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Prospective demand for malting barley and malt quality for the global brewing industry

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Introduction

Rapid changes in the world brewing industry including the boom in craft brewing, diversification in beer brand/style as well as changing ownership present both challenges and opportunities for the malting barley industry. In this presentation, trends in global malting and brewing sectors, specifically in China and the United States, and changing quality requirements for malting barley and malt are reviewed in the context of the current environment and expected future developments.

Results & Discussion

Due to rapidly increasing disposable income and growing drinking age population, China has become the world's largest beer market by volume, while the United States remains the world's largest beer market in terms of value. The rise in China's beer production has been remarkable with a 100% increase in the 10 years between 2002 and 2011, adding more than the entirety of US beer production during that period. In the US, while beer output has fallen, market value continues to grow with the rise in demand for craft and premium beer.

Figure 1. China Beer Output[1]

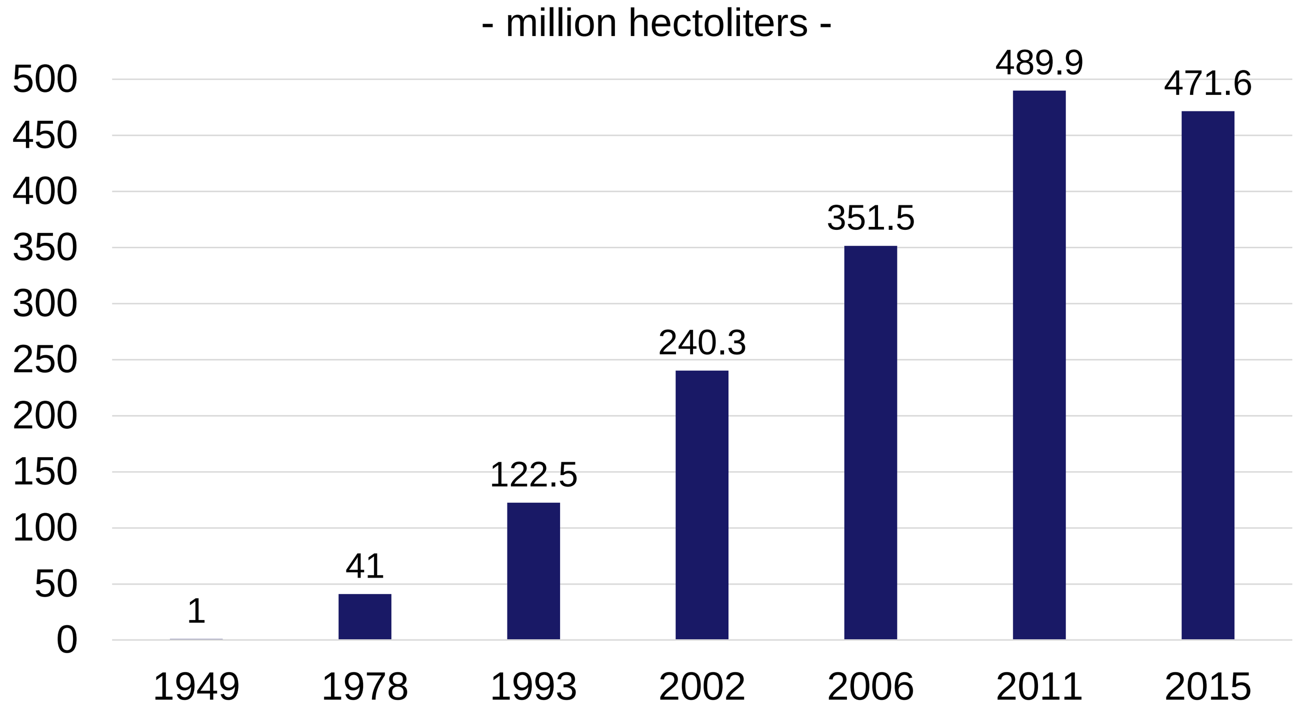
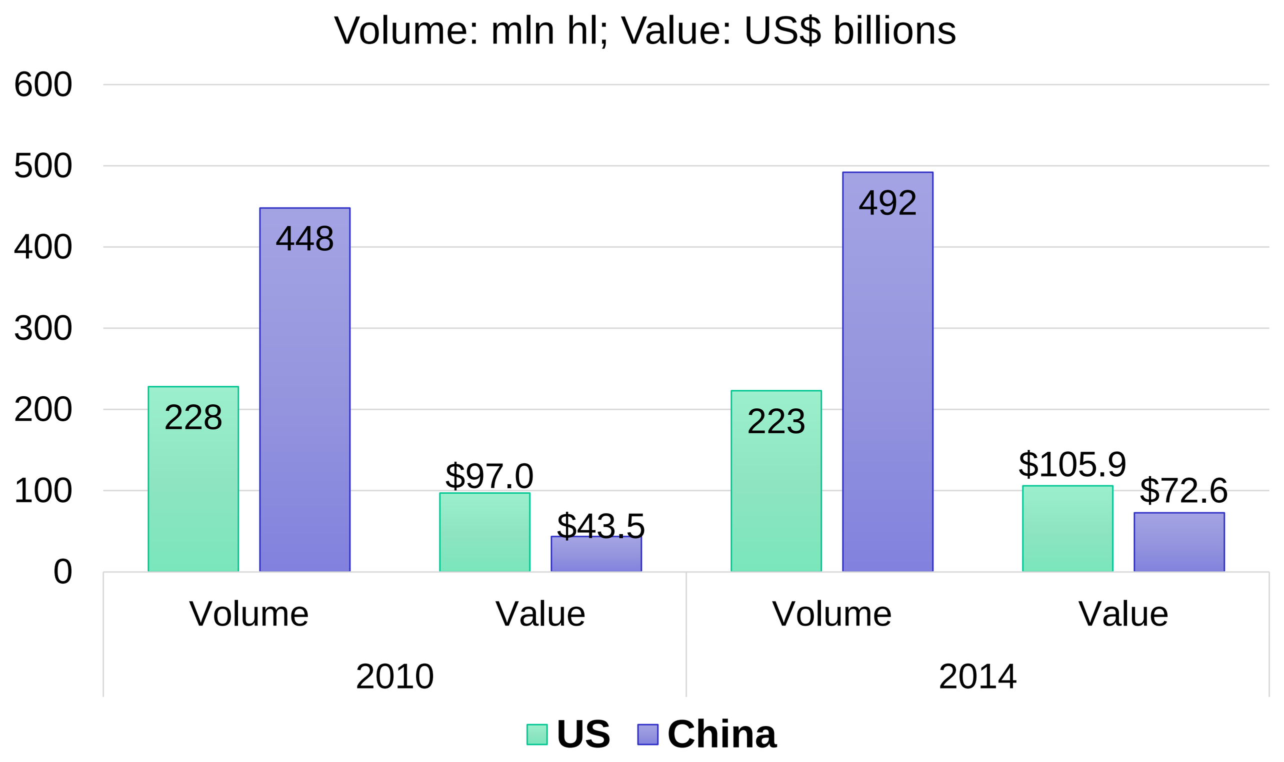


Figure 2. China, US beer Market: Volume & Value[1,2,3]



China Beer Market

In addition to international brewing groups such as Carlsberg and AB-InBev, China Resource Snow Brewery, Tsingtao Brewery, and Beijing Yangjing Beer are dominant players in China accounting for 71% of beer output. Increasingly Chinese beer manufacturers are strengthening their brand positioning. In 2014 China Resources Snow Breweries produced 107 million hectolitres of Snow beer making it the world's largest beer brand at 5.4% of the global market. Its total volume is higher than the combined volume of Budweiser (4.6 billion liters) and Budlight (5.0 billion liters). Together with Tsingtao Brewery and Beijing Yangjing Beer, these three Chinese brewers produced 10.1% of world beer production. According to Euromonitor, the major trend in China's beer market in 2015 "was the continual increase in volume sales of mid-priced and premium brands".

Figure 3. China's Top Five Breweries[4]

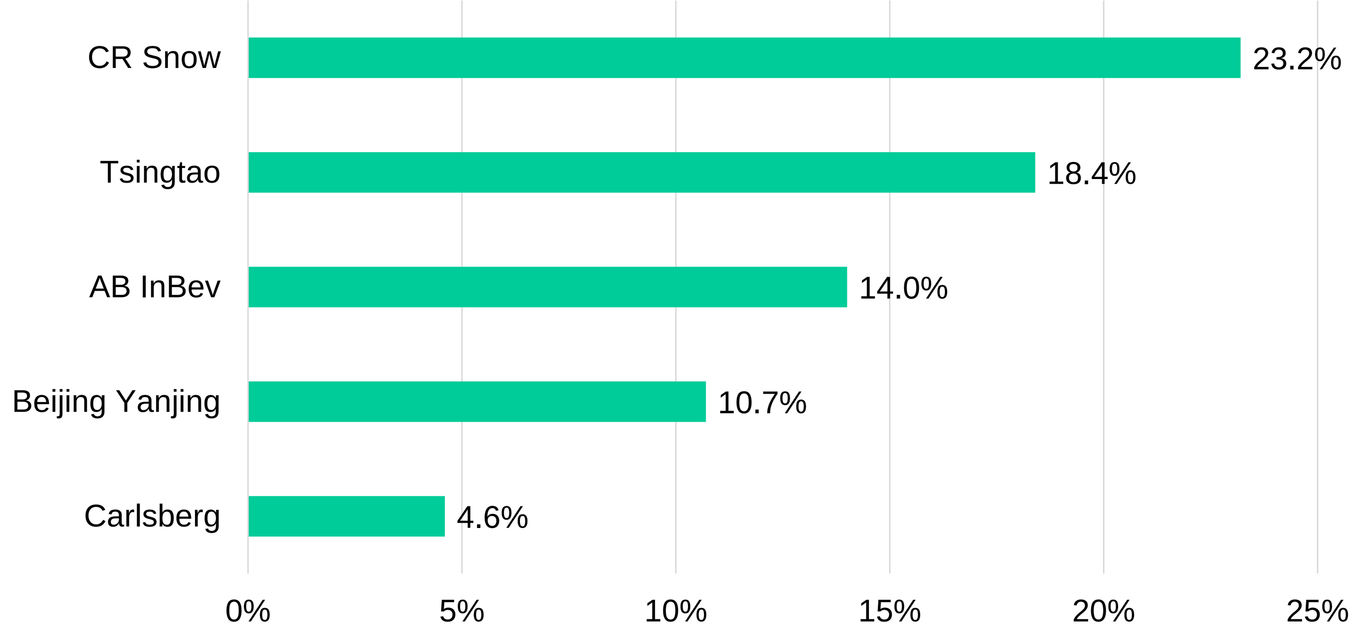
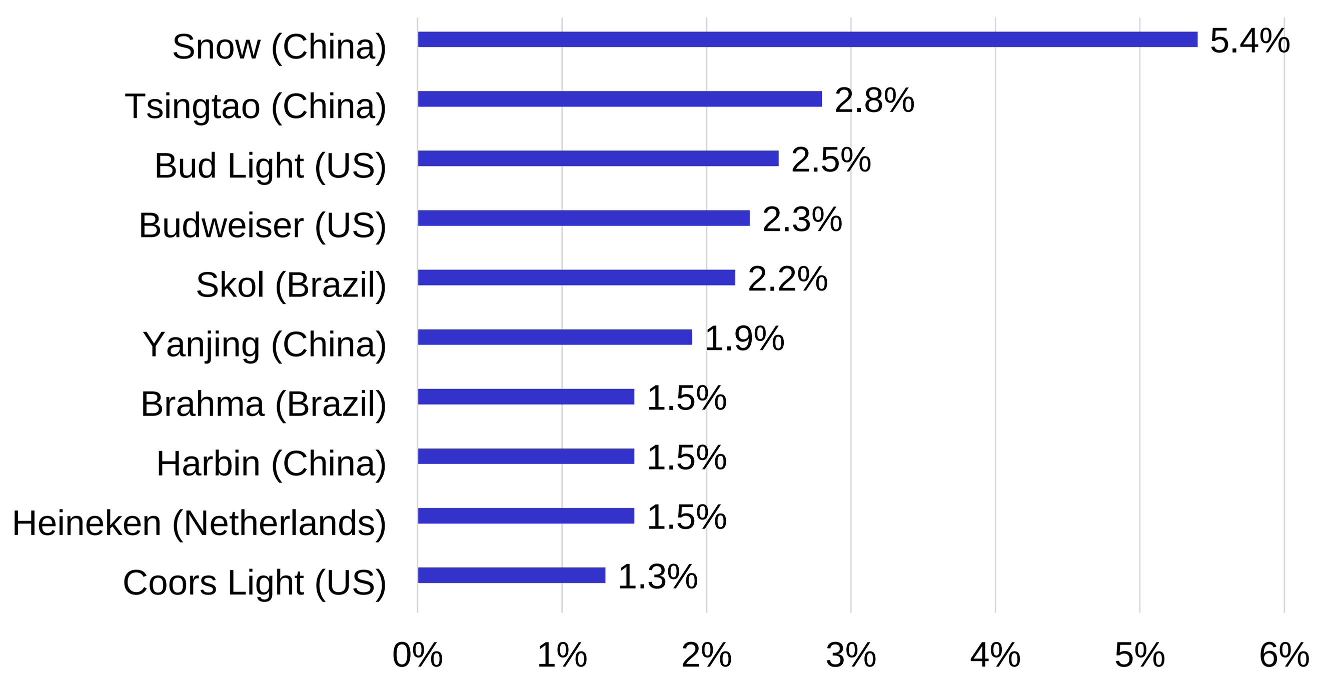


Figure 4. Top Ten Global Beer Brands (% of world production)[4]



U.S. Beer Market

In contrast to the consolidation in China, the craft brewing sector continues its rapid expansion in the United States. According to the US TTB[3] there were 4,824 brewery facilities in the U.S., an increase of about 700 from 2014. The vast majority of these are craft breweries which accounted for 12% of volume and 21% of value of the US beer market in 2015. Meanwhile there are just 21 brewing facilities with over 2 million barrels of production accounting for 84.3% of US output, and the 5 largest US beer companies had 82.5% market share in 2015. While the growth in the light beer category in the US over the last decade has reduced the use of malt in the non-craft sector, the dramatic rise in craft production, which tends to be all malt, is driving growth in demand and creating important opportunities for the malting barley and malt industries. By 2020, the craft industry in the US will be using nearly half of all malt used in the US brewing sector.

Figure 5. US Craft vs Non-Craft Beer Production[2,3]

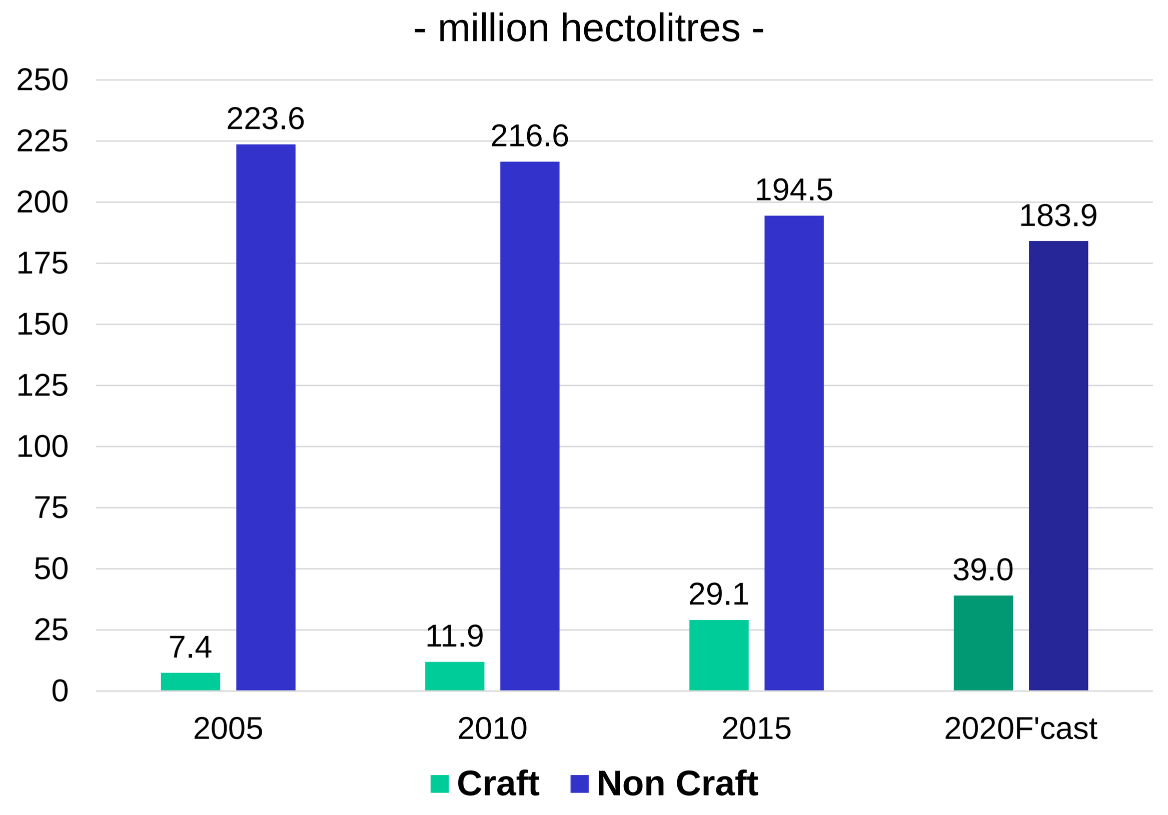


Table 1: US Top Five Breweries & Market Share[5]

Company	2015 Market Share
AB Inbev	43.5%
Miller Coors	25.1%
Constellation Brands	7.4%
Heineken	3.9%
Pabst Brewing	2.5%
All Other Brewers	17.5%

Table 2: Theoretical US Craft vs non-Craft Malt Use

	thousand metric tonnes			
	Craft	Non-Craft	Total	Craft %
2015	773.2	1,240.7	2,013.8	38.4%
2020	1,038.3	1,173.5	2,211.8	46.9%

Evolving Quality Requirements

Rising beer production in China and the rapid development of craft brewing in the US are driving increased demand for malting barley and malt, and are also shifting quality requirements. In China, brewers are demanding barley with higher grain protein and very high enzyme potential to compensate for large adjunct incorporation. In contrast craft brewers, which are typically are all-malt brewers, are demanding barley/malt with lower protein and low enzyme potential. The craft sector has also sparked an interest in Heirloom barley varieties which may offer distinct flavours to some traditional beer styles, although these varieties are generally lower yielding and have poor resistance to diseases making them less attractive to farmers.

Table 3: Quality Requirements by End User

Barley user:	China Adjunct Brewing	North & South America Adjunct Brewing	US Craft Malting & Brewing
Barley quality			
Availability	Larger quantity	Larger quantity	Local barley
Storability	> one crop year	>one crop year	Vary
Protein	11-13.0%	11.5-12.5%	<11.5%
Germination	>96%	>95%	>95%
Malt quality			
Process duration	5-6 days or 6-7 days	6-7days	Vary
Extract yield	As high as possible (>80)	As high as possible (>80)	Not as critical, prefer high
Enzymes	Medium-High (>100 °L/ 120->140 °L)	Medium to high (100-120/120->140)	Low-medium (100-120)
Soluble protein	4.5->5.0	> 5.0	< 5.0
FAN	155-170; >200	>200	< 200
Beta-Glucan	Variable; 110 Max	Variable, 135 Max.	Low as possible
Brewing quality			
Conversion time	<15 minutes	<15 minutes	<15 minutes Not as critical
Filtration efficiency	<1 hour	<1 hour	Not as critical
Wort clarity	Very important	Very important	Important
Fermentability	Prefer high	Prefer high	Vary
Foam stability	>180s (8P, NIBEM), Longer the better	Longer the better	Vary, Longer the better
Color	Light	Light	Vary
Beer flavor	Vary	Vary	Vary

Conclusions

Winning strategies in the barley industry will see players strengthening their variety positioning: new varieties not only have better yield and disease resistance but enzyme packages and distinct flavour attributes that will satisfy different quality requirements from both the high adjunct brewing and craft brewing sectors.

References

[1] China Brewers Associations [2] Brewers Association (US) [3] US Alcohol and Tobacco Tax and Trade Bureau [4] E-Malt [5] National Beer Wholesalers Association (U.S.)