

Challenging conventional thinking on cow rations is essential to meet the economic and environmental pressures faced by dairy herds and businesses. We highlight ways to improve feeding precision.

- 1 Increasing rationing precision to boost productivity and sustainability
- 2 Driving forage intakes and reducing waste
- 3 **Boosting rumen efficiency to improve nutrient use and reduce emissions**



Monitor rumen efficiency to drive performance

We offer some practical tips and pointers on optimising rumen function to make the most of this year's 'challenging' silages, and to maximise intakes and cow performance.

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Driving rumen efficiency will be key to making the best use of diets this winter, driving production and margins while contributing cost-effectively to reducing emissions. So says molasses blends specialist ED&F Man's Georgina Chapman. "Focusing on fine-tuning the rumen ensures that cows can make better use of the feed in their ration, and producers can reduce the need to add expensive ingredients and costs," she explains. "The role of the rumen is to take feed ingredients and, through microbial fermentation, turn them into nutrients that are required and can be used by the cow. A more efficient rumen will digest feeds more effectively and quickly, allowing increased nutrient uptake by the cow and driving performance. This will also help to reduce nutrient wastage and inefficiencies and is the most important first step in reducing methane emissions," she adds.

A clear example of this is fibre, which the rumen microbes digest to produce the volatile fatty acids (VFAs) that are a major energy source to the cow. "An efficient rumen turns a low-value nutrient, such as fibre, into something the cow can utilise," adds Ms Chapman. "The same is true for protein. Cows do not utilise crude protein per se. They need metabolisable protein, a major and important component of which is microbial protein produced by rumen fermentation." ►



Georgina Chapman:
"Consider adding a conditioner to reduce heating"

◀ “If the rumen is more efficient, the supply of microbial protein will increase and this can, in turn, actually allow overall crude protein in the diet to be reduced.” A more efficient rumen will increase nutrient capture from the diet but can also increase total nutrient intake by stimulating higher dry matter intakes. If the rumen microbes are balanced and working effectively, the rate of fibre digestion will be higher and the rate of rumen outflow will increase promoting higher dry matter intakes. “The economic benefits of a more efficient rumen supplying more nutrients to the cow can be huge, reducing the requirements for supplementary energy and protein, leading to lower feed costs and improving nitrogen use efficiency.”

Challenging silages

Ms Chapman says early indications show that this year's silages are proving to be a challenge on many units, with cows struggling to achieve the necessary intakes and to then digest the higher fibre material. Consequently the nutrients in the fibre are not being released, reducing the supply of VFAs and microbial protein. Rumen outflow rates are reduced, depressing dry matter intakes, and a higher proportion of undigested feeds are being seen in the dung.

“We are also hearing reports of changes in cow behaviour, with cows making fewer trips to the feed trough, eating less and spending more time lying down trying to digest the diet,” says Ms Chapman. “Normal cow behaviour is to eat, lie down to digest the feed and then, once digested, she will feel hungry, get up and feed again. This year the urge to get up and eat is reduced because the rumen is still trying to digest the ration.”

She says the quickest ways to assess rumen function are to watch cows and to sieve dung on a weekly basis and assess the effectiveness of diet digestion. “If necessary take steps to modify the diet to improve rumen function.”

Ms Chapman adds that to promote optimum rumen efficiency it is important to balance the supply of rapidly and total rumen-fermentable energy and rapidly and total rumen-degradable protein while, at the same time, ensuring the acid load in the diet does not increase. This can tip cows into SARA and acidosis.

Sugars are an important source of rapidly fermented carbohydrate, mostly fermented within two to three hours of feeding. Promoting a more active fermentation helps to increase fibre digestion, as well as microbial protein production and rumen throughput, which can help

Before using liquid sugars



After using liquid sugars

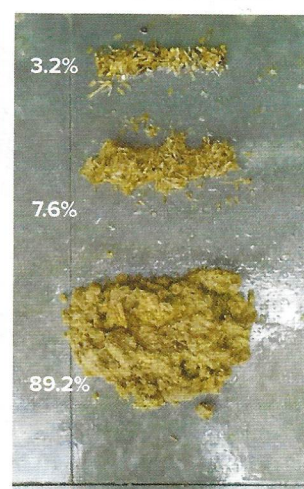


Figure 1: Sieved dung samples of diets containing differing amounts of sugar supplied by molasses-based feed

stimulate dry matter intakes.

“By increasing sugar levels in the diet to between 6% and 8% while holding overall starch and sugar at between 28% and 32%, we can create a more efficient fermentation without increasing the acidosis risk,” she explains.

Figure 1 compares dung samples of diets containing differing amounts of sugar in the dry matter supplied via a molasses-based liquid feed. After six weeks and with an increase in sugar to 6% DM, the dung from cows fed a higher concentration of sugar show more effective fibre digestion, evidence of superior rumen efficiency.

Molasses-based feed

A recent study at the University of Reading confirms that feeding a molasses-based liquid feed can improve fibre digestion and increase total VFA production and, by so doing, increase rumen efficiency.

In the trial cows were fed two diets, one of which contained 1.4kg of ED&F Man's Regumix. Fibre (NDF) digestion significantly increased and total VFA production was higher from cows fed the Regumix diet, indicating that rumen fermentation had been improved.

“Significantly, methane production was also numerically reduced,” says Ms Chapman. “This may seem illogical as methane is a by-product of fibre digestion. With increased scrutiny on methane at present, dietary fine-tuning is an important tool that could reduce methane without increasing costs.”

Ms Chapman also stresses the importance of encouraging cows to eat. Ensure there is sufficient trough space and push up feed regularly. “And watch for signs of diets heating up. As diets heat up, palatability and ration quality declines, making cows less enthusiastic eaters. Signs of heating include reduced dry matter intakes, increased wastage, reduced cow performance, and an unpleasant smell.” It will be important to take steps to reduce the consequences of heating. One low-labour option is to consider adding Fresh-Guard, a ration conditioner that has been proven to prevent ration heating. “By reducing undesirable microbial activity, it has been shown to increase dry matter intake, improve animal performance and reduce feed wastage. It can be added to any ED&F Man bulk liquid feeds,” adds Ms Chapman. |

Pointers to improve efficient feeding

- Know what is in the clamps – analyse silage frequently
- Regularly sieve dung. Is too much material in the long-fibre portion?
- Prevent diet heating to maintain intakes
- Focus on rumen efficiency to drive intakes
- Add a molasses-based liquid feed to promote higher rumen efficiency
- Make time to watch the cows – are they spending enough time feeding?