



OVERVIEW

American Malting Barley Association, Inc.

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September, 2021

The American Malting Barley Association (AMBA) strives to be the leader in improvement, development, and understanding of malting barley. We work with researchers, growers and federal agencies to ensure that the US remains self-sufficient in malting barley production.

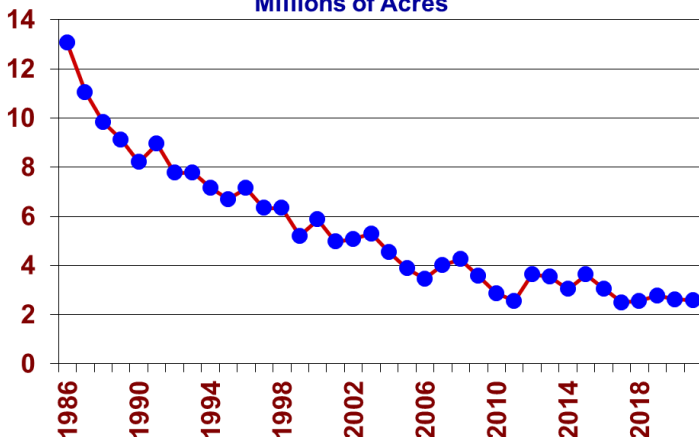
In order to maintain ample barley supplies, AMBA:

- Directs and coordinates the US public sector malting barley research infrastructure of personnel, facilities, and funding.
- Coordinates the evaluation of new varieties and provides growers with a recommended list each season.
- Secures substantial increased federal research funding through lobbying by the National Barley Improvement Committee.
- Promotes increased production of malting barley and management practices to increase quality selection.
- Ensures favorable federal agricultural policies for growers and industry.
- Provides a unified industry voice on supply chain issues.

AMBA's Mission: To encourage and support an adequate supply of high quality malting barley for the malting, brewing, distilling, and food industries and increase our understanding of malting barley.

Barley acres have declined substantially over the past thirty years due to competition with other crops, declines in feed use, changes in federal policies, diseases and other issues. Yet the US has maintained enough malting barley production to meet its needs. AMBA contributes to a robust barley supply chain in many different ways.

US Barley Acreage
Millions of Acres



	Adjunct Brewing Two-Row	All Malt Brewing & Distilling Two-Row ²	Grain Distillers' Two-Row
AMBA Member Interest¹	60%	34%	6%
Barley Factors			
Plump Kernels (on 6/64)	> 90%	> 90%	> 70%
Thin Kernels (thru 5/64)	< 3%	< 3%	< 5%
Germination (4ml 72 hr. GE)	> 98%	> 98%	> 98%
Protein	≤ 13.0%	≤ 12.0%	11.5 -14.0%
Skinned & Broken Kernels	< 5%	< 5%	< 5%
Malt Factors			
Total Protein on 7/64 screen	≤ 12.8%	≤ 11.8%	11.0 - 13.5%
Glycosidic Nitrile (g/MT) ²	> 70%	> 75%	>50%
PSY (LPA/MT) ²	< 10	< 0.5	< 0.5
Measures of Malt Modification			
Beta-Glucan (ppm)	< 100	< 100	
Soluble/Total Protein	40-47%	38-45%	>48%
Turbidity (NTU)	< 10	< 10	
Viscosity (absolute cp)	< 1.50	< 1.50	
Congress Wort			
Soluble Protein	4.8-5.6%	< 5.3%	>6.0%
Extract (FG db)	> 81.0%	> 81.0%	> 79.0%
Color (°ASBC)	1.6-2.5	1.6-2.8	<4.0
FAN	> 210	140-190	>250
Malt Enzymes			
Diastatic Power (°ASBC)	> 140	110-150	>200
Alpha Amylase (DU)	> 50	40-70	>75

RESEARCH AND DEVELOPMENT

AMBA provides \$0.42 million to 25 projects aimed at improving the agronomic and quality of malting barley. Breeders are given quality targets for various malt markets in our breeding guidelines (above). This direct support gives AMBA influence in the staffing and direction of many state and federal barley research programs with staff sitting on advisory committees and panels.

The National Barley Improvement Committee is run by AMBA and has procured over \$76.5 million for barley research since 1998 and another \$20 million for USDA facilities that house barley projects.

There are many priority research areas that require these resources of interest to all end users regardless of their size, including:

- Two-row varieties that have processing or flavor advantages.
- Lines that reduce the risks of growing barley to the producer or provide for sustainable production.
- Winter types which require less irrigation, reduce erosion, and avoid some of the hottest summer weather.
- Varieties with resistance to diseases and insects.
- Increased nitrogen and water use efficiencies.

AMBA's Quality Evaluation Program identifies new breeder lines that have the necessary quality, with member companies conducting malting, brewing and distilling trials. After completing pilot malting trails, lines that have satisfactory quality in plants scale testing may be added to

AMBA's annual recommended list of malting barley varieties.

AGRICULTURAL POLICY

AMBA partners with many other groups on farm policy and other matters of importance to the barley supply chain. Staff works with federal agencies on issues like crop insurance, farm programs, food safety, statistics, transportation, and grain grading. Research yields the necessary varieties, but agricultural policy is essential to provide the safety net that growers need to produce the crop. AMBA keeps abreast of the activities of state and national grower organizations and sponsors meetings in major production regions.

AN INDUSTRY VOICE

AMBA has established standard practices for the measurement of deoxynivalenol (DON) a mycotoxin produced by the *Fusarium* fungus, as well as, a method for measuring sprout damage. It voiced concerns about the use of desiccants and made sure that glyphosate and saflufenacil were not labeled for use on malting barley. AMBA periodically identifies issues that cause concern and educates the public on the industries position. Several grain treatments to prevent insects or suppress dust have been opposed by AMBA.



FULL MEMBERS

- | | |
|---------------------------|-------------------------|
| AB-InBev | Great Western Malting |
| Allagash Brewing | Malteurop North America |
| Beam Suntory | Molson Coors Beverage |
| Bell's Brewery | New Belgium Brewing |
| Boortmalt | New Glarus Brewing |
| Boston Beer | Odell Brewing |
| Briess Malt & Ingredients | Origin Malt |
| Brooklyn Brewery | Proximity Malt |
| Brown-Forman | Rahr Malting |
| CANarchy | Schell's Brewing |
| Deschutes Brewery | Sierra Nevada Brewing |
| Founders Brewing | Summit Brewing |
| Gambrinus Company | |

Regular members have a voting representative on the AMBA Board of Directors and Technical Committee, with input into malting barley variety development and all other programs. Maltsters pay dues of \$4.77 per 1,000 bushels of barley steeped, and distillers and food companies pay \$5.58 per 1,000 bushels of malt consumed the previous calendar year or minimum dues of \$5,250. Brewers pay dues per the following tier system based on barrels of beer shipped the previous calendar year.

80,000,000-100,000,000	\$294,000
70,000,000-80,000,000	\$245,000
60,000,000-70,000,000	\$212,000
50,000,000-60,000,000	\$180,000
40,000,000-50,000,000	\$147,000
35,000,000-40,000,000	\$122,500
30,000,000-35,000,000	\$106,000
25,000,000-30,000,000	\$90,000
20,000,000-25,000,000	\$73,500
15,000,000-20,000,000	\$57,200
10,000,000-15,000,000	\$41,000
6,000,000-10,000,000	\$26,200

4,000,000-6,000,000	\$16,300
2,000,000-4,000,000	\$12,000
1,000,000-2,000,000	\$11,000
800,000-1,000,000	\$10,000
600,000-800,000	\$9,000
400,000-600,000	\$8,000
300,000-400,000	\$7,500
250,000-300,000	\$7,000
200,000-250,000	\$6,500
150,000-200,000	\$6,000
100,000-150,000	\$5,500
< 100,000	\$5,250

ASSOCIATE MEMBERS

- | | |
|-----------------------------------|-------------------------|
| Alaskan Brewing | Lakefront Brewery |
| Ballast Point Brewing | Leopold Bros Distillery |
| Bear Republic Brewing | Lost Coast Brewery |
| Bently Heritage Estate Distillery | Madtree Brewing |
| Blue Ox Malthouse | Market Garden Brewery |
| Boulevard Brewing | Matt Brewing |
| Colorado Malting | Mountain Malt |
| Copperworks Distilling | New Holland Brewing |
| Deer Creek Malthouse | Ninkasi Brewing |
| Diageo | Rhinegeist Brewery |
| Epiphany Craft Malt | Roadhouse Brewery |
| Firestone Walker Brewing | Russian River Brewing |
| Flying Dog Brewery | Skagit Valley Malting |
| Full Sail Brewing | Sun King Brewing |
| Georgetown Brewing | Thrall Family Malt |
| Great Lakes Brewing | Troegs Brewing |
| Lagunitas Brewing | Urban Chestnut Brewing |

Associate membership is for companies that want to help AMBA meet its mission, vision, and objectives, with some membership benefits. Associate members are welcome to attend AMBA Board and Technical Committee meetings as nonvoting members. Malting, distilling, and food companies pay the same dues rate as regular members in their category, with minimum dues of \$525. Brewing companies pay dues of \$3.33 per thousand barrels of beer shipped the previous calendar year, or minimum dues of \$525.