

# **U.P. Ag Connections Newsletter** Agricultural News from MSU Extension and AgBioResearch

#### January 2022

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World Food Prize MI Youth Institute

## After a one year break due to Covid, Michigan State University and partners will be hosting the Ag for Tomorrow Conference in the Heirman Center of Bay College in Escanaba. This year the conference will be held on Wednesday, March 9. Covid protocols are going to need to be followed, including masking. Due to Covid distancing requirements, not all classrooms will hold as many people as before. So classrooms may not be the traditional rooms we have been using in the most recent past. Signage should get everyone directed to classes they wish to attend.

The format will be very similar to the most recent conferences including a room for exhibitors, a keynote address in the exhibitor room, four tracks of classes and lunch in the cafeteria. The keynote address will be delivered by Abbey Palmer, Community Food Systems Educator with Michigan State University, and Lori Wardynski, Agriculture Instructor-FFA Advisor with the Gogebic/Ontonagon Intermediate School District. Abbey will talk about the K-12 agriculture education projects and initiatives currently in the Upper Peninsula and Lori will discuss her program in the classroom and FFA activities she has started in her first year.

The four tracks are not fully set but will include:

## Farm Homestead Track Presentations

- Maple Syrup and Confectioner's Kitchen planned at MSU's Forest Biomass Innovation Center presented by Jesse Randall, Director.
- Beekeeping 201 with Bernie Driggs, UP Beekeeper & Northwoods Beekeepers Member
- Priority Invasive Species in the Central Upper Peninsula Elise DesJarlais, Coordinator of the Lake to Lake Cooperative Invasive Species Management Area of the Marquette Conservation District
- Seed Saving with Annual Vegetables Sue Robishaw, who shares her decades of experience saving seeds in the UP and Abbey Palmer, MSU Extension

#### **Diversified Farms Track**

- What does the FSMA Water Rule mean for your produce farm? Landen Tetil, Marquette • **Conservation District**
- Vegetable Variety Selection for Yield, Quality and Flavor Sarah Goodman and James DeDecker, MSU
- Food SPICE: Technical and Financial Assistance Resources for UP Food Entrepreneurs Parker • Jones and Jamie Rahrig, MSU
- Hemp Production for Grain, Fiber or CBD in the UP James DeDecker, MSU

## **Crop Production Track**

- Get the most out of your hay fields Beef farmer and retired MSU Extension educator Jerry Lindquist from Osceola Co, MI
- 2021 MSU U.P. crop research and demonstration MSU Extension U.P. Crop Production Educator Jim Isleib will present a summary of crop research and demo projects around the U.P. region.

## **Livestock Production Track**

- Feedlot Research at UPREC Paul Naasz will talk about the feedlot research conducted at the Upper Peninsula Research and Extension Center in Chatham that compares animal performance and carcass quality of beef cattle that were grass finishing vs corn fed.
- Reduce Hay Fed to Beef Cows Dan Dalgord stockpiling grass, feeding hay across pastures, and raking hay into windrows for cows to eat through the winter.
  - Pasture Rest Periods Sacrificing yield and Quality Frank Wardynski, MSU Extension.

Michigan State University



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## Seed to Kitchen Collaborative

By James DeDecker and Sarah Goodman, UPREC

In 2021, the MSU Upper Peninsula Research and Extension Center (UPREC) received funding from MSU Project GREEEN and MSU Extension to address the limitations of traditional vegetable variety research and outreach by implementing the <u>Seed to Kitchen Collaborative</u> project in Michigan. The Seed to Kitchen Collaborative, started by Dr. 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 UPREC grew 58 different varieties of five vegetables in replicated variety trials including winter squash, bell pepper, carrot, cucumber, and tomato. Our 2021 tomato trial was a participatory breeding project, which is not reported here. Michigan and Wisconsin farmers also grew subsets of these vegetables and collected observations on their farm to capture the practitioner's point of view.

Organic growers face unique challenges related to soil fertility, pest management, etc., which provide a special context for vegetable variety testing. Furthermore, customers buying local organic 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 and their crews 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 hoped for. 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 labeled with an alpha-numeric 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. 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. Here we report 'overall flavor' and 'willingness to purchase' sensory data. Additional sensory data is available upon request from the authors.

A big "Thank You!" to all of the people and organizations that made our 2021 trials possible, including the Dr. Julie Dawson lab at UW-Madison, Sarah DeGraff, participating seed companies and breeders, Kendra Wilhelm, Marleigh Sherbinow, Taste the Local Difference, Marquette Food Co-op, NMU Dining Services, Humble Turnip, Border Grill, Iron Bay, Delft Bistro, MARESA, and others!

Each month we will include a different vegetable variety. We'll start with Winter Squash...

#### Management

In 2021, four *C. maxima* winter squash varieties were trialed at the MSU Upper Peninsula Research and Extension Center in Chatham, MI. Squash was seeded in the greenhouse May 4 into 2 inch soil blocks using Morgan Composting Dairy Doo Seed Starter 101 soil media. Plants were then potted-up to 4 inch plastic pots on May 14, and transplanted into the field June 3. Plots 3 ft wide x 14 ft long were laid out in a RCBD design with four replications. Fertility was applied just prior to planting, and consisted of beef cattle manure compost applied at 28,000 lbs/ac (0.64 lbs/ft<sup>2</sup>). Plants were spaced 2 ft. apart in-row, with 1 row per bed and 9 ft between beds. Irrigation was provided 2 hrs weekly via one line of drip tape. To control cucumber beetles, Surround (kaolin clay) was applied twice during the growing season on June 8 and 14. Weeds were controlled with plastic mulch and string trimming between beds. Squash was harvested September 22.

Color

Orange Slate blue Pale orange Slate blue

<u>Supplier</u>	<u>Variety</u>	Market Class
Johnny's	JWS 16-42-52	Kabocha
Siskiyou Seeds	Stella Blue	Kabocha
Johnny's	Winter Blush	Kabocha
Johnny's	Winter Sweet	Kabocha

#### Traits

Plant Count, Marketable Count, Marketable Weight (lbs), Unmarketable Weight (lbs), and Proportion Unmarketable.

Notes on trait measurement:

Harvest was done at the end of the season once vines had begun to senesce. Fruits were weighed and graded the day of harvest, September 22. Analysis was conducted at the per plant level.

#### **Quality Evaluation**

#### Chef taste testing:

Flavor evaluation was done by eight local chefs in the Marquette/Alger County area November 16 to December 6, after the squash had cured. 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 Qualtrics where data was entered. Squashes were baked at 350 degrees F for 30 minutes prior to tasting. 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) were also rated.

C. maxima Winter Squash (field)									
(* indicates varieties statistically similar to the "best" variety in each category shown in BOLD)									
Variety	Total weight (lbs/plant)	Marketable Count (#/ plant)	Marketable Weight (lbs/plant)	Unmarketable Proportion (%)	Overall Flavor (1-5)	Willingness to Purchase (1-5)			
JWS 16- 42-52	19.98*	6.55	18.69*	9%	2.74	3.19			
Stella Blue	22.45*	2.72	16.87*	26%	3.79	4.18*			
Winter Blush	21.95*	4.82	19.19*	12%*	3.68	3.69			
Winter Sweet	24.37	3.83	19.18*	19%*	4.33	4.50			

The Brainard Lab at Michigan State University has launched a <u>Physical Weed Control Forum</u> for farmers, researchers, and tool/ equipment manufacturers. Topics in this forum include small and large scale weed control techniques and can apply to mixed vegetable, flower, and field crop systems.

The forum is a resource for farmers to view and share each other's system, tool, and equipment experiences and best practices for physical weed control. It is searchable by topic and easy to navigate.

Feel free to browse around and respond to existing conversations, to start a new thread, ask for advice or troubleshooting on a tool or problem you have, share your successes, post videos or copy links to existing social media posts of physical weed control.

Here's a link to join the forum: https://forum.physicalweedcontrol.org/invites/WaRxhQkYM5

#### Help Wanted

Seeking an experienced farmer to help with cattle operation and grain crops on an 800+ acre farm in Garden, Michigan on the Upper Peninsula. Now accepting applications. Farmer is responsible for daily care, health and over all well-being of cattle and will have experience in hay or grain production. Applicants should have the ability to lift up to 50lbs and to operate various farm equipment and provide basic repair and maintenance. Compensation is competitive based on experience. Housing is available for this position.

Please forward a summary of your current skills and relevant work history to <u>deltagardenfarm@gmail.com</u> or contact us at 773-929-6007. Please also include a contact number so we can call you to discuss the opportunity further.

## 2021 Early Maturity Soybean Variety and Deer Preference Trials – Escanaba

By James DeDecker and Christian Kapp, MSU UPREC

For a fourth year, Michigan State University Extension received funding from the Michigan Soybean Committee to evaluate early maturing soybean varieties in the Upper Peninsula. Our objective was to inform farmers in Northern Michigan about the performance of soybean varieties adapted to local conditions. This included yield potential of individual varieties, as well as gathering additional information on grain quality and deer preference.

Thirty soybean varieties solicited from seed companies were planted in Escanaba, MI on May 27<sup>th</sup>, 2021. Growing degree-day accumulation from planting to harvest was above average at this location (1993 base 50F). Total rainfall was slightly below average, but timely throughout the season (12.6 inches). Early planting, warm weather and low disease pressure contributed to the development of healthy, high yielding plants. Soybeans were harvested October 8<sup>th</sup> using a Wintersteiger plot combine. Seed was weighed and yield corrected for moisture content to a standard 13%.

The trial averaged 51.21 bu/ac, with the lowest yielding variety producing 24.50 bu/ac and the best performing variety yielding 62.03 bu/ac. The average soybean yield for Delta and Menominee counties is 41.0 bu/ac (Source: USDA NASS). There were significant differences in yield between varieties (P<0.0001) and maturity groups (P=0.0004) in 2021 at the UP location (Table 1). There were also significant differences between varieties in protein and oil concentration (P<0.0001). Based on our four years of data, soybeans of RM 0.5-1.5 appear to be well adapted to the southern UP and Northern LP (Fig. 1). We recommend that growers plant multiple soybean varieties within this range to mitigate risk.

In 2021, we also conducted a deer preference study to test the hypothesis that whitetailed deer will preferentially browse soybeans based on tissue sugar concentration. Three soybean varieties were planted in 8-row strips, replicated four times in an RCBD design. Deer damage was rated three times during the V1-V6 growth stages. Tissue sugar concentration ( $R^2$ =0.33, P=0.01) and deer damage ( $R^2$ =0.51, P=0.09) varied significantly among varieties and spatially among replicates. Deer damage was correlated with tissue sugar concentration at V5 ( $R^2$ =0.29, P=0.04) (Fig. 2). This information can be used to select high or low palatability soybean varieties for deer management.



#### **PURPOSE:**

Compare performance of available commercial soybean varieties, RM 0.5-2.0, under Northern Michigan conditions

#### **TRIAL LOCATION:**

MSU Forestry Innovation Center in Escanaba, MI on well-drained Onaway fine sandy loam

#### **EXPERIMENTAL DESIGN:**

Randomized complete block design with four replications

#### **TRIAL MANAGEMENT:**

- 8 seed brands, 30 varieties, RM 0.01-1.9
- Planted May 27, 2021 at 170,000 seeds per acre
- Plots 4' X 16' with 7 in. row spacing
- Borders and alleys planted to minimize edge effect, fenced for deer
- 300 lbs. per acre of 0-14-42 applied at planting
- Post-emerge herbicide, 14 fl oz/ac Outlook + 5 fl oz/ac Raptor

#### **TAKE AWAYS:**

Soybeans RM 0.5-1.5 are adapted to the UP

Deer prefer soybeans that are higher in tissue sugar.

**Figure 1.** Soybean yield by maturity group in Escanaba, MI 2018-21, with recommended maturity range

			Yield		Ductoin			
Brand	Variety	MG	(bu/a)	Sig.	Protein (%)	Sig.	Oil (%)	Sig.
Asgrow	AG13XF0	1.30	53.05	*	32.86		20.38	
Asgrow	AG11XF2	1.10	54.89	*	34.22		19.69	
Asgrow	AG10XF1	1.00	50.92	*	34.53	*	19.58	
Asgrow	AG07XF2	0.70	52.26	*	33.85		20.33	
BASF	CZ 1139GTLL	1.10	56.55	*	32.06		20.36	
Dairyland Seed	DSR-1290E	1.20	61.59	*	31.67		21.47	
Dairyland Seed	DSR-1010E	1.00	53.46	*	34.34		19.51	
Dairyland Seed	DSR-0920E	0.90	61.53	*	34.12		19.85	
Dairyland Seed	DSR-0660E	0.60	42.58		32.66		19.87	
Federal Hybrids	F1909N LLGT+	1.90	52.14	*	33.07		20.63	
Federal Hybrids	AE1210S	1.20	62.03	**	31.97		21.05	
Federal Hybrids	F1120N RXF	1.10	52.57	*	33.73		20.04	
Federal Hybrids	F0920N RXF	0.90	52.28	*	32.63		21.04	
Legend	08LGT065N	0.80	55.15	*	33.64		19.97	
Legend	08E127N	0.80	57.73	*	33.39		20.88	
Legend	08X028	0.80	47.09	*	34.09		19.96	
Legend	05LGT265N	0.50	49.40	*	33.28		19.67	
Legend	LS009E955N	0.09	40.82		35.05	*	19.57	
Legend	LS001E020	0.01	24.50		35.94	**	19.53	
MSU	E13268	1.70	60.19	*	32.29		20.45	
MSU	E19314T	1.60	47.68	*	35.31	*	19.56	
MSU	E19497GT	1.50	38.46		32.20		22.18	**
MSU	E19669	1.30	41.95		31.97		20.49	
Pioneer	P16T05E	1.60	57.87	*	30.99		21.46	
Pioneer	P13A89X	1.30	58.99	*	31.73		21.13	
Pioneer	P13T47E	1.30	49.18	*	31.07		21.80	*
Pioneer	P09A53X	0.90	51.54	*	32.11		21.03	
Pioneer	P09T68E	0.90	54.72	*	32.98		20.88	
ZFS	1721.00	1.70	48.83	*	33.26		20.38	
ZFS	E13H988	1.30	46.39	*	31.52		20.10	
AVERAGE			51.21		33.08		20.43	

**Table 1.** Soybean yield andquality at Escanaba, MI by brandand relative maturity.

\*\* denotes the best performing variety for a given metric.

\*denotes varieties that performed similarly to the best variety for a given metric at alpha = 0.05.



Tissue Sugar







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#### World Food Prize Michigan Youth Institute is an opportunity for teens to explore solutions to local and global challenges.

As millions across the globe deal with food insecurity, the World Food Prize Michigan Youth Institute (WFPMIYI) offers young people an opportunity to be part of the solution. The eighth annual event, to be held May 12, seeks to inspire and prepare the next generation of global leaders to end world hunger and poverty.

"Nearly one in nine people on this planet do not have access at all times to sufficient, safe, and nutritious food and this problem will only continue to grow if we do not address the critical factors that lead to food insecurity," said Brian Wibby, leadership and civic engagement educator for <u>Michigan State University Extension</u> (MSU Extension) and co-coordinator of the WFPMIYI. "We know that there are many interconnected issues that lead to food insecurity and we are providing the World Food Prize Michigan Youth Institute to young people as an opportunity to explore and help solve these vital issues. We know that young people have innovative ideas and a passion for solving problems that can and will make a difference."

The WFPMIYI is a collaborative effort of MSU Extension, <u>Michigan 4-H</u>, <u>Michigan FFA</u>, the <u>MSU College of Agriculture and Natural Re</u><u>sources</u>, <u>MSU International Studies and Programs</u>, and the <u>World Food Prize</u>. The event provides Michigan youth with the opportunity to share their ideas related to global food security with MSU experts and other Michigan youth while learning how MSU faculty, staff, researchers and students are working to address issues related to food security and hunger. The WFPMIYI partners hope that as a result, program participants will be inspired to pursue education that will allow them to apply their passion for global issues in impactful careers related to global food security.

Participants have the option of joining the World Food Prize Michigan Youth Institute in person on the campus of MSU in East Lansing or by participating from anywhere else using <u>Zoom</u> video/web conference technology.

To participate, youth should be in grades 7 -12 and register by the deadline of March 15. As part of the application process, youth prepare a 3-5 page research paper about a global issue concerning hunger and poverty. Paper writing instructions and resources are available to students on the <u>World Food Prize website</u>. At the event, youth present and discuss the results of their research with other participants and experts. They also participate in interactive activities to explore research and other current work that seeks to address food security and access challenges and engage with area experts to discuss solutions to global hunger and poverty.

The top performing students in the WFP MIYI will be selected to attend the World Food Prize Global Youth Institute in Des Moines, Iowa, (or virtually) in October 2022. Held in conjunction with the Norman E. Borlaug International Symposium, youth who attend the Global Youth Institute have the opportunity to interact with Nobel and World Food Prize laureates and participate in dialogues with the world's leading experts and policy makers in the area of global food security.

For more information on the WFPMIYI, visit <u>https://www.canr.msu.edu/wfpmiyi/</u> or contact event coordinator Brian Wibby (<u>wibby@msu.edu</u> or 906-251-1417).