

Bolifor® Magnesium Phosphates & DCAD

What is DCAD?

Dietary Cation Anion Difference (DCAD)
an analytical equation that describes the balance of cations and anions in the diet

CATIONS: Na = Sodium, K = Potassium
ANIONS: Cl = Chloride, S = Sulphur

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$$\text{DCAD} = [(\% \text{Na} / .023) + (\% \text{K} / .039)] - [(\% \text{S} / .016) + (\% \text{Cl} / .0355)]$$

Product	DCAD level (mEq/100g DM)
Bolifor MGP+	-125
Bolifor Mag33	-1.53

Bolifor® Magnesium Phosphates are ideal for supplementing pre-calving due to their negative DCAD levels.

- Mag33 is granulated with a salt coating to enhance the palatability. The presence of Cl from the salt makes the Mag33 DCAD slightly negative.
- Sulphur is present at a low concentration (2%) in MGP+ which, with the absence of salt, makes the MGP+ DCAD strongly negative.

Negative DCAD/Metabolic Acidosis

When an excess of negatively charged minerals (anions such as chloride and sulphur) are fed in the diet, the cow responds by releasing positively charged hydrogen ions (H+) into the blood. With the release of these hydrogen ions, the blood becomes slightly acid (low pH) and this state is known as metabolic acidosis.

Positive DCAD/Metabolic Alkalosis

When an excess of positively charged minerals (cations such as sodium and potassium) are fed in the diet, the cow responds by releasing negatively charged ions such as acetate (CH₃CO₂⁻) and bicarbonate (HCO₃⁻) into the blood to counterbalance the cations, and this gives rise to metabolic alkalosis.

Why is DCAD important?

In the lead up to calving, it is very important that the right metabolic changes take place (early enough) so that calcium is available “on tap” for the cow when she needs it. During gestation, the cow deposits calcium into her calf, however, at calving time the demand for calcium is sudden and increased (approx. 4-10 times more calcium is required than is available).

The metabolic acid-base balance of the cow’s blood is thought to influence the mobilisation of calcium from her bones and help to increase calcium absorption from her gut, making it available to her.

For dry cows three weeks out from calving, a negative DCAD is desired as this acidifies the blood and primes the calcium mobilisation process prior to freshening (calving and entering the milking herd). By priming this system, blood calcium levels should be sufficient at calving and cows are less at risk of going down with milk fever at calving and in early lactation.

Magnesium Pre and Post Calving

Magnesium (Mg) plays an important role in “priming” the calcium mobilisation process. Magnesium is required for the production of hormones that are involved in mobilising calcium from bones and absorbing calcium from the gut, making it available to the cow.

New Zealand pastures are typically low in magnesium during lush, low dry matter growth periods which, seasonally, coincides with calving. It is therefore important to ensure cows are receiving a good quality magnesium supplement at least 3 weeks prior to calving as low magnesium levels predispose cows to milk fever (hypocalcaemia). Limit the use of feeds/fertilisers containing high levels of potassium (K) as this will increase overall DCAD and depress calcium metabolism.

Bolifor® Magnesium Phosphates are high quality, palatable, free flowing (non-dusty), low DCAD magnesium supplements; ideal for pre- AND post calving. Talk to your Vet or Nutritionist to evaluate low DCAD feed strategies best suited to your farming system.



0800 BEC 001 · info@becfeedsolutions.co.nz
www.becfeedsolutions.co.nz

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