SPRING BARLEY VARIETY TRIAL – 2025 RESULTS

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Michigan State University conducted a spring barley variety trial in 2025 with support from Limagrain Cereal Seeds (LCS) and KWS SAAT SE & Co. KGaA (KWS). Our trial location was Chatham, MI at the MSU Upper Peninsula Research and Extension Center (UPREC). The trial included fifteen elite two-row spring barley varieties, six from LCS, four from KWS, three from Canada (SeCan, Crop Development Centre), one from Cornell University / NY Seed Improvement, and one from RAGT (France). This research represents an expanded effort to understand barley adaptability and performance in Michigan for emerging markets in craft malting, brewing and distilling.

Temperature and precipitation were near normal from planting through harvest at Chatham. However, hours of rainfall were above normal due to frequent lake effect rains. No lodging was observed. There was significant grass weed pressure in the plots, but insect and disease incidence were both low. Variety performance data were analyzed using ANOVA (alpha = 0.05) and Tukey's HSD test in the Agricolae package for R. Raw grain quality was analyzed at MSU-UPREC using ASBC methods. Grain quality data was not replicated nor statistically analyzed.

Significant differences were observed among barley varieties for all parameters, except stand density ($P < 0.05$). KWS Kayis, HudsonNY, KWS Acantis and KWS Enduris were significantly earlier, and LCS Odyssey, LG Diablo and LG BU17-8502-A later, heading compared to other entries. HudsonNY was notably taller than other varieties. Disease pressure was minimal overall, but HudsonNY, LCS Odyssey, LG BU16-1519-A, LG Diablo and LGBU17-1320-A each showed some foliar disease symptoms. Mean yield was 97.45 bu/a, with LG BU17-8502-A, LGBU17-8509-B, Esma, KWS Enduris, KWS Kayis and LG BU16-1519-A all yielding over 100 bu/a at 13.5% moisture. Mean test weight was 46.88 lbs/bu with Esma, HudsonNY, KWS Acantis, RGT Planet, CDC Churchill and LGBU17-8509-B all having above-average test weight.

Mean protein concentration was 9.66% with Esma, KWS Enduris and KWS Acantis showing slightly higher protein levels but still below 11%. All entries had greater than 96% plump kernels and less than 0.5% thin kernels. Germination energy (4 ml) averaged 90.47% with CDC Fraser as a significant outlier at 43%. Mean germination energy (8 ml) was 57.73% with most varieties showing at least some water sensitivity. Mean germination capacity was 95.47% with CDC Churchill, CDC Fraser, KWS Acantis, LGBU17-1320-A and LGBU17-8509-B trending below the mean. Pre-harvest sprout (PHS) was quite evident in the average stirring number of 67.47 across varieties. However, LGBU17-8509-B, LG BU16-1519-A, LCS Odyssey and KWS Kayis showed significant PHS resistance, which is promising for Michigan. Mean DON concentration was 0.49 ppm, with no entries exceeding the 1 ppm threshold.

Upper Peninsula Research and Extension Center
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TRIAL DETAILS

Design:

RCBD with four replications

Planting date:

May 13th, 2025 using a Wintersteiger plot drill

Seeding rate:

28 PLS/ft^2 based on TKW and germination

Fertility:

50 lbs/a N as Urea

Herbicide:

29 oz/a Bomoxynil on June 10th, plus 12 oz/a MCPA on June 16th

Fungicide:

4 oz/a Priaxor on June 16th, plus 13.7 oz/a Miravis Ace on July 21st

Harvest Date:

August 29th, 2025 using a Wintersteiger plot combine

Table 1a. Barley Performance by Variety												
Variety	**Stand (1 ft²)**		**Heading Date**		**Height (in)**		**Disease (0G-5B)**		**Yield (bu/a)**		**TW (lbs/bu)**	
CDC Churchill	25.50	a	12-Jul	abc	21.75	ab	0.00	b	92.33	ab	47.73	abc
CDC Fraser	26.88	a	8-Jul	abcd	23.00	ab	0.00	b	80.00	b	44.83	d
Esma	26.38	a	9-Jul	abcd	21.25	b	0.00	b	106.10	ab	48.88	a
HudsonNY	28.38	a	6-Jul	cd	25.25	a	0.75	a	91.15	ab	48.75	ab
KWS 22/3726	25.00	a	13-Jul	ab	20.13	b	0.00	b	94.28	ab	46.65	abcd
KWS Acantis	26.00	a	7-Jul	bcd	20.88	b	0.00	b	98.83	ab	48.45	abc
KWS Enduris	26.50	a	7-Jul	bcd	22.38	ab	0.00	b	105.68	ab	46.20	cd
KWS Kayis	28.25	a	4-Jul	d	21.75	ab	0.00	b	104.03	ab	46.65	abcd
LCS Odyssey	22.38	a	13-Jul	a	21.25	b	0.50	ab	90.48	ab	46.73	abcd
LG BU16-1519-A	23.75	a	10-Jul	abcd	21.13	b	0.50	ab	102.05	ab	44.90	d
LG BU17-8502-A	25.13	a	14-Jul	a	22.13	ab	0.00	b	107.40	a	46.48	bcd
LG Diablo	23.38	a	13-Jul	a	20.50	b	0.50	ab	94.03	ab	46.23	cd
LGBU17-1320-A	24.00	a	12-Jul	abc	20.88	b	0.25	ab	91.53	ab	44.98	d
LGBU17-8509-B	22.38	a	11-Jul	abc	20.25	b	0.00	b	106.80	a	47.70	abc
RGT Planet	23.00	a	9-Jul	abcd	22.13	ab	0.00	b	97.08	ab	48.03	abc
Mean	**25.13**		**10-Jul**		**21.64**		**0.17**		**97.45**		**46.88**	
P-Value	**0.060**		**<0.001**		**0.003**		**0.006**		**0.043**		**<0.001**	

Table 1b. Barley Grain Quality by Variety								
Variety	**Protein (%)**	**Plump (%)**	**Thin (%)**	**GC (%)**	**GE 4 ml (%)**	**GE 8 ml (%)**	**SN (RVU)**	**DON (%)**
CDC Churchill	9.90	96.40	0.31	90.00	89.00	42.00	6.00	0.48
CDC Fraser	9.80	98.90	0.01	94.00	43.00	10.00	3.00	0.38
Esma	10.10	98.10	0.02	96.00	93.00	62.00	36.00	0.20
HudsonNY	9.80	98.20	0.08	97.00	97.00	77.00	36.00	0.35
KWS 22/3726	9.50	97.70	0.21	98.00	98.00	53.00	99.00	0.60
KWS Acantis	10.00	98.50	0.17	92.00	84.00	55.00	36.00	0.82
KWS Enduris	10.10	98.40	0.22	97.00	95.00	57.00	75.00	0.59
KWS Kayis	9.40	98.20	0.15	96.00	94.00	46.00	116.00	0.68
LCS Odyssey	9.40	98.40	0.23	99.00	95.00	77.00	120.00	0.43
LG BU16-1519-A	9.30	98.90	0.02	98.00	99.00	72.00	121.00	0.35
LG BU17-8502-A	9.60	98.40	0.07	96.00	96.00	85.00	99.00	0.38
LG Diablo	9.60	99.20	0.03	96.00	91.00	21.00	7.00	0.62
LGBU17-1320-A	9.40	98.50	0.14	94.00	92.00	74.00	33.00	0.43
LGBU17-8509-B	9.40	98.30	0.10	93.00	96.00	66.00	131.00	0.55
RGT Planet	9.60	98.40	0.01	96.00	95.00	69.00	94.00	0.48
Mean	**9.66**	**98.30**	**0.12**	**95.47**	**90.47**	**57.73**	**67.47**	**0.49**
P-Value	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**