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Consolidation and Modernization of China's Dairy Herd

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Report Highlights:
China’s herd size will continue to shrink (to 7.5 million head), but less than Post originally forecast. Due to the consolidation and modernization of dairy farms, for the first time, scale farms (farms with over 100 head of cattle) account for the majority of the Chinese dairy herd. Fluid milk production is forecast at 35.5 million tons and imports are forecast to grow 15 percent to 750,000 metric tons. The European Union (EU), New Zealand, and Australia continue to dominate the dairy import market.

Executive Summary:

China's dairy herd continues to shrink, but recent consolidations have led to improvements in genetics and production facilities, resulting in increased efficiency which will support long-term growth. Domestic fluid milk production is forecast to remain stable at around 35.5 million tons and imports will continue to grow (about 750,000 metric tons), but at a slower rate compared to the previous two years. Overall dairy consumption in China is fairly stable, with higher-end fresh milk and yogurt products replacing milk-based beverages. Consumers continue to prefer imported dairy products for quality and food safety reasons, resulting in increased imports across the dairy sector. The vast majority of imports continue to come from the EU, New Zealand, and Australia which enjoy free trade agreements with China. The biggest consumption change has been growing Chinese middle-class demand for yogurt and yogurt products, with producers diverting increasingly large accounts of fluid milk and whole milk powder (WMP) into yogurt production. Finally, new infant formula regulations have temporarily slowed production and imports of infant formula, affecting both WMP and skim milk powder (SMP) consumption.

FLUID MILK

Production: Post forecasts production to decrease by 1.4 percent in 2017

Post adjusted its 2017 fluid milk production forecast down to 35.5 million tons and revised its 2016 estimate down to 36.02 million tons, a 1.4 percent year-on-year decrease. This reduction is based on three factors: (1) changes in the herd inventory and makeup, (2) decreased domestic demand, and 3) increasing fluid milk imports. However, this reduction must be considered against the following: the inventory decrease is less than expected, the reduced herd size is offset by increased production efficiency, and lower feed costs have improved profitability for the remaining farms.

Overall herd size continues to decrease, but efficiency is increasing with consolidation

In 2017, the overall herd size will continue decreasing, in large part due to structural changes in the industry. Post forecasts the 2017 cattle in milk herd number at 7.5 million head, or 500,000 head less than 2016. However, this reduction is less than Post's original forecast of a 10 percent reduction. The reason is that fluid milk prices started to recover towards the end of 2016, following the international milk price trend, incentivizing domestic producers to increase fluid milk production.

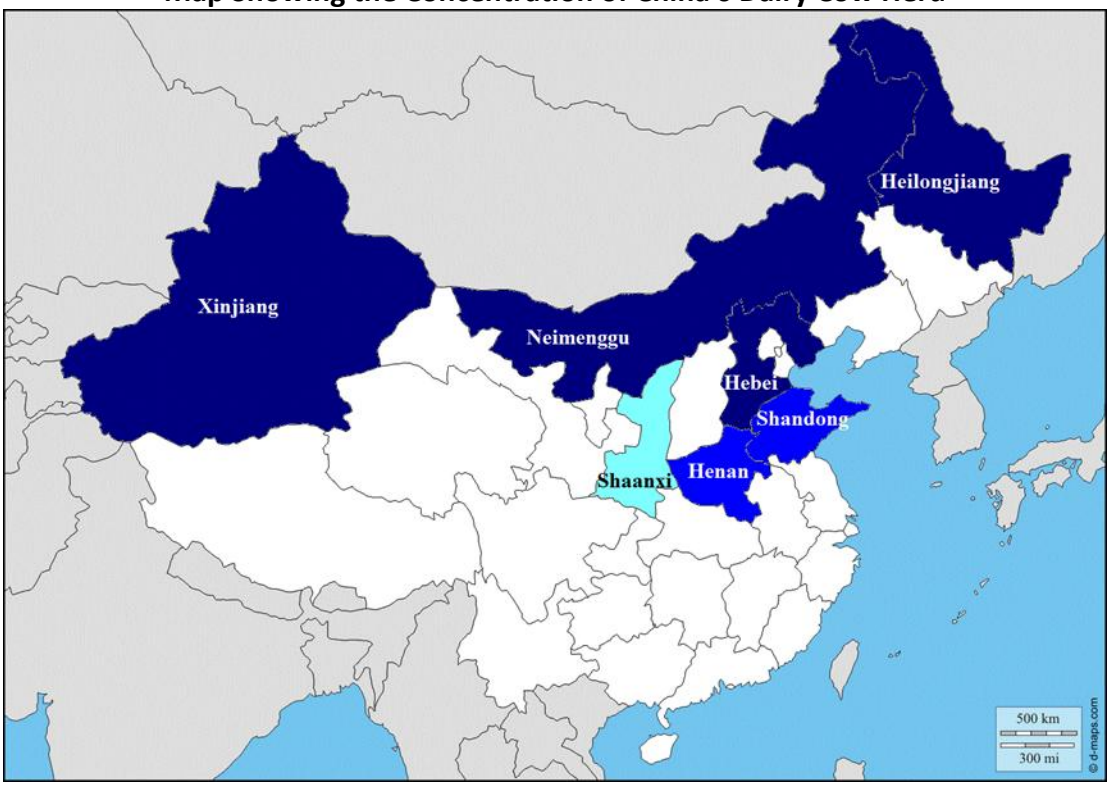
The dairy cattle industry, like other livestock industries, is challenged by the strict environmental laws in China. While these laws have been in place for several years, China has recently begun ratcheting up enforcement of these laws. As a result, small farms continue to withdraw from the dairy industry while farms with at least 100 head of dairy cattle are increasing. For the first time, these larger farms will account for over half of the cattle inventory in China.

Another reason for the decreasing herd size is that there has been a recent decrease in dairy cattle imports. China mainly imports live cattle for genetic improvement, the majority of which come from Australia, followed by New Zealand. The reduced imports are due to lackluster demand for fluid milk this year and a more efficient herd.

However, despite this 500,000 head reduction in herd size, the production gains realized from consolidation will largely offset production losses due to the herd reduction. Post forecasts that 2017 milk production will only show a slight decrease. Post sees this herd-size reduction as a necessary step to consolidation and modernization. As China increased its culling rates beginning in 2016, producers have mainly targeted lower-producing dairy cows. The current large young calf herd, with improved genetics, gives China an increased production potential in the future.

Another notable change to China's dairy herd is that dairy farming will move further away to Northeast and West China, away from population centers and towards vast rangeland areas. This shift is also due to increased environmental concerns. The table below shows the leading dairy cattle inventory provinces in China, along with changes from 2013 to 2015.

Map Showing the Concentration of China's Dairy Cow Herd



Source: China Ministry of Agriculture 2015 (2015 data is the most recent data available.
Includes all dairy cows, not just cows in milk.

Legend:

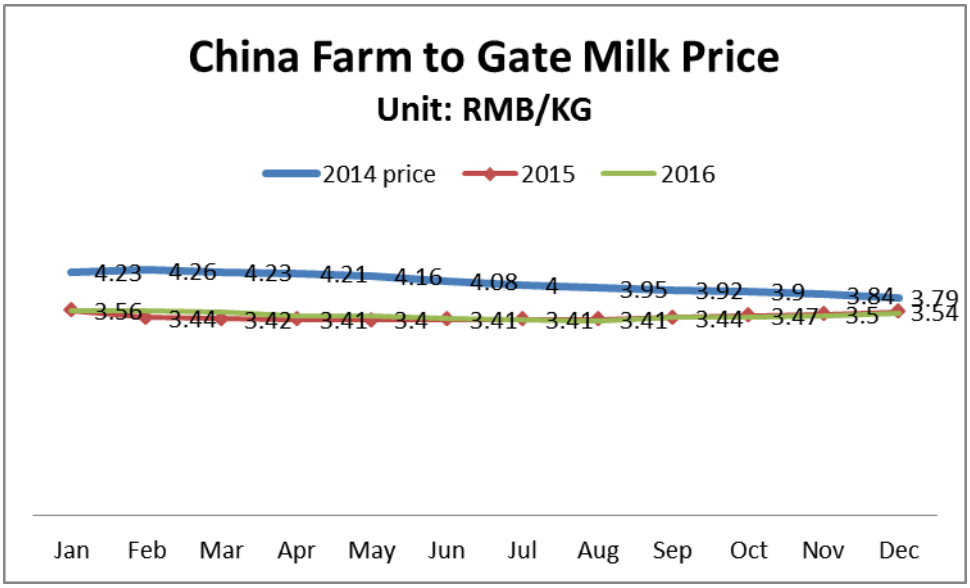
Dark Blue = 10 to 20% of herd inventory)
Blue = 5 to 10%
Light Blue = 3 to 5%

Changes in China's Dairy Cow Population					
	2013	2014	2015	Change from 2013 to 2015	% of 2015 total herd
NeiMengGu	229.2	231.2	237.2	3%	16%
XinJiang	185.3	203	214	15%	14%
HeBei	191.2	198.1	196.3	3%	13%
HeiLongJiang	191.7	197.2	193.4	1%	13%
ShanDong	125	139.7	133.4	7%	9%
HeNan	100.7	103.2	107.8	7%	7%
ShaanXi	46.5	45.5	43.5	-6%	3%
XiZang	37.2	37.2	37.6	1%	2%
NingXia	34.1	37.4	35.4	4%	2%
ShanXi	32.1	34.7	34.6	8%	2%
Liao Ning	30.5	31.6	33.6	10%	2%
GanSu	29.4	30.2	30	2%	2%
Ji Lin	23.2	24.5	26.2	13%	2%
QingHai	28.6	25.8	25.6	-10%	2%
Others	156.3	159.8	158.6	1%	11%
Total	1441	1499.1	1507.2	5%	100%

Source: China Ministry of Agriculture, 2015 data.
Numbers in 100,000 head

Despite weak price recovery, 2017 farm profits are up due to lower feed costs

Post forecasts the milk price will start to recover in 2017, but not by much. The price recovery is constrained by lackluster consumption demand and low international milk prices. However, overall profitability will be up compared to 2016. As Post reported last year, over 50 percent of Chinese dairy farms operated at a loss in the first half of 2016. Since then, China has ramped up its liquidation of massive state corn reserves back into the marketplace. As a result, corn silage (one of the primary feed ingredients for dairy cows alongside alfalfa), has become cheaper. In China, feed costs comprise about two-thirds of the total input cost—much higher than the United States (55 percent), the EU (29) and New Zealand (27).



Source: China Ministry of Agriculture

Consumption: Fluid milk consumption forecast to drop by 3 percent

Milk consumption is reaching saturation levels in big cities like Beijing and Shanghai. Future growth depends on the consumption demand in third and fourth tier cities. But the consumption growth in these cities is not optimistic in the near term due to China's slowing economy and the relatively high cost of fluid milk consumption (to the consumer).

Chinese consumers' per capita milk consumption is still very low by international standards, about 34.1kg per capita, less than one third of the world average. Pasteurized milk consumption has plenty of growth potential in China but food safety concerns constrain increased consumer demand.

Trade: Fluid milk imports will grow by double digits, but at a slower rate than in the past

Post is decreasing its 2017 fluid milk import estimate to 750,000 tons. While this still represents a 15 percent year-on-year increase, it represents slower growth than in 2016 and 2015. The makeup of imports will remain roughly the same, with Ultra High Temperature (UHT) milk accounting for the majority, and a splash of fresh milk shipments from Australia, New Zealand, and South Korea.

Post estimates that imports of UHT milk will continue to rise, albeit at a slower rate than in the past and will further penetrate into the third- and fourth-tier cities in China. Although domestically produced UHT milk consumption is decreasing in large cities as a result of consumer preference for fresh milk and yogurt, imported UHT milk remains popular due to perceived quality and safety advantages over domestic UHT milk. The majority of imported UHT milk is ordered through e-commerce channels by young professionals in the larger cities.

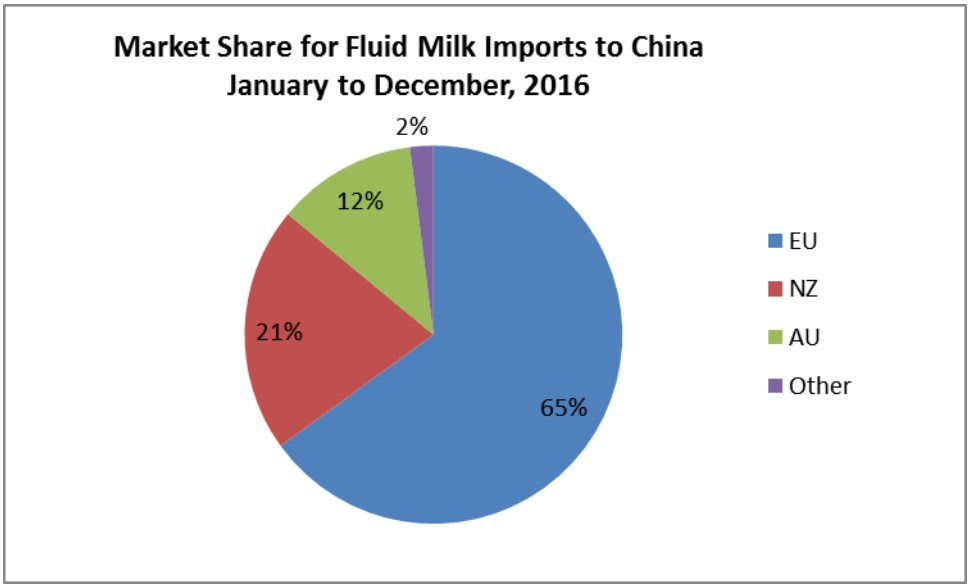
In addition, a growing amount of the imported UHT milk is coming from Chinese-owned facilities. Chinese domestic dairy processors have invested heavily in overseas herds and processing facilities to create overseas supply chains leading back to China.

Chinese import market dominated by countries with free trade agreements

Another continuing trend observed by Post is the benefit of free trade agreements. Both New Zealand and Australia have free trade agreements with China and continue to expand their share in the Chinese dairy market. Under recently negotiated agreements, Australia and New Zealand are able to ship fresh milk by air to China. In addition, Chinese domestic producers have been investing heavily in Australian and New Zealand production and processing facilities. The majority of these products are exported back to China and target Chinese domestic consumption markets.

The EU, which also has a free trade agreement with China, leads UHT imports with a 65 percent market share in China. The EU will continue to be the largest exporter to China in 2017 as the large Russian market still remains closed due to EU trade restrictions on Russia. Although EU reduced its production towards the end of 2016, it has to release its stocks collected last year, which will continue to constrain the international fluid milk price.

Fluid milk imports from the United States are currently very limited. U.S. imports are constrained in large part by slow approvals of U.S. dairy facilities and products under China's new registration regulations (see Import Policy). Once resolved, imports of U.S. fluid milk are expected to get a boost thanks to Chinese consumers' overall positive perceptions about the safety and quality of U.S. food products.



Source: China Customs

Import Policy

Importers must be in compliance with Decree 145 which requires all foreign producers to register their facilities and products with China's Certification and Accreditation Administration (CNCA). Since the implementation of Decree 145 in 2014, many U.S. companies have encountered significant delays in

registering their dairy plants and products.[1]

WHOLE MILK POWDER (WMP)

Production

Production of WMP will be stable in 2017 at about 1.4 million tons. Demand for domestically produced WMP is quite weak, as most consumers (for example, yogurt and infant formula producers) prefer imported WMP. Although domestic WMP is cheaper than imported WMP, the price gap is quite narrow and imported WMP has double the shelf life—two years compared to one year. In addition, as WMP is commonly used in producing infant formula, producers prefer imported WMP for food safety reasons.

Nevertheless, Chinese dairy producers will continue to produce WMP, largely because they are still dealing with overproduction issues. For example, in the period following the Chinese Spring Festival in February, Chinese milk consumption drops off significantly, creating a surplus fluid milk supply. With almost no cheese production in China, most dairy companies have to turn overproduced milk into WMP for storage, even if they do so at a loss.

Consumption: WMP Consumption flat in 2017

Post adjusted its 2017 WMP consumption forecast to about 2 million tons, with almost no change compared to 2016. WMP is mainly used in producing infant formula, UHT milk, yogurt, and bakery products (see below for a breakdown). Although the practice is technically prohibited in China, some Chinese producers will transition WMP back into fresh milk for human consumption. However, due to current prices, this practice is not economically feasible.

Whole Milk Powder Usage in China	
Infant formula	25% market share
Fluid milk (UHT milk, yogurt etc.)	30% market share
Milk beverage	20% market share
Bakery products	25% market share

Source: Industry Publication

Infant formula has traditionally been the largest consumer of WMP. China allows WMP and Nonfat Milk Powder (also known as Skim Milk Powder, or SMP) to be used as a substitute for fresh milk in

[1] For more information on Decree 145, please see FAS GAIN Report 12020: https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Registration%20of%20Overseas%20Food%20Manufacturing%20Facilities%20_Beijing_China%20-%20Peoples%20Republic%20of_6-27-2012.pdf
For more information on FAS Dairy registration information, please see FDA's guidance at: https://www.fda.gov/food/guidanceregulation/guidancedocumentsregulatoryinformation/importsexports/ucm378777.htm

producing infant formula products. Because the WMP price is considerably lower than the fresh milk price, a large portion of China's WMP production has gone into manufacturing infant formula. However, due to the recent implementation of food safety regulations regarding infant formula production (see the Policy Section below), demand from infant formula producers will be weaker. The new policy sets high requirements for domestic and overseas infant formula producers. Some manufacturers will be unable to meet the new requirements and therefore, all product made by these manufacturers will be unsaleable in China. As a result, these products are being dumped into the market, lowering the current demand for WMP.

WMP usage in fluid milk, including both UHT and yogurt, now accounts for 30 percent of WMP consumption (up from less than 20 percent in 2015). While Chinese producers continue to use WMP to produce UHT milk, Chinese consumers prefer imported UHT milk. However, WMP usage in yogurt is rapidly increasing as Chinese demand for yogurt has exploded. In Chinese grocery stores, new yogurt products are heavily promoted with prominent displays and ubiquitous in-store sampling programs. As Chinese middle-class consumers increasingly focus on healthy products, interest in both fresh and shelf-stable yogurt products continues to grow. For example, in 2016, imports of yogurt and yogurt products increased over 100 percent to meet fast growing demand. However, domestically produced yogurt and yogurt products still dominate the market and consume the majority of WMP.

WMP has also been used to make milk-based beverages. The milk beverage category generally includes sweetened beverages with dairy as one of the ingredients. However, consumer demand for this class of products has been shrinking. For example, in 2015, Post estimated milk beverage consumption at 32 percent of total WMP consumption. Milk beverages are considered a low-end milk product and are now being substituted by soy, almond, or peanut milk beverages. Middle- and high-end Chinese consumers generally prefer yogurt or fresh milk.

Policy

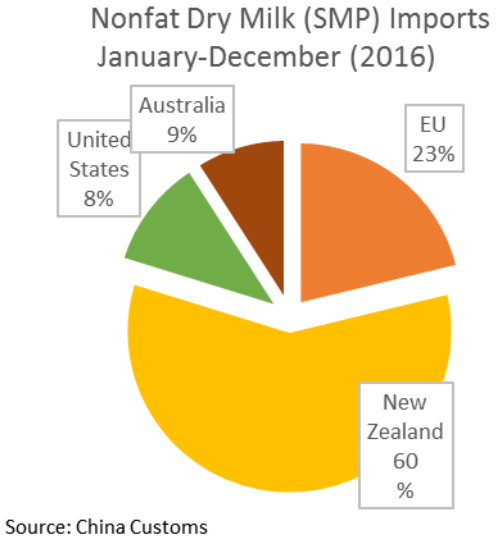
On June 6, 2016, China Food and Drug Administration (CFDA) announced the Administrative Measures for the Registration of Recipes for Formula Powder Products for Infants and Young Children (CFDA Decree 26), which entered into force on October 1, 2016. However, CFDA subsequently extended a one-year grace period for all producers and the new regulations will come into force on October 1, 2017. The new regulations require domestic and overseas infant formula producers to register their facilities with CFDA (in addition to CNCA) and limit the number of products and brands produced.[2]

Trade: Imports continue to increase in 2017

[2] For more details, please refer to Gain report CFDA Publishes Measures for the Registration of Infant Formula Recipes (CFDA Decree 26): http://gain.fas.usda.gov/Recent%20GAIN%20Publications/CFDA%20Publishes%20Measures%20for%20Registration%20of%20Infant%20formula%20Recipes_Beijing_China%20-%20Peoples%20Republic%20of_6-17-2016.pdf.

Post adjusted
in 2017, about a 7
2016. The
narrowing price
imported WMP.
dominant exporter
96 percent market
United States are
market share in
reduced in 2017

China exports
forecasts that
tons in 2017, with
Kong, which
WMP exports.



Source: China Customs

WMP imports up to 450,000 tons
percent increase compared to
increased imports are due to a
gap between domestic and
New Zealand remains the
of WMP to China, with a roughly
share. Imports of WMP from the
marginal, with just a 0.4 percent
2016. This amount may be further
due to the appreciating U.S. dollar.

negligible amounts of WMP. Post
exports will remain stable at 2,000
product heading mainly to Hong
accounts for 64 percent of China's

NONFAT DRY MILK

Post forecasts production of nonfat dry milk, or skim milk powder (SMP) will be down 1.3 percent in 2017 at 35,000 tons. Post lowered its 2017 consumption forecast to 210,000 tons, about a 6 percent decrease compared to 2016. SMP is mainly used in infant formula and milk beverage drinks.

Although infant formula producers rely on SMP to make their products, new regulatory requirements have dampened domestic infant formula production. Due to the difficulty and uncertainty of meeting these regulations, infant formula producers have been conservative in production. In addition, distributors and buyers have decreased their stocks out of concerns that some brands may fail to properly register, thus weakening demand for SMP. Even large multinational producers with production facilities in China have adjusted their strategies and are importing more from their overseas facilities.

SMP usage in milk beverages is also down. Similar to WMP usage in milk beverages, demand for SMP in milk beverages also declined due to a decline in popularity. This decline is a result of Chinese consumers' preference for more healthy milk products and the increasing popularity and availability of other milk-substitutes.

Trade

Post is adjusting it 2017 import forecast down to 175,000 tons, about a 4.9 percent decrease compared to 2016. China has limited nonfat dry milk (SMP) production and consequently relies on imports to meet demand in the food processing sector and infant formula sector. New Zealand and the EU are the two major suppliers. But as domestic demand for SMP is constrained by the new infant formula regulations, the demand for imported SMP has fallen as well.

PSD Tables

Fluid milk PS&D table

Dairy, Milk, Fluid	2015		2016		2017	
Market Begin Year	Jan 2015		Jan 2016		Jan 2017	
China	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Cows In Milk	8400	8400	8000	8000	7500	7500
Cows Milk Production	37550	37550	35700	36020	35000	35500
Other Milk Production	1500	1500	1600	1600	1500	1500
Total Production	39050	39050	37300	37620	36500	37000
Other Imports	460	460	650	634	800	750
Total Imports	460	460	650	650	800	750
Total Supply	39510	39510	37950	38270	37300	37750
Other Exports	25	25	20	23	20	20
Total Exports	25	25	20	20	20	20
Fluid Use Dom. Consum.	15360	15360	14600	14600	14700	14800
Factory Use Consum.	24125	24125	23330	23650	22580	22930
Feed Use Dom. Consum.	0	0	0	0	0	0
Total Dom. Consumption	39485	39485	37930	38250	37280	37730
Total Distribution	39510	39510	37950	38270	37300	37750
(1000 HEAD) ,(1000 MT)						

Whole Milk Powder PS&D table

Dairy, Dry Whole Milk Powder	2015		2016		2017	
Market Begin Year	Jan 2015		Jan 2016		Jan 2017	
China	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Beginning Stocks	300	300	350	350	179	150
Production	1617	1617	1375	1375	1400	1400
Other Imports	347	347	395	420	450	450
Total Imports	347	347	395	420	450	450

Total Supply	2264	2264	2120	2145	2029	2000
Other Exports	4	4	3	3	2	2
Total Exports	4	4	3	3	2	2
Human Dom. Consumption	1910	1910	1938	1992	1977	1998
Other Use, Losses	0	0	0	0	0	0
Total Dom. Consumption	1910	1910	1938	1992	1977	1998
Total Use	1914	1914	1941	1995	1979	2000
Ending Stocks	350	350	179	150	50	0
Total Distribution	2264	2264	2120	2145	2029	2000
(1000 MT)						

Nonfat Dry PS&D table

Dairy, Milk, Nonfat Dry	**2015**		**2016**		**2017**	
Market Begin Year	**Jan 2015**		**Jan 2016**		**Jan 2017**	
China	**USDA Official**	**New Post**	**USDA Official**	**New Post**	**USDA Official**	**New Post**
Beginning Stocks	0	0	0	0	0	0
Production	45	45	40	40	40	35
Other Imports	200	200	180	184	180	175
Total Imports	200	200	180	184	180	175
Total Supply	245	245	220	224	220	210
Other Exports	1	1	0	1	0	0
Total Exports	1	1	0	1	0	0
Human Dom. Consumption	244	244	220	223	220	210
Other Use, Losses	0	0	0	0	0	0
Total Dom. Consumption	244	244	220	223	220	210
Total Use	245	245	220	224	220	210
Ending Stocks	0	0	0	0	0	0
Total Distribution	245	245	220	224	220	210
(1000 MT)						