



MSU Malting Barley Agronomy

GLHBC– 2020

Brook Wilke

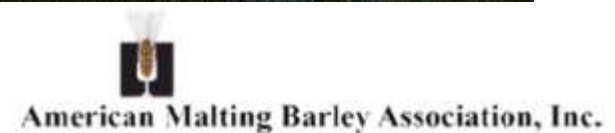
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Inspired Brewing®





2019 Fungicide Trial





2019 Fungicide Trial

<u>Winter Barley Variety</u>	<u>Fungicide Treatment</u>	<u>Yield (Bu/A)</u>	<u>Test Weight (Lb/Bu)</u>	<u>% Crude Protein</u>	<u>% Plump</u>	<u>% Thin</u>	<u>% GC</u>	<u>% GE 4 ml</u>	<u>% GE 8ml</u>	<u>RVA (SN)</u>	<u>DON (ppm)</u>
Puffin	Control	55.0 b	45.8	10.2 c	96.8	0.3	97.3	56.0 a	11.3 b	160	0.5 b
Puffin	Prosaro®	58.0 b	45.5	10.3 c	96.4	0.3	98.3	39.0 b	8.3 b	153	1.2 ab
Puffin	Miravis® Ace	68.6 a	45.7	10.3 c	96.4	0.3	98	43.3 b	8.7 b	155	0.7 b
Calypso	Control	28.7 d	41.5	11.7 a	94.7	0.3	98	30.3 b	19.3 b	169	2.1 a
Calypso	Prosaro®	40.8 c	43.6	11.2 b	97.1	0.2	96.7	39.0 b	28.7 a	165	1.2 ab
Calypso	Miravis® Ace	64.4 a	44.3	10.9 b	97.9	0.2	97	42.3 b	36.0 a	152	1.8 ab



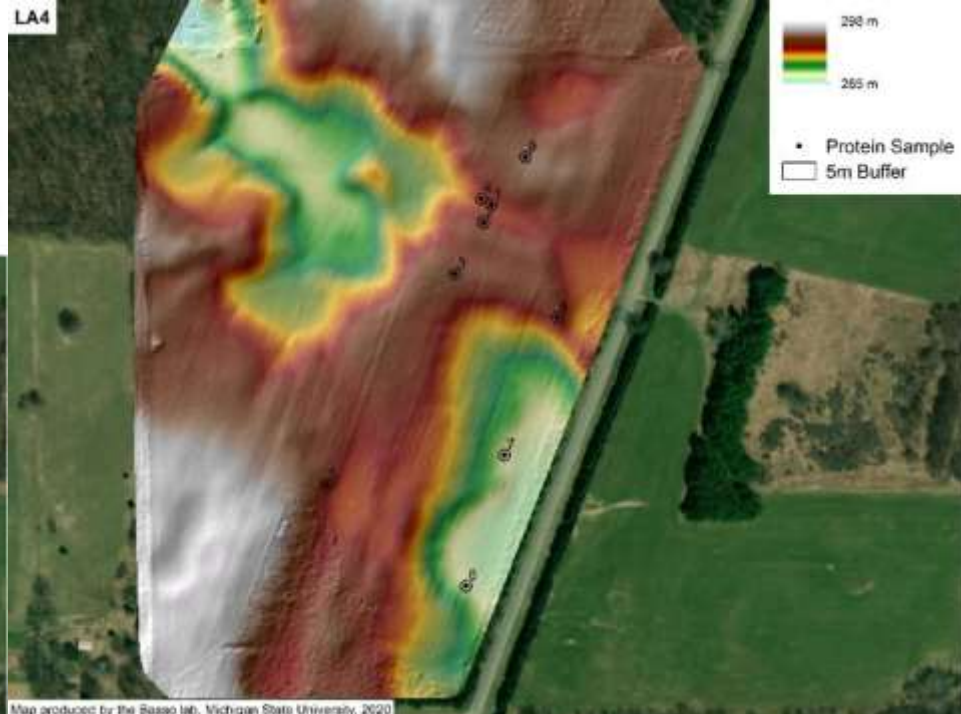
Topography / Grain Protein



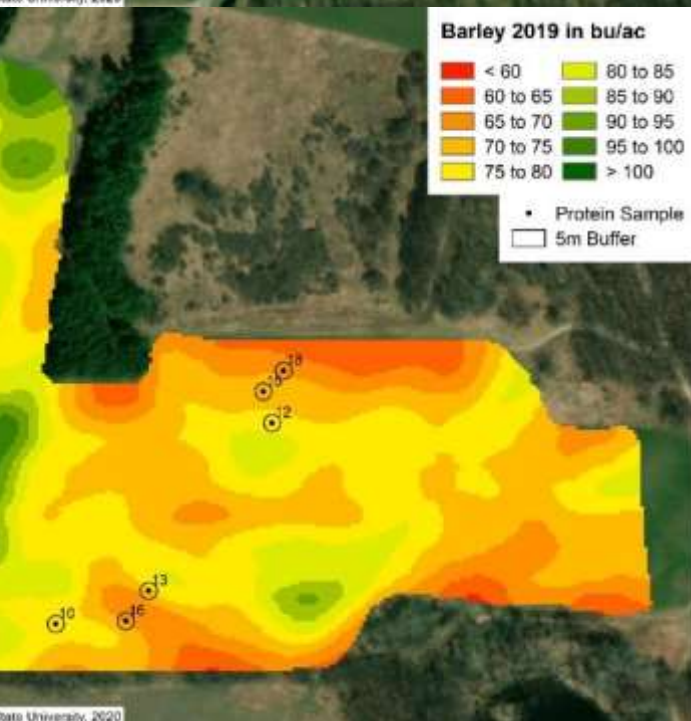
LA4



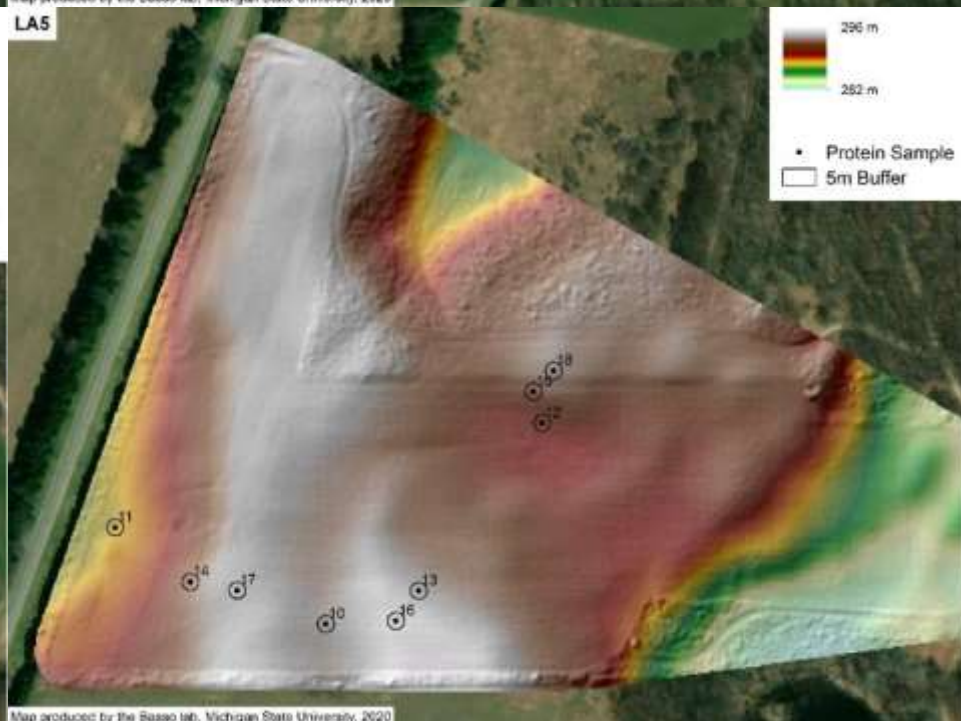
LA4



LA5

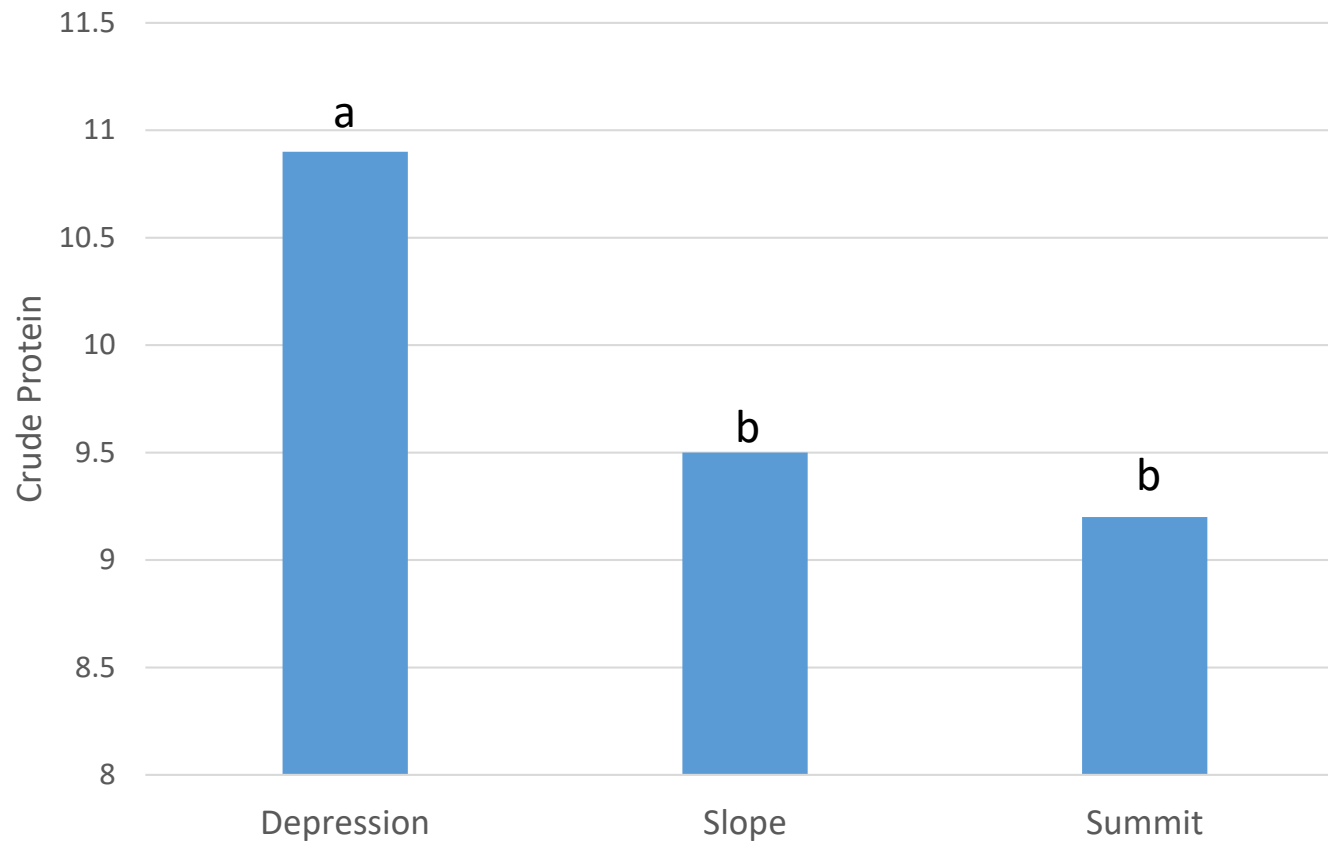


LA5





Topography / Grain Protein



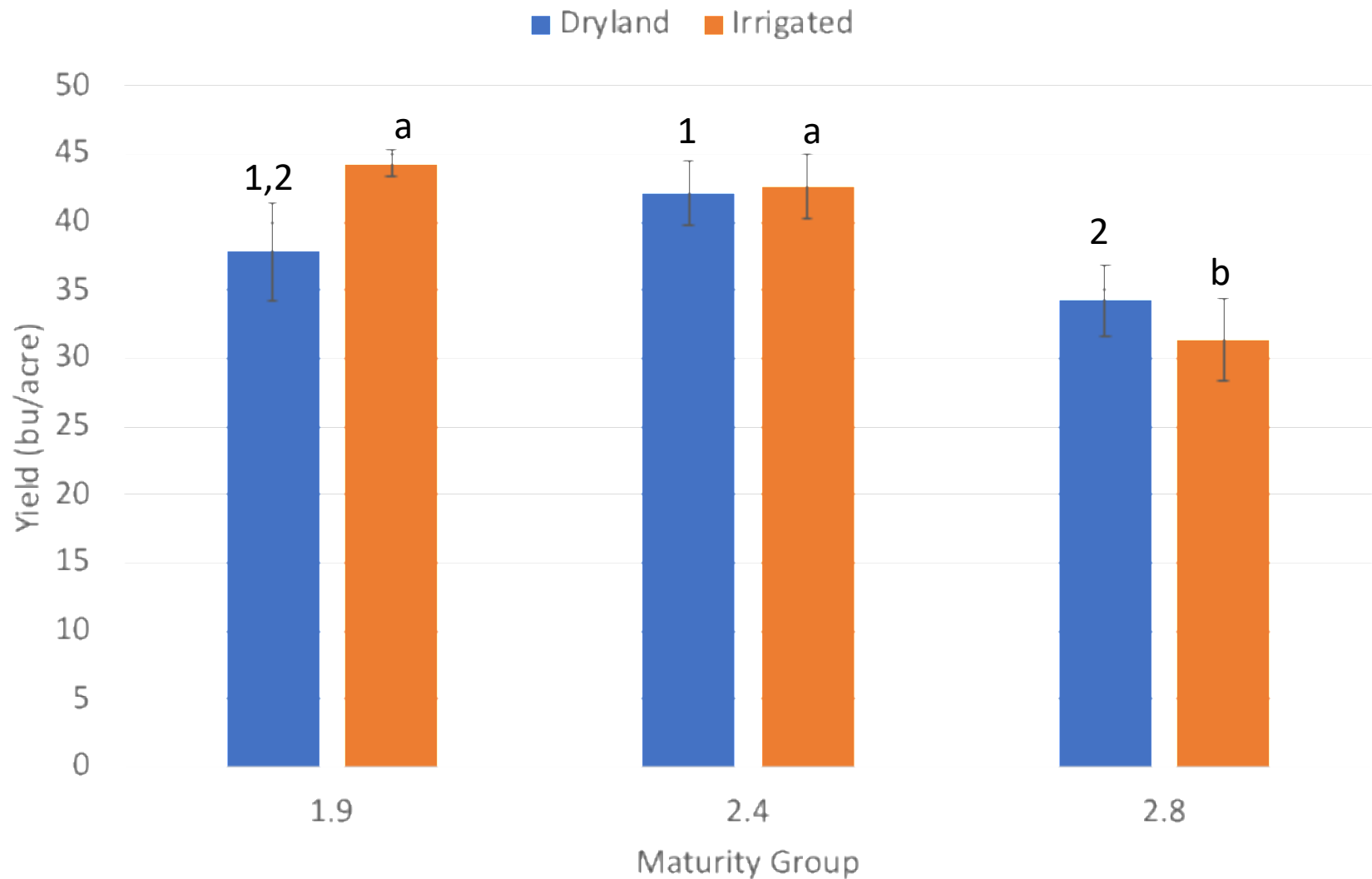


Double Crop Soybeans 2018



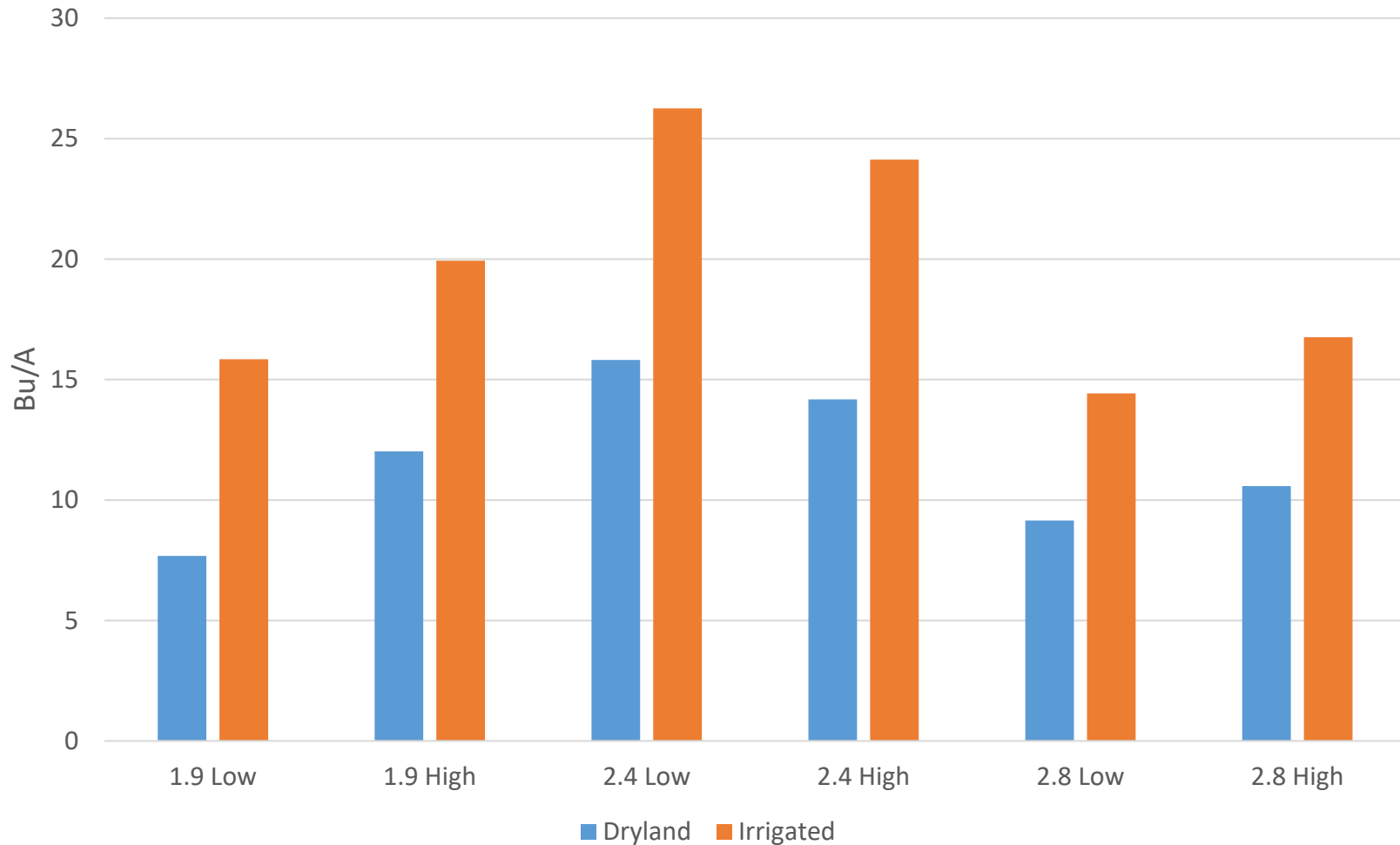


Double Crop Soybeans 2018





Double Crop Soybeans 2019





Prepare for Late Harvest





Winter Barley Variety Trials

Includes Commercial Varieties not included in WMBT. See Handout or MSU Malting Barley Website



WINTER MALTING BARLEY TRIAL – 2019 RESULTS

The Winter Malting Barley Trial (WMBT), through the University of Minnesota served as the basis for the winter barley variety trials planted in Hickory Corners and Kawkawlin, MI in the fall of 2018. The plots included 27 varieties with three replications in a lattice design.

Hickory Corners, MI

Variety	Yield (bu/ac)	Test Weight (lbs/bu) (before cleaning)	Heading Date	Height (Inches)	Lodging (0-5) ^s	Spring Vigor [#] (0-10)
08ARS509-1	100.9	44.1	5/30	33.7	0	7.7
08ARS632-5	78.2	41.6	6/3	32.7	0	6.3
13ARS537-13	92.3	42.6	5/30	31.7	0	4.7
13ARS537-19	64.6	45.3	5/26	31.7	0	4.3
AC10/028/53*	101.8	42.6	5/28	34.7	0.8	7.7
Amaze 10*	41.0	48.6	5/27	35.3	0.1	8.3
Charles	63.4	39.3	6/1	29.3	0.2	4.3
DH120304	78.0	40.6	5/26	32.7	0.1	7.3
DH130910	58.3	42.2	5/30	33	0	7.7
DH140088	92.0	41.8	5/31	35.3	0.3	5.3
DH140963	97.6	41.2	5/31	33.3	0	5.7
Endeavor	66.4	44.9	6/3	35.3	0.4	4.7
Flavia	95.5	43.9	5/27	30.7	0.4	6.3
Hirondella*	100.1	42.1	5/31	35.3	0.2	5.7
KWS Scala	86.6	41.5	6/1	32	0	5.3

HICKORY CORNERS TRIAL DETAILS

Planting date: 10/16/2018

Fertility: 10/16/2018 – 20 lbs N/acre, 45 lbs P/acre, 65 lbs K/acre, 6.3 lbs S/acre.

4/10/2019 100 lbs N/acre (urea)

Fungicide: 5/31/2019 8.2 oz/A Prosaro

Harvest: 7/17/2019

Growing season conditions: An unusually cold wet spring delayed development. There was also some winter kill.

Research site details:

W.K. Kellogg Biological Station (KBS): Project managed by Brook Wilke, Dean Baas, Josh Dykstra





New 2020 - Cereal Rye Variety Trials

- Priority is distilling industry, but will also be valuable for brewers, millers and cover crop growers
- Includes Growth Regulator and Fungicide Evaluations
- Replicated small plots and larger fields for batch distilling
- 3 Locations – Northern, Mid, and Southern Michigan





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Malting Barley Production in Michigan

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Because of the increasing demand for locally sourced ingredients in everything from the salads we eat to the beer we drink, barley, produced for malt, is being revisited as a potential crop for Michigan growers. This publication explores that potential and outlines best production practices for Michigan-grown malting barley.

Michigan State University Early Project, 2011

Introduction

Barley – the most widely adapted cereal grain in the world – is an ancient crop that has been used for thousands of years for feed, food and production of beer. Its ability to thrive in adverse conditions makes it a suitable crop where other high-valued commodities such as corn, rice and wheat fail to yield. Although there is a wide spectrum of barley types, this text will focus on *Hordeum vulgare* L., the commonly cultivated species that dominates global production (Figure 1). The cultivation of barley, the fifth most-produced crop in the world, is widespread throughout North America and occurs on every other continent outside of Antarctica.

Worldwide, 125 million acres of barley were harvested in 2013. Only 3 million of those acres were harvested in the United States, which was nearly half of the 30-year national average (1984-2013, 5.9 million acres). U.S. acreage has steadily declined over this time period as barley competed for agricultural land with other high-value crops. Because of increased yields, however, domestic production of barley (in bushels) is down only 36 percent since 1984. In Michigan, only 10,000 acres of barley were harvested in 2013, with nearly all



Figure 1. Barley is the fifth most produced crop in the world.

production going to feed markets. Nationally, 55 percent to 60 percent of barley goes to feed and is cracked, ground or rolled before being fed to livestock (Figure 2). Protein levels in barley grain range from 10 percent to 15 percent and are heavily affected by crop management. Aside from feed uses, 30 percent to 40 percent of U.S. barley is malting for brewing, 2 percent to 3 percent is used in other foods, and 5 percent is harvested for seed. Unique varieties of barley have been developed to

MANAGEMENT OF WINTER BARLEY IN MICHIGAN - WINTER 2019

Dean Baas, James DeDecker, Joshua Dykstra, Christian Kapp, Martin Nagelkirk, Brook Wilke

With support from: MSUE AABI, MSU Project GREEN, WMBT, AMBA, Michigan Brewer's Guild & Bell's Brewery

Trials featuring winter malting barley varieties and management practices were initiated at Michigan State University in 2016, both at the W.K. Kellogg Biological Station (KBS) in SW Michigan and on farms in the Saginaw Valley region. Objectives include optimizing yield while also meeting quality parameters for malting. Winter barley has produced high yields of malting quality barley at both locations over 3 years. This report summarizes the data and observations made from these trials through January 2019.



Figure 1. The 2018 winter barley management trials at KBS

Barley is part of Michigan's agricultural history. Production peaked at just over 300,000 acres harvest in 1919 and again in 1932.

Barley is suited to Michigan's climate, but winter barley is less winter hardy than other common cereal grains grown in the state, (e.g. wheat, rye). To obtain malting quality, it is important to implement specific management practices.

Winter Barley Management Guidelines

1. Seeds should be planted 1" deep at 1.0–1.4 million seeds per acre. Deep planting >1.25" can result in poor emergence.
2. Nitrogen fertilizer should be limited to 75 lbs N/A at spring green-up, to limit grain protein to 12% or less. Split applications of nitrogen are not recommended as late applied nitrogen can also increase grain protein content
3. Fungicides should be used to control diseases as needed. In particular, fungicide at flowering is recommended to protect against *Fusarium* infection (DON contamination), but is not a guarantee.
4. Plant winter barley as soon as possible after the Hessian Fly Free date to optimize yields and increase probability of winter survival. Barley can be planted through October in southern MI
5. Multiple herbicides are labelled for fall and spring application to control weeds. If lodging is a concern, consider utilizing a growth regulator at time of spring herbicide application
6. Barley should be harvested ASAP after grain reaches maturity. Drying grain is possible with low temperature (<100°F) systems. Barley should be stored at 13.5% moisture or less



Questions?



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