

Opportunities for Success on Small Dairy Farms Revisited

Ken Bailey, PhD, Dept of Agricultural Economics
Penn State University, University Park, PA 16802

Abstract

This paper offers advice to veterinarians that service small dairy producers in the United States (US). There are opportunities in today's market place for dairy producers that want to remain small, but only if they follow a few basic business practices. These may include getting to an optimum size that will generate adequate income for family living while avoiding the problems associated with a "large farm," limiting investments and debt, focusing on just milk and heifer production, achieving high levels of productivity per cow, and avoiding some of the "philosophical issues" that prevent small farms from achieving profitability. In fact, these rules apply not only to small dairy farms, but any business. Small dairy farms can take advantage of strategies used by their larger competitors in order to prosper in the years ahead.

A central theme in this paper is that not all farms in the US have the same goals for profitability, family income and size of operation (number of cows). For example, some farms want to limit farm size in order to avoid hiring labor beyond what the family can provide. Others want to build equity before retirement. For others, a family may want to significantly expand in order to create opportunities for a son or daughter that wants to participate in the business. Thus it is important to recognize that people have different goals and objectives. That said, these goals must make sense in today's competitive market environment.

Résumé

Cet article offre des conseils aux vétérinaires qui font affaire avec des producteurs de petites fermes laitières aux États-Unis. Dans le marché économique actuel, la réussite pour les producteurs qui ne désirent pas s'agrandir n'est possible qu'en suivant quelques règles d'affaires bien simples. Ces règles peuvent inclure de choisir la taille optimale du troupeau qui permettra

de générer assez de revenus pour supporter la famille tout en évitant les problèmes associés à la gestion des grandes fermes, de limiter les investissements et la dette, de mettre l'accent sur la production de lait et de génisses de même que d'atteindre une forte productivité par vache tout en évitant les problèmes d'ordre philosophique qui empêchent les petites fermes d'être rentables. Ces règles s'appliquent non seulement aux petites fermes laitières mais en fait à toute entreprise. Les petites fermes peuvent bénéficier des stratégies utilisées par leurs plus gros compétiteurs dans le but de prospérer ultérieurement.

Le thème principal de cet article est que toutes les fermes aux États-Unis n'ont pas les mêmes buts en ce qui concerne la rentabilité, le revenu familial et la grosseur de l'entreprise (nombre de vaches). Par exemple, des fermes veulent limiter leur opération pour ne pas avoir à engager de la main d'œuvre supplémentaire. D'autres encore veulent accumuler des éléments d'équité avant la retraite. Dans d'autres cas, une ferme peut s'agrandir pour donner une chance à un fils ou à une fille de participer à l'entreprise. Il est donc bien important de reconnaître que différentes personnes ont des buts et des objectifs différents. Ceci étant dit, ces buts doivent être réalistes dans le contexte économique compétitif actuel.

Consolidation in the US Dairy Industry and Possible Reasons

The United States (US) dairy industry has been facing rapid consolidation over the last decade. Farm numbers have declined and output per farm has increased. According to USDA data, the number of dairy farm operations in the US declined from 159,450 in 1993 to 97,560 in 2001. Production per cow, however, grew from 15,722 lb (7,146 kg) in 1993 to 18,139 lb (8,245 kg) in 2001. Also, 57% of the milk produced in 2001 was from farms with 200 cows or more. In 1993, only 36.3% of milk was from this size group.

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There are many opinions regarding the reason for this consolidation in the US dairy industry. Here are my top five reasons:

1. low milk production,
2. poor sales relative to investment, resulting in a low return,
3. poor business knowledge,
4. labor inefficiency, and
5. low quality milk.

Clearly some of these overlap. First, one should recognize that milk is the product that a dairy farm sells. If it costs \$8 in feed to generate 100 lb (45.4 kg) of milk sold for \$15, then it makes sense to expand since there is the potential for profit. In many cases, expanding productivity per cow will allow you to lower your feed costs to say \$7 per 100 lb of milk, even though you are purchasing more feed. With very few exceptions, farms with high levels of productivity (annual milk sales per cow) have the potential to generate more profits than farms with low levels of milk productivity.

Related to this issue, no business can survive without increasing sales each year. To keep ahead of inflation, dairy farms must increase milk sales each year in order to have sufficient profits to live on. Given volatile milk prices, that means developing a plan to expand production each year through more cows and higher milk production per cow (productivity). That does not mean you need to jump from 50 to 5,000 cows. But it does mean you need to increase your sales at least 5-15% each year by improving productivity or by adding a few cows.

Second, no business can continue if they require a large investment and realize very poor sales. The result is a low return on investment. Dairy farms require a lot of capital. Thus farms that "over invest" in capital (i.e., a very expensive barn, parlor or machinery) and have poor sales due to low production levels will not survive over time. They will also not increase equity.

This relationship between sales and investment is called the asset turnover ratio. If a dairy farm invests in a brand new \$150,000 parlor, they must have the cows and milk volume to increase sales in order to cover this new investment. Otherwise, their overall profitability and return on capital will decline. This idea of comparing annual sales with total investment also works for Wal-Mart, Exxon, Microsoft, or the local "Mom and Pop" grocery store.

Third, poor business knowledge is a key factor in business consolidation. Dairy producers need more than just a good work ethic to make it in the business world. They need to know how to invest money to competing uses, increase sales, manage labor and other resources. In short, modern dairy producers need basic management and business skills.

Fourth, labor efficiency is one reason why some farms are more profitable than others. Many farms that

employ hired labor need to develop new skills to manage this important resource. That means lining up the number of hired workers with your volume of annual milk production. Labor must be budgeted each year, just as other high dollar items on the farm are (i.e., machinery and equipment, feed, etc.).

Fifth, the market today no longer wants poor quality milk. The days of commingling poor quality milk with good quality milk are nearly past. Dairy producers who consistently produce milk with a somatic cell count over 400,000 should either improve milk quality, or think about an alternative enterprise (i.e., heifer raising). Producers who cannot produce quality milk will find they no longer have a market. The premiums and discounts in the milk pricing system are weeding out poor performers. That said, producers of high quality milk will find increasing opportunities in today's market place, regardless of size.

Misconceptions That Affect Survivability of Small Farms

There are a number of misconceptions that some producers have regarding the US dairy industry. These misconceptions, unfortunately, may in fact lead to the demise of these very farms. Some of them are as follows:

1. The system is unfair.
2. Someone else, XYZ Corporation, is to blame.
3. I don't want to overproduce.
4. Low input means more profits.
5. My goal is to have the lowest cost of production.

First, the system is not unfair. Under federal order reform, cooperatives and their members, processors, and the USDA worked together to revamp the present pricing system. While not perfect, it does reflect marketing conditions, and in many cases reflects milk quality. Thus, the US dairy industry represents a balance between free market principles and government intervention. Producers are free to produce and market unlimited quantities of milk. Dairy policy has evolved over time, but always after significant debate regarding the impact of policy changes on dairy farmers, processors, retailers, consumers, and more recently, the environment. The fact is, good quality producers who recognize market forces will likely expand their operations and will become more profitable. On the other hand, producers of low quality milk who do not understand the basics of running a business will be punished by market forces.

Second, it is pointless to blame others for industry trends. The US dairy industry is part of a dynamic market that results in significant changes over time. These changes direct resources (i.e., money) in our economy. They decide, for example, why some farms

are expanding, and others are going out of business. This focus on business is one of the reasons we have such a strong economy compared to other countries. This was first discussed by Adam Smith, the father of modern economics, in his observation of a “guiding hand.”

Third, some producers do not want to improve milk output because they do not want to contribute to the “surplus.” After all, surplus milk is a cause of low milk prices. But if one takes this to the logical conclusion, those producers could do even more good by simply “sacrificing” themselves and going out of business. From a competitive standpoint, that does not make any sense. Our economy allows competition in order to determine who will produce milk and who won't. We do not as of yet have a national quota system.

Fourth, low input production is believed by some to lead to greater profits. The idea is that if I write smaller checks and spend less money, I'll keep more for myself. The only problem with this idea, of course, is that it does not work in the business world. Just the opposite is true. A business makes more money and more profits by leveraging capital—some borrowed—against a business model that works. In other words, you make money by spending money. A low input dairy means less milk production. Less milk means higher per unit costs, lower sales and less profit. More about this later.

Fifth, don't focus on more milk, just lower your costs. I hear that a lot. This argument is similar to the low input model. The idea is to get a bunch of dairy farmers together and compare their cost of producing 100 lb of milk. The farmer with the lowest per unit cost is the winner. Right? Well, not always. You can certainly achieve the lowest unit cost of producing milk by not ever investing in new cows, facilities and equipment. After all, doing so will result in depreciation and interest costs. The farm that is “living off depreciation” may have the lowest unit cost, since they have not invested in their business in years. That said, one should avoid over investing in your dairy farm, or ignoring costs. All investments and expenses should be carefully budgeted each year.

First, Define Success

Economists are not known for being decisive, and this one does not want to disappoint. However, to be clear, one should offer a very simple definition of what it means to be “successful” in today's dairy industry. From a business point of view, this means two things:

- earning sufficient dollars from the dairy operation to support family living, and
- building equity over time. Equity is that portion of the value of the farm that is not claimed by the bank (it's what the farmer owns).

I question the feasibility of an operation that does not at least contribute something to family living. The cost of raising a family is getting higher each year. Dairy farmers should be realistic about their needs. For some farms, one spouse may have to work off farm, and the other spouse run the dairy business and “contribute” to family living. From a farm management standpoint, the dollar value of this contribution should at least approximate a reasonable wage in order to justify the owner/operator's time.

The farm should also contribute towards equity over time. A farm that contributes only \$10,000 per year to family living could be viewed as “successful” if farm equity increases by an average of \$25,000 per year.

Equity is very important for another reason. If the farm has a bad year (i.e., low milk prices and/or high feed costs), they will need to borrow (reduce equity) in order to remain in business and hopefully prosper in a better year. One cannot borrow, however, if there is not sufficient equity in the business. A business that is losing equity over time will not be around for the long term.

One measure of success on a dairy farm is “profitability,” or the technical definition of revenue minus variable and fixed expenses. However, one should be careful in using this as the sole benchmark for success. For example, a holistic grazing dairy farm with 35 cows may technically earn a very good “profit,” say \$3 per hundred-weight (cwt), but are they “successful”? They have a high profit, but only because they have no buildings and equipment to depreciate. Their annual milk sales per cow may be just 11,000 lb (5,000 kg), resulting in a profit of just \$11,550, most of which is going into debt payments.

On the other hand, a new dairy expansion with 1,000 cows may only have a profit of \$2 per cwt, and annual milk sales of 25,000 lb (11,363 kg) per cow. Their profits are lower because they are incurring lots of interest costs and are depreciating cows, equipment and buildings. But at the end of the year, they have \$500,000 available for debt servicing and family living.

So who is more profitable? Is it the farm with the absolute lowest profit per cwt of milk sold, or is it the farm with the most cows? The point is, profit per cwt of milk sold is just ONE measure of financial success. Success should reflect a careful balance between annual contribution to family living and equity growth over time.

What Studies Show

Are small farms less profitable and less successful than larger farms? That question was recently addressed in a few studies.

Professor Tauer at Cornell University analyzed dairy farm business records for New York dairy farmers and concluded that larger farms are more profitable.³ However, most of the high cost of production on small

Table 1. Farm size and profitability.

	Less than 90 cows	90-149 cows	150-299 cows	300 or more
Avg. no. of cows	67	115	216	536
Milk sold per cow (lb)	18,743	19,703	20,668	21,454
Milk sold per worker (lb)	627,900	755,300	892,840	1,045,391
Milk price per cwt. (\$)	16.08	15.99	16.18	16.18
Cost of production per cwt. (\$)	15.33	14.93	14.34	14.15
Assets per cow (\$)	9,683	8,737	8,208	6,633
Asset turnover	0.36	0.41	0.48	0.59
Percentage net worth	75	73	70	63
Net earnings per cow (\$)	317	302	408	412
Return on assets (%)	5.0	5.4	7.2	9.0

Source: Northeast Dairy Farm Summary, 2001.²

farms was due to inefficiencies. Once efficiency was equalized across farm sizes, the study concluded that production costs for a small 50-cow dairy farm were only 4% higher than a 500-cow dairy farm.

Northeast Farm Credit produces an annual dairy farm business summary of members in New York, New England and New Jersey.² The 2001 summary of 511 dairy producers clearly shows that larger dairy farms produce more milk per cow, have a higher milk price and a lower cost of production, and use fewer assets to generate a dollar of revenue. In short, they were more profitable (Table 1).

The bigger question is, why? The Farm Credit study shows farms with 300 cows or more produced 14.5% more milk each year from each cow than farms with less than 90 cows. More milk generally allows the farm operator to spread out more revenue over fixed costs, and even results in lower variable costs (i.e., feed). Also, larger farms were likely receiving higher premiums for quality and volume. Finally, larger farms focused their investments on higher returning assets.

The Northeast Farm Credit survey concluded, "successful management had more to do with profitability than any other factor, including size." Thus one can interpret this to mean that small size dairy farm operations can achieve most of the higher profits and return on assets that larger operators were able to generate. There is nothing inherent in our marketing system that will prevent smaller farm operations from being successful.

Economics of Milk Production— It Hasn't Changed!

By now it seems like I'm making contradictions left and right. But in fact I'm not. Farmers invest in a

business that generates income and expenses. Their objective is to do two things: 1) make a profit, and 2) build equity over time. The profit part is actually very simple. It is represented as follows:

$$\begin{aligned} \text{Farm Profits} &= \text{Operating Margin} \times \text{Production} - \text{Fixed Costs} \\ \text{Operating Margin} &= \text{Milk Price} - \text{Feed and Other Variable Costs} \end{aligned}$$

Farmers, like any other business, define profitability by combining their operating margin with volume (milk production) and fixed costs. The idea is to have an operating margin and volume of milk high enough so that profits are realized after paying fixed costs.

The operating margin is simply the milk price less variable expenses such as feed, labor, veterinary and other supplies. Fixed costs are items such as insurance, some machinery costs, and perhaps interest expense.

Some farmers try to circumvent this equation by attempting to achieve higher profits by lowering milk volume. For example, they may cut back on feed and other inputs in order to "lower costs" or save cash. But that actually results in a higher per unit variable cost and a lower margin. Why? Because the cow allocates feed to two things: maintenance and milk production. Cows that increase production from 15,000 to 25,000 lb (6,818 to 11,364 kg) will obviously consume more feed, but the unit cost of that feed will actually go down. If the cost of feed per pound of dry matter is fixed, farmers can achieve a higher margin by expanding production. This is well established in the literature.

Thus dairy farmers, small and large, should attempt to balance their size (number of cows), productivity (yield per cow), and expenses in order to achieve a level of profit that meets their needs.

Advantages/Disadvantages of Being Small

There are a few situations in today's market place where being small may have certain disadvantages:

1. You may not have access to certain marketing premiums that larger farms (those that produce tanker loads of milk) do.
2. You may not have bargaining opportunities for feedstuffs, teat dip, etc., that larger operators have.
3. Much more of your time is "tied up" with daily chores which may limit your management time and opportunities to attend educational meetings and travel.
4. Your hauling costs may be higher.

That said, there are also advantages to being small:

1. You don't have to worry about problems associated with a lot of hired labor. The farm can effectively use family labor.
2. You can avoid the risks associated with major expansions. Let's be clear about this, there are economic risks that result from any dairy expansion!
3. The business can operate with less debt and personal stress.
4. You can avoid large investments and thereby have the flexibility to liquidate if you need to.

There is something to be said for the start-up operation that keeps its costs low, and its business liquid. Young start-up operations should focus on building equity in the cows, not in expensive assets such as equipment and housing. Thus they may want to consider renting a facility. They can build equity rather quickly that way, and set themselves up for a bigger expansion later. If market conditions deteriorate, or if they see other opportunities, they can easily liquidate their assets without significant depreciation.

Don't Forget Risk Management!

The dairy industry is characterized by large swings in market prices. Figure 1 illustrates this clearly; market prices are becoming more volatile, not less. Thus dairy producers should consider using risk management techniques to avoid low milk prices. The current slide in milk prices and the rise in feed costs could have been avoided had producers locked in the milk margin—both milk and feed costs.

The best way to do this is to forward contract milk through a dairy cooperative. All work behind the scenes is carried out by brokers. To learn more about hedging and forward contracting, see my recent report, "The Fundamentals of Forward Contracting, Hedging, and Options for Dairy Producers in the Northeast."¹

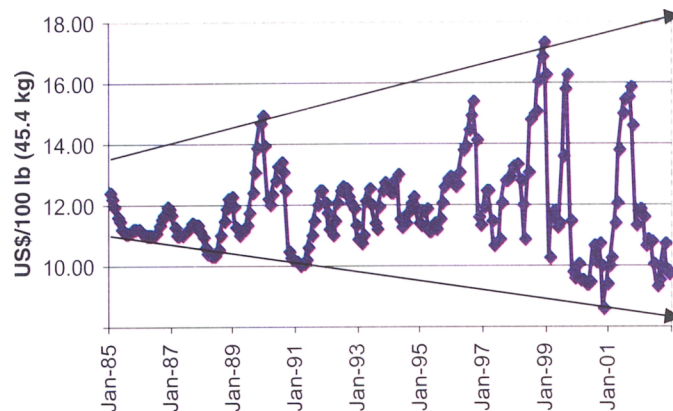


Figure 1. Volatility in Federal Order Class III Prices, 1985-2002.

Forget Margins, Find New Enterprises

Some very innovative dairy producers have decided to get off the competitive tread mill and instead focus their efforts on new enterprises. Some bottle or "jug" their own milk. Others process, market and distribute their own brands of organic milk, ice cream, etc.

These are called "niche" markets. They aren't for everyone. For example, farms located near urban centers may have the opportunity to develop a roadside stand, participate in agro-tourism, or actually home deliver fresh milk. There are some very good examples of entrepreneurial people who are developing these niche markets. They find consumers who want something different. Just go to your local farmer's market if you want ideas.

Here are a few guidelines one should consider before starting a new enterprise:

1. Niche markets are not for everyone. That's why they are called "niche" markets.
2. New enterprises will increase risk to the dairy operation, not reduce it.
3. Not everyone has the marketing skills, or people skills, to successfully develop a retail niche market. Don't set up a road side stand if you "don't like people!"
4. A new enterprise will take more capital, labor, and time to develop.
5. One should plan to "break even" after a few years of hard work.
6. Capital investments and debt should be carefully considered. Most new businesses overinvest in capital, and don't have sufficient operating cash. Only invest in a new enterprise if you are willing to lose or write off 50-90% of the investment. Starting small and cheap is therefore a good alternative.

One should be realistic about niche markets and carefully assess the risks. Make sure you get your ad-

vice from fellow entrepreneurs, not “arm chair economists.” That said, there is more opportunity in the US dairy industry today than simply producing milk.

What It Takes to Succeed in Today’s Market

1. Push production and quality; unit costs will fall.
2. Line up investments with sales (will hopefully improve economic returns).
3. Grow a little bit each year.
4. Don’t get fancy, invest in proven technology!
5. Use SIMPLE production and financial benchmarks as guides.
6. Separate “philosophy” from economics.

First, no one should stay in the dairy business unless they are committed to achieving productivity, efficiency and quality in milk production. There simply is not room in today’s market place for anything else. Thus it does not matter whether you have 50 or 5,000 cows.

Second, investments should make sense relative to your annual sales. This business concept, called “asset turnover,” also applies to the dairy industry. That means if you want to stay in business with 100 cows, avoid making an investment of \$200,000 in a brand new parlor. Your business just will not sustain this level of debt. The same idea applies to robotic milking systems, new machinery, or any expensive investment. While such investments have the potential to improve your lifestyle, the market today may not support it. Competition will force you out.

Third, all businesses must grow over time. That means if you have 50 cows, focus on achieving higher levels of productivity per cow. Then look for ways to add a few more cows each year. No business can afford to remain static year after year. The market will eventually cull you out.

Fourth, there is clearly proven technology in today’s dairy industry. Farms that invest in unproven technology such as new parlors or equipment are taking on more risk than they need to. We know what it takes to bed a cow comfortably in a free stall, so why take chances with fancy ideas. If you are looking for new challenges, find a cheaper hobby (i.e., take up fishing).

Fifth, if you ask anyone from an academic background what essential records you need to keep on the farm in order to remain profitable, the answer you may get is “all of them.” Ideally speaking, modern dairy farms should keep monthly accrual-based enterprise financial

records, and be able to produce “sweet sixteen” financial ratios with the touch of the keyboard. They should also produce monthly or at least quarterly financial statements. That said, farms can achieve the same level of financial success as those with more intensive records if they monitor a handful of key financial and production data, and compare those to benchmarks.

Key production parameters may be daily tank average, days-in-milk, cull rate, etc. Key financial measures may be investment per cow, asset turnover, gross margin, debt to asset ratios, etc. Whatever those benchmarks are, dairy producers should use them in developing an annual marketing plan. This plan should forecast production and key expenses on a monthly basis. It should also set goals or benchmarks for the key production and financial parameters. The objective of the farm operator should be to monitor these key benchmarks and see if they are attained.

Conclusions

Small dairy farms can be almost as profitable as larger ones, on a per hundredweight basis. The benefits that accrue to larger dairy operations, called economies of scale, are a real advantage. However, they are not so significant that smaller operations cannot compete. There is a future for those dairy operations that want to remain small, but profitable.

Smaller farms must focus on those attributes that make larger ones successful. They must improve productivity, focus their investments on where they can get a positive return, manage debt and control costs. They must also improve management skills in order to tie together all the various aspects of the operation that drive efficiencies. Small farms must also commit to growing larger over time. That does not mean jumping from 50 to 5,000 cows. It may mean growing from 100 to 150 cows over a period of time, and improving productivity per cow.

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