



Improving feed conversion efficiency

Here, in the fourth of a series of articles looking at feed conversion efficiency, we explain why the parameter is set to become increasingly important for UK dairy businesses and how it can be improved.

Topic 1: **What is FCE and why is it so important?**

Topic 2: **Breeding for FCE**

Topic 3: **Health and FCE – a holistic approach**

Topic 4: **Non-feed and management factors**

Topic 5: **'Chemical' and 'physical' ration factors**

The cow's environment and how she is managed can have a significant impact on feed efficiency and attention to detail in these areas can have a major bearing on how cows perform.

"Working with Dairy Excellence customers we find that small management changes can have a large impact," says Promar's Paul Henderson. "Just think about time. If cows are kept away from feed too long, the opportunity to increase intakes is being missed. You need to encourage cows to eat and then lie down. Keeping them cooped up in the

Trough space, cow comfort, access to water – it's a long list...

The 'X' factors

There are many aspects of herd management that can influence feed conversion efficiency (FCE) and here, in the fourth article in our series, we take a closer look at the effect of non-feed and extra management factors.

text **Rachael Porter**

collecting yard away from feed will reduce feed efficiency.

"As a guide we advise clients to look at a 'turn' time – the interval between being taken from housing to be milked and then back again – of no more than an hour. Any longer and you will affect performance. If turn time is longer than this it will pay to look at group sizes and cow flow," he says.

Stocking rate

Transition cow management also has an impact on feed efficiency during the next lactation and it is vital to get cows settled quickly. Mr Henderson likes to see dry and fresh calved cows housed at a reduced stocking rate – ideally 80% of

capacity. "Feed is always available and cows can eat and easily find a cubicle to lie in. It will also minimise stress, which has a negative impact on feed intakes and efficiency.

"Water access is always important and we advise a minimum of 50mm of trough space per cow. At this time of year ventilation is also a major concern as cows start to succumb to heat stress as soon as the temperature exceeds 16°C and so keeping them cool can have its benefits," he adds.

Genus ABS's John Cook believes that trough access is probably the biggest building design factor affecting feed efficiency. "When trough space is limited, cows tend to slug feed and eat



Heads down: ensuring that there's enough trough space is vital to maximise intakes

Comfort is key to maximising yield

Staffordshire-based producers Philip and Matthew Smith have seen, first hand, the benefits of a focus on cow comfort. The Smith's run a 250-cow herd at Lower Castle Hayes near Tutbury.

"To get milk from cows you have to get everything right – the breeding, the management, the diet and the environment. You need to tick every box," says Philip Smith.

"Cows had been housed in a dairy building erected in the mid 1970s with two groups either side of a central feed passage. Watching the cows we came to the conclusion it was holding them back. The cubicles were inadequate and poorly designed and the ventilation was far from ideal. Feed access was reasonable, but we had to regularly push the feed up, and we were seeing leg injuries and neck sores.

"We decided we needed a building that would allow the cows to perform to their potential and correct those things that prevented this happening."

The new unit became operational in 2007 and consists of two 55-metre-long sheds, each with 125 cubicles. The building is an open-ridged cantilever design and the top 50cm of Yorkshire boarding have been removed to improve air flow.

Each side of the building houses 119 cows because this reduces stocking density and also fits exactly with the parlour, which reduces turn time.

"We went for feed troughs to improve access and raised the trough floor so cows can reach the feed easily. We have had no problems with neck sores. The cantilever design means the feed is kept dry," Mr Smith adds.



Philip and Matthew Smith

"There is plenty of access to water and we have fitted tipping troughs so that water is always fresh."

The cows are fed twice a day using a Keenan Mech-Fiber 360 fitted with the PACE management technology, which manages the physical presentation and

chemical components of the ration and allows Philip and Matthew to keep close tabs on diet presentation and feed efficiency.

"The new building has improved cow comfort and feed access significantly," says Keenan's Rob Watkins. "Combined with the consistent delivery of a diet with optimum physical presentation, this has resulted in improved rumen health and increased feed efficiency. "Feed efficiency had been around 1.3kg of milk/kg DMI, but has been consistently above 1.4 and peaked at 1.57. The combination of the well-presented diet and excellent facilities is certainly allowing Philip and Matthew's cow to express their potential and they are well on target for a 10,000-litre average."

abnormally large meals," he explains. "This results in large swings in rumen pH. A cow who slug feeds one day gives herself acidosis, feels poorly and eats less the next day. Then she feels better and slug feeds again because of the shortage of trough space.

"If adequate trough space is provided this roller coaster of temporary acidosis and reduced feed efficiency, which manifests itself as variable dung consistency, can be avoided."

According to Richard Simpson from Kingshay, the target for a typical Holstein should be at least 70cm of trough space per cow, with feed pushed up regularly during the day.

"Neck callouses are an indicator that there is a problem with the feed barrier. The feeding surface should be smooth and raised 15cm above the standing area to encourage higher intakes.

Mr Simpson also points out the

importance of good cubicle design on feed efficiency. He explains that cows should, ideally, lie down for 14 hours a day and this means providing adequate numbers of well designed and comfortable cubicles.

Blood flow

"When a cow is lying down blood flow to the udder is increased and this results in higher yields.

"Every extra hour a cow lies down can increase yields by one litre – a clear example of how cow comfort affects feed efficiency.

"Common problems include cubicles that are too small and uncomfortable beds. So watch out for rubbed and damaged hocks and cows standing half in cubicles," says Mr Simpson.

"A detailed analysis, such as that provided by the HowsMyHerd service, can help identify areas for improvement." |