Profitable milk production in 2010

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The total expenditures related to buying feed for your cows, or producing them at the farm, represent more than 50 per cent of the cash outlay on the average dairy farm[2]. It is upsetting to think about the effect on feed costs of the poor hay and corn harvests of 2009 in the worst-hit areas. How can you maintain a profitable operation in such conditions?

However tempting it may be to focus on reducing feed costs, it should be kept in mind that profit is the difference between revenue and expenses: in the end, it is profitability that counts, not costs. If by choosing to spend one dollar less per day on his cows a farmer reaps a dollar less in revenue, he has gained nothing. Worse still, the dollar saved may lead to a loss of more than one dollar, and that means lower net revenue. Statistics are clear: the best way to increase profits is to increase production.

The data on Quebec dairy herds presented in Table 1 illustrates in a dramatic way that the herds generating the highest Milk Revenue minus Feed Cost are also the most productive herds. From a strict biological point of view, the higher the milk production, the more efficient it is. In other words, the cost of the last litre of milk produced is far lower than that of the first litre.

Let us see why. Like any other living being, a lactating cow burns part of the absorbed energy and nutrients for maintenance purposes, i.e. to maintain vital functions like pumping blood, breathing, chewing, digesting, moving, etc. A typical cow burns roughly 10 megacalories per day (Mcal/day) for maintenance, whether it is dry or producing 50 kg of milk. Consequently, if it gets 1.67 Mcal/kg in its ration, the first six kilograms of dry matter are used for maintenance. Given that each kilogram of milk produced requires approximately 0.7 Mcal of energy, if a cow consumes 10 Mcal over its maintenance requirement, it will be able to produce about 15 kg of milk.

At that level of production, half the energy consumed will be used for maintenance, whereas this proportion lowers to a third only if the cow produces 30 kg of milk, and to one fourth, if it produces 45 kg of milk. There is a clear increase in the efficiency of feed energy utilisation as production increases. This principle is known as the «dilution» of maintenance requirements. As production increases, the proportion of the total energy intake that is required for maintenance becomes progressively smaller.

Of course, feed costs tend to increase as rations are formulated for higher production levels. However, this increase is generally not enough to counter the gains in biological efficiency. Looking at feed cost per hectolitre (Table 1), we can see that the average is less for herds generating a higher income over feed costs and that those herds also have the highest milk production.

Good forages for more profitable milk production

Interestingly, profitability does not mean that we have to feed more concentrates. More milk is being produced from forages even in profitable herds. Producing milk from forages does not simply mean to serve a minimum of concentrates and be satisfied with lower levels of production, quite the contrary! In fact, as a percentage of the total production, milk production from forages is even superior with higher production.

One of the keys to success is the production of quality forages. Overly fibrous forage limits dry matter intake while reduced digestibility lowers the amount of energy available, the need that is most difficult to fill at high production levels. However, 2008 and 2009 reminded us that it is not always possible to have in stock large amounts of high quality forages. The final issue is targeting the best possible use of available forages, with their varying quality levels.

It always pays to reserve the best forages for the cows with the highest production. On the one hand, they would suffer the most from the combined effects of rumen overload and lower digestibility. Increased intake causes a reduction in the transit time in the rumen, which in turn, lowers the digestibility of forages even further. On the other hand, it is always easier and more economical to compensate for the poor quality of forages in pre-calving heifers or in cows in late lactation than in the best producers. We cannot feed the latter ever-increasing quantities of concentrates without jeopardizing their health. The risk of rumen acidosis being ever present, any upset in the equilibrium will have a negative impact on feed intake in the short term and on the health and reproductive efficiency in the long term.

A question of management

Good management is obviously an essential requirement for high profitability. It is comforting to realize that herds generating the highest income over feed costs through greater productivity are not doing so at the cost of their reproductive performance (Table 1). Indeed, the calving interval gets slightly lower as production increases. Interestingly, the herds generating the lowest income over feed costs have a longer drying-off period and, thus, a shorter period in milk. It is not too difficult to see that the number of unproductive days has a negative impact on profitability.

Udder health is another factor that influences profitability. A reduction in the somatic cell count is generally noted as the Milk Revenue minus Feed Cost increases. Finally, the most profitable herds are generally composed of large animals, which is necessary for greater feed intake.

How to save on costs

When trying to save money, it is a good idea to take a good look at feed prices. However, in doing so, we should not make the mistake of considering price per ton alone, ending up comparing apples and oranges. We must take into account the relative value of feeds in terms of nutrients supplied and the requirement for these nutrients in the ration. It is also possible to improve profitability by avoiding waste. With total mixed rations, the practice of forming a single group and serving the same ration to all cows can lead to increased feed costs and to the release of nutrients, such as phosphorus and nitrogen, into the environment. It is certainly something to keep in mind in the light of the new standards with respect to phosphorus. With a single group, forage distribution is certainly not optimal. The use of automatic feed distributors is widespread in Quebec. They are very reliable (except, sometimes, on Saturday night!) and time-saving machines, although it is important to validate the quantities being distributed on a regular basis. Volumetric distributors should be recalibrated every two weeks and with each new batch of feed. It is the best way to ensure they are not programmed to distribute too much or too little feed, which would adversely affect productivity.

Of course, we have to live with the limitations of the 2009 forages, but through proper adjustments, we can maintain a high production level without compromising cow health or the financial viability of the farm. You have to keep in mind that the herds with the best margin over feed cost put on average more money per cow on feed, but take advantage of a superior production, which more than compensates for the extra cost. Furthermore, in a time of forage scarcity, producing your quota with less cows makes quite a lot of sense.

This article was first published in May 2003. The figures were updated and the content, still highly relevant, was adjusted to the context of the poor harvest of 2009.

[2]Purchasing feed for cows (outside the farm) represented 13 per cent of the production cost in 2008. Milk Production Cost 2008, Quebec, Groupe AGÉCO

Table 1. Management Criteria according to Milk Revenue minus Feed Cost

Milk Revenue minus Feed Cost Strata	Average	Feed Cost		Milk Production	Forage Milk	Calving Interval	Dry Days	Average Herd Weight	SCC
$/cow/yr	$/cow/yr	$/cow/yr	$/hl	kg/cow/yr	kg/cow/yr	d	d	kg	000/ml
< 3000	2591	1484	25,67	5911	1045	436	78	586	307
3000-3499	3275	1597	23,14	6969	1708	432	71	607	283
3500-3999	3768	1721	22,13	7854	2020	429	70	629	275
4000-4499	4251	1756	20,80	8533	2564	425	67	636	261
4500-4999	4718	1804	19,78	9236	2888	425	67	646	245
> 5000	5315	1849	18,58	10128	3413	422	64	657	223

Source: Valacta database, 2009