

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

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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 white-tailed 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.

See the plots for yourself in these videos produced throughout the season:

- [Planting the trial on May 27<sup>th</sup>](#)
- [Harvest on October 8<sup>th</sup>](#)
- [Deer Preference Study](#)

## TRIAL DETAILS

### 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.



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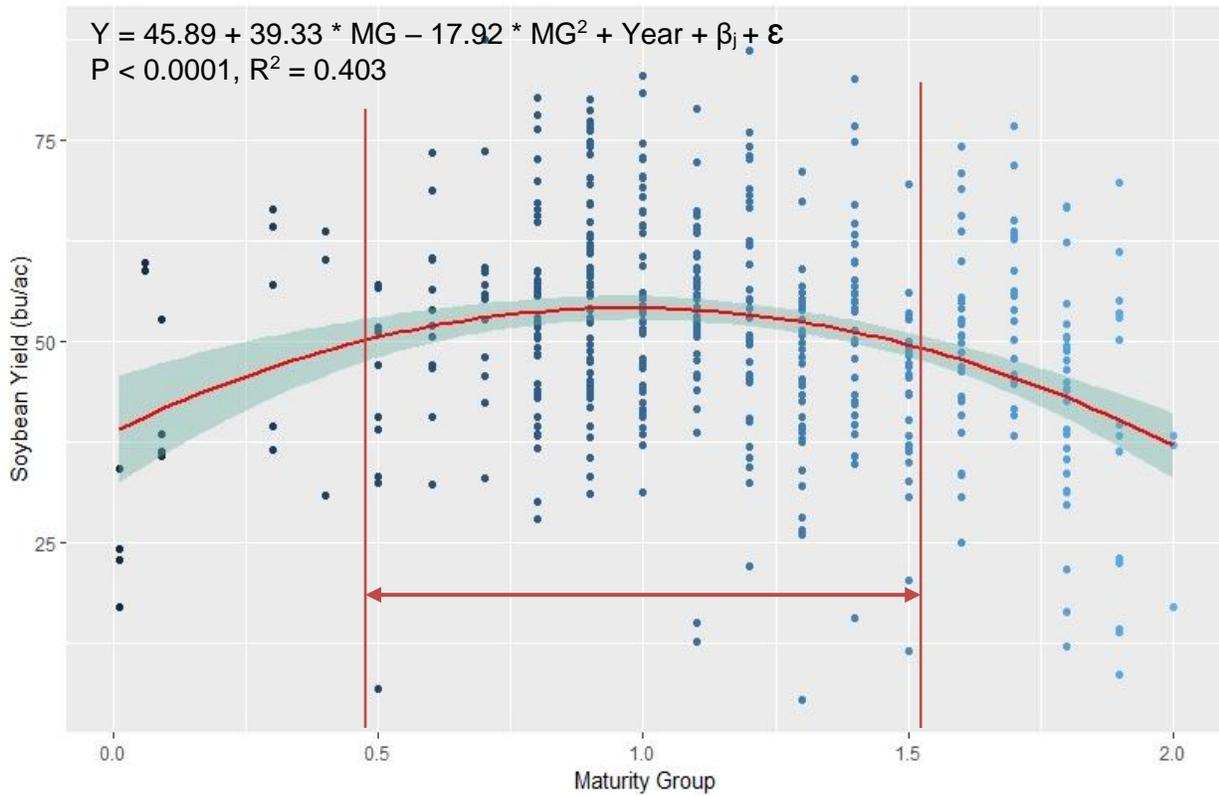


**Table 1.** Soybean yield and quality at Escanaba, MI by brand and relative maturity.  
 (\*\* denotes the best performing variety for a given metric.  
 \* denotes varieties that performed similarly to the best variety for a given metric at alpha = 0.05.)

Brand	Variety	MG	Yield (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	<b>62.03</b>	**	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		<b>35.94</b>	**	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		<b>22.18</b>	**
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	
<b>AVERAGE</b>			<b>51.21</b>		<b>33.08</b>		<b>20.43</b>	



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



**Figure 2.** Deer Damage by Soybean Tissue Sugar Concentration at V5

