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The word "Outlook" in a stylized, italicized font, with the letter "O" being significantly larger and overlapping the "u". The text is white and set against a dark blue background.

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China's Wheat Economy: Current Trends and Prospects for Imports

Bryan Lohmar

Abstract

The last 10 years have been a period of volatility for wheat production and trade in China. Production reached record levels in 1997, then fell by over 30 million metric tons (mmt) by 2003. Imports reached a record level of 12.3 mmt in 1995, then dropped off to less than 1 mmt per year since 1997. This report provides an overview of current wheat production and consumption trends in China, including factors that contributed to slumping imports in recent years. It projects that China will regain its status as a net wheat importer, with imports rising sharply in the next year or two but then falling back to modest levels after that.

Keywords: China, wheat, international trade, imports, exports, production, consumption.

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Introduction

In the early and mid-1990s, China's wheat imports rose steadily to levels that represented over 10 percent of the international wheat market in 1995. But, also in 1995, China embarked on a self-sufficiency campaign to boost wheat production, which increased by over 20 mmt between 1995 and 1997, driving down the demand for imports. China's wheat import levels, however, have remained low despite declining domestic wheat production, which in 2002 was over 30 mmt lower than the peak year of 1997. Indeed, in 2002, China was a net wheat exporter even though domestic production was at its lowest level since the late 1980s.

The reasons behind China's lack of significant wheat imports in the face of falling production are varied, and understanding them will help analysts ascertain China's potential to resume wheat imports. This report

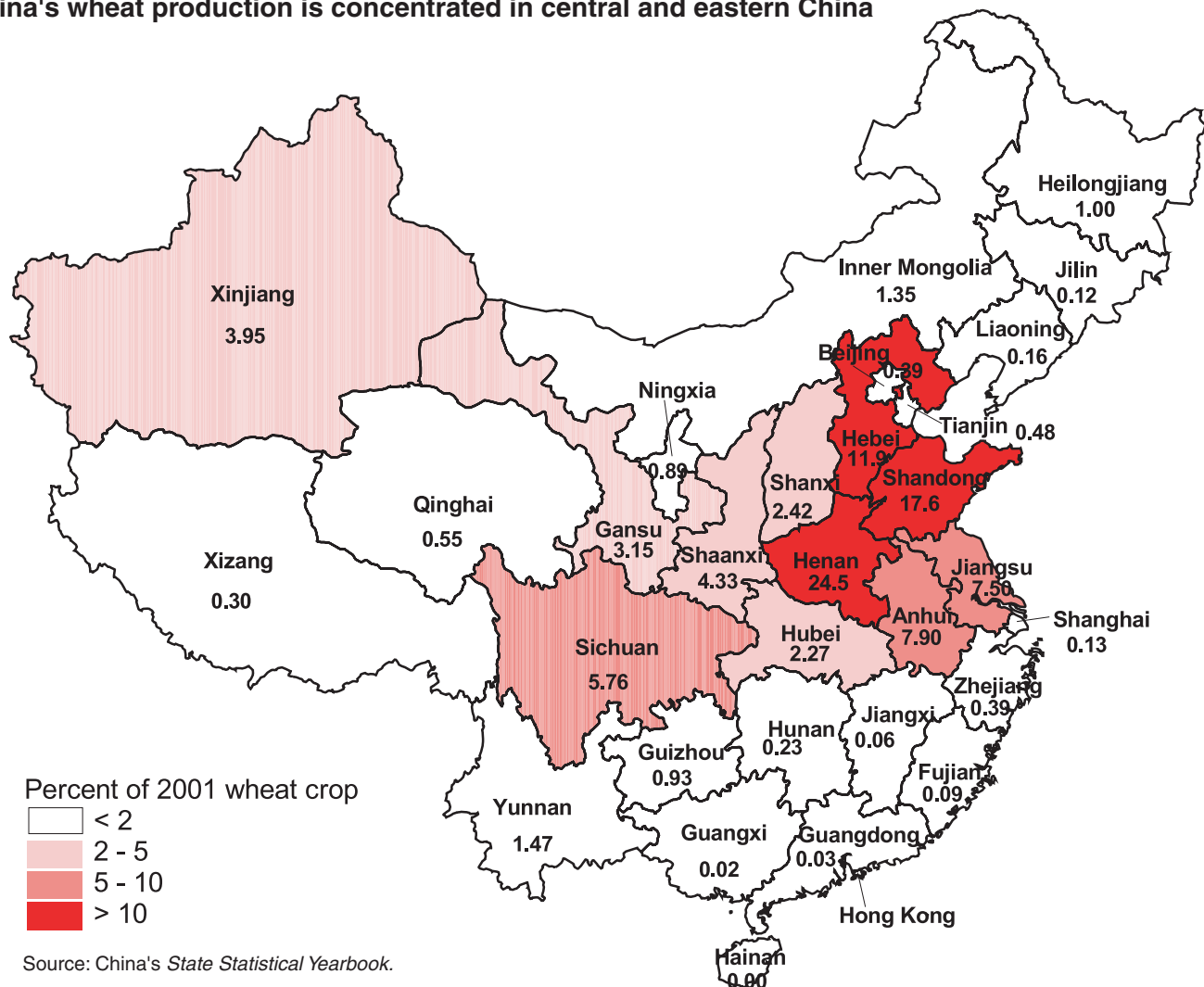
provides an overview of current wheat production and consumption trends in China, including the factors that contributed to slumping imports in recent years. It projects that China will regain its status as a net wheat importer, and that imports may spike to over 10 mmt in 2004 or 2005, but that imports will fall back to modest levels, around 5 mmt per year, after that.

Wheat Production Has Declined Significantly

China is the world's largest wheat-producing country, though production has fallen significantly since peaking in 1997. Most of China's wheat production comes from the North China Plain (fig. 1). The three provinces that constitute most of this area, Henan, Shandong, and Hebei, collectively account for over 50 percent of China's wheat output.

Figure 1

China's wheat production is concentrated in central and eastern China



China's 2003 wheat production dropped below the level of production in 2002, continuing a downward trend that began in the mid-1990s.¹ Declining wheat production is primarily due to reductions in area sown to wheat rather than to declining wheat yields. For example, in the period 1997-2002, wheat production fell by 26.2 percent and sown area fell by 20.5 percent (fig. 2). Wheat yields, however, fell by only 7.2 percent over the period (fig. 3). This trend stands in contrast to the period before 1997, when sown area stayed at around 30 million hectares and production increased due to rising yields.

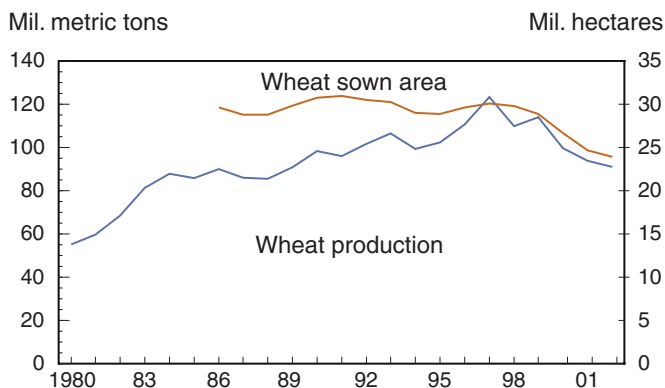
Decreasing sown area is typically caused by farmers switching unproductive, low-yielding areas to other crops, which should cause average yields to rise. In China, however, some of the decline in sown area can be attributed to policies that discourage production of low-quality wheat, which is relatively high yielding, so yields have not risen and have even declined slightly. Farmers in China are clearly switching out of wheat, but much of this activity involves moving productive land from wheat to high-value horticultural crops. Water shortages and other environmental setbacks in major wheat-producing areas may also be playing a role in falling sown area.

According to U.S. Department of Agriculture's *World Agricultural Supply and Demand Estimates* (USDA-WASDE May 12, 2004), China's wheat production in marketing year 2003/04 (86 mmt) dropped below the already low level in 2002/03 (90.3 mmt). The USDA-WASDE estimate puts China's wheat production at a level not seen since 1988, when production was 85.4 mmt according to China's National Bureau of Statistics. Preliminary estimates indicate that wheat production will fall again in the 2004/05 marketing year, with the USDA figure currently at 84 mmt.

Low wheat prices are also causing farmers to move out of wheat and into other crops. According to China's *Rural Statistical Yearbook*, wheat has been the least profitable of all the major crops produced in China over the last several years. Profits from wheat production are certainly below those of horticultural crop production, which has greatly expanded in China over the last few years. In addition, the introduction of geneti-

Figure 2

Falling wheat production is driven by falling sown area in recent years

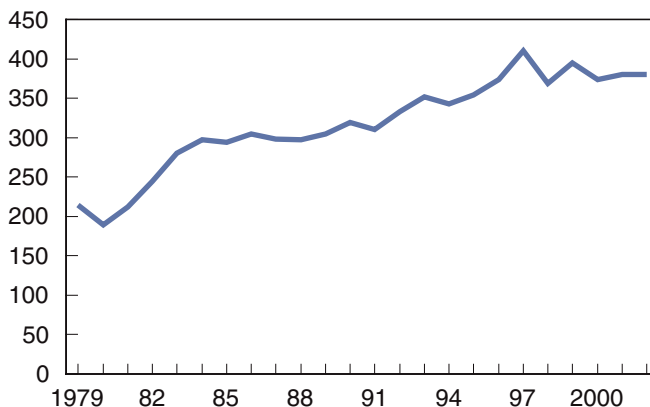


Source: Production figures are from USDA-WASDE (1994-2002) and from China's *State Statistical Yearbook*, National Bureau of Statistics (1979-1994). Sown area figures are from the *State Statistical Yearbook*.

Figure 3

Wheat yields peaked in 1997

Hundred kilograms per hectare



Source: *State Statistical Yearbook*, National Bureau of Statistics, various years.

cally modified (Bt) cotton in the productive North China Plain, where bollworm infestation devastated cotton production in the 1990s, has made cotton production very lucrative and caused cotton area to expand rapidly in wheat-producing areas. High cotton prices and low wheat prices have induced many farmers to move into spring-sown cotton instead of double cropping wheat and cotton and using a short-season (summer-sown) variety of cotton.

Policy changes, market development, and increasing commercialization in rural areas also drove down wheat production in China. For years, farmers cultivated wheat to provide for their own consumption and to deliver to the state to fulfill their grain quota delivery obligations.

¹Wheat production rose slightly between 1998 and 1999, but production in 1998 was well below the record production in 1997, and production has fallen every year since 1999.

The policy of assigning households a grain quota delivery obligation came after de-collectivization in the late 1970s and early 1980s, when farm households received plots of land to farm in exchange for a grain quota delivery, a sort of implicit tax. Many provinces, however, have recently abandoned the grain quota delivery policy and instead accept taxes and fees in cash. Without a grain quota delivery obligation, households have more opportunity to move into commercial crops rather than wheat. In addition, with nonfarm income being the fastest growing component of rural incomes, some households feel they have sufficient sources of cash income to move from subsistence agriculture into more commercialized operations producing cash crops for domestic and international markets.

Depleted resources, particularly water, have also contributed to lower levels of wheat production. Most of China's wheat crop relies on supplemental irrigation because rainfall in wheat-growing regions, particularly in the North China Plain, is concentrated in the summer months, after the wheat harvest. But both ground and surface water sources are showing signs of severe over-exploitation (Lohmar et al., 2003). Groundwater levels are falling rapidly, over 3 meters a year in some places in rural Hebei Province, China's third largest wheat-producing province. Shandong Province, China's second largest wheat-producing province, is at the downstream end of the Yellow River, a critical water source for irrigation. The Yellow River sometimes dries up before reaching the ocean during peak irrigation periods, a problem that worsened throughout the 1990s (but improved somewhat after 1999 due to conservation measures). While policies and institutional reforms are in place to improve water management and promote conservation, it is not known if these policies will have their intended effect. Irrigated wheat production brings very low returns to water; thus, it is likely that the practice will, at the very least, not expand and may well decline if policy reforms effectively induce farmers to allocate water in accordance with its value in other uses.

In addition to instituting policies to promote water conservation, China has also embarked on an ambitious program to promote soil conservation and forestation, some of which affects wheat production. The "Grain for Green" program, established in 1999, compensates farmers who convert cropland into either forest land or grassland, and specifically targets sloped land to prevent soil erosion as well as land vulnerable to desertification (Uchida, Xu, and Rozelle, 2004). In

its first 2 years, a total of 1.2 million hectares of cropland was converted into forests and pasture throughout China, and plans call for over 13 million hectares by 2010, 4.4 million hectares of which will be sloped land. Reducing soil erosion in the Yellow River Basin, a major wheat-producing area, is a primary focus of the program.

As these trends are projected to continue, China's wheat production will likely remain at or below 90 mmt for the foreseeable future. China will continue to expand horticultural production, especially for export markets. China's wheat marketing institutions are becoming more market oriented and are moving beyond government intervention, and farmers are increasingly making decisions based on commercial considerations. In addition, the effects of recently implemented land and water conservation policies will likely become more evident in the future. Research and development focusing on high-yielding wheat varieties may spur yield growth to return to pre-1997 levels, but current research tends to focus instead on such issues as drought-tolerant varieties and high-quality varieties demanded by the market.

Where Are the Imports?

As with wheat production, China's wheat consumption has fallen over the last several years but at a much slower rate. USDA estimates China's total 2003/04 wheat consumption (disappearance) at 104.5 mmt, down slightly from 105.2 mmt in 2002/03, and is projected to fall to 102 mmt in 2004/05 (USDA-WASDE, May 12, 2004). Though its wheat consumption level was higher than its production level, China did not import significant amounts of wheat in 2003. By the end of 2003, however, China began to import wheat, and the country has committed to importing around 7 mmt at the time of this report. China's sluggish import response in recent years grew out of the belief that wheat stocks were still high enough to meet most of the gap between production and consumption.

China's grain stock figures are a tightly guarded state secret, and it is unclear whether officials in China truly know the real stock levels. Outside estimates of China's grain stocks vary widely, and there is no way to confirm them. According to USDA estimates, China will have 42.4 mmt in wheat stocks at the beginning of the 2004/05 marketing year (which begins in July and ends in June), and these stocks are expected to fall to 31.4 mmt by the end of the marketing year (USDA-WASDE, May 12, 2004). China lacks industry groups,

such as grain traders, millers, or feedlot operators, which are independent from the government and could carry out surveys to verify stock estimates. Rising wheat prices in China since August of 2003, however, provide some evidence that stocks are tightening.

The lack of data on disappearance makes it difficult to estimate China's wheat stocks. Disappearance comprises not only wheat consumed as food but also wheat consumed as feed and wheat lost in the marketing system and milling process. China publishes production data, and customs data include information on imports and exports, but information on domestic wheat disappearance is not published. Thus, researchers must estimate wheat disappearance, and these estimates are complicated by recent trends and developments in China: income growth, rural commercialization, and urbanization are effecting a shift away from the consumption of wheat as food in China, the largest component of total disappearance. In addition, the nonconsumption share of total wheat disappearance also has likely fallen over the past decade, as marketing channels and millers have become more commercialized and efficient.

Per capita consumption of wheat in China is falling as consumers increasingly diversify their diets to include more vegetables, fruits, and meats, and less staple grains. This shift is most pronounced in urban areas, where consumers have higher incomes, better access to markets, and higher ownership rates of domestic appliances (such as refrigerators and microwave ovens) that can be used to store and cook perishable and processed foods. Rural consumers are also diversifying their diets as incomes grow and markets develop. Rural-to-urban migrants from traditional wheat-producing areas also tend to reduce consumption of wheat products (a staple in northern China) and consume more rice.

China does not publish national-level statistics of per capita wheat consumption. China publishes data on per capita wheat consumption for rural areas but not for urban areas. According to the *2002 Rural Household Survey Yearbook*, annual rural per capita consumption of wheat is 78 kg. ERS estimates urban consumption to be about one-third of that amount, or

26 kg.² As reported by the *2002 State Statistical Yearbook* (National Bureau of Statistics), China's

rural population is 795.6 million and its urban population is 480.6 million. Based on these figures, total human consumption of wheat in China is estimated at 74.6 mmt. Acknowledging rural-urban migration (rural residents living, undocumented, in urban areas) lowers this estimate. Some studies estimate rural-urban migration to be as high as 100 million, which lowers the estimate of China's total wheat consumption to 66.2 mmt. It is also not clear if these per capita consumption estimates account for milling losses. If not, and assuming a milling ratio of 0.79, the 66.2-74.6 mmt range increases to 83.7-94.4 mmt.

In addition to the lack of reliable statistics on wheat consumption in China, little information exists on the amount of wheat lost in China's marketing system. Over the last decade, China's wheat marketing system has undergone significant changes that have likely resulted in far less wheat being wasted. Reform of the massive and inefficient system of state-owned grain bureaus began in the early 1990s and has accelerated in recent years. In the early stages of grain marketing reform, China's grain bureaus were given the freedom to trade their own grain stocks to generate earnings to supplement their income.

Over time, the grain bureaus and grain stations became increasingly autonomous and commercialized. A growing army of private traders now competes with the grain bureaus. These traders only need to make \$1-\$2 a day, so they operate on very small margins. With an eye on profits, today's traders have more incentive to reduce the amount of grain lost in transit than the state-grain bureaus that monopolized grain marketing prior to reform.

Wheat, however, is the least marketized commodity in China. Many of the millers are also owned by the grain bureaus, and fewer private traders handle wheat than handle other commodities. Even the state-owned millers are becoming more efficient as they compete with private milling enterprises buying from private traders.

²In terms of total grain, urban per capita consumption is about one-third of rural per capita consumption. We assume the ratio is the same for wheat as it is for all grains. It is interesting to note the large regional differences in China's wheat consumption. Rural per capita wheat consumption in the major wheat-growing provinces of Henan, Shandong, and Hebei averages over 170 kg, representing over 80 percent of total grain consumption in those provinces, while it is below 2 kg in the southern rice-growing provinces of Hunan, Guangdong, and Guangxi.

Quality Campaign Also Affecting Imports

Not only are Chinese consumers eating less wheat, but they are also choosing to eat wheat that has different quality characteristics than in the past. Traditional wheat products in China are noodles, dumplings, and a steamed bread called *mantou*. These products generally require wheat with medium levels of gluten. Increasing popularity of processed consumer products and some Western foods is raising demand for wheat of different qualities, primarily for food processing industries. Many Western breads are made with wheat with higher-than-average gluten levels, while cookies, crackers, and cakes are often made with wheat with lower-than-average gluten levels. To improve the quality of their products, processors increasingly seek out wheat with specific quality characteristics, such as protein content (either high or low) or falling number, an indication of the gluten level.

Until recently, farmers had little incentive to produce the wheat demanded by the growing processing industry. Policies in the 1990s encouraged wheat production with little emphasis on quality. State-owned grain stations did not pay farmers a premium for wheat with high gluten levels, although, in general, high-protein varieties of wheat, which are generally high gluten, have lower yields. In addition, the grain system did not have the capacity to separate grain of different qualities in the marketing chain. These factors, coupled with the fact that farmers produced most of their grain crop for at-home consumption rather than to meet the demands of food processors, caused farmers to produce wheat with only average or low levels of gluten.

In 1999, policymakers embarked on a campaign to increase the amount of domestically produced high-quality wheat. The campaign was initiated as a strategy to increase production of “special wheat,” and included designating special wheat production areas and providing subsidized seeds and other inputs to increase wheat quality, primarily for high-gluten wheat. In addition, farmers producing high-quality wheat received price premiums, but the premiums were bureaucratically determined and did not always compensate farmers for yield losses. Despite these shortcomings, the policies effectively expanded the area sown to higher quality wheat. By 2002, farmers planted over 5 million hectares of special wheat, roughly 20 percent of the area sown to wheat. The production from this area supplied most of China’s 2003 demand for quality wheat.

While China has achieved impressive results in producing high-quality wheat in just a few years, the policies used to promote such wheat are not always market oriented and may, in fact, serve to overshoot demand for wheat with certain quality characteristics. For example, high-quality wheat seeds could represent varieties that have specific protein contents, both low and high. But the high-quality wheat in China generally refers only to high-gluten wheat (high falling number); low-gluten wheat is not as great a concern for policymakers. In addition, these specific varieties are promoted by village leaders at the behest of higher level officials and are not adopted by farmers as part of a strategy to increase revenues. Villages may even restrict farmers from using any seeds other than the high-quality seeds they are promoting. Since most wheat in China today is harvested by combines, often contracted by the village, individual farm households must grow the same varieties to ensure consistency.

Wheat quality may play an important role in future wheat demand in China; however, it is difficult to assess the implications for wheat imports. In the late 1990s and early 2000s, the demand for high-protein and low-protein varieties not available domestically generated a demand for imports that was largely unmet due to import restrictions. The current “special wheat” campaign has increased the domestic supply of various wheat quality types, but because policies driving the campaign are nonmarket based, domestic supply could overshoot domestic demand. Under this scenario, future import demand may shift to wheat with medium protein and other quality characteristics. China may even export high-quality wheat and import low-quality wheat in the future.

As is often the case in China, the initial nonmarket mechanisms employed to improve wheat quality will likely evolve into more market-oriented practices, but the process may take 5 years or more. Grain millers are increasingly employing separation practices and are paying farmers according to the demand for the particular quality of wheat delivered. Millers are increasingly contracting with growers for wheat of a specific quality. These types of market-based practices will almost certainly spread so that, ultimately, a functioning domestic market will emerge for wheat of specific quality types. Such a market, however, with all the supporting separation and quality-measuring institutions, will take several years to develop.

Trade Policies Will Continue To Liberalize

The extent to which China imports wheat in the next few years also depends on the workings of the trade regime established as part of China's WTO-accession commitments. For wheat, China's longstanding policy of a state-owned trading enterprise (STE) receiving a monopoly on international trade, administered by China's State Council via a nontransparent quota system, has given way to a tariff-rate quota (TRQ) system that allows for trade by non-STE (Lohmar et al., 2002). Under the TRQ system, a certain amount of wheat (9.6 mmt in 2004) can be imported under a low tariff (1 percent), with any wheat imported beyond this amount subject to a prohibitively high tariff (65 percent in 2004).

In addition, China committed to allocate 10 percent of the wheat quota to non-STE and re-allocate any of the STE portion of the quota that is unused by the end of September to non-STE to import before the end of the year. This system is intended to induce the STEs to operate like commercial enterprises: If China's domestic prices are above international prices, STEs can either earn income by importing wheat or let the opportunity go to non-STE.

Several issues regarding TRQ administration came to light in 2002 and 2003, the first 2 years in which China's wheat trade was managed under the new system. The allocation of quotas was bogged down by delays and official import authorization requirements that were not part of the accession agreement. In addition, a portion of the total TRQ was reserved exclusively for processing and re-export, and policies to verify the re-exports were unclear. Many individual quotas were ultimately allocated in noncommercially viable quantities or to users far from the coastal areas where most traditional importers are located. The United States and China are in ongoing negotiations to resolve these and other issues regarding TRQ administration, the results of which could have a significant impact on future wheat imports, particularly if prices make it profitable to import wheat.

Other trade policy issues may also affect China's wheat imports in the future. China levies a 13-percent value-added tax (VAT) on wheat but in practice appears to exempt much of its domestically produced wheat. Thus, the 13-percent VAT, plus the 1-percent in-quota tariff on wheat, effectively raises the overall duty to 14 percent. While this tax does not violate WTO commitments, many of China's trade partners

are considering addressing this issue in future negotiations.

China also committed to levels of TCK smut that are scientifically sound, but in the first 2 years of WTO membership did not always comply with the agreed-upon standards. Resolving these issues will increase U.S. access to China's market. Since TCK smut affects mostly white wheat, which is grown primarily in the Pacific Northwest, resolving this issue will increase export opportunities for farmers in this region.

Conclusions

The 1990s were a period of volatility for wheat production and trade in China. Wheat production ranged from a low of 99.3 mmt in 1994 to a high of 123.3 mmt in 1997, before beginning its decent to only 86 mmt in 2003. Trade also fluctuated, rising from 4.1 mmt in 1992 to over 12.3 mmt in 1995, after which it bottomed out. These wide swings in production and trade are believed to be mostly policy driven, primarily to allay food self-sufficiency concerns arising from agricultural economist Lester Brown's prediction that China would become reliant on massive food imports (Brown, 1995).

Though 2004 marks the 10-year anniversary of Lester Brown's book, China remains solidly self-sufficient in food production, including, in recent years, wheat production. However, China has paid a high price for promoting wheat production as a response to concerns of becoming dependent on foreign sources of food. Missed opportunities to move to more lucrative crops, and the storage costs for the large production surpluses, are major components of the price China has paid for self-sufficiency policies.

Given this price, it is likely that policymakers in China will allow for more rational policies than promoting grain self-sufficiency in the rural sector, especially after moves to further integrate into the world economy such as accession to WTO. In other words, the government will be less likely to try to drive production decisions and will instead let market forces determine production and trade. The effect of this policy turnaround should bring more stability to wheat production in China.

Still, China will continue to be a major producer and consumer of wheat, and imports will most likely play only a small role in the wheat economy over the next few years. Per capita wheat consumption is falling and

will continue to fall, and overall wheat consumption will also likely decline. Annual production levels are expected to stay at, or less than, 90 mmt, which may nearly meet China's total wheat demand, particularly if current estimates of China's wheat disappearance overshoot actual disappearance. Imports will most likely provide access to wheat of certain quality types not available domestically. If, however, consumption estimates are accurate, and production falls significantly below consumption, China will need to import wheat to make up the difference.

Under these circumstances, China could potentially begin to import wheat in the next few years (it has already begun importing in 2004), but import levels will remain low on average. Given the secrecy of China's stock levels, and the still somewhat cumbersome functioning of China's wheat market, wheat imports could spike to levels as high as 10 mmt in 2004 or 2005. If prices rise enough to make imports commercially viable, however, domestic production will also likely increase enough to bring imports back to around the 5-mmt range shortly thereafter.

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