

Quality Preferences of the Chinese Malting Barley Market

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Key messages

China is the world's second largest importer of barley, annually importing 21 million metric tonnes (MMT) on average during 2012 to 2015. It is also Australia's most important export barley market, with China annually importing 8.3 MMT of malting, feed and fair average quality (FAQ) barley, on average during 2014 to 2016. The Chinese barley market is changing in both structure and regarding its desired quality specifications. China's major malting and brewing companies prefer Canadian varieties for their premium beer market over Australian varieties. The Chinese malting and brewing industry prefer barley with a protein between 10.5%-11.5% and Australian varieties do not consistently achieve this specification. Moreover, the Australian barley industry is releasing new and improved varieties into the Chinese market at a rate the Chinese do not prefer.

Aims

The project's objectives were to build quantitative and qualitative evidence of the:

1. Relative importance of barley, malt and beer quality characteristics that are primary drivers for those responsible for selecting barley for beer production in China.
2. Preferred and acceptable levels of barley and malt quality characteristics in China.
3. Economic value that users attribute to key barley and malt quality characteristics in China.

Method

Technical and purchasing representatives from leading malting and brewing companies in China participated in the research project. The project aimed to identify their preferences and target levels of barley quality characteristics for two beer products; a premium-style lager beer that used 30% rice adjunct and an economy local-style lager with 45% corn syrup adjunct.

An elicitation methodology known as choice modelling was applied, to gain insight into the barley quality attributes sought and valued by the Chinese malting and brewing industry. Additional information was collated on the technical services and delivery models preferred by the industry.

Results

Barley protein content, chemical residue and mycotoxin results (proof of food safety), high germination capacity/percentage and variety purity are considered the most important quality attributes by technicians in selecting malting barley for brewing. Understandably, the price of barley was also a primary concern for barley purchasers.

Barley protein content, price, chemical residue and mycotoxin results (proof of food safety and the nature of the particular Australian accredited barley variety) are considered the most important quality attributes of the malting barley purchased for brewing.

In Chinese brewing, where the barley is incorporated with solid adjuncts (e.g. rice) at high proportions, low protein barley can affect the level of free- α -amino nitrogen and yeast nutrition during fermentation, and thereby affect wort flavour and beer foam characteristics. Australian barley does not consistently achieve the preferred protein specification of 10.5-11.5%.

Poor barley colour resulting from rain at harvest, with associated microbiological activity that causes a food safety risk, was unacceptable to the market. Of lower importance was the 'natural' colour of the variety.

Whilst the target levels of malt quality characteristics preferred by the Chinese industry are well-aligned with the current malting barley variety accreditation system managed by Barley Australia, a review of the target level of free α -amino nitrogen for solid adjunct brewing may be warranted. Over-riding the quality attributes of individual barley varieties was a strong preference by Chinese end-users for continuing access to preferred varieties over many years.

The frequent release of new barley varieties, along with a change in supply of varieties, necessitates costly and time-consuming changes during processing to deliver an end-product of consistent quality. While barley quality preferences for premium and

economy (local) beer segments were ranked similarly by technicians, differences in the preferred variety, price, accreditation and purity were noted by the purchasing representatives.

Recommendations

Examine the opportunity for and value of an increase in the protein level (10.5-11.5%) and associated product quality attributes (FAN, wort flavour, beer foam) of Australian malting barley for export.

Improve the communication, information delivery and education process to Chinese malting and brewing companies regarding new Australian barley varieties so the Chinese end users are respectfully forewarned and equipped for change.

Evaluate barley accumulation and supply chain opportunities to meet the divergent segments of premium and economy beer products in China.

Pursue collaborative technical R, D & E between Australian supply chain and Chinese barley users.

Key words

Malting, Barley, Grain Quality, Brewing, China, Protein

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