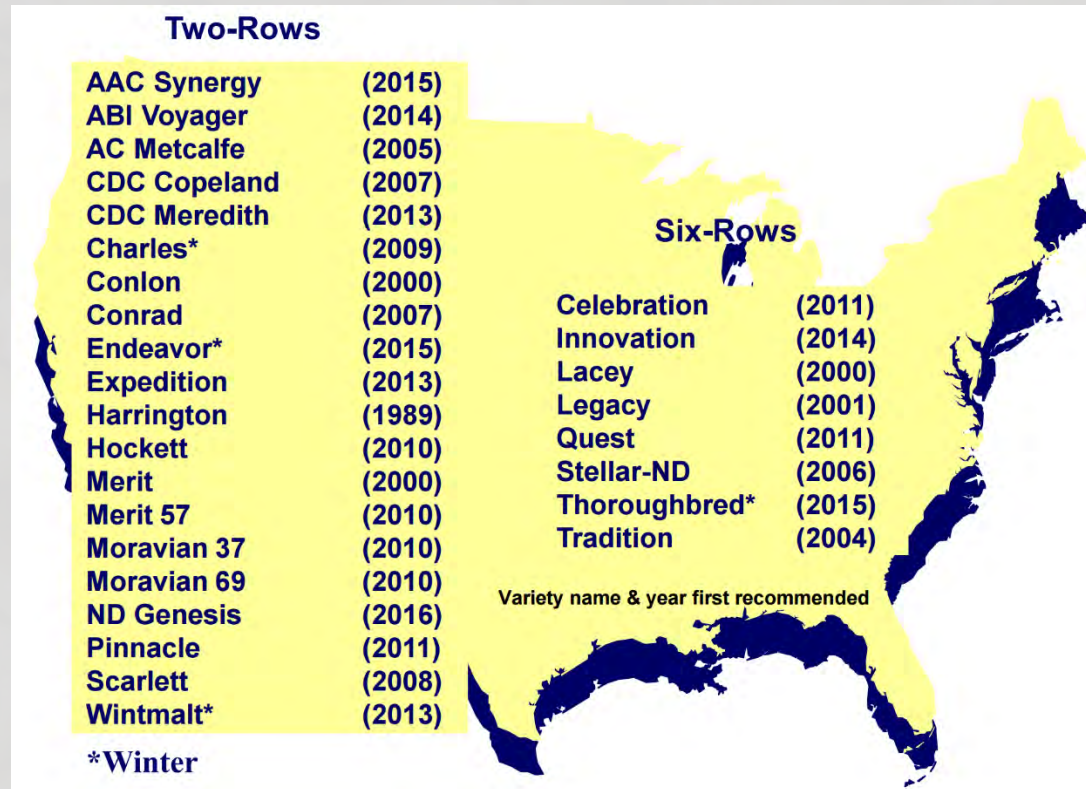


# Ohio's Newest Malting Facilities and Markets

By: Andrew Martahus of Haus Malts



# Variety Selection



- Associations

- Canadian Malt Barley Technical Center (CMBTC)
- American Malt Barley Association (AMBA)
- Craft Malting Guild
- Local malt house

- Universities

- OSU
- Cornell
- Pennsylvania State
- Michigan State
- Predominate barley growing states (Oregon, Idaho, Montana, etc.)

## 2-Row vs 6-Row

- Most common with brewers and distillers
- Most malt barley varieties available are 2-Row
- Most newly developed varieties are 2-Row
- Concerns: Disease pressure, not bred for Ohio, and not many heritage varieties are available
- Somewhat common with distillers, used less with brewers
  - Due to higher diastatic power
- Thoroughbred 6-Row is malted by Riverbend in Ashville as a heritage barley
- Maja available from Ohio Certified Seed
- Concerns: Higher protein, plumpness, thins, and brewer preference



# Seed and Seeding

- Seed Sources
  - Ohio Certified Seed and other states
  - Seedway in New York,
  - references from associations and universities
  - OSU varieties
- Seeding
  - 2-2.5 bushels/acre
  - 1.5-1.75 inches deep



# Soil Fertility and Fertilizer

- Barley (80 bu/acre) demand on soil
  - Uptake (lb/acre): 100-122 Nitrogen, 40-49 Phosphate, 96-117 Potassium, 12-14 Sulfur
  - Removal (lb/acre): 70-85 Nitrogen, 30-37 Phosphate, 23-28 Potassium, 6-8 Sulfur
- General Fertilization (lbs/acre)
  - 55-90 Nitrogen, 30-40 Phosphate, 15-30 Potassium, 15 Sulfur
  - We look for lower protein than feed, therefore later fertilizer applications are not recommended

# Disease Control and Harvesting

- Disease
  - I will let the experts presenting later discuss
  - What effects all small grains will effect barley
    - Fusarium, smut, blackpoint, mildew, etc.
- Harvesting
  - Swathing after <30% moisture or combine at 16% moisture
  - If aerating you can start early
  - Below 13.5% can cause peeling and damage
  - No desiccants or pre-harvest glyphosates



# Barley Selection Process

1. Representative Sample
2. Germination: 95% or greater
3. Protein: 9.5-12.5%
4. RVA/Falling Number: 135+/200+
5. Color: Lighter over Darker
6. Plumpness: 90% on 6/64
7. Moisture: Below 13%
8. Foreign Material: Dockage is taken for excessive weed seeds, straw, etc.

Origin of selected samples	Prairie Provinces		
Crop year <sup>2</sup>	2015	2013	2010-2013 Average
Tonnage, thousands of tonnes <sup>3</sup>	14	37	17
Barley			
Test Weight, Kg/ hL	65.1	66.4	64.8
1000 kernel weight, g	46.1	46.8	44.0
Plump, over 6/64" sieve, %	96.1	93.2	90.1
Intermediate grade, over 5/64" sieve, %	2.8	5.4	7.5
Moisture, % <sup>4</sup>	14.0	11.5	12.9
Protein, %	12.4	11.7	12.1
Germination, 4 ml (3 day), %	96	99	99
Germination, 8 ml (3 day), %	88	91	90

# Barley Selection Cont.

## 9. Fusarium

- Limited at 1ppm for human consumption, we prefer a buffer
- Working with our seed cleaner to develop a procedure for removing high levels of DON/Fusarium to meet the 1ppm threshold
- Adjusting combining methods can help
  - Lighter grain can be blown out with changes in the fan

## 10. Cleaning

- Typically cleaned by size if there is a big assortment
  - 6/64, 5/64, 4/64 (for distillation)
  - We cleaned on a 5.5/64 slotted screen



# What is Malting?

Steep



Germination



Kilning



# Which Grains can be Malted?

## Common

- Barley
- Wheat
  - Spelt
- Rye

## Uncommon

- Corn
- Rice
- Millet
- Buckwheat
- Quinoa
- Amaranth
- Triticale
- Oats



# Availability of Grains in Ohio

- Commodities

- Corn
- Soft Red Wheat

- Contract Grown

- Spelt
- Rye
- Specialty Wheat

- Ohio Barley

- Historically grown in Ohio
- OSU breeding program
  - Test plots
  - New varieties adapted for Ohio
- Ohio Certified Seed
  - Maja
- Haus Malts Contracts
  - 5 fields of winter barley
  - 2 fields of spring barley



# Small Grain Farming

## Challenges

1. Competition with Corn and Soybean
2. Growing rain and temperature
3. Disease pressure
4. Higher quality

## Benefits

1. Double crop
2. Winter cover crop
  - <http://www.nytimes.com/2016/02/07/business/cover-crops-a-farming-revolution-with-deep-roots-in-the-past.html?smprod=nytcore-ipad&smid=nytcore-ipad-share&r=0>
3. Soil quality
4. Lower fertilization
5. Straw market
6. Relationship with buyer and end user
7. Natural manure on fall crop

# Benefits to Us

- Sustainability
- Decrease transportation
- Keep \$ in Ohio
- Control of varieties
- Personal relationships with farmers
- Transparency in supply chain





# Farm to Malt – Quality Checkpoints



- Malt quality barley
  - Most Important: Protein, RVA/Falling Number, DON, Germination
  - Others: Weed seeds, Plumpness, Weathering, Moisture, etc.
- Seed cleaning
  - Uniform kernel size, removal of straw, foreign seeds
- Malting
  - Process control
  - Removal of rootlets and broken/undersized grain
  - Friability, moisture, and color



# What Has Us Excited

- Access to different varieties
- Custom flavor profiles
- Ability to move quickly and respond to changes in local demand
- Freshness
- Unique grains
- Building a local supply chain



# Progress of Haus Malts

- Initially finding farmers
  - Eric Stockinger, Brad Bergefurd, Ohio Seed Improvement Association, Great Lakes Brewing
- Farmers reaching out
  - Specialty crop, economics, winter cover crop, malting themselves
- Current Farms
  - Winter barley: 1 in Smithville, 2 in Pemberville, 2 in Spring Valley
    - Wintmalt and Scala
  - Spring barley: 1 in Trumbull County and 1 in Garrettsville
    - TBD: Synergy, New Dale, Full Pint, etc.





# Progress of Haus Malts Cont.

- 5th batch of malt bagged 2/9/2016
- Brewed at Nano Brew, Little Fish Brewing, Great Lakes Brewing, and more on the way
- Continuous improvements on our kiln, process control, and recipes
- Addition of another bin and pilot kiln





# Malt Houses in Ohio

Malt House	Location	Batch Size	Malt Styles	Distribution Range	Production	Contact Info
Haus Malts	Cleveland	4,000 lbs per bin	Pilsner to dark Munich, smoked, and caramel	Delivery in Cleveland and shipment around Ohio	Started 12/2015	<a href="mailto:andrew@hausmalts.com">andrew@hausmalts.com</a> or 216-570-1108
Little Miami Farms	Spring Valley	2,000 lbs (planned)	Base and custom	Cincinnati and Dayton	Planned to start Q3 2016	<a href="mailto:Jamie@littlemiamifarms.com">Jamie@littlemiamifarms.com</a> or 937-532-9569
Ohio Malting Company	Wakeman	4,000 lbs (planned)	Base	N/A	March 1 <sup>st</sup> , 2016	<a href="mailto:ohiomaltingcompany@gmail.com">ohiomaltingcompany@gmail.com</a> or 440-774-9463
Rustic Brew Farm	Marysville	2,000 lbs (planned)	Pilsner to Pale Ale	Columbus and shipment in Ohio	Q1 2016	<a href="mailto:Matt@RusticBrewFarm.com">Matt@RusticBrewFarm.com</a>
Sweet Acres Malt	Goshen	2,000 lbs (planned)	Base	Cincinnati and Dayton	N/A	<a href="mailto:camille29alexis@hotmail.com">camille29alexis@hotmail.com</a> or 513-763-0487
Nick Sheets (Proposed)	Columbus	4,000 lbs (planned)	Base	N/A	N/A	<a href="mailto:Nick.sheets91@gmail.com">Nick.sheets91@gmail.com</a>



# Thanks for Listening

Q&A period after presentations