

# 'Well begun is half done' for heifer calves

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As financial pressures increase on milk producers across the globe the wisest will already have looked at cost efficiency in just about every area of day-to-day management from feeding through hygiene and breeding. Calf and heifer rearing are key areas that are often lower down the list of priorities despite the best research indicating they need careful attention.

The cost of rearing a heifer calf from birth to entering the milking herd is estimated at £1,000-1,200 with every additional month delay costing around £35-40.

To be cost effective calf rearing systems need to be easy to run and capable of dealing swiftly with potential issues, allowing target growth rates to be achieved with the minimum of complications.



Inadequate growth can lead to reduced conception rates and delayed calving. Trying to make up for poor early growth rates with accelerated growth phases around 12 months of age can affect udder development at a critical stage, a process which can never be reversed. INRA (Institut National de la Recherche Agronomique) would regard an overall average of 825-850g daily live weight gain from birth to 24 months to be an ideal target.

**Table 1. Dietary requirements of calves compared to cow's milk (NRC, INRA).**

Content	Cow's milk	Calf dietary requirement
Protein	30g/litre	28g/litre
Lactose	48g/litre	50g/litre
Fat	40g/litre	28g/litre

Age (days)	Aspect of scour	Associated symptoms	Possible cause	Treatment
1 to 3	Very liquid, straw-coloured	Rapid and severe dehydration, mortality	E. coli K 99	Rehydrate + antibiotics
4 to 11	Translucent off-white slime	Progressive dehydration	Rota and/or Corona virus	Rehydrate + antibiotics
	Translucent off-white or slightly orange coloured slime	Loss of appetite, loss of weight, dehydration	Rota and/or Corona virus and/or Cryptosporidia	Rehydrate
> 11	White slime with acid smell, or thick sour with rancid smell	Calf often staggers	Poor digestion (alimentary)	Rehydrate
	Very liquid, sometimes with blood	Fever, mortality	Salmonella, E. coli K 99	Rehydrate + antibiotics
> 18	Blackish, profuse, or even blood coloured	Loss of appetite, calves are hitting their abdomen, coated tail	Coccidiosis	Anticoccidial + rehydrate
	Slime	Fever, ulceration and degeneration of gut lining	BVD virus, often associated with other pathogens	See your veterinarian

**Table 2. Diagnosing health and digestive issues in calves.**

There are heavy financial losses associated with a poor start to life. In 2011 Neolait stated that of all calves born, 33% are affected by neonatal diseases, 5% die from them and 20% suffer from digestive disorders and dehydration, the cost of the latter being £30/calf/year.

A healthy calving environment and good practice at calving for both the cow and calf are essential to allow production goals to be achieved; challenges such as poor immunity and digestive disorders must be met head on and early. With replacement costs for heifers often exceeding £1000, successful rearing is too important to get wrong.

## Developing immunity

At birth the heifer calf has zero immunity so she must gain immunity through the absorption of antibodies via colostrum. The timing of this is vital with the most effective absorption of IgGs and IgYs being in the first six

hours of life. After 12 hours the efficacy decreases significantly with the window of opportunity closing after 20-24 hours.

Antibody-rich colostrum fed after 24 hours will not impact on the development of the immune system but will have a beneficial effect in providing protection inside the digestive tract.

In 2002 a survey by Finistere France found that 24% of 700 colostrum samples were inadequate with less than 50g of antibodies per litre. Further trials backed up this statement when in 2010 Neolait found that 33% of colostrum samples they tested also contained less than 50g/litre of antibodies.

A heifer calf has to drink 1.5 litres of colostrum during the first two hours of life plus 2.5 litres in the following 24 hours (equals 200g of antibody in the first 24 hours). There is a positive correlation between the amount of antibodies consumed by the calf in the two days following birth and their growth during the first three

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months. So, the old farmer adage of 'well begun is half done' could never be more correct. Another potential issue is that genetic improvements geared to producing higher yields and increased milk solids may have resulted in a feed less suited to calf digestion (Table 1).

The excess fat in cow's milk is difficult to digest and can lead to a creamy nutritional scour so using a milk replacement powder would be better. Furthermore, raw cow's milk will provide only 50% of the calf's requirement for vitamin A, 20% of vitamin E and a very low level of vitamin D<sup>3</sup> with deficiencies in iron, copper, manganese and selenium too.

In addition, there are the effects of pathogens and antibiotics in mastitic milk to consider:

- Antibiotics damage the intestinal flora of the calf, leading to scours.
- Development of resistance, making it more difficult for the calf to recover.
- Increased risk of primiparous cows developing intra-mammary *Staphylococcus aureus* infections (transmitted by licking).
- Prevention of abomasal clot formation, leading to poor digestion.

Feeding cow's milk can also lead to a deficit of trace elements with important consequences, for example an iron deficiency can lead to anaemia. This leads to insufficient biliary and pancreatic secretions,

resulting in incomplete digestion of milk fats. Add to this the excess fat in cow's milk and you end up with a fat overload in the liver and pancreas. This will cause cellular degeneration, digestive blocking, loss of appetite, apathy and creamy-white plastered faeces.

The long term result is a failure to get calves off to a good start and strengthens the argument for boosting initial colostrum support by giving a specific supplement on top of the cow's maternal feed.

## Diagnosis

It is important to recognise when things are going wrong and to diagnose the cause and act accordingly. The appearance of calf scours is a very good indicator of the likely cause of digestive issues (Table 2).

## Solutions

It is obvious that in these situations rapid rehydration is vital to a calf's survival and continued growth. It is important to select a product that can be used without milk withdrawal as removing milk from the diet also removes 85% of the daily energy support for the calf, setting back growth unnecessarily.

Neostrum IG from Neolait (part of the Provimi Group) will boost the potential viability and vigour in all calves in the early weeks of life and will meet the demanding requirements mentioned above. It is available in the UK & Ireland from Rosebeck Services.

Neostrum Ig is a ready-to-use colostrum booster (one tube per calf) containing both bovine and hyper-immune egg powder as well as *Enterococcus faecium* NCIMB 10145, an EU approved probiotic microbial strain.

Due consideration of all the points in Table 3 should help you achieve the ultimate goal of having a cost effective, trouble free calf rearing system. ■

**Table 3. Criteria for the successful rearing of heifer calves.**

- 1 Accept that not all your cows will produce sufficient antibody rich colostrum.
- 1 Be prepared to top up the IgG and IgY antibody supply to all heifer calves in the first day of life (ideally the first six hours).
- 1 Learn to diagnose the health and digestive issues facing your calves.
- 1 Act quickly to combat scours (diarrhoea) before dehydration affects viability.
- 1 Select tried and tested products to meet the nutritional and health needs of the heifer calf – she is too valuable to waste.