum on hoop house vegetable production

Investigators: Grossman, Pfeiffer

Agency: NC SARE Youth Educator Grant

2019-2021

Developing a multi-regional research and education network to improve nutrient management in organic high tunnels

Investigators: Grossman, J.; Jacobson, K.; Rivard, C.; Guknecht, J. Peterson, H.

Agency: USDA-OREI

Dates-2016-202

**b) organic production systems**

Furthering the development and implementation of systems-based organic management strategies for spotted wing drosophila

Investigators: Sial (primary, UGA) and MI, OR, MD, MN, FL, CA, NC, NJ, AR  
Agency: USDA OREI  
Dates: 2018-2020

Sustainable Agriculture Research and Education  
Investigators: Grossman, Pfeiffer  
Agency: NC SARE Research & Education Grant  
Dates: 2019-2022

Harnessing variation in vetch and rhizobia populations to optimize nitrogen fixation  
Investigators: Drinkwater, Grossman  
Agency: USDA-ORG  
2018-2020

Perennial and annual organic transition systems to optimize soil health, carbon sequestration, and profitability  
Investigators: Sheaffer, C., Jungers, J. Gutknecht, J., Grossman, J.  
Agency: USDA-ORG  
2016-2019

Summer cover-cropping strategies and organic vegetable production for beginning, immigrant farmers  
Investigators: Grossman  
Agency: Minnesota Department of Agriculture  
Dates: 2016-2018

Multi-regional risk analysis of farm manure use: balancing soil health and food safety for organic fresh produce production  
Investigators: Paulo H. Pagliari, University of Minnesota; Alda Pires, Beatriz M. Lopez, and Michele Jay-Russell, University of California-Davis; Patricia D. Millner, USDA-ARS, MD; Mark Hutchinson and Jason Lilley, University of Maine; Jessica Shade and Stacy E. Sneeringer, The Organic Center, Washington DC; Elizabeth A. Bihn and Donna M. Pahl, Cornell University  
Agency: USDA-NIFA Dates: 2016-2020

### **c) small-scale production systems**

Improving Sustainable Management Practices for Spotted Wing Drosophila, an Emerging Pest of Small Fruit in Minnesota  
Investigators: Rogers, Hutchison  
Agency: MN Department of Agriculture Crop Research Grant  
Dates: 2017-2020

Overwintering, Migration and Development of Cost-Effective Practical Management Strategies for the Invasive Spotted Wing Drosophila in MN  
Investigators: Rogers, Hutchison, DiGiacomo, Peterson



Agency: MN Invasive & Terrestrial Plant & Pest Center (MN Environmental and Natural Resource Trust Fund)

Dates: 2017-2020

Overcoming the Obstacles to Hazelnut Production in the Upper Midwest

Investigators: Wyse, Aukema, Braun, Cohen,...

Agency: USDA, NIFA SCRI

Dates: 2019 - 2022

Increasing Production of Summer Lettuce and Cauliflower

Investigators: Tong, Rohwer, Vickers

Agency: MN Department of Agriculture Specialty Crops Block Grant

Dates: 2018-2019

Determining Distribution, Impact, and Management Options for Grapevine Trunk Disease in Minnesota Vineyards

Investigators: Clark, Klodd, Blanchette

Agency: University of Minnesota CFANS Rapid Agricultural Response Fund

Dates: 2019-2021

Suitability of Minnesota-adapted and traditional European cider apple cultivars for use in Minnesota cider production

Investigators: Klodd, Luby, Clark, Horton, Tillman

Agency: MN Department of Agriculture Specialty Crops Block Grant

Dates: 2019-2021

Developing Horticulture Extension Programs Based on Educational Priorities of Fruit and Vegetable Producers

Investigators: Klodd

Agency: North Central Sustainable Agriculture Research and Education (SARE)

Dates: 2018-2019

#### **d) biodegradable mulches**

Land Protection and Preservation – Beyond Agricultural Plastic

Investigator: Paulo H. Pagliari

Agency: LCCMR

Dates 2018-2021

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**

MN Fruit & Vegetable Growers Association Conference  
MN Dept. of Agriculture Organic Conference  
MN Grape Growers Assoc. Conference  
Sustainable Farming Association Conference  
Women in Sustainable Ag Conference  
Indigenous Farmers Conference  
Emerging Farmers Conference  
Minnesota Apple Growers Assoc. Conference  
Twin Cities Metro Growers Network <https://www.sfa-mn.org/twin-cities-growers-network/>

**b) webinars**

Spotted-wing drosophila webinars: <https://articles.extension.org/pages/74612/management-of-spotted-wing-drosophila-using-organically-approved-strategies:-an-update>

Local Foods College UMN Extension <https://extension.umn.edu/courses-and-events/local-foods-college>

Late Planting, Re-Planting, and Succession Planting  
<https://www.beginningfarmers.org/late-planting-re-planting-succession-planting-webinar/>

Grape Grower Season Re-Cap Webinars  
<http://enology.umn.edu/news/free-webinar-2018-grape-grower-season-re-cap-nov-15>

**c) print publications**

Management Recommendations for Spotted Wing Drosophila in Organic Berry Crops:  
[https://extension.uga.edu/publications/detail.html?number=B1497&title=Management Recommendations for Spotted Wing Drosophila in Organic Berry Crops](https://extension.uga.edu/publications/detail.html?number=B1497&title=Management+Recommendations+for+Spotted+Wing+Drosophila+in+Organic+Berry+Crops)

**d) video**

Pruning Tips: Grapevines with Winter Injury  
<https://www.youtube.com/watch?v=YHNE2pVI7fQ&t=2s>

Pruning Out Grapevine Trunk Diseases  
<https://www.youtube.com/watch?v=IS7Oiyx7bVE&t=24s>

Pruning Apple Trees: 3-part video series  
<https://www.youtube.com/watch?v=rEMpLjGhQUQ>

**e) field days**

UMN Organic Farm Open Houses  
Deep Winter Greenhouse production field day/workshops  
MN Apple Growers Association summer orchard tour  
MN Grape Growers Association summer picnic  
MN Fruit and Vegetable Growers Association summer field tour  
MOSES field day: Growing Unique Fruits on Your Farm, August 2019

Minnesota Premium Asparagus field days - SFA and UMN  
Minnesota Food Association specialty crop production classes  
Field day: Pumpkin Variety Trial Field Tour, Sept. 2019  
Field day: Managing and Troubleshooting Young Grapevines, May 2019  
Field day: Canopy Management Techniques and Sustainable Pest Control, June 2019  
Field day: Monitoring and Ensuring Grape Quality, August 2019  
Field day: Grape Dormant Pruning, April 2019

**f) demonstrations/tours**

Twin Cities Metro Growers Network and Tours (Hakanson)  
Grape grower network group (6 vineyard tours annually)

**g) websites/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>

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

Garlic Enterprise Analysis: A Study of the Returns to Garlic Production in Minnesota  
<https://conservancy.umn.edu/handle/11299/201259>

Deep Winter Greenhouse Enterprise Analysis  
<https://drive.google.com/open?id=142s59trSII1JuNpYII3GXxRG9BxYTqrM>

Minnesota Fruit and Vegetable Grower Needs Assessment

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 State Report - Tennessee

**Name:** Margarita Velandia, Annette Wszelaki, and Troy Dugger

**University:** The University of Tennessee

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

1. Please **list** current activities in your state involving **research-based production information** about specialty crops and systems that have potential to be profitable for small farms, including (but not limited to):
  - a) protected agriculture — high/ low tunnel/greenhouse production
  - b) organic production systems
  - c) small-scale production systems

*Production:*

- *Performance and Adoptability of Biodegradable Plastic Mulch for Sustainable Specialty Crop Production*
- *Evaluating Cultivar Selection and Integrated Pest Management Practices in Blueberry Production*
- *Organic Internship VOL Supported Ag Program*
- *Cover Crops Under Cover: Evaluating Costs, Benefits, and Ecosystem Services of Cover Crops in Year-Round High Tunnel Production*
- *Systems Thermal Protection Strategies in High Tunnels to Further Extend the Growing Season*
- *Comparing Lettuce Yield and Quality Using Drip and Overhead Irrigation on Biodegradable Mulches*
- *On-farm Fresh-market Tomato and Pumpkin Variety Trials*
- *UT-NCSU Southeast Regional Pumpkin Trial*

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. **Velandia M.** “2019 Tennessee Fruit and Vegetable Producer Survey.” East Tennessee Fruit, Vegetable and Food Safety in-service training. Nashville, TN, May 26, 2019.
2. **Velandia M.** “2019 Tennessee Fruit and Vegetable Producer Survey.” East Tennessee Fruit, Vegetable and Food Safety in-service training. Rutledge, TN, May 12, 2019.
3. **Leffew M.** “Merchandising Methods to Make Money.” Farmers Market Boot Camp, Henderson, TN, January 23, 2019, (Participants = 25); Chattanooga, TN, January 28, 2019, (Participants = 36); Lebanon, TN, February 7, 2019, (Participants = 27); White Pine, TN, February 18, 2019, (Participants = 18.)

4. **Leffew M.** "Digital Marketing Trends." Farmers Market Boot Camp, Henderson, TN, January 23, 2019, (Participants = 25); Chattanooga, TN, January 28, 2019, (Participants = 36); Lebanon, TN, February 7, 2019, (Participants = 27); White Pine, TN, February 18, 2019, (Participants = 18.)
5. **Pepper H.** "Food Product Cost and Pricing Tools." Farmers Market Boot Camp, Henderson, TN, January 23, 2019, (Participants = 25); Chattanooga, TN, January 28, 2019, (Participants = 36); Lebanon, TN, February 7, 2019, (Participants = 27); White Pine, TN, February 18, 2019, (Participants = 18.)
6. **Pepper H.** "Business Planning Basics." Farmers Market Boot Camp, Henderson, TN, January 23, 2019, (Participants = 25); Chattanooga, TN, January 28, 2019, (Participants = 36); Lebanon, TN, February 7, 2019, (Participants = 27); White Pine, TN, February 18, 2019, (Participants = 18.)
7. **Humpal L.** "Opportunities for Elderberry Operations." Added Value Producer Meeting, Coalmont, TN, July 23, 2019 (Participants = 9.)
8. **Bruhin J.** "Value-Added Agriculture in Tennessee." Added Value Producer Meeting, Coalmont, TN, July 23, 2019 (Participants = 9.)
9. **Wszelaki, A.,** Producer conference and county meeting talks on biodegradable mulches, cover crops in high tunnels, food safety, variety trials, and organic production.

b) Webinars

1. **Wszelaki, A.,** and S. Flowers. Field Breaks Facebook Live Webinar Series: To Wash or Not to Wash?, 2019. Available online @UTProduce
2. **Wszelaki, A.,** and S. Flowers. Field Breaks Facebook Live Webinar Series: Getting the Most Out of Your Produce: Postharvest Handling Tips, 2019. Available online @UTProduce
3. **Wszelaki, A.,** J. Buchanan and B. Leib. Field Breaks Facebook Live Webinar Series: Irrigation Basics and Water Treatment Options, 2019. Available online @UTProduce
4. **Wszelaki, A.,** and F. Walker. Field Breaks Facebook Live Webinar Series: Composting Tips to Get the Out of Your Pile, Coming October 2019 online @UTProduce
5. **Wszelaki, A.,** and D. Lockwood. Field Breaks Facebook Live Webinar Series: Managing Wildlife in Your Orchard and Field, Coming November or December 2019 online @UTProduce
6. **Wszelaki, A.,** and L. Dunn. Field Breaks Facebook Live Webinar Series: Potty Talk: Considerations for Worker Health and Hygiene on Your Farm, Coming November or December 2019 online @UTProduce

c) print publications

1. **Velandia, M.,** A. Smith, A. Ahles, Z. Hansen, F. Hale, **A. Wszelaki,** and J. Moore. 2019. Sample Budgets for Large-scale Bell Pepper Operations and the Impact of Phytophthora Blight on Farm Revenue and Costs, 2019. W831, UT Extension [Refereed]. [Available Online](#).
2. **Velandia, M.,** A. Smith, **A. Wszelaki,** and S. Galinato. 2019. The Economics

Feasibility of Adopting Plastic Biodegradable Mulches in Pumpkin Production. W844, UT Extension [Refereed]. [Available Online](#).

*Biodegradable Mulch Information Resources*

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

*UT Organic and Sustainable Crop Production Program Factsheets*  
(soon to transition to <http://utvegetable.com>)

*UT Food Safety Factsheets*

<http://utvegetable.com>

d) video

e) field days

- 1) DeBruyn, J., **A. Wszelaki**, and **M. Velandia**. 2019. "Biodegradable Mulches: What are the Effects on the Ground, on the Crop, and on your Pocketbook." 2019 Ohio Ecological Food and Farm Association (OEFFA) conference, Dayton, OH, February 16, 2019.
- 2) **Wszelaki, A.**, Z. Hansen, B. Leib, and J. Moore. 2019. "Lettuce Production with Biodegradable Mulches Using Drip or Overhead Irrigation." UT Organic Crops Field Tour, Knoxville, TN, April 25, 2019.
- 3) **Wszelaki, A.**, "Managing Cover Crops to Maximize Yield in High Tunnels." NRCS Organic Field Day, Knoxville, TN, April 26, 2019.
- 4) **Wszelaki, A.**, "Crop Rotations for Diversified Vegetable Farms." NRCS Organic Field Day, Knoxville, TN, April 26, 2019.

f) demonstrations

g) websites

<http://utvegetable.com>

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

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

h) social media

*Facebook @UTProduce*

*Instagram @ut\_vsa*

3. Please **list** current activities in your state related to **reporting specialty crop prices** from:

a) farmers markets

- *Report prices at Tennessee Farmers Markets – Tennessee Farmers Markets Price Reports* <http://www.uky.edu/ccd/pricereports/TNFM>

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. Tanaka, K., K. Rignall, K. Moskowitz, **M. Velandia**, C. Trejo-Pech, and S. Muntz. "Extending Roots of Fresh Stop Markets across the Southeast Region." Southern Sustainable Agriculture Research & Education (SARE) Program, USDA-NIFA, 4/2018 -3/2021.
2. Hansen, Z., N. Bumgarner, D. Lockwood, M. Rose, V. Sykes, and **M. Velandia**. "Evaluating Cultivar Selection and Integrated Pest Management Practices Economically to Support Blueberry Growers in the Mid-South." Southern Region Small Fruit Consortium, 3/2019 - 2/2020.
3. Holland, R. "Developing and Utilizing Crop Profiles for Tennessee Specialty Crop Growers." Tennessee Department of Agriculture Specialty Crop Block Grant, 11/1/2018 - 8/1/2021.
4. Holland, R. "Considerations for Growing and Marketing Specialty Crops in Tennessee." Tennessee Department of Agriculture Specialty Crop Block Grant, 11/1/2019 - 8/1/2022.



# SERA 45 State Report - Utah

**Name: Dr. 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
  - b) organic production systems
  - c) small-scale production systems
  - d) biodegradable mulches
  - a) Protected agriculture is a priority in Utah, particularly through the use of high and low tunnels. Current research includes cut flower production (and colleagues are studying fruit and vegetable production). The cut flower research includes:
    1. Advancing and scheduling bloom of perennial cut flowers with high tunnels, low tunnels, and soil heating to hit key holiday markets for premium pricing (1 variety)
    2. Trialing planting dates in high tunnels vs field-grown to advance bloom, improve quality, and increase yield of cut flower crops (37 varieties of annuals)
    3. Forcing perennial cut flowers to bloom in the first year, and extend bloom periods (3 varieties)
  - b) Organic production systems: None.
  - c) Small-scale production systems are also a priority in Utah, due to limited resources (land, water), and high land prices. Research-based production information for small-scale systems includes:
    1. Irrigation efficiency for urban crops: day versus nighttime irrigation for water conservation and plant health
    2. Nutrient management planning for small-scale systems and developing recommendations for high-value crops (cut flowers: dahlia), specific to Utah's soils (high pH, high salinity, low organic matter)
    3. Enterprise budgets for small-scale operations (Peony, Snapdragons at present)
    4. Pest and disease management for cut flower crops: identifying common challenges on Utah Flower Farms.
  - 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
    1. USU Urban and Small Farms Conference (20 February 2019, West Valley City, UT). [http://www.diverseag.org/files-ou/2019-usfc-files/2019\\_Online\\_Schedule.pdf](http://www.diverseag.org/files-ou/2019-usfc-files/2019_Online_Schedule.pdf)
    2. Urban Homestead Expo. USU Extension. (20 April 2019, Salt Lake City, UT). <https://conservationgardenpark.org/events/1204/usu-urban-homestead-expo>
    3. Rocky Mountain District Consulting Rosarian School. (07 June 2019, Sugar House Park, UT). <http://rmdistrict.org/2019-consulting-rosarian-school/>
    4. Utah Cut Flower Farm Association Kickoff Event (09 July 2019, Riverton, UT). [https://www.instagram.com/p/BzN\\_aB7Bjfl/?utm\\_source=ig\\_web\\_copy\\_link](https://www.instagram.com/p/BzN_aB7Bjfl/?utm_source=ig_web_copy_link)
  - b) Webinars - None
  - c) print publications
    1. Sustainable Manure and Compost Applications, USU Extension Fact Sheet, *in review*
    2. Sweet Peas as a Cut Flower Crop in Utah, USU Extension Fact Sheet, *in review*
    3. Snapdragons as a Cut Flower Crop in Utah, USU Extension Fact Sheet, *in review*
  - d) video
    1. Filming footage on high tunnel construction and cut flower plantings (2019-2020, in process, not released)
  - e) field days
    1. The USU Production Horticulture Team hosted one field day on May 22, 2019 at the Utah Agricultural Experiment Station – Greenville in North Logan, UT. <https://www.eventbrite.com/e/preston-high-tunnel-workshop-and-farm-tour-tickets-60206397957#>
    2. USU Extension – Salt Lake hosted one field day on June 26, 2019, at the Wheeler Historic Farm in Murray, UT, with the USU Production Hort Team. <https://www.eventbrite.com/e/sustainable-agriculture-field-day-tickets-62892661644#>
    3. Utah Water Conservation Forum (13 September 2019, Utah Agricultural Experiment Station – Greenville in North Logan, UT).
  - f) demonstrations
    1. Drip Irrigation 101, Utah Agricultural Experiment Station – Greenville. (25 June 2019, North Logan, UT).
    2. Urban Farming for refugees and 4H audiences, in collaboration with the International Rescue Committee: New Roots Farm (19 September 2019, Sandy, UT).
    3. Cache Refugee and Immigrant Connection: Start to Farm (19 Sept

2019, Logan, UT).

- g) Social Media: [https://www.instagram.com/usu\\_smallfarms/](https://www.instagram.com/usu_smallfarms/)
1. Launched Instagram campaign on March 28, 2019. On average, usu\_smallfarms gains 2 followers per day, has a 2:1 follower:following, and a 25% engagement rate on posts.
  2. Poll of social media use by urban and small farmers in Utah, particularly cut flower growers: 58% Instagram, 33% Facebook, 3% Twitter, 6% Other (Urban and Small Farms Conference, 20 February 2019)
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
    1. One enterprise budget for USDA NASS has been completed for Peony high tunnel production and is in review.
    2. One enterprise budget for USDA NASS is in development for Peony field production.
    3. One enterprise budget for USDA NASS is in development for Snapdragon production in a high tunnel.
  - e) community supported agriculture: None
  - f) direct-to-buyer
    1. Current research collaboration with a Utah cut flower farm cooperative on pricing stems for florists and reporting sales
    2. Current research collaboration with six Utah cut flower farms on pricing dahlia stems and reasoning to gauge existing market perceptions
  - g) sampling standards: None
  - h) merchandising education: None
  - i) market performance metrics: None
  - j) other: None
4. Please **list** current **market research activities** in your state that could benefit small farms. Examples may include:
- a) consumer preferences
    1. Florist pricing and market preferences of local flowers (dahlia, peony, snapdragon, stock, celosia, foxglove, delphinium, zinnia, lisianthus, sweet pea, and campanula), including cost per stem, marketable stem lengths, bloom color preferences, and marketing techniques (bundling by number of stems and color, etc.)
  - b) comparison of marketing channels: None
  - c) Other: None

# SERA 45 State Report-West Virginia

**Name: Lewis 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.

- 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
  - b) organic production systems
  - c) small-scale production systems
  
- *Evaluation of organic production of Appalachian heritage beans*  
Funding Agency: USDA, SARE
  
- *Improving Efficiency of High Tunnels in West Virginia*  
Funding Agency: USDA-NRCS
  
- *Evaluation of West Virginia heritage tomato production for high tunnels*  
Funding: WVU Agriculture & Forestry Experiment Station
  
- *Hazelnut production in Appalachia*  
Funding Agency, West Virginia Department of Agric.
  
- *Appalachian cider apple production*  
Funding: WVU Agriculture & Forestry Experiment Station
  
- *High tunnel winter Allium production*
  
- *Genetic Improvement of the 'WV Centennial' Tomato*
  
- 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

West Virginia Small Farm Conference, Charleston, WV; February 14-17, 2019  
Eastern Panhandle Small Farm Conference, Martinsburg, WV; December 4-6, 2019  
Food Safety Training classes  
Organic Horticulture Field Day; August 26, 2019  
WVU Extension Pesticide Training Video  
Regional specialty crop twilight meetings, February, May, July, September

- Please **list** current activities in your state related to **reporting specialty crop prices** from:
  - a) farmers markets
  - b) produce auctions
  - c) farm to school
  - d) retail
  - e) other

No reporting is available in West Virginia.

- 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

Evaluating consumer acceptance of processed, Appalachian heritage beans