Health and fertility problems can be traced back to physiological 'building blocks'

Are minerals the missing link?

We spoke to two ruminant nutritionists to find out more about the long-term impact of incorrect mineral supplementation on herd health and overall performance. And get some advice on how to redress the mineral balance.

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Minerals are essential components in the building blocks of enzymes, hormones and cells. They are required for optimum growth, muscle and nerve function at varying levels according to the cows requirements, which will vary according to pregnancy status, milk production level and growth rate.

"Trace minerals play a key role in many enzyme systems and will consequently have a significant impact on animal performance," says Zinpro Performance Minerals' Jeff Defrain.

"The bioavailability of trace minerals fed to ruminants is dependent upon the source as well as the amounts of other trace and macro elements in the diet. And attempting to increase trace mineral status of the animal by feeding higher levels of inorganic trace minerals not only increases ration costs, but also creates imbalances and can act as an antagonist with other trace minerals, increasing excretion of those trace minerals into the environment," he warns.

Prominent issue

"The increased drive for high dry matter silage has meant that mineral nutrition has become a prominent issue," agrees Thompsons' Richard Moore. "While the benefits of better quality silage are clear, the process involved in making it can lead to a greater level of soil contamination and with this can come higher levels of iron, aluminium and sulphur.

"Equally some of this year's wetter silage will also have some contamination, which has been brought to the clamp on muddy wheels. Contamination can have an antagonistic effect on the availability of other trace minerals. If this is suspected then forage analysis is vital to ensure that the results are taken into account when supplementing minerals and balancing rations."

Key areas

Unfortunately the signs of inadequate mineral intakes can go unnoticed, as producers are faced with the challenge of maximising milk production while keeping cows healthy and getting them back in calf sooner. Four key areas of herd management and four key minerals have been identified that, when altered, can make a visible difference to overall herd performance. "Zinc, copper, manganese and cobalt have been proven, in 17 trials involving 3,474 cows, to offer four benefits – increased milk production, improved fertility, and increased hoof and udder health," says Mr Defrain.

The trials saw cows produce 1.1 litres/day more milk, an 5.3% increase in the number of cows in calf 150 days post partum, a 59.2% reduction in separated soles and a 14.5% reduction in milk SCC. Infertility still remains the primary specific reason for involuntary culling in dairy herds. The challenge is to identify this as a problem as it can take several months before the effects of an issue in this area appear. In general, reproductive performance is influenced by many factors including, but not limited to, plane of nutrition, rate of weight change, level of stress and level of milk production.



"In a recent trial summary, involving nearly 3,500 cows, the trace mineral complexes of zinc, manganese, copper and cobalt decreased days open by 13, and reduced the number of services per conception to 0.3," adds Mr Defrain.

As producers strive to meet increasingly stringent somatic cell count (SCC) regulations, there is a renewed interest in the benefits of trace mineral supplementation.

"Producers reap several economic benefits from decreasing their herd's SCC as improved mammary health and decreased SCC may lead to potentially higher milk premiums, as well as higher milk yield, improved reproductive performance and decreased involuntary culling."

Economic losses

Lameness is recognised as one of the leading animal health problems affecting dairy herds. Economic losses result from lower reproduction and lactation performance, and increased medication and labour costs required to care for lame animals. Mr Defrain highlights the work of a two-year trial with more than 3,000 animals.

"Cows fed organic trace minerals had 59.2% fewer separated soles, 34.2% fewer cases of white line separation, a 10.8% reduction in sole ulcers and 33.1% fewer digital dermatitis lesions," he says. "This can be attributed to the role of zinc and copper, which are essential nutrients for developing healthy claw horn tissue. Zinc and manganese also play a crucial role in wound healing."

These results, taken with others reports, suggest feeding a combination of minerals in a highly available form helps to decrease both the incidence and severity of common claw lesions.

The most effective way to reduce feed costs and improve milk income of the dairy herd is to increase milk yield and the efficiency of milk production. "Increased milk production can be attributed to improved claw and udder health, as well as maintenance of a healthier herdbyimproving reproductive performance," adds Mr Defrain.

Balancing the rations of tomorrow's high producing dairy cows requires that we not only balance rations to deliver proper amounts of amino acids, energy, carbohydrates and fat, but that we also balance rations to deliver to the animal the correct amounts of trace minerals in forms that the animal can utilise. "Feeding Zinpro's unique combination of zinc, copper, manganese and cobalt has been shown to improve reproductive performance and claw health, decrease SCC, all of which aid in improving milk yield and the efficiency of production. And these improvements in performance generate a return on investment of four to one," concludes Mr Defrain.