New studies identify -8 as optimal DCAD prepartum

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Recently published research provides new evidence supporting the optimal Dietary Cation Anion Difference (DCAD) levels for prepartum dairy cows. DCAD measures the levels of four macrominerals in the diet: positive charged cations, potassium (K) and sodium (Na) and negatively charged anions, chloride (Cl) and sulphur (S). The DCAD level is determined by adding these charges together.

Two papers in the March issue of the Journal of Dairy Science concluded that outcomes are optimised when DCAD is about -8 meq/100g DM and urine pH prepartum is between 6.3 and 6.5. Furthermore, any reduction of DCAD prepartum (more positive to less positive, positive to negative, or negative to more negative [up to -8]) resulted in reduced disease risk and improved production performance even when not optimised at -8.

EVIDENCE FROM 39 TRIALS

The authors completed meta-analyses examining dozens of published research trials related to prepartum DCAD, focusing on:

- Effects of DCAD concentration and the impact on production and health.
- Impact of reducing DCAD for prepartum cows (versus comparing only positive vs. negative DCAD).

Overall, the studies reported feeding a negative DCAD diet prepartum for 21 days:

- Increased postpartum milk in multiparous cows.
- Reduced risk of diseases in all cows.
- Improved dry matter intake (DMI) in all cows postpartum.
- Improved blood calcium (Ca) status at calving and post-calving.

Researchers calculated the break point range for each performance parameter and found no significant additional benefit of reducing DCAD to a level below -10 (see Table 1). Formulating rations with a highly negative DCAD or 'acidifying' cows did not improve outcomes and hampered dry matter intake, leading to an exaggeration of negative energy balance prior to calving.

KEY TAKEAWAYS

Feeding a prepartum ration properly balanced for DCAD is critical for healthy calving, smooth transition and a productive early lactation. Formulating rations with an optimal DCAD level of -8 meq/100g DM is shown to optimise postpartum outcomes without sacrificing prepartum dry matter intake. If adequate feed and forage analyses are not available for precision feeding, formulate rations to a -8 to -10 DCAD range and adjust based on urine pH measurements.

Table 1. Effect of negative DCAD and the approximate DCAD for optimal responses.

Effect of negative DCAD	Break point range DCAD (meq/100g dietary DM)
Reduced prepartum DMI	-6 to -9
Increased postpartum DMI	-6 to -10
Increased iCa at calving	-6 to -10
Increased milk, FCM and ECM	-5 to -8
Reduced metritis	-7 to -10
Reduced total disease events	-6 to -10
Reduced clinical milk fever	-6 to -12

References for all research cited available on request

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FERMENTEN improves feed efficiency and increases production

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Recently published research provides additional insight on how FERMENTEN works and reinforces its performance benefits when substituted for soybean meal in dairy rations. When FERMENTEN is included in dairy rations, the diet delivers more metabolisable protein (MP), translating to improved feed efficiency and increased milk and component production.

PROVEN RESULTS FROM TWO TRIALS

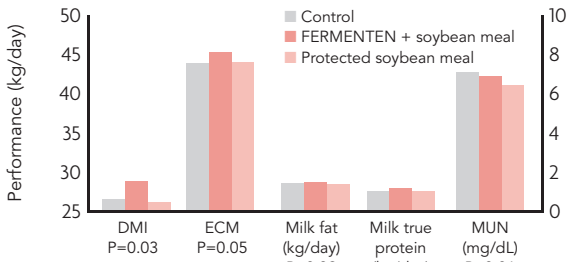
Researchers at Cornell University, USA, conducted a concept test study to confirm the additive's mode of action in the animal. Treatment diets contained a mix of corn silage, alfalfa silage, ground corn and protein premix containing either a control mix of urea and wheat middlings or FERMENTEN. Results from the first study confirmed the activity of FERMENTEN to reduce protein degradation in the rumen, as well as reduce feed crude protein degradation by 15%. This resulted in a 260g increase in total amino acid (AA) flow from the rumen to the omasum. Feeding FERMENTEN led to greater omasal AA flow and increased non-microbial AA flow.

In a second trial based on the mode-of-action study, researchers conducted a pen trial to evaluate milk performance and intake in lactating dairy cattle fed three different protein sources. Three diets equal in crude protein content were fed to 192 cows grouped in 16-cow pens. Their diets of forage and corn grain base supplement were as follows:

- Diet A: Soybean meal (control).
- Diet B: FERMENTEN and soybean meal.
- Diet C: Protected (heat treated) soybean meal.

Results from the second study (Fig. 1) showed that FERMENTEN increased performance of cows fed rumen degradable soybean meal compared with cows fed the control diet. Cows fed FERMENTEN with rumen degradable soybean meal also performed better than cows fed protected soybean meal, and had higher dry matter intake, milk protein and fat yield.

Fig. 1. Performance results of cows fed FERMENTEN.



CONCLUSION

Feeding FERMENTEN in dairy diets is proven to improve cow performance, including higher feed intake and milk production. It reduces crude protein degradation in the rumen, delivering more metabolisable protein and better nitrogen utilisation, resulting in more efficient cows. By feeding FERMENTEN, producers can provide a more economical, rumen degradable protein source for cows, while still gaining the performance benefits of bypassing the rumen.

References for all research cited available on request