2020 Vegetable Variety Trial Reports

Seed to Kitchen Collaborative
Michigan State University
Upper Peninsula Research and Extension Center

In 2020, the MSU Upper Peninsula Research and Extension Center received funding from Organic Valley - Farmers Advocating for Organic to address the limitations of traditional vegetable variety research and outreach by implementing the Seed to Kitchen Collaborative project in Michigan. The Seed to Kitchen Collaborative, started by Julie Dawson at the University of Wisconsin-Madison, brings 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. This year, the North Farm at the Upper Peninsula Research and Extension Center grew 43 different varieties of six vegetables (cucumber, tomato, sweet pepper, onion, carrot and lettuce) in replicated variety trials. Two Upper Peninsula farmers also grew subsets of these vegetables and collected observations on their farm to capture the practitioner's point of view.

Customers buying local produce at a farmers market, the local food co-op, or for use in a restaurant expect that the vegetables they buy will not only be plentiful and beautiful, but also tasty. That is why Seed to Kitchen Collaborative collects sensory (tasting) data post-harvest in addition to yield and quality data in the field. This year, we worked with Taste the Local Difference to recruit eight local chefs to participate in Seed to Kitchen Collaborative sensory evaluation. Their expert palates provided valuable feedback on the flavor, texture and desirability of our many vegetable varieties.

Due to the COVID-19 pandemic, collecting sensory data looked a little different from the group tasting event we originally planned. The process started at the North Farm with harvesting, washing and packing the produce for tasters. The North Farm is certified organic and GAP certified annually to ensure the highest standards for food safety are consistently maintained. At the time of packing, individual vegetables were sanitized and labeled with an alpha-numeric variety code so as to not bias tasters who may be familiar with certain varieties/variety names. Tasting boxes were then delivered to local chefs on Fridays with masking and distancing protocols observed. When chefs received a box, they scanned a QR code inside to access the tasting survey, tasted the produce, and entered their responses online. The sensory data was then summarized and reported alongside yield and quality info generated on the farm.

2020 Tomato Variety Report

Seed to Kitchen Collaborative
Michigan State University
Upper Peninsula Research and Extension Center

Management

In 2020, six indeterminate tomato varieties were trialed at the MSU Upper Peninsula Research and Extension Center in Chatham, MI. Tomatoes were seeded in the greenhouse Week 15 (April 10) into ¾" mini soil blocks using Morgan Composting Dairy Doo Seed Starter 101 soil media. Transplants were bumped up to 4" pots at Week 17 (April 24), and transplanted into the hoop house at Week 22 (May 29).

Plots were laid out as 3-4 reps of 8 plants each in an RCBD. Transplanting was done into 48" open top beds (no mulch), with 18" spacing between beds. Plants were spaced at 20" apart in-row, with two staggered rows per bed. Plants were trained to one leader with plastic twine supported by tomato clips. Plants were pruned of suckers on a weekly basis starting Week 24 (June 8). Irrigation was provided 2 hrs weekly via one line of drip per row of tomatoes. As a preventative measure, Serenade biofungicide was applied every 10-14 days from Week 22 (May 30) until Week 32 (August 5).

Fertility was applied two days prior to planting and incorporated with hand tools into mechanically tilled beds. Base fertility applied to the 4'x140' bed included elemental sulfur (0.001lb/ft^2), gypsum (0.001lb/ft^2) and peat moss (2ft^3). Additional fertility for tomatoes included a feather meal based 10-0-4 fertilizer (0.01lb/ft^2), and potassium sulfate (0.006lb/ft^2).

Traits

Marketable Count, Marketable Weight (kg), Average Weight (g), Unmarketable Count, Unmarketable Weight (kg), Proportion Unmarketable, Unmarketable Causes, End of Season Green Fruit Count, End of Season Green Fruit Weight (kg), Septoria Leaf Area Affected.

Notes on trait measurements: Harvest was done twice a week starting Week 32 (August 7) until Week 39 (September 23). Fruit was sorted into marketable and unmarketable, marketable fruit was counted and weighed, unmarketable fruit was weighed. Foliar diseases were scored as percent

of foliage affected. 5-10 fruit from both marketable and unmarketable categories were photographed for reference.

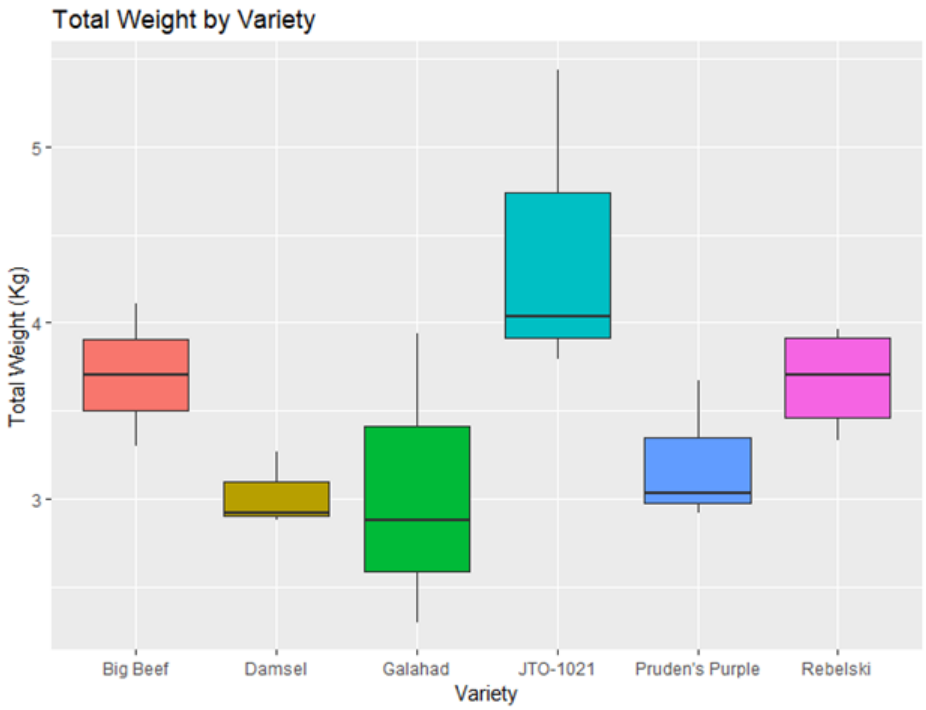
Quality Evaluation

Crew taste testing:
Flavor evaluation was done by the summer field crew after training at the beginning of the season. Flavor components sweetness, acidity, bitterness, and umami were rated on a scale of 1 (low) to 5 (high). Flavor intensity was rated on a scale of 1 (low) to 5 (high). Appearance, texture and overall flavor were rated from 1 (poor) to 5 (excellent).

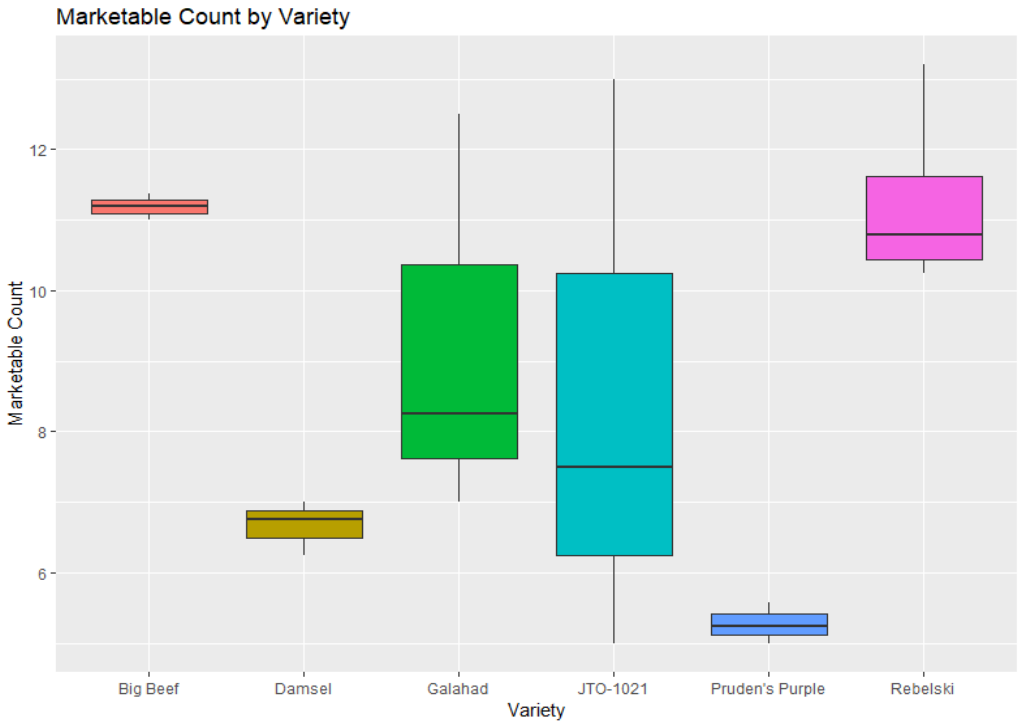
Chef taste testing:
Flavor evaluation was done by 8 local chefs in the Marquette/Alger County area. Varieties were packed with an individual alphanumeric code (no variety names were included in boxes). Boxes were delivered to chefs, including instructions for evaluation and a QR code linking to Seedlinked where data was entered. Flavor components were the same as field crew tastings, and also included a rating of willingness to purchase, rated from 1 (very unlikely) to 5 (very likely). The tomato variety Big Beef was inadvertently excluded from sensory evaluation.

Indeterminate Varieties

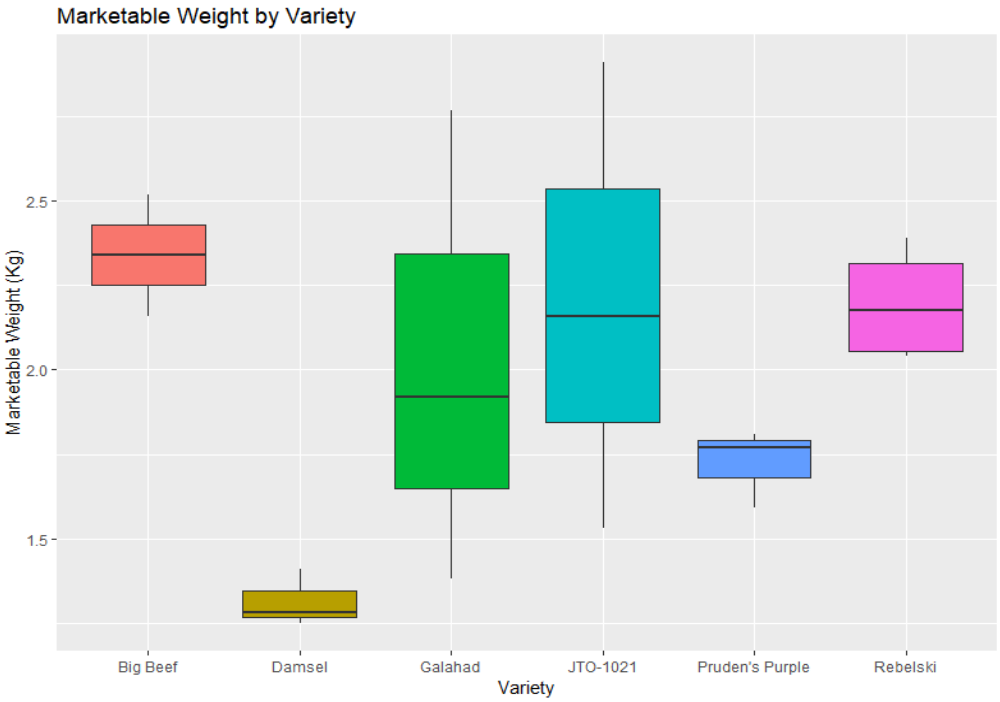
Variety	Color
Galahad	Red
Big Beef	Red
Pruden's Purple	Purple
Damsel	Pink
JTO-1021	Pink
Rebelski	Red



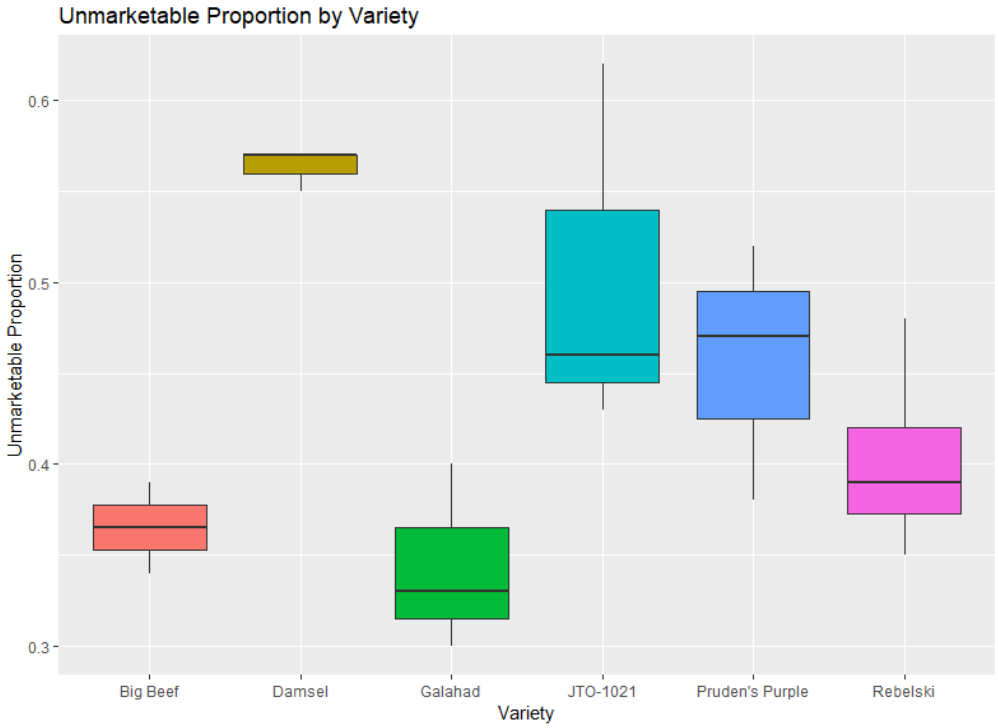
Tomato total weight



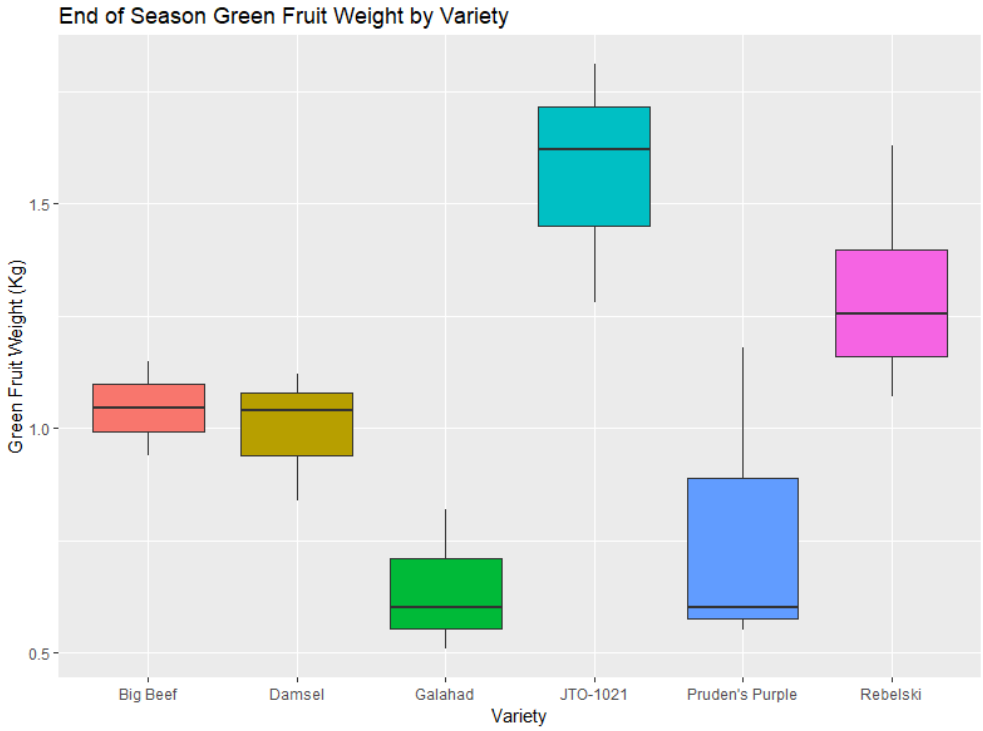
Tomato marketable count



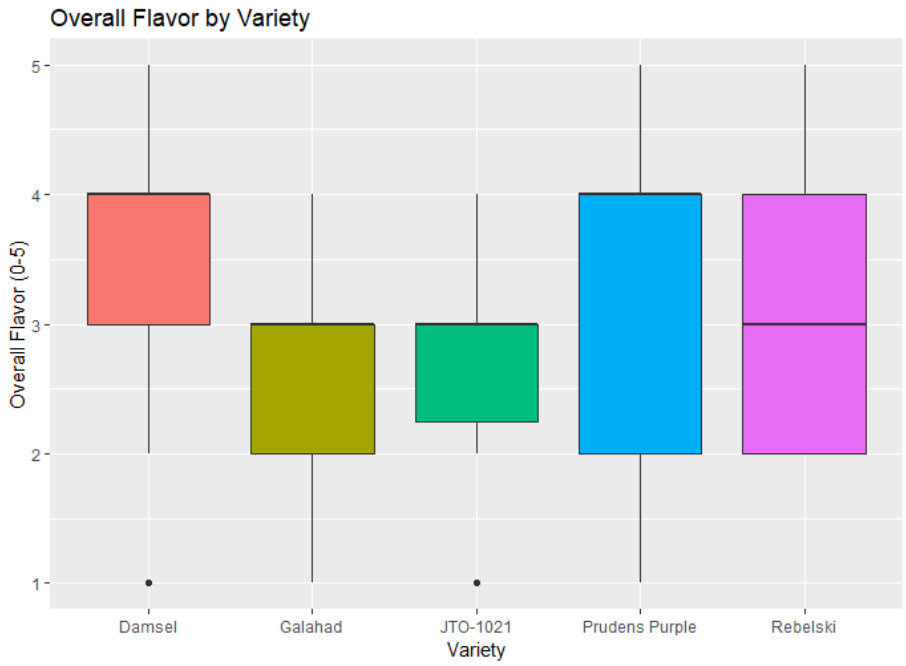
Tomato marketable weight



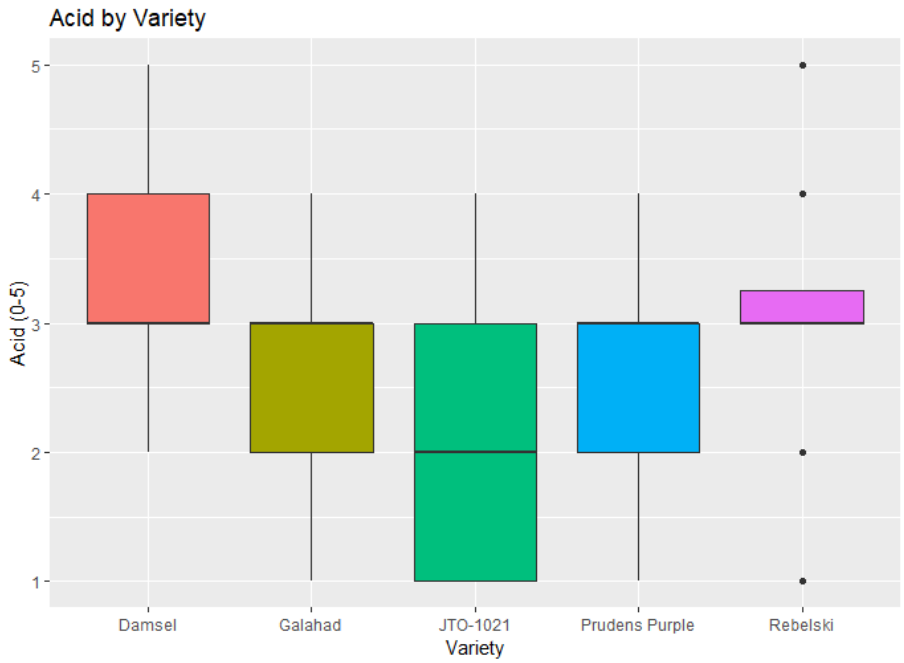
Tomato unmarketable proportion



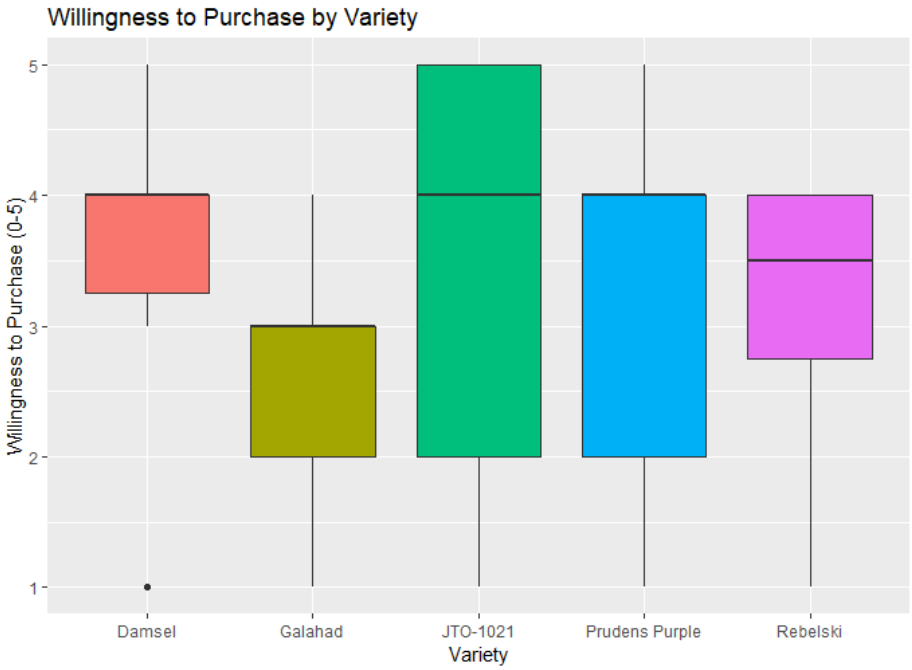
Tomato end of season green fruit weight



Tomato overall flavor



Tomato acidity



Chef willingness to purchase

Indeterminate Slicing Tomatoes (high tunnel) (* indicates varieties statistically similar to the "best" variety in each category shown in **BOLD**)						
Variety	Total weight (Kg)	Marketable Count (#/plant)	Marketable Weight (Kg/plant)	Unmarketable Proportion (%)	Overall Flavor (0-5)	Willingness to Purchase (0-5)
Big Beef	3.71*	11.19*	**2.34**	37%*	NA	NA
JTO-1021	**4.42**	8.50*	2.20*	50%*	2.89*	3.40*
Rebelski	3.68*	**11.26**	2.20*	40%*	3.06*	3.10*
Galahad	3.04	9.25*	2.02*	**34%**	2.58	2.60*
Pruden's Purple	3.21	5.28	1.72*	46%*	3.21*	3.20*
Damsel	3.02	6.67*	1.31	56%	**3.47**	**3.60**

2020 Onion Variety Report

Seed to Kitchen Collaborative
Michigan State University
Upper Peninsula Research and Extension Center

Management

In 2020, ten storage onion varieties were trialed at the MSU Upper Peninsula Research and Extension Center in Chatham, MI. Onions were seeded in the greenhouse Week 15 (April 10) into 98-cell trays using Morgan Composting Dairy Doo Seed Starter 101 soil media. Onions were trimmed twice while in the greenhouse, once during week 19 (May 8), and week 21 (May 22). Onions were fertigated after each trim with Morgan Composting Liquid Fish 3-2-2, at a rate of 2oz/gal, applying 5 gallons across 12 trays. Onions were transplanted at week 23 (June 2).

Plots were laid out as 3-4 reps of 15 transplant holes each in an RCBD. Transplanting was done into 30" top raised beds with black plastic mulch. Plants were spaced 1 ft. apart in-row, with 3 staggered rows per bed. Each transplant cell contained 3-4 plants, and was planted as such. Irrigation was provided 2 hrs weekly via one line of drip tape. Downy mildew was identified in the field, and Serenade biofungicide was applied four times during the growing season at a rate of 4oz/gal and ½ gal per bed. Applications occurred during week 26 (June 24), week 30 (July 23), week 31 (July 31) and week 32 (August 8).

Base fertility applied to the 4'x200' bed included a granular, feather meal based 10-0-4 (0.003lb/ft^2) and potassium sulfate (0.001lb/ft^2). Fish emulsion and fulvic acid (Morgan Composting Fulvic Blaster) were applied, via fertilizer injection into the drip line, twice during the growing season at 2 quarts/acre diluted at a 1:1000 ratio.

Varieties tested:

Variety	Market Class	Color
Patterson	Storage	Yellow
Yankee	Storage	Yellow
Talon	Storage	Yellow
Frontier	Storage	Yellow
Trekker	Storage	Yellow
Redwing	Storage	Red

Red Carpet	Storage	Red
Monastrell	Storage	Red
Rossa di Milano	Storage	Pink
Red Bull	Storage	Red

Traits

Plant Count, Marketable Count, Marketable Weight (kg), Unmarketable Weight (kg), Proportion Unmarketable, Unmarketable causes

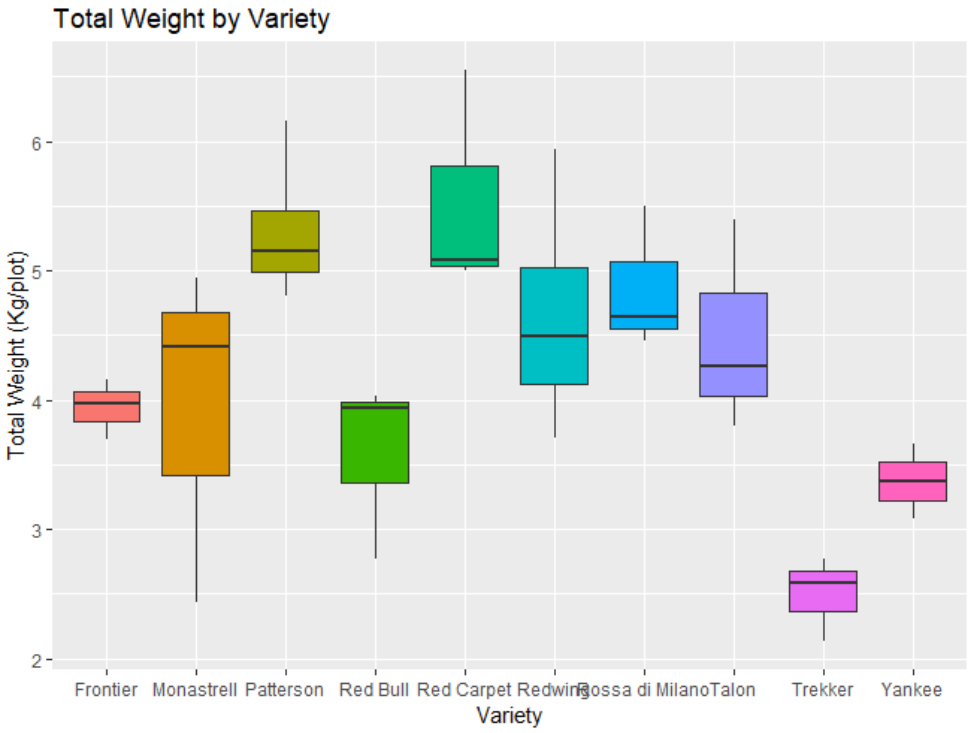
Notes on trait measurement:

Once tops had fallen over, onions were pulled and left in the field for three days to dry down during weeks 36 (September 2) and week 37 (September 8). They were then removed from the field, and cured in the greenhouse with a 70% light reduction shade cloth on top of greenhouse plastic. Sides and doors were opened to facilitate airflow and fans were placed on the onions. Tops were trimmed prematurely to prevent downy mildew from traveling from onion tops down into bulbs. Individual bulb weights were taken on at least 10 bulbs. Onions were then placed in cool storage.

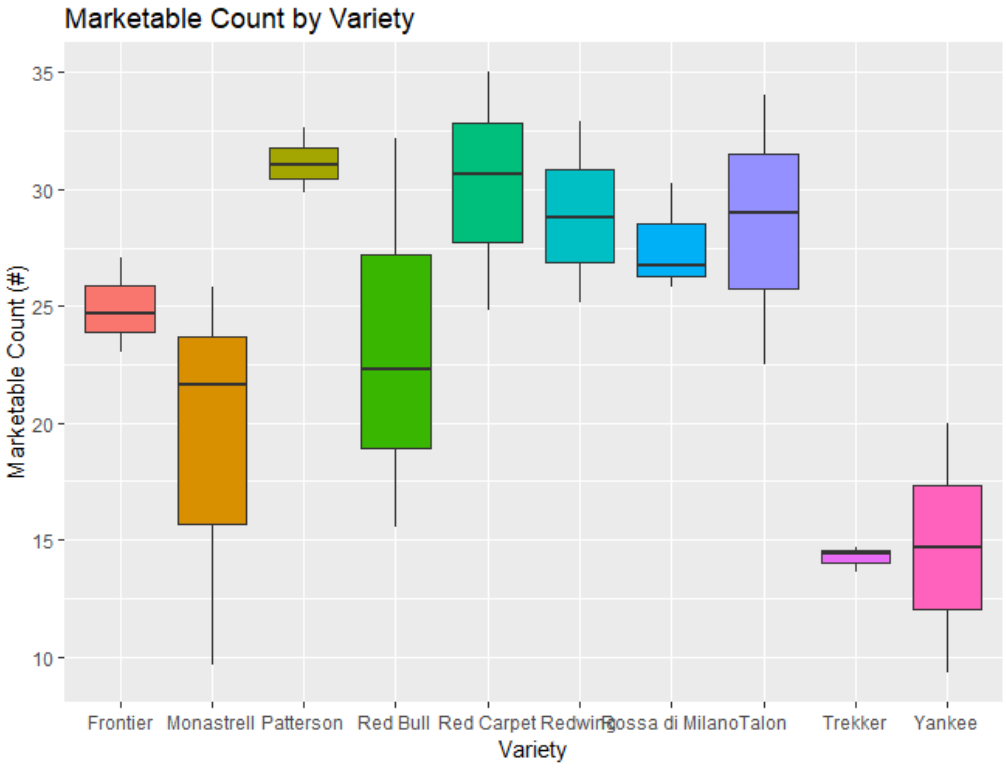
Quality Evaluation

Chef taste testing:

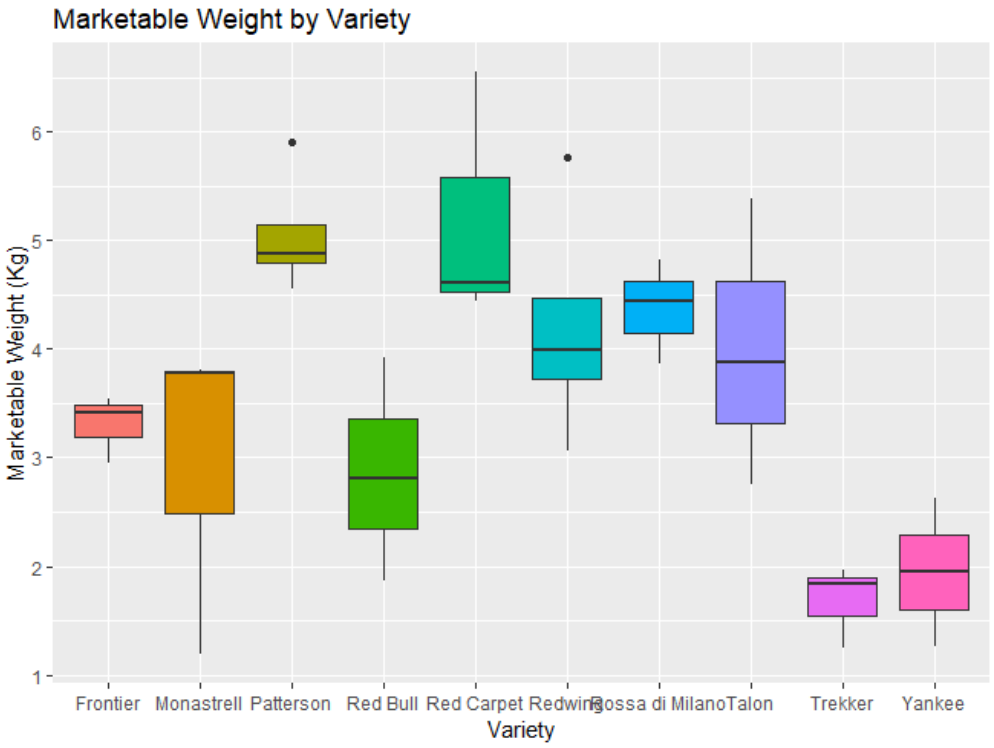
Flavor evaluation was done by 8 local chefs in the Marquette/Alger county area. Varieties were packed with an individual alphanumeric code (no variety names were included in boxes). Boxes were delivered to chefs, including instructions for evaluation and a QR code linking to Seedlinked where data was entered. Onions were baked at 400°F for 20 minutes without oil or seasoning. Flavor components sweetness, acidity, and bitterness were rated on a scale of 1 (low) to 5 (high). Flavor intensity and complexity were rated on a scale of 1 (low) to 5 (high). Appearance, texture and overall flavor were rated from 1 (poor) to 5 (excellent). The likelihood that they would
buy it for their restaurant (1=no way, 5=yes, definitely) and perceived ease of preparation (1=difficult, 5 = easy), and their degree of preference for the variety (1=low, 5= high).



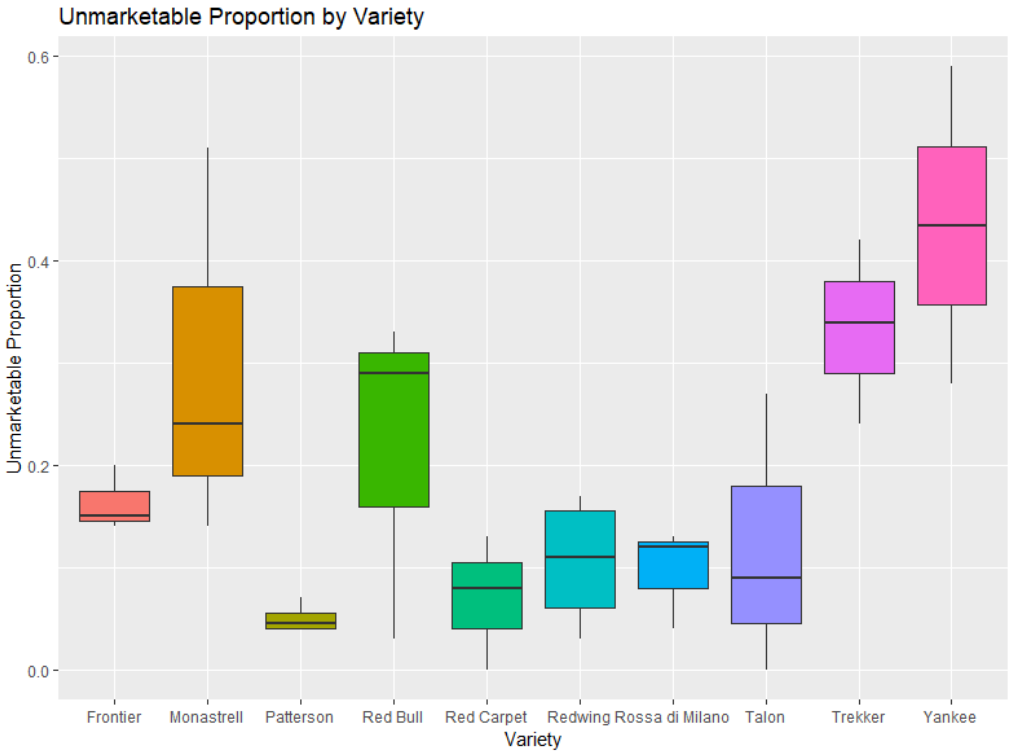
Onion total weight



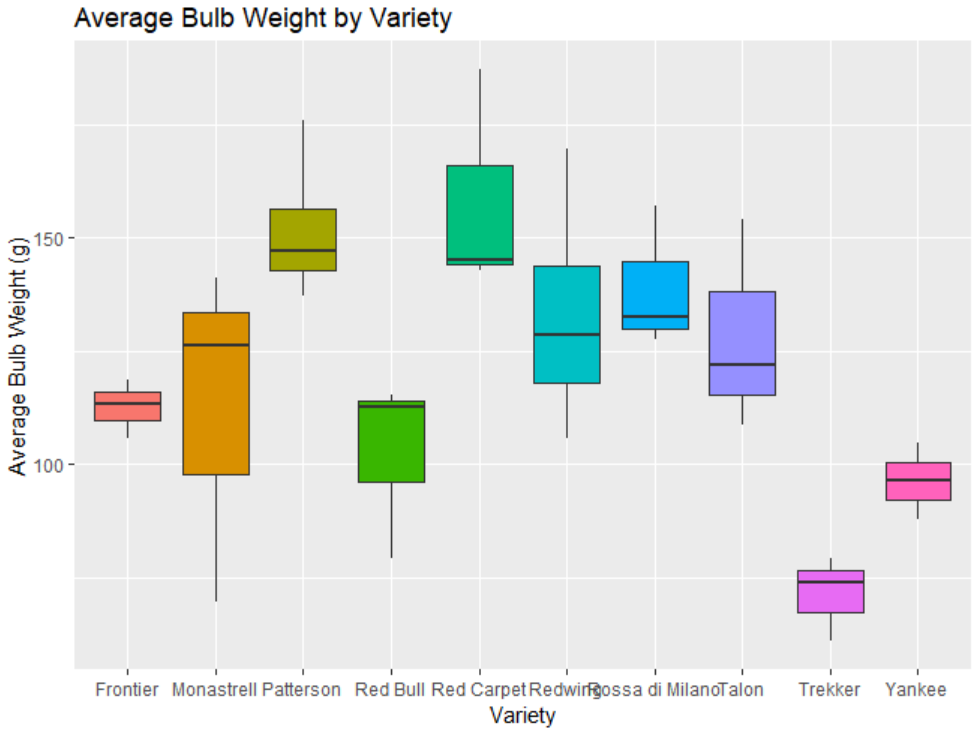
Onion marketable count



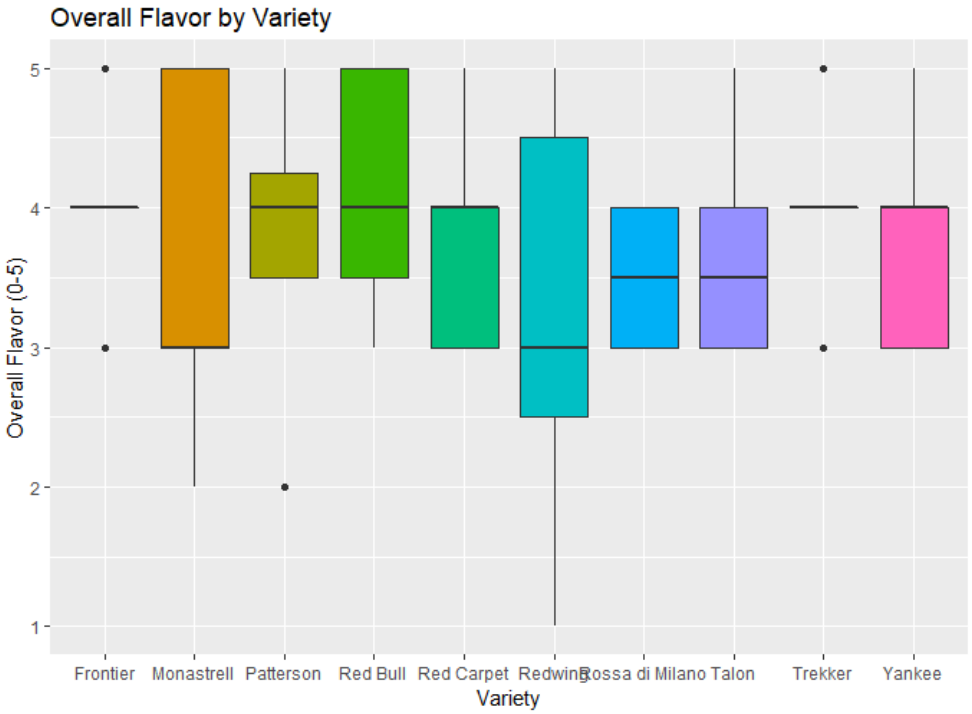
Onion marketable weight



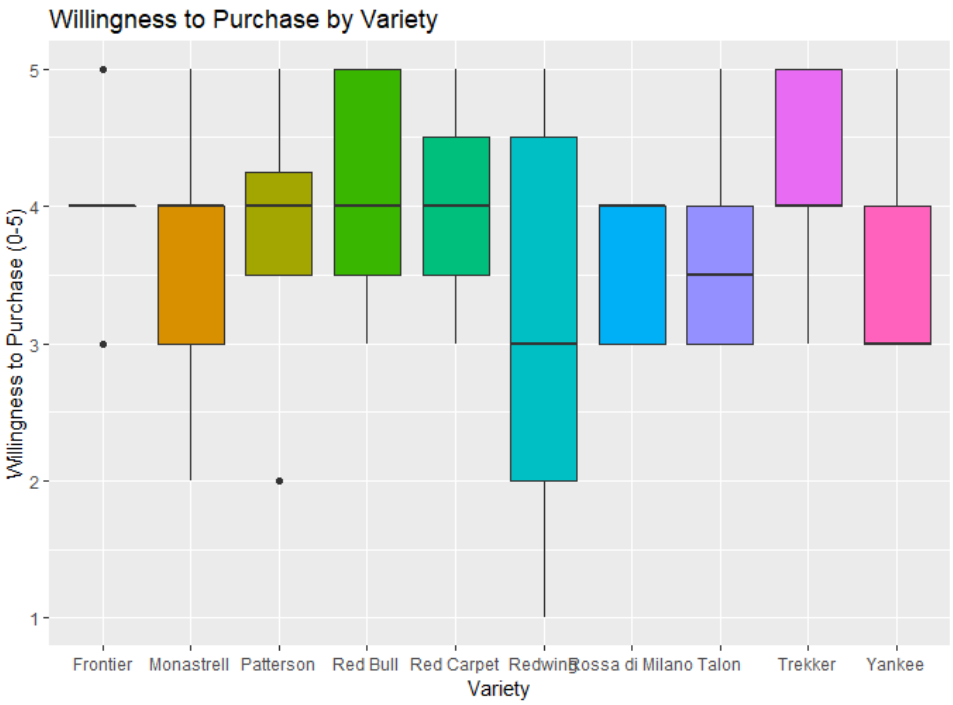
Onion unmarketable proportion



Onion average weight



Onion chef overall flavor



Onion chef willingness to purchase by variety

Yellow and Red Storage Onions (field) (* indicates varieties statistically similar to the "best" variety in each category shown in BOLD)						
Variety	Total weight (Kg)	Marketable Count (#/plot)	Marketable Weight (Kg/plot)	Unmarketable Proportion (%)	Overall Flavor (0-5)	Willingness to Purchase (0-5)
Red Carpet	**5.54**	30.16*	**5.20**	7%*	3.71*	4.00*
Patterson	5.31*	**31.16**	5.06*	**5%**	3.75*	3.75*
Rossa di Milano	4.87*	27.62*	4.37*	10%*	3.50*	3.57*
Redwing	4.66*	28.91*	4.21*	11%*	3.29*	3.14*
Talon	4.49*	28.52*	4.01*	12%*	3.67*	3.67*
Frontier	3.94*	24.95*	3.31*	16%*	4.00*	4.00*
Monastrell	3.93*	19.02	2.93	30%	3.60*	3.60*
Red Bull	3.58	23.33*	2.86	22%*	**4.14**	4.14*
Yankee	3.37	14.67	1.95	44%	3.80*	3.60*
Trekker	2.50	14.23	1.68	33%	4.00*	**4.20**

2020 One-Cut Lettuce Variety Report

Seed to Kitchen Collaborative
Michigan State University
Upper Peninsula Research and Extension Center

Management

In 2020, six one-cut lettuce varieties were trialed at the MSU Upper Peninsula Research and Extension Center in Chatham, MI. Lettuce was seeded in the greenhouse Week 37 (September 2) into 50-cell trays using Morgan Composting Dairy Doo Seed Starter 101 soil media. Lettuces were transplanted at week 41 (October 12).

Plots were laid out as 3-4 reps of 60 plants each in an RCBD. Transplanting was done into 48" top raised beds, with 3 rows per bed, spaced at 6" apart in row. Each transplant cell contained 3-4 plants, and were planted as such. Irrigation was provided as needed via overhead irrigation.

Base fertility applied to the 4'x 140' bed one week prior to planting and incorporated with hand tools into mechanically tilled beds. The application included elemental sulfur (0.001lb/ft^2), gypsum (0.001lb/ft^2) and peat moss (2ft^3).

Varieties tested:

Variety	Market Class	Color
Salanova Green Oakleaf	One-cut	Green
Salanova Green Butter	One-cut	Green
Salanova Green Sweet Crisp	One-cut	Green
Salanova Green Incised	One-cut	Green
Easyleaf Ezrilla	One-cut	Green
Easyleaf Hampton	One-cut	Green

Traits

Plant count, total weight, bolting rating, and leaf rot rating

Notes on trait measurement:

Due to the late planting date, bolting ratings were not taken. Leaf rot rating was taken during harvest observation.

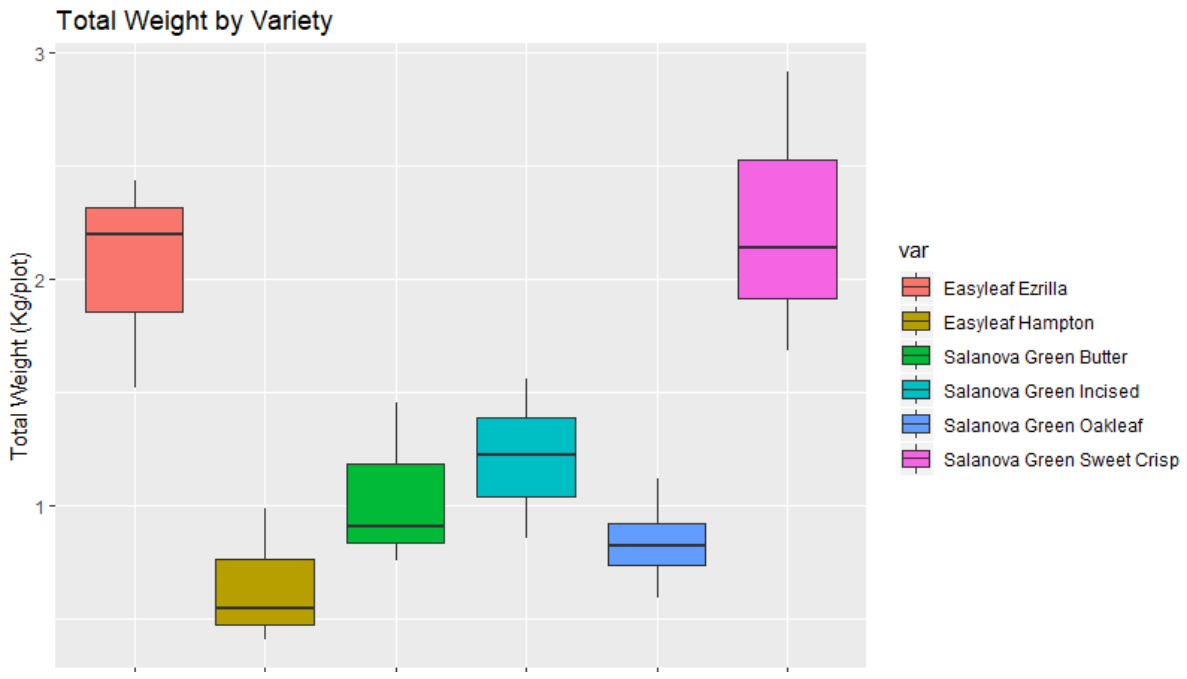
Quality Evaluation

Chef taste testing:

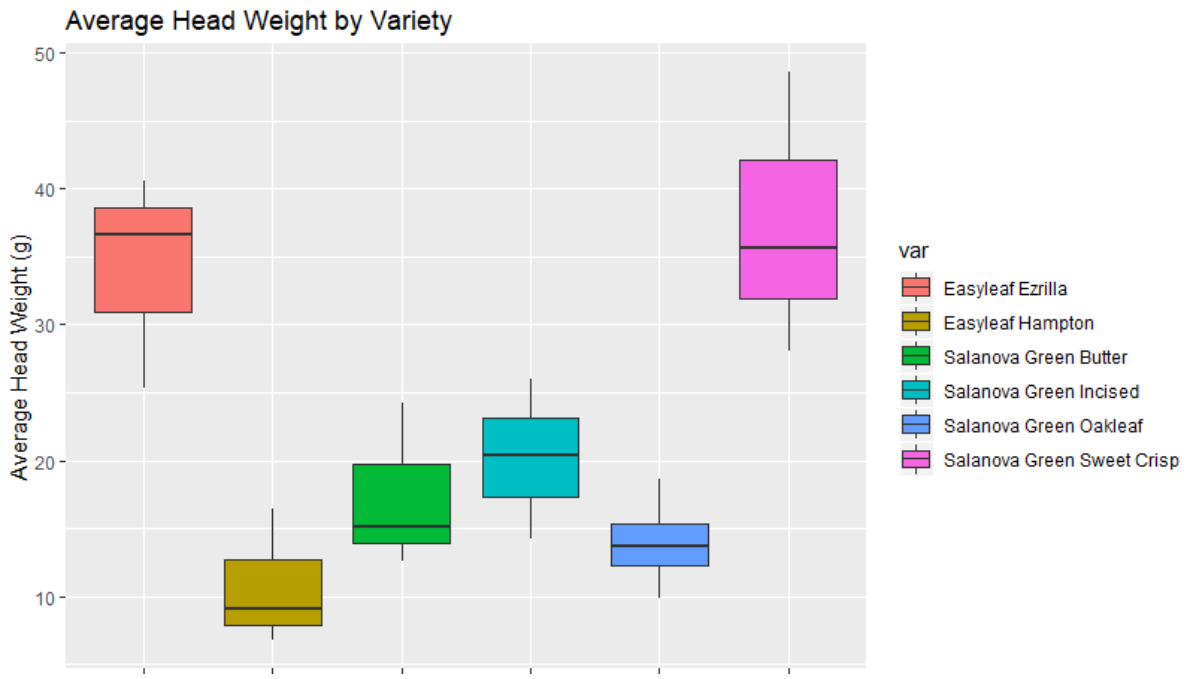
Flavor evaluation was done by 8 local chefs in the Marquette/Alger county area. Varieties were packed with an individual alphanumeric code (no variety names were included in boxes). Boxes were delivered to chefs and included instructions for evaluation, and a QR code linking to Seedlinked where data was inputted.

Flavor components sweetness, acidity, and bitterness were rated on a scale of 1 (low) to 5 (high). Flavor intensity was rated on a scale of 1 (low) to 5 (high). Appearance, texture and overall flavor were rated from 1 (poor) to 5 (excellent).

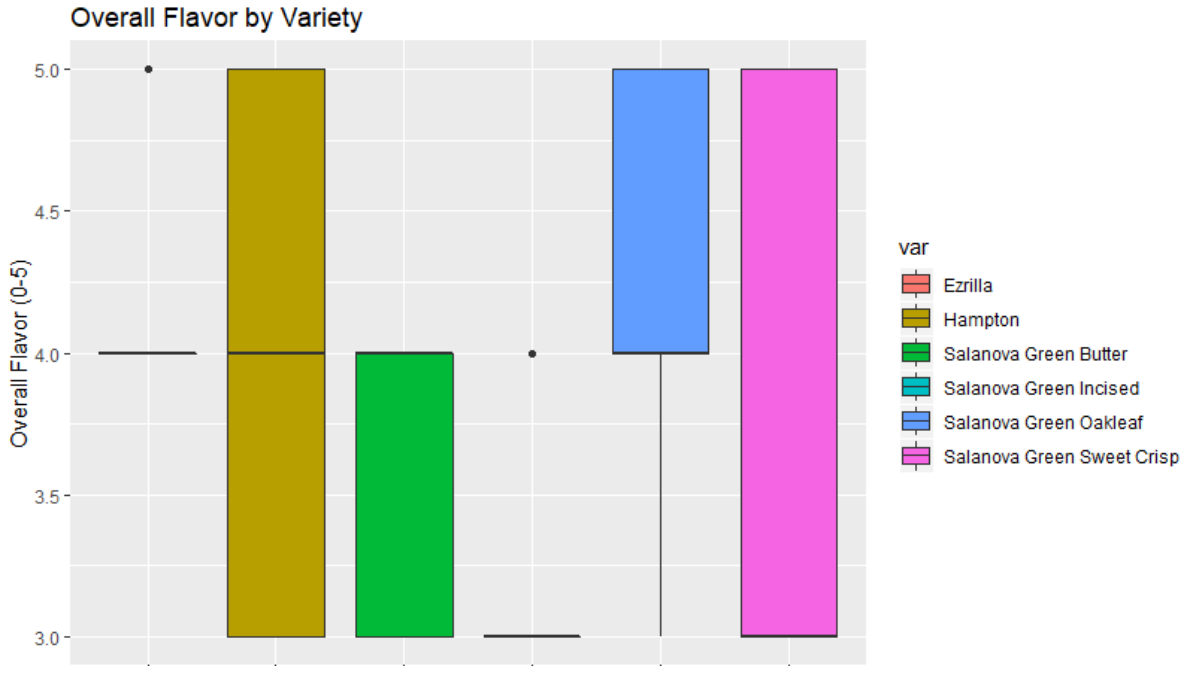
Chefs were asked to rate flavor intensity (1=low, 5=high), the likelihood that they would buy it for their restaurant (1=no way, 5=yes, definitely) and perceived ease of preparation (1=difficult, 5 = easy), and their degree of preference for the variety (1=low, 5= high).



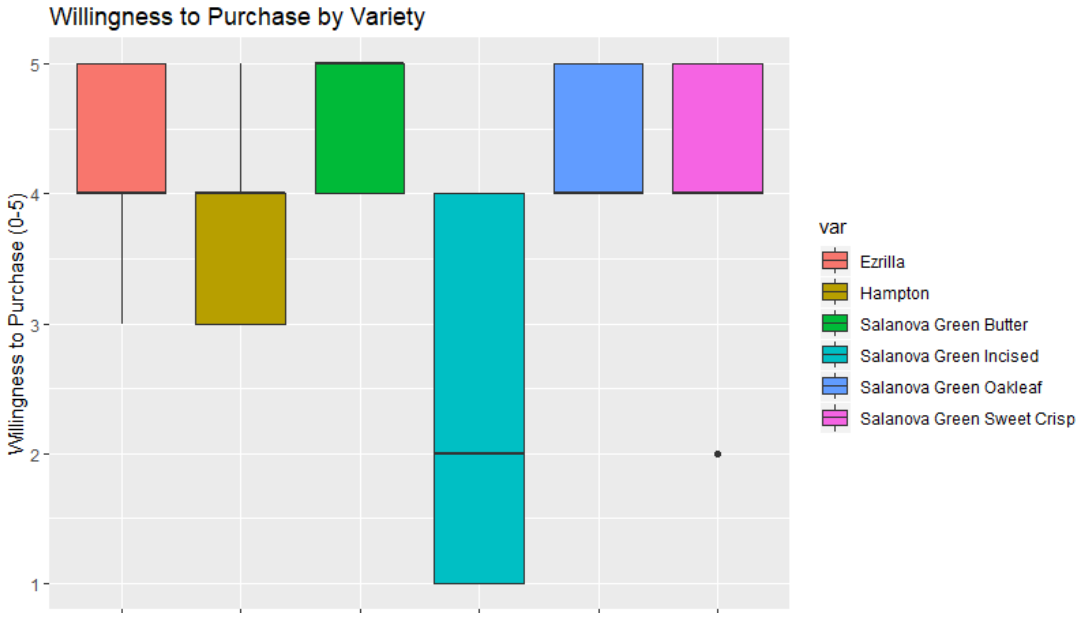
Lettuce total weight



Lettuce average head weight



Lettuce chef overall flavor



Lettuce chef willingness to purchase

One-cut Lettuce (high tunnel) (* indicates varieties statistically similar to the "best" variety in each category shown in **BOLD**)				
Variety	Total Weight (Kg/plot)	Average Weight (g)	Overall Flavor (0-5)	Willingness to Purchase (0-5)
Salanova Green Sweet Crisp	**2.25**	**37.44**	3.8*	4.0*
Easyleaf Ezrilla	2.05*	34.17*	**4.2**	4.2*
Salanova Green Incised	1.21	20.20	3.2*	2.4
Salanova Green Butter	1.04	17.36	3.6*	**4.6**
Salanova Green Oakleaf	0.84	13.95	4.2*	4.4*
Easyleaf Hampton	0.65	10.77	4.0*	3.8*

2020 Corno di Toro Pepper Variety Report

Seed to Kitchen Collaborative
Michigan State University
Upper Peninsula Research and Extension Center

Management

In 2020, six Corno di Toro sweet pepper varieties were trialed at the MSU Upper Peninsula Research and Extension Center in Chatham, MI. Peppers were seeded in the greenhouse Week 16 (April 14) into ¾" mini soil blocks using Morgan Composting Dairy Doo Seed Starter 101 soil media. Transplants were bumped up to 4" pots at Week 18 (April 28), and transplanted into the hoop house at Week 22 (May 27).

Plots were laid out as 3-4 reps of 18 plants each in an RCBD. Transplanting was done into 48" open-top beds (no mulch), with 18" spacing between beds. Plants were spaced 16" apart in-row, with two staggered rows per bed. Plants were trellised twice during the season using the 'Florida weave' method. Irrigation was provided 2 hrs weekly via one line of drip per row of peppers. As a preventative measure, Serenade biofungicide was applied every 10-14 days from Week 22 (May 30) until Week 32 (August 5). No significant disease or insect damage was reported.

Fertility was applied two days prior to planting and incorporated with hand tools into mechanically tilled beds. Base fertility applied to the 4'x140' bed included elemental sulfur (0.001lb/ft^2), gypsum (0.001lb/ft^2) and peat moss (2ft^3). Additional fertility for peppers included a feather meal based 10-0-4 fertilizer (0.017lb/ft^2), and potassium sulfate (0.006lb/ft^2).

Varieties tested

Variety	Color
Carmen	Red
Early Perfect Italian	Red
Escamillo	Yellow
Golden Treasure	Yellow

Lively Italian Orange	Orange
Oronos	Orange

Traits

Marketable Count, Marketable Weight (kg), Unmarketable Weight (kg), Average Weight (g), Lodging, End of Season Green Fruit Count, End of Season Green Fruit Weight (kg), Proportion Unmarketable, Unmarketable Causes.

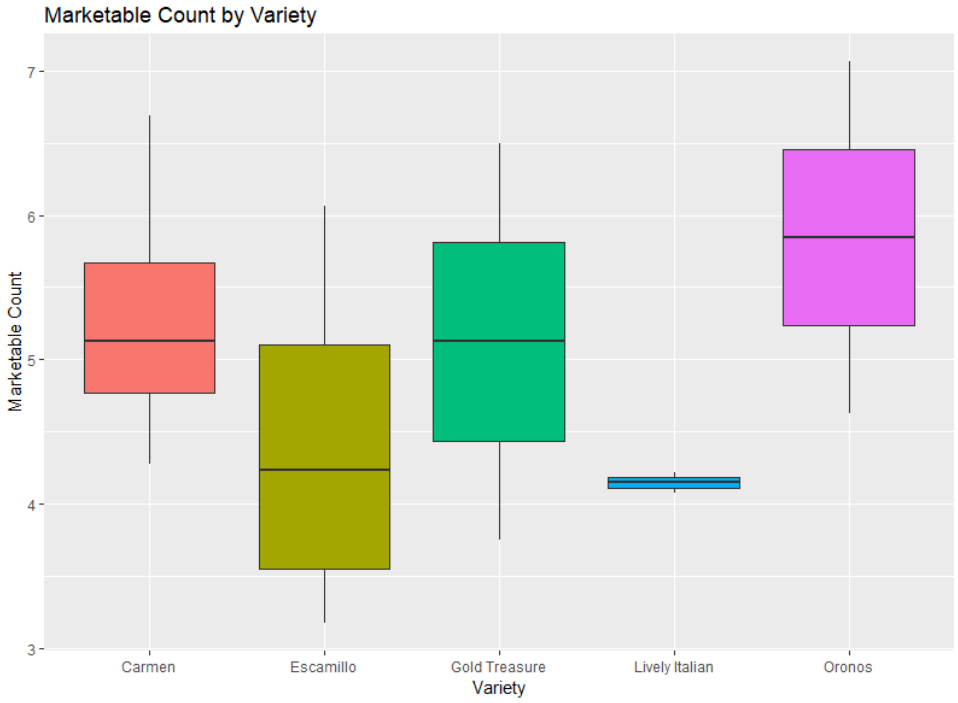
Notes on trait measurement: Harvest was done twice a week from Week 28 (July 9) to Week 39 (September 23). Fruit was sorted into marketable and unmarketable, counted and weighed. 5-10 fruit from both marketable and unmarketable categories were photographed for reference.

Quality Evaluation

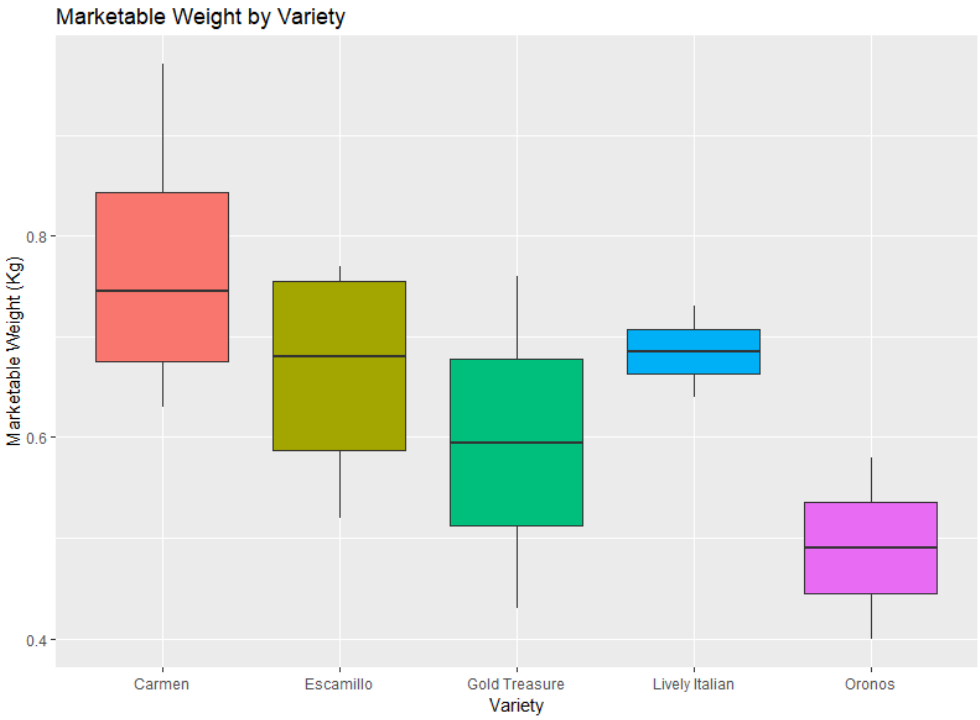
Crew taste testing:
Flavor evaluation was done by the summer field crew after training at the beginning of the season. Flavor components sweetness, acidity, bitterness, and umami were rated on a scale of 1 (low) to 5 (high). Flavor intensity was rated on a scale of 1 (low) to 5 (high). Appearance, texture and overall flavor were rated from 1 (poor) to 5 (excellent).

Chef taste testing:
Flavor evaluation was done by 8 local chefs in the Marquette/Alger county area. Varieties were packed with an individual alphanumeric code (no variety names were included in boxes). Boxes were delivered to chefs, including instructions for evaluation and a QR code linking to Seedlinked where data was entered. Flavor components were the same as field crew tastings, and also included a rating of willingness to purchase, from 1 (very unlikely) to 5 (very likely).

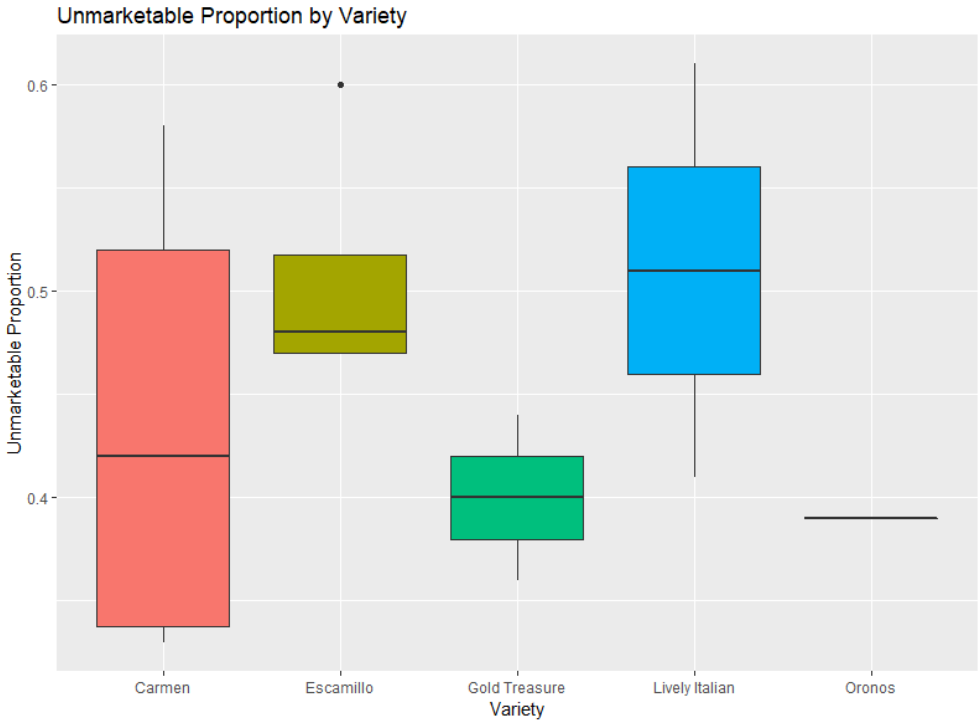
Pepper total weight



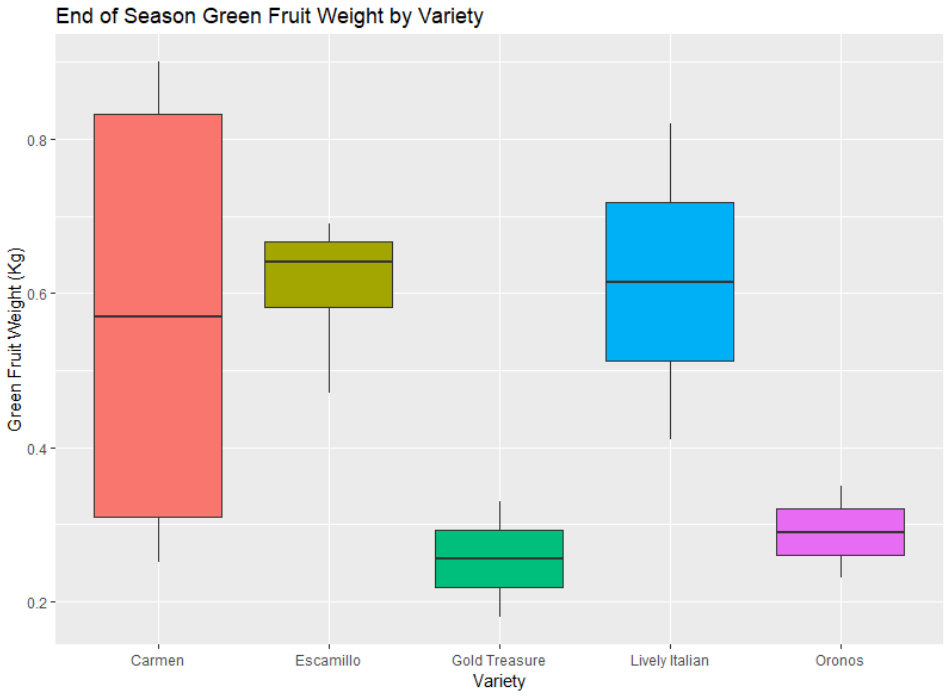
Pepper marketable count



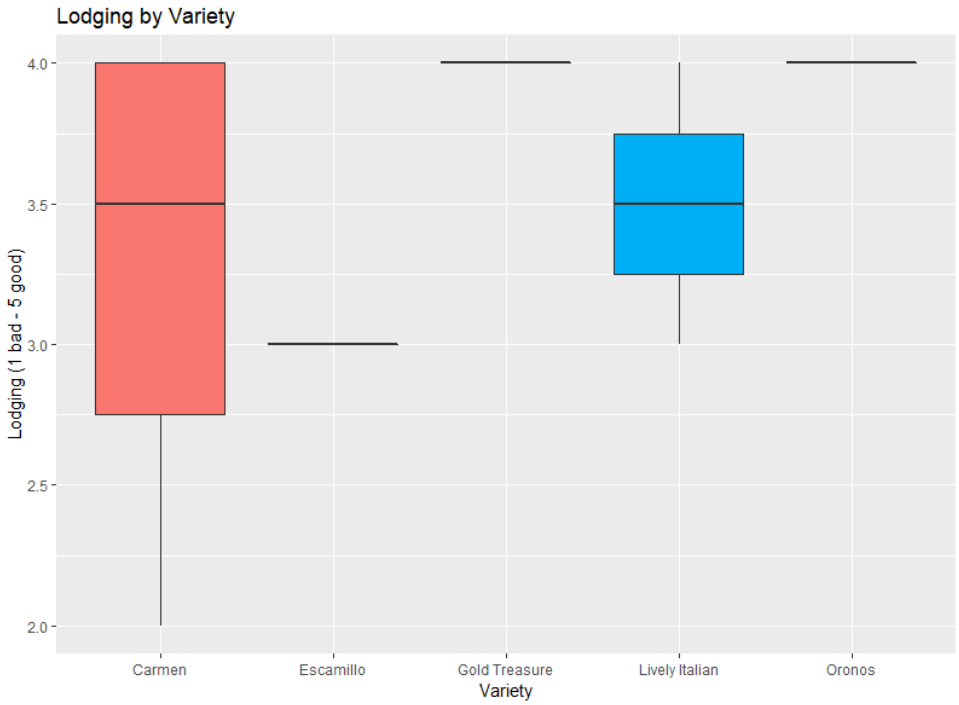
Pepper marketable weight



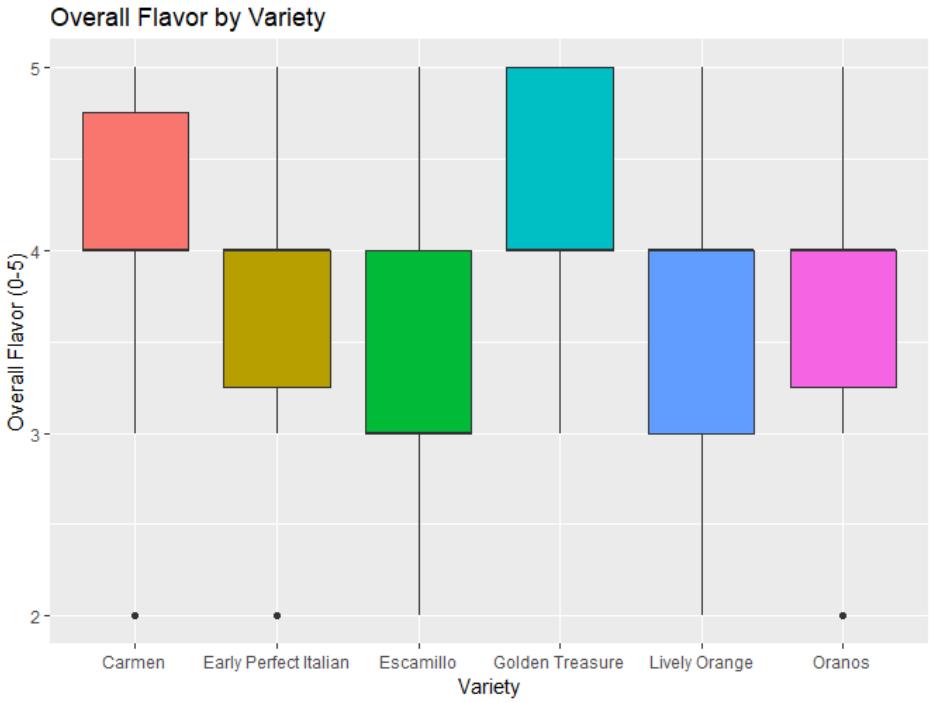
Pepper unmarketable proportion



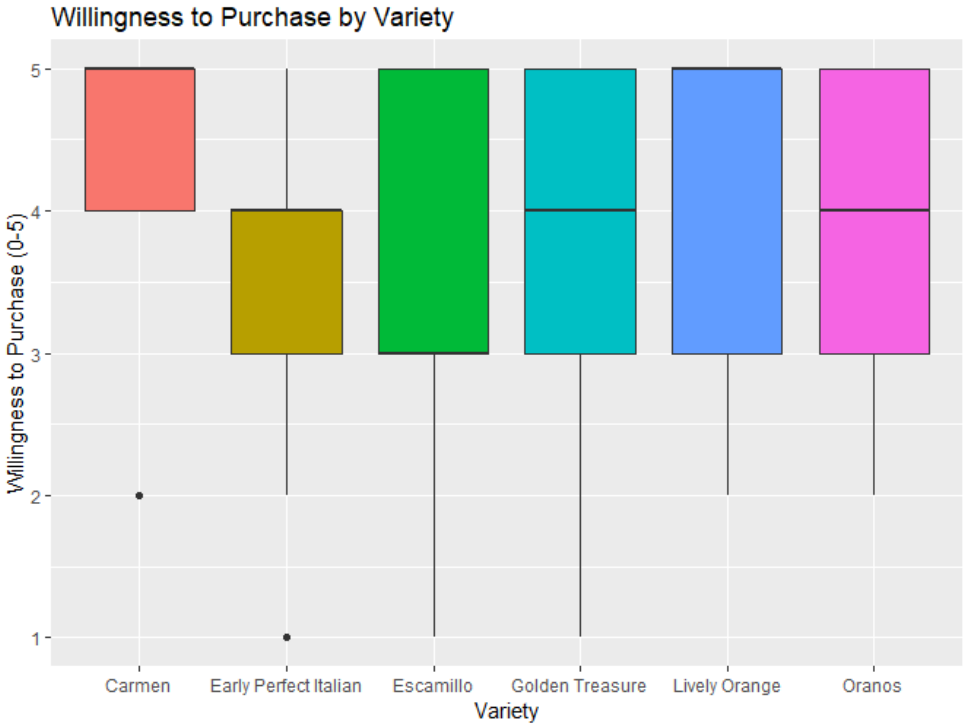
Pepper end of season green fruit weight



Pepper lodging rating



Pepper overall flavor



Chef willingness to purchase

Corno di Toro Peppers (high tunnel) (* indicates varieties statistically similar to the "best" variety in each category shown in **BOLD**)						
Variety	Total weight (Kg)	Marketable Count (#/plant)	Marketable Weight (Kg/plant)	Unmarketable Proportion (%)	Overall Flavor (0-5)	Willingness to Purchase (0-5)
Carmen	**1.44**	5.31*	**0.77**	44%*	4.00*	**4.33**
Lively Italian Orange	1.43*	4.15*	0.69*	51%*	3.70*	4.00*
Escamillo	1.35*	4.43*	0.66*	51%*	3.40*	3.44*
Golden Treasure	0.98*	5.13*	0.60*	40%*	**4.11**	3.67*
Oranos	0.81*	**5.85**	0.49	**39%**	3.70*	3.78*

2020 Carrot Variety Report

Seed to Kitchen Collaborative
Michigan State University
Upper Peninsula Research and Extension Center

Management

In 2020, ten carrot varieties were trialed at the MSU Upper Peninsula Research and Extension Center in Chatham, MI. Plots 6' long were laid out as 3-4 reps in and RCBD and direct-seeded week 29 (July 15) on 48" top raised beds made with a rototiller and custom bed shaper. Carrots were seeded in 3 rows per bed, with 15" between rows. Soil was kept moist with overhead irrigation until germination, and watered with overhead irrigation as needed throughout the growing period. Plots were thinned to 1 in between carrots in-row week 32 (August 8). Carrots were harvested week 41 (October 10).

Prior to planting, a cover crop of buckwheat was seeded in the field week 20 (May 15) and terminated week 26 (June 25). Fertility was applied 5 days prior to planting, and consisted of a feather meal based 10-0-4 fertilizer (0.02lb/ft^2) and potassium sulfate (0.001lb/ft^2).

Varieties tested

Variety	Market Class	Color
Bolero	Nantes	Orange
Dolciva	Nantes	Orange
Scarlet Nantes	Nantes	Orange
Negovia	Nantes	Orange
Bangor	Nantes	Orange
Jerada	Nantes	Orange
Deep Purple	Imperator	Purple
Purple Haze	Imperator	Purple
Purple Elite	Imperator	Purple
Purple Sun	Imperator	Purple

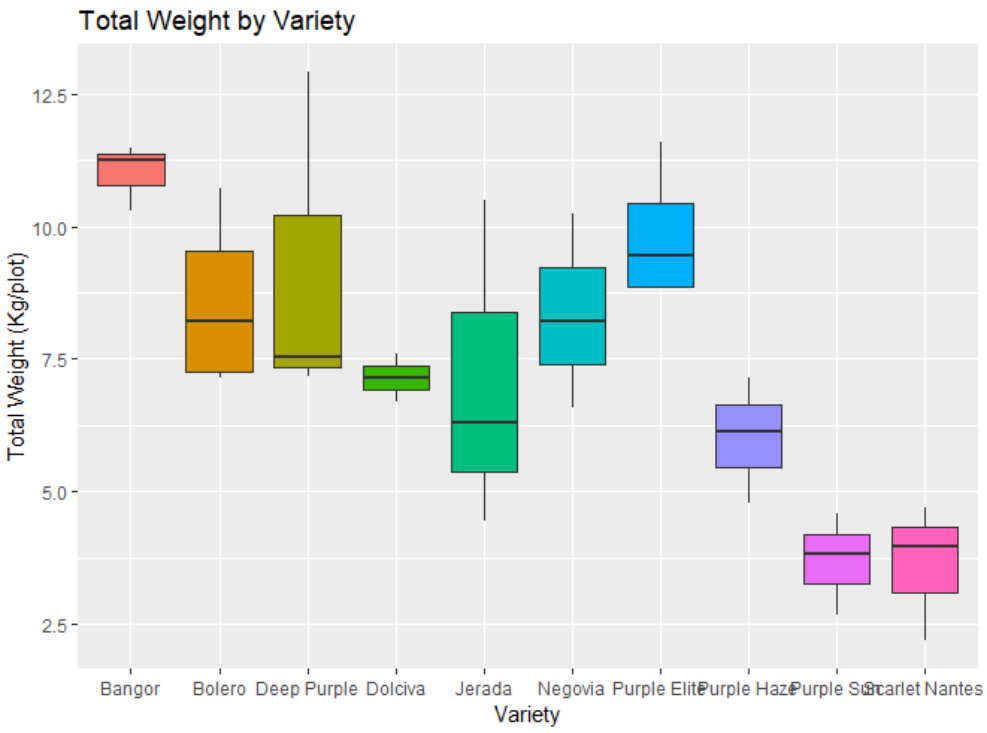
Traits

Traits Field: Marketable Count, Marketable Weight (kg), Unmarketable Count, Unmarketable Weight (kg), Plant Height (cm).
Notes on trait measurement:
Top height was measured before harvest at three points in each plot and averaged.

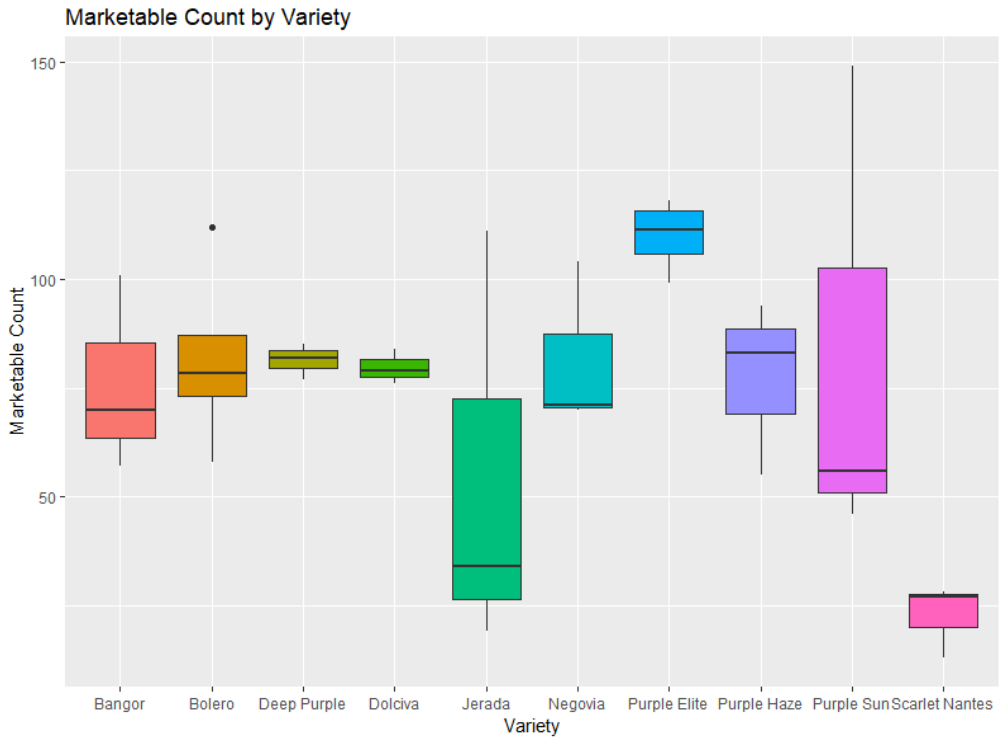
Quality Evaluation

Chef taste testing:
Flavor evaluation was done by 8 local chefs in the Marquette/Alger County area. Varieties were packed with an individual alphanumeric code (no variety names were included in boxes). Boxes were delivered to chefs, including instructions for evaluation and a QR code linking to Seedlinked where data was entered. Comparisons were made within market classes (colors).

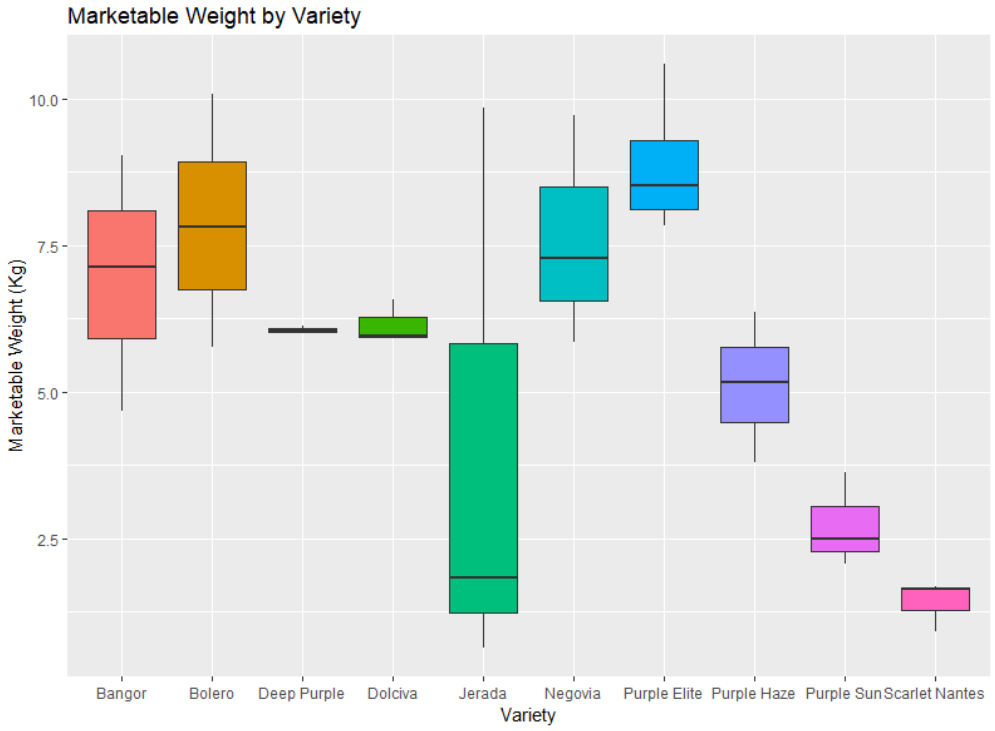
Flavor components sweetness, acidity, and bitterness were rated on a scale of 1 (low) to 5 (high). Flavor intensity and complexity were rated on a scale of 1 (low) to 5 (high). Appearance, texture and overall flavor were rated from 1 (poor) to 5 (excellent). The likelihood that they would buy it for their restaurant (1=no way, 5=yes, definitely) and perceived ease of preparation (1=difficult, 5 = easy), and their degree of preference for the variety (1=low, 5= high).



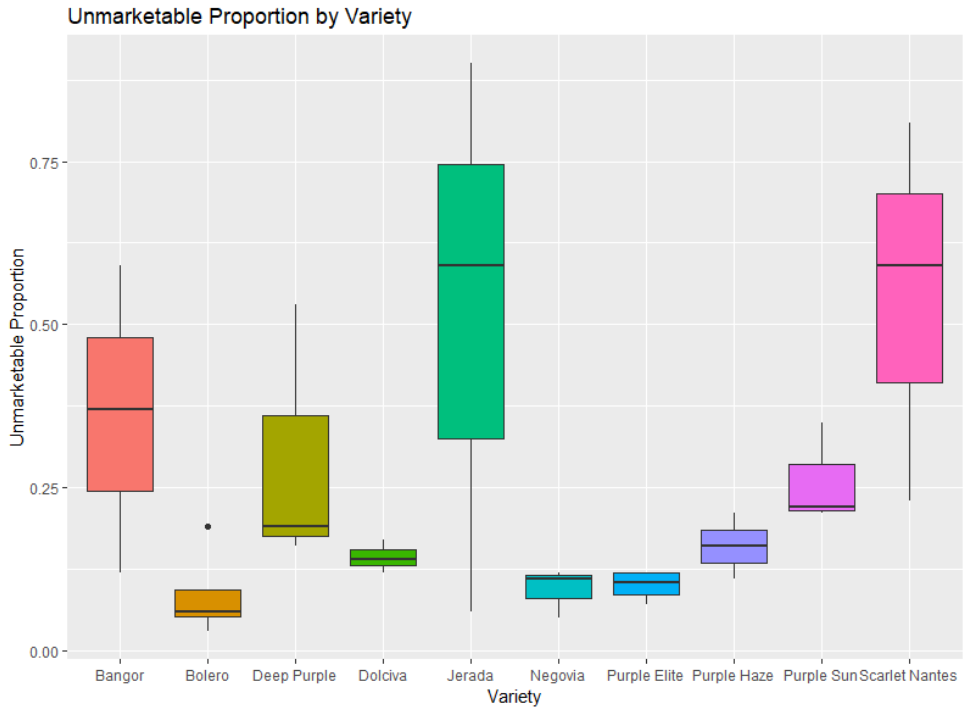
Carrot total weight



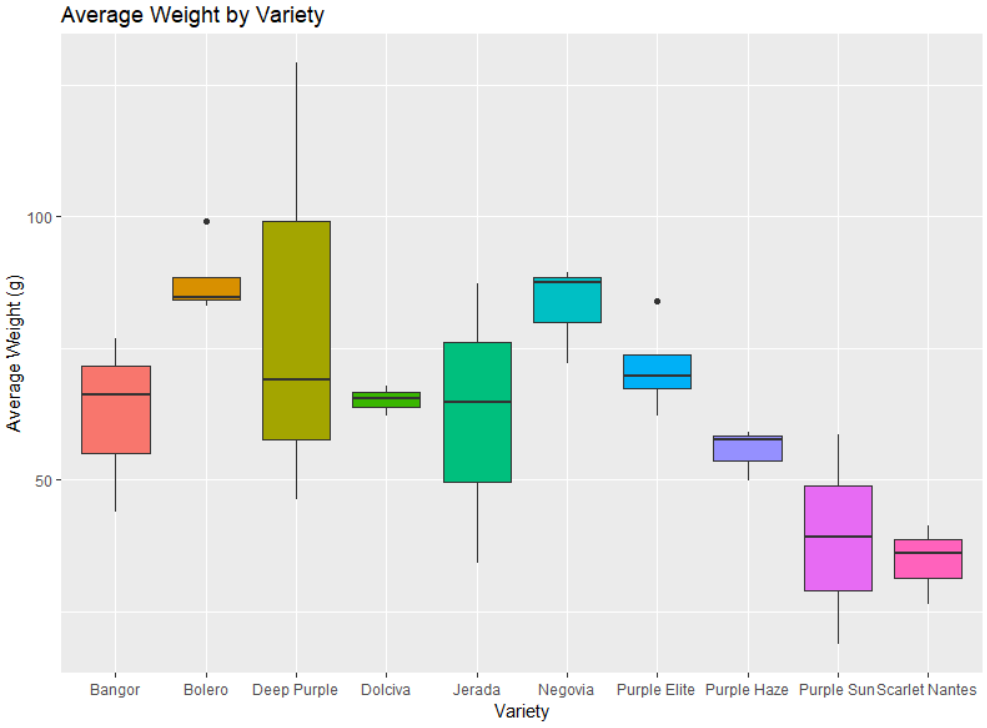
Carrot marketable count



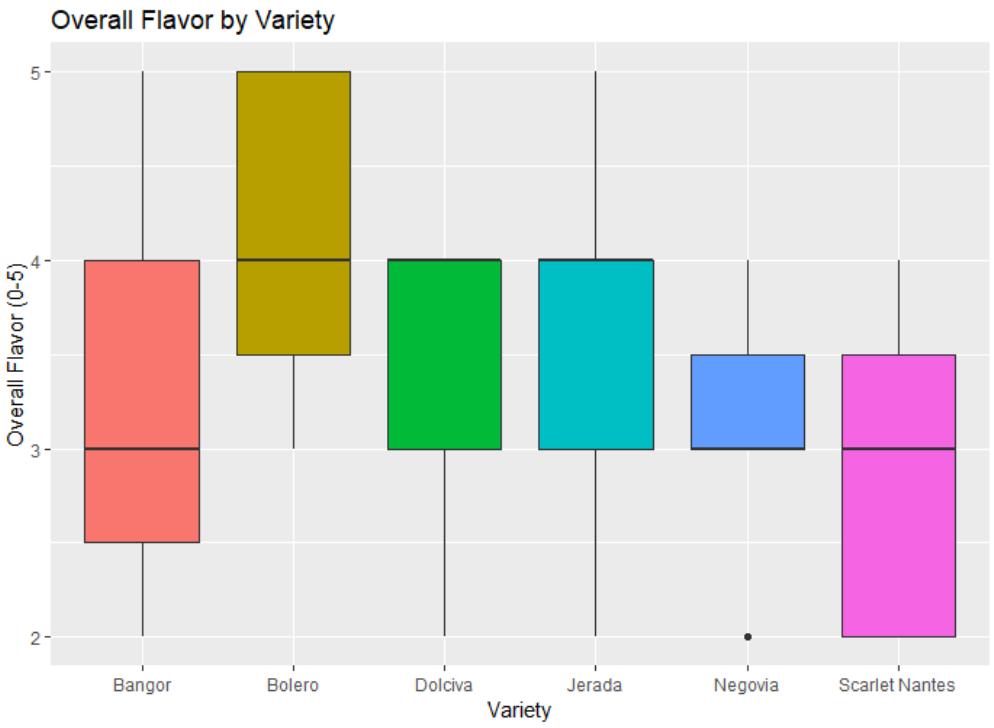
Carrot marketable weight



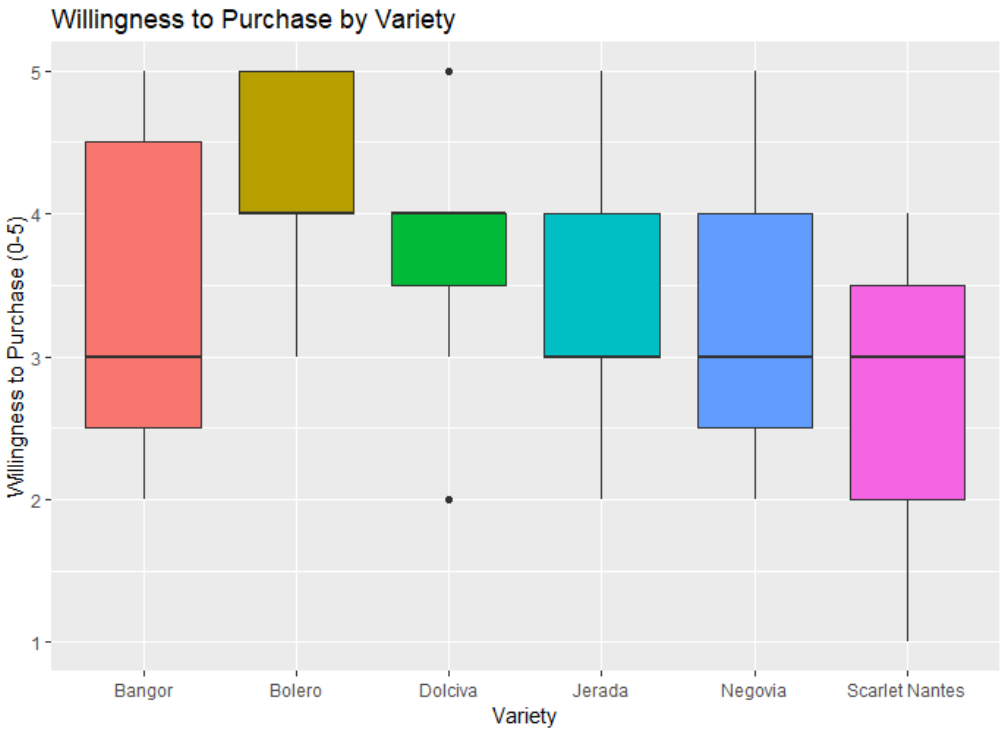
Carrot unmarketable proportion



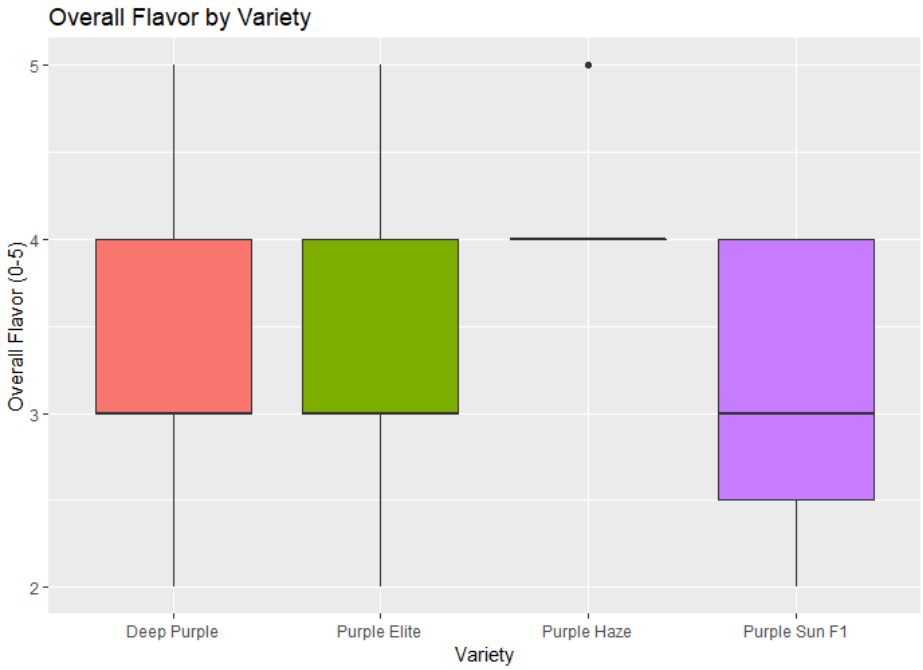
Carrot average weight



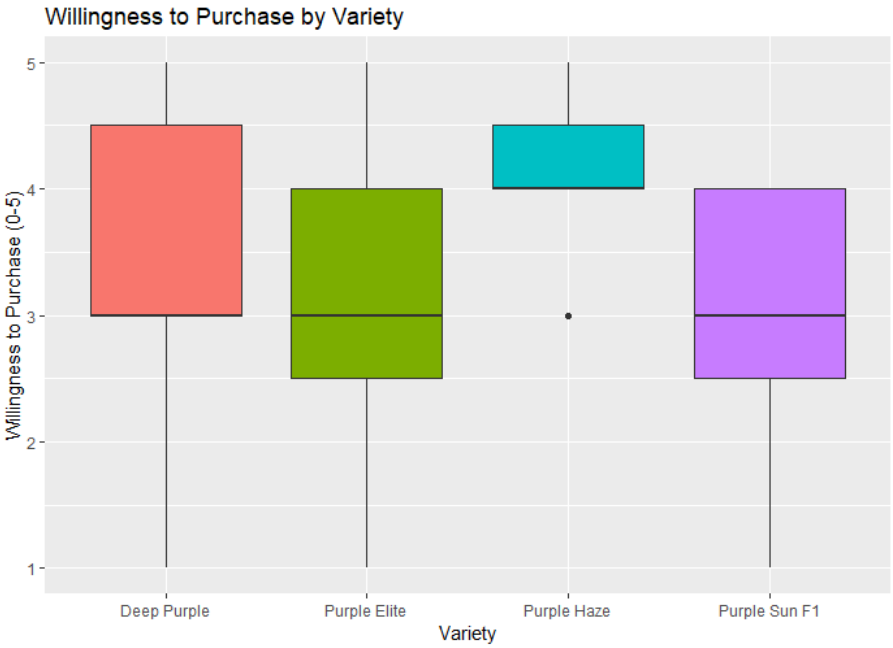
Orange carrot overall flavor



Orange carrot chef willingness to purchase



Purple carrot overall flavor



Purple carrot chef willingness to purchase

Orange and Purple Storage Carrots (field) (* indicates varieties statistically similar to the "best" variety in each category shown in **BOLD**)						
Variety	Total weight (Kg/plot)	Marketable Count (#/plot)	Marketable Weight (Kg/plot)	Unmarketable Proportion (%)	Overall Flavor (0-5)	Willingness to Purchase (0-5)
Purple Elite	9.84*	**110.00**	**8.86**	10%*	3.43*	3.14*
Bolero	8.58*	81.75*	7.86*	**9%**	**4.14**	**4.29**
Negovia	8.34*	81.67*	7.61*	9%*	3.14*	3.29*
Bangor	**11.01**	76.00*	6.94*	36%*	3.29*	3.43*
Dolciva	7.14*	79.67*	6.15*	14%*	3.43*	3.71*
Deep Purple	9.20*	81.33*	6.06*	29%*	3.43*	3.43*
Purple Haze	6.01*	77.33*	5.11*	16%*	4.14*	4.14*
Jerada	7.07*	54.67*	4.10*	52%*	3.57*	3.43*
Purple Sun	3.69	83.67*	2.73	26%*	3.14*	3.00*
Scarlet Nantes	3.62	22.67	1.41	54%*	2.86*	2.71

2020 Cucumber Variety Report

Seed to Kitchen Collaborative
Michigan State University
Upper Peninsula Research and Extension Center

Management

Cucumbers were seeded in the greenhouse Week 16 (April 14) into 3" soil blocks using Morgan Composting Dairy Doo Seed Starter 101 soil media, and transplanted into the hoop house at Week 22 (May 27).

Plots were laid out as 3-4 reps of 12 plants each in an RCBD. Transplanting was done into 48" open-top beds (no mulch), with 18" spacing between beds. Plants were spaced 1 ft. apart in-row, , with 1 row per bed. Plants were trained to one leader with plastic twine supported by tomato clips. Plants were pruned of suckers on a weekly basis starting Week 24 (June 8). Irrigation was provided 2 hrs weekly via one line of drip tape. As a preventative measure, Surround was applied twice during the growing season (June 3 & July 2). Serenade biofungicide was applied every 10-14 days from Week 22 (May 30) until Week 32 (August 5).

Fertility was applied two days prior to planting and incorporated with hand tools into mechanically tilled beds. Base fertility applied to the 4'x140' bed included elemental sulfur (0.001lb/ft^2), gypsum (0.001lb/ft^2) and peat moss (2ft^3). Additional fertility for cucumbers included a feather meal based 10-0-4 fertilizer (0.011lb/ft^2), and potassium sulfate (0.013lb/ft^2).

Varieties tested:

Variety	Market Class
Suyo	Asian
Tasty Green	Asian
Japanese Climbing	Asian
Shintokiwa	Asian
Yamato Sanjaku	Asian

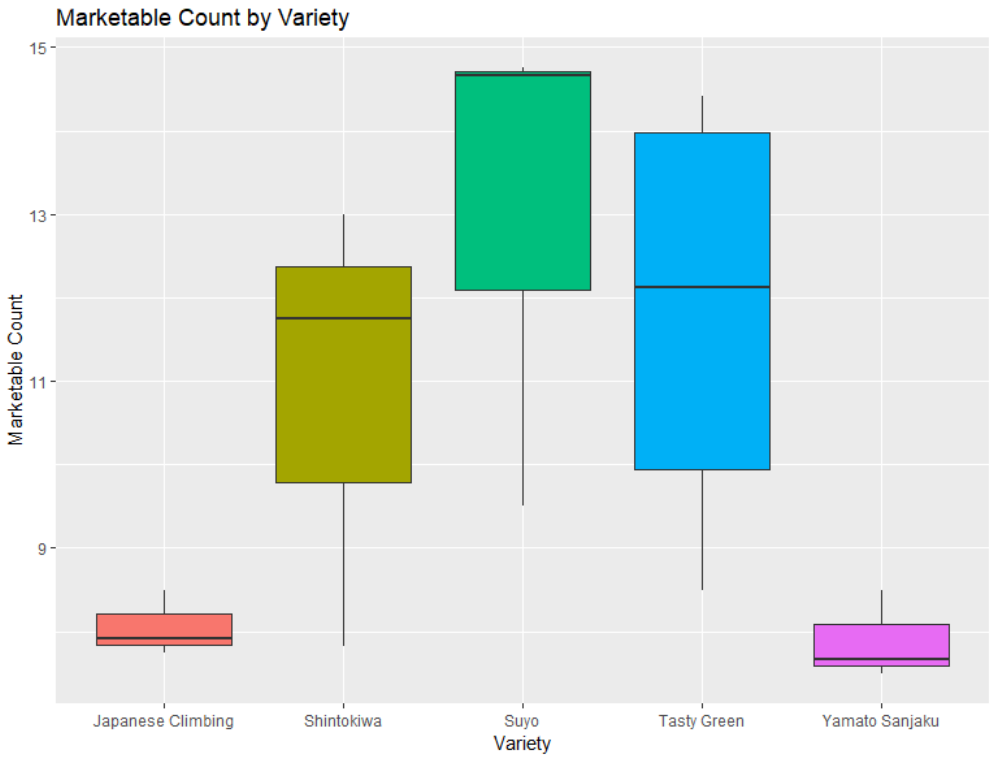
Traits

Marketable Count, Marketable Weight (kg), Unmarketable Count, Unmarketable Weight (kg), Proportion Unmarketable, Unmarketable (oversized) Count, Unmarketable (oversized), Weight (kg), Average Weight (g), Angular leaf spot score (WMARS).
Notes on trait measurement: Harvest was done twice a week from week 27 (June 29) to 38 (September 16). Fruit was sorted into marketable and unmarketable, counted and weighed. 5-10 fruit from both marketable and unmarketable categories were photographed for reference.

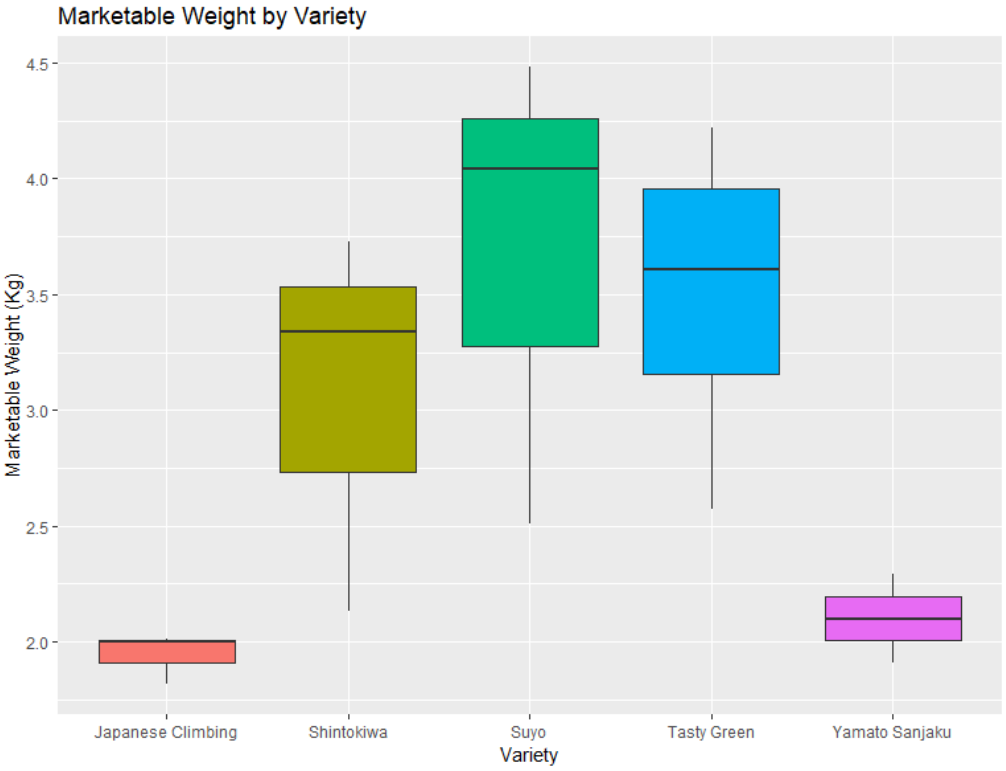
Quality Evaluation

Crew taste testing:
Flavor evaluation was done by the summer field crew after training at the beginning of the season. Flavor components sweetness, acidity, and bitterness were rated on a scale of 1 (low) to 5 (high). Flavor intensity was rated on a scale of 1 (low) to 5 (high). Appearance, texture and overall flavor were rated from 1 (poor) to 5 (excellent).

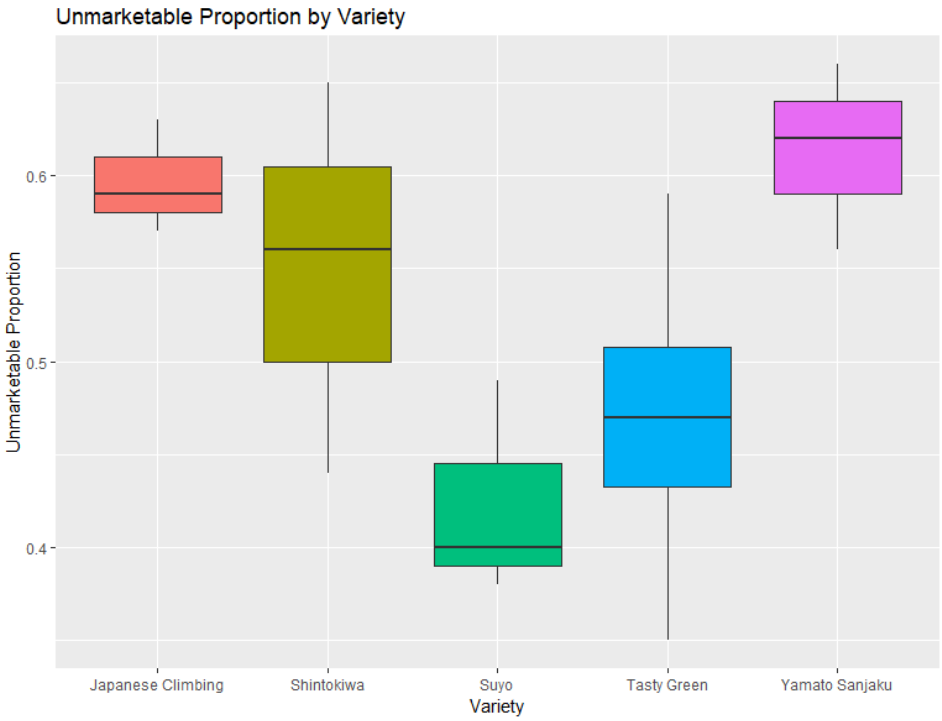
Chef taste testing:
Flavor evaluation was done by 8 local chefs in the Marquette/Alger county area. Varieties were packed with an individual alphanumeric code (no variety names were included in boxes). Boxes were delivered to chefs, including instructions for evaluation and a QR code linking to Seedlinked where data was entered. Chefs were asked to rate flavor intensity (1=low, 5=high), the likelihood that they would buy it for their restaurant (1=no way, 5=yes, definitely) and perceived ease of preparation (1=difficult, 5 =easy), and their degree of preference for the variety (1=low, 5= high).



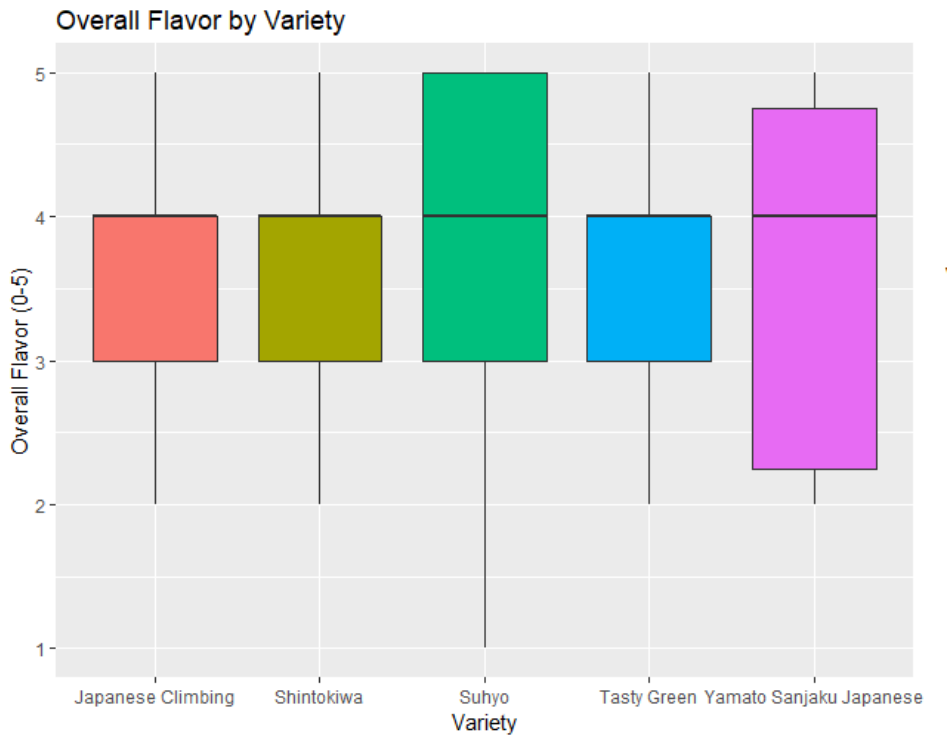
Cucumber marketable count



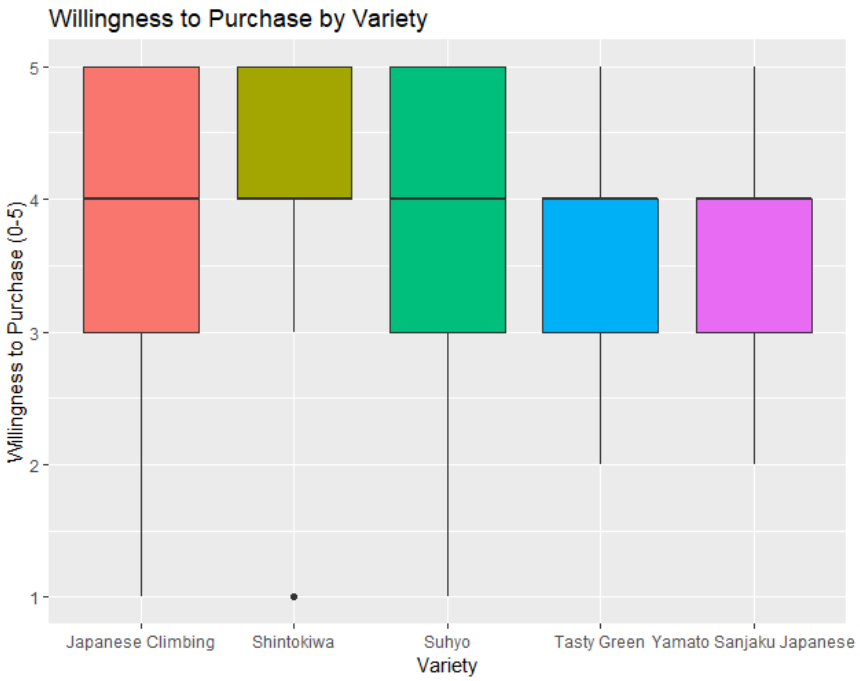
Cucumber marketable weight



Cucumber unmarketable proportion



Cucumber flavor by variety



Cucumber chef willingness to purchase

Asian Cucumbers (high tunnel) (* indicates varieties statistically similar to the "best" variety in each category shown in **BOLD**)						
Variety	Total weight (Kg)	Marketable Count (#/plant)	Marketable Weight (Kg/plant)	Unmarketable Proportion (%)	Overall Flavor (0-5)	Willingness to Purchase (0-5)
Suyo Long	6.54*	**12.97**	**3.67**	**42%**	**3.86**	3.86*
Tasty Green	6.89*	11.79*	3.50*	47%*	3.50*	3.64*
Shintokiwa	**7.34**	10.86*	3.07*	55%*	3.71*	**4.00**
Yamato Sanjaku	5.54*	7.89	2.10	61%	3.57*	3.71*
Japanese Climbing	4.83*	8.06	1.94	60%	3.46*	3.77*