



# Rabo Ag Focus

## U.S. Dairy Farming: Facing New Markets and Uses, August 2005

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### Introduction

The United States (U.S.) dairy sector is entering new markets and product uses as a result of ongoing changes at the demand, production and processing stages. With stocks already at record low levels, world demand for U.S. dairy exports continues to increase, as the supply by traditional exporters is limited and world prices climb higher. Increasing concentration, relocation and larger farms and processors have been ongoing trends, while the development of the export market, the definite increase in the consumption of cheese, and the resulting decline in the importance of fluid milk in total milk use are reshaping the U.S. dairy sector.

### The Demand Side

The growth in consumption of dairy products in the U.S. continues to favor cheeses over fluid milk. While per capita consumption of cheese has increased by almost 3 percent per year since 1983, consumption of all fluid milk varieties has declined annually by about 1 percent during the same time period.

Italian soft cheeses, mainly mozzarella and cheddar varieties, still account for over 65 percent of total cheese consumption and demand shows a steady annual increase of about 2.5 percent. However, within the cheese category, not all cheese varieties present a growing demand. The largest growth since 1999 was mainly driven by the demands for Hispanic, Swiss and Italian hard varieties. Demand for these cheeses increased by almost 50 percent, 25 percent and 23 percent, respectively. Factors explaining these dynamics include the following: convenience, which is evident by increasing consumer expenditures on food away from home, which tends to have a relatively higher cheese content; more diversified taste and consumer base, which is shown by the demand for more cheese varieties, mostly by, but not limited to, Hispanics; and applicability, which

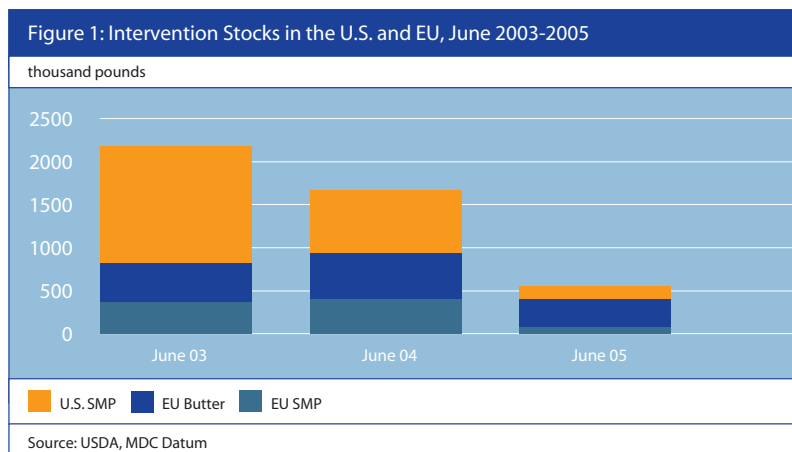
is reflected in the increasing use of dairy ingredients, in general, in novelty products, such as drinks and snacks.

Consumer concerns regarding carbonated beverages are providing ample room for milk-based drinks, particularly in light of the proactive attitude from school boards regarding the convenience of using vending machines for distribution. In general, vending machines are proving to be a strong vehicle for driving the growth in milk consumption. Analysis of a sampling of schools that now supply flavored milk drinks in their vending machines shows demand increases in the 15 percent to 20 percent range. The non-refrigerated, extended shelf-life milk required for these machines is significantly increasing the further processing of milk, for instance, under ultra high temperatures.

Despite an increase in the demand for organic and flavored milks, as well as for milk drinks, there is an aggregate decline in the consumption of fluid milk items. The increasing existence of alternative drinks such as soy-based beverages combined with some concerns regarding the overall healthiness of fluid milk contributes heavily to this decline. Available market data shows that U.S. consumers currently drink more coffee, bottled water and soft drinks than milk. Most importantly, children and teenagers constitute the two groups that drive milk consumption upwards and there is already evidence that they are drinking more milk than their equivalents a decade ago. However, the U.S. population is aging, although at lower rates than other developed countries. The percentage of young children under five years of age currently stands at 6.8 percent. While slightly higher than in 2000, it is still down from 7.4 percent in 1995 and 7.6 percent in 1990.

## Increasing Dairy Exports

World demand for dairy products has been expanding steadily as a result of income and population changes, mostly in China and India. Yet, due to production constraints among leading and traditional world dairy producers such as New Zealand, Australia and the European Union (EU), the systematic increase in demand has not been fully matched by supply. As a result, during the last two years, over 1.7 billion pounds of dairy products have been removed from the respective intervention stocks held by the U.S. and the EU (see Figure 1) that have reached historically low levels.



The tight world supply-demand ratio combined with the lower stocks has resulted in increasing world prices over the last 24 months. During this time period, world prices, measured via fob prices at selected Oceania ports, for powder, cheese and butter increased by about 30 percent, 57 percent and 65 percent, respectively.

The higher prices have prompted an increase in U.S. exports of dairy products that during 2004 reached about USD 1 billion, embodying an almost 100 percent increase relative to 2002. In addition,

exports through the first quarter of 2005 show an increase of approximately 60 percent relative to 2004. There has also been a shift in the composition of U.S. dairy exports. In 2004, milk powders accounted for slightly over 45 percent of dairy exports, up from 22 percent in 2002. Through 2005, and consistent with the stock withdrawals, milk powders account for 60 percent of U.S. dairy exports. Most significant export destinations now include Indonesia, Algeria, China, Thailand and even Canada, in addition to the Philippines and Mexico.

On an aggregate basis, exports currently account for about 5 percent to 6 percent of the U.S. dairy sector's output. While the current market conditions, driven by supply and demand imbalances combined with the deterioration of the U.S. dollar relative to most of its trading partners, have prompted the increase in shipments to foreign markets and can be characterized as having a temporary nature, Rabobank believes otherwise.

## Restructuring and Relocation in Farming

Fewer, larger and more productive farms characterize dairy farming dynamics in most countries and the U.S. is no exception. Relative to 1999, the number of dairy farms with a herd size larger than 500 heads expanded by about 19 percent, with the largest increase found in the over 2,000 heads segment (see Figure 2). Overall, the U.S. dairy sector embodies about 81,000 farms, with about 3,010 (or only 4%) holding herds larger than 500 cows, including 495 farms with herds over 2,000 cows.

Analysis of the changes in productivity shows the smaller farms surpassing the larger ones, with the highest change observed in the 200 to 499 herd segment. Yet, we find that the smaller dairy farms

Figure 2: Selected Indicators in U.S. Dairy Across Different Production Segments

Herd Size (heads)	2004			% Change, 1999-2004			
	Number of Farms	Share in Production, %	Productivity, Liters per Cow per Year	Number of Farms	Share in Total Milk Production	Productivity per Cow	Production per Farm
<99	63,300	22	15,953	(30.0)	(26.0)	4.3	5.2
100-199	10,445	14	17,953	(21.0)	(16.0)	3.9	6.2
200-499	4,685	16	19,825	(11.0)	(3.0)	5.2	9.6
500-999	1,700	14	20,883	6.0	18.0	3.5	11.5
1,000-1,999	815	13	20,667	18.0	23.0	(1.0)	3.8
2,000+	495	20	20,718	102.0	126.0	(0.9)	11.8

Source: Rabobank analysis based on USDA-NASS data

still have a 30 percent productivity gap relative to the larger ones. While the higher production costs associated with the lower scale can be partially compensated with some government support and production of a differentiated product such as organic milk and specialty cheeses, the lower productivity and higher cost structure undermines the long-term competitiveness of the smaller dairy farmers. In addition, the managers of larger dairies are able to negotiate better payment terms from processors, as well as input suppliers, widening the profitability gap favoring larger farmers even further.

At an aggregate level since 1999, almost 30,000 or about 27 percent of dairy farms are no longer in business. Most of the decline has taken place within the segment that embodies less than 100 cows. As smaller farms move out of the business their herds are bought by larger farms. As a result, the decline in cow numbers is not so significant.

Production continues to move away from more traditional areas in Wisconsin, Minnesota, New England and Florida, and relocate westward, as far as California, and to the Midwest, namely Indiana, Ohio and Michigan (see Figure 3). While the recent price increase in mailbox prices led to a slight production recovery in Florida, and partially slowed the exodus of smaller dairies, the relocation trend is still evident.

As increasing volumes of milk are allocated to cheese manufacturing, the location of dairies is no longer driven by proximity to consumption centers. While low production costs and access to abundant quality feed are still the key drivers determining production location, adequate access to water sources together with friendly environmental regulations are becoming increasingly important for farmers considering the location of new, larger dairies. According to the USDA's Economic Research Service, current cost data shows production costs in Texas to be the lowest, about USD 13.34 per cwt in May 2005, approximately 30 percent below those estimated for Wisconsin and New York farms.

Through May 2005, U.S. milk production is up by 2.1 percent relative to its equivalent period in 2004 and the annualized forecast for 2005 points to a 2.0 percent increase reaching 175.2 billion pounds. Higher yields and a slightly larger herd support this expansion.

## Restructuring and Relocation in Processing

Since 1998, more milk is being transformed into cheese than into fluid milk. During 2004, about 39

Figure 3: Regional U.S. Milk Production Indicators

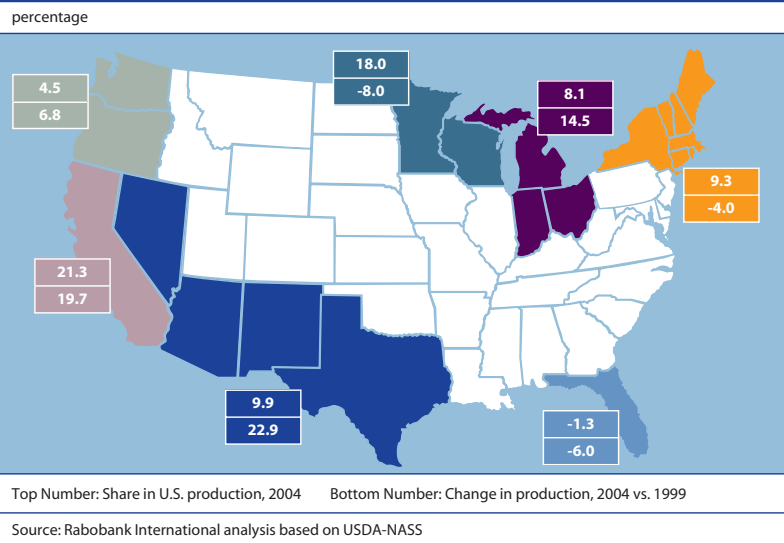
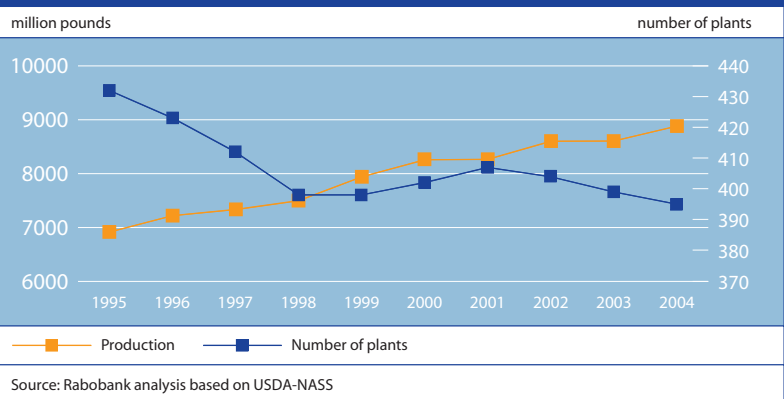


Figure 4: Cheese Manufacturing in the U.S. Selected Statistics, 1995-2004



percent of the fresh milk produced was processed into cheese and 31 percent into fluid milk. The remaining volume has been increasingly processed into dry whole milk and frozen products, and decreasingly into butter, creamery, creamed cottage cheese and evaporated and condensed milk.

According to Census data, between 1997 and 2002, there has been a 22 percent decline in the number of companies involved in bottling. The number of fluid milk plants dropped from 608 to 524, while industry sources account for additional closures of about 15 plants since 2002. Larger cheese plants are now being built in the proximities of the expanding dairy farming regions. The average size plant increased production by 13 percent to almost 23 million pounds per year, while the number of plants shows a downward trend (see Figure 4).

Embodied in the pricing scheme of milk is the importance of Class I milk (used as a beverage) that due to its nature always carries a higher price. As less milk is used in fresh milk manufacturing, the share of the higher priced component will decline



lowering the mailbox price. As milk use changes, the pricing mechanism set by the marketing order system will need to be adjusted reflecting the actual usage.

### Moving Forward

Demand for dairy products continues to increase, particularly for selected cheeses and fluid products, including all types of flavored drinks, product enhanced (such as omega-3, extra calcium) and smaller size presentations. Changes in U.S. consumer preferences together with the growing Hispanic population will continue to fuel the demand not only for Hispanic cheeses but also for other Italian varieties, such as provolone, parmesan and romano cheeses. In addition, and for selected fluid products, children and teenagers are supporting this trend and are providing the basis for a larger consumer base in the coming years.

Preliminary expectations for milk production for 2006 indicate an additional 1.5 percent to 2.0 percent increase relative to 2005. As was the case in 2005, these figures were the result of higher

yields and a slightly larger herd size. These changes are below those expected for world supply and demand, which will lead to an increase in the relative importance of the U.S. in world markets and also provide the basis for relatively strong prices in the U.S.

While milk prices are expected to decline relative to 2004, the strong demand for exports will most likely lead to higher prices for nonfat dry milk, impacting prices in all other milk classes. The USDA's current forecast for the 2005 All Milk composite stands at USD 14.8 cwt, 6.5 percent below the prevailing level in 2004, but significantly above the 2003 level of USD 12.5 cwt.

Rabobank believes that there are structural aspects that indicate a larger role for the U.S. in world dairy trade, as supply conditions worldwide point to the U.S. as one of the most viable regions for increasing production and exports. This structural change combined with the resulting decline in production costs associated with scale increase will certainly allow U.S. dairy farmers to have access to a larger, more dynamic and, probably, less regulated market.

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