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# Not All Gold Glistens

Antibodies in the colostrum are a decisive factor for the future milk yield of a heifer calf. Introduction of systematic colostrum management is simple, and does not require large investments, but remember, you have only one chance.

## Four articles on optimization of colostrum management:

This is the first of four articles about optimizing management of colostrum for calves. The four articles focus on these topics:

- **Financial gain** from improved colostrum management
- **The level of antibodies** is of crucial importance to the calf
- The importance of **feeding colostrum immediately** after birth
- The significance of **good colostrum hygiene**





## About Hanne Skovsgaard and coloQuick International A/S

Hanne Skovsgaard Pedersen PhD is a qualified veterinarian, with experience from large-animal practice and ten years as a researcher. Her focus is on development and dissemination of professional knowledge about optimization of calf management.

coloQuick International A/S is a Danish company established in 2015 by the owners of Calvex A/S. The company supplies products and in-depth knowledge, to increase productivity and reduce consumption of antibiotics in dairy herds by focusing on the first hours of the calf's life.



An important focal area for the owner of any business is to gather the low-hanging fruit – i.e. the small adjustments that make a big difference giving a positive effect on the company’s finances. In dairy farming, heifers are the foundation for future milk production in the herd, and it is vital for a sound economy that the heifers produced, grow into strong cows with a long lifespan and high milk yield.

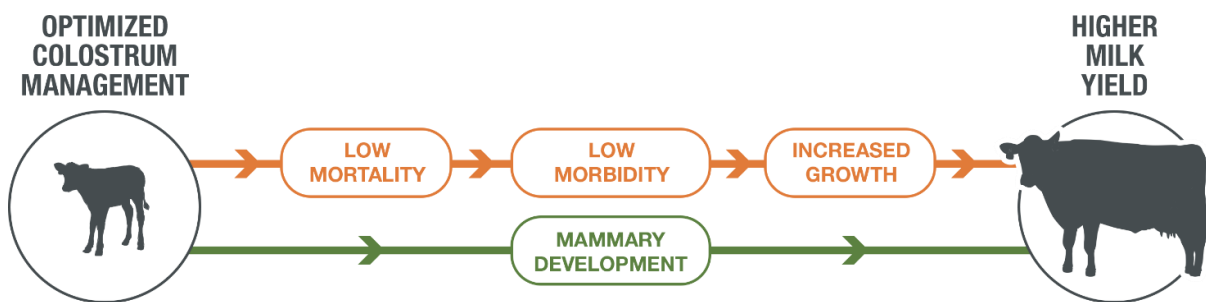
## Colostrum is the most important meal in the calf’s life

Good colostrum management is vital in order to maintain the heifer-calf’s full milk-yield potential, and thus achieve a high quality in the future dairy cows in the herd.

Besides nutrients, colostrum contains many bioactive substances, including antibodies. Numerous research trials have shown that the substances in the colostrum have a positive effect on the calf’s physiology – during the calf’s early life and later, when it becomes a dairy cow (Figure 1).

The nutrients in the colostrum provide energy and building blocks for sustenance and growth. The bioactive substances influence the metabolism and hormone production, and promote the formation of tissue and organs through increased protein synthesis and cell growth. The colostrum also affects the development of the intestinal mucosa, as well as the absorption of antibodies and nutrients, impacting on the growth of the calf.

The calf is born without antibodies, so the antibodies in the colostrum constitute the calf’s defense against disease in the first weeks after calving, until the calf’s own production of antibodies is established. Colostrum is vital both for health and rapid growth during the first months of the calf’s life. Trials have shown a direct connection between optimized colostrum management and a higher milk yield later, due to the positive effect of the colostrum on the development of the heifer’s udder and later milk yield.



**Scientific papers:**

- |                              |                             |  |
|------------------------------|-----------------------------|--|
| Elsohaby et al. 2019,        | Vailati-Riboni et al. 2018, | Faber et al. 2005,                             |
| Hare et al. 2019,            | Soberon & Van Amburgh 2017, | National Dairy Heifer Evaluation Project 1993, |
| Stenkamp-Strahm et al. 2018. | Windeyer et al. 2014,       | DeNise et al. 1989                             |
| Urie et al. 2018a,           | Soberon et al. 2012,        |  |
| Urie et al. 2018b,           | Furman-Fratzak et al. 2011, |  |

Figure 1



## Effects on production parameters and finance

Improved colostrum management has a positive effect on production parameters among calves, young stock and dairy cows. Healthy calves will grow to give higher milk yields, as diarrhea and respiratory infections in calves have a negative effect on potential milk yield. Good calf production means that the heifers will be ready for insemination early and large enough physically for their first calving. In addition, an earlier first insemination, combined with a long lifespan, increases both the dairy cow’s lifetime yield and financial gain from the herd.

Table 1 shows the estimated financial gain from optimizing colostrum management, taken from four sources. The selected preconditions and procedures for the calculations are different, and the numbers and types of production parameters included also vary, and the financial gain finally calculated varies from one source to another.

All sources predict a significant financial gain from optimized colostrum management, in which the most important factors are longer life spans amongst the cows and increased milk yield. The calculations in Campos 2015 are based on the measured increase in milk yield in the first and second lactations of the cows, corrected for the lactation number. This results in a relatively higher estimate (EUR 243 per cow per year) compared with the other sources. If it is assumed that the lifespan of the cows is increased at the same time, the Campos estimate can realistically be achieved.

### ECONOMIC IMPACT OF IMPROVED COLOSTRUM MANAGEMENT

	USA	CANADA	DENMARK	DENMARK
VALUE OF (EUR):	Faber et al. 2005 <sup>1</sup>	Campos 2015 <sup>1</sup>	Røntved et al. 2012 <sup>1</sup>	SimHerd calculation <sup>2</sup> (coloQuick Int. A/S, 2016)
Lower mortality		32	21 <sup>3</sup>	8
Fewer treatments	9	9		
Reduced costs replacement heifers	33			
Lower culling rate		142		
Earlier 1st calving		124	35	
Increased milk yield	103	243	112	87
Extra income per cow per year	145	550	168	95
Extra income per 200 cows per year	29,000	110,000	33,600	19,000

<sup>1</sup> Contribution margin: EUR 0.19 per kg milk

<sup>2</sup> Simulation using the SimHerd model was performed by coloQuick International A/S

<sup>3</sup> Overall financial gain caused by lower mortality and fewer treatments

Table 1



## What will colostrum management mean for YOUR herd?

Optimizing colostrum management results in a higher milk yield when the calves grow into dairy cows. Production of strong cows with a long life span will affect the composition of the herd, since there will be more high-yielding older cows, and this will result in a higher average yield (Figure 2).

The average yield in the herd can be increased without necessarily increasing the highest yield.

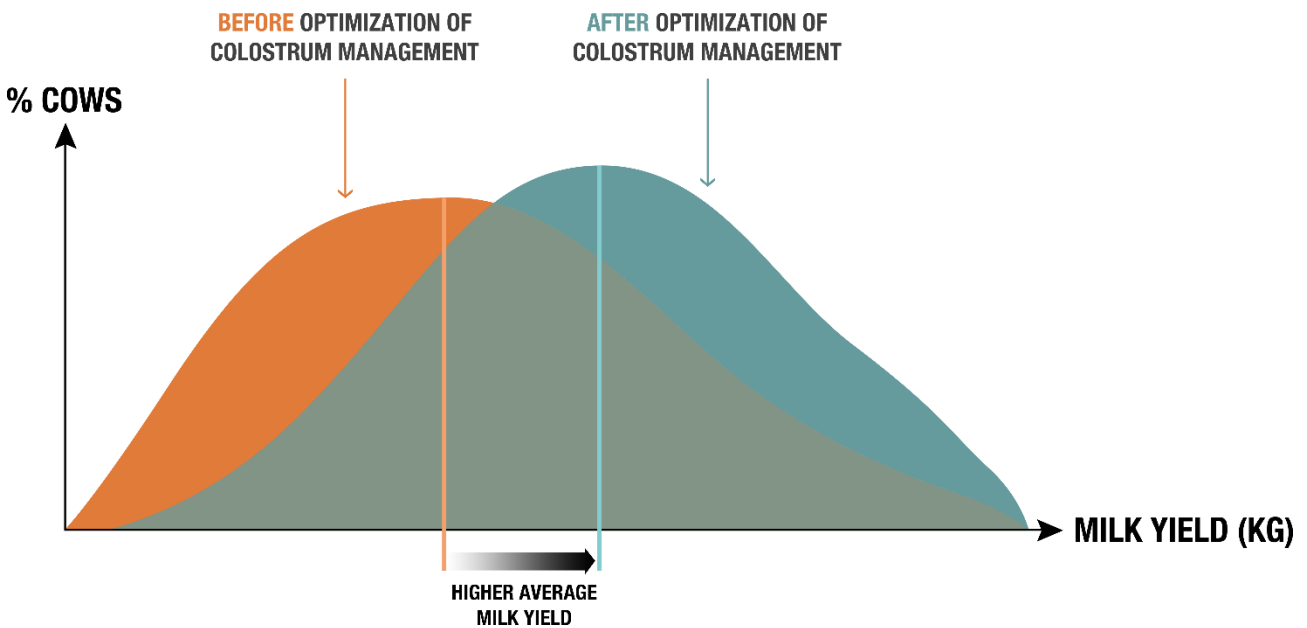


Figure 2

With regard to production, realistic achievement of this scenario is shown in Figure 3, in which the average milk yield in a herd is assumed to increase by 600 kg (Figure 3a) as a result of a change in the composition of the herd in relation to milk yield (Figure 3b).

With an expected contribution margin of EUR 0.19 per kg milk, the annual financial gain will amount to EUR 114 per cow per year, i.e. EUR 22,800 for a herd of 200 cows.

The estimated amount is the minimum, since the increase in milk yield is set relatively low, and no income has been calculated for improvements at the same time in other production parameters.



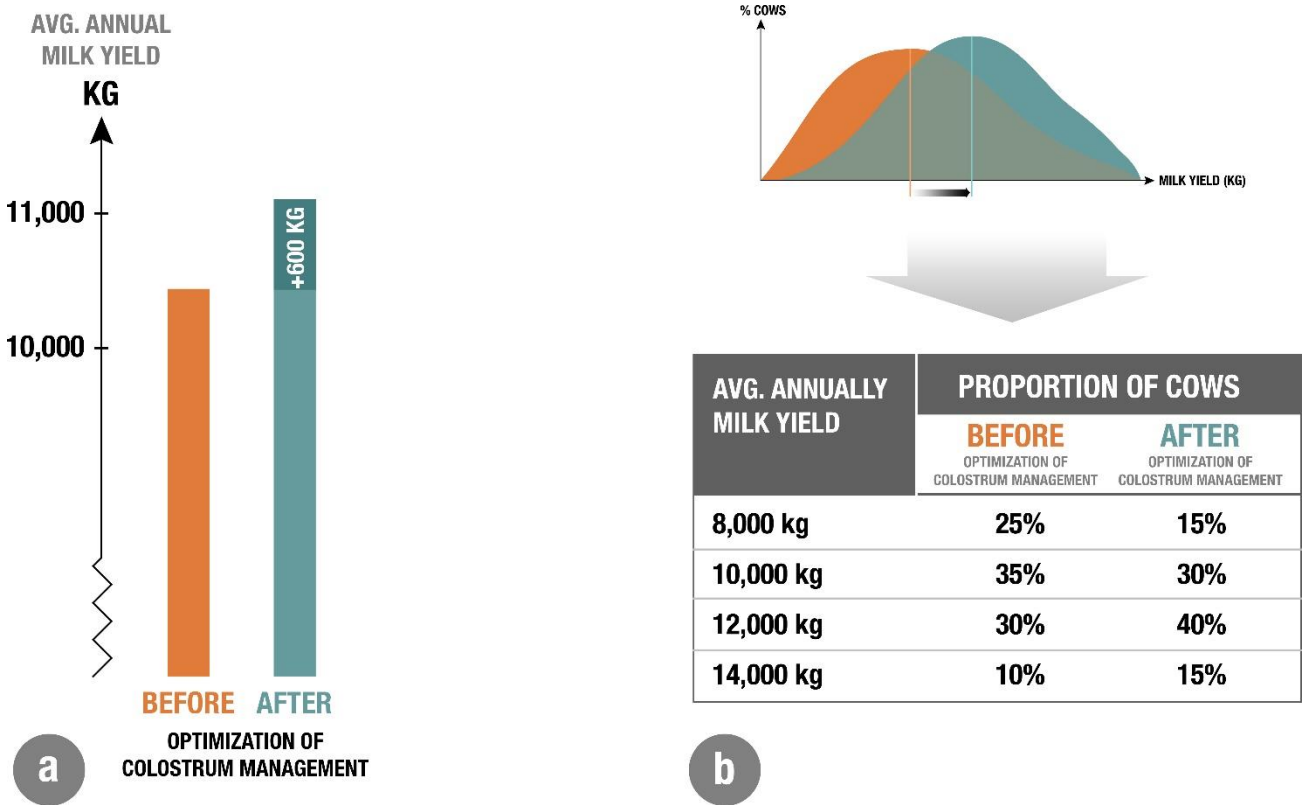


Figure 3a + Figure 3b

The financial gain is to be considered in the light of the minimal financial investment required to optimize colostrum management in a herd. Out of the total costs in the rearing period, of about EUR 1,350 per heifer (Clausen 2014), the investment in colostrum management amounts to only about 0.5% (Figure 4).

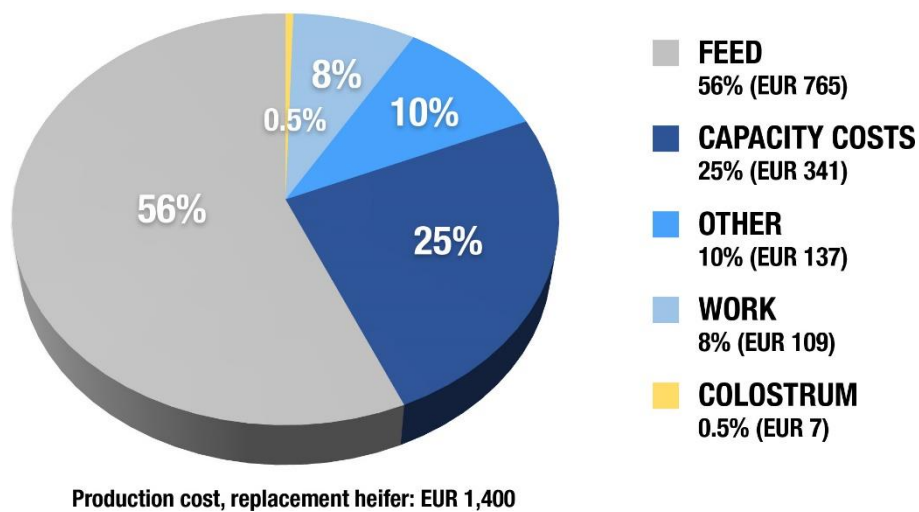


Figure 4

## Determination leads to change – and optimized production

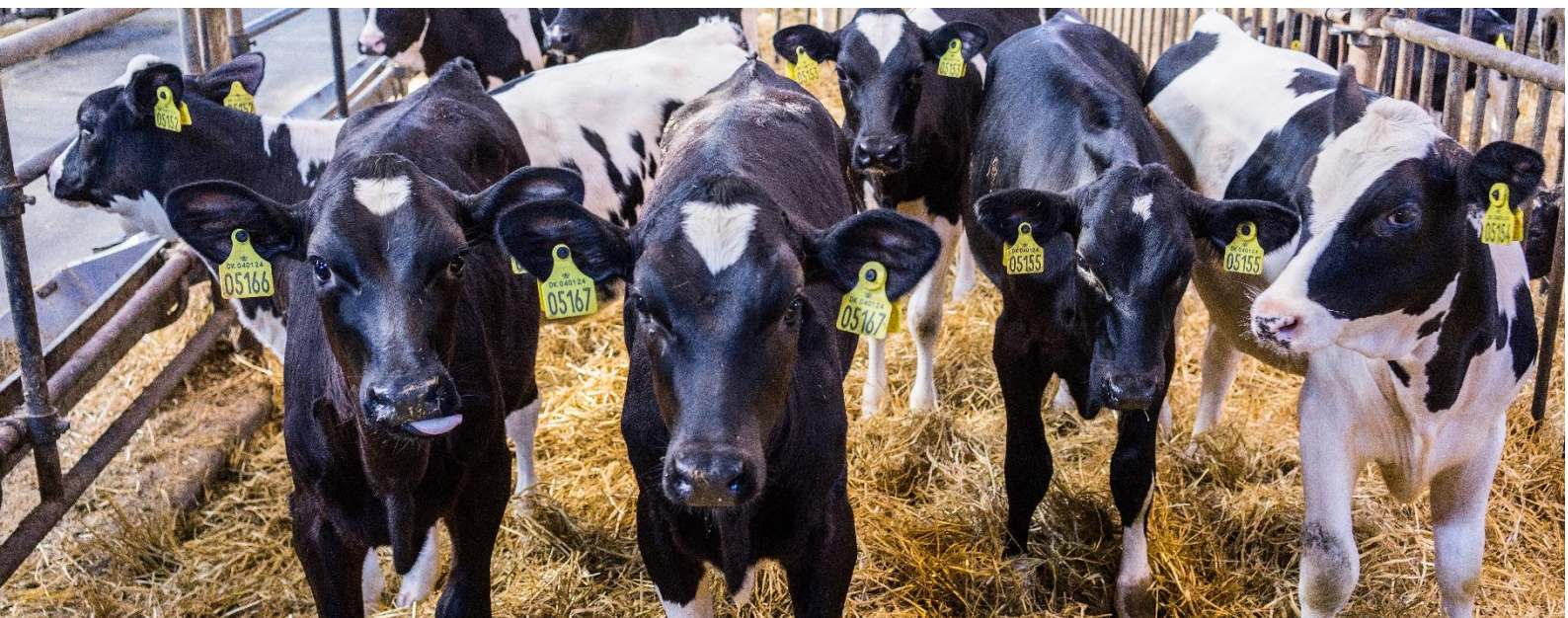
Colostrum lays the foundation to produce healthy calves and strong cows. Optimizing colostrum management is therefore an important but simple means of improving the productivity and economy of the herd. The investment in improved colostrum management requires determination and focus, but financially, it is not much compared with other costs in the rearing period.

As a farmer and owner of the herd, you reap what you sow – and if quality is not optimal in the animals on which your herd is based, your point of departure is poor. On the other hand, if you choose to focus on a good start for the heifer calves, the effort will pay off in positive results and returns in the milking parlor.

### The three most important points of the article:

- Colostrum is the calf's first and most important meal
- The antibodies in colostrum are vital to produce healthy calves and strong cows
- Optimizing colostrum management is a small investment with a potentially large financial benefit

The following articles will focus on how easy, and, not least, how little it costs to reap the benefits.



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