



Servicing the Asian Brewing Market - an Export Maltsters Perspective

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Abstract

The export maltster in Australia is part of the global market competing with suppliers from around the world for a share of an expanding global demand for malt.

This paper will explore the global supply and demand situation and Australia's position in this matrix.

The traditional and growth markets for Australian malt will be examined and factors contributing to success in the Asian market will be described.

Introduction

The export maltster in Australia is part of the global market with brewers around the world purchasing their malt requirements from a range of geographic locations based on price, quality and service factors. These factors are to a large degree driven by a global supply and demand situation.

Global Supply and Demand

Global malting barley production exceeds 20 million tonnes per annum. More than 50% of this malting barley is produced in Europe, and a further 23% in North America. Australia lies third in global malting barley production with an annual harvest of approximately 2.5 million tonnes contributing 10 - 12% to global production (Table 1).

	World Barley Production	
	Total Barley (millions tonnes)	Malting Barley (millions tonnes)
South America	1.2	0.8

Oceania	6.0	2.6
Asia	7.4	1.2
Africa	7.9	0.2
Middle East	11.2	0.1
North America	24.5	5.6
Other Europe	49.4	2.9
EU	51.0	10.5
Total	158.6	23.9

Low malting barley prices have the effect of reducing the area planted to barley as growers look to higher yielding alternatives. Europe is the first of the major production areas to sow and will have most of both Winter and Spring barley crops planted before many growers in Canada and almost all in Australia have to make a decision on what barley crops to sow (Gutsell, M., 2001). Increased access to global statistics on planting, weather and market trends allows Australian malting barley growers to make informed decisions. Over the last 3 years these decisions have been favourable to malting barley with Australian tonnages increasing by an average of 6.7% from 1999 to 2001 (Table 2).

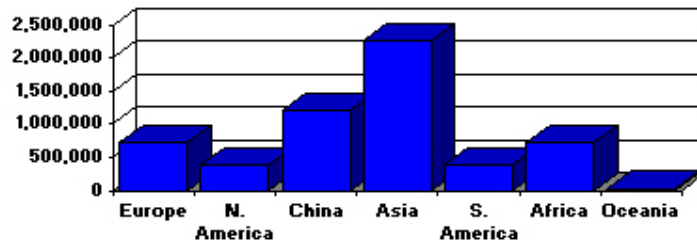
	1993	1994	1995	1996	1997	1998	1999	2000	2001 Est.
Table 2. Australian Barley Production `000 Tonnes									
Total	5,396	6,611	2,913	5,823	6,694	6,482	5,987	5,042	5,596
Malting	2,427	2,772	753	2,336	3,132	2,073	2,060	2,150	2,377
%	44.9	41.9	25.8	40.1	46.8	31.9	34.4	42.6	42.5

An estimated malting operating capacity of 18 million tonnes creates the demand for this global crop of malting barley (Pollock & Pool 1999). The production of beer consumes the majority of global malt production using 16.2 million tonnes per annum whilst distilling and food uses account for a further 0.7 million tonnes.

Global beer sales are projected to increase at 2.34% annually for the next 5 - 10 years creating a demand for an additional 0.35 million tonnes of malt or 0.42 million tonnes of malting barley per year.

Beer sales are focused in 3 areas, 93% being divided amongst the Americas (36%), Europe (34%) and Asia (23%). Of these areas, sales in Asia are growing most rapidly (5.3%) followed by South America, while growth in North America and Europe is static or falling.

Figure 1. Population



The global demand for beer is created by a number of factors including population/demographics, per capita consumption, disposable income and cultural influences. Population is concentrated in Asia where sheer numbers contribute to growth in consumption (Figure 1). While lower in total population statistics, Europe and North America lead the world in per capita consumption. Even in North America there is evidence that the beer drinking population is set to increase and between 2001 and 2009 the number of individuals in the 21 - 29 age bracket will increase by 19%.

Just as malting barley production and beer consumption are segregated globally so the world can be divided into those areas classified as net malt exporters or malt importers. Australia is among the world malt exporters contributing more than 60% of its total malt production to the export market. Other major exporters are Europe and the Americas.

Australian Supply and Demand

Australian barley production has averaged 5.6 million tonnes in the last 8 years with 45% or a 2.5 million tonnes received as malting quality barley (ABARE, 2001). The majority of malting barley is produced in the South Eastern states with Victoria, South Australia and New South Wales accounting for 69% of the total malting crop. Western Australia as a single state delivers 30% with Queensland and Tasmania minor contributors.

The location of Australian malting capacity is aligned with malting barley production with more than 500,000 T (74%) in South Eastern states, 135,000 T (18%) in Western Australia and 45,000 T (6%) in Queensland. Australian maltsters produced 679,000 T of malt in 2000 a slight increase over the 5-year average (604,000 T) (Table 4).

Table 4. Australian Malting Barley Production and Use `000 Tonnes					
State	Total Barley*	Malting Barley*	Malting Capacity	Barley Required	Excess Malting Barley
NSW	1,109	346	85	102	244
VIC	1,058	571	325	390	181

WA	1,366	716	135	162	554
SA	1,801	562	140	168	394
QLD	254	21	45	54	(33)
Total	5,588	2,216	730	876	1,340
(* Average 1992 - 1999)					

The production of this malt requires approximately 700,000 T of malting barley or 35% of the total malting barley crop. Australian malting barley production therefore continues to exceed demand by malting companies in Australia for use for both export and domestic malt sales. This ensures a surplus of grain for export as malting barley.

Approximately a third of the malt produced in Australia is used by domestic brewers, the majority supplied to the Foster's Group (55%) and Lion Nathan (42%) (Fraser, 2001). Malt demand from Australian domestic brewers has remained relatively static over the last 5 years associated with a declining consumption per capita and a shift in beverage consumption patterns. In the same period Australian malt exports have increased by 4% (1998 - 2000) as the Australian malting industry takes advantage of the growing beer markets overseas, particularly in Asia. In 2000 more than 450,000 T of Australian malt was exported to service international brewers.

Markets for Australian Malt

Traditionally, Australian malt has been exported mainly to Japan, the Philippines, Thailand and Korea (Table 5). The last ten years has seen a shift in both the absolute volumes of Australian malt delivered to each of these markets and a change in the proportion of these markets needs serviced by Australia (Fraser, 2001).

		1990	1995	2000
Table 5. Markets for Australian Malt (Tonnes)				
		1990	1995	2000
Domestic		220,000	215,000	205,000
Export	Japan	146,000	112,000	119,000
	Philippines	94,000	102,000	65,000
	Vietnam	0	23,000	82,000
	Thailand	0	11,000	58,000
	Korea	28,000	19,000	57,000
	Other	85,000	66,000	84,000
	Total	573,000	548,000	670,000

The decline in malt exports from Australia to Japan has been well documented. The increased sales to markets in Thailand, South Korea and Vietnam has received less focus.

Japan has provided the major market for premium Australian malt. Between 1989 and 2000 malt tonnages between 150,000 and 115,000 tonne were exported to Japan to service the major breweries such as Asahi, Kirin, Sapporo and Suntory. Until recently these tonnages represented approximately a third of the malt exported from Australia. In the last 3 years these tonnages have dropped to 22% of total malt exports from Australia.

Malt exports from Australia to Vietnam, Thailand and Korea, have risen substantially. These 3 countries now account for 21, 15 and 11% of Australia's total malt exports respectively.

The remaining 19% of malt exported from Australia reaches a number of destinations including South America, Indonesia, Malaysia, Myanmar, India, Cambodia, South Africa and China. These countries receive small amounts, the largest of which accounts for less than 5% of total Australian malt exports.

Japan

In the last 5 years Australia's share of the total Japanese malt market has settled at around 16%. Japanese malt imports in general have declined from their peak in the mid 1990's, reflecting a decline in beer sales from their peak of 72 million HL in 1994 to 55 million HL last year (Table 6).

Table 6 Australian Share of Asian Malt Markets `000 Tonnes									
	1990			1995			2000 (est)		
	Total	Aust	Share	Total	Aust	Share	Total	Aust	Share
Japan	687	151	22%	750	112	15%	699	114	16%
Philippines	182	97	54%	130	65	50%	180	65	36%
Vietnam	15	0	0%	80	23	30%	120	82	68%
Thailand	40	1	2%	100	10	10%	140	58	41%
Korea	44	24	55%	105	23	22%	67	57	85%

Most recently the impact of high sales volumes of low malt inclusion beverages (Happoshu) which attract a low tax rate has been felt by malt exporters to Japan as the Japanese brewer rationalises both the malt volume and quality requirements for its brewing industry. While Happoshu sales boom (increasing by 46% in the last year) traditional beer sales fell in the same period by more than 10% such that Happoshu beverages now contribute some 34% of the Japanese beer market.

Despite these changes, Australia, UK and France have maintained malt volumes to Japan. Canada has continued to gain volume since the introduction of dry beers in the

1990's. Countries such as Germany and New Zealand, however, have experienced severe reductions in malt sales to Japan.

In contrast to the static malt market in Japan, Australia's share of the malt imported to Vietnam, Thailand and Korea over the last 10 years has risen 68%, 41% and 85% respectively Table 6.

Japan represents a mature beer market where disposable income has peaked and brewers are looking to diversify the market and continually improve production efficiencies to reduce costs and maintain or lower prices, stimulating beer and Happoshu consumption.

Vietnam, Thailand and South Korea

Vietnam, Thailand and South Korea, are markets at different stages of maturity. Thailand and South Korea are relatively mature with large scale established breweries and major beer brands. International influences and a high level of capital and technical infrastructure exist and continue to grow. Vietnam is relatively immature with a complex market structure of small breweries and local beers (Bia Hoi) as well as major brands. More recent international inputs also introduce global brands. Major drivers in all areas are population growth, beer consumption level and individual wealth or disposable income (Table 7).

Table 7.	Beer Consumption (Litres/Capita)			
	1998	*2001	*2005	Population (est. 2000)
Vietnam	8.6	16.0	36.9	77 MILLION
Thailand	15.4	28.1	62.5	60 million
Korea	38.9	44.9	54.3	46 million
China	16.9	21.0	26.5	1.0 billion
* Estimated (Pollock & Pool 1999)				

Vietnam offers a major potential market for Australian malt. The economy in Vietnam is market oriented and beer is a popular drink with the large and growing population. Although the GNP per capita is low (US \$240) the country has reached political and economic stability and shows signs of a rapid recovery from the recent Asian crisis with a growth rate of more than 8% annually. Vietnam produces no malting barley and currently has no malting capacity. Breweries however are flourishing with significant investment from major brewing groups such as Heineken, Fosters, Saigon, San Miguel and Hanoi in addition to the large Bia Hoi market.

Thailand has one of the fastest growing economies in Southern Asia. Population growth is still rapid and coupled with an increasing GNP (US \$2,740) provides an increasing demand for beer. Domestic malting barley production is minimal and Thailand depends almost entirely on barley and malt imports to sustain its minor malting capacity (18,000T) and large brewing capacity (16million HL or 240,000T malt). Major brewers in Thailand are Carlsberg/Beer Thai and Boon Rawd with

smaller investments from Thai Asia (Heineken) and Thai Amarit (Kloster). Malt imports to Thailand have increased rapidly and malt from Australia has proved economic and effective for this market. Australian is now one of the 4 major suppliers to Thailand with traditional suppliers from France, Germany and UK.

South Korea relies heavily on malt imported from Australia (approximately 40% of malt imported) to support a large and growing beer market. As in Vietnam and Thailand rice is a staple crop and South Korea is almost self sufficient in rice which is a cheap source of adjunct for the brewing industry in this region. Malting barley is also grown and contributes to the operation of its malting capacity (100,000T) however it is still necessary to import malting barley to sustain this operation. Major brewers in South Korea are Hite (formerly Chosun) who also operate maltings and members of the Interbrew Group, Oriental and Cass. Population growth in South Korea remains in a steady growth phase and GNP is high (US\$ 9,700).

These three countries are likely to provide the major demand for Australian malt in the next 3-8 years. China is also a dominant player in the barley industry, globally and in this region. As a major malting barley importer, population growth and increase in per capita consumption in China will drive an increase in demand for malt and beer. However, while China will continue to use large amounts of Australian malting barley, the Chinese domestic barley and malting industry are developing rapidly and opportunities for major growth in malt sales in this market may be limited.

Brewers Expectations

Brewers' expectations in Asia and in particular in these three growth areas (Vietnam, Thailand and South Korea) are fundamentally the same as those of brewers anywhere in the world. Value can be defined as a combination of price, quality and service. While in these developing areas some customers have less sophistication in their ability to describe or define quality, the functionality of the malt is paramount. A good communication and understanding of brewers needs in these regions gives Australia a unique advantage in servicing these markets.

In Vietnam, national infrastructure and location of many small breweries maintains a demand for bagged malt, which can be distributed, in smaller volumes over a wide area. Manual labour is readily available and economic and the physical appearance of the malt is very important as it will be checked visually on more than one occasion. Grain size, resistance to husk loss and skinnings, colour and lack of moulds are all positive traits in any market but of even high value in visually dependant markets. As the economies in Asia increase these traits are and will become integrated in automated and more technologically based tests and incorporated in HACCP and food safety regimes. Australia's' ability to deliver clean safe products of good grain size and with low dust is a clear advantage in these markets both in the short and longer term and is reflected in specifications for this region.

Products for Vietnam, Thailand and South Korea are based on lager style, full strength beers served in quantity. However, we are already observing diversity in beer brands with international labels such as Heineken and Fosters' Lager in Vietnam as well as traditional local brands. The style of beers produced, the brewery capability

and the cultural heritage of beer consumption all contribute to the brewers' expectation for the malt.

In all three locations local rice crops are readily and cheaply available as adjuncts. Thus the specifications for malt for all areas require a high enzymatic component with an average DP of 280 - 300°WK.

The demand for trouble free brewing performance is increasingly important in these developing regions where production efficiencies are under scrutiny to meet increased volume targets. Brewery efficiency or yield targets are reflected in extract requirements and all of these markets demand EBC extracts greater than 80%db. Specifications for grain size and friability (milling), β -glucan (filtration) and Saccharification time (mashing) are standard in all three areas.

Protein solubilisation is important and generally preferred at a lower level (~40 - 42) in these regions. Low TN is thus not preferred and generally specifications for malt TN are targeting 1.65 - 1.75. Unlike the major Japanese markets, Vietnam, has yet to focus on fermentation and attenuation limits and there has been less emphasis on varietal specification. Blending of malts made from different varieties has been an accepted practice. However increased access to global information is affecting this policy and in the future more markets will become varietally specific. Brewers in South Korea specify single varieties and brewing companies in Thailand have varietal parameters and increasingly stringent specifications. The demand for specific qualities associated with individual varieties may offer market advantages, as experienced with Harrington in Japan.

The Future

Australian barley and malt already holds an excellent reputation as a quality product in Vietnam, Thailand and South Korea. Our share of these growing markets is increasing. Australia's proximity (geographically) to these markets offers not only a potential freight advantage but also an excellent marketing and "partnering" opportunity.

The development of varieties suited to these regions and the ability to maintain their varietal integrity will offer mutual advantages to both brewers and Australian marketers.

It will be important in the future to develop a clear understanding of the needs of brewers in these developing areas and to utilise our experiences in other mature markets to position Australian malt correctly to deliver these requirements.

Major drivers for the brewing industry in these growth regions are likely to be associated with brewery efficiencies and food safety & health issues.

Brewery Efficiencies

In both South Korea and Thailand the brewing industry is rapidly adopting new technologies available locally and internationally. Recent investment in new brewing plant in Thailand will provide further focus on brewing efficiencies (Table 8).

Table 8	Annual Beer Production (hl)	
	2000	2005
Vietnam	11,330,000	36,256,000
Thailand	16,479,000	47,400,000
Korea	20,218,000	27,238,000

Extract yield is extremely valuable to brewers and this has been and will continue to be reflected in increasing extract specifications and expectations. The demand for increased extract yield will bring into focus the capability of barley varieties and malts required as well as an examination of sources and contributions of various adjuncts and additives (enzymes etc.) (Aastrup, *et al* 2000). The use of high gravity brewing (Stewart, 2001) and immobilised yeast fermentation (Pajunen, *et al*, 2001) and an increased understanding of the requirements of yeasts during fermentation will almost certainly be considered and impact on the requirements of the malt for future brewing configurations.

Beer Markets/Food Safety & Health

The successful brewer considers the needs and preferences of the growing beer drinking population. Cultural preferences for beer styles will contribute to malt requirements in the future in terms of foam potential and stability, flavour and colour profiles, flavour stability and health & food safety issues.

In many mature beer markets brewers have already addressed a number of social issues of beer. Low alcohol beer consumption has impacted on beer production in Australia affecting the malt requirements and barley and specifications. Tax structures in Japan have impacted on malt inclusion and malt specifications.

Investment in manufacturing technologies is increasing rapidly in Thailand, South Korea and Vietnam as their economies boom. Food safety issues are prevalent and need to be addressed with sensitivity (Kavanagh, *et al*, 2000) and manufacturing practices are required to be compliant with international ISO and HACCP standards (Jackson, 2000).

Globalisation of the brewing industry and investment by "global" brewing companies has also accelerated the requirements for international standard practices in these regions (Barnes, 1999). Traceability, identity preservation and stringent health and safety requirements are being rapidly adopted and in some cases are already as exacting as in current mature markets.

Global and local attitudes to biotechnology and traditional brewing philosophies will no doubt be closely monitored in these developing markets, and could drive potential for uses of alternative barley types (Rosnagel, 1999) & (MacGregor, 2000).

There are requirements on suppliers to address environmental concerns and meet manufacturing codes of practice in line with brewer's philosophies (MacLeod, 2000). Energy efficiencies, waste reduction and raw materials integrity are among the targets now and in the future (Verstl, 2000) & (Rogers, *et al*, 2001).

Summary

The export maltster in Australia is at a critical stage in a supply relationship with some of the highest potential malt markets in the world. It is imperative at this point to use our experiences in these regions and continue to develop local knowledge to establish the value and contribution of Australian malt to the final products in these markets.

With this approach and the ability to communicate and translate this knowledge into the development, production and manufacture of targeted differentiated malt products for these markets the future of the Australian malting barley industry and Australian export maltsters can be secured.

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