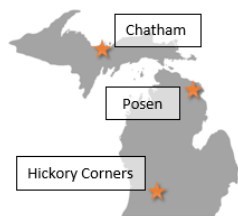


SPRING MALTING BARLEY TRIAL – 2019 YIELD RESULTS

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For a fourth year, Michigan State University continued malting barley variety research as part of the Eastern Spring Barley Nursery (ESBN). ESBN research is sponsored by the Brewers Association and administered through North Dakota State University in an effort to research current malting barley variety adaptability and performance in Midwestern

and Mid-Atlantic seaboard environments. This knowledge is greatly needed, as maltsters and brewers in these areas are interested in sourcing local barley grain for malt production. There is great potential in Michigan for continued growth of the malting barley industry, due to the vast number of malt houses and breweries located within in the state, as well as a favorable climate for growing small grains.

Despite favorable markets, little data is available for both producers and end users about what varieties are best suited for production in Michigan. This data is essential because strict quality standards must be met for barley to be malted for specialty markets. What is problematic for Michigan is that most malting barley varieties commercially available are developed and adapted for either the dry climates of western states, or the climates of Great Britain and continental Europe. Because of this, research for disease resistance, lodging resistance, harvest timing, and yield across these varieties is needed to identify what varieties will perform best here.

This year's Michigan ESBN trials were planted in Chatham, Posen and Hickory Corners. Twenty-seven spring barley varieties were assessed for yield and quality, with quality results forthcoming from North Dakota State University. Twenty-six of the varieties are of the two-row type, with the exception of Tradition which is a six-row check variety. Our experimental design was a randomized lattice with three replications across all locations. Planting was done with a research plot drill, and 50 lbs. of nitrogen was top-dressed after planting. In addition to nitrogen, 21 lbs. of available sulfur was also top-dressed at the Chatham and Posen locations. Disease was rated on a 1-5 scale, with 1 signifying no disease present and 5 signifying complete leaf infection. Harvest was completed with a plot combine, and all samples were weighed and yield calculated at a standard moisture of 13.5%.

In Chatham, planting was completed on May 6th, as field conditions were favorable for early planting. The trial was planted on an Eben Very Cobbly Sandy Loam. Herbicide was applied June 26th prior to stem elongation, using 1 qt/acre of Bronate. A fungicide application of Prosaro at 8.2 oz/acre was applied July 15th at 95% anthesis. Weather conditions were marginal in Chatham this year. Soils were cold and wet in May-June. Then during grain fill, the plants experienced drought stress and high temperatures. This, plus late season bird damage, led to lower than normal yields at harvest on August 15th. 2ND35693 was the highest yielding variety at Chatham, producing 55.9 bu/a. The trial averaged 40.65 bu/a (Table 1).

In Posen, planting was completed May 7th on Onaway Fine Sandy Loam soil. Conditions from May through June were cool with adequate rainfall. July also brought adequate rainfall, but temperatures increased considerably. July was the only summer month that recorded normal to above normal temperatures this

TRIAL DETAILS

Planting date:

Chatham- May 6th
Posen- May 7th
Hickory Corners- March 28th

Fertility:

50 lbs/acre actual nitrogen across all locations at planting.
21 lbs/acre available sulfur at Chatham and Posen location at planting.

Herbicide:

1 qt/acre Bronate at Chatham.
No herbicide used at Posen.
12 oz/acre Axial XL plus
13.5 oz/acre Husky at Hickory Corners.

Fungicide:

8.2 oz/ac of Prosaro® applied at 95% anthesis.

Harvest Date:

Chatham- August 15th
Posen- August 20th
Hickory Corners- July 23rd

Take Aways:

- Plant treated seed, as soon as weather/soil conditions allow
- Use seeding rates equivalent to at least 1.2 M seeds/acre
- Use appropriate fungicide at anthesis to control Fusarium
- Consider varieties of European origin for max yield and quality in MI.



year. In August, precipitation ended abruptly, but moisture stress was minimal because temperatures cooled off and the crop had begun to mature. No herbicide application was necessary, as the plots established quickly after planting preventing any serious weed infestation. Prosaro fungicide was applied July 12th at the rate of 8.2 oz and harvest was completed on August 20th. Yields were excellent in this location, with KWS Fantex yielding the highest at 124.2 bu/a. Four other varieties at this location yielded above 100 bu/a, and 10 other varieties yielded above 90 bu/a (Table 2).

At the Hickory Corners location, planting was done March 28th on Kalamazoo Loam soil. Herbicide was applied prior to stem elongation using Husky at rate of 13.5 oz/acre and Axial XL at a rate of 12 oz/acre. A fungicide application of Prosaro was made at flowering on June 14th at a rate of 8 oz/acre, and the plot was harvested July 23rd. Rainfall was above average at this location, with totals above normal through April and May, and average between June 1st and harvest. 2ND32529 was the highest yielding variety at this location, with a yield of 102.96 bushels/acre. Ten other varieties yielded over 80 bu/a at Hickory Corners this year, and the trial averaged 74.44 bu/a (Table 3).

Table 1. ESNB Barley Variety Performance at Chatham, MI
***(varieties followed by the same letter are not significantly different in yield)**

Variety	Yield (bu/a)	Sig.*	Test Wt.	Heading Date	Height (in)	Disease (1-5)	72 hr GE (%)
2ND32529	55.73	a	50.07	3-Jul	19.33	1.00	96
2ND34634	41.60	ab	48.03	3-Jul	20.00	1.00	97
2ND34954	42.27	ab	51.33	4-Jul	19.67	1.67	100
2ND35530	38.50	ab	48.67	4-Jul	19.67	2.00	97
2ND35693	55.90	a	52.00	3-Jul	21.67	1.00	96
80675-52	35.00	ab	47.67	9-Jul	17.33	5.00	92
AAC Connect	50.53	ab	48.57	4-Jul	20.00	2.00	97
AAC Synergy	43.77	ab	48.30	6-Jul	18.33	2.33	98
Accordine	34.50	ab	47.70	8-Jul	19.00	3.00	92
Crescendo	32.30	ab	48.23	9-Jul	21.67	5.00	96
Esmā	43.37	ab	49.63	6-Jul	18.67	2.00	96
Explorer	45.10	ab	47.80	4-Jul	17.00	2.00	98
Fangio	26.37	b	49.77	8-Jul	18.00	4.00	96
Iconic	31.15	b	49.50	8-Jul	18.00	3.67	99
Klarinette	40.70	ab	48.43	7-Jul	17.33	3.33	94
KWS Amadora	42.50	ab	49.13	6-Jul	17.67	3.00	93
KWS Fantex	34.40	ab	43.70	7-Jul	17.00	3.67	99
KWS Tinka	39.53	ab	50.17	5-Jul	18.00	2.33	97
LCS Genie	41.63	ab	51.73	8-Jul	17.67	3.00	97
LCS Odyssey	35.90	ab	47.80	7-Jul	16.33	3.67	98
LCS Opera	42.87	ab	45.97	7-Jul	17.67	4.00	95
ND Genesis	46.73	ab	52.17	3-Jul	23.67	1.33	98
Newdale	46.43	ab	48.23	6-Jul	20.33	2.67	97
Pinnacle	34.00	ab	48.03	4-Jul	19.33	1.33	97
Sangria	35.53	ab	49.37	6-Jul	18.33	3.33	98
Spartan	34.03	ab	51.30	3-Jul	21.00	1.00	97
Tradition	47.33	ab	50.23	5-Jul	22.67	1.00	97
Average	40.65		49.02	5-Jul	19.09	2.57	96

Table 2. ESNB Barley Variety Performance at Posen, MI
 *(varieties followed by the same letter are not significantly different in yield)

Variety	Yield (bu/a)	Sig.*	Test Wt.	Heading Date	Height (in)	Disease (1-5)	72 hr GE (%)
2ND32529	99.37	abc	49.30	3-Jul	25.67	1.00	97
2ND34634	89.37	abc	48.50	1-Jul	24.00	1.00	97
2ND34954	76.63	abc	51.40	3-Jul	26.00	1.00	100
2ND35530	72.17	bc	47.93	5-Jul	20.67	1.00	97
2ND35693	64.40	c	50.13	3-Jul	26.33	1.00	98
80675-52	87.83	abc	50.77	12-Jul	20.33	1.00	99
AAC Connect	96.80	abc	49.50	5-Jul	24.00	1.00	100
AAC Synergy	88.37	abc	50.20	5-Jul	23.67	1.00	97
Accordine	97.50	abc	51.00	8-Jul	22.33	1.00	90
Crescendo	93.07	abc	50.37	12-Jul	24.67	1.00	98
Esma	113.17	ab	51.93	5-Jul	19.33	1.00	98
Explorer	88.17	abc	49.17	5-Jul	17.00	1.00	93
Fangio	91.40	abc	50.87	8-Jul	21.67	1.00	99
Iconic	107.00	abc	50.17	8-Jul	23.67	1.00	92
Klarinette	93.77	abc	52.17	8-Jul	18.67	1.00	96
KWS Amadora	96.50	abc	52.10	8-Jul	18.33	1.00	94
KWS Fantex	124.20	a	50.93	8-Jul	21.00	1.00	97
KWS Tinka	83.80	abc	48.37	8-Jul	19.67	1.00	93
LCS Genie	110.03	abc	51.73	8-Jul	19.00	1.00	97
LCS Odyssey	91.63	abc	48.83	8-Jul	19.67	1.00	96
LCS Opera	118.97	ab	49.27	8-Jul	21.33	1.00	95
ND Genesis	92.47	abc	50.90	3-Jul	29.33	1.00	94
Newdale	77.13	abc	48.43	8-Jul	21.33	1.00	100
Pinnacle	96.40	abc	49.73	5-Jul	24.33	1.00	95
Sangria	82.30	abc	50.83	8-Jul	18.33	1.00	93
Spartan	17.20	d	49.57	1-Jul	26.33	1.00	89
Tradition	87.07	abc	50.67	3-Jul	30.33	1.00	100
Average	90.25		50.18	6-Jul	22.48	1.00	96

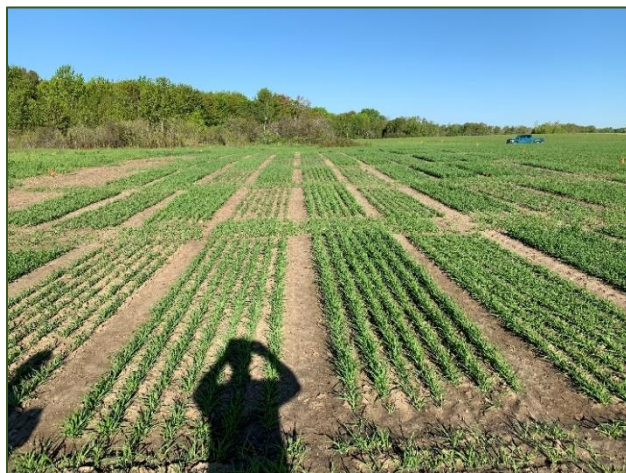


Figure 1. Posen Plots in June



Figure 2. KBS Barley Field Day with AMBA

Table 3. ESNB Barley Variety Performance at Hickory Corners, MI
 *(varieties followed by the same letter are not significantly different in yield)

Variety	Yield (bu/a)	Sig.*	Test Wt.	Heading Date	Height (in)	72 hr GE (%)
2ND32529	102.96	a	40.35	10-Jun	28.00	57
2ND34634	84.90	a-d	36.70	5-Jun	26.00	81
2ND34954	88.08	abc	41.72	10-Jun	28.33	82
2ND35530	62.66	b-e	36.63	10-Jun	25.33	69
2ND35693	76.66	a-e	39.15	11-Jun	24.67	66
80675-52	55.21	cde	38.33	17-Jun	23.33	96
AAC Connect	77.54	a-e	39.17	10-Jun	26.67	57
AAC Synergy	87.02	abc	39.93	10-Jun	26.33	34
Accordine	65.58	b-e	39.77	15-Jun	23.33	81
Crescendo	65.50	b-e	39.22	16-Jun	26.33	94
ESMA	84.28	a-d	39.12	10-Jun	21.33	91
Explorer	86.05	a-d	41.28	10-Jun	21.33	98
Fangio	68.22	b-e	39.13	15-Jun	24.67	88
Iconic	58.88	b-e	39.42	11-Jun	22.33	92
Klarinette	53.35	de	41.42	15-Jun	20.33	96
KWS Amadora	67.38	b-e	40.82	13-Jun	22.33	94
KWS Fantex	63.76	b-e	38.92	16-Jun	21.00	94
KWS Tinka	65.65	b-e	38.45	11-Jun	22.67	79
LCS Genie	67.80	b-e	40.80	19-Jun	21.67	91
LCS Odyssey	90.58	ab	39.80	10-Jun	23.33	89
LCS Opera	83.89	a-d	39.58	11-Jun	20.00	93
ND Genesis	91.23	ab	40.27	6-Jun	29.67	71
Newdale	88.09	abc	40.40	10-Jun	27.67	56
Pinnacle	73.10	a-e	38.15	10-Jun	29.67	85
Sangria	67.97	b-e	40.70	11-Jun	22.33	84
Spartan	50.25	e	42.52	5-Jun	28.33	90
Tradition	83.34	a-d	41.68	6-Jun	32.33	92
Average	74.44		39.76	11-Jun	24.79	81



Figure 3. Barley Field Day at Chatham



Figure 4. Chatham Plots during Field Day

Table 4. ESNB Barley Variety Performance Statewide in 2019
***(varieties followed by the same letter are not significantly different)**

Variety	Yield (bu/a)	Sig.	Test Wt.	Sig.	Height (in)	Sig.
2ND32529	86.02	a	46.57	a	24.33	abc
2ND34634	71.95	ab	44.41	b	23.33	bcd
2ND34954	68.99	ab	48.15	a	24.67	abc
2ND35530	57.78	bc	44.41	b	21.89	cde
2ND35693	65.65	ab	47.09	a	24.22	abc
80675-52	59.35	b	45.59	a	20.33	de
AAC Connect	74.96	ab	45.74	a	23.56	bcd
AAC Synergy	73.05	ab	46.14	a	22.78	cd
Accordine	65.86	ab	46.16	a	21.56	cde
Crescendo	63.62	ab	45.94	a	24.22	abc
Esma	80.27	ab	46.89	a	19.78	e
Explorer	73.11	ab	46.08	a	18.44	e
Fangio	61.99	ab	46.59	a	21.44	cde
Iconic	68.17	ab	45.97	a	21.33	cde
Klarinette	65.34	ab	47.34	a	18.78	e
KWS Amadora	72.08	ab	47.35	a	19.44	e
KWS Fantex	79.08	ab	44.52	b	19.67	e
KWS Tinka	68.08	ab	45.66	a	20.11	de
LCS Genie	73.16	ab	48.09	a	19.44	e
LCS Odyssey	72.70	ab	45.48	ab	19.78	e
LCS Opera	81.91	ab	44.94	b	19.67	e
ND Genesis	76.81	ab	47.78	a	27.56	a
Newdale	70.55	ab	45.69	a	23.11	cd
Pinnacle	67.83	ab	45.31	b	24.44	abc
Sangria	61.93	ab	46.97	a	19.67	e
Spartan	33.83	c	47.79	a	25.22	ab
Tradition	72.58	ab	47.53	a	28.44	a



Figure 5. Chatham Plots at Harvest



Figure 6. Posen Plots at Harvest