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Vermont's Dairy Sector: Is There a Sustainable Future for the 800 lb. Gorilla?

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Dairy is synonymous with Vermont. From the colorful post cards to the images on Ben and Jerry's ice cream containers to famous Cabot Cheese to the images of the Vermont fall pastoral scenes with cows grazing on the hillsides, dairy is the Vermont image held by the nation. This is no accident as dairy is the 800 pound gorilla in Vermont agriculture. Dairy is number-one in agricultural sales in Vermont since 1900 when dairy cows replaced sheep on Vermont's pastures. Dairy annually accounts for 70-80 percent of Vermont's agricultural sales, making it the number one state in the United States in its dependency on one commodity. However, dairy is undergoing some troubling times, raising questions about its future in Vermont. With depressed dairy economic conditions, the gorilla is still dominant in the state and will be around in the coming years — although likely at a different scale than its former healthy 800 pound image.

In 2009, at the same time as a national recession, U.S. dairy farms experienced their worse financial conditions since the 1930's. Following record prices in 2008, a milk price collapse in hand with high feed prices saw dairy farms incur financial losses of nearly \$350-500 per cow in 2009 (Northeast Dairy Farm Summary 2010). Anecdotal reports from lenders and



KEY QUESTIONS

- Will the organic sector resume its previous prolific growth or will it stagnate?
- The growth in artisan cheese presents an opportunity for a few farmers, but will it continue?
- How does the interest in local foods affect Vermont's dairy sector?
- Will the interest in raw milk present a future option for dairy farmers?

UVM Extension cite losses over \$700 per cow for 2009. If there was any silver lining in such a disaster, western dairy farms, which now account for a greater percentage of U.S. milk production, incurred larger losses than farmers in Vermont, Wisconsin, and New York. Vermont did have a bit of reprieve because 20 percent of its dairy farms are organic, reducing the impact of the conventional milk price collapse.

In Vermont, farm losses led to a decline in dairy farms, milk production, and financial losses for many farm services as feed providers, veterinarians, equipment dealers, fuel dealers, and other input suppliers. According to the USDA (2010) milk sales in 2009 fell to \$341 million from \$502 million in 2008. The impact on rural communities is significant with farmers unable to meet tax payments. Even Vermont's organic dairy farmers incurred market setbacks as demand for organic milk dropped and processors quit signing on new farmers, reduced base prices, imposed marketing quotas, and raised hauling fees. While profitability for organic dairies dropped, their economic plight was much better than their conventional neighbors.

Vermont currently produces 2.3 billion pounds of milk annually from 135,000 dairy cows on about 1,000 dairy farms and the state ranks 16th nationally in milk production. One unique aspect of Vermont's milk production is that with such a small population, Vermont must export about 85 percent of its milk to other states. The sustainability of Vermont's dairy sector, its other agricultural sectors, and support industries is tied to its dairy farms. Milk prices, which rebounded a bit in early 2010, could present different scenarios for the future.

Questions linger: Will the organic sector resume its previous prolific growth or will it stagnate? The growth in artisan cheese presents an opportunity for a few farmers, but will it continue? How does the interest in local foods affect Vermont's dairy sector? Will the interest in raw milk present a future option for dairy farmers? These issues will

be addressed below after a discussion of how Vermont arrived at this junction.

Background of Dairy in Vermont

In the 20th century dairy emerged as Vermont's number one agricultural sector, taking over from the sheep which had made Vermont a major player in the Civil War in providing wool for uniforms. The opening of western plains and Australia to sheep production put Vermont at a comparative economic disadvantage in the one sector where Vermont farmers had found a niche. Sheep farming was so dominant in Vermont that in the late 1800's, it was estimated that 70 percent of the land was cleared, mostly for farming and sheep pastures. With the demise of the sheep, many of Vermont's hillsides reverted to woodland in such a manner that today 70 percent of Vermont's landscape is wooded and only 30 percent cleared, with about 10 percent in residential/industrial use and about 20 percent in agriculture.

Why has dairy come to dominate Vermont's agricultural sector at such a level? In economic theory, regions tend to specialize in production in which they have comparative advantage. In the United States, southern states specialize in cotton, the Corn Belt in corn and soybeans, western grazing lands produce beef cattle, and Wisconsin specializes in dairy. There is a corollary to economic theory that indicates that regions without a comparative advantage specialize in production of goods in which they have the least economic disadvantage. For Vermont, dairy has emerged as the product of least disadvantage. The state does not have the deep well drained soils to compete with the Midwest on corn and soybeans. Vermont's short growing season limits grain production and definitely forbids cotton. Winter also limits Vermont's use for beef as so much feed is needed for maintaining animal condition.

Dairy, however, has proliferated in Vermont's environment. Our short, cool growing season promotes the growth of grasses which are vital for dairy cows and allowed grazing in summer and hay production for winter feed. While not holding

Vermont produces 2.3 billion pounds of milk annually from 135,000 dairy cows on 1,026 dairy farms. 85% of the milk is exported to other states.

an advantage over Wisconsin, New York, and Pennsylvania, Vermont could compete with other states, especially on the production of cream, cheese, and butter, which were easily transported to eastern seaboard population centers by rail. By the end of World War II there was barely a Vermont farm that did not have milk cows.

Modernization of Vermont's Dairy Sector

Vermont dairy farms underwent a technology metamorphosis after World War II. Electricity came to the farm. Tractors replaced horses. Powered equipment eliminated much hand labor for feed harvest and handling. Artificial insemination made top genetics available to all dairy farmers. Dairy farming began its change from a way of life to being a business. Farmers adopted vacuum milking machines on a widespread basis. Electricity permitted the use of can coolers and eventually bulk tanks to improve milk quality and ease of transport. Barn cleaners removed some of the drudgery of handling cow manure. Stainless steel milker units, buckets, and milk storage tanks became the rule.

Farmers also experienced a changing market environment from Federal Milk Marketing laws. In an effort to assure consumers of safe, consistent, and fairly priced milk supply, laws were put in place on farmers and processors. Farmers received the benefit of a floor price and an assurance of markets during periods of high seasonal production which occurred with abundant spring grass. With these protections, farmers were required to use stainless steel equipment, refrigerated milk storage, and meet minimum sanitary conditions with federal and state oversight and inspection. The impact of these market and production rules enabled farmers to get loans for equipment and infrastructure improvement because bankers were more assured of repayment from regular milk payments. These conditions brought on the emergence of commercial dairy farms in Vermont with the farmer specializing in managing crops and cows for top milk production.

Structure of Vermont Dairy since 1965

Fewer dairy farms, more cows per farm, and more milk per cow has been the general rule since the 1950s. Only three times in the past 50 years has Vermont seen an increase in the number of dairy farms. Instead Vermont, as all other states, generally experienced a 3- to 5-percent decrease in dairy farm numbers through periods of good and bad prices. Today, Vermont has 1,026 dairy farms, down from more than 6,000 in 1965 (Vermont Agency of Agriculture 2010).



Although the number of dairy farms has declined, there has been a dramatic increase in the number of cows per farm. Average herd size climbed to 40 cows per farm in 1970, to 60 cows per farm in 1990, and to 125 cows in 2010. However, overall cow numbers have dropped each year to a population of 135,000 cows in Vermont in 2010.

While farm and cow numbers have declined, technology, breeding, feeding, barn design, and management skills have tripled the amount of milk produced per cow. In 1965, the average cow produced nearly 6,000 lbs. of milk per year. Today, the average cow is producing more than 18,000 lbs per year with top herds hitting 25,000 lbs of milk per cow per year.

Vermont today produces about 1.3 percent of the nation's milk, about the same as in 1970. But today's dairy farm looks little like the farm of 40 years ago. Milking parlors, drive-through feed alleys in high free-stall barns, mixers dispensing TMR (totally mixed rations) feed to hundreds of cows, manure pits holding millions of gallons of manure, and robotic milkers indicate how specialization has transformed Vermont's dairy farms. Farming is now a capital intensive industry where many farms are marketing 750,000 lbs of milk per full time worker. Investment is high and profits are razor thin and volatile.

Economics has driven the growing farm

size in Vermont and across the country. Farm size in Vermont corresponds closely with neighboring and mid-western states. Much of the change in farm size has been expansion in western states of California, Idaho, New Mexico, and Texas. To remain competitive with large western drylot dairy farms, Vermont farmers have had to get bigger to maintain competitiveness.

Much of this has been driven by milk prices. Up until about 1990, milk prices rarely fluctuated but pricing changes by Congress brought in a period of volatility. In the early 1980's, relatively high support prices encouraged dairy farmers to produce more milk. In 1983, the U.S. Government bought nearly 12 percent of the country's milk production at a taxpayer cost of \$2.6 billion (personal communications, USDA, 2010). Congress approved two programs to reduce milk production, the Dairy Diversion Program in 1983 and the Dairy Termination Program in 1985, which paid farmers to get out of dairy and slaughter their cows.

Within a short time after these programs, milk production began to rise again, resulting in Congress reducing support prices and relying more on market forces. Prices that rarely moved more than \$1 per cwt during a year began showing considerable volatility. Through the 1990s and 2000s prices showed extreme variability and at times, milk prices dropped by \$3-6 per cwt in one month.

Since 1990, farm milk prices have followed a three-year cycle of market highs followed by steep declines (See Chart 1). Casual observation indicates that the spikes are going higher and lower.¹

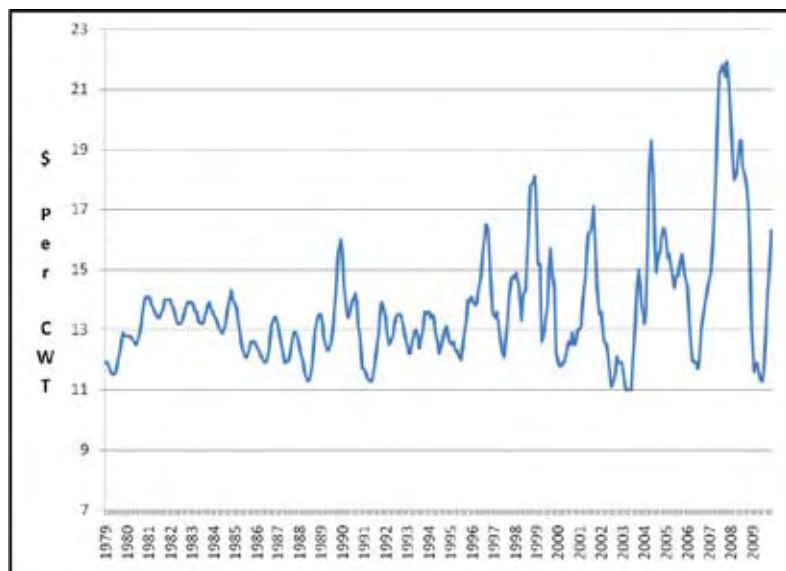
By 2008, farm milk prices hit an extended period of record highs for several months before crashing to 30-year lows. In June 2009, the USDA reported the all-milk price was \$11.79 per cwt, which was 10 cents below what farmers received in June 1979 (USDA, 2010b). These prices are in nominal dollars and are not adjusted for inflation. Try to think of any other industry other than agriculture where producers receive prices similar to 1979 levels.

Ethanol production in the United States has hit dairy particularly hard since 2006 with the impact on skyrocketing feed prices. Until the summer of 2006, dairy farmers and other livestock producers benefited from USDA programs that encouraged surplus corn and soybean production. The price for corn in September 1979 was \$2.51 per bushel and in September 2006, the price was \$2.20. Low feed prices enabled livestock producers to continue production at prices they received 30 years earlier. However, in 2006 the world began to change — oil prices started a record climb and corn use for ethanol skyrocketed as the country began to grow its own fuel. Although politicians and energy experts touted the benefits of corn-based fuel, the public and livestock sectors soon saw an increase in the cost of all grain-related food products.

Consider the price rise of corn which went from \$2.20 in September 2006 to a high of \$5.71 in 2008, before lowering to \$3.27 in 2009 (University of Illinois 2010). The movement of corn, protein, and other substitute grains in conjunction with rising fuel prices raised dairy production costs by more than 30 percent.

When combined with the 2009 drop in milk prices, Vermont's dairy farms

Chart 1: US All-Milk Price 1979-2009



Source: United States Department of Agriculture, 2010b

¹ Farmers are paid for their milk in 100 pound units (approximately 11.5 gallons) at 3.5% butterfat based on a blend of milk usage of Class I, II, III, and IV. Additions or deductions are made to individual prices based on fat and protein components. Farmers also pay for transportation costs from the farm to the first collection plant.

encountered the worst economic climate since the Depression. Financial reports by lenders, University of Vermont Extension, and Vermont Farm Viability estimate that some farms lost \$700 or more per cow, or an estimated \$90,000 cash loss per average 125-cow dairy farm in 2009. In addition, dairy farmers lost additional equity in the declining value of dairy cows and farmland. To put it simply, the economic status of Vermont's conventional dairy farms is the worst in recent time with little optimism to regain the 2009 losses in the next two years.

One twist to the modern dairy trend was the emerging organic sector in the 1990s that now accounts for 20 percent of Vermont's dairy farms. This is described in greater detail below. For the remainder of this paper, the term conventional will refer to non-organic farms.

Other Factors Confronting Dairy Farms

Vermont dairy farms face additional pressure beyond the economic situation. Farms face pressure on environmental issues, public acceptance of large farms, urban encroachment, and the difficulties younger farmers encounter as they try to get into dairy farming.

On the environmental front, many dairy farmers are facing phosphorus management challenges. Lake Champlain and other surface waters have experienced algae eutrophication in recent years from phosphorus loading linked to manure management. As a result, many farms face implementing costly practices to store and spread manure to assure phosphorus applications do not exceed the phosphorus removed from growing crops. There is little doubt that environmental standards will get tighter in coming years. Other environmental challenges could include limits on methane discharge from dairy cows.

The public faces challenges accepting today's large dairy farms. As farms get bigger, more cows are at one location. Manure disposal and feed production take more land that is further from the farm center. Farm implements on public highways create

safety hazards. The greater concentration of cows can create fly, pest, and odor problems. Simply put, large farms are not meant to be close to neighbors who fear all of the negative impacts from the above and possibly a loss in real estate values.

Neighbor complaints about dairy farms are growing from a increasing number of individuals, few with any farm exposure, who move to the scenic, rustic, rural areas of Vermont only to confront the reality of modern farming. These individuals complain about smell, possible pollution, pests, impact on home values, and their perception of "factory farms."

Farmers likely respond that they were there first, are just farming, and complain that urban encroachment forces land values to rise, making land too expensive for farming. Some may say that people who move to rural areas should expect that but the neighbors are not accepting large farms without protest (Smith et al. 2008).

Getting into farming is increasingly difficult. Investment in cattle, equipment, buildings, and land is higher than ever, often exceeding \$7,000 per cow. Starting farming is difficult without inheriting or marrying into a farm family. If a person does not have a farm to go home to, there are few options. One may find an older farmer without any family interested in the farm who may offer a startup opportunity. Otherwise, the only choice is for young farmers to gain experience and start building a herd. Growing into a size that is large enough to support a family unit requires considerable financing that is difficult to obtain without additional assets. It can be done but it takes considerable effort and dedication for a young person to get started in dairy farming. Even those who have a home farm to return to have difficulties setting up a transition plan between generations.

These are just a few issues facing dairy farmers outside of the straight economic challenges of price and cost. The truth is that dairy farming is difficult. Even in good times, 3 to 5 percent of the states's farms go out of business. The remaining farms are getting

Vermont dairy farms face a number of challenges, including the economic situation, environmental issues, public acceptance of large farms, and difficulties for younger farmers to get into farming.

larger, require a greater investment, and demand sharper management. It's not your grandfather's milk stool anymore.

Future of Conventional Dairy

The future of Vermont's dairy farms is questionable at this point in time. Much depends on what milk prices will be in the coming year. Will dairy policy change? Will water pressure on western dairy farms provide an advantage for smaller eastern and upper Midwest dairy farms? Economic conditions are very tenuous for many farmers. Will they receive additional credit? Will they lose much of their equity they have built over a lifetime? Will Federal milk pricing rules change? It's hard to expect anyone to start up when many in the industry are going out of business.

For the immediate future, dairy looks to be a break even deal at best in Vermont.

For the immediate future, dairy looks to be a break-even deal at best in Vermont. Prices on the futures market for milk and feed inputs suggest that the cost of production will remain in the \$16 to \$18 range while milk prices may peak in 2010 at about \$17 per cwt. What will happen in 2011 and beyond is uncertain. When one looks at new technologies like sexed semen that can dramatically increase heifer calves, which grow into cows to produce more milk, one has to wonder where the dairy industry is headed. This is a crisis that will impact the future of agriculture in Vermont for years to come. Some major questions include how many dairy farms might go out of business in the next year? What will happen to their land? Will the land be picked up by other farmers, abandoned, or sold as vacation or investment property?

For the milk market, much depends on the future direction of federal programs. At this time, milk prices are influenced more by market forces than by government programs. In the past year, a farmer-lead program, called Cooperatives Working Together has collected contributions from 80% of the dairy farmers in the country to buy cows and send them to slaughter, in hope of reducing cows numbers

and milk production, thus increasing milk prices. The USDA has assisted dairy farmers with the Milk Income Loss Contract (MILC) which aided dairy farmers somewhat during the most recent downturn. There also has been an additional government subsidy that helped but still did not change the directions of the markets. There is also a national movement to get congressional approval for a supply management program but it is unclear what Congress may do as there is always hesitancy to change established programs.

The future of the dairy sector will have implications well beyond the farmgate. Farmers buy inputs from businesses that supply feed, fertilizer, seed, fuel, equipment, buildings, and vet services. These businesses are also suffering and risk bankruptcy. There are estimates that Vermont dairy farms owe creditors up to \$150 million with some firms reporting accounts receivables of more than \$30 million. Vermont's landscape will be tremendously changed if it loses numerous dairy farms and support industries.

Organic Dairy

Organic dairy has been the fastest growing agricultural segment in Vermont in the past 15 years. A developing sector that has deep roots in Vermont grew from two certified organic dairy farms in the early 1990s to 200 farms in 2010, comprising approximately 20 percent of Vermont's dairy farms. Vermont is second only to Maine in its percentage of organic dairy farms. The estimated milk production coming from these farms is only about 7 to 8 percent of Vermont's total milk because organic farms are generally smaller size and produce less milk per cow. Economic studies of Vermont's organic farms show an average of 65 cows per farm with production at 13,000-14,000 lbs per cow as compared to about 120 cows producing 18,000 lb. of milk per cow for conventional herds (Dalton et al. 2008). But organic markets have also suffered from the financial downturn, with organic dairy processors limiting production from dairy farms.

There are a number of reasons for organic's success in Vermont, including innovative individuals, farmers with a

dedication to organic, and a supportive organization in Northeast Organic Farming Association of Vermont (NOFA-VT), which provides key technical support for farmers.

Organic growth took off with the development of Organic Cow organic milk in the early 1990s. This innovative organic milk processor was a huge success in bringing organic milk to consumers through the northeast. Soon other firms started and more farmers switched to organic milk production for ethical and economic reasons. Farmers received a higher price and due to contracts, and knew what they were going to receive for their milk for the coming year. Looking at Chart 1, one can see why contract pricing was popular among farmers. Meanwhile, conventional milk prices were growing increasingly volatile making it difficult for smaller producers to plan their cash flow for the year. With higher milk prices but lower milk per cow, organic dairy farms were comparably profitable with conventional farms and due to the contracts, were more stable economically.

Organic milk production was driven by growing demand, which increased nearly 20 percent annual growth by 2005. Increasing demand for organic milk and a change in the transition rules led to nearly 80 Vermont farms converting to organic in 2006 and shipping certified organic milk in 2007. This larger amount of milk was initially absorbed into the organic pool. In 2008 the financial crisis hit organic milk particularly hard. Organic milk sales began to drop. This left processors with too much organic milk and they discontinued signing on new farms. Price premiums were discontinued. Base milk price have dropped in some cases. In Maine, one processor dropped contracts with some organic farms. In Vermont, many organic dairy farms were faced with marketing quotas that reduced their milk production by 5 to 7 percent. Despite these market changes, organic dairy farmers were still better off in 2009 than their conventional neighbors who were suffering horrific financial losses (Parsons et al. 2010, Samuelson, 2010).

For the past 10 years, organic dairy has provided a profitable alternative for smaller Vermont dairy farms. For many of these

farms, they faced the option of going organic or getting out of the dairy business because they could not or would not get larger to compete in the conventional market. Many small farms located in narrow valleys did not have available land to get bigger. Many would have had to incur substantially more debt to enlarge buildings. Some did not have the financial means to increase size. Others just did not want to milk more cows.

The final decision for many of these farmers was to go organic with lower milk per cow, but sell at a higher price, and become more profitable than they would have if they remained conventional. An ongoing economic study confirms that many of these farms believe they would not be in business today if not for their decision to go organic. This has kept more dairy farms in business in Vermont than if the organic option was not available. Organic dairy has created numerous businesses related to organic dairy supplies and feed. It has helped rural communities through thriving farms that pay taxes and buy services. Organic farms have bought equipment and made infrastructure improvements as they have enjoyed their profitability. Organic dairy production has been a winning prospect for Vermont (Dalton et al. 2008).

The future of organic milk production is not as bright as its past. Any sector has a challenge to maintain 20 percent growth rates. The future direction of the economy will have a major impact on organic dairy demand. With limited growth, there will be little need for additional organic dairy farms which limits choice for smaller Vermont farms. One major factor that may be beneficial for Vermont farms is the USDA grazing requirements for organic cows. It appears that Vermont farms will be at an advantage over larger western confinement organic dairy farms after the rule is implemented. Another factor that could assist organic dairy farms is the potential demand for organic dairy products such as cheese, yogurt, butter, and ice cream. To date these products have not had near the market success as has fluid milk. In August 2010, organic dairy farmers received some good news that processors will remove the marketing quota and may take on some additional producers.

Given current market conditions, it appears Vermont's organic dairy farms face a stable but stagnant market situation for the next several years. However, with a rebounding economy and tougher grazing requirements, organic dairy could easily enter another period of slow growth that favors Vermont and smaller size organic dairy farms. We may never see 20 percent market growth again but slower growth is still very feasible for the future.

Artisan Cheese

One possible alternative for a fraction of Vermont's dairy farmers is in artisan cheese production and sales. It takes an average of 10 lbs of milk to make 1 lb. of cheese. Milk with higher fat and protein content has a lower milk-to-cheese ratio. Therefore, if one can convert milk to cheese and recover the value of the milk, the cost of making the cheese, and owner's time, one could be better off getting into cheese production. An added bonus is the production of niche market artisan cheese which can command a higher price and greater profit in the marketplace.

At present, there are estimated 30 to 40 cheese makers in Vermont producing and selling various types of cheese. This number includes some sheep and goat cheese makers. A few use both cow and goat milk for their cheese. One challenge to cheese making has been the curing process which is usually done in a cool dark storage area, usually called a cave. To solve this challenge, two Vermont cheese makers in Hardwick have invested in a large cheese storage unit and provide space to other cheese makers.

Cheese makers face challenges from learning both how to make the cheese and in marketing their cheese. The objective is to increase net revenue and this will not happen very easily from commodity type cheese. However, getting into the niche cheese markets requires considerable marketing skills and persistence, which is not necessarily a characteristic of commodity-thinking milk producers.

The question is whether artisan cheese presents an economic opportunity for Vermont dairy farmers. Several have captured

the rewards of this opportunity while others are struggling to begin reaping the rewards. There is an effort by some to cooperatively joint together to market Vermont cheese. The advantages and pitfalls of the above situations are varied. Market wise, there will likely be only a few highly successful artisan cheese varieties. However, by joining with others to promote fine Vermont Artisan Cheese, farmers could share the expertise of professional marketers and expenses and reach markets they could not reach on their own. The key is understanding the product and marketing differences. Milk production is a commodity whereas artisan cheese is a niche market product. Seldom do expert commodity producers excel in niche marketing. It's a totally different business. For those farmers able to capture a niche cheese market, their future looks very rosy. However, there will be those who will not make the grade and likely not improve their future financial situation.

Local Food

The movement for the support of local foods is difficult to assess with the dairy sector. Just what is local for milk? In many towns, local milk is not available because milk is collected and transported to processing plants for pasteurization and packaging and sent back to retail outlets for sale as fluid milk and milk products. The source of the milk is not identifiable. Is Vermont local? For a state where 85 percent of the milk is exported, pushing local may be counterproductive. Dairy farmers in Vermont would not be in business if consumers only wanted "local" milk, meaning people in Boston would not want milk imported from Vermont. Is New England local? Arguably yes for Boston and the northeast population centers that do not have local milk supplies. But any movement of milk toward New York City/New Jersey markets would face competition from milk from New York State which could be defined as more local. Therefore, when you depend on exporting your product, pushing local could be very counter-productive.

Local foods may have a role for a limited number of farmers in Vermont. Booth Brothers and Monument Farms supply local

milk in Vermont and promote their milk as such. These processors command a higher retail milk price but whether it translates to higher income for the farmers is not clear. At the time of this article, it is believed that Monument Farms pays local farmers a small bonus above going milk prices. However, this amount was insignificant in the recent milk price downturn.

One of the few producer/bottlers in Vermont is Strafford Dairy, which processes its own organic milk into fluid milk and ice cream that is sold in cooperative stores throughout the state. This type of farmer-processor is often thought to be capturing all the so-called middleman profits. Other farmers think of getting into processing but change their minds when they realize the investment in pasteurization and packaging equipment can exceed \$500,000. Another challenge is that this type of business requires specialized marketing skills. Besides, dairy production is more than enough to keep one busy. Getting into processing and retailing requires time, investment, marketing, labor management, and consumer relations skills.

Arguably, Vermont has the potential for additional farmer processors but this opportunity is likely limited to a handful of farmers. For example, just how much milk can be sold in a locality? An average Vermont dairy farm produces about 2.2 million pounds of milk from 120 cows. This is more than 251,000 gallons. Now think of the demand side. If a family of four uses two gallons of milk per week, this comes to about 100 gallons per year. The average farm could supply milk for 2,500 families or 10,000 people. Using this logic, we would only need 13 farms to supply fluid milk for 100,000 people or 80 farms to supply more than enough fluid milk for all of Vermont!

Then think of competition in the marketplace. Assume you had six or more farmers in a market area that begin to process and market their own milk. Could they command a higher price for additional profits? They would be competing against store brands and against each other. How many does it take to saturate a local market? How many local sources does it take before

the farmer-processors are competing strictly on price? Think of being a consumer going to the dairy counter and seeing milk from 10 local farms. The consumer has a generally equal opinion of each farm on quality or does not know any of the farms personally and cannot distinguish between them. How does the consumer decide which brand to buy? The best guess is that price has a major impact on the decision. Without gaining an extra price in the marketplace, it would be difficult for the farmer-processors to make any additional profits to cover their additional processing and marketing costs.

Therefore, while the potential for some farmer processors does exist, it is likely that it would only impact a handful of farmers in any certain area of Vermont. Early entry is important to capture long term customer loyalty and profits.

Raw Milk

Nationwide there is a rising interest in raw milk (non-pasteurized) by consumers who tout its nutritive value. In 2009, the Vermont Legislature approved an increase in legal sales of raw milk by farms to 50 quarts of milk per day. The arguments heard by the legislature would confuse any interested individual. From the testimony given by an array of experts one could conclude that raw milk was the most toxic food product ever available or the most nutritive product that could cure everything except AIDS. Among dairy farmers there is a range of opinions on how a case of raw illness would impact overall milk demand. Others wanted to know why a product that people wanted to purchase was not available legally. The final decision by the legislature was based on the idea of providing people the option to purchase what they desired.

Raw milk does present an opportunity for some farmers to sell milk at the farm for a premium but the percentage of milk being sold as raw is small and will likely remain so. Remember that 85 percent of Vermont's milk is exported to other states. So even if everyone in Vermont began drinking raw

Although there is potential for farmer-processors, it is likely that this opportunity would impact only a handful of farmers in certain areas of Vermont.

milk, we would still have to export a lot of milk. Export of raw milk to other states is likely not in the works as this would need some detailed agreement between states and the federal government. The current law does not even allow for selling raw milk at locations away from the farm where it is produced.

Farmers who sell raw milk can command of premium of \$2 to \$3 per gallon. Some farmers are getting a higher premium from selling raw organic milk which commands a higher price. How much sales of raw milk can help dairy farm income is debatable. Farms closer to towns with easily accessible locations possess the greatest market potential. Where there are more dairy farms but less people, the opportunity for selling significant amounts of raw milk is slim. Selling raw milk also carries a potential liability if consumers get sick.

The demand for raw milk is also the leading reason for the growth of non-commercial dairy farms. These are farms milking less than 10 cows and whose primary reason for owning dairy cows is to obtain their own raw milk and sell the extra. This group is reportedly growing but is difficult to measure or estimate their production and sales levels due to difficulty of identification. This sector is expected to increase in coming years with greater emphasis on local foods and desire for local organic foods.

Conclusion

In the above sections we have examined various aspects of Vermont's dairy sector. About 80 percent of Vermont's dairy farms are conventional and produce an estimated 93 percent of Vermont's milk. Another 20 percent of Vermont's dairy farmers are organic, and produce about 7 percent of the total milk. Vermont is a small state and 85 percent of our milk leaves the state. Vermont is more dependent on one commodity, milk, than any other state. And milk accounts for 70 to 80 percent of Vermont's agricultural income. Dairy is the 800 lb. gorilla in Vermont agriculture.

But dairy has become a sick gorilla. In the conventional market, low milk prices and escalated feed prices caused 2009 to be the worst year for the dairy industry since the Depression. Many farmers have experienced substantial losses and have large outstanding accounts to their suppliers. Milk prices appear to be heading toward a break even level; however, overcoming losses incurred in the past year will be difficult. The future is not very optimistic at this point and the long-range impact could be a major loss of farms and a restructuring of the dairy industry in the state. At best, it appears Vermont's dairy farms will try to hold their own for the near future until some change in prices or Federal policy occurs.

Organic dairy appears to be in a stronger condition. Farms have cash flowing, although declining profitability is the likely near-term outcome. Much of the future of organic dairy lies with the revised USDA organic ruling grazing requirements and the national economy, which seem to favor the growth of profitable organic dairy farms. Marketing quotas were being removed in August 2010 so the future does look brighter for organic dairy farms.

Other options such as raw milk, artisan cheese, and local marketing present some diversification options for Vermont dairy farmers. Of the three, artisan cheese is the most developed. There is profit in raw milk and local marketing but the state produces far more milk than needed by Vermonters. These options will likely affect only a few farmers, although it could greatly assist those few considerably.

Milk production will remain important in Vermont. It's a weakened 800 lb. gorilla but due to economic comparative advantage, there is not much else that can be done on Vermont's 800 conventional dairy farms that will produce the income generated by dairy. What will the future hold? We will have to wait and see but the future is coming fast!

Options such as raw milk, artisan cheese, and local marketing present some diversification options for Vermont dairy farmers.

References

- Dalton, Timothy, Robert Parsons, R. R. Kersbergen, G. Rogers, D. Kauppila, L. McCrory, L. Bragg, Q. Wang. "A Comparative Analysis of Organic Dairy Farms in Maine and Vermont: Farm Financial Information from 2004 to 2006." Maine Agricultural and Forest Experiment Station Bulletin Number 851, University of Maine, July 2008.
- Parsons, Robert. History of Organic Dairy Farming (in preparation for submission for publication), 2010.
- Personal Communication, USDA, Dr. Milton Madison, 2010.
- Samuelson, J. 2009 Northeast Dairy Farm Summary, Northeast Farm Credit Associations, 2010.
- Smith, Julie, Robert Parsons, Katie Van Dis, and Grace N. Matiru. "Love Thy Neighbor... But Does that Include a 684-Cow Dairy Operation? A Survey of Community Perceptions." *Journal of Dairy Science*, 91, (2008):1673-1685.
- University of Illinois. <http://www.farmdoc.illinois.edu/manage/pricehistory>, 2010.
- USDA. Milk Production, Disposition, and Income. 2009 Summary, United States Department of Agriculture, DA 1-2 (10), April 2010.
- USDA. United States Department of Agriculture, National Agricultural Statistics Service. <http://www.nass.usda.gov/QuickStats/>, 2010b.
- Vermont Agency of Agriculture. Unpublished statistics, 2010.

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