

China's dairy sector: Current status, future prospects

This review summarizes the history of China's dairy industry, its major challenges and future trends.

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Editor's Note: This is the first of a two-part series on the dairy industry in China. The second segment, on dairy product consumption, will appear in the April issue of *Feedstuffs*.

CHINA'S dairy industry has made tremendous progress in the past 20 years. The industry includes dairy farming and dairy food manufacturing, which are the most dynamic parts of China's animal husbandry and food manufacturing industry and are becoming important parts of the Chinese economy.

Output value of dairy farming in 2015 was \$23.43 billion (\$1 U.S. = 6.7 RMB), which was 5.3% of the animal husbandry industry's output value and a 7.0% annual increase from 2010. Output value of dairy food manufacturing in 2015 was \$52.3 billion, which was 14.8% of the food manufacturing industry's output value and a 13.2% annual increase from 2000 (China Dairy Statistical Summary, 2015).

The government has placed a great emphasis on development of China's dairy industry, especially in areas of quality and supplementation of baby formula products. During the 2015 China Dairy D20 Summit, the Chinese government emphasized that dairy industry development should focus on quality and food safety. After melamine contamination incidents in 2008, China's dairy industry became a major public food safety concern. Since then, the industry has made major efforts to improve dairy product quality, which has led to many changes in the past seven years.

Currently, China's dairy industry is facing two major issues: (1) a lack of consumer satisfaction and confidence

in domestic dairy products, and (2) an immature mechanism for determining profitability, with the producer sector experiencing wide swings in profitability, which tends toward the low side.

China has been a member of the World Trade Organization since 2002. China's dairy industry is an important part of the global dairy market. While the industry has experienced rapid growth and has tremendous potential, there are still situations, challenges and problems. The objectives of this review are to: (1) summarize the history of China's dairy industry and (2) determine its major challenges and future trends.

Dairy production

In 2016, China had 14.3 million head of dairy cattle, including calves, heifers, dry cows and lactating cows. In a typical herd, half of cattle will be dry and lactating cows. Dairy cattle numbers have increased by a factor of three from 2000 to 2016 — an annual rate of 6.9% (Figure 1). Milk production was 37.12 million metric tons in 2016 and increased fourfold during the 2000-16 period, or an annualized increase of 9.1%.

Milk output from China comprised 4.7% of global milk production in 2016, ranking it in third place among milk-producing countries. Dairy product production was 29.93 mmt in 2016 and has increased 14.3-fold during 2000-16 — an annualized increase of 18.2%. The annualized increase in dairy product production is twice that of milk production. Most milk was produced in northern China, including Inner Mongolia, Heilongjiang, Hebei, Henan and Shandong provinces, making up 64.7% of national milk production (Figure 2).

With increasing importation of dairy products, the market changed from a tight supply situation to one of very adequate supply. Some regions of China had an oversupply of raw milk, which led to declining milk prices and greater culling rates in 2014. In the future, total dairy cattle numbers are expected to be stable or decrease slightly, but total milk production will continue to grow due to improvements in milk yield per cow.

Dairy farming

According to the China Dairy Industry Yearbook (2015), there are currently three predominant locations for milk production in China: cropping area (CA), suburban area (SA) and pasture. These cows are mostly Chinese Holsteins.

CA dairy farms are generally owned by a farm family, have a herd size between five and 200 dairy cattle and account for more than 60% of the total raw milk supply. Advantages of CA include inexpensive labor, land and feed resources. Raw milk produced from CA farms is collected by local or farm-owned raw milk stations. Agricultural products such as corn, corn stover, corn silage and soybeans can easily be obtained locally for feed for dairy cattle throughout the year.

SA dairy farming includes all sizes of commercial dairy farms and supply about 30% of the raw milk in China. They face the challenge of limited land resources, leading to environmental pollution issues such as excessive emissions of ammonia into the air and nitrogen and phosphorus into the water. An advantage of SA is a stable consumer market in large cities, but this category is restricted by high labor costs and limited land resources.

Pasture production can produce only around 10% of the raw milk supply and contributes less to total milk production in China due to long-term overgrazing of grasslands and limited land availability. However, cattle, milk and other dairy products are part of the lifestyle of ethnic minorities in remote areas, and the pasture segment will continue to be viable.

IN 2015, 42.3% of dairy cattle were on farms with more than 100 head, which are considered "dairy farms of scale" (China Dairy Assn., 2017). This was an increase of 32.5% from 2008. Nearly 24% of dairy cattle were in dairy farms with more than 1,000 cattle (Figure 3). It was predicted that the percentage of dairy cattle in farms of scale would be about 53.0%.

There were 8,600 dairy farms of scale in 2016, and the majority of them were equipped with automatic milking parlors, refrigerated bulk storage and total mixed ration mixers. The smaller dairy farms typically have no milking machines, but their cows were milked at milking stations equipped with milking machines and refrigerated bulk storage.

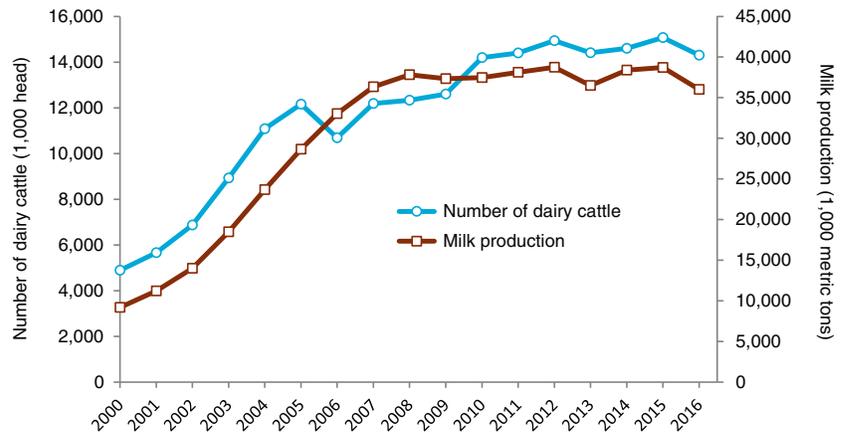
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The raw milk was transported to processors by tankers owned by the farm or factory.

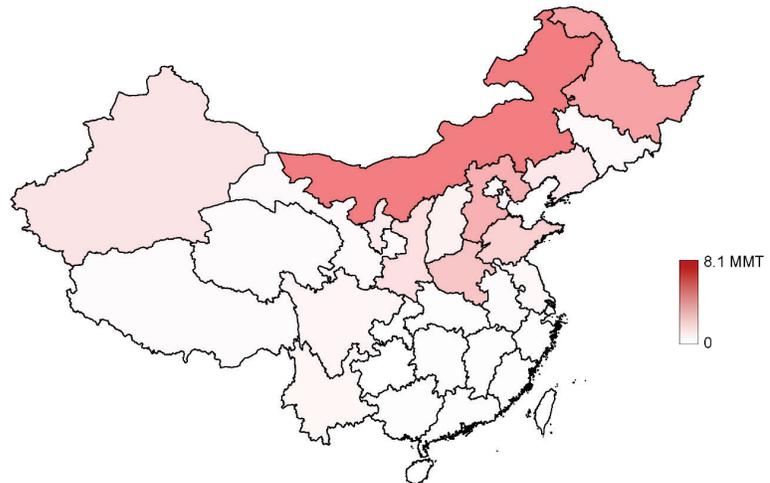
With the government announcing increasingly stricter animal waste recycling, dairy farms are importing and developing new machines or technologies to increase the utilization of manure and urine.

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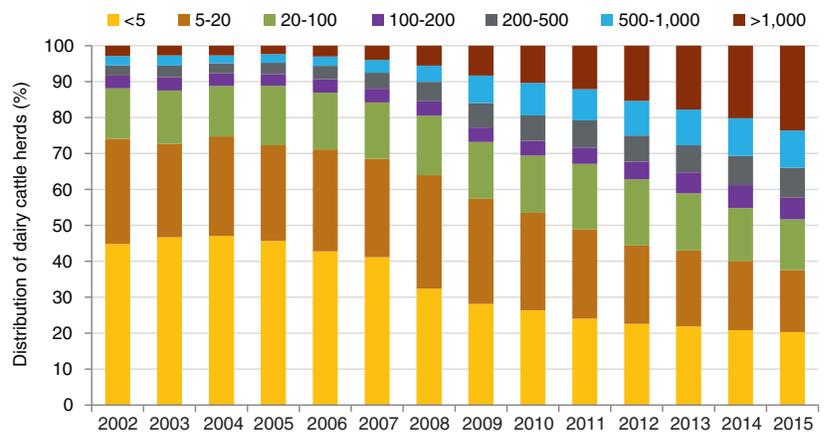
1. Changes in total dairy cattle numbers (including calves, heifers and all cows) and milk production in China from 2000 to 2016



2. Distribution of raw milk production in different provinces of China, 2016



3. Distribution of dairy cattle (calves, heifers, dry and lactating cows) on farms of different scale in China



Source for Figures: China Dairy Statistical Summary (China Dairy Assn., 2017).