



# BRIEFING

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## Malt Barley Production, Brewer Demand, and Crop Insurance Options

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### Objective

### Analysis

### for Informed

### Decision Making

Malting barley receives a premium over feed barley if a producer's malting barley crop meets the specifications required by maltsters (the companies that make malt from malting barley). Producers who do not meet these requirements typically sell their malting barley crop in the feed barley market often at substantial price discounts. Malting varieties also have lower per acre yields and, for the most part, lower nutritional value than feed barley varieties. As a result, producers of malting barley who do not meet quality requirements experience a yield penalty as well as receiving a lower price for their crop relative to feed barley.

Crop insurance options for malting barley production help to mitigate production risks in growing malt barley varieties. However, these insurance options do not always align with industry standards for malting quality. Malting barley contracts offered to farmers by brewers and maltsters typically include more stringent quality standards than those that can be insured against currently available federal crop insurance contracts. However, in years when malting barley is in short supply, maltsters and brewers sometimes lower their quality standards.

### Historical Background

In Europe and some other regions of the world, in contrast to the United States and Canada, maltsters use only

two row malting barley to produce malt. European brewers prefer malt obtained from two row barley varieties over malt obtained from six row varieties because European two row varieties yield greater extract and lower total protein than six row varieties. These physical differences enable more malt and beer to be produced with two row barley than six row barley. Two row varieties are also easier to manage in the production of malt, and, according to brewers, produce a more consistent, better-tasting final product. Consequently, producers in many countries only grow six row varieties for feed.

In contrast to their European competitors, North American brewers and maltsters employ a mixture of two row and six row varieties in the malting process. This shift away from the European brewing tradition occurred during the westward expansion of the United States in the mid to late 19<sup>th</sup> Century. As populations in the Midwestern and Western United States expanded, agricultural producers were drawn westward to regions where two row varieties performed poorly relative to six row varieties. Plant breeding programs then adapted Midwestern six row varieties to meet the demands of North American breweries. As a result, six row malting barley production came to dominate the North American malt barley market, despite many brewers' preferences for two row varieties. Over the past

sixty years, plant breeding has improved the performance of North American six row varieties to the point where North American two row varieties appear to have a negligible advantage in malting performance.<sup>1</sup>

### Location of Malting Barley Production in the United States

Malting barley is currently grown throughout Midwest, Northern Great Plains and Rocky Mountain states (see Figure 1). In 2006, total U.S. barley production, including both malt and feed varieties, was nearly 4 million metric tons (180 million bushels), of which 68 percent was produced in North Dakota, Idaho, and Montana. Growers in the state of Washington, Colorado, Minnesota, and Wyoming also produce barley. Average annual production in each of these states exceeded 100,000 metric tons (4.5 million bushels) between 2002 and 2006.

Two row varieties are more frequently grown in western states.

Harrington, a two-row variety, is the most commonly grown malting barley variety in Montana and Idaho and, in 2004, accounted for 30.5 percent of total barley planted acreage in Montana and 27.9 percent of total barley planted acreage in Idaho. Several other two-row malting varieties — AC Metcalfe, Merit, Moravian varieties, and B1202 — are also extensively grown in western states. In contrast, in 2006, six row malting varieties accounted for approximately three percent of total barley planted acreage in the western region.

Six row varieties are grown much more extensively in eastern Northern Great Plains and Midwestern states. Tradition and Robust, two six row varieties, are the preferred malting varieties in North Dakota, South Dakota, and Minnesota and, in 2006, accounted for more than 45 percent of total barley planted acreage in each of these states. Lacey and Legacy are also popular six row varieties in those states. In contrast, two row malting

varieties comprise less than 15 percent of planted acreage in these states.<sup>2</sup>

### Types of Barley Preferred by North American Breweries

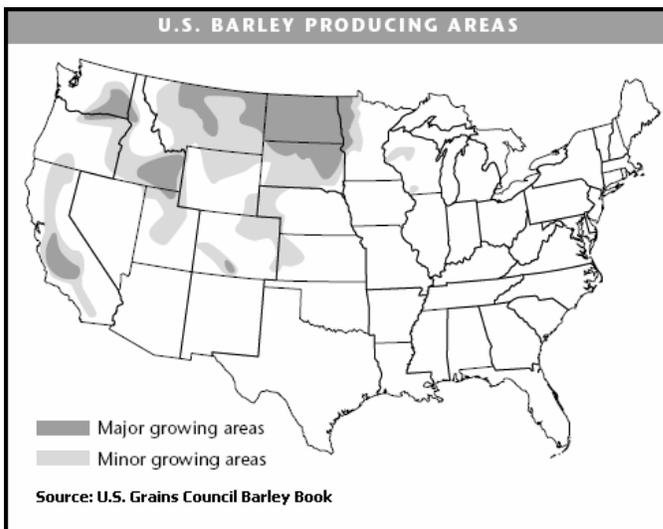
Breweries often specify the varieties of malting barley they will purchase. Further, several major U.S. breweries are directly involved with developing new malting barley varieties. Coors Brewing Company, for example, develops and owns the property rights to its own two row varieties and required growers with Coors contracts to plant those varieties. Not coincidentally, Coors Brewing Company is the only major U.S. brewing company to exclusively use two-row barley varieties.

Most North American breweries employ some combination of two row and six row malting varieties. For example, Busch Agricultural Resources, Inc. contracts with growers who produce Merit, Harrington, and B1202, which are two row varieties, as well as Legacy, a six row variety. Miller Brewing Company uses two six row varieties, Robust and Lacey, in combination with an assortment of two row varieties. Miller Brewing Company is also evaluating several new two row malting barley varieties -- Hockett, Geraldine, and Charles. Great Western Malting, a Canadian malting company, also uses a wide assortment of two row and six row varieties.<sup>3</sup>

### Brewery Quality Attributes Requirements

Breweries prefer to purchase malting barley from crops with high proportions of plump barley kernels

**Figure 1: U.S. Barley Producing Areas**



<sup>1</sup> For more information about the history of barley production and the agronomic differences between two row and six row varieties of barley, see [www.brewingtechniques.com/bmg/schwarz.html](http://www.brewingtechniques.com/bmg/schwarz.html).

<sup>2</sup> The data from this section come from the U.S. Grains Council's Barley Book Supplement, which can be found at [www.grains.org/galleries/technical\\_publications/Barley\\_Book\\_Supplement.pdf](http://www.grains.org/galleries/technical_publications/Barley_Book_Supplement.pdf)

<sup>3</sup> The information in this section was adapted from the U.S. Grain Council's Barley Book, which can be found at [www.grains.org/galleries/technical\\_publications/Barley\\_Book.pdf](http://www.grains.org/galleries/technical_publications/Barley_Book.pdf). Other brewer-specific information came from Malting Barley Quality Panel: "What do Brewers Want?" at the 35<sup>th</sup> Barley Improvement Conference Proceedings, pages 31--43. Another helpful source is [www.idahobarley.org/barleymaltindustryprofile.htm](http://www.idahobarley.org/barleymaltindustryprofile.htm).

and relatively low protein content (measured in percentage terms) and specify stringent standards for these quality attributes in their contracts with growers. If growers do not meet the requirement quality standards, then their crops may not be accepted for malt production. Brewers generally view barley crops with less than 75 percent plump kernels and more than 13.5 percent protein as undesirable for brewing. However, most breweries set their own standards and the contracts offered by many large maltsters have provisions with more stringent standards. There is one important caveat to this general rule. In years when the supply of malting barley is relatively low, breweries have been known to relax their specifications with respect to plump kernels. However, breweries do not tend to relax their protein content standards.

Most brewers consider a protein content of between 10.5 and 12.0 percent to be acceptable. Few brewers are willing to accept crops with protein content as high as 13.5 percent. At the 2005 Barley Improvement Conference, for example, representatives from both Miller Brewing Company and Anheuser Busch argued that breweries should not accept crops with protein contents that exceed 12.5 or 13.0 percent and major malting and brewing companies appear to follow these guidelines. Miller, for example, accepts barley crops with a percent content of between 11.0 and 13.0 percent for two row varieties and between 11.5 and 13.5 percent for six row varieties. Anheuser Busch accepts malting barley crops with a protein content of between 11.0 and 13.0 percent.

Kernel plumpness is an indicator of the extract content of a malting barley crop. More plump kernels mean that more malt can be produced for each

bushel of malting barley. Most brewers do not accept two row crops with less than 75 percent plump kernels or six row crops with less than 65 percent plump kernels. Many brewers specify a larger percentage of plump kernels in the contracts they offer. Miller Brewing Company, for example, states that it does not accept two row varieties with less than 90 percent plump kernels or six row varieties with less than 80 percent plump kernels. Great Western Malting in Canada states that it does not accept two row crops with less than 80 percent plump kernels or six row crops with less than 70 percent plump kernels. However, when malting barley is in short supply, brewers may relax these plump kernel requirements.<sup>4</sup>

### **Malting Barley Crop Insurance Options**

To mitigate malting barley quality risks, the USDA's Risk Management Agency (RMA) provides two crop insurance options for growers of malting barley -- Option A and Option B. Regardless which of these option a producer selects, the producer's crop must also be insured under one of the following feed barley product programs: Multiple-Peril Crop Insurance, Income Protection, or Revenue Assurance.

Options A and B both extend coverage for malting barley beyond the yield and/or revenue coverage provided by these feed barley insurance policies. Malting barley quality endorsements must be administered on an enterprise unit basis, which means all of a producer's malting barley acreage in a county must be insured under the same endorsement.<sup>5</sup>

Option A is available to growers who do not have a malting barley contract with a maltster or brewer prior to the

sales closing date, which is March 15 of the crop year in which barley is planted. Producers who utilize Option A generally sell malting barley on the open market. To be eligible for Option A, a producer must provide RMA with an Actual Production History (APH) for malting barley. If the insured crop does not meet malting barley quality requirements, the producer receives an indemnity payment related to the difference between the malt barley price and the feed barley price. The per bushel amount of the quality indemnity is designated in the Special Provisions of the endorsement, but cannot exceed \$1.25 per bushel.

Option B is available to growers who have signed a contract for the sale of their malting barley crop before purchasing crop insurance. To receive Option B coverage, a producer must provide evidence of a signed contract for the sale of malting barley before the March 15 sales closing date. A producer does not have to provide a malting barley APH under Option B because production contracts specify the maximum expected level of production and the malt barley price premium. Of course, producers who purchase Option B do have to establish an APH for feed barley to be eligible for a feed barley insurance product. The fact that producers do not need to verify their malting barley production history to RMA makes Option B particularly attractive to new growers of malting barley. If the insured crop does not meet malting barley quality requirements, the producer receives the difference between the contracted price premium and the price election for feed barley under federal crop insurance. This additional coverage cannot exceed \$2.00 per bushel, but is typically larger than the amount offered to malting barley producers covered under Option A.

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<sup>4</sup> The figures in this section were largely provided by the Malt Barley Industry Profile at [www.idahobarley.org/barleymaltindustry/profile.htm](http://www.idahobarley.org/barleymaltindustry/profile.htm).

<sup>5</sup> Even where malting barley quality endorsements are administered on an enterprise unit, feed barley insurance can be administered on basic or optional units under Multiple-Peril Crop Insurance.

## Gaps in Coverage

Under Options A and B, growers receive indemnity payments for malting barley crops that do not meet the quality standards specified by RMA. Brewers and maltsters also stipulate quality requirements for malting barley. These industry requirements are generally more stringent than those specified in the current federal crop insurance options (A and B). The discrepancies between the quality standards specified by malting barley buyers and those specified by RMA in Options A and B expose growers to risk in the production of malting barley.

Growers who opt for either Option A or B receive indemnity payments from RMA for crops with a protein content that exceeds 14.0 percent as compared to the industry standard of 13.5 percent. The result is a coverage gap for farmers whose crops have protein contents of between 13.5 percent and 14 percent. Further, most maltsters and brewers do not accept crops with protein content exceeding 13.0 percent and recently representatives from Miller Brewing Company and Anheuser Busch have argued that the brewing industry standard for protein content should not exceed 12.5 percent.

Growers of two row barley receive indemnity payments for crops with less than 75 percent plump kernels. Growers of six row varieties receive indemnity payments for crops with less than 65 percent plump kernels. Again, buyers of two row and six row malting barley often specify

more stringent plumpness requirements in their contracts. For example, contracts with Miller Brewing Company stipulate that acceptable malt barley crops must have more than 80 percent plump kernels for six row varieties and more than 90 percent plump kernels for two row varieties.

RMA also issues indemnity payments to growers of malting barley whose crops have a high percentage of thin kernels (greater than 10.0%), low germination (less than 95.0%), blight damage (greater than 4.0%), injury by mold or frost (greater than 5.0%), mold or frost damage (greater than 0.4%), or sprout damage (greater than 1.0%). Industry standards are also more stringent than the RMA Option A and B standards for most of these quality attributes. For example, most brewers will not accept crops with more than 5 percent thin kernels or less than 98 percent germination. Brewers and maltsters will also reject a crop whose level of the toxin deoxynivalenol (DON) exceeds trace amounts. RMA does not currently offer coverage for crops with measurable levels of DON.

## Summary

Several gaps exist in the coverage provided by the currently available federal insurance options, Options A and B, against losses resulting from shortfalls in malting barley crop quality characteristics. These include gaps with respect to protein levels, kernel plumpness, thin kernels, and the presence of the elements of deoxynivalenol (DON).

The issue of the coverage gaps in the malting barley crop insurance A and B Options has been raised by organizations such as the National Barley Growers Association (NBGA). In a February 2007 Policy Paper, the NBGA supported "adjusting the malt barley endorsement to more accurately reflect malt industry quality standards; including accepted varieties, protein grades, germination, injured by sprout, mold damage, thins and DON." In the past, NBGA has recommended reducing the allowable protein percentage to 13.5 percent from 14.0 percent. These issues are currently being evaluated by policymakers concerned about risk management options for malting barley producers.