

Calves require more milk when temper

# Baby, it's

As temperatures drop it's vital to make sure that young calves are fed more milk to maintain growth rates and health. And many producers should also be reviewing how much milk they feed to young calves, regardless of the weather.

text **Rachael Porter**

**F**eeding young calves is all about energy – not just volume. So says vet Fi Boothby, from the Devon-based Vale Vet Group. “One of the biggest issues our practice sees is producers under feeding dairy calves because they’re just following the ‘two litres whole milk twice a day’ approach,” she says.

“Calves on ad-lib systems will take in up to 12 litres of milk per day, and calves on the cow are feeding at least six times a day, so quite clearly whenever we raise calves off the cow, we aren’t feeding them anywhere near what they’d get as a suckler calf.”

Calves need energy to maintain basic body functions,

to keep warm, to power the immune system and to grow, so it’s absolutely vital that they get enough energy. “Without it they are not growing – and that’s the best case scenario,” says Miss Boothby. “Worse case is that they’re succumbing to infections and losing weight because they aren’t getting enough energy to maintain basic body function, keep warm

and fight off infectious pathogens. In cold weather this becomes an even bigger issue as more energy is used by the calf to warm.”

### False economy

She adds that heaters and calf jackets help: “But they don’t completely negate the need for extra milk powder. The old argument was that feeding them less milk powder meant they would eat more concentrates and so would be weaned quicker onto cheaper feed. But this is a misnomer and a false economy because the feed conversion efficiency of calves on milk is considerably higher than at any other point in their lives.



*Fi Boothby: “Total solids consumed per day are what’s important when ensuring that young calves are being fed enough energy”*



atures fall, so check your feeding levels

# cold outside



Winter top-up: it is essential that producers feed calves additional calf milk replacer in cold weather

ambient temperature	calf aged < 3 weeks (50kg) (%)	calf aged >3 weeks (65kg) (%)
20°C	0	0
10°C	15	0
5°C	25	7.5
0°C	33	15
-10°C	50	30

Table 1: Additional calf milk powder required (%) in cold weather.

“Producers are getting far more for their money when they are milk feeding compared to feeding any other feed later in life.”

The optimum temperature range for calves is typically between 10°C and 20°C, which is known as the thermo neutral zone. “At temperatures in this range, the calf will not have to use any additional energy to maintain its body temperature, leaving maximum energy available for growth,” says ForFarmers’ Nick Berni.

“At 10°C and below, calves will be suffering from cold stress and using increasing amounts of energy to help maintain a constant body temperature. This is the lower critical temperature.”

### Limited reserves

He says that producers should be aware that the lower critical temperature (LCT) for a calf will depend on its age. Calves that are fewer than three weeks old having an LCT of 20°C compared to calves that are more than three weeks old, which have an LCT of 10°C.

“Young calves only have limited reserves of energy to call upon when exposed to low temperatures. In a newborn calf these reserves will be depleted in just 18 hours, leaving them highly susceptible to infection and disease.

“It is essential that producers provide calves with additional calf milk replacer to boost energy and protein levels. Feed higher concentrations of CMR, for example between 15% and 17%, and not extra litres.

Miss Boothby says that litres of milk drunk are less important than energy intake. All calves should have access to water from three days old – restricting it inhibits the development of the rumen.

“It’s the total solids consumed per day that is the important thing to think about,” says Miss Boothby. “With milk powder this is easy because we can weigh it. For calves fed whole milk, producers should assume milk solids are around 12.5% or 125g per litre.

“After colostrum, calves need 600g per day, moving

up to 900g per day by three weeks of age to support themselves and achieve good growth rates. If producers mix milk powder at 125g per litre or less, which is often the rate specified on the side of the bag, they need 7.2 litres of milk per day. But if you mix at a rate of 150g per litre, which is what we would typically recommend as a minimum, producers need to feed just six litres to get the same energy intake. This concentration is fairly standard and I would encourage everyone to do it.

“You can mix at higher concentrations – we have a client who mixes at 175g per litre and another mixes at 200g – but it’s important to take care that the powder is mixing well with the water and that calves don’t suffer with osmotic scour.”

Miss Boothby stresses that, as with any change, it’s important that the increase is gradual: “If not, the calf’s stomach will react. Jumping from 125g per litre in the morning to 175g per litre in the evening would be a disaster.”

### Scour scare

She believes that some of the barriers to producers feeding more milk include their perception that it will push up costs. “But it’s an investment and feeding more milk is, indirectly, less costly once you factor in improved health and growth. Producers also believe that feeding more makes calves scour. It will make calves produce more liquid faeces simply because more milk is being fed, but this isn’t necessarily scour.”

Scour can be caused by nutritional and non-nutritional factors that are unrelated to the quantity of milk fed. “Viruses, bacteria and protozoa are obviously causes of scour, but there are also many factors that influence the closure of the oesophageal groove, which is vital to avoid scouring. If the groove does not close properly, which can be the result of stress or inconsistent feeding, then it will fail to direct milk into the abomasum.

“Instead it will spill into the other stomachs, which are not designed for milk digestion, and this will result in scours, and also reduce the energy the calf

gets from the milk because it has not been digested.” Miss Boothby says that for the groove to close properly calves need to be stress free: “And milk need to be clean, well mixed, at the correct temperature, and fed at the same time and at the same concentration.”

Even producers who try to ensure that their calves are fed enough milk can fail to get it right because they don’t know what they’re feeding. “Producers often add 150g powder to a litre of water and mix it up and assume that they’ve got milk at 150g per litre concentration. They actually have 150g in 1.15 litres, so concentration per litre is lower.

“It’s all about attention to detail and this means weighing milk powder every time they mix it, ideally with digital scales. Using a scoop that you’ve pre-weighed out doesn’t work accurately. I have actually demonstrated this using the same container and the difference is alarming.

“I always talk to producers about the difference in density of a bag that has been sat compressed at the bottom of a pallet for a month, compared to one that’s been thrown around and ‘fluffed up’. So, to avoid underfeeding, you really do need a set of scales next to the bag of feed, so the powder can be weighed out.”

Milk powder quality is also vital to successful calf feeding. “It really is a case of ‘you get what you pay for’. Less expensive powders are usually made from ‘cheap’ ingredients and will offer poorer results. The mineral content and energy content of milk powders don’t tend to vary much. Around 18% fat/oil is a decent benchmark for energy requirements. “What producers do need to look out for on the label is the protein content and quality should be assessed. Crude protein is important for lean muscle growth,” says Miss Boothby.

“Milk powder containing 20% protein will support growth rates of 450g per day, so those wanting to aim for target growth rates of more than 800g per day need to feed a powder with 26% crude protein.

### Protein sources

“The type of protein is also important. Calves need predominantly milk-based protein sources to achieve good digestibility. Soya is an excellent protein source for adult ruminants, but a milk powder containing 26% crude protein comprising mostly soya is unsuitable for calves.

“The amino acid profile of soya does not match calf requirements, and also it has been shown to have nutritional factors in it which contribute to ‘nutritional’ scour. Whey- and skim-based powders are good sources of milk based protein for calves and are easily digestible.”

She adds that another ingredient to note is the crude ash content: “Milk powders with more than 8% ash are not only likely to contain poorer quality ingredients, but will also contribute to diarrhoea. The ash is not absorbed, and passes through the calf, drawing out water and causing nutritional scours.” |

*Wrap up: jackets can help but don't negate the need for extra milk powder*

