Tips to get more from your herd's TMR

Add precision to your rations

Successful TMR feeding is all about consistency – in terms of quality ingredients and particle size and mixing. We spoke to a leading US dairy nutritionist for some trouble-shooting tips to help improve both intakes and milk production.

text **Rachael Porter**

Variability in TMRs – and indeed partial mixed rations – can not only cost litres of milk, but can also put a considerable dampener on profitability. So says US-based Diamond V dairy specialist Kevin Leahy.

He presented a paper at a recent nutrition symposium, held at the Wageningen University in the Netherlands, which outlined some of the most common 'mistakes' when feeding a ration – and what steps producers should take to put them right.

"The goal of every nutritionist and producer should be to limit variation – consistency is key to success with any ration," he says.

"Producers should set out to minimise within-batch and between-batch variations in moisture, particle size and nutrient content of the mix. And also to minimise particle size reduction of forages during handling, while maintaining a uniform mix."

He stresses that it's also important to provide fresh, high quality, non-sorted rations to cattle at all times.

Monitor rations

Sounds straightforward enough, but how do producers actually achieve this? Checking ration variation is the first step. "Determining dry matter content on a regular basis is the first and most important step in monitoring rations," he says. "Full TMR audits are quite time consuming, but relevant if you have a specific animal health, digestion or production problem in a herd."

While there are various ways to measure TMR consistency, such as the use of 'marker' ingredients, including minerals like salt and calcium or magnesium, which are cost effective and useful, they do have a time lag due to the required sampling and laboratory analyses. "This can make it impossible to take immediate action and correct problems in the ration," say Dr Leahy.

More immediate 'on-farm' results are offered by the Penn State Particle Separator (PSPS). This is a good tool to monitor both within-batch and between-batch variation of particle size in TMRs and offers a relatively quick assessment of uniformity.

Accurate test

"But this must be carried out correctly," says Dr Leahy, adding that to get accurate test results the procedure for using the PSPS must include the following steps:

- Sample the ration immediately after it is delivered to the feed bunk and before cows start eating.
- Scoop up approximately 500g of TMR and place it in a one-litre sealable bag.
- Take samples from along the feed bunk representing the beginning, middle and end of the ration load.
- Shake the sample through the PSPS and make sure that smaller particles, which are clumped together with any added liquids, are filtered through the top screen.
- Calculate the percentage weight on each screen and determine the coefficient of variation (CV) for the batch.

"The goal is to have a CV of less than 3% on each screen. In the US, reaching this goal for the top screen is rarely achieved for lactating cow rations. This is because they have between 5% and 10% of the ration, by weight, on the top screen," says Dr Leahy.

"However, in much of Europe it is not

Check scales often and calibrate when needed

Monitor ration variation with a shaker box

Maintain a smooth silage face to help minimise feed losses

To create a smooth face, shave silage piles vertically

unusual for most of the material to be on the top screen. The variation should be assessed on those screens where most of the ration is collected."

The middle and bottom screens can be used in the US to make on-farm assessments of within-batch variation, while in Europe all three screens can be used. More than 1,000 of these TMR analyses have been conducted and compiled throughout the US by Dr Leahy's company during the past six years. "And more than 370 of these analyses included data that highlighted the specific items in the mixing process that were identified as causes of variation."

Of note was that fewer than 30% of the loads that were analysed were considered 'normal', in other words there were no mixing issues. "Worn mixer wagon parts were identified as the cause of variation in more than 20% of the loads," says Dr Leahy. These were blunt knives and blades and worn kicker plates, as well as jammed and feed ingredient infested augers. "A lack of proper maintenance means that even the most carefully formulated ration comprising the best quality ingredients won't mix or feed out as it should."

Feed sampling procedures and locations were also identified as an area where variation can occur. Blending piles of silage and 'pushing up' can alter the analysis results for dry matter and crude protein levels, for example.

"Proper silage face management and careful and accurate sampling forages is vital to ensure that the ingredients in the ration are, themselves, consistent," stresses Dr Leahy.

Level position

The positioning of the mixer wagon, and the sequence in which ingredients are added to it, as well as the mixing itself are also important. "If the mixer wagon is standing on a slope, for example, mixing will not be even, particularly where liquid feeds are being used," says Dr Leahy. "Liquids will pool at one end or side of the wagon and the moisture in that mixed ration will vary at feed out."

As for the type of mixer wagon used – whether it's vertical, horizontal or paddle – he says that there should be little variation, if the mixer wagons are well maintained, when it comes to TMR consistency. He has no preference towards any particular type of mixers. "The general principles are comparable for vertical, horizontal and paddle mixers."

And when it comes to loading up the mixer wagon, as a rule of thumb, he would always prepare a farm specific loading order for ingredients. "You want small additions to be in the wagon early in order to have them thoroughly mixed in the total ration, but not too early because they may not be pushed all the way up. Feed stuffs that need long mixing periods should also go in early," he adds. |

Change blades at least quarterly

Park the mixer on a level area, that's free of debris, to help create consistent diets