

Improving butterfats to boost contract milk price

A better understanding of rumen function is helping to reduce the consequences of butterfat depression. *British Dairying* looks at the factors leading to this problem and the approach one Lancashire milk producer has taken to deal with this challenge.

Maximising compositional quality to help increase milk prices will be a vital tactic as producers look to maintain margins in the light of higher feed prices.

Falling butterfats at grazing are a familiar issue but they can also be a problem in housed cows. However, by better understanding the causes of the problem in the rumen it is possible to reduce the impact on prices, according to Andrew Grimston from Adisseo.

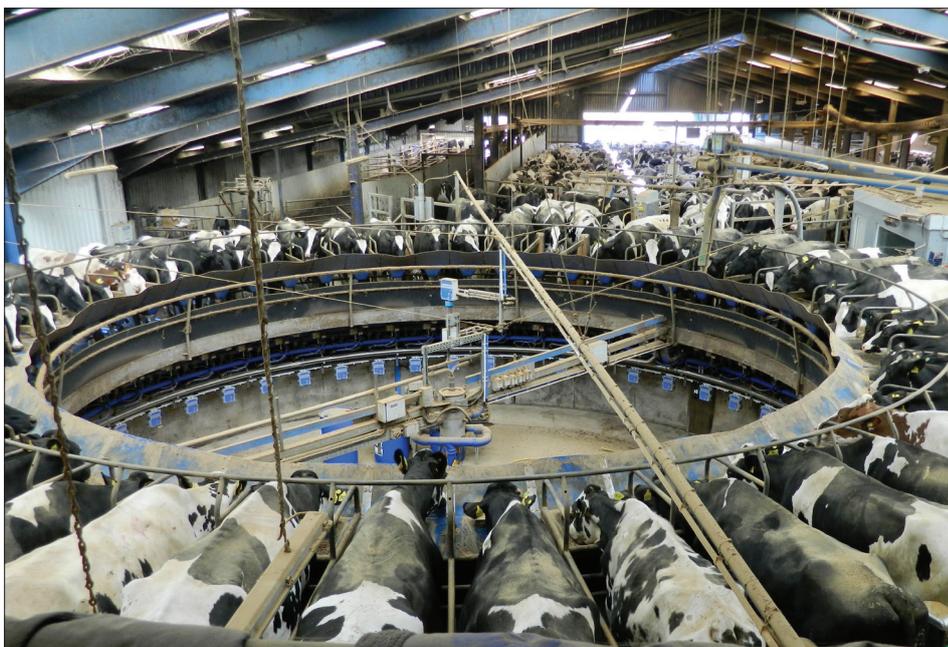
“On compositional quality-based contracts, butterfat bonuses are typically around 0.25p/litre per 0.1%, with many contracts having deductions for low fats,” Mr Grimston comments. “For a 200-cow herd averaging 30 litres per day, a 0.2% increase in butterfat would be worth around £900 per month in increased income.

“Typically around 40% of milk fat is produced in the udder using volatile fatty acids produced in the rumen, while the remaining 60% comes from fatty acids absorbed from the diet. So an effective rumen fermentation is central to efficient butterfat production.

“If we can better understand what it is in the rumen that causes butterfat production to be disrupted, it will be possible to take steps to prevent this happening.”

He says a number of factors are known to predispose cows to lower butterfat production. These include more oils in the feed, particularly unsaturated fatty acids, lower rumen pH, highly fermentable diets and diets low in fibre.

“Grass is a source of unsaturated fats and this is commonly seen as the main reason for the fall in butterfats at turnout. But the rapidly fermented nature and low fibre content of grazing and the risk of low pH will also have an impact.



Lancashire dairy producer David Coulthurst milks 850 cows three times a day through his parlour.

“And it is important to remember that feeds such as soya and rape are also high in unsaturates which can influence butterfat production in housed cow diets,” comments Mr Grimston.

The type of fatty acids is important because unsaturated fatty acids are toxic to many rumen bacteria and high levels will reduce overall rumen fermentation, he warns. To protect themselves, the rumen bacteria convert unsaturated fats into saturated fats through a process called biohydrogenation.

“Once the fats have become saturated, they are no longer toxic to bacteria which can then

stay alive and function efficiently. However, different classes of bacteria use different pathways and produce different fatty acids, and this is a root cause of diet-induced milk fat depression.

“Under specific rumen conditions—principally low rumen pH—classes of bacteria dominate which produce a fatty acid that directly inhibits butterfat production. The only way to reverse this diet-induced milk fat depression is to restore the microbial balance in the rumen and to increase rumen pH—encouraging populations of more beneficial bacteria while reducing the activity of the detrimental bacteria.”



Andrew Grimston from Adisseo.

Mr Grimston advises ensuring that the diet will not predispose cows to a low rumen pH, paying close attention to rapidly fermentable carbohydrates levels, such as cereals, and also the concentration of fibre in the ration. In addition, producers should pay attention to oils levels as reducing unsaturated oil levels will reduce the need for biohydrogenation. Finally, he recommends feeding supplements to encourage the activity of bacteria

that produce beneficial saturated fats.

By improving rumen conditions and restoring the rumen microbial balance, it will be possible to support butterfat production. "One way to help restore microbial balance is to supply substrates required by specific bacteria. RumenSmart is a new innovation based on extensive scientific research that supports the rumen microbial populations, orientating the biohydrogenation pathways to promote fat production.

"In trials it has been shown to improve butterfat production and is particularly effective in higher risk diets. Analysis of bacterial populations show it reduces numbers of strains responsible for the detrimental pathways and encourages the more desirable strains.

"With butterfat bonuses a crucial way to help maintain margins this spring and summer, paying closer attention to the rumen and supporting key microbial populations has a big role to play," Mr Grimston concludes.

Ration review helps increase herd milk fat production



David Coulthurst has addressed butterfat depression issues.

Diet-induced butterfat depression had been a problem for David Coulthurst, who runs a herd of 850 cows at Edenfield Farm at Goosenargh in Lancashire with on average 750 in milk.

The all-year-round calving herd averages 12,200 litres per cow. Milking cows are housed all year round with a heifer group and two milking cow groups. They are milked three times a day.

For the last three years the

herd had been a flying herd. But David has now put 200 cows to sexed semen and will start rearing his own replacements again.

The cows are TMR fed with feed put out once a day and pushed up regularly. The objective is to achieve high forage intakes. Four cuts of grass silage are taken and David makes around 2,000 tonnes of maize silage per year.

Continued on page 58.

Continued from page 57.

Cows are fed to yield in the parlour with a maximum of 3kg per milking.

In early winter 2020 cows were averaging 42 litres but butterfat was down at 3.3%. This resulted in David being penalised under the terms of his milk contract, despite including a C16 fat in the diet to try to increase fat percentage.

In December, he asked Michael Parkinson, ruminant specialist with Massey Feeds, to take a close look at the diet.

Diet assessment

“On an initial assessment the diet seems to contain sufficient fibre and starch—and the starch was helping cows achieve high yields,” Mr Parkinson comments. “Silage was high quality, averaging around 11.8MJ/kg DM.

“However, the silage analysis showed that it was high in lactic acid. This—combined with a high feed rate of a blend containing rapidly fermentable carbohydrates from wheat, barley and ground



Milking cows are fed once a day and feed pushed up regularly to maximise milk from forage.

maize—meant that it was probable that rumen pH was low—creating the conditions responsible for

the fall in butterfat percentage.”

The decision was taken to switch to a bespoke blend and to reduce the quantity fed from 7.0kg to 3.5kg per day. At the same time, 3kg of caustic wheat was added to the diet as this would allow starch quantities to be maintained but provided in a more rumen friendly way.

The TMR now comprised 23kg grass silage, 12kg maize silage, 5kg Trafford Gold, 3.5kg blend, 3kg caustic wheat and 300g C16 fat. An 18% Massey Feeds concentrate was fed in the parlour above M+32 litres.

“In addition, we added 30g of RumenSmart to help stabilise rumen bacteria,” Mr Parkinson explains. “Within a month, butterfat had increased to 4.05% while

yields had been maintained. This suggested that cows were still getting sufficient energy and starch but that the rumen was more effective, and we had reduced diet-induced fat depression.

“Cows have continued to perform well, and we took the decision to take the C16 out of the diet as it did not seem to have been having much of an impact on milk quality. Since it was taken out there has been no impact on fat production.”

David Coulthurst says that the changes have had a significant impact on margins. “By getting the rumen more effective we have been able to increase our milk price and also reduce feed costs per litre, despite generally increasing feed prices.”



There are two cow and one heifer milking groups.



Four cuts of grass and 2,000 tonnes of maize are harvested each year.