

ANIMAL HEALTH 1. Mineral nutrition

Key points

- Organic farmers should take a pro-active approach to mineral nutrition, including mineral inputs in fertiliser and direct to stock.
- Nutrition, especially mineral nutrition, is influenced by choice of pasture species, fertilisers and mineral supplementation.
- Feed quality and feed intake are very important.
- Optimal, and at times therapeutic, mineral inputs will ensure animals' immune responses are as good as possible, and this can reduce the incidence or impact of parasites or disease.

Many organic farmers find that managing animal health is one of the biggest issues on their farms. Organic cropping farms depend on the livestock and pasture phase of their operation to restore soil structure, replenish organic matter, and restore fertility, so the financial viability of livestock is crucial to the success of an organic cropping regime. With this in mind, Canterbury Organic Growers invited Nigel van Dorsser and Trevor Cook (see Organic Update No. 6) to speak to them about animal health.

Need to be proactive

Nutrition, especially mineral nutrition, is influenced by choice of pasture species, fertilisers and mineral supplementation.

Nigel believes that organic farmers, who have few band-aids to treat sick or parasitised animals, must take a proactive approach to mineral nutrition. This includes mineral inputs in fertiliser and direct to stock. Of course, stock get minerals from their feed so the importance of feed quality and feed intake are obvious considerations. Optimal, and at times therapeutic, mineral inputs will ensure their immune responses are as good as possible, and this reduces the incidence or impact of parasites or disease. If nutrition is right, then animal health issues will be manageable or of minimal economic consequence.

If internal parasites are the number one issue on the farm, then the whole system needs to be designed around this until it is no longer the issue. Mineral nutrition and choice of breed (which can influence mineral uptake/retention efficiency) are two of the many management strategies.

Nutrition of lambs

Consideration of the nutrition of lambs should start during late pregnancy when mineral nutrition of the ewe impacts on the lamb's status at birth. Providing ewes and lambs with appropriate mineral supplementation is largely ignored by many farmers yet inputs at this time are pivotal if the ewes and lambs are to manage a parasite challenge. Performance to weaning is very

important, because it is at this stage that the future of the animal is determined – lamb weight at weaning is strongly correlated to slaughter weight.

Immune response

Immune response, or resistance or tolerance of disease has two components: the animal's genetic make-up and the expression of those genes. For instance for footrot in sheep, there is a gene which confers resistance, but good nutrition is needed for that to be expressed. If nutrition is inadequate, even a sheep with the resistant gene will be susceptible to footrot.

Nutrition affects stress tolerance

In an organic environment it is particularly important to be proactive rather than a victim of circumstance – problems will arise when there is stress, like a hard winter or drought, so farmers should be prepared. For example, lice are hardly ever a problem for well fed cattle, especially if trace element and sulphur status is good, but cattle are susceptible to lice if mineral status is sub-optimal and stresses come on.

Supplements useful

The idea that stock should be able to get all the minerals they need from the soil via pasture is at times flawed. For example, on copper deficient soils in dry hill country where there is low dry matter production it may be uneconomic to spread copper as there will be a low recovery by stock. A better route is to supplement the stock.

Another factor is that stock require different levels throughout their life – e.g., copper is required at high levels for lambs to perform in the presence of internal parasites but sheep can accumulate copper and liver levels can become toxic at high levels of copper intake in adults. So when indicated it makes sense to supply young stock with copper via lick, drench or sprayed onto feed. Copper bullets given to replacement calves can make a huge difference to performance in the presence of internal parasite challenge.

Combination of minerals important

The combination of elements is also important. Copper is less toxic if given in combination with other minerals. A factor that needs to be taken into account when giving supplements is that elements work in combination with others. For example, copper, cobalt and iron work together, as do selenium, iodine and copper, and zinc and copper.

Nigel points out that multi-element, trace element diagnosis or pre-emptive input decisions are complex and in reality occur "without perfect knowledge".

However he considers there is enough of a demonstrated animal health benefit from proactive mineral supplementation to make it an invaluable tool for all farmers.

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