BIO-CHLOR™

Maintain transition health.

#ScienceHearted

At ARM & HAMMER™ we think big on a microscopic level to deliver safe feed and food solutions that drive business forward. We're your #ScienceHearted, local-and-global, animal and food production team.

Transition health could be costing you big time.

$340. That's the cost of a single displaced abomasum. One case of milk fever costs you $334, and you'll lose approximately $145 on a case of ketosis.[1] But those are just the acute costs—poor start up milk, high incidence of metritis and low pregnancy rates are also bad for your bottom line and can be caused by subclinical transition health issues.

When the transition period is so critical to lactation success, you can't afford to short-change it.

What if you could help each cow reach her productive potential?

MAINTAIN HEALTH.

What if you could experience fewer disease incidents?

PROMOTE PRODUCTIVITY.

What if you could have consistently higher start-up milk, reduced metritis and higher pregnancy rates?

INCREASE LONGEVITY.

What if you could get one more productive lactation out of each cow?

Only BIO-CHLOR™:

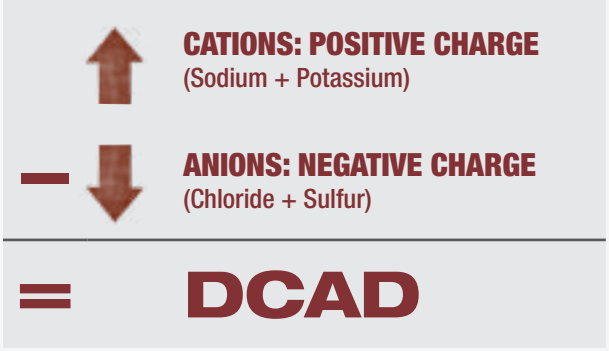
Delivers metabolizable protein (MP) and negative DCAD in a single consistent formulation to:

- ✓ Capitalize on known prepartum diet success to reduce clinical and subclinical hypocalcemia, metritis and displacements
- ✓ Reduce resources needed to diagnose and treat subclinical and clinical issues

When it comes to DCAD, no one has published more research than ARM & HAMMER™—and we're not stopping now. That's #ScienceHearted.

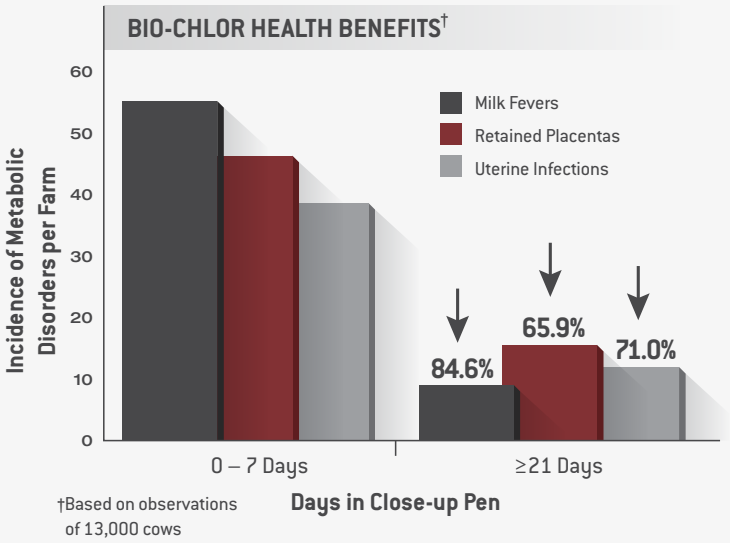
DCAD balancing: proven.

The close-up ration helps set the stage for optimal performance in the upcoming lactation. One proven nutritional tool during transition is dietary cation-anion difference (DCAD) balancing.



Negative DCAD prepartum helps reduce risks associated with milk fever.

Spend less time diagnosing transition issues.



In one research trial with over 13,000 observations, cows fed BIO-CHLOR for at least 21 days prepartum experienced:[2]

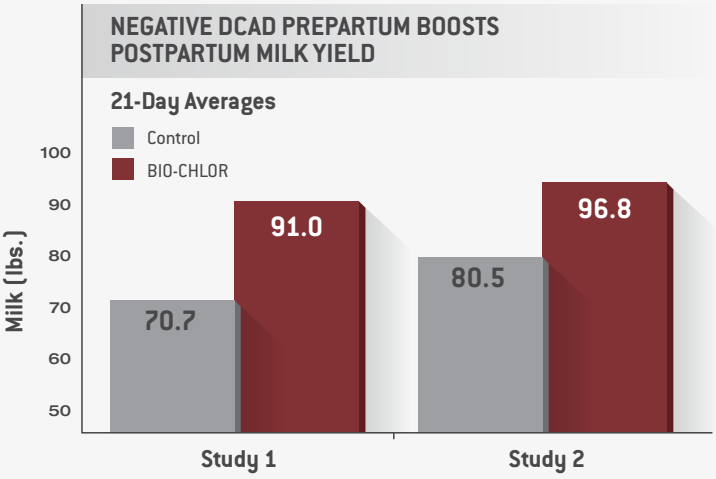
- 84.6% fewer cases of milk fever
- 65.9% reduction in retained placentas
- 71.0% fewer uterine infections

Meta-analysis of 42 publications and 134 treatments displayed the disease and performance incidence change when prepartum DCAD was reduced from +20 to -10 meq/100g dry matter.[3]

Postpartum Dry Matter Intake (lbs./day)	+2.2
Milk Production (lbs./day)	+3.74
FCM (lbs./day)	+2.42
Milk Fever (Incidence %)	-80%
Retained Placenta (Incidence %)	-47%
Metritis (Incidence %)	-39%
Displaced Abomasum (Incidence %)	-18%
Total diseases/cow	-56%

Supports start-up milk.

In two different studies, cows fed BIO-CHLOR 21 days prepartum showed improved milk production compared to the control diet.[5,6]



21 to 42 days.

If pen moves or grouping strategy don't easily allow for feeding a separate close-up ration, BIO-CHLOR is still your prepartum solution. Research[4] shows feeding BIO-CHLOR beginning as early as 42 days prepartum yields similar health and production benefits compared to feeding BIO-CHLOR 21 days prepartum without negative effects.

Metabolizable protein: the amino acid profile to achieve efficiency.

MP is the form of protein that's digested postruminally and supplies essential amino acids which are vital to dairy cattle maintenance and productivity.

RUMEN BACTERIAL PROTEIN + **RUMEN BYPASS PROTEIN** = **METABOLIZABLE PROTEIN AND AMINO ACIDS**

Improved Protein Status

- Reduced metabolic disease
- Improved immune function
- Greater start-up milks

Recommended feeding rates.

Feeding rates will vary and are approximately 1.5 to 2.0 lbs. per cow per day.

- Obtain DCAD forage analysis by wet chemistry and test water supply to determine chloride, potassium, sodium and sulfur levels, which can vary by water source and could affect DCAD levels
- Optimum DCAD range for prepartum cows is -8 to -12 meq/100g dry matter
- Feed BIO-CHLOR™ as a primary MP source in prepartum cow diets

NOTE: For more details on formulating ration DCAD, ask your Arm & Hammer Animal and Food Production representative about our How-To Sheets for balancing negative and positive DCAD diets.

We're #ScienceHearted and we're here for you.
We're ever-curious farm kids turned nutritional innovators, microbial pioneers and food safety game changers. We use scientific research to unlock the power of nature to create products that focus on you, your animals and worldwide food security. To learn more about BIO-CHLOR ask your nutritionist, veterinarian or ARM & HAMMER™ representative or visit AHfoodchain.com.

1 https://www.dairyherd.com/article/high-cost-fresh-cow-disorders
2 Robert Corbett. ARM & HAMMER Animal Nutrition, 2001. Data on file.
3 Meta-analysis of the effects of prepartum dietary cation-anion difference on performance and health of dairy cows Santos JEP, Lean IJ, Golder H, and Block E. 2019. *J Dairy Sci* 102:2134-2154.
4 Weich W, Block E, Litherland NB. Extended negative dietary cation-anion difference feeding does not negatively affect postpartum performance of multiparous dairy cows. *J Dairy Sci* 2013;96:5780-5792.
5 Hoover W. Difference in feed intake pre- and postpartum, urine pH prepartum, and difference in production parameters postpartum for cows fed a control diet vs. a BIO-CHLOR containing diet (DCAD -10 meq/100 g DM) for 21 days pre-partum. ADSA Abstract, 1998.
6 DeGroot MA, Block E, French PD. Effect of prepartum anionic supplementation on periparturient feed intake, health, and milk production. *J Dairy Sci* 2010:93:5268–5279.