



OVERVIEW

American Malting Barley Association, Inc.

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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.

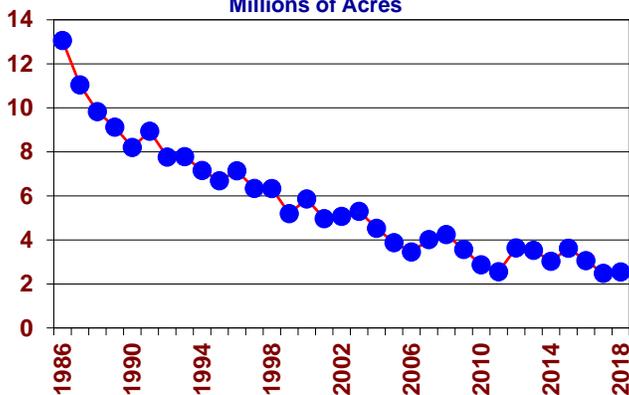
In order to maintain ample barley supplies, AMBA:

- 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



	Six-Row	Adjunct Two-Row	All Malt Two-Row	Grain Distillers'
Barley Factors				
Plump Kernels (on 6/64)	> 80%	> 90%	> 90%	> 70%
Thin Kernels (thru 5/64)	< 3%	< 3%	< 3%	< 5%
Germination (4ml 72 hr. GE)	> 98%	> 98%	> 98%	> 98%
Protein	≤ 13.0%	≤ 13.0%	≤ 12.0%	11.5 -14.0%
Skinned & Broken Kernels	< 5%	< 5%	< 5%	< 5%
Malt Factors				
Total Protein	≤ 12.8%	≤ 12.8%	≤ 11.8%	11.0 -13.5%
on 7/64 screen	> 60%	> 70%	> 75%	>50%
Glycosidic Nitrite (g/MT)			< 0.5	< 1.5
Measures of Malt Modification				
Beta-Glucan (ppm)	< 120	< 100	< 100	
F/C Difference	< 1.2	< 1.2	< 1.2	
Soluble/Total Protein	42-47%	40-47%	38-45%	>48%
Turbidity (NTU)	< 10	< 10	< 10	
Viscosity (absolute cp)	< 1.50	< 1.50	< 1.50	
Congress Wort				
Soluble Protein	5.2-5.7%	4.8-5.6%	< 5.3%	>6.0%
Extract (FG db)	> 79.0%	> 81.0%	> 81.0%	> 79.0%
Color (°ASBC)	1.8-2.5	1.6-2.5	1.6-2.8	<4.0
FAN	> 210	> 210	140-190	>250
Malt Enzymes				
Diastatic Power (°ASBC)	> 150	> 120	110-150	>200
Alpha Amylase (DU)	> 50	> 50	40-70	>75

RESEARCH AND DEVELOPMENT

AMBA provides over \$0.5 million to 24 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 \$70 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 the resources and should be of concern to all end users regardless of their size. Just a few include:

- 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, and member companies participate in commercial malting, brewing and distilling trials. After completing pilot malting trails, lines that have satisfactory quality in plants scale testing are 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 many 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	Full Sail Brewing
Allagash Brewing	Gambrinus Company
Bell's Brewery	Great Western Malting
Boston Beer	Malteurop North America
Briess Malt & Ingredients	Molson Coors
Brooklyn Brewery	New Belgium Brewing
Brown-Forman	New Glarus Brewing
CANarchy	Odell Brewing
Cargill Malt	Origin Malts
Craft Brew Alliance	Rahr Malting
Deschutes Brewery	Schell Brewing
Diageo	Sierra Nevada Brewing
Dogfish Head Craft Brewery	Summit Brewing

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	Madtree Brewing
Anchor Brewing	Malterie Frontenac
Ballast Point Brewing	Market Garden Craft Brewery
Bear Republic Brewing	Matt Brewing
Bently Heritage Estate Distillery	Mecca Grade Estate Malt
Big Sky Malts	Montana Craft Malt
Blacklands Malt	New Holland Brewing
Blue Ox Malthouse	Ninkasi Brewing
Boulevard Brewing	Pizza Port Brewing
Colorado Malting	Real Ale Brewing
Copperworks Distilling	Rhinegeist Brewery
Deer Creek Malthouse	Riverbend Malt House
Epiphany Craft Malt	Russian River Brewing
Firestone Walker Brewing	Skagit Valley Malting
Flying Dog Brewery	Sprecher Brewing
Founders Brewing	Straub Brewery
Georgetown Brewing	Sun King Brewing
Great Lakes Brewing	Thrall Family Malt
Half Acre Beer	Troegs Brewing
Harpoon Brewery	Urban Chestnut Brewing
Lagunitas Brewing	Valley Malt
Lakefront Brewery	Victory Brewing
Leopold Bros Distillery	West Branch Malts
Lost Coast Brewery	

Associate membership is for companies that do not require voting representation but 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.