

Getting mineral nutrition wrong can be expensive and counterproductive

# Mix and match with precision

Improving precision when feeding mineral supplements can help to cut costs and safeguard cow health and performance, by ensuring that they're not fed too much or too little. We spoke to two nutritionists and a vet to find out more.

text Rachael Porter

Imprecise mineral supplementation costs producers thousands of pounds – in wasted product and lost milk production – every year. But the good news is that techniques exist to allow accurate supplementation that can reduce health problems and boost margins.

“Minerals are vital nutrients for dairy cows being involved in all the main processes in the animal, yet a failure to pay attention to detail can lead to increased health problems and unnecessary costs,” explains NWF Agriculture feed specialist John Cann.

“Today's high yielding dairy cows require high levels of mineral supplementation and it is important to make sure they get exactly what they require as feeding too much or too little can bring problems. Getting mineral nutrition wrong is an expensive business.”

## Health risks

Deficiencies lead to reduced performance and increased health problems. If cows are short of particular minerals then problems like mastitis and lameness will increase. But it can be some time before a problem will become apparent and you may not know mineral levels are short.

“Reducing minerals may seem like a good idea, but not if this causes a deficiency,” Mr Cann stresses. “A cost saving today can result in a bigger

problem in the future, but how do you know if cows are deficient and if you have made a wise decision or put animal health and welfare at risk?”

For example, a cow's hoof contains horn laid down over many months. If minerals are reduced the strength of the hoof may be compromised but this won't show as a problem immediately. The cow will initially walk normally and seem healthy, but in a few months the weakened hoof will be in direct contact with the ground and lameness levels will increase with more damage to the sole.

## Immune system

Minerals are also involved in the immune system and reducing mineral levels can lead to raised cell counts and higher levels of mastitis in later lactation rather than immediately.

However, feeding excess minerals can also be a problem. Cows can not store many surplus minerals, resulting in higher excretion levels and a greater pollution risk. For example any excess phosphorus in the diet is simply excreted in the urine which is quite simply a waste of money and contributes to diffuse pollution.

However, some minerals can be stored but this can bring an increased risk of toxicity. Copper is one of the few minerals that cows will store if too much is fed, but once stored, cows can't deplete reserves and they will just continue to store more. Excess copper can result in liver failure.

“The degree and type of mineral

supplementation required will depend largely on the forages in the diet. Maize and wholecrop silages for example are lower in specific minerals than grass silages.

“The only way to ensure that you are feeding the correct balance and level of

*Mineral mix: TMR rations can be excessively high in copper, so formulate with care*



minerals is to carry out a mineral assay on your forage at the same time as you have a standard forage analysis. The cost is negligible compared to the cost of getting mineral supplementation wrong. It is then possible to provide an accurate supplementation plan to ensure accurate

and cost-effective mineral nutrition,” adds Mr Cann.

Lillico Attlee's Warwick Bastard recommends going a step – or two – further to ensure that mineral supplementation is 'spot on'.

“The first step towards precision feeding

is to look at the ration, but if you're herd is still underperforming or showing symptoms that could be linked to mineral deficiency or toxicity, then blood testing could be the way to go,” he says.

But this is not without its problems, not least that it's not always totally accurate. “Blood is 'clever' and can balance itself, so everything appears normal. But it doesn't give a true reflection of that's really going on inside the cow.”

For this reason, if there are persistent issues within a herd, which he believes could be related to mineral deficiency or toxicity, then he'll recommend a liver coring test.

A tiny slither is taken from the cow's liver by the vet using specialist equipment and sent off to the VLA for mineral analysis.

“It's really the only accurate test available – it gives you a definitive 'yes' or 'no' answer. This means that if there is a problem that you can tackle it with confidence and if everything is normal then mineral status can be ruled out as a possible cause.”

## Snap shot

Prior to BSE and restrictions on handling and moving offal, cull cow livers were routinely tested for mineral status. “And this provided producers and nutritionists with an extremely useful snap shot of the mineral status of their herds,” explains Mr Bastard.

Vets can take liver samples from cull cows at the abattoir and get them analysed, with the correct paperwork signed by the abattoir vet.

This is something that vet Graeme McPherson, from the Oxford-based Lackmead Veterinary Group recommends.

“Liver sampling or biopsies may be used to investigate potential copper toxicity, primarily in TMR fed herds, or to check for copper deficiency in New Zealand-style, low-input grass-based systems,” he says.

“Just one test, just to see what's going on, is all that's needed. And at least five cows should be sampled to get a true picture of what's happening within the herd and not just one animal.”

Feeding mineral supplements can be expensive – considerably more than analysing five cow samples at around £12.95 per test, plus vet and admin costs: “So what better way is there to make sure you're not over or under feeding and wasting money?” he adds. |