



Factors affecting malt and barley selection in the Chinese beer market

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Abstract

Establishing a consistent supply of quality malt is a challenging task for any brewer. In many instances the choice is limited to the local supply. The alternative is purchasing on the international market and hence the number of options increases dramatically.

The Chinese beer industry, one of the largest in the world, requires large quantities of malting grade barley to satisfy production requirements. The majority of this barley is sourced from the international market and therefore the brewer in China is faced with the daunting task of selecting malt from a list of barley varieties supplied by local and international maltsters.

The paper describes the Chinese brewing industry and the factors that affect the brewer's decision when determining malt requirements.

Introduction

The Chinese beer market has experienced significant growth in the past twenty years. In 1980, Australian beer consumption exceeded China and yet today, China is the world's second largest beer market some twelve times larger than Australia and producing approximately 220 million hectolitres. Compound annual growth over the past decade has been 15% although in recent years has declined to 5%. China will pass USA to become the world's largest beer market within the next few years.

Despite this growth, consumption per capita is still low at 15 litres per person however consumption varies significantly between region (1). Rural areas typically average less than 10 litres per capita with the cities some three times higher. Beijing's is estimated at 45 litres while the southern city of Guangzhou is approximately 54 litres per person. Overall consumption rates are low compared with the world average of 22.1 litres per person and lower than other Asian countries such as Taiwan and Singapore (2).

Brewing Industry

In the early 1980's, China had approximately 150 breweries. During that decade a further 700 breweries were built (3). These breweries were typically small state owned enterprises, hurriedly built and of mediocre quality standards intended to supply the local market. Forced by government policy to shutdown inefficient state run enterprises, the number of breweries declined during the nineties with an estimated 409 breweries still in operation in 2000. Despite these changes the industry is still fragmented. The largest brewery in China accounts for approximately 6% of the total market whilst the top 19 breweries account for 35% of the national output (4). Excess capacity is estimated between 60 and 90 million hectolitres or 30% of total production capacity resulting in competitive pricing and poor profitability.

Market Segmentation and Pricing

The beer market can be broadly categorised into three segments namely premium, mainstream, and budget priced. The premium segment accounts for a relatively static 5% of the total market. It is a crowded and highly competitive market segment. The pricing of premium brands is in the order of two to three times the price of other market segments. Premium beer is sold in non-returnable, superior packages therefore incurring higher capital, operating and material costs.

Mainstream and budget priced beer accounts for the remaining 95% of the market. Mainstream is approximately 2RMB (AU\$0.45) for a 640 ml bottle. These beers are packaged in returnable bottles and distributed in returnable crates. The respective breweries own the bottles and crates and therefore tight distribution control is necessary to minimise inventory levels and manage losses. This limits the distribution of these brands to the immediate market surrounding the brewery and one of the reasons for the large number of small regional breweries.

Intense competition and excess capacity have resulted in a downward pressure on beer price. Recent surveys have shown the retail price for beer falling by 5 to 10% (2). To maintain profitability, the brewer is forced to review operating costs and as malt is a major component of beer, the attraction for using cheaper, inferior quality malt is enticing. The consumer on the other hand is demanding better quality products.

Chinese beer production techniques incorporate the use of rice or corn in a decoction mashing system, consequently, the requirements of the malt differ to other countries such as Australian where liquid adjuncts, such as sucrose or maltose, are commonly used. Barley varieties that are considered ideal and premium grade in one market may not have the same attractiveness in others due to the use of different operating practices.

Consumer Profile

Brand, price and quality are the main drivers that influence the purchasing decision of the Chinese beer drinker. Previous experience with poor quality products has focused the consumer on some key parameters. Besides the overall taste of the beer - colour, clarity and foam are of equal importance.

Colour has been associated with inferior quality raw materials and poor operating practices and hence a light coloured beer is preferred - the perception is that the lighter the beer the better the beer quality. Australian beers would not be acceptable to the Chinese consumer on colour alone. The lightest coloured Australian beer would be twice the acceptable level in China. The majority of the colour is derived from the malt and hence any operational issues in the malting or brewing process will lead to higher colours in the final product.

The Chinese are very discerning when it comes to beer clarity requiring exceptionally bright clear beers - more so than other beer markets. A number of factors can influence beer clarity including microbiological stability, hygiene, brewing operations and raw materials - particularly malt. Inferior malts can produce high beer hazes and also cause operational problems that increase conversion costs.

Foam is another essential element of beer quality with fine, stable foam being ideal and a competitive advantage in a hostile foam environment where much of China's beer is consumed. Drinking beer is synonymous with eating. Beer is typically served in a glass at ambient temperatures. Food is generally oily and the efficacy of dish washing is dubious at best. The foam must therefore be sufficiently robust to survive the negative impact from dirty and greasy glassware. Again this is a factor of brewing operations and raw materials, with malt playing a significant role in producing decent foam.

Malt is an essential ingredient in beer production. It impacts beer quality, production costs and profitability. The local brewer can choose from a large list of maltsters to supply this important ingredient and therefore requires a thorough understanding of the local malting industry and the merits of the various barleys on selection.

Malt Industry

Malt demand is primarily driven from the brewing industry. Demand has increased three fold in the past decade from 880 thousand Tonnes in 1990 to an estimated 2.7 million Tonnes in 2000. Based on beer production growth rates, an additional 135 thousand Tonnes will be required annually.

There are currently 274 trading maltsters in China however this number could be much larger due to many small breweries having their own maltings. Less than half the maltsters would be considered real commercial operations with less than 20 having capacities in excess of 20,000 Tonnes. Many of the larger maltings are joint ventures with international companies.

The malting industry is also going through a massive transformation from small state owned operations to large regional malting companies. The industry has been insulated from international competition due to the 30% importation duty for malt compared with 3% for barley. Like the beer industry, the malting industry has excess capacity and combined with intense competition also has low profitability.

The technical capabilities of the malting companies vary significantly from simple floor operations to advanced tower maltings. Local climatic conditions play a

significant role on malt quality and consistency with many companies lacking refrigeration to cater for the hot, humid summer conditions. For example, water temperatures can vary from 5 to 30°C (depending on the time of year) influencing steeping times from hours to days thus impacting malt conformity and consistency.

The maltster also faces the challenging task of dealing with a large selection of barley varieties. China has at least thirty barley varieties (5) and together with the imported barleys, the maltster has the unenviable task of understanding the optimum malting conditions for each variety that will satisfy customers' requirements. Barleys that are easy to malt are looked upon favourably.

Barley Industry

China produces approximately 6 million Tonnes of barley annually but only 1 million Tonnes is suitable for the malting industry with the majority of the crop used for stock feed and about 20% for food. Barley cultivation is widespread with the main growing regions being the Central Provinces of Jiangsu and Zhejiang (5). Other areas include the Yellow and Huai River regions in the northern parts of China. Winter barley, grown in the central regions, is the preferred local barley for malting as it generally has lower protein levels than its northern counterparts. Chinese malting barleys typically have lower germination rates, lower extracts, and higher B-Glucan content compared to internationally recognised malting barleys.

The competition for arable land from urban development and other food crops results in much of the barley crop being produced in semi arable land or as a rotation crop for the more important rice and wheat crops. The majority of the farming is intensive, small acreage with issues around crop purity and consistency impacting overall quality. Harvesting can be a manual process with threshing as basic as dispersing the crop over the nearest road, left to dry and threshed by the passing traffic. The remaining grain is swept up and bagged. The government has financed broad acreage state owned farms in the northern regions with the intention to meet the growing demand for malting barley however suitable varieties are required to achieve acceptable malting grades.

Although barley has been cultivated in China for thousands of years, breeding programmes are relatively new with the first program commencing in the early 1980's. Initial breeding projects were essentially governed at national and provincial levels involving various scientific academies with project initiatives based on local requirements. Cooperative breeding programs have recently been initiated with other countries, including France and Japan, specifically focused on malting grade barley varieties.

To meet the current malting barley shortfall, China relies on importing in excess of 1.5 million Tonnes of malting grade barley. This barley is sourced from Australia, Canada and Europe (mainly France). In the past, imported barley was governed by COFCO (China National Cereals, Oils and Foodstuffs, Import and Export Corporation) who had the sole say in which barley was purchased. Today, anybody with an import and export licence (which includes the major maltsters) can import barley.

Conclusion

The Chinese brewing industry is fragmented, highly competitive with excess capacity. This places pressure on pricing and overall profitability. The consumer is demanding higher quality product at cheaper prices.

Malt is a key ingredient in beer manufacturing impacting quality and cost. It can be sourced from a list of maltsters of varying technical capabilities using local and internationally sourced barleys. Each variety has its merits from a quality and cost perspective.

The Brewer relies on advice from the maltster in the selection of appropriate malt to satisfy local brewing conditions with the trend towards blending cheaper, poorer quality malts with premium grades. The brewer also uses previous production experience in assessing the merits of malts sourced from different suppliers. In this environment barley that is easy to malt and brew has a significant advantage.

The challenge for the barley producer is not only supplying a high quality product but also marketing and educating the maltster on the optimum processing conditions to satisfy the brewers' malt requirements. Of paramount importance is to establish a close relationship with the key decision-makers in the supply chain, as this will have a significant influence in the purchasing decision.

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