

THE BENEFITS OF FORMULATING NEGATIVE DCAD DIETS USING BIO-CHLOR IN CNCPS



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Throughout our Dry Cow Know How series, we've offered advice on negative DCAD diets. Now, we'll pull all our top tips together and demonstrate how simple negative DCAD diets can be when using Bio-Chlor.

Formulating for a negative DCAD diet doesn't have to be complicated, but attention to detail is needed. The rewards? Better transition cow health and start up milks. **Below you'll find two transition cow diet examples; one using soya and straight anionic salts, the second using rapeseed meal and Bio-Chlor.**

Transition cow diet: Anionic salts + Soya bean meal	Amount Fed (Kgs)	Amount Fed (Kgs)	Transition cow diet: Bio-Chlor + Rapeseed meal
Maize (Corn) silage	20	19.5	Maize (Corn) silage
Wheat straw	4	4	Wheat straw
Soya bean meal	2.5	2.3	Rapeseed meal
Ground wheat	0.3	0.3	Ground wheat
Dry cow mineral	0.15	0.15	Dry cow mineral
Limestone	0.1	0.1	Limestone
Magnesium Chloride	0.27	0.9	Bio-Chlor
Ammonium Chloride	0.05	-	-
TOTAL	27.37	27.25	TOTAL

The two diets are similar fresh weights but the table below shows the diet formulation on a dry matter basis for nutrient comparison.

Nutrient	Anionic Salts & Soya bean meal	Bio-Chlor & Rapeseed meal
Dry Matter kgs	13.23	13.29
Dry Matter %	48.27	48.77
ME MJ/kg	9.71	9.5
CP %	13.59	13.31
MP g	1191	1237
DCAD meq/100g	-8.75	-9.0



Dr. Joel Pankowski joined the Arm and Hammer Technical Services Team in 2011. Currently, he leads and manages a team of Ph.D. and DVM Multi-Species Technical Service Managers that provide technical expertise to the Field Sales Team, Key Influencers and Producers in the Americas.

Joel received both his BS and MS degrees from The Ohio State University and then went on to earn his Ph.D. in Dairy Management from Cornell University. His areas of expertise are: reproductive management and health, quantitative dairy herd data analysis, transition cow management and fatty acid nutrition.

His 30+ year career has included a variety of technical and leadership roles with the Monsanto Dairy Business, CPG Nutrients, AGWAY, Inc., Land 'O Lakes Purina Feed, and Alpharma Animal Health. Joel resides in Baldwinsville, NY with his wife, Tracy and they have 3 grown children (Stacy, AJ and Trevor).



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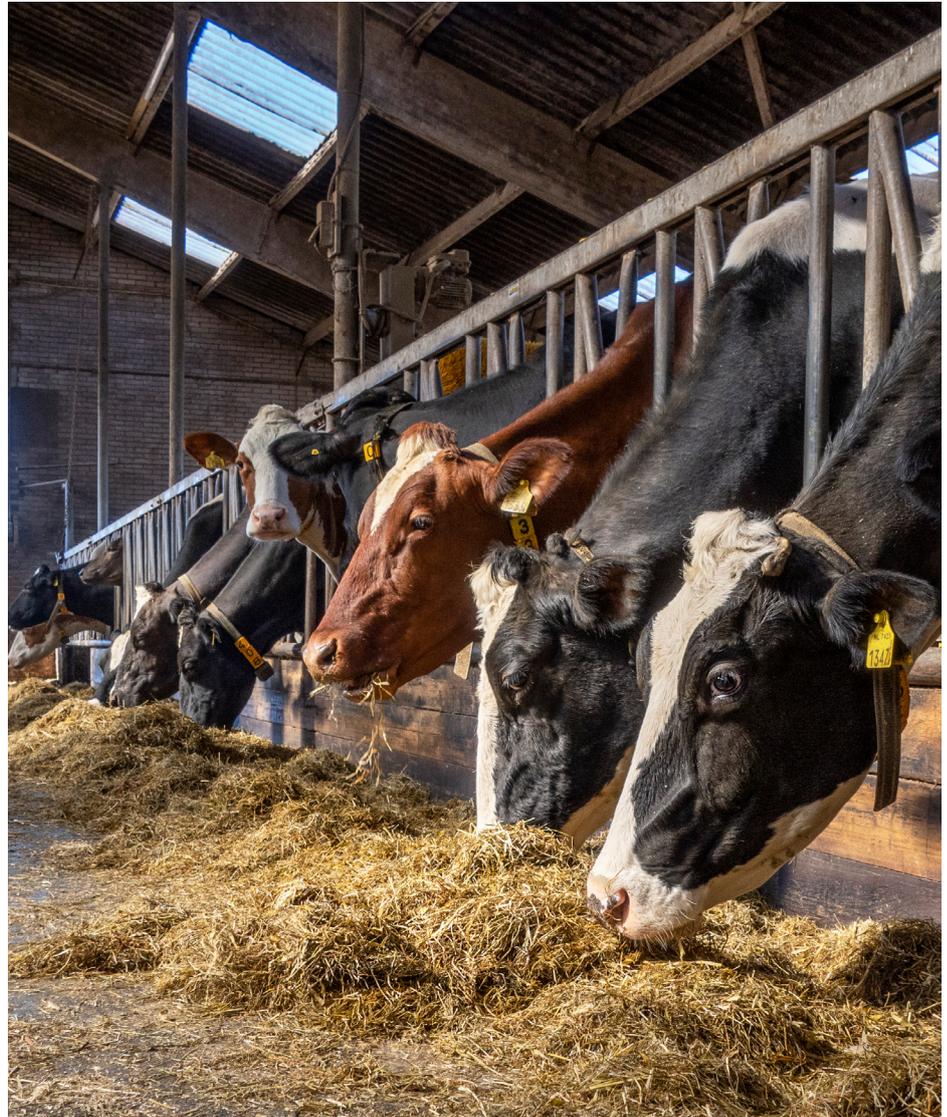
Both diets are very similar, although crude protein (CP) level is slightly lower in the Bio-Chlor diet. As the name suggests, ‘crude’ protein is only a general estimate of total protein supplied by the diet but Metabolizable Protein (MP) levels calculate the total amount of amino acid absorbed in the small intestine. Focussing solely on CP % can lead to unnecessary overfeeding of protein and reduced protein efficiency.

The two diets above demonstrate how the target MP levels can be achieved with different CP levels. By maximizing the utilization of nitrogen sources in the rumen to optimize the output of MP, protein efficiency is improved.

Specific to Bio-Chlor, the mode of action within the rumen has a sparing effect on the degradation of A2 (true soluble proteins, peptides, AA), and B1 (moderately degraded true proteins) protein fractions.

This reduction in the degradation rate (Kd) permits some of the A2 and B1 protein to be spared from degradation, and to escape the rumen as a component of MP (MP is the sum of Microbial, Rumen Escape, and Rumen By-Pass Proteins and Amino Acids). This effect increases the total outflow of amino acids from the rumen, increasing notably, branched chain AA which are especially beneficial to the fibre digesters, potentially explaining improved fibre (NDF) degradation.

Dr. Joel Pankowski, Assoc. Director for Technical Services in the Americas for Arm & Hammer, explains why **using the Cornell Net Carbohydrate and Protein System (CNCPS) is the preferred formulation model for getting the most out of Bio-Chlor**: “CNCPS describes feeds by their chemical fractions and fermentation characteristics, enabling both metabolizable energy and protein to be calculated for a diet.”



“Calculating what the cow absorbs via the small intestine is a better reflection of a diet’s potential,” adds Dr. Pankowski. Arm & Hammer have also worked with the software creators for AMTS, which uses the CNCPS model, to create a special evaluation tool specifically for Bio-Chlor.

“The special evaluation tool quantifies the additional metabolizable protein achieved thanks to the protein sparing

effect of Bio-Chlor within the rumen. It’s a game changer for reducing overfeeding of expensive crude protein,” says Dr. Pankowski. ■

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