

Briefs

Dairy

Tortoises Triumph: Gradual Changes Transform the Dairy Industry

Today's dairy industry is transformed from the one profiled in the inaugural issue of *Agricultural Outlook* (June 1975). Some of the supply and demand forces that were most important in the transformation operated so gradually and continually that they received scant attention in short-run outlook. But they may continue to be major shapers of the dairy industry in years to come. Among these forces are economies of scale and specialization, more women working outside the home, higher household incomes, and a broadening diet which includes cheese-heavy ethnic foods.

In 1975, 115.4 billion pounds of milk, near the post-World War II low, were produced by 444,000 dairy operations. The 11.1 million milk cows produced an average of 10,360 pounds of milk, record milk per cow at the time. In 2002, operations with milk cows are only a fifth as many as in 1975, but hold four-fifths as many cows. Milk production will be up almost by half from 27 years ago, thanks to an increase in milk per cow of almost 80 percent. The 1975 dairy markets were dominated by fluid milk, absorbing half of all milk marketings. In contrast, cheese now uses half the milk, its share doubling since 1975.

Cheese Becomes the Dairy King

By the mid-1970s, cheese had already become an important part of dairy demand, as sales had grown briskly for about 10 years and per capita consumption had shot over 14 pounds. But, per-person use in 2002 is likely to be more than twice the 1975 level. Cheese is convenient, versatile, and an easy, quick way to add flavor to dishes. These attributes became more highly prized as more women entered the labor force and family incomes rose, particularly in multiple-income households. Ethnic cooking, such as Italian and later Mexican, using substantial amounts of cheese, moved into the mainstream of American eating. A

greater variety of cheeses became available as cheese sales grew, fueling further increases in total sales.

If anything, cheese attributes important to retail customers were even more prized by restaurateurs and food processors. The long-run shift from at-home food preparation to consumption of partially or fully prepared foods has benefited cheese sales. Less than half of all cheese is now sold at retail, excluding that in food products.

The pizza phenomenon contributed greatly to dairy demand. Pizza was well established by the mid-1970s, available to most consumers in restaurants, as take-out or delivery, and in the freezer case. However, pizza grew continuously to become a true staple food, available in tremendous diversity and supplied by numerous competitors. Pizza and similar products may account for as much as one-third of total cheese use and are important contributors to overall demand for dairy products.

Total sales of beverage milk are now virtually the same as in the mid-1970s, in spite of the large increase in population. A number of factors have contributed to declining per capita use, including a smaller share of children in the popula-

tion, more meals eaten away from home, increased control of children over their food consumption, and stronger and more diverse competition from other beverages. Milk has fundamentally lost ground to carbonated soft drinks as consumers' choice of a mealtime beverage.

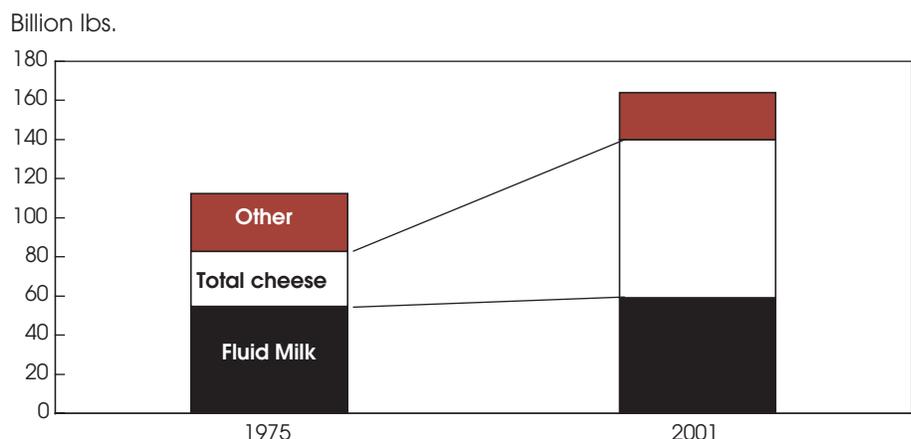
Declines in butter and cream use that reduced dairy demand during the 1950s and 1960s had essentially ended by the mid-1970s. Since then demand for milkfat products has generally been stable to slightly increasing. However, sales of most other dairy products, such as ice cream, cottage cheese, and canned milk, have declined even with mostly favorable prices. Similarly, use of dry and condensed milk as ingredients in processed foods slipped, in part because of increased use of inexpensive whey products.

Milk Output per Cow Has Soared

Grain and other concentrate feeds have remained a cheap input for dairy farmers relative to the capital and labor needed to maintain a cow. Low relative input prices encouraged farmers to boost concentrate feeding to achieve as much milk per cow as possible, in effect substituting milk per cow for milk cow numbers. In addition, milk per cow was boosted by genetic improvement and by improved knowledge and management of feeding.

Optimal feeding of dairy cows has changed over time, even though the basic

U.S. Cheese Use Has Nearly Tripled Since 1975



Economic Research Service, USDA

challenge remains of getting the cow to eat enough of the right nutrients to efficiently produce milk close to her genetic potential. Through most of the 1980s, most dairy farmers boosted milk per cow by increasing the amount of grain fed. More recently, with many dairy herds already getting maximum starch, producers are increasingly relying on feeds, such as whole cottonseed, containing concentrated nutrients other than starch.

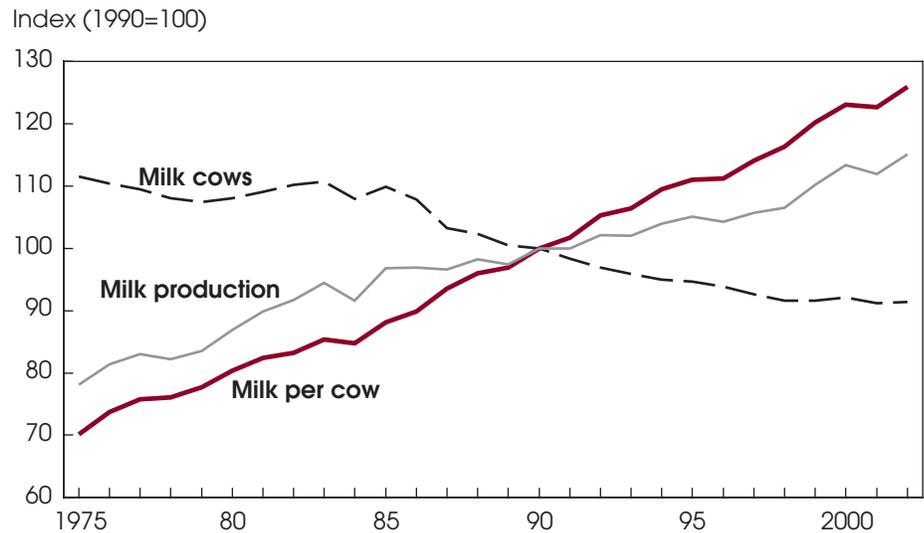
Forage quality is now a much more important factor in milk per cow than it was in the mid-1970s. Low quality forage wastes valuable stomach space. Changes in the relative supply of very-high-quality forage are a major source of variation in milk per cow. However, the milk-feed price ratio, long a powerful predictor of growth in milk per cow, has lost some relevance because of modern feeding practices.

A New Type of Farm

Large dairy farms organized with an industrial-style specialization of labor can substantially reduce both labor and capital costs per cow. In addition, these farms typically are highly specialized in milk production and purchase almost all their inputs. Such operations continue to become more numerous in most major dairy areas. These farms have also proven adept at training dairy managers—employees learn management skills as they climb the career ladder. More than one-third of current milk production comes from farms with 500 or more cows, compared with less than one-tenth in the mid-1970s.

Industrial-style dairy farms were pioneered in the West. Rapid development of the Western dairy industry and stagnation or contraction of the dairy industries in other areas have resulted in dramatic shifts in regional shares of milk produced, often described as “milk production moving west.” However, individual dairy farmers have often moved east, not west. California in particular has long exported dairy farmers, first to other Western states such as Idaho and New Mexico, and more recently to states east of the Rockies.

Milk Cow Numbers Have Declined As Productivity Increased



2002 forecast.

Economic Research Service, USDA

Swings in Supply/ Demand Balance

Milk production was generally in balance with demand during the late-1970s. In fact, real milk prices rose slightly. Relatively high returns, and the assurance that the support price would not let returns decline precipitously, unleashed a massive supply shift in the early 1980s. Most dairy farms expanded, Western dairy growth accelerated, and few farmers left dairying. Not until the end of the 1980s did reduced milk prices slow expansion and precipitate enough exit of dairy farmers to restore balance between milk supply and demand.

Since the mid-1990s, milk prices have been erratic. Demand has shown a mild tendency to grow more than supply. Dairy farms appear to fall into two types: those new-style farms generating good returns and growing rapidly, and the majority that are struggling to adjust and produce an adequate family income.

The Future of Demand

Will the demand for cheese continue to grow, or is the American appetite for cheese about satisfied? Sluggish 2002 cheese sales have boosted the question's prominence. However, cheese sales have paused temporarily before, and many

European countries have seen sales grow steadily over recent decades, even though their use was already higher than the current U.S. level. Cheese sales probably will continue to grow, although increases may be proportionally smaller.

Milkfat and skim solids can add flavor and functional quality to many processed foods. Demand for quality enhancing ingredients probably will grow along with markets for pre-prepared foods. However, this may not benefit demand for traditional milk solids. Fractionated milk products used as food ingredients are likely to be more important, and these products may well be whey-based. Undoubtedly, new markets will emerge for milk-based fractions, but these markets may not offset lower demand for milk solids.

Production Growth Likely

Growth in milk per cow may tend to be slower, at least in proportional terms, and probably will be more erratic. Milk per cow might have already slowed in the 1990s if it had not been for adoption of bovine somatotropin, a hormone that stimulates milk output. Growth in milk per cow probably will be even more dependent on forage quality and further advances in feeding knowledge. In addition, the concentration of milk cows in small geographic areas increases the vul-

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nerability of milk production to the effects of abnormal weather.

New-style dairy farms will become much more numerous and widespread, having proven their viability under a variety of circumstances. Development in the West may be slowed by tighter forage supplies and greater environmental and other restrictions, but the Western dairy industry will continue to expand. The number of new-style dairy farms in the Midwest and Northeast may accelerate as new production concepts are adapted to local climates and feed situations. Some of these dairy farms will be smaller operations making the leap to a much larger size and a totally different organization.

For the foreseeable future, most medium-size dairy farms will adapt and survive. Although many of these farms cannot generate enough return for both family living and reinvestment, they will be able to stay in business until the retirement of the current operator or until major new investment is needed. They even are likely to increase their herd size, although expansion probably will be fairly modest.

A majority of the small and some medium dairy farms will exit the industry when current operators retire or give up, and the next generation goes elsewhere. Small-scale dairy farms have been the only feasible land use in a number of marginal agricultural areas. As these farms exit

dairying, much of their land may be converted to nonagricultural uses.

Some downward pressure on real farm milk prices is likely in the years to come, as milk supply is expected to grow a bit faster than demand. However, longrun demand has proven more resilient than often perceived, and falterings in milk output are likely to trigger occasional price surges. Similar unique circumstances that lead to the sharp erosion of milk prices during 1980-95 are unlikely.

AO

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Specialty Crops

Grape Expectations: Abundant Quantity, High Quality

U.S. consumers are finding an abundance of high-quality fresh-market grapes at slightly higher prices this year than a year ago. USDA forecasts the 2002 U.S. grape crop at 14.5 billion pounds, the third-largest crop ever. Production is up in most of the nation's grape-producing states, including California and Washington, the two leading producers.

The grape crop is 11 percent larger than a year ago but 5 percent smaller than the record 15.4 million-pound crop in 2000. Despite this year's increased production, prices received by growers are up from last year due to the higher quality crop. Higher prices will increase the value of the 2002 grape crop above last year's \$2.92 billion, when a 15-percent decline in production more than offset the effects of higher prices. Grower prices for fresh grapes from June through October 2002 averaged \$788 per ton, up 6 percent from the same period a year ago.

At the retail end, January-September prices for Thompson seedless grapes were higher than a year ago for each month except April and June. Grape supplies this past winter, mostly imported from Chile, were up considerably from a year ago, but retail prices averaged higher due to strong

consumer demand and less competition from reduced U.S. production of fall crop apples and California navels in 2002, and lower banana imports. Smaller apple and pear harvests again this fall will likely help keep grape prices strong for the balance of 2002 and into early 2003.

U.S. fresh grape consumption in 2002/03, even with higher prices, is projected to increase over last year to 7.67 pounds per person. However, higher prices are affecting exports, with May-August shipments up only fractionally from the same period a year ago. Exports are down thus far to important markets, including Malaysia, Taiwan, the Philippines, and the United Kingdom. The heaviest export shipments typically occur during September and October, and exports this year for those months may have slowed due to the recent 2-week shutdown of West Coast ports.

On the bright side, California table grapes are finally entering the Australian market after several years of negotiations. The first shipments totaling 132 cartons of flame seedless grapes arrived in Sydney, Melbourne, and Brisbane via airfreight on July 16, 2002. Export growth potential for U.S. grapes to the Australian market appears promising given the country's

large population, high income, and counter-seasonal grape production.

The U.S. grape industry remains a valuable component of the U.S. agricultural sector with farm cash receipts averaging close to \$3 billion per year over the last 5 years. Technological improvements in production and marketing have helped the industry achieve both the quality and volume demanded by foreign customers, and to play a key role in the global grape market. The U.S. is the world's third largest producer of grapes, next to Italy and France, and provides about 10 percent of the world's production. While most of the grape and grape products produced here are sold through domestic channels, foreign markets are increasingly important. Export markets have taken over 20 percent of U.S. grape production since the mid-1990s, up from 12 percent during the early 1980s. U.S. export volumes of fresh grapes and raisins rank third in the world while wine exports rank sixth.

California Dominates Production

California accounts for over 90 percent of U.S. grape production, dominating both the fresh and processing markets and supplying most of the grapes for exports. Except for the heat wave that moved across the state this summer, weather was generally favorable throughout the grape-growing period and production is expected to increase 12 percent from a year ago to 13.3 billion pounds. All varieties are