



DN NEWSLETTER

issue 05

In this issue our Technical Manager and Vet, Debby Brown, will discuss the importance of Magnesium and Calcium in livestock, why issues and imbalances occur and what we should be doing to optimise health and performance on farm.

Magnesium and Calcium; Crucial Macro-minerals

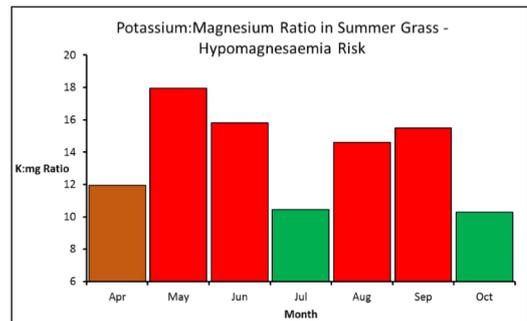
Magnesium is a mineral that we think about when there is lush grass and turnout but it is much more important than that. It is required for many functions in the body including involvement in the nervous system, muscular contractions, immune system and rumen ion transport. Unfortunately, the control of magnesium within the body is not readily managed, with no specific hormonal regulation system.

There is plenty of magnesium stored in the bones but this is not easily available for use by the animal. The plasma magnesium levels are dependent on gastrointestinal absorption, especially from the rumen. Where there is a surplus of magnesium the excess is excreted by the kidneys but if a deficit occurs mobilisation from the bones and soft tissues cannot occur and so must be met by continuous and sufficient absorption.

Magnesium levels are balanced between the magnesium absorbed and that used in milk, growth, foetus development, soft tissues; intestinal losses; and that excreted via the kidneys.

Spring grass typically has a low magnesium content and with low dry matter content and rapid transit through the rumen this reduces the chance for absorption. This increases the risk of signs of magnesium deficiency and therefore 'grass staggers'.

On dairy farms this can be further challenged by the effect of high potassium. High potassium intake has a pronounced negative effect on magnesium digestibility. Forages and grazing fields that are treated with a lot of slurry will have high levels of potassium. Sodium deficiency can make this worse as sodium is replaced by potassium in saliva and this loads the rumen with more potassium. Cows grazing are more likely to suffer with sodium deficiency than those on a TMR which has been supplemented with salt.



Magnesium is important for fibre digestion. Supplementing magnesium can help fat corrected milk yield. Maximum response depends on the stage of lactation. In early lactation, high producing cows produced maximum fat corrected milk when 0.45% magnesium was added to the diet.

Sheep tend to be less susceptible to magnesium issues but as with cattle, both beef and dairy, this will be farm dependent and will be affected by the ratios of Calcium, Potassium, Sodium and Magnesium.

Signs of Grass Staggers:

- Reduced feed intake
- Restlessness, excitability or nervousness
- Stiff legged walk and often a high head carriage and a wide-eyed stare – Neurologic disorders such as ataxia, tetanic muscles spasms
- Head will tend to arch backwards in severe spasm
- Frothing at the mouth
- Cow unable to get up



Calcium is another crucial micromineral which is often under-looked on farms. It is primarily needed for bones, teeth, nerves, muscles, blood clotting and body enzymes. 98% of the cow's calcium is found in the bone. Milk also contains a large part of calcium. Blood calcium levels are critically important to the cows health. These levels are controlled by the endocrine system, specifically the parathyroid gland. When this gland recognises that blood calcium is low, calcium reserves are mobilised from the bone and intestinal calcium absorption is increased.

Calcium levels in grass rapidly decrease through the spring as dry matter production increases. Calcium is closely associated with the fibre fraction in grass where it has a role in the structural integrity of cell walls and levels rise as the fibre level rises in the grass. Many farms have an excess of magnesium in their soils and forages following years of magnesium lime application and this reduces the level and availability of calcium.

Calcium balance is crucial around calving and lambing to ensure the animal meets requirements as demand increases rapidly at birth and then during lactation. Calcium has a big role to play in muscle contraction as well as the immune system and supplementing with limestone flour in a lactating diet can reduce the risk of mastitis as well as support milk production.

Grass Growth and Nutrient Values.

The grass growth rate is still slowly moving upwards and is at a similar growth rate to this time last year. Week on week the ME and protein of the grass is the same but dry matter has dropped slightly.

Grass growth (kg DM/ha)	64.8
Dry matter (%)	19.2
Metabolisable Energy (MJ/kg DM)	12.6
Crude Protein (%)	23.4

Advice:

- It is important to understand the status of these minerals on your farm and for this soil and forage testing for minerals is crucial. As previously mentioned with minerals it is all about ratios so we need to calculate these between the various macro-minerals to understand the need for supplementation or land treatments. Knowing potassium levels can be the answer to many issues.
- It is especially important to test forages used in dry cows as their balance is more crucial than most and excess potassium can cause real issues.
- Ensure salt is always available for stock but especially when grazing.
- Ensure any magnesium supplementation used is palatable as many sources aren't and can then reduce dry matter intake.
- Offering a dry fibre source when initially turning out to spring grass will help as it will slow down the rumen throughput and allow more mineral and nutrient absorption time in the rumen.
- Please contact us if you wish to get any forages, soil or grass tested.
- Many summer feeds have higher magnesium levels and there are also supplementary buckets and minerals available to support stock through the risky spring period.

For further information about products and services from Dugdale Nutrition, please get in touch with your local DN Sales Specialist, or contact us using the details below and we will be happy to help.

