# Boosting milk proteins to fulfil cheesemaking contract

**Last summer, Jason and Becky Mills had to increase their milk solids to meet their buyer's new requirements. They did this through a range of management changes, most significant of which was feeding protected methionine. Ann Hardy reports.**

Like many producers, Jason and Becky Mills—who milk 140 Holsteins at Eastwood Farm, near Torrington in Devon—have had to address the requirement to increase the quality of their milk.

They had lots of warning that their buyer's 'standard litre' for their cheese contract was increasing to 4.2% fat and 3.4% protein in spring 2020. So they started taking action in plenty of time.

With butterfats at the outset hovering around 4% and proteins sometimes dropping to 3.17% during the summer, they knew that they had a fair way to go—especially with their parallel goal of hitting 10,000 litres.

But with most of their feed mill-and-mixed at home and all moved by auger, they had learned from experience that there were constraints on what could be included in their rations.

*Becky and Jason Mills have addressed milk protein in the herd.*

## Auger feed problems

Jason and Becky explain: "Everything has to be augered to the parlour and out-of-parlour feeders. We've found that some ingredients coat the auger inside and block up on the bends."

Furthermore, the auger system also tends to limit the amount of protein that can be fed due to the particle size of ingredients. So a low-protein ration—at 15.5% crude protein—had been used for some years.

This also meant that ingredients had always been kept simple, including home-milled cereals, maize distillers and soya. There are no facilities for a total mixed ration so forage was fed separately in ring feeders. This was generally a 50:50 mix of maize and grass silage, with some pea and barley wholecrop fed at the end of summer once the maize had run low.

The upshot was that yields did not increase as the Mills would have liked. They remained around 9,000 litres for several years, with constituents lower than they wanted for their milk contract.

"Until then, we'd always taken our nutritional advice from feed reps. But we just seemed to be standing still," says Becky.

## Nutrition advice sought

Concerned in particular that they could not raise their milk protein, Jason and Becky eventually recruited the services of independent nutritionist, Fiona Berry.

"Fiona immediately edged the protein in the ration upwards, although it remained at a fairly low 16% due to the constraints of the auger," says Jason. "She added rape and took out the maize distillers and we immediately saw an increase in milk protein."

The couple continued on this ration for 18 months. While milk components were higher than before, they still fell slightly short of their target for their buyer's standard litre.

Last summer they took a further hit when rainfall was low and grazing deteriorated, eventually bottoming out at 3.15%.

Fertility had always been a challenge in the summer months, and a particularly disappointing PD session in June 2019 provided a further prompt for change. "I believed the ration was short of methionine so I recommended that we add this amino acid," says Ms Berry.

## Essential amino acids

"Amino acids are the building blocks of protein, so they're essential for milk and milk solids production and also other functions within the cow. While some can be synthesised by the cow, others cannot. These so-called 'essential' amino-acids must be delivered in the diet."

Those in shortest supply relative to the cow's requirement are considered to be 'limiting'. This means that an inadequate supply will affect the cow's function and performance.

"Methionine is typically the first limiting amino acid in the cow's diet. It is required for the production of milk and components, metabolic health and reproduction," she says.

"So we decided to add Smartamine from Adisseo—a coated form of methionine that is protected from digestion in the rumen," she explains. "This means that it moves on to the cow's abomasum where it is released, and on to the small intestine from where it's absorbed into the bloodstream."

From here it does its work of repairing tissue and creating milk protein, so playing an important role in cow health, milk quality and vigour.

## Summer feed change

"We started feeding the methionine in summer 2020 and there was an immediate uplift in milk protein," says Becky. "We also believe it is having an effect on fertility, judging by the most recent PD sessions."

Vet Rebecca Cavill, from Torch Farm Vets, agrees. She says that the herd's conception rate has climbed since the changes, most notably in the cows 50 to 80 days calved. "Traditionally this group has struggled to hit target protein levels but now they're doing so routinely," she explains.

"Low proteins—especially in the fresh cow—are likely to have a knock-on effect on both fertility and cell count, as they can suggest an element of negative energy balance. There have not been any changes to dry cow management that would explain this, which suggests that the methionine is helping the cows to meet their protein needs more effectively," says Ms Cavill.

"Previously, we would routinely see cows which appeared to be cycling normally but were not holding. This seems to be much less common since the changes."

Today, the Mills record their

*Nutritionist Fiona Berry.*

12-month rolling average milk production at 10,123kg, with fats and proteins steadily rising. The latest recording from November 2020 averaged 4.49% fat and 3.52% protein. "The protein and fertility are phenomenal compared with where they used to be," says Becky.

Financially, Jason and Becky say that the methionine has more than paid for itself. "We worked out before we started that we needed to increase the herd's protein by 0.1% to cover the cost of the product, and anything over that was a bonus," says Becky.

For the future, they say that they have every confidence of meeting their buyer's targets—with other practices in place to continue to move the herd in the right direction.

"We started selecting bulls for percentage protein when we first heard that our buyer would be raising the bar around three years ago," they say. "We won't even look at a bull if he doesn't exceed +0.1% protein in his PTA [Predicted Transmitting Ability]. Now we have heifers bred from this policy joining the herd and we're really pleased with their milk quality so far.

"Somatic cell counts are also coming down—which we're certain is related to the correctly balanced diet—and mastitis is quiet at the moment.

"Lameness incidence, which is also low, also improved following monthly visits from Ben Westaway at Tamar Hoofcare," says Becky.

A comfortable new cubicle shed is helping production too, through improved comfort and lying times. The shed allows cows to stay in by night throughout the year.

"It all feels like it's starting to fall into place and our yields are finally where we feel they should be," she comments.

***Production progress at Eastwood Farm—milk litres sold and composition***

| | Milk (litres sold) | Fat % | Protein % |
|---|---|---|---|
| November 2017 | 27.8 | 4.17 | 3.36 |
| November 2018 | 26.7 | 4.32 | 3.49 |
| November 2019 | 28.6 | 4.24 | 3.38 |
| June 2020 | 33.4 | 4.02 | 3.17 |
| November 2020 | 33.0 | 4.49 | 3.52 |
| Current 12-month rolling 305-day average is 10,123kg at 4.24% fat and 3.29% protein. | | | |

## *All round benefits*

Ms Berry concurs and adds: "The cow doesn't actually have a protein requirement but rather an individual requirement for each essential amino acid. Becky and Jason want to feed a low crude protein ration because of circumstances unique to their farm. But there are also potential financial and environmental benefits of lower protein diets for any farm, provided that they're balanced for essential amino acids.

"The reality is that even high crude protein diets are unlikely to have such balance. Methionine in particular is generally low in cattle feeds.

"It's far better to supplement methionine to achieve a better balance of amino acids—so limiting wasteful nitrogen excretion while helping the cow's production, health and fertility," she concludes.