

A healthy calf, or no calf – it's the little things that make the difference

It's time to pick up the pieces

When a herd's fertility profile starts to slip, where do producers start in order to manage the situation? Reproductive issues can be both physiological and nutritionally related, so we found a vet and a nutritionist willing to take a fresh approach to fertility.

text **Allison Matthews**

When the 40-litre in-calf cow or heifer is approaching peak lactation she cannot ingest enough food to provide the 300MJ of energy required to satisfy daily requirements.

In a year of variable silage Thompsons' dairy nutritionist Mary-Jane Robinson points out that many feed plans will need to factor in an extra two or three kilogrammes of concentrate, just to meet maintenance levels. But on units where the energy gap is not being filled, fertility performance is the most prominent casualty.

"Research suggests that for each delay in conception beyond 85 days a cost has been calculated at up to £4 per day, depending on the extent of the delay and milk yield. The economic costs associated with an extended calving interval include lower milk yields, fewer calves, an increase in the number of services and higher vet costs," she says.

Step one

"Research has shown how prolonged negative energy balance and low blood glucose lead to reduced levels of key hormones, such as IGF-1 and insulin," says the Jubilee Veterinary Clinics' vet Gareth Bell. "In turn, the hormones – such as luteinising hormone that drive the cow's return to cycling – take longer to re-establish and cows either fail to grow follicles of sufficient size or a large follicle persists as the notorious cyst.

"Other cows living 'on the edge' have abnormal corpus luteum on the ovary,

which produce insufficient progesterone to support healthy embryos or don't disappear at the normal time even when the cow isn't pregnant. This is one reason for the false results that sometimes occur with early milk pregnancy tests," he explains.

While these events are taking place, the producer is admiring his newly born healthy calf and making plans for how to return its mother into a profitable and productive member of the team. Taking a practical perspective, Mr Bell says that producers will notice cows failing to show heat and poor conception rates will become apparent.

"But one of the earliest signs of energy stress can be an increase in the numbers of cows needing treatment for womb infections, such as endometritis. Womb health in first-lactation heifers from 14 days post-calving can be a particularly useful early-warning measure of how the whole herd is going to perform.

"Monitoring cow faeces, milk quality records and building condition scoring into the regular fertility visits are cheap but effective methods of spotting nutritional problems early."

Fine line

Miss Robinson is aware that the signs outlined by Mr Bell are the reasons behind phone calls from worried producers, and attributes a lot of it to the feeding of wet first-cut silage, which has low metabolisable energy levels. "Analysing silage is the first management step followed by feeding cows



New-born calf: successful calving is just part of a bigger picture



Mary-Jane Robinson: "First step is to analyse silage"



Gareth Bell: "Womb health issues provide an early warning"

accordingly. The wetter first cuts are making dry matter intakes difficult to achieve, which is resulting in a prolonged negative energy balance in the early lactation cow.

"It is important that producers acknowledge that feed plans designed this time in 2013 will not satisfy the energy needed this year to bridge the gap of poorer silage and if this is not managed then body condition score will suffer, exacerbating the problems post calving."

Body condition score of the cow at calving should ideally be 2.75-3.25 with the aim of losing no more than 0.5 a condition score by service.

On the flip side those that are excessively fat generally struggle with appetite resulting in excessive body fat mobilisation, which can lead to ketosis or fatty liver syndrome. Research has shown that excessively fat cows at drying off are more than twice as likely to develop a reproductive disorder after calving.

Glucogenic diet

"Energy balance is pivotal not only in terms of energy density supplied but also, ultimately, a glucogenic diet. Energy as starch in the diet drives glucose and this ultimately impacts on fertility," Miss Robinson says.

During a period of NEB, the blood concentrations of non-esterified fatty acids (NEFAs) increase. Balancing silage that is typically wetter combined with higher acid loading properties is a challenge to ensure sub-acute ruminal acidosis (SARA) or other issues such as left displaced abomasums (LDAs) are avoided.

Miss Robinson explains how the avoidance of metabolic disorders is all part of managing the transition diet. "Overall protein in the diet can have an impact on fertility performance. The undersupply of protein, in addition to

reducing milk production, can lead to cows not bulling and oversupplying can lead to early embryonic death of the foetus.

"Typically a 30-litre cow would be balanced for 17% crude protein in the overall diet, however where body condition is light it is advisable to lower protein levels to help reduce the mobilisation of body fat.

"Excess protein will exacerbate energy deficits as it requires additional energy to utilise it. Forage mineral analysis can also identify an area that needs to be addressed, particularly when soil contamination is higher, as is the case with the current silage."

Take control

"Macro minerals can become 'locked up' making them unavailable in the diet, and ultimately affecting the success of a herd's fertility," adds Miss Robinson.

In order to take control of the situation Mr Bell recommends other measures, such as fat to protein ratios and milk urea, to assess how a diet is performing. "These options are readily available to milk-recording herds, but from a vet perspective there is great value in a properly formulated metabolic blood profile as provided by some University Vet Schools, particularly when combined with a full history of the diet, condition score and calving date."

Producers may be surprised to find that it is the 5% gained here and the half condition score there, as well as the greater attention to technique that together pay a big dividend.

By taking the lead from the top-performing herds in the UK, producers will find that level of attention to detail. The key to success lies in finding out which two, or even three, constraints are most important for your herd and then addressing these, in turn, and measuring the response. |