

Cutting protein use this winter

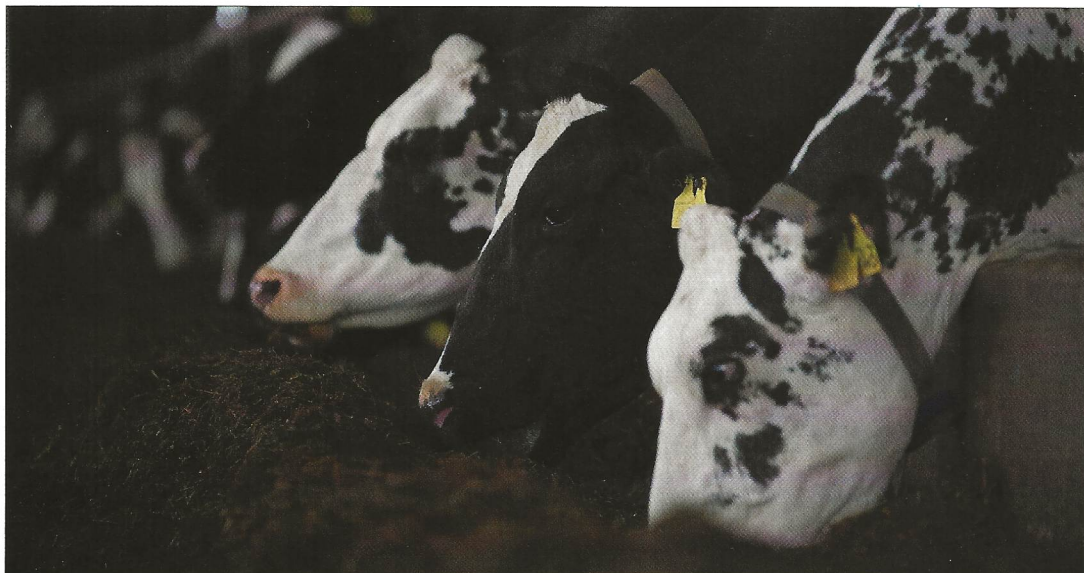
Challenging protein use this winter could help protect margins and reduce waste, so how should dairy farmers and their nutritionists go about it? British Dairying reports.

It will pay to challenge protein levels this season, because focusing on supplying exactly what cows require will allow a reduction in total protein.

“If we can supply protein more efficiently, it will be possible to use less/cow, potentially reducing costs but improving the nitrogen use efficiency (NUE),” says David Wilde, National Ruminant Technical Manager at Massey Harpers Feeds.

“Feeding less protein and increasing how efficiently cows use it can help reduce overall greenhouse gas emissions. Any unused nitrogen can only go to one place - excretion in the manure - and most of it will be lost as ammonia and nitrous oxide.”

When assessing and meeting a cow’s protein requirements, nutritionists need to look at metabolisable protein (MP), he says.



Feeding less protein will cut feed costs and reduce damaging nitrous oxide emissions from cows

“It is perfectly possible to meet cows’ MP requirement from a lower CP diet.”

“Nitrous oxide is around 298 times more potent for global warming than carbon dioxide, and contributes around 20-30% of the emissions attributed to agriculture in the UK. So reducing nitrous oxide can make a significant contribution to reducing total farm emissions.”

Quite simply, NUE is the milk protein output divided by the protein intake, ie a measure of nitrogen capture efficiency. It takes account of all the nitrogen fed from home-grown and purchased feeds. In the UK, NUE averages about 25%.

In other words, three quarters of nitrogen fed is excreted, creating inefficiency and an environmental cost.

Meeting requirements

For example, a 20kg dry matter (DM) intake of a ration with 11.8MJ/kg energy density and 18% crude protein (CP), producing 31kg of milk/day at 3.2% protein, would have an NUE of 27.6%.

“If, by meeting cows’ requirements more precisely, we could reduce the

diet to 16% CP while achieving the same yield and milk quality, NUE would increase to 31%. It is possible to reduce protein content in diets by rationing them to MP,” says David.

Size of opportunity

“Typical dairy rations are formulated to 17-18% CP, but this results in cows often being over-supplied with degradable protein, which is wasteful and ends up in the urine.”

There are many examples of herds across Europe, the US and elsewhere where cows are fed rations as low as 15% CP, which demonstrates the size of the opportunity.

“It is perfectly possible to meet cows’ MP requirement from a lower CP diet, specifically delivering the

actual MP they need.” The MP from rumen available energy (MPE) is the amount of protein that will be utilised by the cow.

In a typical diet, the MPE content might be around 10.5-11.0% of the DM intake, explains David.

“Demand the full details.”

“The trick is to keep that the same while reducing the overall CP%. It is very easy to reduce both at the same time, but this would reduce yields and do nothing for the NUE or your pocket. This is where rationing to the MP content of the diet

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Comparing different protein levels

Ration CP	%	18	16
N Intake	g/d	576	512
N in Milk	g/d	159	159
NUE	%	27.6	31.1

Feeding a lower protein ration improves the nitrogen use efficiency

brings advantages, by ensuring there is sufficient MPE to meet the cows' needs while ensuring the MP based on the nitrogen in the mix (MPN) is not excessive. In most dairy rations, MPN is in excess and we can usually reduce it.

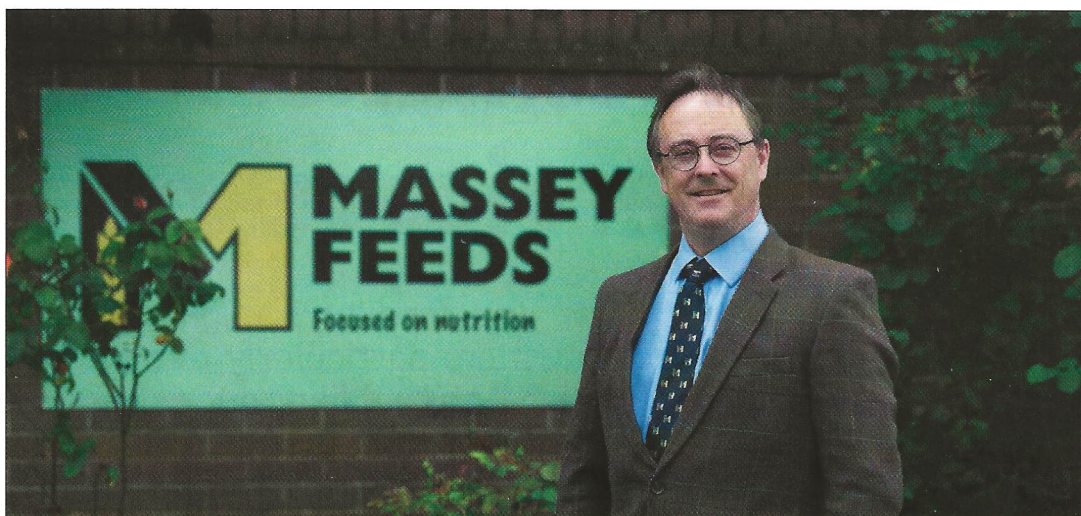
"The higher the MPN in a ration or feed, the higher the CP. But it tells us nothing about the MPE value and how the cow can use that protein."

"The higher the MPN in a ration or feed, the higher the CP."

Feedstuffs and ingredients will vary in how they supply these fractions, and this explains why two 18% compounds can perform differently.

They could have similar MPN contents, but substantially different MPE levels, affecting how well they support milk production, says David.

"The Massey Harpers FiMLAC range, for example, is formulated to MP, allowing more accurate balancing of forages. Typically concentrates



Challenging ration formulations can help farmers to reduce the total amount of protein fed, says David Wilde

have higher levels of MPN than MPE, which can result in poor NUE, but we can modify this ratio to supply the MPE the cow needs." He advises farmers and nutritionists take the following steps to help reduce protein use and increase NUE this winter:

Get forages analysed regularly

This is particularly important for grass silages - and use a laboratory that belongs to the Forage Analysis Assurance Group.

Know your ingredients

Know what the MP values of the blend or compound are.

Don't accept it is an 18% compound or a 24% blend. Demand the full details.

Consider feeding amino acids

Once the MP supply is correct, amino acid balancing can refine and lower the protein supply still further, or help to improve milk quality and yield.

Use additives

To improve rumen nitrogen capture - where the excess MPN in diets is from forages - using essential oils, such as in Novatan, can help capture this protein, helping to reduce waste and emissions.

"Thinking more carefully about diet protein supply and challenging ration formulation could mean feeding less protein, more efficiently and reducing emissions."

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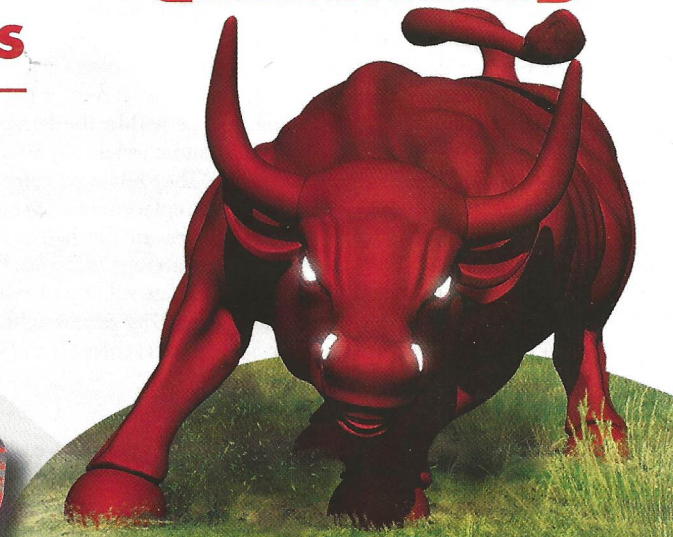
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