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Major Issues Facing Minnesota Dairy Farmers

Boyd M. Buxton*

For many people, the future of dairy farming might appear quite uncertain. This is true both for Minnesota and the whole United States, and especially so for the farmers themselves.

Fluctuating milk and feed prices, rising production costs, declining per capita consumption of dairy products, increasing importance of world markets, and the role of government are some key factors contributing to this increasing uncertainty.

Minnesota's role in U.S. and world dairy markets is being shaped by a complex set of developments, both inside and outside the industry. This issue of *Minnesota Agricultural Economist* discusses some of these developments, including: (1) consumption of dairy products, (2) costs of production, (3) the competitive position of Minnesota dairy farming, (4) world trade, and (5) developments in federal milk marketing programs.

Consumption

Increasing population has kept total milk consumption about constant. However, per capita consumption of milk equivalents for fluid and manufactured dairy products has declined in

the United States — from about 706 pounds per capita in 1955 to 543 pounds in 1974 (figure 1). These figures represent an average decrease of about eight pounds per year for every man, woman, and child in the United States.

Total per capita consumption improved in 1975 and looks promising in 1976, but the long term downward trend will not easily be reversed. A major change in the long term trends will have to be made to avoid an additional 43-pound decline in per capita consumption by 1980.

Like any other product, the amount of dairy products consumed

depends on what consumers will buy. Over the longer run, the amount consumers will buy greatly influences the quantity of milk produced.

Those who consider only the supply side of a supply-demand market, believing the industry should be able to produce all the milk it can at a "fair price," must recognize that consumers must buy it at that price. Clearly, long term milk prices must be high enough to maintain an economically healthy industry. However when production exceeds demand, strong downward pressure on milk prices results, forcing total production into line with consumer demand.

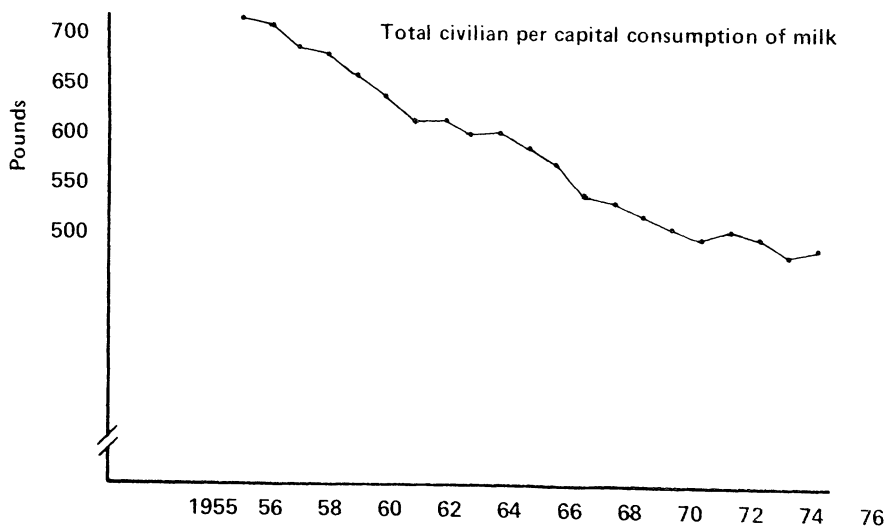


Figure 1. Total per capita consumption of milk in all products, fat solids, milk equivalent, 1955-1976

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Prices can be supported by government purchases under the dairy price support program. However because of government costs, no politically acceptable way exists for the supply to greatly exceed demand over a long period of time. On the other hand, when milk production is tight relative to consumer demand, strong upward pressure on prices provides incentives for increased production. Three times since 1972, dairy product prices rose significantly above the government price support level: late 1973, late 1975, and mid-1976 (figure 2).

How much will dairy product consumption be affected by periods of rapidly fluctuating prices? This important question is difficult to answer. Apparently the rapid price increase in late 1973 significantly affected consumption; civilian consumption dropped a relatively large 11.5 pounds per capita from 1973 to 1974. This decrease undoubtedly was a factor in the precipitous price decline beginning about March 1974.

In 1975, wholesale butter prices in Chicago increased from about 69 cents per pound in June to \$1.04 in December. Wholesale cheese prices rose from about 82 cents to slightly over \$1.00, and the nonfat dry milk price was up 10 cents per pound for the same period. These increases in dairy product prices apparently had less impact on consumption than did the previous price increases in late 1973.

Cheese consumption has held particularly strong despite these substantial price increases.

Prices for dairy product substitutes as well as changes in income and consumer tastes tend to mask the consumption response that consumers make to price changes. A recent study at the University of Minnesota attempted to isolate the impact of dairy product price changes on consumption of such products.¹ Cross section data were used for households during April 1972 to March 1973. These results showed household consumption decreased about 7 percent for butter and 6.2 percent for American cheese with each 10 percent rise in their prices. If only a fraction of this

¹C. Thraen, J. Hammond, and B. Buxton, "An Analysis of Household Consumption of Dairy Products," draft manuscript, Department of Agricultural and Applied Economics, University of Minnesota, 1976.

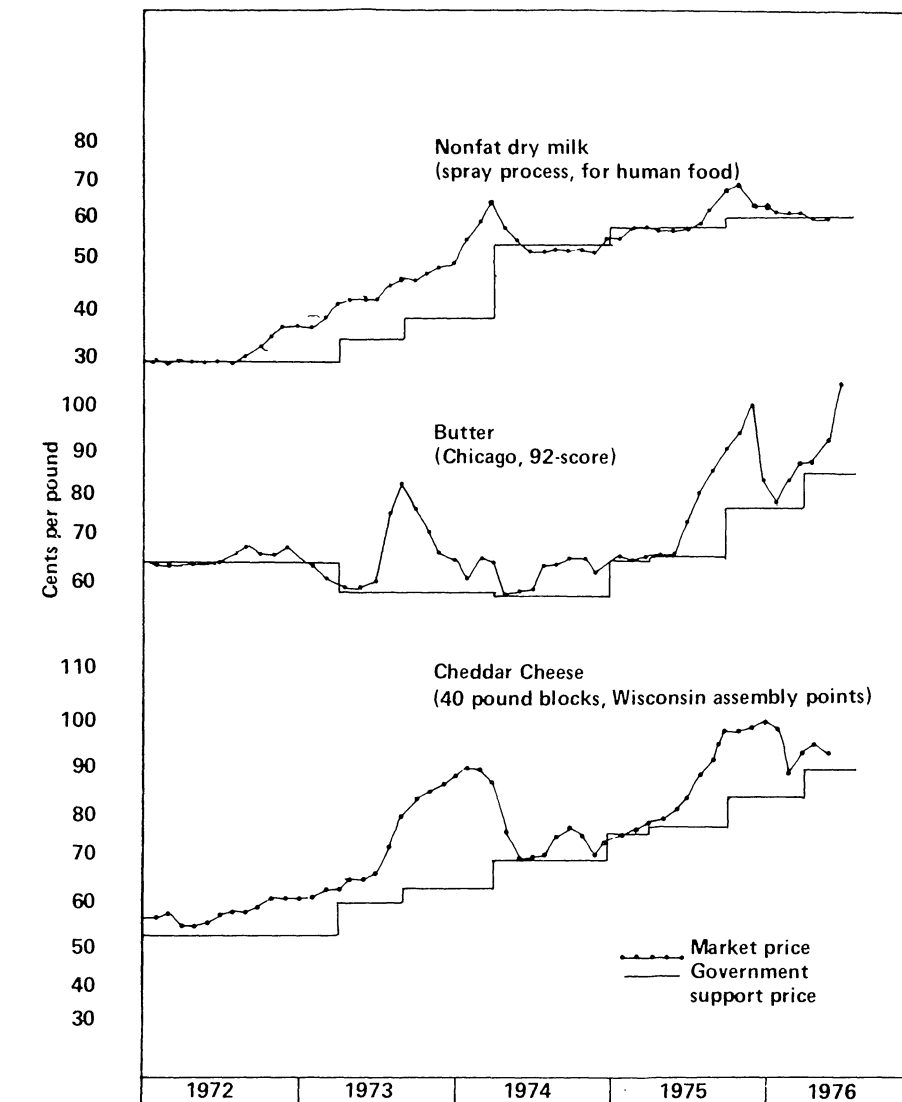


Figure 2. U.S. market and government support prices for nonfat dry milk, butter, and cheddar cheese, 1972-1976

response could be expected in the future, consumption of butter and cheese could be substantially affected by the price increases. The sharp seasonal milk price decline the first half of 1976 undoubtedly helped reinforce the current strong dairy price picture. Today's strong demand for cheese, despite its higher prices, is currently a bright spot for dairy.

What can be done to increase consumption? Recent studies suggest that promotion of dairy products can significantly increase sales.² The actual gain in consumption is uncertain.

²Truman Graf, "The Cooperative and the Market," Agricultural Economics Staff Paper No. 107, University of Wisconsin, November 1975, p. 6.

Nevertheless, consumption probably could not be increased without promotion because of the mentioned earlier downward trend in consumption.

A major question concerns dairy substitutes. Clearly, the economic incentive to use these substitutes increases when dairy prices rise relative to the price of substitutes. It is probably only a matter of time until substitutes make further cuts into per capita consumption of dairy products. Discussion has already occurred on what to call some substitute products and whether their packages can bear the names of the products they are intended to replace. One example is GOLANA. This is Analog (meaning similar in function, but not from the same raw product) spelled backwards.

This name was suggested recently for cheese substitute.

Consumption is a key factor affecting Minnesota's dairy industry, and more attention seems warranted in long term downward trends in per capita consumption.

Cost of production

In recent years, we have been hearing a lot about milk production costs. This is partly because of increasing disenchantment among policymakers and congressmen with the "parity" price concept. It has been used as a measure of a "fair price" and to arrive at a "target price" which is in current farm legislation. The subject also comes up in the search for a base price that truly reflects the dramatic changes occurring in input prices.

Congress directed the Economic Research Service (ERS) in the Department of Agriculture, in conjunction with state universities, to determine the costs of producing major agricultural commodities, including milk. An ERS survey has been published recently by the Committee on Agriculture and Forestry of the United States Senate.³ A consistent accounting method and set of assumptions provided consistent comparisons of costs across the United States for 1974. Production costs tended to vary geographically in about the same way that milk prices varied across the United States. U.S. census data for 1969 confirmed this.⁴ Farm account records also tend to show that net farm income is about the same on similar-sized farms across the nation, regardless of the milk prices they receive. In other words, inputs tend to be relatively high-priced where milk is relatively high-priced. In part, this may reflect the capitalization of milk prices into input values, particularly land. The ERS study estimated production costs in Minnesota to be slightly over 75 cents less per 100 pounds of milk than in the nation as a whole.

³"Costs of Producing Milk in the United States - 1974," Committee Print 72-184, Committee on Agriculture and Forestry, United States Senate, June 11, 1976.

⁴David Cummins and Boyd Buxton, "Dairy Farm Income and Milk Production Costs in the United States, 1969," U.S. Department of Agriculture, Dairy Situation -347, September 1973.

An evaluation of the competitive position of dairy farming in Minnesota relative to dairy farming elsewhere in the United States and abroad may suggest a need to compare Minnesota "milk production costs" with these other areas. But such a comparison may not give a useful answer, because it does not consider returns from resources in uses other than milk production. That is, an area having the lowest milk production costs may not produce milk at all because the resources there can be used more profitably to produce something else. In addition, there is no one cost of producing milk. A speaker at the November 1975 Outlook Conference in Washington, D.C. said, "It is not surprising that men of good will and honest intentions may arrive at different estimates of production costs."⁵ The prices used to represent a land charge can be based on rental rates, current market price times the interest rate, purchase price times the interest rate, or other values. Which is right? There is no single answer. Similar problems emerge in placing a value on operator and family labor, farm-produced inputs, overhead expenses for machinery, and the entire farm operation. Farm management also introduces much variation in cost per 100 pounds of milk. The ERS report indicated that, nationally, about 20 percent of the milk was produced at less than \$7 per 100 pounds, while about 20 percent was produced at a cost of \$10 or more per 100 pounds. Clearly, a wide variation exists in production costs. The real question, then, is "Whose cost of production is being measured?"

Much more meaningful, but somewhat more abstract, is how much milk will be produced at the prevailing milk price. The answer, based on supply, reflects the combined decisions of all producers who are evaluating alternative uses of their resources to decide if dairy farming is profitable enough. This suggests looking at current prices, the amount of milk supplied, and how that quantity might reflect the change in milk prices.

⁵John G. Stovall, "The Cost of Producing Agricultural Commodities," United States Department of Agriculture, Economic Research Service, Speech at National Agricultural Outlook Conference, Washington, D.C., November 1975.

The estimated cost of milk production has limited value for decisions regarding a "fair price," evaluating competitive positions of one area in contrast to another area or for making judgments about the economic health of the dairy farming industry. However, if a consistent accounting method is used it does provide some measures of change in cost over time and provides for comparisons among regions.

Minnesota's Competitive Position

Despite a shift in relative importance of milk production throughout the United States, total U.S. milk production has remained about constant for the past 30 years. The real test of Minnesota's competitive position for U.S. markets lies in its long term survival as a major supply area.

A look at the 20 top milk-producing states for 1960 to 1973 shows that Wisconsin has increased its share of total U.S. milk production from 14.4 to 16.3 percent and California has increased from 6.6 to 8.7 percent. Minnesota, Pennsylvania, New York, and Michigan produced about the same proportion of total U.S. milk production in 1973 as they did in 1960. States declining in relative importance are Ohio, Iowa, Texas, and Missouri (table 1).

California, which ranked fourth before 1971, now holds second place — ahead of both New York and Minnesota. States having the greatest percentage increases in milk production from 1960 to 1972 include Florida (up 43 percent), California (up 29 percent), Texas (up 15 percent), and Washington (up 21 percent). States with the greatest percentage reduction in milk production tend to be in the Corn Belt and include Illinois (down 33 percent), Indiana (down 24 percent), Iowa (down 24 percent), and Missouri (down 10 percent). Major declines have also occurred in the Plains states of Nebraska, North Dakota, Kansas, and Oklahoma. Milk production in Minnesota went down almost seven percent from 1960 to 1972 and has continued to decrease at about the same rate in both 1974 and 1975. Why has production increased in Wisconsin and decreased in Minnesota when both states are considered quite similar? Possibly, competitive pressure

Table 1.
Percentage of total U.S. milk production for the top 30 states, 1960 and 1973

	Percentage of total U.S. production	
	1960	1973
Top 10 states		
Wisconsin	14.4	16.3
California	6.6	8.7
New York	8.4	8.5
Minnesota	8.3	8.0
Pennsylvania	5.6	5.8
Michigan	4.2	4.1
Ohio	4.2	3.8
Iowa	4.8	3.5
Texas	2.4	2.8
Missouri	3.0	2.6
Total 10 states	61.9	64.0
Second 10 states		
Illinois	3.4	2.4
Kentucky	2.6	2.1
Indiana	1.7	2.0
Washington	1.7	2.0
Tennessee	1.8	1.7
Vermont	1.6	1.7
Florida	1.1	1.6
Virginia	1.6	1.5
Idaho	1.3	1.4
Kansas	1.5	1.3
Total 10 states	18.3	17.7

Source: Ray Høglund, "The U.S. Dairy Industry Today and Tomorrow," Agricultural Experiment Station Res. Report 275, Michigan State University, May 1975.

for resources (primarily land) by cash crops in Minnesota's south central, southwestern, and western regions and by beef in the northern part of that state have taken resources out of milk production. Southern Minnesota is more like the Corn Belt states than it is like Wisconsin, and dairying has been declining there as in most Corn Belt states. Many southern Minnesota farmers have torn down fences to plant cash crops. Increased acreages of soybeans in southern Minnesota would tend to substantiate this. Also, only part of Minnesota is like Wisconsin. Milk production has concentrated in the southeastern portion of Minnesota adjacent to and much like Wisconsin. This area should continue to be an important dairy area. As a whole,

Minnesota should maintain its relative importance in total U.S. milk production during the next several years.

Competitive position in world markets

Economic theory's basic concept that quotas create distortions in world trade and reduce the total well-being of potential trading partners is receiving attention from both government officials and consumers. U.S. agriculture, in total, relies heavily on exports of basic food commodities. Domestic prices of feed grains, wheat, and soybeans would be substantially reduced if these export markets would disappear. About 23 percent of our feed grains, 67 percent of our wheat, and 36 percent of our soybeans are export-

ed. There will be pressure to put dairy import quotas on the bargaining block to insure these export markets. Dairy quotas are a major bargaining item for the United States.

The future of dairy import quotas is, of course, unknown. However, a few points can be made. First, the principal justification of dairy import quotas is the dairy price support program. When the government is purchasing dairy products to support their prices, any imports would directly add to government purchases. Hence, the government would be supporting world prices. With a price support program, there will have to be some type of import quotas.

Second, the United States will not permit itself to become a dumping ground for world surplus dairy products, especially when this surplus would not be continually available. This would create unstable U.S. marketing conditions and greatly increased price fluctuations.

Third, no additional imports were authorized in late 1975, even though conditions were similar to those in 1973 and 1974 when additional authorizations were made. One difference was that the Cost of Living Council — very influential in 1972-73 — no longer existed in late 1975.

Dairy products are among the most highly protected commodities in world trade. Current quotas restrict dairy imports to about 1.5 percent of annual United States milk production on milk equivalent fat solids basis. Additional import authorization in 1973 increased imports to slightly over three percent of U.S. production that year.

These quotas have largely insulated the United States from imports that would otherwise enter, either subsidized from foreign countries (primarily Europe) or as profitable sales from lower cost supply areas (primarily New Zealand and Australia).

What would happen if quotas were increased or eliminated? How competitive is the United States? The answers would require information on the competitive position of different countries. The competitive differences among countries are largely determined by the quantity and quality of their farm resources and these resources, suitability for uses other than dairy. Processing and manufacturing sectors as well as transportation

costs also affect competitive ability. Farm and processing efficiency in the major supply regions are contrasted here:

Farm efficiency. Herd sizes vary widely throughout the world. In potential exporting areas, the average herd size in the early 1970's varied from 105 cows in New Zealand to 4.4 cows in Italy. Government policy has greatly affected the size of dairy farms in many countries. For example, the German government has intentionally located industry in rural areas to allow potential part-time dairy enterprises. Recent policy changes in Australia have eliminated a bounty subsidy program and have initiated programs to help marginal dairymen either discontinue milk production or to attain larger herds. Most major supply regions throughout the world have emphasized increasing herd size and efficiency.

Yields per cow are closely related to concentrates fed per cow. In New Zealand, production per cow is low, but dairying there is a pasture-based industry. A typical New Zealand dairy farm has no buildings except an open-shed milking parlor and the farmer's house. The cows are pastured year-round, so there are no hay or concentrate storage structures or handling equipment. For most New Zealand dairy farmers, the machinery inventory is a small tractor and trailer.

The physical efficiency of labor and land for milk production was estimated from farm account data of New Zealand and the United States.⁶ These indicate New Zealand farms can produce 100 pounds of milk with less labor, land, and capital than can U.S. farms. Therefore, New Zealand has an apparent absolute advantage in milk production compared to the United States and Europe.

In the United States, more land and labor are required to dry-lot feed forage and the relatively large quantities of concentrate. Most of the feed is carried to the cows, rather than foraged by them. Because cows are pastured year-round in New Zealand, practically no feed is fed to them by the farmer.

⁶ Boyd M. Buxton and George E. Frick, "Can the United States Compete with Dairy Exporting Nations?," *Journal of Dairy Science*, Vol. 59, June 1976, pp. 1184-1192.

What does milk cost for manufactured dairy products? How much do farmers throughout the world receive for their milk? These prices substantially affect competitive ability of various countries. The target price for 100 pounds of milk in the nine countries of the European Economic Community varies with exchange rates but is expected to be about \$10.47 (U.S.) in Germany to \$8.16 (U.S.) in the United Kingdom for the period beginning September 15, 1976. The average 1975 U.S. manufacturing milk price was \$7.62 per 100 pounds and was about \$8.66 in July of 1976.

The final milk price received by Oceana (New Zealand and Australian) farmers for the 1975-76 year will not be known until all sales of their products are made and the returns are allocated back to the farmers. However, the announced or expected price per 100 pounds of milk is \$4.80 (U.S.) in New Zealand and \$5.40 (U.S.) in Australia.

Processing efficiency. The cost of manufacturing milk into butter, non-fat dry milk, and cheese is lower in the United States than in Europe or Oceana. Although their processing technologies are similar, the United States experiences lesser seasonal fluctuation in milk production. New Zealand and Australian factories are essentially closed during their winter months of June and July. Because of the more marked seasonal fluctuation in milk production, New Zealand and Australian dairy plants operate annually at a lower percentage of capacity than do U.S. plants.

The main conclusion from this information is that Oceana can, but Europe cannot, ship dairy products to the United States more cheaply than U.S. farmers and processors can produce them.

Without an export subsidy, Europe could not pay its farmers the going target price, cover the slightly higher processing cost, pay transportation to the United States, and still make a profit at current U.S. dairy product prices. A few exceptions involve specialized dairy products having limited U.S. markets (for example, Danish blue cheese). On the other hand, New Zealand and Australia could both put manufactured dairy products on American consumers'

tables cheaper than can our own industry. If New Zealand had unlimited supplies, a free trade policy would be disastrous to the U.S. dairy industry. However, New Zealand's total production is only about eight percent as much as is produced in the United States. Australia produces slightly more milk than New Zealand but has less available for export. Given world markets, New Zealand and Australia cannot replace our dairy industry, even under free trade conditions.

Countervailing duties are a different issue; if imposed, they would put back on a straight competitive basis other countries interested in subsidizing their exports to us. Under threat that the United States would impose countervailing duties, Europe chose to eliminate export subsidies on many dairy products to the United States, thereby effectively pricing them out of the U.S. market.

Federal Milk Marketing Orders

Today, the impact of many federal regulations in our economic system are being questioned. Some questions have focused on milk marketing regulations. A particular concern is the impact of classified milk pricing according to use, a basic part of the current federal milk marketing order program. Recent studies have attempted to measure the social cost of these regulations and to identify to what extent consumer prices are affected. These studies have concluded that consumers now pay higher prices for fluid milk than they would without regulation. There is much interest in this question, and the issue is not quickly going to disappear. Eventually, the policymakers will decide whether the current federal milk marketing order program will be continued as is, be modified, or be eliminated. The decision can have major implications for the Minnesota dairy industry.

The Economic Research Service (ERS) of the United States Department of Agriculture is beginning a study to evaluate the impact of the federal milk marketing order program. This study should be completed in early 1977.

Two points seem highly relevant concerning the classified pricing program under federal and state orders. First, the U.S. price for manufacturing milk is lower than it would be without



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orders. Higher fluid prices under classified pricing, restrict consumption of fluid milk, and increase total returns to the dairy industry. The higher returns increase total milk production, thereby increasing the amount diverted into manufactured products. This, in turn, depresses the U.S. manufacturing milk price. This, alone, makes

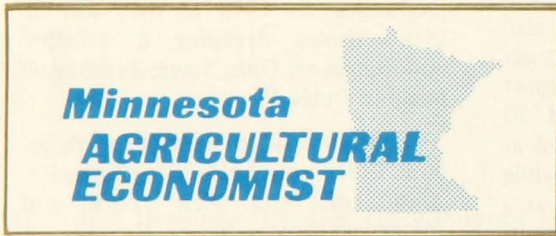
the United States relatively more competitive in the world for manufactured dairy products than it would be without orders. How much more competitive will be measured in the ERS study.

Second, dairy farmers in Minnesota and Wisconsin (both Grade A and certainly Grade B producers) probably are placed at a competitive disadvantage relative to most other areas in the United States. Higher Class I milk prices restrict fluid consumption throughout the United States, causing more milk to be diverted into manufacturing. This, in turn, lowers the manufacturing milk price. Because a large proportion of Minnesota and Wisconsin milk is being used as manufacturing milk, producer prices probably are lower than they would be without classified pricing. The extent of this possible disadvantage facing Minnesota and Wisconsin producers will also be analyzed in the (ERS) study. Although it is not likely, some

rather far reaching changes in milk marketing are possible. These changes can substantially alter the dairy industry. Those in the dairy industry should follow these developments and participate as much as possible in future policymaking.

Conclusions

The risks and uncertainties have greatly increased for short and long run decisionmaking within the U.S. dairy industry. These conditions, likely to persist, mark the beginning of an era of relatively unstable prices and marketing conditions. Changes in consumption, trade policy, government programs, and production costs will all affect dairy farming. Although many adjustments will be made during the years to come, dairy farming in the United States is not going to disappear. The opportunities and prospects should be good for well-managed efficient dairy farms.



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