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Redefining Dairy Expansion

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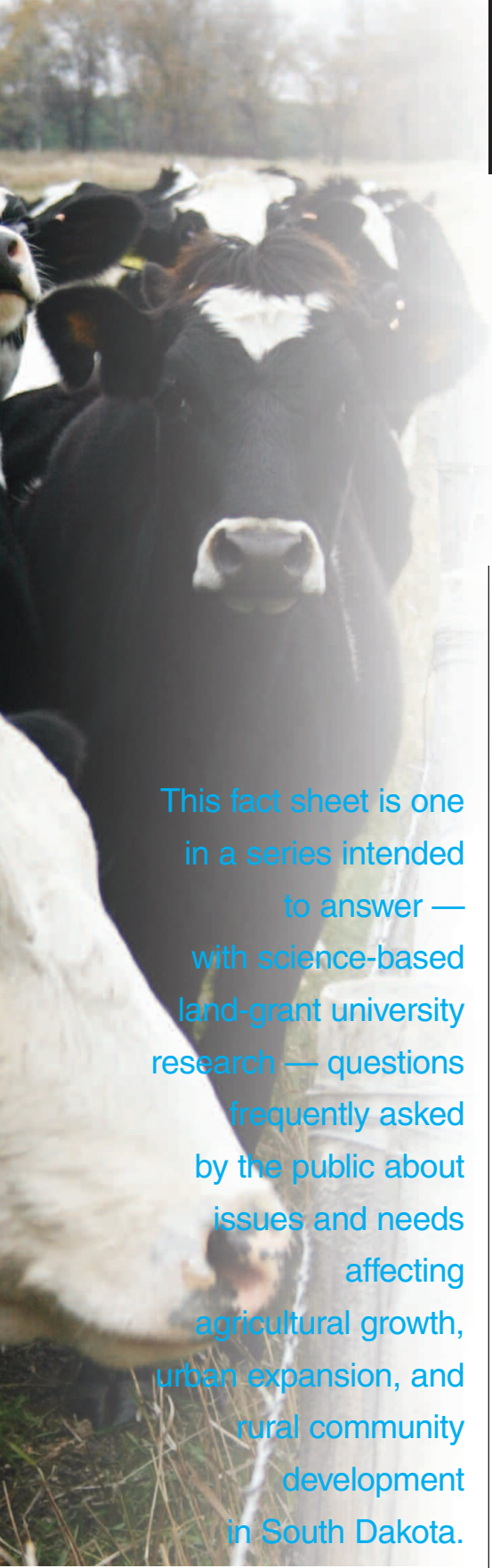

This fact sheet is one in a series intended to answer — with science-based land-grant university research — questions frequently asked by the public about issues and needs affecting agricultural growth, urban expansion, and rural community development in South Dakota.

Redefining Dairy Expansion

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Dairy expansion. The first things that come to mind are more buildings, more cows, a larger parlor, and a shift from managing cows to managing employees — all expected to increase production and profitability.

Yes, larger farms ship more milk, but they are not necessarily more profitable. So the **first thing** you should ask is, do I need to increase herd size to increase profitability?

You have other options to investigate before jumping into expansion. Evaluate your current dairy operation and examine the opportunities you already have.

The relationship between herd size and total cost of production is presented in Graph 1. Although there's quite an uneven distribution (each dot represents a farm), the greatest density of farms is inside the circle in the lower left corner.

These farms have herd sizes under 150 milking cows and cost of production between $12.50 and $20 per hundred lb of milk (CWT). At the extremes, there are many small farms with a cost of production exceeding $20, with one over $35 per CWT.

The larger dairies obviously have lower costs of production, in general between $12.50 and $15 per CWT. But what is also clear is that although some of the smaller dairies have greater costs of production, it is not necessarily the norm.

Although cost of production is among the main challenges facing all dairies, there is one additional challenge, and that is the extreme volatility of milk prices during the past decade.

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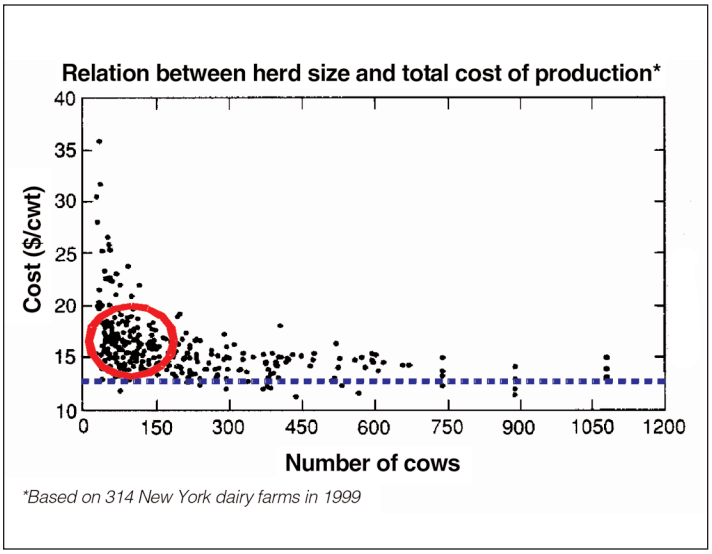
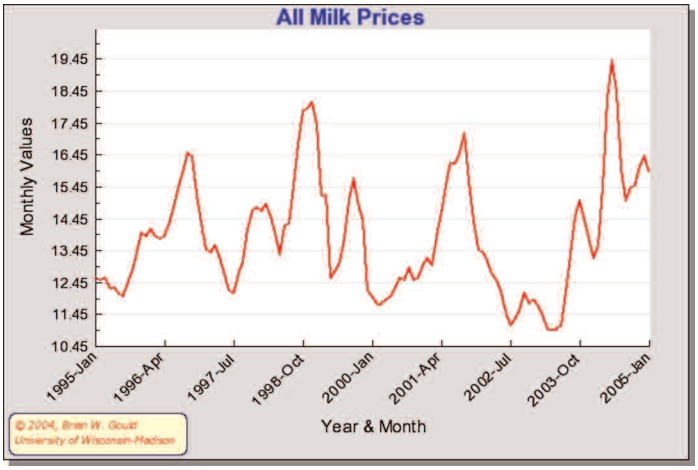
Graph 1.

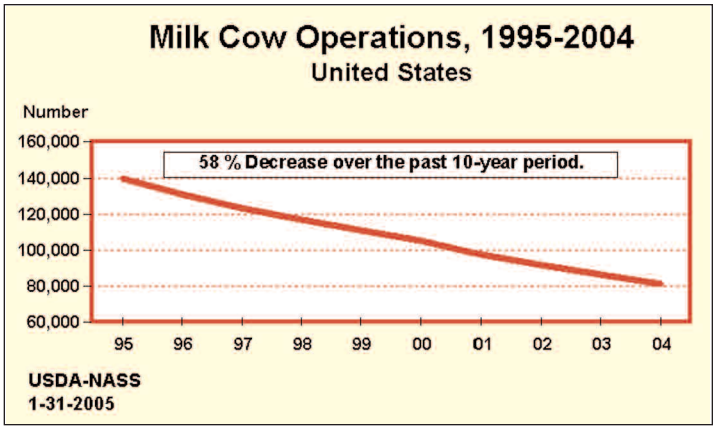


Modified from Tauer, L. W. 1999.

Graph 2.



Graph 3.



Average yearly milk price has been assumed to be relatively constant in the past at approximately $13 per CWT. Even loan institutions still use this figure when running cash flows before approving credit for a proposed expansion.

Even though this average has been slightly higher for the past decade (Graph 2), what has changed most is the extreme volatility of milk prices from one year to the next.

If, for example, we compare the cost of production of farms in Graph 1 to the yearly mailbox prices in Graph 2, it is clear that most farms, large and small, were doing fairly well in October 1998. It took just one year to put some of them in financial distress.

You would think that small farms, with a limited number of cows and milk production, were the ones at greater risk. These were usually older facilities that had not expanded in a while and where the owner and sole operator had little or no debt.

Falling milk prices may have factored in as only part of the decision to quit farming. The producer may have been approaching retirement age or perhaps had property that land developers were clamoring for. He penciled out his options and saw that the cost of growing crops for livestock feed was greater than the value of land if sold for urban development. He may have had still more reasons for quitting. Yet his dairy business may still have been profitable. He made a conscious decision to exit the market based on the best return on his money.

On the other hand, mid- to large-sized dairies, encouraged by high milk prices, probably decided to borrow money and expand. These producers were suddenly faced with the reality of record low milk prices just when they had to face the repayment of their debt.

Historically, high and low milk prices have gone in cycles that usually last years or even decades. These cycles are becoming shorter: A milk price crisis like the one in late 2001 through 2003 was followed immediately by record high prices in 2004. If we compare again the cost of production for those farms surveyed on Graph 1, the low prices during 2001-2003 would have been a primary reason most of them quit farming (Graph 3).

In the last decade almost 43% of all dairy operations in the U.S. stopped producing milk. It comes as no surprise that the great majority of those farms were the "so called" family farms, those under 100 cows.

But what is a family farm? Is it only a husband-wife operation? Research has demonstrated that small husband-wife dairy operations have great difficulties in transferring the farm to the next generation as the same-size operation is not able to sustain two households.

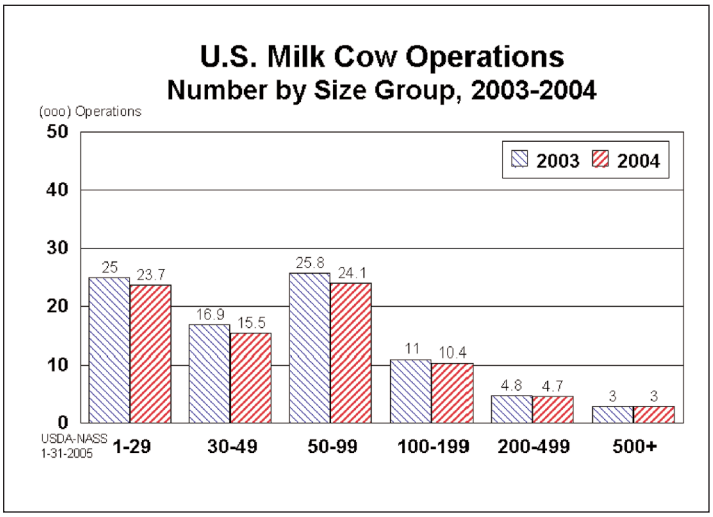
Or is a family farmer one who decides to hire labor to milk more cows to make ends meet or to free up time for family activities? The definition of a family farm is still fluid.

What happened to U.S. dairy farms by size group between 2003 and 2004 is shown in Graph 4. The point of equilibrium seems to be between 100 and 200 dairy cows. Farms with less than 100 cows dropped in numbers from one year to the next whereas those with 200 cows or more were able to remain in operation.

A similar trend was followed by South Dakota dairies. In 1998, 46.5% of the dairy cows in South Dakota were in operations of 100 cows or more. In 2003, 63% of the cows were housed in this size operation. South Dakota large dairy operations (defined as 500 cows or more) accounted for 26.5% of total milk cows during 2003 compared to 11.5% in 1999.

Since 1999, 40% of South Dakota farmers with less than 99 cows have quit dairying altogether or have expanded their herds into the 100-cow category or beyond, while 88% of those with 100 to 499 cows still remain in business. The number of herds with 500 cows or more doubled between 1999 and 2003.

Graph 4.



Do we really need more cows?

We need to define "expansion." The dictionary says it means "to become greater in size, volume, quantity, or scope." Certainly, dairy expansion can relate to size, volume of production, or total number of cows. Expanding scope—meaning your perceptions, thoughts, or actions—also can influence how you view your own dairy farm.

The real question is: Do you absolutely need to expand your dairy farm in terms of cow numbers to increase the volume of milk shipped? And if you do, will this expansion meet your expectations regarding profitability, quality of life, or bringing the next generation back into your operation?

One thing that has to be understood is that increased production is only a means to achieve a more worthy goal, and that is to increase the quality of life for the dairy producer and his or her family. This does not happen necessarily by increasing the size of the parlor and adding more stalls and cows. **The most profitable milk is the additional pound produced by a cow already in your dairy herd.**

Often we find dairies that are thinking about expanding when their current rolling herd average is 15,000 lb. If they have 100 cows and milk 50 lb per day on the average, will they be more profitable by doubling the size of the herd? With milk prices at $13 per CWT and cost of production at $13 per CWT, how many additional cows do they need to milk to make money? You don't need to be a math whiz to see those dairies will only break even with either 100 or 200 cows.

So why do farmers expand? In essence, it is the same reasoning behind paying a credit card debt with a second credit card just to maintain cash flow. What those producers fail to realize is that the interests they pay in loans for that expansion will end up eroding their equity and resulting in deeper debt. And then, in addition to the facility expenses is the need for enough money to fill the stalls with cows.

So, before even considering expanding herd size, you must first milk your existing cows to their genetic potential.

Reaching that potential depends in part on the feed they are getting. One of the most common problems facing dairies today is feed quality. Lack of feed quality may limit a herd to producing only 50 lb when the cows have potential to produce over 70 lb per cow daily. Fixed costs to produce milk are often the same, but the money-generating units (the cows) are not working to their capacity.

Cows won't produce to their potential on inadequately balanced rations or when the rations do not match their age and stage of lactation. This can be easily corrected by using minimum proven technologies that give maximum return on investment (feed analyses and/or DHIA are examples).

It takes less time and work to feed all cows in the dairy herd the same ration. But what that does is under-feed some cows (high producers) and over-feed others (low producers). If a dairy producer expands the herd before addressing such a simple management issue, early lactation cows might end in negative energy balance; breeding might be delayed, resulting in longer lactations and fewer replacements to fill the brand-new stalls; and the new parlor that has to be paid off on a timely fashion may not be utilized efficiently.

High milk production vs. milk shipped

That brings us to the next question. Do we want high milk production averages or do we want to optimize milk production?

With unfavorable milk/feed price ratios, maximizing production can be a risky business. On the other hand, optimizing milk production means that the conversion of feed into milk, often referred to as feed efficiency, becomes an integral part of your plan. In simple terms, feed efficiency is: pounds of milk produced per pound of feed consumed by the cow.

Thus, maximizing feed intake is no longer the most important factor in producing profitable milk; instead, it is replaced by optimizing nutrient uptake. Harvesting high quality, highly digestible forages can have the greatest impact in improving feed efficiency. If income over feed costs is limited because of poor quality feeds, adding more cows to the operation will not improve profitability.

Forages need to be tested for nutrient composition on a regular basis. The principle "we can't manage what we can't measure" also applies to dairy cattle feeds.

Finally, how much milk over what's necessary to pay bills is shipped off the farm every day? This takes us away from thinking cow production averages or high individual milk production. Are all the stalls occupied by profitable cows?

Farmer A and Farmer B each have a dairy with 100 stalls. Farmer A milks 80 cows that give 80 lb per day and Farmer B milks 100 cows but only produces 70 lb. Which farm produces more milk? What's in those 20 extra stalls in Farmer A's barn?

Make sure your dairy is filled to capacity with profitable cows before even thinking about herd expansion. Make sure that a cow of average milk production is not taking the space of a heifer that can easily outperform her in a few months. And if you decide to expand the herd, make sure your cow flow is calculated carefully enough to ensure you have all stalls full with cows in production.

Fixed and variable costs will determine the cost of producing milk. If we can control these costs and at the same time increase the quantity of milk shipped per day, farm profitability will improve.

Milk quality

Milk quality is probably one of the most important concerns in a dairy today. It's not all about lost premiums; it's mainly about losses in milk production due to clinical and sub-clinical mastitis, increased culling rates, and increased replacement costs as more heifers are needed to replace cows

culled because of mastitis. A second lactation or older cow will produce 1.3 lb less milk every time SCC (somatic cell count) increases by 100,000 (Dickrell, 2000).

Issues regarding milk quality need to be addressed prior to any form of expansion. Proper milking procedures and protocols need to be established to produce quality milk and to maximize production.

After expansion occurs, the owner or herd manager will be responsible for training new employees in proper milking procedures. By necessity most dairies expanding in the Midwest hire employees who may have never milked a cow in their life. Proper training will be critical in maintaining milk quality. In addition, new animals to the herd will need to be monitored for mastitis and milk quality to ensure that new problems are not introduced into the herd.

What about culling percentage?

Culling in most dairies is exceedingly high and can easily approach 40%. Even with an optimum breeding program this is an incredibly expensive toll on the need for replacement heifers.

Lower involuntary culling rates mean that you can discard cows based on lower production and thus improve the genetics of the herd. Higher culling rates mean you need to rely on purchasing heifers from other farms to maintain herd size instead of getting them from your own replacements. Purchasing heifers from other herds also increases the risks of introducing new diseases into the herd.

Whether or not you will expand, it is important to write expected culling rates into your cash flow. A problem often faced by dairies that have undergone expansion is that in spite of a brand new parlor, enough good quality feed, and competent personnel, they don't have enough cows to fill the dairy to capacity!

Review

Before expansion is even considered, always review current facilities and management practices to determine if more milk can be produced with the current herd size. Always keep in mind that the logical order of thought in considering expansion is:

1. More milk from **existing** cows.
2. More milk from more cows:
   a. In current facilities.
   b. In new facility (same milking system).
   c. In new facility with new milking system.

If you decide to expand, do not underestimate the cost of the total project. Remember that it's not uncommon to exceed the estimated costs by up to 15%. This can occur because: 1) the original bid is re-adjusted; 2) the "it's too good to pass up" syndrome results in changes to the original plan that significantly alter the final cost; and 3) costs from miscellaneous items were not included in the original bid.

Last but not least, don't forget to carefully address the cow-flow projection. After all, it's the milk generated by these cows that will pay the bills.

References:

Tauer, L. W. 1999. Efficiency and competitiveness of the small New York dairy farm. J Dairy Sci 84: 2573–2576.

Dickrell, J. 2000. Get excessive about mastitis. Dairy Today. March 2000: 9-11.

Fact sheets in the 925 livestock development series:

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FS 925-G Dairies and Local Economic Development

FS 925-H Redefining Dairy Expansion

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