Agriculture and Agri-Food Canada | Agriculture et Agroalimentaire Canada

Bi-weekly Bulletin

May 20, 2005 Volume 18 Number 10

CHINA: BEER AND MALTING BARLEY

China is the largest producer and consumer of beer and importer of malting barley in the world. Canada is one of the top exporters of malting barley to China where it competes with Australia and the European Union (EU). For 2004-05, as well as 2005-06, Canada is expected to export more than half a million tonnes of malting barley to China worth about $100 million. Over the medium term, China is expected to remain the largest and among the fastest growing malting barley markets in the world and its import demand is forecast to increase by 20% by 2010-11. However, the implementation of the Developmental Framework for China's Malting Barley Production is expected to increase the growth of domestic production in order to substitute for imports, although at a pace slower than expected in the Framework. This issue of the Bi-weekly Bulletin examines the situation and outlook for China's beer, malt and malting barley industries and the implications for Canada.

The Beer Industry in China

Beer Production

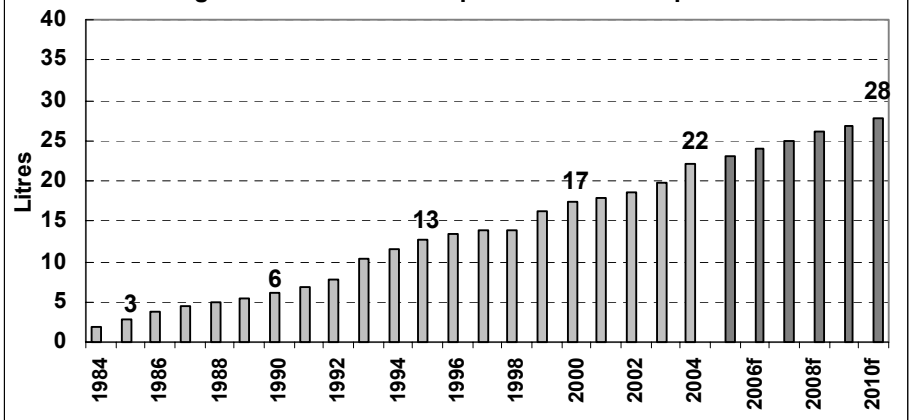
The foundation of China's modern beer industry was set up in the 1950's when new production facilities were constructed in major metropolitan centres across the country. However, the rapid expansion of the industry did not occur until the implementation of the reform and open-door policies in the later 1970s. Data from China's National Bureau of Statistics show that beer production in China has grown at a rate of 18% annually over the last 27 years, from 4 million hectolitres (Mhl) in 1978 to 291 Mhl in 2004. The industry has experienced three stages of development: (a) 1978-1987 with growth of 26% annually when production increased from 4 Mhl to 50 Mhl; (b) 1988-1995 with growth of 16% annually when production increased from 54 Mhl to 154 Mhl; and (c) 1996-2004 with growth of 7% annually and production increased to 291 Mhl. China overtook the United States (US) as the world's largest beer producer in 2002.

Although the percentage rate of growth has slowed down, the annual increase in the volume of China's beer production has accelerated, from an average of 5 Mhl for 1978-1987 to 13 Mhl for 1988-1995, and further to 15 Mhl for 1996-2004.

Beer Consumption

As indicated in Figure 1, per capita beer consumption in China has grown at 12% annually for the past 21 years, from less than 3 litres (L) in 1984 to 22 L in 2004.

Figure 1. China: Per Capita Beer Consumption



Source: China National Bureau of Statistics.
f: Agriculture and Agri-food Canada forecast.

Current per capita consumption is comparable to that in Hong Kong (24 L) and Singapore (20 L), but it is much lower than in Japan (41 L), Canada (68 L) and the US (84 L). China overtook the US as the world's largest beer consumer in 2003. The potential for growth is expected to be substantial, given the large disparity in beer consumption between urban and rural areas and across different regions in China.

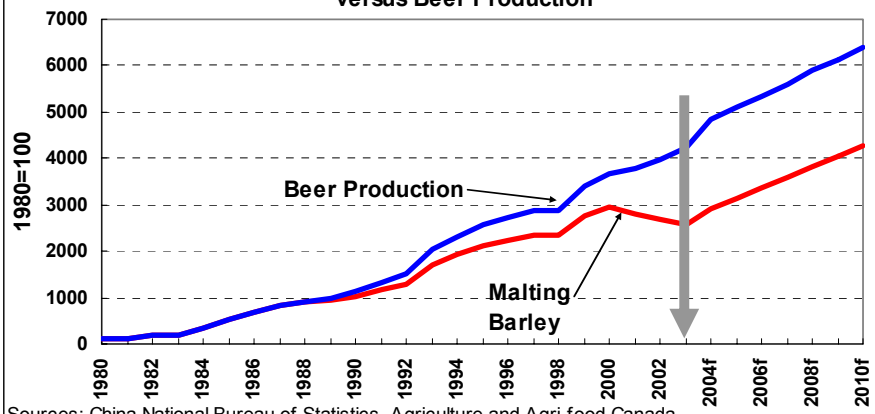
Factors Driving Higher Beer Consumption

Several factors are driving the expansion of the beer industry in China:
(a) large increases in population, despite at slow rate of growth; (b) rapid economic growth and increased disposable income; (c) massive migration away from the country to cities and towns; and (d) health consciousness.

In some less developed regions of China, a substantial proportion of the villagers, especially senior citizens, do not drink beer. The process of urbanization, associated with higher income and lifestyle changes, significantly increases the chance either for a potential consumer to become a beer drinker or a drinker to consume more. The rising consumption levels for existing consumers and the enlargement of the consumer base play an equally important role in increasing consumption. The population base of beer consumers in China is estimated by some Chinese analysts to expand at an annual rate of 20%, as a result of higher income and urbanization.

Health consciousness has started to play a more and more important role, especially among the urban population, in

Figure 2. China: Growth in Malting Barley Demand versus Beer Production



Sources: China National Bureau of Statistics, Agriculture and Agri-food Canada.
f: Agriculture and Agri-food Canada forecast.

the switch to beer from traditional Chinese liquors. The share of beer in all alcoholic beverages has jumped from 19% in 1980 to 72% in 2000, while the growth of liquors, with much higher alcohol content, has decreased correspondingly.

The Beer Industry

The rapid expansion of China's beer production has been accompanied by dramatic structural changes in the beer industry. Of most relevance to the demand for malting barley are consolidation, foreign investment and the upgrading of product composition.

Compared to the maturity of the European and North American markets, the beer market in China is still fragmented. Most breweries operate on a regional or sub-regional scale and there are hundreds of brands. However, the industry has been undergoing consolidation since 1988 and this process has accelerated in recent years. The number of breweries has decreased from 813 in 1988 to about 400 at present. The top 10 brewery companies controlled 53% of the market in 2003, compared to only 22% in 1996. The top three companies currently account for about one third of the production.

Giant foreign breweries started entering the Chinese market in the 1980s. The so-called "First Wave" of these entrances was not a success story. This was due mainly to their inappropriate strategies of building up their own facilities and selling their own brands. After years of little progress, the "Second Wave" began in 2002 and foreign investment has resumed playing an important role in the industry. This time, equity acquisition of local breweries, including large and medium sized ones, became the principal strategy. Instead of selling foreign brands, local brands are kept and most of the transactions involve less than 50% of the share holdings. The total investment involved in these transactions is estimated at US$700 million for the last two years. International beer giants such as Anheuser-Busch, SAB Miller, Interbrew, Heineken, and Carlsberg have all made their appearance in the Chinese market.

The Chinese beer market has been dominated by low priced products, but the premium products have been rapidly gaining market share. The demand for famous brands, draft beer, specialty beer with juice, beer with health functions and non-alcoholic beer has been rising. On the other hand, consolidation and the participation of foreign companies have significantly improved the industry's ability to develop new products and expand sales.

Consolidation, joint ventures between local and international companies and the upgrading of product mix all lead to increased demand for imported malting barley, at the expense of domestic barley. Joint ventures and top domestic breweries use much more imported barley than their small and medium counterparts. Tsingtao beer Group, the biggest in China with 13% of the market, uses only Australian and Canadian barley in their major brands. The second largest, Yanjing Beer with 10% of the market, uses mainly imported malting barley, except for very small amount of domestic barley immediately ahead of Australia's harvest. CRE Beer, the third largest, is the only large brewery using both domestic and imported malting barley on a regular basis.

Barley Malt and Malting Barley Demand

Declining Ratio of Barley Malt to Beer

The rapid expansion of China's beer industry increased the demand for barley malt, the principal component in beer production. However, the growth of malting barley demand has not been proportional to growth in beer production, especially in recent years. As indicated in Figure 2, while China's beer production increased by a factor of 47 times since 1980, demand for malting barley only increased by a factor of 28. The demand for barley malt is estimated at 2.62 million tonnes (Mt) for the production of 291 Mhl of beer in 2004. This is lower than the record demand for 2.64 Mt of malt in 2000 when only 220 Mhl of beer was produced. Two reasons are responsible for the lower usage of barley malt and malting barley.

Firstly, the substitution of adjunct for barley malt has increased. Chinese breweries have the tradition of using rice or, to a lesser extent, corn as an adjunct in beer production. This creates a special taste favoured by local consumers and, at the same time, reduces barley malt usage and input costs. In recent years when malting barley supplies were short, and malting barley prices were high relative to rice prices, breweries adjusted their production techniques to incorporate more rice in substitution for barley malt. In the last couple of years when rice prices increased more than malting barley prices, substantial amounts of corn and even grain syrups were used as a substitute for barley malt.

Secondly, the original gravity of beer, defined as the amount of malt and adjunct as a percentage of water in wort, has decreased significantly, from 11-12% to 6-7% in recent years. Thus more beer is produced from a given amount of malt and adjunct.

Consequently, the ratio of barley malt to beer is estimated to have decreased from more than 13 kilogram of barley malt for one hectolitre of beer (Kg/Hl) in the 1980s to 12 Kg/Hl in the 1990s and 9 Kg/Hl over the last four years. Thus, one tonne of malting barley currently generates about 90 Hl of beer in China compared to about 75 Hl in Canada.

The Malting Industry

China's malting industry is characterized by low margins, excess capacity, active acquisition and continuous expansion. There are about 200 maltsters in China with a total processing capacity of malting barley estimated at 4.3 Mt. Based on

beer production in 2004, malt demand is estimated at 2.62 Mt, suggesting overcapacity of more than 30%. The industry consists of maltsters with huge differences in production capacity and technology, from very small floor operations to the largest with the latest equipment in the world. The number of small operations (less than 10 thousand tonnes (Kt)) had dropped from 243 in 2000 to 93 in 2003, while the number of large and medium-sized operations increased from 67 to 85. In addition, there were 24 malting facilities under construction in 2003, most of which are located close to barley producing areas, especially in western and northern China, while most of the existing facilities are in eastern, southern and northeast China.

In China's malting industry, brewery-owned malting facilities have a total processing capacity of 0.5 Mt. Among the independent maltsters, the top 10 have a total capacity of 1.1 Mt. These two groups account for 37% of the total capacity. Medium sized maltsters have a total capacity of 1.20 Mt, accounting for 28%. The total capacity for small maltsters (with a capacity of less than 50 Kt) is estimated at 1.5 Mt, or 35% of the capacity nationwide.

The Use of Low Quality Barley by the Malting Industry

When the supply of malting barley is low, and prices are high, some maltsters, especially the smaller ones in central China that are far away from both import and domestic malting barley sources, use low quality barley to produce malt. Low quality malt is still attractive to regional and sub-regional breweries to produce budget brand beer. It is estimated that at least 0.5 Mt of low quality barley was used in 2003, which includes malting and feed varieties of barley from both domestic and import sources.

Domestic Barley Production and Supply

Production Trends

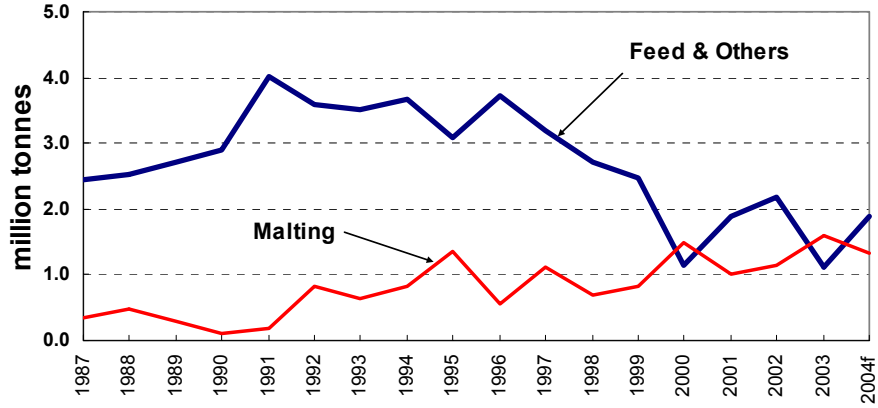
Barley has not been a major grain in China's recent history and production has been flat over the past three decades, except for a short-term surge in the 1990s. Historically, barley was mainly used for animal feed and, to a lesser extent, human food. Feed demand for barley has declined, due to the rapid reduction in the number of draft animals and the lower feed value of barley compared to corn. Barley production has also been discouraged by slower growth in yields than competitive crops, the status of barley as a rotation crop in many areas and government policies that favour major grains such as wheat, rice and corn.

The demand for malting barley has increased significantly, following the strong growth in beer production. The use of barley for feed has decreased correspondingly. As indicated in Figure 3, utilization of domestically produced "malting" barley has increased by 7% annually, from 0.35 Mt in the later 1980s to 1.35 Mt in the early 2000s and the proportion of the barley crop used for malting has increased from less than 20% to nearly 50%.

Production Geography

Malting barley production in China used to be concentrated in eastern China's Jiangsu and Zhejing provinces. This is the earliest and, at one time, the largest malting barley production base. However, barley is treated as a rotation crop in this region and freezing in early spring and rain at harvest affect crop quality. As a result, production has been decreasing recently and was about 250 Kt in 2004. This production base is located in a malting barley deficit area dominated by imports.

Figure 3. China: Domestic Barley Utilization



Sources: China National Bureau of Statistics, Agriculture and Agri-food Canada.
f: Agriculture and Agri-food Canada forecast.

The northwest production base consists mainly of Gansu and Xinjiang. It is the fastest growing production region, with the best quality crop in China. With a production of 650 Kt, it became the largest malting barley producing region in 2003. However, the base is far away from population centres and high transportation costs are involved. This base mainly services northwest China, and can reach northern and central China. The northeast production base consists of Heilongjiang and Inner Mongolia and mainly services northeast China. Production in 2004 was about 200 Kt. Two other production bases are located in Central China and southwest China's Yunnan province.

Issues

The major issues facing China's malting barley supply chain can be summarized as follows:

a) low grain quality and inconsistency of quality with respect to plumpness, extraction rates, test weight, protein content due to a lack of suitable varieties and appropriate cultivation practices, exacerbated by a large number of small farms with different technologies;
b) high logistical costs and infrastructure constraints for the rail and highway system;
c) post-harvest quality deterioration, and perceived high production costs;
d) an underdeveloped quality control system;
e) vertical disintegration between barley producers and maltsters, in the transformation of market information and technology; unprotected producers are fully exposed to downward price risks, which intensify year-to-year fluctuation in production and discourage long term growth; upward price risks are faced by maltsters, especially the smaller companies; and
f) the need for government policies to promote barley production and marketing, such as seed subsidies, direct support and the waiver of railway construction fees.

The Developmental Framework for China's Malting Barley Production (DFCMBP)

The dependence on imports for two thirds of the total malting barley requirements is perceived as a major concern for the Chinese beer and malting industry. The shortage of overseas supplies and escalation of world market prices are seen as a threat to the development of China's beer industry, especially for small and medium-size breweries and maltsters. Volatility in domestic prices and production puts producers and processors in a risky position. The

DFCMBP program, introduced in 2004-05, is a joint effort between governments and stakeholders in the malting barley industry to address these concerns by boosting domestic malting barley production to substitute for imports.

The objectives of the program are:
- to raise malting barley area from 42 thousand hectares (Kh) in 2003 to 78 Kh by 2008;
- to increase malting barley production from 1.98 Mt in 2003 to 3.91 Mt by 2008, of which 3.15 Mt is expected to be of malting quality;
- to increase the share of domestic production from 40% of total requirements in 2003 to 70% by 2008; and
- to improve quality so that at least 90% of the production in major production bases reaches the national standards for malting.

To achieve these objectives, the following measures have been, or are to be, taken:
- the establishment of advantageous production bases;
- determination of major varieties by production region;
- extension of cultivation technologies to improve crop quality, increase yields and lower production costs;
- the setup of a quality control system;
- enlargement of production scales;
- vertical integration among industry participants;
- the improvement of quality consistency and reduction of production costs;
- seed subsidies from government;
- preferential loans and taxation policies to assist key maltsters; and
- government assistance for the establishment of malting barley/barley malt production and marketing co-operatives.

Implications of the DFCMBP for Imports

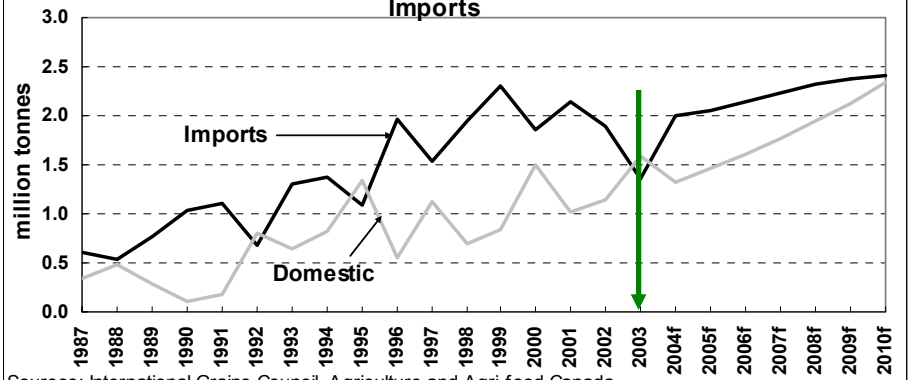
The impact of the program on China's import demand for malting barley will depend on (1) the extent to which the program can be implemented successfully and (2) how long it will take. However, the target of 70% requirements for 2008 appears difficult to achieve by that date.

Significant progress has been made in the establishment of production bases. Some of the measures, such as government policies and supports, are less difficult to implement than others. However, issues related to variety, quality, costs and industrial structure are much harder to tackle and probably cannot be resolved by the target date.

The regions that are going to benefit first and the most from the DFCMBP are likely to be northwest, northeast and southwest China, where the production bases are located and beer consumption is expected to grow the fastest. The long distance, prohibitive logistical costs, and system constraints are bottlenecks for domestic malting barley to penetrate the largest markets in eastern and southern China. In these markets, imports are preferred for their higher quality and capture a much larger market share. The comparative advantages for imports in terms of quality and costs are expected to prevail in these regions in the foreseeable future.

The use of low quality barley in the malting process could also impede the ability of domestic supplies to gain market share against foreign imports. A large portion of low quality barley is used in central and western China and by small and medium-size maltsters which are closer to the production bases. Before directly competing with imports, incremental production of high quality malting barley is likely to substitute for domestically produced low quality barley.

Figure 4. China: Malting Barley Domestic Supply versus Imports



Sources: International Grains Council, Agriculture and Agri-food Canada.
f: Agriculture and Agri-food Canada forecast.

Malting Barley and Barley Malt Imports

Current Situation

Malting barley production in China has increased significantly. However, domestic supplies cannot keep pace with the growth in demand. As a result, China started importing malting barley in 1980 and has been the world's largest importer since 1988. Currently, China accounts for about 40% of world imports of malting barley, excluding intra-EU trade.

Figure 4 shows China's malting barley supplies by domestic production and imports. China's malting barley imports had increased from less than 0.2 Mt in 1980 to 1.0 Mt in 1990 and slightly over 2.0 Mt in 2000. Following a peak of 2.3 Mt in 1999, imports have decreased to around 2.0 Mt, with the exception of 2003 when they dropped below 1.5 Mt, as a result of supply shortages worldwide.

However, there has been no indication that imports are gaining market share against domestic supplies. In fact, it appears that the market share for domestic supplies, including low quality barley used for malting, has increased slightly over the last 15 years, to nearly 35% from 30% in the late 1980s, while

China: Beer and Malting Barley

	1999-2003	*2004-05f*	*2005-06f*	*2010-11f*
Beer Production (Mhl)	230	291	306	383
Per Capita Beer Consumption (L)	18	22	23	28
Malting Barley Requirements (Mt)	3.10	3.25	3.50	4.80
Total Imports (Mt)	1.90	2.00	2.00	2.40
Australia	1.10	1.05	1.15	1.30
Canada	0.38	0.60	0.50	0.70
EU	0.42	0.35	0.35	0.40
Domestic production (Mt)	1.20	1.25	1.50	2.40

Sources: China National Bureau of Statistics, China Custom Statistics and IGC.
f: Agriculture and Agri-food Canada forecast.

the share for imports has declined from 70% to 65%.

China has not been, and is not expected to be, a significant player in the international market for barley malt. As a result of China's entry into the WTO, the tariff escalation between barley malt and malting barley decreased but Chinese maltsters, especially those in the coast areas, are expected to maintain their advantage in production costs. This is also consistent with the trend that world capacity for the production of barley malt has been shifting away from the exporting countries of malting barley to the importing countries.

Export Competition

Figure 5 shows the market share by major exporter in the Chinese malting barley market. Between 1980 and 1994, the Chinese malting barley import market was serviced by Australia (73%) and Canada (27%). Australian exports rose from 130 Kt in 1980 to about 1.1 M in 1994, while Canadian exports increased from zero to 307 Kt annually.

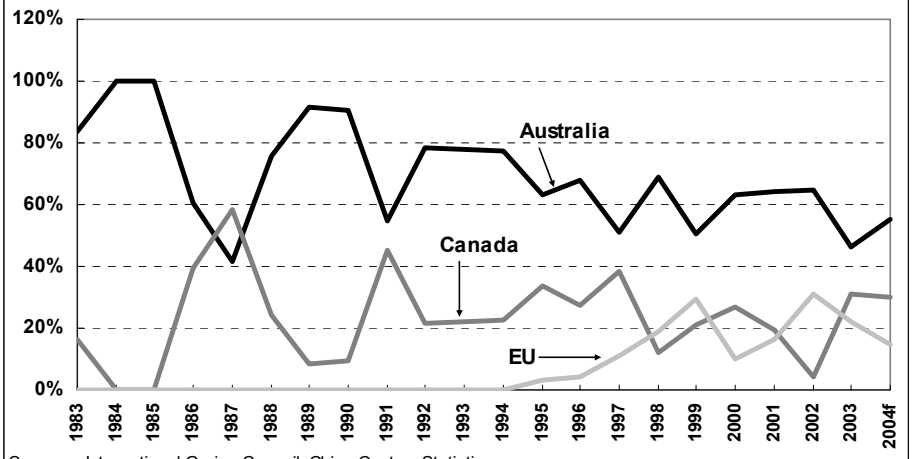
The EU joined the competition in 1995 and after three years of robust growth, the EU has captured about 20% of the Chinese market, or about 400 Kt annually, since 1998.

The market share for Australia dropped from 75% over 1980-1994 to 60% over 1998-2004 and the market share for Canada decreased from 27% to 20% over the same periods. In addition to competition, much of the drop for Canada is due to the 2002 drought which sharply reduced malting-quality barley supplies and forced Canada out of the world malting barley market in later 2002-03, as seen in Figure 6. Despite decreasing market shares, Canada's export volume increased from an annul average of 190 Kt over 1988-1992 to 390 Kt over 1998-2004, while annual volume for Australia increased from 640 Kt to1.26 Mt.

Freight Costs

Australia has a freight advantage over Canada in the Chinese malting barley market because of its proximity to China. In addition, inland transportation costs are also significantly lower for Australia since the production regions are closer to export ports. It is generally believed that the surge in ocean freight rates has had a larger impact on grain shipments from Canada than from Australia, due to longer distance. However, Australia is one of the major exporters of industrial materials to China. The northbound routes from Australia to China are among the busiest and ports are very congested. Therefore, freight rates for these routes could increase more than those for the North Pacific routes from Vancouver to Chinese ports.

Figure 5. China: Import Market Shares of Malting Barley



Sources: International Grains Council, China Custom Statistics.
f: Agriculture and Agri-Food Canada forecast.

Outlook: 2005 to 2010

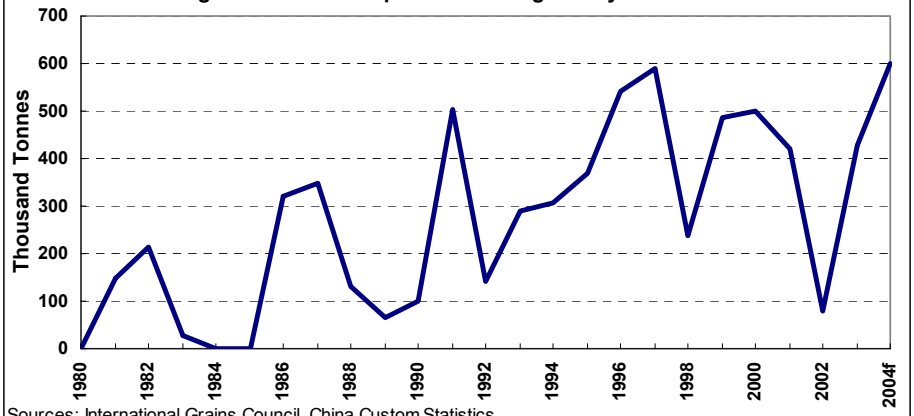
Beer production in China is forecast by AAFC to increase by 4-5% annually over the medium term, from 291 Mhl in 2004 to 300 Mhl by 2005 and 380 Mhl by 2010. The population is projected by the Chinese government to grow at 0.7–0.8%, from 1.32 billion in 2004 to 1.38 billion by 2010. China's urban: rural population ratio is projected to change from about 35:65 in 2000 to 45:55 by 2010, which means another 160 million people living in Chinese cities and towns. Per capita beer consumption is projected to rise by a further 27%, to 28 L by 2010.

Malting barley demand is forecast to increase from 3.3 Mt in 2004-05 to 3.5 Mt by 2005-06 and 4.8 Mt by 2010-11. The conversion rate of barley malt to beer is expected to recover gradually, from 9 Kg/Hl in 2004-05 to 10 Kg/Hl in 2010-11, as the situation of supply shortage and high prices for malting barley improves and production of premium beer grows faster.

Domestic production of malting barley is forecast to grow by 10% annually, driven mainly by the implementation of the DFCMBP. Production in 2005-06 is forecast to increase to 1.5 Mt, from 1.3 Mt in 2004-05, as area seeded to malting barley in China increases in response to high prices in 2004-05. Production of malting barley is forecast to grow to 2.4 Mt by 2010-11. The share of domestic supply is expected to increase from about 40% of total requirements in 2004-05 to 50% by 2010-11, a substantial increase but still short of the DFCMBP target for 2008. With increased domestic production and improved crop quality, the use of low quality barley in the malting process is expected to decrease.

China's malting barley imports in 2005-06 are forecast to be virtually unchanged from 2004-05 at 2.0 Mt. The continued weakness in the Chinese currency and the high ocean freight rates will make the landed price for imported malting barley

Figure 6. China: Imports of Malting Barley from Canada



Sources: International Grains Council, China Custom Statistics.
f: Agriculture and Agri-Food Canada forecast.

relatively high, although world prices are expected to decrease.

Malting barley imports are projected to reach 2.4 Mt by 2010-11, 20% higher than in 2004-05. Consolidation, foreign investment and product upgrading in the brewing and malting industry are expected to lead to strong import demand for high quality malting barley. Imported malting barley will continue to dominate the eastern and southern Chinese markets, due to its advantage in price and quality. High costs and capacity constraints in China's transportation and handling system will limit the competitiveness of domestic supplies in these markets.

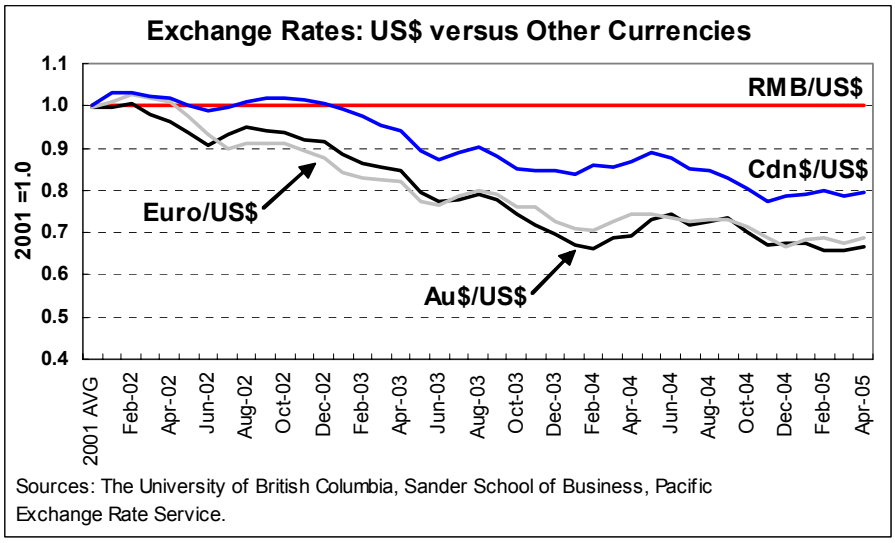
Canada is forecast to export about 0.5 Mt of malting barley into the Chinese market in 2005-06, slightly less than 2004-05 as Australia's barley production increases from the weather-related low of 2004-05. Canadian exports are projected to increase throughout the medium term. By 2010-11, Canada is projected to export 0.7 Mt of malting barley to China, about 30% of the import market.

For more information please contact:
Joe Wang, Coarse Grains Analyst
Phone: (204) 983-8461
E-mail: wangjz@agr.gc.ca

Exchange Rates and Malting Barley Prices

The value of the Chinese currency is tied with the US dollar and the exchange rate has been around US$1=8.28 RMB or Yuan since September 1999. For other currencies, such as the Canadian dollar, the exchange rates in RMB will float in relation to their respective values versus the U.S. dollar.

The currencies for the major exporters in the world malting barley market have appreciated substantially against the US dollar and, thus, the Chinese RMB since 2001. The values of the Euro and the Australian dollar have increased by more than 30%, while the value of the Canadian dollar has increased by 20%.



Sources: The University of British Columbia, Sander School of Business, Pacific Exchange Rate Service.

The effect of changes in foreign exchange rates is usually shared by importers and exporters depending on the structure of the market and the capacity for players to respond. On one extreme, if exporters have the market power to increase export prices (in US dollar) the full percentage as the US dollar depreciates, there could be little impact on them and importers will take the full burden. On the other extreme, if importers have the full market power, exporters are not capable of changing export prices, then exporters have to take the full effect. Generally the effect is somewhere between the two extreme cases. As a result of the weakness of the RMB, imported malting barley becomes more expensive in China while returns for Canadian producers are lower.

China's foreign exchange system has been undergoing pressure to change by some of its trading partners, particularly the US. Although the Chinese government has been preparing to move in this direction, it is expected that priority will be given to China's own interests, with respect to the timing and the magnitude of the change. Given the macroeconomic situation in China and the inflow of global speculative capital, the reform is expected to be cautious and gradual.

Electronic version available at www.agr.gc.ca/mad-dam/

ISSN 1207-621X
AAFC No. 2081/E

Bi-weekly Bulletin is published by the:
Market Analysis Division,
Marketing Policy Directorate,
Strategic Policy Branch,
Agriculture and Agri-Food Canada.
500-303 Main Street
Winnipeg, Manitoba, Canada R3C 3G7
Telephone: (204) 983-8473c
Fax: (204) 983-5524

Director: Maggie Liu
Chief: Fred Oleson

To receive a free e-mail subscription to Bi-weekly Bulletin, please send your request to bulletin@agr.gc.ca.

Issued also in French under title:
Le Bulletin bimensuel
ISSN 1207-6228
AAFC No. 2081/F

While the Market Analysis Division assumes responsibility for all information contained in this bulletin, we wish to gratefully acknowledge input from the following: AAFC/MISB, Canadian Wheat Board, Canadian Malting Barley Technical Centre, and Canadian Embassy in Beijing, China.