TILAPIA PRODUCTION IN CHINA
Huge Output Balanced by Huge Consumption

Summary:

With almost half the global production and a quarter of global consumption, China is a critical player in the tilapia industry. In recent years, the quality and variety of Chinese tilapia products have improved, and state-of-the-art processing plants now handle the huge volume of product. New products and packaging are promoting additional international demand.

China's new processing plants incorporate state-of-the-art design, equipment, sanitation, and packaging.

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The domestication and production of tilapia took a quantum leap forward in China in recent years (Figure 1). Farmed production in 2005 reached 978,000 mt, with fish grown in virtually every province. Behind only carp, tilapia now represent the second most popular species group of farmed fish in China.

The southern province of Guangdong leads with almost half of all production. Much of its fish and related products are exported. The neighboring provinces of Hainan, Fujian, and Guangxi are also major producers.

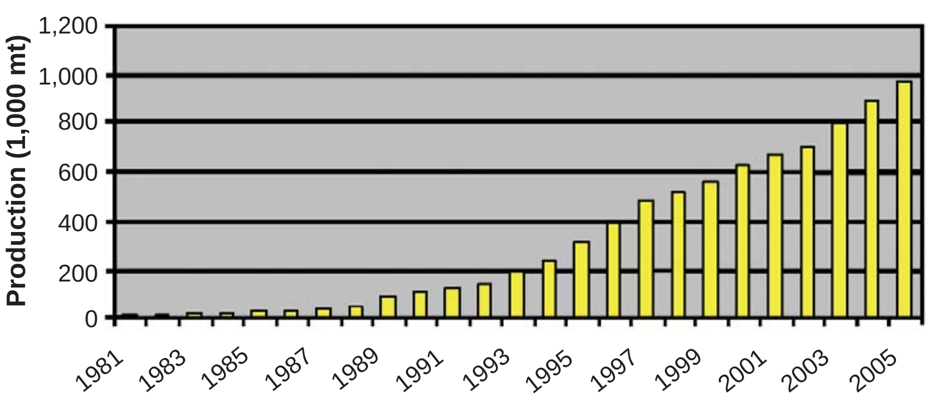

Figure 1. *Annual production of tilapia in China.*

Top Producer, Top Market

In addition to being the world's biggest producer of tilapia, China is also the world's biggest market, with more than half of the production sold domestically. Most fish for the domestic markets are sold live to local restaurants. However, as the standard of living increases in China and additional women enter the workforce, value-added, processed fish products including fillets are starting to find market demand in grocery stores.

Within China, there is also an effort to increase tilapia demand for another reason. When the highest-quality products are exported and lower-quality, smaller fish are sold in domestic markets, the industry can be at risk for accusations of dumping.

The rapid improvement in the Chinese standard of living has tempered this situation. Domestic tilapia prices increased from 12 RMB (U.S. $1.50)/kg to 15 RMB ($1.90)/kg from 2004 to mid-2006. This price approaches the U.S. $2.17/kg average price paid for whole frozen tilapia in 2005.

Export Products

In recent years, China has earned a reputation as a producer of low-cost frozen fillets for export. These fillets are exported to North American and European markets, but the United States is by far the biggest export market for Chinese tilapia (Table 1). However, this is a recent phenomenon.

In 1998, whole frozen tilapia accounted for more than 90% of China's tilapia exports. While the volume of whole frozen fish exports has since increased 100-fold, the volume of frozen fillets increased 1,000-fold. Of course, the fillet volume represents three times as much in live fish weight.

In total, the live fish harvested for export represent around 45% of the national production. Based on the export volume of the first five months of 2006, Chinese exports to the U.S. for 2006 are expected to be around 95,000 mt.

Intensification, however, has been steady. More ponds now utilize mechanical aeration. Most fish are fed pelleted diets, and fish are sampled for off-flavors while still in ponds or cages. Depuration is becoming more common before harvest, and transportation to processing plants has also improved. Stake bed trucks with canvas sides, emptied by hand, have been replaced by fish haul tanks with aerators and chutes to quickly transfer fish without direct handling.

Table 1. Annual exports of tilapia products (mt) from China to the United States.

Product	1998	1999	2000	2001	2002	2003	2004	2005	2006 (est.)
Fresh fillets	<1	38	59	191	844	856	<1	<1	<1
Frozen fillets	38	749	1,810	2,529	6,026	15,857	28,086	44,121	54,932
Whole frozen	435	4,940	11,622	10,870	19,615	23,762	31,781	30,884	39,530

Fast Development

The tilapia industry in China is also evolving rapidly. The quality and variety of products offered to markets has improved, as well as the packaging. At the same time, we are beginning to see more privatization in all aspects of the industry.

The old model of Chinese tilapia production started with large-scale, state-supported hatcheries that produced hundreds of millions of fry and fingerlings yearly. These were distributed to hundreds of thousands of small farmers, who grew the tilapia in ponds, cages, and rice paddies.

At harvest, the fish were collected in trucks and transported to processing plants. The processors were a mix of old and new plants, some converted from other food products and others designed specifically for tilapia processing. Much of the product was shipped to Taiwan and repackaged there for eventual export.

Hatcheries

In 2006, changes are affecting all aspects of China's tilapia industry. Several private hatcheries have opened and some state hatcheries are being converted to cooperatives. Most hatcheries in China use a hybridization of GIFT strains of Nile tilapia, *Oreochromis niloticus*, crossed with blue tilapia, *O. aureus*. This cross typically yields a high percentage of male fry.

Farms

Small farms still make up the vast majority of producers. Rice paddies, farm ponds, and cages in reservoirs and rivers account for virtually all tilapia production. Vertically integrated farms with multiple ponds or recirculation systems are rare, but are being encouraged.

Most tilapia producers in China are small operations, but their facilities now incorporate more intensive culture using aeration and commercial feeds.

Although China is known as a source for low-cost frozen fillets, new product forms are fueling additional demand for the country's tilapia.

Processing Plants

The greatest improvements have been in the processing plants. Government support in the form of low-cost land and loans helped spur the industry, but investment capital from Taiwan and foreign partnerships is supporting the newest plants. These plants meet HACCP and ISO standards, and incorporate state-of-the-art design, equipment, sanitation, and packaging.

Industry Promotion

Even the government promotion arm has evolved. The China Aquatic Products Processing and Marketing Association (CAPPMA) is still a department within the Ministry of Agriculture. However, in the early days, CAPPMA represented the entire industry and promoted tilapia in a generic manner.

Today the association develops contacts on a global basis, represents the industry at seafood shows, posts a Web site, and promotes improved farming and processing techniques. CAPPMA encourages individual processing companies to develop their own marketing programs, brands, and labels. The association also supports a biannual tilapia technology and trade conference. This series has brought academic expertise together with production, processing, and marketing personnel from across China and the rest of the world.

New products and packaging are promoting additional demand on an international basis to match the increased domestic demand. Butterfly tilapia with bones removed and new resealable packages of individually quick-frozen fillets are driving restaurant and grocery sales, respectively.