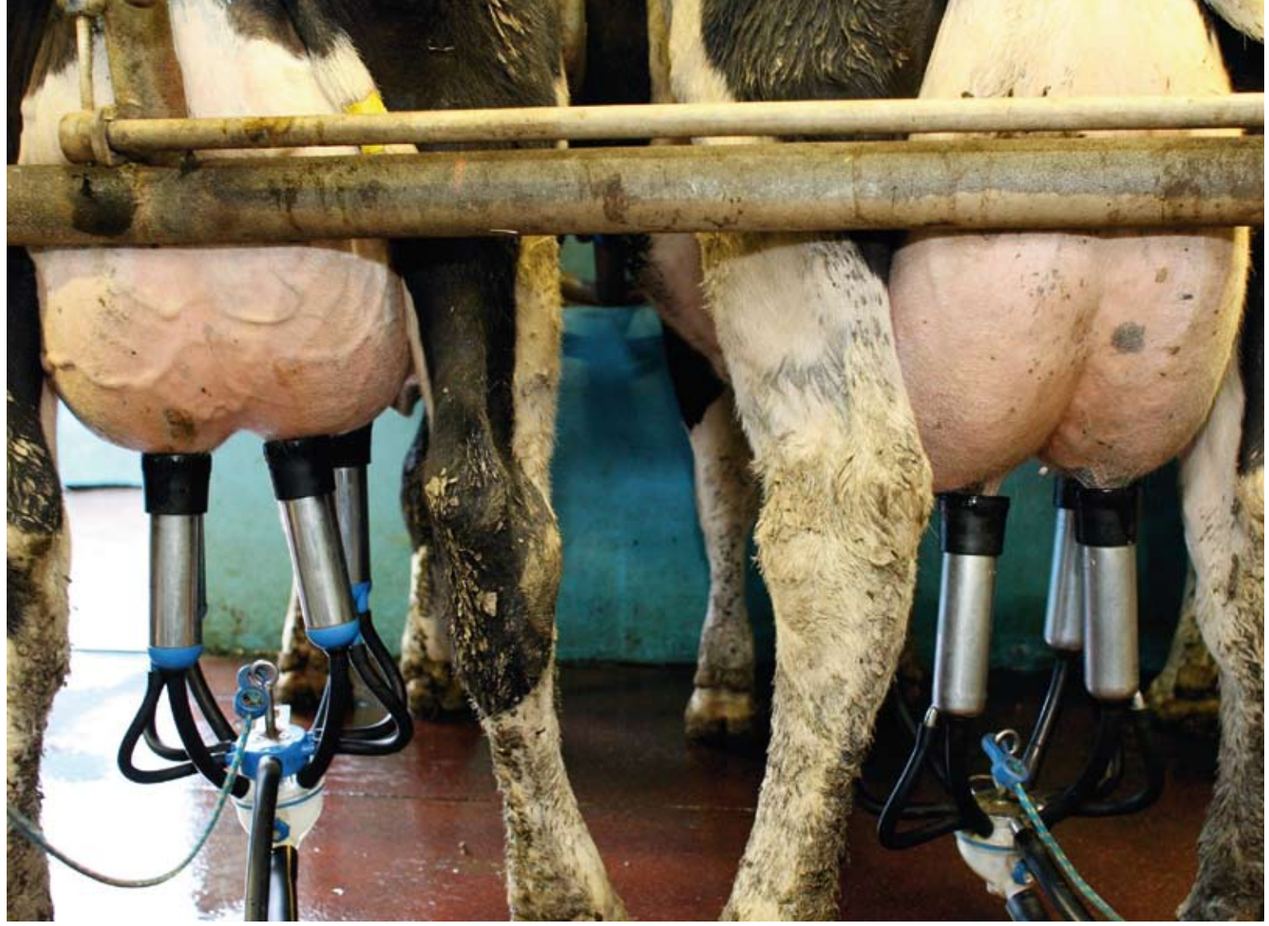
What are the key componen ts of milk protein percentage?

'Cheque' for quality

February, March and April bring longer days and the promise of spring. But for dairy producers across the UK they can also bring the seasonal depletion of the milk cheque due to poor milk quality. How do you get to the bottom of this problem and tackle it?



While on-farm experience and statistics show that falling milk components are less of an issue with each passing year, with the current pressures on milk price in the UK, and particularly in Northern Ireland, producers must take all cost effective steps to avoid losing out on valuable income due to poor fat and protein levels

"For the next few months, while both components will come under pressure, the data and on-farm experience confirms that reduced milk protein percentage will be the main scavenger of the milk cheque," says Thompson Feeds' Richard Moore.

"And while milk protein is affected by many factors, including genetics, stage of lactation, dry cow management and forage quality, when faced with a situation of loss of income due to poor milk protein, a lecture on the background to the subject is not what is required," he adds.

"Fast acting, corrective action is the name of the game and nutrition is undoubtedly the key area for scrutiny as feed levels, feed types and feed management are areas that are under the immediate control of the producer."

Richard Moore: "Producers must look closely at dry matter intakes"

Milk protein

While with most milk contracts it is financial sense to improve milk protein percentage rather than improving milk fat, it is however in most cases a more challenging problem. This is due to a number of factors, but key among these is that the natural variation in milk protein is much less than that of milk fat, but also milk protein percentage is less sensitive to dietary changes. Despite this, with the appropriate focus, increases can be achieved, according to Mr Moore.

Until turn-out the majority of low milk protein cases will be related to a shortage of energy being fed to higher yielding fresh calved cows. Cows in negative energy balance in early lactation are increasingly forced to produce milk from body reserves resulting in classical symptoms of reduced milk protein coupled with reduced body condition score and fertility.

To tackle this Mr Moore recommends that producers look at dry matter intake (DMI).

"This can be the first key area for assessment while probing into many on-farm issues, and this is no less the case for milk protein percentage. Both nutritionist and producer should work together to assess the aspects of the herd in the box.

It is critical to ensuring concentrate feed rates are adjusted to meet the energy requirements of the herd.

"Concentrate feed rate is by far a more effective means of improving the energy balance of a dairy cow than by just moving to a higher energy dairy compound at the same feed-rate," explains Mr Moore. His point is illustrated in table 1.

It is important in today's economic climate that if feed rates need to be elevated that this is carried out on a selective basis if there is not a tight TMR batch. Failure to manage this may improve milk protein pecentage but ultimately will overfeed the staler proportion of the herd with significant economic loss.

"Where possible additional concentrate should be offered through either in- or out-of-parlour feeders to drive for the most efficient concentrate use. However, in many of today's more dated units, a quick check on the accuracy of metered feeders with a set of kitchen scales can be a worthwhile use of 10 minutes.

"If a cow requires and is allocated an extra 2kg of concentrate, account is taken of this in either the computer processor or if manual fed, cows re-tapped, and cows will be assumed to be receiving the extra 2kg by both producer and nutritionist.

"Often this is an assumption too far. Take time to keep a tab on what are the most important pieces of equipment on your unit – even though they may be the least seen."

Table 1: The effect of concentrate supplementation on ME intake

	2kg extra concentrate at 11.4 ME ie. Increase from 10-12kg/day	move ration to an 11.8 ME from 11.4 at 10kg feed rate
extra ME intake/day (MJ)	17.1 MJ/day (22.8-5.7*)	4 MJ/day (10kg x 0.4ME)

* allows for a loss of forage intake due to substitution

Ration selection

Ration selection is also a vitally important means of addressing milk protein. Moving to a higher ME ration will further boost the energy balance but equally it's the source of that energy which is important.

"Starch levels in the total diet are an important driver of propionate production in the rumen and will drive the milk protein percentage of milk. The use of sources higher in by-pass starch, such as maize, will further this benefit," adds Mr Moore.

With this in mind the levels and balance of cereal in the concentrate portion of the diet become particularly important with regard to milk protein improvement. While higher levels of cereal inclusion offer this benefit, Mr Moore confirms that they come with a health warning.

"Over use will drive down rumen pH and could put cows into sub clinical acidosis territory, reduced DMI and ultimately reduced energy intake – the very issue we are trying to avoid. Depending, of course, on feed management and dry matter of the diet, starch levels in the total diet in excess of 20% present a risk."

The points raised in this article are the key areas for focus when faced with low milk protein percentage. However it is by no means a complete check-list. Central to the issue, as with so much of dairy cow nutrition, is getting out there among the cows and getting a good feel for the situation, taking appropriate corrective action and, most importantly, monitoring progress.

Allison Matthews

Questions to ask when looking to increase milk protein

- What is the rumen fill score of cows?
- How is body condition score?
- What is the calulated fresh weight intake of forage and concentrate of the herd's TMR?
- If using out-of-parlour feeders and/or ad-lib feeding, can you get some assessment through the measurement of block size?
- Is forage dry matter just as it was analysed in the sample three months ago?
- Has the quality of forage changed?
- How much space is there at the feed barrier – is it the required one metre per cow?
- Are 60% of cows lying and cudding – not sleeping?