

# The Seed to Kitchen Collaborative: Identifying Improved Vegetable Varieties for Organic Direct-Market Growers

## Final report for ONC23-121

Project Type: Partnership

Funds awarded in 2023: \$49,391.00

Projected End Date: 03/31/2025

Host Institution Award ID: H010694403

Grant Recipient: Michigan State University AgBioResearch and Extension

Region: North Central

State: Michigan

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Michigan State University AgBioResearch and Extension

Approved on 06/04/2025 3:42pm EDT by Betsy Wieland

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## Project Information

### Summary:

Small and beginning vegetable growers in the North-Central Region (NCR) are using organic practices and direct-marketing to add value to their products. A 2017 survey of direct-market vegetable growers in WI identified flavor, disease resistance, yield and early maturity as the most important vegetable traits. Michigan boasts a thriving conventional vegetable industry consisting of large, wholesale growers supported by university variety trials. Unfortunately, such traditional variety testing programs do not focus specifically on cultivar performance in organic production systems, nor on sensory characteristics, like flavor and appearance, that drive marketability in a direct-market vegetable business. Our completed research with the Seed to Kitchen Collaborative (SKC) based at University of Wisconsin-Madison addresses these limitations by bringing together vegetable breeders, seed companies, researchers, organic vegetable growers and professional chefs to evaluate the productivity and quality of elite vegetable varieties in organic research station and on-farm trials. We worked closely with breeders and seed companies, providing quantitative and qualitative data from university trials and collaborating growers respectively to improve methods of breeding and variety selection for organic vegetable production systems. At harvest time, partner chefs and others tasted the most promising vegetable varieties, providing detailed sensory evaluations to aid variety development and marketing.

### Project Objectives:

We hypothesize that implementing the SKC model of vegetable variety testing focused on organic production, participatory on-farm trials and sensory evaluation

will improve breeding and selection of vegetable varieties for organic, direct market growers in the NCR.

1) Identify high-performing and flavorful varieties of at least six vegetable crops for organic, direct-market growers in the NCR through expansion of the SKC trials at UW-Spooner, MSU-UPREC and on cooperating farms in MI and WI.

2) Share this research with growers and consumers through field days at experiment stations and on cooperating farms, sensory evaluation activities with partner chefs, and written reports.

## Cooperators

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## Research

### Materials and methods:

Variety trials for summer lettuce, Moschata winter squash (2023), sprouting broccoli, cherry, cocktail and saladette tomatoes, yellow and red snack-sized bell peppers (2024) were conducted at the UW Madison Spooner Agricultural Research Station in Spooner, WI, the MSU Upper Peninsula Research and Extension Center in Chatham, MI, (MOSA certified organic) and on four private farms in WI and MI using organic methods. The station trial design was an RCBD with 2-4 replications. On farm trials were unreplicated. At Chatham, the soil type was Ruse Ensign Nykanen complex fine sandy loam and the previous crop was a pea oat cover crop. At Spooner, the soil type was Mahtomedi Cress complex loamy sand and the previous crop was a cereal rye cover crop.

At university locations, produce was graded as marketable or unmarketable, counted and weighed. Farmers rated variety performance on multiple parameters

using a 1-5 star system in the SeedLinked app. Varieties were blinded and presented to researchers, growers, chefs and others for sensory evaluation (n=43 in 2023 and n=33 in 2024). Here we report yield and grade data from the two university locations and sensory data from all locations. Data were analyzed using ANOVA and Tukey's HSD test in the agricolae package for R, at alpha = 0.10. Sensory factors were rated on a scale of 1 (low/bad) to 5 (high/good).

Nothing beats a crisp and refreshing salad on a summer day, but growing lettuce during the heat of summer is always a challenge. We tested how tried-and-true varieties stack up against newcomers for production during summer. This trial included a mix of green Batavia and Romaine lettuce.

Everyone loves butternut, but specialty Cucurbita moschata squash can be even more delicious than usual butternuts, and their unique shapes make them a perfect decorative piece on a kitchen or farmers market table. In this trial we tested 10 specialty moschata types, from exciting new releases to underappreciated heirlooms.

In recent years, early sprouting broccoli has gained traction. It is easier to grow than standard heading broccoli because it more reliably produces a crop under the fluctuating temperatures common in spring and summer, while also producing better in less-than optimal fertility and soil moisture. Sprouting broccoli keeps producing shoots and can be harvested for up to 8 weeks.

Erica Kempter of Nature and Nurture Seeds, Keith Mueller of KC Tomatoes, the Seed to Kitchen Collaborative, Organic Seed Alliance and SeedLinked partnered to test a new collaborative breeding strategy to develop high performing tomato and pepper varieties for the Upper Midwest. The Juliet x Blush cherry tomato population includes small, globe shaped fruit, in colors of pinks and reds. The Juliet x Blush saladette tomato population includes saladette-sized solid and striped fruit, with base colors of pink, red, or orange. The Juliet X Blush population is an open-source seed initiative (OSSI) pledged under the name Super Snacks. The 17HO3 tomato population includes cocktail to medium sized fruit, predominantly bicolor orange/red and is also open-source seed initiative (OSSI) pledged. The Doe Hill X Wisconsin Lakes bell pepper population includes snack-sized yellow and red fruit and is also open-source seed initiative (OSSI) pledged.

#### Research results and discussion:

Summer lettuce varieties differed significantly in head weight ( p < 0.0001) and percent of bolted plants ( p = 0.0003). Mean head weight was 0.59 lbs (0.38 - 1.05 lbs). Mean percent bolted was 36.65% (7.14% - 91.67%). Lovelock, Summertime, MVG 81 and Baja were among the best performers across all parameters.

Variety	Head Weight (lbs)		Percent Bolted (%)		Appearance (1-5)		Bitterness (1-5)		Overall Flavor (1-5)	
<b>Albachiara</b>	0.52	bc	16.67%	bc	4.14	a	2.86	a	3.00	a
<b>Anuenue</b>	0.39	c	47.62%	abc	3.57	a	2.57	a	3.57	a
<b>Baja</b>	0.56	bc	22.22%	bc	4.29	a	2.71	a	3.29	a
<b>Florence</b>	0.57	bc	37.35%	bc	4.71	a	2.71	a	4.00	a
<b>Lovelock</b>	0.80	ab	57.50%	ab	4.71	a	2.48	a	4.29	a
<b>Magenta</b>	0.65	bc	63.54%	ab	4.71	a	2.43	a	4.00	a

<b>Muir</b>	0.44	c	7.14%	c	4.33	a	2.44	a	4.33	a
<b>MVG 53</b>	0.52	bc	38.34%	abc	4.00	a	2.17	a	3.50	a
<b>MVG 73</b>	0.38	c	33.34%	bc	4.56	a	2.88	a	3.44	a
<b>MVG 81</b>	0.56	bc	8.34%	bc	4.22	a	2.44	a	3.33	a
<b>Summertime</b>	0.68	bc	16.07%	bc	3.89	a	2.44	a	3.33	a
<b>Sunland</b>	1.05	a	91.67%	a	3.89	a	1.56	a	3.56	a

Winter squash varieties differed significantly in total fruit count (  $p = 0.004$ ), total fruit weight (Figure 2.,  $p = 0.073$ ), individual fruit weight ( $p < 0.0001$ ), and marketable fruit count (  $p = 0.002$ ) per plant, as well as texture ( $p < 0.001$ ), sweetness ( $p < 0.0001$ ) and overall flavor (  $p < 0.0001$ ). Mean fruit count per plant was 12.13 (2.00 - 31.50) with 10.37 fruit being marketable and 1.76 fruit being unmarketable due to immaturity, rodent damage or disease. Mean total fruit weight per plant was 44.55 lbs (3.70 - 95.20 lbs ) with 39.96 lbs being marketable and 4.60 lbs being unmarketable. Mean individual weight of marketable fruits was 4.83 lbs (1.85 - 13.68 lbs ). Mean overall flavor on a 1-5 scale was 3.41 (1.00 - 5.00). Autumn Frost, Black Futsu, Doran Round and Tetsukabuto were among the best performers across all parameters.

Variety	Marketable Count	Marketable Weight (lbs)	Unmarketable Count	Unmarketable Weight (lbs)	Individual Fruit Weight (lbs)	Appearance (1-5)	Texture (1-5)	Sweetness (1-5)	Overall Flavor (1-5)									
Autumn Crown	11.90	abc	41.30	a	0.70	a	2.20	a	3.46	bc	3.50	a	2.46	c	2.35	bc	2.42	c
Autumn Frost	15.80	a	54.48	a	2.40	a	3.98	a	3.47	bc	3.92	a	3.76	a	3.45	a	3.93	a
Black Futsu	12.30	abc	30.89	a	2.00	a	5.68	a	2.49	c	3.41	a	3.47	ab	3.18	ab	3.78	a
Cheese Pumpkin	4.33	c	55.39	a	1.33	a	10.73	a	12.31	a	3.62	a	3.41	abc	2.59	bc	3.5	a
Doran Round	7.90	bc	34.18	a	1.50	a	3.50	a	4.14	bc	3.86	a	3.61	a	3.44	a	3.82	a
Gouda	10.60	abc	30.20	a	1.80	a	2.02	a	2.81	bc	3.70	a	3.47	ab	2.82	abc	3.46	ab
Long Island Cheese	4.80	c	43.53	a	0.40	a	2.40	a	10.39	a	3.67	a	3.57	ab	2.79	abc	3.42	ab
Seminole	14.60	ab	35.45	a	3.50	a	3.72	a	2.50	c	3.74	a	2.80	bc	2.28	c	2.7	bc
Tetsukabuto	8.70	abc	40.38	a	2.00	a	9.58	a	4.89	b	3.69	a	3.12	abc	2.81	abc	3.47	a

Sprouting broccoli varieties differed significantly in earliness (  $p < 0.001$ ), height ( $p = 0.006$ ), marketable head weight ( $p = 0.006$ ), marketable head count ( $p < 0.001$ ) and total head weight ( $p = 0.005$ ) per plant. Mean total head weight per plant was 0.35 lbs with 0.30 lbs being marketable and 0.05 lbs being unmarketable due to over-maturity and size. Mean overall appearance was 4.02 and flavor was 4.27 on a 1-5 scale. Burgundy, Happy Rich and Montebello performed well across all parameters, although Burgundy scored slightly lower than other varieties on flavor.

Variety	First Harvest	Vigor (1-5)	Disease Resistance (1-5)	Height (In)	Marketable Wt (lbs)	Marketable Ct	Total Wt (lbs)	Appearance (1-5)	Flavor (1-5)									
BC1611	15-Jul	bcd	3.67	a	4	a	14.50	ab	0.32	ab	12.08	ab	0.33	ab	4.50	a	4.75	a
Burgundy	26-Jul	ab	3.83	a	4	a	14.75	ab	0.47	a	15.67	a	0.48	a	4.00	a	3.75	a
De Cicco	3-Aug	a	3.63	a	4	a	15.25	a	0.16	b	5.88	b	0.16	b	NA	a	5.00	a
Happy Rich	8-Jul	cd	4.33	a	4	a	12.50	b	0.45	ab	15.11	a	0.50	a	4.33	a	4.60	a
Melody	3-Jul	d	3.50	a	4	a	14.50	ab	0.20	ab	9.02	ab	0.33	ab	3.50	a	3.75	a
Montebello	24-Jul	abc	3.67	a	4	a	14.25	ab	0.36	ab	9.39	ab	0.39	ab	3.83	a	4.00	a
Sweet Bunch	10-Jul	bcd	4.33	a	4	a	15.25	a	0.31	ab	11.83	ab	0.36	ab	3.33	a	4.00	a
Sweet Stems	3-Jul	d	3.17	a	4	a	13.25	ab	0.16	b	9.60	ab	0.24	ab	4.67	a	4.33	a

Cherry tomato varieties differed significantly in vigor (  $p = 0.026$ ), marketable fruit weight (  $p < 0.001$ ), total fruit weight (  $p < 0.001$  ), total fruit count (  $p < 0.001$ ), green fruit weight (  $p < 0.001$ ), green fruit count (  $p = 0.066$ ) and individual fruit weight (  $p = 0.016$ ) per plant. Mean fruit count per plant was 179.08 with 162.97 fruit being marketable and 16.16 fruit being unmarketable due to size, blossom end rot, splitting/cracking or disease. Mean total fruit weight per plant was 8.05 lbs with 7.23 lbs being marketable and 0.82 lbs being unmarketable. Mean individual weight of marketable fruits was 0.045 lbs. Mean overall appearance was 4.05 and flavor was 3.75 on a 1-5 scale. JXB-0016 performed similarly to the Sakura check variety across all parameters except total and marketable fruit weight, however, its mean individual fruit weight was also slightly less.

Variety	First Harvest	Vigor (1-5)	Disease Resistance (1-5)	Marketable Wt (lbs)	Marketable Ct	Total Wt (lbs)	Total Ct	Green Wt (lbs)	Green Ct	Individual Fruit Wt (lbs)	Appearance (1-5)	Flavor (1-5)												
Sakura	19-Jul	a	5.00	a	4.00	a	11.35	a	204.80	a	12.79	a	265.67	a	4.40	a	172.33	a	0.056	a	3.96	a	3.86	a
JXB-0016	20-Jul	a	4.67	ab	4.00	a	7.44	b	163.17	a	8.35	b	196.67	ab	1.07	b	144.67	ab	0.046	ab	4.28	a	4.00	a
JXB-0049	19-Jul	a	4.00	ab	4.00	a	4.50	b	126.87	a	5.06	c	157.67	bc	1.14	b	94.67	ab	0.035	b	4.04	a	3.50	a
JXB-0054	19-Jul	a	3.67	b	4.00	a	5.63	b	157.03	a	6.00	bc	96.33	c	0.85	b	93.33	b	0.042	ab	3.92	a	3.65	a

Cocktail tomato varieties differed significantly in marketable fruit count (  $p = 0.018$ ), total fruit count (  $p = 0.084$ ), green fruit weight (  $p = 0.021$  ), green fruit count (  $p < 0.001$ ) per plant, as well as appearance (  $p = 0.061$ ). Mean fruit count per plant was 107.92 with 82.90 fruit being marketable and 25.02 fruit being unmarketable due to insect and rodent damage, splitting/cracking, or blossom end rot. Mean total fruit weight per plant was 11.46 lbs with 8.99 lbs being marketable and 2.47 lbs being unmarketable. Mean individual weight of marketable fruits was 0.11 lbs. Mean overall appearance was 3.53 and flavor was 2.93 on a 1-5 scale. None of the experimental varieties performed as well as the Clementine check variety.

Variety	First Harvest	Vigor (1-5)	Disease Resistance (1-5)	Marketable Wt (lbs)	Marketable Ct	Total Wt (lbs)	Total Ct	Green Wt (lbs)	Green Ct	Individual Fruit Wt (lbs)	Appearance (1-5)	Flavor (1-5)												
Clementine	30-Jul	a	5.00	a	4.00	a	10.94	a	115.40	a	12.20	a	166.33	a	4.04	a	182.00	a	0.10	a	3.81	a	3.15	a
17H03-0001	23-Jul	a	4.00	a	4.00	a	8.13	a	73.70	b	10.07	a	76.00	b	2.69	ab	33.23	b	0.11	a	3.64	ab	2.62	a
17H03-0016	31-Jul	a	4.00	a	4.00	a	8.25	a	68.77	b	10.71	a	76.00	b	0.89	b	20.37	b	0.11	a	2.96	b	2.62	a
17H03-0018	28-Jul	a	4.33	a	4.00	a	8.66	a	73.73	b	12.87	a	113.33	ab	1.21	b	25.13	b	0.11	a	3.69	ab	3.31	a

Striped saladette tomato varieties differed significantly in earliness (  $p = 0.006$ ), vigor (  $p = 0.028$ ), disease resistance (  $p = 0.051$ ) and marketable fruit count (  $p = 0.089$ ). Mean fruit count per plant was 102.68 with 79.28 fruit being marketable and 23.40 fruit being unmarketable due to fruit drop, blossom end rot, insect damage, splitting/cracking or disease. Mean total fruit weight per plant was 7.49 lbs with 5.75 lbs being marketable and 1.74 lbs being unmarketable. Mean individual weight of marketable fruits was 0.07 lbs. Mean overall appearance was 3.92 and flavor was 3.67 on a 1-5 scale. JXB-0044 performed similarly to the Blush check variety across all parameters except in disease resistance where it outperformed Blush.

Variety	First Harvest	Vigor (1-5)	Disease Resistance (1-5)	Marketable Wt (lbs/plant)	Marketable Ct	Total Wt (lbs)	Total Ct	Green Wt (lbs)	Green Ct	Individual Fruit Wt (lbs)	Appearance (1-5)	Flavor (1-5)												
Blush	27-Jul	ab	3.67	ab	2.67	b	7.80	a	109.07	a	9.87	a	140.67	a	1.24	a	46.75	a	0.07	a	3.90	a	3.73	a
JXB - 0020	6-Aug	a	4.00	ab	4.00	a	4.54	a	52.20	b	6.60	a	70.60	a	1.48	a	72.53	a	0.08	a	3.86	a	3.59	a
JXB - 0032	20-Jul	b	3.00	b	4.00	a	4.27	a	65.50	ab	5.45	a	88.50	a	2.49	a	33.67	a	0.07	a	4.09	a	3.55	a
JXB - 0044	25-Jul	b	4.33	a	4.00	a	6.40	a	90.33	ab	8.03	a	110.93	a	1.13	a	65.67	a	0.08	a	3.82	a	3.82	a

Red saladette tomato varieties differed significantly in marketable fruit weight (  $p =$

0.008), marketable fruit count ( $p = 0.001$ ), total fruit weight ( $p = 0.035$ ), total fruit count ( $p = 0.057$ ), green fruit count ( $p = 0.033$ ) and individual fruit weight ( $p < 0.001$ ) per plant. Mean fruit count per plant was 159.67 with 138.73 fruit being marketable and 20.94 fruit being unmarketable due to fruit drop, blossom end rot, splitting/cracking or insect damage. Mean total fruit weight per plant was 11.06 lbs with 9.45 lbs being marketable and 1.61 lbs being unmarketable. Mean individual weight of marketable fruits was 0.07 lbs. Mean overall appearance was 3.72 and flavor was 2.81 on a 1-5 scale. JXB-0024 performed similarly to the Juliet check variety across all parameters despite the individual fruit weight being slightly less.

Variety	First Harvest	Vigor (1-5)	Disease Resistance (1-5)	Marketable Wt (lbs)	Marketable Ct	Total Wt (lbs)	Total Ct	Green Wt (lbs)	Green Ct	Individual Fruit Wt (lbs)	Appearance (1-5)	Flavor (1-5)												
Juliet	25-Jul	a	5.00	a	4.00	a	11.90	a	157.60	ab	13.17	ab	185.00	ab	2.55	a	140.00	a	0.08	a	3.45	a	2.95	a
JXB-0014	30-Jul	a	4.67	a	4.00	a	6.09	b	82.93	c	7.46	b	67.00	b	1.98	a	40.00	b	0.08	a	3.77	a	2.82	a
JXB-0024	26-Jul	a	4.33	a	4.00	a	11.27	a	197.40	a	13.40	a	241.67	a	2.89	a	138.00	a	0.06	b	3.91	a	2.82	a
JXB-0037.1	20-Jul	a	4.00	a	3.67	a	8.55	ab	117.00	bc	10.22	ab	145.00	ab	1.94	a	75.67	ab	0.07	a	3.73	a	2.64	a

Yellow bell pepper varieties differed significantly in earliness ( $p = 0.045$ ), disease resistance ( $p = 0.039$ ), marketable fruit count ( $p = 0.096$ ), individual fruit weight ( $p < 0.001$ ) per plant, as well as flavor ( $p = 0.002$ ). Mean fruit count per plant was 15.79 with 7.22 fruit being marketable and 8.57 fruit being unmarketable due to rodent damage, size, sun scald and scarring. Mean total fruit weight per plant was 1.93 lbs with 1.32 lbs being marketable and 0.61 lbs being unmarketable. Mean individual weight of marketable fruits was 0.21 lbs. Mean overall appearance was 3.87 and flavor was 3.46 on a 1-5 scale. DHWL-0021 performed similarly to the Doe Hill check variety across all parameters despite the individual fruit weight being slightly greater.

Variety	First Harvest	Vigor (1-5)	Disease Resistance (1-5)	Marketable Wt (lbs)	Marketable Ct	Total Wt (lbs)	Total Ct	Individual Fruit Wt (lbs)	Green Wt (lbs)	Green Ct	Appearance (1-5)	Flavor (1-5)											
Doe Hill	21-Aug	b	4.00	a	4.75	a	1.46	a	10.33	a	2.23	21.25	a	0.14	c	2.19	a	37.28	a	3.93	a	3.87	a
DHWL-0021	23-Aug	ab	3.50	a	4.50	ab	1.92	a	8.67	ab	2.62	11.75	a	0.22	b	2.66	a	29.19	a	3.94	a	3.55	ab
DHWL-0029	12-Sep	a	NA	.	NA	.	0.75	a	2.33	b	1.14	NA	.	0.32	a	2.75	a	13.33	a	NA	.	NA	.
DHWL-0057	24-Aug	ab	3.00	a	4.00	b	1.14	a	7.53	ab	1.72	14.38	a	0.16	c	2.55	a	33.17	a	3.74	a	2.97	b

Red bell pepper varieties differed significantly in disease resistance ( $p = 0.017$ ), marketable fruit weight ( $p < 0.001$ ), marketable fruit count ( $p < 0.001$ ), total fruit weight ( $p = 0.003$ ), total fruit count ( $p < 0.001$ ), individual fruit weight ( $p < 0.001$ ) and green fruit count ( $p = 0.086$ ) per plant. Mean fruit count per plant was 17.88 with 13.19 fruit being marketable and 4.69 fruit being unmarketable due to rodent damage, soft rot, scarring and cracking. Mean total fruit weight per plant was 2.80 lbs with 1.98 lbs being marketable and 0.82 lbs being unmarketable. Mean individual weight of marketable fruits was 0.18 lbs. Mean overall appearance was 3.62 and flavor was 2.85 on a 1-5 scale. No experimental varieties performed as well as the Snackabelle Red check variety.

Variety	First Harvest	Vigor (1-5)	Disease Resistance (1-5)	Marketable Wt (lbs)	Marketable Ct	Total Wt (lbs)	Total Ct	Individual Fruit Wt (lbs)	Green Wt (lbs)	Green Ct	Appearance (1-5)	Flavor (1-5)												
Snackabelle Red	18-Aug	a	4.00	a	3.25	b	3.24	a	29.36	a	3.73	a	36.19	a	0.11	c	1.34	a	17.33	ab	3.17	a	2.50	a
PSBX-DHWL-0022	24-Aug	a	3.25	a	3.75	ab	1.54	b	7.69	b	2.41	b	11.86	b	0.20	ab	2.01	a	16.67	ab	3.81	a	3.10	a
PSBX-DHWL-0023	22-Aug	a	3.25	a	4.00	a	1.38	b	7.75	b	2.54	b	13.17	b	0.18	b	2.18	a	28.78	a	3.77	a	3.00	a
PSBX-DHWL-0041	24-Aug	a	3.00	a	4.00	a	1.78	b	7.94	b	2.51	b	10.28	b	0.23	a	1.97	a	14.89	b	3.73	a	2.80	a

## Participation summary

6 Farmers/Ranchers participating in research

## Educational & Outreach Activities

**1** On-farm demonstrations

**6** Tours

**4** Webinars / talks / presentations

**3** Workshop field days

**5** Other educational activities: Seed to Kitchen produce tastings.

### **Participation summary:**

**1,500** Farmers/Ranchers

**500** Agricultural service providers

#### Education/outreach description:

##### On-farm Demonstrations

- 42 Ishpeming High School students participated in planting and harvesting the 2024 Seed to Kitchen potato trial (data not reported here) at our partner location, Partridge Creek Farm, under the supervision of Allison Stawara.

##### Tours

- 87 K-12 students from six different schools toured MSU UPREC in 2023 and learned about the project.

##### Webinars, Talks and Presentations

- 9 farmers attended a presentation by Dr. DeDecker on the project at the Agriculture for Tomorrow Conference on Feb 20, 2024 in Escanaba, MI.
- Over 1,500 farmers, researchers and others attended the Marbleseed Organic Farming Conference Feb 22-24, 2024 in La Crosse, WI and had an opportunity to view a research poster reporting 2023 results of the project.
- Over 1,500 farmers, researchers and others attended the Marbleseed Organic Farming Conference Feb 20-22, 2025 in La Crosse, WI and had an opportunity to view a research poster reporting results of the project.
- A presentation on our tomato trials at the Organic Seed Grower's Conference in Corvallis, OR on Feb 28, 2025 was available to 400 in-person and 300 virtual attendees.

##### Workshops / Field Days

- Our 2023 field day event brought together 12 organic vegetable growers and Seed to Kitchen Researchers from MSU UPREC and UW Madison on Sept 9, 2023 for a tour of four Michigan farms participating in Seed to Kitchen vegetable variety trials.
- Our MSU UPREC 125th anniversary celebration on Aug 10, 2024 attracted 175 participants who toured field research projects at MSU UPREC, including the

Seed to Kitchen trials reported here, and also had an opportunity to participate in a tomato tasting for the project.

- 150 people attended the Spooner Ag Station Twilight Farm Tour on Aug 20, 2024 and had the opportunity to view and learn about the Seed to Kitchen trials as well as participate in a tomato tasting.

#### Other Educational Activities

- Our 2023 produce tastings engaged 43 chefs, local food buyers, retailers and food system educators in blind tastings of organic produce to compare the quality of elite vegetable varieties on trial at the UPREC North Farm, UW Spooner Experiment Station, and organic vegetable farms across MI and WI.
- Our 2024 produce tastings engaged 33 chefs, local food buyers, retailers and food system educators in blind tastings of organic produce to compare the quality of elite vegetable varieties on trial at the UPREC North Farm, UW Spooner Experiment Station, and organic vegetable farms across MI and WI.
- 11 Partridge Creek Farm farm stand customers participated in a potato tasting on October 8, 2024 (data not reported here).
- 12 chefs and others who work in the culinary industry participated in a tomato tasting at Pasture and Plenty in Madison, WI on Aug 21, 2024.
- 40 people participated in a tomato tasting at Tipi Produce in Evansville, WI on Sept 15, 2024.

## Learning Outcomes

**6** Farmers/Ranchers gained knowledge, skills and/or awareness

Key changes:

- Increased knowledge of organic vegetable variety selection and management (trellising and pruning)

## Project Outcomes

**5** Farmers/Ranchers changed or adopted a practice

Project outcomes:

Economically viable

Small vegetable growers in the NCR are using organic practices and direct-marketing to add value to their products. Breeding and selecting vegetable cultivars within the production and marketing environments for which they are intended is critical to meeting the economic needs of growers using sustainable, low-input production practices. Identifying vegetable varieties that meet the self-identified needs of organic, direct market growers in the NCR is critical to their economic viability. Making new adapted varieties available to growers through the open-source seed initiative (OSSI) pledge ensures equitable and economical access. Individuals have the freedom to use OSSI-Pledged seeds in any way they choose. In

return, users pledge not to restrict others' use of these seeds or their derivatives by patents or other means, and to include the OSSI Pledge with any transfer of these seeds or their derivatives.

Six field day participants completed our 2023 evaluation survey (50% response rate). Respondents reported 7.5 jobs managing 17.5 acres of organic vegetables on 4+ farms. 100% of respondents reported increased knowledge of organic vegetable variety selection and management as a result of the program. 83% of respondents reported their intention to implement new management practices on their farms based on what they learned including improved direct market vegetable variety selection, trellising and pruning.

#### Environmentally sound

Vegetable varieties that thrive in organic production systems are generally thrifty in their use of nutrients and more resistant to pests. Breeding and selecting vegetable varieties with these strengths will allow organic growers to reduce their reliance on fertilizer and pesticides, sell more produce, and hopefully support their larger farm systems in adopting/maintaining organic practices to benefit the environment at large.

Our research posters reporting 2023 and 2024 variety trial results reached hundreds of farmers, researchers and educators at the 2024 and 2025 Marbleseed Organic Farming Conferences in La Crosse, WI.

#### Socially responsible

Participatory, on-farm research and plant breeding are hallmarks of social responsibility in agriculture development. These models, as applied by SKC, are inclusive of farmers and consumers in the vegetable breeding process, which makes variety development a conversation among diverse places and people rather than an isolated project of one person or lab deciding what plant traits should be prioritized for a given geography or industry.

Our Seed to Kitchen trials and tastings engaged seed companies, growers, chefs, local food buyers, retailers and food system educators in participatory evaluation of organic produce to compare the productivity and quality of elite vegetable varieties on trial at the MSU-UPREC North Farm, UW-Madison Spooner Experiment Station, and organic vegetable farms across MI and WI.

## 5 New working collaborations

## Information Products

If you produced standalone books, bulletins, or other educational products, add them here. Products should contain acknowledgement of SARE's support. Graphs, illustrations and tables should be uploaded to the related section of the report.

- [The Seed to Kitchen Collaborative and SeedLinked : Identifying Improved Winter Squash Varieties for Organic Direct Market Growers](#) (Approved)
- [Participatory vegetable breeding and variety selection for regional adaptation and flavor: outcomes from 2023 and 2024 trials in the Upper Midwest](#) (Approved)
- [Vegetable Variety Selection for Yield, Quality and Flavor](#) (Approved)

- [Lessons from Tomato Selection and Breeding](#) (Approved)

## Signed Media Release Forms

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Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and should not be construed to represent any official USDA or U.S. Government determination or policy.



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This work is supported by the [Sustainable Agriculture Research and Education \(SARE\)](#) program under a cooperative agreement with the [University of Maryland](#), project award no. 2024-38640-42986, from the [U.S. Department of Agriculture's National Institute of Food and Agriculture](#). Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and should not be construed to represent any official USDA or U.S. Government determination or policy.

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