

Perks of a protein supply rethink

There is a big opportunity to rethink how we supply protein to UK dairy cows which could reduce costs and carbon footprint on farms, according to Dr Sion Richards, senior ruminant specialist at Adisseo.

He says replacing soya with domestic and EU-produced protein and formulating diets based on amino acid supply are ways the industry could achieve this.

Dr Richards says: "Protein represents one of the major costs of feeding dairy cows and also brings one of the highest carbon costs. Soya is considered one of the best protein sources, but is one of the worst ingredients from a carbon perspective.

"Replacing soya with domestic and EU-produced protein sources, such as rape, protected rape, wheat distillers and beans, will help reduce the carbon impact of feeding dairy cows. The dependence on soya could be reduced further by challenging protein feed rates and increasing the precision of protein nutrition."

Feeding protein translates into supplying animals with amino acids which are the building blocks of protein, says Dr Richards.



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"The usual approach to ensure adequate amino acid supply is to simply feed more protein.

"In essence you put more in, anticipating that more of the amino acids get absorbed. The result is that cows are fed too much protein, which at current protein costs is a huge burden, as well as having an environmental impact."

Typical UK dairy rations are formulated to 17 per cent crude protein, he says, but this results

in cows being over-supplied metabolisable protein by 8-10 per cent. The average EU diet is 16 per cent CP, while diets in the US are closer to 15 per cent.

Amino acid supply

He says: "By formulating diets based on amino acid supply, we can more closely balance requirements, particularly for essential amino acids. These cannot be synthesised by the cow and have to be supplied in the diet.

"As soon as an amino acid becomes limiting, or there is not enough to meet the cow's requirements, the performance of the cow is affected. In most UK dairy diets, methionine is the first limiting amino acid, with an estimated 85 per cent of diets being deficient.

"Unique rumen protected sources of methionine can be added to diets to balance amino acids, improve nitrogen efficiency and reduce protein costs."

COMPARING DIET CONTAINING SOYA VERSUS DIET FORMULATED TO AMINO ACIDS

THE table below compares two total mixed ration diets which are formulated for M+40 litres at 4 per cent fat and 3.3 per cent protein, providing the same total energy.

Both are based on two-thirds grass silage and one-third maize. The first is a typical UK diet

containing soya and rape, while in the second, the soya has been removed and the diet formulated to amino acids.

Dr Richards says: "By feeding precisely for amino acids and removing soya, the diet is now 15 per cent crude protein compared to

17 per cent. Efficiency of nitrogen use has increased by 12 per cent, so cows are making better use of the nitrogen supplied.

"Removing soya has reduced the cost of the diet but, most significantly, has more UK grown concentrates and has cut the

carbon footprint per kilo of milk from 600g/kg to 386g/kg, a 36 per cent reduction.

"Challenging the norms of protein feeding offers dairy farmers a significant opportunity to reduce purchased feed use, reduce carbon cost per litre and save costs."

TOTAL MIXED RATION DIET COMPARISON

SOURCE: ADISSEO

	Typical UK diet	Diet formulated on amino acids
Crude protein (%)	17.2	15
Metabolisable protein (g)	2,540	2,380
Nitrogen use efficiency (%)	30.3	35.7
Cost per cow per day (£)	4.60	4.50
Total soya (kg/cow/day)	2.3	0
Total rapeseed (kg/cow/day)	2.3	1.75
Percentage of UK-grown concentrates	59	77