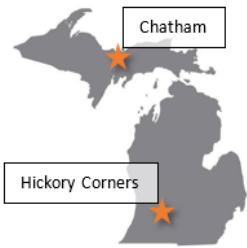


MCIA SPRING OAT & BARLEY VARIETY TRIAL – 2022 RESULTS

James DeDecker, Brook Wilke, Christian Kapp, Josh Dykstra, Lovisa Kunkle and Dean Baas



Michigan State University conducted spring oat and barley variety trials in 2022 with support from the Michigan Crop Improvement Association (MCIA). Locations included Chatham, MI at the MSU Upper Peninsula Research and Extension Center (UPREC) and the W.K. Kellogg Biological Station (KBS) in Hickory Corners, MI. These trials brought the Eastern Spring Barley Nursery (NDSU) and a national oat variety testing program called the Uniform Early Open Oat Nursery (USDA) to Michigan, as well as incorporating commercial oat and barley entries. This research represents an expanded effort to understand oat and barley adaptability and performance in Michigan for both traditional markets and emerging opportunities in craft malting, milling, and distilling.

Temperature and precipitation were near normal at Chatham, and slightly above normal at Hickory Corners. However, precipitation was limited during grain fill at Hickory Corners, contributing to lower test weights. Data were analyzed using ANOVA (alpha = 0.05) and Tukey's HSD test in the Agricolae package for R. Only aggregate data was available for grain protein at Hickory Corners. No lodging was observed at either location. Significant differences were observed among varieties for all other parameters except oat yield at Hickory Corners, where Cereal leaf beetle and grass weed pressure contributed to greater variation within varieties. Average yields were near 70 bu/ac across species and locations. Foliar disease ratings (blotch and powdery mildew) were significantly correlated with oat and barley yields at Chatham. LCS Odyssey seed had low vigor and unusually poor performance. Dr. DeDecker presented results of the ESNB at the 23rd North American Barley Researchers Workshop and 43rd AMBA Barley Improvement Conference (NABRW) in Davis, CA on Sept. 22, 2022 (Fig. 1). MSU Trustees and administrators toured UPREC plots on Aug 2, 2022 (Fig.4). Additional barley quality data is forthcoming and this report will be updated when it is available.

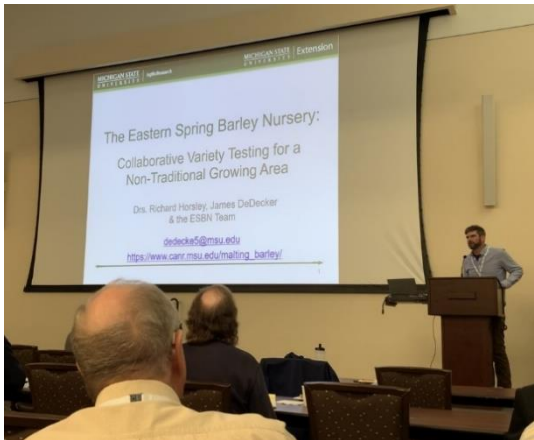


Fig 1. Dr. DeDecker presenting at the NABRW



Fig 2. Plots at Chatham on July 7, 2022



Fig 3. Air Dancer protecting plots from birds at Chatham



Fig 4. Dr. Wilke and Christian Kapp presenting to MSU leaders at Chatham

TRIAL DETAILS

Design:

Rectangular lattice with three replications

Planting date:

May 9th at Chatham
April 12th at Hickory Corners

Seeded at 28 seeds/ft²

Fertility:

50 lbs/ac actual N and 21 lbs/ac S across all locations at planting

Herbicide:

15 oz/ac of Huskie (barley)
1pt/ac Broclean (oats)
at Chatham
13.5 oz/ac of Huskie
at Hickory Corners

Fungicide (barley):

13.45 oz/ac of Miravis Ace
at Chatham
13.5 oz/ac of Miravis Ace
at Hickory Corners

Harvest Date:

August 15th (barley) & 30th (oats)
at Chatham
July 26th at Hickory Corners

Pest & Weather Notes:

- Significant foliar fungal disease at Chatham
- Some site variation at both locations
- Cereal Leaf Beetle sprayed with 3.2 oz/ac Grizzly Z at Hickory Corners

Variety (color)	Yield (bu/a @13.5%)	TW (lbs/bu)	Heading Date	Height (in)	Disease (0-5)	Protein (%)
A10 (t)	55.6	34.6	29-Jun*	30.3	1.7	12.6*
A11 (w)	69.7*	36.9*	6-Jul	26.1	1.7	12.2*
A25 (t)	44.8	34.0	29-Jun*	28.7	2.0	12.1*
Antigo (y)	63.5*	37.4*	1-Jul*	29.9	2.7	12.0*
Badger (y)	65.3*	35.3	1-Jul*	30.1	2.7	11.9*
Beta Gene (y)	84.4	35.1	9-Jul	33.3	0.3*	11.5*
Buffalo (w)	73.9*	35.2	7-Jul	34.8	0.7*	11.8*
CLINTFORD (ck) (t)	61.6*	35.1	1-Jul*	31.0	1.3	11.6*
DON (ck) (w)	63.7*	35.1	3-Jul	28.7	1.0	12.3*
Esker 2020 (y)	75.5*	34.6	4-Jul	33.3	0.7*	11.4*
George (y)	80.2*	35.6	14-Jul	36.6*	1.0	11.6*
Goliath (w)	70.2*	37.1*	10-Jul	42.7	1.0	11.7*
Hayden (w)	81.5*	37.2*	6-Jul	32.3	1.7	11.7*
Horsepower (w)	80.8*	35.7	3-Jul	29.4	2.0	11.8*
Ida (w)	77.9*	35.3	5-Jul	34.8	1.0	11.7*
IL15-5271 (t)	77.9*	36.3*	4-Sep	29.9	1.3	10.9
IL15-5752 (t)	72.9*	37.5*	29-Jun	28.7	3.3	11.8*
IL17-5238 (y)	62.8*	36.0	1-Jul*	31.6	1.7	12.8
IL17-7334 (y)	69.5*	34.7	3-Jul	25.1	1.0	11.6*
KAME (ck) (y)	64.1*	33.4	3-Jul	29.2	2.0	11.5*
MN Pearl (w)	77.4*	35.2	10-Jul	34.0	1.3	11.1
MN18015X_004 (w)	74.6*	37.4*	1-Jul*	28.0	1.3	11.3
MN18048X_005 (t)	68.7*	36.3*	3-Jul	36.0*	2.0	11.1
MN18057X_007 (t)	60.2*	35.8	3-Jul	28.5	1.3	12.5*
MN19104X_016 (y)	71.5*	37.3*	3-Jul	30.8	1.0	12.1*
NATTY (ck) (w)	80.8*	36.5*	4-Jul	37.4*	1.3	11.7*
Rushmore (w)	77.5*	37.1*	6-Jul	34.9	1.7	11.6*
SD181377 (w)	81.4*	36.2*	4-Jul	34.2	0.7*	11.2
SD190323 (w)	69.0*	36.3*	4-Jul	30.1	1.3	11.5*
SD190850 (w)	72.7*	37.6*	3-Jul	36.8*	1.3	12.0*
SD190992 (w)	84.3*	36.7*	7-Jul	34.2	0.7*	11.6*
SD191467 (w)	77.2*	36.7*	3-Jul	36.4*	0.3*	11.4*
SD191508 (w)	70.4*	38.2	4-Jul	26.2	1.7	11.8*
WIX10305-4 (t)	62.8*	37.7*	2-Jul	25.8	0.0	12.1*
WIX10677-3 (w)	70.3*	33.4	7-Jul	33.5	2.0	12.3*
WIX10680-3 (y)	82.3*	34.1	14-Jul	33.2	0.7*	11.6*
Average	71.6	36.0	4-Jul	31.8	1.4	11.8



Table 2: Oat Performance at Hickory Corners, MI (*indicates varieties similar to the BEST)

Variety (color)	Yield (bu/a @13.5%)	TW (lbs/bu)	Heading Date	Height (in)	Disease (0-5)	Protein (%)
A10 (t)	62.2*	30.6*	12-Jun*	33.3	NA	12.3
A11 (w)	69.6*	31.9*	17-Jun	25.7	NA	12.9
A25 (t)	46.1*	29.2	12-Jun*	33.3	NA	13.6
Antigo (y)	74.6*	32.1*	13-Jun*	33.3	NA	12.9
Badger (y)	69.0*	30.9*	13-Jun*	31.7	NA	12.5
Beta Gene (y)	76.0*	28.7	17-Jun	32.0	NA	12.1
Buffalo (w)	80.5*	28.5	18-Jun	37.0	NA	11.4
CLINTFORD (ck) (t)	72.2*	30.1*	13-Jun*	33.7	NA	12.2
DON (ck) (w)	86.7*	30.3*	13-Jun*	30.7	NA	13.0
Esker 2020 (y)	80.2*	29.1	15-Jun*	34.3	NA	11.7
George (y)	62.6*	29.2	19-Jun	36.0	NA	12.4
Goliath (w)	64.6*	29.8*	18-Jun	42.3	NA	12.3
Hayden (w)	71.1*	30.2*	17-Jun	36.0	NA	12.1
Horsepower (w)	86.3*	29.3	15-Jun*	30.0	NA	12.0
Ida (w)	71.4*	28.3	19-Jun	36.0	NA	11.7
IL15-5271 (t)	72.7*	28.7	14-Jun*	31.0	NA	11.8
IL15-5752 (t)	62.7*	32.5*	12-Jun	31.0	NA	13.0
IL17-5238 (y)	86.7*	30.4*	12-Jun*	35.3	NA	12.3
IL17-7334 (y)	65.5*	28.0	14-Jun*	26.7	NA	12.3
KAME (ck) (y)	75.2*	28.5	13-Jun*	32.0	NA	12.2
MN Pearl (w)	63.4*	28.5	17-Jun	33.3	NA	11.1
MN18015X_004 (w)	82.8*	31.1*	13-Jun*	29.3	NA	12.6
MN18048X_005 (t)	57.5*	29.1*	14-Jun*	35.3	NA	13.0
MN18057X_007 (t)	70.0*	29.1*	16-Jun	32.7	NA	12.8
MN19104X_016 (y)	81.9*	30.2*	15-Jun*	34.7	NA	12.3
NATTY (ck) (w)	52.9*	31.6*	13-Jun*	35.0	NA	12.5
Rushmore (w)	72.4*	31.2*	15-Jun*	37.3	NA	12.0
SD181377 (w)	72.5*	29.4*	15-Jun*	35.7	NA	12.0
SD190323 (w)	71.1*	29.8*	15-Jun*	35.3	NA	11.9
SD190850 (w)	66.0*	31.4*	14-Jun*	38.7*	NA	11.0
SD190992 (w)	63.0*	28.9	17-Jun	35.3	NA	11.6
SD191467 (w)	86.8	32.6	15-Jun*	36.7	NA	11.9
SD191508 (w)	84.2*	31.1*	15-Jun*	32.3	NA	12.1
WIX10305-4 (t)	63.5*	31.6*	15-Jun*	26.0	NA	13.7
WIX10677-3 (w)	76.8*	28.6	15-Jun*	36.0	NA	12.0
WIX10680-3 (y)	84.5*	28.2	18-Jun	34.0	NA	12.7
Average	71.8	30.0	15-Jun	33.6	NA	12.3



Table 3: Barley Performance at Chatham, MI (* indicates vars. similar to the BEST)

Variety	Yield (bu/a @13.5%)	TW (lbs/bu)	Heading Date	Height (in)	Disease (0-5)	Protein (%)	Plump Kernels (%)	DON (ppm)	RVA (rvu)	72 hr GE (%)
10031 U1	96.3	51.2*	5-Jul*	21.8*	2.0*	10.2	98.8	0.23	153	98
2ND32529	80.1*	48.2*	1-Jul*	24.3*	3.7	10.4	94.4	0.16	77	99
2ND36638	76.7*	48.6*	1-Jul*	23.5*	3.3	10.5	98.4	0.31	144	96
2ND36642	85.4*	49.8*	3-Jul*	23.8*	2.3*	10.0	98.8	0.22	142	96
2ND37111	67.9	46.2	1-Jul*	23.7*	3.0	10.2	92.6	0.34	128	99
2ND37130	70.7	48.5*	1-Jul*	24.1*	2.7*	10.2	94.6	0.16	133	99
2ND37568	62.9	46.6	1-Jul*	23.2*	2.3*	9.8	95.7	0.21	128	98
3523 U2	87.4*	49.3*	4-Jul*	20.2	2.3*	9.6	98.0	0.15	99	97
AAC Connect	65.0	47.7*	3-Jul*	23.2*	2.3*	11.7	88.2	0.12	14	94
AAC Synergy	68.4	48.1*	5-Jul*	23.4*	2.7*	10.9	90.9	0.26	22	96
Bowers	53.0	47.0	2-Jul*	26.2*	2.3*	11.4	81.6	0.29	152	100
CU198	86.3*	51.3	4-Jul*	26.1*	2.7*	10.9	94.2	0.23	132	99
Esma	85.2*	49.1*	4-Jul*	18.4	2.0*	11.1	95.3	0.15	123	95
Excelsior Gold	65.4	50.7*	3-Jul*	25.2*	3.0	11.6	93.6	0.21	131	98
Explorer	69.3	48.5*	7-Jul	18.1	2.0*	10.0	95.3	0.18	137	99
Firefox	82.8*	48.6*	30-Jun*	23.2*	3.0	10.5	96.1	0.29	66	97
Klarinette	91.0*	49.8*	3-Jul*	22.8*	1.7*	10.7	98.8	0.40	137	97
KWS Amadora	77.6*	50.2*	11-Jul	19.1	2.0*	10.5	94.0	0.22	56	99
KWS Jessie	88.0*	49.9*	3-Jul*	18.5	2.3*	9.4	97.8	0.18	126	97
KWS Kellie	85.5*	48.6*	10-Jul	18.2	1.7*	10.2	96.5	0.29	128	98
KWS Willis	85.4*	49.2*	9-Jul	20.8	2.0*	10.4	97.5	0.13	138	94
Lacey	63.7	49.8*	30-Jun*	27.3	4.0	11.5	86.0	0.18	143	98
LCS Genie	60.4	48.4*	20-Jul	21.3	2.7*	11.5	84.3	0.28	153	93
LCS Odyssey	51.8	47.2	20-Jul	22.8*	0.7	11.5	96.8	0.38	79	67
ND Genesis	71.1	50.5*	3-Jul*	22.9*	3.3	10.6	97.2	0.18	52	95
Newdale	61.0	47.1	9-Jul	23.2*	3.0*	11.4	81.5	0.16	23	94
Pinnacle	58.4	49.3*	3-Jul*	21.0	3.0	10.0	93.6	0.17	87	94
Rasmussen	59.6	49.1*	30-Jun	22.6*	3.7	11.0	79.7	0.20	156	100
Revanche	81.3*	47.7*	5-Jul*	21.1	2.0*	10.3	95.4	0.43	137	97
TR17255	66.5	46.9	5-Jul*	24.0*	3.0	11.0	83.7	0.28	6	71
Average	70.9	48.6	5-Jul	20.9	2.5	10.6	93.0	0.23	107	95.1



Fig 5. Barley plots at Hickory Corners



Fig 6. Oat plots at Hickory Corners

Table 4: Barley Performance at Hickory Corners, MI (* indicates vars. similar to the BEST)

Variety	Yield (bu/a @13.5%)	TW (lbs/bu)	Heading Date	Height (in)	Protein (%)	Plump Kernels (%)	DON (ppm)	RVA (rvu)	72 hr GE (%)
10031 U1	75.0*	39.0*	14-Jun	27.3	11.8	79.1	0.12	153	100
2ND32529	77.3*	41.4*	11-Jun*	32.0*	11.6	86.4	0.11	63	99
2ND36638	78.1*	40.9*	11-Jun*	29.3	11.5	93.1	0.19	142	100
2ND36642	84.6	39.1*	11-Jun*	30.3	10.9	93.6	0.26	128	98
2ND37111	67.3*	38.7*	11-Jun*	29.3	11.5	81.5	0.24	74	100
2ND37130	71.0*	39.9*	11-Jun*	30.0	11.7	88.6	0.17	108	100
2ND37568	71.8*	38.3*	12-Jun*	32.7*	11.2	90.2	0.24	66	100
3523 U2	70.9*	38.7*	14-Jun	25.3	11.9	79.6	0.17	127	100
AAC Connect	61.2*	37.3*	15-Jun	30.3	12.9	58.8	0.21	5	94
AAC Synergy	70.8*	38.7*	15-Jun	31.7*	12.1	88.2	0.26	9	98
Bowers	64.2*	36.8*	12-Jun*	36.0	13.2	44.4	0.26	99	93
CU198	75.0*	42.0	13-Jun*	33.3*	12.5	70.9	0.19	103	99
Esma	72.8*	38.3*	15-Jun	26.7	12.6	52.9	0.13	124	99
Excelsior Gold	61.8*	38.8*	13-Jun*	34.7*	13.1	76.4	0.25	135	100
Explorer	74.7*	39.1*	15-Jun	25.3	11.6	70.2	0.21	122	99
Firefox	72.0*	40.4*	12-Jun*	32.0*	11.4	84.3	0.19	70	100
Klarinette	78.6*	41.2*	12-Jun*	24.3	11.6	89.0	0.21	119	100
KWS Amadora	75.4*	41.4*	15-Jun	25.7	11.4	79.0	0.3	103	99
KWS Jessie	76.7*	37.3*	16-Jun	23.3	11.6	67.6	0.2	145	100
KWS Kellie	72.9*	38.4*	16-Jun	26.0	11.9	62.7	0.17	127	99
KWS Willis	76.8*	37.5*	15-Jun	27.7	12.6	77.9	0.15	111	99
Lacey	69.9*	37.9*	10-Jun	35.0*	12.2	47.8	0.23	45	100
LCS Genie	58.2*	41.6*	19-Jun	26.3	14.1	66.8	0.21	149	100
LCS Odyssey	61.2*	37.4*	18-Jun	27.0	13.3	75.0	0.23	154	99
ND Genesis	68.6*	38.4*	13-Jun*	32.0*	11.4	83.4	0.23	17	97
Newdale	57.6*	37.5*	17-Jun	31.0	14.4	37.2	0.11	7	98
Pinnacle	62.0*	37.7*	12-Jun*	31.0	11.7	86.3	0.19	118	99
Rasmussen	64.7*	39.2*	11-Jun*	32.0*	12.1	54.2	0.38	83	99
Revanche	68.0*	36.1*	14-Jun	26.3	11.7	65.6	0.15	138	100
TR17255	64.7*	36.9*	14-Jun	32.7*	13.6	54.5	0.16	5	53
Average	68.6	38.8	14-Jun	29.2	12.2	72.8	0.20	95	97.4



Fig 7. MSU Extension intern, Sarah Hubbard, harvesting at Hickory Corners



Fig 8. Combining at Hickory Corners