



WHAT DCAD LEVEL SHOULD I AIM FOR IN MY TRANSITION COW DIET?

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Sponsored by Arm & Hammer Animal Nutrition

Transition cow diets are one of the most critical factors influencing cow health, productivity, and long-term performance. In fact, often it's the small details – like balancing DCAD pre-calving – that deliver the biggest results.

One of the key challenges to consider during the transition period is how to prevent clinical and sub-clinical hypocalcemia while also supporting start-up milk. **Negative Dietary Cation-Anion Difference (DCAD) is one strategy that can do both.**

Why Negative DCAD During the Transition Period?

The natural level of most dairy rations is a positive DCAD due to the high content of sodium (Na^+) and/or potassium (K^+) in common forages. However, during the dry period, especially the last 2 to 3 weeks before calving, it is crucial to **reduce the DCAD to a negative level.**

Why? Because feeding a **negative DCAD diet during the dry period** has been shown to be the most effective nutritional strategy to **prevent hypocalcemia** – both the obvious clinical form like downer cows, and more subtle sub-clinical effects such as difficult calvings, retained placenta, metritis, displaced abomasum, reduced feed intake, and lower milk production.

This was confirmed in a study by Santos et al. (2019),¹ which highlighted that negative DCAD diets reduce the incidence of hypocalcemia and associated transition disorders.

How Does Negative DCAD Work?

Feeding a negative DCAD diet **lowers the blood pH slightly**, creating mild metabolic acidosis. This small acid-base shift activates the cow's physiological mechanisms to increase their reactivity to Parathyroid Hormone (PTH), allowing **calcium mobilization from the bones**. As a result, blood calcium levels are maintained during the critical calving period.

In other words, the negative DCAD diet “primes” the cow's metabolism to handle the sudden surge in calcium demand for colostrum and milk production after calving.

What should my target DCAD Be?

It is important to strike the right balance. The recommended target DCAD during the transition period is: **-8 to -12 mEq per 100 grams of dry matter**

This range has been found effective in lowering blood pH enough to support calcium mobilization without risking metabolic acidosis or reduced dry matter intake.

If you're operating a single dry cow group across the whole duration of the dry period (45 to 60 days) and only feed one diet during this time, negative DCAD diets can still be an effective strategy. In these diets, the recommended target DCAD is: **-6 to -8 mEq per 100 grams of dry matter**

The Correct Range

A **practical and affordable** way to check the diet is achieving the desired negative DCAD level is to measure the **urine pH** of dry cows, which reliably reflects blood pH.

Aim for a urine pH between **6.0 and 6.8** in Holstein cows during the negative DCAD feeding period.

If the urine pH is higher than 6.8, the diet may not be sufficiently acidified. If it is lower than 6.0, the acid load may be too high, risking palatability and feed intake issues.

Don't Forget the Fresh Cow Diet!

The transition period doesn't end at calving. Research by Razzaghi et al. (2012) demonstrated that cows fed a **negative DCAD diet before calving (around -10 mEq/100 g)** followed by a **positive DCAD diet after calving (+35 to +40 mEq/100 g)** showed improved health, feed intake, and overall performance.²



How We Support your DCAD Strategy

We provide a **multifunctional DCAD supplement** designed to easily achieve your DCAD and metabolizable protein targets in your pre-calving diets.

Our **anionic protein blend** delivers effective chloride and sulfate salts to produce a controlled negative DCAD without sacrificing palatability or dry matter intake.

Using bio-chlor, dairy producers can confidently manage transition nutrition to **reduce milk fever incidence, improve fresh cow health, and maximize early lactation performance.**¹

The Bottom Line.

Negative DCAD diets not only prevent costly metabolic diseases but also set your herd up for a successful lactation when using bio-chlor.

Get Started

Visit ahanimalnutrition.com or contact your local feed advisor to optimize your transition nutrition.

Reference:

1. Santos, J. E. P., Lean, I. J., Golder, H., & Block, E. (2019). Meta-analysis of the effects of prepartum dietary cation-anion difference on performance and health of dairy cows. *Journal of Dairy Science*, 102(3), 2134-2154.
2. Razzaghi A., Aliarabi H., Tabatabaei M.M., Saki A.A., Valizadeh R., Zamani P. (2012) Effect of dietary cation-anion difference during prepartum and postpartum periods on performance, blood, and urine minerals status of Holstein dairy cow. *Asian-Australasian Journal of Animal Science*, 25(4): 486.